The new, compact synchronous motors
for high-performance applications

Catalog News for NC61 and D21.1 - 2007

servomotor 1FT7

SIEMENS

Overview

The new 1FT7 motors are permanent-magnet-excited synchronous motors with very compact dimensions and an optically attractive design. Due to the well-proven cross-profile, quick and easy mounting of the motors is possible.

The 1FT7 motors fulfill the highest demands in terms of dynamic performance, speed setting range including field weakening, shaft and flange accuracy and positioning accuracy. They are equipped with latest encoder technology and optimized for the use with our fully digital control and drive systems.

Benefits

- High shaft and flange accuracy
- Low torque ripple
- High dynamic performance
- High overload capability (up to 4 x M_0)
- Compact design
- High degree of protection
- Robust, vibration-isolated encoder mounting
- Easy encoder replacement on site without alignment
- Quick and easy mounting due to cross-profile
- Rotatable connectors
- New flange design with set-back flange surface particularly suitable for toothed belt output and vertical mounting (IM V1). The previous flange design compatible with 1FT6 motors can be ordered as an option.

Application

- High-performance machine tools
- Machines with stringent requirements in terms of dynamic response and precision, e.g. packaging machines, film drawing systems, printing machines and handling equipment

Technical specifications

Product name	1FT7 motor
Type of motor	Permanent-magnet-excited synchronous motor
Magnet material	Rare-earth magnet material
Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 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
Cooling	Natural cooling
Temperature monitoring	KTY 84 temperature sensor in stator winding
Paint finish	Pearl dark grey (RAL 9023)
2nd rating plate	Enclosed separately
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 (normal)
Vibration magnitude in accordance with EN 60034-14 (IEC 60034-14)	Grade A is observed up to rated speed
Max. sound pressure level in accordance with EN ISO 1680	1FT704 ... 1FT706: 65 dB (A) 1FT708 ... 1FT710: 70 dB (A)
Built-in encoder systems for motors without DRIVE-CLiQ interface	• Incremental encoder sin/cos 1 V_{pp} 2048 pulses/revolution • Absolute encoder, multiturn, 2048 pulses/revolution and traversing range 4096 revolutions with EnDat interface
Built-in encoder systems for motors with DRIVE-CLiQ interface	• Incremental encoder 22 bit 2048 pulses/revolution • Absolute encoder 22 bit 2048 pulses/revolution, multiturn, traversing range 4096 revolutions
Connection	Connectors for signals and power can be rotated up to 270°
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 • Shaft and flange accuracy Tolerance R

[1] Shaft extension run-out, concentricity of spigot and shaft, perpendicularity of mounting face of flange to shaft.

1FT7 core type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	**1FT7 synchronous motors Natural cooling**	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
2000	100	5.03 (6.75)	30 (266)	24 (212)	10	**1FT7102 - 1AC7■ - 1■■ 1**	5	91.4 (0.0809)	26.1 (57.6)
		7.96 (10.7)	50 (443)	38 (336)	15	**1FT7105 - 1AC7■ - 1■■ 1**	5	178 (0.1575)	44.2 (97.5)
3000	48	1.35 (1.81)	5 (44.3)	4.3 (39.8)	2.6	**1FT7044 - 1AF7■ - 1■■ 1**	3	5.43 (0.0048)	7.2 (15.9)
	63	1.7 (2.28)	6 (53.1)	5.4 (47.8)	3.9	**1FT7062 - 1AF7■ - 1■■ 1**	5	7.36 (0.0065)	7.1 (15.7)
		2.39 (3.20)	9 (79.7)	7.6 (67.3)	5.1	**1FT7064 - 1AF7■ - 1■■ 1**	5	11.9 (0.0105)	9.7 (21.4)
	80	3.24 (4.34)	13 (115)	10.5 (92.9)	6.6	**1FT7082 - 1AF7■ - 1■■ 1**	5	26.5 (0.0235)	14 (30.9)
		4.55 (6.10)	20 (177)	14.5 (128)	8.5	**1FT7084 - 1AF7■ - 1■■ 1**	5	45.1 (0.0399)	20.8 (45.9)
		5.65 (7.58)	28 (248)	18 (159)	11	**1FT7086 - 1AF7■ - 1■■ 1**	5	63.6 (0.0563)	31.6 (69.7)
4500	80	4.82 (6.46)[3]	20 (177)	11.5 (102)[3]	10.1[3]	**1FT7084 - 1AH7■ - 1■■ 1**	5	45.1 (0.0399)	20.8 (45.9)
6000	63	2.13 (2.86)[1]	6 (53.1)	3.7 (32.7)[1]	5.9[1]	**1FT7062 - 1AK7■ - 1■■ 1**	5	7.36 (0.0065)	7.1 (15.7)
		2.59 (3.47)[2]	9 (79.7)	5.5 (48.7)[2]	6.1[2]	**1FT7064 - 1AK7■ - 1■■ 1**	5	11.9 (0.0105)	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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution		**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution		**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 guide.[5]

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power P_{calc} [6]	SINAMICS Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current	Order No. For complete order no., see SINAMICS S120 Drive System [5]	Power connector	Motor cable cross-section [4]	Order No. Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}		Size		
	A	kW (HP)	A			mm^2	
1FT7102-1AC7...	12	6.28 (8.42)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 1.5	**6FX■ 002 - 5■S21-....**
1FT7105-1AC7...	18	10.47 (14.0)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 - 5■S31-....**
1FT7044-1AF7...	2.8	1.57 (2.11)	3	**6SL312■ - ■TE13-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7062-1AF7...	3.9	1.88 (2.52)	5	**6SL312■ - ■TE15-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7064-1AF7...	5.6	2.83 (3.80)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7082-1AF7...	7.6	4.08 (5.47)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7084-1AF7...	11	6.28 (8.42)	18	**6SL312■ - ■TE21-8AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7086-1AF7...	15.5	8.8 (11.8)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 - 5■S31-....**
1FT7084-1AH7...	15.6	9.42 (12.6)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 - 5■S31-....**
1FT7062-1AK7...	8.4	3.77 (5.06)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7064-1AK7...	9	5.65 (7.58)	9	**6SL312■ - ■TE21-0AA.**	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. [5]		**....**

[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 IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

[5] See catalogs NC 61 · 2005 or D 21.1 · 2006.

[6] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$

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

1FT7 standard type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 synchronous motors Natural cooling	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
1500	100	4.08 (5.47)	30 (266)	26 (230)	8	**1FT7102 - 5AB7■ - 1■■■**	5	91.4 (0.0809)	26.1 (57.6)
		6.6 (8.85)	50 (443)	42 (372)	13	**1FT7105 - 5AB7■ - 1■■■**	5	178 (0.1575)	44.2 (97.5)
		9.58 (12.9)	70 (620)	61 (540)	16	**1FT7108 - 5AB7■ - 1■■■**	5	248 (0.2195)	59 (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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution	**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution	**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**

To select the degree of protection and type, see Selection guide.[2)]

Selection and Ordering Data

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

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

[2] See catalogs NC 61 · 2005 or D 21.1 · 2006.

[3] $P_{calc}\,[kW] = \frac{M_0\,[Nm] \times n_{rated}}{9550}$

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

1FT7 standard type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 synchronous motors Natural cooling	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
2000	80	2.39 (3.20)	13 (115)	11.4 (101)	4.7	**1FT7082 - 5AC7■ - 1 ■ ■ ■**	5	26.5 (0.0235)	14 (30.9)
		3.54 (4.75)	20 (177)	16.9 (150)	7.8	**1FT7084 - 5AC7■ - 1 ■ ■ ■**	5	45.1 (0.0399)	20.8 (45.9)
		4.71 (6.32)	28 (248)	22.5 (199)	9.2	**1FT7086 - 5AC7■ - 1 ■ ■ ■**	5	63.6 (0.0563)	31.8 (70.1)
	100	5.03 (6.75)	30 (266)	24 (212)	10	**1FT7102 - 5AC7■ - 1 ■ ■ ■**	5	91.4 (0.0809)	26.1 (57.6)
		7.96 (10.7)	50 (443)	38 (336)	15	**1FT7105 - 5AC7■ - 1 ■ ■ ■**	5	178 (0.1575)	44.1 (97.2)
		10.5 (14.1)	70 (620)	50 (443)	18	**1FT7108 - 5AC7■ - 1 ■ ■ ■**	5	248 (0.2195)	59 (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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution	**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution	**D** **F**

Shaft extension:	**Shaft an 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**

To select the degree of protection and type, see Selection guide.[2)]

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power P_{calc} [3]	SINAMICS Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current	Order No. For complete order no., see SINAMICS S120 Drive System [2]	Power connector	Motor cable cross-section [1]	Order No. Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}		Size	mm²	
	A	kW (HP)	A				
1FT7082-5AC7...	4.9	2.72 (3.65)	5	**6SL312■ - ■TE15-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7084-5AC7...	8.5	4.19 (5.62)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7086-5AC7...	10.6	5.86 (7.86)	18	**6SL312■ - ■TE21-8AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7102-5AC7...	12	6.28 (8.42)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 1.5	**6FX■ 002 -5■S21-....**
1FT7105-5AC7...	18	10.47 (14.0)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 -5■S31-....**
1FT7108-5AC7...	25	14.66 (19.7)	30	**6SL312■ - ■TE23-1AA.**	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. [2]		**....**

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

[2] See catalogs NC 61 · 2005 or D 21.1 · 2006.

[3] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$

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

1FT7 standard type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 synchronous motors Natural cooling	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
3000	48	0.85 (1.14)	3 (26.6)	2.7 (23.9)	2.1	**1FT7042 - 5AF7■ - 1■■■**	3	2.81 (0.0025)	4.6 (10.1)
		1.35 (1.81)	5 (44.3)	4.3 (38.1)	2.6	**1FT7044 - 5AF7■ - 1■■■**	3	5.43 (0.0048)	7.2 (15.9)
		1.76 (2.36)	7 (62.0)	5.6 (49.6)	3.5	**1FT7046 - 5AF7■ - 1■■■**	3	7.52 (0.0067)	9.3 (20.5)
	63	1.7 (2.28)	6 (53.1)	5.4 (47.8)	3.9	**1FT7062 - 5AF7■ - 1■■■**	5	7.36 (0.0065)	7.1 (15.7)
		2.39 (3.20)	9 (79.7)	7.6 (67.3)	5.1	**1FT7064 - 5AF7■ - 1■■■**	5	11.9 (0.0105)	9.7 (21.4)
		2.92 (3.92)	12 (106)	9.3 (82.3)	7.2	**1FT7066 - 5AF7■ - 1■■■**	5	16.4 (0.0145)	12.3 (27.1)
		3.42 (4.59)	15 (133)	10.9 (96.5)	6.7	**1FT7068 - 5AF7■ - 1■■■**	5	23.2 (0.0205)	16.3 (35.9)
	80	3.24 (4.34)	13 (115)	10.5 (92.9)	6.6	**1FT7082 - 5AF7■ - 1■■■**	5	26.5 (0.0235)	14 (30.9)
		4.55 (6.10)	20 (177)	14.5 (128)	8.5	**1FT7084 - 5AF7■ - 1■■■**	5	45.1 (0.0399)	20.8 (45.9)
		5.62 (7.54)	28 (248)	18 (159)	11	**1FT7086 - 5AF7■ - 1■■■**	5	63.6 (0.0563)	31.8 (70.1)
	100	6.28 (8.42)	30 (266)	20 (177)	12	**1FT7102 - 5AF7■ - 1■■■**	5	91.4 (0.0809)	26.1 (57.6)
		8.8 (11.8)	50 (443)	28 (248)	15	**1FT7105 - 5AF7■ - 1■■■**	5	178 (0.1575)	44.2 (97.5)

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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution		**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution		**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**

To select the degree of protection and type, see Selection guide.[2)]

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power P_{calc} [3]	SINAMICS Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current	Order No. For complete order no., see SINAMICS S120 Drive System [2]	Power connector	Motor cable cross-section [1]	Order No. Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}		Size		
	A	kW (HP)	A			mm²	
1FT7042-5AF7...	2.1	0.94 (1.26)	3	**6SL312■ - ■TE13-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7044-5AF7...	2.8	1.57 (2.11)	3	**6SL312■ - ■TE13-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7046-5AF7...	4	2.2 (2.95)	5	**6SL312■ - ■TE15-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7062-5AF7...	3.9	1.88 (2.52)	5	**6SL312■ - ■TE15-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7064-5AF7...	5.6	2.83 (3.80)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7066-5AF7...	8.4	3.77 (5.06)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7068-5AF7...	8.3	4.71 (6.32)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7082-5AF7...	7.6	4.08 (5.47)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7084-5AF7...	11	6.28 (8.42)	18	**6SL312■ - ■TE21-8AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7086-5AF7...	15.5	8.8 (11.8)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 - 5■S31-....**
1FT7102-5AF7...	18	9.42 (12.6)	18	**6SL312■ - ■TE21-8AA.**	1.5	4 x 2.5	**6FX■ 002 - 5■S31-....**
1FT7105-5AF7...	26	15.71 (21.1)	30	**6SL312■ - ■TE23-1AA.**	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. [2]	**....**

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

[2] See catalogs NC 61 · 2005 or D21.1 · 2006.

[3] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$

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

1FT7 standard type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 synchronous motors Natural cooling	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
4500	48	1.32 (1.77)[1]	7 (62.0)	3.6 (31.9)[1]	4.7[1]	**1FT7046 - 5AH7■ - 1■■■**	3	7.52 (0.0067)	9.3 (20.5)
	63	2.55 (3.42)[2]	12 (106)	6.1 (54.0)[2]	7.5[2]	**1FT7066 - 5AH7■ - 1■■■**	5	16.4 (0.0145)	12.3 (27.1)
	80	3.77 (5.06)	13 (115)	8 (70.8)	8.4	**1FT7082 - 5AH7■ - 1■■■**	5	26.5 (0.0235)	14 (30.9)
		4.82 (42.7)[2]	20 (177)	11.5 (102)[2]	10.1[2]	**1FT7084 - 5AH7■ - 1■■■**	5	45.1 (0.0399)	20.8 (45.9)

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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution		**N** **M**	
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution		**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**

To select the degree of protection and type, see Selection guide.[4]

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current	Order No. For complete order no., see SINAMICS S120 Drive System [4]	Power connector	Motor cable cross-section [3]	Order No. Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}		Size		
	A	kW (HP)	A			mm²	
1FT7046-5AH7...	8.1	3.3 (4.43)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7066-5AH7...	13.6	5.65 (7.58)	18	**6SL312■ - ■TE21-8AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7082-5AH7...	12.3	6.13 (8.22)	18	**6SL312■ - ■TE21-8AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7084-5AH7...	15.6	9.42 (12.6)	18	**6SL312■ - ■TE21-8AA.**	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. [4]	**....**

[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 IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

[4] See catalogs NC 61 · 2005 or D 21.1 · 2006.

[5] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$

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

1FT7 standard type motors
Natural cooling

Selection and Ordering Data

Rated speed	Shaft height	Rated power	Static torque	Rated torque	Rated current	1FT7 synchronous motors Natural cooling	No. 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-in)	Nm (lb_f-in)	A			10^{-4} kgm^2 (lb_f-in-s^2)	kg (lb)
6000	48	1.26 (1.69)	3 (26.6)	2 (17.7)	3	**1FT7042 - 5AK7■ - 1 ■ ■ ■**	3	2.81 (0.0025)	4.6 (10.1)
		1.41(1.89)[1]	5 (44.3)	3 (26.6)[1]	3.6[1]	**1FT7044 - 5AK7■ - 1 ■ ■ ■**	3	5.43 (0.0048)	7.2 (15.9)
	60	2.13 (2.86)[2]	6 (53.1)	3.7 (32.7)[2]	5.9[2]	**1FT7062 - 5AK7■ - 1 ■ ■ ■**	5	7.36 (0.0065)	7.1 (15.7)
		2.59 (3.47)[1]	9 (79.7)	5.5 (48.7)[1]	6.1[1]	**1FT7064 - 5AK7■ - 1 ■ ■ ■**	5	11.9 (0.0105)	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 pulses/revolution Absolute encoder EnDat 2048 pulses/revolution	**N** **M**
Encoder systems for motors with DRIVE-CLiQ interface:	Incremental encoder 22 bit 2048 pulses/revolution Absolute encoder 22 bit 2048 pulses/revolution	**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**

To select the degree of protection and type, see Selection guide.[4]

Selection and Ordering Data

Motor type (continued)	Static current	Calculated power P_{calc} [5]	SINAMICS Motor Module		Power cable with complete shield Motor connection (and brake connection) via power connector		
			Rated output current	Order No.	Power connector	Motor cable cross-section [3]	Order No. Pre-assembled cable
	I_0 at M_0 ΔT=100 K	P_{calc} for M_0 ΔT=100 K	I_{rated}	For complete order no., see SINAMICS S120 Drive System [4]	Size	mm^2	
	A	kW (HP)	A				
1FT7042-5AK7...	3.9	1.89 (2.53)	5	**6SL312■ - ■TE15-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7044-5AK7...	5.7	3.15 (4.22)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7062-5AK7...	8.4	3.78 (5.07)	9	**6SL312■ - ■TE21-0AA.**	1	4 x 1.5	**6FX■ 002 - 5■S01-....**
1FT7064-5AK7...	9	5.67 (7.60)	9	**6SL312■ - ■TE21-0AA.**	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. [4]		**....**

[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 IEC 60204-1 for installation type C under continuous operating conditions at an ambient air temperature of 40 °C (104 °F), designed for I_0 (100 K), PVC/PUR-insulated cable.

[4] See catalogs NC 61 · 2005 or D 21.1 · 2006.

[5] $P_{calc}\ [kW] = \frac{M_0\ [Nm] \times n_{rated}}{9550}$

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

Dimension drawings

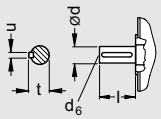
1FT7 motors without/with DRIVE-CLiQ
Natural cooling

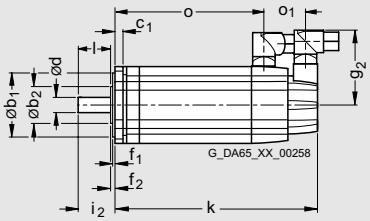
For motor		Dimensions in mm (in)										Flange 1 (1FT6-compatible)			
												without brake		with brake	
Shaft height	Type	DIN IEC	a_1 P	b_1 N	c_1 LA	e_1 M	f AB	f_1 T	g_2 –	o_1 –	s_2 S	i_2 –	k LB	o –	k LB	o –
1FT7, type IM B5, natural cooling, with connector, with/without brake															
48	**1FT7042**		120 (4.72)	80 (3.15)	10 (0.39)	100 (3.94)	96 (3.78)	3 (0.12)	93 (3.66)	52 (2.05)	6.5 (0.26)	40 (1.57)	169 (6.65)	102 (4.02)	201 (7.91)	134 (5.28)
	1FT7044												219 (8.62)	152 (5.98)	251 (9.88)	184 (7.24)
	1FT7046												259 (10.20)	192 (7.56)	291 (11.46)	224 (8.82)
63	**1FT7062**		155 (6.10)	110 (4.33)	10 (0.39)	130 (5.12)	126 (4.96)	3.5 (0.14)	105 (4.13)	52 (2.05)	9 (0.35)	50 (1.97)	173 (6.81)	106 (4.17)	208 (8.19)	141 (5.55)
	1FT7064												205 (8.07)	137 (5.39)	240 (9.45)	172 (6.77)
	1FT7066												236 (9.29)	169 (6.65)	272 (10.71)	204 (8.03)
	1FT7068												284 (11.18)	216 (8.50)	319 (12.56)	251 (9.88)

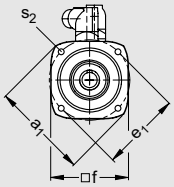
		Flange 0							Drive end shaft extension				
					without brake		with brake						
Shaft height	Type	DIN IEC	b_2 –	i_2 –	f_2 –	k LB	o –	k LB	o –	**d** **D**	d_6 –	l E	t GA	u F
48	**1FT7042**		46 (1.81)	46 (1.81)	5.5 (0.22)	163 (6.42)	96 (3.78)	195 (7.68)	128 (5.04)	**19 (0.75)**	M6	40 (1.57)	21.5 (0.85)	6 (0.24)
	1FT7044					213 (8.39)	146 (5.75)	245 (9.65)	178 (7.01)					
	1FT7046					253 (9.96)	186 (7.32)	285 (11.22)	218 (8.58)					
63	**1FT7062**		51 (2.01)	56.5 (2.22)	6 (0.24)	166 (6.54)	100 (3.94)	202 (7.95)	135 (5.31)	**24 (0.94)**	M8	50 (1.97)	27 (1.06)	8 (0.31)
	1FT7064					198 (7.80)	131 (5.16)	233 (9.17)	166 (6.54)					
	1FT7066					230 (9.06)	163 (6.42)	265 (10.43)	198 (7.80)					
	1FT7068					277 (10.91)	210 (8.27)	312 (12.28)	245 (9.65)					

Flange 0
1FT704 .
1FT706 .

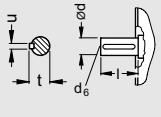
Shaft version
with fitted key

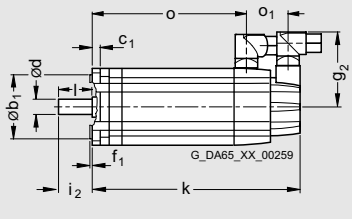


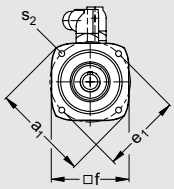




Flange 1
(1FT6-compatible)
1FT704 .
1FT706 .





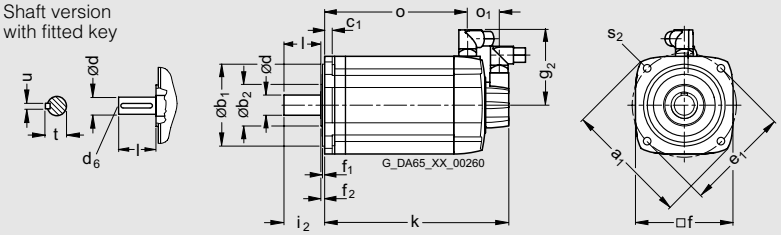


For motor		Dimensions in mm (in)										Flange 1 (FT6-compatible)			
												without brake		with brake	
Shaft height	Type	DIN IEC	a_1 P	b_1 N	c_1 LA	e_1 M	f AB	f_1 T	g_2 –	o_1 –	s_2 S	i_2 –	k LB	o –	k LB	o –
1FT7, type IM B5, natural cooling, with connector, with/without brake															
80	**1FT7082**		195 (7.68)	130 (5.12)	11.5 (0.45)	165 (6.50)	155 (6.10)	3.5 (0.14)	141 (5.55)	50 (1.97)	11 (0.43)	58 (2.28)	196 (7.72)	130 (5.12)	248 (9.76)	183 (7.20)
	1FT7084												247 (9.72)	165 (6.50)	299 (11.77)	234 (9.21)
	1FT7086												299 (11.77)	234 (9.21)	351 (13.82)	286 (11.26)
100	**1FT7102**		245 (9.65)	180 (7.09)	13 (0.51)	215 (8.46)	196 (7.72)	4 (0.16)	161 (6.34)	55 (2.17)	14 (0.55)	80 (3.15)	221 (8.70)	151 (5.94)	273 (10.75)	203 (7.99)
	1FT7105												307 (12.09)	238 (9.37)	360 (14.17)	290 (11.42)
	1FT7108												377 (14.84)	307 (12.09)	429 (16.89)	359 (14.13)

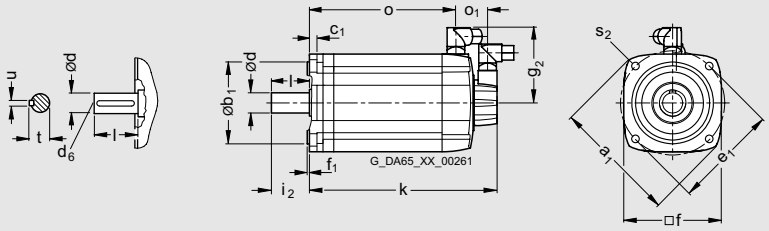
		Flange 0							Drive end shaft extension				
					without brake		with brake						
Shaft height	Type	DIN IEC	b_2 –	i_2 –	f_2 –	k LB	o –	k LB	o –	**d D**	d_6 –	l E	t GA	u F
80	**1FT7082**		66 (2.60)	64.5 (2.54)	6 (0.24)	189 (7.44)	124 (4.88)	241 (9.49)	177 (6.97)	**32 (1.26)**	M12	58 (2.28)	35 (1.38)	10 (0.39)
	1FT7084					241 (9.49)	159 (6.26)	293 (11.54)	228 (8.98)					
	1FT7086					292 (11.50)	228 (8.98)	345 (13.58)	280 (11.02)					
100	**1FT7102**		81 (3.19)	87 (3.43)	6.5 (0.26)	214 (8.43)	144 (5.67)	266 (10.47)	196 (7.72)	**38 (1.50)**	M12	80 (3.15)	41 (1.61)	10 (0.39)
	1FT7105					301 (11.85)	231 (9.09)	353 (13.90)	283 (11.14)					
	1FT7108					370 (14.57)	300 (11.81)	422 (16.61)	352 (13.86)					

Flange 0
1FT708 .
1FT710 .

Shaft version
with fitted key



Flange 1
(1FT6-compatible)
1FT708 .
1FT710 .



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