

## MOTION-CONNECT connection systems

### Signal cables for SINAMICS S120

#### Overview



MOTION-CONNECT DRIVE-CLiQ signal cable with IP20/IP67 connector

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

The following different types of cable are available:

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

#### Type of delivery for pre-assembled signal cables

Pre-assembled signal cables are available in units of 10 m (3.94 in).

The cables are supplied on reels up to 30 kg or 100 m (66.2 lb or 328 ft). Above 30 kg or 100 m (66.2 lb or 328 ft), cable drums are used instead of reels.

#### Application

##### DRIVE-CLiQ signal cables without 24 V DC cores

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

##### MOTION-CONNECT DRIVE-CLiQ signal cables with 24 V DC cores

are used whenever components with DRIVE-CLiQ connections must meet high requirements such as mechanical stress and oil resistance, e.g., where a connection is made outside the cabinet between Power Modules, Motor Modules, and SIMOTICS S-1FK7/SIMOTICS M-1PH8 motors with DRIVE-CLiQ interface.

##### MOTION-CONNECT pre-assembled signal cables

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

#### Design

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

The 6FX.002-2....-.... signal cables are available with crimped contacts and with the connector enclosure supplied separately (not in the case of DRIVE-CLiQ signal cables and signal cables with exposed core ends).

Signal cables with separately supplied **module-end** connector: in this case, the 6th position of the Article No. must be changed from **0** to **1**:

6FX.012-2C....-.... (not for signal cables for connecting via terminals or 6FX.002-2AH00-...., 6FX.002-2CA12-....).

Signal cables with separately supplied **motor-end** connector: in this case, the 6th position of the Article No. must be changed from **0** to **4**:

6FX.042-2C....-.... (not for signal cables for connecting via terminals or 6FX8002-2BA20-...., 6FX8002-2BA21-....).

#### Note:

Once the contacts have latched into the insulator, they can no longer be removed.

## MOTION-CONNECT connection systems

Signal cables for SINAMICS S120

### Technical specifications

| DRIVE-CLiQ signal cables                    | DRIVE-CLiQ<br>6FX2...-1DC...-....               | DRIVE-CLiQ<br>MOTION-CONNECT 500<br>6FX5...-..DC...-.... | DRIVE-CLiQ<br>MOTION-CONNECT 800PLUS<br>6FX8...-..DC...-....                                            |
|---------------------------------------------|-------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Certificate of suitability</b>           |                                                 |                                                          |                                                                                                         |
| • cURus or UR/CSA                           | UL STYLE 2502/CSA-N.210.2-M90                   | UL STYLE 2502/CSA-N.210.2-M90                            | UL STYLE 2502/CSA-N.210.2-M90                                                                           |
| • UR-CSA File No. <sup>1)</sup>             | Yes                                             | Yes                                                      | Yes                                                                                                     |
| • RoHS conformity                           | Yes                                             | Yes                                                      | Yes                                                                                                     |
| <b>Rated voltage according to EN 50395</b>  | 30 V                                            | 30 V                                                     | 30 V                                                                                                    |
| <b>Test voltage, rms</b>                    | 500 V                                           | 500 V                                                    | 500 V                                                                                                   |
| <b>Operating temperature on the surface</b> |                                                 |                                                          |                                                                                                         |
| • Fixed installation                        | -20 ... +80 °C (-4 ... +176 °F)                 | -20 ... +80 °C (-4 ... +176 °F)                          | -20 ... +80 °C (-4 ... +176 °F)                                                                         |
| • Flexible installation                     | –                                               | 0 ... 60 °C (32 ... 140 °F)                              | -20 ... +60 °C (-4 ... +140 °F)                                                                         |
| <b>Tensile stress, max.</b>                 |                                                 |                                                          |                                                                                                         |
| • Fixed installation                        | 45 N/mm <sup>2</sup> (6526 lb/in <sup>2</sup> ) | 80 N/mm <sup>2</sup> (11603 lb/in <sup>2</sup> )         | 50 N/mm <sup>2</sup> (7252 lb/in <sup>2</sup> )                                                         |
| • Flexible installation                     | –                                               | 30 N/mm <sup>2</sup> (4351 lb/in <sup>2</sup> )          | 20 N/mm <sup>2</sup> (2901 lb/in <sup>2</sup> )                                                         |
| <b>Smallest bending radius</b>              |                                                 |                                                          |                                                                                                         |
| • Fixed installation                        | 50 mm (1.97 in)                                 | 35 mm (1.38 in)                                          | 35 mm (1.38 in)                                                                                         |
| • Flexible installation                     | –                                               | 125 mm (4.92 in)                                         | 75 mm (2.95 in)                                                                                         |
| <b>Torsional stress</b>                     | –                                               | Absolute 30°/m                                           | Absolute 30°/m                                                                                          |
| <b>Bending</b>                              | –                                               | 100000                                                   | 10 million                                                                                              |
| <b>Traversing velocity</b>                  | –                                               | 30 m/min (98.4 ft/min)                                   | 300 m/min (984 ft/min)                                                                                  |
| <b>Acceleration</b>                         | –                                               | 2 m/s <sup>2</sup> (6.56 ft/s <sup>2</sup> )             | Up to 50 m/s <sup>2</sup> (164 ft/s <sup>2</sup> ),<br><a href="#">see characteristics on page 12/5</a> |
| <b>Insulation material, incl. jacket</b>    | CFC/silicone-free                               | CFC/silicone-free                                        | CFC/halogen-free/silicon-free<br>IEC 60754-1/DIN VDE 0472-815                                           |
| <b>Oil resistance</b>                       | EN 60811-2-1                                    | EN 60811-2-1 (mineral oil only)                          | EN 60811-2-1                                                                                            |
| <b>Outer jacket</b>                         | PVC                                             | PVC                                                      | PUR, HD22.10 S2<br>(VDE 0282, Part 10)                                                                  |
|                                             | Gray RAL 7032                                   | DESINA color green RAL 6018                              | DESINA color green RAL 6018                                                                             |
| <b>Flame-retardant</b>                      | EN 60332-1-1 to 1-3                             | EN 60332-1-1 to 1-3                                      | EN 60332-1-1 to 1-3                                                                                     |

Degree of protection of the pre-assembled signal cables and their extensions when closed and inserted: IP67.

<sup>1)</sup> The File No. is printed on the cable jacket.

## MOTION-CONNECT connection systems

### Signal cables for SINAMICS S120

#### Technical specifications (continued)

| Signal cables                               | MOTION-CONNECT 500<br>6FX50...-.....-.....      | MOTION-CONNECT 800PLUS<br>6FX80...-.....-.....                                                          |
|---------------------------------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Certificate of suitability</b>           |                                                 |                                                                                                         |
| • cURus or UR/CSA                           | UL758-CSA-C22.2-N.210.2-M90                     | UL758-CSA-C22.2-N.210.2-M90                                                                             |
| • UR-CSA File No. <sup>1)</sup>             | Yes                                             | Yes                                                                                                     |
| • RoHS conformity                           | Yes                                             | Yes                                                                                                     |
| <b>Rated voltage according to EN 50395</b>  | 30 V                                            | 30 V                                                                                                    |
| <b>Test voltage, rms</b>                    | 500 V                                           | 500 V                                                                                                   |
| <b>Operating temperature on the surface</b> |                                                 |                                                                                                         |
| • Fixed installation                        | -20 ... +80 °C (-4 ... +176 °F)                 | -50 ... +80 °C (-58 ... +176 °F)                                                                        |
| • Flexible installation                     | 0 ... 60 °C (32 ... 140 °F)                     | -20 ... +60 °C (-4 ... +140 °F)                                                                         |
| <b>Tensile stress, max.</b>                 |                                                 |                                                                                                         |
| • Fixed installation                        | 50 N/mm <sup>2</sup> (7252 lb/in <sup>2</sup> ) | 50 N/mm <sup>2</sup> (7252 lb/in <sup>2</sup> )                                                         |
| • Flexible installation                     | 20 N/mm <sup>2</sup> (2901 lb/in <sup>2</sup> ) | 20 N/mm <sup>2</sup> (2901 lb/in <sup>2</sup> )                                                         |
| <b>Smallest bending radius</b>              |                                                 |                                                                                                         |
| • Fixed installation                        | 60 mm (2.36 in)                                 | 4 × D <sub>max</sub>                                                                                    |
| • Flexible installation                     | 100 mm (3.94 in)                                | 70 mm <sup>2)</sup> (2.75 in)                                                                           |
| <b>Torsional stress</b>                     | Absolute 30°/m                                  | Absolute 30°/m                                                                                          |
| <b>Bending</b>                              | 2 million                                       | 10 million                                                                                              |
| <b>Traversing velocity</b>                  | 180 m/min (591 ft/min)                          | Up to 300 m/min (984 ft/min)                                                                            |
| <b>Acceleration</b>                         | 5 m/s <sup>2</sup> (16.41 ft/s <sup>2</sup> )   | Up to 50 m/s <sup>2</sup> (164 ft/s <sup>2</sup> ),<br><a href="#">see characteristics on page 12/5</a> |
| <b>Insulation material, incl. jacket</b>    | CFC/silicone-free                               | CFC/halogen-free/silicon-free<br>IEC 60754-1/DIN VDE 0472-815                                           |
| <b>Oil resistance</b>                       | EN 60811-2-1 (mineral oil only)                 | EN 60811-2-1                                                                                            |
| <b>Outer jacket</b>                         | PVC<br>DESINA color green RAL 6018              | PUR, HD22.10 S2 (VDE 0282, Part 10)<br>DESINA color green RAL 6018                                      |
| <b>Flame-retardant</b>                      | EN 60332-1-1 to 1-3                             | EN 60332-1-1 to 1-3                                                                                     |

Degree of protection of the pre-assembled signal cables and their extensions when closed and inserted: IP67.

<sup>1)</sup> The File No. is printed on the cable jacket.

<sup>2)</sup> Exception: 6FX8002-2SL...-.....; smallest bending radius (flexible): 85 mm (3.35 in).

**MOTION-CONNECT connection systems**

Signal cables for SINAMICS S120

**MOTION-CONNECT DRIVE-CLiQ signal cables with 24 V DC cores****Selection and ordering data****Pre-assembled MOTION-CONNECT DRIVE-CLiQ signal cables for SINAMICS S120 and motors with 24 V DC cores**

| Version                                                                            | Usage                                                                                                                                                                                                                                                                                      | Length,<br>max. | $D_{\max}$    | Connector/<br>degree of<br>protection,<br>module-end | Connector/<br>degree of<br>protection,<br>motor-end | MOTION-CONNECT<br>DRIVE-CLiQ signal cable<br>with 24 V DC cores |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------|------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|
|                                                                                    |                                                                                                                                                                                                                                                                                            | m (ft)          | mm<br>(in)    |                                                      |                                                     | Article No.                                                     |
|   | To the decimeter                                                                                                                                                                                                                                                                           |                 |               |                                                      |                                                     |                                                                 |
|                                                                                    | For components with DRIVE-CLiQ interface in the control cabinet.<br><br>For example, for making the connection between SINAMICS S120 Motor Modules or Power Modules and the DRIVE-CLiQ cabinet bushing.                                                                                    | 100<br>(328)    | 7.1<br>(0.28) | RJ45/IP20                                            | RJ45/IP20                                           | <b>6FX5002-2DC00-....</b>                                       |
|                                                                                    |                                                                                                                                                                                                                                                                                            | 75<br>(246)     | 7.1<br>(0.28) | RJ45/IP20                                            | RJ45/IP20                                           | <b>6FX8002-2DC00-....</b>                                       |
|   | To the decimeter                                                                                                                                                                                                                                                                           |                 |               |                                                      |                                                     |                                                                 |
|                                                                                    | For built-in or built-on encoder systems with DRIVE-CLiQ interface.<br><br>For example, for making the connection between SIMOTICS S-1FT7/-1FK7/<br>SIMOTICS M-1PH8/SIMOTICS T-1FW3 motors and SINAMICS S120 Motor Modules or Power Modules.                                               | 100<br>(328)    | 7.1<br>(0.28) | RJ45/IP20                                            | RJ45/IP67                                           | <b>6FX5002-2DC10-....</b>                                       |
|                                                                                    |                                                                                                                                                                                                                                                                                            | 75<br>(246)     | 7.1<br>(0.28) | RJ45/IP20                                            | RJ45/IP67                                           | <b>6FX8002-2DC10-....</b>                                       |
|  | To the decimeter                                                                                                                                                                                                                                                                           |                 |               |                                                      |                                                     |                                                                 |
|                                                                                    | For built-in or built-on encoder systems with DRIVE-CLiQ interface.<br><br>For example, for making the connection between SIMOTICS S-1FT7/-1FK7/SIMOTICS M-1PH8/<br>SIMOTICS T-1FW3 motors and SINAMICS S120 via DRIVE-CLiQ cabinet bushings, couplings or DME20, or 2 couplings or DME20. | 100<br>(328)    | 7.1<br>(0.28) | RJ45/IP67                                            | RJ45/IP67                                           | <b>6FX5002-2DC20-....</b>                                       |
|                                                                                    |                                                                                                                                                                                                                                                                                            | 75<br>(246)     | 7.1<br>(0.28) | RJ45/IP67                                            | RJ45/IP67                                           | <b>6FX8002-2DC20-....</b>                                       |
| MOTION-CONNECT 500                                                                 |                                                                                                                                                                                                                                                                                            |                 |               |                                                      |                                                     | 5                                                               |
| MOTION-CONNECT 800PLUS                                                             |                                                                                                                                                                                                                                                                                            |                 |               |                                                      |                                                     | 8                                                               |
| Length code                                                                        |                                                                                                                                                                                                                                                                                            |                 |               |                                                      |                                                     | ....                                                            |

## Overview

| Data position in Article No.                                                       |  |  |  | 1                                                                                  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |   |
|------------------------------------------------------------------------------------|--|--|--|------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|
| <b>MOTION-CONNECT 500</b>                                                          |  |  |  | 6                                                                                  | F | X | 5 | 0 | ■ | 2 | – | 2 | ■  | ■  | ■  | ■  | –  | .  | .  | . |
| <b>MOTION-CONNECT 800PLUS</b>                                                      |  |  |  | 6                                                                                  | F | X | 8 | 0 | ■ | 2 | – | 2 | ■  | ■  | ■  | ■  | –  | .  | .  | . |
| <b>6FX2 cables</b>                                                                 |  |  |  | 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 |   |   |   |   |    |    |    |    |    |    |    |   |
| <b>Variant: Signal cables for integrated encoder</b>                               |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| <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 <sub>pp</sub> ), 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 <sub>pp</sub> ), 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  |    |    |   |
| <b>Variant: Signal cables for external encoder</b>                                 |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| <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 <sub>pp</sub> ), 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  |    |    |   |
| <b>Variant: Signal cables for temperature sensor</b>                               |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| <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>               |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| <u>Adapter cable with M17 socket on SIMOTICS L-1FN3300 ... L-1FN3900</u>           |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| <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  |    |    |   |
| <b>Length code</b>                                                                 |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| Units of 10 cm (3.94 in) or 1 meter (3.28 ft) or in fixed lengths                  |  |  |  |                                                                                    |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |

# MOTION-CONNECT connection systems

Article number code

## Length code

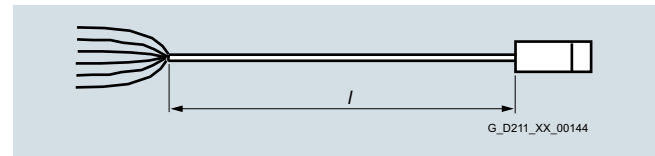
### Overview

| Description                                 | Article No.               | supplement     |
|---------------------------------------------|---------------------------|----------------|
| <b>Length code for pre-assembled cables</b> |                           |                |
|                                             | <b>6FX.0.2-.....-</b>     | <b>■ ■ ■ ■</b> |
| 0 m                                         | 1                         |                |
| 100 m (328 ft)                              | 2                         |                |
| 200 m (656 ft)                              | 3                         |                |
| 0 m                                         | 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                                         | A                         |                |
| 1 m (3.28 ft)                               | B                         |                |
| 2 m (6.56 ft)                               | C                         |                |
| 3 m (9.84 ft)                               | D                         |                |
| 4 m (13.1 ft)                               | E                         |                |
| 5 m (16.4 ft)                               | F                         |                |
| 6 m (19.7 ft)                               | G                         |                |
| 7 m (23.0 ft)                               | H                         |                |
| 8 m (26.2 ft)                               | J                         |                |
| 9 m (29.5 ft)                               | K                         |                |
| 0 m                                         | 0                         |                |
| 0.1 m (3.94 in)                             | 1                         |                |
| 0.2 m (7.87 in)                             | 2                         |                |
| 0.3 m (11.81 in)                            | 3                         |                |
| 0.4 m (15.75 in)                            | 4                         |                |
| 0.5 m (19.96 in)                            | 5                         |                |
| 0.6 m (23.62 in)                            | 6                         |                |
| 0.7 m (27.56 in)                            | 7                         |                |
| 0.8 m (31.5 in)                             | 8                         |                |
| Examples:                                   | 1.0 m (3.28 ft): 1 A B 0  |                |
|                                             | 2.2 m (7.22 ft): 1 A C 2  |                |
|                                             | 8.0 m (26.3 ft): 1 A J 0  |                |
|                                             | 299.0 m (981 ft): 3 K K 0 |                |

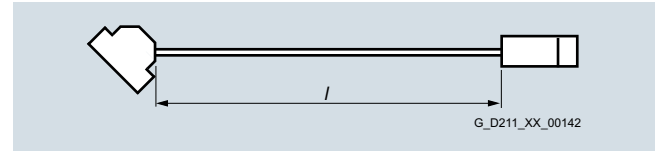
| Description                                                                     | Article No.           | supplement       |
|---------------------------------------------------------------------------------|-----------------------|------------------|
| <b>Length code for power and signal cables, sold by the meter <sup>1)</sup></b> |                       |                  |
|                                                                                 | <b>6FX.008-.....-</b> | <b>■ ■ ■ A 0</b> |
| 50 m (164 ft)                                                                   | 1                     | F                |
| 100 m (328 ft)                                                                  | 2                     | A                |
| 200 m (656 ft)                                                                  | 3                     | A                |
| 500 m (1641 ft)                                                                 | 6                     | A                |

### More information

#### Definition of lengths for pre-assembled cables



Cable with exposed core ends and pre-assembled connector

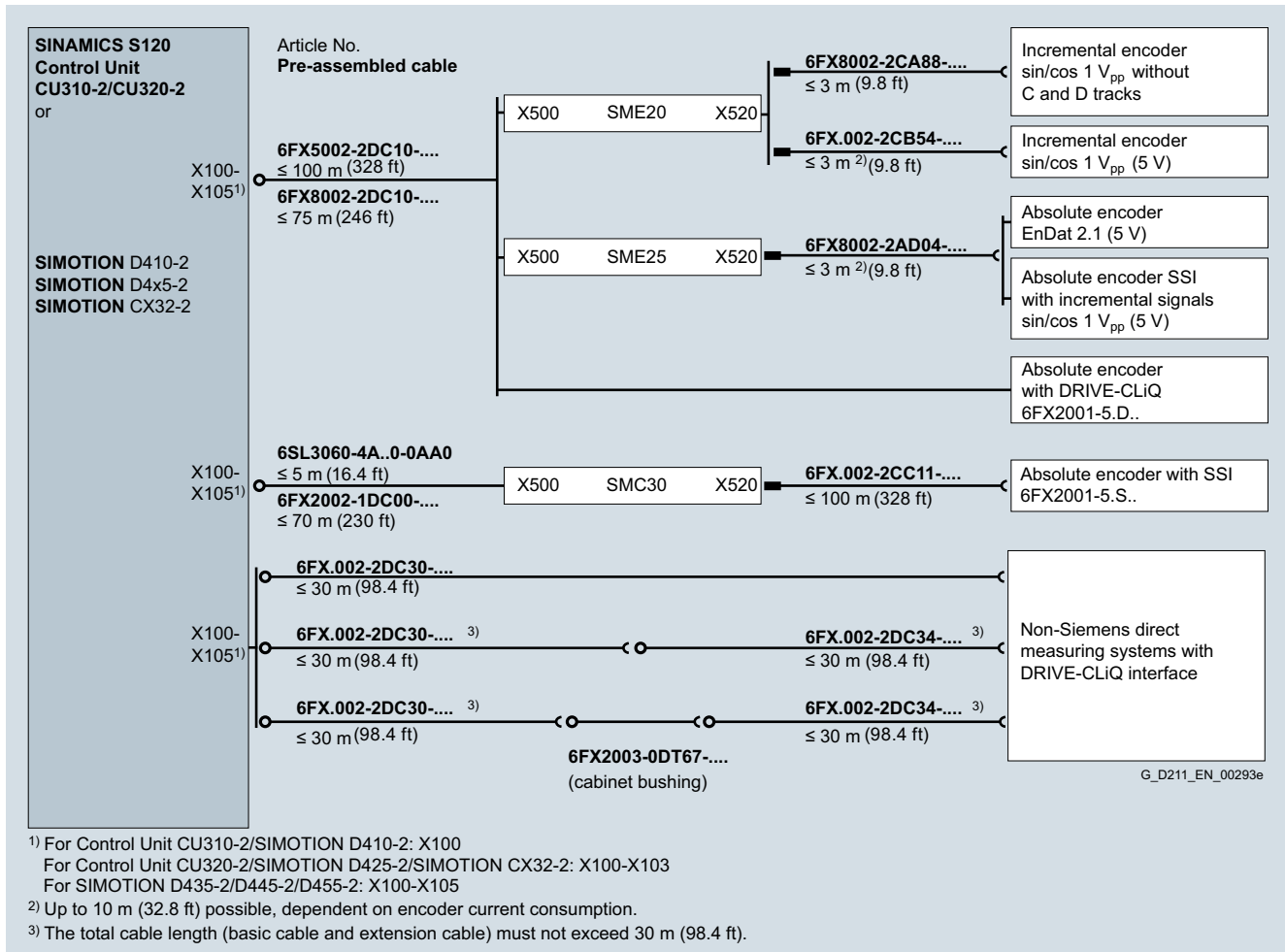


Cable with pre-assembled connectors at both ends

Tolerance:

- Cable lengths up to 10 m (32.8 ft):  $\pm 2\%$
- Cable lengths of 10 m (32.8 ft) and longer:  $\pm 1\%$

<sup>1)</sup> Note type of delivery. Cables with core cross-section  $4 \times 4 \text{ mm}^2$  or  $4 \times 4 \text{ mm}^2$  with brake cores can be delivered in units of 1 m (3.28 ft).

**Integration****Connection of a machine encoder (direct measuring system)**

## MOTION-CONNECT connection systems

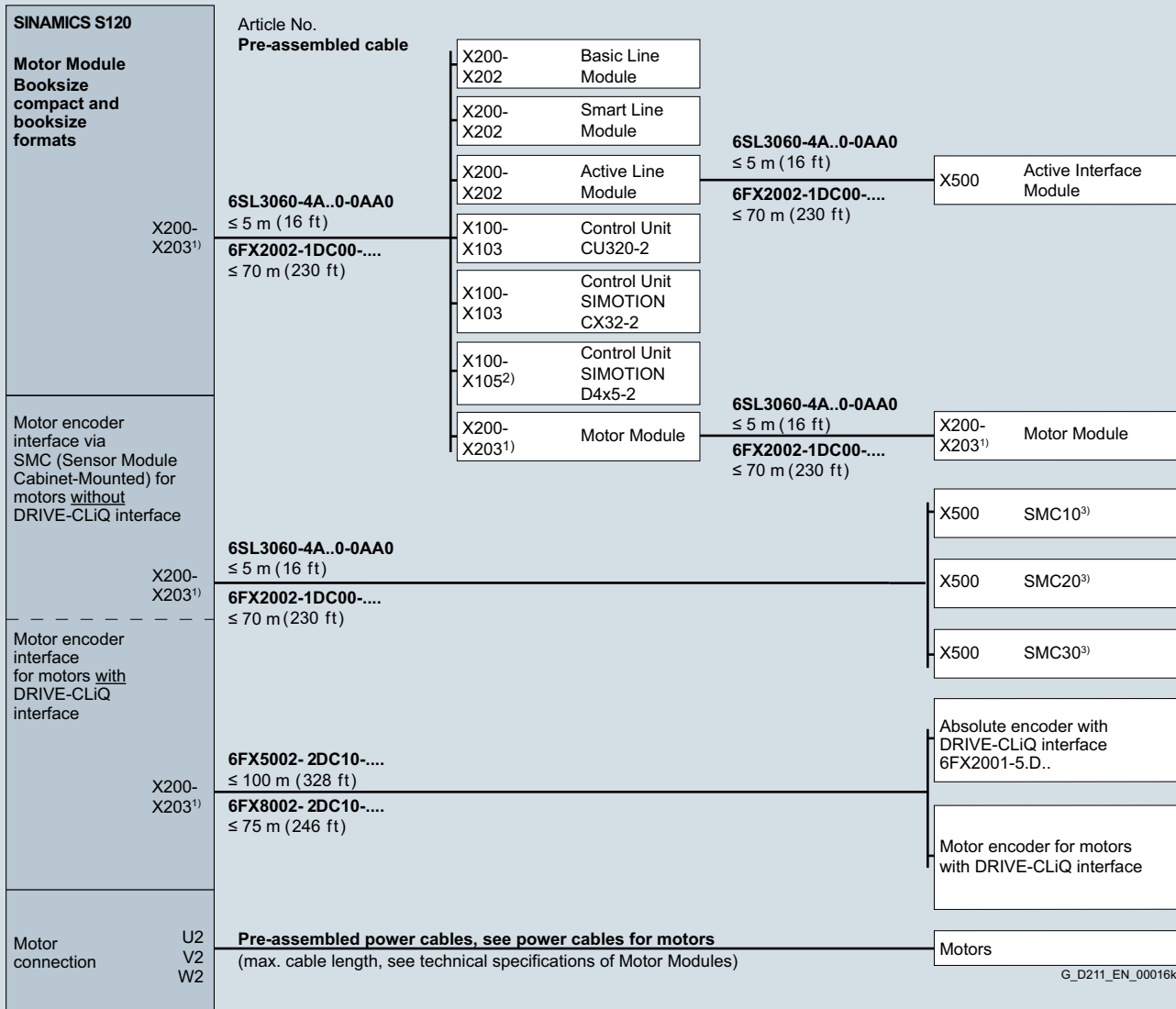
### Connection overviews

#### SINAMICS S120 Motor Modules in booksize format

#### Integration

##### Connection overview of SINAMICS S120 Motor Modules in booksize compact and booksize formats for SIMOTICS motors with/without DRIVE-CLiQ interface

The DRIVE-CLiQ signal cables of 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 must be mounted directly adjacent to one another in a row.

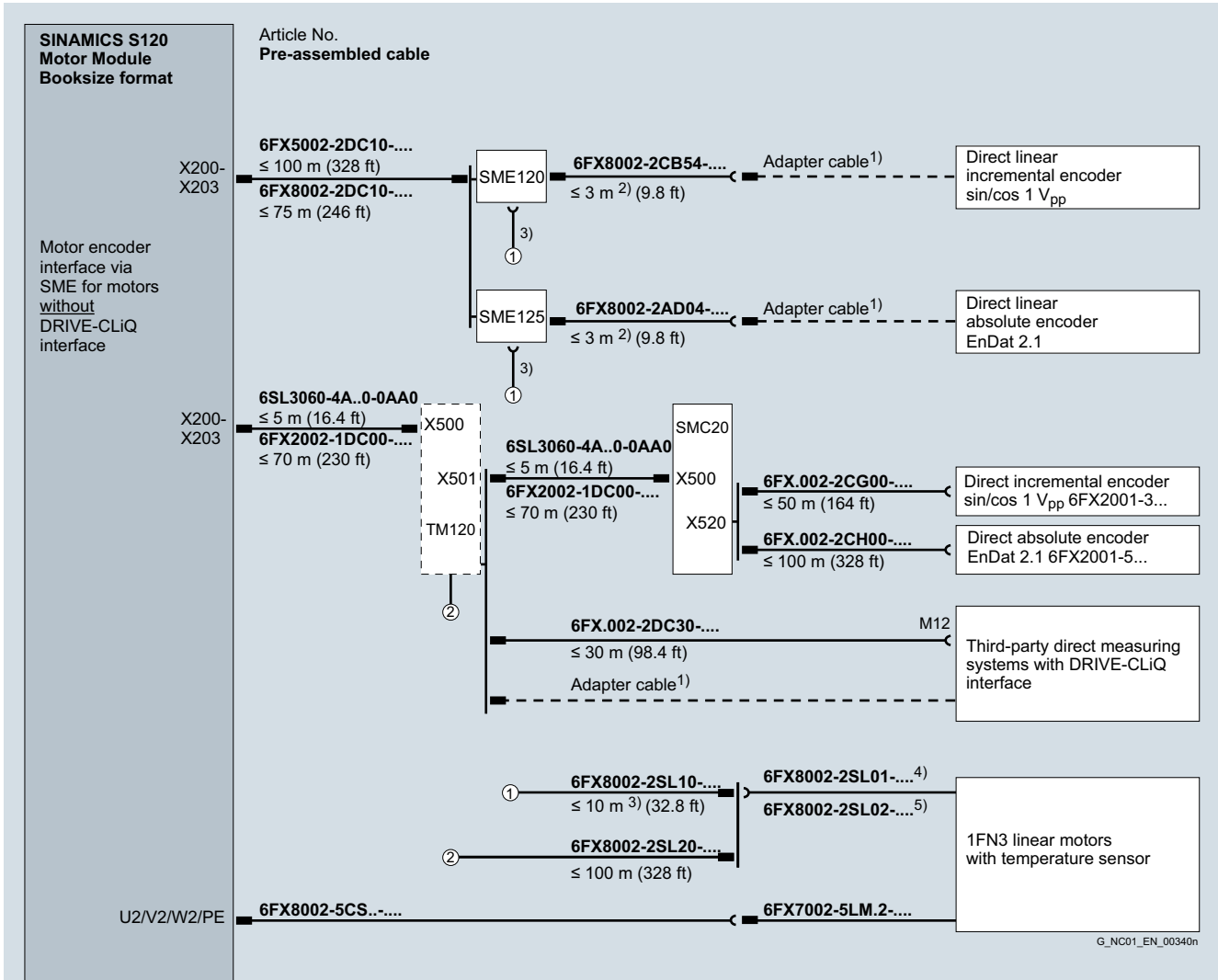


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<sup>1)</sup> For Single Motor Module: X200-X202.  
For Double Motor Module: X200-X203.

<sup>2)</sup> For SIMOTION D425-2: X100-X103.  
For SIMOTION D435-2/D445-2/D455-2: X100-X105.

<sup>3)</sup> See connection overviews of SMC10/SMC20/SMC30.

**Integration (continued)****Connection overview of SINAMICS S120 Motor Modules in booksize format with SME120/SME125 or TM120 with/without SMC20 and SIMOTICS L-1FN3 linear motors**

1) Adapter cable available from measuring system manufacturer.

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

3) The total cable length between SME120/SME125 and 1FN3 must not exceed 10 m (32.8 ft).

4) Adapter cable for 1FN3100/1FN3150 motors.

5) Adapter cable for 1FN3300 to 1FN3900 motors.

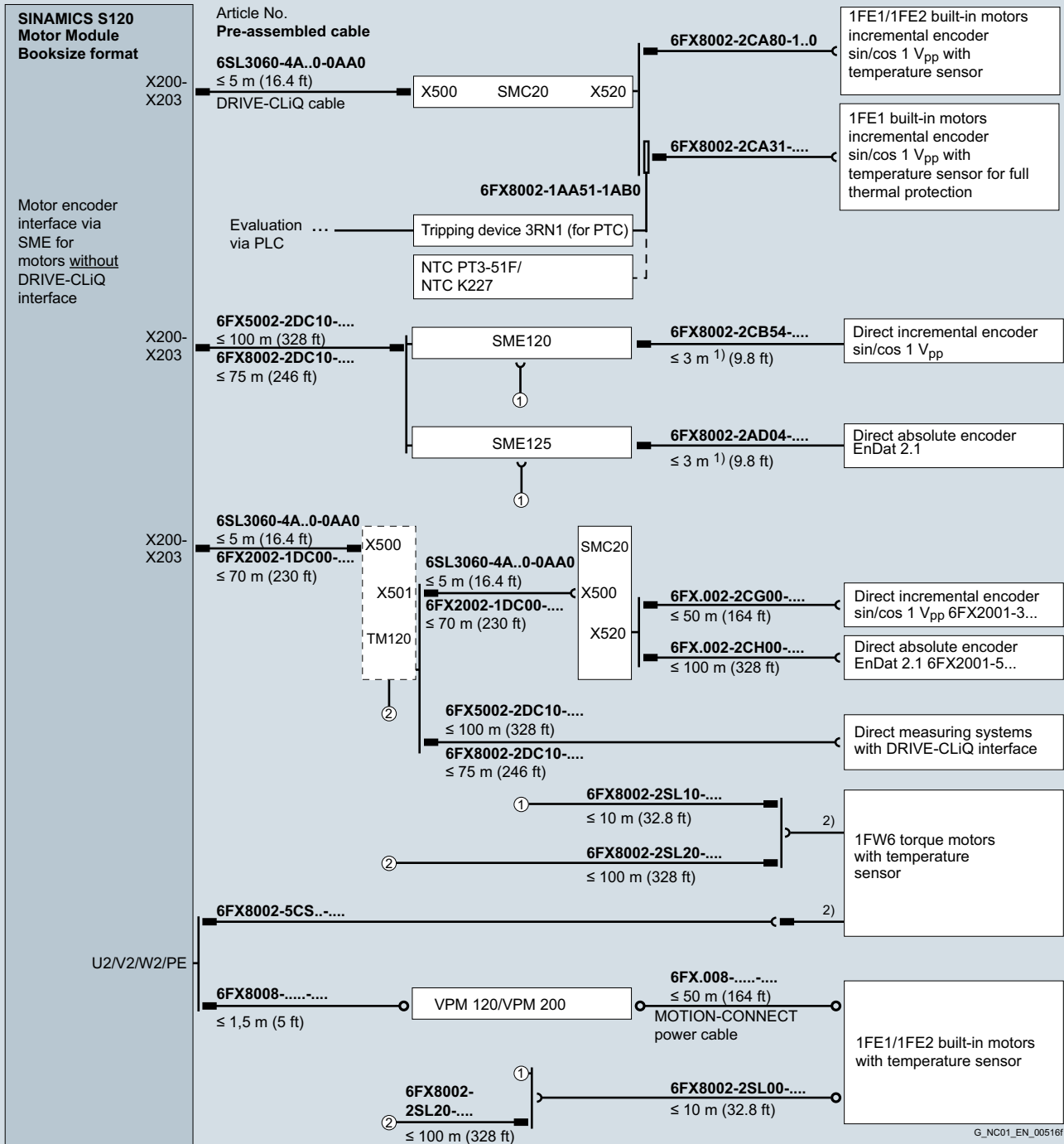
# MOTION-CONNECT connection systems

## Connection overviews

### SINAMICS S120 Motor Modules in booksize format

#### Integration (continued)

**Connection overview of SINAMICS S120 Motor Modules in booksize format with SME120/SME125 or TM120 with/without SMC20 and SIMOTICS T-1FW6 torque motors/SIMOTICS M-1FE1/-1FE2 built-in motors**



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

2) For type of connection with exposed core ends, power and signal connectors are not included in the scope of supply of the motor, they must be ordered separately (see Accessories for power and signal cables).

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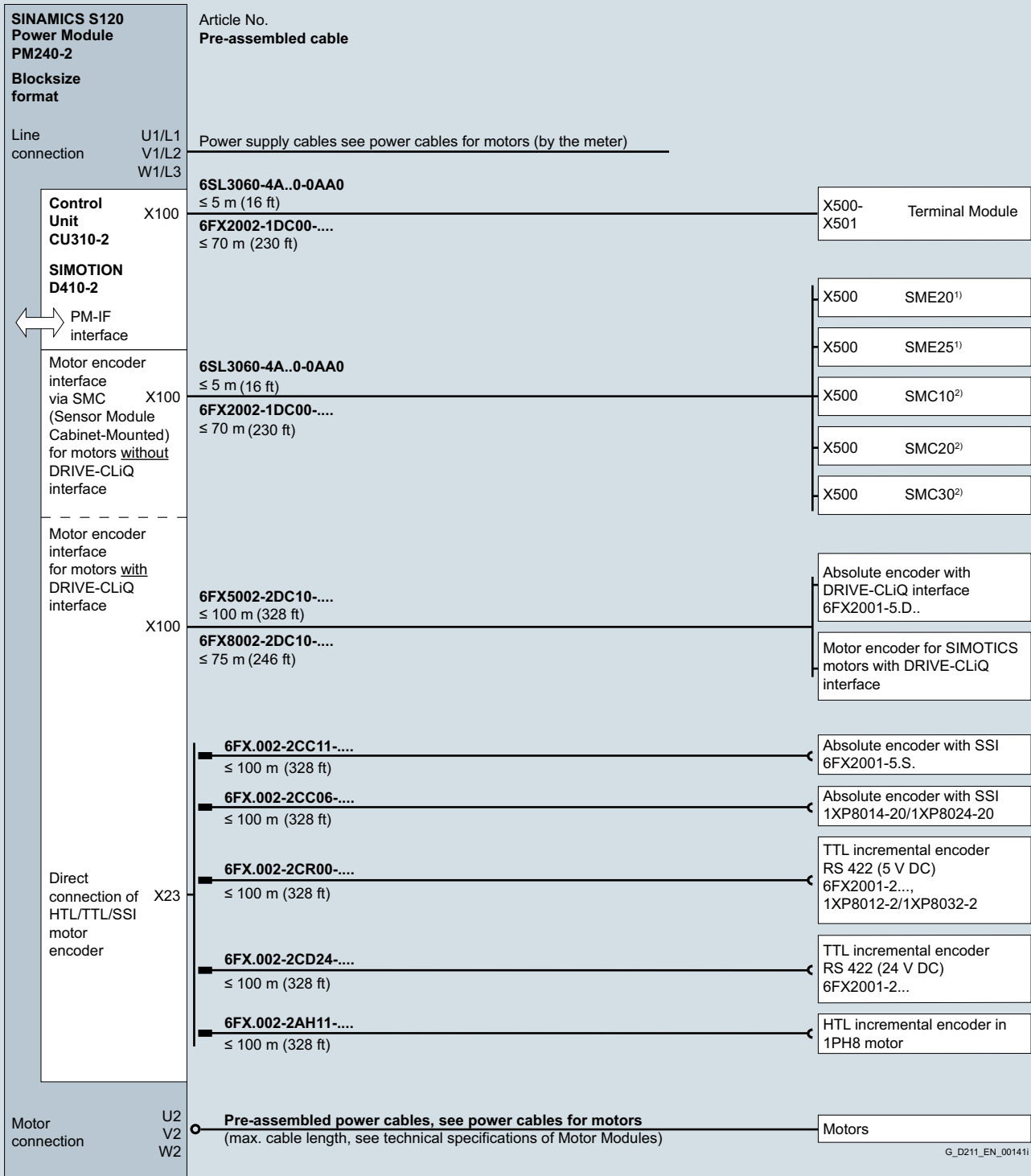
# MOTION-CONNECT connection systems

## Connection overviews

### SINAMICS S120 Power Modules in blocksize format

#### Integration

**Connection overview of SINAMICS S120 Power Modules in blocksize format with CU310-2/SIMOTION D410-2 Control Unit for SIMOTICS motors with/without DRIVE-CLiQ interface**

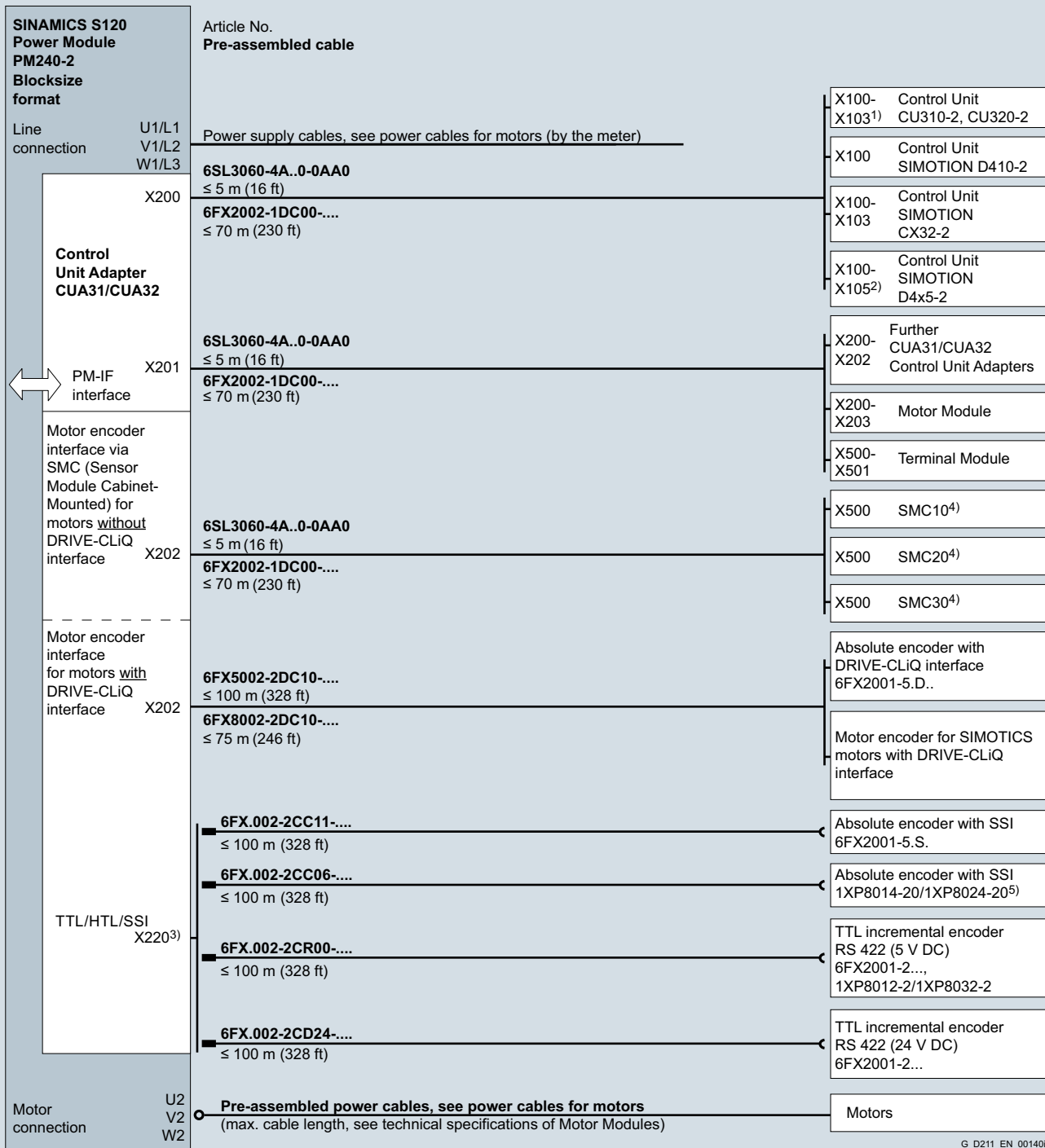


<sup>1)</sup> See connection overview for connection of a machine encoder.

<sup>2)</sup> See connection overviews of SMC10/SMC20/SMC30.

**Integration** (continued)

**Connection overview of SINAMICS S120 Power Modules in blocksize format with CUA31/CUA32 Control Unit Adapter for SIMOTICS motors with/without DRIVE-CLiQ interface**



1) For Control Unit CU310-2: X100.  
For Control Unit CU320-2: X100-X103.  
2) For SIMOTION D425-2: X100-X103.  
For SIMOTION D435-2/D445-2/D455-2: X100-X105.

3) Only for CUA32 Control Unit Adapter.  
4) See connection overviews of SMC10/SMC20/SMC30.  
5) Only for position control