

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors

Water cooling

Selection and Ordering Data

Rated power for duty type in accordance with IEC 60034-1 ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max	1FE1 built-in motors Water cooling Standard type	Moment of inertia Rotor without sleeve ⁸⁾	Weight, approx. (rotor and stator)
P_{rated}		M_{rated}		n_{rated}	n_{max}			
S1	S6-40 %	S1	S6-40 %				J	m
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	rpm	rpm	Order No.	kgm ² (lb _f -in-s ²)	kg (lb)

High-Torque series, 6-pole

7.4 (9.9)	10 (13.4)	4.5 (39.8)	6 (53.1)	15 800	20 000	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)	12 500	18 000	1FE1042-6WN ■ 0- 1 B A ■	0.00033 (0.0029)	6.5 (14.3)
11.5 (15.4)	14.6 (19.6)	11 (97)	14 (124)	10 000	15 000	1FE1042-6WR ■ 0- 1 B A ■	0.00033 (0.0029)	6.5 (14.3)
6.3 (8.5)	7.9 (10.6)	10 (89)	12.6 (112)	6 000	12 000	1FE1051-6WN ■ 0- 1 B ■ ■	0.00106 (0.0094)	5.5 (12.1)
8.3 (11.1)	10.4 (13.9)	10 (89)	12.6 (112)	8 000	15 000	1FE1051-6WK ■ 0- 1 B ■ ■	0.00106 (0.0094)	5.5 (12.1)
11.5 (15.4)	14.5 (19.4)	20 (177)	25.2 (223)	5 500	12 000	1FE1052-6WN ■ 0- 1 B ■ ■	0.00195 (0.0173)	8.2 (18.1)
14 (18.8)	18 (24.1)	18 (159)	23 (204)	7 500	15 000	1FE1052-6WK ■ 0- 1 B ■ ■	0.00195 (0.0173)	8.2 (18.1)
23 (30.8)	29 (38.9)	37 (328)	46 (407)	6 000	12 000	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)	8 500	12 000	1FE1061-6WH ■ 0- 1 B ■ ■	0.00141 (0.0125)	5.5 (12.1)
4 (5.4)	5.3 (7.1)	13 (115)	17 (151)	3 000	5 000	1FE1061-6WY ■ 0- 1 B ■ ■	0.00141 (0.0125)	5.5 (12.1)
25 (33.5)	36.5 (48.9)	56 (496)	81 (717)	4 300	12 000	1FE1064-6WN ■ 1- 1 B A ■	0.00553 (0.0489)	14.5 (32)
20 (26.8)	29 (38.9)	56 (496)	81 (717)	3 400	10 000	1FE1064-6WQ ■ 1- 1 B A ■	0.00553 (0.0489)	14.5 (32)
34 (45.6)	42 (56.3)	65 (575)	81 (717)	5 000	8 500	1FE1082-6WP ■ 0- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)
24.5 (32.8)	30.5 (40.9)	65 (575)	81 (717)	3 600	6 000	1FE1082-6WS ■ 0- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)
29.3 (39.3)	36.5 (48.9)	65 (575)	81 (717)	4 300	9 000	1FE1082-6WQ ■ 1- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)
15 (20.1)	18.7 (25.1)	65 (575)	81 (717)	2 200	9 000	1FE1082-6WW ■ 1- 1 B ■ ■	0.01048 (0.0927)	14 (30.9)
23.1 (31)	31.1 (41.7)	130 (1 151)	175 (1 549)	1 700	7 000	1FE1084-6WU ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)
31 (41.6)	42 (56.3)	130 (1 151)	175 (1 549)	2 300	9 000	1FE1084-6WR ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)
15 (20.1)	19 (25.5)	130 (1 151)	175 (1 549)	1 100	4 500	1FE1084-6WX ■ 1- 1 B ■ ■	0.02067 (0.1829)	30 (66.2)
10 (13.4)	13.2 (17.7)	28 (248)	36 (319)	3 500	7 000	1FE1091-6WN ■ 0- 1 B ■ ■	0.00814 (0.0720)	20 (44.1)
6.3 (8.5)	7.5 (10.1)	30 (266)	36 (319)	2 000	4 000	1FE1091-6WS ■ 0- 1 B ■ ■	0.00814 (0.0720)	20 (44.1)
24.2 (32.4)	31 (41.6)	66 (584)	85 (752)	3 500	7 000	1FE1092-6WN ■ 0- 1 B ■ ■	0.01566 (0.1386)	30.5 (67.3)
22 (29.5)	28 (37.5)	66 (584)	85 (752)	3 200	7 000	1FE1092-6WR ■ 1- 1 B ■ ■	0.0240 (0.2124)	30.5 (67.3)
36.6 (49.1)	47 (63)	100 (885)	128 (1 133)	3 500	7 000	1FE1093-6WN ■ 0- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)
21 (28.2)	27 (36.2)	100 (885)	128 (1 133)	2 000	4 000	1FE1093-6WS ■ 0- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)
16.8 (22.5)	21.5 (28.8)	100 (885)	128 (1 133)	1 600	7 000	1FE1093-6WV ■ 1- 1 B ■ ■	0.02317 (0.2051)	41 (90.4)

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

1
3
5

- Delivery of stator + rotor²⁾⁴⁾⁵⁾

1

- Stator with cooling jacket²⁾³⁾

B

- Without rotor sleeve
- With rotor sleeve, for d^* see dimensions table
- With rotor sleeve, for d^{**} see dimensions table
- With rotor sleeve "-...D." for 1FE1082.../1FE1113-6W... only, see dimensions table
- With rotor sleeve "-...E." for 1FE1113-6W... only, see dimensions table

A
B
C
D
E

- 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)

0
1
2
3

S1 = continuous duty

S6 = intermittent duty:

Sizes 40, 50, 60: duty cycle time 1 min

Sizes 80 to 140: duty cycle time 2 min

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors
Water cooling

Selection and Ordering Data

Motor type (continued)	Rated current for duty type in accordance with IEC 60034-1 ¹⁾		Voltage Protection Module ¹⁰⁾	SINAMICS S120 Motor Module	
	I_{rated}	S6-40 %		Required rated current	Booksize format
	S1	A		I_{rated} S1 to n_{max}	Order No.
	A	A		A	

High-Torque series, 6-pole

1FE1041-6WM...	13	17.5	—	30	6SL312 ■ - 1 TE23-0AA3
1FE1042-6WN...	24	32	—	45	6SL312 ■ - 1 TE24-5AA3
1FE1042-6WR...	19	26	—	45	6SL312 ■ - 1 TE24-5AA3
1FE1051-6WN...	15	22	—	18	6SL312 ■ - 1 TE21-8AA3
1FE1051-6WK...	20	29	—	45	6SL312 ■ - 1 TE24-5AA3
1FE1052-6WN...	30	44	—	30	6SL312 ■ - 1 TE23-0AA3
1FE1052-6WK...	37	54	—	60	6SL312 ■ - 1 TE26-0AA3
1FE1054-6WN...	60	88	—	60	6SL312 ■ - 1 TE26-0AA3
1FE1061-6WH...	21	30	—	30	6SL312 ■ - 1 TE23-0AA3
1FE1061-6WY...	8	11.5	—	9	6SL312 ■ - 1 TE21-0AA3
1FE1064-6WN...	56	80	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1064-6WQ...	43	61	VPM 120	45	6SL312 ■ - 1 TE24-5AA3
1FE1082-6WP...	65	91	—	85	6SL312 ■ - 1 TE28-5AA3
1FE1082-6WS...	45	62	—	45	6SL312 ■ - 1 TE24-5AA3
1FE1082-6WQ...	60	84	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1082-6WW...	30	42	VPM 120	30	6SL312 ■ - 1 TE23-0AA3
1FE1084-6WU...	45	64	VPM 120	45	6SL312 ■ - 1 TE24-5AA3
1FE1084-6WR...	60	84	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1084-6WX...	30	42	VPM 120	30	6SL312 ■ - 1 TE23-0AA3
1FE1091-6WN...	24	35	—	30	6SL312 ■ - 1 TE23-0AA3
1FE1091-6WS...	15	19	—	18	6SL312 ■ - 1 TE21-8AA3
1FE1092-6WN...	58	84	—	60	6SL312 ■ - 1 TE26-0AA3
1FE1092-6WR...	41	58	VPM 120	45	6SL312 ■ - 1 TE24-5AA3
1FE1093-6WN...	83	120	—	85	6SL312 ■ - 1 TE28-5AA3
1FE1093-6WS...	53	76	—	60	6SL312 ■ - 1 TE26-0AA3
1FE1093-6WV...	43	60	VPM 120	45	6SL312 ■ - 1 TE24-5AA3

Cooling:

Internal air cooling
External air cooling

0
1

Motor Module:

Single Motor Module
Double Motor Module

1
2

- 1) Data for $\Delta T = 105 \text{ K}$, 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) For moment of inertia with sleeve, see Configuration Manual.
- 9) For cable design, see Configuration Manual
- 10) Power section with integrated VPM available soon.

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors

Water cooling

Selection and Ordering Data

Rated power for duty type in accordance with IEC 60034-1 ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Water cooling Standard type	Moment of inertia Rotor without sleeve ⁹⁾	Weight, approx. (rotor and stator)
P_{rated}		M_{rated}		n_{rated}	n_{max}			
S1	S6-40 %	S1	S6-40 %					
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	rpm	rpm	Order No.	kgm ² (lb _f -in-s ²)	kg (lb)

High-Torque series, 6-pole

33 (44.2)	35 (46.9)	150 (1 328)	190 (1 682)	2 100	6 500	1FE1113-6WU ■ 1- 1 B ■ ■	0.0650 (0.5752)	57 (126)
22 (29.5)	24 (32.2)	150 (1 328)	190 (1 682)	1 400	5 700	1FE1113-6WX ■ 1- 1 B ■ ■	0.0650 (0.5752)	57 (126)
41.9 (56.2)	53.6 (71.9)	200 (1 770)	256 (2 266)	2 000	6 500	1FE1114-6WR ■ 1- 1 B ■ ■	0.06239 (0.5521)	80 (176)
29.3 (39.3)	37.5 (50.3)	200 (1 770)	256 (2 266)	1 400	6 500	1FE1114-6WT ■ 1- 1 B ■ ■	0.06239 (0.5521)	80 (176)
20.9 (28.0)	26.8 (35.9)	200 (1 770)	256 (2 266)	1 000	6 000	1FE1114-6WW ■ 1- 1 B ■ ■	0.06239 (0.5521)	80 (176)
41.6 (55.8)	45.0 (60.4)	265 (2 345)	340 (3 009)	1 500	6 500	1FE1115-6WT ■ 1- 1 B C ■	0.0780 (0.690)	90 (198)
37.7 (50.5)	48.3 (64.8)	300 (2 655)	384 (3 399)	1 200	6 500	1FE1116-6WR ■ 1- 1 B ■ ■	0.09285 (0.8217)	103 (227)
28.3 (37.9)	36.2 (48.5)	300 (2 655)	384 (3 399)	900	5 500	1FE1116-6WT ■ 1- 1 B ■ ■	0.09285 (0.8217)	103 (227)
22 (29.5)	28 (37.5)	300 (2 655)	384 (3 399)	700	4 000	1FE1116-6WW ■ 1- 1 B ■ ■	0.09285 (0.8217)	103 (227)

High-Torque series, 8-pole

63 (84.5)	80 (107)	430 (3 806)	620 (5 487)	1 400	6 500	1FE1144-8WL ■ 1- 1 B C ■	0.11440 (1.013)	84.5 (186)
104 (139.4)	124 (166) ²⁾	585 (5 188)	795 (7 036) ²⁾	1 700	8 000	1FE1145-8WN ■ 1- 1 B C ■	0.21636 (1.9148)	117 (258)
79.6 (106.7)	96 (129)	585 (5 188)	795 (7 036)	1 300	6 000	1FE1145-8WQ ■ 1- 1 B C ■	0.21636 (1.9148)	117 (258)
67.4 (90.4)	80 (107)	585 (5 188)	795 (7 036)	1 100	5 000	1FE1145-8WS ■ 1- 1 B C ■	0.21636 (1.9148)	117 (258)
103 (138.1)	124 (166) ²⁾	820 (7 258)	1 110 (9 824) ²⁾	1 200	5 500	1FE1147-8WN ■ 1- 1 B C ■	0.28823 (2.5508)	155 (342)
81.6 (109.4)	96 (129)	820 (7 258)	1 110 (9 824)	950	4 200	1FE1147-8WQ ■ 1- 1 B C ■	0.28823 (2.5508)	155 (342)
64.4 (86.3)	80 (107)	820 (7 258)	1 110 (9 824)	750	3 500	1FE1147-8WS ■ 1- 1 B C ■	0.28823 (2.5508)	155 (342)

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

1
3
5

- Delivery of stator + rotor³⁾⁵⁾⁶⁾

1

- Stator with cooling jacket³⁾⁴⁾

B

- Without rotor sleeve
- With rotor sleeve, for d^* see dimensions table
- With rotor sleeve, for d^{**} see dimensions table
- With rotor sleeve "...D." for 1FE1082.../1FE1113-6W... only, see dimensions table
- With rotor sleeve "...E." for 1FE1113-6W... only, see dimensions table

A
B
C
D
E

- 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)

0
1
2
3

S1 = continuous duty
S6 = intermittent duty:
 Sizes 40, 50, 60: duty cycle time 1 min
 Sizes 80 to 140: duty cycle time 2 min

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors
Water cooling

Selection and Ordering Data

Motor type (continued)	Rated current for duty type in accordance with IEC 60034-1 ¹⁾		Voltage Protection Module ¹¹⁾	SINAMICS S120 Motor Module	
	I_{rated}	S6-40 %		Required rated current	Booksize format
	S1			S1	
	A	A		A	Order No.
High-Torque series, 6-pole					
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
High-Torque series, 8-pole					
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				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 power section.

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 with sleeve, see Configuration Manual.

¹⁰⁾ For cable design, see Configuration Manual

¹¹⁾ Power section with integrated VPM available soon.

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors

Water cooling

Selection and Ordering Data

Rated power for duty type in accordance with IEC 60034-1 ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Water cooling Standard type	Moment of inertia of rotor	Weight, approx. (rotor and stator)
P_{rated}		M_{rated}		n_{rated}	n_{max}			
S1	S6-40 %	S1	S6-40 %					
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	rpm	rpm	Order No.	kgm ² (lb _f -in-s ²)	kg (lb)

High-Speed series, 4-pole

12.6 (16.9)	17.6 (23.6)	5 (44.3)	7 (62)	24 000	40 000	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)	9 500	30 000	1FE1051-4WN ■ 1- 1 B A ■	0.00057 (0.005)	4.2 (9.3)
31.4 (42.1)	35 (47)	12 (106)	15.5 (137.2)	25 000	40 000 ⁸⁾	1FE1052-4HD ■ 0- 1 B A ■	0.00087 (0.007)	7.15 (15.77)
23.9 (32.0)	30 (40)	12 (106)	15.5 (137.2)	19 000	40 000 ⁸⁾	1FE1052-4HG ■ 1- 1 B A ■	0.00087 (0.007)	7.15 (15.77)
11 (15)	12 (16)	13 (115)	18 (159)	8 000	30 000	1FE1052-4WN ■ 1- 1 B A ■	0.00110 (0.0097)	7.35 (16.21)
17.5 (23.1)	19 (26)	13 (115)	17 (151)	12 500	30 000	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)	13 500	40 000 ⁸⁾	1FE1053-4HH ■ 1- 1 B A ■	0.00128 (0.0113)	10.2 (22.5)
23 (31)	25 (34)	20 (177)	27 (239)	11 000	30 000	1FE1053-4WJ ■ 1- 1 B A ■	0.00163 (0.0144)	10.5 (23.2)
16.5 (22.1)	18 (24)	20 (177)	27 (239)	7 900	30 000	1FE1053-4WN ■ 1- 1 B A ■	0.00163 (0.0144)	10.5 (23.2)
16 (21)	16 (21)	28 (248)	40 (354)	5 500	24 000	1FE1072-4WN ■ 1- 1 B A ■	0.00287 (0.0254)	11.2 (24.7)
20 (27)	20 (27)	28 (248)	40 (354)	6 800	24 000	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)	9 700	24 000	1FE1072-4WH ■ 1- 1 B A ■	0.00287 (0.0254)	11.2 (24.7)
30 (40)	30 (40)	42 (372)	59 (522)	6 800	24 000	1FE1073-4WN ■ 1- 1 B A ■	0.00430 (0.0381)	16 (35.3)
15 (20)	15 (20)	45 (398)	64 (566)	3 200	14 000	1FE1073-4WT ■ 1- 1 B A ■	0.00430 (0.0381)	16 (35.3)
41 (55)	41 (55)	56 (496)	79 (699)	7 000	20 000	1FE1074-4WN ■ 1- 1 B A ■	0.00573 (0.0507)	21 (46.3)
48 (64)	51 (68)	60 (531)	86 (761)	7 700	20 000	1FE1074-4WM ■ 1- 1 B A ■	0.00573 (0.0507)	21 (46.3)
25.8 (34.6)	28 (38)	60 (531)	85 (752)	4 100	18 000	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)	3 500	20 000	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)	2 000	11 000	1FE1082-4WR ■ 1- 1 B A ■	0.00559 (0.0495)	15.1 (33.3)
28 (38)	28 (38)	63 (558)	83 (735)	4 200	20 000	1FE1083-4WN ■ 1- 1 B A ■	0.00847 (0.0750)	22 (48.5)
38 (51)	38 (51)	84 (744)	110 (974)	4 300	20 000	1FE1084-4WN ■ 1- 1 B A ■	0.01118 (0.0989)	28.5 (62.9)
35 (47)	35 (47)	78 (690)	110 (974)	4 300	20 000	1FE1084-4WP ■ 1- 1 B A ■	0.01118 (0.0989)	28.5 (62.9)
30 (40)	30 (40)	84 (743)	110 (974)	3 400	18 000	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)	3 000	15 000	1FE1084-4WT ■ 1- 1 B A ■	0.01118 (0.0989)	28.5 (62.9)
38 (51)	38 (51)	105 (929)	138 (1 221)	3 500	18 000	1FE1085-4WN ■ 1- 1 B A ■	0.01388 (0.1228)	35 (77.2)
24 (32)	24 (32)	105 (929)	140 (1 239)	2 200	12 000	1FE1085-4WT ■ 1- 1 B A ■	0.01388 (0.1228)	35 (77.2)
33 (44)	33 (44)	105 (929)	140 (1 239)	3 000	16 000	1FE1085-4WQ ■ 1- 1 B A ■	0.01388 (0.1228)	35 (77.2)

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

1
3
5

- Delivery of stator + rotor²⁾⁴⁾⁵⁾

1

- Stator with cooling jacket²⁾³⁾

B

- Without rotor sleeve

A

- 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)

0
1
2
3

S1 = continuous duty
S6 = intermittent duty:
Sizes 40, 50, 60: duty cycle time 1 min
Sizes 80 to 140: duty cycle time 2 min

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors
Water cooling

Selection and Ordering Data

Motor type (continued)	Rated current for duty type in accordance with IEC 60034-1 ¹⁾		Voltage Protection Module ¹⁰⁾	SINAMICS S120 Motor Module	
	I_{rated} S1 A	S6-40 % A		Required rated current I_{rated} S1 to n_{max} A	Booksize format Order No.

High-Speed series, 4-pole

1FE1051-4HC...	25	34.5	–	45	6SL312 ■ - 1 TE24-5AA3
1FE1051-4WN...	12	17	VPM 120	30	6SL312 ■ - 1 TE23-0AA3
1FE1052-4HD...	57	75	–	132	6SL312 ■ - 1 TE31-3AA3
1FE1052-4HG...	44	59	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1052-4WN...	20	26	VPM 120	45	6SL312 ■ - 1 TE24-5AA3
1FE1052-4WK...	30	39	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1053-4HH...	46	63	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1053-4WJ...	36	49	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1053-4WN...	29	38	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1072-4WN...	36	54	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1072-4WL...	45	68	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1072-4WH...	64	96	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1073-4WN...	65	97	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1073-4WT...	30	44	VPM 120	30	6SL312 ■ - 1 TE23-0AA3
1FE1074-4WN...	91	136	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1074-4WM...	97	144	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1074-4WT...	53	77	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1082-4WN...	42	60	VPM 120	45	6SL312 ■ - 1 TE24-5AA3
1FE1082-4WR...	24	34	VPM 120	30	6SL312 ■ - 1 TE23-0AA3
1FE1083-4WN...	77	110	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1084-4WN...	105	150	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1084-4WP...	79	120	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1084-4WQ...	83	119	VPM 120	85	6SL312 ■ - 1 TE28-5AA3
1FE1084-4WT...	60	110	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1085-4WN...	105	150	VPM 120	132	6SL312 ■ - 1 TE31-3AA3
1FE1085-4WT...	60	85	VPM 120	60	6SL312 ■ - 1 TE26-0AA3
1FE1085-4WQ...	85	120	VPM 120	85	6SL312 ■ - 1 TE28-5AA3

Cooling:

Internal air cooling
External air cooling

0
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

¹⁰⁾ Power section with integrated VPM available soon.

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors

Water cooling

Selection and Ordering Data

Rated power for duty type in accordance with IEC 60034-1 ¹⁾		Rated torque ¹⁾		Rated speed	Speed, max.	1FE1 built-in motors Water cooling Standard type	Moment of inertia of rotor	Weight, approx. (rotor and stator)
P_{rated}		M_{rated}		n_{rated}	n_{max}			
S1	S6-40 %	S1	S6-40 %					
kW (HP)	kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	rpm	rpm	Order No.	kgm ² (lb _f -in-s ²)	kg (lb)

High-Speed series, 4-pole

16 (21)	16 (21)	45 (398)	60 (531)	3 400	18 000	1FE1092-4WP ■ 1- 1 B ■ ■	0.00916 (0.0811)	30 (66.2)
10.5 (14.1)	10.5 (14.1)	24 (443)	35 (310)	2 000	10 000	1FE1092-4WV ■ 1- 1 B ■ ■	0.00916 (0.0811)	30 (66.2)
27.5 (36.9)	27.5 (36.9)	64 (310)	92 (814)	3 500	18 000	1FE1093-4WM ■ 1- 1 B ■ ■	0.01694 (0.1499)	43.5 (95.9)
26 (35)	26 (35)	75 (664)	103 (912)	3 300	16 000	1FE1093-4WN ■ 1- 1 B ■ ■	0.01694 (0.1499) ⁹⁾	43.5 (95.9)
35 (47)	35 (47)	75 (664)	103 (912)	4 500	18 000	1FE1093-4WH ■ 1- 1 B ■ ■	0.01694 (0.1499) ⁹⁾	43.5 (95.9)
40 (54)	40 (54)	100 (885)	137 (1 213)	3 800	18 000	1FE1094-4WL ■ 1- 1 B ■ ■	0.02168 (0.1919) ⁹⁾	50.5 (111)
46 (62)	46 (62)	100 (885)	137 (1 213)	4 400	18 000	1FE1094-4WK ■ 1- 1 B ■ ■	0.02168 (0.1919) ⁹⁾	50.5 (111)
26 (35)	26 (35)	100 (885)	125 (1 106)	2 500	13 000	1FE1094-4WS ■ 1- 1 B ■ ■	0.02168 (0.1919) ⁹⁾	50.5 (111)
18 (24)	18 (24)	95 (841)	118 (1 044)	1 800	10 000	1FE1094-4WU ■ 1- 1 B ■ ■	0.02168 (0.1919)	50.5 (111)
46 (62)	46 (62)	125 (1 106)	170 (1 505)	3 500	18 000	1FE1095-4WN ■ 1- 1 B ■ ■	0.02642 (0.2338) ⁹⁾	59 (130)
52 (70)	52 (70)	150 (1 328)	206 (1 823)	3 300	16 000	1FE1096-4WN ■ 1- 1 B ■ ■	0.03140 (0.2779) ⁹⁾	67 (148)
38.5 (51.6)	45 (60)	102 (903)	142 (1 257)	3 600	16 000	1FE1103-4WN ■ 1- 1 B A ■ ■	0.01589 (0.1406)	34 (75)
54 (72)	64 (86)	136 (1 204)	190 (1 682)	3 800	16 000	1FE1104-4WN ■ 1- 1 B A ■ ■	0.02098 (0.1857)	42.5 (93.7)
53.4 (71.6)	64 (86)	170 (1 505)	236 (2 089)	3 000	16 000	1FE1105-4WN ■ 1- 1 B A ■ ■	0.02609 (0.2309)	52 (115)
72.6 (97.3)	85 (114)	204 (1 806)	283 (2 505)	3 400	16 000	1FE1106-4WN ■ 1- 1 B A ■ ■	0.03147 (0.2785)	61.5 (136)
62 (83)	66 (89)	204 (1 806)	270 (2 390)	2 900	14 000	1FE1106-4WR ■ 1- 1 B A ■ ■	0.03147 (0.2785)	61.5 (136)
56.5 (75.7)	60 (80)	200 (1 770)	270 (2 390)	2 700	12 500	1FE1106-4WS ■ 1- 1 B A ■ ■	0.03147 (0.2785)	61.5 (136)
25 (34)	30 (40)	200 (1 770)	270 (2 390)	1 200	6 000	1FE1106-4WY ■ 1- 1 B A ■ ■	0.03147 (0.2785)	61.5 (136)
63 (85)	75 (101)	200 (1 770)	275 (2 434)	3 000	14 000	1FE1124-4WN ■ 1- 1 B A ■ ■	0.05112 (0.4524)	62.6 (138)
78.5 (105.2)	90 (121)	250 (2 213)	345 (3 054)	3 000	14 000	1FE1125-4WN ■ 1- 1 B A ■ ■	0.06337 (0.5608)	76 (168)
65.5 (87.8)	82 (110)	250 (2 213)	345 (3 054)	2 500	12 500	1FE1125-4WP ■ 1- 1 B A ■ ■	0.06337 (0.5608)	76 (168)
94 (126)	112 (150)	300 (2 655)	410 (3 629) ²⁾	3 000	14 000	1FE1126-4WN ■ 1- 1 B A ■ ■	0.07604 (0.6729)	90 (198)
78.5 (105.2)	100 (134)	300 (2 655)	410 (3 629) ²⁾	2 500	12 500	1FE1126-4WP ■ 1- 1 B A ■ ■	0.07604 (0.6729)	90 (198)
63 (85)	82 (110)	300 (2 655)	410 (3 629)	2 000	10 000	1FE1126-4WQ ■ 1- 1 B A ■ ■	0.07604 (0.6729)	90 (198)

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

1
3
5

- Delivery of stator + rotor³⁾⁵⁾⁶⁾

1

- Stator with cooling jacket³⁾⁴⁾

B

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

A
R

- 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)

0
1
2
3

S1 = continuous duty
S6 = intermittent duty:
Sizes 50 and 70: Duty cycle time 1 min
Sizes 80 to 120: duty cycle time 2 min

Synchronous motors

Main spindle motors for SINAMICS S120

1FE1 standard type built-in motors
Water cooling

Selection and Ordering Data

Motor type (continued)	Rated current for duty type in accordance with IEC 60034-1 ¹⁾		Voltage Protection Module ¹¹⁾	SINAMICS S120 Motor Module	
				Required rated current	Booksize format
	I_{rated} S1 A	S6-40 % A		I_{rated} S1 A	Order No.

High-Speed series, 4-pole

1FE1092-4WP...	41	58	VPM 120	45	6SL312 - 1 TE24-5AA3
1FE1092-4WV...	24	25	VPM 120	30	6SL312 - 1 TE23-0AA3
1FE1093-4WM...	64	92	VPM 120	85	6SL312 - 1 TE28-5AA3
1FE1093-4WN...	60	86.4	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
External air cooling

0
1

Motor Module:

Single Motor Module

1

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

²⁾ Observe limit for power section.

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 $d_f = 80 \text{ mm}$ (3.15 in), see Configuration Manual.

¹⁰⁾ For cable design, see Configuration Manual.

¹¹⁾ Power section with integrated VPM available soon.