

Servo Motors for SIMOVERT MASTERDRIVES

Synchronous Servo Motors

1FK7 Motors Compact, Core Type
Natural cooling

Selection and Ordering Data

Rated Rotational Speed	Shaft Height	Rated Output	Rated Torque ¹⁾	Rated Current	Standstill Torque	1FK7 Synchronous Motors Compact Natural cooling	Pole Pair Number	Rotor Moment of Inertia (w/o Brake)	Weight (without Brake)
n_{rated}		P_{rated} at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	Order No. Core Type		J	
rpm	SH	kW (HP)	Nm (lb _f -in)	A	Nm (lb _f -in)			10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)
2000	100	7.75 (10.39)	37 (327.5)	16	48 (424.8)	1FK7 105 – 5AC71 – 1 ■■■■	4	156 (0.1381)	39 (85)
3000	48	0.82 (1.1)	2.6 (23)	1.95	3 (26.6)	1FK7 042 – 5AF71 – 1 ■■■■	4	3.01 (0.0027)	4.9 (10.8)
	63	1.48 (1.98)	4.7 (41.6)	3.7	6 (53.1)	1FK7 060 – 5AF71 – 1 ■■■■	4	7.95 (0.0070)	7 (15.4)
		2.29 (3.07)	7.3 (64.6)	5.6	11 (97.4)	1FK7 063 – 5AF71 – 1 ■■■■	4	15.1 (0.0134)	11.5 (25.4)
	80	2.14 (2.87)	6.8 (60.2)	4.4	8 (70.8)	1FK7 080 – 5AF71 – 1 ■■■■	4	15 (0.0133)	10 (22.1)
		3.3 (4.42)	10.5 (92.9)	7.4	16 (141.6)	1FK7 083 – 5AF71 – 1 ■■■■	4	27.3 (0.0242)	14 (30.9)
	100	3.77 (5.05)	12 (106.1)	8	18 (159.3)	1FK7 100 – 5AF71 – 1 ■■■■	4	55.3 (0.0489)	19 (41.9)
		4.87 (6.53)	15.5 (137.2)	11.8	27 (238)	1FK7 101 – 5AF71 – 1 ■■■■	4	79.9 (0.0707)	21 (46.3)
		5.37 ⁴⁾ (7.2 ⁴⁾)	20.5 ⁴⁾ (181.4 ⁴⁾)	16.5 ⁴⁾	36 (318.6)	1FK7 103 – 5AF71 – 1 ■■■■	4	105 (0.0929)	29 (63.9)
		8.17 (10.95)	26 (230.1)	18	48 (424.8)	1FK7 105 – 5AF71 – 1 ■■■■	4	156 (0.1381)	39 (85)
4500	63	1.74 (2.33)	3.7 (32.7)	4.1	6 (53.1)	1FK7 060 – 5AH71 – 1 ■■■■	4	7.95 (0.0070)	7 (15.4)
		2.09 ⁵⁾ (2.8 ⁵⁾)	5 ⁵⁾ (44.3 ⁵⁾)	6.1 ⁵⁾	11 (97.4)	1FK7 063 – 5AH71 – 1 ■■■■	4	15.1 (0.0134)	11.5 (25.4)
	80	2.39 ⁵⁾ (3.2 ⁵⁾)	5.7 ⁵⁾ (50.5 ⁵⁾)	5.6 ⁵⁾	8 (70.8)	1FK7 080 – 5AH71 – 1 ■■■■	4	15 (0.0133)	10 (22.1)
		3.04 ⁶⁾ (4.08 ⁶⁾)	8.3 ⁶⁾ (73.5 ⁶⁾)	9 ⁶⁾	16 (141.6)	1FK7 083 – 5AH71 – 1 ■■■■	4	27.3 (0.0242)	14 (30.9)
6000	28	0.4 (0.54)	0.6 (5.3)	1.4	0.85 (7.5)	1FK7 022 – 5AK71 – 1 ■■■■	3	0.28 (0.0002)	1.8 (4)
	36	0.47 (0.63)	0.8 (7.1)	1.4	1.1 (9.7)	1FK7 032 – 5AK71 – 1 ■■■■	3	0.61 (0.0005)	2.7 (6)
	48	0.69 (0.92)	1.1 (9.7)	1.7	1.6 (14.2)	1FK7 040 – 5AK71 – 1 ■■■■	4	1.69 (0.0015)	3.5 (7.7)
		1.05 ⁷⁾ (1.41 ⁷⁾)	2 ⁷⁾ (17.7 ⁷⁾)	3.1 ⁷⁾	3 (26.6)	1FK7 042 – 5AK71 – 1 ■■■■	4	3.01 (0.0027)	4.9 (10.8)

• Encoder systems:

Incremental encoder sin/cos 1 V_{pp}
Absolute encoder EnDat 2,048 pulses/rev ^{1) 2)}
Absolute encoder EnDat 512 pulses/rev ^{1) 3)}
Simple absolute encoder EnDat 32 pulses/rev ^{1) 2)}
Multipole resolver
2-pole resolver

A
E
H
G
S
T

• Shaft end:

With key and keyway
With key and keyway
Keyless shaft
Keyless shaft

• Radial eccentricity tol.:

N
N
N
N

• Holding brake:

No
Yes
No
Yes

A
B
G
H

• Degree of protection:

IP64
IP65 and also IP67 drive-end flange
IP64, anthracite gray finish
IP65 and also IP67 drive-end flange, anthracite gray finish

0
2
3
5

• Special models:
Please specify option code; refer to page 2/3.

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Servo Motors for SIMOVERT MASTERDRIVES

Synchronous Servo Motors

1FK7 Motors Compact, Core Type
Natural cooling

Selection and Ordering Data

Motor Type (continued)	Standstill Current I_0 at $\Delta T=100\text{ K}$ A	SIMOVERT MASTERDRIVES MC Inverter/Converter Rated Current		Power Cable with Complete Shield Motor Connection (with Brake Connection) via Power Connector		
		I_{rated} A	Order No. Inverter Converter	Power Connector Size	Cable Cross-section Motor ⁸⁾ mm ²	Order No. Pre-Assembled Cable
1FK7 105 – 5AC71 – 1...	20	25.5 20.5	6SE7 022 – 6TP ■ 0 6SE7 022 – 1EP ■ 0	1.5	4 x 2.5	6FX ■ 002 – 5 ■ A31 – . . . 0
1FK7 042 – 5AF71 – 1...	2.2	4.0 3.0	6SE7 014 – 0TP ■ 0 6SE7 013 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 060 – 5AF71 – 1...	4.5	6.1 5.0	6SE7 016 – 0TP ■ 0 6SE7 015 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 063 – 5AF71 – 1...	8	10.2 8.0	6SE7 021 – 0TP ■ 0 6SE7 018 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 080 – 5AF71 – 1...	4.8	6.1 5.0	6SE7 016 – 0TP ■ 0 6SE7 015 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 083 – 5AF71 – 1...	10.4	13.2 10.0	6SE7 021 – 3TP ■ 0 6SE7 021 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 100 – 5AF71 – 1...	11.2	13.2 14.0	6SE7 021 – 3TP ■ 0 6SE7 021 – 4EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 101 – 5AF71 – 1...	19	25.5 20.5	6SE7 022 – 6TP ■ 0 6SE7 022 – 1EP ■ 0	1.5	4 x 2.5	6FX ■ 002 – 5 ■ A31 – . . . 0
1FK7 103 – 5AF71 – 1...	27.5	34.0 34.0	6SE7 023 – 4TP ■ 0 6SE7 023 – 4EP ■ 0	1.5	4 x 4.0	6FX ■ 002 – 5 ■ A41 – . . . 0
1FK7 105 – 5AF71 – 1...	31	34.0 34.0	6SE7 023 – 4TP ■ 0 6SE7 023 – 4EP ■ 0	1.5	4 x 10	6FX ■ 002 – 5 ■ A61 – . . . 0
1FK7 060 – 5AH71 – 1...	6.2	6.1 8.0	6SE7 016 – 0TP ■ 0 6SE7 018 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 063 – 5AH71 – 1...	12	13.2 14.0	6SE7 021 – 3TP ■ 0 6SE7 021 – 4EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 080 – 5AH71 – 1...	7.4	10.2 8.0	6SE7 021 – 0TP ■ 0 6SE7 018 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 083 – 5AH71 – 1...	15	17.5 20.5	6SE7 021 – 8TP ■ 0 6SE7 022 – 1EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 022 – 5AK71 – 1...	1.8	2.0 3.0	6SE7 012 – 0TP ■ 0 6SE7 013 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 032 – 5AK71 – 1...	1.7	2.0 1.5	6SE7 012 – 0TP ■ 0 6SE7 011 – 5EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 040 – 5AK71 – 1	2.25	4.0 3.0	6SE7 014 – 0TP ■ 0 6SE7 013 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0
1FK7 042 – 5AK71 – 1...	4.4	6.1 5.0	6SE7 016 – 0TP ■ 0 6SE7 015 – 0EP ■ 0	1	4 x 1.5	6FX ■ 002 – 5 ■ A01 – . . . 0

- SIMOVERT MASTERDRIVES Motion Control
- SIMOVERT MASTERDRIVES Motion Control Performance 2

5
7

Power Cable Model

- MOTION-CONNECT 800
- MOTION-CONNECT 500

8
5

- Without brake cable
- With brake cable

C
D

For information about length codes and signal cables, see “MOTION-CONNECT Connection System”, Part 5.

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

2) Not available with 1FK702 and 1FK703

3) Only available with 1FK702 and 1FK703

4) Rated power/current refers to $n = 2500\text{ rpm}$.

5) Rated power/current refers to $n = 4000\text{ rpm}$.

6) Rated power/current refers to $n = 3500\text{ rpm}$.
- 7) Rated power/current refers to $n = 5000\text{ rpm}$.

8) The current carrying capacity of the power cables corresponds to IEC 60204-1 for Routing Type C under continuous duty conditions at an ambient air temperature of $+40\text{ °C}$ ($+104\text{ °F}$), designed for I_0 (100 K) PVC/PUR insulated cable.

Servo Motors for SIMOVERT MASTERDRIVES

Synchronous Servo Motors

1FK7 High Dynamic Motors, Core Type

Natural cooling

Selection and Ordering Data

Rated Rotational Speed	Shaft Height	Rated Output	Rated Torque ¹⁾	Rated Current	Standstill Torque	1FK7 High Dynamic Synchronous Motors Natural cooling	Pole Pair Number	Rotor Moment of Inertia (w/o Brake)	Weight (without Brake)
n_{rated}		P_{rated} at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	Order No. Core Type		J	
rpm	SH	kW (HP)	Nm (lb _f -in)	A	Nm (lb _f -in)			10 ⁻⁴ kgm ² (lb _f -in-s ²)	kg (lb)
3000	48	1.1 (1.47)	3.5 (31)	4	4 (35.4)	1FK7 044 – 7AF71 – 1 ■■■■	3	1.28 (0.0011)	7.7 (17)
	63	1.7 (2.29)	5.4 (47.8)	5.3	6.4 (56.6)	1FK7 061 – 7AF71 – 1 ■■■■	3	3.4 (0.0030)	10 (22.1)
		2.51 (3.36)	8 (70.8)	7.5	12 (106.2)	1FK7 064 – 7AF71 – 1 ■■■■	3	6.5 (0.0058)	15.5 (34.2)
	80	2.51 (3.36)	8 (70.8)	6.7	14 (123.9)	1FK7 082 – 7AF71 – 1 ■■■■	4	14 (0.0124)	17.2 (37.9)
		3.14 ²⁾ (4.21) ²⁾	12 ²⁾ (106.2) ²⁾	12.5 ²⁾	22 (194.7)	1FK7 085 – 7AF71 – 1 ■■■■	4	23 (0.0204)	23.5 (51.8)
4500	48	1.23 (1.65)	2.6 (23)	4	3.1 (27.4)	1FK7 043 – 7AH71 – 1 ■■■■	3	1 (0.0009)	6.7 (14.8)
		1.41 (1.53)	3 (26.6)	4.9	4 (35.4)	1FK7 044 – 7AH71 – 1 ■■■■	3	1.28 (0.0011)	7.7 (17)
	63	2.03 (2.72)	4.3 (38.1)	5.9	6.4 (56.6)	1FK7 061 – 7AH71 – 1 ■■■■	3	3.4 (0.0030)	10 (22.1)
		2.36 (3.16)	5 (44.3)	7	12 (106.2)	1FK7 064 – 7AH71 – 1 ■■■■	3	6.5 (0.0058)	15.5 (34.2)
6000	36	0.57 (0.76)	0.9 (8)	1.5	1.3 (11.5)	1FK7 033 – 7AK71 – 1 ■■■■	3	0.27 (0.0002)	3.1 (6.8)
	48	1.26 (1.69)	2 (17.7)	4.4	3.1 (27.4)	1FK7 043 – 7AK71 – 1 ■■■■	3	1 (0.0009)	6.3 (13.9)

• Encoder systems:		Incremental encoder sin/cos 1 V _{pp} Absolute encoder EnDat 2,048 pulses/rev ^{1) 3)} Absolute encoder EnDat 512 pulses/rev ^{1) 4)} Simple absolute encoder EnDat 32 pulses/rev ^{1) 3)} Multipole resolver 2-pole resolver	A E H G S T
• Shaft end: With key and keyway With key and keyway Keyless shaft Keyless shaft		• Tolerance: N N N N	A B G H
• Holding brake:		No Yes No Yes	
• Degree of protection:		IP64 IP65 and also IP67 drive-end flange IP64, anthracite gray finish IP65 and also IP67 drive-end flange, anthracite gray finish	0 2 3 5
• Special models: Please specify option code; refer to page 2/3.			–Z

Servo Motors for SIMOVERT MASTERDRIVES

Synchronous Servo Motors

1FK7 High Dynamic Motors, Core Type

Natural cooling

Selection and Ordering Data

Motor Type (continued)	Standstill Current	SIMOVERT MASTERDRIVES MC Inverter/Converter Rated Current		Power Cable with Complete Shield Motor Connection (with Brake Connection) via Power Connector		
	I_0 at $\Delta T=100\text{ K}$	I_{rated}	Order No. Inverter Converter	Power Connector	Cable Cross-section Motor ⁵⁾	Order No. Pre-Assembled Cable
	A	A		Size	mm ²	
1FK7 044 – 7AF71 – 1...	4.5	6.1 5.0	6SE7 016 – 0TP  0 6SE7 015 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 061 – 7AF71 – 1...	6.1	6.1 8.0	6SE7 016 – 0TP  0 6SE7 018 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 064 – 7AF71 – 1...	11	13.2 14	6SE7 021 – 3TP  0 6SE7 021 – 4EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 082 – 7AF71 – 1...	10.6	13.2 14	6SE7 021 – 3TP  0 6SE7 021 – 4EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 085 – 7AF71 – 1...	22.5	25.5 27	6SE7 022 – 6TP  0 6SE7 022 – 7EP  0	1.5	4 x 4	6FX  002 – 5  A41 – . . . 0
1FK7 043 – 7AH71 – 1...	4.5	6.1 5.0	6SE7 016 – 0TP  0 6SE7 015 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 044 – 7AH71 – 1...	6.3	10.2 8.0	6SE7 021 – 0TP  0 6SE7 018 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 061 – 7AH71 – 1...	8	10.2 8.0	6SE7 021 – 0TP  0 6SE7 018 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 064 – 7AH71 – 1...	15	17.5 20.5	6SE7 021 – 8TP  0 6SE7 022 – 1EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 033 – 7AK71 – 1...	2.2	4.0 3.0	6SE7 014 – 0TP  0 6SE7 013 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
1FK7 043 – 7AK71 – 1...	6.4	10.2 8.0	6SE7 021 – 0TP  0 6SE7 018 – 0EP  0	1	4 x 1.5	6FX  002 – 5  A01 – . . . 0
• SIMOVERT MASTERDRIVES Motion Control				5		
• SIMOVERT MASTERDRIVES Motion Control Performance 2				7		
Power Cable Model						
• MOTION-CONNECT 800						8
• MOTION-CONNECT 500						5
For information about signal cables, see “MOTION-CONNECT connection system.”						
• Without brake cable						C D
• With brake cable						

For information about length codes and signal cables, see “MOTION-CONNECT Connection System”, Part 5.

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

2) Rated power/current refers to $n = 2500\text{ rpm}$.

3) Not available with 1FK703

4) Only available with 1FK703

5) The current carrying capacity of the power cables corresponds to IEC 60204-1 for Routing Type C under continuous duty conditions at an ambient air temperature of +40 °C (+104 °F), designed for I_0 (100 K) PVC/PUR insulated cable.