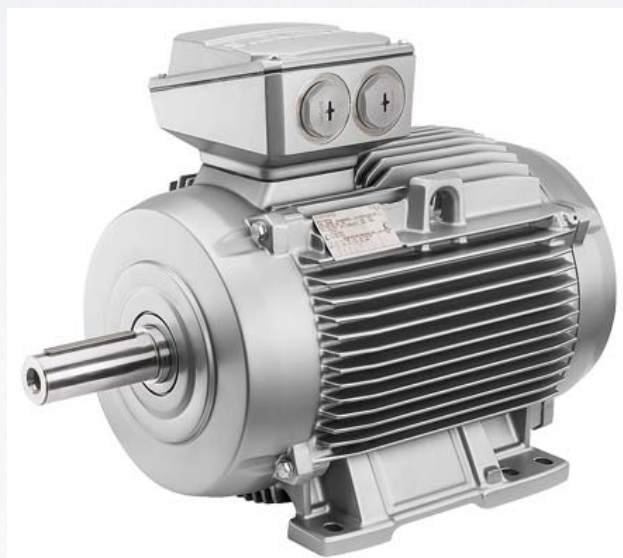


**SIEMENS**



Motors

Low-Voltage Motors  
**SIMOTICS DP**  
Steel plant Motors  
Roller table motors

Catalog

Edition  
09/2017

[www.siemens.com/simotics](http://www.siemens.com/simotics)



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## Introduction

Orientation

## General

### Overview

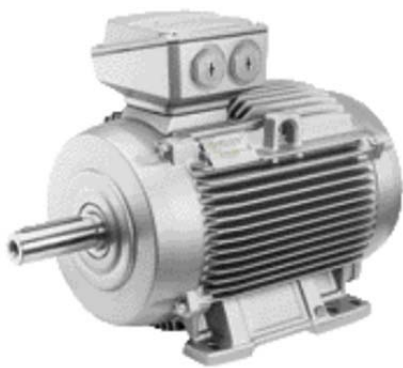
Motors deployed in steel rolling mills and other metal-processing sectors must be capable of operating under diverse electrical conditions, but must also withstand high mechanical stresses. The analysis of plant-specific requirements can be divided into two parts.

The first part includes duty with typical reversing operation under conditions of extreme mechanical stress and very high temperatures. 1PC1423/1LP3 roller-table motors must be deployed for this purpose. Modern transport roller-tables and work roller-tables situated close to roll stands in rolling mills are now equipped with directly driven reversing rollers.

The second part includes the downstream applications such as slab furnace feed, cooling line, reheating furnace, straightening machines, and slitting lines in which the mechanical stresses are significantly lower. These are the applications for which the new steel plant motors have been designed by Siemens. These motors are available for direct-on-line operation (DOL) in efficiency class IE3, and as variants optimized for converter operation (VSD).

Whether a steel plant or roller-table motor is selected depends on stress factors and the decision as to which motor type is suitable must be taken by the customer (ordering party).

### Benefits (steel plant motor)



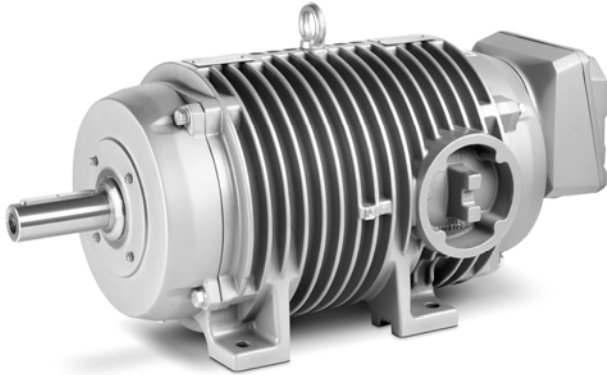
Steel plant motor

The steel plant motors offer the user a number of advantages and benefits:

- Highly efficient in efficiency class IE3 for direct-on-line operation (DOL)
- Highly efficient motors for converter operation
- Cast-iron versions for corrosive ambient conditions, in corrosivity class C3 (IEC 60721, Part 2-1)

- Increased corrosion protection using specially designed paint finishes is available
- Self-ventilated motors 1PC1433 for direct-on-line operation (DOL) with efficiency class IE3
- Self-ventilated motors 1PC1443 for converter operation (VSD) on SINAMICS S120
- Naturally cooled motors 1PC1463 in enclosed version, without external fan, for converter operation (VSD) on SINAMICS S120
- Simple to commission in combination with a SINAMICS S120 converter
- In depth know-how with respect to plant-specific designs
- Worldwide service network with 24-hour service hotline for motors and converters
- Naturally cooled motors 1PC1463 demonstrate a high resistance to peak transient torques  $T_B = 3 \times T_{rated}$

## ■ Benefits (roller-table motor)



Roller-table motor

The high-end roller-table motors offer the user a number of advantages and benefits:

- Round-ribbed housing and bearing plates in cast iron with spheroidal graphite.
- The round-ribbed housing is torsionally rigid and suitable for use in environments with the highest mechanical requirements.
- The standard version has the following specifications:
  - IP66 degree of protection
  - Special paint finish, sea air resistant in corrosivity class C4 (IEC 60721, Part 2-1)
  - Internal coating
  - Condensation drainage holes
  - Rust-resistant screws (externally)
  - Fixed bearing DE
  - Standard shaft made of stainless steel X20Cr13 (1.4021)
  - Rating plate made of stainless steel
  - External grounding
  - Connected in star for dispatch
  - 6 PTC thermistors – for alarm and tripping
- Optionally available with "special sealing system – corrosion protection" for particularly high environmental requirements when using stainless steel.
- Motors are designed to withstand vibration and shocks in roller-table motors 1PC1423
  - Type of construction IM B3 according to class 3M6 in accordance with EN 60721-3-3 (shocks up to 25 g)
  - Available in types of construction IMB5 and IMB35 according to class 3M4 in accordance with EN 60721-3-3 (shocks up to 10 g)

Has been tested and confirmed in the test laboratory.

- Tested SIMOTICS system
  - DP roller-table motors with SINAMICS S120 frequency converter (high insulation strength up to 500 V, optionally up to 690 V)
- Standard version has thermistor motor protection for alarm and tripping
- Terminal box on the NDE bearing plate, optional
  - Terminal box on right-hand side
- Factory certification 2.1 describes the general conditions for converter operation with SINAMICS S and SINAMICS G, and therefore provides valuable support for our customers when engineering and commissioning their drive systems. It is provided with each motor shipped. In depth know-how with respect to plant-specific designs
- Worldwide service network with 24-hour service hotline for motors and converters
- High resistance to peak transient torques  $T_B = 3 \times T_{rated}$
- 24-month warranty, 36 months optionally available.

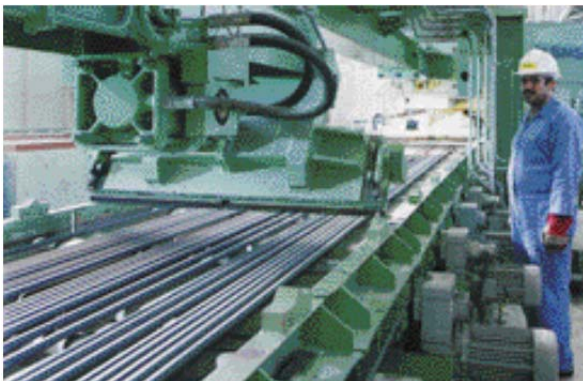
# Introduction

Orientation

## General

### Application

Steel plant motors have been specially designed for metal production applications. They are capable of withstanding exceptionally high mechanical stresses caused by vibration and shocks. Their primary applications include the transport of steel or aluminum, and the transport of semi-finished products to cooling or heating systems, or to metal sheet and foil coilers.



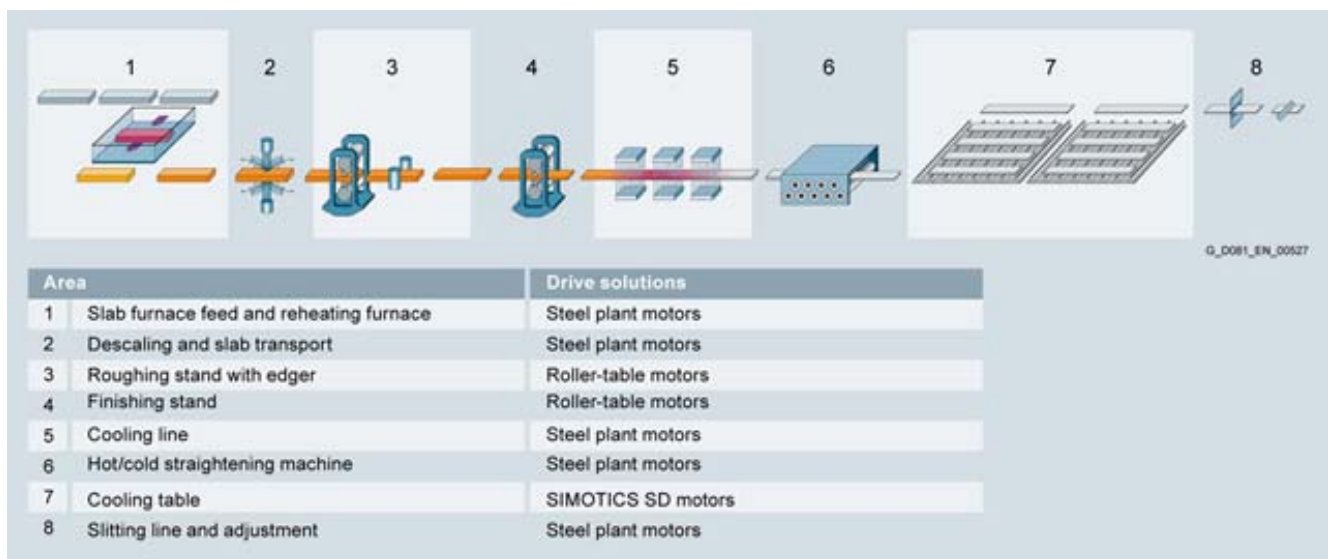
Steel plant motors – transport material for coiling

### Applications in a typical steel plant

Siemens roller-table motors with "ring-rib" design must be used for reversing rolling operation in the "hot zone" (close to the roll stands) in extremely polluted atmospheres with severe continuous vibrations combined with continuous shocks.



Application for roller-table motor



## Technical specifications

### Housing design

- Steel plant motors have a low-vibration, cast-iron housing in longitudinal-rib design and bearing plates with special vibration-damping action.
- Roller-table motors also have a torsionally rigid ring-rib housing and are suitable for use in environments with the highest mechanical requirements.

### Bearings

Optimized bearing systems have been developed to ensure safe, fault-free operation of the motors when they are subjected to the combined effects of vibration and shocks. The motors are equipped as standard with bearings of series 63. The bearing at the drive end (DE) is always a located bearing, while the bearing arrangement is preloaded at the non-drive end (NDE).

#### Bearing plates

Bearing plates are installed on both sides and are designed in terms of their form and material to withstand the high mechanical stresses defined in accordance with EN 60721-3-3. It is absolutely essential that the actual stresses associated with the application are taken into account in these design data. Verification of the design must be requested in special cases.

### Electrical design

Motor type 1PC1433 can be ordered in all standard voltage variants, see selection and ordering data.

Motor types 1PC1443, 1PC1463, and 1PC1423 have been specially developed for converter operation. The standard version of these motors is designed for a rated voltage of 400 V, other voltages are optionally available. A voltage of up to 690 V is optionally available for 1PC1423.

#### Type of connection for 1PC1433, 1PC1443, and 1PC1463:

Frame sizes 112 M to 160 L: Star (neutral point in winding overhang)

Frame sizes 180 L to 280 M: Delta

#### Type of connection for 1PC1423:

Frame sizes 112 M to 200 K: Star (neutral point in winding overhang)

### Insulation

All motors are fitted with the DURIGNIT IR 2000 insulation system in temperature class 155 (F). Utilization of the motors for line operation corresponds to temperature class 130 (B) at rated power and in line operation, and to temperature class 155 (F) when the motors are supplied by a converter.

The variants for converter operation are optimized for use with SINAMICS S120 converters. The motors are fitted with special "Advanced" insulation to ensure that they can operate without restriction in four-quadrant operation on SINAMICS S120 converters (incl. Active Line Module) up to a maximum line voltage of 480 V. "Premium" insulation is optionally available for roller-table motors 1PC1423 with line voltages up to 690 V.

Max. voltage stress:

	Reinforced insulation system (Advanced)	Special insulation system (Premium)
$U_{\text{phase-to-phase}}$	$\leq 3200 \text{ Vpp}$	$\leq 4400 \text{ Vpp}$
$U_{\text{phase-ground}}$	$\leq 2800 \text{ Vpp}$	$\leq 3000 \text{ Vpp}$

### Motor connection

Steel plant motors: The standard terminal box from the basic motor series 1LE15 is also used for steel plant motors. The terminal box position can be freely selected. Larger terminal boxes are optionally available.

Roller-table motors: A terminal box on the NDE bearing plate is provided as standard; optionally available on the right-hand side of the housing (required for mounting a rotary pulse encoder).

All motors generally have an external grounding terminal.

### Foot design

Steel plant motors

Motor construction types with feet and terminal box at the top have cast feet. With motor construction types with feet and terminal box on the right-hand side/left-hand side, the feet are screwed on with frame sizes 112 M to 200 L, and cast with frame sizes 225 M to 280 M.

Roller-table motors:

The feet are cast on.

### Winding temperature monitoring

Standard version of motor 1PC1433 for line operation has no PTC thermistors, but these can be optionally fitted.

The standard versions of motor types 1PC1443, 1PC1463, and 1PC1423 specially designed for converter operation are equipped with PTC thermistors for alarm and tripping. Alternatively, the temperature is detected by one or two KTY84-130 sensors or Pt1000 (which replace the PTC thermistors).

### Paint finish

Steel plant motors:

Standard version is in corrosivity class C3 according to IEC 60721, Part 2-1.

Roller-table motors:

Standard version is in corrosivity class C4 according to IEC 60721, Part 2-1 with special paint finish, sea air resistant, and internal coating.

Other colors and paint finishes are optionally available.

### Degree of protection

Steel plant motors:

Standard version with IP55, optionally IP56 or IP65

Roller-table motors:

Standard version: IP66 degree of protection

### Higher coolant temperatures

Coolant temperatures that exceed CT 40 °C require derating in accordance with the following table:

	Coolant temperature CT			
	40 °C	45 °C	50 °C	55 °C
Temperature class 155 (F) used according to 130 (B) and is suitable for line operation of self-ventilated steel plant motors				
Derating factor for line operation	1.00	0.96	0.92	0.87

# Introduction

## Orientation

### General technical specifications

#### Technical specifications (continued)

##### Overview of technical specifications

This table provides an overview of the most important technical differences between the steel plant motors and roller-table motors.

Series	SIMOTICS DP steel plant motors			Roller-table motors
	1PC1433	1PC1443	1PC1463	1PC1423/1LP3
Cooling method	IC411 self-ventilated	IC411 self-ventilated	IC410 non-ventilated	IC410 non-ventilated
Voltage supply	Line operation	Converter operation		Line or converter operation
Efficiency classes acc. to EN 60034-30	IE3 for line motor	– (no IE class for converter motors)		–
Frame sizes	112 M ... 280 L			1PC1423: 112 M ... 200 S 1LP3: 225 M ... 400
No. of poles	4-pole: frame sizes 112 ... 280 6-pole: frame sizes 180 ... 280			4-pole: frame sizes 112 ... 180 6-pole: frame sizes 180 ... 315 8-pole: frame sizes 315 ... 400
Frequencies	50 Hz, 60 Hz, and project-specific nominal points			
Standard voltages	230 V, 400 V, 460 V, 500 V, 690 V			
Rated speed	4-pole: 1500 rpm (50 Hz) 1800 rpm (60 Hz)		4-pole: 1500 rpm (50 Hz) 1800 rpm (60 Hz) 2610 rpm (87 Hz)	4-pole: 1500 rpm (50 Hz) 1800 rpm (60 Hz) 2610 rpm (87 Hz)
	6-pole: 1000 rpm (50 Hz) 1200 rpm (60 Hz)		6-pole: 1000 rpm (50 Hz) 1200 rpm (60 Hz) 1740 rpm (87 Hz)	6-pole: 1000 rpm (50 Hz) 1200 rpm (60 Hz) 1740 rpm (87 Hz)
				8-pole: 750 rpm (50 Hz) 900 rpm (60 Hz) 1300 rpm (87 Hz)
Rated power	2.2 ... 104 kW		3.1 ... 36 kW	3.5 ... 66 kW
Rated torque	22 ... 579 Nm	21 ... 552 Nm	20 ... 346 Nm	23 ... 2135 Nm
Acceleration torque	$T_B = \min. 3 \times T_{rated}$ for non-ventilated motors			
Duty types	S1, S3, S6, S7, S9			S3, S6, S7, S9
Housing material	Cast-iron 20			Cast iron with spheroidal graphite
Type of housing	Longitudinal ribs			Round ribs
Temperature class	155 °C (F)			
Insulation according to EN 60034-1	Temperature class 155 (F), Durignit IR2000			
Winding insulation (variable)	Reinforced "Advanced" insulation system up to 500 V AC on the SINAMICS S120 converter as standard			<ul style="list-style-type: none"> <li>Reinforced "Advanced" insulation system up to 500 V AC on the SINAMICS S120 converter</li> <li>Optional "Premium" insulation system up to 690 V AC on the SINAMICS S120 converter</li> </ul>
Mechanical stability	3M4 according to EN 60721-3-3 (approx. 10 g incl. 10 shocks/min)			<ul style="list-style-type: none"> <li>Type of construction IM B3: 3M6 according to EN 60721-3-3 (shock up to 25 g)</li> <li>All other types of construction: 3M4 in accordance with EN 60721-3-3 (shock up to 10 g)</li> </ul>
Degree of protection	IP55 as standard; optional IP56, IP65			<ul style="list-style-type: none"> <li>Frame sizes 112 ... 200: IP66 as standard</li> <li>Frame sizes 225 ... 400: IP55 as standard; optional IP56, IP65</li> </ul>
Voltage	Operating data for line voltage 400 V (50 Hz), other voltages/frequencies optionally available			Operating data for line voltage 400 V (50 Hz) and 690 V (50 Hz); other voltages/frequencies optionally available
Certificates	CE, EAC			CE, EAC
Marking	IEC EN 60034			IEC EN 60034
Permissible coolant temperature	Standard: -20 ... +40 °C			<ul style="list-style-type: none"> <li>Frame sizes 112 M to 200 S: -20 to +40 °C</li> <li>Frame sizes 200 L to 400: -20 to +40 °C</li> </ul>
Types of construction acc. to EN 60034-7	IM B3, IM B5, IM V1, IM V3, IM B35			IM B3, IM B5, IM B35



**Technical specifications (continued)**

	<b>SIMOTICS DP steel plant motors</b>			<b>Roller-table motors</b>
Series	1PC1433	1PC1443	1PC1463	1PC1423/1LP3
Paint finish (climate group according to IEC 60721)	RAL 7030, class C3 as standard			RAL 7030, class C4 as standard
Vibration quantity level according to EN 60034-14	Level A or B optionally available			
Shaft extension in accordance with DIN 748	Half-key balancing as standard			
Sound pressure level according to EN ISO1680 (tolerance +3 dB)	See "Selection and ordering data"			
Weights	See "Selection and ordering data"			
Modular mounting concept	Encoder, forced ventilation optional			Pulse encoder
Consistent series concept	<ul style="list-style-type: none"> <li>• Cast housing feet, screwed-on feet optional</li> <li>• Terminal box obliquely partitioned and rotatable through 4 × 90°</li> <li>• Bearings of series 63 at both ends as standard</li> </ul>			–
Options	See "Article No. supplements and special versions".			

# Introduction

Orientation

## Article No. 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.:

**1PC1433-1EB43-4AB4-Z**

**H00**

The article number structure and logic corresponds to that of 1LE1 line motors.

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

For deviations in the second and third block from the catalog codes either **Z** or **90** should be used as 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	
<b>1st to 5th position:</b> Digit, letter, letter, digit, digit	<b>Motor type</b>		1	P	C	1															
<b>5th position:</b> Digit	<b>Version</b>						4														
<b>6th position:</b> Digit	<b>Ventilation</b>	Roller-table motors: IC410 (VSD – converter operation) Steel plant motors: IC411/IC416 (DOL – line operation) Steel plant motors: IC411 (VSD – converter operation) Steel plant motors: IC410 (VSD – converter operation)						2 3 4 6													
<b>7th position:</b> Digit	<b>Efficiency class</b>	IE3							3												
<b>8th and 9th position:</b> Digit, letter	<b>Motor frame size</b>	112 ... 280									1 ... 2	B ... D									
<b>10th position:</b> Letter	<b>No. of poles</b>	4-pole 6-pole											B C								
<b>11th position:</b> Digit	<b>Core length</b>												0 ... 8								
<b>12th and 13th position:</b> 2 digits	<b>Voltage, circuit and frequency</b> (encoded with two digits, see “Selection and ordering data”)														0 ... 9		0 ... 7				
<b>14th position:</b> Letter	<b>Type of construction</b> (encoded with A ... J)																	A ... J			
<b>15th position:</b> Letter	<b>Motor protection</b> (encoded with A ... J)																		A ... J		
<b>16th position:</b> Digit	<b>Terminal box position</b>	Terminal box at top (viewed from the drive end DE) Terminal box right Terminal box left NDE terminal box																		4 5 6 8	
	<b>Special order versions</b>																				- Z
		• encoded – additional order code required • not encoded – additional plain text required																			

### Ordering example

Selection criteria	Requirement	Structure of the Article No.
Motor type 1PC14	Steel plant motor with High Efficiency IE3, line operation, IP55 degree of protection, cast-iron version	<b>1PC1433-</b> □□□□□-□□□□
Motor frame size/No. of poles/Speed	180 L/4-pole/1500 rpm	<b>1PC1433-1EB4</b> □-□□□□
Rated power	22 kW	<b>1PC1433-1EB43-4</b> □□□□
Voltage and frequency	400 VΔ/690 VY, 50 Hz	<b>1PC1433-1EB43-4A</b> □□□□- <b>Z</b>
Type of construction with special version	IM B3 with protective cover	<b>H00</b>
Motor protection	Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	<b>1PC1433-1EB43-4AB</b> □- <b>Z</b>
Terminal box position	Terminal box at top (viewed from drive end (DE))	<b>H00</b>
		<b>1PC1433-1EB43-4AB4-Z</b>
		<b>H00</b>

## Overview

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

Standard version	Additional identification code –Z with order code		S05	S06
	S03 (standard for 1PC1423)	S04		
<b>Paint finish, suitability of paint finish for climate group in accordance with IEC 60721, Part 2-1</b>				
Standard paint finish "steel plant motors" C3	Special paint finish system "sea air resistant" C4	Special paint finish system "offshore" C5	Interior paint finish, all bare internal components primed with rust inhibitor <sup>1)</sup>	Polyurethane-based top coat, can only be ordered with <b>S03</b> or <b>S04</b>
<b>Use</b>				
Worldwide (global) for outdoor installation in direct sunlight and/or exposed to weather conditions.	Recommended for indoor or outdoor installation directly exposed to weather conditions, industrial climate with moderate SO <sub>2</sub> exposure, VIK requirements, inshore maritime climate, but not offshore maritime climate, e.g. for crane drives and also in the paper industry.	Recommended for outdoor installations directly exposed to weather conditions, industrial climate with moderate CO <sub>2</sub> exposure, and offshore maritime climate, e.g. for crane drives.	The motors can be supplied with internal paint finish on request. Recommended when there is a risk of heavy condensate formation.	Exposure to direct sunlight (UV light) may cause a change in color. When color stability is a requirement, a polyurethane-based paint system is recommended for the top coat (RAL 7030). Colors other than RAL 7030 are available on request.
<b>Test requirements according to EN ISO 12944-2 Corrosion Category</b>				
C3	C4	C5	–	–
<b>Total film thickness – nominal film thickness in µm <sup>2)3)</sup></b>				
<b>Motors in aluminum version</b>				
2-K epoxy resin				
90	150	170 <sup>3)</sup>	–	–
<b>Polyurethane/S06</b>				
–	150	170 <sup>3)</sup>	–	Film thickness similar to S03/S04
<b>Resistance</b>				
	Chemical exposure up to 5 % acid and caustic solution concentration	Chemical exposure up to 5 % acid and caustic solution concentration		Sunlight
<b>Temperature range</b>				
Up to 120 °C for brief periods	–40 ... +140 °C	–40 ... +140 °C		
Up to 100 °C continuously				
<b>Suitability for recoating <sup>4)</sup></b>				
Can be recoated within 1 week				
<b>Pre-treatment of parts</b>				
All parts cleaned and degreased, steel and cast-iron parts sandblasted				
<b>Drying</b>				
All layers oven-dried				
<b>Top coat colors</b>				
Standard version	RAL 7030 (stone gray)			
Available colors	Alternative standard and special RAL colors must be ordered with order code <b>Y53</b> or <b>Y56</b> and specification in plain text of the required RAL number (see tables for order codes <b>Y53</b> and <b>Y56</b> on the following page for selection of available RAL numbers/RAL colors). <b>S06</b> is available only in standard RAL 7030			
<b>Treatment of bare metal areas of shaft extensions and flanges</b>				
Coated with anti-corrosion agent that repels water and palm sweat				
<b>Miscellaneous</b>				
Abrasion-resistant, elastic, scratch-resistant, shock-proof, totally light resistant (but not permanently UV resistant), physiologically harmless				

### Note:

For transport, the bare parts are coated with anti-corrosion paint which will last for a limited amount of time.

- 1) Machined laminated rotor core, shaft, inner diameter of cast-iron housing.
- 2) Total film thickness:
  - The specified film thickness represents average values for the external motor surfaces
  - Unpainted or one layer of paint (30 µm) less beneath the fan cover
  - The film thickness may differ at inaccessible locations (pockets/recesses or bases of ribs)
 The film thickness specified for aluminum/cast-iron versions refers not only to motors, but also to components such as the bearing plate and housing.
- 3) 50 µm zinc galvanized layer + 120 µm paint film thickness.
- 4) Primers, water-based 2-K epoxy resin paints, and polyurethane-based paints can be overpainted with paints of the same kind if the motors are in the original packaging and are still covered by the warranty. A suitability test should be conducted before any recoating work is undertaken if the customer intends to use a coating of a different kind to overpaint the motor. Alternatively, a test in accordance with EN ISO 16927 "Determination of the overcoatability and recoatability of a coating" can be requested and ordered.

## Introduction

Technical information

## Colors and paint finish

### Overview (continued)

#### *Finish in other standard RAL colors – Order code Y53 (plain-text specification of the RAL number required)*

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

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

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

#### *Paint finish in special RAL colors – Order code Y56 (plain-text specification of the RAL number required)*

RAL No.	Color name	RAL No.	Color name
3004	Purple red	6032	Signal green
3011	Brown red	6034	Pastel turquoise
3015	Light pink	7005	Mouse gray
3020	Traffic red	7009	Green gray
4005	Blue lilac	7012	Basalt gray
5000	Violet blue	7015	Slate gray
5001	Green blue	7023	Concrete gray
5002	Ultramarine blue	7036	Platinum gray
5003	Sapphire blue	7037	Dusty gray
5005	Signal blue	7038	Agate gray
5011	Steel blue	7039	Quartz gray
5013	Cobalt blue	7040	Window gray
5014	Pigeon blue	7042	Traffic gray A
5020	Ocean blue	7044	Silk gray
5021	Water blue	7045	Telegray 1
5022	Night blue	7046	Telegray 2
5023	Distant blue	7047	Telegray 4
6000	Patina green	8012	Red brown
6001	Emerald green	8025	Pale brown
6002	Leaf green	8028	Terra brown
6005	Moss green	9003	Signal white
6009	Fir green	9004	Signal black
6010	Grass green	9006	White aluminum
6016	Turquoise green	9007	Gray aluminum
6017	May green	9010	Pure white
6018	Yellow green	9011	Graphite black
6024	Traffic green	9016	Traffic white
6026	Opal green	9017	Traffic black
6029	Mint green	9018	Papyrus white

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

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

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

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

## Overview

## Connected in star for dispatch

- Option for motors 1PC1433 – order code **M01**
- Standard for motors 1PC1443 and 1PC1463 in frame sizes 112 M to 160 L
- Standard for motors 1PC1423 in frame sizes 112 M to 200 L

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

## Connected in delta for dispatch

- Option for motors 1PC1433 – order code **M02**
- Standard for motors 1PC1443 and 1PC1463 in the frame sizes 180 L to 280 M

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

## Packing weights (steel plant motors)

For motors		For land transport							
Frame size	Type <b>1PC14..-</b>	Type of construction IM B3				Types of construction IM B5, IM V1			
		in box Tare	on ISPM wooden base board with telescope box Tare	on pallet Tare	in crate Tare	in box Tare	on ISPM wooden base board with telescope box Tare	on pallet Tare	in crate Tare
		kg	kg	kg	kg	kg	kg	kg	kg
112 M	<b>1B.2</b>	–	5.0	–	–	–	5.0	–	–
	<b>1B.6</b>	–	5.0	–	–	–	5.0	–	–
132 S	<b>1C.0</b>	4.7	–	–	–	5.2	–	–	–
	<b>1C.1</b>	4.7	–	–	–	5.2	–	–	–
132 M	<b>1C.2</b>	4.7	–	–	–	5.2	–	–	–
	<b>1C.3</b>	4.7	–	–	–	5.2	–	–	–
	<b>1C.6</b>	8.7	–	–	–	9.2	–	–	–
160 M	<b>1D.2</b>	4.8	–	–	–	5.7	–	–	–
	<b>1D.3</b>	4.8	–	–	–	5.7	–	–	–
160 L	<b>1D.4</b>	4.8	–	–	–	5.7	–	–	–
	<b>1D.6</b>	8.8	–	–	–	9.7	–	–	–
180		–	–	8.0	–	–	–	10.0	–
200		–	–	11.0	–	–	–	13.0	–
225		–	–	14.0	–	–	–	17.0	–
250		–	–	22.0	–	–	–	25.0	–
280		–	–	24.0	–	–	–	27.0	–

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

Note: Packing weights for roller-table motors 1PC1423 are available on request.

## Safety notes

**Steel plant motors:** The printed German and English operating instructions (compact) are enclosed.

**Roller-table motors:** The printed German and English operating instructions are enclosed.

## Documentation

Steel plant motors: Printed German and English operating instructions enclosed with the motor are available as an option

–

Order code **B04**

## Test certificates

**Acceptance test certificate 3.1 in accordance with EN 10204 –**

Order code **B02**

## Extension of the liability for defects for SIMOTICS 1PC14 low-voltage motors

SIMOTICS 1PC14 low-voltage motors are supplied with a liability for defects of 24 months as standard. Furthermore, there is the option of offering an extension for engineering.

## Introduction

Technical information

### Version in accordance with standards and specifications

#### Overview

##### Applicable standards and specifications

The 1PC14 motors comply with the IEC 60034 series of international product standards for rotating electrical machines and, in particular, those parts that are listed in the table below.

Title	IEC/EN	EN
General specifications for rotating electrical machines	IEC 60034-1, IEC 60085	EN 60034-1
Specification of the losses and efficiency of rotating electrical machines	IEC 60034-2-1	EN 60034-2-1
General-purpose three-phase induction motors having standard dimensions and powers	IEC 60072 Mounting dimensions and power series only (no assignment of frame size to power)	EN 50347 Mounting dimensions according to IEC 60072 and power assignment for Europe
Starting performance of rotating electrical machines	IEC 60034-12	EN 60034-12
Terminal designations and direction of rotation for electrical machines	IEC 60034-8	EN 60034-8
Designation for types of construction, mounting, and terminal box position (IM code)	IEC 60034-7	EN 60034-7
Terminal box cable entries	–	DIN 42925
Built-in thermal protection	IEC 60034-11	EN 60034-11
Noise limits of rotating electrical machines	IEC 60034-9	EN 60034-9
IEC standard voltages	IEC 60038	IEC 60038
Methods of cooling of rotating electrical machines (IC code)	IEC 60034-6	EN 60034-6
Vibration severity of rotating electrical machines	IEC 60034-14	EN 60034-14
Vibration limits	–	ISO 10816
Degrees of protection for rotating electrical machines (IP code)	IEC 60034-5	EN 60034-5
International efficiency classes for rotating electrical machines (IE code)	IEC 60034-30-1	EN 60034-30

##### Tolerances for electrical data

According to EN 60034, the following tolerances are permitted:

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

Efficiency  $\eta$  at

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

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

$\eta$  must be set to a decimal number.

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

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

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

Locked-rotor current  $+20\%$

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

Breakdown torque  $-10\%$

Moment of inertia  $\pm 10\%$

##### Certifications

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

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

## Overview

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

Low-voltage motors that fall within the scope of the EU Directive must fulfill the specifications of international efficiency class IE3.

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

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

In accordance with EISA, modified conditions have been in effect since June 1, 2016.

This law stipulates that all motors must comply with the requirements stated in NEMA MG1 Table 12-12 (NPE = Nema Premium Efficient).

From this date onwards, therefore, motors previously covered by the EPAAct must also comply with NPE. The NPE requirements apply to motors with the following characteristics/operating conditions:

- Line supply voltage  $\leq 600$  V
- Line frequency 60 Hz
- Power range 1 hp to 500 hp
- Number of poles: 2-, 4-, 6-, 8-pole motors and geared motors
- Uninterrupted duty S1 (here: 1PC1433)

Exclusions from the EISA efficiency requirements:

- Brake motors
- Converter motors

#### Note:

Option: Electrical according to NEMA MG1-12

Order code **D30:**

Option: Design according to UL with "Recognition Mark"

Order code **D31:**

These options can be ordered for steel plant motors 1PC1433 that are not subject to the EISA specifications (e.g. for use outside North America).

## Introduction

Technical information

### Motor protection

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#### Overview

##### *Motor protection*

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

Standard version of motor 1PC1433 for line operation has no PTC thermistors, but these can be optionally fitted.

15th position of the Article No. Letter **A**

The standard versions of motor types 1PC1443, 1PC1463, and 1PC1423 specially designed for converter operation are equipped with PTC thermistors for alarm and tripping.

15th position of the Article No. Letter **C**

Alternatively, the temperature is detected by one (letter **F**) or two (letter **G**) KTY84-130 sensors (which replace the PTC thermistors).

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

The following applies to all motors:

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

Current-dependent protection devices

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

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

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

For standard duty with short start-up times and starting currents not too excessive and for low numbers of switching operations, motor circuit breakers provide adequate protection. Motor circuit breakers are not suitable for heavy starting duty or high numbers of switching operations. Differences in the thermal time constants for the protection equipment and the motor result in unnecessary early tripping when the circuit breaker is set to rated current.

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

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

PTC thermistors – thermistor motor protection

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

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

15th position of the Article No. Letter **B**.

Two temperature sensor circuits are used if a warning is required before the motor is shut down (tripped).

The warning is normally set to 10 K below the tripping temperature.

Motor protection with PTC thermistor for alarm and tripping. In the terminal box, 4 auxiliary terminals are required.

15th position of the Article No. Letter **C**

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



## Overview

### KTY 84-130 temperature sensor

This temperature sensor is a semiconductor that changes its resistance depending on temperature in accordance with a defined curve. Within the measuring range, however, the KTY 84-130 characteristic rises almost linearly.

The temperature sensor is embedded in the winding overhang of the motor in the same way as the components mentioned above. It is characterized by its outstanding precision, high reliability, and temperature stability, as well as a fast response time. Thanks to these properties, which permit the almost analog monitoring of winding temperature, the KTY 84-130 is preferred for converter operation.

Motor temperature sensing with embedded temperature sensor KTY 84-130. In the terminal box, 2 auxiliary terminals are required.

15th position of the Article No. Letter **F**

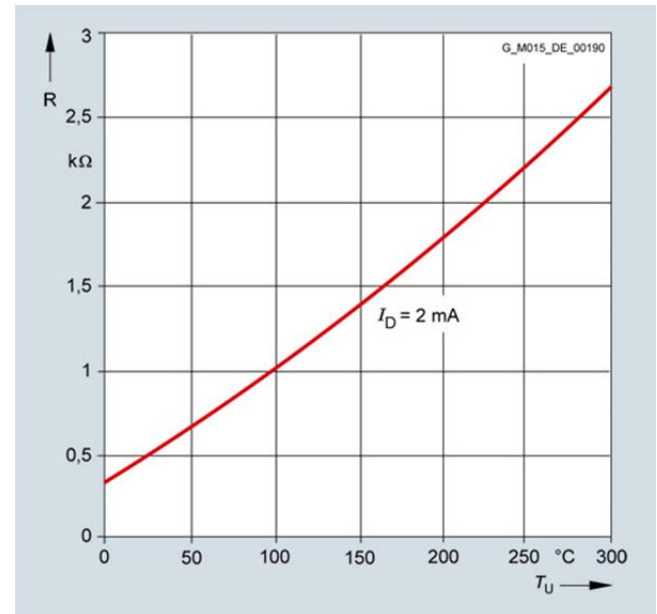
Motor temperature sensing with two embedded temperature sensors KTY 84-130. In the terminal box, 4 auxiliary terminals are required.

15th position of the Article No. Letter **G**

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

For line operation, the 3RS10 temperature monitoring device, which forms part of the protection equipment, can be ordered separately. For further details, see Catalog IC10, Article No.: E86060-K1010-A101-A7.

### KTY 84-130 temperature sensor characteristic



# Introduction

Technical information

## Motor protection

### Overview

#### Pt100/Pt1000 resistance thermometer

The resistance thermometer has a chip for a temperature sensor, the resistance of which changes in relation to temperature according to a series of reproducible basic values. The changes in resistance are transferred as changes in current. At 0 °C, the measurement resistances are adjusted to 100  $\Omega$  for the Pt100 and 1000  $\Omega$  for the Pt1000, and correspond to the accuracy class B (i.e. the relationship between resistance and temperature). The limit deviation is  $\pm 0.3$  °C and the admissible deviations are defined in EN 60751.

The Pt1000 resistance thermometer will gradually replace the KTY84-130 temperature sensors available today.

Similar to the method of operation of the Pt100, the relationship between the temperature and the electrical resistance of conductors is utilized in the Pt1000 to measure the temperature, just like with the additional resistance thermometers described above.

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

Motor temperature sensing with 3 Pt100 resistance thermometers. In the terminal box, 6 auxiliary terminals are required.

15th position of the Article No. Letter H

Motor temperature detection by 6 Pt100 resistance thermometers. In the terminal box, 12 auxiliary terminals are required.

15th position of the Article No. Letter J

Motor temperature sensing by embedded Pt1000 resistance thermometers. In the terminal box, 2 auxiliary terminals are required.

15th position of the Article No. Letter K

Motor temperature sensing by two embedded Pt1000 resistance thermometers. In the terminal box, 4 auxiliary terminals are required.

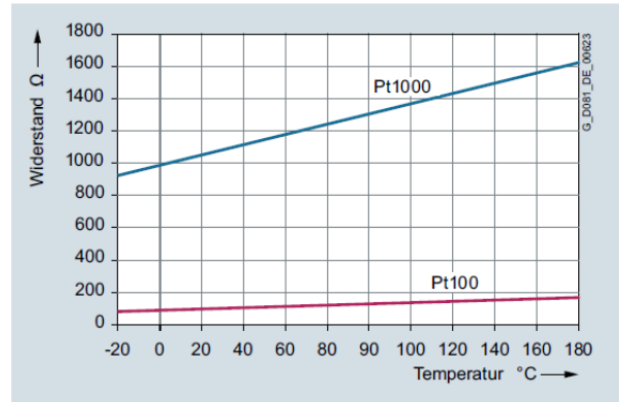
15th position of the Article No. Letter L

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

For line operation, the 3RS10 temperature monitoring relay, which forms part of the protection equipment, can be ordered separately.

For further details, see Catalog IC 10, Article No.: E86060-K1010-A101-A7.

Pt100/Pt1000 resistance thermometer characteristic



## Overview

### Efficiency and power factor

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

### Rated speed and direction of rotation

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

When U1, V1, W1 are connected to L1, L2, L3 the motor rotates clockwise when viewing the drive shaft end. The motor rotates counter-clockwise when two phases are interchanged.

### Rated torque

The rated torque in Nm delivered at the motor shaft is

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

$P$  Rated power in kW

$n$  Speed in rpm

#### Note:

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

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

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

- 160 % for CL 16
- 130 % for CL 13

of the rated torque.

### Motors specially designed for converter operation

The 1PC1443, 1PC1463, and 1PC1423 motors have been specifically designed for converter operation. The catalog data apply to operation with Siemens SINAMICS converters. The catalog data are applicable for operation with SINAMICS S120 converters. When operated with an alternative converter, the catalog data apply (thermal torque limits, maximum overload torques), approximately for the following general conditions:

- The converter is operated with a minimum rated pulse frequency of 4 kHz (90 kW 2 kHz).
- The converter can provide the rated voltage as listed in the catalog.
- Permissible voltage peaks of the standard insulation (Advanced)  $\hat{U}_{LL} \leq 1600 \text{ V}$ ,  $\hat{U}_{LE} \leq 1400 \text{ V}$ ,  $t_s > 0.1 \mu\text{s}$ .

For SINAMICS G120 converters (from firmware Version 4.7 and higher), the SIMOTICS GP/SD-VSD10 line can be selected as motor category in the SINAMICS converter using the STARTER software or at the converter operator panel (AOP – Advanced Operator Panel; BOP – Basic Operator Panel) and can be addressed using the motor code No.

#### Rated voltage

The tolerance for the rated voltage is in accordance with EN 60034-1. A rated voltage is not specified. The rated motor voltages are selected so that when operated with a SINAMICS converter, the available voltage is optimally utilized.

#### Insulation

The motors can be operated with line voltages 480/500 V with SINAMICS S converters (uncontrolled and controlled infeed) when maintaining the permissible peak voltages specified above. Operation at higher line voltages ( $\leq 690 \text{ V}$ ) is possible for motors with special insulation 690 V (Premium) or by using suitable converter circuits (du/dt or sine-wave filter) to limit the voltage peaks that occur ( $\hat{U}_{LL} \leq 1600 \text{ V}$ ,  $\hat{U}_{LE} \leq 1400 \text{ V}$ ).

If the converter is equipped with a filter (du/dt or sine-wave filter), then the insulation system can also be used for higher line voltages. This also applies for operation with a pulse-controlled AC converter with voltage rise times  $t_s > 0.1 \mu\text{s}$  at the motor terminals.

For converter operation with the power ratings specified in the catalog, the motors can be utilized corresponding to thermal class 155 (F) (service factor 1.0).

In the case of a fault when connected to an IT system (ground fault), the insulation is excessively stressed. In this case, the process should be terminated as quickly as possible ( $t < 2 \text{ h}$ ), and the fault resolved. We do not recommend operation on TN supply systems with transition-point grounding.

# Introduction

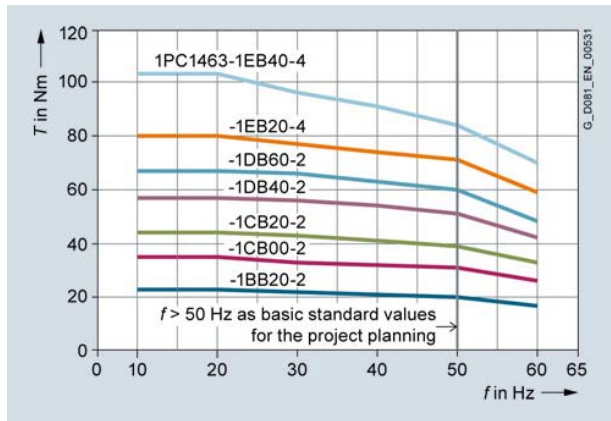
Technical information

## Voltages, currents, and frequencies

### Overview

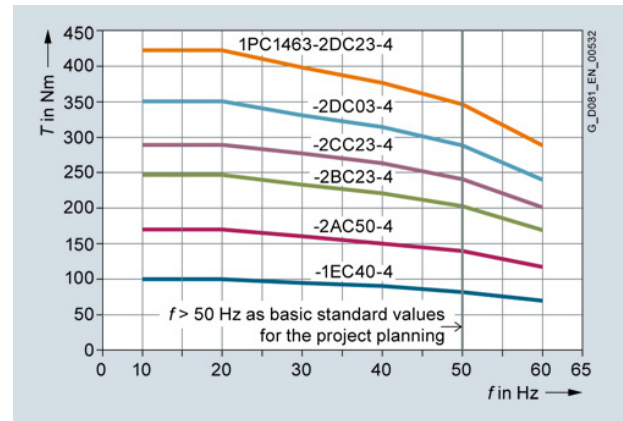
Torque-frequency characteristic curves for 1PC1463 motors, 4-pole

Type	Frequency $f$ Hz					
	10	20	30	40	50	60
1PC1463-1BB20-2	23.0	23.0	22.0	21.0	20.0	16.9
1PC1463-1CB00-2	35.0	35.0	33.0	32.0	31.0	26.2
1PC1463-1CB20-2	44.0	44.0	43.0	41.0	39.0	33.0
1PC1463-1DB40-2	57.0	57.0	56.0	54.0	51.0	42.3
1PC1463-1DB60-2	67.0	67.0	66.0	63.0	60.0	48.2
1PC1463-1EB20-4	80.0	80.0	77.0	74.0	71.0	59.0
1PC1463-1EB40-4	103.0	103.0	96.0	91.0	84.0	69.9



Torque-frequency characteristic curves for 1PC1463 motors, 6-pole

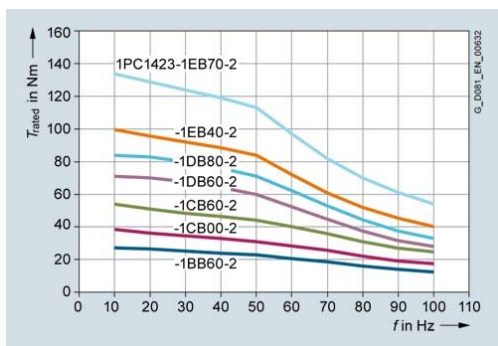
Type	Frequency $f$ Hz					
	10	20	30	40	50	60
1PC1463-1EC40-4	100.0	100.0	95.0	90.0	82.0	70.0
1PC1463-2AC50-4	170.0	170.0	160.0	150.0	140.0	117.0
1PC1463-2BC23-4	247.0	247.0	233.0	221.0	203.0	169.0
1PC1463-2CC23-4	289.0	289.0	277.0	263.0	241.0	201.0
1PC1463-2DC03-4	351.0	351.0	331.0	314.0	288.0	240.0
1PC1463-2DC23-4	422.0	422.0	398.0	377.0	346.0	288.0



**Overview**

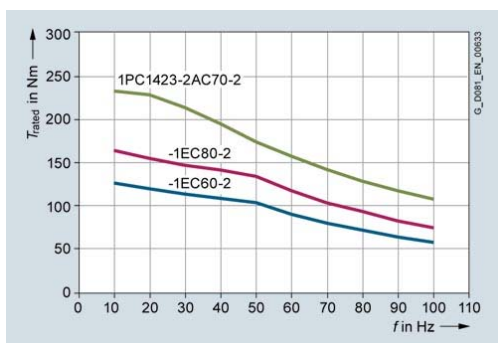
Torque-frequency characteristic curves for 1PC1423 motors, 4-pole

Type	Frequency									
	$f$									
	Hz									
	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>100</b>
	Torque									
	$T$									
	Nm									
1PC1423-1BB60-2	27.1	26.5	25.3	24.0	22.7	20.7	18.5	16.0	14.0	12.3
1PC1423-1CB00-2	38.3	36.2	34.4	32.9	31.0	28.4	25.6	22.0	19.2	17.5
1PC1423-1CB60-2	54.0	51.0	48.4	46.3	43.9	40.0	36.0	31.0	27.0	24.6
1PC1423-1DB60-2	71.0	70.1	67.6	64.2	60.0	52.4	44.8	37.6	31.7	27.9
1PC1423-1DB80-2	84.0	83.0	80.0	76.0	71.0	62.0	53.0	44.5	37.5	33.0
1PC1423-1EB40-2	99.6	95.8	92.1	88.4	84.0	72.1	60.9	52.0	45.3	40.1
1PC1423-1EB70-2	134.0	129.0	124.0	119.0	113.0	97.0	82.0	70.0	61.0	54.0



Torque-frequency characteristic curves for 1PC1423 motors, 6-pole

Type	Frequency									
	$f$									
	Hz									
	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>90</b>	<b>100</b>
	Torque									
	$T$									
	Nm									
1PC1423-1EC60-2	126.0	119.0	113.0	108.0	103.0	90.0	79.0	71.0	63.0	57.0
1PC1423-1EC80-2	164.0	155.0	147.0	141.0	134.0	117.0	103.0	93.0	82.0	74.0
1PC1423-2AC70-2	233.0	229.0	214.0	195.0	174.0	157.0	142.0	128.0	117.0	107.0



## Introduction

Technical information

### Voltages, currents, and frequencies

#### Overview (continued)

##### Motors for line operation

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

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

For further details, see EN 60034-1.

According to the standard, longer operation is not recommended for category B. See "Rating plates and additional rating plates" for details of the rating plate inscriptions and corresponding examples. The selection and ordering data state the rated current at 400 V. The IEC 60038 standard specifies a tolerance of  $\pm 10\%$  for line voltages of 230 V, 400 V, and 690 V.

Line voltages	Voltage code
<b>1PC1 motors</b>	
230 V $\Delta$ /400 VY, 50 Hz	22
400 V $\Delta$ /690 VY, 50 Hz	34
500 VY, 50 Hz	27
500 V $\Delta$ , 50 Hz	40

##### Non-standard voltages and/or frequencies

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

For some non-standard voltages at 50 or 60 Hz, order codes are specified. They are ordered by specifying the code digit **9** for voltage in the 12th position of the Article No. as well as the code digit **0** in the 13th position of the Article No. and the corresponding order code.

Rating plate and additional rating plates

Overview

In accordance with EN 60034-1, the approximate total weight is specified on the rating plate for all motors.

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

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

Optionally, the number of additional rating plates can be ordered using order codes Y82 and Y80. Does not apply to rotational direction arrows, PTC thermistor plates, other notices.

Additional (rating) plate(s), order code **M10**.

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

Overview of languages on the rating plate

Motor type	Frame size	Rating plate	
		German (de)	English (en)
1PC14	112 ... 280	☐	○

☐ Standard version  
○ Without additional charge

Other languages on request

Examples of rating plates

**SIEMENS**  
Made in Germany  
3-Mot. 1AV2162A 1LE1001-1DA234AA4 E 12025331139\_01001  
IEC/EN 60034 160M IM B3 IP 55  
67kg Th.Cl. 155(F) -20°C ≤TAMB≤40°C  
Bearing DE 6209-2ZC3 NE 6209-2ZC3  
V Hz A kW COS NOM.EFF 1/min IE-CL  
400 Δ 50 20.5 11.0 0.87 89.4% 2955 IE2  
690 Y 50 11.8 11.0 0.87 89.4% 2955 IE2  
450 Δ 60 19.9 12.6 0.88 90.2% 3555 IE2  
460 Δ 60 17.8 11.0 0.86 90.2% 3560 IE2

**Legend:**

1 Maschinenart: Drehstrom-Niederspannungsmotor	17 Baugröße
2 Artikel-Nr.	18 Zusatzangaben (optional)
3 Fabriknummer (Ident.-Nr., Seriennummer)	19 Einsatztemperaturbereich (nur wenn abweichend von der Norm)
4 Bauform	20 Aufstellhöhe (nur wenn größer als 1000 m)
5 Schutzart	21 Kundendaten (optional)
6 Bemessungsspannung [V] und Wicklungsschaltung	22 Herstellungsdatum JJMM
7 Frequenz [Hz]	23 Halbkeilwuchtung
8 Bemessungsstrom [A]	24 Code Letter „CL“
9 Bemessungsleistung [kW]	25 Motor Type Nummer (MT)
10 Leistungsfaktor (cos φ)	26 IEC-Normreihe Leistung 50 Hz (P50/50 Hz) 400 Δ
11 Wirkungsgrad	27 IEC-Normreihe Leistung 50 Hz (P50/50 Hz) 690 Δ
12 Bemessungsdrehzahl [min <sup>-1</sup> ]	28 Äquivalente Leistung 60 Hz bei gleicher Ausnutzung wie IEC-Normreihe 50 Hz
13 IE-Wirkungsgradklasse	29 IEC-Normreihe Leistung 60 Hz (P50/60 Hz)
14 Normen und Vorschriften	
15 Maschinengewicht [kg]	
16 Wärmeklasse	

SIEMENS		IE3		CE			
Made in Czech Rep. D-90441 Nürnberg							
3-MOT 1C V3184B 1PC14331EB434AB4   UD 1705/							
IEC/EN 60034 180L IMB3 IP55							
180kg	Th.Cl. 155(F)	-20°C ≤TAMB≤40°C					
Bearing							
○	DE 6311-2RSC3	○					
○	NE 6311-2RSC3	○					
V	Hz	A	kW	cosφ	NOM.EFF	1/min	IE-CL
400 Δ	50	41.0	22.0	0.83	93.0	1470	IE3
690 Y	50	24.0	22.0	0.83	93.0	1470	IE3
460 Δ	60	41.0	25.3	0.83	93.6	1770	IE3
460 Δ	60	36.5	22.0	0.81	93.6	1775	IE3

1PC1433 – steel plant motor for line operation, self-ventilated

SIEMENS		IE3		CE				
Made in Czech Rep. D-90441 Nürnberg								
3-MOT 1C V3184B 1PC14431EB404AB4   UD 1705/								
IEC/EN 60034 180L IMB3 IP55								
180kg	Th.Cl. 155(F)	-20°C ≤TAMB≤40°C						
Bearing								
○	DE 6210-ZC3	○						
○	NE 6210-ZC3	○						
CONVERTER DUTY ONLY VPWM SINAMICS S120 Nmax 4200 1/min								
V	Hz	A	kW	cosφ	Nm	1/min	EFF	CODE
400 Δ	51.1	41.0	22.0	0.83	140	1500	93.0	10109
460 Δ	61.2	41.0	25.3	0.83	134	1800	93.6	

1PC1443 – steel plant motor for converter operation, self-ventilated

The self-ventilated 1PC1443 motors also have the motor code for simple commissioning on SINAMICS S120 converters.

SIEMENS		IE2		CE				
Made in Czech Rep. D-90441 Nürnberg								
3-MOT 1CN3184B 1PC14631EB404AB4   UD 1705/								
IEC/EN 60034 180L IMB3 IP55								
180kg	Th.Cl. 155(F)	-20°C ≤TAMB≤40°C						
Bearing								
○	DE 6311-2RSC3	○						
○	NE 6311-2RSC3	○						
CONVERTER DUTY ONLY VPWM SINAMICS S120 Nmax 4200 1/min								
V	Hz	A	kW	cosφ	Nm	1/min	EFF	CODE
400 Δ	50	27.5	13.0	0.73	84	1480		lacc 73A Macc 252Nm

1PC1463 – steel plant motor for converter operation, naturally cooled without external fan, enclosed version

SIEMENS		IE2		CE				
Made in Czech Rep. D-90441 Nürnberg								
3-MOT 1DN3166B 1PC14231DB690AC8   UD 1705/								
IEC/EN 60034 160L IMB3 IP66								
165kg	Th.Cl. 155(F)	-20°C ≤TAMB≤40°C						
Bearing								
○	DE 6310-2RSC3	○						
○	NE 6310-2ZC3	○						
INVERTER DUTY ONLY VPWM SINAMICS S120 Nmax 4200 1/min								
V	Hz	A	kW	cosφ	Nm	1/min	EFF	CODE
400 Y	50	19.1	9.3	0.76	60	1485		lacc 53A Macc 180Nm

1PC1423 – roller-table motor for converter operation on the SINAMICS S120

## Introduction

### Technical information

## Coolant temperature

### Overview

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

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

This results in a permissible motor power of:

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

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

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

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



## Overview

### *DURIGNIT IR 2000 insulation*

The DURIGNIT IR 2000 insulating system consists of high-quality enamel wires and insulating sheet materials in conjunction with temperature-resistant resin impregnation. This ensures that these motors will have a high mechanical and electrical strength, high service value, and a long lifetime. The insulation protects the winding to a large degree against aggressive gases, vapors, dust, oil, and increased air humidity. It can withstand the usual vibration stressing. The insulation is suitable up to an absolute air humidity of 30 g water per m<sup>3</sup> of air. Moisture condensation should be prevented from forming on the winding. For higher values, the **N30** and **N31** options are available – see page 26.

Please inquire about extreme applications.

### *Restarting against residual field and opposite phase*

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

### *Winding and insulation version with regard to temperature class*

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

#### **The following applies to steel plant line motors 1PC1433:**

At rated power with line operation, the motors can be used in temperature class 130 (B).

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

According to the selection table, at rated power and rated voltage, all 1PC1433 motors in line operation have a service factor of 1.15.

Order code **N01**

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

When utilized according to temperature class 155 (F), the rated power specified in the selection and ordering data can be increased by 15 %.

Order code **N02**

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

With powers as defined in the catalog and line operation, coolant temperature is permitted to rise to 55 °C.

Order code **N03**

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

#### **The following applies to steel plant converter motors 1PC1443 and 1PC1463:**

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

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

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

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

**Temperature class 180 (H) is also available as an option:**

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

The line motors 1PC1433 can be ordered according to temperature class 180 (H) for utilization according to temperature class 155 (F) with a maximum coolant temperature of 60 °C if they are specified in plain text in the order.

Order code **Y75**

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

With line motors 11PC1433, utilization according to temperature class 180 (H) is possible at rated power and an increased coolant temperature and/or an increased power. This does not apply to the converter motors 1PC1443 and 1PC1463.

The grease service life specified is valid for a coolant temperature of 40 °C. If the coolant temperature is increased by 10 K, the grease service life and regreasing interval are halved.

#### Note:

A specific design is required due to the necessary mechanical component verification.

## Introduction

Technical information

## Windings and insulation

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### ■ Overview

#### **The following applies to roller-table motors 1PC1423:**

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

For converter operation at the powers specified in the catalog, the motors are utilized according to temperature class 155 (F).

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

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

#### **Temperature class 180 (H) is also available as an option:**

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

Order code **N11**

The grease service life specified is valid for a coolant temperature of 40 °C. If the coolant temperature is increased by 10 K, the grease service life and regreasing interval are halved.

#### Note:

A specific design is required due to the necessary mechanical component verification.

**Overview**

Increased air humidity/temperature with 30 to 60 g water per m<sup>3</sup> of air

A steel plant motor design for increased air humidity in the range between 30 and 60 g water per m<sup>3</sup> air as a function of the temperature is possible, as shown in the following table. This version has condensation drainage holes (sealed).

Order code **N30** (includes order codes **H03** and **M11**)

You must contact us if order code **N30** is to be combined with mountings (e.g. rotary pulse encoders).

Increased air humidity/temperature with over 60 to 100 g water per m<sup>3</sup> air

Steel plant motors are available in a version designed for increased air humidity of over 60 to 100 g water per m<sup>3</sup> of air, depending on the temperature, as shown in the table below. This version has condensation drainage holes.

Order code **N31** (includes order codes **H03** and **M11**).

You must contact us if order code **N31** is to be combined with mountings (e.g. rotary pulse encoders).

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

**Absolute/relative conversion of air humidity**

The values in the table with a blue background are covered by the standard version (up to < 30 g water per m<sup>3</sup> of air).

The values in the table with a light gray background are covered by order code **N30** (30 to < 60 g of water per m<sup>3</sup> of air).

The values in the table with a dark gray background are covered by order code **N31** (60 to < 100 g of water per m<sup>3</sup> of air).

Please get in contact regarding requirements exceeding 100 g water per m<sup>3</sup> of air.

Note:

The coolant temperature and installation altitude can be found from page 23 **Overview** onwards.

## Introduction

Technical information

## Windings and insulation

### Overview (continued)

#### Anti-condensation heater

Supply voltage 230 V (1~)

Order code **Q02**

Supply voltage 115 V (1~)

Order code **Q03**

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

An additional cable entry is provided for the connecting cable in the terminal box:

Motor series	Frame size	Cable entry
Cast-iron motors (SD)	≤ 180	1 × M16 × 1.5
	200	1 × M20 × 1.5
	≥ 225	2 × M20 × 1.5

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

Frame size	Heating power of the anti-condensation heating	
	Supply voltage at	
	230 V	115 V (110 V)
	Order code <b>Q02</b>	Order code <b>Q03</b>
	W	W
112	25	25
132 ... 200	50	50
225 ... 250	92	92
280	109	109

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

#### Fan impeller, fan cover

The 1PC1433 and 1PC1443 motors have radial-flow fans in the standard version that cool regardless of the direction of rotation of the motor (cooling method IC411 acc. to EN 60034-6). The air flow is forced from the non-drive-end (NDE) to the drive end (DE).

Fan impeller and cover are made of metal as standard.







In confined spaces, it must be ensured that the minimum spacing is maintained between the fan cover and the wall.

#### Clearance from wall/fan grilles

Frame size	mm
112	25
132	30
160	40
180, 200	90
225, 250	100
280	110

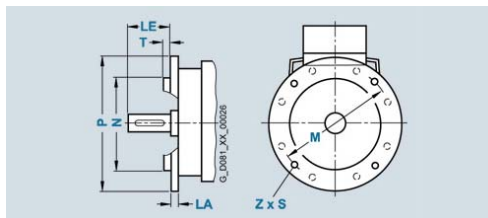
## Overview

### Standard types of construction and special types of construction

Type of construction acc. to EN 60034-7	Frame size	Letter of the 14th position of the Article No.	Additional identification code -Z with order code
<b>Without flange</b>			
IM B3/IM 1001 	112 M to 280 M	<b>A</b>	-
<b>With flange</b>			
IM B5/IM 3001 	112 M to 280 M	<b>F</b>	-
IM V1/IM 3011 without protective cover 	112 M to 280 M	<b>G</b>	-
IM V1/IM 3011 with protective cover 	112 M to 280 M	<b>G</b>	+ H00 <sup>1)</sup>
IM V3/IM 3031 	112 M to 280 M	<b>H</b>	-
IM B35/IM 2001 	112 M to 280 M	<b>J</b>	-

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

### Flange dimensions



In EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes.

The designation of flange A and C according to DIN 42948 (invalid since September 2003) are also listed for information purposes. See the table below.

(Z = the number of retaining holes)

Frame size	Type of construction	Flange type	Flange with through holes (FF/A)		Dimension designation acc. to IEC							
			Acc. to EN 50347	Acc. to DIN 42948	LA	LE	M	N	P	S	T	Z
<b>112 M</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF215</b>	A 250	11	60	215	180	250	14.5	4	4
<b>132 S/M</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF265</b>	A 300	12	80	265	230	300	14.5	4	4
<b>160 M/L</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF300</b>	A 350	13	110	300	250	350	18.5	5	4
<b>180 M/L</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF300</b>	A 350	13	110	300	250	350	18.5	5	4
<b>200 L</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF350</b>	A 400	15	110	350	300	400	18.5	5	4
<b>225 S/M</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF400</b>	A 450	16	140	400	350	450	18.5	5	8
<b>250 M</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF500</b>	A 550	18	140	500	450	550	18.5	5	8
<b>280 S/M</b>	IM B5, IM B35, IM V1, IM V3	Standard flange	<b>FF500</b>	A 550	18	140	500	450	550	18.5	5	8

<sup>1)</sup> Zweites normatives zylindrisches W ellenende L05 nicht möglich.

## Introduction

Technical information

### Motor connection and terminal box

#### Overview

##### Connection, circuit, and terminal boxes

###### Terminal box position

The terminal box of the steel plant motors can be mounted in four different locations or positions.

The position of the terminal box is coded using the 16th position of the motor Article No.

When defining the position of the terminal box, please observe the following:

- Motors with feet must always be viewed looking onto the drive end with the shaft in the horizontal position. The feet are then always at "6 o'clock".
- Flange-mounting motors (e.g. IM B5) whose drive-end flange has a condensation drainage hole must always be viewed looking onto the drive end with the shaft in the horizontal position. The condensation drainage hole is then always at "6 o'clock".

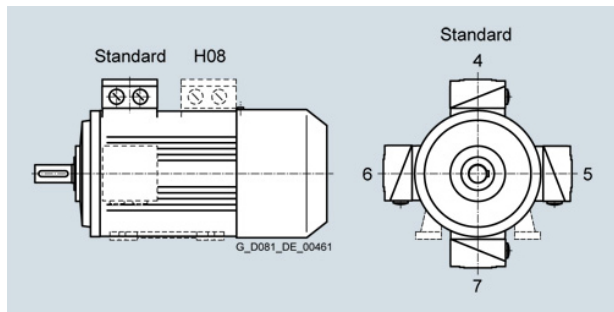
All motors have cast feet. The terminal box can be rotated later.

Terminal box on right-hand side:

16th position of the Article No. Digit **5**

Terminal box on left-hand side:

16th position of the Article No. Digit **6**



Location of the terminal box with the corresponding digits in the 16th position of the Article No.

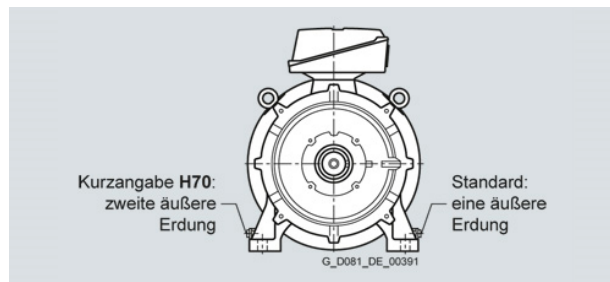
The number of winding ends depends on the winding design. Three-phase motors are connected to the three phase conductors L1, L2, and L3 of a three-phase system. The motor rated voltage in the operating connection must match the phase conductor voltages of the line/converter output voltages.

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

Labeled terminals are provided to connect the protective conductor.

A PE terminal is provided in the terminal box for grounding. A grounding terminal is provided on the outside of the motor housing.

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



###### Design of the terminal box for steel plant motors

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

For special requirements, or on customer request, a larger terminal box can be supplied.

Larger terminal box:

Order code **R50**

If the necessary installation angle of the motor would cause machine components to collide with the terminal box, the terminal box can be moved from the drive end (DE) to the non-drive end (NDE). Only use according to temperature class 155 (F). When the terminal box is rotated to the non-drive end (NDE) of the motor, it is important to note that dimensions "C" and "CA" will not comply with the values specified by EN 50347. Dimension drawings can be requested via the DT Configurator. Order code **H08**

## Overview

### Motor connection

#### *Line feeder cables*

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

The terminal box is located on the housing and bolted in place. The terminal box can be turned by 4 × 90° degrees on the terminal base of the machine housing in the case of a terminal board with 6 terminal studs (standard version). For further information, see tables below and the Operating Instructions.

#### *Parallel feeders*

Some motors must be fitted with parallel feeders due to the maximum permissible current per terminal.

These motors are indicated in the selection and ordering data.

### Steel plant motors: Cable entry on terminal box

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

- Towards the drive end (DE)  
(Rotation of the terminal box by 90°, entry from DE)  
not possible for B5 construction types.  
Order code **R10**
- Towards the ventilation side (NDE)  
(Rotation of the terminal box by 90°, entry from NDE)  
Order code **R11**
- Opposite from the standard position 0°  
(Rotation of the terminal box by 180°, entry opposite from the standard position 0°)  
Order code **R12**

The dimensions of the terminal box are listed in the section "Dimensions" in accordance with the frame size and the "Dimensional drawings".

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

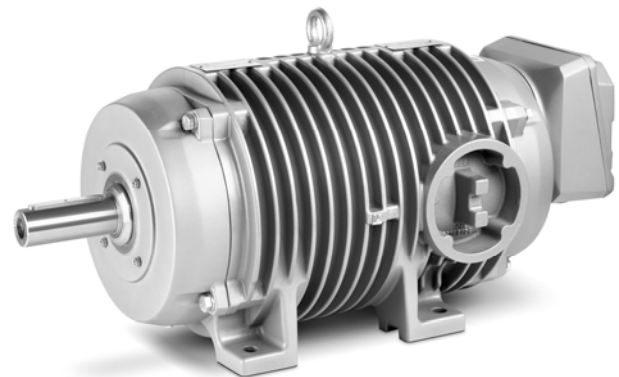


Detailed view of the steel plant motors' terminal box in standard position

### Roller-table motors: Cable entry on terminal box

Roller-table motors 1PC1423 in shaft height 112 – 200 have

- Terminal box on the NDE bearing plate, optionally on the right-hand side of the housing
- Grounding terminal on the housing



Terminal box of the roller-table motors in standard position

## Introduction

### Technical information

## Motor connection and terminal box

### Overview

#### Steel plant motors: Location of the cable entries with the corresponding order codes

Motor	Frame size	Terminal box	Terminal box position			Rotation of the terminal box and cable entry			Retrofitting possible
			up	Right-hand side	Left-hand side	-90°	+90°	180°	
Type		Type	16th position of the Article No.	5	6	Article No. with -Z and order code			
			Order code	4	5		R10	R11	R12
IPC14	112 ... 280	TB1F01 ... TB1R01	✓	✓	✓	✓	✓	✓	Yes

#### Roller-table motors: Location of the cable entries with the corresponding order codes

Motor	Frame size	Terminal box	Terminal box position		Article No.
			Right-hand side	NDE bearing plate	
Type		Type	16th position of the Article No.	5	8
IPC14	112 ... 200	TB1F71 ... TB1J71	✓	✓	

#### Steel plant motors: Technical specifications for terminal boxes for IPC14 motors

Frame size	Terminal box <sup>1)</sup>	Number of terminals	Contact screw thread	Max. connectable conductors	Outer cable diameter (sealing range)	Cable entry <sup>2)</sup>
	Standard/larger			mm <sup>2</sup>	mm	
112	TB1F01/TB1J01	6	M4	4	11 ... 21	2 × M32 × 1.5
132	TB1H01/TB1J01	6	M4	6	11 ... 21	2 × M32 × 1.5
160	TB1J01/TB1K01	6	M5	16	19 ... 28/ 27 ... 35	2 × M40 × 1.5/ 2 × M50 × 1.5
180	TB1J01/TB1K01	6	M5/M6	16/25	19 ... 28/ 27 ... 35	M40 × 1.5/ M50 × 1.5
200	TB1L01/TB1L01	6	M6/M8	25/35	27 ... 35/ 27 ... 35	2 × M50 × 1.5/ 2 × M50 × 1.5
225	TB1L01/TB1N01	6	M8/M10	35/120	27 ... 35/ 34 ... 42	2 × M50 × 1.5/ 2 × M63 × 1.5
250	TB1N01/TB1Q01	6	M10/M12	120/240	34 ... 42/ 38 ... 45	2 × M63 × 1.5
280						2 × M63 × 1.5

#### Roller-table motors: Technical specifications for terminal boxes for IPC14 motors

Frame size	Terminal box <sup>1)</sup>	Number of terminals	Contact screw thread	Max. connectable conductors	Outer cable diameter (sealing range)	Cable entry <sup>2)</sup>
	Standard			mm <sup>2</sup>	mm	
112	TB1F71	3	M5	10	11 ... 21	1 × M32 × 1.5
132					9 ... 17	1 × M25 × 1.5
160	TB1J71	3	M6	16	19 ... 28/ 9 ... 13	2 × M40 × 1.5/ 2 × M20 × 1.5
180						
200						

#### Terminal connection

The terminal board accommodates the terminals that are connected to the leads to the motor windings. The connecting terminals are designed so that for frame sizes

112 M...280 M, the external (line) connection can be made without the need for cable lugs.

<sup>1)</sup> Bei Ersatz- oder Reparaturteilbestellungen neben der genauen Bezeichnung der Teile stets auch den Maschinentyp und die Fabriknummer angeben.

<sup>2)</sup> Ausgelegt für Kabelverschraubungen mit O-Ring.

<sup>3)</sup> NPT-Gewinde auf Anfrage.

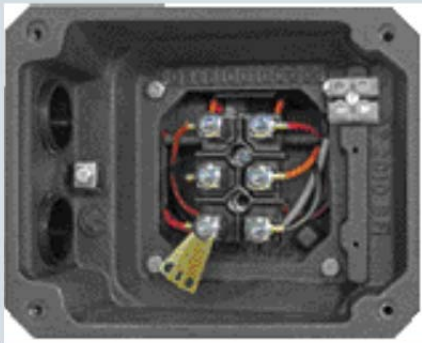


Overview

Basic data for terminal boxes for 1PC14 motors

Motor	Frame size	Terminal box	Cable entries/locking	Terminal box material	Feeder connection
1PC1433 1PC1443 1PC1463	112 ... 280	TB1F01 ... TB1R01	2 entries complete with sealing plugs, thread in terminal box, terminal box is mounted and bolted on	Cast iron	<ul style="list-style-type: none"> <li>• Cable lug</li> <li>• Rigid cable, no cable lug</li> </ul>
1PC1423	112 ... 132	TB1F71 ... TB1J71	2 entries complete with sealing plugs, thread in terminal box, terminal box is mounted and bolted on	Cast iron	<ul style="list-style-type: none"> <li>• Cable lug</li> <li>• Rigid cable, no cable lug</li> </ul>
1PC1423	160 ... 200	TB1J71	4 entries complete with sealing plugs, thread in terminal box, terminal box is mounted and bolted on	Cast iron with spheroidal graphite	<ul style="list-style-type: none"> <li>• Cable lug</li> <li>• Rigid cable, no cable lug</li> </ul>

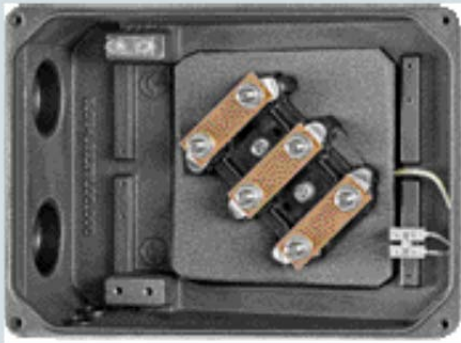
Terminal box type TB1F01, TH1H01



Terminal box type TB1J01



Terminal box type TB1L01



Terminal box type TB1N01



Terminal box type TB1Q01



Terminal box to 1PC1423



## Introduction

Technical information

### Mechanical version and degrees of protection

#### Overview

##### Measures for gear mounting

The flange-mounting motors can be prepared for mounting onto gear units if necessary.

We recommend that the admissible bearing loads are carefully checked.

Lifting eyes and transport

1PC14 motors without feet have four cast lifting eyes as standard, each offset by 90°.

##### Housing material

Motor series	Frame size	Housing material	Housing feet
<b>1PC14</b>	112 ... 280	Cast iron	Cast

##### Preparation for mountings

Brakes as well as rotary encoders of the "modular and special technology" can be retrofitted. The motor must be prepared for this. Possible on request.

For the encoders:

- Leine and Linde, type LL 861 900 220, order code **G04**
- Hübner, type HOG 9 DN 1024 I, order code **G05**
- Hübner, type HOG 10 D 1024 I, order code **G06**
- Hübner, type POG10 DN, 2 x 1024 I, order code **G09**

For roller-table motors, the terminal box position is on the right-hand side when an encoder is mounted.

In addition, a prepared motor shaft with cylindrical shaft extension of 16 mm can be offered for retrofitting encoder mounted parts.

Order code **G42**

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

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

The order code **G42** may not be combined with order code **L00** vibration severity level B.

##### Degrees of protection

All steel plant motors are designed to IP55 degree of protection. All roller-table motors 1PC1423 are designed to IP66 degree of protection. They can be installed in dusty or humid environments. The motors are suitable for operation in tropical climates. Guide value < 60 % relative air humidity at CT 40 °C. Other requirements are available on request (see table on page 24).

Optional degrees of protection are available for steel plant motors IP56, IP65.

All degrees of protection and testing conditions comply with the requirements of EN 60529.

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

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

The condensation drainage holes at the drive end (DE) and non-drive end (NDE) are delivered in frame sizes 225 to 280 (112 to 200 with option **H03**) as standard and are sealed (IP55) on delivery.

When the motors are used in a corrosive environment, it is recommended that non-rusting screws are used externally. Order code **H07**

Non-rusting screws are used as standard in roller-table motors.

Vibration-proof version is supplied as standard.

Vibration resistance to Class 3M4 (3M6 to 1PC1423 in type of construction IMB3) according to IEC 60721-3-3.

##### Noise levels for line operation

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

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

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

## Overview

The type of rotor balancing in accordance with EN 60034-14 Sept 2004 is stamped on the face of the shaft extension at the customer side DE/NDE:

F = Balancing with full feather key  
(agreement of full feather key)

H = Balancing with half feather key  
(agreement of half feather key) – standard

N = Balancing without feather key –  
plain text specification required (agreement without feather key)

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

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

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

Vibration quantity level A is the standard version and is valid up to a rated frequency of 60 Hz.

Low-vibration version B can be supplied to fulfill stricter requirements on smooth running.

Order code **L00**

The order code **L00** vibration quantity level B is not possible in combination with order code **G42**.

These vibrations are evaluated in accordance with Zones A or B according to ISO 101816-3.

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

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

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

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

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

Higher values must be agreed beforehand. A component with twice the line frequency is regarded as dominant if the type test shows that it is greater than 2.3 mm/s (rms value).

## Introduction

Technical information

## Shaft and rotor

### Overview

#### Shaft extension

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

#### DE (shaft extension)

Diameter mm	Thread mm
> 28 ... 30	DR M10
> 30 ... 38	DR M12
> 38 ... 50	DR M16/DS M16
> 50 ... 75	DR M20/DS M20

#### Shaft extension with standard dimensions, without feather keyway

For motor series 1PC14, the standard shaft extension can be ordered with standard dimensions without a feather keyway. Order code **L04**

#### Standard shaft made of stainless steel

A standard shaft made of stainless steel can be ordered for the steel plant motor series 1PC1433, 1PC1443, 1PC1463 (standard version for roller-table motors 1PC1423).

This is only possible for shaft extensions of standard dimensions.

Order code **L06**

Special non-rusting materials are only available on request.

#### Non-standard cylindrical shaft extension

The non-standard cylindrical shaft extension can be used on the drive end DE. The feather keys are always supplied.

Order code **Y58**

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

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

See the table below "Admissible changes to the shaft extension DE" and the dimension tables.

#### Admissible changes to the shaft extension DE (Y58)

Motor series	Frame size	No. of poles	Shaft extension length E in mm		Shaft extension diameter D in mm		
			Standard	up to maxi-mum	mini-Standard	up to maxi-mum <sup>1)</sup>	
<b>1PC14</b>	112	4 ... 6	60	120	24	28	30
	132	4 ... 6	80	120	24	38	40
	160	4 ... 6	110	220	38	42	45
	180	4 ... 6	110	220		48	48
	200	4 ... 6	110	220	on	55	55
	225	4 ... 6	140	280	requ-	60	60
	250	4 ... 6	140	280	est	65	70
	280	4 ... 6	140	280		75	80

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

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

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

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

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

#### Concentricity tolerance for the shaft extension

Diameter of the cylindrical shaft extension d mm	Concentricity tolerance	
	N (standard) mm	R (reduced) mm
> 28 ... 30	0.04	0.021
> 30 ... 50	0.05	0.025
> 50 ... 75	0.06	0.03

## Overview

### *Bearing lifetime (nominal lifetime)*

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

Under average operating conditions, a lifetime ( $L_{10h}$ ) of 100000 hours can be achieved.

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

### *Bearing system*

The bearing lifetime of motors with horizontal mounting is 40000 hours if there is no additional axial loading at the coupling output and 20000 hours when utilized according to the maximum admissible load. This assumes that the motor is operated at 50 Hz. The nominal bearing lifetime is reduced for converter operation at higher frequencies.

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

Due to their physical characteristics, variable-speed motors have a different bearing lifetime under the same load conditions – this relationship is linear. If the frequency rises by 20 % from 50 Hz to 60 Hz, under the load conditions specified in the catalog, the lifetime drops by 20 % from 20000 to 16000 hours. If the frequency falls by 20 % from 50 Hz to 40 Hz, under the load conditions specified in the catalog, the lifetime rises by 20 % from 20000 to 24000 hours.

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

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

The bearing system is axially preloaded with a spring element at the non-drive end (NDE) to ensure smooth running of the motor without play (see diagram of bearings 1 on the following page).

Reinforced deep-groove ball bearings of series 63 are fitted on both ends as standard. The bearings are sealed on both ends in frame sizes 112 to 200, and open in frame sizes 225 to 280 including regreasing device.

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

Order code **Q01**

### *Bearing insulation*

To prevent damage caused by bearing currents, insulated bearings can be supplied for frame sizes 225 to 280 – they are recommended for motors from frame size 225 upwards. Order code **L51** (insulated NDE bearing) means DE located bearing as standard

### *Permanent lubrication*

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

### *Regreasing*

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

A regreasing device with lubricating nipple can be optionally provided for frame sizes 112 to 200.

Order code **L23**

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

### *Mechanical stress and grease service life*

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

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

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

Order code **Q05**

# Introduction

## Technical information

### Bearings and lubrication

#### Overview (continued)

#### Mechanical limit speeds $n_{max}$ at maximum supply frequency $f_{max}$ for 1PC14 motors with reinforced deep-groove ball bearings on both sides

Frame size	Type	4-pole		6-pole	
		$n_{max}$ rpm	$f_{max}$ Hz	$n_{max}$ rpm	$f_{max}$ Hz
112 M	<b>1B...</b>	4200	140	3600	180
132 S/M	<b>1C...</b>	4200	140	3600	180
160 M/L	<b>1D...</b>	4200	140	3600	180
180 M/L	<b>1E...</b>	4200	140	3600	180
200 L	<b>2A...</b>	4200	140	3600	180
225 S/M	<b>2B...</b>	4500	150	4400	220
250 M	<b>2C...</b>	3700	123	3700	175
280 S/M	<b>2D...</b>	3000	100	3000	150

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

#### Grease service life and regreasing intervals for horizontal installation

Motor series	Frame size	No. of poles	Grease service life up to CT 40 °C <sup>2)</sup>
<b>Permanent lubrication<sup>1)</sup></b>			
<b>1PC14</b>	112 ... 200	4, 6	20000 h or 40000 h <sup>3)</sup>
<b>Regreasing<sup>1)</sup></b>			
<b>1PC14</b>	112 ... 200	4, 6	8000 h <sup>4)</sup>
	180 ... 280	4, 6	8000 h

#### Regreasing requirements as a function of coolant temperature (CT)

With temperature class 155 (F):

CT 40 to 60 °C – regreasing interval 8000 h

CT 60 to 80 °C – regreasing interval 4000 h

With temperature class 180 (H):

CT 40 °C – regreasing interval 8000 h

CT 45 to 60 °C – regreasing interval 4000 h

CT 65 to 80 °C – regreasing interval 2000 h

#### Bearing assignment for steel plant motors 1PC14

Frame size	No. of poles	Drive end (DE) bearing	Non-drive end (NDE) bearing	Fig. No.
		Horizontal and vertical type of construction	Horizontal and vertical type of construction	
112 M	4, 6	6306 2RS C3	6306 2RS/2Z C3	<b>Fig. 1</b>
132 S/M	4, 6	6308 2RS C3	6308 2RS/2Z C3	
160 M/L	4, 6	6310 2RS C3 <sup>*)</sup>	6310 2RS/2Z C3 <sup>*)</sup>	
180 M/L	4, 6	6311 2RS C3	6311 2RS/2Z C3	
200 L	4, 6	6313 2RS C3	6313 2RS/2Z C3	
225 S/M	4, 6	6313 C3	6313 C3	
250 M	4, 6	6315 C3	6315 C3	
280 S/M	4, 6	6317 C3	6317 C3	

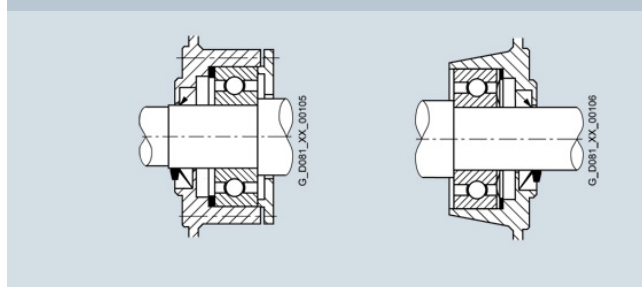
\*) 1PC1423, AH160: Design with shaft diameter 48 mm: DE bearing 6311 2RS C3

Bearing type RS for self-ventilated motors, NDE

Bearing type Z2 for naturally cooled motors, NDE

#### Diagrams of bearings (steel plant motors)

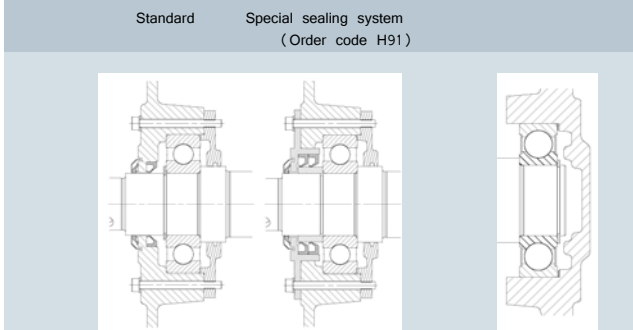
**Fig. 1** DE bearing (location bearing) NDE bearing (floating bearing)



1) For special uses, please inquire about grease service life and regreasing intervals.  
2) For every 10 K the coolant temperature is increased above 80 °C, the grease service life and regreasing interval are halved.

#### Diagrams of bearings (roller-table motor)

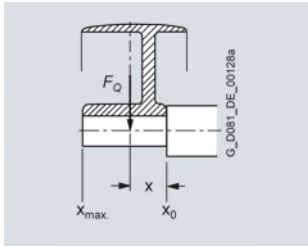
**Fig. 2** DE bearing (location bearing) NDE bearing (floating bearing)



3) 40000 h applies for horizontally installed motors with coupling output without additional axial loads  
4) For frame sizes 112 to 200 with regreasing device, the bearings are designed without sealing disks.

**Overview** (continued)

**Admissible cantilever forces**



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

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

Total cantilever force  $F_Q = c \times F_u$

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

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

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

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

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

Admissible cantilever forces

**Steel plant motors 1PC1433, 1PC1443, 1PC1463 at 50 Hz**  
**Valid are:  $x_0$  values for  $x = 0$  and  $x_{max}$  values for  $x = l$  ( $l$  = shaft extension)**

For motors		Admissible cantilever force	
		at $x_0$	at $x_{max}$
Frame size	No. of poles	N	N
112	4	1960	1555
	6	2270	1800
132	4	2860	2250
	6	3320	2580
160	4	3450	2750
	6	4000	3160
180	4	4110	3270
	6	4720	3740
200	4	5480	4500
	6	6220	5110
225	4	6250	4900
	6	7200	5750
250	4	7600	6200
	6	8750	7350
280	4	8500	7000
	6	9800	8150

**Roller-table motors 1PC1423 at 50 Hz**

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

For motors		Admissible cantilever force	
		at $x_0$	at $x_{max}$
Frame size	Type	N	N
112	1PC1423-1BB2	1890	1590
132	1PC1423-1CB0	2910	2420
	1PC1423-1CB6	2760	2300
160	1PC1423-1DB6	4450	3660
	1PC1423-1DB8	4420	3640
180	1PC1423-1EB4	5270	4050
	1PC1423-1EB7	5030	4050
	1PC1423-1EC6	5960	4050
	1PC1423-1EC8	5700	4050
200	1PC1423-2AC7	6880	5820

# Introduction

## Technical information

### Bearings and lubrication

#### Overview (continued)

##### Admissible axial load

##### Steel plant motors 1PC1433, 1PC1443, 1PC1463 in horizontal type of construction

Frame size	Type	1500 rpm Load		1000 rpm Load	
		tension N	thrust N	tension N	thrust N
112	1PC14.3-1BB2	1810	1250	–	–
	1PC14.3-1BC2	–	–	2090	1530
132	1PC14.3-1CB0	2820	1500	–	–
	1PC14.3-1CB2	2820	1500	–	–
	1PC14.3-1CC0	–	–	3290	1970
	1PC14.3-1CC2	–	–	3290	1970
	1PC14.3-1CC3	–	–	3250	1930
160	1PC14.3-1DB2	3050	2330	–	–
	1PC14.3-1DB4	3020	2300	–	–
	1PC1463-1DB6	2270	2990	–	–
	1PC14.3-1DC2	–	–	3550	2830
180	1PC14.3-1EB2	3660	2510	–	–
	1PC14.3-1EB4	3630	2480	–	–
	1PC14.3-1EC4	–	–	4230	3080

Frame size	Type	1500 rpm Load		1000 rpm Load	
		tension N	thrust N	tension N	thrust N
200	1PC14.3-2AB5	4430	3620	–	–
	1PC14.3-2AC4	–	–	5210	4400
	1PC14.3-2AC5	–	–	5170	4360
225	1PC14.3-2BB0	3900	4950	–	–
	1PC14.3-2BB2	3900	4950	–	–
	1PC14.3-2BC2	–	–	4700	5750
250	1PC14.3-2CB2	4450	6050	–	–
	1PC14.3-2CC2	–	–	5500	7100
280	1PC14.3-2DB0	5100	6700	–	–
	1PC14.3-2DB2	5000	6600	–	–
	1PC14.3-2DC0	–	–	6350	7900
	1PC14.3-2DC2	–	–	6300	7850

##### Steel plant motors 1PC1433, 1PC1443, 1PC1463 in vertical type of construction

Frame size	Type	1500 rpm				1000 rpm			
		Shaft extension pointing							
		down		up		down		up	
	Load down N	up N	Load down N	up N	Load down N	up N	Load down N	up N	
112	1PC14.3-1BB2	170	1340	1120	390	–	–	–	–
	1PC14.3-1BC2	–	–	–	–	160	1640	1410	390
132	1PC14.3-1CB0	440	1710	1280	870	–	–	–	–
	1PC14.3-1CB2	440	1710	1280	870	–	–	–	–
	1PC14.3-1CC0	–	–	–	–	470	2150	1780	840
	1PC14.3-1CC2	–	–	–	–	470	2150	1780	840
	1PC14.3-1CC3	–	–	–	–	420	2160	1690	890
160	1PC14.3-1DB2	2760	2610	2040	3330	–	–	–	–
	1PC14.3-1DB4	2680	2640	1960	3360	–	–	–	–
	1PC1463-1DB6	2630	2690	1910	3410	–	–	–	–
	1PC14.3-1DC2	–	–	–	–	3200	3180	2480	3900
180	1PC14.3-1EB2	3240	2920	2090	4070	–	–	–	–
	1PC14.3-1EB4	3180	2930	2020	4090	–	–	–	–
	1PC14.3-1EC4	–	–	–	–	3740	3560	2580	4710
200	1PC14.3-2AB5	3820	4210	3010	5020	–	–	–	–
	1PC14.3-2AC4	–	–	–	–	4570	5010	3760	5820
	1PC14.3-2AC5	–	–	–	–	4470	5060	3660	5870
225	1PC14.3-2BB0	3150	5800	4200	4750	–	–	–	–
	1PC14.3-2BB2	3000	5850	4100	4850	–	–	–	–
	1PC14.3-2BC2	–	–	–	–	3650	6850	4700	5800
250	1PC14.3-2CB2	3250	7250	4850	5650	–	–	–	–
	1PC14.3-2CC2	–	–	–	–	4200	8350	5750	6750
280	1PC14.3-2DB0	3640	8500	5320	6930	–	–	–	–
	1PC14.3-2DB2	3170	8580	4790	6990	–	–	–	–
	1PC14.3-2DC0	–	–	–	–	5000	9570	6630	7990
	1PC14.3-2DC2	–	–	–	–	4700	9700	6350	8150



**Overview** (continued)

Roller-table motors 1PC1423 in horizontal type of construction

Frame size	Type	1500 rpm		1000 rpm	
		Load		Load	
		tension	thrust	tension	thrust
		N	N	N	N
112	1PC1423-1BB2	1220	1740	–	–
132	1PC1423-1CB0	1680	2720	–	–
	1PC1423-1CB6	1600	2640	–	–
160	1PC1423-1DB6	2770	3590	–	–
	1PC1423-1DB8	2740	3560	–	–
180	1PC1423-1EB4	3400	4360	–	–
	1PC1423-1EB7	3280	4240	–	–
	1PC1423-1EC6	–	–	4080	5040
	1PC1423-1EC8	–	–	3930	4890
200	1PC1423-2AC7	–	–	5030	5670

Motors 1PC1423 in vertical type of construction

Frame size	Type	1500 rpm				1000 rpm			
		<b>Shaft extension pointing</b>							
		<b>down</b>		<b>up</b>		<b>down</b>		<b>up</b>	
		Load		Load		Load		Load	
		down	up	down	up	down	up	down	up
		N	N	N	N	N	N	N	N
112	1PC1423-1BB2	1080	1880	1600	1360	–	–	–	–
132	1PC1423-1CB0	1480	2920	2520	1880	–	–	–	–
	1PC1423-1CB6	1340	2900	2380	1860	–	–	–	–
160	1PC1423-1DB6	2380	3980	3200	3160	–	–	–	–
	1PC1423-1DB8	2320	3980	3140	3160	–	–	–	–
180	1PC1423-1EB4	2930	4830	3890	3870	–	–	–	–
	1PC1423-1EB7	2690	4830	3650	3870	–	–	–	–
	1PC1423-1EC6	–	–	–	–	3480	5640	4440	4680
	1PC1423-1EC8	–	–	–	–	3200	5620	4160	4660
200	1PC1423-2AC7	–	–	–	–	4080	6620	4720	5980

## Introduction

Technical information

## Mounting technology

### Overview

#### Separately driven fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed. Both of these results can only be achieved with converter operation for the motor series 1PC1443.

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

A rating plate listing all the important data is fitted to the separately driven fan. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. Admissible coolant temperatures  $CT_{min} -25\text{ °C}$ ,  $CT_{max} +65\text{ °C}$ <sup>1)</sup>, lower/higher coolant temperatures are available on request.

When the separately driven fan is mounted, the length of the motor increases by  $\Delta l$ . For an explanation of the additional dimensions and weights, please refer to "Dimensions and weights" from page 46.

#### Technical specifications of forced ventilation (according to tolerances of EN 60034-1)

Frame size	Rated voltage range V	Frequency Hz	Rated speed rpm	Power consumption kW	Rated current A
112	1 AC	220 to 277	50	0.073	0.26
	3 AC	200 to 303 $\Delta$	50	0.085	0.27
	3 AC	346 to 525 Y	50	0.085	0.15
	1 AC	220 to 277	60	0.107	0.31
	3 AC	220 to 332 $\Delta$	60	0.094	0.28
	3 AC	380 to 575 Y	60	0.094	0.16
132	1 AC	230 to 277	50	0.115	0.40
	3 AC	200 to 303 $\Delta$	50	0.138	0.45
	3 AC	346 to 525 Y	50	0.138	0.24
	1 AC	230 to 277	60	0.185	0.59
	3 AC	220 to 332 $\Delta$	60	0.148	0.41
	3 AC	380 to 575 Y	60	0.148	0.24
160 to 200	1 AC	230 to 277	50	0.236	0.96
	3 AC	200 to 303 $\Delta$	50	0.220	0.76
	3 AC	346 to 525 Y	50	0.220	0.43
	3 AC	220 to 332 $\Delta$	60	0.284	0.94
	3 AC	380 to 575 Y	60	0.284	0.56
225 M to 280 M	3 AC	200 to 240 $\Delta$	50	0.450	2.00
	3 AC	380 to 420 Y	50	0.450	1.15
	3 AC	440 to 480 Y	60	0.520	1.05

For Article Nos. and type details, see operating instructions.

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

**Overview** (continued)

**Encoder mounted parts**

Tried and tested encoders and mounting concepts are available for optimum rotational speed acquisition.

All encoders have a separate electrical connection (not in the motor terminal box).

Note:

A protective cover is supplied as standard when rotary pulse encoders are mounted for order codes **G04**, **G05**, and **G06** up to a frame size of 200.

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

**LL 861 900 220 rotary pulse encoder**



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

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

Order code **G04**

*The LL 861 900 220 rotary pulse encoder can be retrofitted. The motor must be prepared for this. For this purpose, when the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection" on page 33 **Overview**). The rotary pulse encoder is not part of the scope of supply in this case.*

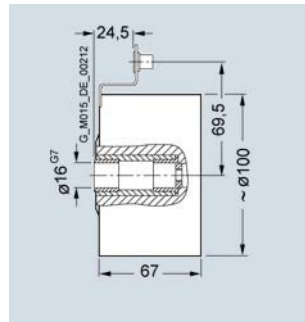
The version of the rotary pulse encoder with a diagnostics system (ADS) can be supplied by Leine and Linde.

Manufacturer:

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

[www.leinelinde.com](http://www.leinelinde.com)

Email: [info@leinelinde.se](mailto:info@leinelinde.se)



Mounting dimensions of LL 861 900 220 rotary pulse encoder

*Technical specifications for LL 861 900 220 (HTL version)*

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

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

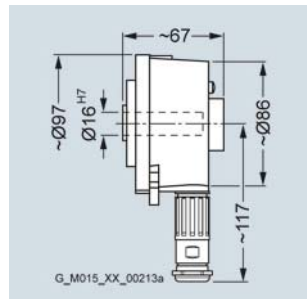
## Introduction

Technical information

## Mounting technology

### Overview (continued)

#### HOG 9 DN 1024 I rotary pulse encoder



Mounting dimensions of HOG 9 DN 1024 I rotary pulse encoder

#### Technical specifications for HOG 9 DN 1024 I (HTL version)

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

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

The encoder is equipped with insulated bearings.

The HOG 9 DN 1024 I rotary pulse encoder can be supplied already mounted.

Order code **G05**

*The HOG 9 DN 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. For this purpose, when the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection" on page 33 **Overview**). The rotary pulse encoder is not part of the scope of supply in this case.*

Manufacturer:

Baumer Hübner GmbH

Max-Dohrn-Str. 2+4

10589 Berlin, Germany

Phone: +49 (30) 69003-0

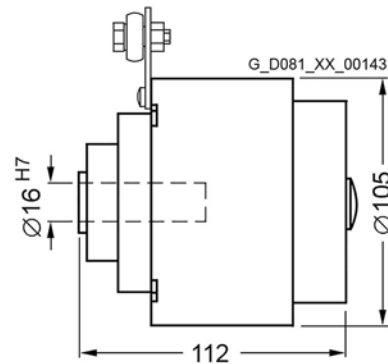
Fax: +49 (30) 69003-104

[www.baumerhuebner.com](http://www.baumerhuebner.com)

Email: [info@baumerhuebner.com](mailto:info@baumerhuebner.com)

**Overview** (continued)

**HOG 10 D 1024 I rotary pulse encoder**



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

The HOG 10 D 1024 I rotary pulse encoder can be supplied already mounted.

Order code **G06**

*The HOG 10 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. For this purpose, when the motor is ordered, the option "Prepared for mountings, center hole only", order code **G40**, or the option "Prepared for mountings with shaft D16", order code **G42**, must be specified (see "Mechanical design and degrees of protection" on page 33 **Overview**). The rotary pulse encoder is not part of the scope of supply in this case. The letters FSL and ESL stand for the following terms:*

*FSL: (Mechanical) centrifugal switch*

*ESL: Electronic speed switch*

*Both switch types are suitable for tripping the motor when a critical limit rotational speed is reached, or for accelerating the motor along a control ramp into the admissible speed range again, or for shutting down the motor completely (depending on the customer application).*

*The electronic speed switch is particularly suitable for converter operation.*

*The critical limit rotational speed to be monitored for the customer's application must be specified in the order. Further settings might also be necessary. These settings will be made at the Baumer & Hübner factory according to customer specifications.*

Manufacturer:

Baumer Hübner GmbH  
 Max-Dohrn-Str. 2+4  
 10589 Berlin, Germany  
 Phone: +49 (30) 69003-0  
 Fax: +49 (30) 69003-104

[www.baumerhuebner.com](http://www.baumerhuebner.com)  
 Email: [info@baumerhuebner.com](mailto:info@baumerhuebner.com)

Mounting dimensions of HOG 10 D 1024 I rotary pulse encoder

*Technical specifications for HOG 10 D 1024 I (HTL version)*

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

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

## Introduction

Technical information

## Mounting technology

### Overview (continued)

#### POG 10 DN 1024 I rotary pulse encoder



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

The POG 10 DN 1024 I rotary pulse encoder can be supplied already mounted.

Order code **G09**

Manufacturer:

Baumer Hübner GmbH

Max-Dohrn-Str. 2+4

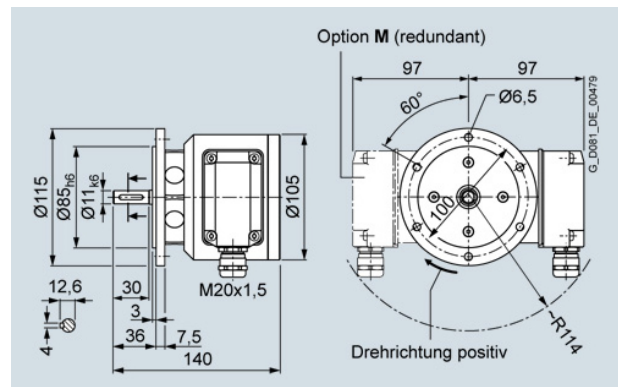
10589 Berlin, Germany

Phone: +49 (30) 69003-0

Fax: +49 (30) 69003-104

[www.baumerhuebner.com](http://www.baumerhuebner.com)

Email: [info@baumerhuebner.com](mailto:info@baumerhuebner.com)



Mounting dimensions of POG 10 DN 1024 I rotary pulse encoder

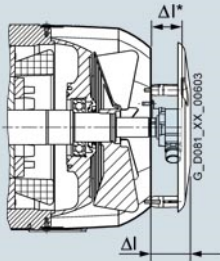
*Technical specifications for POG 10 DN 1024 I  
(HTL version)*

Mounting of encoder for temperatures below  $-30\text{ °C}$  and higher than  $+100\text{ °C}$  available on request.

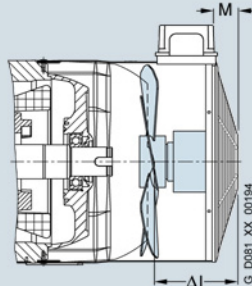
Supply voltage $U_B$	+9 V to +30 V
Current consumption without load	Approx. 100 mA
Pulses per revolution	3000 ... 5000
Mark space ratio	40:60
Maximum frequency	120 kHz
Maximum speed	12000 rpm
Temperature range	$-40$ to $+100\text{ °C}$
Degree of protection	IP66 in accordance with IEC 60529
Maximum adm. radial cantilever force	□ 450 N
Maximum adm. axial force	□ 300 N
Weight	approx. 1.9 kg

**Overview** (continued)

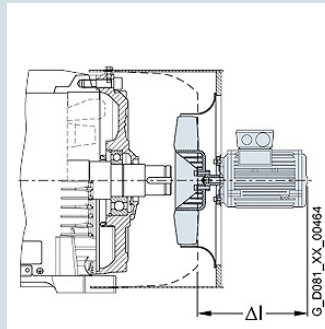
**Fig. 1** Rotary pulse encoder (on cover),  
 order code **G04/G05/G06**



**Fig. 2** Separately driven fan,  
 order code **F70**

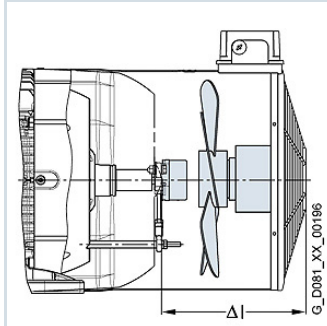


Frame sizes 112 to 200

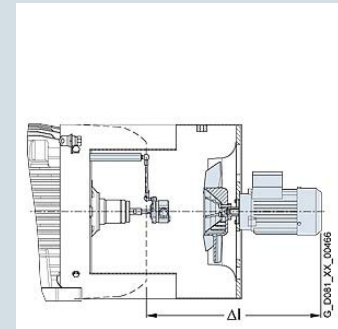


Frame sizes 225 to 280

**Fig. 3** Rotary pulse encoder (under cover) and  
 separately driven fan,  
 order codes **F70**  
 + **G04/G05/G06**



Frame sizes 112 to 200



Frame sizes 225 to 280

**Assignment**

**Fig. 1**

Frame size Rotary pulse encoder including protective cover

**LL 861 900 220**

**HOG 9 DN 1024 I**

**HOG 10 D 1024 I**

**Fig. 1**

Rotary pulse encoder without protective cover

**LL 861 900 220**

**HOG 9 D 1024 I**

**HOG 10 D 1024 I**

Order code

Order code

Order code

Order code

Order code

Order code

**G04**

**G05**

**G06**

**G04**

**G05**

**G06**

Δl

Weight,  
 approx.

Δl

Weight,  
 approx.

Δl

Weight,  
 approx.

Δl

Weight,  
 approx.

Δl

Weight,  
 approx.

Δl

Weight,  
 approx.

mm

kg

mm

kg

mm

kg

mm

kg

mm

kg

mm

kg

112	83	1.9	83	1.5	126	2.2	–	–	–	–	–	–
132	87	2.4	87	2	130	2.7	–	–	–	–	–	–
160	87	2.7	87	2.3	130	3	–	–	–	–	–	–
180	90	2.3	90	1.9	127	2.6	–	–	–	–	–	–
200	90	2.5	90	2.1	127	2.8	–	–	–	–	–	–
225	135	2	135	1.6	135	2.3	75	1.3	72	0.9	116	1.6
250	135	2	135	1.6	135	2.3	75	1.3	72	0.9	116	1.6
280	135	2	135	1.6	135	2.3	75	1.3	72	0.9	116	1.6

Please add mechanical installation data for the POG 10DN 1024 I.

# Introduction

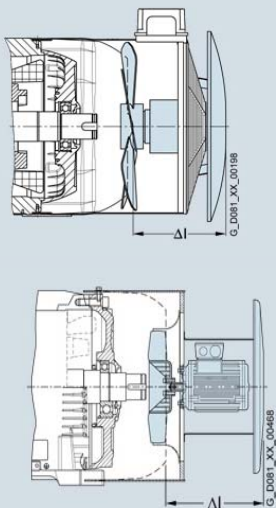
Technical information

## Mounting technology

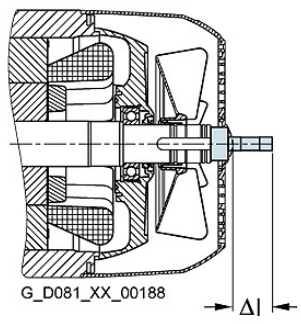
### Overview (continued)

Assignment									
Fig. 2				Fig. 3					
Frame size	Separately driven fan			Separately driven fan and rotary pulse encoder (under cover)					
Order codes	<b>F70</b>			Order codes		Order codes		Order codes	
				<b>F70</b>		<b>F70</b>		<b>F70</b>	
				<b>+ G04</b>		<b>+ G05</b>		<b>+ G06</b>	
	$\Delta l$	M	Weight, approx.	$\Delta l$	Weight, approx.	$\Delta l$	Weight, approx.	$\Delta l$	Weight, approx.
	mm	mm	kg	mm	kg	mm	kg	mm	kg
112	81.5	30	2.9	156.5	5.1	156.5	4.7	241.5	5.6
132	116	40	3.9	186	6.8	186	6.4	291	7.4
160	135.5	40	5.6	205.5	9.8	205.5	9.4	320.5	10.5
180	257	40	8.3	257	10.6	257	10.2	400	10.9
200	262	40	9.3	262	11.8	262	11.4	397	12.1
225	221	–	22	410	26	410	26	410	26
250	226	–	25	425	28	425	28	425	28
280	222	–	28	429	31	429	31	429	31

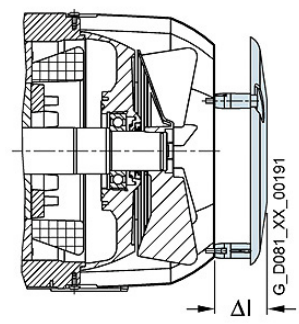
**Fig. 4** Protective cover for separately driven fan, order code **H00**



**Fig. 5** Separately driven fan, order code **F70**



**Fig. 6** Rotary pulse encoder (under cover) and separately driven fan, order codes **F70 + G04/G05/G06**



Assignment							
Fig. 4				Fig. 5		Fig. 6	
Frame size	Protective cover for separately driven fan			Prepared for mountings with D16 shaft		Protective cover	
Order codes	<b>H00</b>			Order codes		Order codes	
				<b>G42</b>		<b>H00</b>	
	$\Delta l$	Weight, approx.	Diameter of the fan cover	$\Delta l$	Weight, approx.	$\Delta l$	Weight, approx.
	mm	kg	mm	mm	kg	mm	kg
112	122	1.8	249	54.3	0.2	122	0.7
132	149	2.4	300	58.8	0.4	156	1.3
160	177	3	338	55.6	0.7	182.5	1.7
180	288	1.7	338	57	0.33	285	1.7
200	293	1.7	338	56	0.27	297	1.7
225	305	2.5	210	58	0.33	100	2.2
250	311	2.5	249	58	0.33	100	2.4
280	307	2.5	300	58	0.33	110	3.4



**Selection and ordering data**  
Motors with IE3 Premium Efficiency line (DOL) operation  
**Cast-iron series 1PC1433, self-ventilated**

**Selection and ordering data**

Operating values at rated power														Cast-iron series <b>1PC1433</b> – IE3 version in accordance with IEC 60034-3C Article No.		$m_{MB}$	$J$	Torque class
$P_{rated}$	$P_{rated}$	Frame size	$n_{rated}$	$T_{rated}$	IE class	$\eta_{rated}$	$\eta_{rated}$	$\eta_{rated}$	$\cos\phi_{rated}$	$I_{rated}$	$T_{LR}/I_{LR}$	$T_B/T_{rated}$	$L_{plA}$	$L_{WA}$				
50 Hz	60 Hz		50 Hz	50 Hz	50 Hz 60 Hz	50 Hz	50 Hz	50 Hz	ed.	50 Hz	$T_{rated}$	$I_{rated}$	$T_{rated}$	50 Hz	50 Hz			
														3				
														kg	kgm <sup>2</sup>	CL		

- Cooling: Self-ventilated (IC411)
- Efficiency: IE3 Premium Efficiency, service factor (SF) 1.15
- Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)

4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz<sup>1)</sup>

4	4.55	112 M	1460	26	IE3	IE3	88.6	89.2	88.6	0.82	7.90	2.4	7.1	3.7	58	70	1PC1433-1BB2	-□□□□	47	0.017	16
5.5	6.3	132 S	1470	36	IE3	IE2	89.6	90.1	89.5	0.84	10.5	2.1	7.2	3.4	64	76	1PC1433-1CB0	-□□□□	75	0.046	16
7.5	8.6	132 M	1470	49	IE3	IE2	90.4	91.1	90.8	0.84	14.3	2.4	7.4	3.5	64	76	1PC1433-1CB2	-□□□□	83	0.046	16
11	12.6	160 M	1475	71	IE3	IE3	91.4	91.9	91.4	0.84	20.5	2.2	6.8	3.2	65	77	1PC1433-1DB2	-□□□□	116	0.083	16
15	17.3	160 L	1475	97	IE3	IE3	92.1	92.3	91.5	0.82	28.5	2.5	8.5	3.8	65	77	1PC1433-1DB4	-□□□□	135	0.099	16
18.5	21.3	180 M	1470	120	IE3	IE3	92.6	93.1	92.9	0.82	35.0	2.5	7.2	3.3	66	73	1PC1433-1EB2	-□□□□	172	0.13	16
22	25.3	180 L	1470	143	IE3	IE3	93.0	93.7	93.6	0.83	41.0	2.3	6.8	3.3	68	75	1PC1433-1EB4	-□□□□	182	0.14	16
30	34.5	200 L	1470	195	IE3	IE2	93.6	94.0	93.7	0.84	55.0	2.6	7.3	3.1	65	72	1PC1433-2AB5	-□□□□	246	0.22	16
37	42.5	225 S	1478	239	IE3	IE2	93.9	94.5	94.4	0.86	66.0	2.5	6.4	2.7	65	78	1PC1433-2BB0	-□□□□	295	0.42	16
45	52	225 M	1478	291	IE3	IE2	94.2	94.9	95.1	0.86	80.0	2.6	6.4	2.7	65	78	1PC1433-2BB2	-□□□□	330	0.47	16
55	63	250 M	1482	354	IE3	IE2	94.6	95.1	95.0	0.87	96.0	2.5	6.8	2.9	66	79	1PC1433-2CB2	-□□□□	430	0.85	16
75	86	280 S	1485	482	IE3	IE2	95.0	95.3	95.0	0.86	133	2.5	6.9	3.0	69	83	1PC1433-2DB0	-□□□□	580	1.4	16
90	104	280 M	1485	579	IE3	IE2	95.2	95.5	95.3	0.87	157	2.6	7.2	3.0	70	84	1PC1433-2DB2	-□□□□	680	1.7	16

Voltages	No. of poles	Frame size	Motor type	Version	Order code (s)
50 Hz 230 VΔ/400 VY 60 Hz <sup>1)</sup>	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Standard	2 2
50 Hz 400 VΔ/690 VY 60 Hz <sup>1)</sup>	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Standard	3 4
50 Hz 500 VY	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Without add. charge	2 7
50 Hz 500 VΔ	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Without add. charge	4 0
Further voltages <sup>1)</sup>	For price information, code numbers, order codes, and descriptions, see page 3/29				0
<b>Types of construction</b>	No. of poles	Frame size	Motor type	Version	Order code (s)
Without flange IM B3 <sup>2)</sup>	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Standard	A
With flange IM B5 <sup>2)</sup>	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	With add. charge	F
Further types of construction	For price information, code letters, and descriptions, see page 3/3				...
<b>Motor protection</b>	No. of poles	Frame size	Motor type	Version	Order code (s)
PTC thermistor with 3 temperature sensors	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	With add. charge	E
Further motor protection	For price information, code letters, and descriptions, see page 3/4				...
<b>Terminal box position</b>	No. of poles	Frame size	Motor type	Version	Order code (s)
Terminal box at top	4, 6	112 M ... 280 M	1PC1433-1B ... -2D	Standard	4
Further terminal box positions	For price information, code numbers, and descriptions, see page 3/5				
<b>Special versions</b>	No. of poles	Frame size	Motor type	Version	Order code (s)
Options	For price information, order codes, and descriptions, see from page 3/6				1PC1433-...-□-□□□□-Z...+...+...+...

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and Configuring").

2) Types derived from IM B3 (IM B6/7/8, IM V6, and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

# Selection and ordering data

Motors with IE3 Premium Efficiency line (DOL) operation

Cast-iron series 1PC1433 self-ventilated – line voltage 400 V/50 Hz, 440 V/60 Hz

## Selection and ordering data (continued)

Operating values at rated power															Cast-iron series		$m_{MB3}$	$J$	Torque class	
$P_{rated}$	$P_{rated}$	Frame size	$n_{rated}$	$T_{rated}$	IE class	$\eta_{rated}$	$\eta_{rated}$	$\eta_{rated}$	$\cos(\phi)_{rated}$	$I_{rated}$	$T_{LR}/T_{rated}$	$I_{LR}/I_{rated}$	$T_B/T_{rated}$	$L_{plA}$	$L_{WA}$	1PC1433 –				Article No.
50 Hz	60 Hz		50 Hz	50 Hz	50 Hz 60 Hz	50 Hz	50 Hz	50 Hz	ed,	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz					
						4/4	3/4	2/4		400 V	50 Hz	50 Hz	50 Hz							
kW	kW	FS	rpm	Nm		%	%	%		A								kg	kgm <sup>2</sup>	CL

- Cooling: Self-ventilated (IC411)
- Efficiency: IE3 Premium Efficiency, service factor (SF) 1.15
- Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)

6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz <sup>1)</sup>

2.2	2.55	112 M	970	22	IE3	IE2	84.3	85.0	83.9	0.75	5.00	2.2	5.6	2.8	65	74	1PC1433-1BC2	48	0.017	13
3	3.45	132 S	975	30	IE3	IE2	85.6	86.9	86.6	0.77	6.60	1.6	5.3	2.4	63	75	1PC1433-1CC0	71	0.029	13
4	4.55	132 M	975	39	IE3	IE2	86.8	88.0	87.8	0.77	8.60	1.7	5.6	2.5	63	75	1PC1433-1CC2	71	0.037	13
5.5	6.3	132 M	975	54	IE3	IE2	88.0	89.1	88.8	0.77	11.7	1.8	5.7	2.6	63	75	1PC1433-1CC3	84	0.046	13
7.5	8.6	160 M	980	73	IE3	IE2	89.1	90.1	89.7	0.76	16.0	1.9	4.9	2.3	67	79	1PC1433-1DC2	128	0.098	13
11	12.6	160 L	975	108	IE3	IE2	90.3	91.2	90.8	0.77	23.0	1.9	5.0	2.3	67	79	1PC1433-1DC4	153	0.12	13
15	18	180 L	975	147	IE3	IE2	91.2	92.0	91.9	0.80	29.5	2.3	5.9	2.8	61	68	1PC1433-1EC4	169	0.19	16
18.5	22	200 L	978	181	IE3	IE2	91.7	92.5	92.4	0.79	37.0	2.5	5.6	2.6	64	71	1PC1433-2AC4	221	0.28	16
22	26.5	200 L	978	215	IE3	IE2	92.2	93.1	93.2	0.79	43.5	2.5	5.6	2.6	61	68	1PC1433-2AC5	236	0.32	16
30	36	225 M	982	292	IE3	IE2	92.9	93.6	93.5	0.83	56.0	2.6	6.6	3.0	64	77	1PC1433-2BC2	330	0.67	16
37	44.5	250 M	985	359	IE3	IE2	93.3	94.0	94.0	0.85	67.0	2.7	7.0	2.9	62	75	1PC1433-2CC2	415	1	16
45	54	280 S	988	435	IE3	IE2	93.7	94.3	94.2	0.85	82.0	3.0	6.8	2.8	60	74	1PC1433-2DC0	520	1.4	16
55	66	280 M	988	532	IE3	IE2	94.1	94.6	94.4	0.85	99.0	3.2	7.2	3.0	60	74	1PC1433-2DC2	570	1.6	16

Voltagess	No. of poles	Frame size	Motor type	Version	Order code (s)
50 Hz 230 VΔ/400 VY 60 Hz <sup>1)</sup>	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Standard	2 2
50 Hz 400 VΔ/690 VY 60 Hz <sup>1)</sup>	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Standard	3 4
50 Hz 500 VY	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Without add. charge	2 7
50 Hz 500 VΔ	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Without add. charge	4 0
Further voltagess <sup>1)</sup>	For price information, code numbers, order codes, and descriptions, see page 3/2				9 0
Types of construction	No. of poles	Frame size	Motor type	Version	Order code (s)
Without flange IM B3 <sup>2)</sup>	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Standard	A
With flange IM B5 <sup>2)</sup>	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D With add. charge	F
Further types of construction	For price information, code letters, and descriptions, see page 3/3				...
Motor protection	No. of poles	Frame size	Motor type	Version	Order code (s)
PTC thermistor with 3 temperature sensors	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D With add. charge	E
Further motor protection	For price information, code letters, and descriptions, see page 3/4				...
Terminal box position	No. of poles	Frame size	Motor type	Version	Order code (s)
Terminal box at top	4, 6	112 M ...	280 M 1PC1433-1B ...	-2D Standard	4
Further terminal box positions	For price information, code numbers, and descriptions, see page 3/5				
Special versions	No. of poles	Frame size	Motor type	Version	Order code (s)
Options	For price information, order codes, and descriptions, see from page 1PC1433-... 3/6				-Z ...+...+...+...

1) Operating values at rated power for 60 Hz are stored in the Drive Technology Configurator (DT Configurator; see Appendix, "Tools and Configuring")

2) Types derived from IM B3 (IM B6/7/8, IM V6, and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5, or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

# Selection and ordering data

Motors for converter operation

## Cast-iron series 1PC1443 self-ventilated – line voltage 400 V/50 Hz, 440 V/60 Hz

### Selection and ordering data

$P_{\text{rated}}$ , 50 Hz	$P_{\text{rated}}$ , 60 Hz	Frame size	Connection	Operating values at rated power					$i_{\text{rated}}$	Cast-iron series 1PC1443 – version specifically for converter operation
				$f_{\text{rated}}$	$T_{\text{rated}}$	$\eta_{\text{rated}}$ ,	$\cos(\varphi_{\text{rated}})$ , 4/4			
kW	kW	FS		Hz	Nm	%		A	Article No.	
<ul style="list-style-type: none"> <li>• Cooling: Self-ventilated (IC411)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 400 V/50 Hz, 440 V/60 Hz</li> </ul>										
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz										
4		112 M	Y	51.4	25.5	88.6	0.82	7.9	1PC1443-1BB2 . . . . .	
	4.55		Y	61.4	24.1	89.5	0.83	7.7		
5.5		132 S	Y	51.0	35.0	89.6	0.82	10.8	1PC1443-1CB0 . . . . .	
	6.3		Y	61.0	33.4	91.7	0.83	10.4		
7.5		132 M	Y	51.0	47.7	90.4	0.84	14.3	1PC1443-1CB2 . . . . .	
	8.6		Y	61.0	45.6	91.7	0.85	13.8		
11		160 M	Y	50.9	70.0	91.4	0.84	20.5	1PC1443-1DB2 . . . . .	
	12.6		Y	60.9	67.0	92.4	0.85	20.0		
15		160 L	Y	50.7	96.0	92.1	0.82	28.5	1PC1443-1DB4 . . . . .	
	17.5		Y	60.8	93.0	93.6	0.83	28.0		
18.5		180 M	$\Delta$	51.0	118.0	92.6	0.82	35.0	1PC1443-1EB2 . . . . .	
	21.3		$\Delta$	61.0	113.0	93.6	0.83	34.5		
22		180 L	$\Delta$	51.1	140.0	93.0	0.83	41.0	1PC1443-1EB4 . . . . .	
	25.3		$\Delta$	61.2	134.0	93.6	0.83	41.0		
30		200 L	$\Delta$	50.9	191.0	93.6	0.84	55.0	1PC1443-2AB5 . . . . .	
	34.5		$\Delta$	60.9	183.0	93.0	0.85	55.0		
37		225 S	$\Delta$	50.7	236.0	93.9	0.86	66.0	1PC1443-2BB0 . . . . .	
	42.5		$\Delta$	60.8	225.0	93.6	0.86	66.0		
45		225 M	$\Delta$	50.8	286.0	94.2	0.86	80.0	1PC1443-2BB2 . . . . .	
	52		$\Delta$	60.8	276.0	94.1	0.86	81.0		
55		250 M	$\Delta$	50.6	350.0	94.6	0.87	96.0	1PC1443-2CB2 . . . . .	
	63		$\Delta$	60.6	334.0	94.1	0.87	97.0		
75		280 S	$\Delta$	50.5	477.0	95.0	0.86	133.0	1PC1443-2DB0 . . . . .	
	86		$\Delta$	60.5	456.0	94.5	0.87	131.0		
90		280 M	$\Delta$	50.5	573.0	95.2	0.87	157.0	1PC1443-2DB2 . . . . .	
	104		$\Delta$	60.5	552.0	95.0	0.87	158.0		
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz										
2.2		112 M	Y	51.6	21.0	84.3	0.75	4.7	1PC1443-1BC2 . . . . .	
	2.55		Y	61.6	20.3	87.5	0.77	4.75		
3		132 S	Y	51.0	28.7	85.6	0.76	6.7	1PC1443-1CC0 . . . . .	
	3.45		Y	61.0	27.5	89.5	0.77	6.3		
4		132 M	Y	51.2	38.2	86.8	0.77	8.6	1PC1443-1CC2 . . . . .	
	4.55		Y	61.2	36.2	89.5	0.78	8.2		
5.5		132 M	Y	51.2	53.0	88.0	0.78	11.6	1PC1443-1CC3 . . . . .	
	6.3		Y	61.2	50.0	91.0	0.78	11.1		
7.5		160 M	Y	51.1	72.0	89.1	0.76	16.0	1PC1443-1DC2 . . . . .	
	8.6		Y	61.1	68.0	91.0	0.76	15.6		
11		160 L	Y	51.1	105.0	90.3	0.77	23.0	1PC1443-1DC4 . . . . .	
	12.6		Y	61.1	100.0	91.7	0.77	22.5		
15		180 L	$\Delta$	51.4	143.0	91.2	0.80	29.5	1PC1443-1EC4 . . . . .	
	18		$\Delta$	61.4	143.0	91.7	0.81	30.5		
18.5		200 L	$\Delta$	51.2	176.0	91.7	0.79	37.0	1PC1443-2AC4 . . . . .	
	22		$\Delta$	61.2	175.0	91.7	0.80	37.5		
22		200 L	$\Delta$	51.3	210.0	92.2	0.79	43.5	1PC1443-2AC5 . . . . .	
	26.5		$\Delta$	61.4	211.0	93.0	0.81	26.5		
30		225 M	$\Delta$	51.0	286.0	92.9	0.83	56.0	1PC1443-2BC2 . . . . .	
	36		$\Delta$	61.1	286.0	93.0	0.84	58.0		
37		250 M	$\Delta$	50.8	353.0	93.3	0.85	67.0	1PC1443-2CC2 . . . . .	
	44.5		$\Delta$	60.9	354.0	93.6	0.85	70.0		
45		280 S	$\Delta$	50.6	430.0	93.7	0.85	82.0	1PC1443-2DC0 . . . . .	
	54		$\Delta$	60.6	430.0	93.6	0.86	84.0		
55		280 M	$\Delta$	50.6	525.0	94.1	0.85	99.0	1PC1443-2DC2 . . . . .	
	66		$\Delta$	60.7	525.0	94.1	0.85	104.0		

All technical specifications refer to converter operation.

# Selection and ordering data

Motors for converter operation

Cast-iron series 1PC1443 self-ventilated – line voltage 400 V/50 Hz, 440 V/60 Hz

## Selection and ordering data (continued)

Motor type	$m_{M B3}$	$J$	$L_{pLA}$ Tolerance +3 dB (A) Load	$L_{WA}$ Tolerance +3 dB (A) Load	Mech. speed	Terminal box limit type	Preferred Motor Modules of the SINAMICS S120 Other SINAMICS converters also possible – low overload operating mode <sup>1)</sup>	Base load current $I_{CH}$	Rated current $I_{rated}$	Single Motor Module booksize Width
	kg	kgm <sup>2</sup>	dB (A)	dB (A)	rpm					
1PC1443-1BB2.-....	47	0.017	58.0	70.0	4200	TB1F01	6SL3120-1TE21-0AD0	7.7	9.0	50
	47	0.017	62.0	74.0	4200		6SL3120-1TE21-0AD0	7.7	9.0	50
1PC1443-1CB0.-... ..	75	0.034	64.0	76.0	4200	TB1H01	6SL3120-1TE21-8AC0	15.3	18.0	50
	75	0.034	68.0	80.0	4200		6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1443-1CB2.-....	83	0.046	64.0	76.0	4200	TB1H01	6SL3120-1TE21-8AC0	15.3	18.0	50
	83	0.046	68.0	80.0	4200		6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1443-1DB2.-....	116	0.083	65.0	77.0	4200	TB1J01	6SL3120-1TE23-0AC0	25.5	30.0	100
	116	0.083	69.0	81.0	4200		6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1443-1DB4.-....	135	0.099	65.0	77.0	4200	TB1J01	6SL3120-1TE23-0AC0	25.5	30.0	100
	135	0.099	69.0	81.0	4200		6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1443-1EB2.-....	172	0.13	66.0	73.0	4200	TB1J01	6SL3210-1TE24-5AA3	38.0	45.0	150
	172	0.13	68.0	75.0	4200		6SL3210-1TE24-5AA3	38.0	45.0	150
1PC1443-1EB4.-....	182	0.14	68.0	75.0	4200	TB1J01	6SL3210-1TE24-5AA3	38.0	45.0	150
	182	0.14	70.0	77.0	4200		6SL3210-1TE24-5AA3	38.0	45.0	150
1PC1443-2AB5.-....	246	0.22	65.0	72.0	4200	TB1L01	6SL3210-1TE26-0AA3	52.0	60.0	150
	246	0.22	67.0	74.0	4200		6SL3210-1TE26-0AA3	52.0	60.0	150
1PC1443-2BB0.-....	295	0.42	65.0	78.0	4500	TB1L01	6SL3210-1TE28-5AA3	68.0	85.0	200
	295	0.42	68.0	82.0	4500		6SL3210-1TE28-5AA3	68.0	85.0	200
1PC1443-2BB2.-....	330	0.47	65.0	78.0	4500	TB1L01	6SL3210-1TE28-5AA3	68.0	85.0	200
	330	0.47	68.0	82.0	4500		6SL3210-1TE28-5AA3	68.0	85.0	200
1PC1443-2CB2.-....	430	0.85	66.0	79.0	3700	TB1N01	6SL3210-1TE31-3AA3	105.0	132.0	300
	430	0.85	68.0	82.0	3700		6SL3210-1TE31-3AA3	105.0	132.0	300
1PC1443-2DB0.-....	580	1.40	69.0	83.0	3000	TB1N01	6SL3210-1TE32-0AA4	141.0	200.0	300
	580	1.39	77.0	91.0	3000		6SL3210-1TE32-0AA4	141.0	200.0	300
1PC1443-2DB2.-....	680	1.7	70.0	84.0	3000	TB1N01	6SL3210-1TE32-0AA4	141.0	200.0	300
	680	1.7	79.0	93.0	3000		6SL3210-1TE32-0AA4	141.0	200.0	300
1PC1443-1BC2.-....	48	0.017	65.0	74.0	3600	TB1F01	6SL3120-1TE15-0AD0	4.3	5.0	50
	48	0.017	65.0	77.0	3600		6SL3120-1TE15-0AD0	4.3	5.0	50
1PC1443-1CC0.-....	71	0.037	63.0	75.0	3600	TB1H01	6SL3120-1TE21-0AD0	7.7	9.0	50
	71	0.037	67.0	79.0	3600		6SL3120-1TE21-0AD0	7.7	9.0	50
1PC1443-1CC2.-....	71	0.037	63.0	75.0	3600	TB1H01	6SL3120-1TE21-0AD0	7.7	9.0	50
	71	0.037	67.0	79.0	3600		6SL3120-1TE21-0AD0	7.7	9.0	50
1PC1443-1CC3.-....	84	0.046	63.0	75.0	3600	TB1H01	6SL3120-1TE21-8AC0	15.3	18.0	50
	84	0.046	67.0	79.0	3600		6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1443-1DC2.-....	128	0.098	67.0	79.0	3600	TB1J01	6SL3120-1TE21-8AC0	15.3	18.0	50
	128	0.098	70.0	82.0	3600		6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1443-1DC4.-....	153	0.12	67.0	79.0	3600	TB1J01	6SL3120-1TE23-0AC0	25.5	30.0	100
	153	0.12	70.0	82.0	3600		6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1443-1EC4.-....	169	0.19	61.0	68.0	3600	TB1J01	6SL3120-1TE23-0AC0	25.5	30.0	100
	169	0.19	61.0	68.0	3600		6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1443-2AC4.-....	221	0.28	64.0	71.0	3600	TB1L01	6SL3210-1TE24-5AA3	38.0	45.0	150
	221	0.28	64.0	71.0	3600		6SL3210-1TE24-5AA3	38.0	45.0	150
1PC1443-2AC5.-....	236	0.32	61.0	68.0	3600	TB1L01	6SL3210-1TE24-5AA3	38.0	45.0	150
	236	0.32	63.0	70.0	3600		6SL3210-1TE24-5AA3	38.0	45.0	150
1PC1443-2BC2.-....	330	0.67	64.0	77.0	4400	TB1L01	6SL3210-1TE26-0AA3	52.0	60.0	150
	330	0.67	66.0	80.0	4400		6SL3210-1TE26-0AA3	52.0	60.0	150
1PC1443-2CC2.-....	415	1.00	62.0	75.0	3700	TB1N01	6SL3210-1TE28-5AA3	68.0	85.0	200
	415	1.00	63.0	76.0	3700		6SL3210-1TE28-5AA3	68.0	85.0	200
1PC1443-2DC0.-....	520	1.40	60.0	74.0	3000	TB1N01	6SL3210-1TE28-5AA3	68.0	85.0	200
	520	1.40	66.0	80.0	3000		6SL3210-1TE28-5AA3	68.0	85.0	200
1PC1443-2DC2.-....	570	1.60	60.0	74.0	3000	TB1N01	6SL3210-1TE31-3AA3	105.0	132.0	300
	570	1.60	66.0	80.0	3000		6SL3210-1TE31-3AA3	105.0	132.0	300

<sup>1)</sup> In addition to the Power Module, a Control Unit and an Operator Panel are required (see Catalog D 31 and/or D 35).

# Selection and ordering data

Motors for line operation

## Roller-table motor 1PC1423 self-ventilated – line voltage 400 V/50 Hz

### Selection and ordering data

Operating values at rated power														Cast-iron series 1PC1463 – version specifically for converter operation	
$P_{\text{rated, 50 Hz}}$	$P_{\text{rated, 60 Hz}}$	Frame size	Con- nection	$f_{\text{rated}}$	$T_{\text{rated}}$	$\eta_{\text{rated, 4/4}}$ 4/4 for converter operation	$\cos(\varphi)_{\text{rate, 4/4}}$	$I_{\text{rated}}$	$m_{\text{IM B3}}$	$J$	$L_{\text{plA, Tolerance}}$ +3 dB (A) Load	$L_{\text{WA, Tolerance}}$ +3 dB (A) Load	Mech. speed limit		Term- inal box type
kW	kW	FS		Hz	Nm	%		A	kg	kgm <sup>2</sup>	dB (A)	dB (A)	rpm	Article No.	
<ul style="list-style-type: none"> <li>• Cooling: Naturally cooled in enclosed version without external fan (IC 410)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 400 V/50 Hz, 440 V/60 Hz</li> </ul>															
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz															
3.1		112 M	Y	50.85	20.0	87.8	0.73	7.00	47	0.017	57	70	4200	TB1F01	1PC1463-1BB2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
4.8		132 S	Y	50.55	31.0	90.2	0.72	10.8	74	0.040	58	71	4200	TB1H01	1PC1463-1CB0 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
6.1		132 M	Y	50.70	39.0	91.3	0.76	12.6	81	0.046	59	72	4200	TB1H01	1PC1463-1CB2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
8		160 L	Y	50.50	51.0	91.5	0.72	17.5	130	0.099	59	72	4200	TB1J01	1PC1463-1DB4 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
9.3		160 L	Y	50.50	60.0	92.5	0.76	19.1	140	0.11	58	71	4200	TB1J01	1PC1463-1DB6 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
11		180 M	Δ	50.60	71.0	93.5	0.72	23.5	170	0.13	59	72	4200	TB1J01	1PC1463-1EB2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
13		180 L	Δ	50.70	84.0	94.1	0.73	27.5	180	0.14	60	73	4200	TB1J01	1PC1463-1EB4 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz															
8.5		180 L	Δ	50.80	82.0	92.2	0.65	20.5	165	0.19	56	69	3600	TB1J01	1PC1463-1EC4 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
14.5		200 L	Δ	50.60	140	93.0	0.64	35	245	0.32	61	74	3600	TB1L01	1PC1463-2AC5 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
21		225 M	Δ	50.55	201	92.8	0.71	46	330	0.67	63	76	4400	TB1L01	1PC1463-2BC2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
25		250 M	Δ	50.40	239	93.6	0.72	54	410	1.00	65	78	3700	TB1N01	1PC1463-2CC2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
30		280 S	Δ	50.35	286	93.8	0.73	63	510	1.40	74	85	3000	TB1N01	1PC1463-2DC0 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
36		280 M	Δ	50.35	344	94.1	0.74	75	550	1.60	74	85	3000	TB1N01	1PC1463-2DC2 . . . . .
	O. R.			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	

All technical specifications refer to converter operation.

- In addition to the Power Module, a Control Unit and an Operator Panel are required (see Catalog D 31 and/or D 35).

# Article No. supplements and special versions

Voltages

## Steel plant motors 1PC1433, 1PC1443, 1PC1463

Voltages	Voltage code	Additional identification code with 12th and 13th position of the Article No.	Motor category		Motor type – frame size							
			Motor version	Motor type (cast iron)	112	132	160	180	200	225	250	280
			TEFC (IC411)	1PC1433 1PC1443	1PC1433 for line operation (DOL) ① 1PC1443 for converter operation (VSD) ②							
			TENV (IC410)	1PC1463	1PC1463 for converter operation (VSD) ③							
1PC14...-...-...-... Order code			Motor version	Motor type	Frame size							
					112	132	160	180	200	225	250	280
<b>Voltage at 50 Hz or 60 Hz</b>												
50 Hz 400 VY, 60 Hz 460 VY	0 2	-	Only applicable for ② and ③	□	□	□	-	-	-	-	-	-
50 Hz 230 VΔ/400 VY, 60 Hz 460 VY	2 2	-	Only applicable for ①	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ	3 4	-	Only applicable for ①	□	□	□	□	□	□	□	□	□
50 Hz 400 VY, 60 Hz 460 VΔ	0 4	-	Only applicable for ② and ③	-	-	-	□	□	□	□	□	□
50 Hz 500 VY	2 7	-	Only applicable for ①	○	○	○	○	○	○	○	○	○
50 Hz 500 VΔ	4 0	-	Only applicable for ①	○	○	○	○	○	○	○	○	○
50 Hz 220 VΔ/380 VY, 60 Hz 440 VΔ	2 1	-	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ	3 3	-	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ			Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 240 VΔ/415 VY, 60 Hz 480 VY	2 3	-	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 415 VΔ, 60 Hz 480 VΔ	3 5	-	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Voltage at 60 Hz and required power</b>												
220 VΔ/380 VY; 50 Hz power	9 0	M2A	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz power	9 0	M1A	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz power	9 0	M2B	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ; 50 Hz power			Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz power	9 0	M1B	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 50 Hz power	9 0	M2C	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 60 Hz power	9 0	M1C	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 50 Hz power	9 0	M2D	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 60 Hz power	9 0	M1D	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VY; 50 Hz power	9 0	M2E	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VY; 60 Hz power	9 0	M1E	Only applicable for ①	○	○	○	○	○	○	○	○	○
460 VΔ; 50 Hz power	9 0	M2F	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VΔ; 60 Hz power	9 0	M1F	Only applicable for ①	○	○	○	○	○	○	○	○	○
575 VY; 50 Hz power	9 0	M2G	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VY; 60 Hz power	9 0	M1G	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 50 Hz power	9 0	M2H	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 60 Hz power	9 0	M1H	Only applicable for ①	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Non-standard voltage and/or frequencies</b>												
Non-standard winding <sup>1)</sup>	9 0	M1Y • and customer specifications	All	All	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible

1) Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), voltage, frequency and required rated output in kW.

# Article No. supplements and special versions

Voltages

## Steel plant motors 1PC1433, 1PC1443, 1PC1463

Types of construction	Type of construction letter	Additional identification code with 14th position of the Article No. and plain text, if required	Motor category										
			Motor version	Motor type (cast iron)	Motor type – frame size								
					112	132	160	180	200	225	250	280	
			TEFC (IC411)	1PC1433	1PC1433 for line operation (DOL) ①								
				1PC1443	1PC1443 for converter operation (VSD) ②								
			TENV (IC410)	1PC1463	1PC1463 for converter operation (VSD) ③								
			Motor version	Motor type	Frame size								
					112	132	160	180	200	225	250	280	
1PC14 . . . . . □ . . (Z)			Order code										
<b>Without flange</b>													
IM B3		A	–	All	All	□	□	□	□	□	□	□	
<b>With flange</b>													
			Acc. to EN 50347 Acc. to DIN 42948			FF215 A 250	FF265 A 300	FF300 A 350	FF300 A 350	FF350 A 400	FF400 A 450	FF500 A 550	FF500 A 550
IM B5		F	–	All	All	✓	✓	✓	✓	✓	✓	–	–
IM V1, without protective cover		G	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
IM V1 with protective cover		G	H00	All	All	✓	✓	✓	✓	✓	✓	✓	✓
IM V3		H	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
IM B35		J	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- ✓ With additional charge

# Article No. supplements and special versions

Types of construction

## Steel plant motors 1PC1433, 1PC1443, 1PC1463

Motor protection	Motor protection letter 15th position of the Article No.	Additional identification code with order code and plain text, if required	Motor category									
			Motor version	Motor type (cast iron)	Motor type – frame size							
					112	132	160	180	200	225	250	280
			TEFC (IC411)	1PC1433	1PC1433 for line operation (DOL) ①							
				1PC1443	1PC1443 for converter operation (VSD) ②							
			TENV (IC410)	1PC1463	1PC1463 for converter operation (VSD) ③							
			Motor version	Motor type	Frame size							
					112	132	160	180	200	225	250	280
<b>1PC14...-...-... □ .</b> Order code												
Motor protection												
None (standard)	A	–	Standard for ①, not for ② and ③		□	□	□	□	□	□	□	□
1 or 3 PTC thermistors – for tripping (2 terminals)	B	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
2 or 6 PTC thermistors – for alarm and tripping (4 terminals)	C	–	Standard for ② and ③		✓	✓	✓	✓	✓	✓	✓	✓
1 KTY84-130 temperature sensor (2 terminals)	F	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
2 KTY84-130 temperature sensors (4 terminals)	G	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
3 Pt100 resistance thermometers – 2 wire input (6 terminals)	H	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
6 Pt100 resistance thermometers – 2 wire input (12 terminals)	J	–	All	All	–	–	–	✓	✓	✓	✓	✓

- Standard version
- ✓ With additional charge
- Not possible

**Note:**


Options are available specifically for bearing protection – For order codes and descriptions, see from page 57 Special versions.



# Article No. supplements and special versions

Motor protection

## Steel plant motors 1PC1433, 1PC1443, 1PC1463

Terminal box position	Terminal box position code with 16th position of the Article No.	Additional identification code with order code and plain text, if required	Motor category									
			Motor version	Motor type (cast iron)	Motor type – frame size							
					112	132	160	180	200	225	250	280
			TEFC (IC411)	1PC1433	1PC1433 for line operation (DOL) ①							
				1PC1443	1PC1443 for converter operation (VSD) ②							
			TENV (IC410)	1PC1463	1PC1463 for converter operation (VSD) ③							
	1PC14.....□	Order code	Motor version	Motor type	Frame size							
					112	132	160	180	200	225	250	280
Terminal box position <sup>1)</sup>												
Terminal box at top	4	–	All	All	□	□	□	□	□	□	□	□
Terminal box on right-hand side	5	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Terminal box on left-hand side	6	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- ✓ With additional charge

# Article No. supplements and special versions

## Options

### Steel plant motors 1PC1433, 1PC1443, 1PC1463

Special versions	Additional identification code -Z with order code and plain text, if required	Motor category									
		Motor version	Motor type (cast iron)	Motor type – frame size							
				112	132	160	180	200	225	250	280
		TEFC (IC411)	1PC1433	1PC1433 for line operation (DOL) ①							
			1PC1443	1PC1443 for converter operation (VSD) ②							
		TENV (IC410)	1PC1463	1PC1463 for converter operation (VSD) ③							
1PC14 . . . . . -Z Order code		Motor version	Motor type	Frame size							
				112	132	160	180	200	225	250	280
<b>Motor protection</b>											
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	Q05	All	All	✓	✓	✓	✓	✓	✓	✓	✓
<b>Motor connection and terminal box</b>											
External grounding	H04	All	All	□	□	□	□	□	□	□	□
Terminal box on NDE	H08	All	All	–	–	–	✓	✓	✓	✓	✓
Second external grounding	H70	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 90°, entry from DE	R10	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 90°, entry from NDE	R11	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 180°	R12	All	All	○	○	○	✓	✓	✓	✓	✓
One metal cable gland	R15	All	All	✓	✓	✓	✓	✓	✓	✓	✓
EMC cable gland, maximum configuration	R16	All	All	–	–	–	✓	✓	✓	✓	✓
Metal cable gland, maximum configuration	R18	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Larger terminal box	R50	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Terminal box without cable entry opening	R51	All	All	–	–	–	○	○	○	○	○
Silicon-free version	R74	All	All	□	□	□	□	□	□	✓	✓
<b>Windings and insulation</b>											
Temperature class 180 (H), utilized according to 155 (F) at rated power and max. CT 60 °C <sup>1)</sup>	N11	All	All	✓	✓	✓	✓	✓	✓	✓	✓
<b>Colors and paint finish</b>											
Standard paint finish in RAL 7030 stone gray		All	All	□	□	□	□	□	□	□	□
Special paint finish sea air resistant	S03	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Paint finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (See catalog section 1 "Introduction")	Y53 • and RAL ... paint finish	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Paint finish in special RAL colors: For RAL colors, see "Special paint finish in special RAL colors" (See catalog section 1 "Introduction")	Y56 • and RAL ... paint finish	All	All	✓	✓	✓	✓	✓	✓	✓	✓
<b>Modular technology – Basic versions <sup>11)</sup></b>											
Mounted separately driven fan	F70	Only for ① and ②		✓	✓	✓	✓	✓	✓	✓	✓
<b>Special technology</b>											
Mounting of LL 861 900 220 rotary pulse encoder <sup>3)</sup>	G04	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of HOG 9 D 1024 I rotary pulse encoder <sup>3)</sup>	G05	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of HOG 10 D 1024 I rotary pulse encoder <sup>3)</sup>	G06	All	All	✓	✓	✓	✓	✓	✓	✓	✓

# Article No. supplements and special versions

## Special versions

### Steel plant motors 1PC1433, 1PC1443, 1PC1463

Version in accordance with standards and specifications											
Version according to UL with "Recognition Mark" <sup>9)</sup>	D31	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Canadian regulations (CSA) <sup>10)</sup>	D40	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Mechanical version and degrees of protection											
Prepared for mountings with D16 shaft	G42	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Protective cover <sup>2) 3) 4)</sup>	H00	Only for ① and ②		✓	✓	✓	✓	✓	✓	✓	✓
Condensation drainage holes	H03	All	All	□	□	□	□	□	□	□	□
Rust-resistant screws (externally)	H07	All	All	✓	✓	✓	✓	✓	✓	✓	✓
IP65 degree of protection <sup>5)</sup>	H20	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Bearings and lubrication											
Regreasing device	L23	All	All	✓	✓	✓	✓	✓	✓	□	□
Bearing insulation NDE	L51	For ①		-	-	-	-	-	-	✓	✓
		For ② and ③		-	-	-	-	-	-	✓	✓
Balance and vibration quantity											
Vibration quantity level A		All	All	□	□	□	□	□	□	□	□
Vibration quantity level B	L00	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Balancing without feather key, feather key is supplied	L01	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Shaft and rotor											
Shaft extension with standard dimensions, without feather keyway	L04	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Standard shaft made of stainless steel (e.g. 1.4021)	L06	All	All	-	-	-	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality, and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension, DE <sup>6)</sup>	Y58 • and customer specifications	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Special shaft steel as requested by customer	Y60	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Heating and ventilation											
Metal external fan	F76	All	All	□	□	□	□	□	□	□	□
Anti-condensation heating for 230 V	Q02	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 115 V	Q03	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Rating plate and additional rating plates											
Second rating plate, loose	M10	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Additional rating plate with deviating rating plate data	Y80 • and customer specifications	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Additional rating plate with customer specifications	Y82 • and customer specifications	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation, and test certificates											
Acceptance test certificate 3.1 according to EN 10204 <sup>7)</sup>	B02	All	All	✓	✓	✓	✓	✓	✓	✓	✓
Printed German/English operating instructions enclosed <sup>8)</sup>	B04	All	All	✓	✓	✓	✓	✓	✓	✓	✓

□ Standard version

○ Without additional charge

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

✓ With additional charge

O.R. Possible on request

- Not possible

## Article No. supplements and special versions

### Special versions

#### Steel plant motors 1PC1433, 1PC1443, 1PC1463

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- 1) Cannot be used for motors in UL version (order code **D31**). The grease lifetime specified in Catalog Section 1 "Introduction" refers to CT 40 °C. If the coolant temperature is increased by 10 K, the grease lifetime and re-greasing interval are halved.
- 2) The 1XP8 rotary pulse encoders are fitted with a protective cover as standard. The protective cover is omitted at the factory when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 3) The LL and HOG rotary pulse encoders up to frame size 160 are fitted with a protective cover as standard. The protective cover is omitted at the factory when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 4) Order code **H00** provides mechanical protection for encoders. Not possible in combination with HOG 9 D 1024l rotary pulse encoder (order code **G05**) and/or brake 2LM8 (order code **F01**).
- 5) Not possible in combination with HOG 9 D 1024l rotary pulse encoder □ (order code G05) and/or brake 2LM8 (order code F01).
- 6) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with EN 50347, Form A are used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer in accordance with the appropriate standard. Not valid for Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for nonstandard shaft extensions DE or NDE. The feather key is always supplied. For order codes **Y58**, **Y59**, and **L05** the following applies:
  - Dimensions D and DA ≤ inner diameter of roller bearing (see dimension tables under "Dimensions")
  - Dimensions E and EA ≤ 2 × length E (normal) of the shaft extension.
- 7 )
- 8 ) The delivery time for the factory test certificate may differ from the delivery time for the motor.
- 9 ) The Operating Instructions (compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WW/view/en/10803948/133300>
- 10 ) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range.
- 11 ) The rated voltage is indicated on the rating plate without voltage range.
- 12 ) A second shaft extension is not possible. Please inquire for mounted brakes.

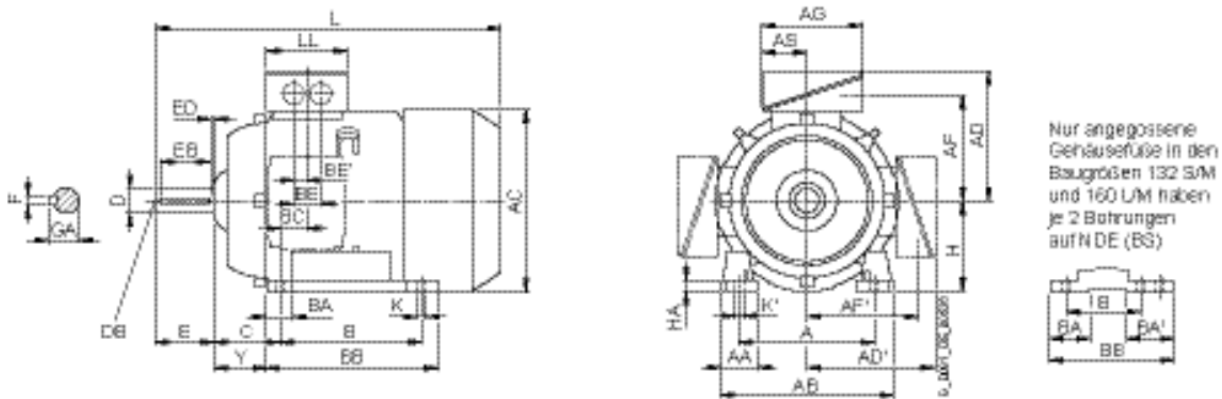
## Dimensions

Cast-iron series 1PC1433, 1PC1443 – self-ventilated

Frame sizes 112 M to 160 L

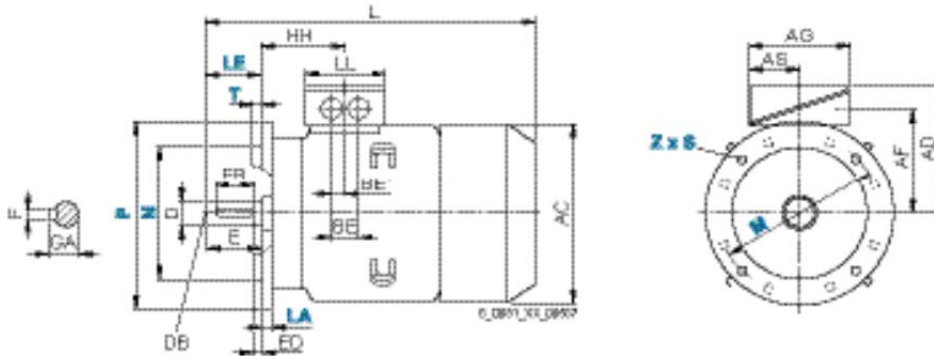
### Dimensional drawings

#### Type of construction IM B3



#### Types of construction IM B5 and IM V1

For flange dimensions, see page 28 ( $Z$  = the number of retaining holes)



For motor	Type	Dimension designation acc. to IEC																					
Frame size	1PC1433– 1PC1443–	No. of poles	A	AA	AB	AC	AD	AD <sup>1</sup>	AF	AF <sup>2</sup>	AG	AS	B	BA	BA <sup>3</sup>	BB	BC	BE	BE <sup>3</sup>	C	H	HA	Y
112 M	All	4, 6	190	46	226	239	195	195	150	150	163	80.5	140	48	48	176	30	48	24	70	112	12	52
132 S	All	4, 6	216	53	256	281	214.5	214.5	169	169	163	80.5	140	52 <sup>5)</sup>	89 <sup>1)</sup>	218 <sup>3)</sup>	26.5	48	24	89	132	15	69
132 M	All	4, 6	216	53	256	281	214.5	214.5	169	169	163	80.5	178	52 <sup>5)</sup>	89 <sup>1)</sup>	218	26.5	48	24	89	132	15	69
160 M	All	4, 6	254	60	300	333.5	265	265	213	213	190	92	210	73 <sup>6)</sup>	117 <sup>2)</sup>	300 <sup>4)</sup>	37	60	30	108	160	18	85
160 L	All	4, 6	254	60	300	333.5	265	265	213	213	190	92	254	73 <sup>6)</sup>	117 <sup>2)</sup>	300	37	60	30	108	160	18	85

- 1) With screwed-on feet, dimension BA' 95 mm.
- 2) With screwed-on feet, dimension BA' 79 mm.
- 3) With screwed-on feet, dimension BB 180 mm.

- 4) With screwed-on feet, dimension BB 256 mm.
- 5) With screwed-on feet, dimension BA 41 mm.
- 6) With screwed-on feet, dimension BA 51 mm.

# Dimensions

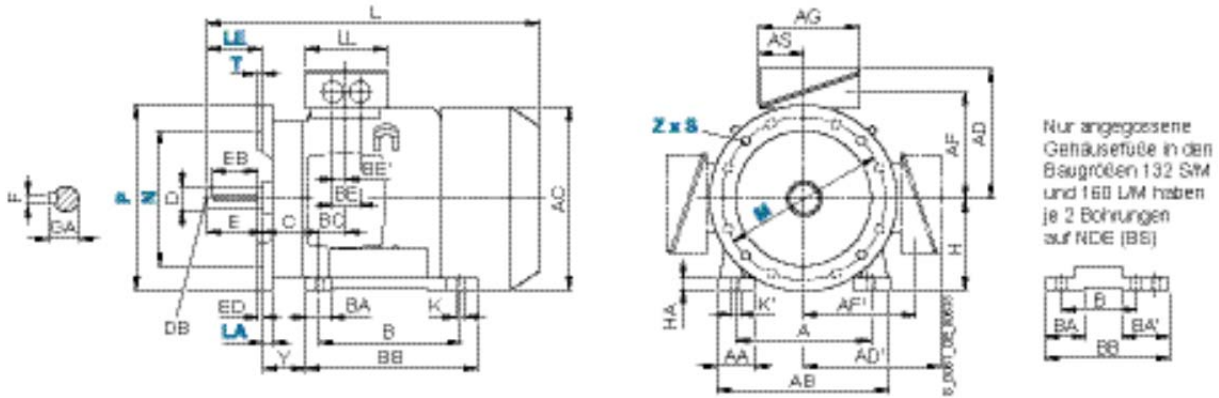
Cast-iron series 1PC1433, 1PC1443 – self-ventilated

Frame sizes 112 M to 160 L

## Dimensional drawings (continued)

### Type of construction IM B35

For flange dimensions, see page 28 ( $Z$  = the number of retaining holes)



For motor Type		Dimension designation acc. to IEC						DE shaft extension					
Frame size	1PC1433- 1PC1443-	No. of poles	HH	K	K'	L	LL	D	DB	E	EB	ED	F
112 M	All	4, 6	100.5	12	16	407	134	28	M10	60	50	5	8
132 S	All	4, 6	115.5	12	16	457	134	38	M12	80	70	5	10
132 M	All	4, 6	115.5	12	16	507	134	38	M12	80	70	5	10
160 M	All	4, 6	145	14.5	18	594	165	42	M16	110	90	10	12
160 L	All	4, 6	145	14.5	198	654	165	42	M16	110	90	10	12

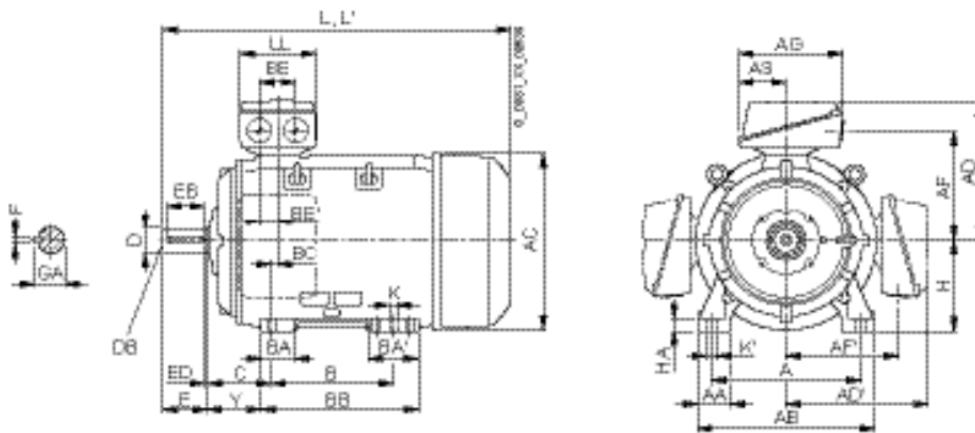
## Dimensions

Cast-iron series 1PC1433, 1PC1443 – naturally cooled motors

Frame sizes 180 M to 280 M

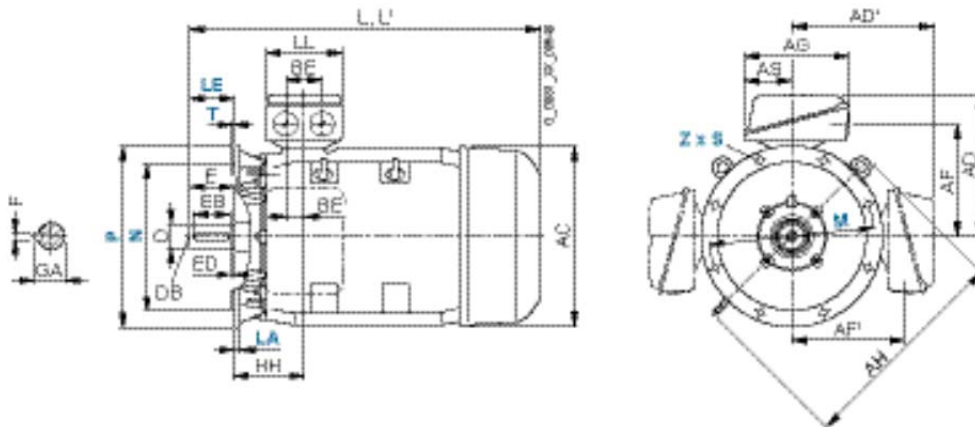
### Dimensional drawings

#### Type of construction IM B3



#### Types of construction IM B5 and IM V1

For flange dimensions, see page 28 ( $Z$  = the number of retaining holes)



For motor Type			Dimension designation acc. to IEC																		
Frame size	1PC1433– 1PC1443–	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B	BA	BA'	BB	BC	BE	BE'	C
180 M	All	4	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121
180 L	All	4, 6	279	65	339	356	286	286	234	234	190	468	92	279	85	120	328	34	60	30	121
200 L	2AC4 2AB5, 2AC5	6 4, 6	318	70	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133
225 S	All	4	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149
225 M	All	4, 6	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149
250 M	All	4, 6	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168
280 S	All	4, 6	457	100	540	551	433	433	345	345	319	672	145	368	101	152	479	20	110	55	190
280 M	All	4, 6	457	100	540	551	433	433	345	345	319	672	145	419	101	152	479	20	110	55	190

## Dimensions

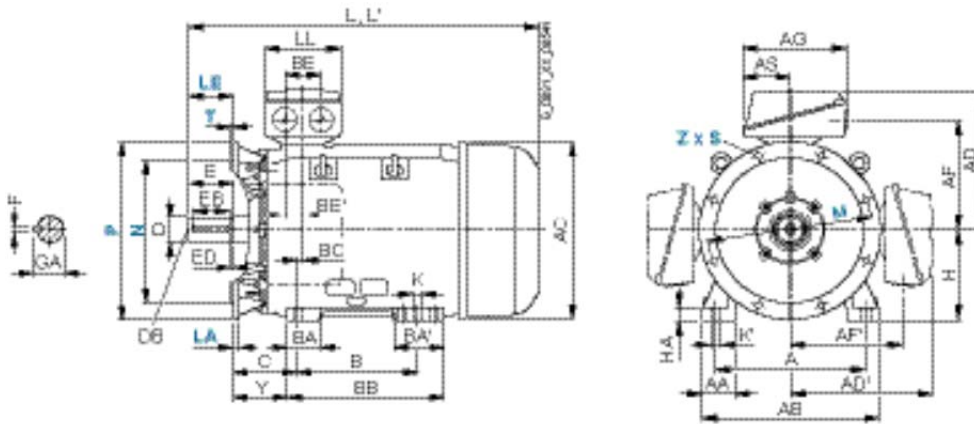
Cast-iron series 1PC1433, 1PC1443 – self-ventilated

Frame sizes 180 M to 280 M

### Dimensional drawings (continued)

#### Type of construction IM B35

For flange dimensions, see page 28 ( $Z$  = the number of retaining holes)



Frame size	For motor Type	No. of poles	Dimension designation acc. to IEC										DE shaft extension			
			H	HA	Y	HH	K	K'	L	LL	D	DB	E	EB	ED	F
180 M	All	4	180	20	95	155	15	19	669	165	48	M16	110	100	5	14
180 L	All	4, 6	180	20	95	155	15	19	699	165	48	M16	110	100	5	14
200 L	2AC4	6	200	25	108	164	19	25	721	197	55	M20	110	100	5	16
	2AB5, 2AC5	4, 6							746							
225 S	All	4	225	34	124	164	19	25	788	197	60	M20	140	125	10	18
225 M	All	4, 6	225	34	124	164	19	25	848	197	60	M20	140	125	10	18
250 M	All	4, 6	250	40	138	192	24	30	887	233	60	M20	140	125	10	18
280 S	All	4, 6	280	40	160	210	24	30	960	233	75	M20	140	125	10	20
280 M	All	4, 6	280	40	160	210	24	30	1070	233	75	M20	140	125	10	20



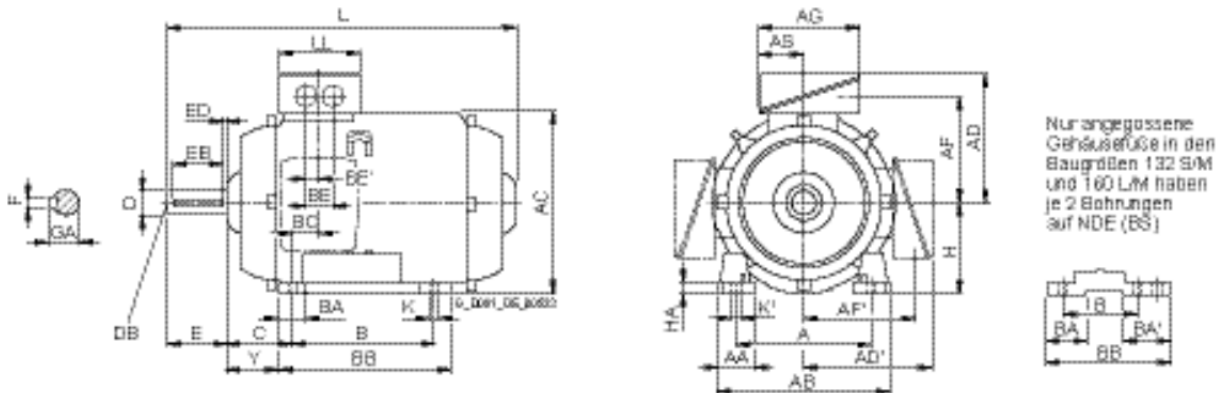
# Dimensions

Cast-iron series IPC1463 – naturally cooled motors

Frame sizes 132 S to 280 M

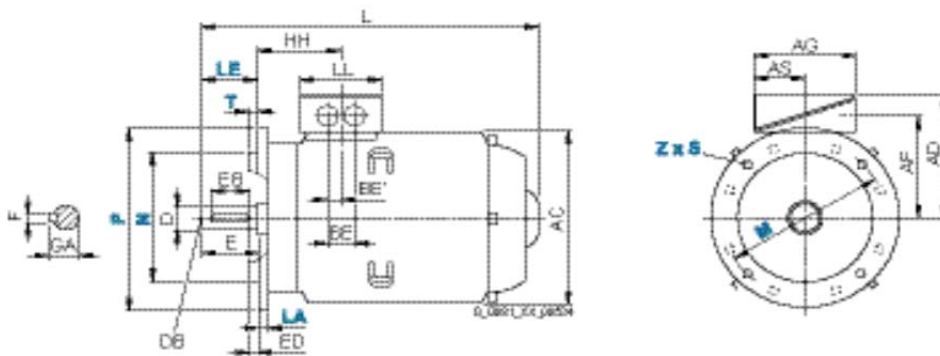
## Dimensional drawings

### Type of construction IM B3



### Types of construction IM B5 and IM V1

For flange dimensions, see page 28 (Z = the number of retaining holes)



For motor	Type	Dimension designation acc. to IEC																		
Frame size	IPC1463-	No. of poles	A	AA	AB	AC	AD	AD <sup>1)</sup>	AF	AF <sup>1)</sup>	AG	AS	B	BA	BA <sup>1)</sup>	BB	BC	BE	BE <sup>1)</sup>	C
132 S	All	4	216	53	256	281	214.5	214.5	169	169	163	80.5	140	52 <sup>5)</sup>	89 <sup>1)</sup>	218 <sup>3)</sup>	26.5	48	24	89
132 M	All	4	216	53	256	281	214.5	214.5	169	169	163	80.5	178	52 <sup>5)</sup>	89 <sup>1)</sup>	218	26.5	48	24	89
160 L	1DB4	4	254	60	300	333.5	265	265	213	213	190	92	210	73 <sup>6)</sup>	117 <sup>2)</sup>	300 <sup>4)</sup>	37	60	30	108
	1DB6	4											254							
180 M	1EB2, 1EC4	4	279	65	339	356	286	286	234	234	190	92	241	85	120	328	34	60	30	121
180 L	1EB4	4	279	65	339	356	286	286	234	234	190	92	279	85	120	328	34	60	30	121
	1EC4	6											241							
200 L	2AC5	6	318	70	378	396	315	315	259	259	266	112	305	104	104	355	31	85	42.5	133
225 M	2BC2	6	356	80	436	449	338	338	282	282	266	112	311	92	117	361	15	85	42.5	149
250 M	2CC2	6	406	100	490	497	410	410	322	322	319	145	349	102	102	409	24	110	55	168
280 S	2DC0	6	457	100	540	551	433	433	345	345	319	145	368	101	152	479	20	110	55	190
280 M	2DC2	6	457	100	540	551	433	433	345	345	319	145	419	101	152	479	20	110	55	190

- 1) With screwed-on feet, dimension BA' 95 mm.
- 2) With screwed-on feet, dimension BA' 79 mm.
- 3) With screwed-on feet, dimension BB 180 mm.

- 4) With screwed-on feet, dimension BB 256 mm.
- 5) With screwed-on feet, dimension BA 41 mm.
- 6) With screwed-on feet, dimension BA 51 mm.

# Dimensions

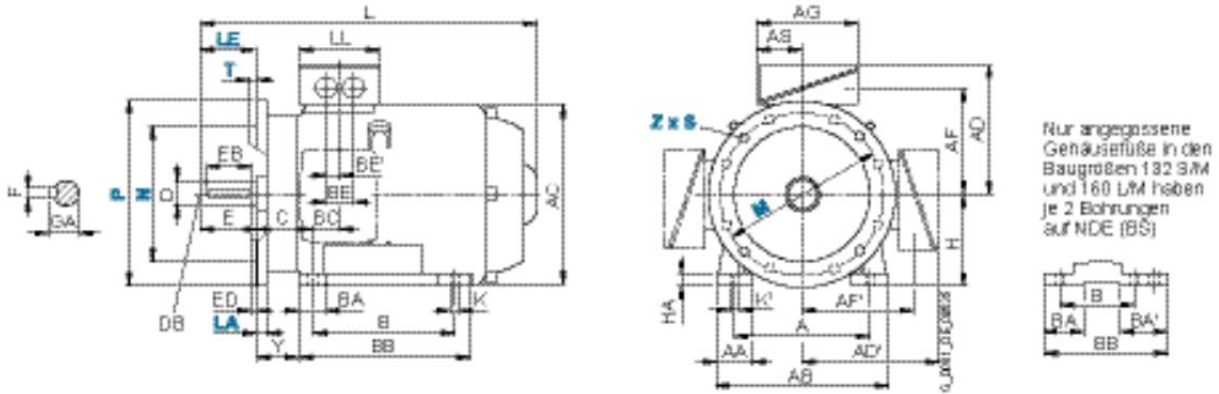
Cast-iron series 1PC1463 – naturally cooled motors

Frame sizes 132 S to 280 M

## Dimensional drawings (continued)

### Type of construction IM B35

For flange dimensions, see page 28 ( $Z$  = the number of retaining holes)



For motor Frame size	Type	No. of poles	Dimension designation acc. to IEC								DE shaft extension					
			H	HA	Y	HH	K	K'	L	LL	D	DB	E	EB	ED	F
132 S	All	4	132	15	69	115.5	12	16	372	134	38	M12	80	70	5	10
132 M	All	4	132	15	69	115.5	12	16	422	134	38	M12	80	70	5	10
160 L	1DB4	4	160	18	85	145	14.5	18	500	165	42	M16	110	90	10	12
	1DB6	4							560							
180 M	1EB2	4	180	20	95	155	15	19	571	165	48	M16	110	100	5	14
180 L	1EB4	4	180	20	95	155	15	19	671	165	48	M16	110	100	5	14
	1EC4	6							571							
200 L	2AC5	6	200	25	108	164	19	25	652	197	55	M20	110	100	5	16
225 M	2BC2	6	225	34	124	164	19	25	728	197	60	M20	140	125	10	18
250 M	2CC2	6	250	40	138	192	24	30	762	233	65	M20	140	125	10	18
280 S	2DC0	6	280	40	160	210	24	30	830	233	75	M20	140	125	10	20
280 M	2DC2	6	280	40	160	210	24	30	830	233	75	M20	140	125	10	20

## Selection and ordering data

Motors for converter operation

### Roller-table motor 1PC1423 self-ventilated – line voltage 400 V/50 Hz

#### Selection and ordering data

Operating values at rated power				Cast-iron series 1PC1423 – version specifically for converter operation						
$P_{\text{rated}}$ , 50 Hz	Frame size	Connection	Speed	$T_{\text{rated}}$	$M_{\text{acc}}$	$\eta_{\text{rated}}$ , 4/4 for converter operation	$\text{COS}\phi_{\text{rated}}$ , 4/4 for converter operation	$I_{\text{rated}}$	$I_{\text{acc}}$	Article No.
kW	FS		rpm	Nm	Nm	%		A	A	
<ul style="list-style-type: none"> <li>• Cooling: Self-ventilated (IC410)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP66 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 400 V/50 Hz</li> </ul>										
4-pole: 1500 rpm at 50 Hz										
3.5	112 M	Y	1475	23	69	88.2	0.75	7.6	21.0	1PC1423-1BB6 9-0AC8
4.8	132 M	Y	1480	31	93	89.2	0.71	10.9	28.5	1PC1423-1CB0 9-0AC8
6.8	132 M	Y	1480	44	132	90.2	0.71	15.3	39.5	1PC1423-1CB6 9-0AC8
9.3	160 L	Y	1485	60	180	91.0	0.76	19.1	53.0	1PC1423-1DB6 9-0AC8
11	160 L	Y	1485	71	213	91.4	0.75	23.0	61.0	1PC1423-1DB8 9-0AC8
13	180 L	Y	1480	84	252	91.8	0.74	27.5	73.0	1PC1423-1EB4 9-0AC8
17.5	180 L	Y	1480	110	330	92.5	0.74	37.0	95.0	1PC1423-1EB7 9-0AC8
6-pole: 1000 rpm at 50 Hz										
10.6	180 L	Y	985	100	300	90.2	0.65	26.0	62.0	1PC1423-1EC6 9-0AC8
13.8	180 L	Y	985	130	390	90.9	0.68	32.0	85.0	1PC1423-1EC8 9-0AC8
18	200 K	Y	990	170	510	91.7	0.63	45.0	103.0	1PC1423-2AC7 9-0AC8

## Selection and ordering data

Motors for converter operation

### Roller-table motor 1PC1423 self-ventilated – line voltage 400 V/50 Hz

#### Selection and ordering data

Motor type	$m_{M \text{ B3}}$	$J$	$L_{pIA}$ Tolerance +3 dB (A) Load	$L_{WA}$ Tolerance +3 dB (A) Load	Mech. speed	Terminal box limit type	Preferred Motor Modules of the SINAMICS S120 Other SINAMICS converters also possible – low overload operating mode <sup>1)</sup>	Base load current $I_{CH}$	Rated current $I_{rated}$	Single Motor Module booksize  Width
	kg	kgm <sup>2</sup>	dB (A)	dB (A)	rpm		Type	A	A	mm
<ul style="list-style-type: none"> <li>• Cooling: Self-ventilated (IC410)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP66 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 400 V/50 Hz</li> </ul>										
<b>4-pole: 1500 rpm at 50 Hz</b>										
1PC1423-1BB69-0AC8	66	0.019	63	75	4200	TB1F71	6SL3120-1TE21-0AD0	7.7	9.0	50
1PC1423-1CB09-0AC8	89	0.035	68	80	4200	TB1F71	6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1423-1CB69-0AC8	105	0.049	68	80	4200	TB1F71	6SL3120-1TE21-8AC0	15.3	18.0	50
1PC1423-1DB69-0AC8	166	0.102	61	74	4200	TB1J71	6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1423-1DB89-0AC8	173	0.112	61	74	4200	TB1J71	6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1423-1EB49-0AC8	212	0.158	67	81	4200	TB1J71	6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1423-1EB79-0AC8	250	0.204	67	81	4200	TB1J71	6SL3210-1TE24-5AA3	38.0	45.0	150
<b>6-pole: 1000 rpm at 50 Hz</b>										
1PC1423-1EC69-0AC8	222	0.247	77	90	3600	TB1J71	6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1423-1EC89-0AC8	252	0.318	77	90	3600	TB1J71	6SL3120-1TE23-0AC0	25.5	30.0	100
1PC1423-2AC79-0AC8	325	0.503	64	77	3600	TB1J71	6SL3120-1TE24-5AA3	38.0	45.0	150

3) In addition to the Power Module, a Control Unit and an Operator Panel are required (see Catalog D 31 and/or D 35).

## Selection and ordering data

Motors for converter operation with special insulation for 690 V

### Roller-table motor 1PC1423 self-ventilated – line voltage 690 V/50 Hz

#### Selection and ordering data

Operating values at rated power						Cast-iron series 1PC1423 – version specifically for converter operation					
$P_{\text{rated, 50 Hz}}$	Frame size	Connection	Speed	$T_{\text{rated}}$	$M_{\text{acc}}$	$\eta_{\text{rated, 4/4}}$ 4/4 for converter operation	$\text{COS}(\varphi_{\text{rated, 4/4}})$ 4/4 for converter operation	$I_{\text{rated}}$	$I_{\text{acc}}$	Article No.	
kW	FS		rpm	Nm	Nm	%		A	A		
<ul style="list-style-type: none"> <li>• Cooling: Self-ventilated (IC410)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP66 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 690 V/50 Hz</li> </ul>											
4-pole: 1500 rpm at 50 Hz											
3.5	112 M	Y	1475	23	69	88.2	0.75	4.4	12.1	1PC1423-1BB6 9-0AC8	
4.8	132 M	Y	1480	31	93	89.2	0.71	6.3	16.5	1PC1423-1CB0 9-0AC8	
6.8	132 M	Y	1480	44	132	90.2	0.71	8.8	23.0	1PC1423-1CB6 9-0AC8	
9.3	160 L	Y	1485	60	180	91.0	0.76	11.0	30.5	1PC1423-1DB6 9-0AC8	
11	160 L	Y	1485	71	213	91.4	0.75	13.3	35.0	1PC1423-1DB8 9-0AC8	
13	180 L	Y	1480	84	252	91.8	0.74	15.9	42.0	1PC1423-1EB4 9-0AC8	
17.5	180 L	Y	1480	110	330	92.5	0.74	21.5	55.0	1PC1423-1EB7 9-0AC8	
6-pole: 1000 rpm at 50 Hz											
10.6	180 L	Y	985	100	300	90.2	0.65	15.0	36.0	1PC1423-1EC6 9-0AC8	
13.8	180 L	Y	985	130	390	90.9	0.68	18.5	49.0	1PC1423-1EC8 9-0AC8	
18	200 K	Y	990	170	510	91.7	0.63	26.0	60.0	1PC1423-2AC7 9-0AC8	

## Selection and ordering data

Motors for converter operation with special insulation for 690 V

### Roller-table motor 1PC1423 self-ventilated – line voltage 690 V/50 Hz

#### Selection and ordering data

Motor type	$m_{M \text{ B3}}$	$J$	$L_{pIA}$ Tolerance +3 dB (A) Load	$L_{WA}$ Tolerance +3 dB (A) Load	Mech. speed	Terminal box limit type	Preferred Motor Modules of the SINAMICS S120 Other SINAMICS converters also possible – low overload operating mode <sup>1)</sup>	Base load current $I_{CH}$	Rated current $I_{rated}$	Single Motor Module booksize  Width
	kg	kgm <sup>2</sup>	dB (A)	dB (A)	rpm	Type		A	A	mm
<ul style="list-style-type: none"> <li>• Cooling: Self-ventilated (IC410)</li> <li>• Insulation: Thermal class 155 (temperature class F), IP66 degree of protection, utilization in accordance with thermal class 155 (temperature class F)</li> <li>• Operation on a converter with uncontrolled infeed – SINAMICS S; rated voltage 690 V/50 Hz</li> </ul>										
<b>4-pole: 1500 rpm at 50 Hz</b>										
1PC1423-1BB69-0AC8	66	0.019	63	75	4200	TB1F71	6SL3210-1PH21-4_LO	14.0	14.0	200
1PC1423-1CB09-0AC8	89	0.035	68	80	4200	TB1F71	6SL3210-1PH21-4_LO	14.0	14.0	200
1PC1423-1CB69-0AC8	105	0.049	68	80	4200	TB1F71	6SL3210-1PH21-4_LO	14.0	14.0	200
1PC1423-1DB69-0AC8	166	0.102	61	74	4200	TB1J71	6SL3210-1PH21-4_LO	14.0	14.0	200
1PC1423-1DB89-0AC8	173	0.112	61	74	4200	TB1J71	6SL3210-1PH21-4_LO	14.0	14.0	200
1PC1423-1EB49-0AC8	212	0.158	67	81	4200	TB1J71	6SL3210-1PH22-0_LO	19.0	19.0	200
1PC1423-1EB79-0AC8	250	0.204	67	81	4200	TB1J71	6SL3210-1PH22-3_LO	23.0	23.0	200
<b>6-pole: 1000 rpm at 50 Hz</b>										
1PC1423-1EC69-0AC8	222	0.247	77	90	3600	TB1J71	6SL3210-1PH22-0_LO	19.0	19.0	200
1PC1423-1EC89-0AC8	252	0.318	77	90	3600	TB1J71	6SL3210-1PH22-0_LO	19.0	19.0	200
1PC1423-2AC79-0AC8	325	0.503	64	77	3600	TB1J71	6SL3210-1PH22-7_LO	27.0	27.0	200

1) In addition to the Power Module, a Control Unit and an Operator Panel are required (see Catalog D 31 and/or D 35).

## Selection and ordering data

Line operating data

### Roller-table motor 1PC1423 self-ventilated – line voltage 400 V/50 Hz

#### Selection and ordering data

Operating values at rated power													Article No.	
$P_{rated}$ 50 Hz	Frame size	$n_{rated}$ 50 Hz	$T_{rated}$ 50 Hz	IE class	$\eta_{rated}$ 50 Hz, 4/4	$\cos\phi_{rate}$ d, 50 Hz, 4/4	$I_{rated}$ 50 Hz, 400 V	$T_{rated}$	$I_s$ $I_{rated}$	$L_{p(A)}$ 50 Hz	$L_{w(A)}$ 50 Hz		$m_{MB3}$	$J$
kW	FS	rpm	Nm	%		A			dB(A)	dB(A)		kg	kgm <sup>2</sup>	
* Cooling: Self-ventilated (IC410)														
* Insulation: Thermal class 155 (temperature class F), IP66 degree of protection, utilization in accordance with thermal class 155 (temperature class F)														
* Direct-on-line operation (DOL) 400 V/50 Hz														
4-pole: 1500 rpm at 50 Hz														
3.5	112 M	1475	23	IE3	88.2	0.75	7.6	5.0	10.6	63	75	1PC1423-1BB69-0AC8	66	0.019
4.8	132 M	1480	31	IE3	89.2	0.71	10.9	3.7	10.6	68	80	1PC1423-1CB09-0AC8	89	0.035
6.8	132 M	1480	44	IE3	90.2	0.71	15.3	3.6	10.7	68	80	1PC1423-1CB69-0AC8	105	0.049
9.3	160 L	1485	60	IE3	91.0	0.76	19.1	4.4	10.8	61	74	1PC1423-1DB69-0AC8	166	0.102
11	160 L	1485	71	IE3	91.4	0.75	23.0	3.2	10.8	61	74	1PC1423-1DB89-0AC8	173	0.112
13	180 L	1480	84	IE3	91.8	0.74	27.5	3.8	10.3	67	81	1PC1423-1EB49-0AC8	212	0.158
17.5	180 L	1480	110	IE3	92.5	0.74	37.0	4.0	11.3	67	81	1PC1423-1EB79-0AC8	250	0.204
6-pole: 1000 rpm at 50 Hz														
10.6	180 L	985	100	IE3	90.2	0.65	26.0	3.9	9.2	77	90	1PC1423-1EC69-0AC8	222	0.247
13.8	180 L	985	130	IE3	90.9	0.68	32.0	4.0	9.5	77	90	1PC1423-1EC89-0AC8	252	0.318
18	200 K	990	170	IE3	91.7	0.63	45.0	5.4	10.1	64	77	1PC1423-2AC79-0AC8	325	0.503

## Article No. supplements and special versions

### Voltages

#### Roller-table motors 1PC1423

Voltages	Voltage code 12th and 13th position of the Order No.	Additional identification code with order code and plain text	Motor category						
			Motor version	Motor type (cast-iron)	Frame size				
			Roller Table	1PC1423	112	132	160	180	200
Anormal voltage and/or frequency			Motor version	Motor type	112	132	160	180	200
Non-standard winding for supply voltage ≤ 500 V with converter operation (Advanced)	90	M1Y• and plain text (Voltage, frequency, rated-output)	AI	AI	○	○	○	○	○
Non-standard winding for supply voltage > 500 V to 690 V with converter operation (Premium) <sup>1)</sup>	90	M2Y• and plain text (Voltage, frequency, rated-output)	AI	AI	✓	✓	✓	✓	✓

- 1) Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, and required rated power in kW.



## Article No. supplements and special versions

Voltages

### Roller-table motors 1PC1423

Types of construction	Type of construction code 14th position of the Order No.	Additional identification code with order code and plain text if required	Motor category						
			Motor version	Motor type (cast-iron)	Frame size				
			112	132	160	180	200		
			Roller Table	1PC1423					
			Motor version	Motor type	112	132	160	180	200
<b>Without flange</b>									
IMB3 <sup>1)</sup>	A	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>With flange</b>		acc. to DIN EN 50347 acc. to DIN 42948			FF215 A 250	FF265 A 300	FF300 A 350	FF300 A 350	FF350 A 400
IMB5 <sup>1)</sup>	F	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
IMB35 <sup>1)</sup>	J	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/> Standard version							
		- Not possible							

- 1) The type of construction is stamped on the rating plate. When ordering a different mounting position, the mounting position must be specified to ensure that the condensation drainage holes are positioned correctly.

## Article No. supplements and special versions

Motor protection

### Roller-table motors 1PC1423

Motor protection	Motor protection code 15th position of the Order No.	Additional identification code with order code and plain text if required	Motor category						
			Motor version	Motor type (cast-iron)	Frame size				
			Roller Table	1PC1423	112	132	160	180	200
Motor protection (winding protection)			Motor version	Motor type	112	132	160	180	200
6 PTC thermistors - for alarm and tripping (4 terminals) <sup>1)</sup>	<b>C</b>	-	All	All	☐	☐	☐	☐	☐
3 Pt100 resistance thermometers – 2 - wire circuit (6 terminals) <sup>1)</sup>	<b>H</b>	-	All	All	✓	✓	✓	✓	✓
6 Pt100 resistance thermometers – 2 wire circuit (12 terminals) <sup>1)</sup>	<b>J</b>	-	All	All	-	-	-	✓	✓
1 Pt1000 resistance thermometer (2 terminals) <sup>1)</sup>	<b>K</b>	-	All	All	○	○	○	○	○
2 Pt1000 resistance thermometer (4 terminals) <sup>1)</sup>	<b>L</b>	-	All	All	✓	✓	✓	✓	✓
		☐ Standard version							
		○ Without additional charge							
		- Not possible							

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

# Article No. supplements and special versions

Terminal box position

## Roller-table motors 1PC1423

Connection box position	Connection box position code 16th position of the Order No.	Additional identification code with order code and plain text if required	Motor category						
			Motor version	Motor type (cast-iron)	Frame size				
			Roller Table	1PC1423	112	132	160	180	200
			Motor version	Motor type	112	132	160	180	200
<b>Connection box position</b>									
<b>Connection box non drive end</b>	<b>8</b>	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Connection box on right hand site</b>	<b>5</b>	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
			<input type="checkbox"/> Standard version						

# Article No. supplements and special versions

## Options

### Roller-table motors 1PC1423

Special versions	MLFB or Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (cast-iron)	Frame size					
				112	132	160	180	200	
		Roller Table	1PC1423						
		Motor version	Motor type	112	132	160	180	200	
<b>Motor protection</b>									
1 Pt1000 temperature sensor (2 terminals) <sup>1)</sup>	Q35	All	All	✓	✓	✓	✓	✓	
2 Pt1000 temperature sensors (4 terminals) <sup>1)</sup>	Q36	All	All	✓	✓	✓	✓	✓	
<b>Motor connection and connection box</b>									
External grounding	H04	All	All	□	□	□	□	□	
Terminal box with drillings and metrical metal cable glands <sup>2)</sup>	R40	All	All	✓	✓	✓	✓	✓	
Cast-iron auxiliary terminal box (small)	R62	All	All	✓	✓	✓	✓	✓	
<b>Windings and insulation</b>									
Temperature class 180 (H), used acc. to 155(F), at rated power and max. CT 60 °C	N11	All	All	✓	✓	✓	✓	✓	
<b>Colors and paint finish</b>									
Special finish sea air resistant	S03	All	All	□	□	□	□	□	
Internal coating	S05	All	All	□	□	□	□	□	
Finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog D 81.1 Section 1 "Introduction")	Y53 • and finish RAL .....	All	All	✓	✓	✓	✓	✓	
Finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog D 81.1 Section 1	Y56 • and finish RAL .....	All	All	✓	✓	✓	✓	✓	
<b>Special technology</b>									
Mounting of LL 861 900 220 rotary pulse encoder <sup>3)</sup>	G04	All	All	✓	✓	✓	✓	✓	
Mounting of HOG 9 D 1024 I rotary pulse encoder <sup>3)</sup>	G05	All	All	✓	✓	✓	✓	✓	
Mounting of HOG 10 D 1024 I rotary pulse encoder	G06	All	All	✓	✓	✓	✓	✓	
Mounting of POG 10 DN, 2 x 1024 I rotary pulse encoder <sup>3)</sup>	G09	All	All	✓	✓	✓	✓	✓	
<b>Mechanical design and degrees of protection</b>									
Design of protection IP66		All	All	□	□	□	□	□	
Vibration-proof version; Vibration resistance to Class 3M6 acc. to IEC721-3-3		IM B3	All	□	□	□	□	□	
Vibration-proof version; Vibration resistance to Class 3M4 acc. to IEC 60721-3-3	H02	IM B5, IM B35	All	□	□	□	□	□	
Condensation drainage holes <sup>4)</sup>	H03	All	All	□	□	□	□	□	
Rust-resistant screws (externally)	H07	All	All	□	□	□	□	□	
Special Sealing System - Corrosion Protection	H91	All	All	✓	✓	✓	✓	✓	
<b>Designs in accordance with standards and specifications</b>									
TR CU product safety certificate EAC for Eurasian customs union	D47	All	All	✓	✓	✓	✓	✓	
<b>Bearings and lubrication</b>									
Located bearing DE	L20	All	All	□	□	□	□	□	
Regreasing device	L23	All	All	✓	✓	✓	✓	✓	
Bearing insulation NDE	L51	All	All	-	-	-	-	-	
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	All	All	✓	✓	✓	✓	✓	
<b>Balance and vibration quantity</b>									
Vibration quantity level A		All	All	□	□	□	□	□	
Half-key balancing (standard)		All	All	□	□	□	□	□	

# Article No. supplements and special versions

## Special versions

### Roller-table motors 1PC1423

Special versions	MLFB or Additional identification code -Z with order code and plain text if required	Motor category						
		Motor version	Motor type (cast-iron)	Frame size				
				112	132	160	180	200
		Roller Table	1PC1423					
		Motor version	Motor type	112	132	160	180	200
<b>Shaft and rotor</b>								
Shaft extension with standard dimensions, without feather keyway	L04	All	All	✓	✓	✓	✓	✓
Standard shaft made of stainless steel (e.g.	L06	All	All	□	□	□	□	□
Special design conical shaft end without key according to DIN 1448	L09	All	All	✓	✓	✓	✓	✓
Non-standard shaft extension, DE <sup>5)</sup>	Y58 • and identification code	All	All	✓	✓	✓	✓	✓
<b>Rating plate and extra rating plates</b>								
Rating plate, stainless steel	M11	All	All	□	□	□	□	□
Extra rating plate with identification codes	Y82 • and customer specifications	All	All	✓	✓	✓	✓	✓
<b>Extension of liability</b>								
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery <sup>6)</sup>	Q82	All	All	-	-	-	4,6%	4,6%
<b>Packaging, safety notes, documentation and test certificates</b>								
Printed German/English Operating Instructions enclosed <sup>7)</sup>		All	All	□	□	□	□	□
Acceptance test certificate 3.1 according to EN	B02	All	All	✓	✓	✓	✓	✓
Document – Electrical data sheet	B60	All	All	✓	✓	✓	✓	✓
Document – Order dimensional drawing	B61	All	All	✓	✓	✓	✓	✓
Connected in star for dispatch	M01	All	All	□	□	□	□	□
	□ Standard version							
	- Not possible							
	• This order code only determines the price of the version – Additional plain text is required.							

- 1) Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.
- 2) Terminal box with drilled holes for metric cable entry
  - FS 112/132: 2 metric cable entries
  - FS 160/180: 2 sealing caps and 2 metric cable entries
- 3) Only possible with terminal box on right-hand side.
- 4) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP66). If condensation drainage holes are required for motors of the IM B6, IM B7, or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.
- 5) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer in accordance with the appropriate standard. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather keys are always supplied. For order codes Y58, Y59, and K16:
  - Dimensions D and DA ≤ inner ball bearing diameter (see dimension tables for "Dimensions")
  - Dimensions E and EA ≤ 2 × length E (normal) of the shaft extension.
 For explanation of the order codes, see Catalog D 81.1 Part 0 "Introduction".
- 6) Wearing parts (bearings) are excluded from the warranty extension.
- 7) The compact operating instructions are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WW/view/en/40761976>.
- 8) The delivery time for the factory test certificate may differ from the delivery time for the motor.

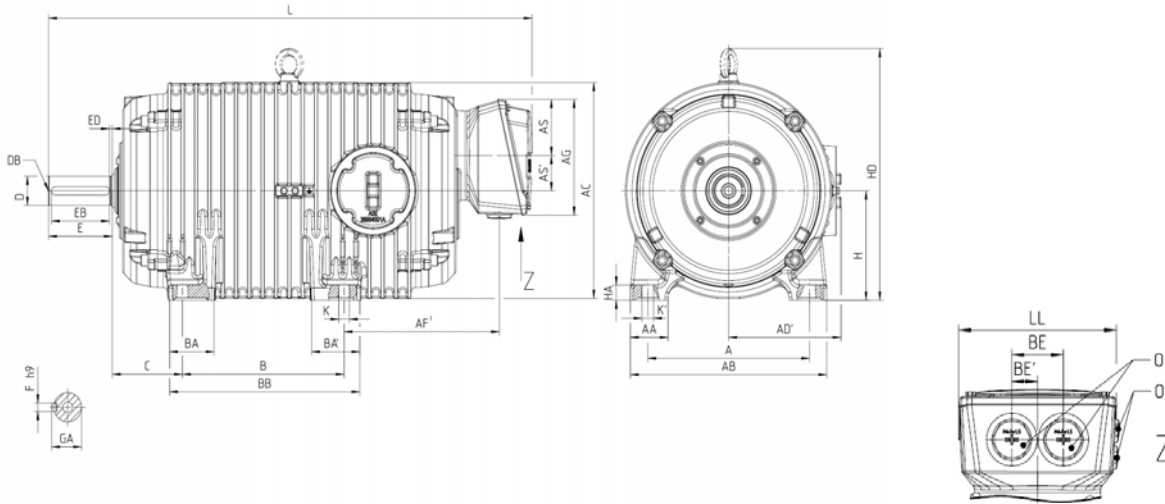
## Dimensions

Roller-table motors 1PC1423 – naturally cooled

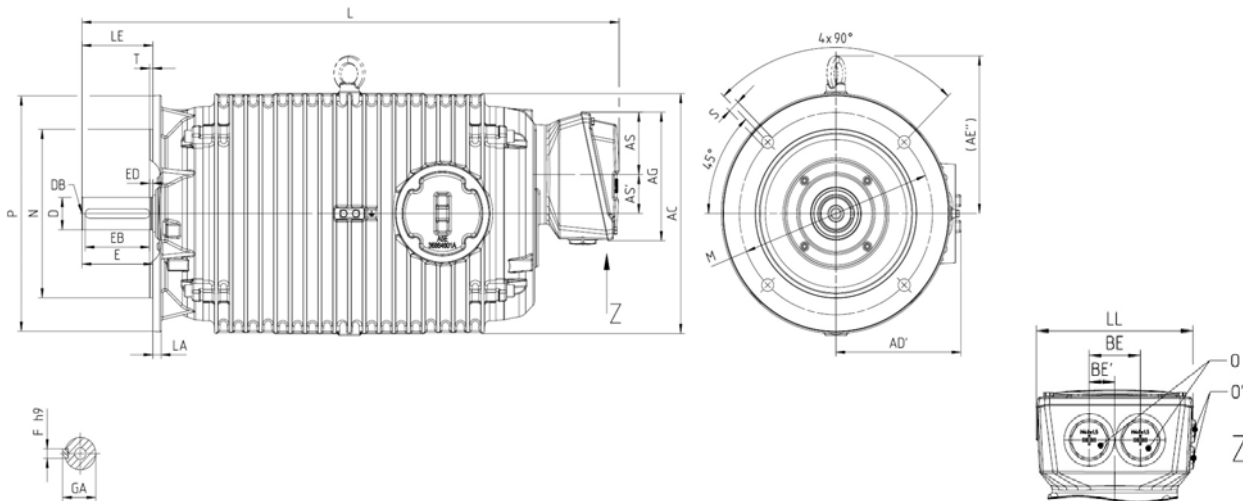
Frame sizes 112 M – 200 K

### Dimensional drawings

#### Type of construction IM B3 (NDE terminal box)



#### Type of construction IM B5 (NDE terminal box)



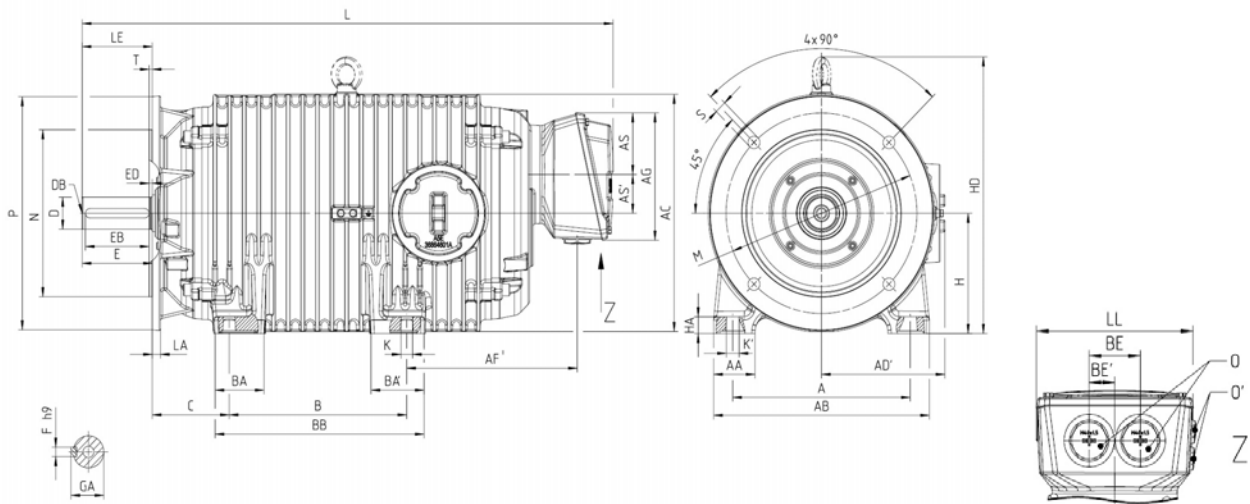
For motor Frame size	Type	Dimension designation acc. to IEC	No. of poles	Dimension designation acc. to IEC																	
				A	AA	AB	AC	AD	AD <sup>2</sup>	AF	AF <sup>2</sup>	AG	AS	B	BA	BA <sup>2</sup>	BB	BC	BE	BE <sup>2</sup>	C
112 M	All	4	4	190	46	226	222	-	-	-	-	185	92	140	48	71	195	-	52	26	70
132 M	All	4	4	216	53	256	260	-	-	-	-	185	92	178	57.5	82.5	243	-	52	26	89
160 L	All	4	4	254	60	300	315	-	-	-	-	191	92	254	70.5	82.5	300	-	60	30	108
180 L	All	4.6	4.6	279	65	339	356	-	-	-	-	191	92	279	76.5	83	328	-	60	30	121
200 K	All	4.6	4.6	318	70	378	395	-	-	-	-	191	92	355	75	93	405	-	60	30	133

## Dimensions

Roller-table motors 1PC1423 – naturally cooled

### Dimensional drawings (continued)

Type of construction IM B35 (NDE terminal box)



For motor	Type	Dimension designation acc. to IEC	DE shaft extension												
			Frame size	Type	No. of poles	H	HA	HH	K	K'	L	LL	D	DB	E
112 M	All	4	112	15	225	13	16	516	161	28	M10	60	50	5	8
132 M	All	4	132	18	292.5	13	17	614	161	38	M12	80	70	5	10
160 L	All	4	160	20	387	18	20	776	184	42	M16	110	90	10	12
180 L	All	4.6	180	25	450	18	20	835	184	48	M16	110	100	5	14
200 K	All	4.6	200	30	479	19	25	872	184	55	M20	110	100	5	16

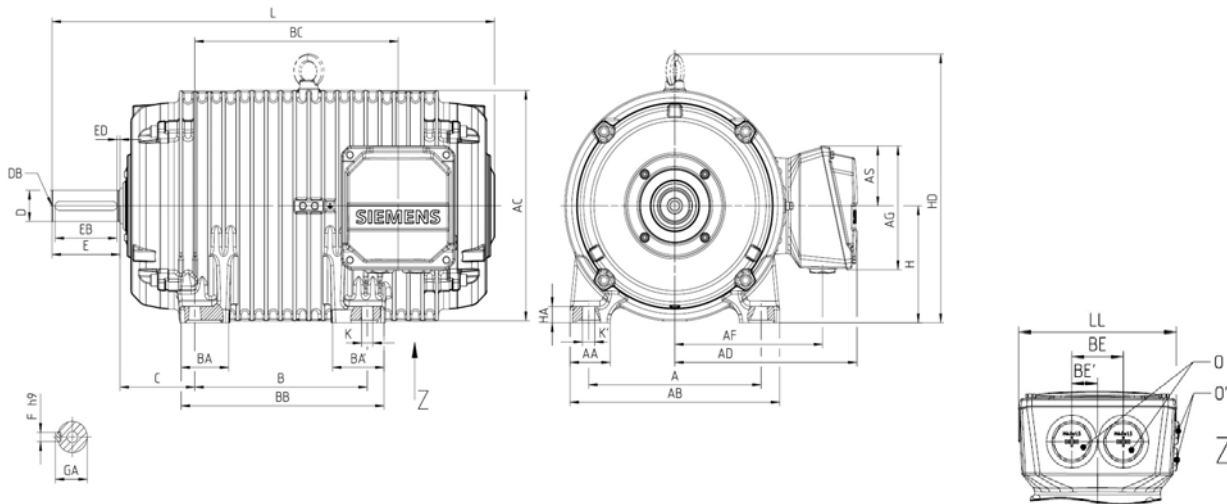
## Dimensions

Roller-table motors 1PC1423 – naturally cooled

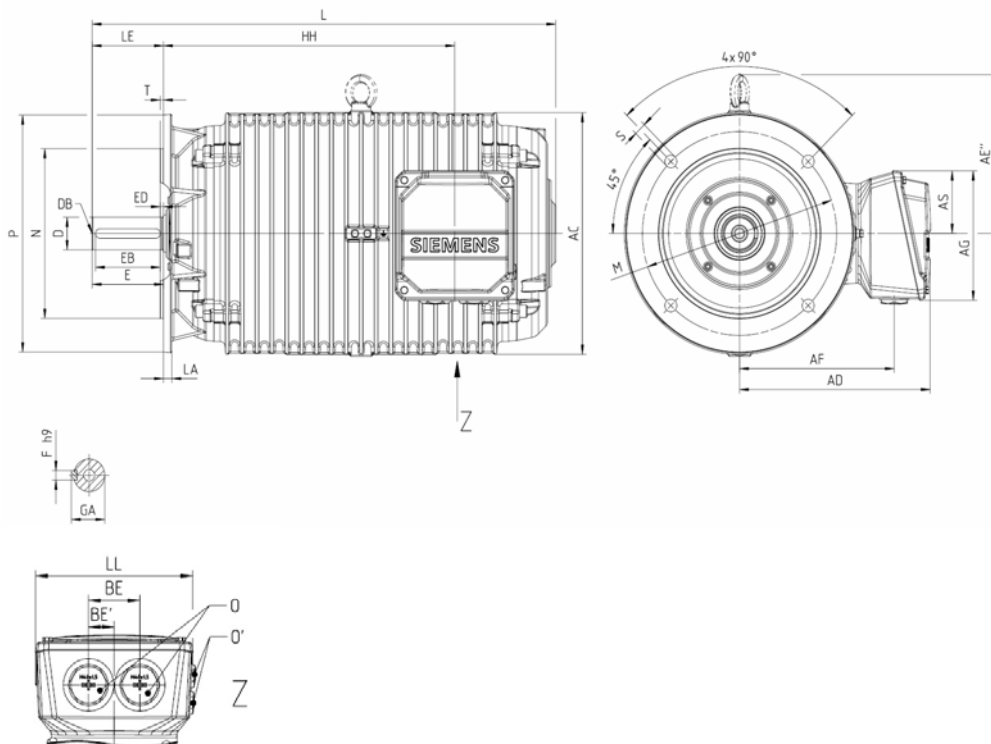
Frame sizes 112 M – 200 K

### Dimensional drawings (continued)

*Type of construction IM B3 (terminal box on right-hand side)*



*Type of construction IM B5 (terminal box on right-hand side)*



For motor	Type	Dimension designation acc. to IEC																				
			Frame size	Type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B	BA	BA'	BB	BC	BE	BE'
112 M	All	4	190	46	226	222	-	-	-	-	185	92	140	48	71	195	-	52	26	70		
132 M	All	4	216	53	256	260	-	-	-	-	185	92	178	57.5	82.5	243	-	52	26	89		
160 L	All	4	254	60	300	315	-	-	-	-	191	92	254	70.5	82.5	300	-	60	30	108		
180 L	All	4.6	279	65	339	356	-	-	-	-	191	92	279	76.5	83	328	-	60	30	121		
200 K	All	4.6	318	70	378	395	-	-	-	-	191	92	355	75	93	405	-	60	30	133		



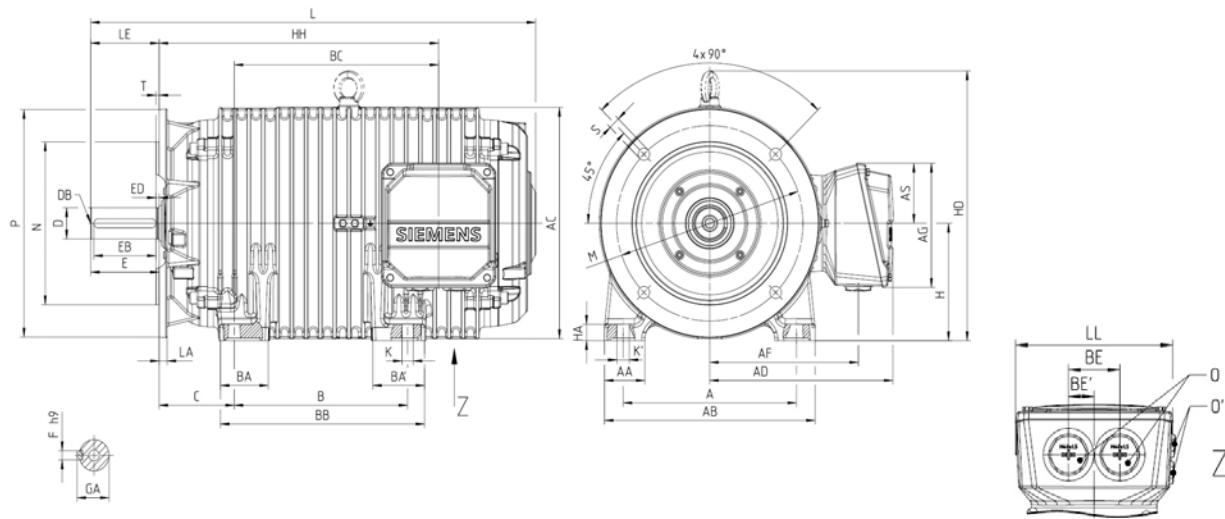
# Article No. supplements and special versions

Special versions

Roller-table motors 1PC1423

## ■ Dimensional drawings (continued)

*Type of construction IM B35 (terminal box on right-hand side)*



For motor	Type	Dimension designation acc. to IEC	DE shaft extension												
			Frame size	Type	No. of poles	H	HA	HH	K	K'	L	LL	D	DB	E
112 M	All	4	112	15	225	13	16	516	161	28	M10	60	50	5	8
132 M	All	4	132	18	292.5	13	17	614	161	38	M12	80	70	5	10
160 L	All	4	160	20	387	18	20	776	184	42	M16	110	90	10	12
180 L	All	4.6	180	25	450	18	20	835	184	48	M16	110	100	5	14
200 K	All	4.6	200	30	479	19	25	872	184	55	M20	110	100	5	16

#### Overview

##### **Couplings**

The motor from Siemens is connected to the machine or gear unit through a coupling. Siemens is an important coupling manufacturer with a wide range of products.

For standard applications, Siemens recommends that flexible couplings, types N-EUPEX and RUPEX or torsionally rigid couplings, types ARPEX and ZAPEX are used. For special applications, FLUDEX and ELPEX-S couplings are recommended.

Available from:

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

or

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

[www.siemens.com](http://www.siemens.com)

Email: [flendercouplings@siemens.com](mailto:flendercouplings@siemens.com)

##### **Taper pins to DIN 258 with threaded ends and constant taper lengths**

Taper pins are used for components that are repeatedly removed. The drilled hole is conically ground using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies approx. 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are commercially available.

For instance, available from:

Otto Roth GmbH & Co. KG  
Rutesheimer Strasse 22  
70499 Stuttgart, Germany  
Phone: +49 711 1388-0  
Fax: +49 711 1388-233

[www.ottoroth.de](http://www.ottoroth.de)

Email: [info@ottoroth.de](mailto:info@ottoroth.de)

##### **Foundation blocks according to DIN 799**

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, base frames, etc. After the fixing bolts have been unscrewed, the machines can be shifted without them having to be lifted.

When the machine is initially installed, the foundation blocks that are bolted to the machine (without washers) and fitted with taper pins are not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

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

[www.luetgert-antriebe.de](http://www.luetgert-antriebe.de)

Email: [info@luetgert-antriebe.de](mailto:info@luetgert-antriebe.de)

##### **Slide rails with fixing bolts and tensioning screws according to DIN 42923**

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:

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

[www.luetgert-antriebe.de](http://www.luetgert-antriebe.de)

Email: [info@luetgert-antriebe.de](mailto:info@luetgert-antriebe.de)

### ■ More information

#### *Spare motors and repair parts*

- Commitment to provide replacement motors and repair parts following delivery of the motor:
  - For up to 3 years after the delivery of the original motor, in the event of total motor failure – with regard to the mounting dimensions and functions – Siemens will supply a comparable replacement motor (the type series may vary).
  - If a spare motor is supplied within the 3-year period, this does not mean that the warranty restarts.
  - Replacement motors delivered after the active production of the machine series are also identified as spare motors on the rating plate.
  - Spare parts are offered only for these spare motors on request; repair and replacement are not possible.
  - After a period of 3 years (after the delivery of the original motor), it is only possible to repair these motors (depending on the availability of the spare parts required).
  - For up to 5 years after the delivery of the original motor, spare parts will be available and for a further 5 years, Siemens will provide information about spare parts and will supply documents when required.
- When repair parts are ordered, the following details must be provided:
  - Designation and part number
  - Article No. and factory number of the motor
- For bearing types, see the section "Introduction".
- For standard components, a commitment to supply repaired parts does not apply.
- Support – hotline  
In Germany:  
Phone: +49 911 895 7 222

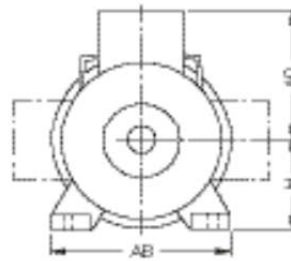
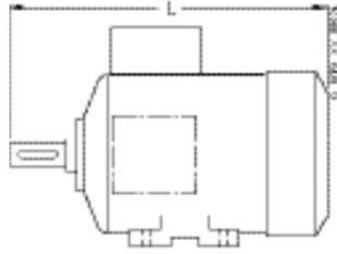
You will find telephone numbers for other countries on our website:

<http://www.siemens.com/automation/service&support>

# Dimensions

Notes on the dimensions, dimension sheet generator (part of the Drive Technology Configurator)

## Overview



Frame size	Type	Dimensions					
		L	AD	H	AB	O	
112 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	407	195	112	226	2 × M32 × 1.5
	Cast-iron series, naturally cooled	1PC1463	340	195	112	256	2 × M32 × 1.5
		1PC1423	407				
132 S	Cast-iron series, self-ventilated	1PC1433, 1PC1443	457	214.5	132	256	2 × M32 × 1.5
	Cast-iron series, naturally cooled	1PC1463	372	214.5	132	256	2 × M32 × 1.5
		1PC1423	457				
132 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	507	214.5	132	256	2 × M32 × 1.5
	Cast-iron series, naturally cooled	1PC1463	422	214.5	132	256	2 × M32 × 1.5
		1PC1423	507				
160 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	594	265	160	300	2 × M40 × 1.5
	Cast-iron series, naturally cooled	1PC1463	500	265	160	300	2 × M40 × 1.5
		1PC1423	594	265	160	300	2 × M40 × 1.5
160 L	Cast-iron series, self-ventilated	1PC1433, 1PC1443	654	265	160	300	2 × M40 × 1.5
	Cast-iron series, naturally cooled	1PC1463-					
		1DB4	500	265	160	300	2 × M40 × 1.5
		1DB6	560				
		1PC1423	654				
180 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	669	286	180	339	2 × M40 × 1.5
	Cast-iron series, naturally cooled	1PC1463	571	286	180	339	2 × M40 × 1.5
		1PC1423	669				
180 L	Cast-iron series, self-ventilated	1PC1433, 1PC1443	699	286	180	339	2 × M40 × 1.5
	Cast-iron series, naturally cooled	1PC1463-					
		1EB4	671	286	180	339	2 × M40 × 1.5
		1EC4	571				
		1PC1423	699				

Frame size	Type	Dimensions					
		L	AD	H	AB	O	
200 L	Cast-iron series, self-ventilated	1PC1433-, 1PC1443-					
		2AC4	721	315	200	378	2 × M50 × 1.5
		2AB5, 2AC5	746				
	Cast-iron series, naturally cooled	1PC1463	652	315	200	378	2 × M50 × 1.5
		1PC1423	721				
225 S	Cast-iron series, self-ventilated	1PC1433, 1PC1443	788	338	225	436	2 × M50 × 1.5
225 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	848	338	225	436	2 × M50 × 1.5
	Cast-iron series, naturally cooled	1PC1463	728	338	225	436	2 × M50 × 1.5
250 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	887	410	250	490	2 × M63 × 1.5
	Cast-iron series, naturally cooled	1PC1463	762	410	250	490	2 × M63 × 1.5
280 S	Cast-iron series, self-ventilated	1PC1433, 1PC1443	960	433	280	540	2 × M63 × 1.5
	Cast-iron series, naturally cooled	1PC1463	830	433	280	540	2 × M63 × 1.5
280 M	Cast-iron series, self-ventilated	1PC1433, 1PC1443	1070	433	280	540	2 × M63 × 1.5
	Cast-iron series, naturally cooled	1PC1463	830	433	280	540	2 × M63 × 1.5

## Dimensions

Roller-table motors 1PC1423 – naturally cooled

Frame sizes 112 M to 200 L

### Notes on the dimensions

Dimensional drawings according to EN 50347 and IEC 60072.

#### Fits

The shaft extensions specified in the dimensions table (DIN 748) and centering spigot diameters (EN 50347) are machined with the following fits:

Dimension designation	ISO fit	ISO 286-2
D, DA	to 30	j6
	over 30 to 50	k6
	over 50	m6
N	to 250	j6
	over 250	h6
F, FA		h9
K		H17
S	flange (FF)	H17

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

#### Dimension tolerances

For the following dimensions, the permissible deviations are given below:

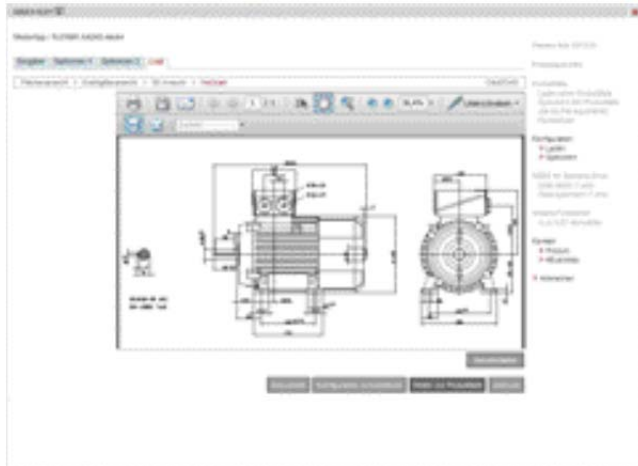
Dimension designation	Dimension	Permissible deviation
H	to 250	- 0.5
	over 250	- 1.0
E, EA		- 0.5

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

All dimensions are specified in mm.

### Dimension sheet generator (within the Drive Technology Configurator)

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



When a complete Article No. is entered or configured with or without order codes, a dimensional drawing can be called up under the "Documentation" tab.

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

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

#### Online access in the Siemens Industry Mall

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

German: [www.siemens.de/dt-konfigurator](http://www.siemens.de/dt-konfigurator)

English: [www.siemens.com/dt-configurator](http://www.siemens.com/dt-configurator)

#### Offline access in the Interactive Catalog CA 01

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

[www.siemens.com/automation/CA01](http://www.siemens.com/automation/CA01)