

Synchronous motors

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 $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$			J	
rpm	SH	kW (HP)	Nm (lb _f -ft)	Nm (lb _f -ft)	A	Order No.		10^{-4} kgm^2 ($10^{-3}\text{ lb}_f\text{-in-s}^2$)	kg (lb)
1 500	160	60.5 (81.1)	425 (313)	385 (283)	136	1FT6163-8SB76 - ■■■■	4	2 300 (2 035)	170 (374)
		85 (114)	600 (442)	540 (398)	174	1FT6168-8SB76 - ■■■■	4	3 100 (2 743)	210 (463)
2 500	160	89 (119)	425 (313)	340 (250)	185	1FT6163-8SD76 - ■■■■	4	2 300 (2 035)	170 (374)
Type of construction: 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} 2 048 S/R Absolute encoder EnDat 2 048 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 Tolerance R		without without					
Plain shaft		Tolerance N		without					
Plain shaft		Tolerance R		without					
Vibration magnitude:				Degree of protection: ²⁾				0 1 3 4	
Grade A				IP64					
Grade A				IP65					
Grade R				IP64					
Grade R				IP65					

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

Selection and ordering data

Motor type (continued)	Static current I_0 at $\Delta T=100\text{ K}$ A	Calculated power $P_{\text{calc}}^{6)}$ P_{calc} for M_0 $\Delta T=100\text{ K}$ kW (HP)	SINAMICS S120 Motor Module		Power cable with complete shield		
			Rated output current ⁵⁾ $I_{\text{rated}}^{4)}$ A	Booksize format Order No.	Motor connection via terminal box Type gk 630		Power cable/ By the meter
					Cable entry terminal box	Max. con- nectable cable cross- section mm ²	Order No.
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-....
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 Connection system MOTION-CONNECT.						

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

Synchronous motors

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 $\Delta T=100\text{ K}$	M_0 at $\Delta T=100\text{ K}$	M_{rated} at $\Delta T=100\text{ K}$	I_{rated} at $\Delta T=100\text{ K}$			J	m		
rpm		kW (HP)	Nm (lb _r -ft)	Nm (lb _r -ft)	A	Order No.		10^{-4} kgm^2 ($10^{-3}\text{ lb}_r\text{-in-s}^2$)	kg (lb)		
1 500	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	2 300 (2 035)	170 (374)		
		108.4 (145.4)	700 (515)	690 (508)	221	1FT6168-8WB76 - ■■■■	4	3 100 (2 743)	210 (463)		
		2 500	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	2 300 (2 035)	170 (374)			

Type of construction: 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} 2 048 S/R Absolute encoder EnDat 2 048 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: Fitted key and keyway Fitted key and keyway Plain shaft Plain shaft	Shaft and flange accuracy: Tolerance N Tolerance R Tolerance N Tolerance R	Holding brake: without without without without
		A D G K
Vibration magnitude: Grade A Grade A Grade R Grade R	Degree of protection: IP64 IP65 IP64 IP65	0 1 3 4

To select the degree of protection, see selection guide.

Selection and ordering data

Motor type (continued)	Static current I_0 at M_0 $\Delta T = 100$ K A	Calculated power P_{calc} ⁴⁾ P_{calc} for M_0 $\Delta T = 100$ K kW (HP)	SINAMICS S120 Motor Module		Power cable with complete shield Motor connection via terminal box Type gk 630		
			Rated output current ²⁾ I_{rated} A	Booksize format Order No.	Cable cross-section terminal box	Max. connectable cable cross-section mm ²	Power cable By the meter Order No.
1FT6132-6WB76-...	58	24.3 (23.6)	60	6SL312 -1TE 26-0AA3	2 x M32 x 1.5	2 x 4 x 16	6FX008-1BB61-....
1FT6134-6WB76-...	73	31.4 (42.1)	85	6SL312 -1TE 28-5AA3	2 x M40 x 1.5	2 x 4 x 35	6FX008-1BB35-....
1FT6136-6WB76-...	92	37.7 (50.6)	132	6SL312 -1TE 31-3AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6138-6WB76-...	112	47.1 (63.2)	132	6SL312 -1TE 31-3AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6163-8WB76-...	160	70.7 (94.8)	200	6SL312 -1TE 32-0AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6168-8WB76-...	225	110 (147)	260	6SL3320 -1TE 32-6AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6132-6WD76-...	92	40.6 (54.4)	85 ³⁾	6SL312 -1TE 28-5AA3	2 x M40 x 1.5	2 x 4 x 35	6FX008-1BB35-....
1FT6134-6WD76-...	122	52.4 (70.3)	132	6SL312 -1TE 31-3AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6136-6WD76-...	158	62.8 (84.2)	200	6SL312 -1TE 32-0AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6138-6WD76-...	167	78.5 (105)	200	6SL312 -1TE 32-0AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
1FT6163-8WD76-...	240	118 (158)	260	6SL3320 -1TE 32-6AA3	2 x M50 x 1.5	2 x 4 x 50	6FX008-1BB50-....
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 Connection system MOTION-CONNECT.							

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) With the specified Motor Module, the motor cannot be fully utilized with M_0 at $\Delta T = 100$ 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) $P_{calc} [\text{kW}] = \frac{M_0 [\text{Nm}] \times n_{rated}}{9550}$ $P_{calc} [\text{HP}] = \frac{M_0 [\text{lb}_f\text{-in}] \times n_{rated}}{63000}$