General information

Overview

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

The power cables and signal cables can be ordered by the meter or preassembled.

The following MOTION-CONNECT cable designs are available:

- **MOTION-CONNECT 500**, the solution for mainly fixed routing.
- **MOTION-CONNECT 500 PLUS** can be trailed, is resistant to mineral oil (except biological oils and cutting oils) and is therefore particularly suitable for woodworking machines, printing machines and simple machine tools.
  The existing MOTION-CONNECT 500 signal cables even fulfill the requirements of MOTION-CONNECT 500 PLUS, so that no new signal cable type is required.
- **MOTION-CONNECT 700**, the ideal complement to linear motors and machines with high mechanical requirements.
- **MOTION-CONNECT 800** satisfies all demands for use in trailing configurations with machine tools and production machines.

Benefits

The use of preassembled MOTION-CONNECT cables offers the following advantages:

- High quality, ensuring safety and perfect functioning
- Cost savings with logistics, design, assembly and purchasing
- Liability for defects by Siemens
- Supplied in exact meter lengths (other lengths available on request).

Application

The maximum permissible technical cable lengths specified must be observed when determining the cable lengths for systems and applications described in this catalog. Malfunctions can occur if longer lengths are used.

Siemens AG provides no warranty for correct transmission of signals or power in this case.

The cables are not suitable for outdoor use.

Technical data

Cables	MOTION-CONNECT 500 PLUS Type 6FX5 1	MOTION-CONNECT 500 Type 6FX5 0	MOTION-CONNECT 700 Type 6FX7	MOTION-CONNECT 800 Type 6FX8
Approvals				
Power/signal cables				
• VDE [1]	yes	yes	yes	yes
• cUL or UL/CSA	UL758-CSA-C22.2-N.210.2-M90	UL758-CSA-C22.2-N.210.2-M90	UL758-CSA-C22.2-N.210.2-M90	UL758-CSA-C22.2-N.210.2-M90
• UL-CSA File No. [2]	yes	yes	yes	yes
Electrical data to DIN VDE 0472				
Rated voltage				
• Power cable V_0/V - Supply cores - Signal cores	600 V/1000 V 24 V (VDE) 1000 V (UL/CSA)	600 V/1000 V 24 V (VDE) 1000 V (UL/CSA)	600 V/1000 V 24 V (VDE) 1000 V (UL/CSA)	600 V/1000 V 24 V (VDE) 1000 V (UL/CSA)
• Signal cable	–	30 V	30 V	30 V
Test voltage (eff)				
• Power cable - Supply cores - Signal cores	4 kV 2 kV	4 kV 2 kV	4 kV 2 kV	4 kV 2 kV
• Signal cable	–	500 V	500 V	500 V

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

2) The file number is printed on the cable sheath.

Technical data (continued)

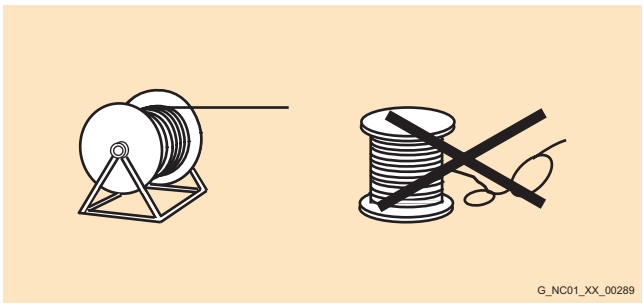
Cables	MOTION-CONNECT 500 PLUS Type 6FX5 1	MOTION-CONNECT 500 Type 6FX5 0	MOTION-CONNECT 700 Type 6FX7	MOTION-CONNECT 800 Type 6FX8
Operating temperature				
On the surface				
• Fixed installation	-20 ... +80 °C (-4 ... +176 °F)	-20 ... +80 °C (-4 ... +176 °F)	-50 ... +80 °C (-58 ... +176 °F)	-50 ... +80 °C (-58 ... +176 °F)
• Flexible installation	0 ... +60 °C (+32 ... +140 °F)	0 ... +60 °C (+32 ... +140 °F)	-20 ... +60 °C (-4 ... +140 °F)	-20 ... +60 °C (-4 ... +140 °F)
Mechanical data				
Max. tensile stress on power/signal cables				
• Fixed installation	50 N/mm² (7252 lb_f/in^2)	50 N/mm² (7252 lb_f/in^2)	50 N/mm² (7252 lb_f/in^2)	50 N/mm² (7252 lb_f/in^2)
• Flexible installation	20 N/mm² (2900 lb_f/in^2)	20 N/mm² (2900 lb_f/in^2)	20 N/mm² (2900 lb_f/in^2)	20 N/mm² (2900 lb_f/in^2)
Minimum permissible bending radius				
• Power cable				
- Fixed installation	5 x D_{max}	5 x D_{max}	4 x D_{max}	6 x D_{max}
- Flexible installation	See "Power cables"	See "Power cables"	See "Power cables"	See "Power cables"
• Signal cable, max.				
- Fixed installation	–	60 mm (2.4 in)	60 mm (2.4 in)	60 mm (2.4 in)
- Flexible installation	–	100 mm (3.9 in)	95 mm (3.9 in)	100 mm (3.9 in)
Torsional stress	Absolute 30°/m	Absolute 30°/m	Absolute 30°/m	Absolute 30°/m
Bending				
• Power cables				
- 1.5 ... 6 mm²	2 mill.	100,000	10 mill.	10 mill.
- 10 ... 185 mm²	–	100,000	10 mill.	3 mill.
• Signal cables	–	2 mill.	10 mill.	10 mill.
Traversing speed				
• Power cables				
- 1.5 ... 6 mm²	180 m/min (590.7 ft/min)	30 m/min (98.4 ft/min)	200 m/min (656.3 ft/min)	180 m/min (590.7 ft/min)
- 10 ... 50 mm²	–	30 m/min (98.4 ft/min)	200 m/min (656.3 ft/min)	100 m/min (328.2 ft/min)
• Signal cables	–	180 m/min (590.7 ft/min)	200 m/min (656.3 ft/min)	180 m/min (590.7 ft/min)
Acceleration				
• Power cables	5 m/s² (16.4 ft/s²)	2 m/s² (6.6 ft/s²)	30 m/s² (98.4 ft/s²)	5 m/s² (16.4 ft/s²) (5 m (16.4 ft)) 10 m/s² (32.8 ft/s²) (2.5 m (8.2 ft))
• Signal cables	–	5 m/s² (16.4 ft/s²)	30 m/s² (98.4 ft/s²)	5 m/s² (16.4 ft/s²) (5 m (16.4 ft)) 10 m/s² (32.8 ft/s²) (2.5 m (8.2 ft))
Chemical data				
Insulation material	CFC/silicone-free	CFC/silicone-free	CFC/halogen/silicone-free DIN 472 815/IEC 60754-1	CFC/halogen/silicone-free DIN 472 815/IEC 60754-1
Oil resistance	EN 60811-1-1/-2-1 (mineral oil only)	VDE 0472, Part 803 Test mode B (mineral oil only)	VDE 0472, Part 803 Test mode B	VDE 0472, Part 803 Test mode B
Outer shield	PVC	PVC	PUR, DIN VDE 0282, Part 10	PUR, DIN VDE 0282, Part 10
• Power cable	DESINA color orange RAL 2003	DESINA color orange RAL 2003	DESINA color orange RAL 2003	DESINA color orange RAL 2003
• Signal cable	–	DESINA color green RAL 6018	DESINA color green RAL 6018	DESINA color green RAL 6018
Flame-retardant	IEC 60332.1	IEC 60332.1	IEC 60332.1	IEC 60332.1

The technical specifications of these cables apply only to single bending with horizontal traverse paths up to 5 m (16.4 ft).

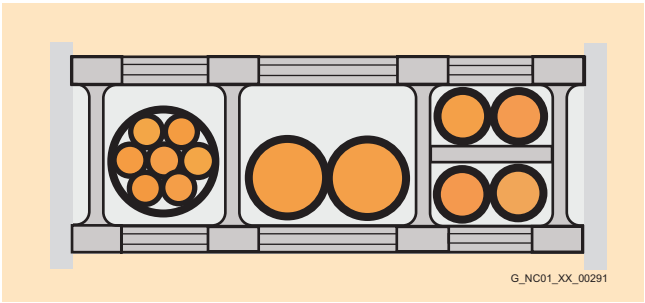
Degree of protection of preassembled power and signal cables and their extension cables in closed and inserted state: IP67

General information

Function



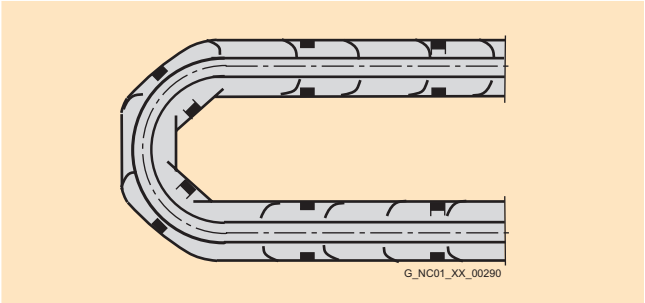
The cables must be removed from the drum without twisting, i.e. the cables must be unwound and must never be lifted over the drum flange while still wound in loops.



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

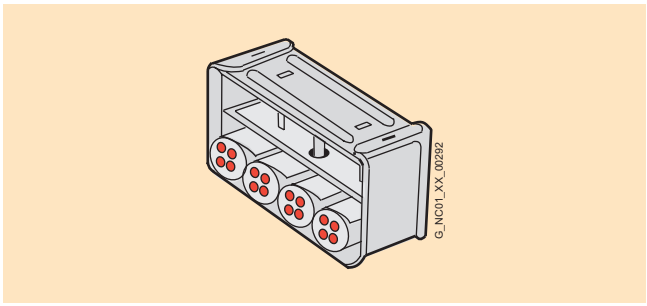
When inserting preassembled cables in the cable carrier, do **not** pull at the connector, as this may damage the strain relief or cable clamping.

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



The cables must be able to move unrestricted in particular in the radii of curvature of the carrier. The prescribed minimum bending radii must not be undershot.

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.



MOTION-CONNECT cables are tested in a cable carrier. During testing, a strain-relief assembly is attached to one end of the cable at the moving ends of the cable carrier. Strain relief is applied to a wide area of the peripheral surface without crushing the cable assembly.

When installing cables, you must always observe the information in the Installation Guide provided by the cable carrier manufacturer as appropriate for the way in which the system has been constructed.

Notes:
If, for example, preassembled cables are routed in a cable carrier in such a way that the connector would inhibit the installation, preassembled cables can also be supplied without assembled connectors (signal and power cables). On these cables, the contacts are crimped and the connector housing is supplied separately packed. Once the cables have been installed, the customer assembles the connector housing.

When routing the cables, always observe the instructions of the cable carrier manufacturer.

MOTION-CONNECT cables are approved for a horizontal traverse path of up to 5 m (16.4 ft).

In the event of vibrational loads and if horizontal or vertical cable entries are used, we always recommend the use of an additional cable fixing, if part of the cable hangs loose or is not guided in between the strain relief on the cable carrier and the connection on the motor. To prevent machine vibrations being transmitted to the connectors, the cable should be fixed at the moving part where the motor is mounted.

Length code

Selection and ordering data

Designation	Order No.				
Preassembled cables	**6FX. ...-.....-**	■	■	■	**0**
Length code:					
0 m (0 ft)		**1**			
100 m (328 ft)		**2**			
200 m (656 ft)		**3**			
300 m (984 ft)		**4**			
0 m (0 ft)			**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 (0 ft)				**A**	
1 m (3.3 ft)				**B**	
2 m (6.6 ft)				**C**	
3 m (9.8 ft)				**D**	
4 m (13.1 ft)				**E**	
5 m (16.4 ft)				**F**	
6 m (19.7 ft)				**G**	
7 m (23 ft)				**H**	
8 m (26.2 ft)				**J**	
9 m (29.5 ft)				**K**	
Examples:	1.0 m: (3.3 ft)	1	A	B	0
	2.0 m: (7.2 ft)	1	A	C	0
	8.0 m: (26.3 ft)	1	A	J	0
	299.0 m: (981 ft)	3	K	K	0

Selection and ordering data

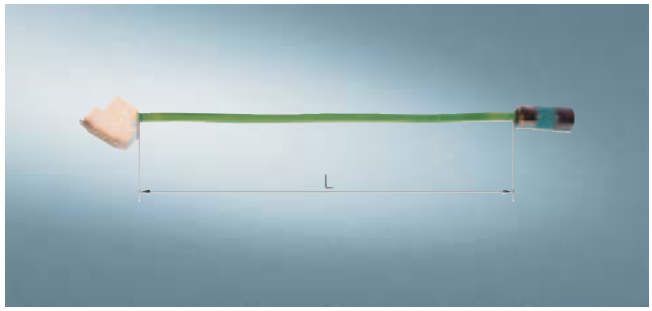
Designation	Order No.
Power/signal cables sold by the meter [1]	
• 50 m (164 ft)	**6FX. 008-.....-1FA0**
• 100 m (328 ft)	**6FX. 008-.....-2AA0**
• 200 m (984 ft)	**6FX. 008-.....-3AA0**
• 500 m (1641 ft)	**6FX. 008-.....-6AA0**

Further information

Fixed length for signal cables 6FX. 002-.....-1...

Order No.	Length in m (ft)						
	1 (3.3)	1.5 (4.9)	2 (6.6)	3 (9.8)	5 (16.4)	7 (23)	10 (32.8)
6FX2 002-1CA01-1 ■ ■ 0	**AB**		**AC**		**AF**	**AH**	
6FX2 002-1CB01-1 ■ ■ 0	**AB**		**AC**		**AF**	**AH**	
6FX2 002-1CC00-1 ■ ■ ■		**AB5**	**AC0**		**AF0**		
6FX2 002-4EA04-1 ■ ■ 0					**AF**		**BA**
6FX5 002-1AA00-1 ■ ■ 0				**AD**	**AF**		**BA**
6FX8 002-2CA41-1 ■ ■ 0					**AF**		**BA**

Length definition for preassembled cables



L = Length in m (ft)

Tolerance:
- up to 10 m (32.8 ft): ±2%
- above 10 m (32.8 ft): ±1%

1) Power cables from 4 mm^2 can be ordered as specified in meters up to a length of 100 m (328 ft). Power cables of 1.5 mm^2 and 2.5 mm^2 are supplied as 50 m (164 ft), 100 m (328 ft), 200 m (656 ft) and 500 m (1641 ft) rings or on disposable drums.