

Overview



Power cable for connecting a SIMOTICS M-1PH8 motor with terminal box to a SINAMICS S120 Motor Module

The synchronous and asynchronous motors are connected to the Motor Modules or Power Modules by means of MOTION-CONNECT power cables.

The pre-assembled MOTION-CONNECT power cables are of high quality and offer safety with problem-free functioning.

Depending on the design, the MOTION-CONNECT power cables are either pre-assembled at one end or at both ends.

If pre-assembled power cables are to be installed in a cable carrier in such a way that the connector would inhibit assembly, pre-assembled cables without assembled connector can also be supplied. In this case, the contacts of the cables are crimped and the connector enclosure is supplied separately. After installing the cables, the customer assembles the connector enclosure.

The 6FX.002-5.... power cables are available with crimped contacts and with the connector enclosure supplied separately (not applicable to DRIVE-CLiQ power cables).

Power cables with separately supplied motor-end connector enclosure. In this case, the 6th position of the Order No. must be changed from **0** to **4**: 6FX.042-5....-....

Power cables with separately supplied module-end connector enclosure. In this case, the 6th position of the Order No. must be changed from **0** to **1**: 6FX.012-5....-....



Power cable with supplied connector for connecting a SIMOTICS S-1FT7/-1FK7/SIMOTICS M-1PH8 motor to a SINAMICS S120 Motor Module

Type of delivery for pre-assembled power cables

Pre-assembled power cables can be ordered in units of 10 cm (3.94 in) up to a maximum length of 299.8 m (984 ft).

The cables are supplied on reels up to 30 kg or 100 m (66.2 lb or 328 ft). Above 30 kg or 100 m (66.2 lb or 328 ft), cable drums are used instead of reels. This applies to both pre-assembled power cables and for cables sold by the meter.

Type of delivery for power cables sold by the meter

Fixed lengths

Cross-section	Brake cores	MOTION-CONNECT 500 MOTION-CONNECT 800PLUS
1.5 mm ²	without/with	50 m (164 ft), 100 m (328 ft), 200 m (656 ft), 500 m (1641 ft)
2.5 mm ²	without/with	50 m (164 ft), 100 m (328 ft), 200 m (656 ft), 500 m (1641 ft)

Variable length, available in exact meter lengths

Cross-section	Brake cores	MOTION-CONNECT 500	MOTION-CONNECT 800PLUS
4 mm ²	without/with	≤ 500 m (1641 ft)	≤ 500 m (1641 ft)
6 mm ²	without/with	≤ 500 m (1641 ft)	≤ 500 m (1641 ft)
10 mm ²	without/with	≤ 500 m (1641 ft)	≤ 500 m (1641 ft)
16 mm ²	without/with	≤ 200 m (656 ft)	≤ 200 m (656 ft)
25 mm ²	without/with	≤ 200 m (656 ft)	–
35 mm ²	without/with	≤ 200 m (656 ft)	–
50 mm ²	without/with	≤ 200 m (656 ft)	–
70 mm ²	without	≤ 100 m (328 ft)	≤ 100 m (328 ft)
95 mm ²	without	≤ 100 m (328 ft)	≤ 100 m (328 ft)
120 mm ²	without	≤ 100 m (328 ft)	≤ 100 m (328 ft)

MOTION-CONNECT connection systems

Power cables for SINAMICS S120

Technical specifications

Power cables	MOTION-CONNECT 500 6FX500-...-...-...	MOTION-CONNECT 800PLUS 6FX800-...-...-...
Approvals, according to		
• VDE ¹⁾	Yes	Yes
• cURus or UR/CSA	UL 758, CSA-C22.2-N.210.2-M90	UL 758, CSA-C22.2-N.210.2-M90
• UR-CSA File No. ²⁾	Yes	Yes
• RoHS conformity	Yes	Yes
Rated voltage V_0/V in accordance with EN 50395		
• Power conductors	600 V/1000 V	600 V/1000 V
• Signal conductors	24 V (EN) 1000 V (UL/CSA)	24 V (EN) 1000 V (UL/CSA)
Test voltage, rms		
• Power conductors	4 kV	4 kV
• Signal conductors	2 kV	2 kV
Operating temperature on the surface		
• Fixed installation	-20 ... +80 °C (-4 ... +176 °F)	-50 ... +80 °C (-58 ... +176 °F)
• Flexible installation	0 ... 60 °C (32 ... 140 °F)	-20 ... +60 °C (-4 ... +140 °F)
Tensile stress, max.		
• Fixed installation	50 N/mm ² (7252 lb _f /in ²)	50 N/mm ² (7252 lb _f /in ²)
• Flexible installation	20 N/mm ² (2901 lb _f /in ²)	20 N/mm ² (2901 lb _f /in ²)
Smallest bending radius		
• Fixed installation	$5 \times D_{\max}$	$4 \times D_{\max}$
• Flexible installation	See selection and ordering data	See selection and ordering data
Torsional stress	Absolute 30°/m	Absolute 30°/m
Bending	100000	10 million
Traversing velocity	30 m/min (98.4 ft/min)	Up to 300 m/min (984 ft/min)
Acceleration	2 m/s ² (6.56 ft/s ²)	Up to 50 m/s ² (164 ft/s ²), see characteristics
Insulation material, incl. jacket	CFC/silicone-free	CFC/halogen/silicone-free IEC 60754-1/DIN VDE 0472-815
Oil resistance	EN 60811-2-1 (mineral oil only)	EN 60811-2-1
Outer jacket	PVC DESINA color orange RAL 2003	PUR, HD22.10 S2 (VDE 0282, Part 10) DESINA color orange RAL 2003
Flame-retardant	EN 60332-1-1 to 1-3	EN 60332-1-1 to 1-3

Degree of protection of the pre-assembled power cables and their extensions when closed and inserted: IP67.

¹⁾ The respective registration number is printed on the cable jacket (only applies to power cables).

²⁾ The File No. is printed on the cable jacket.

MOTION-CONNECT connection systems

Power cables for SINAMICS S120

Power cables for SIMOTICS S-1FT7/-1FK7/
SIMOTICS M-1PH8 motors with SPEED-CONNECT connector

Selection and ordering data (continued)

For SIMOTICS S-1FK7 motors without holding brake and with SPEED-CONNECT connector on SINAMICS S120 Power Modules

Connection method, Power Module end	Number of cores x cross-section mm ²	Connector size, motor end	Pre-assembled cable <u>without</u> brake cores	Cable sold by the meter ¹⁾ <u>without</u> brake cores	D_{max}		Weight (without connector)		Smallest perm. bending radius ²⁾	
			Order No.	Order No.	6FX5 mm (in)	6FX8 mm (in)	6FX5 kg/m (lb/ft)	6FX8 kg/m (lb/ft)	6FX5 mm (in)	6FX8 mm (in)
Exposed core ends	4 × 1.5	1	6FX002-5CG10-....	6FX008-1BB11-....	8.4 (0.33)	9.5 (0.37)	0.12 (0.08)	0.15 (0.10)	155 (6.10)	75 (2.95)
		1.5	6FX002-5CG22-....							
	4 × 2.5	1	6FX002-5CG12-....	6FX008-1BB21-....	10.0 (0.39)	11.0 (0.43)	0.21 (0.14)	0.20 (0.13)	180 (7.09)	90 (3.54)
		1.5	6FX002-5CG32-....							
	4 × 4	1.5	6FX002-5CG42-....	6FX008-1BB31-....	11.4 (0.45)	12.3 (0.48)	0.27 (0.18)	0.27 (0.18)	210 (8.27)	100 (3.94)
	4 × 6	1.5	6FX002-5CG52-....	6FX008-1BB41-....	13.6 (0.54)	14.9 (0.59)	0.37 (0.25)	0.41 (0.28)	245 (9.65)	120 (4.72)
	4 × 10	1.5	6FX002-5CG62-....	6FX008-1BB51-....	20.0 (0.79)	18.2 (0.72)	0.73 (0.49)	0.62 (0.42)	360 (14.17)	140 (5.51)
MOTION-CONNECT 500			5	5						
MOTION-CONNECT 800PLUS			8	8						
Length code										

For SIMOTICS S-1FK7 motors with holding brake and with SPEED-CONNECT connector on SINAMICS S120 Power Modules

Connection method, Power Module end	Number of cores x cross-section mm ²	Connector size, motor end	Pre-assembled cable <u>with</u> brake cores	Cable sold by the meter ¹⁾ <u>with</u> brake cores	D_{max}		Weight (without connector)		Smallest perm. bending radius ²⁾	
			Order No.	Order No.	6FX5 mm (in)	6FX8 mm (in)	6FX5 kg/m (lb/ft)	6FX8 kg/m (lb/ft)	6FX5 mm (in)	6FX8 mm (in)
Exposed core ends	4 × 1.5+2 × 1.5	0.5	6FX002-5DN30-....	6FX008-1BA11-....	10.8 (0.43)	12.0 (0.47)	0.22 (0.15)	0.23 (0.16)	195 (7.68)	90 (3.54)
	4 × 1.5+2 × 1.5	1	6FX002-5DG10-....							
		1.5	6FX002-5DG22-....							
	4 × 2.5+2 × 1.5	1	6FX002-5DG12-....	6FX008-1BA21-....	12.4 (0.49)	13.8 (0.54)	0.25 (0.17)	0.30 (0.20)	225 (8.86)	105 (4.13)
		1.5	6FX002-5DG32-....							
	4 × 4+2 × 1.5	1.5	6FX002-5DG42-....	6FX008-1BA31-....	14.0 (0.55)	15.2 (0.60)	0.35 (0.24)	0.38 (0.26)	255 (10.04)	115 (4.53)
	4 × 6+2 × 1.5	1.5	6FX002-5DG52-....	6FX008-1BA41-....	16.1 (0.63)	17.3 (0.68)	0.49 (0.33)	0.50 (0.34)	290 (11.42)	130 (5.12)
	4 × 10+2 × 1.5	1.5	6FX002-5DG62-....	6FX008-1BA51-....	21.7 (0.85)	20.1 (0.79)	0.81 (0.54)	0.71 (0.48)	395 (15.55)	150 (5.91)
MOTION-CONNECT 500			5	5						
MOTION-CONNECT 800PLUS			8	8						
Length code										

¹⁾ Note type of delivery.

²⁾ Valid for installation in a cable carrier.

MOTION-CONNECT connection systems

Order number code

Power cables

Overview

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MOTION-CONNECT 500	6	F	X	5	0	.	2	-	5	.	.	.	-	.	.	.
MOTION-CONNECT 800PLUS	6	F	X	8	0	.	2	-	5	.	.	.	-	.	.	.
Pre-assembled at motor and module ends						0										
Pre-assembled at motor end, connector at module end supplied separately						1										
Motor-end connector supplied separately, pre-assembled at module end						4										
Without brake cores								5	C							
With brake cores								5	D							
<u>Basic cable between</u>																
<u>and</u>																
SINAMICS S120 Motor Module, booksize format up to 30 A								5	D	A	2	0				
Motor connector, full-thread, size 0.5								5		S		1				
Motor connector, full-thread, size 1/1.5								5		S	1	3				
Motor connector, full-thread, size 3								5		S		2				
Motor with terminal box (exposed core ends)								5		S		2				
Motor connector, SPEED-CONNECT, size 0.5								5	D	N	2	0				
Motor connector, SPEED-CONNECT, size 1/1.5								5		N		1				
SINAMICS S120 Motor Module, booksize format, 45 A or higher								5		S		4				
Motor connector, full-thread, size 1/1.5								5		S	2	3				
Motor connector, full-thread, size 3								5		N		4				
Motor connector, SPEED-CONNECT, size 1/1.5								5		N		4				
SINAMICS S120 Power Module/Motor Module, booksize compact format								5	D	A	3	0				
Motor connector, full-thread, size 0.5								5		G		1				
Motor connector, full-thread, size 1/1.5								5		G		3				
Motor connector, full-thread, size 3								5	D	N	3	0				
Motor connector, SPEED-CONNECT, size 0.5								5		G	1	0				
Motor connector, SPEED-CONNECT, size 1/1.5								5		G		0				
SINAMICS S120 Power Module/Motor Module, booksize format								5	C	R						
SIMOTICS M-1PH8 with terminal box								5	C	R						
<u>Extension between basic cable with connector</u>																
<u>and motor connector</u>																
Full-thread, size 0.5								5	M	E	0	5				
Full-thread, size 1								5		A		5				
Full-thread, size 1.5								5		A		8				
Full-thread, size 3								5		X		8				
SPEED-CONNECT, size 0.5								5	M	N	0	5				
SPEED-CONNECT, size 1								5		Q		5				
SPEED-CONNECT, size 1.5								5		Q		8				
SPEED-CONNECT, size 1.5								5		Q		8				
Adapter cable for SIMOTICS L-1FN3	6	F	X	7	0	0	2	-	L	M						
Cross-section																
Length code																
Units of 10 cm (3.94 in) or 1 meter (3.28 ft) or in fixed lengths																

MOTION-CONNECT connection systems

Order number code

Length code

Overview

Data position of the Order No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
MOTION-CONNECT 500	6	F	X	5	0	0	8	-	1	B	.	.	.	-	.	.	.
MOTION-CONNECT 800PLUS	6	F	X	8	0	0	8	-	1	B	.	.	.	-	.	.	.
											B						
Power cable without brake cores, sold by the meter																	
Power cable with brake cores, sold by the meter											A						
No. of cores and cross-sections																	
Length code																	
Units of 10 cm (3.94 in) or 1 meter (3.28 ft) or in fixed lengths																	

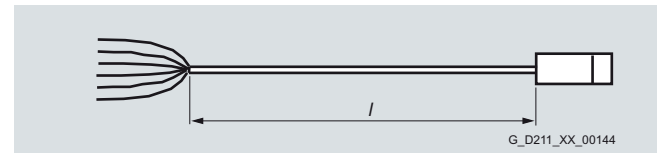
Overview

Description	Order No. supplement
Length code for pre-assembled cables	6FX.0.2-.....- ■ ■ ■ ■
0 m	1
100 m (328 ft)	2
200 m (656 ft)	3
0 m	A
10 m (32.8 ft)	B
20 m (65.6 ft)	C
30 m (98.4 ft)	D
40 m (131 ft)	E
50 m (164 ft)	F
60 m (197 ft)	G
70 m (230 ft)	H
80 m (262 ft)	J
90 m (295 ft)	K
0 m	A
1 m (3.28 ft)	B
2 m (6.56 ft)	C
3 m (9.84 ft)	D
4 m (13.1 ft)	E
5 m (16.4 ft)	F
6 m (19.7 ft)	G
7 m (22.9 ft)	H
8 m (26.3 ft)	J
9 m (29.5 ft)	K
0 m	0
0.1 m (3.94 in)	1
0.2 m (7.87 in)	2
0.3 m (11.81 in)	3
0.4 m (15.75 in)	4
0.5 m (19.96 in)	5
0.6 m (23.62 in)	6
0.7 m (27.56 in)	7
0.8 m (31.5 in)	8
Examples:	
1.0 m (3.28 ft):	1 A B 0
2.2 m (7.22 ft):	1 A C 2
8.0 m (26.3 ft):	1 A J 0
299.0 m (981 ft):	3 K K 0

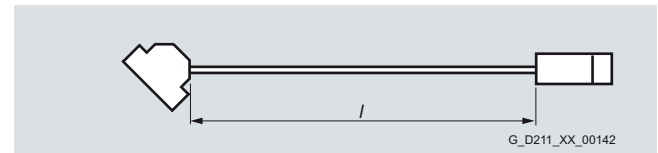
Description	Order No. supplement
Length code for power and signal cables, sold by the meter¹⁾	6FX.008-.....- ■ ■ A 0
50 m (164 ft)	1 F
100 m (328 ft)	2 A
200 m (656 ft)	3 A
500 m (1640 ft)	6 A

More information

Definition of lengths for pre-assembled cables



Cable with exposed core ends and pre-assembled connector



Cable with pre-assembled connectors at both ends

Tolerances:

- Cable lengths up to 10 m (32.8 ft): $\pm 2\%$
- Cable lengths of 10 m (32.8 ft) and longer: $\pm 1\%$

¹⁾ Note type of delivery.