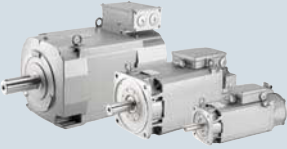
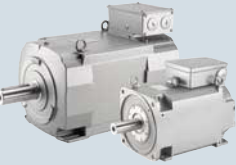


SIMOTICS main motors

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.

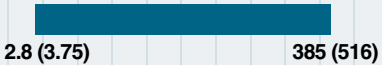
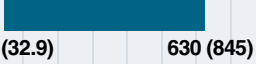
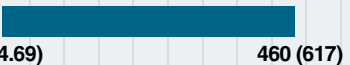
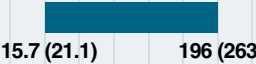
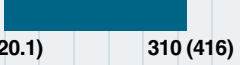
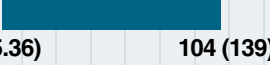
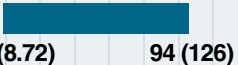
In machine tools, they are usually designated and used as main spindle motors.

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

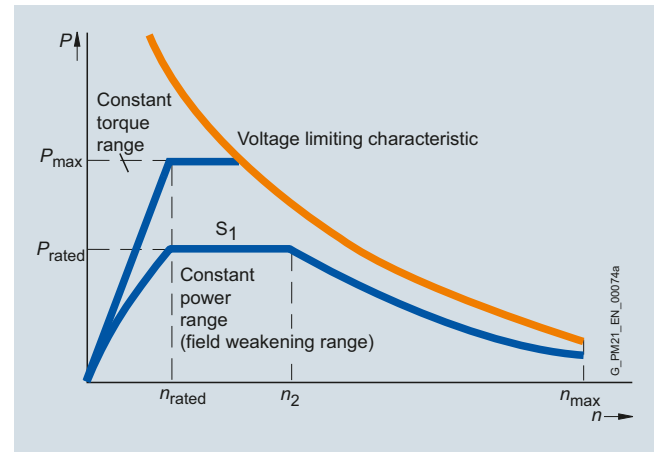
- Low space requirements thanks to high power density
- Performance capability thanks to wide rotational speed setting ranges
- High degree of structural flexibility due to the choice of
 - Asynchronous or synchronous design
 - Forced ventilation or water cooling
 - Mechanical designs
- Minimized maintenance 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

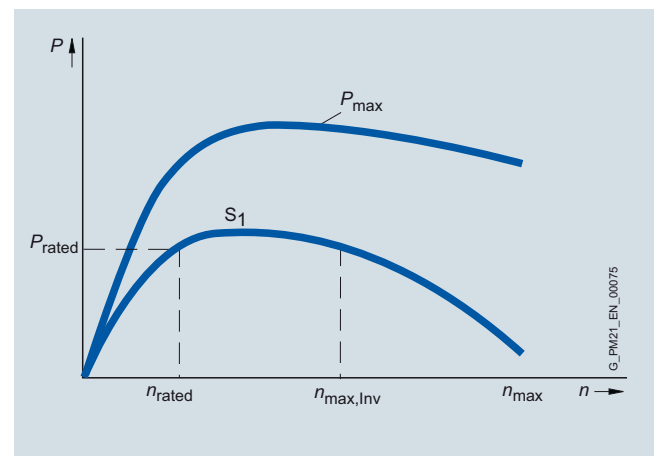
The application spectrum reaches across all industries and comprises, for example:

- 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
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 400 V 3 AC, Smart/Basic Line Module (continued)									
1500	80	2.8 (3.75)	18 (13.3)	7.5	346	53.3	4700	10000	1PH8083-■ F ■■-....
		3.7 (4.96)	24 (17.7)	10	336	53.2	5200	10000	1PH8087-■ F ■■-....
	100	3.7 (4.96)	24 (17.7)	12.5	265	52.4	5000	9000	1PH8101-■ F ■■-....
		5.5 (7.38)	35 (28.5)	13.5	368	52.4	4200	9000	1PH8103-■ F ■■-....
		7 (9.39)	45 (33.2)	17.5	348	51.9	5250	9000	1PH8105-■ F ■■-....
		9 (12.1)	57 (42.0)	23.5	330	52.2	4500	9000	1PH8107-■ F ■■-....
		11 (14.8)	70 (51.6)	24	360	51.4	4800	8000	1PH8131-■ F ■■-....
	132	15 (20.1)	96 (70.8)	34	342	51.3	5500	8000	1PH8133-■ F ■■-....
		18.5 (24.8)	118 (87.0)	43	330	51.3	6150	8000	1PH8135-■ F ■■-....
		22 (29.5)	140 (103)	56	308	51.3	4300	8000	1PH8137-■ F ■■-....
		30 (40.2)	191 (141)	71	319	50.8	3500	6500	1PH8163-■ F ■■-....
	160	37 (49.6)	236 (174)	78	350	50.8	2800	6500	1PH8165-■ F ■■-....
		51 (68.4)	325 (240)	116	335	50.6	5000	5000	1PH8184-■ F ■■-....
	180	74 (99.2)	471 (347)	166	330	50.6	5000	5000	1PH8186-■ F ■■-....
		95 (127)	605 (446)	200	340	50.5	3300	4500	1PH8224-■ F ■■-....
	225	130 (174)	828 (611)	270	340	50.5	3300	4500	1PH8226-■ F ■■-....
		160 (215)	1019 (752)	340	340	50.4	3300	4500	1PH8228-■ F ■■-....
		196 (263)	1248 (920)	390	345	50.4	1900	3300	1PH8284-1 ■ F 1 ■-....
	280	250 (335)	1592 (1174)	490	345	50.4	2000	3300	1PH8286-1 ■ F 1 ■-....
		320 (429)	2037 (1502)	620	345	50.4	2100	3300	1PH8288-1 ■ F 1 ■-....
2000	80	3.7 (4.96)	18 (13.3)	11.6	293	70.2	9200	10000	1PH8083-■ G ■■-....
		4.9 (6.57)	23 (17.0)	14.1	320	69.8	8400	10000	1PH8087-■ G ■■-....
	100	7 (9.39)	33 (24.3)	17.5	345	69.0	6000	9000	1PH8103-■ G ■■-....
		10.5 (14.1)	50 (36.9)	26	355	68.6	4000	9000	1PH8107-■ G ■■-....
	132	20 (26.8)	96 (70.8)	45	350	68.1	4000	8000	1PH8133-■ G ■■-....
		21.5 (28.8)	103 (76.0)	51	323	68.0	4000	8000	1PH8135-■ G ■■-....
		28 (37.5)	134 (98.8)	60	350	68.1	4000	8000	1PH8137-■ G ■■-....
	160	36 (48.3)	172 (127)	83	324	67.5	3000	6500	1PH8163-■ G ■■-....
		41 (55.0)	196 (145)	88	350	67.4	2750	6500	1PH8165-■ G ■■-....
	2500	180	78 (105)	298 (220)	166	340	84.0	5000	5000
106 (142)			405 (299)	230	335	83.9	5000	5000	1PH8186-■ L ■■-....
225		142 (190)	542 (400)	295	340	83.9	3200	4500	1PH8224-■ L ■■-....
		168 (225)	642 (474)	350	335	83.8	3200	4500	1PH8226-■ L ■■-....
		205 (275)	783 (578)	420	340	83.8	3200	4500	1PH8228-■ L L ■■-....
3000	80	4.1 (5.50)	13 (9.59)	13.6	298	102.6	10000	10000	1PH8083-■ M ■■-....
		4.8 (6.44)	15 (11.1)	17.3	284	102.2	10000	10000	1PH8087-■ M ■■-....
	100	8.4 (11.3)	27 (19.9)	25.7	297	102.1	14250	9000	1PH8103-■ M ■■-....
		12 (16.1)	38 (28.0)	38	294	101.6	16500	9000	1PH8107-■ M ■■-....

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 _f -ft)	I_{rated} A	U_{rated} V	f_{rated} Hz	n_2 rpm	n_{max} rpm	Article No.
Line voltage 3 AC 400 V, Active Line Module (continued)									
1750	80	3.3 (4.43)	18 (13.3)	7.5	398	61.7	5200	10000	1PH8083-■ F ■■-....
		4.3 (5.77)	23 (17.0)	10	396	61.3	5850	10000	1PH8087-■ F ■■-....
	100	4.3 (5.77)	23 (17.0)	12.5	304	60.8	5000	9000	1PH8101-■ F ■■-....
		6.3 (8.45)	34 (25.1)	13.1	412	60.8	4000	9000	1PH8103-■ F ■■-....
		8 (10.7)	44 (32.5)	17.5	400	60.2	5900	9000	1PH8105-■ F ■■-....
		10 (13.4)	55 (40.6)	22	380	60.4	5000	9000	1PH8107-■ F ■■-....
	132	13 (17.4)	71 (52.4)	24	416	59.8	5150	8000	1PH8131-■ F ■■-....
		17.5 (23.5)	96 (70.8)	34	392	59.7	5000	8000	1PH8133-■ F ■■-....
		21.5 (28.8)	117 (86.3)	43	383	59.6	5500	8000	1PH8135-■ F ■■-....
		25 (33.5)	136 (100)	56	353	59.6	5000	8000	1PH8137-■ F ■■-....
	160	34 (45.6)	186 (137)	70	366	59.2	3050	6500	1PH8163-■ F ■■-....
		41 (55.0)	224 (165)	76	400	59.1	2650	6500	1PH8165-■ F ■■-....
	180	60 (80.5)	327 (241)	120	390	58.9	5000	5000	1PH8184-■ F ■■-....
		85 (114)	464 (342)	164	385	58.9	5000	5000	1PH8186-■ F ■■-....
	225	110 (148)	600 (443)	198	395	58.9	3200	4500	1PH8224-■ F ■■-....
		135 (181)	737 (544)	250	395	58.8	3300	4500	1PH8226-■ F ■■-....
		179 (240)	977 (721)	330	395	58.7	3400	4500	1PH8228-■ F ■■-....
	280	225 (302)	1228 (906)	390	400	58.7	2200	3300	1PH8284- 1 ■ F 1 ■-....
		270 (362)	1474 (1087)	460	400	58.7	2200	3300	1PH8286- 1 ■ F 1 ■-....
		340 (456)	1856 (1369)	580	400	58.7	2200	3300	1PH8288- 1 ■ F 1 ■-....
2300	80	4.1 (5.50)	17 (12.5)	11.3	332	80.0	10000	10000	1PH8083-■ G ■■-....
		5.4 (7.24)	22 (16.2)	13.7	353	79.8	9650	10000	1PH8087-■ G ■■-....
	100	7.5 (10.1)	31 (22.9)	17	382	78.9	6000	9000	1PH8103-■ G ■■-....
		12.0 (16.1)	50 (36.9)	26	406	78.6	4600	9000	1PH8107-■ G ■■-....
	132	22.5 (30.2)	93 (68.6)	44	400	78.1	5000	8000	1PH8133-■ G ■■-....
		24 (32.2)	100 (73.8)	50	370	77.9	5000	8000	1PH8135-■ G ■■-....
		29 (38.9)	120 (88.5)	56	400	77.9	5000	8000	1PH8137-■ G ■■-....
	160	38 (51.0)	158 (117)	78	370	77.4	3200	6500	1PH8163-■ G ■■-....
		44 (59.0)	183 (135)	85	394	77.4	3000	6500	1PH8165-■ G ■■-....
	2900	180	81 (109)	267 (197)	152	395	97.3	5000	5000
101 (135)			333 (246)	198	385	97.2	5000	5000	1PH8186-■ L ■■-....
225		149 (200)	491 (362)	270	395	97.2	3300	4500	1PH8224-■ L ■■-....
		185 (248)	609 (449)	335	390	97.1	3300	4500	1PH8226-■ L ■■-....
		215 (288)	708 (522)	390	395	97.1	3300	4500	1PH8228-■ L ■■-....
3300	80	4.5 (6.03)	13 (9.59)	13.5	327	112.6	10000	10000	1PH8083-■ M ■■-....
		5.2 (6.97)	15 (11.1)	17.1	303	112.3	10000	10000	1PH8087-■ M ■■-....
	100	9.3 (12.5)	27 (19.9)	25.7	326	112.1	16000	9000	1PH8103-■ M ■■-....
		13 (17.4)	38 (28.0)	38	314	111.7	18000	9000	1PH8107-■ M ■■-....

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, Smart/Basic Line Module (continued)									
2000	80	3.7 (4.96)	18 (13.3)	7.6	447	70.0	5550	10000	1PH8083-■ F ■■-....
		4.9 (6.57)	23 (17.0)	10	435	69.9	6100	10000	1PH8087-■ F ■■-....
	100	4.7 (6.30)	22 (16.2)	12.5	343	69.0	7500	9000	1PH8101-■ F ■■-....
		7 (9.39)	33 (24.3)	12.7	460	69.1	4100	9000	1PH8103-■ F ■■-....
		9 (12.1)	43 (31.7)	17	453	68.5	6180	9000	1PH8105-■ F ■■-....
		11 (14.8)	53 (39.1)	21.5	428	68.6	5500	9000	1PH8107-■ F ■■-....
	132	15 (20.1)	72 (53.1)	24	460	68.2	5300	8000	1PH8131-■ F ■■-....
		20 (26.8)	96 (70.8)	34	445	68.0	6200	8000	1PH8133-■ F ■■-....
		24 (32.2)	115 (84.8)	43	434	67.9	7100	8000	1PH8135-■ F ■■-....
		28 (37.5)	134 (98.8)	55	401	67.9	4000	8000	1PH8137-■ F ■■-....
	160	37 (49.6)	177 (131)	68	416	67.4	3550	6500	1PH8163-■ F ■■-....
		45 (60.3)	215 (159)	75	440	67.5	3300	6500	1PH8165-■ F ■■-....
	180	68 (91.2)	325 (240)	118	450	67.2	5000	5000	1PH8184-■ F ■■-....
		94 (126)	449 (331)	160	445	67.2	5000	5000	1PH8186-■ F ■■-....
	225	124 (166)	592 (437)	196	460	67.2	2900	4500	1PH8224-■ F ■■-....
		153 (205)	731 (539)	245	450	67.1	3100	4500	1PH8226-■ F ■■-....
		196 (263)	936 (690)	325	450	67.1	3200	4500	1PH8228-■ F ■■-....
	280	255 (342)	1218 (898)	390	455	67.0	2200	3300	1PH8284- 1 ■ F 1 ■-....
		310 (416)	1481 (1092)	460	455	67.0	2200	3300	1PH8286- 1 ■ F 1 ■-....
		385 (516)	1838 (1356)	570	455	67.0	2200	3300	1PH8288- 1 ■ F 1 ■-....
2650	80	4.6 (6.17)	17 (12.5)	11.2	376	91.6	10000	10000	1PH8083-■ G ■■-....
		6 (8.05)	22 (16.2)	13.6	390	91.6	10000	10000	1PH8087-■ G ■■-....
	100	8 (10.7)	29 (21.4)	16	434	90.4	7500	9000	1PH8103-■ G ■■-....
		13.0 (17.4)	47 (34.7)	24	460	90.0	7000	9000	1PH8107-■ G ■■-....
	132	24 (32.2)	86 (63.4)	41	456	89.6	7000	8000	1PH8133-■ G ■■-....
		26 (34.9)	94 (69.3)	48	424	89.6	6000	8000	1PH8135-■ G ■■-....
		30 (40.2)	108 (79.7)	52	460	89.4	4250	8000	1PH8137-■ G ■■-....
	160	40 (53.6)	144 (106)	76	390	89.2	3500	6500	1PH8163-■ G ■■-....
		50 (67.1)	180 (133)	85	440	89.0	3250	6500	1PH8165-■ G ■■-....
	3400	180	65 (87.2)	183 (135)	120	460	113.7	5000	5000
81 (109)			228 (168)	158	455	113.7	5000	5000	1PH8186-■ L ■■-....
225		85 (114)	239 (176)	168	460	113.6	3600	4500	1PH8224-■ L ■■-....
		90 (121)	253 (187)	205	460	113.5	3600	4500	1PH8226-■ L ■■-....
		95 (127)	267 (197)	225	460	113.5	3600	4500	1PH8228-■ L ■■-....
3600	80	4.9 (6.57)	13 (9.59)	14	355	122.6	10000	10000	1PH8083-■ M ■■-....
		5.7 (7.64)	15 (11.1)	17.1	329	122.4	10000	10000	1PH8087-■ M ■■-....
	100	10 (13.4)	27 (19.9)	25.4	355	122.1	17650	9000	1PH8103-■ M ■■-....
		14 (18.8)	37 (27.3)	37.5	350	121.6	18000	9000	1PH8107-■ M ■■-....

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 _r -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 (continued)									
2200	80	4.1 (5.50)	18 (13.3)	7.6	480	76.2	6300	10000	1PH8083-■ ■ F ■ ■ -....
		5.3 (7.11)	23 (17.0)	10	480	76.3	7100	10000	1PH8087-■ ■ F ■ ■ -....
	100	5.1 (6.84)	22 (16.2)	12.5	363	76.0	7500	9000	1PH8101-■ ■ F ■ ■ -....
		7.7 (10.3)	33 (24.3)	12.7	480	76.1	4100	9000	1PH8103-■ ■ F ■ ■ -....
		9.9 (13.3)	43 (31.7)	17	485	75.3	7000	9000	1PH8105-■ ■ F ■ ■ -....
	132	12.1 (16.2)	53 (39.1)	21.5	470	75.2	5500	9000	1PH8107-■ ■ F ■ ■ -....
		16.5 (22.1)	72 (53.1)	24	500	75.0	5300	8000	1PH8131-■ ■ F ■ ■ -....
		22 (29.5)	96 (70.8)	34	480	74.8	6200	8000	1PH8133-■ ■ F ■ ■ -....
		26.4 (35.4)	115 (84.8)	43	468	74.7	6000	8000	1PH8135-■ ■ F ■ ■ -....
	160	30 (40.2)	130 (95.9)	53	440	74.6	4500	8000	1PH8137-■ ■ F ■ ■ -....
		40.7 (54.6)	177 (131)	68	456	74.2	3500	6500	1PH8163-■ ■ F ■ ■ -....
	180	49.5 (66.4)	215 (159)	75	493	74.2	3500	6500	1PH8165-■ ■ F ■ ■ -....
		68 (91.2)	295 (218)	110	500	73.8	5000	5000	1PH8184-■ ■ F ■ ■ -....
	225	94 (126)	408 (301)	140	490	74.1	5000	5000	1PH8186-■ ■ F ■ ■ -....
		110 (148)	478 (353)	168	500	73.7	2900	4500	1PH8224-■ ■ F ■ ■ -....
		130 (174)	564 (416)	205	500	73.7	3100	4500	1PH8226-■ ■ F ■ ■ -....
	280	170 (228)	738 (544)	275	500	73.6	3200	4500	1PH8228-■ ■ F ■ ■ -....
		230 (308)	998 (736)	330	500	73.6	2400	3300	1PH8284- 1 ■ F 1 ■ -....
		279 (374)	1211 (893)	395	500	73.6	2400	3300	1PH8286- 1 ■ F 1 ■ -....
		347 (465)	1506 (1111)	495	500	73.6	2400	3300	1PH8288- 1 ■ F 1 ■ -....
2800	80	4.8 (6.44)	16 (11.8)	11.3	400	96.4	10000	10000	1PH8083-■ ■ G ■ ■ -....
		6.3 (8.45)	21 (15.5)	13.5	425	96.5	10000	10000	1PH8087-■ ■ G ■ ■ -....
	100	8.5 (11.4)	29 (21.4)	16	455	95.3	7000	9000	1PH8103-■ ■ G ■ ■ -....
		13.7 (18.4)	47 (34.7)	24	480	95.1	7000	9000	1PH8107-■ ■ G ■ ■ -....
	132	25 (33.5)	85 (62.7)	41	480	94.7	7000	8000	1PH8133-■ ■ G ■ ■ -....
		26 (34.9)	89 (65.6)	47	440	94.6	6000	8000	1PH8135-■ ■ G ■ ■ -....
		31 (41.6)	106 (78.2)	52	494	94.4	4000	8000	1PH8137-■ ■ G ■ ■ -....
	160	42 (56.3)	143 (105)	75	447	94.1	3500	6500	1PH8163-■ ■ G ■ ■ -....
50 (67.1)		171 (126)	81	483	94.1	3500	6500	1PH8165-■ ■ G ■ ■ -....	
3900	80	5.3 (7.11)	13 (9.59)	14	372	132.8	10000	10000	1PH8083-■ ■ M ■ ■ -....
		6.0 (8.05)	15 (11.1)	17.1	357	132.4	10000	10000	1PH8087-■ ■ M ■ ■ -....
	100	10.8 (14.5)	26 (19.2)	25	383	132.1	9000	9000	1PH8103-■ ■ M ■ ■ -....
		14.0 (18.8)	34 (25.1)	35	380	131.5	9000	9000	1PH8107-■ ■ M ■ ■ -....

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																			
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																																							
Plain shaft		–														0																									
Feather key		Full-key														1																									
Feather key		Half-key														2																									
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)																																									
<u>Terminal box</u>		<u>Cable entry</u>				<u>Signal connection</u>				<u>External fan</u>																															
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			–	G00																	
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			–	G02																	
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			–	G00																	
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			–	G00																	
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.