

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

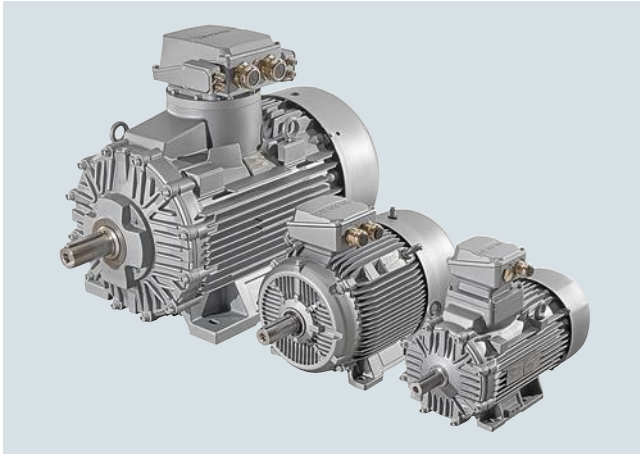


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SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Overview



In many industrial and public sectors, explosion protection or explosion hazards are ever-present, e.g. in the chemicals industry, in refineries, on drilling platforms, at gas stations, in feed manufacturing and in sewage treatment plants.

The risk of explosion is always present when gases, fumes, mist or dust are mixed with oxygen in the air in an explosive ratio close to sources of ignition that are able to release the so-called minimum ignition energy.

In the chemical and petrochemical industries in particular, when crude oil and natural gas are transported, or in mining, milling (e.g. grain and granular solids), this can result in serious injury to persons and damage to equipment.

To ensure maximum safety in these areas, legislators in most countries have implemented appropriate stipulations in the form of laws and regulations based on national and international standards.

Explosion-protected equipment is designed such that an explosion can be prevented when it is used properly.

The explosion-protected equipment can be designed in accordance with various types of protection.

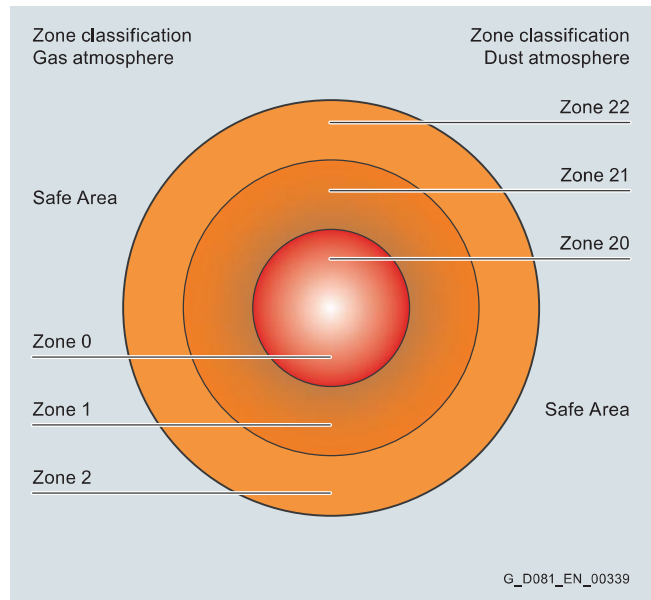
The local conditions must be subdivided into specified zones by the user with the assistance of the responsible authorities in accordance with the frequency of occurrence of an explosion hazard. Device (equipment) categories are assigned to these zones. The zones are then subdivided into possible types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

Classification of zones

Areas subject to explosion hazard are divided into zones. Division into zones depends on the chronological and geographical probability of the presence of a hazardous, potentially explosive atmosphere. Information and specifications for classification of the zones are laid down in the following standards:

- IEC/EN 60079-10-1 for gas atmospheres
- IEC/EN 60079-10-2 for dust atmospheres

Further, a distinction is made between various explosion groups as well as temperature classes and these are included in the hazard assessment.



Depending on the particular zone and therefore the associated hazard, operating equipment must comply with defined minimum requirements regarding the type of protection. The different types of protection require corresponding measures to prevent ignition that should be implemented at the motor in order to prevent a surrounding explosive atmosphere from being ignited.

Note:

According to the standard IEC/EN 60079-7:2015, the previous designations of the types of protection Ex e and Ex nA have been changed to **Ex eb** and **Ex ec** respectively. The expiration date of the previous designations was July 31, 2018.

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Zone	Gas	Dust	Zone definition acc. to IEC/EN 60079-10-1 for gas atmospheres IEC/EN 60079-10-2 for dust atmospheres	Assigned types of protection	Category according to 2014/34/EU	Equipment protection level acc. to IEC/EN 60079-0
0	–	–	An area in which an explosive gas atmosphere is present continuously, 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 be present occasionally during normal operation.	Ex eb (previously Ex e), EX db eb (previously EX de); Ex db (previously Ex d)	2	Gb
2	–	–	An area in which it is expected that an explosive gas atmosphere will be present only rarely and then only for a short period during normal operation.	Ex ec (previously, Ex nA)	3	Gc
–	20	–	An area in which there is an explosive gas atmosphere comprising a dust-air mixture continuously, over long periods 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 be present occasionally during normal operation.	Ex tb ³⁾	2	Db
–	22	–	An area in which it is expected that an explosive gas atmosphere in the form of a cloud of combustible dust in air will be present only rarely and then only for a short period during normal operation.	Ex tc ⁴⁾	3	Dc

Changes to the Ex marking

In accordance with the latest edition of the standards for "Flameproof enclosure" and "Increased safety" types of protection, there is a change to how devices and equipment are marked. The type of protection "Non-sparking" Ex nA acc. to IEC/EN 60079-15 has been integrated into the latest edition of the standard for "Increased safety" according to IEC/EN 60079-7 as Ex ec. This has the following effect on the Ex marking:

- "Increased safety" for Zone 1 and Zone 2 (previously Ex e):
II 2G Ex eb IIC T3 Gb
- "Increased safety" for Zone 2 (previously Ex nA):
II 3G Ex ec IIC T3 Gc
- Flameproof enclosure for Zone 1 and Zone 2 (previously Ex d):
II 2G Ex db IIC T4 Gb

There are no changes for the user other than the device marking.

Overview of standards for explosion protection

The explosion-protected three-phase motors comply with European standards. The European standards are recognized by all member states of CENELEC (European Committee for Electrotechnical Standardization). The national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden, Switzerland, Portugal, and United Kingdom (UK) are members of CENELEC.

Title	European standard
General provisions	EN 60079-0
Flameproof enclosure "d"	EN 60079-1
Increased safety "e"	EN 60079-7
Zone classification (gases, vapors, mist)	EN 60079-10-1
Zone classification (dust)	EN 60079-10-2
Intrinsic safety "i"	EN 60079-11
Electrical equipment in potentially explosive atmospheres (gases, vapors, mist)	EN 60079-14
Maintenance of Ex equipment	EN 60079-17
Intrinsically safe electrical systems	EN 60079-25
Equipment "Dust" (dust explosion protection by housing) "t"	EN 60079-31
Equipment "Dust"	EN 50281-2-1
Equipment "Dust"	EN 61241-2-2
Basic concepts and methodology	EN 1127-1

1) Motors of
- Zone 1 can also be used in Zone 2
- Zone 21 can also be used in Zone 22

2) Motors which are certified for gas or dust protection must not be used in hybrid mixtures! Hybrid mixtures:
Explosive gas and dust atmospheres are present simultaneously.

3) SIMOTICS XP motors with type of protection Ex tb are intended for group IIIC as a general rule, i.e. they are permitted for operation in environments with conductive and non-conductive dust.

4) SIMOTICS XP motors with type of protection Ex tc are intended for group IIIB as a general rule, i.e. they are not permitted for operation in environments with conductive dust.

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Temperature classes and groups

Combustible gases and vapors are divided into temperature classes according to their ignitability and into groups according to their spark ignition capacity. The marking of a three-phase motor with the codes for the type of protection, group and temperature class specifies that it can be used without danger in hazardous areas depending on the zone classification. The numerical sequence of the codes for the group and temperature class has been selected so that motors that satisfy the requirements for a certain group and temperature class also satisfy the requirements for lower groups and classes.

Temperature classes

Temperature class of electrical equipment	Maximum surface temperature of electrical equipment	Ignition temperature of gases or vapors
T1	450 °C	> 450 °C
T2	300 °C	> 300 °C
T3	200 °C	> 200 °C
T4	135 °C	> 135 °C
T5	100 °C	> 100 °C
T6	85 °C	> 85 °C

Examples of the assignment of combustible gases and vapors

Group	Temperature classes											
	T1		T2		T3		T4		T5		T6	
	Material designation	Ignition temperature °C	Material designation	Ignition temperature °C	Material designation	Ignition temperature °C	Material designation	Ignition temperature °C	Material designation	Ignition temperature °C	Material designation	Ignition temperature °C
IIA ¹⁾	Acetone	540	i-Amyl acetate	380	Naphthas		Acetaldehyde	140				
	Ethane	515	n-Butane	365	Petrol fuels	²⁾						
	Ethyl acetate	460	n-Butyl alcohol	340	Mineral spirits	²⁾						
	Ethyl chloride	510	Cyclohexanone	430	Diesel fuels	²⁾						
	Ammonia	630	1,2-Dichloroethane	440	Heating oils	²⁾						
	Benzene	555	Acetic anhydride	330	n-Hexane	240						
	Acetic acid	485										
	Carbon monoxide	605										
	Methane	595										
	Methanol	455										
	Methyl chloride	625										
	Naphtalene	520										
	Phenol	595										
Propane	470											
Toluene	535											
IIB ¹⁾	Coal gas (town gas)	560	Ethanol	425	Hydrogen sulfide	270	Ethyl ether	180				
			Ethylene	425								
			Ethylene oxide	440								
IIC ¹⁾	Hydrogen	560	Acetylene	305						Carbon disulfide	95	

Explosion Protection Directive 2014/34/EU

Explosion protection has been fully harmonized by Directive 2014/34/EU in Germany and in the other member states of the European Union. The requirements of the new law came into force on April 20, 2016. Since then only those devices and protection systems that comply with Directive 2014/34/EU are permitted to be placed on the market.

Directive 2014/34/EU and Directive 1999/92/EC specify that only specific electrical equipment and devices are permitted to be used in the zones. The devices are assigned to equipment groups and categories.

Use of electrical equipment in accordance with EN 60079-14

Electrical equipment used in potentially explosive workshops and storage areas must comply with EN 60079-14/ VDE 0165-1 "Explosive atmospheres - Part 14: Electrical installations design, selection and erection". All other general regulations issued by the responsible supervisory authorities and the Employer's Liability Insurance Association or any specifically issued for individual case are also applicable. A plant or system subject to inspection is not permitted to be commissioned initially or following a significant modification until the plant or system has been inspected by an approved inspection agency for correctness of assembly, installation, site conditions and safe operation, taking into account the intended mode of operation. Devices compliant with Directive 2014/34/EU are permitted to be commissioned in accordance with the responsible supervisory authority. (cf. German Health and Safety at Work Regulations (BetrSichV), section 3, § 14)

¹⁾ Subgroups IIA, IIB and IIC must be specified for the types of protection Ex db, Ex eb and Ex ec described in this list in accordance with EN 60079-0.


²⁾ The minimum ignition temperature depends on the composition and lies between 220 to 300 °C, over 300 °C in special cases.


Overview

Device marking


The equipment group and category are specified in the device marking.

The device marking is defined as follows:

e.g. CE 0158  II 2G Ex eb IIC T3 Gb

- **CE** conformity marking
CE stands for "Communautés Européennes" (European Communities)
The manufacturer of the explosion-protected devices declares by means of CE marking that the relevant product has been manufactured in accordance with all applicable regulations and requirements of the EU and the requirements laid down in Directive 2014/34/EU and the product has been subjected to the relevant conformity evaluation process.
- **0158** identification number of the inspecting authority (DEKRA)
-  Marking for prevention of explosions in accordance with Directive 2014/34/EU

Example "increased safety":

	CE	0158		II	3	G	Ex	ec	IIC	T3	Gc
CE marking											
Number of the certifying "notified" body (0158 = DEKRA)											
Explosion protection marking											
Equipment group: I = Underground II = All other areas											
Category: 2 (Zone 1/21) 3 (Zone 2/22)											
Ex atmosphere G = Gas D = Dust											
Explosion-protected equipment											
Type of protection Ex db, db eb, eb, ec, tb or tc (db eb = motor housing Ex db with terminal box Ex eb)											
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											

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

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Overview of SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

The table below contains a complete overview of our products, their types of protection and the assignment of motor types to categories. It is important to note that depending on whether the

motor is used for converter operation or line operation, different order codes are required for unique selection of the required product.

Sector	Category	Zone	Frequency of occurrence of the Ex atmosphere	Type of protection	Temperature class	Equipment protection level	Degree of protection	Motor type and if applicable order code	Operation	Order code	Utilization according to temperature class	Standard
Gases and vapors (G)	1G	0	constantly or long-term	Not admissible with low-voltage motors								
	2G	1	occasionally	Ex db eb IIC ¹⁾ (flameproof enclosure)	T1 – T4	Gb	IP55	1MB1.5, 1MB5.5	Line	–	130 (B)	IEC/EN 60079-0 IEC/EN 60079-1 IEC/EN 60079-7
				Ex eb IIC ¹⁾ (increased safety)	T1 – T3				–	130 (B)/ 155 (F) ²⁾		
	3G	2	rarely or for a short period	Ex ec IIC ¹⁾ (increased safety)		Gc		1MB103, 1MB153, 1MB163	Line	–	130 (B)	
Converter	B40 B41											
Dust (D)	1D	20	constantly or long-term	Not admissible with low-voltage motors								
	2D	21	occasionally	Ex tb IIIC ¹⁾ : Conductive and non-conductive dust	Max. housing temperature T120 °C ⁴⁾	Db	IP65	1MB101, 1MB151, 1MB161	Line	–	130 (B)	IEC/EN 60079-0 IEC/EN 60079-31
									Converter	B40 B41		
3D	22	rarely or for a short period	Ex tc IIIB ¹⁾ : non-conductive dust		Dc	IP55	1MB102, 1MB152, 1MB162					
Gases and vapors (G) and dusts (D) ³⁾	2G 2D	1 or 21	occasionally	Ex db eb IIC ¹⁾ (flameproof enclosure)/ Ex tb IIIC ¹⁾ : Conductive and non-conductive dust	T1 – T4/ Max. housing temperature T130 °C	Gb Db	IP65	1MB1.5 +B32, 1MB5.5 +B32	Line	–	130 (B)	IEC/EN 60079-0 IEC/EN 60079-1 IEC/EN 60079-31
	Converter	B43 B44										
	3G 3D	2 or 22	rarely or for a short period	Ex ec IIC ¹⁾ (increased safety)/ Ex tc IIIB: non-conductive dust	T1 – T3/ Max. housing temperature T120 °C ⁴⁾	Gc Dc	IP55	1MB103 +B30 1MB153 +B30 1MB163 +B30	Line	–	130 (B)	IEC/EN 60079-0 IEC/EN 60079-7 IEC/EN 60079-31
Converter	B40 B41											

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¹⁾ Highest explosion group IIC includes IIB and IIA. IIIA stands for lint, IIIB for non-conductive dust and IIIC for conductive dust. 1MB155, 1MB555 motors optionally with Ex db terminal box.

²⁾ See EU type-examination certificate.

³⁾ The Ex motor is not admissible in an explosive atmosphere of dust and air (hybrid). A standard is not currently available that describes the product requirements for a hybrid mixture.

⁴⁾ For 1MB1 IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5, 1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C.
For 1MB5 frame sizes 400 and 450: T125 °C.

Benefits

The explosion-protected motors from Siemens offer the user 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 complies with Directive 1999/92/EC in accordance with Appendix II B (ATEX 137 previously ATEX 118a). The plant manufacturer or plant operating company is responsible for correct selection and proper usage of the equipment.
- Comprehensive series of Ex motors for protection against gas and dust.
- Individual versions of motors are possible thanks to the numerous catalog options.
- Further special versions are possible on request.
- Declarations of compliance with the order 2.1 are available for a defined spectrum of Siemens motors/converters.
- The operating instructions are available in all 23 official EU languages as well as Russian, Turkish and Chinese.
- Certificates: ATEX, IECEx, CQST, EACEx

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

The right motor for various challenges

The following motor series are available with cast-iron housings for applications in harsh, hazardous environments:

- **Basic Line:**
Rugged, reliable motors for machine construction
- **Performance Line:**
Motors for the process industry with reinforced bearings and a more rugged coating – for requirements that extend beyond the Basic Line

Comparison: Basic Line versus Performance Line

Function	Basic Line – 1MB15	Performance Line – 1MB16
Bearing size	62, 63 from frame size 280 upwards	63
Relubrication	Optional, standard from frame size 280 upwards	Standard from frame size 160 upwards, optional for frame sizes 100 to 132
Paint system	Standard paint finish, corrosivity category C2	Special paint finish, corrosivity category C3
Drainage	Drain plug from frame size 100 upwards	Drain plug from frame size 100 upwards
Rating plate made of stainless steel	Standard from frame size 225 upwards, optional for frame sizes 71 to 200	Standard from frame size 100 upwards
Motor protection	Optional	PTC
Fan cover	Steel	Steel
Warranty	12 months	36 months

Application

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 treatment plants
- Wood processing (e.g. sawdust, tree resin)
- Other industries subject to explosion hazards

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Technical specifications

General information

Ex motors are suitable for operation in electrical power systems with a voltage tolerance of $\pm 10\%$.

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

Standard certificate: EU type-examination certificate (ATEX) and EU declaration of conformity, optionally IECEx, CQST and EACEx.

Note:

For all explosion-protected motors, designs according to UL and CSA are not possible.

Operating instructions are supplied as standard with explosion-protected motors in English and German. Translations are also available in all the other official EU languages as well as in Russian, Turkish, and Chinese online and on DVD.

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**)

From 40 °C, the power is reduced. Other temperatures are available on request.

Note on Ex eb (1MB1.4):

Order codes **N05, N06, N07, N08** currently on request.

Motor connection

Certified metric cable glands/sealing plugs are included in the scope of supply of 1MB1 and 1MB5 motors.

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

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

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

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Technical specifications

Type of protection "Dust explosion protection" Ex tb, Ex tc acc. to IEC/EN 60079-31 for use in Zone 21, Zone 22.

The types of protection **Ex tb** and **Ex tc** apply to electrical equipment protected using a housing and with limited surface temperature for use in areas in which combustible dust can be present in concentration levels that could cause a fire or an explosion.

Measures are taken to prevent impermissibly high temperatures and to prevent sparks or arcs from occurring on external components of the motor.

Ex tb motors are used in areas where it is expected that an explosive atmosphere comprising dust/air mixtures will be present occasionally and for a short period.

These motors are assigned to Equipment Group II – Category 2D (corresponding to Zone 21). SIMOTICS XP motors with type of protection Ex tb are intended for group IIIC, i.e. they are permitted for operation in environments with conductive and non-conductive dust.

Ex tc motors are used in areas where it is expected that a potentially-explosive atmosphere will be caused by dust that is stirred up. If this does occur, in all probability rarely and for a short period. These motors are assigned to Equipment Group II – Category 3D (corresponding to Zone 22). SIMOTICS XP motors with type of protection Ex tc are intended for group IIIB as a general rule, i.e. they are only permitted for operation in environments with non-conductive dust.

Ex tb IIIC T120 °C Gb for use in Zone 21:



Design for Zone 21, as well as Zone 22 for conductive dust (degree of protection: IP65) equipment category 2D. Motors Ex tb IIIC T120 °C Db ¹⁾: 1MB1.1 and 1MB5.1 are suitable for use in explosive dust atmospheres with conductive or non-conductive dust that are present occasionally (Zone 21) or rarely (Zone 22). For rated operation, the surface temperature is 120 °C ¹⁾.

Ex tc IIIB T120 °C Gc for use in Zone 22:

Version for Zone 22 with non-conductive dust (degree of protection IP55) equipment category 3D. Motors Ex tc IIIB T120 °C Dc ¹⁾: 1MB1.2 and 1MB5.2 are suitable for use in explosive dust atmospheres with non-conductive dust that are present rarely (Zone 22). For rated operation, the surface temperature is 120 °C ¹⁾.

The motors have a terminal box, a sealing system, an external grounding terminal, a metal fan cover and a metal external fan according to standard IEC/EN 60079-0.

Identification on the rating plate:

- Zone 21:  II 2D Ex tb IIIC T120 °C Db ¹⁾
- Zone 22:  II 3D Ex tc IIIB T120 °C Dc ¹⁾

Number of the EU type-examination certificate

Pole-changing versions:

- Ex tb (Zone 21): Not possible
- Ex tc (Zone 22): Possible on request.

Type of protection "increased safety" Ex ec acc. to IEC/EN 60079-7 for use in Zone 2

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. The maximum surface temperature that can occur during operation must be below the limit temperature of the temperature class marked on the motor, e.g. T3.

Measures are taken to prevent impermissibly high temperatures and to prevent sparks or arcs from occurring on the inside and on external components of the motor.

Motors with type of protection **Ex ec** are used in an explosive atmosphere where this atmosphere is expected to reach a level that poses a risk **only rarely** and then also **only for a short period**. These motors are assigned to Equipment Group II – Category 3G (corresponding to Zone 2).

Ex ec motors can additionally optionally have type of protection Ex tc with Group IIIB (non-conductive dust) acc. to IEC/EN 60079-31 for use in Zone 22 (present rarely).

Ex ec IIC T3 Gc

→ Standard version for paint film thicknesses < 200 µm.

Optional Ex ec IIB T3 Gc (order code B31)

→ Optional version for paint film thicknesses > 200 µm to < 2 mm.

For further information about paint and paint film thicknesses, see page 1/14 onwards.

Optional type of protection **Ex ec/Ex tc** for use in Zone 2/22 ²⁾

The motors must be ordered with:

Version additionally for dust Ex tc - Zone 22 – order code **B30** ²⁾




Motors

- Ex ec IIC T3 Gc: 1MB1.3 and 1MB5.3
 - Ex ec IIB T3 Gc: 1MB1.3 and 1MB5.3 (order code **B31**)
- have a terminal box (similar to Ex eb), a sealing system, an external grounding terminal and a metal fan cover according to standard IEC/EN 60079-0. The temperature class is T1-T3.

With optional order with order code **B30** additionally a metal external fan.

The combination **B30+B31** is possible.

Identification on the rating plate:

- Zone 2:  II 3G Ex ec IIC T3 Gc
- Zone 2/22:  II 3G Ex ec IIC T3 Gc
-  II 3D Ex tc IIIB T120 °C Dc ²⁾

Number of the EU type-examination certificate

Please inquire in the case of:

- Utilization according to temperature class 155 (F)
- For pole-changing versions

¹⁾ IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5, 1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C

²⁾ Hybrid mixtures:
For certification of the motors according to the usual standards, the suitability test for use in explosive gas atmospheres is performed separately from the suitability test for use in explosive dust atmospheres. This enables marking for explosive gas or dust atmospheres, but not for use of the motor in hybrid mixtures.
The owner can certify the motor for hybrid mixtures despite the statements in the Operating Instructions. Information on operation in hybrid mixtures is provided in IEC 60079-14:2013 Annex M.

Technical specifications

Type of protection "increased safety" Ex eb acc. to IEC/EN 60079-7 for use in Zone 1

With type of protection **Ex eb**, additional measures are taken to prevent the possibility of high temperatures and to prevent sparks or arcs from occurring on the inside and on external components of the motor.

In case of a malfunction, the drive must be switched off within the time t_E . This ensures that none of the motor's components reaches the ignition temperature of the surrounding gas in the event of a malfunction.

Motors with type of protection **Ex eb** are used in an explosive atmosphere where a hazardous explosive atmosphere is expected occasionally to reach a level that poses a risk. These motors are assigned to Equipment Group II – Category 2G (corresponding to Zone 1). They ensure a high degree of safety.

Optionally Ex eb motors can additionally have type of protection Ex tb with Group IIIC (conductive and non-conductive dust) acc. to IEC/EN 60079-31 for use in Zone 21 (occasionally present).

Ex eb IIC T3 Gb

→ Standard version for paint film thicknesses < 200 µm.

Optional Ex eb IIB T3 Gb (order code **B31**)

→ Optional version for paint film thicknesses > 200 µm to < 2 mm.

For further information about paint and paint film thicknesses, see page 1/14 onwards.

Optional type of protection Ex eb/Ex tb for use in Zone 1/21²⁾

The motors must be ordered with:

Version additionally for dust Ex tb - Zone 21 – order code **B32**²⁾

Motors




- Ex eb IIC T3 Gb: 1MB1.4 and 1MB5.4
- Ex eb IIB T3 Gb: 1MB1.4 and 1MB5.4 (order code **B31**)

have a terminal box (Ex eb), a sealing system, an external grounding terminal and a metal fan cover according to standard IEC/EN 60079-0. The winding is specially designed and tested for the temperature class T1/T2 or T3.

With optional order with order code **B32** additionally a metal external fan.

The combination **B32+B31** is possible.

Identification on the rating plate:

- Zone 1:  II 2G Ex eb IIC T3 Gb
- Zone 1/21:  II 2G Ex eb IIC T3 Gb
-  II 2D Ex tb IIIC T120 °C Db¹⁾

Number of the EU type-examination certificate

Please inquire in the case of:

- Increased coolant temperatures
- Marine certificates

1) IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5, 1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C

2) Hybrid mixtures:
For certification of the motors according to the usual standards, the suitability test for use in explosive gas atmospheres is performed separately from the suitability test for use in explosive dust atmospheres. This enables marking for explosive gas or dust atmospheres, but not for use of the motor in hybrid mixtures.
The owner can certify the motor for hybrid mixtures despite the statements in the Operating Instructions. Information on operation in hybrid mixtures is provided in IEC 60079-14:2013 Annex M.

Type of protection "flameproof enclosure" Ex db eb and Ex db acc. to IEC/EN 60079-1 for use in Zone 1

Type of protection **Ex db** is achieved by ensuring that any explosion is contained within the motor. The housing must resist the pressure of the explosion and also prevent ignition from the internal to the external atmospheres.

Motors with type of protection **Ex db** are used in an explosive atmosphere where a hazardous explosive atmosphere is expected occasionally to reach a level that poses a risk. These motors are assigned to Equipment Group II – Category 2G (corresponding to Zone 1). They ensure a high degree of safety.

To define the risk posed by a potentially explosive gas, the minimum ignition temperature of a dust cloud is required as well as details of the possibility of a flame exiting through a narrow slit in the motor housing. This is achieved by classification in explosion groups IIA, IIB and IIC, whereby IIC represents the highest requirements (see the table "Assignment of combustible gases and vapors").

Ex db eb IIC T4 Gb

→ Standard version for paint film thicknesses < 200 µm.

Optional Ex db eb IIB T4 Gb (order code **B31**)

→ Optional version for paint film thicknesses > 200 µm to < 2 mm.

Alternatively, a paint finish certified in accordance with the Ex Directive can be used. For further information about paint and paint film thicknesses, see page 1/14 onwards.

Optional type of protection

- **Ex db eb/Ex tb** for use in Zone 1/21²⁾
- **Ex db eb/Ex tc** for use in Zone 1/22²⁾

The motors must be ordered with:

- Version additionally for dust Ex tb IIIC - Zone 21 – order code **B32**²⁾
- Version additionally for dust Ex tb IIB - Zone 22 – order code **B30**²⁾

Motors

- Ex db eb IIC T4 Gb: 1MB155 and 1MB555
- Ex db eb IIB T4 Gb: 1MB155 and 1MB555 (order code **B31**)





are suitable for use in explosive gas atmospheres with occasionally present gases or vapors in Zone 1 for temperature classes T1 to T4. The maximum surface temperature that can occur during operation must lie below the limit temperature of the respective temperature class.

The motors have a terminal box (Ex eb), optional Ex db (order code **R48**), a sealing system, an external grounding terminal and a metal fan cover according to standard IEC/EN 60079-0. The motor housing is designed with type of protection "flameproof enclosure" and has temperature class T4.

With optional order with order code **B32** additionally a metal external fan.

The combination **B32+B31** is possible.

Identification on the rating plate:

- Zone 1:  II 2G Ex db eb IIC T4 Gb or  II 2G Ex db eb IIC T4 Gb (R48)
- Zone 1/21:  II 2G Ex db eb IIC T4 Gb
-  II 2D Ex tb IIIC T130 °C Db²⁾

Number of the EU type-examination certificate

Please inquire in the case of: Reduced starting currents

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Line operation

Insulation system

The insulation system of SIMOTICS XP 1MB1 and 1MB5 motors is suitable for line voltages up to 690 V. The connection system (terminal box, terminals) is also designed for this rated voltage.

The motors are equipped with 6 terminals. They can therefore be operated in any star or delta connection. If a voltage variant with dual voltage e.g. 400VΔ/690VY is selected, the rated data of all voltage levels will be stamped on the rating plate.

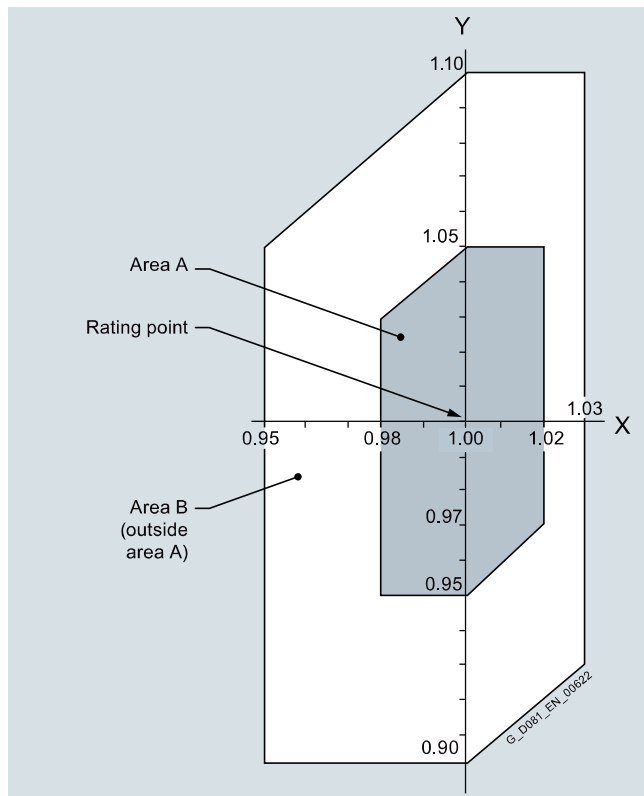
SIMOTICS XP 1MB1 and 1MB5 motors have an insulation system with a thermal class of 155 °C (F). Utilization at rated operation corresponds to thermal class 130 °C (B).

For deviations in use for frame sizes 400 and 450, see "Winding and insulation version with regard to temperature class", on page 1/27.

Voltage tolerances

The motors are suitable for operation with voltage and frequency tolerances according to EN 60034-1.

In addition, tests are to be performed to ensure that the permissible temperature limits for the inner and outer surfaces of the motor according to the relevant standard are not exceeded during continuous operation at the voltage limits ($\pm 10\%$). For 8-pole motors of frame size 450, continuous duty is only possible with $\pm 5\%$.



Y-axis: Voltage tolerance
Z-axis: Frequency tolerance

Motor protection

Motor protection must always be realized with a certified motor circuit breaker, see Catalog IC 10, taking into account the inrush current ratio and the maximum startup time.

Note:

For Ex eb motors in line operation, motor protection is alternatively possible as protection by PTC thermistors only, taking into account the inrush current ratio $I_{\text{startup}}/I_{\text{rated}}$ and time t_E . When the motor shaft is locked, the motor circuit breaker must disconnect the motor from the line supply within time t_E so that the maximum ignition temperature of the specific temperature class is not exceeded. Optionally on some motors up to frame size 200, full motor protection with a PTC thermistor is possible. The information about full motor protection with a PTC thermistor is documented in the EU type-examination certificate. The tripping devices required for this purpose, see Catalog IC 10, must always be certified.

Operation on a frequency converter

General information

Basically, explosion-protected motors (except for Ex eb) can be fed from converters. Particular attention must be paid to the interaction between the motor and converter system, especially with regard to the following aspects:

- The harmonic content of the supply voltage raises the motor temperature, so the motor power must be reduced
- Less cooling of the motor at speeds below the rated speed
- Voltage stress on the motor winding
- Bearing currents

The general use of high-quality insulation systems enables converter operation. When operated with a converter, the motor with explosion protection must be fitted with PTC thermistors. These are installed in the stator winding and, in combination with an ex-certified trip unit (EU type-examination certificate), they perform sole motor protection in the case of converter operation.

The permissible speed and torque range is stamped on an additional rating plate.

These rated operating points stamped on the additional rating plate apply for both constant torque drives and fluid-flow machines with a square-law load torque. For constant torque drives, the resulting thermal motor torques in the positioning range must be taken into account.

During converter operation, the reduced torques for constant torque and drives for fans, pumps and compressors must be observed due to the harmonic content of the supply.

This data is available in the "Drive Technology Configurator" (DT Configurator) at

www.siemens.com/dtconfigurator

Technical specifications

Higher noise levels must be expected than for 50 Hz line operation for motors operating with converters due to the harmonic content of the supply.

Maximum voltage stress on the motor winding in converter operation:

Frame sizes: 71 to 355:

- $\hat{U}_{\text{phase-to-phase}} \leq 1500 \text{ V}$ (3000 V peak-peak values ($V_{\text{pk/pk}}$))
- $\hat{U}_{\text{phase-to-ground}} \leq 1100 \text{ V}$ (2200 V peak-peak values ($V_{\text{pk/pk}}$))

The following generally applies to Siemens converters (SINAMICS):

- $U_{\text{line}} = 480 \text{ V} \pm 10 \%$ (BLM = Basic Line Module; DFE = Direct Front End)
- $U_{\text{line}} \leq 480 \text{ V} \pm 10 \%$ (ALM = Active Line Module; AFE = Active Front End); $U_{\text{DC}} < 720 \text{ V}$
- $U_{\text{line}} = 690 \text{ V} \pm 10 \%$ (only permissible with a suitable dv/dt or sine-wave filter)
Ex db: Certificate valid for general PWM converter
Ex ec, Ex tb, Ex tc certificate valid only in combination with a SINAMICS G180 that has an amplified dv/dt filter (standard option G180: **L10**).

Motors of the 1MB55 series with frame sizes 400 and 450 with the IVIC-C advanced insulation system:

- $\hat{U}_{\text{phase-to-phase}} \leq 1600 \text{ V}$ (3200 V peak-peak values ($V_{\text{pk/pk}}$))
- $\hat{U}_{\text{phase-to-ground}} \leq 1400 \text{ V}$ (2800 V peak-peak values ($V_{\text{pk/pk}}$))

Motors of the 1MB.8 series with frame sizes 71 to 450 with the IVIC-C premium insulation system:

- $\hat{U}_{\text{phase-to-phase}} \leq 2200 \text{ V}$ (4400 V peak-peak values ($V_{\text{pk/pk}}$))
- $\hat{U}_{\text{phase-to-ground}} \leq 1500 \text{ V}$ (3000 V peak-peak values ($V_{\text{pk/pk}}$))

Motors with the advanced insulation system can be operated on the converter without an additional dv/dt or sine-wave filter if the following limits are observed:

- $U_{\text{line}} \leq 480 \text{ V}$
- $U_{\text{DC}} \leq 720 \text{ V}$

Converter operation requires a dv/dt or sine-wave filter or a motor with PREMIUM insulation system (motor types 1MB18, or 1MB58.) if at least one of the following limits is exceeded:

- $U_{\text{line}} > 480 \text{ V}$
- $U_{\text{DC}} > 720 \text{ V}$

The voltage limits are chosen such that safe operation is ensured without knowledge of the converter or the converter infeed. If it is ensured that the motor is powered through a converter with uncontrolled infeed (e.g. SINAMICS G), the 1MB15 and 1MB55 motors can be operated up to $U_{\text{line}} = 480 \text{ V}$ as an exception because the limits $U_{\text{DC}} \leq 720 \text{ V}$ are then observed.

In configuration of the drive system, it must be considered that the DC-link voltage U_{DC} exceeds the limit of $U_{\text{DC, max}} = 720 \text{ V}$ (continuous duty) during braking where converters without energy recovery capability, such as SINAMICS G, are used. Exceeding this limit is permissible for a short time, for example, if the $U_{\text{DC, max}}$ controller or braking chopper ensures that the DC-link voltage does not exceed the following limits:

- 1MB.5 (advanced): $U_{\text{DC, max}} = 890 \text{ V}$ (short-time duty)
- 1MB.8 (premium): $U_{\text{DC, max}} = 1225 \text{ V}$ (short-time duty)

Further configuration notes are documented in the declaration of compliance with the order 2.1 and in the EU type-examination certificates.

Order processing of 1MB1, 1MB5 motors with Ex db, Ex ec, Ex tb and Ex tc for converter operation

PTC thermistor

For converter operation, Ex motors must always be monitored using PTC thermistors. The motors must therefore be ordered with the 15th position of the Article No.

- **B** – PTC thermistor for tripping – or alternatively
- **C** – PTC thermistor for alarm and tripping.

General information regarding the PTC thermistors:

- **B** in 15th position of the Article No.:
The motors are equipped with 3 PTC thermistors for tripping in the motor winding.
- **C** in 15th position of the Article No.:
The motors are equipped with 3 PTC thermistors for alarm and 3 PTC thermistors for tripping in the motor winding.

Certified tripping units are required for this purpose, see Catalog IC 10.

To ensure unambiguous order handling for the voltage, each approved voltage code/voltage order code is assigned only "one" voltage/frequency, as seen below:

Voltage code 12th and 13th position of the Article No.	Order code	Line frequency	Line voltage
27	–	50 Hz	500 VY, 50 Hz power
40	–	50 Hz	500 VΔ, 50 Hz power
90	M4A	50 Hz	400 VY, 50 Hz power
90	M4B	50 Hz	400 VΔ, 50 Hz power
90	M2C	60 Hz	440 VY, 50 Hz power
90	M1C	60 Hz	440 VY, 60 Hz power
90	M2D	60 Hz	440 VΔ, 50 Hz power
90	M1D	60 Hz	440 VΔ, 60 Hz power
90	M2E	60 Hz	460 VY, 50 Hz power
90	M1E	60 Hz	460 VY, 60 Hz power
90	M2F	60 Hz	460 VΔ, 50 Hz power
90	M1F	60 Hz	460 VΔ, 60 Hz power
90	M2G	60 Hz	575 VY, 50 Hz power
90	M1G	60 Hz	575 VY, 60 Hz power
90	M2H	60 Hz	575 VΔ, 50 Hz power
90	M1H	60 Hz	575 VΔ, 60 Hz power
90	M2K	60 Hz	480 VY; 50 Hz power
90	M1K	60 Hz	480 VY; 60 Hz power
90	M2L	60 Hz	480 VΔ, 50 Hz power
90	M1L	60 Hz	480 VΔ, 60 Hz power
90	M1Y (non-standard winding)	50 or 60 Hz	Plain text (observe max. voltage stress)
90	M3A ¹⁾	87 Hz	At 87 Hz, 400 VΔ: (4-pole to 8-pole)

¹⁾ The motor contains winding version 50 Hz 230 VΔ.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Converter operation specially for motors in type of protection "Ex ec" (Zone 2) and VIK-Ex ec version

IEC/EN 60079-7 specifies that the motor and converter must be tested as a unit (individual test). The individual test is available for motors of "Ex ec" type of protection on the specified converters SINAMICS G, SINAMICS S and SINAMICS V20. For details, see declaration of compliance with the order 2.1. Not possible for frame sizes 400 and 450.

Individual testing can be performed for non-Siemens converters on request (additional charge). The customer may be required to supply the external converter for individual tests.

The test will cost more when using non-Siemens converters (especially on commissioning). Commissioning personnel must be provided by the customer for setup and operation during the test, if required.

Converter operation specially for motors in type of protection "Ex tb" (Zone 21) and "Ex tc" (Zone 22)¹⁾

The drive system comprising motors protected against dust explosions operating on SINAMICS G, SINAMICS S and SINAMICS V20 converters has been tested. For details, see declaration of compliance with the order 2.1. Please inquire about operation with non-Siemens converters. Not possible for frame sizes 400 and 450.

Converter operation specially for motors with type of protection "Ex ec/Ex tc" (Zone 2/22)²⁾

For the 1MB..3 Ex ec motors, the order code **B30** version (IP55) for Zones 2 and 22 must also be specified in the case of non-conductive dust. Declaration of compliance with the order 2.1 analogous to that for Zones 2, 21 and 22. Please inquire about non-Siemens converters.

1MB1, 1MB5 in Ex ec, Ex tb and Ex tc: Selection of the frequency converters

The SINAMICS frequency converters are categorized into 2 product groups (order code **B40** and **B41**). Each product group is a data record with motor operating data each assigned to one frequency converter. The converter type is stamped on the rating plate. Alternative, approved SINAMICS converters can be selected, by adding the order code **Y68**.

Product group 1 (basic version):

Order code **B40** - version for converter operation in basic version with operating data SINAMICS G120 with PM240-2

Product group 1 (alternative SINAMICS converter):

Order codes **B40 + Y68**

Operating data such as the **B40** order code with alternative SINAMICS converter on the rating plate:

- **Y68** with plain text (C-text) G120 with PM230
- **Y68** with plain text (C-text) G120 with PM240
- **Y68** with plain text (C-text) G120C
- **Y68** with plain text (C-text) G120P with PM230
- **Y68** with plain text (C-text) G120P with PM240-2
- **Y68** with plain text (C-text) G120P with PM240P-2
- **Y68** with plain text (C-text) G120P with PM330
- **Y68** with plain text (C-text) G130
- **Y68** with plain text (C-text) G150
- **Y68** with plain text (C-text) G180
- **Y68** with plain text (C-text) S120 (BLM/SLM)
- **Y68** with plain text (C-text) V20

Product group 2 (basic version):

Order code **B41** - version for converter operation in basic version with operating data SINAMICS S150.

Product group 2 (alternative SINAMICS converter):

Order codes **B41 + Y68**

Operating data such as the **B41** order code with alternative SINAMICS converter on the rating plate:

- Order code **Y68** with plain text (C-text) S120 (ALM)

1MB155 and 1MB555 with Ex db, Ex db eb: Selection of the frequency converter

The SIMOTICS 1MB..5. motors are suitable and certified for operation on the PWM frequency converter. The only distinction made is whether the maximum permitted temperature rise of the winding is 130(B) – order code **B43** or 155(F) – order code **B44**. The power with utilization of 155(F) is approx. 10 % higher than with utilization 130(B) and the order code **B43** is usually approximately equal to the line power.

Combination with SINAMICS converters as stated in the list under Ex ec has been pretested and is recommended. For other converter types and non-Siemens converters, operation according to the Ex specifications is possible if the requirements of the certificate are met.

Defining the power for converter operation

The optimum power data are marked on the motors. These data are universally valid and can be viewed in the "Drive Technology Configurator" (DT Configurator) and used as the basis for configuration.

In specific applications, e.g. for very long motor cables, if a sine-wave filter is being used - or for converter types that cannot reach the full rated voltage at rated frequency as a result of the inherent design, then at rated voltage there is a voltage drop at the motor terminals. Under this operating condition, in order that the motor temperature rise is not inadmissibly high, at the maximum permissible current, it is possible that the motor power is reduced (derating). For example, for use of sine-wave filters and the consequential reduction of the motor voltage by 10 to 15 %, the permissible power ratings for converter operation must be similarly reduced by 10 to 15 % at rated frequency because the corner frequency for determining the power is reduced accordingly. Operation below the reduced corner frequency is possible without reducing the torque.

¹⁾ Zone 21 includes conductive and non-conductive dust.

²⁾ The Ex motor is not admissible in an explosive atmosphere of dust and air (hybrid). A standard is not currently available that describes the product requirements for a hybrid mixture.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Rating plate

The operating data for line operation is specified on the rating plate - on an additional rating plate, according to the selected product, 4 rated operating points are possible in the following variants:

Possible variants	Rated operating points in Hz				Additional identification code voltage code 12th and 13th position of the Article No. and order code
50 Hz field weakening range	5	25	50	f_{max}	50 Hz voltage: e.g. '90' and M4A
60 Hz field weakening range	6	30	60	f_{max}	60 Hz voltage: e.g. '90' and M1E
87 Hz characteristic	5	25	87	f_{max}	87 Hz at 400 VΔ: '90' and M3A

f_{max} see page 5/17 "Mechanical limit speeds of the SIMOTICS XP 1MB15, 1MB5 Ex db, Ex ec, Ex tb and Ex tc explosion-protected motors".

Other voltages can be selected with the voltage code **90** (12th, 13th position of the Article No.) and order code **M1Y** Special winding.

Special case: Line operation data in two voltage levels plus converter data in one voltage level: **M1Y + Y80** e.g. 400 VΔ/690 VY 50Hz DOL + 400 VΔ VSD

Insulated bearings

Frame sizes 225 and 250:

For converter operation it is recommended that an "insulated bearing cartridge NDE" – order code **L51** be used.

Frame sizes 280 to 355:

For ordering with order codes **B40/B41/B43/B44**, the "insulated bearing cartridge NDE" is included as standard.

Frame sizes 400 and 450:

For ordering with order codes **B40/B41/B43**, the "insulated bearing cartridge NDE" is included as standard.

The data on the separate rating plate for converter operation apply to both constant torque drives and pump/fan/compressor drives. For a constant torque drive, the resulting thermal motor torques in the positioning range must be taken into account.

Example motor ID:

Motor rating plate with line operation data and additional rating plate with converter operation data:

Increased safety motor Ex ec (Zone 2) for operation on SINAMICS G180:

1MB15331CB002AB4-Z
M4A+B40+Y68

Plain text Y68: SINAMICS G180

SIEMENS		IE3 H CE	
D-90441 Nürnberg		Made in Czech Rep.	
3-Mot. 1CV3130B 1MB15331CB002AB4-Z		UD 1701/1234567 001 001 0158	
IEC/EN 60034 132S 1MB3 IP55		Ex II 3 G	
67kg	Th.Cl. 155(F)	-20°C ≤ TAMB ≤ 40°C	
Bearing		Ex ec IIC T3 Gc	
DE 6208-2ZC3	NE 6208-2ZC3	FTZU 13 ATEX 0055	
V	Hz	A	kW
400 Y	50	10.8	5.5
cos φ	NOM.EFF	1/min	IE-CL
0.82	89.6	1470	IE3

SIEMENS						
D-90441 Nürnberg						
3-Mot. 1CV3130B 1MB15331CB002AB4-Z						
UD 1701/1234567 001 001						
IEC/EN 60034						
For converter supply						
Converter parameter settings according to DOL plate!						
Duty S9 SINAMICS G180						
CONVERTER INPUT: 400V VPWM Fp ≥ 4 kHz						
V	Hz	A	kW	cos φ	Nm	1/min
49 Y	5	10.6	0.29	0.84	20.5	134
205 Y	25	9.2	2.35	0.81	30.5	730
380 Y	50	8.9	4.40	0.81	28.0	1475
380 Y	100	8.4	4.10	0.85	13.1	2955

For all motors, an additional rating plate complete with the operating data for the motor on the converter is fitted.

The converter type and the associated operating data are on the rating plate.

The reasons for stamping the converter type on the additional rating plate are the different control levels for the converter output voltage, pulse frequency, output frequency, harmonic content and the associated derating for the motor.

For compliance with the permissible temperature class 130 (B), derating is necessary for converter operation below the power for direct line operation! The reduction in torque depends on the choice of converter type. The data can be viewed in the "Drive Technology Configurator" (DT Configurator) and used as the basis for configuration.

The declaration of compliance with the order 2.1 for the specified converters is stored with the documentation for low-voltage motors in the "Drive Technology Configurator" (DT Configurator).

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

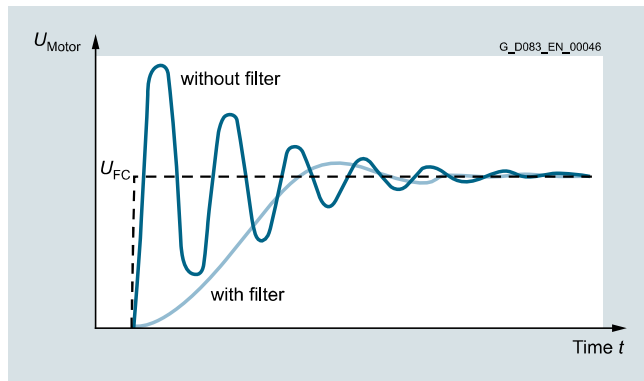
Configuration notes for converter operation

Permissible voltage stress

More stress is placed on the insulation of the motor winding with converter operation than with line operation. The voltage stress also depends on the type of converter used.

Voltage stress on a converter with pulse width modulation (PWM)

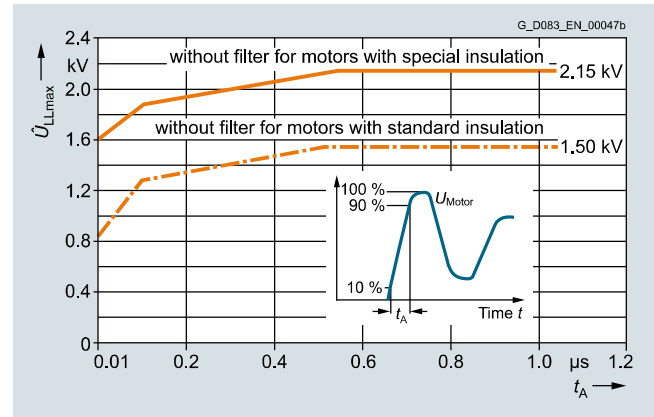
The PWM converter subjects the motor windings to wear and tear mainly by quickly applying voltage pulses. Each switching process of the converter releases a voltage wave onto the motor supply cable that can result in excessive motor voltages due to reflection (see diagram).



Typical progression of converter voltage U_{FC} and motor voltage U_{Motor} on the PWM converter (converter with and without output filter)

The maximum voltage is influenced by the rise time of the pulses and by the length of cable used between motor and converter. A dv/dt output filter at the converter can reduce the maximum motor voltage to uncritical values. If the permitted limits of the peak voltage for standard insulation $1500 V_{peak}$ or for premium insulation $2200 V_{peak}$ is exceeded in operation, premature motor failures can occur.

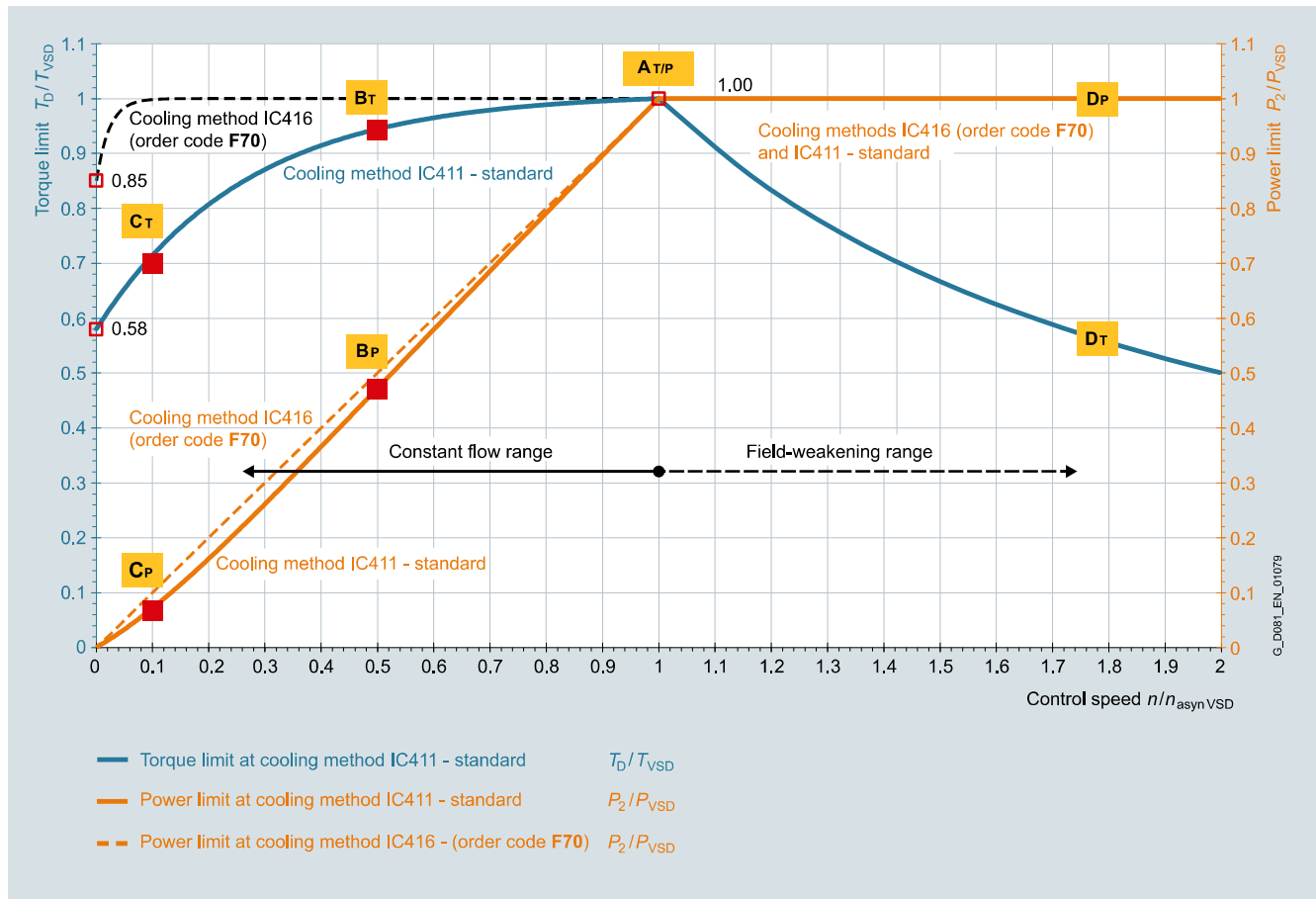
For SIMOTICS XP motors, the limits according to the certificate apply additionally and take precedence.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications



5

Configuration characteristics for frame sizes 225 to 355

$A_{M/P}$: Reference point for general selecting/dimensioning
 A_P : Typical load point for applications with square-law load torque, e.g. fans and pumps

B_M/C_M : Typical load point for applications with constant load torque, e.g. hoisting gear, conveyor belts etc.
 D_M/D_P : Typical load point for applications with increased speed/frequency

Fan

For version of the fan and the fan cover

Motor series	Frame size	Type of protection			
		Ex tb, Ex tc	Ex ec	Ex eb	Ex db eb
1MB1	63	Aluminum	Plastic	-	-
	71 ... 90	Aluminum	Plastic	Plastic	Plastic
	100 ... 160	Aluminum	Plastic ¹⁾	Plastic	Plastic
	180 ... 280	Sheet steel	Plastic	Plastic	Plastic
	315	Sheet steel	Plastic	-	-
1MB5	315	Sheet steel	Sheet steel	Plastic	Plastic
	355 (2-pole)	Sheet steel	Sheet steel	-	Plastic
	355 (4- ... 8-pole)	Sheet steel	Sheet steel	-	Sheet steel
	400 ... 450	Cast iron	Cast iron	-	-

Note: For Ex ec, Ex eb and Ex db eb motors in combination with order code

- **B30** – Version additionally for dust Ex tc – Zone 22
 - **B32** – Version additionally for dust Ex tb – Zone 21
- Fan material as for Ex tb, Ec tc.

¹⁾ The fan material for 1MB1032 (IE1) is aluminum.

Low-noise version

Clockwise rotation: Order code **F77**
 Counterclockwise rotation: Order code **F78**

Low-noise version			
Motor series	Frame size	2-pole motors LpfA db (A)	LWA db (A)
1MB155	225	69.5	83.4 ²⁾
	250	72.5	86.5 ²⁾
	280	73.4	85
1MB555	315	73.5	88.3
	355	79.6	94.9

A version with a second shaft extension is not possible.

²⁾ These sound power levels are above the set values in the VIK recommendation in the "reduced noise" version. This difference must be agreed between the manufacturer and the operator.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Mechanical limit speeds

Mechanical limit speeds of the SIMOTICS XP 1MB10, 1MB15, 1MB16 Ex ec, Ex tb and Ex tc explosion-protected motors

Motor frame size	Motor type	2-pole ¹⁾		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
1MB10, 1MB15, 1MB16									
71 M	1MB15	6000	100	3000	100	2000	100	1500	100
80 M	1MB15	6000	100	3000	100	2000	100	1500	100
90 L	1MB15	6000	100	3000	100	2000	100	1500	100
100 L	1MB10, 1MB15, 1MB16	5100	85	3000	100	2000	100	1500	100
112 M	1MB10, 1MB15, 1MB16	5100	85	3000	100	2000	100	1500	100
132 S/M	1MB10, 1MB15, 1MB16	3800	63.3	3000	100	2000	100	1500	100
160 M/L	1MB10, 1MB15, 1MB16	4500	75	3000	100	2000	100	1500	100
180 M/L	1MB15, 1MB16	4500	75	3000	100	2000	100	1500	100
200 L	1MB15, 1MB16	4500	75	3000	100	2000	100	1500	100
225 S/M	1MB15, 1MB16	3600	60	3000	100	2000	100	1500	100
250 M	1MB15, 1MB16	3600	60	3000	100	2000	100	1500	100
280 S/M	1MB15, 1MB16	3600	60	3000	100	2000	100	1500	100
315 S/M/L	1MB15, 1MB16	- ²⁾	- ²⁾	2600	87	2000	100	1500	100

Mechanical limit speeds of the SIMOTICS XP 1MB..5 Ex db, Ex db eb explosion-protected motors

Motor frame size	Motor type	2-pole ¹⁾		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
1MB1.5, 1MB5.5									
71 M	1MB1.5	6000	100	3000	100	2000	100	1500	100
80 M	1MB1.5	6000	100	3000	100	2000	100	1500	100
90 L	1MB1.5	6000	100	3000	100	2000	100	1500	100
100 L	1MB1.5	6000	100	3000	100	2000	100	1500	100
112 M	1MB1.5	6000	100	3000	100	2000	100	1500	100
132 S/M	1MB1.5	5400	90	3000	100	2000	100	1500	100
160 M/L	1MB1.5	4800	80	3000	100	2000	100	1500	100
180 M/L	1MB1.5	4560	76	3000	100	2000	100	1500	100
200 L	1MB1.5	4500	75	3000	100	2000	100	1500	100
225 S/M	1MB1.5	4500	75	2610	87	2000	100	1500	100
250 M	1MB1.5	3900	65	2400	80	2000	100	1500	100
280 S/M	1MB1.5	3600	60	2250	75	2000	100	1500	100
315 S/M/L	1MB5.5	3600	60	1950	65	2000	100	1500	100
355 M/L	1MB5.5	3600	60	1800	60	2000	100	1500	100

¹⁾ For continuous operation in the range f_{max} (n_{max}), an inquiry is required.

²⁾ For frame size 315, converter operation is not permissible with 2 poles.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Special technology

"Special technology" comprises technology that is compatible with explosion-protected motors.

Explosion-protected motors can be implemented in a broader range of applications when explosion-protected rotary pulse encoders or explosion-protected separately driven fans are mounted.

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed.

The following explosion-protected motor versions are available with explosion-protected rotary pulse encoders:

Type of protection	Motor type + order code	Frame size	Order code for explosion-protected rotary pulse encoder
Ex tb (Zone 21)	1MB101...	100 L ... 160 L	G30: Mounting of LL 841 (HTL); 1024 explosion-protected rotary pulse encoder
	1MB151...	100 L ... 315 L	
	1MB161...	100 L ... 315 L	
	1MB551...	400 ... 450	
	1MB581...	400 ... 450	
Ex tc (Zone 22)	1MB102...	100 L ... 160 L	
	1MB152...	100 L ... 315 L	
	1MB162...	100 L ... 315 L	
	1MB552...	400 ... 450	
	1MB582...	400 ... 450	
Ex ec (Zone 2)	1MB103...	100 L ... 160 L	
	1MB153...	100 L ... 315 L	
	1MB163...	100 L ... 315 L	
	1MB553...	400 ... 450	
	1MB583...	400 ... 450	
Ex ec or Ex tc (Zone 2/22)	1MB103... + B30	100 L ... 160 L	
	1MB153... + B30	100 L ... 315 L	
	1MB163... + B30	100 L ... 315 L	
	1MB553... + B30	400 ... 450	
	1MB583... + B30	400 ... 450	
Ex db or Ex db eb (Zone 1)	1MB155...	100 L ... 355 L	
	1MB555...		
Ex db or Ex db eb (Zone 1/21)	1MB155... + B32	100 L ... 355 L	
	1MB555... + B32		

Note:

The maximum speed of the rotary pulse encoder is limited to $n_{\max} = 4200$ rpm.

The following explosion-protected motor versions are available with explosion-protected separately driven fans:

Type of protection	Motor type + order code	Frame size	Order code for explosion-protected separately driven fan
Ex tb (Zone 21)	1MB151...	225 S ... 315 L	F70: "Mounted separately driven fan".
	1MB161...	225 S ... 315 L	
	1MB551...	400 ... 450	
	1MB581...	400 ... 450	
Ex tc (Zone 22)	1MB102...	100 L ... 160 L	
	1MB152...	100 L ... 315 L	
	1MB162...	100 L ... 315 L	
	1MB552...	400 ... 450	
	1MB582...	400 ... 450	
Ex ec (Zone 2)	1MB103...	100 L ... 160 L	
	1MB153...	100 L ... 315 L	
	1MB163...	100 L ... 315 L	
	1MB553...	400 ... 450	
	1MB583...	400 ... 450	
Ex ec or Ex tc (Zone 2/22)	1MB103... + B30	100 L ... 160 L	
	1MB153... + B30	100 L ... 315 L	
	1MB163... + B30	100 L ... 315 L	
	1MB553... + B30	400 ... 450	
	1MB583... + B30	400 ... 450	
Ex db or Ex db eb (Zone 1)	1MB155...	225 S ... 355 L	
	1MB555...		
Ex db or Ex db eb (Zone 1/21)	1MB155... + B32	225 S ... 355 L	
	1MB555... + B32		

Notes:

- The motor operating data with the explosion-protected separately driven fan is available in the "Drive Technology Configurator" (DT Configurator).
- Alternatively, explosion-protected separately driven fans can also be used in line operation for special applications.

Technical specifications

Explosion-protected rotary pulse encoder

The rotary pulse encoder can only be mounted on a standard non-drive end (NDE), i.e. a second shaft extension cannot be supplied.

By virtue of its design, the explosion-protected rotary pulse encoder does not have insulated bearings (please inquire).

The degree of protection of the rotary pulse encoder must be observed. The relevant data are stamped on the rating plate of the rotary pulse encoder.

Attaching an explosion-protected rotary pulse encoder increases the length of the motor by Δl .

For an explanation of the additional dimensions and weights, see "Dimensions and weights of explosion-protected rotary pulse encoders".

LL 841 910 013 rotary pulse encoder (HTL version)

This encoder has a rugged construction and is therefore also suitable for difficult operating conditions. It is resistant to shock and vibration.

The LL 841 910 013 explosion-protected rotary pulse encoder is supplied with the already mounted ADS diagnostic system for early detection of errors in the encoder.

Order code **G30**

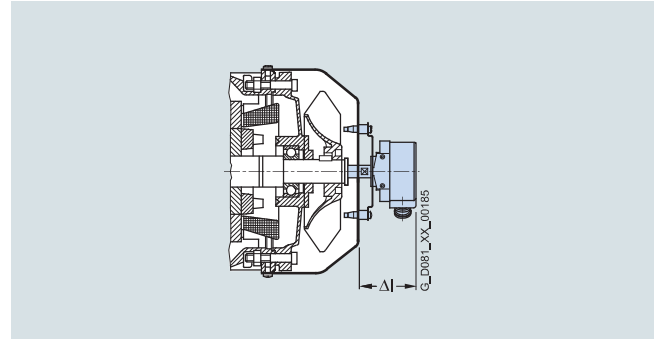
Technical specifications for LL 841 910 013 (HTL version)

Supply voltage U_B	+9 ... +30 V
Current input without load	max. 80 mA
Admissible load current per output	40 mA
Pulses per revolution	1024
Outputs	6 short-circuit proof square-wave pulses A, A', B, B', 0, 0', high current HTL Floating switching output for ADS signal
Pulse offset between the two outputs	90° ±2.5° el.
Output amplitude	$U_{High} > U_B - 4 V$ $U_{Low} < 2.5 V$
Mark space ratio	1:1 ± 10 %
Maximum frequency	100 kHz with 350 m cable length
Maximum speed	4200 rpm (the maximum permissible speed must be observed during the configuration)
Temperature range	-40 ... +70 °C
Degree of protection	IP65
Maximum adm. radial cantilever force	150 N
Maximum adm. axial force	100 N
Connection system	Terminal strips in encoder/cable connection M20 x 1.5 radial (screw terminals)
Weight, approx.	1.7 kg

Manufacturer:
Leine und Linde AG
Olivehällsvägen 8
64542 Strängnäs, Sweden
Phone: +46 152 265 00
Fax +46 152 265 05

www.leinelinde.com
Email: info@leinelinde.de

Dimensions and weights of the explosion-protected rotary pulse encoders



Explosion-protected rotary pulse encoder (on cover), order code **G30**

1MB10, 1MB15, 1MB16, 1MB55, 1MB56, 1MB58 motors

Frame size	Δl	Weight approx.
	mm	kg
100	110	2
112	110	2
132	110	2
160	110	2
180	110	2
200	110	2
225	100	3
250	100	3
280	100	3
315	100	3
355	100	3
400	100	3
450	100	3

A protective cover of non-corrosive sheet steel is available for the explosion-protected rotary pulse encoders from the "special technology".

For motors in the shaft heights

- 100 to 200: a protective cover is always provided
- 225 to 450: Order code **G43** – "Mechanical protection for encoder" (protective cover analogous to order code **H00**)

The length of the motor is also increased in the case of the following shaft heights:

- 100 to 200 by up to 146 mm
- 225 to 315 by up to 25 mm

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Explosion-protected separately driven fan

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

In the case of explosion-protected motors, the explosion-protected separately driven fan is available already mounted. Order code **F70**

Notes:

- The order code **F70** applies to all types of protection because the type of protection is already defined by the article number of the motor. Order code **F70** determines the additional charge for the separately driven fan in the assigned type of protection.
- The motor operating data with the explosion-protected separately driven fan is available in the "Drive Technology Configurator" (DT Configurator).

The supply voltage for the explosion-protected motors with separately driven fan is specified as follows:

Type 2CW2 has a wide-range voltage winding (see page 5/21 "Technical specifications of separately driven fans for 1MB1 explosion-protected motors (frame sizes 100 to 200) in the Ex tc (Zone 22) and Ex ec (Zone 2) versions"). These explosion-protected motors with separately driven fan up to frame size 200 have a rated voltage (rated voltage range) with tolerances according to IEC/EN 60034-1, range A.

Technical specifications of separately driven fans for 1MB1.5 and 1MB5.5 explosion-protected motors (frame sizes 225 to 355) in the Ex db eb (Zone 1) versions

Frame size	Voltage V	Frequency Hz	P_{max} kW	I_{max} A
225	400	50	0.55	1.34
250				
280	460	60		1,23
315				
355	400	50	1.1	2,25
	460	60		1.98

A rating plate with the operating data is fitted to each explosion-protected motor with separately driven fan.

The type of protection of the explosion-protected motor with separately driven fan corresponds to that of the associated explosion-protected basic motor. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it.

Please inquire regarding coolant temperatures outside the range -20 to $+40$ °C.

The Ex ec/Ex tc motor with separately driven fan has the degree of protection IP55 as standard; Ex tb: IP65 (higher degrees of protection with Ex ec are available on request).

Motors with a separately driven fan must be equipped with a PTC thermistor as motor protection (15th position of the Article No.); In the event of a fault in the separately driven fan, the PTC thermistor must reliably trip the 1MB1 or 1MB5 explosion-protected motors.

For assignments and article numbers, see the tables "Technical specifications of separately driven fans for explosion-protected motors 1MB1..." on the following pages. A rating plate listing all the important data is fitted to the separately driven fan. Please inquire in the case of supply voltages outside of the rated voltage range. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. The permissible coolant temperatures are $CT_{min} -20$ °C and $CT_{max} +40$ °C. Lower coolant temperatures are available on request.

When the separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Dimensions and weights of explosion-protected separately driven fans".

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Technical specifications of separately driven fans for 1MB1 explosion-protected motors (frame sizes 100 to 200) in the Ex tc (Zone 22) and Ex ec (Zone 2) versions

Technical specifications of separately driven fans (according to tolerances of EN 60034-1)				
Frame size	Rated voltage range V	Frequency Hz	Power consumption kW	Rated current A
100	1 AC 220 ... 277	50	0,066	0,28
	3 AC 200 ... 303 Δ	50	0,091	0,37
	3 AC 346 ... 525 Y	50	0,091	0,22
	1 AC 220 ... 277	60	0,075	0,30
	3 AC 220 ... 332 Δ	60	0,087	0,31
	3 AC 380 ... 575 Y	60	0,087	0,18
112	1 AC 220 ... 277	50	0,071	0,28
	3 AC 200 ... 303 Δ	50	0,097	0,35
	3 AC 346 ... 525 Y	50	0,097	0,20
	1 AC 220 ... 277	60	0,094	0,37
	3 AC 220 ... 332 Δ	60	0,103	0,31
	3 AC 380 ... 575 Y	60	0,103	0,18
132	1 AC 230 ... 277	50	0,098	0,40
	3 AC 200 ... 303 Δ	50	0,124	0,58
	3 AC 346 ... 525 Y	50	0,124	0,33
	1 AC 230 ... 277	60	0,149	0,57
	3 AC 220 ... 332 Δ	60	0,148	0,44
	3 AC 380 ... 575 Y	60	0,148	0,25
160 ... 200	1 AC 230 ... 277	50	0,253	0,97
	3 AC 200 ... 303 Δ	50	0,247	0,87
	3 AC 346 ... 525 Y	50	0,247	0,50
	3 AC 220 ... 332 Δ	60	0,360	0,93
	3 AC 380 ... 575 Y	60	0,360	0,56

Technical specifications of separately driven fans for 1MB1 explosion-protected motors (frame sizes 225 to 315) in the Ex tb (Zone 21), Ex tc (Zone 22) and Ex ec (Zone 2) versions

Frame size	Designation on rating plate of separately driven fan	Rated voltage range V	Frequency Hz	Rated speed rpm	Power consumption kW	Rated current for rated voltage A
225 M ... 280 M	1LA7073-2AA62-Z	3 AC 230 Δ	50	2800	0,550	1,36
		3 AC 400 Y	50	2800	0,550	0,79
		3 AC 460 Y	60	3400	0,630	1,32
315 – 2-pole	1LA9073-2LA92-Z	3 AC 230 Δ	50	2780	0,700	1,73
		3 AC 400 Y	50	2780	0,700	1,00
		3 AC 460 Y	60	3385	0,700	1,64
315 – 4, 6, 8-pole	1LA7073-2AA62-Z	3 AC 230 Δ	50	2800	0,550	1,36
		3 AC 400 Y	50	2800	0,550	0,79
		3 AC 460 Y	60	3400	0,630	1,32

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

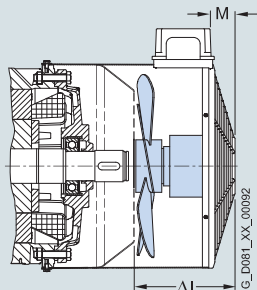
Orientation

Technical specifications

Dimensions and weights of the explosion-protected separately driven fans (order code **F70**)

1MB102, 1MB152, 1MB162, 1MB103, 1MB153, 1MB163 Frame sizes 100 to 200

Explosion-protected separately driven fans
Ex tc, Ex ec



Type of protection/motor type

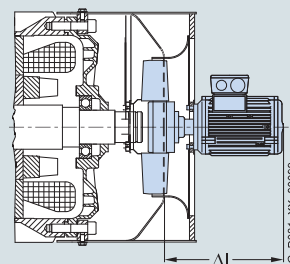
Ex tc (Zone 22)/1MB102, 1MB152, 1MB162

Ex ec (Zone 2)/1MB103, 1MB153, 1MB163

Frame size	Δl	Weight approx.
	mm	kg
100	141	4
112	158	4,5
132	177	5,5
160	227	7
180	269	10
200	272	11

1MB151, 1MB161, 1MB152, 1MB162, 1MB153, 1MB163 Frame sizes 225 to 315

Explosion-protected separately driven fans
Ex tb, Ex tc, Ex ec



Type of protection/motor type

Ex tb (Zone 21)/1MB151, 1MB161

Ex tc (Zone 22)/1MB152, 1MB162

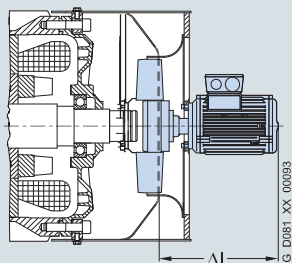
Ex ec (Zone 2)/1MB153, 1MB163

Frame size	Δl	Weight approx.
	mm	kg
225	267	24,5
250	272	27,5
280	270	30,5
315	280	38,5

5

1MB..5 Frame sizes 225 to 355

Explosion-protected separately driven fan
Ex db eb



Type of protection/motor type

Ex db eb (Zone 1)/1MB155, 1MB555

Frame size	Δl	Weight approx.
	mm	kg
225	555	
250		
280		
315		
355	370	

Technical specifications

Version 1MB..5 motors (Ex db, Ex db eb) with mounted brake

The brake is located at drive-end of the motor and can be mounted with flange B5 or B14 depending on the motor – 14th position of the Article No. **F** (flange B5); **K** (flange B14).

The shaft extension is implemented in the same way as the standard shaft extension of the motor. A special shaft extension or special bearings are not possible.

The motor, including the brake, is available ATEX-certified as standard and optionally with IECEx (order code **D37**) and EACEx (order code **D35**).

The spring-operated brake (order code **F20**) is a single-disk brake with two friction surfaces. The compression springs produce the braking torque by means of friction that opposes the disk. The brake is released electromagnetically.

The degree of protection of the brake is IP66 (IEC/EN 60034-5 and IEC/EN 60079-0).

The braking voltage supply 24 V DC (order code **F10**), 230 V AC (order code **F11**) and 400 V AC (order code **F12**) have to be ordered together with order code **F20**.

In the standard version, the brake is equipped with a bimetal protection device for thermal protection with a limit value for the temperature class of the brake.

Dynamic application of the brake in accordance with the permissible energy and frequency of braking (duty cycles) can be determined by the formula "Calculation of the slipping time of the friction disk" and table "Frequency of braking".

For special operating characteristics in accordance with the permissible energy and the frequency of braking (braking cycles), calculation of new values by Siemens is necessary.

The possibility of manual release of the brake can be ordered optionally (order code **F50**). In this case, the brake can be released in the de-energized state (no lock).

Further options for controlling the brake, such as a PTC thermistor for monitoring the brake temperature, are available on request

Overview of the brake selection for 1MB1553 motors, 2 to 8-pole

		Frame size							
		80	90	100	112	132	160 ¹⁾	180 ²⁾	200 ²⁾
Flange of the brake system with B5 flange at DE ³⁾		FF165	FF165	FF215	FF215	FF265	FF300	FF300	FF350
Flange of the brake system with B14 flange at DE ³⁾		FT100	FT115	FT130	FT130	FT165	FT215	–	–
Max. diameter of the shaft extension	mm	19 j6	24 j6	28 j6	28 j6	38 k6	42 k6	48 k6	55 m6
Brake type		VIS80	VIS90	VIS100	VIS112	VIS132	VIS160	VIS180	VIS200
Permissible radial force of the point of application $x = 0.5$ ⁴⁾	N	380	380	550	550	790	790	1700	1700
Rated braking torque (T_f) ⁵⁾ (static torque)	Nm	12	20	40	50	100	160	260	350
Possible range of the torque (on request)	Nm	12 ... 22	12 ... 22	24 ... 40	30 ... 60	70 ... 150	100 ... 160	180 ... 350	300 ... 460
Maximum speed n_{max} - (S1 duty)	rpm	3600	3600	3600	3600	3600	2900	2500	2500
Maximum speed n_{max} - (S3-40 % load)	rpm	4320	4320	4000	4000	4000	3600	2800	2800
Power supply unit power	W	50	50	80	80	105	105	180	180
Current at 24 V DC	A	2.7	2.7	2.1	2.1	2.8	2.8	3.5	3.5
Current at 230 V AC – (207 V DC coil voltage) ⁶⁾	A	0.45	0.45	0.2	0.2	0.35	0.35	0.6	0.6
Current at 400 V AC – (180 V DC coil voltage) ⁷⁾	A	0.22	0.22	0.18	0.18	0.2	0.2	0.35	0.35
Weight, approx.	kg	32	34	50	50	78	82	135	150
Brake engagement time t_1 ⁸⁾	ms	40	40	90	90	180	180	230	230
Disengagement time t_2 ⁹⁾	ms	18	18	18	18	23	23	30	30
VIS brake moment of inertia	kgm ²	0.00088	0.00088	0.00323	0.00323	0.00831	0.00885	0.0385	0.0397
Lifetime of the brake lining (time to inspection)	kJ	50000	50000	75000	75000	90000	90000	120000	120000

Dynamic application of the brake

Due to dynamic application of the brake, the permissible energy is limited by the maximum frequency of brake application and the maximum slipping time of the friction disk for one brake application.

- Due to the limited maximum braking velocity, 2-pole motors are not suitable for S1 duty.
- Due to the limited maximum braking velocity, 2-pole motors are not possible.
- The brake is mounted at the drive-end. The motor with brake can be mounted with a B5 or B14 flange, depending on the motor. Flange B5 (14th position of the Article No. **F**) mounting of types of construction IM B5, IM V1, IM B35, IM V15; Flange B14 (14th position of the Article No. **K**) mounting of types of construction IM B14, IM V18, IM B34). It is not possible to mount IM V3 and IM V35.
- The bearing lifetime of the brake is the same as the bearing lifetime of the motor.

- The dynamic braking torque is lower because the rated braking torque depends on the speed. (The technical specifications must be stated for the dynamic braking torque.)
- For a voltage of 230 V AC, a bridge rectifier is used, which is contained in the scope of supply.
- For a voltage of 400 V AC, a half-wave rectifier is used, which is contained in the scope of supply.
- Time until the braking torque is reached after the voltage supply is switched off.
- Time until the braking torque has decayed after the voltage supply is switched on.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Technical specifications

Calculation of the slipping time t_3 of the friction disk ¹⁾

$$t_3 = \frac{J_{\text{total}} \cdot n}{9.55 \cdot (T_f \pm T_{\text{load}})}$$

J_{total}	Total moment of inertia on the motor shaft $J_{\text{brake}} + J_{\text{motor}} + J_{\text{load}}$ in kgm^2
n	Motor speed in rpm
T_f	Rated braking torque in Nm
T_{load}	Instantaneous load torque in Nm positive or negative, depending on the conformity with the braking torque
t_3	Slipping time in s

Frequency and slipping time t_3 (duty cycles)

Brake type	Frequency of operations per cycle (1/h) ²⁾	
	Slipping time t_3 ≤ 0.5 s	Slipping time t_3 ≥ 0.5 s to ≤ 0.8 s
VIS80	1800	900
VIS90	1800	900
VIS100	1300	650
VIS112	1300	650
VIS132	900	450
VIS160	900	450
VIS180	600	300
VIS200	600	300

VIK version

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

- **VIK standard version –**
1LE1, 1LE5 + order code **C02**
"VIK" identification on rating plate.
→ Product range in Catalog Section 2.
- **VIK-Ex ec version for line operation –**
1MB1.3, 1MB5 + order code **C02**
"VIK" and "Ex ec IIC T3 Gc" marking on the rating plate according to Directive 2014/34/EU (ATEX).
→ Product range in this Catalog Section.
- **VIK Ex ec version for converter operation –**
1MB1.3, 1MB5 + order code **C02+B40/B41+...**
"VIK" and "Ex ec IIC T3 Gc" markings on the rating plate and motor operating data for converter operation on the additional rating plate according to Directive 2014/34/EU (ATEX).

VIK standard version and VIK Ex ec versions include technology for Zone 2 with type of protection Ex ec IIC T3 Gc. Motors up to frame size 355 can be supplied in accordance with the technical requirements of the VIK recommendation.

Minimum efficiency class:

For VIK standard, VIK Ex ec and VIK-Ex db version, the minimum efficiency class IE3 for line operation and IE2 for converter operation must be complied with according to EC Directive 640/2009 EC. For the VIK Ex eb version, the minimum efficiency class is IE2.

Note:

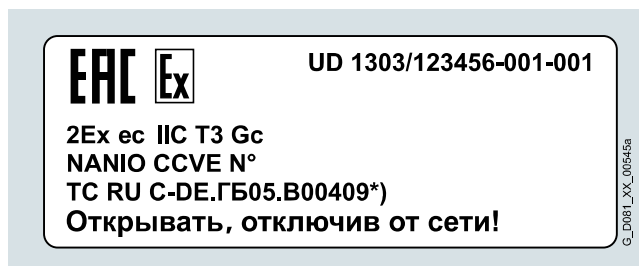
8-pole motors or all motors < 0.75 kW are still possible as these motors are outside the power range specified for IE stamping.

Ex certification EAC for the Eurasian Customs Union (Russia, Belarus, and Kazakhstan, Armenia, Kyrgyzstan) EAC = Eurasian Conformity

For the import and commissioning of explosion-protected motors in the Eurasian Customs Union, approval is required from a named Russian testing authority.

"Ex certificate EAC for the Eurasian Customs Union"
Order code **D35**

When motors are ordered with order code **D35**, they are fitted with an additional rating plate displaying the logo "EAC Ex" and the Russian Ex marking.



Example: Additional rating plate

The "EAC Ex" logo can also be found on the package label. The motor must have an "EAC Ex certificate", although the certificate does not generally have to be shipped with the motor. The customs authorities use the motor article number to check the motor certification.

A copy of the EAC Ex certificate must be in the customer's possession before the motor is commissioned.

The certificates are available from the SIOS (Siemens Industry Online Support) portal
<https://support.industry.siemens.com/cs/ww/en/>
as well as the "Drive Technology Configurator" (DT Configurator)
www.siemens.com/dt-configurator

Coolant temperature

Coolant temperature -40 to $+40$ °C for explosion-protected motor

For all SIMOTICS XP 1MB. motors of frame sizes 71 to 450, the operating temperature can optionally be extended up to -40 °C. Extensive technical measures are necessary in this case.

Order code **D03**

Order code **D03** is not possible in combination with order code **H02** "Vibration-proof version".

¹⁾ The slipping time t_3 is the friction time until the motor stops (≤ 0.8 s); slipping time > 0.8 s on request.

²⁾ Maximum frequency of braking (duty cycles) per hour (> 0.8 s on request).

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Orientation

Article number code

Selection and ordering data

The article number consists of a combination of digits and letters and is divided into three hyphenated blocks to provide a better overview, e.g.:

**1MB1511-1DB22-2AB4-Z
R10**

The first block (positions 1 to 7) identifies the motor type. The second block (positions 8 to 12) defines the motor frame size and length, the number of poles and power and in some cases the frequency/voltage. In the third block (positions 13 to 16), the frequency/voltage, type of construction and further design features are encoded.

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

Ordering data:

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

Structure of the Article No.:		Position:	1	2	3	4	5	6	7	-	8	9	10	11	12	-	13	14	15	16	
1st to 4th position: Digit, letter, letter, digit	Explosion-protected – Self-ventilated by fan mounted on and driven by rotor		1	M	B	1															
5th position: Digit	Aluminum housing Cast-iron housing Basic Line Cast-iron housing Performance Line Cast-iron housing – Premium insulation system		1	M	B	5	0 5 6 8														
6th to 7th position: 2 digits	Ex tb IIIC (Ex-Zone 21) Ex tc IIIB (Ex-Zone 22) Ex ec IIC T3 (Ex Zone 2) Ex eb IIC T3 (Ex Zone 1) Ex db, Ex db ed IIC T4 (Ex Zone 1)	Motors with IE2 High Efficiency Motors with IE1 Standard Efficiency Motors with IE3 Premium Efficiency Motors with IE4 Super Premium Efficiency Motors with IE2 High Efficiency Motors with IE1 Standard Efficiency Motors with IE3 Premium Efficiency Motors with IE4 Super Premium Efficiency Motors with IE2 High Efficiency Motors with IE1 Standard Efficiency Motors with IE3 Premium Efficiency Motors with IE4 Super Premium Efficiency Motors with IE3 Premium Efficiency	1 1 1 1 2 2 2 2 3 3 3 3 4 5	1 2 3 4 1 2 3 4 1 2 3 4 3 3																	
8th, 9th and 11th position: Digit, letter, digit	Motor frame size (frame size as a combination of shaft height and overall length, encoded)							0 ... 4	A ... B			0 ... 7									
10th position: Letter	No. of poles A: 2-pole, B: 4-pole, C: 6-pole, D: 8-pole									A ... D											
12th and 13th position: 2 digits	Voltage, circuit and frequency (encoded with two digits, 9-0 requires order code M.. (e.g. M1Y))											0 ... 9	0 ... 8								
14th position: Letter	Type of construction (encoded with A ... V)																	A ... V			
15th position: Letter	Motor protection (encoded with A ... J)																		A ... J		
16th position: Digit	Terminal box position 0: Terminal box, top left, 1: Terminal box, top right, 2: Terminal box, 45° left, 3: Terminal box, 45° right, 4: Terminal box, at top, 5: Terminal box, on right side, 6: Terminal box, on left side, 7: Terminal box, at bottom, 9: Special mounted components																			0 ... 9	
	Special order versions: encoded – additional order code required not encoded – additional plain text required																				- Z

Ordering example

Selection criteria	Requirement	Structure of the Article No.
Motor type 1MB1	Self-ventilated motor with explosion protection of type Ex tb IIIC (Ex Zone 21), cast-iron version, with IE2 High Efficiency, IP55 degree of protection	1MB1511- -
Motor frame size/No. of poles/Speed	160 M/4-pole/1500 rpm	1MB1511-1DB2
Rated power	11 kW	1MB1511-1DB22-2
Voltage and frequency	230 VΔ/400 VY, 50 Hz	1MB1511-1DB22-2
Type of construction with special version	IM B3	1MB1511-1DB22-2A
Motor protection	Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	1MB1511-1DB22-2AB
Terminal box position	Terminal box at top	1MB1511-1DB22-2AB4
Special version	Rotation of the terminal box through 90°, entry from DE	1MB1511-1DB22-2AB4-Z R10

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SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE4 Super Premium Efficiency **IE4**

Cast-iron series 1MB55.4 – self-ventilated or forced-air cooled

Selection and ordering data

P _{rated} , 50 Hz kW	Frame size FS	Operating values at rated power											Cast-iron series 1MB55.4		m _{IM B3} kg	J kgm ²		
		n _{rated} rpm	T _{rated} Nm	η _{rated} , 4/4 %	η _{rated} , 3/4 %	η _{rated} , 2/4 %	cos φ _{rated} , 4/4	I _{rated} A	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _B /I _{rated}	L _{pIA} dB(A)	L _{WA} dB(A)	Article No.			▲ New	
2-pole: 3000 rpm at 50 Hz																		
560 ^{1) 2)}	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		
630 ^{1) 2)}	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		
710 ³⁾	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		
800 ^{1) 2) 3) 4)}	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		
900 ^{1) 2) 3) 4)}	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		
1000 ^{1) 2) 3) 4)}	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		
4-pole: 1500 rpm at 50 Hz																		
560 ^{1) 2)}	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		
630 ^{1) 2)}	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		
710 ³⁾	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		
800 ³⁾	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		
900 ³⁾	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		
1000 ^{1) 3)}	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		
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		
500 ¹⁾	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		
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		
630 ^{1) 2)}	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		
710 ³⁾	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		
800 ^{1) 3)}	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		
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		
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		
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		
500 ⁵⁾	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		
560 ⁵⁾	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		
630 ^{1) 5)}	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		
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages																		
50 Hz 400 VΔ/690 VY 60 Hz 460 VΔ																		
50 Hz 500 VΔ 60 Hz 575 VΔ																		
50 Hz 690 VΔ																		
For other voltages and more information, see from page 5/55																		
Types of construction																		
Without flange IM B3																		
With flange IM B5																		
For other types of construction and more information, see from page 5/67																		
Motor protection																		
Without Standard																		
PTC thermistor with 3 temperature sensors With additional charge																		
For other motor protection and more information, see from page 5/72																		
Terminal box position																		
Terminal box base left with terminal box 45° Without additional charge																		
Terminal box base right with terminal box 45° Standard																		
For other terminal box positions and more information, see from page 5/77																		
Special versions																		
Forced-air cooled (IC416) 1MB55 4-...-Z F90+...+...+...																		
For options and information, see from page 5/96 1MB55 4-...-Z ...+...+...+...																		

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1) Terminal box 1XB1631.
 2) Terminal box position NDE can only be ordered using order code **H09** (2 × terminal box TB3R61). Order code **H08** not available.
 3) The standard version is 50 Hz 690 VΔ (voltage code **4-7**) or 60 Hz 575 VΔ (voltage code **4-0**).
 4) In the series version, the maximum speed is n_{max} = 3000 rpm. Converter operation at higher speeds on request for an additional charge.
 5) Utilization with sinusoidal supply in accordance with thermal class 155 (temperature class F).



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE3 Premium Efficiency

Aluminum series 1MB10 – self-ventilated

Selection and ordering data

Operating values at rated power														Aluminum series		m _{IM B3}	J	
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	Different IE class 60 Hz/P60	η _{rated} 50 Hz, 4/4	η _{rated} 50 Hz, 3/4	η _{rated} 50 Hz, 2/4	cosφ _{rated} 50 Hz, 4/4	I _{rated} 50 Hz, 400 V	T _{Lr} /I _{Lr} I _{Lr} /I _{rated}	T _B /I _B I _B /I _{rated}	L _p fA, 50 Hz	L _{WA} , 50 Hz	Article No.			kg
kW	kW	FS	rpm	Nm		%	%	%		A			dB(A)	dB(A)		kg	kgm ²	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																		
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																		
0.75	0.86	80 M	2850	2.5		80.7	82.2	81.9	0.86	1.56	2.6	6.2	3	60	71	1MB10-3-0DA2	11	0.0011
1.1	1.27	80 M	2885	3.6		82.7	83.9	83.1	0.85	2.25	3	7.1	3.3	60	71	1MB10-3-0DA3	12	0.0013
1.5	1.75	90 S	2910	4.9		84.2	84.6	83.2	0.86	3	2.7	8.1	4.2	65	77	1MB10-3-0EA0	15	0.0021
2.2	2.55	90 L	2910	7.2		85.9	86.8	86.1	0.88	4.2	2.6	8.3	4	65	77	1MB10-3-0EA4	19	0.0031
3	3.45	100 L	2920	9.8		87.1	87.9	87.5	0.88	5.6	3.2	8.1	4.6	67	79	1MB10-3-1AA4	26	0.0054
4	4.55	112 M	2950	13		88.1	88.7	88.2	0.89	7.4	2.5	8.7	4	69	81	1MB10-3-1BA2	34	0.012
5.5	6.3	132 S	2950	18		89.2	90.1	89.7	0.9	9.9	1.9	7.3	3.7	68	80	1MB10-3-1CA0	43	0.024
7.5	8.6	132 S	2950	24		90.1	90.9	90.7	0.92	13.1	2.1	8.3	4	68	80	1MB10-3-1CA1	57	0.031
11	12.6	160 M	2955	36		91.2	91.3	90.2	0.87	20	2.5	7.6	3.8	70	82	1MB10-3-1DA2	75	0.053
15	17.3	160 M	2960	48		91.9	91.9	91	0.87	27	2.8	8.8	4.3	70	82	1MB10-3-1DA3	84	0.061
18.5	21.3	160 L	2955	60		92.4	92.8	92.3	0.9	32	2.8	8.3	3.9	70	82	1MB10-3-1DA4	94	0.068
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																		
0.55	0.63	80 M	1440	3.6		80.8	81.1	79.3	0.78	1.26	2.1	5.9	3.1	53	64	1MB10-3-0DB2	11	0.0021
0.75	0.86	80 M	1450	4.9		82.5	82.3	79.9	0.75	1.75	2.7	7.1	3.9	53	64	1MB10-3-0DB3	14	0.0029
1.1	1.27	90 S	1440	7.3		84.1	84.7	83.4	0.78	2.4	2.9	6.9	3.6	56	68	1MB10-3-0EB0	16	0.0036
1.5	1.75	90 L	1445	9.9		85.3	86	85.2	0.8	3.15	2.9	7.3	3.5	60	68	1MB10-3-0EB4	19	0.0049
2.2	2.55	100 L	1465	14.3		86.7	87	85.9	0.83	4.4	3.2	8.4	4.4	60	72	1MB10-3-1AB4	30	0.014
3	3.45	100 L	1460	19.6		87.7	88.5	87.9	0.83	5.9	2.5	8.3	3.9	60	72	1MB10-3-1AB5	30	0.014
4	4.55	112 M	1460	26		88.6	89.2	88.6	0.82	7.9	2.4	7.1	3.7	58	70	1MB10-3-1BB2	34	0.017
5.5	6.3	132 S	1470	36		89.6	90	89.4	0.82	10.8	2.9	8.6	3.7	64	76	1MB10-3-1CB0	64	0.046
7.5	8.6	132 M	1465	49		90.4	91.1	90.8	0.84	14.3	2.6	8.2	3.7	64	76	1MB10-3-1CB2	64	0.046
11	12.6	160 M	1475	71		91.4	91.8	91.2	0.84	20.5	2.6	7.6	3.4	65	77	1MB10-3-1DB2	83	0.083
15	17.3	160 L	1475	97		92.1	92.3	91.5	0.82	28.5	2.5	8.5	3.8	65	77	1MB10-3-1DB4	100	0.099
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																		
0.37	0.43	80 M	940	3.8		73.5	73.1	69.4	0.66	1.1	2.3	4.2	2.7	42	53	1MB10-3-0DC2	12	0.0025
0.55	0.63	80 M	935	5.6		77.2	77	73.9	0.67	1.53	2.5	4.5	2.8	42	53	1MB10-3-0DC3	14	0.0031
0.75	0.86	90 S	945	7.6		78.9	80	78.8	0.7	1.96	2.2	4.6	2.6	43	55	1MB10-3-0EC0	16	0.004
1.1	1.27	90 L	950	11	IE1	81	81.4	79.3	0.66	2.95	2.8	5	3	57	65	1MB10-3-0EC4	19	0.0052
1.5	1.75	100 L	970	14.8	IE2	82.5	83.1	81.5	0.73	3.6	1.9	5.2	2.8	59	71	1MB10-3-1AC4	30	0.014
2.2	2.55	112 M	970	22	IE2	84.3	85	83.9	0.75	5	2.2	5.6	2.8	65	74	1MB10-3-1BC2	39	0.014
3	3.45	132 S	975	29		85.6	86.1	84.9	0.73	6.9	2.3	6.6	3.2	58	66	1MB10-3-1CC0	42	0.034
4	4.55	132 M	975	39		86.8	87.1	86.2	0.73	9.1	2.2	6.2	3	67	75	1MB10-3-1CC2	46	0.039
5.5	6.3	132 M	975	54		88.0	88.3	87.2	0.72	12.5	2.7	6.8	3.4	64	72	1MB10-3-1CC3	58	0.05
7.5	8.6	160 M	985	73		89.1	89.5	88.6	0.81	15	2.3	7.9	3.2	71	79	1MB10-3-1DC2	95	0.132
11	12.6	160 L	980	107		90.3	90.8	90.2	0.80	22	2.9	6.8	2.8	66	74	1MB10-3-1DC4	106	0.164
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages																		
50 Hz 230 VΔ/400 VY														Version		Order code		
60 Hz ¹⁾ 460 VY														Standard		2 2		
50 Hz 400 VΔ/690 VY														Standard		3 4		
60 Hz ¹⁾ 460 VA														Without additional charge		2 7		
50 Hz 500 VY														Without additional charge		4 0		
50 Hz 500 VΔ																9 0		
For other voltages ¹⁾ and more information, see from page 5/51																		
Types of construction																		
Without flange														Version		Order code		
IM B3 ²⁾														Standard		A		
With flange														With additional charge		F		
IM B5 ²⁾														With additional charge		K		
With flange																...		
For other types of construction and more information, see from page 5/56																		
Motor protection																		
Without														Version		Order code		
Standard																A		
3 temperature sensors (frame sizes 80, 90 or 100 to 200)														With additional charge		B		
For other motor protection and more information, see from page 5/68																		
Terminal box position																		
Terminal box at top														Version		Order code		
Standard																4		
For other terminal box positions and more information, see from page 5/73																		
Special versions																		
For options, see from page 5/78																		
1MB10-3-...																Order code(s)		
-Z ...+...+...+...																		

For footnotes, see page 5/40



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE3 Premium Efficiency



Cast-iron series 1MB15, 1MB16 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series		m _{IM B3}	J	
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	Different IE class 60 Hz/P60	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	cosφ _{rated} 50 Hz	I _{rated} 50 Hz	T _{LR} I _{rated}	I _{LR} I _{rated}	T _B I _{rated}	L _{pFA} 50 Hz	L _{WA} 50 Hz			Article No.
kW	kW	FS	rpm	Nm		%	%	%		A								
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																		
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																		
0.37	0.43	71 M	2850	1.2		73.8	73.3	69.7	0.76	0.95	3.5	5.8	3.5	52	63	1MB1 5 3-0CA2	13	0.00045
0.55	0.63	71 M	2860	1.8		77.8	77.5	74.5	0.76	1.34	3.7	6.1	3.7	57	68	1MB1 5 3-0CA3	14.5	0.00056
0.75	0.88	80 M	2850	2.5		80.7	82.2	81.9	0.86	1.56	2.6	6.2	3	60	71	1MB1 5 3-0DA2	18	0.0011
1.1	1.27	80 M	2885	3.6		82.7	83.9	83.1	0.85	2.25	3	7.1	3.3	60	71	1MB1 5 3-0DA3	21	0.0013
1.5	1.75	90 S	2910	4.9		84.2	84.6	83.2	0.86	3	2.7	8.1	4.2	65	77	1MB1 5 3-0EA0	25.5	0.0021
2.2	2.55	90 L	2910	7.2		85.9	86.8	86.1	0.88	4.2	2.6	8.3	4	65	77	1MB1 5 3-0EA4	32	0.0031
3	3.45	100 L	2920	9.8		87.1	87.9	87.5	0.88	5.6	3.2	8.1	4.6	67	79	1MB1 3-1AA4	36	0.0054
4	4.55	112 M	2950	13		88.1	88.7	88.2	0.89	7.4	2.5	8.7	4	69	81	1MB1 3-1BA2	45	0.012
5.5	6.3	132 S	2950	18		89.2	90.1	89.7	0.9	9.9	1.9	7.3	3.7	68	80	1MB1 3-1CA0	58	0.024
7.5	8.6	132 S	2950	24		90.1	90.9	90.7	0.92	13.1	2.1	8.3	4	68	80	1MB1 3-1CA1	73	0.031
11	12.6	160 M	2955	36		91.2	91.3	90.2	0.87	20	2.5	7.6	3.8	70	82	1MB1 3-1DA2	100	0.053
15	17.3	160 M	2960	48		91.9	91.9	91	0.87	27	2.8	8.8	4.3	70	82	1MB1 3-1DA3	110	0.061
18.5	21.3	160 L	2955	60		92.4	92.8	92.3	0.9	32	2.8	8.3	3.9	70	82	1MB1 3-1DA4	127	0.068
22	24.5	180 M	2950	71		92.7	93	92.4	0.89	38.5	2.3	7.5	3.5	67	80	1MB1 3-1EA2	160	0.08
30	33.5	200 L	2955	97		93.3	93.6	93.3	0.87	53	2.5	7	3.3	67	80	1MB1 3-2AA4	225	0.134
37	41.5	200 L	2955	120		93.7	93.9	93.5	0.88	65	2.5	7.1	3.2	67	80	1MB1 3-2AA5	250	0.158
45	51	225 M	2960	145		94	94.5	94.4	0.89	78	2.4	6.9	3.3	73	87	1MB1 3-2BA2	315	0.26
55	62	250 M	2975	177		94.3	94.5	93.9	0.89	95	2.3	6.7	3.1	73	87	1MB1 3-2CA2	385	0.46
75	84	280 S	2975	241	IE2	94.7	94.8	94.1	0.89	128	2.4	6.8	3	74	88	1MB1 3-2DA0	510	0.77
90	101	280 M	2975	289	IE2	95	95.1	94.6	0.9	152	2.4	7.2	3.1	74	88	1MB1 3-2DA2	590	0.94
110	123	315 S	2982	352		95.2	95.4	94.9	0.91	183	2.4	7.1	3.1	75	89	1MB1 3-3AA0	750	1.4
132	148	315 M	2982	423		95.4	95.5	95.2	0.91	220	2.5	7.2	3.1	75	89	1MB1 3-3AA2	880	1.6
160	180	315 L	2982	512	IE2	95.6	95.7	95.2	0.92	265	2.8	7.8	3.3	77	91	1MB1 3-3AA4	980	1.9
200	224	315 L	2982	640		95.8	95.9	95.5	0.92	330	2.5	7.2	3	77	91	1MB1 3-3AA5	1150	2.3
Basic Line																		
Performance Line																		
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages ³⁾																		
50 Hz 230 VΔ/400 VY														Version		Order code		
60 Hz ¹⁾ 460 VY														Standard		2 2		
50 Hz 400 VΔ/690 VY														Standard		3 4		
50 Hz 500 VY														Without additional charge		2 7		
50 Hz 500 VΔ														Without additional charge		4 0		
For other voltages ¹⁾ and more information, see from page 5/52																		
Types of construction																		
Without flange IM B3 ²⁾														Version		Order code		
With flange IM B5 ²⁾														Standard		A		
With flange IM B14 ²⁾														With additional charge		F		
														With additional charge		K		
For other types of construction and more information, see from page 5/59																		
Motor protection																		
Without														Line		Version		
PTC thermistor with 3 temperature sensors														Basic Line		Standard		
														Performance Line		With additional charge		
																Standard		
For other motor protection and more information, see from page 5/69																		
Terminal box position																		
Terminal box at top														Version		Order code		
														Standard		4		
For other terminal box positions and more information, see from page 5/74																		
Special versions																		
For options, see from page 5/82																		
1MB1 3-...-Z-...+...+...+...																		

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For footnotes, see page 5/40



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE3 Premium Efficiency

Cast-iron series 1MB15, 1MB16 – self-ventilated

Selection and ordering data

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated power											Cast-iron series 1MB15.3 – Basic Line 1MB16.3 – Performance Line	m _{IM B3}	J		
			n _{rated} 50 Hz	T _{rated} 50 Hz	Different IE class 60 Hz/P60	η _{rated} 50 Hz, 4/4	η _{rated} 50 Hz, 3/4	η _{rated} 50 Hz, 2/4	cosφ _{rated} 50 Hz, 4/4	I _{rated} 50 Hz, 400 V	T _{LR} T _{rated}	I _{LR} I _{rated}	T _B T _{rated}				L _{pIA} 50 Hz	L _{WA} 50 Hz
kW	kW	FS	rpm	Nm	%	%	%	A									kg	kgm ²

- Cooling: self-ventilated (IC411)
 - Efficiency according to IEC 60034-30: IE3 Premium Efficiency
 - Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)
- 4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾

0.25	0.29	71 M	1395	1.7		73.5	73.6	70.4	0.72	0.68	2.5	4.2	2.6	44	55	1MB1 5 3-0CB2	13	0.0095
0.37	0.43	71 M	1410	2.6		77.3	76.8	73.2	0.7	0.99	3.1	4.8	3.1	56	67	1MB1 5 3-0CB3	16	0.0014
0.55	0.63	80 M	1440	3.6		80.8	81.1	79.3	0.78	1.26	2.1	5.9	3.1	53	64	1MB1 5 3-0DB2	18,5	0.0021
0.75	0.88	80 M	1450	4.9		82.5	82.3	79.9	0.75	1.75	2.7	7.1	3.9	53	64	1MB1 5 3-0DB3	22,5	0.0029
1.1	1.27	90 S	1440	7.3		84.1	84.7	83.4	0.78	2.4	2.9	6.9	3.6	56	68	1MB1 5 3-0EB0	25	0.0036
1.5	1.75	90 L	1445	9.9		85.3	86	85.2	0.8	3.15	2.9	7.3	3.5	60	68	1MB1 5 3-0EB4	31	0.0049
2.2	2.55	100 L	1465	14.3		86.7	87	85.9	0.83	4.4	3.2	8.4	4.4	60	72	1MB1 3-1AB4	40	0.014
3	3.45	100 L	1460	19.6		87.7	88.5	87.9	0.83	5.9	2.5	8.3	3.9	60	72	1MB1 3-1AB5	40	0.014
4	4.55	112 M	1460	26		88.6	89.2	88.6	0.82	7.9	2.4	7.1	3.7	58	70	1MB1 3-1BB2	46	0.017
5.5	6.3	132 S	1470	36		89.6	90	89.4	0.82	10.8	2.9	8.6	3.7	64	76	1MB1 3-1CB0	74	0.046
7.5	8.6	132 M	1465	49		90.4	91.1	90.8	0.84	14.3	2.6	8.2	3.7	64	76	1MB1 3-1CB2	80	0.046
11	12.6	160 M	1475	71		91.4	91.8	91.2	0.84	20.5	2.6	7.6	3.4	65	77	1MB1 3-1DB2	109	0.083
15	17.3	160 L	1475	97		92.1	92.3	91.5	0.82	28.5	2.5	8.5	3.8	65	77	1MB1 3-1DB4	127	0.099
18.5	21.3	180 M	1470	120		92.6	93.1	93	0.82	35	2.5	7.2	3.3	66	73	1MB1 3-1EB2	165	0.13
22	25.3	180 L	1470	143		93	93.6	93.6	0.83	41	2.3	6.8	3.3	68	75	1MB1 3-1EB4	170	0.14
30	34.5	200 L	1470	195	IE2	93.6	94.2	94.2	0.84	55	2.6	7.3	3.1	65	72	1MB1 3-2AB5	240	0.22
37	42.5	225 S	1478	239	IE2	93.9	94.5	94.4	0.86	66	2.5	6.4	2.7	65	78	1MB1 3-2BB0	285	0.42
45	52	225 M	1478	291	IE2	94.2	94.9	95	0.86	80	2.6	6.6	2.6	66	79	1MB1 3-2BB2	340	0.52
55	63	250 M	1482	354	IE2	94.6	95.1	95	0.87	96	2.5	6.8	2.9	66	79	1MB1 3-2CB2	420	0.85
75	86	280 S	1485	482	IE2	95	95.3	95	0.86	133	2.5	6.9	3	69	83	1MB1 3-2DB0	570	1.4
90	104	280 M	1485	579	IE2	95.2	95.5	95.3	0.87	157	2.6	7.2	3	70	84	1MB1 3-2DB2	670	1.7
110	127	315 S	1488	706		95.4	95.8	95.5	0.87	191	2.6	6.8	2.9	70	84	1MB1 3-3AB0	760	2.2
132	152	315 M	1490	846		95.6	95.9	95.9	0.87	230	2.8	7.3	3	73	87	1MB1 3-3AB2	960	2.9
160	184	315 L	1490	1025		95.8	96.1	96.1	0.87	275	2.9	7.3	3.1	73	87	1MB1 3-3AB4	990	3.1
200	230	315 L	1488	1284	IE2	96	96.3	96.1	0.88	340	3.2	7.4	3	73	87	1MB1 3-3AB5	1190	3.7

Basic Line		5																
Performance Line		6																
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB		1																
Zone 2 (explosive gases rarely or for a short period) Ex ec IIIC		2																
Voltages ³⁾																		
Version																		Order code
50 Hz 230 VΔ/400 VY																		Standard
60 Hz ¹⁾ 460 VY																		Standard
50 Hz 400 VΔ/690 VY																		Standard
60 Hz ¹⁾ 460 VΔ																		Standard
50 Hz 500 VY																		Without additional charge
50 Hz 500 VΔ																		Without additional charge
For other voltages ¹⁾ and more information, see from page 5/52																		9 0
Types of construction																		Order code
Version																		Standard
Without flange																		IM B3 ²⁾
With flange																		IM B5 ²⁾
With flange																		IM B14 ²⁾
For other types of construction and more information, see from page 5/59																		A
Motor protection																		Order code
Version																		Standard
Without																		Only possible for Basic Line
PTC thermistor with 3 temperature sensors																		Basic Line
For other motor protection and more information, see from page 5/69																		With additional charge
Terminal box position																		Order code
Version																		Standard
Terminal box at top																		4
For other terminal box positions and more information, see from page 5/74																		
Special versions																		Order code(s)
For options, see from page 5/82																		1MB1 3-... -Z ...+...+...+...

For footnotes, see page 5/40



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE3 Premium Efficiency



Cast-iron series 1MB15, 1MB16 – self-ventilated

Selection and ordering data

Operating values at rated power															Cast-iron series		m _{IM B3}	J
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	Different IE class	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	cosφ _{rated} 50 Hz	I _{rated} 50 Hz	T _{Lr} / T _{rated}	I _{Lr} / I _{rated}	T _B / T _{rated}	L _{pfA} 50 Hz	L _{WA} 50 Hz	Article No.		
kW	kW	FS	rpm	Nm		%	%	%		A								
0.18	0.21	71 M	885	1.9		63.9	64.6	60.8	0.69	0.59	2.3	2.8	2.3	39	50	1MB1 5 3-0CC2	12.5	0.001
0.25	0.29	71 M	900	2.7		68.6	69.5	66.2	0.69	0.76	2.6	3.2	2.6	46	57	1MB1 5 3-0CC3	15.5	0.0015
0.37	0.43	80 M	940	3.8		73.5	73.1	69.4	0.66	1.1	2.3	4.2	2.7	42	53	1MB1 5 3-0DC2	18.5	0.0025
0.55	0.63	80 M	935	5.6		77.2	77	73.9	0.67	1.53	2.5	4.5	2.8	42	53	1MB1 5 3-0DC3	22.5	0.0031
0.75	0.88	90 S	945	7.6		78.9	80	78.8	0.7	1.96	2.2	4.6	2.6	43	55	1MB1 5 3-0EC0	26.5	0.004
1.1	1.27	90 L	950	11	IE1	81	81.4	79.3	0.66	2.95	2.8	5	3	57	65	1MB1 5 3-0EC4	32	0.0052
1.5	1.75	100 L	970	14.8	IE2	82.5	83.1	81.5	0.73	3.6	1.9	5.2	2.8	59	71	1MB1 3-1AC4	36	0.011
2.2	2.55	112 M	970	22	IE2	84.3	85	83.9	0.75	5	2.2	5.6	2.8	65	74	1MB1 3-1BC2	53	0.017
3	3.45	132 S	975	29		85.6	86.1	84.9	0.73	6.9	2.3	6.6	3.2	58	66	1MB1 3-1CC0	60	0.034
4	4.55	132 M	975	39		86.8	87.1	86.2	0.73	9.1	2.2	6.2	3	67	75	1MB1 3-1CC2	64	0.039
5.5	6.3	132 M	975	54		88.0	88.3	87.2	0.72	12.5	2.7	6.8	3.4	64	72	1MB1 3-1CC3	76	0.05
7.5	8.6	160 M	985	73		89.1	89.5	88.6	0.81	15	2.3	7.9	3.2	71	79	1MB1 3-1DC2	124	0.132
11	12.6	160 L	980	107		90.3	90.8	90.2	0.80	22	2.9	6.8	2.8	66	74	1MB1 3-1DC4	138	0.164
15	18	180 L	975	147	IE2	91.2	91.9	91.9	0.8	29.5	2.3	5.9	2.8	61	68	1MB1 3-1EC4	180	0.19
18.5	22	200 L	978	181	IE2	91.7	92.5	92.5	0.79	37	2.5	5.6	2.6	64	71	1MB1 3-2AC4	215	0.28
22	26.5	200 L	978	215	IE2	92.2	93.1	93.2	0.79	43.5	2.5	5.6	2.6	61	68	1MB1 3-2AC5	230	0.32
30	36	225 M	982	292	IE2	92.9	93.6	93.5	0.83	56	2.6	6.6	3	64	77	1MB1 3-2BC2	325	0.67
37	44.5	250 M	985	359	IE2	93.3	94	94	0.85	67	2.7	7	2.9	62	75	1MB1 3-2CC2	405	1
45	54	280 S	988	435	IE2	93.7	94.3	94.2	0.85	82	3	6.8	2.8	60	74	1MB1 3-2DC0	510	1.4
55	66	280 M	988	532	IE2	94.1	94.5	94.4	0.85	99	3.3	7.2	3	65	79	1MB1 3-2DC2	560	1.64
75	90	315 S	990	723		94.6	94.9	94.4	0.84	136	2.6	7.5	3.1	63	78	1MB1 3-3AC0	750	2.6
90	108	315 M	991	867	IE2	94.9	95.2	94.9	0.85	161	2.5	6.7	2.8	63	78	1MB1 3-3AC2	890	3.1
110	132	315 L	991	1060	IE2	95.1	95.5	95.3	0.84	199	2.8	7.2	3	63	78	1MB1 3-3AC4	990	3.9
132	158	315 L	992	1271	IE2	95.4	95.7	95.4	0.82	245	3.3	8	3.3	66	81	1MB1 3-3AC5	1130	4.48
160	192	315 L	992	1540	IE2	95.6	95.8	95.5	0.82	295	3.5	8.5	3.6	66	81	1MB1 3-3AC6	1260	5.41

Basic Line	5				
Performance Line	6				
Zones					
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC	1				
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB	2				
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC	3				
Voltages ³⁾		Version			Order code
50 Hz 230 VΔ/400 VY	60 Hz ¹⁾ 460 VY	Standard	2	2	-
50 Hz 400 VΔ/690 VY	60 Hz ¹⁾ 460 VΔ	Standard	3	4	-
50 Hz 500 VY		Without additional charge	2	7	-
50 Hz 500 VΔ		Without additional charge	4	0	-
For other voltages ¹⁾ and more information, see from page 5/52			9	0	...
Types of construction		Version			Order code
Without flange	IM B3 ²⁾	Standard		A	-
With flange	IM B5 ²⁾	With additional charge		F	-
With flange	IM B14 ²⁾	With additional charge		K	-
For other types of construction and more information, see from page 5/59					...
Motor protection	Line	Version			
Without	Only possible for Basic Line	Standard		A	
PTC thermistor with 3 temperature sensors	Basic Line	With additional charge		B	
	Performance Line	Standard		B	
For other motor protection and more information, see from page 5/69					
Terminal box position		Version			
Terminal box at top		Standard		4	
For other terminal box positions and more information, see from page 5/74					
Special versions					Order code(s)
For options, see from page 5/82					1MB1 3-...-Z ...+...+...+...

For footnotes, see page 5/40

Selection and ordering data

P _{rated} , 50 Hz kW	Frame size FS	Operating values at rated power											Cast-iron series 1MB5.3		m _{IM B3} kg	J kgm ²		
		n _{rated} rpm	T _{rated} Nm	η _{rated} %	η _{rated} %	η _{rated} %	cos φ _{rated} %	I _{rated} A	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _B /I _{rated}	L _{pIA} dB(A)	L _{WA} dB(A)	Article No.			▲ New	
<ul style="list-style-type: none"> • 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 with sinusoidal supply in accordance with thermal class 130 (temperature class B) • Optional and suitable for converter operation with insulated bearings (L51) for f_p ≥ 2.5 kHz; U_{line} ≤ 480 V; U_{motor} ≤ 500 V; U_{DC} ≤ 720 V - IVC-C advanced insulation system 																		
2-pole: 3000 rpm at 50 Hz																		
560 ^{1) 2)}	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	
630 ^{1) 2)}	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	
710 ³⁾	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	
800 ^{1) 2) 3) 4)}	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	
900 ^{1) 2) 3) 4)}	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	
1000 ^{1) 2) 3) 4)}	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	
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	
630 ^{1) 2)}	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	
710 ³⁾	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	
800 ³⁾	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	
900 ³⁾	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	
1000 ^{1) 3)}	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	
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	
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	
560 ¹⁾	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	
630 ¹⁾	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	
710 ³⁾	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	
800 ^{1) 3)}	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	
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	
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	
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	
500 ⁵⁾	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	
560 ⁵⁾	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	
630 ^{1) 5)}	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	
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages																		
Version																		
50 Hz 400 VΔ/690 VY 60 Hz 460 VΔ																		
Standard																		
50 Hz 500 VΔ 60 Hz 575 VΔ																		
Without additional charge																		
50 Hz 690 VΔ																		
Without additional charge																		
For other voltages and more information, see from page 5/55																		
Types of construction																		
Version																		
Without flange IM B3																		
Standard																		
With flange IM B5																		
With additional charge																		
For other types of construction and more information, see from page 5/67																		
Motor protection																		
Version																		
Without																		
Standard																		
PTC thermistor with 3 temperature sensors																		
With additional charge																		
For other motor protection and more information, see from page 5/72																		
Terminal box position																		
Version																		
Terminal box base left with terminal box 45°																		
Without additional charge																		
Terminal box base right with terminal box 45°																		
Standard																		
For other terminal box positions and more information, see from page 5/77																		
Special versions																		
Version																		
Forced-air cooled (IC416)																		
1MB55 3-...-Z F90+...+...+...																		
For options and information, see from page 5/96																		
1MB55 3-...-Z ...+...+...+...																		

1) Terminal box 1XB1631.

2) Terminal box position NDE can only be ordered using order code **H09** (2 × terminal box TB3R61). Order code **H08** not available.3) The standard version is 50 Hz 690 VΔ (voltage code **4-7**) or 60 Hz 575 VΔ (voltage code **4-0**).4) In the series version, the maximum speed is n_{max} = 3000 rpm. Converter operation at higher speeds on request for an additional charge.

5) Utilization with sinusoidal supply in accordance with thermal class 155 (temperature class F).

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE3 Premium Efficiency



Cast-iron series 1MB58.3 – self-ventilated or forced-air cooled – Premium insulation system

Selection and ordering data

P _{rated} , 50 Hz kW	Frame size FS	Operating values at rated power											Cast-iron series 1MB58.3		m _{M B3} kg	J kgm ²				
		n _{rated} rpm	T _{rated} Nm	η _{rated} , 4/4 %	η _{rated} , 3/4 %	η _{rated} , 2/4 %	cosφ _{rated} , 4/4	I _{rated} A	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _B /I _{rated}	L _{pIA} dB(A)	L _{WA} dB(A)	Article No.			▲ New			
2-pole: 3000 rpm at 50 Hz																				
545 ¹⁾	400	2988	1740	96.9	96.9	96.4	0.90	900	1.6	7.3	3.1	74	90	▲ 1MB58 3-4AA3	2850	8.9				
610 ¹⁾	400	2988	1950	97.0	97.0	96.7	0.91	1000	1.6	7.3	3.1	74	90	▲ 1MB58 3-4AA5	3000	9.8				
680 ²⁾	400	2988	2150	97.0	97.1	96.8	0.91	640	1.7	7.3	3	74	90	▲ 1MB58 3-4AA7	3200	10.8				
775 ^{1) 2) 3)}	450	2990	2500	97.4	97.4	97.0	0.88	760	1.2	7.7	3.4	75	91	▲ 1MB58 3-4BA3	4000	12.3				
875 ^{1) 2) 3)}	450	2988	2800	97.4	97.5	97.3	0.90	840	1.2	7.2	3	75	91	▲ 1MB58 3-4BA5	4250	13.5				
970 ^{1) 2) 3)}	450	2986	3100	97.4	97.5	97.4	0.91	920	1.2	7.0	2.8	75	91	▲ 1MB58 3-4BA7	4450	14.7				
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	▲ 1MB58 3-4AB3	2800	12.8				
615	400	1492	3950	96.6	96.6	96.2	0.87	1060	1.9	6.9	2.8	78	94	▲ 1MB58 3-4AB5	3000	14.4				
690 ²⁾	400	1492	4400	96.6	96.7	96.4	0.88	680	2.0	7.0	2.7	78	94	▲ 1MB58 3-4AB7	3200	16.5				
785 ²⁾	450	1492	5000	96.6	96.6	96.1	0.88	770	1.6	7.2	2.7	81	97	▲ 1MB58 3-4BB3	3850	22.2				
880 ²⁾	450	1492	5600	96.8	96.8	96.3	0.87	870	1.5	7.2	2.6	81	97	▲ 1MB58 3-4BB5	4100	24.8				
980 ²⁾	450	1492	6300	96.9	96.9	96.5	0.89	950	1.7	7.1	2.6	81	97	▲ 1MB58 3-4BB7	4300	27.4				
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	▲ 1MB58 3-4AC3	2900	22.0				
485	400	993	4650	96.2	96.4	96.1	0.86	850	2.2	6.7	2.8	72	88	▲ 1MB58 3-4AC5	3050	24.7				
545 ¹⁾	400	993	5200	96.3	96.5	96.2	0.86	950	2.2	6.7	2.7	72	88	▲ 1MB58 3-4AC7	3250	27.8				
615 ¹⁾	450	993	5900	96.5	96.7	96.4	0.84	1100	2.1	6.6	2.7	74	90	▲ 1MB58 3-4BC3	3800	34.4				
690 ²⁾	450	993	6600	96.6	96.8	96.6	0.85	700	2.0	6.8	2.5	74	90	▲ 1MB58 3-4BC5	4050	38.5				
780 ²⁾	450	993	7500	96.7	96.9	96.7	0.85	790	2.0	6.7	2.6	74	90	▲ 1MB58 3-4BC7	4300	43.1				
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	▲ 1MB58 3-4AD3	2850	21.9				
375	400	744	4800	95.9	96.1	95.7	0.80	710	2.1	7.2	2.8	64	80	▲ 1MB58 3-4AD5	3050	24.5				
425	400	744	5500	96.1	96.2	95.8	0.80	800	2.1	7.2	2.7	64	80	▲ 1MB58 3-4AD7	3250	27.5				
485 ⁴⁾	450	745	6200	96.1	96.2	95.9	0.79	920	2.0	7.0	2.6	67	83	▲ 1MB58 3-4BD3	3800	34.0				
545 ⁴⁾	450	745	7000	96.2	96.4	96.0	0.79	1040	2.0	7.0	2.6	67	83	▲ 1MB58 3-4BD5	4000	38.0				
600 ^{1) 4)}	450	745	7700	96.3	96.5	96.1	0.80	1120	2.1	7.3	2.6	67	83	▲ 1MB58 3-4BD7	4250	42.5				
Zones																				
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																				
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																				
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																				
Voltages																				
50 Hz 400 VΔ/690 VY		60 Hz 460 VΔ		Version		Standard													Order code	
50 Hz 500 VΔ		60 Hz 575 VΔ		Without additional charge		4 0													-	
50 Hz 690 VΔ				Without additional charge		4 7													-	
For other voltages and more information, see from page 5/55																				
Types of construction																				
Without flange		IM B3		Version		Standard													Order code	
With flange		IM B5		With additional charge		A F													-	
For other types of construction and more information, see from page 5/67																				
Motor protection																				
Without				Version		Standard													Order code	
PTC thermistor with 3 temperature sensors				With additional charge		A B													-	
For other motor protection and more information, see from page 5/72																				
Terminal box position																				
Terminal box base left with terminal box 45°				Version		Without additional charge													Order code	
Terminal box base right with terminal box 45°				Standard		2 3													-	
For other terminal box positions and more information, see from page 5/77																				
Special versions																				
Forced-air cooled (IC416)						1MB58 3-...-Z F90+...+...+...													Order code(s)	
For options and information, see from page 5/96																				

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1) Terminal box 1XB1631.
 2) The standard version is 50 Hz 690 VΔ (voltage code 4-7) or 60 Hz 575 VΔ (voltage code 4-0).
 3) In the series version, the maximum speed is n_{max} = 3000 rpm. Converter operation at higher speeds on request for an additional charge.
 4) Utilization with sinusoidal supply in accordance with thermal class 155 (temperature class F).



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE2 High Efficiency

Aluminum series 1MB10 – self-ventilated

Selection and ordering data

Operating values at rated power													Aluminum series					
$P_{rated, 50 Hz}$	$P_{rated, 60 Hz}$	Frame size	$n_{rated, 50 Hz}$	$T_{rated, 50 Hz}$	Different IE class	$\eta_{rated, 50 Hz, 4/4}$	$\eta_{rated, 50 Hz, 3/4}$	$\eta_{rated, 50 Hz, 2/4}$	$\cos\phi_{rated, 50 Hz, 4/4}$	$I_{rated, 50 Hz, 400 V}$	T_{LR}/I_{rated}	I_{LR}/I_{rated}	T_{β}/I_{rated}	$L_{p(A), 50 Hz}$	$L_{WA, 50 Hz}$	1MB1	$m_{IM B3}$	J
kW	kW	FS	rpm	Nm		%	%	%		A						Article No.	kg	kgm ²
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE2 High Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																		
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																		
0.75	0.86	80 M	2805	2.6		77.4	80	80.1	0.84	1.67	1.9	4.9	2.3	60	71	1MB10 1-0DA2	9	0.0008
1.1	1.27	80 M	2835	3.7		79.6	81.3	80.9	0.83	2.4	2.7	6	3.1	60	71	1MB10 1-0DA3	11	0.0011
1.5	1.75	90 S	2885	4.9		81.3	81.7	79.8	0.84	3.15	2.7	6.9	3.6	65	77	1MB10 1-0EA0	13	0.0017
2.2	2.55	90 L	2890	7.3		83.2	83.7	82	0.85	4.5	2.5	7.1	3.7	65	77	1MB10 1-0EA4	15	0.0021
3	3.45	100 L	2905	9.9		84.6	85.5	84.6	0.84	6.1	2.3	7	3.3	67	79	1MB10 1-1AA4	21	0.0044
4	4.55	112 M	2945	13		85.8	86.2	85.1	0.85	7.9	2.1	8	3.6	69	81	1MB10 1-1BA2	27	0.0092
5.5	6.3	132 S	2950	18		87	88	87.6	0.87	10.5	1.8	6.6	2.9	68	80	1MB10 1-1CA0	39	0.02
7.5	8.6	132 S	2950	24		88.1	88.5	87.6	0.87	14.1	2.2	7.5	3.1	68	80	1MB10 1-1CA1	43	0.024
11	12.6	160 M	2955	36		89.4	89.3	88	0.87	20.5	2.1	7.4	3.2	70	82	1MB10 1-1DA2	67	0.045
15	17.3	160 M	2955	48		90.3	90.7	90	0.88	27	2.4	7.6	3.4	70	82	1MB10 1-1DA3	75	0.053
18.5	21.3	160 L	2955	60		90.9	91.3	90.6	0.88	33.5	2.9	7.9	3.6	70	82	1MB10 1-1DA4	84	0.061
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																		
0.55	0.63	80 M	1440	3.6		77.1	76.8	73.7	0.74	1.39	2.2	5.3	3.1	53	64	1MB10 1-0DB2	10	0.0017
0.75	0.86	80 M	1440	5		79.6	79.9	77.5	0.76	1.79	2.2	5.6	3.1	53	64	1MB10 1-0DB3	11	0.0021
1.1	1.27	90 S	1425	7.4		81.4	81.8	80	0.78	2.5	2.3	5.6	2.9	56	68	1MB10 1-0EB0	13	0.0028
1.5	1.75	90 L	1435	10		82.8	83.5	82.2	0.79	3.3	2.6	6.4	3.4	56	68	1MB10 1-0EB4	16	0.0036
2.2	2.55	100 L	1455	14		84.3	85.1	84.2	0.81	4.65	2.1	6.9	3.3	60	72	1MB10 1-1AB4	21	0.0086
3	3.45	100 L	1455	20		85.5	86.4	85.6	0.82	6.2	2	6.9	3.1	60	72	1MB10 1-1AB5	25	0.011
4	4.55	112 M	1460	26		86.6	87.3	86.4	0.81	8.2	2.5	7.1	3.2	58	70	1MB10 1-1BB2	29	0.014
5.5	6.3	132 S	1465	36		87.7	88.4	87.6	0.8	11.3	2.3	6.9	2.9	64	76	1MB10 1-1CB0	42	0.027
7.5	8.6	132 M	1465	49		88.7	89.8	89.8	0.83	14.7	2.3	6.9	2.9	64	76	1MB10 1-1CB2	49	0.034
11	12.6	160 M	1470	71		89.8	91	90.9	0.85	21	2.1	6.7	2.8	65	77	1MB10 1-1DB3	71	0.065
15	17.3	160 L	1475	97		90.6	91.2	90.8	0.85	28	2.3	7.3	3	65	77	1MB10 1-1DB4	83	0.083
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages																		
Version													Order code					
50 Hz 230 VΔ/400 VY 60 Hz ¹⁾ 460 VY													Standard					
50 Hz 400 VΔ/690 VY 60 Hz ¹⁾ 460 VΔ													Standard					
50 Hz 500 VY													Without additional charge					
50 Hz 500 VΔ													Without additional charge					
For other voltages ¹⁾ and more information, see from page 5/51																		
Types of construction																		
Version													Order code					
Without flange IM B3 ²⁾													Standard					
With flange IM B5 ²⁾													With additional charge					
With flange IM B14 ²⁾													With additional charge					
For other types of construction and more information, see from page 5/56																		
Motor protection																		
Version													Order code					
Without													Standard					
3 temperature sensors (frame sizes 80, 90 or 100 to 200)													With additional charge					
For other motor protection and more information, see from page 5/68																		
Terminal box position																		
Version													Order code					
Terminal box at top													Standard					
For other terminal box positions and more information, see from page 5/73																		
Special versions																		
Version													Order code(s)					
For options, see from page 5/78																		
1MB10 1-...-Z...+...+...+...																		



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE2 High Efficiency



Aluminum series 1MB10 – self-ventilated

Selection and ordering data

Operating values at rated power														Aluminum series				
$P_{rated, 50 Hz}$	$P_{rated, 60 Hz}$	Frame size	$n_{rated, 50 Hz}$	$T_{rated, 50 Hz}$	Different IE class	$\eta_{rated, 50 Hz}$	$\eta_{rated, 50 Hz}$	$\eta_{rated, 50 Hz}$	$\cos\phi_{rated, 50 Hz}$	$I_{rated, 50 Hz}$	T_{LR}/I_{rated}	I_{LR}/I_{rated}	T_{β}/I_{rated}	$L_{p1A, 50 Hz}$	$L_{WA, 50 Hz}$	1MB1	m_{MB3}	J
kW	kW	FS	rpm	Nm		%	%	%		A						Article No.	kg	kgm ²
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE2 High Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																		
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																		
0.37	0.43	80 M	925	3.8		67.6	67.9	64.4	0.69	1.14	2.1	4	2.4	42	53	1MB10-1-0DC2	9	0.0017
0.55	0.63	80 M	935	5.6		73.1	73.8	70.8	0.66	1.65	2.5	4.4	2.9	42	53	1MB10-1-0DC3	12	0.0025
0.75	0.86	90 S	935	7.7		75.9	76.8	74.5	0.7	2.05	2	4.1	2.5	43	55	1MB10-1-0EC0	13	0.003
1.1	1.27	90 L	935	11	IE1	78.1	79.3	77.7	0.7	2.9	2.2	4.4	2.6	43	55	1MB10-1-0EC4	16	0.004
1.5	1.75	100 L	970	15		79.8	80.5	79	0.73	3.7	2	5.4	2.8	59	71	1MB10-1-1AC4	25	0.011
2.2	2.55	112 M	965	22		81.8	82.7	81.7	0.75	5.2	2	5	2.8	62	74	1MB10-1-1BC2	29	0.014
3	3.45	132 S	970	30		83.3	83.4	81	0.72	7.2	1.6	5	2.5	63	75	1MB10-1-1CC0	38	0.024
4	4.55	132 M	970	39		84.6	85.5	84.3	0.75	9.1	1.6	5	2.3	63	75	1MB10-1-1CC2	43	0.029
5.5	6.3	132 M	970	54		86	87.1	86.4	0.76	12.1	1.9	5.6	2.6	63	75	1MB10-1-1CC3	52	0.037
7.5	8.6	160 M	975	73		87.2	87.9	87.2	0.74	16.8	1.9	4.7	2.2	67	79	1MB10-1-1DC2	77	0.075
11	12.6	160 L	975	108		88.7	89.7	89.3	0.76	23.5	1.9	4.8	2.2	67	79	1MB10-1-1DC4	93	0.098
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																		
0.75	0.86	100 L	705	10		66.2	65.7	61.6	0.61	2.7	1.5	3.2	2.1	60	72	1MB10-1-1AD4	21	0.0086
1.1	1.27	100 L	695	15		70.8	72.3	69.6	0.65	3.45	1.4	3.2	1.9	60	72	1MB10-1-1AD5	25	0.011
1.5	1.75	112 M	725	20		74.1	73.9	71.2	0.63	4.65	1.6	4	2.4	63	75	1MB10-1-1BD2	34	0.017
2.2	2.55	132 S	725	29		77.6	78.2	76.6	0.62	6.6	1.4	3.5	2	63	75	1MB10-1-1CD0	46	0.034
3	3.45	132 M	720	40	IE1	80	80.7	79.2	0.62	8.7	1.4	3.7	2	63	75	1MB10-1-1CD2	52	0.037
4	4.55	160 M	730	52		81.9	82.6	81.4	0.67	10.5	1.6	3.7	1.9	63	75	1MB10-1-1DD2	69	0.065
5.5	6.3	160 M	730	72		83.8	84.2	83	0.67	14.1	1.7	3.9	2	63	75	1MB10-1-1DD3	82	0.083
7.5	8.6	160 L	725	99		85.3	86.4	86	0.7	18.1	1.6	3.8	1.9	63	75	1MB10-1-1DD4	94	0.098
Zones																		
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																		
Voltages																		
Version														Order code				
50 Hz 230 VΔ/400 VY														Standard				
60 Hz ¹⁾ 460 VY														2 2				
50 Hz 400 VΔ/690 VY														Standard				
60 Hz ¹⁾ 460 VΔ														3 4				
50 Hz 500 VY														Without additional charge				
50 Hz 500 VΔ														2 7				
Without additional charge														4 0				
Without additional charge														9 0				
Without additional charge														...				
For other voltages ¹⁾ and more information, see from page 5/51																		
Types of construction																		
Version														Order code				
Without flange IM B3 ²⁾														Standard				
With flange IM B5 ²⁾														A				
With flange IM B14 ²⁾														With additional charge				
With additional charge														K				
With additional charge														...				
For other types of construction and more information, see from page 5/56																		
Motor protection																		
Version														Order code				
Without														Standard				
3 temperature sensors (frame sizes 80, 90 or 100 to 200)														With additional charge				
With additional charge														A				
With additional charge														B				
For other motor protection and more information, see from page 5/68																		
Terminal box position																		
Version														Order code				
Terminal box at top														Standard				
Terminal box at top														4				
For other terminal box positions and more information, see from page 5/73																		
Special versions																		
Version														Order code(s)				
Special versions														1MB10-1-...-Z ...+...+...+...				
For options, see from page 5/78																		

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For footnotes, see page 5/40



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE2 High Efficiency

Cast-iron series 1MB15, 1MB16 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series		m _M B3	J								
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	Different IE class 60 Hz/P60	η _{rated} 50 Hz, 4/4	η _{rated} 50 Hz, 3/4	η _{rated} 50 Hz, 2/4	cos φ _{rated} 50 Hz, 4/4	I _{rated} 50 Hz, 400 V	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _B /I _{rated}	L _{ptA} 50 Hz	L _{WA} 50 Hz			Article No.	kg	kgm ²					
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)										
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE2 High Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																									
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																									
0.37	0.43	71 M	2770	1.3		69.5	70.5	67.9	0.81	0.95	2.5	4.1	2.5	58	63	1MB1 5 1-0CA2	11.5	0.00035							
0.55	0.63	71 M	2780	1.9		74.1	75.2	72.9	0.8	1.34	2.6	4.6	2.6	58	63	1MB1 5 1-0CA3	13	0.00045							
0.75	0.86	80 M	2805	2.6		77.4	80	80.1	0.84	1.67	1.9	4.9	2.3	60	71	1MB1 5 1-0DA2	16	0.0008							
1.1	1.27	80 M	2835	3.7		79.6	81.3	80.9	0.83	2.4	2.7	6	3.1	60	71	1MB1 5 1-0DA3	18	0.0011							
1.5	1.75	90 S	2885	4.9		81.3	81.7	79.8	0.84	3.15	2.7	6.9	3.6	65	77	1MB1 5 1-0EA0	23	0.0017							
2.2	2.55	90 L	2890	7.3		83.2	83.7	82	0.85	4.5	2.5	7.1	3.7	65	77	1MB1 5 1-0EA4	25.5	0.0021							
3	3.45	100 L	2905	9.9		84.6	85.5	84.6	0.84	6.1	2.3	7	3.3	67	79	1MB1 1-1AA4	32	0.0044							
4	4.55	112 M	2945	13		85.8	86.2	85.1	0.85	7.9	2.1	8	3.6	69	81	1MB1 1-1BA2	39	0.0092							
5.5	6.3	132 S	2950	18		87	88	87.6	0.87	10.5	1.8	6.6	2.9	68	80	1MB1 1-1CA0	57	0.02							
7.5	8.6	132 S	2950	24		88.1	88.5	87.6	0.87	14.1	2.2	7.5	3.1	68	80	1MB1 1-1CA1	61	0.024							
11	12.6	160 M	2955	36		89.4	89.3	88	0.87	20.5	2.1	7.4	3.2	70	82	1MB1 1-1DA2	96	0.045							
15	17.3	160 M	2955	48		90.3	90.7	90	0.88	27	2.4	7.6	3.4	70	82	1MB1 1-1DA3	104	0.053							
18.5	21.3	160 L	2955	60		90.9	91.3	90.6	0.88	33.5	2.9	7.9	3.6	70	82	1MB1 1-1DA4	113	0.061							
22	24.5	180 M	2940	71		91.3	91.6	90.9	0.87	40	2.7	7.4	3.6	77	84	1MB1 1-1EA2	145	0.069							
30	33.5	200 L	2960	97		92	92.1	91.5	0.87	54	2.5	6.9	3.3	78	85	1MB1 1-2AA4	200	0.13							
37	41.5	200 L	2960	119		92.5	92.7	92.1	0.88	66	2.7	7.4	3.5	78	85	1MB1 1-2AA5	225	0.15							
45	51	225 M	2965	145		92.9	93.1	92.5	0.88	79	2.7	7.8	3.7	76	89	1MB1 1-2BA2	295	0.23							
55	62	250 M	2970	177		93.2	93.3	92.4	0.88	97	2.3	6.8	3.1	76	89	1MB1 1-2CA2	360	0.4							
75	84	280 S	2978	240		93.8	93.6	92.4	0.86	134	2.5	7.2	3.2	76	89	1MB1 1-2DA0	490	0.71							
90	101	280 M	2975	289		94.1	94.2	93.5	0.88	157	2.5	7.1	3.1	76	89	1MB1 1-2DA2	530	0.83							
110	123	315 S	2982	352		94.3	94.2	93.3	0.9	187	2.4	7.3	3	77	91	1MB1 1-3AA0	720	1.3							
132	148	315 M	2982	423		94.6	94.7	94.1	0.91	220	2.4	7.2	3.1	77	91	1MB1 1-3AA2	880	1.6							
160	180	315 L	2982	512		94.8	94.9	94.3	0.92	265	2.3	7	3.1	80	95	1MB1 1-3AA4	930	1.8							
200	224	315 L	2982	640		95	95.2	94.8	0.92	330	2.5	7.3	3	80	95	1MB1 1-3AA5	1130	2.2							
Basic Line																	5								
Performance Line																	6								
Zones																		1							
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																		2							
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																		3							
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																									
Voltages ³⁾																									
50 Hz 230 VΔ/400 VY																			2	2		Order code			
60 Hz ¹⁾ 460 VY																						Standard			
50 Hz 400 VΔ/690 VY																				3	4	Order code			
60 Hz ¹⁾ 460 VΔ																						Standard			
50 Hz 500 VY																					2	7	Order code		
50 Hz 500 VΔ																					4	0	Order code		
For other voltages ¹⁾ and more information, see from page 5/52																						9	0	Order code	
...																							...		
Types of construction																									
Without flange IM B3 ²⁾																							A	Order code	
With flange IM B5 ²⁾																							F	Order code	
With flange IM B14 ²⁾																							K	Order code	
For other types of construction and more information, see from page 5/59																								...	
Motor protection																									
Without																								A	Order code
PTC thermistor with 3 temperature sensors																								B	Order code
Basic Line																								B	Order code
Performance Line																								B	Order code
For other motor protection and more information, see from page 5/69																									
Terminal box position																									
Terminal box at top																								4	Order code(s)
For other terminal box positions and more information, see from page 5/74																									
Special versions																									
For options, see from page 5/82																									Order code(s)
1MB1 1-...-Z-...+...+...+...																									



For footnotes, see page 5/40

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE2 High Efficiency



Cast-iron series 1MB15, 1MB16 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series					
P_{rated} 50 Hz	P_{rated} 60 Hz	Frame size	n_{rated} 50 Hz	T_{rated} 50 Hz	Different IE class	η_{rated} 50 Hz	η_{rated} 50 Hz	η_{rated} 50 Hz	$\cos\phi_{rated}$ 50 Hz	I_{rated} 50 Hz	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pA} 50 Hz	L_{WA} 50 Hz	1MB15.1 – Basic Line	1MB16.1 – Performance Line	$\eta_{IM B3}$	J
kW	kW	FS	rpm	Nm		%	%	%		A						Article No.		kg	kgm ²
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE2 High Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																			
0.09	0.11	71 M	630	1.4	4)	40.1	40.6	35.8	0.67	0.50	1.7	1.6	1.7	59	63	1MB1 5 1-1-0CD2	-	11.5	0.00077
0.12	0.14	71 M	640	1.8		40.1	39.6	34.7	0.66	0.65	1.8	1.8	1.8	48	59	1MB1 5 1-1-0CD3	-	12.5	0.00100
0.18	0.21	80 M	690	2.5		45.9	43.6	37.8	0.60	0.93	1.7	2.2	2.1	51	62	1MB1 5 1-1-0DD2	-	16.5	0.00175
0.25	0.29	80 M	705	3.4		50.6	48.1	41.9	0.55	1.30	2.0	2.5	2.5	51	62	1MB1 5 1-1-0DD3	-	18.5	0.00246
0.37	0.43	90 S	675	5.2		56.1	55.6	49.6	0.71	1.34	1.4	2.6	1.7	53	65	1MB1 5 1-1-0ED0	-	20	0.00225
0.55	0.63	90 L	665	7.9		61.7	63.4	59.8	0.74	1.74	1.5	2.7	1.7	53	65	1MB1 5 1-1-0ED4	-	21.5	0.00305
0.75	0.86	100 L	705	10		66.2	65.7	61.6	0.61	2.7	1.5	3.2	2.1	60	72	1MB1 1-1-1AD4	-	32	0.0086
1.1	1.27	100 L	695	15		70.8	72.3	69.6	0.65	3.45	1.4	3.2	1.9	60	72	1MB1 1-1-1AD5	-	36	0.011
1.5	1.75	112 M	725	20		74.1	73.9	71.2	0.63	4.65	1.6	4	2.4	63	72	1MB1 1-1-1BD2	-	53	0.017
2.2	2.55	132 S	725	29		77.6	78.2	76.6	0.62	6.6	1.4	3.5	2	63	75	1MB1 1-1-1CD0	-	64	0.034
3	3.45	132 M	720	40	IE1	80	80.7	79.2	0.62	8.7	1.4	3.7	2	63	75	1MB1 1-1-1CD2	-	67	0.037
4	4.55	160 M	730	52		81.9	82.6	81.4	0.67	10.5	1.6	3.7	1.9	63	75	1MB1 1-1-1DD2	-	98	0.065
5.5	6.3	160 M	730	72		83.8	84.2	83	0.67	14.1	1.7	3.9	2	63	75	1MB1 1-1-1DD3	-	111	0.083
7.5	8.6	160 L	725	99		85.3	86.4	86	0.7	18.1	1.6	3.8	1.9	63	75	1MB1 1-1-1DD4	-	123	0.098
11	13.2	180 L	720	146	IE1	86.9	88	87.6	0.7	26	2.3	4.9	2.6	72	75	1MB1 1-1-1ED4	-	155	0.195
15	18	200 L	718	199		88	89.5	89.9	0.76	32.5	2.4	5.4	2.8	58	80	1MB1 1-1-2AD5	-	220	0.344
18.5	22	225 S	730	242	IE1	89	89.9	89.5	0.78	38.5	2.2	5.4	2.7	59	72	1MB1 1-1-2BD0	-	250	0.43
22	26.5	225 M	730	288		90.3	91.3	91.1	0.8	44	2.3	5.5	2.7	58	71	1MB1 1-1-2BD2	-	270	0.5
30	36	250 M	732	391		91.3	92.2	92	0.8	59	2.4	5.6	2.7	60	73	1MB1 1-1-2CD2	-	370	0.86
37	44.5	280 S	736	480		91.9	92.5	92.1	0.78	75	2.3	5.4	2.4	63	77	1MB1 1-1-2DD0	-	460	1.1
45	54	280 M	738	582		92.4	92.8	92.4	0.79	89	2.5	5.7	2.5	66	80	1MB1 1-1-2DD2	-	510	1.4
55	66	315 S	740	710		92.9	93.3	92.9	0.8	107	2.2	5.8	2.6	69	83	1MB1 1-1-3AD0	-	640	2
75	90	315 M	738	970		93.5	94.4	94.5	0.81	143	2.3	5.9	2.7	69	84	1MB1 1-1-3AD2	-	720	2.5
90	108	315 L	740	1161		93.5	94.3	94.4	0.83	167	2.2	5.8	2.5	69	84	1MB1 1-1-3AD4	-	860	3.1
110	132	315 L	740	1419		94.2	95	95.1	0.82	205	2.7	6.7	2.9	74	88	1MB1 1-1-3AD5	-	980	3.9
132	158	315 L	740	1703		94.4	94.8	94.4	0.81	250	2.9	7.2	3.3	76	90	1MB1 1-1-3AD6	-	1070	4.5

Basic Line	5
Performance Line	6
Zones	
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC	1
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB	2
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC	3
Voltages ³⁾	
50 Hz 230 VΔ/400 VY	2 2
50 Hz 400 VΔ/690 VY	3 4
50 Hz 500 VY	2 7
50 Hz 500 VΔ	4 0
For other voltages ¹⁾ and more information, see from page 5/52	9 0
Types of construction	
Without flange IM B3 ²⁾	A
With flange IM B5 ²⁾	F
With flange IM B14 ²⁾	K
For other types of construction and more information, see from page 5/59	
Motor protection	
Without	Only possible for Basic Line
PTC thermistor with 3 temperature sensors	Basic Line
	Performance Line
For other motor protection and more information, see from page 5/69	
Terminal box position	
Terminal box at top	Standard
For other terminal box positions and more information, see from page 5/74	
Special versions	
For options, see from page 5/82	

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For footnotes, see page 5/40



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE1 Standard Efficiency

Aluminum series 1MB10 – self-ventilated

Selection and ordering data

Operating values at rated power													Aluminum series		m _{IM B3}	J					
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	η _{rated} 50 Hz, 4/4	η _{rated} 50 Hz, 3/4	η _{rated} 50 Hz, 2/4	COSφ _{rated} 50 Hz, 4/4	I _{rated} 50 Hz, 400 V	T _{LR} / T _{rated}	I _{LR} / I _{rated}	T _P / T _{rated}	L _{pIA} 50 Hz	L _{WA} 50 Hz			1MB1	Article No.	kg	kgm ²	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE1 Standard Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																					
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																					
3	3.45	100 L	2835	10	81.5	83.2	82.8	0.87	6.1	3.2	6.4	3.5	67	79	1MB10-2-1AA4	-	20	0.0034			
4	4.55	112 M	2935	13	83.1	83	80.8	0.85	8.2	3.3	8.3	4.2	69	81	1MB10-2-1BA2	-	25	0.0067			
5.5	6.3	132 S	2910	18	84.7	85.9	85.7	0.88	10.7	1.8	5.7	2.6	68	80	1MB10-2-1CA0	-	35	0.013			
7.5	8.6	132 S	2925	24	86	86.7	86.1	0.88	14.3	2.2	6.8	3.1	68	80	1MB10-2-1CA1	-	40	0.016			
11	12.6	160 M	2925	36	87.6	88	87.1	0.86	21	2	5.7	2.7	70	82	1MB10-2-1DA2	-	60	0.03			
15	17.3	160 M	2935	49	88.7	88.9	87.7	0.85	28.5	2.4	6.8	3.2	70	82	1MB10-2-1DA3	-	68	0.036			
18.5	21.3	160 L	2935	60	89.3	89.7	89.3	0.87	34.5	2.7	7.6	3.4	70	82	1MB10-2-1DA4	-	78	0.044			
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																					
2.2	2.55	100 L	1425	15	79.7	80.3	78.1	0.81	4.9	2.3	5.1	2.7	60	72	1MB10-2-1AB4	-	18	0.0059			
3	3.45	100 L	1425	20	81.5	82.6	81.5	0.85	6.3	2.4	5.4	2.6	60	72	1MB10-2-1AB5	-	22	0.0078			
4	4.55	112 M	1435	27	83.1	84.3	83.7	0.83	8.4	2.5	6.1	2.9	58	70	1MB10-2-1BB2	-	27	0.010			
5.5	6.3	132 S	1450	36	84.7	85.3	84.2	0.82	11.4	2.3	5.7	2.7	64	76	1MB10-2-1CB0	-	38	0.019			
7.5	8.6	132 M	1450	49	86	86.5	85.4	0.82	15.4	2.6	6.6	3.1	64	76	1MB10-2-1CB2	-	44	0.024			
11	12.6	160 M	1460	72	87.6	87.9	86.7	0.81	22.5	2.7	6.9	3.3	65	77	1MB10-2-1DB2	-	62	0.044			
15	17.3	160 L	1460	98	88.7	89.1	88	0.82	30	3	7.5	3.6	65	77	1MB10-2-1DB4	-	73	0.056			
Zones																					
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																					
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																					
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																					
Voltages																					
Version													Order code								
50 Hz 230 VΔ/400 VY			60 Hz ¹⁾ 460 VY			Standard													2	2	-
50 Hz 400 VΔ/690 VY			60 Hz ¹⁾ 460 VΔ			Standard													3	4	-
50 Hz 500 VY						Without additional charge													2	7	-
50 Hz 500 VΔ						Without additional charge													4	0	-
For other voltages ¹⁾ and more information, see from page 5/51																					
Types of construction																					
Version													Order code								
Without flange			IM B3 ²⁾			Standard													A	-	
With flange			IM B5 ²⁾			With additional charge													F	-	
With flange			IM B14 ²⁾			With additional charge													K	-	
For other types of construction and more information, see from page 5/56																					
Motor protection																					
Version													Order code								
Without						Standard													A	-	
PTC thermistor with 3 temperature sensors						With additional charge													B	-	
For other motor protection and more information, see from page 5/68																					
Terminal box position																					
Version													Order code								
Terminal box at top						Standard													4	-	
For other terminal box positions and more information, see from page 5/73																					
Special versions																					
Version																Order code(s)					
For options, see from page 5/78																1MB10-2-...-Z ...+...+...+...					





SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zones 21, 22, and 2 with types of protection Ex tb, Ex tc, Ex ec · IE1 Standard Efficiency

Aluminum series 1MB10 – self-ventilated

Selection and ordering data

Operating values at rated power														Aluminum series			
$P_{rated, 50 Hz}$	$P_{rated, 60 Hz}$	Frame size	$n_{rated, 50 Hz}$	$T_{rated, 50 Hz}$	$\eta_{rated, 50 Hz, 4/4}$	$\eta_{rated, 50 Hz, 3/4}$	$\eta_{rated, 50 Hz, 2/4}$	$\cos\phi_{rated, 50 Hz, 4/4}$	$I_{rated, 50 Hz, 400 V}$	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	$L_{pIA, 50 Hz}$	$L_{WA, 50 Hz}$	1MB1	$m_{IM B3}$	J
kW	kW	FS	rpm	Nm	%	%	%		A				dB(A)	dB(A)	Article No.	kg	kgm ²
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE1 Standard Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																	
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																	
1.5	1.75	100 L	940	15	75.2	75.6	72.3	0.74	3.9	2	4	2.2	59	71	1MB10 2-1AC4	19	0.0065
2.2	2.55	112 M	940	22	77.7	78.5	76.3	0.72	5.7	2.6	4.6	2.7	57	69	1MB10 2-1BC2	25	0.0092
3	3.45	132 S	955	30	79.7	79.9	77.1	0.74	7.3	2	4.6	2.6	63	75	1MB10 2-1CC0	34	0.017
4	4.55	132 M	955	40	81.4	82.6	81.9	0.76	9.3	2.3	5.2	2.6	63	75	1MB10 2-1CC2	39	0.021
5.5	6.3	132 M	955	55	83.1	84	83	0.75	12.7	2.7	5.7	3	63	75	1MB10 2-1CC3	48	0.027
7.5	8.6	160 M	970	74	84.7	84.8	83.2	0.73	17.5	2.1	5.5	2.9	67	79	1MB10 2-1DC2	72	0.056
11	12.6	160 L	965	109	86.4	86.8	85.9	0.77	24	1.9	5.9	2.7	67	79	1MB10 2-1DC4	92	0.078
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																	
0.75	0.86	100 L	705	10	61.2	58.1	50.5	0.62	2.85	1.9	3	2.2	60	72	1MB10 2-1AD4	17	0.0056
1.1	1.27	100 L	690	15	66.5	66	61.8	0.61	3.9	2	3.2	2.3	60	72	1MB10 2-1AD5	22	0.0078
1.5	1.75	112 M	700	20	70.2	71.1	68.7	0.66	4.65	1.9	3.5	2.1	63	75	1MB10 2-1BD2	29	0.0094
2.2	2.55	132 S	715	29	74.2	74.1	71.4	0.66	6.5	1.7	3.9	2.4	63	75	1MB10 2-1CD0	37	0.019
3	3.45	132 M	715	40	77	77.4	75.2	0.68	8.3	1.8	3.9	2.2	63	75	1MB10 2-1CD2	44	0.024
4	4.55	160 M	720	53	79.2	79.3	76.3	0.67	10.9	1.6	4.1	2.3	63	75	1MB10 2-1DD2	60	0.044
5.5	6.3	160 M	720	73	81.4	81.9	80.3	0.68	14.3	1.6	4	2.2	63	75	1MB10 2-1DD3	72	0.056
7.5	8.6	160 L	715	100	83.1	83.7	82.4	0.69	18.9	1.7	3.8	2.2	63	75	1MB10 2-1DD4	91	0.077
Zones																	
Zone 21 (conductive and non-conductive dust occasionally) Ex tb IIIC																	
Zone 22 (non-conductive dust rarely or for a short period) Ex tc IIIB																	
Zone 2 (explosive gases rarely or for a short period) Ex ec IIC																	
Voltages																	
Version														Order code			
50 Hz 230 VΔ/400 VY														Standard		2 2	-
50 Hz 400 VΔ/690 VY														Standard		3 4	-
50 Hz 500 VY														Without additional charge		2 7	-
50 Hz 500 VΔ														Without additional charge		4 0	-
For other voltages ¹⁾ and more information, see from page 5/51																9 0	...
Types of construction																	
Version														Order code			
Without flange IM B3 ²⁾														Standard		A	-
With flange IM B5 ²⁾														With additional charge		F	-
With flange IM B14 ²⁾														With additional charge		K	-
For other types of construction and more information, see from page 5/56																	...
Motor protection																	
Version														Order code			
Without														Standard		A	-
PTC thermistor with 3 temperature sensors														With additional charge		B	-
For other motor protection and more information, see from page 5/68																	
Terminal box position																	
Version														Order code			
Terminal box at top														Standard		4	-
For other terminal box positions and more information, see from page 5/73																	
Special versions																	
Version														Order code(s)			
For options, see from page 5/78														1MB10 2-... -Z		...+...+...+...	

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¹⁾ Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and engineering").
²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) or stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. For orders with condensation drainage holes (H03), the type must be specified.

³⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (order code R52) or a larger terminal box (order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.
⁴⁾ No IE class for 50 and 60 Hz because the motor is outside the validity for the efficiency classes according to IEC 60034-30-1:2014.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency

Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} 50 Hz	Tem- perature class	Frame size	Operating values at rated power											L _{p(A)} 50 Hz	L _{WA} 50 Hz	m _{IM B3} J				
			η _{rated} 50 Hz	T _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	cos φ _{rated} 50 Hz	I _{rated} 50 Hz	I _L /I _{rated} 50 Hz	I _B /I _{rated} 50 Hz	t _E T1/T2				t _E T3			
kW	FS	rpm	Nm	%	%	%	A										kg	kgm ²		
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																				
2-pole: 3000 rpm at 50 Hz, temperature classes T1 to T3																				
0.37	T1, T2, T3	71 M	2775	1,3	73,8	74,4	72,4	0,83	0,91	2,7	5	2,7	42	37	63	70 ²⁾	▲ 1MB1 5 43-0CA2	13	0,00045	
0.55	T1, T2, T3	71 M	2845	1,8	77,8	77	73,8	0,76	1,33	3,9	6,7	3,8	25	22	63	70 ²⁾	▲ 1MB1 5 43-0CA3	15	0,00056	
0.75	T1, T2, T3	80 M	2840	2,5	80,7	81,7	80,8	0,86	1,7	2,6	5,7	2,8	22	19	64	71 ²⁾	▲ 1MB1 5 43-0DA2	18	0,0011	
1.1	T1, T2, T3	80 M	2845	3,7	82,7	83,7	82,7	0,85	2,4	3,1	6,7	3,2	22	14	65	73 ²⁾	▲ 1MB1 5 43-0DA3	21	0,0013	
1.3	T1, T2, T3	90 S	2900	4,3	83,5	84,2	83	0,89	2,7	2,7	7,4	3,4	9	8	68	75	▲ 1MB1 5 43-0EA0	26	0,0021	
1.85	T1, T2, T3	90 L	2890	6,1	85,1	86	85,9	0,92	3,7	2,7	7,8	3,2	8	7	68	75	▲ 1MB1 5 43-0EA4	32	0,0031	
2.5	T1, T2, T3	100 L	2895	8,2	86,4	87,5	86,9	0,92	4,9	2,7	7,7	3,3	10	9	68	75	▲ 1MB1 5 43-1AA4	37	0,0054	
3.3	T1, T2, T3	112 M	2940	10,7	87,4	87,6	87,3	0,92	6,5	1,9	7,3	2,9	10	9	70	77	▲ 1MB1 5 43-1BA2	43	0,012	
4.6	T1, T2, T3	132 S	2950	15	88,6	89,8	90,1	0,91	8,7	1,7	7,5	3,1	16	13	72	79	▲ 1MB1 5 43-1CA0	61	0,024	
5.5	T3	132 S	2950	18	89,2	90,3	90,4	0,93	10,2	1,9	7,7	3	16	14	72	79	▲ 1MB1 5 43-1CA1	75	0,031	
7.5	T3	160 M	2955	24	90,1	90,2	88,6	0,9	13,7	2,3	8,2	3,2	37	21	78	85 ²⁾	▲ 1MB1 5 43-1DA2	100	0,053	
10	T3	160 M	2955	32,5	90,9	91,1	90,6	0,91	18	2,3	8	3,1	29	15	78	85 ²⁾	▲ 1MB1 5 43-1DA3	110	0,061	
12.5	T3	160 M	2945	40,5	91,5	91,9	91,7	0,92	22,5	2,2	7,6	2,8	26	13	78	85 ²⁾	▲ 1MB1 5 43-1DA4	125	0,068	
15	T3	180 M	2955	48,5	91,9	92,3	91,2	0,89	27,5	2,6	8,3	3,6	21	8	74	81	▲ 1MB1 5 43-1EA2	165	0,08	
20	T3	200 L	2970	64	92,5	92,7	91,7	0,84	38	1,9	7	3,1	42	7 ³⁾	76	83	▲ 1MB1 5 43-2AA4	220	0,12	
24	T3	200 L	2970	77	92,9	93,1	92,8	0,86	44,5	2	7,1	3	39	11	75	82	▲ 1MB1 5 43-2AA5	245	0,15	
28	T3	225 M	2960	90	93,2	93,7	93,5	0,9	52	2,4	5,9	2,6	30	11	76	90	▲ 1MB1 5 43-2BA2	330	0,266	
36	T3	250 M	2975	116	93,7	93,8	93,1	0,91	65	2,4	6,2	2,7	35	17	75	88	▲ 1MB1 5 43-2CA2	420	0,466	
47	T3	280 S	2975	151	94,1	94,2	93,5	0,9	84	2,7	6,4	2,6	21	9	75	89	▲ 1MB1 5 43-2DA0	530	0,826	
58	T3	280 M	2975	186	94,4	94,5	94	0,91	103	2,6	6,5	2,6	20	8 ³⁾	75	89	▲ 1MB1 5 43-2DA2	620	0,934	
68	T3	315 S	2982	220	94,6	94,6	93,8	0,92	119	2,2	6,6	2,8	33	15	75	89	▲ 1MB5 43-3AA0	950	1,67	
80	T3	315 M	2982	255	94,8	94,9	94,3	0,93	140	2,2	6,4	2,6	28	15	75	89	▲ 1MB5 43-3AA2	1020	1,95	
100	T3	315 L	2982	320	95,1	95,1	94,6	0,93	172	2,4	6,7	2,7	23	10	75	89	▲ 1MB5 43-3AA4	1190	2,32	
125	T3	315 L	2980	400	95,3	95,4	94,9	0,92	215	2,3	6,6	2,7	19	10	76	91	▲ 1MB5 43-3AA5	1210	2,34	
Basic Line																	5			
Performance Line																	6			
Voltagess																				
Version																			Order code	
50 Hz 230 VΔ/400 VY 60 Hz 460 VY																		2	2	-
50 Hz 400 VΔ/690 VY 60 Hz 460 VΔ																		3	4	-
50 Hz 500 VY																		2	7	-
50 Hz 500 VΔ																		4	0	-
For other voltagess and more information, see from page 5/53																		9	0	...
Types of construction																				
Version																			Order code	
Without flange IM B3 ⁴⁾																			A	-
With flange IM B5 ⁴⁾																			F	-
With flange IM B14 ⁴⁾																			K	-
For other types of construction and more information, see from page 5/62																			...	
Motor protection																				
Version																				
Without																			A	-
PTC thermistor with 3 temperature sensors																			B	-
For other motor protection and more information, see from page 5/70																			...	
Terminal box position																				
Version																				
Terminal box at top																			4	-
For other terminal box positions and more information, see from page 5/75																			...	
Special versions																				
Version																				
For options, see from page 5/87																			Order code(s)	
1MB 43-... -Z...+...+...																				

1) Noise values for line operation under load, tolerance + 3dB(A).

2) These sound power levels are above the set values in the VIK recommendation in the "standard" version. This difference must be agreed between the manufacturer and the operator.

3) The t_E time T3 of
 - 1MB1543-2AA4 at 7s is below the set value of 7,8 s
 - 1MB1543-2DA2 at 8 s is below the set values of 8,6 s
 from the VIK recommendation. This difference must be agreed between the manufacturer and the operator.

4) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency



Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} , 50 Hz kW	Tem- pera- ture class	Frame size	Operating values at rated power													Cast-iron series		m _{IM B3} J		
			η _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	η _{rated} , 50 Hz, 4/4	cos φ _{rated} , 50 Hz, 400 V	I _{rated} , 50 Hz	T _{Lr} /I _{rated} , 50 Hz	I _{Lr} /I _{rated} , 50 Hz	T _B /I _{rated} , 50 Hz	t _E , 50 Hz, T1/T2	t _E , 50 Hz, T3	L _{ptA} , 50 Hz	L _{WA} , 50 Hz		Article No.	
FS	rpm	Nm	%	%	%	A											▲ New	kg	kgm ²	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																				
2-pole: 3000 rpm at 50 Hz, temperature classes T1 and T2 with second rating plate (T1/T2 and T3)																				
6,5 ²⁾	T1, T2	132 S	2930	21	87.6	88.8	90.1	0.93	12.2	1.6	6.5	2.5	13	-	72	79	▲ 1MB1 43-1CA1	75	0.031	
9.5	T1, T2	160 M	2935	31	90.8	91.4	91.6	0.91	17.4	1.8	6.4	2.5	32	-	78	85 ³⁾	▲ 1MB1 43-1DA2	100	0.053	
13 ²⁾	T1, T2	160 M	2925	42,5	89.9	90.9	91.4	0.92	23.5	1.8	6.1	2.4	22	-	78	85 ³⁾	▲ 1MB1 43-1DA3	110	0.061	
16 ²⁾	T1, T2	160 L	2910	53	90.5	91.9	92.4	0.92	29.5	1.7	5.8	2.2	17	-	78	85 ³⁾	▲ 1MB1 43-1DA4	125	0.068	
19	T1, T2	180 M	2935	62	92.4	93.1	92.9	0.91	34.5	2.0	6.6	2.8	16	-	74	81	▲ 1MB1 43-1EA2	165	0.08	
25	T1, T2	200 L	2955	81	93.0	93.7	94.0	0.86	46.5	1.5	5.7	2.5	21	-	76	83	▲ 1MB1 43-2AA4	220	0.12	
31	T1, T2	200 L	2950	100	93.4	93.9	94.2	0.88	57	1.5	5.4	2.3	23	-	75	82	▲ 1MB1 43-2AA5	245	0.15	
Basic Line 5 Performance Line 6																				
Voltages																	Version		Order code	
50 Hz 230 VΔ/400 VY			60 Hz 460 VY														Standard		2 2	-
50 Hz 400 VΔ/690 VY			60 Hz 460 VΔ														Standard		3 4	-
50 Hz 500 VY																	Without additional charge		2 7	-
50 Hz 500 VΔ																	Without additional charge		4 0	-
For other voltages and more information, see from page 5/53																			9 0	...
Types of construction																	Version		Order code	
Without flange			IM B3 ⁴⁾														Standard		A	-
With flange			IM B5 ⁴⁾														With additional charge		F	-
With flange			IM B14 ⁴⁾														With additional charge		K	-
For other types of construction and more information, see from page 5/62																			...	
Motor protection																	Version		Order code	
Without																	Standard		A	-
PTC thermistor with 3 temperature sensors																	With additional charge		B	-
For other motor protection and more information, see from page 5/70																			...	
Terminal box position																	Version		Order code	
Terminal box at top																	Standard		4	-
For other terminal box positions and more information, see from page 5/75																			...	
Special versions																			Order code(s)	
For options, see from page 5/87																			1MB1 43-... -Z...+...+...	

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1) Noise values for line operation under load, tolerance + 3dB(A).

2) Only complies with efficiency classification IE2.

3) These sound power levels are above the set values in the VIK recommendation in the "standard" version. This difference must be agreed between the manufacturer and the operator.

4) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency

Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} , 50 Hz	Tem- perature class	Frame size	Operating values at rated power											Cast-iron series	m _{IM B3} J				
			η _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cosφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	I _{Lr} /I _{rated}	I _{Lr} /I _{rated}	T _B /I _{rated}	t _E , 50 Hz, T1/T2			t _E , 50 Hz, T3	L _{pA} , 50 Hz	L _{WA} , 50 Hz	
kW	FS	rpm	Nm	%	%	%	A										▲ New	kg	kgm ²
• Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																			
4-pole: 1500 rpm at 50 Hz, temperature classes T1 to T3																			
0.25	T1, T2, T3	71 M	1385	1.72	73.5	72.7	68.3	0.72	0.75	2.4	4.1	2.6	73	65	59	66 ³⁾	▲ 1MB1 5 43-0CB2	13	0.00095
0.37	T1, T2, T3	71 M	1400	2.5	77.3	76.7	73	0.7	1.02	3.3	4.9	3.1	66	59	56	63 ³⁾	▲ 1MB1 5 43-0CB3	16	0.0014
0.55	T1, T2, T3	80 M	1435	3.7	80.8	80.7	77.7	0.77	1.37	2.2	5.4	2.8	34	30	57	64 ³⁾	▲ 1MB1 5 43-0DB2	18	0.0021
0.75	T1, T2, T3	80 M	1440	4.95	82.5	82.6	80.8	0.76	1.8	2.7	6.4	3.2	28	25	60	67 ³⁾	▲ 1MB1 5 43-0DB3	22	0.0029
1	T1, T2, T3	90 S	1435	6.7	83.7	84.3	82.8	0.78	2.3	3	6.7	3.4	35	31	57	64 ³⁾	▲ 1MB1 5 43-0EB0	25	0.0036
1.35	T1, T2, T3	90 L	1440	9	84.9	85.1	83.7	0.78	3.05	3	7	3.6	30	27	62	69 ³⁾	▲ 1MB1 5 43-0EB4	31	0.0049
2	T1, T2, T3	100 L	1455	13.1	86.3	86.7	86	0.85	4	2.4	7.7	3.3	28	25	61	68	▲ 1MB1 43-1AB4	40	0.014
2.5	T1, T2, T3	100 L	1455	16	87.1	88.1	87.6	0.85	5.1	2.4	7.9	3.2	18	16	63	70 ³⁾	▲ 1MB1 43-1AB5	40	0.014
3.6	T1, T2, T3	112 M	1460	24	88.3	88.8	88	0.83	7.3	2.2	8	3.4	14	13	59	66	▲ 1MB1 43-1BB2	43	0.017
5	T1, T2, T3	132 S	1470	32	89.3	90.1	89.8	0.84	9.8	2.1	7.5	3	27	23	62	69	▲ 1MB1 43-1CB0	67	0.034
6.8	T1, T2, T3	132 M	1470	44	90.2	90.7	90.4	0.84	13.4	2.2	7.7	3.1	26	23	66	73	▲ 1MB1 43-1CB2	82	0.046
10	T1, T2, T3	160 M	1475	65	91.2	91.6	90.9	0.84	19.6	1.7	6.6	2.8	28	21	66	73	▲ 1MB1 43-1DB2	110	0.083
13.5	T1, T2, T3	160 L	1475	87	91.9	92.1	91.4	0.84	26.5	2.7	7.4	3.1	23	11	66	73	▲ 1MB1 43-1DB4	130	0.099
15	T3	180 M	1470	97	92.1	92.5	92.5	0.82	30	2.4	7.6	3.4	22	8	67	74	▲ 1MB1 43-1EB2	165	0.13
17.5	T3	180 L	1470	114	92.5	93	93	0.83	34.5	2.3	7.5	3.3	23	7 ²⁾	69	76	▲ 1MB1 43-1EB4	180	0.14
24	T3	200 L	1475	155	93.1	93.4	93	0.84	46.5	2.4	7.6	3.3	20	6 ²⁾	65	72	▲ 1MB1 43-2AB5	240	0.22
30	T3	225 S	1485	193	93.6	93.7	93.1	0.84	57	3	7.3	3.1	32	13	66	79	▲ 1MB1 43-2BB0	300	0.417
36	T3	225 M	1482	230	93.9	94.3	94.2	0.85	67	3	7.1	2.9	31	11	66	79	▲ 1MB1 43-2BB2	370	0.545
44	T3	250 M	1486	285	94.2	94.5	94.2	0.86	80	3.1	7.6	3.1	37	18	69	83	▲ 1MB1 43-2CB2	480	0.975
58	T3	280 S	1488	370	94.6	94.8	94.3	0.87	106	2.8	7.2	3	45	20	68	82	▲ 1MB1 43-2DB0	680	1.7
70	T3	280 M	1490	450	94.9	95.1	94.9	0.86	129	3.1	7.6	2.9	29	13	69	83	▲ 1MB1 43-2DB2	670	1.61
84	T3	315 S	1492	540	95.1	95.1	94.6	0.85	156	2.2	7.1	2.8	22	9	69	84	▲ 1MB5 43-3AB0	900	2.38
100	T3	315 M	1491	640	95.3	95.4	94.9	0.86	184	2.2	7	2.7	33	16	70	85	▲ 1MB5 43-3AB2	980	2.88
115	T3	315 L	1492	740	95.5	95.5	95	0.85	215	2.5	7.1	3	35	15	72	86	▲ 1MB5 43-3AB4	1110	3.18
135	T3	315 L	1492	860	95.7	95.8	95.3	0.85	250	2.4	7.1	2.9	22	9	70	85	▲ 1MB5 43-3AB5	1190	3.67

Basic Line		5	6	Order code
Performance Line				
Voltages		Version		Order code
50 Hz 230 VΔ/400 VY	60 Hz 460 VY	Standard	2 2	-
50 Hz 400 VΔ/690 VY	60 Hz 460 VΔ	Standard	3 4	-
50 Hz 500 VY		Without additional charge	2 7	-
50 Hz 500 VΔ		Without additional charge	4 0	-
For other voltages and more information, see from page 5/53			9 0	...
Types of construction		Version		Order code
Without flange	IM B3 ⁴⁾	Standard	A	-
With flange	IM B5 ⁴⁾	With additional charge	F	-
With flange	IM B14 ⁴⁾	With additional charge	K	-
For other types of construction and more information, see from page 5/62				...
Motor protection		Version		Order code(s)
Without		Standard	A	
PTC thermistor with 3 temperature sensors		With additional charge	B	
For other motor protection and more information, see from page 5/70				
Terminal box position		Version		Order code(s)
Terminal box at top		Standard	4	
For other terminal box positions and more information, see from page 5/75				
Special versions				Order code(s)
For options, see from page 5/87		1MB . 43- -Z		

1) Noise values for line operation under load, tolerance + 3dB(A).
 2) The tE time T3 of
 – 1MB1543-1EB4 at 7s falls below the set value of 7.2s from the VIK recommendation
 – 1MB1543-2AB5 at 6s falls below the set value of 7.1s from the VIK recommendation.
 These differences must be agreed between the manufacturer and the operator.

3) These sound power levels are above the set values in the VIK recommendation in the "standard" version. This difference must be agreed between the manufacturer and the operator.
 4) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency



Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} , 50 Hz	Temper- ature class	Frame size	Operating values at rated power											Cast-iron series		m _{IM B3} J			
			η _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cosφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} / I _{rated} , 50 Hz	I _{LR} / I _{rated} , 50 Hz	T _B / I _{rated} , 50 Hz	t _E , 50 Hz, T1/T2	t _E , 50 Hz, T3	L _{ptA} , 50 Hz, 1)		L _{WA} , 50 Hz, 1)	Article No.	
kW	FS	rpm	Nm	%	%	%	A										kg	kgm ²	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
4-pole: 1500 rpm at 50 Hz, temperature classes T1 and T2 with second rating plate (T1/T2 and T3)																			
17	T1, T2	180 M	1465	111	92,4	93,3	93,4	0,83	33,5	2,1	6,9	2,9	19	-	67	74	▲ 1MB1 43-1EB2	165	0,13
20	T1, T2	180 L	1465	130	92,8	93,9	94,2	0,84	39,0	2	6,6	2,9	18	-	71	78	▲ 1MB1 43-1EB4	180	0,14
27	T1, T2	200 L	1470	175	93,4	94,0	94,1	0,85	52	2,1	6,9	2,9	16	-	66	73	▲ 1MB1 43-2AB5	240	0,22
33	T1, T2	225 S	1482	215	93,6	93,9	93,5	0,85	62	2,7	6,7	2,8	30	-	65	79	▲ 1MB1 43-2BB0	300	0,417
40	T1, T2	225 M	1480	260	94,1	94,7	94,8	0,86	75	2,7	6,3	2,6	27	-	66	79	▲ 1MB1 43-2BB2	370	0,545
50	T1, T2	250 M	1485	320	94,4	94,9	94,9	0,87	91	2,7	6,7	2,7	35	-	70	84	▲ 1MB1 43-2CB2	480	0,975
68	T1, T2	280 S	1485	435	94,9	95,3	95,2	0,88	124	2,4	6,1	2,6	40	-	69	83	▲ 1MB1 43-2DB0	680	1,7
80	T1, T2	280 M	1490	510	95,1	95,6	95,6	0,87	146	2,7	6,7	2,5	23	-	69	83	▲ 1MB1 43-2DB2	670	1,61
100	T1, T2	315 S	1490	640	95,3	95,6	95,4	0,86	185	1,8	6	2,3	19	-	71	85	▲ 1MB5 43-3AB0	900	2,38
120	T1, T2	315 M	1488	770	95,5	95,8	95,7	0,86	220	1,8	5,8	2,2	28	-	76	91	▲ 1MB5 43-3AB2	980	2,88
135	T1, T2	315 L	1490	870	95,7	96	95,8	0,86	250	2,1	6,1	2,5	23	-	74	89	▲ 1MB5 43-3AB4	1110	3,18
165	T1, T2	315 L	1488	1060	95,8	96,1	96,0	0,86	305	2	5,8	2,3	17	-	72	87	▲ 1MB5 43-3AB5	1190	3,67
Basic Line																	5		
Performance Line																	6		
Voltages																			Order code
50 Hz 230 VΔ/400 VY 60 Hz 460 VY																	Standard	2 2	-
50 Hz 400 VΔ/690 VY 60 Hz 460 VΔ																	Standard	3 4	-
50 Hz 500 VY																	Without additional charge	2 7	-
50 Hz 500 VΔ																	Without additional charge	4 0	-
For other voltages and more information, see from page 5/53																	9 0	...	
Types of construction																			Order code
Without flange IM B3 ²⁾																	Standard	A	-
With flange IM B5 ²⁾																	With additional charge	F	-
With flange IM B14 ²⁾																	With additional charge	K	-
For other types of construction and more information, see from page 5/62																		...	
Motor protection																			
Without																	Standard	A	
PTC thermistor with 3 temperature sensors																	With additional charge	B	
For other motor protection and more information, see from page 5/70																			
Terminal box position																			
Terminal box at top																	Standard	4	
For other terminal box positions and more information, see from page 5/75																			
Special versions																			Order code(s)
For options, see from page 5/87																	1MB . 43-	- -Z	

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¹⁾ Noise values for line operation under load, tolerance + 3dB(A).

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency

Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} , 50 Hz	Tem- perature class	Frame size	Operating values at rated power											L _{ptA} , 50 Hz	L _{WA} , 50 Hz	m _{IM B3} J			
			η _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cosφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz	T _{LR} / I _{rated} , 50 Hz	I _{LR} / I _{rated} , 50 Hz	T _B / I _{rated} , 50 Hz	t _E , 50 Hz, T1/T2				t _E , 50 Hz, T3		
kW	FS	rpm	Nm	%	%	%	A										kg	kgm ²	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
6-pole: 1000 rpm at 50 Hz, temperature classes T1 to T3																			
0.25	T1, T2, T3	71 M	875	2.75	68.6	69.8	67.9	0.72	0.72	2.4	3.4	2.4	500	233	58	65 ²⁾	▲ 1MB1 5 43-0CC3	16	0.00015
0.37	T1, T2, T3	80 M	935	3.8	73.5	72.6	68	0.64	1.16	2.3	4.2	2.7	73	65	55	62 ²⁾	▲ 1MB1 5 43-0DC2	19	0.00025
0.55	T1, T2, T3	80 M	925	5.7	77.2	77.1	74.3	0.65	1.65	2.6	4.4	2.9	94	82	60	67 ²⁾	▲ 1MB1 5 43-0DC3	22	0.0031
0.65	T1, T2, T3	90 S	940	6.6	78.3	79.3	77.8	0.7	1.8	1.8	4.2	2.4	87	77	61	68 ²⁾	▲ 1MB1 5 43-0EC0	26	0.004
0.95	T1, T2, T3	90 L	935	9.7	80.2	81.3	79.9	0.71	2.5	2.2	4.7	2.5	64	56	60	67 ²⁾	▲ 1MB1 5 43-0EC4	31	0.0048
1.3	T1, T2, T3	100 L	955	13	81.8	82.5	80.5	0.71	3.4	2.5	5.3	2.8	63	55	58	65	▲ 1MB1 43-1AC4	36	0.011
1.9	T1, T2, T3	112 M	960	18.9	83.6	84.5	83.7	0.74	4.5	2.6	6.6	3.2	45	40	60	67	▲ 1MB1 43-1BC2	46	0.017
2.6	T1, T2, T3	132 S	980	25.5	85	85.8	85.3	0.75	5.8	2.1	6.5	2.8	54	48	63	70	▲ 1MB1 43-1CC0	70	0.029
3.5	T1, T2, T3	132 M	975	34.5	86.3	87.4	87.3	0.76	7.8	1.8	5.8	2.5	31	27	68	75	▲ 1MB1 43-1CC2	70	0.037
4.8	T1, T2, T3	132 M	975	47	87.5	88.4	88.3	0.76	10.5	2.1	6.2	2.7	34	30	69	76	▲ 1MB1 43-1CC3	82	0.046
6.6	T1, T2, T3	160 M	980	64	88.6	88.7	87.8	0.8	13.8	2.4	6.8	2.8	37	33	67	74	▲ 1MB1 43-1DC2	120	0.098
9.7	T1, T2, T3	160 L	980	95	89.9	90	89	0.79	20.5	2.7	7.1	2.9	22	19	70	77	▲ 1MB1 43-1DC4	145	0.12
13.2	T1, T2, T3	180 L	975	129	90.8	91.4	91.6	0.77	28	2.1	6.2	2.8	38	17	66	73	▲ 1MB1 43-1EC4	180	0.19
16.5	T1, T2, T3	200 L	975	162	91.4	92.3	92.5	0.8	34.5	2	5.4	2.3	52	12	60	67	▲ 1MB1 43-2AC4	215	0.28
20	T1, T2, T3	200 L	985	194	91.9	92.1	91.3	0.79	43	1.7	6.5	3	40	16	69	76	▲ 1MB1 43-2AC5	265	0.33
27	T1, T2, T3	225 M	985	220	92.7	93.2	93.1	0.82	52	2.8	6.9	3.1	61	24	64	77	▲ 1MB1 43-2BC2	390	0.845
33	T1, T2, T3	250 M	985	265	93.1	93.9	94	0.85	63	2.4	6.3	2.6	61	22	65	78	▲ 1MB1 43-2CC2	480	1.27
40	T1, T2, T3	280 S	988	320	93.5	94.1	94	0.86	75	2.8	6.3	2.5	47	13	66	80	▲ 1MB1 43-2DC0	570	1.64
46	T3	280 M	990	370	93.8	94.2	94.1	0.84	87	3.4	7.5	3	28	13	63	77	▲ 1MB1 43-2DC2	570	1.64
64	T3	315 S	992	510	94.4	94.6	94.1	0.86	118	2.4	7.5	3.3	32	15	65	79	▲ 1MB5 43-3AC0	870	3.25
76	T3	315 M	992	610	94.6	94.9	94.6	0.87	139	2.3	7.4	3.2	28	11	65	79	▲ 1MB5 43-3AC2	900	3.54
92	T3	315 L	991	740	94.9	95.2	95.1	0.88	167	2.3	6.9	3	37	13	69	83	▲ 1MB5 43-3AC4	1090	4.52
110	T3	315 L	992	880	95.1	95.3	95.1	0.87	198	2.5	7.6	3.3	26	9	71	86	▲ 1MB5 43-3AC5	1170	5.16
125	T3	315 L	992	1000	95.3	95.5	95.1	0.85	230	2.4	6.7	2.7	28	9	70	84	▲ 1MB5 43-3AC6	1180	4.89
Basic Line 5																			
Performance Line 6																			
Voltages																			
Version																			
Standard																			
Standard																			
Without additional charge																			
Without additional charge																			
For other voltages and more information, see from page 5/53																			
Types of construction																			
Version																			
Without flange IM B3 ³⁾																			
Standard																			
With flange IM B5 ³⁾																			
With additional charge																			
With flange IM B14 ³⁾																			
With additional charge																			
For other types of construction and more information, see from page 5/62																			
Motor protection																			
Version																			
Without																			
Standard																			
PTC thermistor with 3 temperature sensors																			
With additional charge																			
For other motor protection and more information, see from page 5/70																			
Terminal box position																			
Version																			
Terminal box at top																			
Standard																			
For other terminal box positions and more information, see from page 5/75																			
Special versions																			
For options, see from page 5/87																			
1MB . 43- -Z																			



1) Noise values for line operation under load, tolerance + 3dB(A).

2) These sound power levels are above the set values in the VIK recommendation in the "standard" version. This difference must be agreed between the manufacturer and the operator.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.

SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with type of protection Ex eb · IE3 Premium Efficiency



Cast-iron series 1MB1543, 1MB1643, 1MB5543, 1MB5643 – self-ventilated

Selection and ordering data

P _{rated} , 50 Hz	Tem- perature class	Frame size	Operating values at rated power													Cast-iron series	m _{IM B3} J															
			η_{rated} , 50 Hz	T_{rated} , 50 Hz	η_{rated} , 50 Hz, 4/4	η_{rated} , 50 Hz, 3/4	η_{rated} , 50 Hz, 2/4	$\cos\phi_{rated}$, 50 Hz, 4/4	I_{rated} , 50 Hz, 400 V	T_{LR}/I_{rated} , 50 Hz	I_{LR}/I_{rated} , 50 Hz	T_B/I_{rated} , 50 Hz	t_E , T1/T2	t_E , T3	L_{pFA} , 50 Hz			L_{WA} , 50 Hz	Article No.													
kW	FS	rpm	Nm	%	%	%	A										dB(A)	dB(A)	▲ New	kg	kgm ²											
<ul style="list-style-type: none"> Cooling: self-ventilated (IC411) Efficiency according to IEC 60034-30: IE3 Premium Efficiency Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																																
6-pole: 1000 rpm at 50 Hz, temperature classes T1 and T2 with second rating plate (T1/T2 and T3)																																
50	T1, T2	280 M	988	485	93,9	94,5	94,5	0,85	94	3,1	6,9	2,8	27	-	63	77	▲ 1MB1	■ 43-2DC2	■ -	■ -	■ -	570	1,64									
68	T1, T2	315 S	991	660	94,5	94,7	94,4	0,87	125	2,3	7	3,1	31	-	66	80	▲ 1MB5	■ 43-3AC0	■ -	■ -	■ -	870	3,25									
82	T1, T2	315 M	991	790	94,7	95,1	94,9	0,88	149	2,2	6,9	3	25	-	65	79	▲ 1MB5	■ 43-3AC2	■ -	■ -	■ -	900	3,54									
98	T1, T2	315 L	990	950	95	95,4	95,4	0,88	179	2,2	6,5	2,8	34	-	69	84	▲ 1MB5	■ 43-3AC4	■ -	■ -	■ -	1090	4,52									
120	T1, T2	315 L	991	1160	95,2	95,6	95,5	0,88	218	2,3	6,9	3,1	23	-	71	86	▲ 1MB5	■ 43-3AC5	■ -	■ -	■ -	1170	5,16									
135	T1, T2	315 L	991	1300	95,4	95,7	95,5	0,85	250	2,2	6,2	2,5	24	-	70	85	▲ 1MB5	■ 43-3AC6	■ -	■ -	■ -	1180	4,89									
Basic Line																	5															
Performance Line																	6															
Voltages																	Version		Order code													
50 Hz 230 VΔ/400 VY			60 Hz 460 VY			Standard		2 2		-																						
50 Hz 400 VΔ/690 VY			60 Hz 460 VΔ			Standard		3 4		-																						
50 Hz 500 VY						Without additional charge		2 7		-																						
50 Hz 500 VΔ						Without additional charge		4 0		-																						
For other voltages and more information, see from page 5/53																																
Types of construction																	Version		Order code													
Without flange			IM B3 ²⁾			Standard		A		-																						
With flange			IM B5 ²⁾			With additional charge		F		-																						
With flange			IM B14 ²⁾			With additional charge		K		-																						
For other types of construction and more information, see from page 5/62																																
Motor protection																	Version		Order code(s)													
Without						Standard		A																								
PTC thermistor with 3 temperature sensors						With additional charge		B																								
For other motor protection and more information, see from page 5/70																																
Terminal box position																	Version		Order code(s)													
Terminal box at top						Standard		4																								
For other terminal box positions and more information, see from page 5/75																																
Special versions																			Order code(s)													
For options, see from page 5/87																	1MB . ■ 43- ■ - ■ ■ ■ ■ ■ ■		-Z													

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¹⁾ Noise values for line operation under load, tolerance + 3dB(A).

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with types of protection Ex db, Ex db eb · IE3 Premium Efficiency

Cast-iron series 1MB15/1MB55 – self-ventilated

Selection and ordering data

P _{rated} , P _{60 Hz}		Frame size	Operating values at rated power										Cast-iron series 1MB1553/1MB5553		m _{IM B3}	J		
50 Hz	60 Hz		n _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} /T _{rated}	I _{LR} /I _{rated}	T _B /T _{rated}	L _{p(A,1)} , 50 Hz	L _{WA,1)} , 50 Hz	Article No.	kg	kgm ²	
kW	kW	FS	rpm	Nm	%	%	%	A							▲ New			
• Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																		
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																		
0.37	0.37	71 M	2850	1.2	73.8	73.3	69.7	0.76	0.95	3.5	5.8	3.5	57	64	▲ 1MB1553-0CA2	24	0.00045	
0.55	0.55	71 M	2850	1.8	77.8	77.5	74.5	0.76	1.34	3.7	6.1	3.7	57	68	▲ 1MB1553-0CA3	25	0.00056	
0.75	0.75	80 M	2850	2.5	80.7	82.2	81.9	0.86	1.56	2.6	6.2	3	58	69	▲ 1MB1553-0DA2	30	0.0011	
1.1	1.1	80 M	2885	3.6	82.7	83.9	83.1	0.85	2.25	3	7.1	3.3	58	78	▲ 1MB1553-0DA3	32	0.0013	
1.5	1.5	90 S	2910	4.9	84.2	84.6	83.2	0.86	3	2.7	8.1	4.2	60	71	▲ 1MB1553-0EA0	41	0.0021	
2.2	2.2	90 L	2910	7.2	85.9	86.8	86.1	0.88	4.2	2.6	8.3	4	60	73	▲ 1MB1553-0EA4	45	0.0031	
3	3	100 L	2920	9.8	87.1	87.9	87.5	0.88	5.6	3.2	8.1	4.6	65	82	▲ 1MB1553-1AA4	64	0.0054	
4	4	112 M	2950	13	88.1	88.7	88.2	0.89	7.4	2.5	8.7	4	65	77	▲ 1MB1553-1BA2	74	0.012	
5.5	5.5	132 S	2950	18	89.2	90.1	89.7	0.9	9.9	1.9	7.3	3.7	68	80	▲ 1MB1553-1CA0	95	0.024	
7.5	7.5	132 S	2950	24	90.1	90.9	90.7	0.92	13.1	2.1	8.3	4	68	78	▲ 1MB1553-1CA1	106	0.031	
11	11	160 M	2955	36	91.2	91.3	90.2	0.87	20	2.5	7.6	3.8	68	80	▲ 1MB1553-1DA2	169	0.053	
15	15	160 M	2960	48	91.9	91.9	91	0.87	27	2.8	8.8	4.3	70	82	▲ 1MB1553-1DA3	179	0.061	
18.5	18.5	160 L	2955	60	92.4	92.8	92.3	0.9	32	2.8	8.3	3.9	70	84	▲ 1MB1553-1DA4	190	0.068	
22	22	180 M	2950	71	92.7	93	92.4	0.89	38.5	2.3	7.5	3.5	70	80	▲ 1MB1553-1EA2	238	0.08	
30	30	200 L	2955	97	93.3	93.6	93.3	0.87	53	2.5	7	3.3	69	81	▲ 1MB1553-2AA4	324	0.134	
37	37	200 L	2955	120	93.7	93.9	93.5	0.88	65	2.5	7.1	3.2	69	82	▲ 1MB1553-2AA5	348	0.158	
45	45	225 M	2960	145	94	94.5	94.4	0.89	78	2.4	6.9	3.3	73	87	▲ 1MB1553-2BA2	447	0.26	
55	55	250 M	2975	177	94.3	94.5	93.9	0.89	95	2.3	6.7	3.1	73	87	▲ 1MB1553-2CA2	532	0.46	
75	75	280 S	2975	241	94.7	94.8	94.2	0.89	128	2.5	7.3	2.7	78	92	▲ 1MB1553-2DA0	729	0.77	
90	90	280 M	2975	289	95	95.2	94.8	0.9	152	2.4	7.5	3.1	79	93	▲ 1MB1553-2DA2	763	0.926	
110	110	315 S	2982	352	95.2	95.3	94.7	0.91	183	2.3	7.2	3.2	80	94	▲ 1MB5553-3AA0	1100	1.76	
132	132	315 M	2984	422	95.4	95.4	94.7	0.91	220	1.9	7.5	2.5	80	94	▲ 1MB5553-3AA2	1230	1.99	
160	160	315 L	2980	513	95.6	95.7	95.3	0.91	265	1.8	6.9	2.3	80	94	▲ 1MB5553-3AA4	1300	2.29	
200	200	315 L	2980	641	95.8	96	95.7	0.92	330	1.9	6.9	2.4	80	94	▲ 1MB5553-3AA5	1430	2.65	
250	250	315 L	2982	801	95.8	95.9	95.6	0.91	415	2.8	7.2	3	80	94	▲ 1MB5553-3AA6	1590	2.82	
315	315	355 M	2986	1007	95.8	95.9	95.4	0.9	530	2.1	7.8	2.8	83	98	▲ 1MB5553-3BA2	2130	4.31	
355	355	355 M	2975	1139	95.8	96.1	96	0.92	580	2.4	6.6	2.5	83	98	▲ 1MB5553-3BA3	2340	5.8	
400	400	355 L	2986	1279	95.8	96	95.7	0.89	680	2.3	7.6	2.9	83	98	▲ 1MB5553-3BA4	2610	5.9	
460	460	355 L	2990	1469	95.8	95.8	95.3	0.89	780	2.8	9	3.5	83	98	▲ 1MB5553-3BA5	2620	5.9	
Voltagess															Version		Order code	
50 Hz 230 VΔ/400 VY			60 Hz 460 VY			Standard			Standard		2		2		-			
50 Hz 400 VΔ/690 VY			60 Hz 460 VΔ			Standard			Standard		3		4		-			
50 Hz 500 VY						Without additional charge			Without additional charge		2		7		-			
50 Hz 500 VΔ						Without additional charge			Without additional charge		4		0		-			
For other voltages and more information, see from page 5/54																		
Types of construction															Version		Order code	
Without flange			IM B3 ²⁾			Standard			Standard		A		-		-			
With flange			IM B5 ²⁾			With additional charge			With additional charge		F		-		-			
With flange			IM B14 ²⁾			With additional charge			With additional charge		K		-		-			
For other types of construction and more information, see from page 5/65																		
Motor protection															Version		Order code	
Without						Standard			Standard		A		-		-			
PTC thermistor with 3 temperature sensors						With additional charge			With additional charge		B		-		-			
For other motor protection and more information, see from page 5/71																		
Terminal box position															Version		Order code	
Terminal box at top						Standard			Standard		4		-		-			
For other terminal box positions and more information, see from page 5/76																		
Special versions															Version		Order code(s)	
For options, see from page 5/91																		
1MB.553-....															-Z		...+...+...+...	



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with types of protection Ex db, Ex db eb · IE3 Premium Efficiency



Cast-iron series 1MB15/1MB55 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series		m _{IM B3}	J			
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	cosφ _{rated} , 50 Hz	I _{rated} , 50 Hz	T _{LR} / I _{rated}	I _{LR} / I _{rated}	T _B / I _{rated}	L _{p(A,1)} , 50 Hz			L _{WA,1)} , 50 Hz	1MB1553/1MB553	Article No.
kW	kW	FS	rpm	Nm	%	%	%	%	%	A							▲ New			
• Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																				
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																				
0.25	0.25	71 M	1395	1.7	73.5	73.7	70.4	0.72	0.68	2.5	4.2	2.6	64	64	▲ 1MB1553-0CB2	25	0.00095			
0.37	0.37	71 M	1410	2.5	77.3	76.8	73.2	0.70	0.99	3.1	4.8	3.1	70	70	▲ 1MB1553-0CB3	27	0.0014			
0.55	0.55	80 M	1440	3.6	80.8	81.1	79.3	0.78	1.26	2.1	5.9	3.1	69	69	▲ 1MB1553-0DB2	30	0.0021			
0.75	0.75	80 M	1450	4.9	82.5	82.3	79.9	0.75	1.75	2.7	7.1	3.9	70	70	▲ 1MB1553-0DB3	33	0.0029			
1.1	1.1	90 S	1440	7.3	84.1	84.7	83.4	0.78	2.4	2.9	6.9	3.6	72	72	▲ 1MB1553-0EB0	42	0.0036			
1.5	1.5	90 L	1445	10	85.3	85.9	84.9	0.80	3.15	2.7	7.2	3.6	63	63	▲ 1MB1553-0EB4	45	0.0049			
2.2	2.2	100 L	1465	14	86.7	87.0	85.9	0.83	4.4	3.2	8.4	4.4	77	77	▲ 1MB1553-1AB4	67	0.014			
3	3	100 M	1460	20	87.7	88.5	87.9	0.83	5.9	2.5	8.3	3.9	69	69	▲ 1MB1553-1AB5	68	0.014			
4	4	112 S	1460	26	88.6	89.2	88.6	0.82	7.9	2.4	7.1	3.7	69	69	▲ 1MB1553-1BB2	76	0.017			
5.5	5.5	132 S	1470	36	89.6	90.0	89.4	0.82	10.8	2.9	8.6	3.7	80	80	▲ 1MB1553-1CB0	109	0.034			
7.5	7.5	132 M	1465	49	90.4	91.1	90.8	0.84	14.3	2.6	8.2	3.7	76	76	▲ 1MB1553-1CB2	120	0.046			
11	11	160 M	1475	71	91.4	91.8	91.2	0.84	20.5	2.6	7.6	3.4	81	81	▲ 1MB1553-1DB2	179	0.071			
15	15	160 L	1475	97	92.1	92.3	91.5	0.82	28.5	2.5	8.5	3.8	71	71	▲ 1MB1553-1DB4	191	0.085			
18.5	18.5	180 M	1470	120	92.6	93.1	93.0	0.82	35	2.5	7.2	3.3	82	82	▲ 1MB1553-1EB2	240	0.13			
22	22	180 L	1470	143	93.0	93.6	93.6	0.83	41	2.3	6.8	3.3	76	76	▲ 1MB1553-1EB4	249	0.14			
30	30	200 L	1470	195	93.6	94.2	94.2	0.84	55	2.6	7.3	3.1	75	75	▲ 1MB1553-2AB5	346	0.24			
37	37	225 S	1480	239	93.9	94.5	94.4	0.86	66	2.5	6.4	2.7	63	77	▲ 1MB1553-2BB0	456	0.467			
45	45	225 M	1475	291	94.2	94.7	94.6	0.86	80	2.6	6.4	2.7	64	78	▲ 1MB1553-2BB2	466	0.52			
55	55	250 M	1482	354	94.6	95.1	95	0.87	96	2.5	6.8	2.9	66	79	▲ 1MB1553-2CB2	563	0.85			
75	75	280 S	1486	482	95	95.3	95	0.86	133	2.5	6.9	3	72	86	▲ 1MB1553-2DB0	782	1.4			
90	90	280 M	1485	579	95.2	95.5	95.3	0.87	157	2.6	7.2	3	70	84	▲ 1MB1553-2DB2	818	1.7			
110	110	315 S	1490	705	95.4	95.7	95.4	0.85	196	2.4	6.6	2.6	75	91	▲ 1MB5553-3AB0	1150	2.48			
132	132	315 M	1490	846	95.6	95.9	95.7	0.86	230	2.1	7	2.7	75	91	▲ 1MB5553-3AB2	1270	2.79			
160	160	315 L	1491	1025	95.8	96	95.6	0.85	285	2.3	7.5	3	75	91	▲ 1MB5553-3AB4	1330	3.17			
200	200	315 L	1490	1282	96	96.4	96.3	0.86	350	2.3	7.6	2.8	75	91	▲ 1MB5553-3AB5	1480	3.79			
250	250	315 L	1490	1602	96	96.2	95.9	0.87	430	2.1	7.2	2.8	75	91	▲ 1MB5553-3AB6	1660	4.55			
315	315	355 M	1491	2017	96	96.2	95.8	0.86	550	2.3	8	2.9	81	95	▲ 1MB5553-3BB2	2140	5.6			
355	355	355 M	1491	2274	96	96.1	95.8	0.88	610	2.2	7.5	3.1	81	95	▲ 1MB5553-3BB3	2240	6.36			
400	400	355 L	1491	2562	96	96.1	95.9	0.87	690	2.1	7.3	3	80	95	▲ 1MB5553-3BB4	2420	7.06			
460	460	355 L	1492	2944	96	96.2	96	0.85	810	3.1	8.4	3.3	80	96	▲ 1MB5553-3BB5	2720	8.5			

Voltagess	Version	Order code
50 Hz 230 VΔ/400 VY	Standard	2 2
50 Hz 400 VΔ/690 VY	Standard	3 4
50 Hz 500 VY	Without additional charge	2 7
50 Hz 500 VΔ	Without additional charge	4 0
For other voltages and more information, see from page 5/54		9 0

Types of construction	Version	Order code
Without flange IM B3 ²⁾	Standard	A
With flange IM B5 ²⁾	With additional charge	F
With flange IM B14 ²⁾	With additional charge	K
For other types of construction and more information, see from page 5/65		...

Motor protection	Version	Order code
Without	Standard	A
PTC thermistor with 3 temperature sensors	With additional charge	B
For other motor protection and more information, see from page 5/71		...

Terminal box position	Version	Order code
Terminal box at top	Standard	4
For other terminal box positions and more information, see from page 5/76		...

Special versions	Order code(s)
For options, see from page 5/91	1MB.553-... -Z ...+...+...+...

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For footnotes, see page 5/50



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with types of protection Ex db, Ex db eb · IE3 Premium Efficiency

Cast-iron series 1MB15/1MB55 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series		m _{IM B3}	J		
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cosφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} / I _{rated}	I _{LR} / I _{rated}	T _B / I _{rated}	L _{p(A,1)} , 50 Hz	L _{WA,1)} , 50 Hz	1MB1553/1MB553			Article No.	kg
kW	kW	FS	rpm	Nm	%	%	%		A				dB(A)	dB(A)	▲ New				
• Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
0.18	0.18	71 M	885	1.94	63.9	64.6	60.8	0.69	0.59	2.3	2.8	2.3	39	68	▲ 1MB1553-0CC2	24	0.001		
0.25	0.25	71 M	885	2.70	68.6	69.5	66.2	0.69	0.76	2.6	3.2	2.6	39	50	▲ 1MB1553-0CC3	26	0.0015		
0.37	0.37	80 M	940	3.76	73.1	69.4	69.4	0.66	1.10	2.3	4.2	2.7	46	57	▲ 1MB1553-0DC2	31	0.0025		
0.55	0.55	80 M	935	5.60	77.2	77.0	73.9	0.67	1.53	2.5	4.5	2.8	42	68	▲ 1MB1553-0DC3	34	0.0031		
0.75	0.75	90 S	945	7.60	78.9	80.0	78.8	0.70	1.96	2.2	4.6	2.6	42	66	▲ 1MB1553-0EC0	43	0.004		
1.1	1.1	100 L	965	10.9	81	81.1	79.4	0.74	2.65	2.6	7.2	3.7	62	69	▲ 1MB1553-1AC3	67	0.014		
1.5	1.5	112 L	975	14.7	82.5	82.5	81.0	0.70	3.75	3.7	7.9	4.1	57	64	▲ 1MB1553-1BC1	75	0.017		
2.2	2.2	132 S	975	29.4	85.6	86.6	86.3	0.75	6.7	2.4	7.3	3.5	59	66	▲ 1MB1553-1CC1	96	0.037		
3	3	132 S	975	21.5	84.3	85.2	84.7	0.74	5.1	2.5	7.3	3.6	59	66	▲ 1MB1553-1CC0	96	0.037		
4	4	132 M	970	39.3	86.8	87.9	87.7	0.76	8.8	2.4	7	3.4	59	66	▲ 1MB1553-1CC2	101	0.037		
5.5	5.5	132 M	975	54	88	88.8	88.4	0.77	11.7	2.5	7.4	3.6	59	66	▲ 1MB1553-1CC3	115	0.046		
7.5	7.5	160 M	982	73	89.1	89.7	89.2	0.81	15	2.9	7.2	3	62	69	▲ 1MB1553-1DC2	184	0.098		
11	11	160 L	982	107	90.3	90.7	89.9	0.81	21.5	3.1	7.6	3.2	62	69	▲ 1MB1553-1DC4	200	0.12		
15	15	180 L	975	147	91.2	91.9	91.9	0.80	29.5	2.3	5.9	2.8	67	68	▲ 1MB1553-1EC4	236	0.19		
18.5	18.5	200 L	978	181	91.7	92.5	92.5	0.79	37.0	2.5	5.6	2.6	61	71	▲ 1MB1553-2AC4	325	0.28		
22	22	200 L	978	215	92.2	93.1	93.2	0.79	43.5	2.5	5.6	2.6	64	72	▲ 1MB1553-2AC5	339	0.32		
30	30	225 M	982	292	92.9	93.6	93.5	0.83	56	2.6	6.6	3	64	77	▲ 1MB1553-2BC2	458	0.67		
37	37	250 M	986	358	93.3	93.9	93.8	0.84	68	2.7	7.2	2.9	58	72	▲ 1MB1553-2CC2	533	1.01		
45	45	280 S	988	435	93.7	94.4	94.3	0.85	82	3	6.8	2.8	60	75	▲ 1MB1553-2DC0	729	1.4		
55	55	280 M	988	532	94.1	94.6	94.4	0.85	99	3.2	7.2	3	60	74	▲ 1MB1553-2DC2	748	1.6		
75	75	315 S	992	722	94.6	94.8	94.2	0.8	143	2.4	7.6	2.9	68	83	▲ 1MB5553-3AC0	1070	2.98		
90	90	315 M	992	866	94.9	95.2	94.8	0.82	167	2.5	7.7	2.9	68	83	▲ 1MB5553-3AC2	1130	3.54		
110	110	315 L	992	1059	95.1	95.4	95.1	0.83	200	2.4	7.7	2.8	68	83	▲ 1MB5553-3AC4	1270	4.25		
132	132	315 L	992	1271	95.4	95.7	95.5	0.83	240	2.5	7.8	2.9	68	83	▲ 1MB5553-3AC5	1380	4.89		
160	160	315 L	992	1540	95.6	96	96.1	0.82	295	2.5	7.3	2.8	68	83	▲ 1MB5553-3AC6	1520	5.7		
200	200	315 L	992	1925	95.8	96	95.8	0.81	370	2.8	7	3	68	83	▲ 1MB5553-3AC7	1670	6.39		
250	250	355 S	993	2404	95.8	96.2	96.1	0.84	450	2.5	8	3.1	75	90	▲ 1MB5553-3BC1	2340	11.3		
315	315	355 M	992	3032	95.8	96.3	96.4	0.86	550	2.4	6.8	2.8	75	90	▲ 1MB5553-3BC2	2630	13.8		
355	355	355 M	993	3414	95.8	95.9	95.6	0.84	640	2.6	7.4	3.2	76	91	▲ 1MB5553-3BC3	2650	13.8		
380	380	355 L	993	3654	95.8	96.1	95.9	0.84	680	2.7	7.7	2.9	75	90	▲ 1MB5553-3BC4	2650	13.5		

Voltagess	Version	Order code
50 Hz 230 VΔ/400 VY	Standard	2 2
50 Hz 400 VΔ/690 VY	Standard	3 4
50 Hz 500 VY	Without additional charge	2 7
50 Hz 500 VΔ	Without additional charge	4 0
For other voltages and more information, see from page 5/54		9 0

Types of construction	Version	Order code
Without flange IM B3 ²⁾	Standard	A
With flange IM B5 ²⁾	With additional charge	F
With flange IM B14 ²⁾	With additional charge	K
For other types of construction and more information, see from page 5/65		...

Motor protection	Version	Order code
Without	Standard	A
PTC thermistor with 3 temperature sensors	With additional charge	B
For other motor protection and more information, see from page 5/71		...

Terminal box position	Version	Order code
Terminal box at top	Standard	4
For other terminal box positions and more information, see from page 5/76		...

Special versions	Order code(s)
For options, see from page 5/91	1MB.553-... -Z ...+...+...+...



SIMOTICS XP 1MB1, 1MB5 explosion-protected motors

Zone 1 with types of protection Ex db, Ex db eb · IE3 Premium Efficiency



Cast-iron series 1MB15/1MB55 – self-ventilated

Selection and ordering data

Operating values at rated power														Cast-iron series			
$P_{rated, 50 Hz}$	$P_{rated, 60 Hz}$	Frame size	$n_{rated, 50 Hz}$	$T_{rated, 50 Hz}$	$\eta_{rated, 50 Hz, 4/4}$	$\eta_{rated, 50 Hz, 3/4}$	$\eta_{rated, 50 Hz, 2/4}$	$\cos\phi_{rated, 4/4}$	$I_{rated, 50 Hz, 400 V}$	T_{LR}/I_{rated}	I_{LR}/I_{rated}	T_B/I_{rated}	$L_{p(A, 1), 50 Hz}$	$L_{WA, 1), 50 Hz}$	1MB1553/1MB553	$m_{IM B3}$	J
kW	kW	FS	rpm	Nm	%	%	%		A						Article No.	kg	kgm ²
• Cooling: self-ventilated (IC411) • Efficiency according to IEC 60034-30: IE3 Premium Efficiency • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																	
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																	
0.09	0.09	71 M	650	1.3	44.1	42.8	37.3	0.64	0.81	1.9	2.2	1.9	58	61	▲ 1MB1553-0CD2	25	
0.12	0.12	71 M	660	1.7	50.7	49.9	44.8	0.63	0.95	2.1	2.5	2.1	58	61	▲ 1MB1553-0CD3	27	
0.18	0.18	80 M	715	2.4	58.7	54.8	47.3	0.51	1.51	1.9	2.9	2.6	59	65	▲ 1MB1553-0DD2	30	
0.25	0.25	80 M	695	3.4	64.1	62.7	57.8	0.57	1.72	1.8	2.9	2.1	59	65	▲ 1MB1553-0DD3	33	
0.37	0.37	90 S	710	5	69.3	68.3	63.7	0.55	2.45	1.6	3.2	2.3	60	73	▲ 1MB1553-0ED0	43	
0.55	0.55	90 L	715	7.3	73	71.2	66.5	0.52	3.65	2.3	3.6	2.7	60	73	▲ 1MB1553-0ED4	44	
0.75	0.75	100 L	700	10.2	75	77.3	76.2	0.70	2.05	1.7	4	2.2	60	67	▲ 1MB1553-1AD4	59	
1.1	1.1	100 L	710	14.9	77.7	79.4	78.2	0.70	2.9	1.9	4.8	2.5	60	67	▲ 1MB1553-1AD5	64	
1.5	1.5	112 M	720	19.9	79.7	80.3	78.6	0.70	3.9	2.1	5	2.8	60	70	▲ 1MB1553-1BD2	74	
2.2	2.2	132 S	720	29.1	81.9	83.4	82.9	0.73	5.3	2.1	6.1	2.7	62	76	▲ 1MB1553-1CD0	96	
3	3	132 M	725	39.5	83.5	84.4	83.6	0.74	7	2.4	6.4	2.9	62	76	▲ 1MB1553-1CD2	104	
4	4	160 M	728	52	84.5	86.0	86.2	0.74	9.2	1.9	5.4	2.4	61	68	▲ 1MB1553-1DD2	157	
5.5	5.5	160 M	732	72	86.2	87.3	86.6	0.74	12.5	2.1	5.9	2.6	61	68	▲ 1MB1553-1DD3	169	
7.5	7.5	160 L	735	98	87.3	87.9	87.0	0.77	16.1	1.8	6.3	2.7	61	68	▲ 1MB1553-1DD4	183	
11	11	180 L	725	145	88.6	89.7	89.6	0.74	24	2.1	5.1	2.4	67	82	▲ 1MB1553-1ED4	259	
15	15	200 L	730	196	89.6	90.1	89.4	0.73	33.5	3	6.8	3.7	65	70	▲ 1MB1553-2AD5	357	
18.5	18.5	225 S	732	241	90.1	90.6	90	0.75	39.5	2.5	5.9	3	56	70	▲ 1MB1553-2BD0	417	0.5
22	22	225 M	732	287	90.6	91.4	91.2	0.77	45.5	2.6	5.9	2.9	56	70	▲ 1MB1553-2BD2	425	0.55
30	30	250 M	735	390	91.3	91.8	91.5	0.79	60	2.6	6.1	3	60	74	▲ 1MB1553-2CD2	512	0.86
37	37	280 S	736	480	91.8	92.5	92.4	0.78	75	2.3	5.4	2.4	63	77	▲ 1MB1553-2DD0	680	1.1
45	45	280 M	738	582	92.2	92.8	92.6	0.8	88	2.5	5.9	2.5	65	79	▲ 1MB1553-2DD2	743	1.6
55	55	315 S	744	706	92.5	92.8	92.4	0.81	106	2.4	6.4	2.6	67	82	▲ 1MB5553-3AD0	1020	3.14
75	75	315 M	743	964	93.1	93.5	93.2	0.81	144	2.5	6.3	2.6	67	82	▲ 1MB5553-3AD2	1090	3.14
90	90	315 L	742	1158	93.4	93.9	93.7	0.82	170	2.4	6.3	2.5	67	82	▲ 1MB5553-3AD4	1150	3.76
110	110	315 L	742	1416	94.7	95.1	94.9	0.82	205	2.6	6.6	2.7	67	82	▲ 1MB5553-3AD5	1290	4.48
132	132	315 L	741	1701	94	94.4	94.2	0.82	245	2.4	6	2.5	67	82	▲ 1MB5553-3AD6	1370	5.1
160	160	315 L	741	2062	94.3	94.7	94.7	0.79	310	2.4	6.2	2.4	67	82	▲ 1MB5553-3AD7	1650	6.78
200	200	355 M	744	2567	94.6	95	95	0.8	380	2.3	7.1	2.7	73	88	▲ 1MB5553-3BD0	2340	11.3
250	250	355 M	744	3209	94.6	95	95	0.8	475	2.4	7.2	2.9	73	88	▲ 1MB5553-3BD1	2600	13.8
315	315	355 L	744	4043	94.6	94.9	94.6	0.8	600	2.4	7	2.9	73	88	▲ 1MB5553-3BD2	2610	13.8

Voltagess	Version	Order code
50 Hz 230 VΔ/400 VY	Standard	2 2
50 Hz 400 VΔ/690 VY	Standard	3 4
50 Hz 500 VY	Without additional charge	2 7
50 Hz 500 VΔ	Without additional charge	4 0
For other voltagess and more information, see from page 5/54		9 0

Types of construction	Version	Order code
Without flange IM B3 ²⁾	Standard	A
With flange IM B5 ²⁾	With additional charge	F
With flange IM B14 ²⁾	With additional charge	K
For other types of construction and more information, see from page 5/65		...

Motor protection	Version	Order code
Without	Standard	A
PTC thermistor with 3 temperature sensors	With additional charge	B
For other motor protection and more information, see from page 5/71		...

Terminal box position	Version	Order code
Terminal box at top	Standard	4
For other terminal box positions and more information, see from page 5/76		...

Special versions	Order code(s)
For options, see from page 5/91	1MB.553-... -Z ...+...+...+...

¹⁾ Noise values for line operation under load, tolerance +3dB(A).

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate.