

MOTION-CONNECT connection systems

Overview

Power cables

Cable	For motor	MOTION-CONNECT 500	MOTION-CONNECT 800PLUS	Page
Dynamic requirements	SIMOTICS	Medium	High	
Environmental requirements		Medium	High	
UL/CSA		✓	✓	
Halogen-free		–	✓	
RoHS		✓	✓	
Power cables with SPEED-CONNECT connector				
	S-1FT7	✓	✓	12/9, 12/10
	S-1FK7	✓	✓	12/11
	M-1PH808 M-1PH810	✓	✓	12/9
Power cables with full-thread connector				
	S-1FT7	✓	✓	12/12 ... 12/14
	S-1FK7	✓	✓	12/14
	M-1PH808 M-1PH810 M-1PH813	✓	✓	12/12, 12/14
	L-1FN3	–	✓	12/19
	T-1FW6	–	✓	12/21
Extensions for power cables with SPEED-CONNECT or full-thread connector				
	S-1FT7	✓	✓	12/15
	S-1FK7	✓	✓	12/15
	M-1PH808 M-1PH810 M-1PH813	✓	✓	12/15
	L-1FN3	–	✓	12/19
	T-1FW6	–	✓	12/21
Power cables for motors with terminal box				
	M-1PH8	✓ from 35 mm ²	✓ up to 16 mm ²	12/16, 12/17
	T-1FW3	✓	✓ up to 16 mm ²	12/20

Hybrid cables for SINAMICS S120M distributed servo drive

Cable	For distributed servo drive	MOTION-CONNECT 800PLUS	Page
Dynamic requirements	SINAMICS S120M	High	
Environmental requirements		High	
UL/CSA		✓	
Halogen-free		✓	
RoHS		✓	
Hybrid cables			
	6FX8002-7HY	✓	12/22

✓ = Possible

– = Not possible

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Introduction

General information

Overview

MOTION-CONNECT cables are suitable for use with many different types of machine tools and production machinery.

The following variants of MOTION-CONNECT cable are available as fully-assembled power and signal cables or sold by the meter:

- **MOTION-CONNECT 500**
 - Cost-effective solution for predominantly fixed installation
 - Suitable for low mechanical loading
 - Tested for travel distances up to 5 m (16.4 ft)
- **MOTION-CONNECT 800PLUS**
 - Meets requirements for use in cable carriers
 - Suitable for high mechanical loading
 - Oil resistance
 - Tested for travel distances of up to 50 m (164 ft)

Benefits

Pre-assembled MOTION-CONNECT cables provide high quality and perfect, system-tested functionality.

SPEED-CONNECT

Fast, stable and reliable connections can be made with the new, pre-assembled cables with SPEED-CONNECT connectors. With a short rotation as far as the stop, the cap nut of the connector secures the connection.

The cables with SPEED-CONNECT connectors supplement the previous offering of MOTION-CONNECT cables with full-thread connectors.

Application

MOTION-CONNECT cables are intended for use in machines. They are not suitable for building technology applications or outdoor installation.

MOTION-CONNECT cables have been tested in a cable carrier with horizontal travel distance and have also been designed for this type of application. They are not self-supporting.

The pre-assembled cables can be ordered in length units of 10 cm (3.94 in) and can be extended, if necessary.

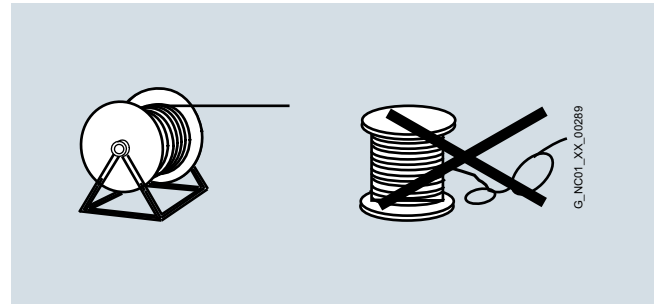
When cable lengths (basic cables and extensions) are determined for the systems and applications described in this catalog, the technically permissible maximum cable lengths (e.g., 25 m (82 ft)) specified in the catalog must be observed. Malfunctions can occur if longer cables are used.

Siemens assumes no liability for correct transmission of signals or power in this case.

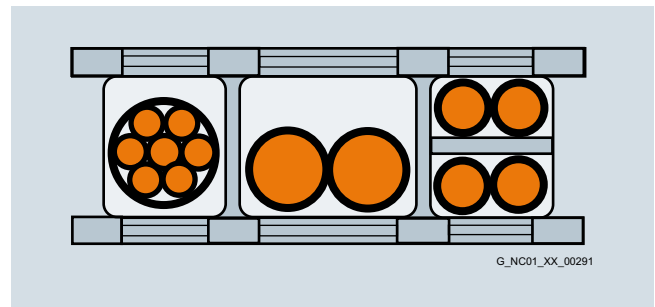
Compatibility between SPEED-CONNECT and full-thread connectors:

Connector on motor with external thread	Connector with cap nut on cable	Compatibility
SPEED-CONNECT	SPEED-CONNECT	✓
SPEED-CONNECT	Full-thread	✓
Full-thread	Full-thread	✓
Full-thread	SPEED-CONNECT	–

Function



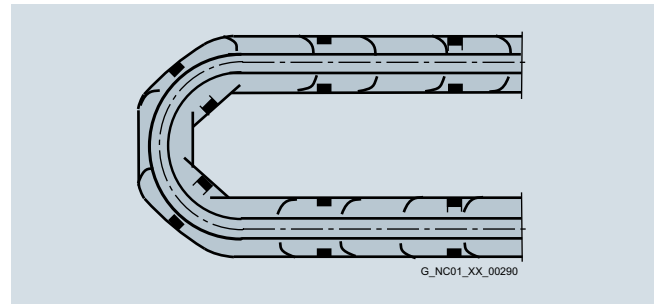
The cables must be removed from the drum without twisting, i.e., the cables must be unwound and must never be lifted over the drum flange in loops.



To maximize the service life of the cable carrier and cables, cables in the carrier made from different materials must be separated by spacers in the cable carrier. The spacers must be filled evenly to ensure that the position of the cables does not change during operation. The cables should be distributed as symmetrically as possible according to their weights and dimensions. Cables with very different outer diameters should also be separated by spacers.

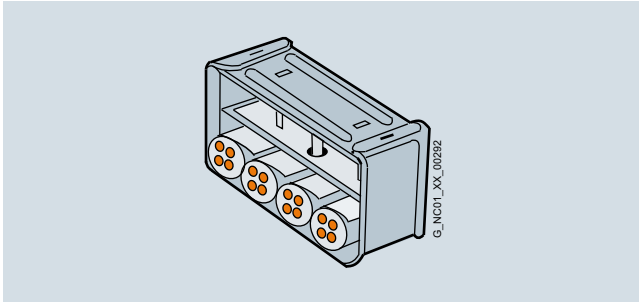
When inserting pre-assembled cables into the cable carrier, do **not** pull at the connector, as this may damage the strain relief or cable clamping.

The cables must not be fixed in the cable carrier. They must be freely movable.



The cables must be able to be moved without applying force in particular in the bending radii of the carrier. The specified minimum bending radii must be adhered to.

The cable fixings must be attached at both ends at an appropriate distance away from the end points of the moving parts in a dead zone.

Function (continued)

MOTION-CONNECT cables are tested in a cable carrier. The cables are attached at one end by means of strain relief to the moving ends of the cable carrier. Strain relief is applied over a wide area of the cable jacket surface without crimping the cable.

Cables must be installed in accordance with the instructions supplied by the cable carrier manufacturer.

Note:

If, for example, pre-assembled cables are installed in a cable carrier in such a way that the connector would inhibit assembly, pre-assembled cables without assembled connectors can also be supplied (power and signal cables ¹⁾). In this case, the contacts of the cables are crimped and the connector is supplied separately. After installing the cables, the customer assembles the connector.

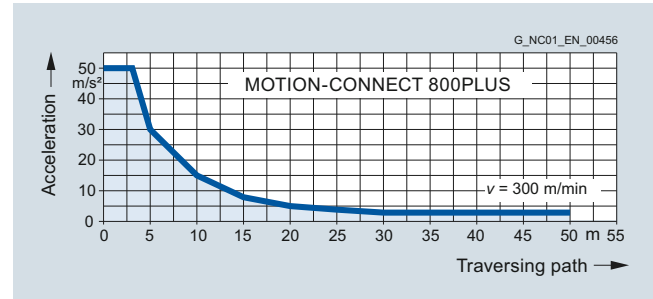
In case of vibration load and with horizontal or vertical cable entries, we recommend that the cable is additionally fixed if between the cable strain relief on the cable carrier and the terminal at the motor part of the cable is hanging loose or is not routed. To prevent machine vibrations being transmitted to the connectors, the cable should be fixed at the moving part where the motor is mounted.

Representation in connection overviews

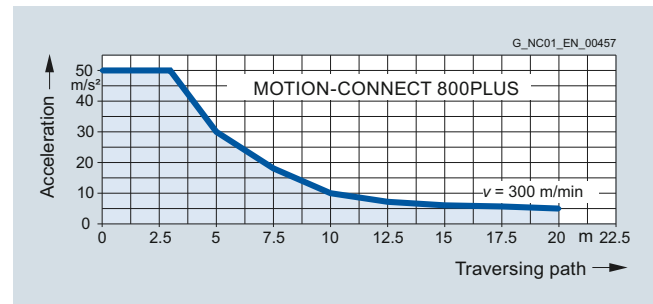
Symbol	Explanation
	Connector with pin contacts
	Connector with socket contacts
	Exposed core ends
	Cable must be supplied by the customer

Characteristic curves

The shaded area beneath the characteristic represents the potential range of use for the cables. The characteristics represent the tested operating points.



Acceleration for MOTION-CONNECT 800PLUS signal and power cables up to 16 mm²



Permissible acceleration for MOTION-CONNECT 800PLUS cables of 25 mm², 35 mm², and 50 mm²

¹⁾ Not applicable to DRIVE-CLiQ signal cables.

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Current carrying capacity for power and signal cables

The current carrying capacity of PVC/PUR-insulated copper cables is specified for installation types B1, B2, C, and E under continuous operating conditions in the table with reference to an ambient air temperature of 40 °C (104 °F). For other ambient temperatures, the values must be corrected by the derating factors from the table.

Cross-section mm ²	Current carrying capacity rms AC 50/60 Hz or DC in amps for installation type			
	B1 Single-core cables in conduits or installation ducts	B2 Multi-core cables in conduits or cable ducts	C Multi-core cables, vertically or horizontally on walls/open, without conduits and installation ducts/with contact	E Multi-core cables, horizon- tally or vertically on perforated cable racks/ open, without conduits and installation ducts/with contact
Electronics ¹⁾				
0.20	–	4.3	4.4	4.4
0.50	–	7.5	7.5	7.8
0.75	–	9	9.5	10
Power ²⁾				
0.75	8.6	8.5	9.8	10.4
1.00	10.3	10.1	11.7	12.4
1.50	13.5	13.1	15.2	16.1
2.50	18.3	17.4	21	22
4	24	23	28	30
6	31	30	36	37
10	44	40	50	52
16	59	54	66	70
25	77	70	84	88
35	96	86	104	110
50	117	103	125	133
70	149	130	160	171
95	180	165	194	207
120	208	179	225	240

Derating factors for power and signal cables

Ambient air temperature °C (°F)	Derating factor according to EN 60204-1, Table D.1
30 (86)	1.15
35 (95)	1.08
40 (104)	1.00
45 (113)	0.91
50 (122)	0.82
55 (131)	0.71
60 (140)	0.58

¹⁾ One control circuit pair.

²⁾ One symmetrically loaded three-phase AC cable.

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Accessories for power and signal cables

Mounting flange/HF (high-frequency) clamp

Overview



Mounting flange for power connectors

Mounting flanges are used to route or fix connectors in IP67 degree of protection, for example, in control cabinets. With the exception of angled connectors, a mounting flange can be retrofitted on connectors with a cap nut or with external thread.

Overview



HF (high-frequency) clamp for power connectors

To ensure correct grounding at the cable duct or cabinet wall, a ground clamp is optionally available together with the flanges for large-area discharging of high-frequency interferences. An HF (high-frequency) clamp is not required for size 3 power connectors.

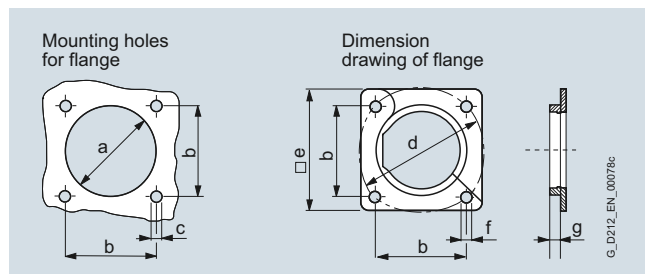
Selection and ordering data

Description	Article No.
Mounting flange for	
• Power connector, size 0.5 and signal connector M17	6FX2003-7HX00
• Power connector, size 1	6FX2003-7BX00
• Power connector, size 1.5	6FX2003-7CX00
• Power connector, size 3	6FX2003-7AX00
• Signal connector M23	6FX2003-7DX00

Selection and ordering data

Description	Article No.
HF (high-frequency) clamp for	
• Power connector, size 0.5 and signal connector M17	6FX2003-7FA00
• Power connector, size 1 and signal connector M23	6FX2003-7FX00
• Power connector, size 1.5	6FX2003-7GX00

Dimensional drawings



Dimensions	Power connector				Signal connector	
	Connector size 0.5 mm (in)	Connector size 1 mm (in)	Connector size 1.5 mm (in)	Connector size 3 mm (in)	M17 mm (in)	M23 mm (in)
a	Ø 23 (0.91)	Ø 28.6 (1.13)	Ø 47 (1.85)	Ø 66 (2.6)	Ø 23 (0.91)	Ø 27.6 (1.09)
b	22.6 (0.89)	28.3 (1.11)	42.4 (1.67)	75 (2.95)	22.6 (0.89)	28.3 (1.11)
c	4 × M2.5	4 × M3	4 × M4	4 × M4	4 × M2.5	4 × M3
d	Ø 32 (1.26)	Ø 40 (1.57)	Ø 60 (2.36)	Ø 63 (2.48)	Ø 32 (1.26)	Ø 40 (1.57)
e	32 (1.26)	35 (1.38)	55 (2.17)	84.9 (3.34)	32 (1.26)	35 (1.38)
f	M3	M4	M5	M6	M3	M4
g	6.5 (0.26)	6.5 (0.26)	7 (0.28)	10 (0.39)	6.5 (0.26)	6.5 (0.26)