

MOTION-CONNECT connection systems

Signal cables for SINAMICS S120

Signal cables for motors with full-thread connector

Selection and ordering data

Pre-assembled signal cables for motors with full-thread connector

Encoder system	Motor	Connection via	Length, max.	$D_{\max}$	Degree of protection Conne- tor 1)	Basic cable	Extension
	SIMOTICS	SINAMICS	m (ft)	mm (in)		Article No.	Article No.
Absolute encoder with EnDat 2.1	M-1PH8/T-1FW3	SMC20	100 (328)	9.8 (0.39)	IP20/IP67	6FX0002-2EQ10-....	6FX0002-2EQ14-....
Absolute encoder with EnDat 2.1 5 V DC		SME25	3 ²⁾ (9.84)	9.2 (0.36)	IP67/IP67	6FX0002-2AD04-....	—
Absolute encoder with EnDat 2.1	L-1FN3/T-1FW6	SME125	3 ²⁾ (9.84)	9.2 (0.36)	IP67/IP67	6FX8002-2AD04-....	—
Absolute encoder with EnDat 2.1		SMC20	100 (328)	9.2 (0.36)	IP20/IP67	6FX0002-2CH00-....	6FX0002-2AD04-....
• 6FX2001-5.E..		SMC20	100 (328)	9.2 (0.36)	IP20/IP67	6FX0002-2CH00-....	6FX0002-2AD04-....
• 1XP8014-10/1XP8024-10							
Absolute encoder with SSI 5 V DC		SME25	3 (9.84)	9.2 (0.36)	IP67/IP67	6FX0002-2AD04-....	—
Absolute encoder with SSI 24 V DC		SMC30	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2CC11-....	6FX0002-2CB54-....
• 6FX2001-5.S..		SMC30	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2CC06-....	—
Clock-pulse rate 100 ... 250 kHz							
• 1XP8014-20/1XP8024-20/-21							
Incremental encoder sin/cos 1 V _{pp}	M-1PH8/ T-1FW3	SMC20	100 (328)	9.8 (0.39)	IP20/IP67	6FX0002-2CA31-....	6FX0002-2CA34-....
2048 S/R, with C and D tracks							
Incremental encoder sin/cos 1 V _{pp}	M-1PH8	SMC20	50 (164)	9.2 (0.36)	IP20/IP67	6FX8002-2CA80-....	6FX0002-2CA34-....
256 and 512 S/R, without C and D tracks							
HTL Incremental encoder	M-1PH8	SMC30	300 ³⁾ (984)	9.3 (0.37)	—/IP67	6FX0002-2AH00-....	6FX0002-2AH04-....
		SMC30	300 ³⁾ (984)	9.3 (0.37)	IP20/IP67	6FX042-2AH00-....	6FX0002-2AH04-....
HTL Incremental encoder	M-1PH8	CU310-2/ D410-2	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2AH11-....	—
Incremental encoder sin/cos 1 V _{pp}		SMC20	50 (164)	9.3 (0.37)	IP20/IP67	6FX0002-2CG00-....	6FX0002-2CB54-....
without C and D tracks 6FX2001-3							
HTL Incremental encoder, 24 V DC		SMC30	100 (328)	9.3 (0.37)	—/IP67	6FX5002-2CA12-....	6FX0002-2CB54-....
• 6FX2001-4						6FX5042-2CA12-....	6FX0002-2CB54-....
• 1XP8012-10/-11, 1XP8032-10/-11/ -12		SMC30	100 (328)	9.3 (0.37)	—/IP67	6FX5002-2CA12-....	6FX0002-2CB54-....
						6FX5042-2CA12-....	
TTL incremental encoder, RS422		SMC30	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2CR00-....	6FX0002-2CB54-....
• 6FX2001-2, 5 V DC		SMC30	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2CR00-....	6FX0002-2CB54-....
• 1XP8012-20/-21/-22, 1XP8032-20/ -21/-22, 5 V DC							
• 6FX2001-2, 24 V DC		SMC30	100 (328)	9.3 (0.37)	IP20/IP67	6FX0002-2CD24-....	6FX0002-2CB54-....
Incremental encoder sin/cos 1 V _{pp}		SME20	3 ²⁾ (9.84)	9.3 (0.37)	IP67/IP67	6FX0002-2CB54-....	—
5 V DC, without C and D tracks							
Direct incremental encoder	L-1FN3/T-1FW6	SME120	3 ²⁾ (9.84)	9.3 (0.37)	IP67/IP67	6FX8002-2CB54-....	—
sin/cos 1 V _{pp}							
Resolver	S-1FK7 ⁴⁾ /T-1FW3	SMC10	130 (426)	9.2 (0.36)	IP20/IP67	6FX0002-2CF02-....	6FX0002-2CF04-....
Resolver		SMC10	130 (426)	9.2 (0.36)	IP20/IP67	6FX0002-2CF06-....	—
1XP8013-10/-11/ 1XP8023-10/-11							
MOTION-CONNECT 500						5	5
MOTION-CONNECT 800PLUS						8	8
Signal cable							
Pre-assembled						0	
Connector at module end supplied separately						1	
Connector at motor end supplied separately						4	
Length code							

The combinations of signal cable extensions shown are only provided by way of example.

The maximum specified cable length (basic cable and extensions) must not be exceeded.

The total maximum length is reduced by 2 m (6.56 ft) for each interruption point.

¹⁾ The specification for the degree of protection refers to the basic cable.

²⁾ Up to 10 m (32.8 ft) possible, depending on the encoder current consumption.

³⁾ With evaluation of difference signals A*, A, B*, B, otherwise ≤ 100 m (328 ft).

⁴⁾ Not for SIMOTICS S-1FK701 motors.

Overview

Data position in Article 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	–	2	■	■	■	■	–	.	.	.	
MOTION-CONNECT 800PLUS				6	F	X	8	0	■	2	–	2	■	■	■	■	–	.	.	.	
6FX2 cables				6	F	X	2	0	0	2	–	1	D	C	■	0	–	.	.	.	
Pre-assembled at motor and module ends								0													
Pre-assembled at motor end, connector at module end supplied separately								1													
Connector at motor end supplied separately, pre-assembled at module end								4													
Variant: Signal cables for integrated encoder																					
<u>DRIVE-CLiQ cables between</u>				<u>and</u>																	
Power Module/Motor Module/SMC with IP20 connector				Power Module/Motor Module/SMC with IP20 connector									D	C	0	0					
Power Module/Motor Module/SMC with IP20 connector				Motor/encoder/SME IP67 connector									D	C	1	0					
DME20/cabinet bushing/coupler				Motor/encoder/SME IP67 connector									D	C	2	0					
<u>Basic cable between</u>				<u>and motor with</u>																	
SMC20				Incremental encoder (sin/cos 1 V _{pp}), full-thread connector, M23									C	A	3	1					
SMC30				Incremental encoder (HTL), full-thread connector, M23									A	H	0	0					
CU310-2				Incremental encoder (HTL), full-thread connector, M23									A	H	1	1					
SMC20				Absolute encoder, full-thread connector, M23									E	Q	1	0					
SMC10				Resolver, full-thread connector, M23									C	F	0	2					
SMC20				Incremental encoder (sin/cos 1 V _{pp}), SPEED-CONNECT connector, M23									C	Q	3	1					
SMC20				Incremental encoder, SPEED-CONNECT connector, M17									C	N	2	0					
SMC20				Absolute encoder, SPEED-CONNECT connector, M23									E	Q	3	1					
SMC20				Absolute encoder, SPEED-CONNECT connector, M17									E	N	2	0					
SMC10				Resolver, SPEED-CONNECT connector, M17									F	N	2	0					
<u>Extension between basic cable with connector</u>				<u>and motor connector</u>																	
Full-thread or SPEED-CONNECT				Full-thread or SPEED-CONNECT													4				
Variant: Signal cables for external encoder																					
<u>Basic cable between</u>				<u>and</u>																	
SMC30				Incremental encoder 6FX2001-2 (TTL/supply 5 V), full-thread connector									C	R	0	0					
SMC30				Incremental encoder 1XP8012-2./1XP8032-2. (TTL/supply 24 V), full-thread connector									C	D	2	4					
SMC20				Incremental encoder 6FX2001-3 (sin/cos 1 V _{pp}), full-thread connector									C	G	0	0					
SMC30				Incremental encoder 6FX2001-4 (HTL), full-thread connector									C	A	1	2					
SMC30				Incremental encoder 1XP8012-1./1XP8032-1. (HTL), full-thread connector									C	A	1	2					
SMC30				Absolute encoder with SSI 1XP8014-2./1XP8024-2., full-thread connector									C	C	0	6					
SMC30				Absolute encoder 6FX2001-5.S (SSI), full-thread connector									C	C	1	1					
SMC20				Absolute encoder 6FX2001-5.E (EnDat 2.1), full-thread connector									C	H	0	0					
SMC20				Absolute encoder 1XP8014-10/1XP8024-10 (EnDat 2.1), full-thread connector									C	H	0	0					
SMC10				Resolver 1XP8013-1./1XP8023-1., full-thread connector									C	F	0	6					
<u>Extension between basic cable with connector</u>				<u>and motor connector</u>																	
Full-thread				Full-thread													4				
Variant: Signal cables for temperature sensor																					
<u>Adapter cable with M17 socket on SIMOTICS T-1FW6 terminals</u>				6	F	X	8	0	0	2	–	2	S	L	■	■	–	.	.	.	
<u>Adapter cable with M17 socket on SIMOTICS L-1FN3100/L-1FN3150</u>																0	1				
<u>Adapter cable with M17 socket on SIMOTICS L-1FN3300 ... L-1FN3900</u>																0	2				
<u>Extension to basic cable between SME12x and SIMOTICS L-1FN3/SIMOTICS T-1FW6</u>																1	0				
<u>Basic cable between TM120 and SIMOTICS L-1FN3/SIMOTICS T-1FW6</u>																2	0				
Length code																					
Units of 10 cm (3.94 in) or 1 meter (3.28 ft) or in fixed lengths																.	.	.	.		