

Overview



MOTION-CONNECT DRIVE-CLiQ cable

Signal cables are pre-assembled and are sold by the meter for the connection of a variety of components.

The following different types of cable are available:

- DRIVE-CLiQ cables
- MOTION-CONNECT DRIVE-CLiQ cables
- MOTION-CONNECT pre-assembled cables

Application

DRIVE-CLiQ cables

are used to connect components with DRIVE-CLiQ connections which have a separate or external 24 V DC power supply.

DRIVE-CLiQ cables for connecting Line/Motor Modules with a Control Unit are part of the scope of supply of the relevant Line/Motor Modules.

MOTION-CONNECT DRIVE-CLiQ cables

are used whenever components with DRIVE-CLiQ connections must meet high requirements such as mechanical stress and oil resistance, e.g., with a connection outside the cabinet between

- Motor Modules and Sensor Modules
- Motor Modules and motors with DRIVE-CLiQ interface

MOTION-CONNECT DRIVE-CLiQ cables feature 24 V DC cores.

MOTION-CONNECT pre-assembled cables

are used whenever motor encoders on motors without DRIVE-CLiQ interface are connected to Sensor Modules.

Note:

All signal cables **6FX.002-2C...-....** are also available with crimped contacts and the connector housing supplied separately.

- Signal cables with separately supplied **motor-end** connector housing:
For this variant, the 6th digit in the order number must be changed from 0 to 4: 6FX.042-2C...-....
- Signal cables with separately supplied **module-end** connector housing:
For this variant, the 6th digit in the order number must be changed from 0 to 1: 6FX.012-2C...-....

Integration

The DRIVE-CLiQ cables type 6SL3060-4A..0-0AA0 required for the standard configuration are part of the scope of supply of the Line Modules and Motor Modules. In this case, the modules should be mounted directly adjacent to one another in a row.

Overview of connections for CU320 Control Unit, booksize format

CU320 Control Unit	Pre-assembled signal cables	
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X200- Active X202 Line Module
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X200- Motor X203 Module
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X500- Terminal X501 Module
X126	PROFIBUS connector 6ES7972-0BA41-0XA0 (without PG connection) or 6ES7972-0BB41-0XA0 (with PG connection)	
X140	6FX8002-1AA01-1AF0	PC/PG

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Overview of connections for CU320 Control Unit, chassis format

CU320 Control Unit	Pre-assembled signal cables	
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X400- Active X402 Line Module
	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-....	Active X500 Interface Module
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X400- Motor X403 Module
X100- X103	6SL3060-4A..0-0AA0 or 6FX2002-1DC00-.... ≤ 70 m (230 ft)	X500-Terminal X501 Modules
X126	PROFIBUS connector 6ES7972-0BA41-0XA0 (without PG connector) or 6ES7972-0BB41-0XA0 (with PG connector)	
X140	6FX8002-1AA01-1AF0	PC/PG

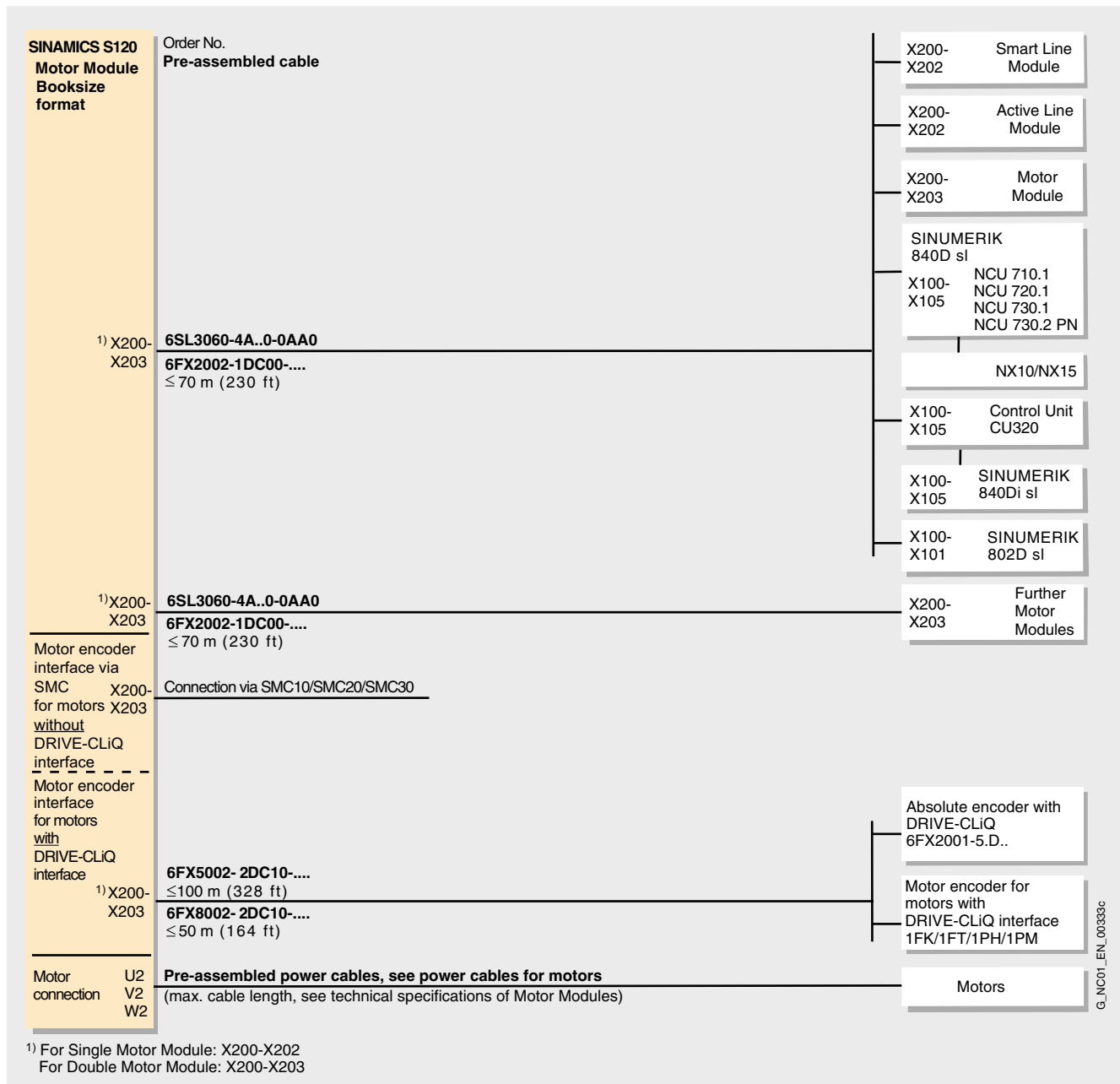
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Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Line Modules and Motor Modules in booksize format and SINUMERIK 802D sl/840Di sl/840D sl



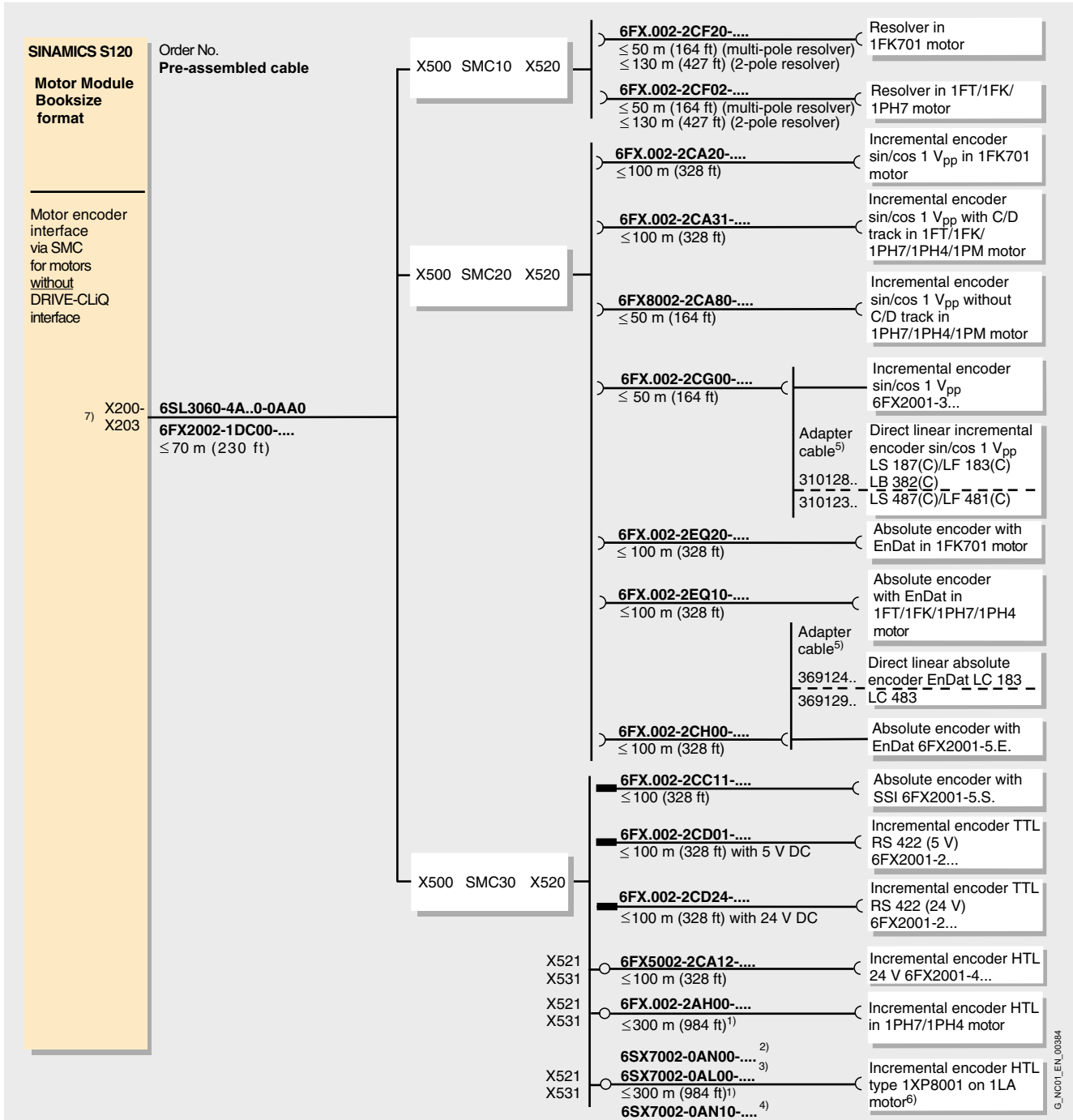
¹⁾ For Single Motor Module: X200-X202
For Double Motor Module: X200-X203

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Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Line Modules and Motor Modules in booksize format and SINUMERIK 802D sl/840Di sl/840D sl (continued)



1) With evaluation of difference signals A*, A and B*, B, otherwise ≤ 100 m.
2) Signals A*, A, B*, B, R*, R.
3) Signals A, B.

4) With right-angled connector.
5) Cable available from measuring system manufacturer.
6) Not for 2KG geared motor.
7) With Single Motor Module: X200-X202.
With Double Motor Module: X200-X203.

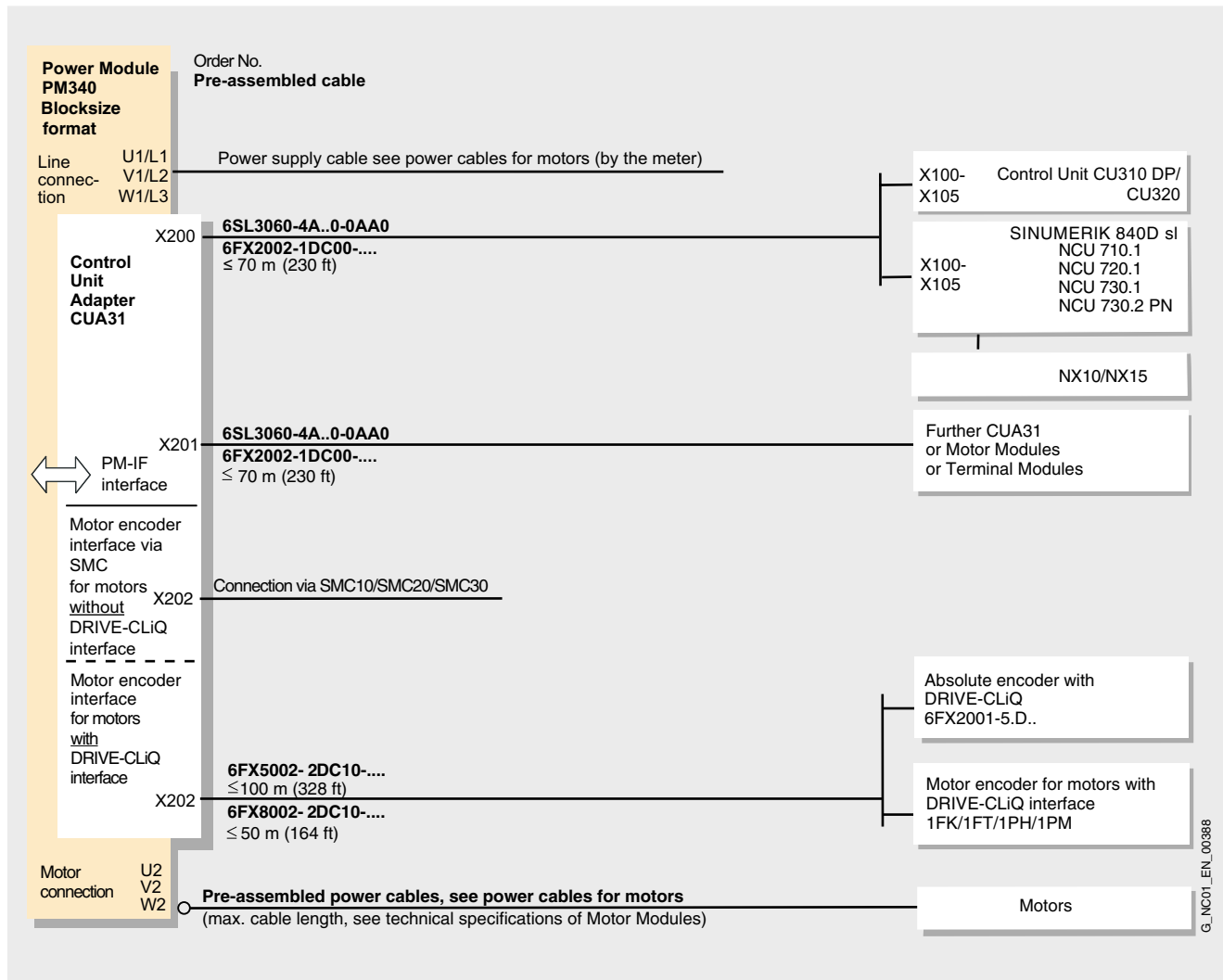
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Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

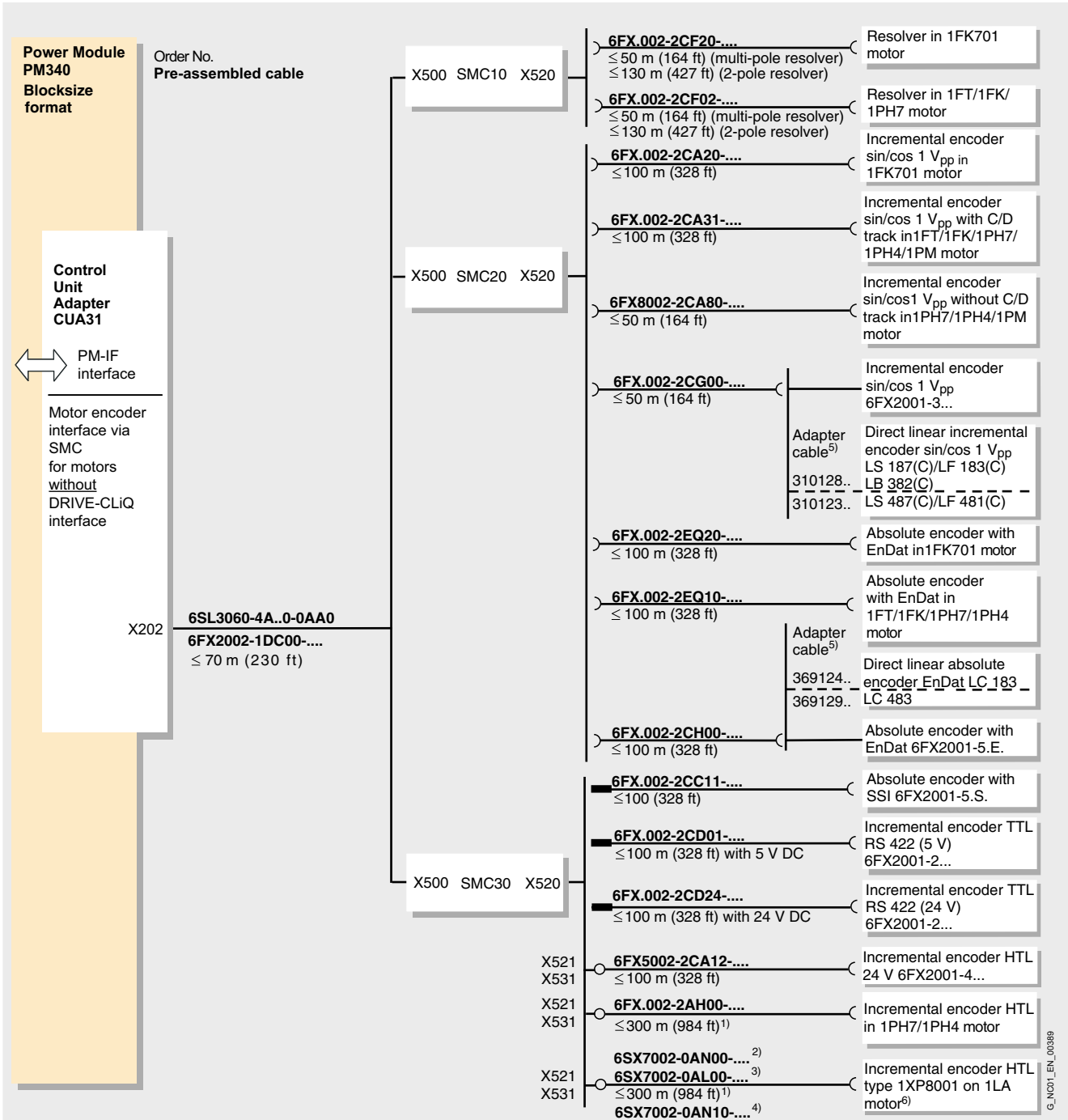
Overview of connections for SINAMICS S120 Power Modules in blocksize format with CUA31 Control Unit Adapter and SINUMERIK 840D sl



Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Power Modules in blocksize format with CUA31 Control Unit Adapter and SINUMERIK 840D sl (continued)



1) With evaluation of difference signals A*/A and B*/B, otherwise ≤ 100 m.
 2) Signals A*, A, B*, B, R*, R.
 3) Signals A, B.

4) With right-angled connector.
 5) Cable available from measuring system manufacturer.
 6) Not for 2KG geared motors.

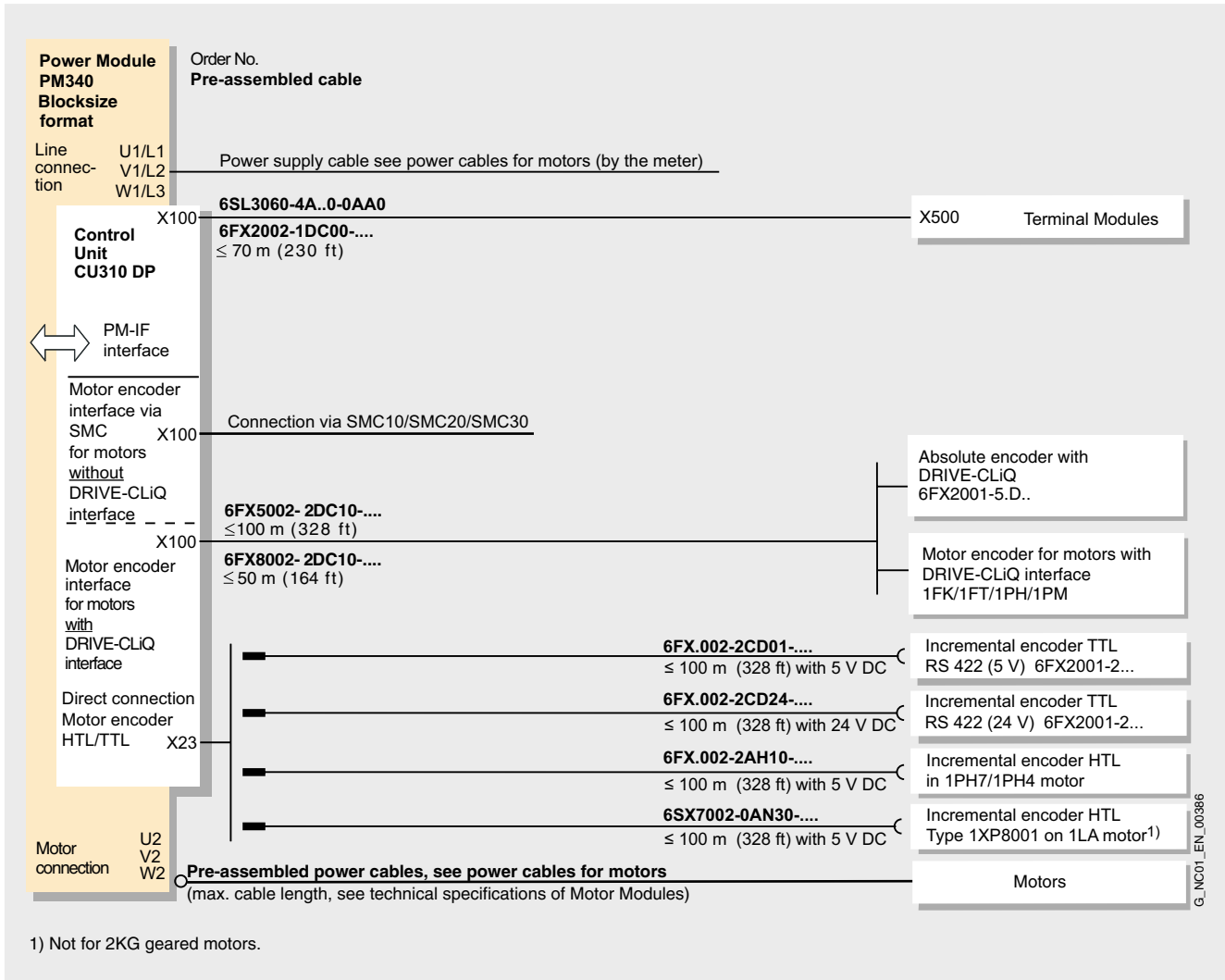
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Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Power Modules in blocksize format with CU310 DP Control Unit and SINUMERIK 840D sl

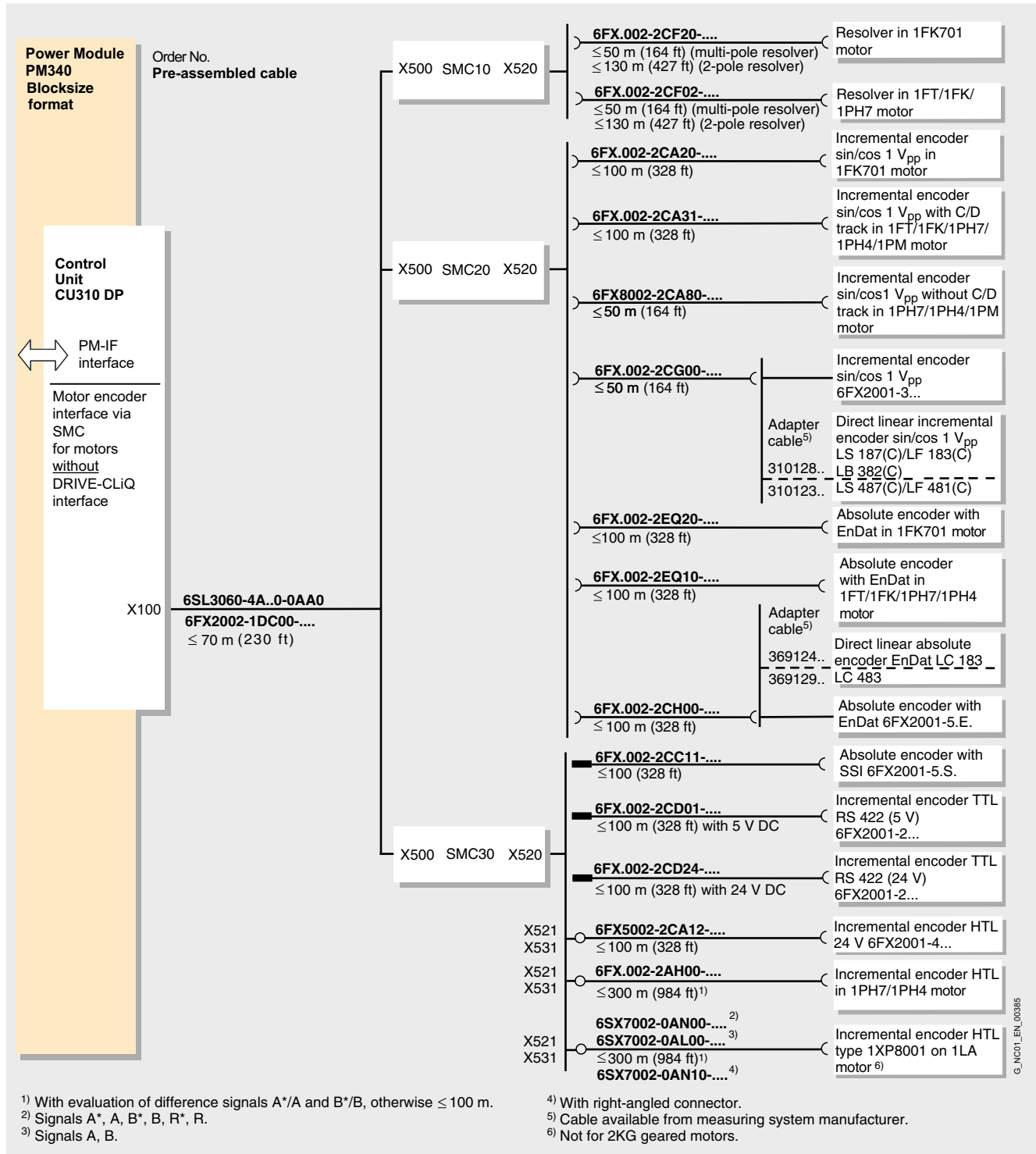


Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Power Modules in blocksize format with CU310 DP Control Unit and SINUMERIK 840D sl (continued)

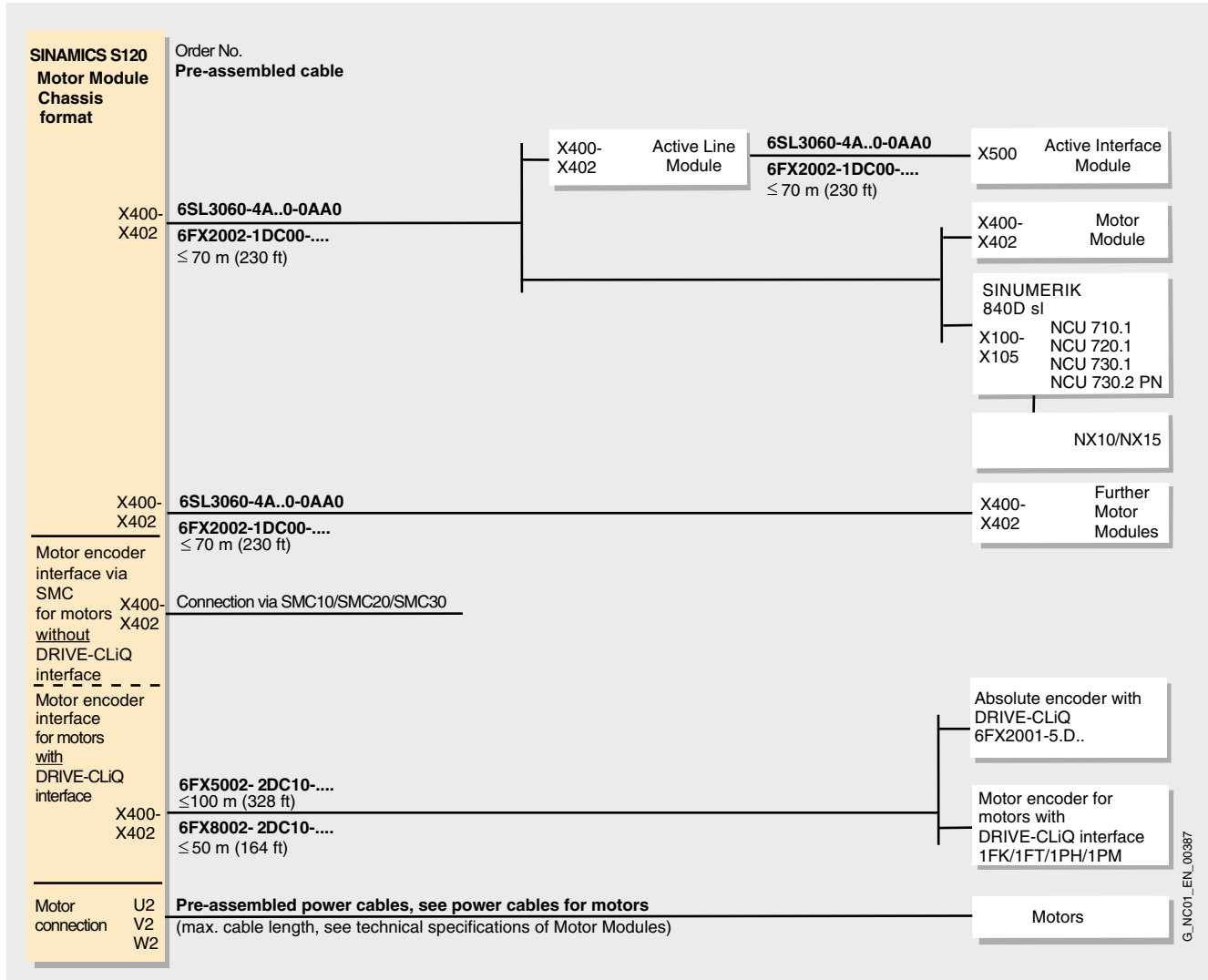


Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Line Modules and Motor Modules in chassis format and SINUMERIK 840D sl

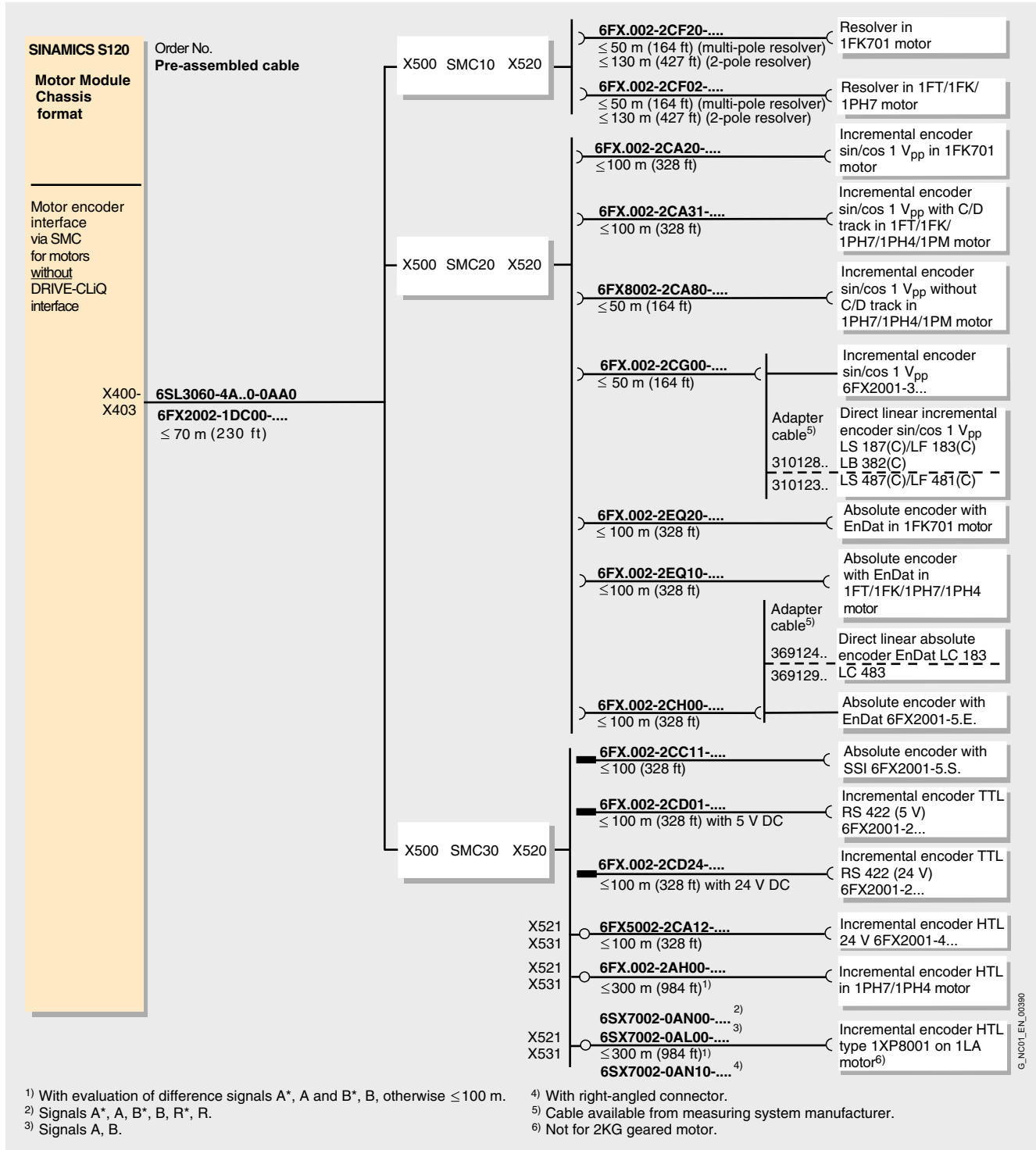


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Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Line Modules and Motor Modules in chassis format and SINUMERIK 840D sl



1) With evaluation of difference signals A*, A and B*, B, otherwise ≤ 100 m.
2) Signals A*, A, B*, B, R*, R.
3) Signals A, B.

4) With right-angled connector.
5) Cable available from measuring system manufacturer.
6) Not for 2KG geared motor.

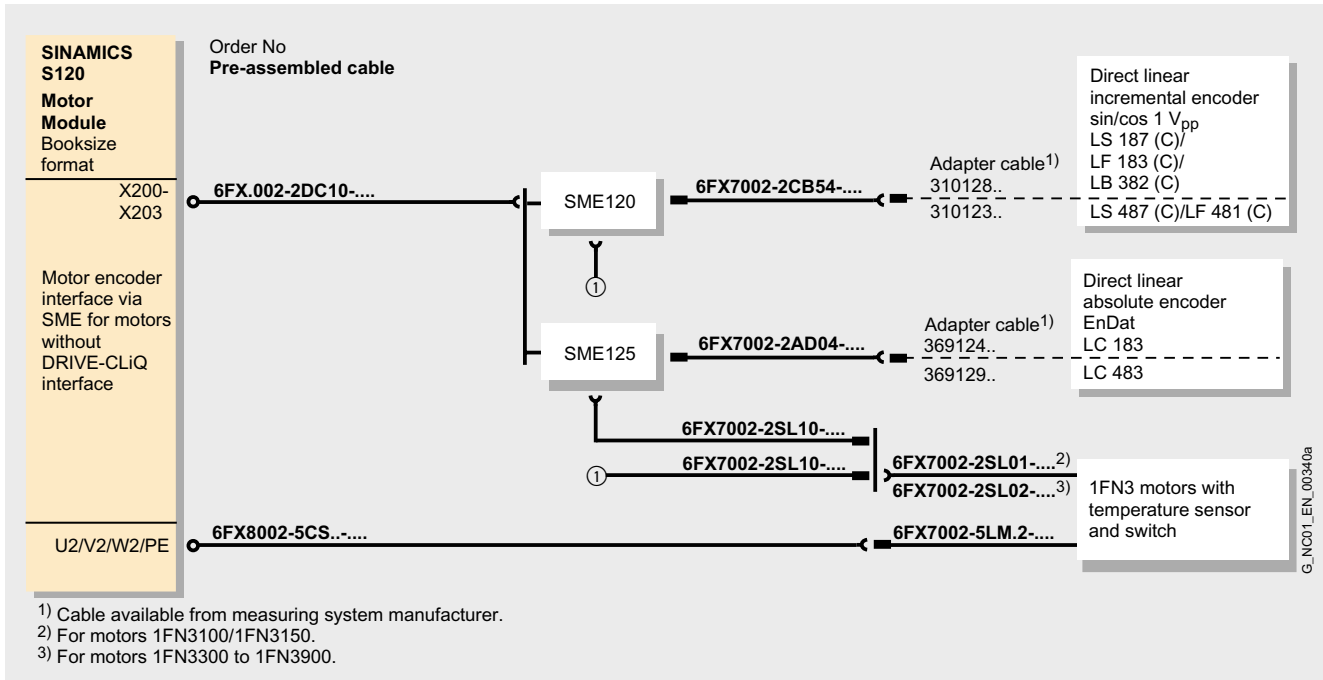
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Connection system MOTION-CONNECT

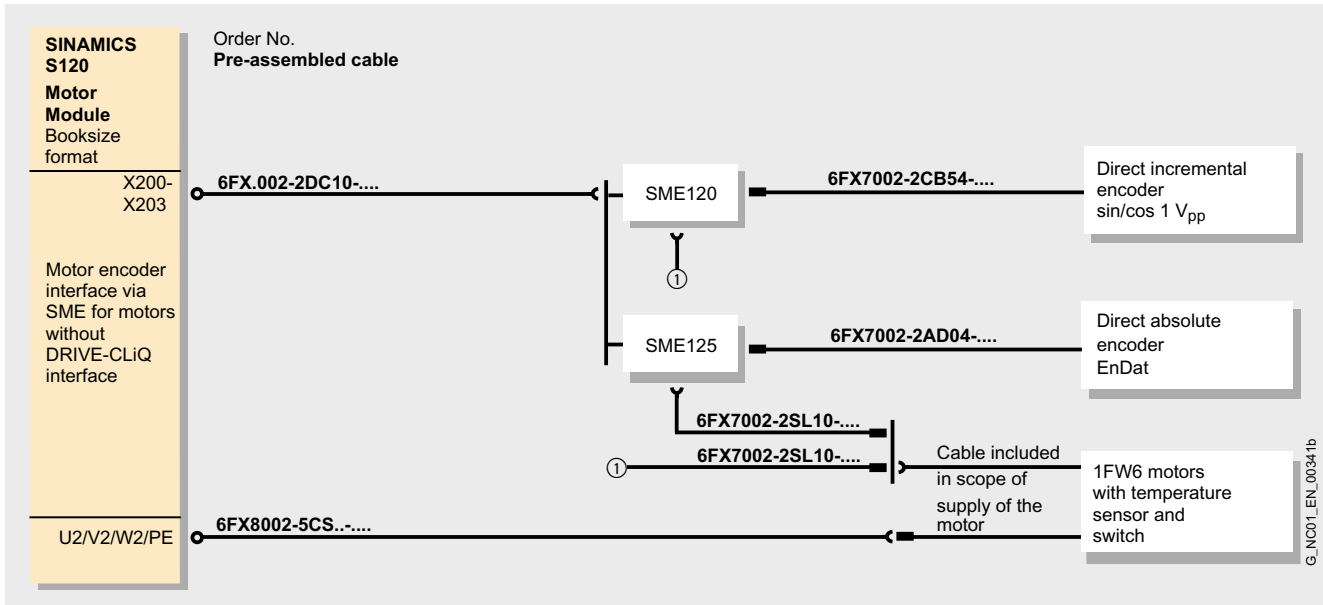
Signal cables for SINAMICS S120

Integration (continued)

Overview of connections for SINAMICS S120 Motor Modules in booksize format and 1FN3 linear motors

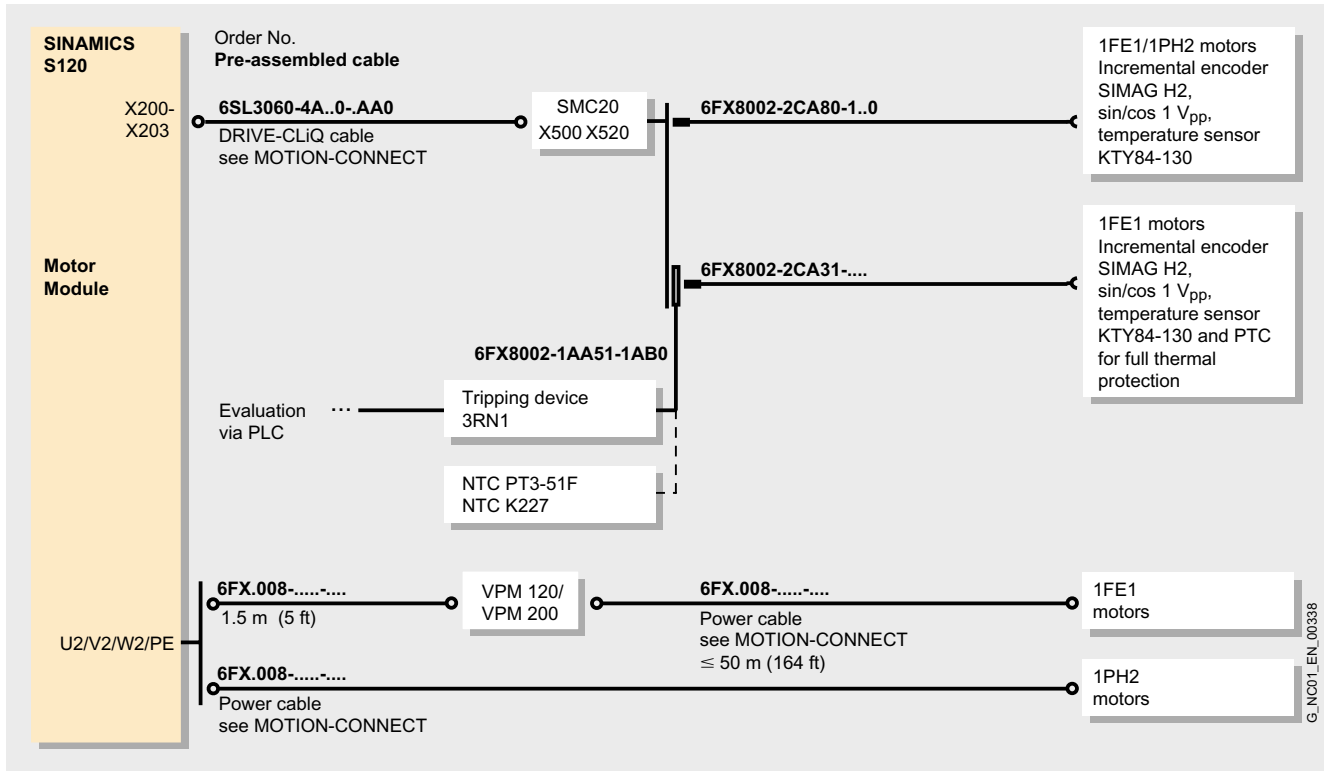


Overview of connections for SINAMICS S120 Motor Modules in booksize format and 1FW6 torque motors

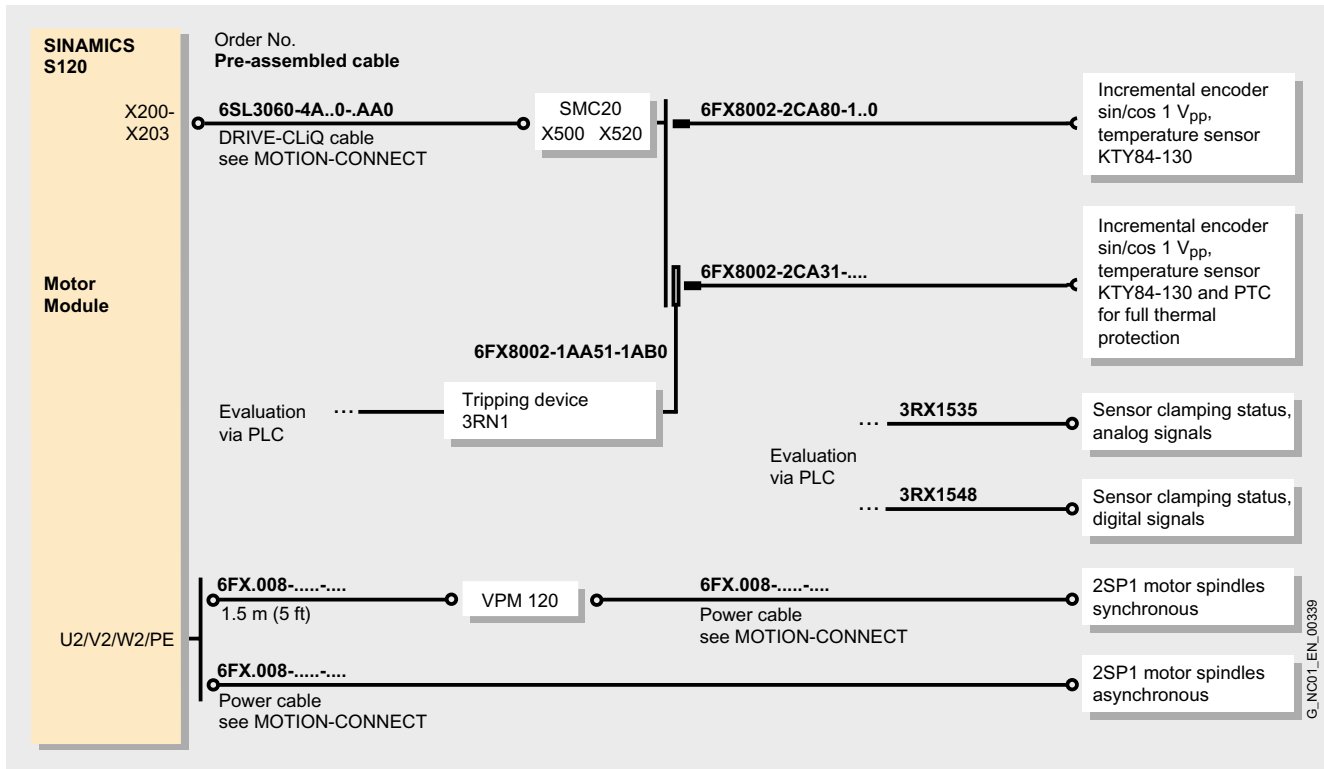


Integration (continued)

Overview of connections for SINAMICS S120 Motor Modules and 1FE1/1PH2 motors



Overview of connections for SINAMICS S120 Motor Modules and 2SP1 motors

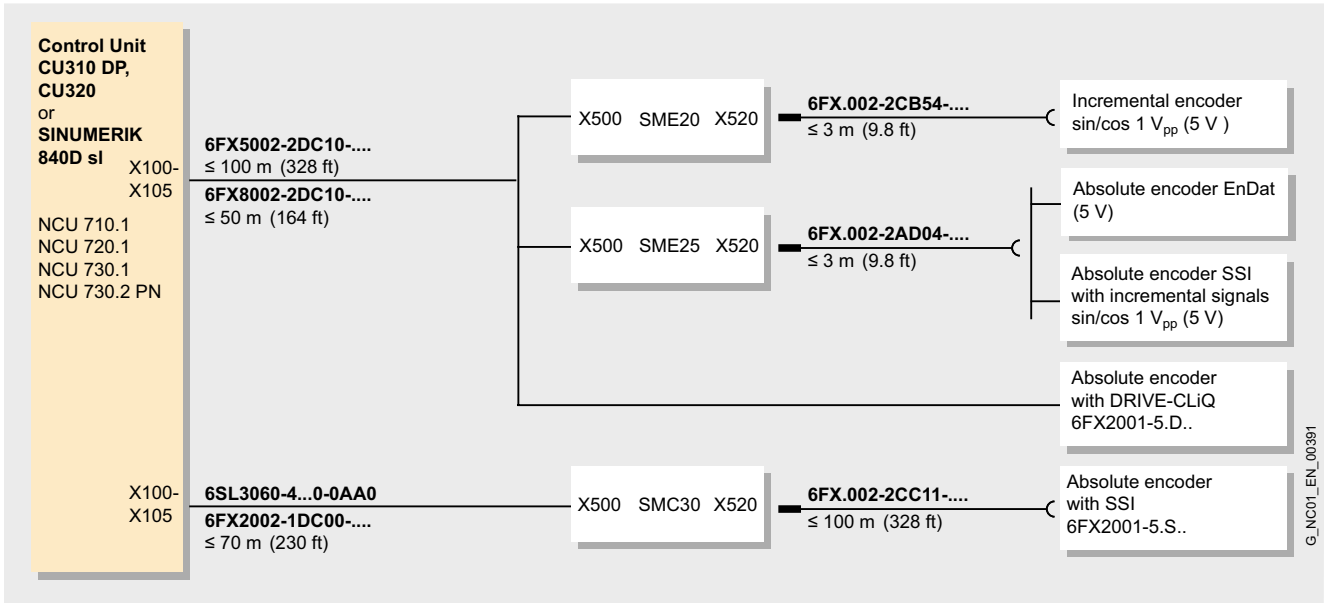


Connection system MOTION-CONNECT

Signal cables for SINAMICS S120

Integration (continued)

Connection of a machine encoder – direct measuring system



Selection and Ordering Data

Pre-assembled DRIVE-CLiQ signal cables

Design	Length	Degree of protection Connector	DRIVE-CLiQ signal cable without 24 V DC cores Order No.
In fixed lengths	0.11 m (0.36 ft)	IP20/IP20	6SL3060-4AB00-0AA0
	0.16 m (0.52 ft)		6SL3060-4AD00-0AA0
	0.21 m (0.69 ft)		6SL3060-4AF00-0AA0
	0.26 m (0.85 ft)		6SL3060-4AH00-0AA0
	0.31 m (1.02 ft)		6SL3060-4AK00-0AA0
	0.36 m (1.18 ft)		6SL3060-4AM00-0AA0
	0.41 m (1.35 ft)		6SL3060-4AP00-0AA0
	0.60 m (1.97 ft)		6SL3060-4AU00-0AA0
	0.95 m (3.12 ft)		6SL3060-4AA10-0AA0
	1.20 m (3.94 ft)		6SL3060-4AW00-0AA0
	1.45 m (4.76 ft)		6SL3060-4AF10-0AA0
	2.80 m (9.19 ft)		6SL3060-4AJ20-0AA0
5.00 m (16.4 ft)	6SL3060-4AA50-0AA0		
By the meter	Max. 70 m (230 ft)	IP20/IP20	6FX2002-1DC00-....
	Max. 70 m (230 ft)	IP67/IP67	6FX2002-1DC20-....

Length code

....

Encoder system	Motor type	Length, max.	Degree of protection Connector	DRIVE-CLiQ signal cable with 24 V DC cores Order No.
Encoder systems for motors with DRIVE-CLiQ interface: Incremental encoder	1FK7/1FT6/1FT7/ 1FW3/1PH4/ 1PH7/1PL6/ 1PM4/1PM6	50 m (164 ft)	IP20/IP20	6FX8002-2DC00-....
		100 m (328 ft)		6FX5002-2DC00-....
Absolute encoder Resolver Absolute encoder with DRIVE-CLiQ 6FX2001-5.D..		50 m (164 ft)	IP20/IP67	6FX8002-2DC10-....
		100 m (328 ft)		6FX5002-2DC10-....
		50 m (164 ft)	IP67/IP67 ¹⁾	6FX8002-2DC20-....
		100 m (328 ft)		6FX5002-2DC20-....

MOTION-CONNECT 500

5

MOTION-CONNECT 800

8

Length code

....

¹⁾ No direct connection to modules.

Connection system

MOTION-CONNECT

Signal cables for SINAMICS S120

Selection and Ordering Data (continued)

Pre-assembled signal cables

Encoder system	Motor type	Connection via	Length, max.	Degree of protection Connector	Basic cables	Extensions
					Order No.	Order No.
Incremental encoder sin/cos 1 V _{pp} 2048 S/R						
• With C and D tracks	1FK ²⁾ /1FT/ 1FW3/1PH4/ 1PH7/1PL6	SMC20	100 m (328 ft)	IP20/IP67	6FX 002-2CA31-....	6FX 002-2CA34-....
• Without C and D tracks	1PH4/1PH7/ 1PL6/1PM4/ 1PM6	SMC20	50 m (164 ft)	IP20/IP67	6FX 8002-2CA80-....	6FX 002-2CA34-....
Incremental encoder sin/cos 1 V _{pp} 2048 S/R	1FK701	SMC20	50 m (164 ft)	IP20/IP67	6FX 002-2CA20-....	6FX5 002-2CA24-....
Incremental encoder sin/cos 1 V _{pp} 2048 S/R	1FS6	SMC20	50 m (164 ft)	IP20/IP67	6FX5 002-2XA00-....	–
Incremental encoder HTL	1PH7/1PH4/ 1PL6	SMC30	100 m (328 ft) 300 m (984 ft) ⁴⁾	IP20/IP67	6FX 002-2AH00-....	6FX 002-2AH04-....
Incremental encoder HTL 24 V DC 6FX2001-4		SMC30	100 m (328 ft)		6FX5 002-2CA12-....	–
Incremental encoder TTL RS 422 6FX2001-2						
• 5 V DC		SMC30	100 m (328 ft)	IP20/IP67	6FX 002-2CD01-....	6FX 002-2CB54-....
• 24 V DC		SMC30	100 m (328 ft)	IP20/IP67	6FX 002-2CD24-....	6FX 002-2CB54-....
Incremental encoder HTL 5 V DC	1PH7/1PH4/ 1PL6	CU310DP	100 m (328 ft)	IP20/IP67	6FX 002-2AH10-....	–
Incremental encoder HTL 5 V DC	1LA ¹⁾	CU310DP	300 m (984 ft)	IP20/IP67	6SX7 002-0AN30-....	–
Incremental encoder HTL type 1XP8001	1LA ¹⁾	SMC30		IP20/IP67		
• Signals A, B			100 m (328 ft)		6SX7 002-0AL00-....	–
• Signals A*, A, B*, B, R*, R			300 m (984 ft) ⁴⁾		6SX7 002-0AN00-....	–
• Signals A*, A, B*, B, R*, R with right-angled connector			300 m (984 ft) ⁴⁾		6SX7 002-0AN10-....	–
Incremental encoder sin/cos 1 V _{pp} 6FX2001-3		SMC20	50 m (164 ft)	IP20/IP67	6FX 002-2CG00-....	6FX 002-2CB54-....
Incremental encoder sin/cos 1 V _{pp} 5 V DC		SME20	3 m (9.84 ft)		6FX 002-2CB54-....	–
Direct linear incremental encoder sin/cos 1 V _{pp}	1FN3 ³⁾ /1FW6	SME120			6FX7 002-2CB54-....	–
MOTION-CONNECT 500					5	5
MOTION-CONNECT 800					8	8
Length code				

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

Note:

The maximum specified cable length (basic cable and extensions) must not be exceeded. The total maximum permissible length is reduced by 2 m (6.56 ft) for each interruption point.

¹⁾ Not for 2KG geared motor.

²⁾ Not for 1FK701.

³⁾ Version for continuous load.

⁴⁾ With evaluation of difference signals A*, A, B*, B.

Selection and Ordering Data (continued)

Pre-assembled signal cables

Encoder system	Motor type	Connection via	Length, max.	Degree of protection Connector	Basic cables		Extensions	
					Order No.	Order No.	Order No.	Order No.
Absolute encoder with SSI 6FX2001-5.S..		SMC30		IP20/IP67	6FX 002-2CC11-....	–		
• Clock rate 300 kHz			100 m (328 ft)					
• Clock rate 400 kHz			400 m (1312 ft)					
• Clock rate 1 MHz			50 m (164 ft)					
Absolute encoder with SSI 5 V DC		SME25	3 m (9.84 ft)		6FX 002-2AD04-....	–		
Basic/Absolute encoder with EnDat	1FK ¹⁾ /1FT/ 1FW3/1PH4/ 1PH7/1PL6	SMC20	100 m (328 ft)	IP20/IP67	6FX 002-2EQ10-....		6FX 002-2EQ14-....	
Absolute encoder with EnDat 512 S/R	1FK701	SMC20	50 m (164 ft)	IP20/IP67	6FX 002-2EQ20-....		6FX 002-2EQ24-....	
Absolute encoder with EnDat 2048 S/R	1FS6	SMC20	50 m (164 ft)	IP20/IP67	6FX 002-2XQ10-....	–		
Absolute encoder with EnDat 6FX2001-5.E..		SMC20	100 m (328 ft)	IP20/IP67	6FX 002-2CH00-....		6FX 002-2AD04-....	
Absolute encoder with EnDat 5 V DC		SME25	3 m (9.84 ft)		6FX 002-2AD04-....	–		
Direct linear absolute encoder EnDat	1FN3 ²⁾ /1FW6	SME125			6FX 002-2AD04-....	–		
Resolver								
• Multi-pole	1FK ¹⁾ /1FT/ 1FW3	SMC10	50 m (164 ft)	IP20/IP67	6FX 002-2CF02-....		6FX 002-2CF04-....	
• 2-pole	1FK ¹⁾ /1FT/ 1PH7/1PL6	IP20/IP67	130 m (426 ft)	IP20/IP67				
Resolver	1FK701	SMC10	50 m (164 ft)	IP20/IP67	6FX 002-2CF20-....		6FX 002-2CF24-....	
PTC thermistor for connection to 3RN10 tripping device	1FS6	–	Unlimited	–	6FX 002-1XA04-....	–		
Temperature sensor	1FN3100 ... 1FN3150 ²⁾	SME120/ SME125			6FX 002-2SL01-....		6FX 002-2SL10-....	
Temperature sensor	1FN3300 ... 1FN3900 ²⁾	SME120/ SME125			6FX 002-2SL02-....		6FX 002-2SL10-....	
Temperature sensor	1FW6	SME120/ SME125			6FX 002-2SL10-....	–		
MOTION-CONNECT 500					5		5	
MOTION-CONNECT 800					8		8	
Length code					

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²⁾ Version for continuous load.