

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.

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 is always a located bearing, while the bearing arrangement is preloaded at the non-drive end.

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 for category 3M4 (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 and 1PC1463 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.

Type of connection

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

Frame sizes 180 L to 280 M: Delta

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 output and in line operation, and to temperature class 155 (F) with converter operation.

The variants for converter operation are optimized for use with SINAMICS S120 converters. The motors are fitted with special 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.

Motor connection

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.

All steel plant motors generally have an external grounding terminal.

Foot design

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 RHS/LHS, the feet are screwed on with frame sizes 112 to 200, and cast with frame sizes 225 to 280.

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 and 1PC1463 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 (which replace the PTC thermistors).

Paint finish

Special finish in RAL 7030, corrosivity class C3 according to IEC 12944-2 is provided as standard.

Other colors and finishes are optionally available.

Degree of protection

These correspond to the protection classes specified in the catalog for basic motor series 1LE15. With IP56, icing must be avoided.

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)				
Derating factor for line operation	1.00	0.96	0.92	0.87

SIMOTICS DP Application-Specific Motors

Steel plant motors 1PC14

Orientation

Technical specifications (continued)

Overview of technical specifications

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

Characteristic	Steel plant motors		
Version	1PC1433 (TEFC, DOL, IC411) Motor for line operation, self-ventilated	1PC1443 (TEFC, VSD, IC411) Motor for converter operation, self-ventilated	1PC1463 (TENV, VSD, IC410) Motor for converter operation, naturally cooled without external fan, enclosed version
Housing	Cast iron		
Number of poles	4, 6		
Efficiency class	IE3 (Premium Efficiency) – (no IE class for converter motors)		
Frame sizes	112 M ... 280 L		
Rated output	1 ... 38 kW		
Torque	Approx. 26 ... 578 Nm		Approx. 20 ... 340 Nm
Rated speed	4-pole: 1500 rpm (50 Hz)/ 1800 rpm (60 Hz) 6-pole: 1000 rpm (50 Hz)/ 1200 rpm (60 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)/ 1740 rpm (87 Hz)	
Voltage	Standard motor input voltage: 400 V (50 Hz), other voltages optionally available		
Standard voltages	50 Hz: 230 V, 400 V, 500 V, 690 V 60 Hz: 460 V		
Frequencies	50 Hz, 60 Hz		50 ... 87 Hz
Certificates	DE, GOST-R		
Marking	IEC 60034-30		
Temperature class	155 (F) utilized according to 130 (B) 155 (F) utilized according to 155 (F)		
Insulation according to EN 60034-1	Temperature class 155 (F), Durignit IR2000		
Degree of protection acc. to EN 60034-5	Standard IP55, optionally IP56 and IP65		
Cooling method	Self-ventilated (IC411)		Naturally cooled without external fan, enclosed version (IC410)
Permissible coolant temperature	Standard –20 ... 40 °C		
Types of construction acc. to EN 60034-7	IM B3, IM B5, IM V1, IM V3, IM B35		
Finish (climate group according to IEC 60721)	RAL 7030, class C3 as standard		
Vibration quantity level acc. 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 ISO 1680 (tolerance +3 dB)	The sound pressure level is listed in the "Selection and ordering data" for the required motor.		
Weights	The weight is listed in the "Selection and ordering data" for the required motor.		
Modular mounting concept	Encoder, brake, separately driven fan optional		
Consistent series concept	• Cast housing feet, screwed-on feet optional • Terminal box obliquely partitioned and rotatable through 4 × 90° • Bearings of series 63 at both ends as standard		
Options	See "Article No. supplements and special versions".		

Technical specifications (continued)

Examples of rating plates

SIEMENS									
Made in Czech Rep.									
3-Mot. 1CV3184B 1PC14331EB434AB4 UD 1405/									
IEC/EN 60034 180L IMB3 IP55									
179kg Th.Cl.155(F) -20°C<= TAMB<=40°C									
Bearing									
DE 6311-2ZJC3									
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		

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Motor 1PC1433 for line operation, self-ventilated with efficiency class IE3 (Premium Efficiency)

SIEMENS									
Made in Czech Rep.									
3-Mot. 1CV3184B 1PC14631EB404AB4 UD 1405/									
IEC/EN 60034 180L IMB3 IP55									
179kg Th.Cl.155(F) -20°C<= TAMB<=40°C									
Bearing									
DE 6311-2RSC3									
NE 6311-2RSC3									
INVERTER DUTY ONLY VPWM SINAMICS S120 Nmax 4200 1/min									
lacc 73.0A Macc 252Nm									
V	Hz	A	kW	cosφ	Nm	1/min	EFF	CODE	
400 Δ	50	27.5	13.0	0.73	84	1480			

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Motor 1PC1463 for converter operation, naturally cooled without external fan, enclosed version

SIEMENS									
Made in Czech Rep.									
3-Mot. 1CV3184B 1PC14431EB421AB4 UD 1405/									
IEC/EN 60034 180L IMB3 IP55									
179kg Th.Cl.155(F) -20°C<= TAMB<=40°C									
Bearing									
DE 6311-2ZJC3									
NE 6311-2RSC3									
INVERTER DUTY ONLY VPWM SINAMICS 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		

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Motor 1PC1443 for converter operation, self-ventilated

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

SIMOTICS DP Application-Specific Motors

Steel plant motors 1PC14

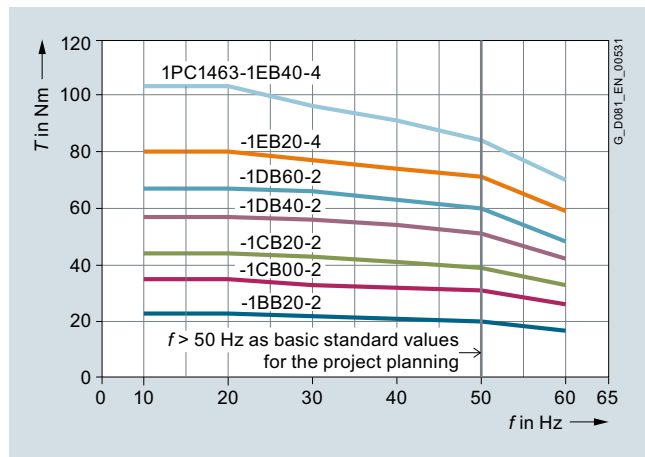
Orientation

Technical specifications (continued)

Torque/frequency characteristics

1PC1463, 4-pole

Type	Frequency f Hz					
	10	20	30	40	50	60
	Torque T Nm					
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



1PC1463, 6-pole

Type	Frequency f Hz					
	10	20	30	40	50	60
	Torque T Nm					
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

