

Synchronous motors

Feed motors for SIMODRIVE 611

1FK7 Compact motors

Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 Compact synchronous motor Natural cooling	No. of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	$P_{\text{at } \Delta T=100 \text{ K}}$	M_0 at $\Delta T=100 \text{ K}$	M_{rated} at $\Delta T=100 \text{ K}$	I_{rated} at $\Delta T=100 \text{ K}$	Order No.		J	m
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)
2000	100	7.75 (10.39)	48 (425)	37 (328)	16	1FK7105 - 5AC71- 1 ■ ■ ■ ■	4	156 (0.1381)	39 (86.2)
3000	48	0.82 (1.1)	3 (27)	2.6 (23)	1.95	1FK7042 - 5AF71- 1 ■ ■ ■ ■	4	3.01 (0.0027)	4.9 (10.8)
	63	1.48 (1.98)	6 (53)	4.7 (41.6)	3.7	1FK7060 - 5AF71- 1 ■ ■ ■ ■	4	7.95 (0.0070)	7 (15.4)
		2.29 (3.07)	11 (97)	7.3 (64.6)	5.6	1FK7063 - 5AF71- 1 ■ ■ ■ ■	4	15.1 (0.0134)	11.5 (25.4)
	80	2.14 (2.87)	8 (71)	6.8 (60.2)	4.4	1FK7080 - 5AF71- 1 ■ ■ ■ ■	4	15 (0.0133)	10 (22.1)
		3.3 (4.42)	16 (142)	10.5 (92.9)	7.4	1FK7083 - 5AF71- 1 ■ ■ ■ ■	4	27.3 (0.0242)	14 (30.9)
	100	3.77 (5.05)	18 (159)	12 (106.1)	8	1FK7100 - 5AF71- 1 ■ ■ ■ ■	4	55.3 (0.0489)	19 (41.9)
		4.87 (6.53)	27 (238)	15.5 (137.2)	11.8	1FK7101 - 5AF71- 1 ■ ■ ■ ■	4	79.9 (0.0707)	21 (46.3)
		5.37 (7.2) ²⁾	36 (319)	20.5 (181.4) ²⁾	16.5 ²⁾	1FK7103 - 5AF71- 1 ■ ■ ■ ■	4	105 (0.0929)	29 (63.9)
8.17 (10.95)		48 (425)	26 (230)	18	1FK7105 - 5AF71- 1 ■ ■ ■ ■	4	156 (0.1381)	39 (86.2)	
4500	63	1.74 (2.33)	6 (53)	3.7 (32.7)	4.1	1FK7060 - 5AH71- 1 ■ ■ ■ ■	4	7.95 (0.0070)	7 (15.4)
		2.09 (2.8) ³⁾	11 (97)	5 (44.3) ³⁾	6.1 ³⁾	1FK7063 - 5AH71- 1 ■ ■ ■ ■	4	15.1 (0.0134)	11.5 (25.4)
	80	2.39 (3.2) ³⁾	8 (71)	5.7 (50.5) ³⁾	5.6 ³⁾	1FK7080 - 5AH71- 1 ■ ■ ■ ■	4	15 (0.0133)	10 (22.1)
	3.04 (4.8) ⁴⁾	16 (142)	8.3 (73.5) ⁴⁾	9 ⁴⁾	1FK7083 - 5AH71- 1 ■ ■ ■ ■	4	27.3 (0.0242)	14 (30.9)	
6000	20	0.05 (0.07)	0.18 (1.6)	0.08 (0.7)	0.85	1FK7011 - 5AK71- 1 ■ ■ ■ 3	4	0.064 (0.00006)	0.9 (2)
		0.10 (0.13)	0.35 (3.1)	0.16 (1.4)	0.85	1FK7015 - 5AK71- 1 ■ ■ ■ 3	4	0.083 (0.00007)	1.1 (2.4)
	28	0.43 (0.58)	0.85 (7.5)	0.6 (5.3)	1.4	1FK7022 - 5AK71- 1 ■ ■ ■ ■	3	0.28 (0.0002)	1.8 (4)
	36	0.50 (0.67)	1.1 (9.7)	0.8 (7.1)	1.3	1FK7032 - 5AK71- 1 ■ ■ ■ ■	3	0.61 (0.0005)	2.7 (6)
		0.63 (0.84)	1.6 (14.2)	1 (8.9)	1.3	1FK7034 - 5AK71- 1 ■ ■ ■ ■	3	0.9 (0.0008)	3.7 (8.2)
	48	0.69 (0.92)	1.6 (14.2)	1.1 (9.7)	1.7	1FK7040 - 5AK71- 1 ■ ■ ■ ■	4	1.69 (0.0015)	3.5 (7.7)
	1.02 (1.41) ⁵⁾	3 (27)	1.95 (17.3) ⁵⁾	3.1 ⁵⁾	1FK7042 - 5AK71- 1 ■ ■ ■ ■	4	3.01 (0.0027)	4.9 (10.8)	
Encoder systems:			Incremental encoder sin/cos 1 V _{pp} 2048 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution ¹⁾ (not for 1FK701 to 1FK703) Absolute encoder EnDat 512 pulses/revolution ¹⁾ (only for 1FK701 to 1FK703) Basic absolute encoder EnDat 32 pulses/revolution ¹⁾ (not for 1FK701 to 1FK703) Multipole resolver 2-pole resolver				A E H G S T		
Shaft extension:			Rotational accuracy:		Holding brake:		A B G H		
Fitted key and keyway			Tolerance N		without				
Fitted key and keyway			Tolerance N		with				
Plain shaft			Tolerance N		without				
Plain shaft			Tolerance N		with				
Degree of protection:			IP64 (not for 1FK701) IP65 and IP67 drive end flange (not for 1FK701) IP64 (IP54 for 1FK701) and anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish (not for 1FK701) IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor (not for 1FK701)				0 2 3 5 8		

To select the degree of protection and type, see "Selection guide".

Synchronous motors

Feed motors for SIMODRIVE 611

1FK7 Compact motors
Natural cooling

Selection and Ordering Data

Motor type (continued)	Static current I_0 at M_0 $\Delta T = 100$ K A	Calculated power $P_{\text{calc}} =$ $M_0 \times$ $n_{\text{rated}} / 9550$ P_{calc} for M_0 $\Delta T = 100$ K kW (HP)	SIMODRIVE 611 power module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current ⁸⁾ I_{rated} A	Order No.	Power connector Size	Motor cable cross- section ⁷⁾ mm ²	Order No. Pre-assembled cable
1FK7105-5AC71...	20	10 (13.4)	28	For ordering data, see Converter systems	1.5	4x2.5	6FX 002-5 A31 - ...
1FK7042-5AF71...	2.2	0.9 (1.21)	3		1	4x1.5	6FX 002-5 A01 - ...
1FK7060-5AF71...	4.5	1.9 (2.55)	5		1	4x1.5	6FX 002-5 A01 - ...
1FK7063-5AF71...	8	3.5 (4.69)	9		1	4x1.5	6FX 002-5 A01 - ...
1FK7080-5AF71...	4.8	2.5 (3.35)	5		1	4x1.5	6FX 002-5 A01 - ...
1FK7083-5AF71...	10.4	5.0 (6.7)	9 ⁶⁾		1	4 x 1.5	6FX 002-5 A01 - ...
1FK7100-5AF71...	11.2	5.7 (7.64)	18		1	4x1.5	6FX 002-5 A01 - ...
1FK7101-5AF71...	19	8.5 (11.39)	18 ⁶⁾		1.5	4x2.5	6FX 002-5 A31 - ...
1FK7103-5AF71...	27.5	11.3 (15.15)	28		1.5	4x4	6FX 002-5 A41 - ...
1FK7105-5AF71...	31	15 (20.11)	28 ⁶⁾		1.5	4x10	6FX 002-5 A61 - ...
1FK7060-5AH71...	6.2	2.8 (3.75)	9		1	4x1.5	6FX 002-5 A01 - ...
1FK7063-5AH71...	12	5.2 (6.97)	18		1	4x1.5	6FX 002-5 A01 - ...
1FK7080-5AH71...	7.4	3.8 (5.09)	9		1	4x1.5	6FX 002-5 A01 - ...
1FK7083-5AH71...	15	7.5 (10.05)	18		1	4x1.5	6FX 002-5 A01 - ...
1FK7011-5AK71...	1.5	0.11	3		0.5	4x1.5	6FX5002 - 5DA30 - ...
1FK7015-5AK71...	1.5	0.22	3		0.5	4x1.5	6FX5002 - 5DA30 - ...
1FK7022-5AK71...	1.8	0.5	3		1	4x1.5	6FX 002-5 A01 - ...
1FK7032-5AK71...	1.7	0.7 (0.94)	3		1	4x1.5	6FX 002-5 A01 - ...
1FK7034-5AK71...	1.9	1 (1.34)	3		1	4x1.5	6FX 002-5 A01 - ...
1FK7040-5AK71...	2.25	1 (1.34)	3		1	4x1.5	6FX 002-5 A01 - ...
1FK7042-5AK71...	4.4	1.9 (2.55)	5		1	4x1.5	6FX 002-5 A01 - ...

Type of power cable:

MOTION-CONNECT 800

MOTION-CONNECT 700 (only with brake cores)

MOTION-CONNECT 500

MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm²)

8	0
7	0
5	0
5	1

Without brake cores

With brake cores

C
D

For length code as well as power and signal cables, see MOTION-CONNECT connection system.

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¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ These values refer to $n = 2500$ rpm.

³⁾ These values refer to $n = 4000$ rpm.

⁴⁾ These values refer to $n = 3500$ rpm.

⁵⁾ These values refer to $n = 5000$ rpm.

⁶⁾ With the specified power module, the motor cannot be fully utilized at M_0 at $\Delta T = 100$ K winding temperature rise. If a power module with a higher rating is used, you must check whether the specified power cable can be connected to it.

⁷⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁸⁾ For the default setting of pulse frequency.

Synchronous motors

Feed motors for SIMODRIVE 611

1FK7 High Dynamic motors Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque ¹⁾	Rated current	1FK7 High Dynamic synchronous motor Natural cooling	No. of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at $\Delta T=100\text{ K}$	T_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	Order No.		J	m
rpm		kW (HP)	Nm (lb _f -in)	Nm (lb _f -in)	A			10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)
3000	48	1.1 (1.5)	4 (35)	3.5 (31)	4	1FK7044 - 7AF71- 1 ■ ■ ■	3	1.28 (0.0011)	7.7 (17)
	63	1.7 (2.3)	6.4 (56.6)	5.4 (47.8)	5.3	1FK7061 - 7AF71- 1 ■ ■ ■	3	3.4 (0.0030)	10 (22.1)
		2.51 (3.36)	12 (106)	8 (71)	7.5	1FK7064 - 7AF71- 1 ■ ■ ■	3	6.5 (0.0058)	15.5 (34.2)
	80	3.14 (4.21) ²⁾	22 (195)	12 (106) ²⁾	12.5 ²⁾	1FK7085 - 7AF71- 1 ■ ■ ■	4	23 (0.0204)	23.5 (51.8)
		3.77 (5.05) ³⁾	28 (248)	18 (159) ³⁾	14.5 ³⁾	1FK7086 - 7AF71- 1 ■ ■ ■	4	23 (0.0204)	23.5 (51.8)
4500	48	1.23 (1.65)	3.1 (27.4)	2.6 (23)	4	1FK7043 - 7AH71- 1 ■ ■ ■	3	1 (0.0009)	6.3 (13.9)
		1.41 (1.53)	4 (35)	3 (27)	4.9	1FK7044 - 7AH71- 1 ■ ■ ■	3	1.28 (0.0011)	7.7 (17)
	63	2.03 (2.72)	6.4 (56.6)	4.3 (38.1)	5.9	1FK7061 - 7AH71- 1 ■ ■ ■	3	3.4 (0.0030)	10 (22.1)
		2.36 (3.16)	12 (106)	5 (44)	7	1FK7064 - 7AH71- 1 ■ ■ ■	3	6.5 (0.0058)	15.5 (34.2)
6000	36	0.57 (0.76)	1.3 (11.5)	0.9 (8)	1.5	1FK7033 - 7AK71- 1 ■ ■ ■	3	0.27 (0.0002)	3.1 (6.8)
	48	1.26 (1.69)	3.1 (27.4)	2 (17.7)	4.4	1FK7043 - 7AK71- 1 ■ ■ ■	3	1 (0.0009)	6.3 (13.9)
Encoder systems:			Incremental encoder sin/cos 1 V _{pp} 2048 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution ¹⁾ (not for 1FK703) Absolute encoder EnDat 512 pulses/revolution ¹⁾ (only for 1FK703) Basic absolute encoder EnDat 32 pulses/revolution ¹⁾ (not for 1FK703) Multipole resolver 2-pole resolver				A E H G S T		
Shaft extension: Fitted key and keyway Fitted key and keyway Plain shaft Plain shaft			Rotational accuracy: Tolerance N Tolerance N Tolerance N Tolerance N		Holding brake: without with without with		A B G H		
Degree of protection:			IP64 IP65 and IP67 drive end flange IP64 and anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish IP65 and IP67 drive end flange, anthracite paint finish and metal rating plate on motor				0 2 3 5 8		

To select the degree of protection and type, see "Selection guide".

Synchronous motors

Feed motors for SIMODRIVE 611

1FK7 High Dynamic motors
Natural cooling

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power $P_{\text{calc}} =$ $M_0 \times$ $n_{\text{rated}}/9550$	SIMODRIVE 611 power module		Power cable with complete shield Motor connection (and brake connection) via power connector		
	I_0 at M_0 $\Delta T=100$ K	P_{calc} for M_0 $\Delta T=100$ K	Rated output current ⁵⁾	Order No.	Power connector	Motor cable cross- section ⁴⁾	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm ²	
1FK7044-7AF71...	4.5	1.3 (1.7)	5	For ordering data, see "Converter systems"	1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7061-7AF71...	6.1	2.0 (2.7)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7064-7AF71...	11	3.8 (5.1)	18		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7085-7AF71...	22.5	6.9 (9.3)	28		1.5	4 x 4	6FX ■ ■ 02- 5 ■ A41 - ...
1FK7086-7AF71...	21	8.8 (11.8)	28		1.5	4 x 4	6FX ■ ■ 02- 5 ■ A41 - ...
1FK7043-7AH71...	4.5	1.5 (2.0)	5		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7044-7AH71...	6.3	1.9 (2.6)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7061-7AH71...	8	3.0 (4.0)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7064-7AH71...	15	5.7 (7.6)	18		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7033-7AK71...	2.2	0.8 (1.1)	3		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
1FK7043-7AK71...	6.4	1.9 (2.6)	9		1	4 x 1.5	6FX ■ ■ 02- 5 ■ A01 - ...
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 700 (only with brake cores) MOTION-CONNECT 500 MOTION-CONNECT 500 PLUS (only up to a cross-section of 6 mm ²)							8 0 7 0 5 0 5 1
Without brake cores							C
With brake cores							D
For length code as well as power and signal cables, see "MOTION-CONNECT connection system".							

¹⁾ If the absolute encoder is used, M_{rated} is reduced by 10%.

²⁾ These values refer to $n = 2500$ rpm.

³⁾ These values refer to $n = 2000$ rpm.

⁴⁾ The current carrying capacity of the power cables complies with IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

⁵⁾ For the default setting of pulse frequency.