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	MOTION-CONNECT 500	MOTION-CONNECT 700	MOTION-CONNECT 800
	Type 6FX5 1	Type 6FX5 0	Type 6FX7	Type 6FX8
Approvals				
Power/signal cables VDE¹ 	Ves	ves	ves	Ves
• 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 VE	DE 0472			
Rated voltage				
 Power cable V₀/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).

General information

Technical data (cont	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	9							
On the surface								
Fixed installationFlexible installation	-20 +80 °C (-4 +176 °F) 0 +60 °C (+32 +140 °F	-20 +80 °C (-4 +176 °F)) 0 +60 °C (+32 +140 °F	-50 +80 °C (-58 +176 °F) -20 +60 °C (-4 +140 °F)) -50 +80 °C (-58 +176 °F) -20 +60 °C (-4 +140 °F)				
Mechanical data								
Max. tensile stress on power/signal cables	<u> </u>			<u> </u>				
 Fixed installation 	50 N/mm ² (7252 lb _f /in ²)	50 N/mm ² (7252 lb _f /in ²)	50 N/mm ² (7252 lb _f /in ²)	50 N/mm ² (7252 lb _f /in ²)				
 Flexible installation 	20 N/mm ² (2900 lb _f /in ²)	20 N/mm ² (2900 lb _f /in ²)	20 N/mm ² (2900 lb _f /in ²)	20 N/mm ² (2900 lb _f /in ²)				
Minimum permissible bending radius								
Power cable Fixed installation Flexible installation	5 x D _{max} See "Power cables"	5 x D _{max} See "Power cables"	4 x D _{max} See "Power cables"	6 x <i>D_{max}</i> See "Power cables"				
 Signal cable, max. Fixed installation Flexible installation 	-	60 mm (2.4 in) 100 mm (3.9 in)	60 mm (2.4 in) 95 mm (3.9 in)	60 mm (2.4 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 10 185 mm² 	2 mill. –	100,000 100,000	10 mill. 10 mill.	10 mill. 3 mill.				
 Signal cables 	_	2 mill.	10 mill.	10 mill.				
Traversing speed								
 Power cables 1.5 6 mm² 10 50 mm² 	180 m/min (590.7 ft/min) –	30 m/min (98.4 ft/min) 30 m/min (98.4 ft/min)	200 m/min (656.3 ft/min) 200 m/min (656.3 ft/min)	180 m/min (590.7 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/s ² (16.4 ft/s ²)	2 m/s ² (6.6 ft/s ²)	30 m/s ² (98.4 ft/s ²)	5 m/s ² (16.4 ft/s ²) (5 m (16.4 ft)) 10 m/s ² (32.8 ft/s ²) (2.5 m (8.2 ft))				
 Signal cables 	_	5 m/s ² (16.4 ft/s ²)	30 m/s ² (98.4 ft/s ²)	5 m/s ² (16.4 ft/s ²) (5 m (16.4 ft)) 10 m/s ² (32.8 ft/s ²) (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							
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

MOTION-CONNECT cables and connections

General information

Function



G_NC01_XX_00289

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.

MOTION-CONNECT cables and connections

Power cables – extensions

Selection and ordering data

Power cable and extension for 1FT/1FK motors

					-6
No. of cores x cross-section	Connector size	Extensions	Connector size	Basic cables	
mm²		Order No.		Order No.	
4x1.5	1	6FX 🗧 002-5 🔳 A05	1	6FX 📕 002-5 📕 A01	
4x2.5	1	6FX 📕 002-5 📕 A15	1	6FX 🗖 002-5 🗖 A11	
4x1.5	1.5	6FX 📕 002-5 📕 A28	1.5	6FX 🗖 002-5 🗖 A21	
4x2.5	1.5	6FX 📕 002-5 📕 A38	1.5	6FX 🗖 002-5 🗖 A31	
4x4	1.5	6FX 📕 002-5 📕 A48	1.5	6FX 🗖 002-5 🗖 A41	
4x6	1.5	6FX 📕 002-5 📕 A58	1.5	6FX 🗖 002-5 🗖 A51	
4x10	1.5	6FX 📕 002-5 📕 A68	1.5	6FX 🗖 002-5 🗖 A61	
4x10	3	6FX 📕 002-5 📕 X18	3	6FX 🗧 002-5 📕 A13	
4x16	3	6FX 📕 002-5 📕 X28	3	6FX 🗖 002-5 🗖 A23	
4x25	3	6FX 📕 002-5 D X38	3	6FX 🗖 002-5 D A31	
4x35	3	6FX 5 002-5 D X48	3	6FX 5 002-5 D A43	
	3	6FX 8 002-5 D X48	3	6FX 8 002-5 D A43	
4x50	3 3	6FX 5 002-5 D X58 6FX 8 002-5 D X58	3	6FX 5 002-5 D A53 6FX 8 002-5 D A53	
MOTION-CONNECT 500 MOTION-CONNECT 700 ¹) MOTION-CONNECT 800		5 7 8		5 7 8	
Without brake cores With brake cores		C D		C D	

Power cable and extension for 1FN3 linear motors

No. of cores x cross-section	PG size	Preassembled motor adapter cable	Power con- nector size	No. of cores x cross-section	Extension for basic cable	Basic cable to converter
mm ²		Order No.			Order No.	Order No.
4x2.5	16	6FX7 002-5LM40	1	4x1.5	6FX7 002-5EA05	6FX7 002-5EA02
4x2.5	21	6FX7 002-5LM60	1	4x1.5	6FX7 002-5EA05	6FX7 002-5EA02
4x2.5	21	6FX7 002-5LM60	1	4x2.5	6FX7 002-5EB11	6FX7 002-5EB18
4x4	21	6FX7 002-5LM70	1.5	4x4	6FX7 002-5EA48	6FX7 002-5EA41
4x4	21	6FX7 002-5LM70	1.5	4x6	6FX7 002-5EA58	6FX7 002-5EA51
4x10	29	6FX7 002-5LM30	1.5	4x10	6FX7 002-5EA68	6FX7 002-5EA61

The combinations of power cables and extensions shown are only provided by way of example.

MOTION-CONNECT cables and connections

Length code

Designation	Order No.			
Preassembled cables	6FX 💶			0
Length code: 0 m (0 ft) 100 m (328 ft) 200 m (656 ft) 300 m (984 ft)	1 2 3 4			
0 m (0 ft) 10 m (32.8 ft) 20 m (65.6 ft) 30 m (98.4 ft) 40 m (131 ft) 50 m (164 ft) 60 m (197 ft) 70 m (230 ft) 80 m (262 ft) 90 m (295 ft)		A B C D E F G H J K		
0 m (0 ft) 1 m (3.3 ft) 2 m (6.6 ft) 3 m (9.8 ft) 4 m (13.1 ft) 5 m (16.4 ft) 6 m (19.7 ft) 7 m (23 ft) 8 m (26.2 ft) 9 m (29.5 ft)			A B C D E F G H J K	
Examples:	1.0 m: (3.3 ft) 1 2.0 m: (7.2 ft) 1 8.0 m: (26.3 ft) 1 299.0 m: (981 ft) 3	A A K	B C J K	0 0 0

Selection and ordering data

Designation	Order No.
Power/signal cables sold by the meter ¹)	
• 50 m (164 ft)	6FX. 0081FA0
• 100 m (328 ft)	6FX. 0082AA0
• 200 m (984 ft)	6FX. 0083AA0
• 500 m (1641 ft)	6FX. 0086AA0

Further information

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

Order No.	Leng	th in I	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	AB		AC		AF	AH	
6FX2 002-1CB01-1	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 mm² can be ordered as specified in meters up to a length of 100 m (328 ft). Power cables of 1.5 mm² and 2.5 mm² 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.