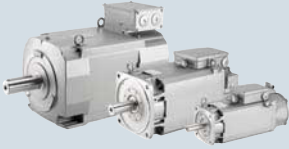
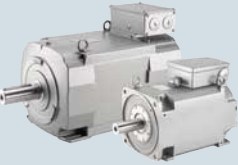


SIMOTICS main motors

Overview

Motor type	Features	Degree of protection	Cooling method
SIMOTICS M-1PH8 asynchronous motor 	Three-phase squirrel-cage motor without housing Compact unit with high power density	IP55	Forced ventilation
		IP23	Forced ventilation
		IP55/IP65	Water cooling
SIMOTICS M-1PH8 synchronous motor 	Permanent-magnet synchronous motor Outstanding performance capabilities Compact unit with extremely high power density	IP55	Forced ventilation
		IP55/IP65	Water cooling
SIMOTICS M-1FE1/1FE2 synchronous built-in motors 	Synchronous built-in motors Permanent-magnet	IP00	Water cooling

SIMOTICS M main motors

The potential applications for SIMOTICS M-1PH8/M-1FE1/M-1FE2 motors are extremely versatile.

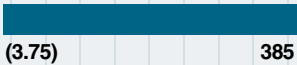
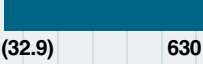
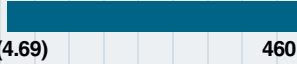
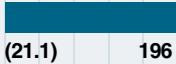
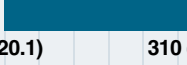
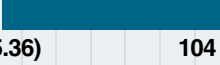
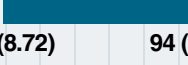
In machine tools, they are usually designated and used as main spindle motors.

In production machines, such as printing, packaging, and reforming machines, they are used as high-output main motors.

The selection and ordering data for the SINAMICS S120 Motor Modules are based on the booksize format by way of example. Blocksize and chassis formats are also possible. The SIZER for Siemens Drives engineering tool is available for detailed configuration

SIMOTICS main motors

Overview

Shaft height	Rated power P_{rated} for duty type S1 kW (hp)	Rated torque M_{rated}	Page
SH 80/SH 100/SH 132/SH 160/ SH 180/SH 225/SH 280	 2.8 (3.75) 385 (516)	13 ... 2475 Nm (9.59 ... 1825 lb _f -ft)	9/8
SH 180/SH 225/SH 280	 24.5 (32.9) 630 (845)	317 ... 3710 Nm (234 ... 2736 lb _f -ft)	9/26
SH 80/SH 100/SH 132/SH 160/ SH 180/SH 225/SH 280	 3.5 (4.69) 460 (617)	20 ... 2610 Nm (14.8 ... 1925 lb _f -ft)	9/36
SH 132/SH 160/SH 180/SH 225	 15.7 (21.1) 196 (263)	94 ... 1091 Nm (69.3 ... 805 lb _f -ft)	9/52
SH 132/SH 160/SH 180/SH 225	 15 (20.1) 310 (416)	107 ... 1650 Nm (78.9 ... 1217 lb _f -ft)	9/58
Outer diameter (cooling jacket) High Torque series 95/115/130/190/ 205/250/310	 4 (5.36) 104 (139)	4.5 ... 820 Nm (3.32 ... 605 lb _f -ft)	9/90
High Speed series 120/155/180/205/ 230/270	 6.5 (8.72) 94 (126)	5 ... 300 Nm (3.69 ... 221 lb _f -ft)	9/94
High Torque series 180	 34 (45.6) 159 (213)	640 ... 1530 Nm (472 ... 1128 lb _f -ft)	9/98

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 main motors

Overview



SIMOTICS M-1PH8 motors, forced ventilation, shaft heights 80 to 160

The SIMOTICS M-1PH8 series is the latest motor generation for universal use with Motion Control applications. The wide power range is aimed at use as a central machine drive (as what is known as a "main motor") for various applications. The motors are available as an asynchronous variant as well as a compact synchronous variant with either forced ventilation or water cooling, based on a flexible building block principle. The flexible configuration – such as storage or electrical connection technology – allows you to adapt the motors to the requirements of almost any industrial application.

**Main drive with 1PH8 = high power +
high dynamic response +
high accuracy**



SIMOTICS M-1PH8 motors, water cooling, shaft heights 80 to 160



SIMOTICS M-1PH8 motors, water cooling, shaft heights 180 to 280

When developing the SIMOTICS M-1PH8 motor series, we placed special emphasis on making them perfectly compatible with the SINAMICS S120 drive system. For example, the specially harmonized power components, electronic rating plates, and the ability to integrate the motors via the DRIVE-CLiQ system interface ensure quick and easy commissioning as well as problem-free operation. What's more, thanks to the harmonization of the system, they are capable of handling extreme duty cycles, short rise times, and are exceptionally precise in terms of speed, torque, and positioning.

Benefits

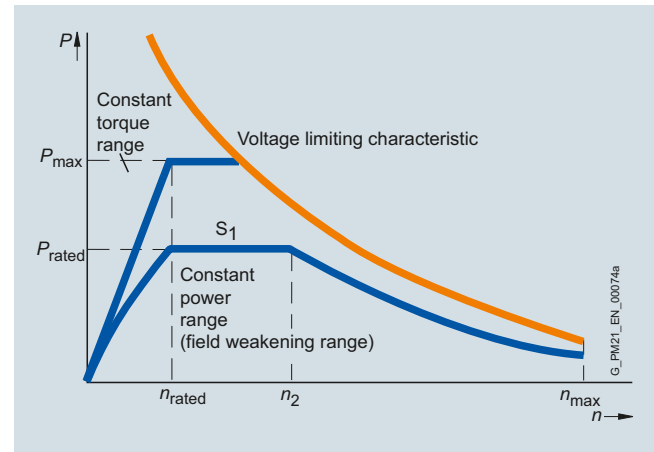
- Low space requirements thanks to high power density
- Performance capability thanks to wide rotational speed setting ranges
- High degree of structural flexibility due to the choice of
 - Asynchronous or synchronous design
 - Forced ventilation or water cooling
 - Mechanical designs
- Minimized maintenance costs thanks to high bearing service lives
- Precise motion control thanks to high rotational accuracy, even at the lowest speeds
- Maximum thermal utilization over the complete speed range
- Quiet operation as a result of low sound pressure level
- Optimized for the SINAMICS S120 drive system

Application

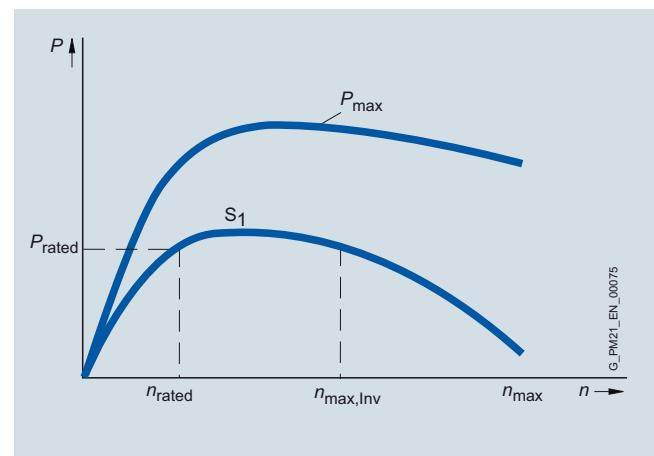
The application spectrum reaches across all industries and comprises, for example:

- Main drives in presses and extruders
- Converting applications
- Main spindle drives in machine tools
(See Catalog NC 62)
- Rotary axes in the paper and printing industry
- Use in crane systems

The SIMOTICS M-1PH8 motors are suitable for installation in dry indoor areas without corrosive atmospheres.

Characteristic curves**SIMOTICS M-1PH8 asynchronous motor**

Typical speed/power characteristic curve for SIMOTICS M-1PH8 asynchronous motors

SIMOTICS M-1PH8 synchronous motor

Typical speed/power characteristic curve for SIMOTICS M-1PH8 synchronous motors

The characteristic curves show the typical relationship between motor speed and drive power for SIMOTICS M-1PH8 motors for duty type S1 (continuous duty) in accordance with IEC 60034-1.

The detailed characteristic curves for the corresponding voltage and winding can be found in the SIMOTICS M-1PH8 Configuration Manual.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous and synchronous motors, forced ventilation

Technical specifications

SIMOTICS M-1PH8 motor, forced ventilation	
Stator winding insulation in accordance with EN 60034-1 (IEC 60034-1)	For an ambient temperature of up to 40 °C (104 °F) Temperature class 180 (H)
Cooling according to EN 60034-6 (IEC 60034-6) • 1PH808 ... 1PH822 • 1PH828	Forced ventilation Fan mounted axially at NDE Fan mounted radially at NDE
Temperature monitoring	Pt1000 temperature sensor in the stator winding 1PH818 ... 1PH828 additional Pt1000 as reserve
Fan supply voltage • 1PH808 • 1PH810 ... 1PH816 • 1PH818/1PH822 • 1PH828	230 V 1 AC 50/60 Hz, 265 V 1 AC 60 Hz 400 V 3 AC 50/60 Hz, 480 V 3 AC 60 Hz 200 ... 277 V 1 AC 50/60 Hz (EC fan) 400 V 3 AC 50/60 Hz, 480 V 3 AC 60 Hz (optional) 400 V 3 AC 50/60 Hz, 480 V 3 AC 60 Hz
Type of construction in accordance with EN 60034-7 (IEC 60034-7) • 1PH808 • 1PH810 ... 1PH828	IM B3, IM B5 IM B3, IM B5, IM B35
Degree of protection in accordance with EN 60034-5 (IEC 60034-5) • 1PH808 ... 1PH828 • 1PH818 ... 1PH828	IP55 (forced ventilation) IP23 (open-circuit cooling)
Shaft extension on the drive end in accordance with DIN 748-3 (IEC 60034-5)	Plain shaft or feather key full-key or half-key balancing for feather key
Shaft and flange accuracy in accordance with DIN 42955 (IEC 60072-1) ¹⁾	Without holding brake: Tolerance R (reduced) With holding brake: Tolerance N (normal)
Vibration severity	In accordance with Siemens/EN 60034-14 (IEC 60034-14) ¹⁾
Sound pressure level L_{pA} (1 m) in accordance with DIN EN ISO 1680, max. Tolerance +3 dB <u>Forced ventilation (IP55)</u> • 1PH808 ... 1PH813 • 1PH816 • 1PH818 • 1PH822 • 1PH828 <u>Forced ventilation (IP23)</u> • 1PH818 • 1PH822 • 1PH828	70 dB at a rated pulse frequency of 4 kHz and a speed range up to 5000 rpm 73 dB at a rated pulse frequency of 4 kHz and a speed range up to 5000 rpm 73 dB at a rated pulse frequency of 2 kHz and a speed range up to 5000 rpm 73 dB at a rated pulse frequency of 2 kHz and a speed range up to 3500 rpm 74 dB at a rated pulse frequency of 2 kHz and a speed range up to 3300 rpm 73 dB at a rated pulse frequency of 2 kHz and a speed range up to 3000 rpm 73 dB at a rated pulse frequency of 2 kHz and a speed range up to 2000 rpm 74 dB at a rated pulse frequency of 2 kHz and a speed range up to 2800 rpm
Built-in encoder systems	Absolute and incremental encoder with or without DRIVE-CLiQ interface
Connection <u>Power</u> • 1PH808 ... 1PH813 • 1PH816 ... 1PH828 <u>Fan</u> • 1PH808 • 1PH810 ... 1PH813 • 1PH816 ... 1PH828 <u>Encoder system</u>	Connector for signals or DRIVE-CLiQ interface (mating connector not included in the scope of supply) Power connector or terminal box Terminal box Power connector Power connector or terminal box Terminal box Connector for signals or DRIVE-CLiQ interface (mating connector not included in the scope of supply)
Rating plate	1 attached to motor 1 supplied separately with terminal box
Paint finish	Standard paint finish in anthracite RAL 7016
Certificate of suitability, according to	cURus, CE, EAC

¹⁾ Shaft extension run-out, concentricity of centering ring and shaft, and perpendicularity of flange to shaft.

Technical specifications (continued)

SIMOTICS M-1PH8 motor, water cooling	
Stator winding insulation in accordance with EN 60034-1 (IEC 60034-1)	For a coolant inlet temperature up to 30 °C (86 °F) Temperature class 180 (H) ²⁾
Cooling according to EN 60034-6 (IEC 60034-6)	Water cooling Max. cooling water pressure at inlet: 6 bar Connecting thread at NDE
Temperature monitoring • 1PH808 ... 1PH816 • 1PH818 ... 1PH828	Pt1000 temperature sensor in the stator winding 1 additional Pt1000 as reserve
Type of construction in accordance with EN 60034-7 (IEC 60034-7) • 1PH808 • 1PH810 ... 1PH828	IM B3, IM B5 IM B3, IM B5, IM B35
Degree of protection in accordance with EN 60034-5 (IEC 60034-5) • 1PH808 ... 1PH816 • 1PH818 ... 1PH828	IP65 IP55
Shaft extension on the drive end in accordance with DIN 748-3 (IEC 60072-1)	Plain shaft or feather key, full-key or half-key balancing for feather key
Shaft and flange accuracy in accordance with DIN 42955 (IEC 60072-1) ¹⁾	Without holding brake: Tolerance R (reduced) With holding brake: Tolerance N (normal)
Vibration severity	in accordance with Siemens/EN 60034-14 (IEC 60034-14) ¹⁾
Sound pressure level L_{pA} (1 m) in accordance with DIN EN ISO 1680, max. Tolerance +3 dB • 1PH808 ... 1PH813 • 1PH816 • 1PH818 • 1PH822 • 1PH828	68 dB at a rated pulse frequency of 4 kHz and a speed range up to 5000 rpm 69 dB at a rated pulse frequency of 4 kHz and a speed range up to 5000 rpm 70 dB at a rated pulse frequency of 2 or 4 kHz and a speed range up to 5000 rpm 70 dB at a rated pulse frequency of 2 or 4 kHz and a speed range up to 4500 rpm 72 dB at a rated pulse frequency of 2 kHz and a speed range up to 3300 rpm
Built-in encoder systems	Absolute and incremental encoder with or without DRIVE-CLiQ interface
Connection <u>Power</u> • 1PH808 ... 1PH813 • 1PH816 ... 1PH828 <u>Fan</u> • 1PH808 • 1PH810 ... 1PH813 • 1PH816 ... 1PH828 <u>Encoder system</u>	Connector for signals or DRIVE-CLiQ interface (mating connector not included in the scope of supply) Power connector or terminal box Terminal box Power connector Power connector or terminal box Terminal box Connector for signals or DRIVE-CLiQ interface (mating connector not included in the scope of supply)
Rating plate	1 attached to motor 1 supplied separately with terminal box
Paint finish	Standard paint finish in anthracite RAL 7016
Certificate of suitability	cURus, CE, EAC

¹⁾ Shaft extension run-out, concentricity of centering ring and shaft, and perpendicularity of flange to shaft.

²⁾ The following motors are designed to conform to temperature class 155 (F):
1PH8107-1.F2/1PH8107-1.M2
1PH8138-2.F2/1PH8138-2.G2
1PH8164/1PH8166/1PH8168

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors > Forced ventilation, IP55 degree of protection

Selection and ordering data

Rated speed	Shaft height	Rated power	Rated torque	Rated current	Rated voltage	Rated frequency	Operating speed during field weakening, max. ¹⁾	Speed, max. ²⁾	SIMOTICS M-1PH8 asynchronous motors Forced ventilation Article No.
n_{rated} rpm	SH	P_{rated} kW (hp)	M_{rated} Nm (lb _F -ft)	I_{rated} A	U_{rated} V	f_{rated} Hz	n_2 rpm	n_{max} rpm	
Line voltage 400 V 3 AC, Smart/Basic Line Module									
400	100	2.5 (3.35)	60 (44.3)	8.8	290	15.5	1500	7000	1PH8107-■ ■ B ■ ■ -....
	132	2.9 (3.89)	69 (50.9)	9	272	14.7	1500	6000	1PH8131-■ ■ B ■ ■ -....
		5.2 (6.97)	124 (91.5)	15.5	309	15.0	1000	6000	1PH8133-■ ■ B ■ ■ -....
		6.4 (8.58)	153 (113)	18	320	15.2	1000	6000	1PH8135-■ ■ B ■ ■ -....
		6.9 (9.25)	165 (122)	18	323	14.7	1300	6000	1PH8137-■ ■ B ■ ■ -....
	160	9.5 (12.7)	227 (167)	30	260	14.3	2150	6500	1PH8163-■ ■ B ■ ■ -....
		13 (17.4)	310 (229)	36	300	14.1	1750	6500	1PH8165-■ ■ B ■ ■ -....
	180	16.3 (21.9)	389 (287)	49	271	14.1	2800	5000	1PH8184-■ ■ B ■ ■ -....
		21.2 (28.4)	506 (373)	65	268	13.9	3000	5000	1PH8186-■ ■ B ■ ■ -....
	225	30.4 (40.8)	726 (535)	86	268	13.9	2400	4500	1PH8224-■ ■ B ■ ■ -....
		39.2 (52.6)	936 (690)	112	264	13.9	2500	4500	1PH8226-■ ■ B ■ ■ -....
		48 (64.4)	1146 (845)	132	272	13.8	2600	4500	1PH8228-■ ■ B ■ ■ -....
	280	63 (84.5)	1504 (1109)	154	325	13.6	1100	3300	1PH8284- 1 ■ B 1 ■ -....
		80 (107)	1910 (1409)	186	325	13.6	1200	3300	1PH8286- 1 ■ B 1 ■ -....
		103 (138)	2459 (1814)	245	325	13.6	1300	3300	1PH8288- 1 ■ B 1 ■ -....
700	180	27 (36.2)	368 (271)	65	320	24.0	3300	5000	1PH8184-■ ■ C ■ ■ -....
		35 (46.9)	478 (353)	83	330	23.9	3700	5000	1PH8186-■ ■ C ■ ■ -....
	225	55 (73.8)	750 (553)	136	310	23.8	2900	4500	1PH8224-■ ■ C ■ ■ -....
		68 (91.2)	928 (684)	162	310	23.8	3100	4500	1PH8226-■ ■ C ■ ■ -....
		82 (110)	1119 (825)	188	315	23.8	3300	4500	1PH8228-■ ■ C ■ ■ -....
	280	110 (148)	1501 (1107)	240	330	23.7	2100	3300	1PH8284- 1 ■ C 1 ■ -....
		138 (185)	1883 (1389)	295	325	23.7	2100	3300	1PH8286- 1 ■ C 1 ■ -....
		166 (223)	2265 (1671)	365	325	23.6	2100	3300	1PH8288- 1 ■ C 1 ■ -....
1000	100	3.7 (4.96)	35 (25.8)	10	333	35.8	2550	9000	1PH8103-■ ■ D ■ ■ -....
		6.3 (8.45)	60 (44.3)	17.5	307	35.5	4300	9000	1PH8107-■ ■ D ■ ■ -....
	132	7.9 (10.6)	75 (55.3)	20	316	34.8	3000	8000	1PH8131-■ ■ D ■ ■ -....
		12 (16.1)	115 (84.8)	30	319	35.0	3000	8000	1PH8133-■ ■ D ■ ■ -....
		17 (22.8)	162 (119)	43	307	34.8	4300	8000	1PH8137-■ ■ D ■ ■ -....
	160	22 (29.5)	210 (155)	55	300	34.2	2800	6500	1PH8163-■ ■ D ■ ■ -....
		28 (37.5)	267 (197)	71	292	34.2	4600	6500	1PH8165-■ ■ D ■ ■ -....
	180	39 (52.3)	372 (274)	87	340	34.0	4200	5000	1PH8184-■ ■ D ■ ■ -....
		51 (68.4)	487 (359)	112	340	34.0	4400	5000	1PH8186-■ ■ D ■ ■ -....
	225	71 (95.2)	678 (500)	158	335	33.8	3300	4500	1PH8224-■ ■ D ■ ■ -....
		92 (123)	879 (648)	194	340	33.8	3300	4500	1PH8226-■ ■ D ■ ■ -....
		113 (152)	1079 (796)	235	340	33.9	3300	4500	1PH8228-■ ■ D ■ ■ -....
	280	150 (201)	1433 (1057)	315	335	33.7	2100	3300	1PH8284- 1 ■ D 1 ■ -....
		182 (244)	1738 (1282)	410	330	33.6	2100	3300	1PH8286- 1 ■ D 1 ■ -....
		226 (303)	2158 (1592)	495	335	33.6	2100	3300	1PH8288- 1 ■ D 1 ■ -....

For versions, see
Article No. supplements
and options.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors > Forced ventilation, IP55 degree of protection

Selection and ordering data

Rated speed	Shaft height	Rated power	Rated torque	Rated current	Rated voltage	Rated frequency	Operating speed during field weakening, max. ¹⁾	Speed, max. ²⁾	SIMOTICS M-1PH8 asynchronous motors Forced ventilation Article No.
n_{rated} rpm	SH	P_{rated} kW (hp)	M_{rated} Nm (lb _F -ft)	I_{rated} A	U_{rated} V	f_{rated} Hz	n_2 rpm	n_{max} rpm	
Line voltage 400 V 3 AC, Active Line Module									
500	100	3.2 (4.29)	61 (45.0)	8.8	345	18.8	1500	7000	1PH8107-■ ■ B ■ ■ -....
	132	3.6 (4.83)	69 (50.9)	9	328	18.0	1500	6000	1PH8131-■ ■ ■ B ■ ■ -....
		6.5 (8.72)	124 (91.5)	15.5	363	18.5	1200	6000	1PH8133-■ ■ ■ B ■ ■ -....
		8 (10.7)	153 (113)	18	380	18.5	1000	6000	1PH8135-■ ■ ■ B ■ ■ -....
		8.6 (11.5)	165 (122)	18	391	17.8	1400	6000	1PH8137-■ ■ ■ B ■ ■ -....
		12 (16.1)	229 (169)	30	325	17.6	2200	6500	1PH8163-■ ■ ■ B ■ ■ -....
	160	16 (21.5)	306 (226)	36	365	17.5	1850	6500	1PH8165-■ ■ ■ B ■ ■ -....
		20.5 (27.5)	392 (289)	49	335	17.4	2900	5000	1PH8184-■ ■ ■ B ■ ■ -....
	180	26.5 (35.5)	506 (373)	65	335	17.2	3100	5000	1PH8186-■ ■ ■ B ■ ■ -....
		38 (51.0)	726 (535)	85	335	17.2	2500	4500	1PH8224-■ ■ ■ B ■ ■ -....
	225	49 (65.7)	936 (690)	110	330	17.2	2600	4500	1PH8226-■ ■ ■ B ■ ■ -....
		60 (80.5)	1146 (845)	132	340	17.2	2700	4500	1PH8228-■ ■ ■ B ■ ■ -....
		80 (107)	1529 (1128)	154	395	17.0	1600	3300	1PH8284- 1 ■ B 1 ■ -....
	280	100 (134)	1909 (1408)	188	400	17.0	1600	3300	1PH8286- 1 ■ B 1 ■ -....
		130 (174)	2481 (1830)	245	395	17.0	1600	3300	1PH8288- 1 ■ B 1 ■ -....
800		180	31 (41.6)	370 (273)	65	365	27.4	3800	5000
	40 (53.6)	478 (353)	83	360	27.3	4100	5000	1PH8186-■ ■ ■ C ■ ■ -....	
		225	57 (76.4)	681 (502)	126	350	27.1	3400	4500
	73 (97.9)	872 (643)	154	350	27.1	3600	4500	1PH8226-■ ■ ■ C ■ ■ -....	
		92 (123)	1098 (810)	182	360	27.2	3800	4500	1PH8228-■ ■ ■ C ■ ■ -....
		280	125 (168)	1492 (1100)	235	400	27.0	2300	3300
	155 (208)	1850 (1364)	285	385	27.0	2300	3300	1PH8286- 1 ■ C 1 ■ -....	
	190 (255)	2268 (1673)	365	370	27.0	2300	3300	1PH8288- 1 ■ C 1 ■ -....	
1150	100	4.3 (5.77)	36 (26.6)	10	380	40.7	2450	9000	1PH8103-■ ■ ■ D ■ ■ -....
	7.2 (9.66)	60 (44.3)	17.5	348	40.6	4750	9000	1PH8107-■ ■ ■ D ■ ■ -....	
		132	9 (12.1)	75 (55.3)	20	360	39.8	3000	8000
	13.5 (18.1)	112 (82.6)	29	361	40.0	3000	8000	1PH8133-■ ■ ■ D ■ ■ -....	
		19.5 (26.1)	162 (119)	43	350	39.8	4000	8000	1PH8137-■ ■ ■ D ■ ■ -....
		160	25 (33.5)	208 (153)	55	343	39.2	3550	6500
	208 (279)	257 (190)	69	333	39.2	4850	6500	1PH8165-■ ■ ■ D ■ ■ -....	
		180	44 (59.0)	365 (269)	86	390	39.0	4800	5000
	58 (77.8)	482 (356)	112	390	38.9	5000	5000	1PH8186-■ ■ ■ D ■ ■ -....	
		225	81 (109)	673 (496)	156	385	38.8	3400	4500
	105 (141)	872 (643)	192	390	38.8	3400	4500	1PH8226-■ ■ ■ D ■ ■ -....	
		129 (173)	1071 (790)	235	390	38.8	3400	4500	1PH8228-■ ■ ■ D ■ ■ -....
		280	170 (228)	1414 (1043)	310	400	38.6	2200	3300
	210 (282)	1745 (1287)	410	380	38.6	2200	3300	1PH8286- 1 ■ D 1 ■ -....	
		260 (349)	2160 (1593)	495	385	38.6	2200	3300	1PH8288- 1 ■ D 1 ■ -....

For versions, see
Article No. supplements
and options.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors > Forced ventilation, IP55 degree of protection

Selection and ordering data

Rated speed	Shaft height	Rated power	Rated torque	Rated current	Rated voltage	Rated frequency	Operating speed during field weakening, max. ¹⁾	Speed, max. ²⁾	SIMOTICS M-1PH8 asynchronous motors Forced ventilation	
n_{rated} rpm	SH	P_{rated} kW (hp)	M_{rated} Nm (lb _r -ft)	I_{rated} A	U_{rated} V	f_{rated} Hz	n_2 rpm	n_{max} rpm	Article No.	
Line voltage 480 V 3 AC, Smart/Basic Line Module										
600	100	3.8 (5.10)	60 (44.3)	8.8	406	22.0	1500	7000	1PH8107-■B■-....	
	132	4.3 (5.77)	68 (50.2)	9	384	21.3	1500	6000	1PH8131-■B■-....	
		7.8 (10.5)	124 (91.5)	15.5	421	21.8	1200	6000	1PH8133-■B■-....	
		9.6 (12.9)	153 (113)	18	443	21.9	1000	6000	1PH8135-■B■-....	
		10.3 (13.8)	165 (122)	18	458	21.4	1300	6000	1PH8137-■B■-....	
		14.5 (19.4)	231 (170)	30	370	21.0	2150	6500	1PH8163-■B■-....	
	160	19 (25.5)	302 (223)	35	420	20.8	1800	6500	1PH8165-■B■-....	
		25 (33.5)	398 (294)	49	410	20.7	3000	5000	1PH8184-■B■-....	
	225	32 (42.9)	509 (375)	66	400	20.6	3200	5000	1PH8186-■B■-....	
		45 (60.3)	716 (528)	83	405	20.5	2600	4500	1PH8224-■B■-....	
	280	59 (79.1)	939 (693)	110	395	20.5	2700	4500	1PH8226-■B■-....	
		72 (96.6)	1146 (845)	130	410	20.5	2800	4500	1PH8228-■B■-....	
		95 (127)	1519 (1120)	154	460	20.3	1800	3300	1PH8284-1■B1■-....	
	1000	180	39 (52.3)	372 (274)	65	460	34.0	3700	5000	1PH8184-■C■-....
		50 (67.1)	478 (353)	83	450	33.9	4000	5000	1PH8186-■C■-....	
225		71 (95.2)	678 (500)	126	425	33.8	3700	4500	1PH8224-■C■-....	
1350	100	4.7 (6.30)	33 (24.3)	9.7	423	47.3	3500	9000	1PH8103-■D■-....	
	132	8.0 (10.7)	57 (42.0)	17	400	47.1	5045	9000	1PH8107-■D■-....	
		10.6 (14.2)	75 (55.3)	20	416	46.5	3000	8000	1PH8131-■D■-....	
		15 (20.1)	106 (78.2)	28	417	46.5	3500	8000	1PH8133-■D■-....	
		22 (29.5)	156 (115)	42	404	46.4	4000	8000	1PH8137-■D■-....	
		28 (37.5)	198 (146)	52	400	45.8	4000	6500	1PH8163-■D■-....	
	160	34 (45.6)	241 (178)	66	387	45.8	5600	6500	1PH8165-■D■-....	
180	50 (67.1)	354 (261)	84	450	45.7	5000	5000	1PH8184-■D■-....		
225	67 (39.8)	474 (350)	112	450	45.6	5000	5000	1PH8186-■D■-....		
	92 (123)	651 (480)	154	450	45.5	3400	4500	1PH8224-■D■-....		
	120 (161)	849 (626)	188	460	45.5	3400	4500	1PH8226-■D■-....		
	147 (197)	1040 (767)	225	460	45.5	3400	4500	1PH8228-■D■-....		
	200 (268)	1416 (1044)	315	460	45.3	2200	3300	1PH8284-1■D1■-....		
280	245 (329)	1733 (1278)	410	445	45.3	2200	3300	1PH8286-1■D1■-....		
	305 (409)	2158 (1592)	495	450	45.3	2200	3300	1PH8288-1■D1■-....		

For versions, see
Article No. supplements
and options.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

SIMOTICS M-1PH8 asynchronous motors > Forced ventilation, IP55 degree of protection

Selection and ordering data

Rated speed	Shaft height	Rated power	Rated torque	Rated current	Rated voltage	Rated frequency	Operating speed during field weakening, max. ¹⁾	Speed, max. ²⁾	SIMOTICS M-1PH8 asynchronous motors Forced ventilation Article No.
n_{rated} rpm	SH	P_{rated} kW (hp)	M_{rated} Nm (lb _f -ft)	I_{rated} A	U_{rated} V	f_{rated} Hz	n_2 rpm	n_{max} rpm	
Line voltage 480 V 3 AC, Active Line Module									
700	100	4.4 (5.90)	60 (44.3)	8.7	452	25.5	1500	7000	1PH8107-■ ■ B ■ ■ -....
	132	4.9 (6.57)	67 (49.4)	9	450	24.6	1500	6000	1PH8131-■ ■ B ■ ■ -....
		9.1 (12.2)	124 (91.5)	15.5	480	25.2	1200	6000	1PH8133-■ ■ B ■ ■ -....
		11.2 (15.0)	153 (113)	18	500	25.3	1000	6000	1PH8135-■ ■ B ■ ■ -....
		11.5 (15.4)	157 (116)	17.5	500	24.9	1300	6000	1PH8137-■ ■ B ■ ■ -....
	160	16.9 (22.7)	231 (170)	30	427	24.4	2250	6500	1PH8163-■ ■ B ■ ■ -....
		22 (29.5)	300 (221)	35	475	24.3	1900	6500	1PH8165-■ ■ B ■ ■ -....
	180	29 (38.9)	396 (292)	49	475	24.0	3100	5000	1PH8184-■ ■ B ■ ■ -....
		37 (49.6)	505 (372)	65	470	23.9	3400	5000	1PH8186-■ ■ B ■ ■ -....
	225	52 (69.7)	709 (523)	82	470	23.9	2700	4500	1PH8224-■ ■ B ■ ■ -....
		68 (91.2)	928 (684)	108	465	23.8	2800	4500	1PH8226-■ ■ B ■ ■ -....
		84 (113)	1146 (845)	130	480	23.8	2900	4500	1PH8228-■ ■ B ■ ■ -....
	280	105 (141)	1433 (1057)	150	500	23.7	1400	3300	1PH8284- 1 ■ B 1 ■ -....
		132 (177)	1801 (1328)	184	500	23.7	1500	3300	1PH8286- 1 ■ B 1 ■ -....
		165 (221)	2251 (1660)	230	500	23.7	1600	3300	1PH8288- 1 ■ B 1 ■ -....
1100	180	42 (56.3)	365 (269)	64	500	37.3	3800	5000	1PH8184-■ ■ C ■ ■ -....
		55 (73.8)	478 (353)	83	500	37.3	4100	5000	1PH8186-■ ■ C ■ ■ -....
	225	78 (105)	677 (499)	126	470	37.1	3700	4500	1PH8224-■ ■ C ■ ■ -....
		101 (135)	877 (647)	154	500	37.1	3900	4500	1PH8226-■ ■ C ■ ■ -....
		126 (169)	1094 (807)	182	500	37.1	4000	4500	1PH8228-■ ■ C ■ ■ -....
	280	155 (208)	1346 (993)	220	500	37.0	2400	3300	1PH8284- 1 ■ C 1 ■ -....
		191 (256)	1658 (1223)	270	500	37.0	2400	3300	1PH8286- 1 ■ C 1 ■ -....
		238 (319)	2066 (1524)	345	500	37.0	2400	3300	1PH8288- 1 ■ C 1 ■ -....
1500	100	5.2 (6.97)	33 (24.3)	9.7	470	52.2	3500	9000	1PH8103-■ ■ D ■ ■ -....
		8.8 (11.8)	56 (41.3)	17.0	440	52.0	5750	9000	1PH8107-■ ■ D ■ ■ -....
	132	11.7 (15.7)	74 (54.6)	20	460	51.5	3000	8000	1PH8131-■ ■ D ■ ■ -....
		16.6 (22.3)	106 (78.2)	28	459	51.5	3500	8000	1PH8133-■ ■ D ■ ■ -....
		24 (32.2)	153 (113)	41	447	51.5	4500	8000	1PH8137-■ ■ D ■ ■ -....
	160	31 (41.6)	197 (145)	52	442	50.9	4000	6500	1PH8163-■ ■ D ■ ■ -....
		37.7 (50.6)	240 (177)	65	430	50.8	5000	6500	1PH8165-■ ■ D ■ ■ -....
	180	53 (71.1)	337 (249)	80	500	50.6	5000	5000	1PH8184-■ ■ D ■ ■ -....
		73 (97.9)	465 (343)	110	500	50.6	5000	5000	1PH8186-■ ■ D ■ ■ -....
	225	92 (123)	586 (432)	142	500	50.4	3600	4500	1PH8224-■ ■ D ■ ■ -....
		120 (161)	764 (563)	174	500	50.4	3600	4500	1PH8226-■ ■ D ■ ■ -....
		147 (197)	936 (690)	210	500	50.5	3600	4500	1PH8228-■ ■ D ■ ■ -....
	280	200 (268)	1273 (939)	290	500	50.3	2200	3300	1PH8284- 1 ■ D 1 ■ -....
		245 (329)	1560 (1151)	380	495	50.3	2200	3300	1PH8286- 1 ■ D 1 ■ -....
		305 (409)	1942 (1432)	455	500	50.3	2200	3300	1PH8288- 1 ■ D 1 ■ -....

For versions, see
Article No. supplements
and options.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

Article No. supplements for SIMOTICS M-1PH8 without holding brake > SH 180 to SH 280

Selection and ordering data

Data position of the Article No.								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Shaft height 180								1	P	H	8	1	8	.	–	■	■	■	■	■	–	■	■	■	.	–	Z
Shaft height 225								1	P	H	8	2	2	.	–	■	■	■	■	■	–	■	■	■	.	–	Z
Shaft height 280 (only asynchronous variant with water cooling)								1	P	H	8	2	8	.	–	■	■	■	■	■	–	■	■	■	.	–	Z
Overall length (cannot be selected, determined by the choice of rated power)								.																			
Asynchronous version																1											
Synchronous version																2											
Encoder systems for motors <u>without</u> DRIVE-CLiQ interface																											
Without encoder ¹⁾																	A								2		
Absolute encoder EnDat 2048 S/R (encoder AM2048S/R)																	E								2		
Incremental encoder HTL 1024 S/R (encoder HTL1024S/R) ¹⁾																	H								2		
Incremental encoder HTL 2048 S/R (encoder HTL2048S/R) ^{1) 4)}																	J								2		
Incremental encoder HTL 1024 S/R (encoder HTL1024S/R) with connection via additional terminal box ¹⁾																	W								2		
Incremental encoder HTL 2048 S/R (encoder HTL2048S/R) with connection via additional terminal box ^{1) 4)}																	Y								2		
Incremental encoder sin/cos 1 V _{pp} 2048 S/R with C and D track (encoder IC2048S/R)																	M								2		
Encoder systems for motors <u>with</u> DRIVE-CLiQ interface																											
Absolute encoder 22-bit singleturn + 12-bit multiturn (encoder AM22DQ)																	F								1		
Incremental encoder 22-bit with commutation position (encoder IC22DQ)																	D									1	
Rated speeds (380 V to 480 V 3 AC) (winding design)																											
400 rpm, 500 rpm, 600 rpm, 700 rpm																		B									
700 rpm, 800 rpm, 1000 rpm, 1100 rpm																		C									
1000 rpm, 1150 rpm, 1350 rpm, 1500 rpm																		D									
1500 rpm, 1750 rpm, 2000 rpm, 2200 rpm																		F									
2500 rpm, 2900 rpm, 3400 rpm																		L									
Rated speeds (690 V 3 AC) only with shaft height 280 (winding design)																											
400 rpm, 500 rpm																		H									
700 rpm, 800 rpm																		K									
1000 rpm, 1150 rpm																		U									
1500 rpm, 1750 rpm																		W									
Cooling								Degree of protection																			
Forced ventilation, DE → NDE								IP55								0											
Forced ventilation, NDE → DE								IP55								1											
Water cooling								IP55								2											
Forced ventilation, DE → NDE (only asynchronous version)								IP23								3											
Forced ventilation, NDE → DE (only asynchronous version)								IP23								4											
Type of construction																											
<u>Shaft height 180</u>				<u>Shaft height 225</u>				<u>Shaft height 280</u>																			
IM B3 (IM B6, IM B7, IM B8, IM V6)				IM B3 (IM B6, IM B7, IM B8, IM V6)				IM B3 (IM V6)				0															
IM V5				IM V5				IM V5 ⁹⁾				1															
IM B5 with A450 flange (IM V3) ⁵⁾				IM B5 with A550 flange (IM V3) ⁶⁾				IM B5 with A660 flange (IM V3) ^{7) 9)}				2															
IM B35 with A450 flange (IM V35)				IM B35 with A550 flange (IM V35)				IM B35 with A660 flange (IM V35)				3															
IM V15 with A450 flange				IM V15 with A550 flange				IM V15 with flange A660 ⁹⁾				5															
Version status ¹⁰⁾																											
Special version (order codes required for options)																											
																								Z			

For the 13th to 16th digit of the Article No., see next page.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

Article No. supplements for SIMOTICS M-1PH8 without holding brake > SH 180 to SH 280**Selection and ordering data** (continued)

Data position of the Article No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		1	P	H	8	.	.	.	-	■	■	■	■	■	-	■	■	■	.	-	Z
Shaft extension (DE)		Balancing													0						
Plain shaft	–														0						
Feather key	Full-key														1						
Feather key	Half-key														2						
Bearing	Vibration severity acc. to Siemens/EN 60034-14	Shaft and flange accuracy																			
Standard	A	N													A						
Standard	R/A	R													B						
Increased radial forces	A	N													E						
Increased radial forces	R/A	R													F						
<u>Also possible with shaft heights 180 and 225:</u>																					
Standard	S/A	R													C						
Standard ¹⁾	SR/A	R													D						
Performance ⁸⁾	SR/A	R													L						
Power connection (looking at DE)																					
<u>Terminal box</u>	<u>Cable entry</u>	<u>Signal connection</u>																			
Top	Right	DE													A						
Top	Left	DE													B						
Top	NDE	Right													C						
Top	DE	Right													D						
Version status ¹⁰⁾																					
Special version (order codes required for options)																				Z	

¹⁾ Only possible when 8th data position is "1" (Asynchronous version).⁴⁾ Limited to $n_{\max} = 4600$ rpm.⁵⁾ Limited to $n_{\max} = 3000$ rpm, not possible when 14th data position is "L" (Performance).⁶⁾ Limited to $n_{\max} = 2500$ rpm, not possible when 14th data position is "L" (Performance).⁷⁾ Limited to $n_{\max} = 2000$ rpm.⁸⁾ Only possible when 8th data position is "1" (Asynchronous version); not possible when 12th data position is "2" (IM B5) and 11th data position is "3" and "4" (Forced ventilation, IP23).Shaft height 180: limited to $n_{\max} = 7500$ rpm;Shaft height 225: limited to $n_{\max} = 6000$ rpm.⁹⁾ Only possible when 14th data position is "A" or "B" (Standard bearing).¹⁰⁾ Directly coupled to 9th data position.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

Article No. supplements for SIMOTICS M-1PH8 without holding brake > SH 280**Selection and ordering data**

Data position of the Article No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Shaft height 280 (forced ventilation)		1	P	H	8	2	8	.	-	1	■	■	■	■	-	■	■	■	.	-	Z
Overall length (cannot be selected, determined by the choice of rated power)		.																			
Asynchronous version		1																			
Encoder systems for motors without DRIVE-CLiQ interface																					
Without encoder										A										2	
Absolute encoder EnDat 2048 S/R (encoder AM2048S/R)										E										2	
Incremental encoder HTL 1024 S/R (encoder HTL1024S/R)										H										2	
Incremental encoder HTL 2048 S/R (encoder HTL2048S/R)										J										2	
Incremental encoder HTL 1024 S/R (encoder HTL1024S/R) with connection via additional terminal box 7)										W										2	
Incremental encoder HTL 2048 S/R (encoder HTL2048S/R) with connection via additional terminal box 7)										Y										2	
Incremental encoder sin/cos 1 Vpp 2048 S/R with C and D track (encoder IC2048S/R)										M										2	
Encoder systems for motors with DRIVE-CLiQ interface																					
Absolute encoder 22-bit singleturn + 12-bit multturn (encoder AM22DQ)										F										1	
Incremental encoder 22-bit with commutation position (encoder IC22DQ)										D										1	
External encoder systems																					
Incremental encoder HTL 1024 S/R WITH HOLLOW SHAFT HOG 22 (Baumer-Hübner), prepared for mounting 1)										G										2	
Incremental encoder HTL 1024 S/R POG 10 (Baumer-Hübner), prepared for mounting 2)										K										2	
Rated speeds (380 V to 480 V 3 AC) (winding design)																					
400 rpm, 500 rpm, 600 rpm, 700 rpm										B											
700 rpm, 800 rpm, 1000 rpm, 1100 rpm										C											
1000 rpm, 1150 rpm, 1350 rpm, 1500 rpm										D											
1500 rpm, 1750 rpm, 2000 rpm, 2200 rpm										F											
Rated speeds (690 V 3 AC) (winding design)																					
400 rpm, 500 rpm										H											
700 rpm, 800 rpm										K											
1000 rpm, 1150 rpm										U											
1500 rpm, 1750 rpm										W											
Cooling	Degree of protection																				
Forced ventilation	IP55												1								
Forced ventilation	IP23												4								
Type of construction																					
IM B3 (IM V6)													0								
IM V5 3) 6)													1								
IM B5 with A660 flange (IM V3) 3) 6)													2								
IM B35 with A660 flange (IM V35)													3								
IM V15 with A660 flange (IM V35) 3) 6)													5								
Version status 8)																					
Special version (order codes required for options)																					Z

For the 13th to 16th digit of the Article No., see next page.

SIMOTICS main motors

SIMOTICS M asynchronous and synchronous motors for SINAMICS S120

Article No. supplements for SIMOTICS M-1PH8 without holding brake > SH 280**Selection and ordering data** (continued)

Data position of the Article No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16						
		1	P	H	8	.	.	.	-	1	■	■	■	■	-	■	■	■	.	-	Z		
Shaft extension (DE)		Balancing													0 1 2	A B E F	U V W X	- G00 - G02 G00 G02 - G00 G02					
Plain shaft	–																						
Feather key	Full-key																						
Feather key	Half-key																						
Bearing	Vibration severity acc. to Siemens/EN 60034-1		Shaft and flange accuracy																				
Standard	A	N													A								
Standard	R/A	R													B								
Increased radial forces	A	N													E								
Increased radial forces	R/A	R													F								
Power connection (looking at DE)																							
Terminal box		Cable entry		Signal connection		External fan																	
NDE right		Bottom		DE		NDE top, air inlet from NDE, air-flow direction NDE → DE NDE left, air inlet from NDE, air-flow direction NDE → DE															U		
NDE left		Bottom		DE		NDE top, air inlet from NDE, air-flow direction NDE → DE NDE right, air inlet from NDE, air-flow direction NDE → DE															V		
NDE top		Right		DE		NDE left, air inlet from NDE, air-flow direction NDE → DE NDE right, air inlet from NDE, air-flow direction NDE → DE															W		
DE top ⁴⁾		Right		NDE		NDE top, air inlet from NDE, air-flow direction NDE → DE ^{4) 5)} NDE left, air inlet from NDE, air-flow direction NDE → DE ⁴⁾ NDE right, air inlet from NDE, air-flow direction NDE → DE ⁴⁾															X		
Version status ⁸⁾																							
For other versions, see options																							
Z																							

- 1) When ordering, also select option H75 (= encoder provided).
- 2) When ordering, also select options H56 (= procured by factory) or G80 (= provided).
- 3) $n_{\max}$ limited to 2000 rpm.
- 4) Only possible when 12th data position is "0" (IM B3) and "1" (IM V5).
- 5) Only possible for assignments with terminal box 1XB7712-P..
- 6) Only possible when 14th data position is "A" and "B" (standard bearing).
- 7) Possible for the following combinations:
12th data position is "0" or "1" with 16th data position is "W" or "X"
12th data position is "2", "3", or "5" with 16th data position "W".
- 8) Directly coupled to 9th data position.