

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type

Water cooling

Selection and ordering data

Rated power for duty type ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max	1FE1 built-in motors Standard type	Moment of inertia of rotor without sleeve ⁸⁾	Weight, approx. Stator + rotor without sleeve		
P_{rated}	S6-40 %	M_{rated}	S6-40 %	n_{rated}	n_{max}				J	m
kW (HP)	kW (HP)	Nm (lb _r -in)	Nm (lb _r -in)	rpm	rpm				kgm ² (lb _r -in-s ²)	kg (lb)
High-Torque series, 6-pole – Water cooling										
7.4 (9.9)	10 (13.4)	4.5 (39.8)	6 (53.1)	15800	18000	1FE1041-6WM ■ 0- 1 B A ■	0.00019 (0.0017)	2.8 (6.2)		
14.4 (19.3)	18 (24.1)	11 (97)	14 (124)	12500	18000	1FE1042-6WN ■ 0- 1 B A ■	0.00033 (0.0029)	6.5 (14.3)		
11.5 (15.4)	14.7 (19.7)	11 (97)	14 (124)	10000	15000	1FE1042-6WR ■ 0- 1 B A ■	0.00033 (0.0029)	6.5 (14.3)		
6.3 (8.5)	7.9 (10.6)	10 (89)	12.5 (111)	6000	12000	1FE1051-6WN ■ 0- 1 B ■ ■	0.00106 (0.0094)	5.5 (12.1)		
8.3 (11.1)	10.4 (13.9)	10 (89)	12.4 (110)	8000	15000	1FE1051-6WK ■ 0- 1 B ■ ■	0.00106 (0.0094)	5.5 (12.1)		
11.5 (15.4)	14.5 (19.4)	20 (187)	25.4 (225)	5500	12000	1FE1052-6WN ■ 0- 1 B ■ ■	0.00195 (0.0173)	8.2 (18.1)		
14 (18.8)	18 (24.1)	18 (159)	23 (204)	7500	15000	1FE1052-6WK ■ 0- 1 B ■ ■	0.00195 (0.0173)	8.2 (18.1)		
23 (30.8)	28.9 (38.8)	37 (328)	46 (407)	6000	12000	1FE1054-6WN ■ 0- 1 B A ■	0.0038 (0.0336)	14.3 (31.5)		
11.6 (15.6)	15 (20.1)	13 (115)	17 (151)	8500	12000	1FE1061-6WH ■ 0- 1 B ■ ■	0.00141 (0.0125)	5.5 (12.1)		
4 (5.4)	5.3 (7.1)	13 (115)	17 (151)	3000	5000	1FE1061-6WY ■ 0- 1 B ■ ■	0.00141 (0.0125)	5.5 (12.1)		
25 (33.5)	36.5 (48.9)	56 (496)	81 (717)	4300	12000	1FE1064-6WN ■ 1- 1 B A ■	0.00553 (0.0489)	14.5 (32)		
20 (26.8)	29 (38.9)	56 (496)	81 (717)	3400	10000	1FE1064-6WQ ■ 1- 1 B A ■	0.00553 (0.0489)	14.5 (32)		
34 (45.6)	42 (56.3)	65 (575)	81 (717)	5000	8500	1FE1082-6WP ■ 0- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)		
24.5 (32.8)	30.5 (40.9)	65 (575)	81 (717)	3600	6000	1FE1082-6WS ■ 0- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)		
29.3 (39.3)	36.5 (48.9)	65 (575)	81 (717)	4300	9000	1FE1082-6WQ ■ 1- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)		
15 (20.1)	18.7 (25.1)	65 (575)	81 (717)	2200	9000	1FE1082-6WW ■ 1- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)		
23.1 (31)	31.1 (41.7)	130 (1151)	175 (1549)	1700	7000	1FE1084-6WU ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)		
31 (41.6)	42 (56.3)	130 (1151)	175 (1549)	2300	9000	1FE1084-6WR ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)		
15 (20.1)	19 (25.5)	130 (1151)	175 (1549)	1100	4500	1FE1084-6WX ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)		
10 (13.4)	13.2 (17.7)	28 (248)	36 (319)	3500	7000	1FE1091-6WN ■ 0- 1 B ■ ■	0.00814 (0.0720)	20 (44.1)		
6.3 (8.5)	7.5 (10.1)	30 (266)	36 (319)	2000	4000	1FE1091-6WS ■ 0- 1 B ■ ■	0.00814 (0.0720)	20 (44.1)		
24.2 (32.4)	31 (41.6)	66 (584)	85 (752)	3500	7000	1FE1092-6WN ■ 0- 1 B ■ ■	0.01566 (0.1386)	30.5 (67.3)		
22 (29.5)	28.5 (38.2)	66 (584)	85 (752)	3200	7000	1FE1092-6WR ■ 1- 1 B ■ ■	0.01566 (0.1386)	30.5 (67.3)		
36.6 (49.1)	47 (63)	100 (885)	128 (1133)	3500	7000	1FE1093-6WN ■ 0- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)		
21 (28.2)	27 (36.2)	100 (885)	128 (1133)	2000	4000	1FE1093-6WS ■ 0- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)		
16.8 (22.5)	21.5 (28.8)	100 (885)	128 (1133)	1600	7000	1FE1093-6WV ■ 1- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)		

• Standard protection: 2 × KTY²⁾

• Full protection: 2 × KTY + 3 × PTC thermistor drilling⁶⁾

• Universal protection⁷⁾

• Delivery of stator + rotor²⁾⁴⁾⁵⁾

• Stator with cooling jacket²⁾³⁾

• Without rotor sleeve, for d_i see dimensions table

• With rotor sleeve, for d^* see dimensions table

(Only for 1FE1061/1FE1082/1FE1084/1FE1091/1FE1092/1FE1093)

• With rotor sleeve, for d^{**} see dimensions table (Only for 1FE1051/1FE1052/1FE108/1FE109)

• With rotor sleeve, for d^{**} see dimensions table (Only for 1FE1082)

• Free cable ends, 1.5 m (4.92 ft) in length⁹⁾

Cable outlet at larger outer diameter of cooling jacket

Cable outlet at smaller outer diameter of cooling jacket (on request)

• Free cable ends, flexible, 0.5 m (1.64 ft) in length (preferred variant)

Cable outlet at larger outer diameter of cooling jacket

Cable outlet at smaller outer diameter of cooling jacket (on request)

S1 = continuous duty

S6 = intermittent duty:

Type 1FE104/1FE105/1FE106/1FE1082: duty cycle time 1 min

Type 1FE1084/1FE109: duty cycle time 2 min

1
3
5

1

B

A

B

C

D

0

1

2

3

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type
Water cooling

Motor type (repeated)	Rated current for duty type ¹⁾		Voltage Protection Module	SINAMICS S120 Motor Module	
	I_{rated} S1 A	S6-40 % A		Required rated current I_{rated} S1 to n_{max} A	Booksiz format For additional versions and components, see SINAMICS S120 drive system Order No.
1FE1041-6WM...	13	17.5	–	30	6SL312 ■ - 1TE23-0AA3
1FE1042-6WN...	24	32	–	45	6SL312 ■ - 1TE24-5AA3
1FE1042-6WR...	19	26	–	30	6SL312 ■ - 1TE23-0AA3
1FE1051-6WN...	15	22	–	18	6SL312 ■ - ■TE21-8AA3
1FE1051-6WK...	20	29	–	45	6SL312 ■ - 1TE24-5AA3
1FE1052-6WN...	30	44	–	30	6SL312 ■ - 1TE23-0AA3
1FE1052-6WK...	37	54	–	60	6SL312 ■ - 1TE26-0AA3
1FE1054-6WN...	60	89	–	60	6SL312 ■ - 1TE26-0AA3
1FE1061-6WH...	21	30	–	30	6SL312 ■ - 1TE23-0AA3
1FE1061-6WY...	8	11.5	–	9	6SL312 ■ - ■TE21-0AA3
1FE1064-6WN...	56	80	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1064-6WQ...	43	61	VPM 120	45	6SL312 ■ - 1TE24-5AA3
1FE1082-6WP...	65	91	–	85	6SL312 ■ - 1TE28-5AA3
1FE1082-6WS...	45	62	–	45	6SL312 ■ - 1TE24-5AA3
1FE1082-6WQ...	60	84	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1082-6WW...	30	42	VPM 120	30	6SL312 ■ - 1TE23-0AA3
1FE1084-6WU...	45	64	VPM 120	45	6SL312 ■ - 1TE24-5AA3
1FE1084-6WR...	60	84	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1084-6WX...	30	42	VPM 120	30	6SL312 ■ - 1TE23-0AA3
1FE1091-6WN...	24	35	–	30	6SL312 ■ - 1TE23-0AA3
1FE1091-6WS...	15	19	–	18	6SL312 ■ - ■TE21-8AA3
1FE1092-6WN...	58	84	–	60	6SL312 ■ - 1TE26-0AA3
1FE1092-6WR...	41	58	VPM 120	45	6SL312 ■ - 1TE24-5AA3
1FE1093-6WN...	83	120	–	85	6SL312 ■ - 1TE28-5AA3
1FE1093-6WS...	53	76	–	60	6SL312 ■ - 1TE26-0AA3
1FE1093-6WV...	43	60	VPM 120	45	6SL312 ■ - 1TE24-5AA3

Cooling:

Internal air cooling 0
External air cooling 1

Motor Module:

Single Motor Module 1
Double Motor Module 2

¹⁾ Data for $\Delta T = 105$ K, special windings on request.

²⁾ Standard scope of supply: Encapsulated winding with $2 \times KTY$ (1 spare).

³⁾ Stator without cooling jacket, with impregnated winding on request.

⁴⁾ Ordering spare parts: Stator: 1FE1...-.....-2.W.

⁵⁾ Ordering spare parts: Rotor: 1FE1...-.....-3W..

⁶⁾ Full protection option, application example: Load at motor standstill, external tripping unit required: Order No. 3RN1013-1GW10.

⁷⁾ Universal protection option: Full protection + NTC PT3-51F + NTC K227.

⁸⁾ For moment of inertia with sleeve, see Configuration Manual.

⁹⁾ For cable design, see Configuration Manual

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type

Water cooling

Selection and ordering data

Rated power for duty type ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Standard type	Moment of inertia of rotor without sleeve ⁹⁾	Weight, approx. Stator + rotor without sleeve
P_{rated}	S6-40 %	M_{rated}	S6-40 %	n_{rated}	n_{max}			
S1	S6-40 %	S1	S6-40 %	n_{rated}	n_{max}	Order No.	J	m
kW (HP)	kW (HP)	Nm (lb _r -in)	Nm (lb _r -in)	rpm	rpm		kgm ² (lb _r -in-s ²)	kg (lb)
High-Torque series, 6-pole – Water cooling								
33 (44.2)	35 (46.9)	150 (1328)	190 (1682)	2100	6500	1FE1113-6WU ■ 1- 1 B ■ ■ ■	0.0470 (0.4160)	57 (126)
22 (29.5)	24 (32.2)	150 (1328)	190 (1682)	1400	5700	1FE1113-6WX ■ 1- 1 B ■ ■ ■	0.0470 (0.4160)	57 (126)
41.9 (56.2)	53.6 (71.9)	200 (1770)	257 (2275)	2000	6500	1FE1114-6WR ■ 1- 1 B ■ ■ ■	0.06239 (0.5522)	80 (176)
29.3 (39.3)	37.5 (50.3)	200 (1770)	257 (2275)	1400	6500	1FE1114-6WT ■ 1- 1 B ■ ■ ■	0.06239 (0.5522)	80 (176)
20.9 (28.0)	26.8 (35.9)	200 (1770)	257 (2275)	1000	6000	1FE1114-6WW ■ 1- 1 B ■ ■ ■	0.06239 (0.5522)	80 (176)
41.6 (55.8)	45.0 (60.4)	265 (2345)	340 (3009)	1500	6500	1FE1115-6WT ■ 1- 1 B C ■	0.10503 (0.9296) ¹¹⁾	90 (198)
37.7 (50.5)	48.3 (64.8)	300 (2655)	385 (3408)	1200	6500	1FE1116-6WR ■ 1- 1 B ■ ■ ■	0.09285 (0.8218)	103 (227)
28.3 (37.9)	36.2 (48.5)	300 (2655)	385 (3408)	900	5500	1FE1116-6WT ■ 1- 1 B ■ ■ ■	0.09285 (0.8218)	103 (227)
22 (29.5)	28 (37.5)	300 (2655)	385 (3408)	700	4000	1FE1116-6WW ■ 1- 1 B ■ ■ ■	0.09285 (0.8218)	103 (227)
High-Torque series, 8-pole – Water cooling								
63 (84.5)	80 (107)	430 (3806)	620 (5487)	1400	6500	1FE1144-8WL ■ 1- 1 B ■ ■ ■	0.11447 (1.032)	84.5 (186)
104 (139.4)	125 (168) ²⁾	585 (5188)	795 (7036) ²⁾	1700	8000	1FE1145-8WN ■ 1- 1 B ■ ■ ■	0.21636 (1.9148)	117 (258)
79.6 (106.7)	97 (130)	585 (5188)	795 (7036)	1300	6000	1FE1145-8WQ ■ 1- 1 B ■ ■ ■	0.21636 (1.9148)	117 (258)
67.4 (90.4)	80 (107)	585 (5188)	795 (7036)	1100	5000	1FE1145-8WS ■ 1- 1 B ■ ■ ■	0.21636 (1.9148)	117 (258)
103 (138.1)	124 (166) ²⁾	820 (7258)	1110 (9824) ²⁾	1200	5500	1FE1147-8WN ■ 1- 1 B ■ ■ ■	0.28823 (2.5508)	155 (342)
81.6 (109.4)	96 (129)	820 (7258)	1110 (9824)	950	4200	1FE1147-8WQ ■ 1- 1 B ■ ■ ■	0.28823 (2.5508)	155 (342)
64.4 (86.3)	80 (107)	820 (7258)	1110 (9824)	750	3500	1FE1147-8WS ■ 1- 1 B ■ ■ ■	0.28823 (2.5508)	155 (342)

- Standard protection: 2 × KTY³⁾
- Full protection: 2 × KTY + 3 × PTC thermistor drilling⁷⁾
- Universal protection⁸⁾

- Delivery of stator + rotor³⁾⁵⁾⁶⁾

- Stator with cooling jacket³⁾⁴⁾

- Without rotor sleeve (Only for 1FE1113/1FE1114/1FE1116/1FE1144)
- With rotor sleeve, for d^* see dimensions table (Only for 1FE1114/1FE1116)
- With rotor sleeve, for d^{**} see dimensions table (Not for 1FE1113)
- With rotor sleeve, for d^{**} see dimensions table (Only for 1FE1113/1FE1145/1FE1147)
- With rotor sleeve, for d^{**} see dimensions table (Only for 1FE1113/1FE1145)

- Free cable ends, 1.5 m (4.92 ft) in length¹⁰⁾
- Cable outlet at larger outer diameter of cooling jacket
- Cable outlet at smaller outer diameter of cooling jacket (on request)
- Free cable ends, flexible, 0.5 m (1.64 ft) in length (preferred variant)
- Cable outlet at larger outer diameter of cooling jacket
- Cable outlet at smaller outer diameter of cooling jacket (on request)

S1 = continuous duty

S6 = intermittent duty:

Type 1FE111/1FE114: duty cycle time 2 min

1			
3			
5			
	1		
		B	
			A
			B
			C
			D
			E
			0
			1
			2
			3

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type
Water cooling

Motor type (repeated)	Rated current for duty type ¹⁾		Voltage Protection Module	SINAMICS S120 Motor Module	
	I_{rated} S1 A	S6-40 % A		Required rated current I_{rated} S1 A	Booksiz format For additional versions and components, see SINAMICS S120 drive system Order No.
1FE1113-6WU...	60	91	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1113-6WX...	43	62	VPM 120	45	6SL312 - 1 TE24-5AA3
1FE1114-6WR...	108	160	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1114-6WT...	84	123	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1114-6WW...	58	85	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1115-6WT...	85	123	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1116-6WR...	109	160	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1116-6WT...	84	123	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1116-6WW...	60	87	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1144-8WL...	133	193	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1145-8WN...	200	290 ²⁾	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1145-8WQ...	158	230	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1145-8WS...	130	188	VPM 200	132	6SL312 - 1 TE31-3AA3
1FE1147-8WN...	200	290 ²⁾	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1147-8WS...	158	230	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1147-8WS...	130	190	VPM 200	132	6SL312 - 1 TE31-3AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module

1

7

¹⁾ Data for $\Delta T = 105 \text{ K}$, special windings on request.

²⁾ Observe limit for Motor Module.

³⁾ Standard scope of supply: Encapsulated winding with $2 \times KTY$ (1 spare).

⁴⁾ Stator without cooling jacket, with impregnated winding on request.

⁵⁾ Ordering spare parts: Stator: 1FE1...-.....-2.W.

⁶⁾ Ordering spare parts: Rotor: 1FE1...-.....-3W..

⁷⁾ Full protection option, application example: Load at motor standstill, external tripping unit required: Order No. 3RN1013-1GW10.

⁸⁾ Universal protection option: Full protection + NTC PT3-51F + NTC K227.

⁹⁾ For moment of inertia with sleeve, see Configuration Manual.

¹⁰⁾ For cable design, see Configuration Manual.

¹¹⁾ Moment of inertia of rotor with rotor sleeve d^{**} .

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type Water cooling

Selection and ordering data

Rated power for duty type ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Standard type	Moment of inertia of rotor J	Weight, approx. Stator + rotor without sleeve m
P_{rated}	S6-40 %	M_{rated}	S6-40 %	n_{rated}	n_{max}			
S1	S1	S1	S1	rpm	rpm			
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)			Order No.	kgm ² (lb _f -in-s ²)	kg (lb)
High-Speed series, 4-pole – Water cooling								
12.6 (16.9)	17.6 (23.6)	5 (44.3)	7 (62)	24000	40000	1FE1051-4HC ■ 0-1 B A ■	0.00045 (0.004)	4.1 (9.0)
6.5 (8.7)	8.0 (10.7)	6.5 (57.5)	9.0 (79.7)	9500	30000	1FE1051-4WN ■ 1-1 B A ■	0.00057 (0.005)	4.2 (9.3)
31.4 (42.1)	35 (46.9)	12 (106)	15.5 (137.2)	25000	40000 ⁸⁾	1FE1052-4HD ■ 0-1 B A ■	0.00087 (0.007)	7.15 (15.77)
23.9 (32.0)	30 (40.2)	12 (106)	15.5 (137.2)	19000	40000 ⁸⁾	1FE1052-4HG ■ 1-1 B A ■	0.00087 (0.007)	7.15 (15.77)
11 (15)	12 (16.1)	13 (115)	18 (159)	8000	30000	1FE1052-4WN ■ 1-1 B A ■	0.00110 (0.0097)	7.35 (16.21)
17.5 (23.1)	19 (25.5)	13 (115)	17 (151)	12500	30000	1FE1052-4WK ■ 1-1 B A ■	0.00110 (0.0097)	7.35 (16.21)
25.5 (34.2)	32.5 (43.6)	18 (159)	23 (204)	13500	40000 ⁸⁾	1FE1053-4HH ■ 1-1 B A ■	0.00128 (0.0113)	10.2 (22.5)
23 (31)	25 (33.5)	20 (177)	27 (239)	11000	30000	1FE1053-4WJ ■ 1-1 B A ■	0.00163 (0.0144)	10.5 (23.2)
16.5 (22.1)	18 (24.1)	20 (177)	27 (239)	7900	30000	1FE1053-4WN ■ 1-1 B A ■	0.00163 (0.0144)	10.5 (23.2)
16 (21)	16 (21.5)	28 (248)	40 (354)	5500	24000	1FE1072-4WN ■ 1-1 B A ■	0.00287 (0.0254)	11.2 (24.7)
20 (27)	20 (26.8)	28 (248)	40 (354)	6800	24000	1FE1072-4WL ■ 1-1 B A ■	0.00287 (0.0254)	11.2 (24.7)
28.5 (38.2)	28.5 (38.2)	28 (248)	40 (354)	9700	24000	1FE1072-4WH ■ 1-1 B A ■	0.00287 (0.0254)	11.2 (24.7)
30 (40)	30 (40.2)	42 (372)	59 (522)	6800	24000	1FE1073-4WN ■ 1-1 B A ■	0.00430 (0.0381)	16 (35.3)
15 (20)	15 (20.1)	45 (398)	64 (566)	3200	14000	1FE1073-4WT ■ 1-1 B A ■	0.00430 (0.0381)	16 (35.3)
41 (55)	41 (55)	56 (496)	79 (699)	7000	20000	1FE1074-4WN ■ 1-1 B A ■	0.00573 (0.0507)	21 (46.3)
48 (64)	51 (68.4)	60 (531)	86 (761)	7700	20000	1FE1074-4WM ■ 1-1 B A ■	0.00573 (0.0507)	21 (46.3)
25.8 (34.6)	28 (37.5)	60 (531)	85 (752)	4100	18000	1FE1074-4WT ■ 1-1 B A ■	0.00573 (0.0507)	21 (46.3)
15.5 (20.8)	15.5 (20.8)	42 (372)	55 (487)	3500	20000	1FE1082-4WN ■ 1-1 B A ■	0.00559 (0.0495)	15.1 (33.3)
8.8 (11.8)	8.8 (11.8)	42 (372)	55 (487)	2000	11000	1FE1082-4WR ■ 1-1 B A ■	0.00559 (0.0495)	15.1 (33.3)
28 (38)	28 (37.5)	63 (558)	83 (735)	4200	20000	1FE1083-4WN ■ 1-1 B A ■	0.00847 (0.0750)	22 (48.5)
38 (51)	38 (51)	84 (744)	110 (974)	4300	20000	1FE1084-4WN ■ 1-1 B A ■	0.01118 (0.0989)	28.5 (62.9)
35 (47)	35 (46.9)	78 (690)	110 (974)	4300	20000	1FE1084-4WP ■ 1-1 B A ■	0.01118 (0.0989)	28.5 (62.9)
30 (40)	30 (40.2)	84 (743)	110 (974)	3400	18000	1FE1084-4WQ ■ 1-1 B A ■	0.01118 (0.0989)	28.5 (62.9)
26.4 (35.4)	26.4 (35.4)	84 (743)	110 (974)	3000	15000	1FE1084-4WT ■ 1-1 B A ■	0.01118 (0.0989)	28.5 (62.9)
38 (51)	38 (51)	105 (929)	138 (1221)	3500	18000	1FE1085-4WN ■ 1-1 B A ■	0.01388 (0.1228)	35 (77.2)
24 (32)	24 (32.2)	105 (929)	140 (1239)	2200	12000	1FE1085-4WT ■ 1-1 B A ■	0.01388 (0.1228)	35 (77.2)
33 (44)	33 (44.3)	105 (929)	140 (1239)	3000	16000	1FE1085-4WQ ■ 1-1 B A ■	0.01388 (0.1228)	35 (77.2)

- Standard protection: 2 × KTY²⁾
- Full protection: 2 × KTY + 3 × PTC thermistor drilling⁶⁾
- Universal protection⁷⁾

- Delivery of stator + rotor²⁾⁴⁾⁵⁾

- Stator with cooling jacket²⁾³⁾

- Without rotor sleeve

- Free cable ends, 1.5 m (4.92 ft) in length⁹⁾
Cable outlet at larger outer diameter of cooling jacket
Cable outlet at smaller outer diameter of cooling jacket (on request)
- Free cable ends, flexible, 0.5 m (1.64 ft) in length (preferred variant)
Cable outlet at larger outer diameter of cooling jacket
Cable outlet at smaller outer diameter of cooling jacket (on request)

S1 = continuous duty

S6 = intermittent duty:

Type 1FE105/1FE107: duty cycle time 1 min

Type 1FE108: duty cycle time 2 min

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type
Water cooling

Motor type (repeated)	Rated current for duty type ¹⁾		Voltage Protection Module	SINAMICS S120 Motor Module	
	I_{rated} S1 A	S6-40 % A		Required rated current I_{rated} S1 to n_{max} A	Booksiz format For additional versions and components, see SINAMICS S120 drive system Order No.
1FE1051-4HC...	25	34.5	–	45	6SL312 ■ - 1TE24-5AA3
1FE1051-4WN...	12	17	VPM 120	30	6SL312 ■ - 1TE23-0AA3
1FE1052-4HD...	57	75	–	132	6SL312 ■ - 1TE31-3AA3
1FE1052-4HG...	44	59	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1052-4WN...	20	26	VPM 120	45	6SL312 ■ - 1TE24-5AA3
1FE1052-4WK...	30	39	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1053-4HH...	46	63	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1053-4WJ...	36	49	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1053-4WN...	29	38	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1072-4WN...	36	54	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1072-4WL...	45	68	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1072-4WH...	64	96	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1073-4WN...	65	97	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1073-4WT...	30	44	VPM 120	30	6SL312 ■ - 1TE23-0AA3
1FE1074-4WN...	91	136	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1074-4WM...	97	144	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1074-4WT...	53	77	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1082-4WN...	42	60	VPM 120	45	6SL312 ■ - 1TE24-5AA3
1FE1082-4WR...	24	34	VPM 120	30	6SL312 ■ - 1TE23-0AA3
1FE1083-4WN...	77	110	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1084-4WN...	105	150	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1084-4WP...	79	120	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1084-4WQ...	83	119	VPM 120	85	6SL312 ■ - 1TE28-5AA3
1FE1084-4WT...	60	85	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1085-4WN...	105	150	VPM 120	132	6SL312 ■ - 1TE31-3AA3
1FE1085-4WT...	60	85	VPM 120	60	6SL312 ■ - 1TE26-0AA3
1FE1085-4WQ...	85	120	VPM 120	85	6SL312 ■ - 1TE28-5AA3

Cooling:	
Internal air cooling	0
External air cooling	1
Motor Module:	
Single Motor Module	1

- 1) Data for $\Delta T = 105$ K, special windings on request.
- 2) Standard scope of supply: Encapsulated winding with 2 x KTY (1 spare).
- 3) Stator without cooling jacket, with impregnated winding on request.
- 4) Ordering spare parts: Stator: 1FE1...-.....-2.W.
- 5) Ordering spare parts: Rotor: 1FE1...-.....-3W..
- 6) Full protection option, application example: Load at motor standstill, external tripping unit required: Order No. 3RN1013-1GW10.
- 7) Universal protection option: Full protection + NTC PT3-51F + NTC K227.
- 8) Series reactor required, see Configuration Manual.
- 9) For cable design, see Configuration Manual

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type

Water cooling

Selection and ordering data

Rated power for duty type ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Standard type	Moment of inertia of rotor J	Weight, approx. Stator + rotor without sleeve m
P_{rated}	S6-40 %	M_{rated}	S6-40 %	n_{rated}	n_{max}			
S1		S1				Order No.		
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	rpm	rpm		kgm ² (lb _f -in-s ²)	kg (lb)
High-Speed series, 4-pole – Water cooling								
16 (21)	16 (21)	45 (398)	60 (531)	3400	18000	1FE1092-4WP ■ 1- 1 B R ■	0.00916 (0.0811) ⁹⁾	30 (66.2)
10.5 (14.1)	10.5 (14.1)	50 (443)	35 (310)	2000	10000	1FE1092-4WV ■ 1- 1 B R ■	0.00916 (0.0811) ⁹⁾	30 (66.2)
27.5 (36.9)	27.5 (36.9)	64 (566)	92 (814)	3500	18000	1FE1093-4WM ■ 1- 1 B ■ ■	0.01350 (0.1195) ⁹⁾	41.6 (91.7)
26 (35)	26 (35)	75 (664)	103 (912)	3300	16000	1FE1093-4WN ■ 1- 1 B ■ ■	0.01350 (0.1195) ⁹⁾	41.6 (91.7)
35 (47)	35 (47)	75 (664)	103 (912)	4500	18000	1FE1093-4WH ■ 1- 1 B ■ ■	0.01350 (0.1195) ⁹⁾	41.6 (91.7)
40 (54)	40 (54)	100 (885)	137 (1213)	3800	18000	1FE1094-4WL ■ 1- 1 B ■ ■	0.01808 (0.1600) ⁹⁾	48.5 (107)
46 (62)	46 (62)	100 (885)	137 (1213)	4400	18000	1FE1094-4WK ■ 1- 1 B ■ ■	0.01808 (0.1600) ⁹⁾	48.5 (107)
26 (35)	26 (35)	100 (885)	125 (1106)	2500	13000	1FE1094-4WS ■ 1- 1 B ■ ■	0.01808 (0.1600) ⁹⁾	48.5 (107)
18 (24)	18 (24)	95 (841)	118 (1044)	1800	10000	1FE1094-4WU ■ 1- 1 B ■ ■	0.01808 (0.1600) ⁹⁾	48.5 (107)
46 (62)	46 (62)	125 (1106)	170 (1505)	3500	18000	1FE1095-4WN ■ 1- 1 B ■ ■	0.02242 (0.1984) ⁹⁾	56.8 (125)
52 (70)	52 (70)	150 (1328)	206 (1823)	3300	16000	1FE1096-4WN ■ 1- 1 B ■ ■	0.02700 (0.2390) ⁹⁾	64.2 (142)
38.5 (51.6)	45 (60)	102 (903)	142 (1257)	3600	16000	1FE1103-4WN ■ 1- 1 B A ■	0.01589 (0.1406)	34 (75)
54 (72)	64 (86)	136 (1204)	190 (1682)	3800	16000	1FE1104-4WN ■ 1- 1 B A ■	0.02098 (0.1857)	42.5 (93.7)
53.4 (71.6)	64 (86)	170 (1505)	236 (2089)	3000	16000	1FE1105-4WN ■ 1- 1 B A ■	0.02608 (0.2309)	52 (115)
72.6 (97.3)	85 (114)	204 (1806)	283 (2505)	3400	16000	1FE1106-4WN ■ 1- 1 B A ■	0.03147 (0.2785)	61.5 (136)
62 (83)	66 (89)	204 (1806)	270 (2390)	2900	14000	1FE1106-4WR ■ 1- 1 B A ■	0.03147 (0.2785)	61.5 (136)
56.5 (75.7)	60 (80)	200 (1770)	270 (2390)	2700	12500	1FE1106-4WS ■ 1- 1 B A ■	0.03147 (0.2785)	61.5 (136)
25 (34)	30 (40)	200 (1770)	270 (2390)	1200	6000	1FE1106-4WY ■ 1- 1 B A ■	0.03147 (0.2785)	61.5 (136)
63 (85)	75 (101)	200 (1770)	275 (2434)	3000	14000	1FE1124-4WN ■ 1- 1 B A ■	0.05112 (0.4524)	62.6 (138)
78.5 (105.2)	90 (121)	250 (2213)	345 (3054)	3000	14000	1FE1125-4WN ■ 1- 1 B A ■	0.06337 (0.5608)	76 (168)
65.5 (87.8)	82 (110)	250 (2213)	345 (3054)	2500	12500	1FE1125-4WP ■ 1- 1 B A ■	0.06337 (0.5608)	76 (168)
94 (126)	112 (150) ²⁾	300 (2655)	410 (3629) ²⁾	3000	14000	1FE1126-4WN ■ 1- 1 B A ■	0.07604 (0.6729)	90 (198)
78.5 (105.2)	100 (134) ²⁾	300 (2655)	410 (3629) ²⁾	2500	12500	1FE1126-4WP ■ 1- 1 B A ■	0.07604 (0.6729)	90 (198)
63 (85)	82 (110)	300 (2655)	410 (3629)	2000	10000	1FE1126-4WQ ■ 1- 1 B A ■	0.07604 (0.6729)	90 (198)

- Standard protection: 2 × KTY³⁾
- Full protection: 2 × KTY + 3 × PTC thermistor drilling⁷⁾
- Universal protection³⁾

- Delivery of stator + rotor³⁾⁵⁾⁶⁾

- Stator with cooling jacket³⁾⁴⁾

- Without rotor sleeve
- Without rotor sleeve, $d_i = 80$ mm (3.15 in) for 1FE109.-4W... only

- Free cable ends, 1.5 m (4.92 ft) in length¹⁰⁾
Cable outlet at larger outer diameter of cooling jacket
Cable outlet at smaller outer diameter of cooling jacket (on request)
- Free cable ends, flexible, 0.5 m (1.64 ft) in length (preferred variant)
Cable outlet at larger outer diameter of cooling jacket
Cable outlet at smaller outer diameter of cooling jacket (on request)

S1 = continuous duty
S6 = intermittent duty:
Type 1FE109/1FE110/1FE112: duty cycle time 2 min

1			
3			
5			
	1		
		B	
			A
			R
			0
			1
			2
			3

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 built-in motors, standard type
Water cooling

Motor type (repeated)	Rated current for duty type ¹⁾		Voltage Protection Module	SINAMICS S120 Motor Module	
	I_{rated} S1 A	S6-40 % A		Required rated current I_{rated} S1 A	Booksiz format For additional versions and components, see SINAMICS S120 drive system Order No.
1FE1092-4WP...	41	58	VPM 120	45	6SL312 - 1 TE24-5AA3
1FE1092-4WV...	24	35	VPM 120	30	6SL312 - 1 TE23-0AA3
1FE1093-4WM...	64	92	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1093-4WN...	60	86	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1093-4WH...	83	120	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1094-4WL...	90	130	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1094-4WK...	108	156	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1094-4WS...	60	85	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1094-4WU...	45	64	VPM 120	45	6SL312 - 1 TE24-5AA3
1FE1095-4WN...	108	156	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1096-4WN...	120	173	VPM 120	132	6SL312 - 1 TE31-3AA3
1FE1103-4WN...	84	127	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1104-4WN...	120	181	VPM 200	132	6SL312 - 1 TE31-3AA3
1FE1105-4WN...	120	180	VPM 200	132	6SL312 - 1 TE31-3AA3
1FE1106-4WN...	159	240	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1106-4WR...	128	184	VPM 200	132	6SL312 - 1 TE31-3AA3
1FE1106-4WS...	120	170	VPM 200	132	6SL312 - 1 TE31-3AA3
1FE1106-4WY...	60	85	VPM 120	60	6SL312 - 1 TE26-0AA3
1FE1124-4WN...	135	198	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1125-4WN...	162	240	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1125-4WP...	147	215	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1126-4WN...	200	295 ²⁾	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1126-4WP...	180	265 ²⁾	VPM 200	200	6SL312 - 1 TE32-0AA3
1FE1126-4WQ...	147	215	VPM 200	200	6SL312 - 1 TE32-0AA3

Cooling:	
Internal air cooling	0
External air cooling	1
Motor Module:	
Single Motor Module	1

¹⁾ Data for $\Delta T = 105$ K, special windings on request.

²⁾ Observe limit for Motor Module.

³⁾ Standard scope of supply: Encapsulated winding with 2 x KTY (1 spare).

⁴⁾ Stator without cooling jacket, with impregnated winding on request.

⁵⁾ Ordering spare parts: Stator: 1FE1...-.....-2.W.

⁶⁾ Ordering spare parts: Rotor: 1FE1...-.....-3W..

⁷⁾ Full protection option, application example: Load at motor standstill, external tripping unit required: Order No. 3RN1013-1GW10.

⁸⁾ Universal protection option: Full protection + NTC PT3-51F + NTC K227.

⁹⁾ For moment of inertia for version R without rotor jacket $d_f = 80$ mm (3.15 in), see Configuration Manual.

¹⁰⁾ For cable design, see Configuration Manual