1FT6 motors

Overview

1FT6 motors are permanent-magnet synchronous motors with compact dimensions.

1FT6 motors with integrated encoders can be operated on the SINAMICS drive system.

The fully digital control of the SINAMICS S120 drive system and the encoder technology of the 1FT6 motors fulfill the highest demands in terms of dynamic performance, speed setting range, and rotational and positioning accuracy.

1FT6 motors are available with natural cooling, forced ventilation or also with water cooling. With the natural cooling method, heat is dissipated through the surface of the motor, whereas with the forced ventilation method, heat is forced out by means of built-on fans. Maximum power ratings, as well as a high degree of protection, can be achieved using water cooling.

Benefits

- Optimum surface quality at the workpiece thanks to highest smooth running characteristics degree of radial eccentricity (sinusoidal current injection)
- Minimized downtime due to high dynamic performance
- Power and signal connections for use in highly contaminative environments
- High resistance to cantilever force
- High thermal reserves for continuous or overload applications
- High overload capability (250 ms)
- Extremely high efficiency
- Extremely good drive dynamic response due to low rotor moments of inertia
- Low torque ripple (mean value 1 %)
- High degree of protection

Applications

- High-performance machine tools
- Machines with stringent requirements in terms of dynamic response, precision and flexibility, e.g. packaging machines, cross cutters, converting machines, material handling and printing machines.

Technical specifications

Type of motor	Permanent-magnet synchronous motor
Magnet material	Rare-earth magnet material
Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 155 (F) for a winding temperature rise of ΔT = 100 K at an ambient temperature of +40 °C (104 °F) For water cooling max. inlet temperature 30 °C (86 °F) Avoid condensation.
Cooling	Natural cooling, forced ventilation and water cooling
Temperature monitoring	KTY84 temperature sensor in the stator winding
Type in accordance with EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3) IM B14 (IM V18, IM V19) IM B35 for 1FT613/1FT616
Degree of protection in accordance with EN 60034-5 (IEC 60034-5)	IP64 standard type, IP65 core type
Shaft extension on the drive end in accordance with DIN 748-3 (IEC 60072-1)	Plain shaft
Shaft and flange accuracy [1] **in accordance with DIN 42955 (IEC 60072-1)**	Tolerance N
Vibration magnitude in accordance with EN 60034-14 (IEC 60034-14)	Level A (maintained up to rated speed)
Max. sound pressure level L_{pA} (1 m (3.28 ft)) in accordance with EN ISO 1680	
• Motors with natural/water cooling	
- 1FT602 to 1FT604	55 dB
- 1FT606 to 1FT616	70 dB
• Motors with forced ventilation	
- 1FT608/1FT610	70 dB
- 1FT613/1FT616	74 dB

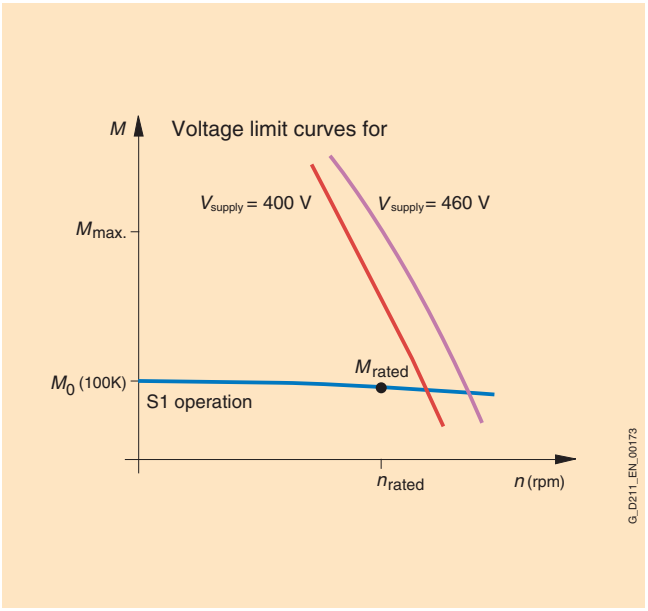
Built-in encoder systems for motors without DRIVE-CLiQ interface	• Incremental encoder sin/cos 1 V_{pp} 2048 S/R • Absolute encoder, multi-turn (traversing range 4096 revolutions) with EnDat interface: - 2048 S/R for 1FT603 to 1FT616 - 512 S/R for 1FT602 • Multi-pole resolver (number of poles corresponds to number of pole pairs of the motor) • 2-pole resolver
Built-in encoder systems for motors with DRIVE-CLiQ interface	• 22 bit incremental encoder (2048 S/R internal) • Absolute encoder: - 22 bit single-turn (2048 S/R internal) +12 bit multi-turn (traversing range 4096 revolutions) for 1FT603 to 1FT616 - 20 bit single-turn (512 S/R internal) +12 bit multi-turn (traversing range 4096 revolutions) for 1FT602 • 15 bit resolver • 14 bit resolver
Connection	Connectors for signals and power for 1FT602 to 1FT613 Terminal boxes for 1FT616
Paint finish	Anthracite RAL 7016
2nd rating plate	Enclosed separately
Options	• Shaft extension on the drive end with fitted key and keyway (half-key balancing) • Vibration magnitude Grade R • Built-in holding brake • Degree of protection IP67, IP68 M5 sealing air connection present (except with forced ventilation) • Terminal boxes for power connections for 1FT610 to 1FT613 • Planetary gearboxes, built-on (requirement: Plain shaft extension, shaft and flange accuracy tolerance N, vibration magnitude grade A, and IP65 degree of protection) for 1FT602 to 1FT613

S/R = signals/revolution

[1] Shaft extension run-out, concentricity of centering ring and shaft, and perpendicularity of flange to shaft.

1FT6 motors

Characteristics



Speed-torque characteristic

More information

Core types can be supplied for certain motor types. These core types can be express delivered as replacement motors in the event of plant outages and offer the advantage of a quicker spare parts supply. For this reason, core types should be used for configuration wherever possible.

The selection and ordering data for Motor Modules are based on the Booksize format by way of example. The formats Booksize Compact, Blocksize or Chassis are also possible.
Detailed engineering is performed with the SIZER engineering tool.

Options

Order code	Option description	1FT6 Natural cooling	Forced ventilation	Water cooling
K09	Terminal box on right-hand side	–	■ (SH 160)	■ (SH 132 and SH 160)
K10	Terminal box on left-hand side	–	■ (SH 160)	■ (SH 132 and SH 160)
L68	Full-key balancing	–	■ (SH 132 and SH 160)	■ (SH 132 and SH 160)
M03	Version for Zone 2 hazardous areas (according to IEC EN 60079-15)	■ (up to SH 100)	–	■ (SH 63 to SH 100)
M39	Version for Zone 22 hazardous areas (according to EN 50281)	■ (up to SH 100)	–	■ (SH 63 to SH 100)
N05	Non-standard shaft extension (dimensions as for 1FT5 motors)	■ (SH 36 to SH 100)	–	–
N40	Food grade design	■ (SH 63 to SH 100)	–	■ (SH 63 to SH 100)
X01	Jet black finish RAL 9005	■	■	■
X02	Cream finish RAL 9001	■	■	■
X03	Reseda green finish RAL 6011	■	■	■
X04	Pebble gray finish RAL 7032	■	■	■
X05	Sky blue finish RAL 5015	■	■	■
X06	Light ivory finish RAL 1015	■	■	■

■ Option available
– Not available

Options

M03
Version for Zone 2 hazardous areas (according to IEC EN 60079-15)

Combustible or explosive gases or vapors occur only rarely or briefly in Zone 2 areas. The type of protection designation is EEx nA II ("non sparking").

The special conditions for operating 1FT6 motors in Zone 2 areas, in particular the reduction in permissible operating speeds, are described in detail in Appendix 610.40061.01 to the EC Declaration of Conformity 664.20023.21.

M39
Version for Zone 22 hazardous areas (according to IEC EN 61241-1)

Combustible or potentially explosive dust (non-conductive dust) occurs only rarely or briefly in Zone 22 areas The type of protection designation is Ex 3D T 150 °C (302 °F).

The special conditions for operating 1FT6 motors in Zone 22 areas are described in detail in Appendix 610.40070.01 to the EC Declaration of Conformity 664.20030.21.

Note regarding M03 and M39 options:

When used in Zone 2 or Zone 22, 1FT6 motors are only designed for encoder connection through connectors. A version with a DRIVE-CLiQ interface on the motor is not possible. Connection to SINAMICS S120 is only possible via SMC (Sensor Module Cabinet-Mounted).

N05
Non-standard shaft extension (dimensions as for 1FT5 motors)

1FT6 motors are shipped with the following shaft dimensions that are compatible with 1FT5 motors:

- SH 36: 11 x 23 mm (0.43 x 0.91 in)
- SH 48: 14 x 30 mm (0.55 x 1.18 in)
- SH 63: 19 x 40 mm (0.75 x 1.57 in)
- SH 80: 24 x 50 mm (0.94 x 1.97 in)
- SH 100: 32 x 58 mm (1.26 x 2.28 in)

Note:

1FT6 motors with SH 63 with option N05 do not have a compatible flange with 1FT5 motors with SH 63.

N40
Food industry design

With this option, 1FT6 motors feature the following:

- Stainless steel shaft, fitted key and screws
- Bearing sealed with special grease (suitable for food industry) and shaft seal with stainless steel spring
- Degree of protection IP68
- Must be connected by plug (nickel plated), terminal box connection is not possible
- Paint finish: Primer plus light top coat (white aluminum RAL 9006)

1FT6 motors, core type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Core type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
2000	100	4.8 (6.44)	27 (19.9)	23 (17)	11	**1FT6102-1AC71-■■■1**	4	99 (87.6)	27.5 (60.6)
		8.0 (10.7)	50 (36.9)	38 (28)	17.6	**1FT6105-1AC71-■■■1**	4	168 (148)	39.5 (87.1)
3000	48	1.4 (1.88)	5 (3.7)	4.3 (3.2)	2.9	**1FT6044-1AF71-■■■1**	2	5.1 (4.51)	8.3 (18.3)
	63	1.5 (2.01)	6 (4.4)	4.7 (3.5)	3.4	**1FT6062-1AF71-■■■1**	3	8.5 (7.52)	9.5 (20.9)
		2.2 (2.95)	9.5 (7)	7.0 (5.2)	4.9	**1FT6064-1AF71-■■■1**	3	13 (11.5)	12.5 (27.6)
	80	3.2 (4.29)	13 (9.6)	10.3 (7.6)	8.7	**1FT6082-1AF71-■■■1**	4	30 (26.5)	15 (33.1)
		4.6 (6.17)	20 (14.7)	14.7 (10.8)	11	**1FT6084-1AF71-■■■1**	4	48 (42.4)	20.5 (45.2)
		5.8 (7.78)	27 (19.9)	18.5 (13.6)	13	**1FT6086-1AF71-■■■1**	4	66.5 (58.8)	25.5 (56.2)
4500	63	1.7 (2.28)	6 (4.4)	3.6 (2.7)	3.9	**1FT6062-1AH71-■■■1**	3	8.5 (7.52)	9.5 (20.9)
		2.3 (3.08)	9.5 (7)	4.8 (3.5)	5.5	**1FT6064-1AH71-■■■1**	3	13 (11.5)	12.5 (27.6)
	80	4.9 (6.57)	20 (14.7)	10.5 (7.7)	12.5	**1FT6084-1AH71-■■■1**	4	48 (42.4)	20.5 (45.2)
		5.7 (7.64)	27 (19.9)	12 (8.8)	12.6	**1FT6086-1AH71-■■■1**	4	66.5 (58.8)	25.5 (56.2)
6000	36	0.88 (1.18)	2 (1.5)	1.4 (1)	2.1	**1FT6034-1AK71-■■■1**	2	1.1 (0.97)	4.4 (9.7)
	80	4.1 (5.50)	20 (14.7)	6.5 (4.8)	9.2	**1FT6084-1AK71-■■■1**	4	48 (42.4)	20.5 (45.2)

Type:	IM B5		**1**
Connector outlet direction:	Transverse right (not for 1FT603/1FT604/1FT606) Transverse left (not for 1FT603/1FT604/1FT606) Axial NDE Axial DE		**1** **2** **3** **4**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1]		**A** **E**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1]		**D** **F**
Shaft extension: Plain shaft Plain shaft	**Shaft and flange accuracy:** Tolerance N Tolerance N	**Holding brake:** without with	**G** **H**

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 4)	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current 3)	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section 2)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT6102-1AC7...	12.1	5.7 (7.6)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6105-1AC7...	21.4	10.5 (14.8)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6044-1AF7...	3	1.6 (2.2)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6062-1AF7...	4.1	1.9 (2.6)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-1AF7...	6.1	3.0 (4.0)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6082-1AF7...	9.6	4.1 (5.5)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6084-1AF7...	13.2	6.3 (8.5)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6086-1AF7...	16.4	8.5 (11.4)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6062-1AH7...	5.7	2.8 (3.8)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-1AH7...	9.0	4.5 (6.0)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6084-1AH7...	19.8	9.4 (12.6)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6086-1AH7...	23.3	12.7 (17.0)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6034-1AK7...	2.6	1.3 (1.7)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6084-1AK7...	24.1	12.6 (16.9)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
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) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

3) With default setting of the pulse frequency.

4) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	100	3.8 (5.1)	27 (19.9)	24.5 (18.1)	8.4	**1FT6102-8AB7■-■■■■**	4	99 (87.6)	27.5 (60.6)
		6.4 (8.6)	50 (36.9)	41 (30.2)	14.5	**1FT6105-8AB7■-■■■■**	4	168 (148)	39.5 (87.1)
		9.6 (12.9)	70 (51.6)	61 (45)	20.5	**1FT6108-8AB7■-■■■■**	4	260 (230)	55.5 (122)
	132	9.7 (13.0)	75 (55.3)	62 (45.7)	19	**1FT6132-6AB71-■■■■**	3	430 (380)	85 (187)
		11.8 (15.8)	95 (70)	75 (55.3)	24	**1FT6134-6AB71-■■■■**	3	547 (484)	100 (220)
		13.8 (18.5)	115 (84.8)	88 (64.9)	27	**1FT6136-6AB71-■■■■**	3	664 (587)	117 (258)

Type:	IM B5 IM B14 [2] (not for 1FT613)	**1** **2**
Connector outlet direction:	Transverse right Transverse left Axial NDE (not for 1FT613) Axial DE	**1** **2** **3** **4**
Terminal box/ Cable entry:	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE	**5** **6** **7** **8**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] Multi-pole resolver 2-pole resolver	**A** **E** **S** **T**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1] 15 bit resolver 14 bit resolver	**D** **F** **U** **P**

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**

Vibration magnitude:	Degree of protection:	
Grade A	IP64	**0**
Grade A	IP65	**1**
Grade A	IP67	**2**
Grade A	IP68	**6**
Grade R	IP64	**3**
Grade R	IP65	**4**
Grade R	IP67	**5**
Grade R	IP68	**7**

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [4]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [3]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT6102-8AB7...	8.7	4.2 (5.6)	9	**6SL312■ - ■TE21 - 0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6105-8AB7...	16.0	7.9 (10.6)	18	**6SL312■ - ■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6108-8AB7...	22.3	11.0 (14.8)	30	**6SL312■ - 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6132-6AB7...	21.6	11.8 (15.8)	30	**6SL312■ - 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6134-6AB7...	27.0	14.9 (20.0)	30	**6SL312■ - 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6136-6AB7...	34	18.1 (24.3)	45	**6SL312■ - 1TE24-5AA3**	1.5	4 x 10	**6FX■002-5■S64-....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
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) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

3) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

4) With default setting of the pulse frequency.

5) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
2000	63	0.8 (1.1)	4.0 (2.9)	3.7 (2.7)	1.9	**1FT6061-6AC7■-■■■■**	3	6.0 (5.31)	8.0 (7.6)
		1.1 (1.5)	6.0 (4.4)	5.2 (3.8)	2.6	**1FT6062-6AC7■-■■■■**	3	8.5 (7.52)	9.5 (20.9)
		1.7 (2.3)	9.5 (7)	8.0 (5.9)	3.8	**1FT6064-6AC7■-■■■■**	3	13 (11.5)	12.5 (27.6)
	80	1.6 (2.2)	8.0 (5.9)	7.5 (5.5)	4.1	**1FT6081-8AC7■-■■■■**	4	21 (18.5)	12.5 (27.6)
		2.4 (3.2)	13 (9.6)	11.4 (8.4)	6.6	**1FT6082-8AC7■-■■■■**	4	30 (26.5)	15.0 (33.1)
		3.5 (4.7)	20 (14.7)	16.9 (12.5)	8.3	**1FT6084-8AC7■-■■■■**	4	48 (42.4)	20.5 (45.2)
		4.7 (6.3)	27 (19.9)	22.5 (16.6)	10.9	**1FT6086-8AC7■-■■■■**	4	66.5 (58.8)	25.5 (56.2)
	100	4.8 (6.4)	27 (19.9)	23 (17)	11	**1FT6102-8AC7■-■■■■**	4	99 (87.6)	27.5 (60.6)
		8.0 (10.7)	50 (36.9)	38 (28)	17.6	**1FT6105-8AC7■-■■■■**	4	168 (148)	39.5 (87.1)
		11.5 (15.4)	70 (51.6)	55 (40.5)	24.5	**1FT6108-8AC7■-■■■■**	4	260 (230)	55.5 (122)
	132	11.5 (15.4)	75 (55.3)	55 (40.5)	23	**1FT6132-6AC71-■■■■**	3	430 (380)	85.0 (187)
		13.6 (18.2)	95 (70)	65 (47.9)	27	**1FT6134-6AC71-■■■■**	3	547 (484)	100 (220)
		15.5 (20.8)	115 (84.8)	74 (54.5)	30	**1FT6136-6AC71-■■■■**	3	664 (587)	117 (258)

Type:	IM B5 IM B14 [2] (not for 1FT613)	1 2
Connector outlet direction:	Transverse right (not for 1FT606) Transverse left (not for 1FT606) Axial NDE (not for 1FT613) Axial DE	1 2 3 4
Terminal box/ cable entry: (only for 1FT61)	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE	5 6 7 8
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] Multi-pole resolver 2-pole resolver	A E S T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1] 15 bit resolver 14 bit resolver	D F U P

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	Degree of protection:	
Grade A	IP64	0
Grade A	IP65	1
Grade A	IP67	2
Grade A	IP68	6
Grade R	IP64	3
Grade R	IP65	4
Grade R	IP67	5
Grade R	IP68	7

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [4]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [3]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT6061-6AC7...	1.9	0.84 (1.1)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6062-6AC7...	2.7	1.3 (1.7)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-6AC7...	4.2	2.0 (2.7)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6081-8AC7...	3.9	1.7 (2.3)	5	**6SL312■-■TE15-0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6082-8AC7...	6.6	2.7 (3.6)	9	**6SL312■-■TE21-0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6084-8AC7...	8.8	4.2 (5.6)	9	**6SL312■-■TE21-0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6086-8AC7...	11.3	5.7 (7.6)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6102-8AC7...	12.1	5.7 (7.6)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6105-8AC7...	21.4	10.5 (14.8)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6108-8AC7...	29	14.7 (19.7)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 6	**6FX■002-5■S51-....**
1FT6132-6AC7...	29	15.7 (21.1)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 6	**6FX■002-5■S51-....**
1FT6134-6AC7 ...	36	19.9 (26.7)	45	**6SL312■-1TE24-5AA3**	1.5	4 x 10	**6FX■002-5■S64-....**
1FT6136-6AC7...	42	24.1 (32.3)	45	**6SL312■-1TE24-5AA3**	3	4 x 16	**6FX■002-5■S14-....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
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] Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

[3] The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

[4] With default setting of the pulse frequency.

[5] $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	**1FT6 synchronous motors Natural cooling**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
3000	48	0.7 (0.9)	2.6 (1.9)	2.15 (1.6)	1.7	**1FT6041-4AF71 -** ■ ■ ■ ■	2	2.9 (2.57)	6.6 (14.6)
		1.4 (1.9)	5.0 (3.7)	4.3 (3.2)	2.9	**1FT6044-4AF71 -** ■ ■ ■ ■	2	5.1 (4.51)	8.3 (18.3)
	63	1.1 (1.5)	4.0 (2.9)	3.5 (2.6)	2.6	**1FT6061-6AF7**■ **-** ■ ■ ■ ■	3	6.0 (5.31)	8.0 (17.6)
		1.5 (2.0)	6.0 (4.4)	4.7 (3.5)	3.4	**1FT6062-6AF7**■ **-** ■ ■ ■ ■	3	8.5 (7.52)	9.5 (20.9)
		2.2 (3.0)	9.5 (7)	7.0 (5.2)	4.9	**1FT6064-6AF7**■ **-** ■ ■ ■ ■	3	13.0 (11.5)	12.5 (27.6)
	80	2.2 (3.0)	8.0 (5.9)	6.9 (5.1)	5.6	**1FT6081-8AF7**■ **-** ■ ■ ■ ■	4	21.0 (18.5)	12.5 (27.6)
		3.2 (4.3)	13 (9.6)	10.3 (7.6)	8.7	**1FT6082-8AF7**■ **-** ■ ■ ■ ■	4	30.0 (26.5)	15.0 (33.1)
		4.6 (6.2)	20 (14.7)	14.7 (10.8)	11	**1FT6084-8AF7**■ **-** ■ ■ ■ ■	4	48.0 (42.4)	20.5 (45.2)
		5.8 (7.8)	27 (19.9)	18.5 (13.6)	13	**1FT6086-8AF7**■ **-** ■ ■ ■ ■	4	66.5 (58.8)	25.5 (56.2)
	100	6.1 (8.2)	27 (19.9)	19.5 (14.4)	13.2	**1FT6102-8AF7**■ **-** ■ ■ ■ ■	4	99.0 (87.6)	27.5 (60.6)
		9.7 (13.0)	50 (36.9)	31 (22.8)	22.5	**1FT6105-8AF7**■ **-** ■ ■ ■ ■	4	168 (148)	39.5 (87.1)
		11.6 (15.6)	70 (51.6)	37 (27.3)	25	**1FT6108-8AF7**■ **-** ■ ■ ■ ■	4	260 (230)	55.5 (122.4)
	132	11.3 (15.2)	75 (55.3)	36 (26.5)	23	**1FT6132-6AF71 -** ■ ■ ■ ■	3	430 (380)	85.0 (187.4)

Type:	IM B5 IM B14 [2] (not for 1FT604/1FT613)	1 2
Connector outlet direction:	Transverse right (not for 1FT604/1FT606) Transverse left (not for 1FT604/1FT606) Axial NDE (not for 1FT613 and not for 1FT6 with DRIVE-CLiQ and power connector size 3) Axial DE	1 2 3 4
Terminal box/ cable entry: (only for 1FT61)	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE	5 6 7 8
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] Multi-pole resolver 2-pole resolver	A E S T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1] 15 bit resolver 14 bit resolver	D F U P

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	**Degree of protection:**	
Grade A	IP64	0
Grade A	IP65	1
Grade A	IP67	2
Grade A	IP68	6
Grade R	IP64	3
Grade R	IP65	4
Grade R	IP67	5
Grade R	IP68	7

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [5]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} [6] for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [4]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT6041-4AF7 ...	1.9	0.8 (1.1)	3	**6SL312■ - ■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6044-4AF7 ...	3.0	1.6 (2.2)	3	**6SL312■ - ■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6061-6AF7 ...	2.7	1.3 (1.7)	3	**6SL312■ - ■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6062-6AF7 ...	4.1	1.9 (2.6)	5	**6SL312■ - ■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-6AF7 ...	6.1	3.0 (4.0)	9	**6SL312■ - ■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6081-8AF7 ...	5.8	2.5 (3.4)	9	**6SL312■ - ■TE21-0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6082-8AF7 ...	9.6	4.1 (5.5)	18	**6SL312■ - ■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6084-8AF7 ...	13.2	6.3 (8.5)	18	**6SL312■ - ■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6086-8AF7 ...	16.4	8.5 (11.4)	18	**6SL312■ - ■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6102-8AF7 ...	16.9	8.5 (11.4)	18	**6SL312■ - ■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6105-8AF7 ...	32	15.7 (21.1)	30 [3]	**6SL312■ - 1TE23-0AA3**	1.5	4 x 10	**6FX■002-5■S61-....**
1FT6108-8AF7 ...	41	22.0 (29.5)	45	**6SL312■ - 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6132-6AF7 ...	43	23.6 (31.7)	45	**6SL312■ - 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**

Cooling:							
Internal air cooling	**0**						
External air cooling	**1**						
Motor Module:							
Single Motor Module		**1**					
Double Motor Module		**2**					
Type of power cable:							
MOTION-CONNECT 800					**8**		
MOTION-CONNECT 500					**5**		
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) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

3) With the specified Motor Module, the motor cannot be fully utilized with M_0 at ΔT = 100 K winding temperature rise.
If a Motor Module with a higher rating is used, you must check whether the specified power cable can be connected to it.

4) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

5) With default setting of the pulse frequency.

6) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
4500	63	1.4 (1.9)	4.0 (2.9)	2.9 (2.1)	3.4	**1FT6061-6AH7■-■■■■**	3	6.0 (5.31)	8.0 (17.6)
		1.7 (2.3)	6.0 (4.4)	3.6 (2.7)	3.9	**1FT6062-6AH7■-■■■■**	3	8.5 (7.52)	9.5 (20.9)
		2.3 (3.1)	9.5 (7.0)	4.8 (3.5)	5.5	**1FT6064-6AH7■-■■■■**	3	13.0 (11.5)	12.5 (27.6)
	80	2.7 (3.6)	8.0 (5.9)	5.8 (4.3)	7.3	**1FT6081-8AH7■-■■■■**	4	21.0 (18.5)	12.5 (27.6)
		4.0 (5.4)	13.0 (9.6)	8.5 (6.3)	11.0	**1FT6082-8AH7■-■■■■**	4	30.0 (26.5)	15.0 (33.1)
		4.9 (6.6)	20.0 (14.7)	10.5 (7.7)	12.5	**1FT6084-8AH7■-■■■■**	4	48.0 (42.4)	20.5 (45.2)
		5.7 (7.6)	27.0 (19.9)	12.0 (8.8)	12.6	**1FT6086-8AH7■-■■■■**	4	66.5 (58.8)	25.5 (56.2)
	100	5.7 (7.6)	27.0 (19.9)	12.0 (8.8)	12.0	**1FT6102-8AH7■-■■■■**	4	99.0 (87.6)	27.5 (60.6)

Type:	IM B5 IM B14 [2]			**1** **2**
Connector outlet direction:	Transverse right (not for 1FT606) Transverse left (not for 1FT606) Axial NDE Axial DE			**1** **2** **3** **4**
Terminal box/ cable entry: (only for 1FT61)	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE			**5** **6** **7** **8**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] Multi-pole resolver 2-pole resolver			**A** **E** **S** **T**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1] 15 bit resolver 14 bit resolver			**D** **F** **U** **P**
Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**		
Fitted key and keyway	Tolerance N	without		**A**
Fitted key and keyway	Tolerance N	with		**B**
Fitted key and keyway	Tolerance R	without		**D**
Fitted key and keyway	Tolerance R	with		**E**
Plain shaft	Tolerance N	without		**G**
Plain shaft	Tolerance N	with		**H**
Plain shaft	Tolerance R	without		**K**
Plain shaft	Tolerance R	with		**L**
Vibration magnitude:	**Degree of protection:**			
Grade A	IP64			**0**
Grade A	IP65			**1**
Grade A	IP67			**2**
Grade A	IP68			**6**
Grade R	IP64			**3**
Grade R	IP65			**4**
Grade R	IP67			**5**
Grade R	IP68			**7**

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

Selection and ordering data

Motor type (continued)	Static current I_0 at M_0 ΔT=100 K	Calculated power P_{calc} 6) P_{calc} for M_0 ΔT=100 K	SINAMICS S120 Motor Module: Rated output current 5) I_{rated}	SINAMICS S120 Motor Module: Booksize format Order No.	Power cable with complete shield – Motor connection (and brake connection) via power connector: Power connector	Cable cross-section 4)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT6061-6AH7...	4	1.9 (2.6)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6062-6AH7...	5.7	2.8 (3.8)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-6AH7...	9.0	4.5 (6.0)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6081-8AH7...	8.6	3.8 (5.1)	9	**6SL312■-■TE21-0AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6082-8AH7...	14.8	6.1 (8.2)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6084-8AH7...	19.8	9.4 (12.6)	18 3)	**6SL312■-■TE21-8AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6086-8AH7...	23.3	12.7 (17.0)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6102-8AH7...	24.1	12.7 (17.0)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**

Option	Code
Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
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) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

3) With the specified Motor Module, the motor cannot be fully utilized with M_0 at ΔT = 100 K winding temperature rise.

4) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

5) With default setting of the pulse frequency.

6) $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$ $P_{calc}\ [HP] = \frac{M_0\ [lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
6000	28	0.19 (0.3)	0.4 (0.3)	0.3 (0.2)	1.1	**1FT6021-6AK71-■■■■**	3	0.21 (0.19)	1.2 (2.6)
		0.31 (0.4)	0.8 (0.6)	0.5 (0.4)	0.9	**1FT6024-6AK71-■■■■**	3	0.34 (0.30)	2.1 (4.6)
	36	0.47 (0.6)	1.0 (0.7)	0.75 (0.6)	1.2	**1FT6031-4AK71-■■■■**	2	0.65 (0.58)	3.1 (6.8)
		0.88 (1.2)	2.0 (1.5)	1.4 (1.0)	2.1	**1FT6034-4AK71-■■■■**	2	1.1 (0.97)	4.4 (9.7)
	48	1.1 (1.5)	2.6 (1.9)	1.7 (1.3)	2.4	**1FT6041-4AK71-■■■■**	2	2.9 (2.57)	6.6 (14.6)
		1.9 (2.6)	5.0 (3.7)	3.0 (2.2)	4.1	**1FT6044-4AK71-■■■■**	2	5.1 (4.51)	8.3 (18.3)
	63	1.3 (1.7)	4.0 (2.9)	2.1 (1.5)	3.1	**1FT6061-6AK7■-■■■■**	3	6.0 (5.31)	8.0 (17.6)
		1.3 (1.7)	6.0 (4.4)	2.1 (1.5)	3.2	**1FT6062-6AK7■-■■■■**	3	8.5 (7.52)	9.5 (20.9)
		1.3 (1.7)	9.5 (7.0)	2.1 (1.5)	3.5	**1FT6064-6AK7■-■■■■**	3	13.0 (11.5)	12.5 (27.6)
	80	2.9 (4.0)	8.0 (5.9)	4.6 (3.4)	7.7	**1FT6081-8AK7■-■■■■**	4	21.0 (18.5)	12.5 (27.6)
		3.5 (4.7)	13.0 (9.6)	5.5 (4.1)	9.1	**1FT6082-8AK7■-■■■■**	4	30.0 (26.5)	15.0 (33.1)
		4.1 (5.5)	20.0 (14.7)	6.5 (4.8)	9.2	**1FT6084-8AK7■-■■■■**	4	48.0 (42.4)	20.5 (45.2)

Type:	IM B5 IM B14 [2] (not for 1FT602/1FT603/1FT604)	1 2
Connector outlet direction:	Transverse right (not for 1FT603/1FT604/1FT606) Transverse left (not for 1FT603/1FT604/1FT606) Axial NDE Axial DE	1 2 3 4
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] (not for 1FT602) Absolute encoder EnDat 512 S/R [1] (only for 1FT602) Multi-pole resolver 2-pole resolver	A E H S T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute enc. 22 bit single-turn +12 bit multi-turn [1] (not for 1FT602) Absolute enc. 20 bit single-turn +12 bit multi-turn (only for 1FT602) 15 bit resolver 14 bit resolver	D F L U P

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	Degree of protection:	
Grade A	IP64	0
Grade A	IP65 (not for 1FT602)	1
Grade A	IP67	2
Grade A	IP68 (not for 1FT602)	6
Grade R	IP64	3
Grade R	IP65 (not for 1FT602)	4
Grade R	IP67	5
Grade R	IP68 (not for 1FT602)	7

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [4]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [3]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT6021-6AK7 ...	1.25	0.3 (0.4)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6024-6AK7 ...	1.25	0.5 (0.7)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6031-4AK7 ...	1.4	0.6 (0.8)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6034-4AK7 ...	2.6	1.3 (1.7)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6041-4AK7 ...	3.0	1.6 (2.2)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6044-4AK7 ...	5.9	3.1 (4.2)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6061-6AK7...	5.0	2.5 (3.4)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6062-6AK7...	7.6	3.8 (5.1)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-6AK7...	12.0	4.0 (5.4)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6081-8AK7...	11.1	5.0 (6.7)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S21-....**
1FT6082-8AK7...	17.3	8.2 (11.0)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6084-8AK7...	24.1	12.6 (16.9)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**

Cooling:								
Internal air cooling	**0**							
External air cooling	**1**							
Motor Module:								
Single Motor Module		**1**						
Double Motor Module		**2**						
Type of power cable:								
MOTION-CONNECT 800					**8**			
MOTION-CONNECT 500					**5**			
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] Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

[3] The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

[4] With default setting of the pulse frequency.

[5] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\ [HP] = \frac{M_0\ [lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 motors, standard type
Forced ventilation

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Forced ventilation [2]	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	100	9.3 (12.5)	65.0 (47.9)	59.0 (43.5)	21.7	**1FT6105-8SB7■ - ■■■■**	4	168 (148)	45.5 (100)
		13.0 (17.4)	90.0 (66.3)	83.0 (61.2)	31	**1FT6108-8SB7■ - ■■■■**	4	260 (230)	61.5 (135)
	132	16.0 (21.5)	110 (81.1)	102 (75.5)	36	**1FT6132-6SB71 - ■■■■**	3	430 (380)	91.0 (200)
		20.4 (27.4)	140 (103)	130 (95.8)	45	**1FT6134-6SB71 - ■■■■**	3	547 (484)	106 (233)
		25.1 (33.7)	175 (129)	160 (117)	55	**1FT6136-6SB71 - ■■■■**	3	664 (587)	123 (271)
2000	100	11.7 (15.7)	65.0 (47.9)	56.0 (41.3)	28	**1FT6105-8SC7■ - ■■■■**	4	168 (148)	45.5 (100)
		16.8 (22.5)	90.0 (66.3)	80.0 (59)	40	**1FT6108-8SC7■ - ■■■■**	4	260 (230)	61.5 (135)
	132	20.5 (27.5)	110 (81.1)	98.0 (72.2)	46	**1FT6132-6SC71 - ■■■■**	3	430 (380)	91.0 (200)
		26.2 (35.1)	140 (103)	125 (92.1)	57	**1FT6134-6SC71 - ■■■■**	3	547 (484)	106 (233)
		32.5 (43.6)	175 (129)	155 (114)	72	**1FT6136-6SC71 - ■■■■**	3	664 (587)	123 (271)

Type:	IM B5 IM B14 [3] (not for 1FT613.)	1 2
Connector outlet direction:	Transverse right Transverse left Axial NDE (not for 1FT613 and not for 1FT6 with DRIVE-CLiQ and power connector size 3) Axial DE	1 2 3 4
Terminal box/ Cable entry:	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE	5 6 7 8
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R [1] Multi-pole resolver 2-pole resolver	A E S T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn [1] 15 bit resolver 14 bit resolver	D F U P

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	Degree of protection: [4]	
Grade A	IP64	0
Grade A	IP65	1
Grade R	IP64	3
Grade R	IP65	4

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [6]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [5]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT6105-8SB7...	21.9	10.2 (13.7)	30	**6SL312■ -1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6108-8SB7...	30	14.1 (18.9)	30	**6SL312■ -1TE23-0AA3**	1.5	4 x 6	**6FX■002-5■S51-....**
1FT6132-6SB7...	36	17.3 (23.2)	45	**6SL312■ -1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6134-6SB7...	44	22.0 (29.5)	60	**6SL312■ -1TE26-0AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6136-6SB7...	55	27.5 (36.9)	60	**6SL312■ -1TE26-0AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6105-8SC7...	30	13.6 (18.2)	30	**6SL312■ -1TE23-0AA3**	1.5	4 x 6	**6FX■002-5■S51-....**
1FT6108-8SC7...	41	18.8 (25.2)	45	**6SL312■ -1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6132-6SC7...	47	23.0 (30.8)	60	**6SL312■ -1TE26-0AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6134-6SC7...	58	29.3 (39.3)	60	**6SL312■ -1TE26-0AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6136-6SC7...	77	36.6 (49.1)	85	**6SL312■ -1TE28-5AA3**	3	4 x 25	**6FX■002-5DS33-....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
Without brake cores	**C**
With brake cores	**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

Notes on blower motor for forced ventilation:

	Shaft heights 80 and 100	Shaft height 132
Direction of air flow	From NDE to DE	From DE to NDE
Connection system	Connector size 1	Terminal box
Type of connecting cable	6FX.002-5CA01-....	6FX.008-1BB11-....
Pin and terminal assignments	Pin 1: L1, Pin 2: N	U1/L1: V2/L2: W3/L3
Supply voltage	1-phase 220/260 V AC, 50/60 Hz	3-phase 400/460 V AC, 50/60 Hz
Max. fan current	0.3 A	0.4 A
Weight of the fan module, approx.	4.8 kg (10.6 lb)	5.6 kg (12.3 lb)
Sound pressure level L_{pA} (1 m)	70 dB	74 dB

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

2) Not for use in environments containing electrically conductive dust. Forced ventilation cannot be used in the presence of flammable, corrosive, electrically conductive or explosive dust.

3) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

4) The degree of protection refers to the motor. The built-on fan meets the requirements of degree of protection IP54.

5) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

6) With default setting of the pulse frequency.

7) $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\ [HP] = \frac{M_0\ [lb_f\text{-in}] \times n_{rated}}{63000}$

1FT6 motors, standard type
Forced ventilation

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque [1]	Rated current	1FT6 synchronous motors Forced ventilation [2]	Num-ber of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb$_f$-ft)	Nm (lb$_f$-ft)	A			10^{-4}kgm^2 (10^{-3} lb$_f$-in-s^2)	kg (lb)
3000	80	6.9 (9.3)	26.0 (19.2)	22.0 (16.2)	17	**1FT6084-8SF7■ - ■■■■**	4	48.0 (42.4)	25.0 (55.1)
		9.7 (13.0)	35.0 (25.8)	31.0 (22.8)	24.5	**1FT6086-8SF7■ - ■■■■**	4	66.5 (58.8)	30.0 (66.2)
	100	15.7 (21.1)	65.0 (47.9)	50.0 (36.9)	35	**1FT6105-8SF7■ - ■■■■**	4	168 (148)	45.5 (100)
		22 (29.5)	90.0 (66.3)	70.0 (51.6)	53	**1FT6108-8SF7■ - ■■■■**	4	260 (230)	61.5 (135)
	132	28.3 (38.0)	110 (81.1)	90.0 (66.3)	62	**1FT6132-6SF71 - ■■■■**	3	430 (380)	91.0 (200)
		34.6 (46.4)	140 (103)	110 (81.1)	72	**1FT6134-6SF71 - ■■■■**	3	547 (484)	106 (233)
		45.5 (61.0)	175 (129)	145 (106)	104	**1FT6136-6SF71 - ■■■■**	3	664 (587)	123 (271)
4500	80	9.4 (12.6)	26.0 (19.2)	20.0 (14.7)	24.5	**1FT6084-8SH7■ - ■■■■**	4	48.0 (42.4)	25.0 (55.1)
		12.7 (17.0)	35.0 (25.8)	27.0 (19.9)	31.5	**1FT6086-8SH7■ - ■■■■**	4	66.5 (58.8)	30.0 (66.2)
	100	18.8 (25.2)	65.0 (47.9)	40.0 (29.9)	41	**1FT6105-8SH7■ - ■■■■**	4	168 (148)	45.5 (100)
6000	80	10.7 (14.4)	26.0 (19.2)	17.0 (12.5)	25.5	**1FT6084-8SK7■ - ■■■■**	4	48.0 (42.4)	25.0 (55.1)
		13.8 (18.5)	35.0 (25.8)	22.0 (16.2)	29	**1FT6086-8SK7■ - ■■■■**	4	66.5 (58.8)	30.0 (66.2)

Option	Version	Code
Type:	IM B5	1
	IM B14 [3] (not for 1FT613.)	2
Connector outlet direction (not for 1FT6136-6SF71):	Transverse right	1
	Transverse left	2
	Axial NDE (not for 1FT613 and not for 1FT6 with DRIVE-CLiQ and power connector size 3)	3
	Axial DE	4
Terminal box/ cable entry: (only for 1FT61)	Transverse/from right	5
	Transverse/from left	6
	Axial/from NDE	7
	Axial/from DE	8
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R	A
	Absolute encoder EnDat 2048 S/R [1]	E
	Multi-pole resolver	S
	2-pole resolver	T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder	D
	Absolute encoder, 22 bit single-turn +12 bit multi-turn [1]	F
	15 bit resolver	U
	14 bit resolver	P

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	Code
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	**Degree of protection:** [4]	Code
Grade A	IP64	0
Grade A	IP65	1
Grade R	IP64	3
Grade R	IP65	4

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [7]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [6]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT6084-8SF7...	18.2	8.2 (11.0)	18 [5]	**6SL312■ - ■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FT6086-8SF7...	25	11.0 (14.8)	30	**6SL312■ - 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6105-8SF7...	42	20.4 (27.4)	45	**6SL312■ - 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6108-8SF7...	62	28.3 (37.9)	60 [5]	**6SL312■ - 1TE26-0AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6132-6SF7...	69	34.6 (46.4)	85	**6SL312■ - 1TE28-5AA3**	3	4 x 25	**6FX■002-5DS33-....**
1FT6134-6SF7...	83	44.0 (59.0)	85	**6SL312■ - 1TE28-5AA3**	3	4 x 25	**6FX■002-5DS33-....**
1FT6136-6SF7...	110	55.0 (73.8)	132	**6SL312■ - 1TE31-3AA3**	Terminal box (max. 4 x 35)		
1FT6084-8SH7...	26	12.3 (16.5)	30	**6SL312■ - 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6086-8SH7...	38	16.5 (22.1)	45	**6SL312■ - 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6105-8SH7...	59	30.6 (41.0)	85	**6SL312■ - 1TE28-5AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6084-8SK7...	35	16.3 (21.9)	45	**6SL312■ - 1TE24-5AA3**	1.5	4 x 10	**6FX■002-5■S64-....**
1FT6086-8SK7...	44	22.0 (29.5)	45	**6SL312■ - 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
Without brake cores	**C**
With brake cores	**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

Notes on blower motor for forced ventilation:

	Shaft heights 80 and 100	Shaft height 132
Direction of air flow	From NDE to DE	From DE to NDE
Connection system	Connector size 1	Terminal box
Type of connecting cable	6FX.002-5CA01-....	6FX.008-1BB11-....
Pin and terminal assignments	Pin 1: L1, Pin 2: N	U1/L1: V2/L2: W3/L3
Supply voltage	1-phase 220/260 V AC, 50/60 Hz	3-phase 400/460 V AC, 50/60 Hz
Max. fan current	0.3 A	0.4 A
Weight of the fan module, approx.	4.8 kg (10.6 lb)	5.6 kg (12.3 lb)
Sound pressure level L_{pA} (1 m)	70 dB	74 dB

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

2) Not for use in environments containing electrically conductive dust. Forced ventilation cannot be used in the presence of flammable, corrosive, electrically conductive or explosive dust.

3) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

4) The degree of protection refers to the motor. The built-on fan meets the requirements of degree of protection IP54.

5) With the specified Motor Module, the motor cannot be fully utilized with M_0 at ΔT = 100 K winding temperature rise.

6) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

7) With default setting of the pulse frequency.

8) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 Big Servo motors
Forced ventilation

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT6 synchronous motors Big Servo Forced ventilation [1]	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}		P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No.		J	
rpm	SH	kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	160	60.5 (81.1)	425 (313)	385 (283)	136	**1FT6163-8SB7 6 -** ■■■■	4	2300 (2035)	170 (374)
		85 (114)	600 (442)	540 (398)	174	**1FT6168-8SB7 6 -** ■■■■	4	3100 (2743)	210 (463)
2500	160	89 (119)	425 (313)	340 (250)	185	**1FT6163-8SD7 6 -** ■■■■	4	2300 (2035)	170 (374)

Type [3]:	IM B35		6	
Terminal box at top, cable entry:	Transverse right Transverse left Axial NDE Axial DE		5 6 7 8	
Encoder systems for motors without DRIVE-CLiQ interface	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R Multi-pole resolver 2-pole resolver		A E S T	
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn 15 bit resolver 14 bit resolver		D F U P	
Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**		
With fitted key and keyway	Tolerance N	without	A	
With fitted key and keyway	Tolerance R	without	D	
Plain shaft	Tolerance N	without	G	
Plain shaft	Tolerance R	without	K	
Vibration magnitude:		**Degree of protection:** [2]		
Grade A		IP64		0
Grade A		IP65		1
Grade R		IP64		3
Grade R		IP65		4

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

Selection and ordering data

Motor type (continued)	Static current I_0 at ΔT=100 K	Calculated power P_{calc} 7) P_{calc} for M_0 ΔT=100 K	SINAMICS S120 Motor Module Rated output current 5) I_{rated} 4)	Booksize format Order No.	Power cable with complete shield Motor connection via terminal box: Cable entry terminal box 6)	Max. connectable cable cross-section	Order No. Power cable/ By the meter
	A	kW (HP)	A			mm²	
1FT6163-8SB76-....	151	66.8 (89.6)	200	**6SL312■-1TE32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6168-8SB76-....	194	94.2 (126)	200	**6SL312■-1TE32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6163-8SD76-....	226	111 (148)	200	**6SL312■-1TE32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**

	Code
Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

Notes on blower motor for forced ventilation:

	Shaft height 160
Direction of air flow	From DE to NDE
Connection system	Terminal box
Type of connecting cable	6FX.008-1BB11-....
Pin and terminal assignments	U1/L1: V2/L2: W3/L3
Supply voltage	400/480 V 3 AC 50/60 Hz
Max. fan current	0.8 A
Sound pressure level L_{pA} (1 m)	74 dB

1) Not for use in environments containing electrically conductive dust. Forced ventilation cannot be used in the presence of flammable, corrosive, electrically conductive or explosive dust.

2) The degree of protection refers to the motor. The built-on fan meets the requirements of degree of protection IP54.

3) 1FT616 Big Servo motors of construction type IM B35 can be mounted on the flange only.

4) Motor Modules are assigned according to the motor rated current.

5) With default setting of the pulse frequency.

6) Terminal box type gk 630.

7) $P_{calc}\,[\text{kW}] = \frac{M_0\,[\text{Nm}] \times n_{rated}}{9550}$ $P_{calc}\,[\text{HP}] = \frac{M_0\,[\text{lb}_f\text{-in}] \times n_{rated}}{63000}$

1FT6 motors, standard type
Water cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT6 synchronous motors Water cooling [1) 2)]	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	100	18.2 (24.4)	119 (87.7)	116 (85.5)	43	**1FT6108-8WB7■ - ■■■■**	4	260 (230)	61.5 (135)
2000	100	17.2 (23.1)	85.0 (62.6)	82.0 (60.4)	60	**1FT6105-8WC7■ - ■■■■**	4	168 (148)	45.5 (100)
		24.1 (32.3)	119 (87.7)	115 (84.8)	57	**1FT6108-8WC7■ - ■■■■**	4	260 (230)	61.5 (135)
3000	63	3.2 (4.3)	10.2 (7.5)	10.0 (7.4)	6.9	**1FT6062-6WF7■ - ■■■■**	3	8.5 (7.52)	9.5 (20.9)
		5.1 (6.8)	16.2 (11.9)	16.0 (11.8)	10.3	**1FT6064-6WF7■ - ■■■■**	3	13.0 (11.5)	12.5 (27.6)
	80	11.0 (14.8)	35.0 (25.8)	35.0 (25.8)	27	**1FT6084-8WF7■ - ■■■■**	4	48.0 (42.4)	21.0 (46.3)
		14.5 (19.4)	47.0 (34.6)	46.0 (33.9)	37	**1FT6086-8WF7■ - ■■■■**	4	66.5 (58.8)	26.0 (57.3)
	100	24.5 (32.9)	85.0 (62.6)	78.0 (57.5)	82	**1FT6105-8WF7■ - ■■■■**	4	168 (148)	45.5 (100)
		34.2 (45.9)	119 (87.7)	109 (80.3)	81	**1FT6108-8WF7■ - ■■■■**	4	260 (230)	61.5 (135)
4500	63	4.7 (6.3)	10.2 (7.5)	10.0 (7.4)	9.6	**1FT6062-6WH7■ - ■■■■**	3	8.5 (7.52)	9.5 (20.9)
		7.5 (10.1)	16.2 (11.9)	16.0 (11.8)	15.2	**1FT6064-6WH7■ - ■■■■**	3	13.0 (11.5)	12.5 (27.6)
	80	16.5 (22.1)	35.0 (25.8)	35.0 (25.8)	39	**1FT6084-8WH7■ - ■■■■**	4	48.0 (42.4)	21.0 (46.3)
		21.2 (28.4)	47.0 (34.6)	45.0 (33.2)	53	**1FT6086-8WH7■ - ■■■■**	4	66.5 (58.8)	26.0 (57.3)
6000	63	6.2 (8.3)	10.2 (7.5)	9.8 (7.2)	12.7	**1FT6062-6WK7■ - ■■■■**	3	8.5 (7.52)	9.5 (20.9)
		9.9 (13.3)	16.2 (11.9)	15.8 (11.6)	20	**1FT6064-6WK7■ - ■■■■**	3	13.0 (11.5)	12.5 (27.6)
	80	21.4 (28.7)	35.0 (25.8)	34.0 (25.1)	51	**1FT6084-8WK7■ - ■■■■**	4	48.0 (42.4)	21.0 (46.3)
		27.7 (37.2)	47.0 (34.6)	44.0 (32.4)	58	**1FT6086-8WK7■ - ■■■■**	4	66.5 (58.8)	26.0 (57.3)

Type:	IM B5 IM B14 [3)] (not for 1FT613)	1 2
Connector outlet direction:	Transverse right (not for 1FT606) Transverse left (not for 1FT606) Axial NDE (not for 1FT6 with DRIVE-CLiQ and power connec. size 3) Axial DE (1FT6062 only with water connec. on side or below) [2)]	1 2 3 4
Terminal box/cable entry: (only for 1FT61)	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE	5 6 7 8
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R Multi-pole resolver 2-pole resolver	A E S T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn 15 bit resolver 14 bit resolver	D F U P

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Fitted key and keyway	Tolerance R	without	D
Fitted key and keyway	Tolerance R	with	E
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H
Plain shaft	Tolerance R	without	K
Plain shaft	Tolerance R	with	L

Vibration magnitude:	Degree of protection:	
Grade A	IP64	0
Grade A	IP65	1
Grade A	IP67	2
Grade A	IP68	6
Grade R	IP64	3
Grade R	IP65	4
Grade R	IP67	5
Grade R	IP68	7

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

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [7]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [6]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [5]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT6108-8WB7...	43	18.7 (25.1)	45	**6SL312■- 1TE24-5AA3**	3	4 x 10	**6FX■002-5■S14-....**
1FT6105-8WC7...	58	17.8 (23.9)	60	**6SL312■- 1TE26-0AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6108-8WC7...	57	24.9 (33.4)	60	**6SL312■- 1TE26-0AA3**	3	4 x 16	**6FX■002-5■S23-....**
1FT6062-6WF7...	6.9	3.2 (4.3)	9	**6SL312■- ■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6064-6WF7...	10.3	5.1 (6.8)	18	**6SL312■- ■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FT6084-8WF7...	24.5	11.0 (14.8)	30	**6SL312■- 1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FT6086-8WF7...	34	14.8 (19.9)	45	**6SL312■- 1TE24-5AA3**	1.5	4 x 10	**6FX■002-5■S64-....**
1FT6105-8WF7...	83	26.7 (35.8)	85	**6SL312■- 1TE28-5AA3**	3	4 x 25	**6FX5 002-5DS33-....**
1FT6108-8WF7...	86	37.4 (50.2)	85 [4]	**6SL312■- 1TE28-5AA3**	3	4 x 35	**6FX5 002-5DS43-....**
1FT6062-6WH7...	9.7	4.8 (6.4)	18	**6SL312■- ■TE21-8AA3**	1	4 x 1.5	**6FX■ 002-5■S01-....**
1FT6064-6WH7...	15.4	7.6 (10.2)	18	**6SL312■- ■TE21-8AA3**	1	4 x 2.5	**6FX■ 002-5■S11-....**
1FT6084-8WH7...	37	16.5 (22.1)	45	**6SL312■- 1TE24-5AA3**	1.5	4 x 10	**6FX■ 002-5■S64-....**
1FT6086-8WH7...	52	22.1 (29.6)	60	**6SL312■- 1TE26-0AA3**	3	4 x 16	**6FX■ 002-5■S23-....**
1FT6062-6WK7...	12.9	6.4 (8.6)	18	**6SL312■- ■TE21-8AA3**	1	4 x 1.5	**6FX■ 002-5■S01-....**
1FT6064-6WK7...	20.5	10.2 (13.7)	30	**6SL312■- 1TE23-0AA3**	1	4 x 2.5	**6FX■ 002-5■S11-....**
1FT6084-8WK7...	47	22.0 (29.5)	60	**6SL312■- 1TE26-0AA3**	3	4 x 10	**6FX■ 002-5■S14-....**
1FT6086-8WK7...	59	29.5 (39.6)	60	**6SL312■- 1TE26-0AA3**	3	4 x 16	**6FX■ 002-5DS23-....**

Cooling:		
Internal air cooling	**0**	
External air cooling	**1**	
Motor Module:		
Single Motor Module		**1**
Double Motor Module		**2**
Type of power cable:		
MOTION-CONNECT 800		**8**
MOTION-CONNECT 500		**5**
Without brake cores		**C**
With brake cores		**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.		**....**

Notes on water cooling:

- Inlet temperature of cooling water: max. 30 °C (86 °F)
- Cooling water throughput: at least 5 l/min (1.32 US gallons)
- Pressure ahead of motor: p_{max} = 3 bar (43.5 psi)
- Cooling water connection: G 3/8"
- Coolant: water with up to 25 % corrosion protection (recommendation: Tyfocor)
- Loss of pressure between inlet and outlet <0.1 bar (1.45 psi)

1) Delivered as standard with water connection "at top".

2) Water connection on right side: Add **-Z** + order code **Q20 to order number**
Water connection on left side: Add -**Z** + order code **Q21 to order number**
Water connection below: Add **-Z** + order code **Q22 to order number**.

3) Same flange as for IM B5 type, but with metric threaded insert in the four mounting holes.

4) With the specified Motor Module, the motor cannot be fully utilized with M_0 at ΔT = 100 K winding temperature rise. If a Motor Module with a higher rating is used, you must check whether the specified power cable can be connected to it.

5) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

6) With default setting of the pulse frequency.

7) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT6 Big Servo motors
Water cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	**1FT6 synchronous motors Big Servo Water cooling**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No.		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	132	23.6 (31.7)	155 (114)	150 (110)	58	**1FT6132-6WB76 -** ■■■■	3	430 (380)	90.0 (198)
		29.1 (39.0)	200 (147)	185 (136)	67	**1FT6134-6WB76 -** ■■■■	3	547 (484)	103 (227)
		36.1 (48.4)	240 (176)	230 (169)	90	**1FT6136-6WB76 -** ■■■■	3	665 (588)	120 (264)
		45.5 (61.0)	300 (221)	290 (213)	112	**1FT6138-6WB76 -** ■■■■	3	845 (747)	137 (302)
	160	70.7 (94.8)	450 (331)	450 (331)	160	**1FT6163-8WB76 -** ■■■■	4	2300 (2035)	170 (374)
		108.4 (145.4)	700 (515)	690 (508)	221	**1FT6168-8WB76 -** ■■■■	4	3100 (2743)	210 (463)
2500	132	35.3 (47.3)	155 (114)	135 (99.5)	82	**1FT6132-6WD76 -** ■■■■	3	430 (380)	90.0 (198)
		48.4 (64.9)	200 (147)	185 (136)	115	**1FT6134-6WD76 -** ■■■■	3	547 (484)	103 (227)
		57.6 (77.2)	240 (176)	220 (162)	149	**1FT6136-6WD76 -** ■■■■	3	665 (588)	120 (264)
		72.0 (96.6)	300 (221)	275 (202)	162	**1FT6138-6WD76 -** ■■■■	3	845 (747)	137 (302)
	160	117.8 (158.0)	450 (331)	450 (331)	240	**1FT6163-8WD76 -** ■■■■	4	2300 (2035)	170 (374)

Type [1]**:**	IM B35		**6**	
Terminal box/ Cable entry:	Transverse/from right Transverse/from left Axial/from NDE Axial/from DE		**5** **6** **7** **8**	
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R Multi-pole resolver 2-pole resolver		**A** **E** **S** **T**	
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn 15 bit resolver 14 bit resolver		**D** **F** **U** **P**	
Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	**A** **D** **G** **K**	
Fitted key and keyway	Tolerance N	without		
Fitted key and keyway	Tolerance R	without		
Plain shaft	Tolerance N	without		
Plain shaft	Tolerance R	without		
Vibration magnitude:	**Degree of protection:**			
Grade A	IP64		**0**	
Grade A	IP65		**1**	
Grade R	IP64		**3**	
Grade R	IP65		**4**	

To select the degree of protection, see selection guide.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [4]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [2]	Booksize format	Motor connection via terminal box		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Cable cross-section terminal box type [3]	Max. connectable cable cross-section	Order No. Power cable By the meter
	A	kW (HP)	A			mm²	
1FT6132-6WB76-...	58	24.3 (23.6)	60	**6SL312■ -1TE 26-0AA3**	2 x M32 x 1.5	2 x 4 x 16	**6FX■008-1BB61-....**
1FT6134-6WB76-...	73	31.4 (42.1)	85	**6SL312■ -1TE 28-5AA3**	2 x M40 x 1.5	2 x 4 x 35	**6FX■008-1BB35-....**
1FT6136-6WB76-...	92	37.7 (50.6)	132	**6SL312■ -1TE 31-3AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6138-6WB76-...	112	47.1 (63.2)	132	**6SL312■ -1TE 31-3AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6163-8WB76-...	160	70.7 (94.8)	200	**6SL312■ -1TE 32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6168-8WB76-...	225	110 (147)	260	**6SL3320 -1TE 32-6AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6132-6WD76-...	92	40.6 (54.4)	85	**6SL312■ -1TE 28-5AA3**	2 x M40 x 1.5	2 x 4 x 35	**6FX■008-1BB35-....**
1FT6134-6WD76-...	122	52.4 (70.3)	132	**6SL312■ -1TE 31-3AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6136-6WD76-...	158	62.8 (84.2)	200	**6SL312■ -1TE 32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6138-6WD76-...	167	78.5 (105)	200	**6SL312■ -1TE 32-0AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**
1FT6163-8WD76-...	240	118 (158)	260	**6SL3320 -1TE 32-6AA3**	2 x M50 x 1.5	2 x 4 x 50	**6FX■008-1BB50-....**

Cooling: Internal air cooling External air cooling	**0** **1**			
Motor Module: Single Motor Module		**1**		
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500			**8** **5**	
For length code as well as power and signal cables, see MOTION-CONNECT connection system.				**....**

Notes on water cooling:

- Inlet temperature of cooling water: max. 30 °C (86 °F)
- Cooling water throughput:
  1FT613: at least 8 l/min (2.11 US gallons)
  1FT616: at least 10 l/min (2.64 US gallons)
- Pressure ahead of motor: p_{max} = 6 bar (87 psi)
- Cooling water connection:
  1FT613: G 3/8".
  1FT616: G 1/2".
- Coolant: water with up to 25 % corrosion protection (recommendation: Tyfocor)
- Loss of pressure between inlet and outlet <0.1 bar (1.45 psi)

1) 1FT616 Big Servo motors of construction type IM B35 can be mounted on the flange only.

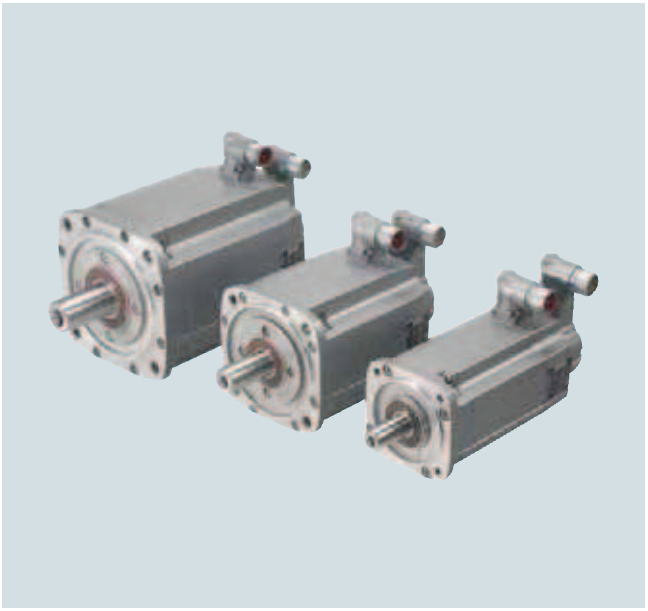
2) With default setting of the pulse frequency.

3) Terminal box type gk 630.

4) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT7 Compact motors

Overview



The new 1FT7 Compact motors are permanent-magnet synchronous motors with very compact dimensions and an optically attractive design. Quick and easy mounting of the motors is possible due to the well proven cross-profile and quick release cable connectors.

The 1FT7 Compact motors fulfill the highest demands on dynamic response, speed setting range including field weakening, shaft and flange accuracy. They are equipped with state-of-the-art encoder technology and optimized for the use with our fully digital control and drive systems.

Benefits

- High shaft and flange accuracy
- Low torque ripple (average value <1 %)
- Highest dynamic response for minimized acceleration and deceleration times due to reduced moment of inertia (up to 30 % less than 1FT6)
- High overload capability (up to 4 x M_0)
- Compact design (up to 30 % shorter than 1FT6)
- High degree of protection
- Rugged, vibration-isolated encoder mounting
- Easy encoder replacement on site without alignment
- Quick and easy mounting due to cross-profile
- Rotatable quick release connectors
- New flange design with recessed flange surface, especially suitable for toothed-belt output and vertical assembly (IM V1). The previous flange design, compatible with the 1FT6 motors, can be ordered optionally.

Applications

- High-performance machine tools
- Machines with stringent requirements in terms of dynamic response, precision and limited space conditions, such as packaging machines, foil stretching machines, printing machines and material handling equipment

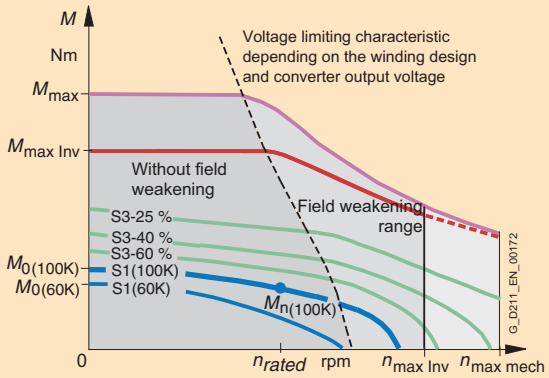
Technical specifications

Type of motor	Permanent-magnet synchronous motor
Magnet material	Rare-earth magnet material
Cooling	Natural cooling (SH 36 to SH 100)
Temperature monitoring	KTY 84 temperature sensor in stator winding
Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 155 (F) for a winding temperature rise of ΔT = 100 K at an ambient temperature of +40 °C (104 °F)
Type in accordance with EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3) with flange 0
Degree of protection in accordance with EN 60034-5 (IEC 60034-5)	IP65
Shaft extension on the drive end in accordance with DIN 748-3 (IEC 60072-1)	Plain shaft
Shaft and flange accuracy in accordance with DIN 42955 (IEC 60072-1) [1]	Tolerance N
Vibration magnitude in accordance with EN 60034-14 (IEC 60034-14)	Grade A (maintained up to rated speed)
Max. sound pressure level L_{pA} (1 m (3.28 ft)) in accordance with EN ISO 1680 Tolerance +3dB	
• 1FT703 to 1FT706	65 dB
• 1FT708 to 1FT710	70 dB
Built-in encoder systems for motors without DRIVE-CLiQ interface	• Incremental encoder sin/cos 1 V_{pp} 2048 S/R • Absolute encoder, multi-turn 2048 S/R (traversing range 4096 revolutions) with EnDat interface
Built-in encoder systems for motors with DRIVE-CLiQ interface	• 22 bit incremental encoder (2048 S/R internal) • 22 bit absolute encoder single-turn (2048 S/R internal) +12 bit multi-turn (traversing range 4096 revolutions)
Connection	Connectors for signals and power can be rotated
Paint finish	Pearl dark grey RAL 9023
2nd rating plate	Enclosed separately
Options	• Type IM B5 (IM V1, IM V3) with flange 1 (compatible with 1FT6) • Shaft extension on the drive end with fitted key and keyway (half-key balancing) • Built-in holding brake • Degree of protection IP64, IP67 • Vibration magnitude Grade R • Shaft and flange accuracy Tolerance R • Paint finish with other colors • Planetary gearbox, built-on

S/R = signals/revolution

[1] Shaft extension run-out, concentricity of centering ring and shaft, and perpendicularity of flange to shaft.

Characteristics



Torque characteristic of a synchronous motor operating on a converter with field weakening (example characteristic)

More information

Core types can be supplied for certain motor types. These core types can be express delivered as replacement motors in the event of plant outages and offer the advantage of a quicker spare parts supply. For this reason, core types should be used for configuration wherever possible.

The selection and ordering data are based on the Booksize format by way of example. The formats Booksize Compact, Blocksize or Chassis are also possible.
Detailed engineering is performed with the SIZER engineering tool.

Options

Order code	Option description	1FT7 Compact
X01	Jet black finish RAL 9005	■
X02	Cream finish RAL 9001	■
X03	Reseda green finish RAL 6011	■
X04	Pebble gray finish RAL 7032	■
X05	Sky blue finish RAL 5015	■
X06	Light ivory finish RAL 1015	■
X09	Anthracite finish RAL 7016	■

■ Option available

1FT7 Compact motors, core type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	**1FT7 Compact synchronous motors Natural cooling**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Core type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
2000	100	5.03 (6.75)	30 (22.1)	24 (17.7)	10	**1FT7102 - 1AC7■ - 1■ ■ 1**	5	91.4 (80.9)	26.1 (57.5)
		7.96 (10.7)	50 (36.9)	38 (28)	15	**1FT7105 - 1AC7■ - 1■ ■ 1**	5	178 (157)	44.2 (97.5)
3000	48	1.35 (1.81)	5.0 (3.7)	4.3 (3.2)	2.6	**1FT7044 - 1AF7■ - 1■ ■ 1**	3	5.43 (4.81)	7.2 (15.9)
	63	1.7 (2.28)	6.0 (4.4)	5.4 (4.0)	3.9	**1FT7062 - 1AF7■ - 1■ ■ 1**	5	7.36 (6.51)	7.1 (15.7)
		2.39 (3.20)	9.0 (6.6)	7.6 (5.6)	5.2	**1FT7064 - 1AF7■ - 1■ ■ 1**	5	11.9 (10.5)	9.7 (21.4)
	80	3.24 (4.34)	13 (9.6)	10.5 (7.7)	6.6	**1FT7082 - 1AF7■ - 1■ ■ 1**	5	26.5 (23.4)	14 (30.9)
		4.55 (6.10)	20 (14.8)	14.5 (10.7)	8.5	**1FT7084 - 1AF7■ - 1■ ■ 1**	5	45.1 (39.9)	20.8 (45.9)
		5.65 (7.58)	28 (20.7)	18 (13.3)	11	**1FT7086 - 1AF7■ - 1■ ■ 1**	5	63.6 (56.2)	27.5 (60.6)
4500	80	4.82 (6.46) [3]	20 (14.8)	11.5 (8.5) [3]	10.1 [3]	**1FT7084 - 1AH7■ - 1■ ■ 1**	5	45.1 (39.9)	20.8 (45.9)
		4.71 (6.32)	28 (20.7)	10 (7.4)	10	**1FT7086 - 1AH7■ - 1■ ■ 1**	5	63.6 (56.2)	27.5 (60.6)
6000	36	0.88 (1.18)	2.0 (1.5)	1.4 (1.0)	2.1	**1FT7034 - 1AK7■ - 1■ ■ 1**	3	0.85 (0.75)	3.8 (8.38)
	63	2.13 (2.86) [1]	6.0 (4.4)	3.7 (2.7) [1]	5.9 [1]	**1FT7062 - 1AK7■ - 1■ ■ 1**	5	7.36 (6.51)	7.1 (15.7)
		2.59 (3.47) [2]	9.0 (6.6)	5.5 (4.1) [2]	6.1 [2]	**1FT7064 - 1AK7■ - 1■ ■ 1**	5	11.9 (10.5)	9.7 (21.4)

Type IM B5:	Flange 0 Flange 1 (compatible with 1FT6)		**0** **1**	
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R		**N** **M**	
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn + 12 bit multi-turn		**D** **F**	
Shaft extension: Plain shaft Plain shaft	**Shaft and flange accuracy:** Tolerance N Tolerance N	**Holding brake:** without with	**G** **H**	
Vibration magnitude: Grade A	**Degree of protection:** IP65			**1**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 6)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current 5)	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section 4)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT7102-1AC7...	12.5	6.28 (8.42)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 1.5	**6FX■ 002 - 5■S21 - ....**
1FT7105-1AC7...	18	10.47 (14.0)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7044-1AF7...	2.8	1.57 (2.11)	3	**6SL312■ - ■TE13 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7062-1AF7...	3.9	1.88 (2.52)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7064-1AF7...	5.7	2.83 (3.80)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7082-1AF7...	7.6	4.08 (5.47)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7084-1AF7...	11	6.28 (8.42)	18	**6SL312■ - ■TE21 - 8AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7086-1AF7...	15.5	8.80 (11.8)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7084-1AH7...	15.6	9.42 (12.6)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7086-1AH7...	22.4	13.19 (17.7)	30	**6SL312■ - 1 TE23 - 0AA3**	1.5	4 x 4	**6FX■ 002 - 5■S41 - ....**
1FT7034-1AK7...	2.7	1.26 (1.69)	3	**6SL312■ - ■TE13 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7062-1AK7...	8.4	3.77 (5.06)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7064-1AK7...	9	5.65 (7.58)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**

Cooling: Internal air cooling External air cooling	**0** **1**						
Motor Module: Single Motor Module Double Motor Module		**1** **2**					
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500			**8** **5**				
Without brake cores With brake cores				**C** **D**			
For length code as well as power and signal cables, see MOTION-CONNECT connection system.					**....**		

1) These values refer to n = 5500 rpm.

2) These values refer to n = 4500 rpm.

3) These values refer to n = 4000 rpm.

4) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

5) With default setting of the pulse frequency.

6) P_{calc} [kW] = $\frac{M_0\ [\text{Nm}] \times n_{rated}}{9550}$ P_{calc} [HP] = $\frac{M_0\ [\text{lb}_f\text{-in}] \times n_{rated}}{63000}$

1FT7 Compact motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 Compact synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
1500	100	4.08 (5.47)	30 (22.1)	26 (19.2)	8	**1FT7102 - 5AB7■ - 1■■■**	5	91.4 (80.9)	26.1 (57.5)
		6.60 (8.85)	50 (36.9)	42 (31.0)	13	**1FT7105 - 5AB7■ - 1■■■**	5	178 (157)	44.2 (97.5)
		9.58 (12.8)	70 (51.6)	61 (45.0)	16	**1FT7108 - 5AB7■ - 1■■■**	5	248 (219)	59.0 (130)

Type IM B5:	Flange 0 Flange 1 (compatible with 1FT6)	**0** **1**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R	**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn	**D** **F**

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**

Vibration magnitude:	Degree of protection:	
Grade A	IP64	**0**
Grade A	IP65	**1**
Grade A	IP67	**2**
Grade R	IP64	**3**
Grade R	IP65	**4**
Grade R	IP67	**5**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 3)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current 2)	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section 1)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT7102-5AB7...	9	4.71 (6.32)	9	**6SL312■ - ■TE21 - 0AA3**	1.5	4 x 1.5	**6FX■ 002 - 5■S21 - ....**
1FT7105-5AB7...	15	7.85 (10.5)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 1.5	**6FX■ 002 - 5■S21 - ....**
1FT7108-5AB7...	18	10.99 (14.7)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**

Cooling:								
Internal air cooling	**0**							
External air cooling	**1**							
Motor Module:								
Single Motor Module		**1**						
Double Motor Module		**2**						
Type of power cable:								
MOTION-CONNECT 800			**8**					
MOTION-CONNECT 500			**5**					
Without brake cores						**C**		
With brake cores						**D**		
For length code as well as power and signal cables, see MOTION-CONNECT connection system.								**....**

1) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

2) With default setting of the pulse frequency.

3) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT7 Compact motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 Compact synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
2000	80	2.39 (3.20)	13 (9.6)	11.4 (8.4)	4.9	**1FT7082 - 5AC7■ - 1■■■**	5	26.5 (23.5)	14 (30.9)
		3.54 (4.75)	20 (14.8)	16.9 (12.5)	8.4	**1FT7084 - 5AC7■ - 1■■■**	5	45.1 (39.9)	20.8 (45.9)
		4.71 (6.32)	28 (20.7)	22.5 (16.6)	9.2	**1FT7086 - 5AC7■ - 1■■■**	5	63.6 (56.3)	27.5 (60.6)
	100	5.03 (6.75)	30 (22.1)	24.0 (17.7)	10	**1FT7102 - 5AC7■ - 1■■■**	5	91.4 (80.9)	26.1 (57.5)
		7.96 (10.7)	50 (36.9)	38.0 (28.0)	15	**1FT7105 - 5AC7■ - 1■■■**	5	178 (157)	44.2 (97.5)
		10.5 (14.1)	70 (51.6)	50.0 (36.9)	18	**1FT7108 - 5AC7■ - 1■■■**	5	248 (219)	59 (130)

Type IM B5:	Flange 0 Flange 1 (compatible with 1FT6)		**0** **1**
Encoder systems for motors <u>without</u> DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R		**N** **M**
Encoder systems for motors <u>with</u> DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn		**D** **F**
Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**
Vibration magnitude:	**Degree of protection:**		
Grade A	IP64		**0**
Grade A	IP65		**1**
Grade A	IP67		**2**
Grade R	IP64		**3**
Grade R	IP65		**4**
Grade R	IP67		**5**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [3]	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current [2]	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [1]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT7082-5AC7...	5	2.72 (3.65)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7084-5AC7...	9	4.19 (5.62)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7086-5AC7...	10.6	5.86 (7.86)	18	**6SL312■ - ■TE21 - 8AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7102-5AC7...	12.5	6.28 (8.42)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 1.5	**6FX■ 002 - 5■S21 - ....**
1FT7105-5AC7...	18	10.47 (14.0)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7108-5AC7...	25	14.66 (19.7)	30	**6SL312■ - 1TE23 - 1AA3**	1.5	4 x 4	**6FX■ 002 - 5■S41 - ....**

Cooling:		
Internal air cooling	**0**	
External air cooling	**1**	
Motor Module:		
Single Motor Module		**1**
Double Motor Module		**2**
Type of power cable:		
MOTION-CONNECT 800		**8**
MOTION-CONNECT 500		**5**
Without brake cores		**C**
With brake cores		**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.		**....**

[1] The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

[2] With default setting of the pulse frequency.

[3] $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT7 Compact motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 Compact synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
3000	48	0.85 (1.14)	3.0 (2.2)	2.7 (2.0)	2.1	**1FT7042 - 5AF7■ - 1■■■**	3	2.81 (2.49)	4.6 (10.1)
		1.35 (1.81)	5.0 (3.7)	4.3 (3.2)	2.6	**1FT7044 - 5AF7■ - 1■■■**	3	5.43 (4.81)	7.2 (15.9)
		1.76 (2.36)	7.0 (5.2)	5.6 (4.1)	3.5	**1FT7046 - 5AF7■ - 1■■■**	3	7.52 (6.66)	9.3 (20.5)
	63	1.70 (2.28)	6.0 (4.4)	5.4 (4.0)	3.9	**1FT7062 - 5AF7■ - 1■■■**	5	7.36 (6.51)	7.1 (15.7)
		2.39 (3.20)	9.0 (6.6)	7.6 (5.6)	5.2	**1FT7064 - 5AF7■ - 1■■■**	5	11.9 (10.5)	9.7 (21.4)
		2.92 (3.92)	12.0 (8.9)	9.3 (6.9)	7.2	**1FT7066 - 5AF7■ - 1■■■**	5	16.4 (14.5)	12.3 (27.1)
		3.42 (4.59)	15.0 (11.1)	10.9 (8.0)	6.7	**1FT7068 - 5AF7■ - 1■■■**	5	23.2 (20.5)	16.3 (35.9)
	80	3.24 (4.34)	13.0 (9.6)	10.3 (7.6)	6.6	**1FT7082 - 5AF7■ - 1■■■**	5	26.5 (23.5)	14.0 (30.9)
		4.55 (6.10)	20.0 (14.8)	14.5 (10.7)	8.5	**1FT7084 - 5AF7■ - 1■■■**	5	45.1 (39.9)	20.8 (45.9)
		5.62 (7.54)	28.0 (20.7)	18 (13.3)	11	**1FT7086 - 5AF7■ - 1■■■**	5	63.6 (56.3)	27.5 (60.6)
	100	6.28 (8.42)	30.0 (22.1)	20 (14.8)	12	**1FT7102 - 5AF7■ - 1■■■**	5	91.4 (80.9)	26.1 (57.5)
		8.80 (11.8)	50.0 (36.9)	28 (20.7)	15	**1FT7105 - 5AF7■ - 1■■■**	5	178 (157)	44.2 (97.5)
		8.17 (11.0)	70.0 (51.6)	20 (14.8)	12	**1FT7108 - 5AF7■ - 1■■■**	5	248 (220)	59.0 (130)

Type IM B5:	Flange 0	**0**
	Flange 1 (compatible with 1FT6)	**1**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R	**N**
	Absolute encoder EnDat 2048 S/R	**M**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder	**D**
	Absolute encoder, 22 bit single-turn +12 bit multi-turn	**F**

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**

Vibration magnitude:	Degree of protection:	
Grade A	IP64	**0**
Grade A	IP65	**1**
Grade A	IP67	**2**
Grade R	IP64	**3**
Grade R	IP65	**4**
Grade R	IP67	**5**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 3)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current 2)	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section 1)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FT7042-5AF7...	2.1	0.94 (1.26)	3	**6SL312■ - ■TE13 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7044-5AF7...	2.8	1.57 (2.11)	3	**6SL312■ - ■TE13 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7046-5AF7...	4	2.20 (2.95)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7062-5AF7...	3.9	1.88 (2.52)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7064-5AF7...	5.7	2.83 (3.80)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7066-5AF7...	8.4	3.77 (5.06)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7068-5AF7...	8.3	4.71 (6.32)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7082-5AF7...	7.6	4.08 (5.47)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7084-5AF7...	11	6.28 (8.42)	18	**6SL312■ - ■TE21 - 8AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7086-5AF7...	15.5	8.80 (11.8)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7102-5AF7...	18	9.42 (12.6)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7105-5AF7...	26	15.71 (21.0)	30	**6SL312■ - 1TE23 - 1AA3**	1.5	4 x 4	**6FX■ 002 - 5■S41 - ....**
1FT7108-5AF7...	36	21.99 (29.5)	45	**6SL312■ - 1TE24 - 5AA3**	1.5	4 x 6	**6FX■ 002 - 5■S51 - ....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
Without brake cores	**C**
With brake cores	**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

1) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

2) With default setting of the pulse frequency.

3) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT7 Compact motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	**1FT7 Compact synchronous motors Natural cooling**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
4500	48	1.32 (1.77) [1]	7.0 (5.2)	3.6 (2.7) [1]	4.7 [1]	**1FT7046 - 5AH7■ - 1■■■**	3	7.52 (6.66)	9.3 (20.5)
	63	2.55 (3.42) [2]	12 (8.9)	6.1 (4.5) [2]	7.5 [2]	**1FT7066 - 5AH7■ - 1■■■**	5	16.4 (14.5)	12.3 (27.1)
	80	3.77 (5.06)	13 (9.6)	8.0 (5.9)	8.4	**1FT7082 - 5AH7■ - 1■■■**	5	26.5 (23.5)	14.0 (30.9)
		4.82 (6.46) [2]	20 (14.8)	11.5 (8.5) [2]	10.1 [2]	**1FT7084 - 5AH7■ - 1■■■**	5	45.1 (39.9)	20.8 (45.9)
		4.71 (6.32)	28 (20.7)	10 (7.4)	10	**1FT7086 - 5AH7■ - 1■■■**	5	63.6 (56.3)	27.5 (60.6)

Type IM B5:	Flange 0 Flange 1 (compatible with 1FT6)		**0** **1**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R		**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn		**D** **F**
Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**
Vibration magnitude:	**Degree of protection:**		
Grade A	IP64		**0**
Grade A	IP65		**1**
Grade A	IP67		**2**
Grade R	IP64		**3**
Grade R	IP65		**4**
Grade R	IP67		**5**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current [4]	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [3]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT7046-5AH7...	8.1	3.30 (4.43)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7066-5AH7...	13.6	5.65 (7.58)	18	**6SL312■ - ■TE21 - 8AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7082-5AH7...	12.3	6.13 (8.22)	18	**6SL312■ - ■TE21 - 8AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7084-5AH7...	15.6	9.42 (12.6)	18	**6SL312■ - ■TE21 - 8AA3**	1.5	4 x 2.5	**6FX■ 002 - 5■S31 - ....**
1FT7086-5AH7...	22.4	13.19 (17.7)	30	**6SL312■ - 1 TE23 - 0AA3**	1.5	4 x 4	**6FX■ 002 - 5■S41 - ....**

Cooling:	
Internal air cooling	**0**
External air cooling	**1**
Motor Module:	
Single Motor Module	**1**
Double Motor Module	**2**
Type of power cable:	
MOTION-CONNECT 800	**8**
MOTION-CONNECT 500	**5**
Without brake cores	**C**
With brake cores	**D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

1) These values refer to n = 3500 rpm.

2) These values refer to n = 4000 rpm.

3) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

4) With default setting of the pulse frequency.

5) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FT7 Compact motors, standard type
Natural cooling

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 Compact synchronous motors Natural cooling	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No. **Standard type**		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
6000	36	0.88 (1.18)	2.0 (1.5)	1.4 (1.0)	2.1	**1FT7034 - 5AK7■ - 1■■■**	3	0.85 (0.75)	3.8 (8.38)
		1.07 (1.43)	3.0 (2.2)	1.7 (1.3)	2.4	**1FT7036 - 5AK7■ - 1■■■**	3	1.33 (1.18)	5.0 (11.0)
	48	1.26 (1.69)	3.0 (2.2)	2.0 (1.5)	3	**1FT7042 - 5AK7■ - 1■■■**	3	2.81 (2.49)	4.6 (10.1)
		1.41 (1.89) [1]	5.0 (3.7)	3.0 (2.2) [1]	3.6 [1]	**1FT7044 - 5AK7■ - 1■■■**	3	5.43 (4.81)	7.2 (15.9)
	63	2.13 (2.86) [2]	6.0 (4.4)	3.7 (2.7) [2]	5.9 [2]	**1FT7062 - 5AK7■ - 1■■■**	5	7.36 (6.51)	7.1 (15.7)
		2.59 (3.47) [1]	9.0 (6.6)	5.5 (4.1) [1]	6.1 [1]	**1FT7064 - 5AK7■ - 1■■■**	5	11.9 (10.5)	9.7 (21.4)

Type IM B5:	Flange 0 Flange 1 (compatible with 1FT6)	**0** **1**
Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R Absolute encoder EnDat 2048 S/R	**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder Absolute encoder, 22 bit single-turn +12 bit multi-turn	**D** **F**

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	**A**
Fitted key and keyway	Tolerance N	with	**B**
Fitted key and keyway	Tolerance R	without	**D**
Fitted key and keyway	Tolerance R	with	**E**
Plain shaft	Tolerance N	without	**G**
Plain shaft	Tolerance N	with	**H**
Plain shaft	Tolerance R	without	**K**
Plain shaft	Tolerance R	with	**L**

Vibration magnitude:	**Degree of protection:**	
Grade A	IP64	**0**
Grade A	IP65	**1**
Grade A	IP67	**2**
Grade R	IP64	**3**
Grade R	IP65	**4**
Grade R	IP67	**5**

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current [4]	Booksize format			
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [3]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm²	
1FT7034-5AK7...	2.7	1.26 (1.69)	3	**6SL312■ - ■TE13 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7036-5AK7...	4.0	1.88 (2.52)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7042-5AK7...	3.9	1.89 (2.53)	5	**6SL312■ - ■TE15 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7044-5AK7...	5.7	3.15 (4.22)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7062-5AK7...	8.4	3.78 (5.07)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**
1FT7064-5AK7...	9	5.67 (7.60)	9	**6SL312■ - ■TE21 - 0AA3**	1	4 x 1.5	**6FX■ 002 - 5■S01 - ....**

Cooling: Internal air cooling External air cooling	**0** **1**
Motor Module: Single Motor Module Double Motor Module	**1** **2**
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500	**8** **5**
Without brake cores With brake cores	**C** **D**
For length code as well as power and signal cables, see MOTION-CONNECT connection system.	**....**

1) These values refer to n = 4500 rpm.

2) These values refer to n = 5500 rpm.

3) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

4) With default setting of the pulse frequency.

5) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FK7 motors

Overview

1FK7 motors are extremely compact, permanent-magnet synchronous motors. The available options, gearboxes and encoders, together with the expanded product range, mean that the 1FK7 motors can be optimally adapted to any application. They therefore also satisfy the permanently increasing demands of state-of-the-art machine generations.

1FK7 motors can be combined with the SINAMICS S120 drive system to create a powerful system with high functionality. The integrated encoder systems for speed and position control can be selected depending on the application.

The motors are designed for operation without external cooling as the heat is dissipated through the motor surface. 1FK7 motors have a high overload capability.

Benefits

1FK7 Compact motors offer:

- Space-saving installation due to extremely high power density
- For universal applications
- Wide range of motors

1FK7 High Dynamic motors offer:

- Extremely high dynamic response due to low rotor moment of inertia

Applications

- Machine tools
- Robots and manipulators
- Wood, glass, ceramics and stone working
- Packaging, plastics and textile machines
- Auxiliary axes

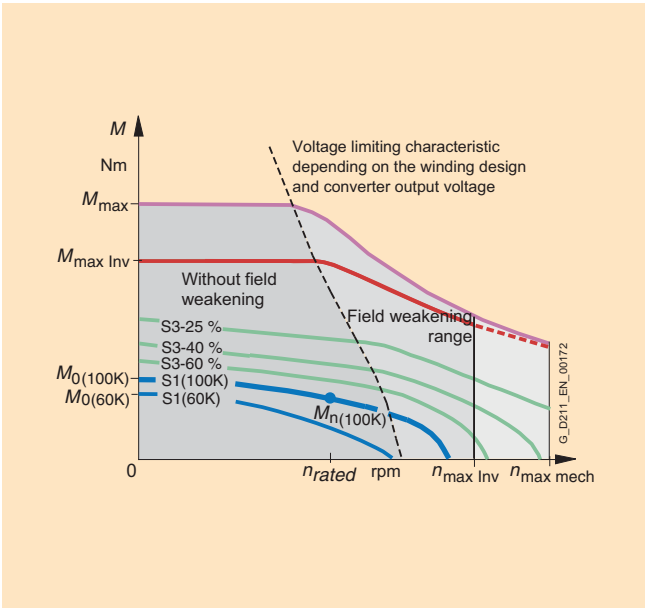
Technical specifications

Type of motor	Perm.-magnet syn. motor
Magnet material	Rare-earth magnet material
Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 155 (F) for a winding temperature rise of ΔT = 100 K at an ambient temperature of 40 °C (104 °F)
Cooling	Natural cooling
Temperature monitoring	KTY84 temperature sensor in the stator winding
Type in accordance with EN 60034-7 (IEC 60034-7)	IM B5 (IM V1, IM V3)
Degree of protection [1] **in accord. with EN 60034-5 (IEC 60034-5)**	IP64
Shaft extension on the drive end in accordance with DIN 748-3 (IEC 60072-1)	Plain shaft
Shaft and flange accuracy [2] **in accordance with DIN 42955 (IEC 60072-1)**	Tolerance N
Vibration magnitude in accord. with EN 60034-14 (IEC 60034-14)	Grade A (maintained up to rated speed)
Max. sound pressure level L_{pA} (1 m (3.28 ft)) in accord. with DIN EN ISO 1680	
• 1FK701 to 1FK704	55 dB
• 1FK706	65 dB
• 1FK708 to 1FK710	70 dB
Built-in encoder systems for motors without DRIVE-CLiQ interface	• Incremental encoder sin/cos 1 V_{pp} 2048 S/R • Absolute encoder, multi-turn, [3] with EnDat interface: - 2048 S/R for 1FK704 to 1FK710 - 512 S/R for 1FK701 to 1FK703 - 32 S/R for 1FK704 to 1FK710 - 16 S/R for 1FK701 to 1FK703 • Multi-pole resolver (number of poles corresp. to number of pole pairs of the motor) • 2-pole resolver
Built-in encoder systems for motors with DRIVE-CLiQ interface	• 22 bit incremental encoder (2048 S/R internal) • Absolute encoder: - 22 bit single-turn (2048 S/R internal) +12 bit multi-turn [3] for 1FK704 to 1FK710 - 20 bit single-turn (512 S/R internal) +12 bit multi-turn [3] for 1FK702 to 1FK703 - 16 bit single-turn (32 S/R internal) +12 bit multi-turn [3] for 1FK704 to 1FK710 - 15 bit single-turn (16 S/R internal) +12 bit multi-turn [3] for 1FK702 to 1FK703 • 15 bit resolver • 14 bit resolver
Connection	Connectors for signals and power can be rotated (270°)
Paint finish [1]	Unpainted
2nd rating plate [1] **3rd rating plate**	Attached in the NDE cover Enclosed separately
Options [1]	• Shaft ext. at the drive end with fitted key and keyway (half-key balancing) • Built-in holding brake • Degree of protection IP65, drive end flange IP67 • Planetary gearbox, assembled (requirement: plain shaft extension, degree of protection IP64 for LP+ and IP65 for SP+) • Anthracite finish RAL 7016

S/R = signals/revolution

1) 1FK701 only available in degree of protection IP54 and anthracite paint finish, no rating plate in NDE cover, planetary gearbox not available.
2) Shaft extension run-out, concentricity of centering ring and shaft, and perpendicularity of flange to shaft.
3) Traversing range 4096 revolutions

Characteristics



Torque characteristic of a synchronous motor operating on a converter with field weakening (example characteristic)

Options

Order code	Option description	1FK7 Compact	1FK7 High Dynamic
M03	Version for Zone 2 hazardous areas (in accordance with EN 50021/IEC 60079-15)	■	■
M39	Version for Zone 22 hazardous areas (in accordance with EN 50281/IEC 61241)	■	■
N05	Non-standard shaft extension (dimensions as for 1FT5 motors)	■	■
N25	Permanent magnet brake instead of spring-operated brake	–	■
K23	Special finish for "Worldwide" climate comprising primer and paint finish (anthracite RAL 7016 paint finish or selectable with Option X0.)	■	■
K24	Primed (unpainted)	■	■
X01	Jet black finish RAL 9005	■	■
X02	Cream finish RAL 9001	■	■
X03	Reseda green finish RAL 6011	■	■
X04	Pebble gray finish RAL 7032	■	■
X05	Sky blue finish RAL 5015	■	■
X06	Light ivory finish RAL 1015	■	■
X08	White aluminum RAL 9006, suitable for food grade applications	■	■
X27	Pearl dark grey RAL 9023 paint finish	■	■

■ Option available

M03
Version for Zone 2 hazardous areas (according to IEC EN 60079-15)

Combustible or explosive gases or vapors occur only rarely or briefly in Zone 2 areas The type of protection designation is EEx nA II ("non sparking").

The special conditions for operating 1FK7 motors in Zone 2 areas, in particular the reduction in permissible operating speeds, are described in detail in Appendix 610.40063.01 to the EC Declaration of Conformity 664.20025.21.

M39
Version for Zone 22 hazardous areas (according to IEC EN 61241-1)

Combustible or potentially explosive dust (non-conductive dust) occurs only rarely or briefly in Zone 22 areas The type of protection designation is Ex 3D T 150 °C.

The special conditions for operating 1FK7 motors in Zone 22 areas are described in detail in Appendix 610.40071.01 to the EC Declaration of Conformity 664.20031.21.

Note regarding M03 and M39 options:

When used in Zone 2 or Zone 22, 1FK7 motors are only designed for encoder connection through connectors. A version with a DRIVE-CLiQ interface on the motor is not possible. Connection to SINAMICS S120 is only possible via SMC (Sensor Module Cabinet-Mounted).

N05
Non-standard shaft extension (dimensions as for 1FT5 motors)

1FK7 motors are shipped with the following shaft dimensions that are compatible with 1FT5 motors:
- SH 36: 11 x 23 mm (0.43 x 0.91 in)
- SH 48: 14 x 30 mm (0.55 x 1.18 in)
- SH 63: 19 x 40 mm (0.75 x 1.57 in)
- SH 80: 24 x 50 mm (0.94 x 1.97 in)
- SH 100: 32 x 58 mm (1.26 x 2.28 in)

Note:

1FK7 motors of SH 63 with option N05 do not have a compatible flange with 1FT5 motors of SH 63.

Q90
Food-grade gear oil

Only for 1FK7 Compact with helical and bevel gears

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	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No.		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
2000	100	4.29 (5.75)	27 (19.9)	20.5 (15.1)	9.6	**1FK7101-5AC71-1■■■**	4	79.9 (70.7)	21 (46.3)
		5.23 (7.01)	36 (26.6)	25 (18.4)	11.5	**1FK7103-5AC71-1■■■**	4	105 (92.9)	29 (63.9)
		7.75 (10.4)	48 (35.4)	37 (27.3)	16	**1FK7105-5AC71-1■■■**	4	156 (138)	39 (86.2)
3000	48	0.82 (1.1)	3.0 (2.2)	2.6 (1.9)	1.95	**1FK7042-5AF71-1■■■**	4	3.01 (2.66)	4.9 (10.8)
	63	1.48 (2.0)	6.0 (4.4)	4.7 (3.5)	3.7	**1FK7060-5AF71-1■■■**	4	7.95 (7.04)	7.0 (15.4)
		2.29 (3.1)	11 (8.2)	7.3 (5.4)	5.6	**1FK7063-5AF71-1■■■**	4	15.1 (13.3)	11.5 (25.4)
	80	2.14 (2.9)	8.0 (5.9)	6.8 (5.0)	4.4	**1FK7080-5AF71-1■■■**	4	15.0 (13.2)	10 (22.1)
		3.3 (4.4)	16 (11.8)	10.5 (7.7)	7.4	**1FK7083-5AF71-1■■■**	4	27.3 (24.1)	14 (30.9)
	100	3.77 (5.1)	18 (13.3)	12.0 (8.8)	8.0	**1FK7100-5AF71-1■■■**	4	55.3 (48.9)	19 (41.9)
		4.87 (6.5)	27 (19.9)	15.5 (11.4)	11.8	**1FK7101-5AF71-1■■■**	4	79.9 (70.7)	21 (46.3)
		5.37 (7.2) [2]	36 (26.6)	20.5 (15.1) [2]	16.5 [2]	**1FK7103-5AF71-1■■■**	4	105 (92.9)	29 (63.9)
		8.17 (11.0)	48 (35.4)	26.0 (19.2)	18	**1FK7105-5AF71-1■■■**	4	156 (138)	39 (86.2)
4500	63	1.74 (2.3)	6.0 (4.4)	3.7 (2.7)	4.1	**1FK7060-5AH71-1■■■**	4	7.95 (7.04)	7.0 (15.4)
		2.09 (2.8) [3]	11 (8.2)	5.0 (3.7) [3]	6.1 [3]	**1FK7063-5AH71-1■■■**	4	15.1 (13.3)	11.5 (25.4)
	80	2.39 (3.2) [3]	8.0 (5.9)	5.7 (4.2) [3]	5.6 [3]	**1FK7080-5AH71-1■■■**	4	15.0 (13.2)	10 (22.1)
		3.04 (4.1) [4]	16 (11.8)	8.3 (6.1) [4]	9 [4]	**1FK7083-5AH71-1■■■**	4	27.3 (24.1)	14 (30.9)
6000	20	0.05 (0.1)	0.18 (0.1)	0.08 (0.1)	0.85	**1FK7011-5AK71-1■■3**	4	0.064 (0.06)	0.9 (2.0)
		0.10 (0.1)	0.35 (0.3)	0.16 (0.1)	0.85	**1FK7015-5AK71-1■■3**	4	0.083 (0.08)	1.1 (2.4)
	28	0.43 (0.6)	0.85 (0.6)	0.6 (0.4)	1.4	**1FK7022-5AK71-1■■■**	3	0.28 (0.25)	1.8 (4.0)
	36	0.50 (0.7)	1.1 (0.8)	0.8 (0.6)	1.3	**1FK7032-5AK71-1■■■**	3	0.61 (0.54)	2.7 (6.0)
		0.63 (0.8)	1.6 (1.2)	1.0 (0.7)	1.3	**1FK7034-5AK71-1■■■**	3	0.9 (0.80)	3.7 (8.2)
	48	0.69 (0.9)	1.6 (1.2)	1.1 (0.8)	1.7	**1FK7040-5AK71-1■■■**	4	1.69 (1.50)	3.5 (7.7)
		1.02 (1.4) [5]	3.0 (2.2)	1.95 (1.4) [5]	3.1 [5]	**1FK7042-5AK71-1■■■**	4	3.01 (2.66)	4.9 (10.8)

Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R	A
	Absolute encoder EnDat 2048 S/R [1] (not for 1FK701 to 1FK703)	E
	Absolute encoder EnDat 512 S/R [1] (only for 1FK702 to 1FK703)	H
	Absolute encoder EnDat 32 S/R [1] (not for 1FK701 to 1FK703)	G
	Absolute encoder EnDat 16 S/R [1] (only for 1FK701 to 1FK703)	J
	Multi-pole resolver	S
	2-pole resolver	T
Encoder systems for motors with DRIVE-CLiQ interface [8]:	22 bit incremental encoder (not for 1FK701)	D
	22 bit absolute encoder, single-turn +12 bit multi-turn [1] (not for 1FK701 to 1FK703)	F
	20 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK702/1FK703)	L
	16 bit absolute encoder, single-turn +12 bit multi-turn [1] (not for 1FK701 to 1FK703)	K
	15 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK702/1FK703)	V
	15 bit resolver (not for 1FK701)	U
	14 bit resolver (not for 1FK701)	P

Shaft extension:	Shaft and flange accuracy:	Holding brake:	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H

Degree of protection:	IP64 (not for 1FK701)	0
	IP65 and DE flange IP67 (not for 1FK701)	2
	IP64 (IP54 for 1FK701) and anthracite paint finish	3
	IP65 and DE flange IP67, anthracite paint finish (not for 1FK701)	5
	IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor (not for 1FK701)	8

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} [10]	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current [9]	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	Cable cross-section [7]	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FK7101-5AC71...	12.3	5.7 (7.64)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S01-....**
1FK7103-5AC71...	14.7	7.5 (10.0)	18	**6SL312■-■TE21-8AA3**	1.5	4 x 1.5	**6FX■002-5■S01-....**
1FK7105-5AC71...	20	10 (13.4)	30	**6SL312■-■TE23-0AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FK7042-5AF71...	2.2	0.9 (1.2)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7060-5AF71...	4.5	1.9 (2.6)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7063-5AF71...	8	3.5 (4.7)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7080-5AF71...	4.8	2.5 (3.4)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7083-5AF71...	10.4	5.0 (6.7)	9 [6]	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7100-5AF71...	11.2	5.7 (7.6)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7101-5AF71...	19	8.5 (11.4)	18 [6]	**6SL312■-■TE21-8AA3**	1.5	4 x 2.5	**6FX■002-5■S31-....**
1FK7103-5AF71...	27.5	11.3 (15.2)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FK7105-5AF71...	31	15 (20.1)	30 [6]	**6SL312■-1TE23-0AA3**	1.5	4 x 10	**6FX■002-5■S61-....**
1FK7060-5AH71...	6.2	2.8 (3.8)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7063-5AH71...	12	5.2 (7.0)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7080-5AH71...	7.4	3.8 (5.1)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7083-5AH71...	15	7.5 (10.1)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7011-5AK71...	1.5	0.11 (0.2)	3	**6SL312■-■TE13-0AA3**	0.5	4 x 1.5	**6FX5002-5DA20-....**
1FK7015-5AK71...	1.5	0.22 (0.3)	3	**6SL312■-■TE13-0AA3**	0.5	4 x 1.5	**6FX5002-5DA20-....**
1FK7022-5AK71...	1.8	0.5 (0.7)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7032-5AK71...	1.7	0.7 (0.9)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7034-5AK71...	1.9	1.0 (1.3)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7040-5AK71...	2.25	1.0 (1.3)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7042-5AK71...	4.4	1.9 (2.6)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**

Cooling:		
Internal air cooling	**0**	
External air cooling	**1**	
Motor Module:		
Single Motor Module		**1**
Double Motor Module		**2**
Type of power cable:		
MOTION-CONNECT 800		**8**
MOTION-CONNECT 500		**5**
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 = 4000 rpm.

4) These values refer to n = 3500 rpm.

5) These values refer to n = 5000 rpm.

6) With the specified Motor Module, the motor cannot be fully utilized with M_0 at ΔT = 100 K winding temperature rise. If a Motor 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 EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F)

8) Motors with shaft height 20 are not available with a DRIVE-CLiQ interface. The encoder systems are connected via the SMC (Sensor Module Cabinet-Mounted).

9) With default setting of the pulse frequency.

10) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

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**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No.		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
3000	48	1.1 (1.48)	4.0 (2.9)	3.5 (2.6)	4	**1FK7044-7AF71-1■■■**	3	1.28 (1.13)	7.7 (17)
	63	1.7 (2.28)	6.4 (4.7)	5.4 (4.0)	5.3	**1FK7061-7AF71-1■■■**	3	3.4 (3.01)	10 (22.1)
		2.51 (3.37)	12 (8.8)	8.0 (5.9)	7.5	**1FK7064-7AF71-1■■■**	3	6.5 (5.75)	15.5 (34.2)
	80	3.14 (4.21) [2]	22 (16.2)	12 (8.8) [2]	12.5 [2]	**1FK7085-7AF71-1■■■**	4	23 (20.3)	23.5 (51.8)
		3.77 (5.06) [3]	28 (20.6)	18 (13.3) [3]	14.5 [3]	**1FK7086-7AF71-1■■■**	4	23 (20.3)	23.5 (51.8)
4500	48	1.23 (1.65)	3.1 (2.3)	2.6 (1.9)	4	**1FK7043-7AH71-1■■■**	3	1.0 (0.89)	6.3 (13.9)
		1.41 (1.89)	4.0 (2.9)	3.0 (2.2)	4.9	**1FK7044-7AH71-1■■■**	3	1.28 (1.13)	7.7 (17)
	63	2.03 (2.72)	6.4 (4.7)	4.3 (3.2)	5.9	**1FK7061-7AH71-1■■■**	3	3.4 (3.01)	10 (22.1)
		2.36 (3.16)	12 (8.8)	5.0 (3.7)	7	**1FK7064-7AH71-1■■■**	3	6.5 (5.75)	15.5 (34.2)
6000	36	0.57 (0.76)	1.3 (1.0)	0.9 (0.7)	1.5	**1FK7033-7AK71-1■■■**	3	0.27 (0.24)	3.1 (6.8)
	48	1.26 (1.69)	3.1 (2.3)	2.0 (1.5)	4.4	**1FK7043-7AK71-1■■■**	3	1.0 (0.89)	6.3 (13.9)

Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R	A
	Absolute encoder EnDat 2048 S/R [1] (not for 1FK703)	E
	Absolute encoder EnDat 512 S/R [1] (only for 1FK703)	H
	Absolute encoder EnDat 32 S/R [1] (not for 1FK703)	G
	Absolute encoder EnDat 16 S/R [1] (only for 1FK703)	J
	Multi-pole resolver	S
	2-pole resolver	T
Encoder systems for motors with DRIVE-CLiQ interface:	22 bit incremental encoder	D
	22 bit absolute encoder, single-turn +12 bit multi-turn [1] (not for 1FK703)	F
	20 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK703)	L
	16 bit absolute encoder, single-turn +12 bit multi-turn [1] (not for 1FK703)	K
	15 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK703)	V
	15 bit resolver	U
	14 bit resolver	P

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H

Degree of protection:	IP64	0
	IP65 and DE flange IP67	2
	IP64 and anthracite paint finish	3
	IP64 and DE flange IP67, anthracite paint finish	5
	IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor	8

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 6)	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current 5)	Booksize format	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	Order No.	Power connector	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	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7061-7AF71...	6.1	2.0 (2.7)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7064-7AF71...	11	3.8 (5.1)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7085-7AF71...	22.5	6.9 (9.3)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FK7086-7AF71...	21	8.8 (11.8)	30	**6SL312■-1TE23-0AA3**	1.5	4 x 4	**6FX■002-5■S41-....**
1FK7043-7AH71...	4.5	1.5 (2.0)	5	**6SL312■-■TE15-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7044-7AH71...	6.3	1.9 (2.6)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7061-7AH71...	8	3.0 (4.0)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7064-7AH71...	15	5.7 (7.6)	18	**6SL312■-■TE21-8AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7033-7AK71...	2.2	0.8 (1.1)	3	**6SL312■-■TE13-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**
1FK7043-7AK71...	6.4	1.9 (2.6)	9	**6SL312■-■TE21-0AA3**	1	4 x 1.5	**6FX■002-5■S01-....**

Cooling:								
Internal air cooling	**0**							
External air cooling	**1**							
Motor Module:								
Single Motor Module		**1**						
Double Motor Module		**2**						
Type of power cable:								
MOTION-CONNECT 800					**8**			
MOTION-CONNECT 500					**5**			
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 EN 60204-1 for installation type C, for continuous duty at an ambient

5) With default setting of the pulse frequency.

6) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

1FK7 Compact/1FK7 High Dynamic motors
Natural cooling for Power Modules

Selection and ordering data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	**1FK7 Compact/High Dynamic synchronous motor Natural cooling Connection to SINAMICS 230 V 1 AC**	Number of pole pairs	Rotor moment of inertia (without brake)	Weight (without brake)
n_{rated}	SH	P_{rated} at ΔT=100 K	M_0 at ΔT=100 K	M_{rated} at ΔT=100 K	I_{rated} at ΔT=100 K	Order No.		J	m
rpm		kW (HP)	Nm (lb_f-ft)	Nm (lb_f-ft)	A			10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	kg (lb)
3000	36	0.31 (0.42)	1.15 (0.8)	1.0 (0.7)	1.6	**1FK7032-5AF21-1■ ■ ■**	3	0.61 (0.54)	2.7 (5.9)
		0.38 (0.51)	1.3 (1.0)	1.2 (0.9)	2.0	**1FK7033-7AF21-1■ ■ ■**	3	0.27 (0.24)	3.1 (6.8)
		0.46 (0.62)	1.6 (1.2)	1.45 (1.1)	1.8	**1FK7034-5AF21-1■ ■ ■**	3	0.9 (0.8)	3.7 (8.2)
	48	0.82 (1.1)	3.0 (2.2)	2.6 (1.9)	3.5	**1FK7042-5AF21-1■ ■ ■**	4	3.01 (2.66)	4.9 (10.8)
		0.79 (1.06)	2.7 (2.0)	2.5 (1.8)	3.8	**1FK7043-7AF21-1■ ■ ■**	3	1.0 (0.89)	6.3 (13.9)
6000	20	0.05 (0.1)	0.18 (0.1)	0.08 (0.1)	0.5	**1FK7011-5AK21-1■ ■ 3**	4	0.064 (0.06)	0.9 (2.0)
		0.10 (0.1)	0.35 (0.3)	0.16 (0.1)	0.5	**1FK7015-5AK21-1■ ■ 3**	4	0.083 (0.08)	1.1 (2.4)
	28	0.38 (0.51)	0.85 (0.6)	0.6 (0.4)	1.4	**1FK7022-5AK21-1■ ■ ■**	3	0.28 (0.25)	1.8 (4.0)

Encoder systems for motors without DRIVE-CLiQ interface:	Incremental encoder sin/cos 1 V_{pp} 2048 S/R	A
	Absolute encoder EnDat 2048 S/R [1] (only for 1FK704)	E
	Absolute encoder EnDat 512 S/R [1] (not for 1FK704)	H
	Absolute encoder EnDat 32 S/R [1] (only for 1FK704)	G
	Absolute encoder EnDat 16 S/R [1] (not for 1FK704)	J
	Multi-pole resolver	S
	2-pole resolver	T
Encoder systems for motors with DRIVE-CLiQ interface [4]:	22 bit incremental encoder (not for 1FK701)	D
	22 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK704)	F
	20 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK702/1FK703)	L
	16 bit absolute encoder, single-turn +12 bit multi-turn [1] (only for 1FK704)	K
	15 bit single-turn absolute encoder +12 bit multi-turn [1] (only for 1FK702/1FK703)	V
	15 bit resolver (not for 1FK701)	U
	14 bit resolver (not for 1FK701)	P

Shaft extension:	**Shaft and flange accuracy:**	**Holding brake:**	
Fitted key and keyway	Tolerance N	without	A
Fitted key and keyway	Tolerance N	with	B
Plain shaft	Tolerance N	without	G
Plain shaft	Tolerance N	with	H

Degree of protection:	IP64 (not for 1FK701)	0
	IP65 and DE flange IP67 (not for 1FK701)	2
	IP64 (IP54 for 1FK701) and anthracite paint finish	3
	IP65 and DE flange IP67, anthracite paint finish (not for 1FK701)	5
	IP65 and DE flange IP67, anthracite paint finish and metal rating plate on motor (not for 1FK701)	8

To select the degree of protection and type, see selection guides.

Selection and ordering data

Motor type (continued)	Static current	Calculated power P_{calc} 6)	SINAMICS S120 Power Module		Power cable with complete shield		
			Rated output current 5)	**Booksize format without line filter**	Motor connection (and brake connection) via power connector		
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated} at M_0 ΔT=100 K	Order No.	Power connector	Cable cross-section 3)	Order No. Pre-assembled cable
	A	kW (HP)	A		Size	mm^2	
1FK7032-5AF21...	1.7	0.36 (0.5)	2.3	**6SL3210 - 1SB12-3UA3**	1	4 x 1.5	**6FX■002-5■G01-....**
1FK7033-7AF21...	2.2	0.41 (0.6)	2.3	**6SL3210 - 1SB12-3UA3**	1	4 x 1.5	**6FX■002-5■G01-....**
1FK7034-5AF21...	1.9	0.50 (0.7)	2.3	**6SL3210 - 1SB12-3UA3**	1	4 x 1.5	**6FX■002-5■G01-....**
1FK7042-5AF21...	3.9	0.94 (1.3)	3.9	**6SL3210 - 1SB14-0UA3**	1	4 x 1.5	**6FX■002-5■G01-....**
1FK7043-7AF21...	3.9	0.85 (1.1)	3.9	**6SL3210 - 1SB14-0UA3**	1	4 x 1.5	**6FX■002-5■G01-....**
1FK7011-5AK21...	0.85	0.11 (0.2)	0.9	**6SL3210 - 1SB11-0UA3**	0.5	4 x 1.5	**6FX5002-5DA30-....** 2)
1FK7015-5AK21...	0.85	0.22 (0.3)	0.9	**6SL3210 - 1SB11-0UA3**	0.5	4 x 1.5	**6FX5002-5DA30-....** 2)
1FK7022-5AK21...	1.8	0.53 (0.7)	2.3	**6SL3210 - 1SB12-3UA3**	1	4 x 1.5	**6FX■002-5■G01-....**

Cooling: Internal air cooling	**0**							
Motor Module: Single Motor Module		**1**						
Type of power cable: MOTION-CONNECT 800 MOTION-CONNECT 500			**8 5**					
Without brake cores With brake cores						**C 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) This power cable is fitted with a connector with M17 thread at the motor end and brake cores as standard (4 x 1.5 mm^2 + 2 x 1.5 mm^2).

3) The current carrying capacity of the power cables complies with EN 60204-1 for installation type C, for continuous duty at an ambient air temperature of 40 °C (104 °F).

4) Motors of shaft height 20 are not available with a DRIVE-CLiQ interface. The encoder systems are connected via the SMC (Sensor Module Cabinet-Mounted).

5) With default setting of the pulse frequency.

6) $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$ $\quad P_{calc}\,[HP] = \frac{M_0\,[lb_f\text{-}in] \times n_{rated}}{63000}$

Selection guides
Built-in holding brakes

Built-in holding brakes for 1FT6, 1FT7 and 1FK7 motors

Many drives need a holding brake with an emergency stop function for safety reasons or to meet process requirements.

The permanent-magnet or spring-loaded, single-face brakes used for these motor series function according to the closed-circuit current principle. The magnetic field of the permanent magnet exerts a tension on the brake anchor plate, i.e. in a condition of zero current, the brake is closed and the motor shaft thereby stopped. When the rated voltage of 24 V DC is applied to the brake, current flows through the coil and produces a counter-field that cancels the pull of the permanent magnet, causing the brake to release.

The spring-loaded, single-face brake operates by the force of pressure exerted by the spring instead of a permanent magnet.

In the event of an emergency stop or power outage, approximately 2000 braking operations can be performed with the maximum switched energy without causing excessive wear on the holding brake (condition: maximum external moment of inertia = moment of inertia of motor and n_{max} type-specific).

The holding brake is not an operational brake.

In order to avoid switching overvoltages and any related effects on the plant environment, the brake cables must be connected

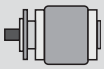
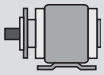
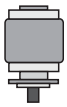
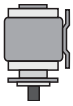
Technical specifications for built-in holding brakes (brake supply voltage 24 V DC ±10 %)

Frame size	Motor type	Brake type	Holding torque [1]	Direct current	Opening time with varistor	Closing time with varistor	Moment of inertia	Maximum switched energy per brake operation from n = 3000 rpm
			Nm (lb_f-ft)	A	ms	ms	10^{-4} kgm^2 (10^{-3} lb_f-in-s^2)	J
for 1FT6 motors								
28	**1FT602.**	**EBD 0.11 B**	1.0 (0.7)	0.3	20	10	0.07 (0.06)	9
36	**1FT603.**	**EBD 0.15 B**	2.0 (1.5)	0.4	30	15	0.12 (0.11)	27
48	**1FT604.**	**EBD 0.4 BA**	5.0 (3.7)	0.8	50	20	1.06 (0.94)	125
63	**1FT606.**	**EBD 1.5 B**	15.0 (11.1)	0.8	130	30	3.2 (2.83)	320
80	**1FT6081/082**	**EBD 1.2 B**	15.0 (11.1)	0.8	150	35	3.2 (2.83)	750
80	**1FT6084/086**	**EBD 3.5 BN**	28.0 (20.7)	0.9	180	35	13.5 (11.9)	1600
100	**1FT610.**	**EBD 4 B**	70.0 (51.6)	1.4	220	50	32 (28.3)	2100
132	**1FT613.** [2]	**EBD 8 B**	140 (103)	1.7	300	90	76 (67.2)	9800
for 1FT7 Compact motors								
36	**1FT703.**	**HT04P01**	3.0 (2.2)	0.3	60	25	0.12 (0.11)	30
48	**1FT704.**	**HT07P01**	8.0 (5.9)	0.6	90	30	0.87 (0.77)	270
63	**1FT706.**	**HT09P01**	18 (13.3)	0.8	150	50	2.84 (2.51)	880
80	**1FT708.**	**HT11P01**	48 (35.4)	1.0	220	65	15.4 (13.6)	1900
100	**1FT710.**	**HT14P01**	85 (62.7)	1.6	250	70	27.6 (24.4)	5300
for 1FK7 Compact motors								
20	**1FK701.**	**HT03P**	0.4 (0.3)	0.3	30	20	0.019 (0.02)	2
28	**1FK7022**	**EBD 0.11 BN**	1.1 (0.8)	0.3	30	20	0.07 (0.06)	8
36	**1FK7032**	**EBD 0.13 BN**	1.3 (1.0)	0.4	50	30	0.08 (0.07)	17
48	**1FK704.**	**EBD 0.3 BV**	3.2 (2.4)	0.6	70	30	0.72 (0.64)	74
63	**1FK706.**	**EBD 0.8 BK**	13 (9.6)	0.8	100	50	2.25 (1.99)	400
80	**1FK7080**	**EBD 1.5 BN**	10 (7.4)	0.7	100	50	3.1 (2.74)	400
80	**1FK7083**	**EBD 2 BY**	22 (16.2)	0.9	200	60	8.6 (7.61)	1400
100	**1FK7100**	**EBD 2 BY**	22 (16.2)	0.9	200	60	8.6 (7.61)	1400
100	**1FK7101/103/105**	**EBD 3.5 BV**	41 (30.2)	1.0	300	70	13.5 (11.9)	3000
for 1FK7 High Dynamic motors								
36	**1FK703.**	**1EB 14-30**	1.3 (1.0)	0.45	100	40	0.12 (0.11)	14
48	**1FK704.**	**1EB 20-40**	4.0 (3.0)	0.6	150	50	0.13 (0.12)	96
63	**1FK706.**	**1EB 28-60**	12 (8.9)	0.8	150	50	0.34 (0.30)	230
80	**1FK708.**	**1EB 35-80**	22 (16.2)	1.2	200	60	2.0 (1.77)	700

[1] Minimum torque of brake in static state (stationary motor)

[2] Holding brake is not available for version with water cooling

Types/mounting position

Type/ mounting position	Desig-nation	Type/ mounting position	Desig-nation	Type/ mounting position	Desig-nation
	IM B3		IM B5 IM B14		IM B35
	IM V5		IM V1 IM V18		IM V15
	IM V6		IM V3 IM V19		IM V35

Degree of protection

The degree of protection designation in accordance with EN 60034-5 and IEC 60034-5 consists of letters "IP" and two digits (e.g. IP64). The second digit in the degree of protection designation represents protection against water, the first digit protection against touch and protection against ingress of solid foreign objects.

Since coolants are used for machine tools and transfer lines that contain oil, are able to creep, and may also be corrosive, protection against water alone is insufficient. The IP rating should only be considered here as a guideline. Our sealing systems are based on many years of practical experience, exceed the IEC specifications by far, and are appropriate to the requirements of machine tools.

The table can serve as a decision aid for selecting the proper degree of protection for motors. With the IM V3/IM V19 types, permanent liquid on the flange is only permissible with IP67/IP68.

Liquids / **Effect**	**General workshop environment**	**Water General cooling lubricant (95 % water, 5 % oil) Oil**	**Penetrating oil; petroleum; aggressive cooling lubricants**
Dry	IP64	–	
Water-enriched environment/ increased humidity	–	IP64	IP67 [1]
Mist		IP65	IP67
Spray	–	IP65	IP68
Jet	–	IP67	IP68
Splash, brief immersion; constant inundation	–	IP67	IP68

[1] IP64 with dry run at shaft exit.