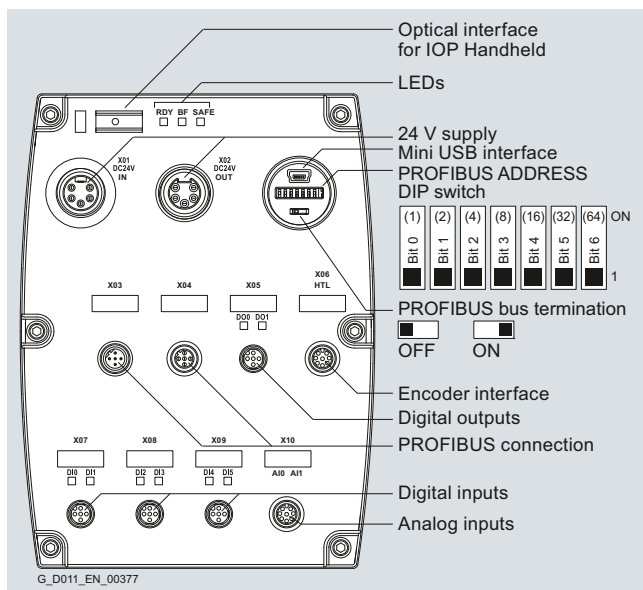


SINAMICS G120D distributed inverters

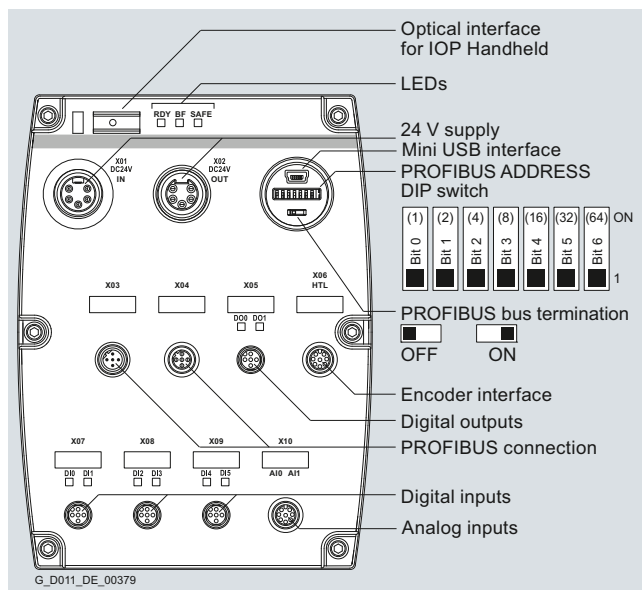
0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

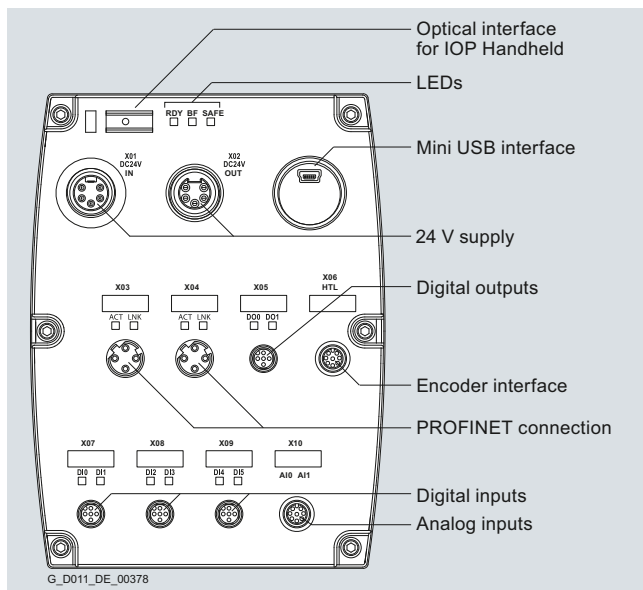
Design



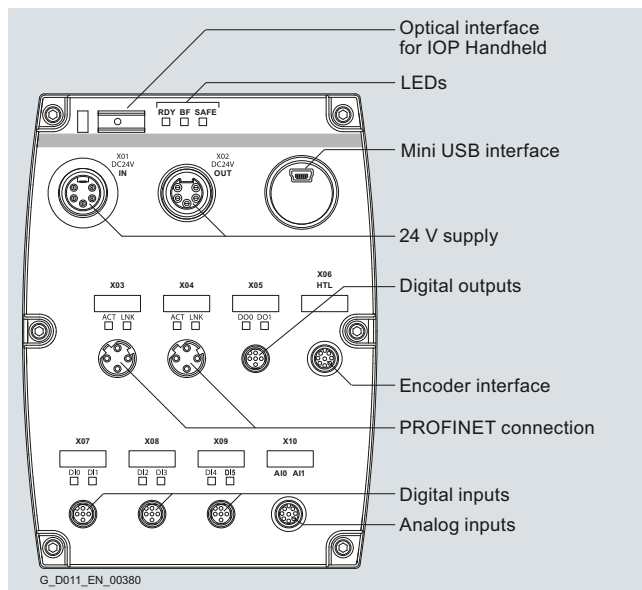
CU240D-2 DP Control Unit



CU240D-2 DP-F Control Unit



CU240D-2 PN Control Unit



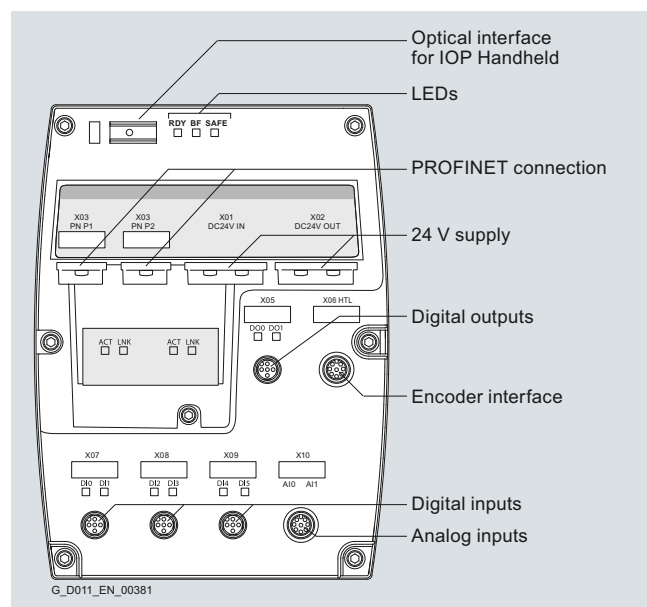
CU240D-2 PN-F Control Unit

SINAMICS G120D distributed inverters

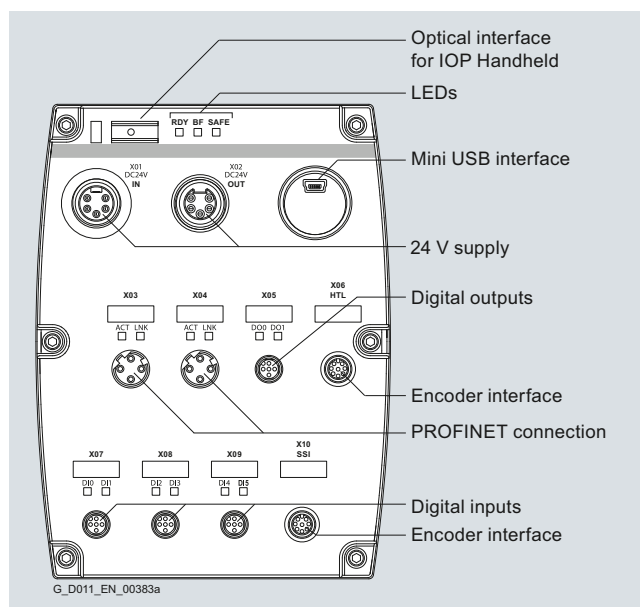
0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

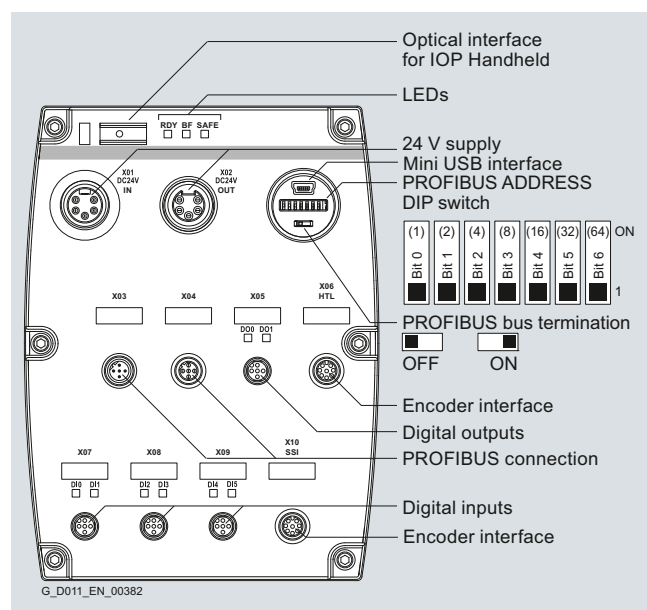
Design



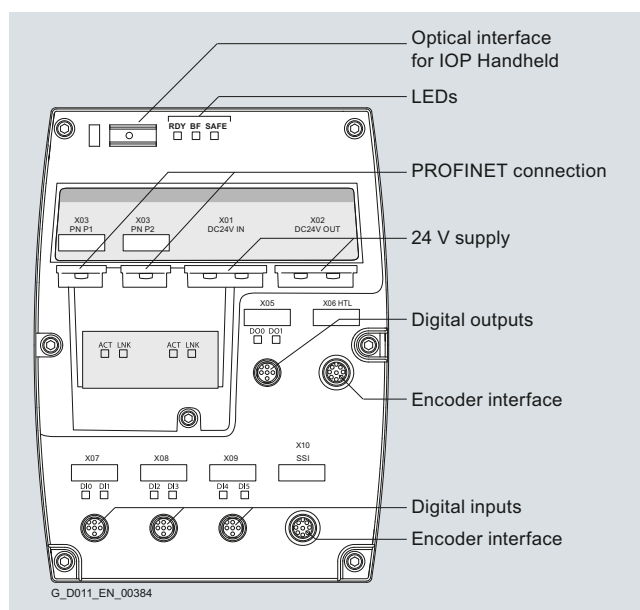
CU240D-2 PN-F PP Control Unit



CU250D-2 PN-F Control Unit



CU250D-2 DP-F Control Unit



CU250D-2 PN-F PP Control Unit



Control Unit, view from the rear, memory card slot at the top and PM-IF interface at bottom center

Overview

- Absolute and relative positioning
- Linear and rotary axis
- Motor encoder or direct measuring system
- 4 referencing modes
- 16 traversing blocks
- Direct setpoint input (MDI)
- Jogging
- Backlash compensation
- Following error monitoring
- Cam signals

The positioning functions are only available in the CU250D-2 Control Unit and are functionally identical to the positioning functionality of SINAMICS S110. Due to its flexibility and adaptability, the basic positioner can be used for a wide range of positioning tasks.

The functions are easy to handle both during commissioning and during operation. Furthermore, they are characterized by their comprehensive monitoring functions.

Many applications can be carried out without external position controllers.

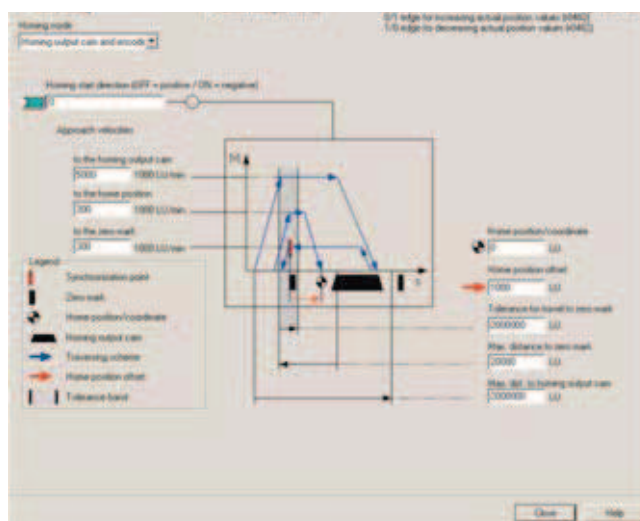
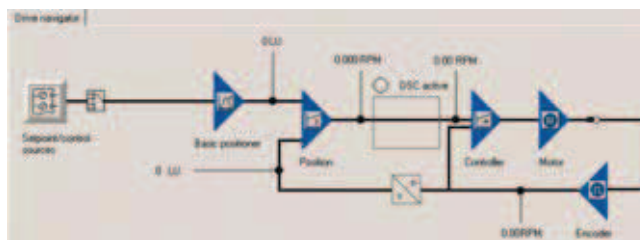
The EPos basic positioner is available as an additional function module that can be activated, and is used for the absolute/relative positioning of linear and rotary axes (modulo) with both rotary and linear motor encoders (indirect measuring system).

User-friendly configuring and commissioning including control panel (operation using PC) and diagnostics with the STARTER commissioning tool Version 4.3 and higher.

In addition to extremely flexible positioning functions, EPos offers a high degree of user-friendliness and reliability thanks to integral monitoring and compensation functions.

Different operating modes and their functionality increase flexibility and plant productivity, for example, by means of "on-the-fly" and bumpless correction of the motion control.

Preconfigured PROFIdrive positioning frames are available which, when selected, automatically establish the internal "connection" to the basic positioner.



SINAMICS G120D distributed inverters

0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Function

Functionality of the EPos basic positioner

Lower-level closed-loop position control with the following essential components

- Position actual value sensing (including the lower-level measuring input evaluation and reference mark search)
- Position controller (including limits, adaptation and pre-control calculation)
- Position control cycle 8 ms (speed control cycle 2 ms)
- Monitoring functions (standstill, positioning and dynamic following error monitoring, cam signals)

Mechanical system

- Backlash compensation

Limitations

- Speed/acceleration/delay/jerk limitation
- Software limit switches (traversing range limitation by means of position setpoint evaluation)
- Stop cams (traversing range limitation by means of hardware limit switch evaluation)

Referencing or adjustment

- Setting reference point (with stationary axis)
- Search for reference (separate mode including reversing cam functionality, automatic reversal of direction, referencing to "output cam and encoder zero mark" or only "encoder zero mark" or "external zero mark (BERO)")
- Flying referencing (seamless subordinate referencing is possible during "normal" traversing with the aid of measuring input evaluation; generally evaluation, e.g. of a BERO. Subordinate function for the modes "jog", "direct setpoint input/MDI" and "traversing blocks")
- Absolute encoder alignment

Traversing blocks mode (16 traversing blocks)

- Positioning by means of traversing blocks stored in the device, including continuation conditions and specific jobs for previously homed axis
- Traversing block editor using STARTER
- A traversing block contains the following information:
 - Job number and job (e.g. positioning, waiting, GOTO block jump, setting of binary outputs, travel to fixed endstop)
 - Motion parameters (target position, override speed for acceleration and deceleration)
 - Mode (e.g.: hide block, continuation conditions such as "Continue_with_stop", "Continue_flying" and "Continue_externally using high-speed measuring inputs")
 - Job parameters (e.g. wait time, block step conditions)

Direct setpoint specification mode (MDI)

- Positioning (absolute, relative) and setting-up (endless closed-loop position control) using direct setpoint inputs (e.g. via the PLC using process data)
- It is always possible to influence the motion parameters during traversing (on-the-fly setpoint acceptance) as well as for on-the-fly changes between the setup and positioning modes.
- The direct setpoint specification mode (MDI) can also be used in the relative positioning or setup mode if the axis is not referenced. This means that on-the-fly synchronization and re-referencing can be carried out using "flying referencing".

Jog mode

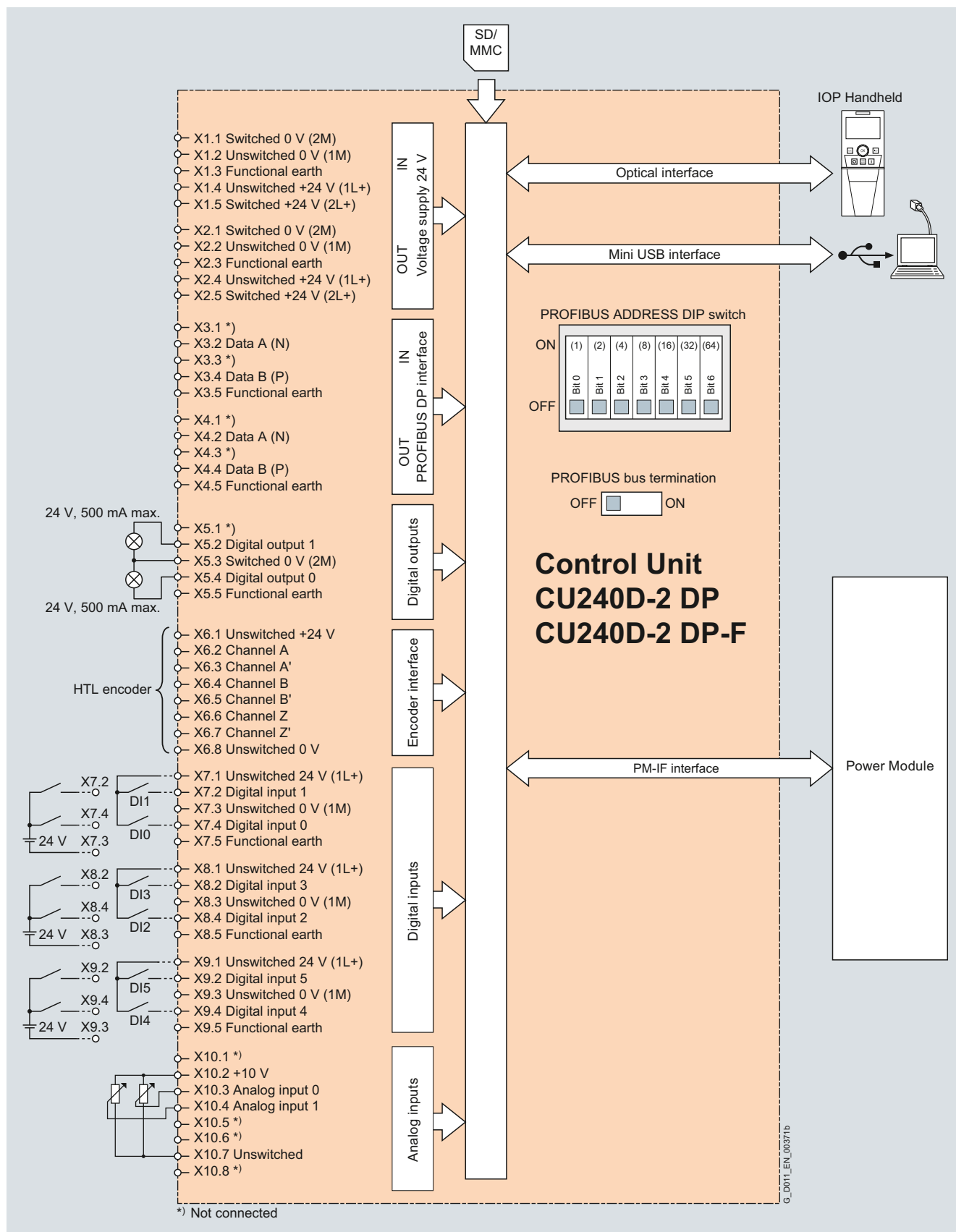
- Closed-loop position controlled traversing of the axis with "endless position controlled" or "jog incremental" modes (traverse through a "step width"), which can be toggled between

SINAMICS G120D distributed inverters

0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Integration



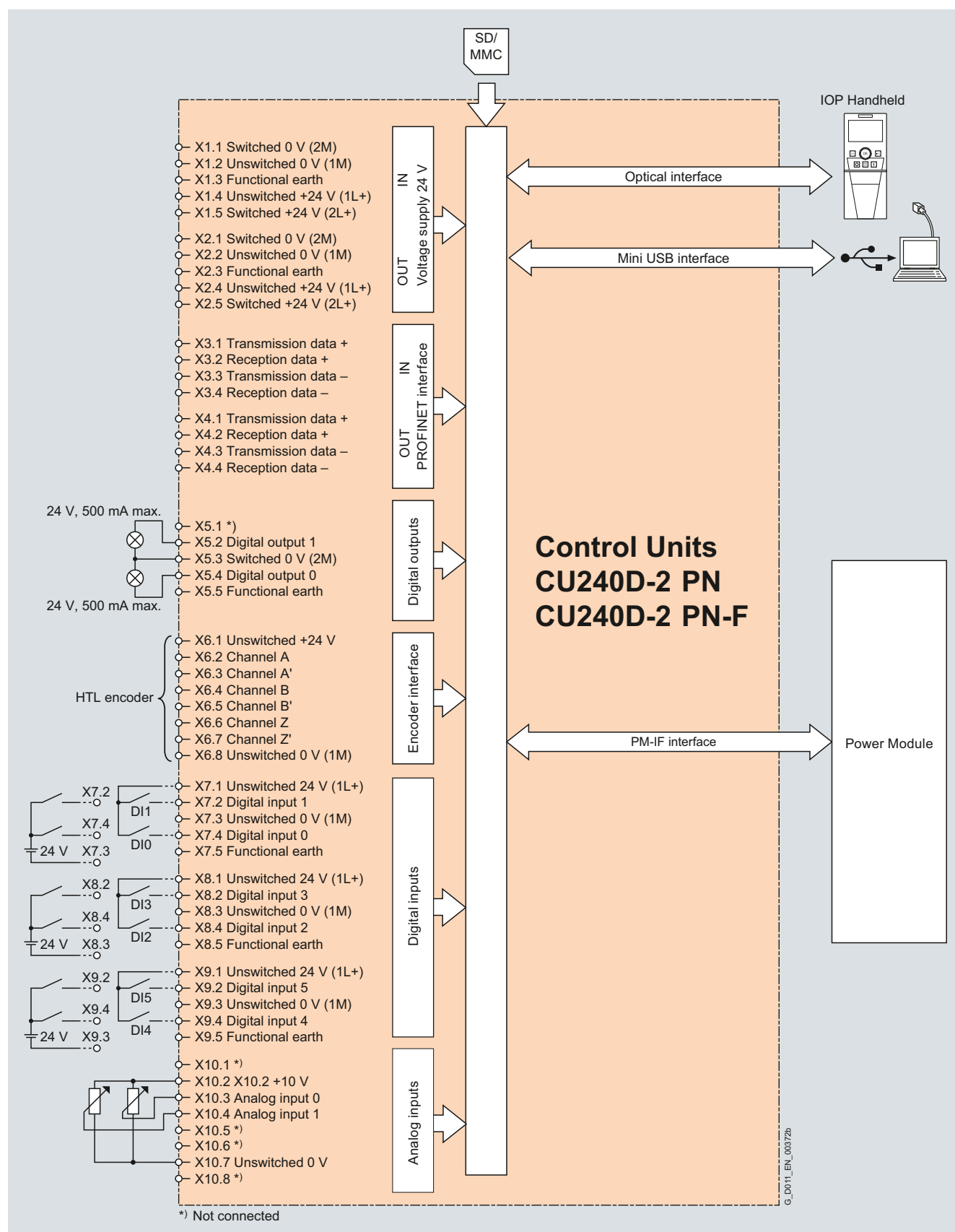
Connection example for CU240D-2 DP and CU240D-2 DP-F Control Units

SINAMICS G120D distributed inverters

0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Integration



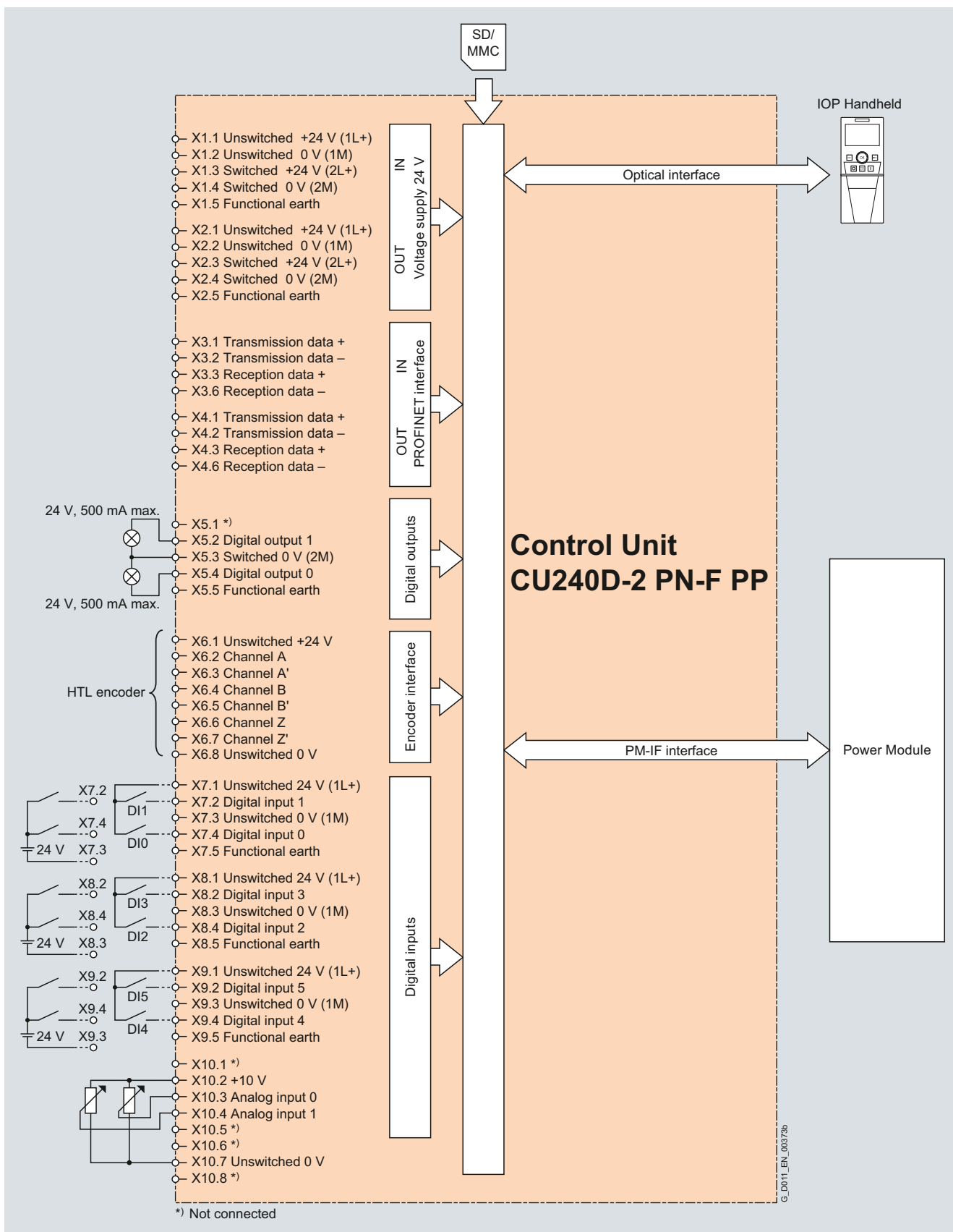
Connection example for CU240D-2 PN and CU240D-2 PN-F Control Units

SINAMICS G120D distributed inverters

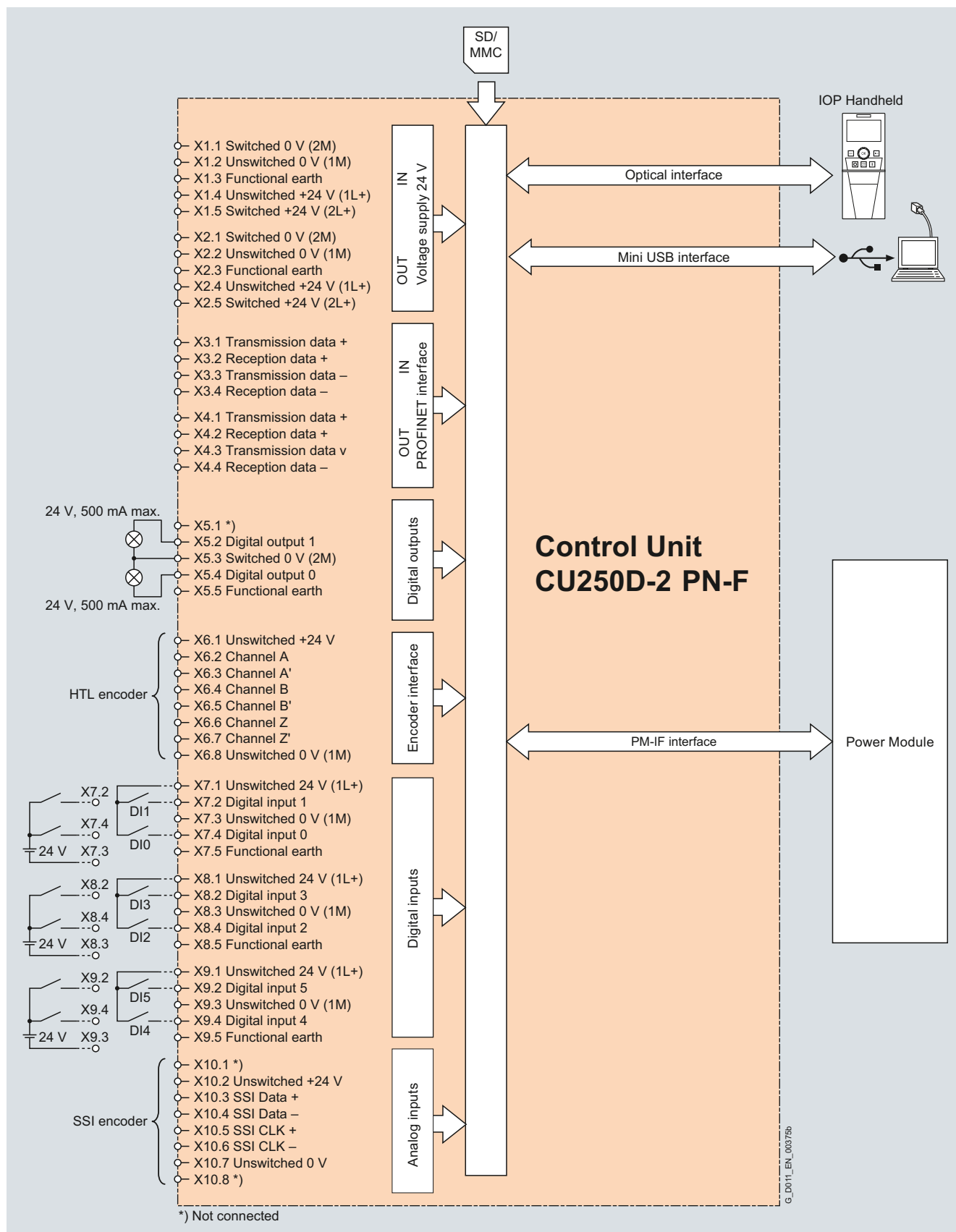
0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Integration



Connection example for CU240D-2 PN-F PP Control Unit

Integration

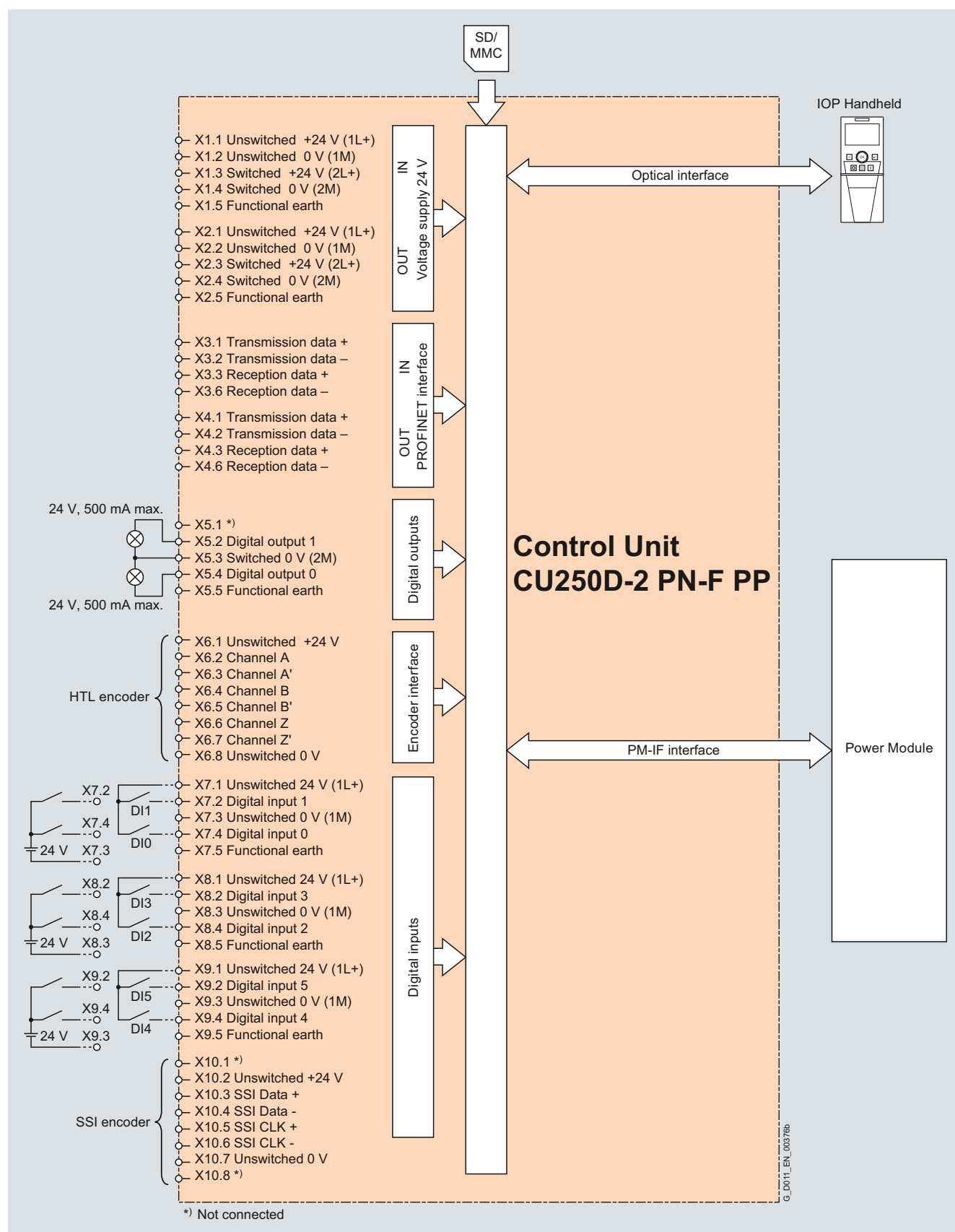
Connection example for CU250D-2 PN-F Control Unit

SINAMICS G120D distributed inverters

0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Integration



Connection example for CU250D-2 PN-F PP Control Unit

SINAMICS G120D distributed inverters

0.75 kW to 7.5 kW (1.0 hp to 10 hp)

CU240D-2 and CU250D-2 Control Units

Technical specifications

Control Unit	CU240D-2 DP 6SL3544-0FB20-1PA0	CU240D-2 PN 6SL3544-0FB20-1FA0	CU240D-2 DP-F 6SL3544-0FB21-1PA0	CU240D-2 PN-F 6SL3544-0FB21-1FA0 CU240D-2 PN-F PP 6SL3544-0FB21-1FB0	CU250D-2 DP-F 6SL3546-0FB21-1PA0	CU250D-2 PN-F 6SL3546-0FB21-1FA0 CU250D-2 PN-F PP 6SL3546-0FB21-1FB0
Electrical specifications						
Operating voltage	External 24 V DC necessary	External 24 V DC necessary	External 24 V DC necessary	External 24 V DC necessary	External 24 V DC necessary	External 24 V DC necessary
Current consumption ¹⁾ (from the 24 V supply)						
• With Power Module frame sizes FSA and FSB	300 mA	400 mA	300 mA	400 mA	300 mA	400 mA
• With Power Module frame size FSC	450 mA	550 mA	450 mA	550 mA	450 mA	550 mA
Interfaces						
Digital inputs (non-isolated)	6	6	6	6	6	6
• Optionally parameterizable as safe inputs	1	1	3	3	3	3
Analog inputs (0 ... 10 V)	2	2	2	2	–	–
Digital outputs (0.5 A, fed through switched 24 V DC, isolated)	2	2	2	2	2	2
• Optionally parameterizable as safe digital output	–	–	1	1	1	1
Bus interface	PROFIBUS DP	PROFINET	PROFIBUS DP, PROFIsafe	PROFINET, PROFIsafe	PROFIBUS DP, PROFIsafe	PROFINET, PROFIsafe
HTL encoder interface (incremental interface, bipolar up to 2048 pulses, max. 150 mA)	1	1	1	1	1	1
SSI encoder interface (absolute encoder, singleturn and multiturn 4096 pulses, 24 V, max. 250 mA)	–	–	–	–	1	1
PTC/KTY interface (connection via Power Module)	✓	✓	✓	✓	✓	✓
• Motor temperature sensor	1 input, sensors that can be connected: PTC, KTY or Thermo-Click	1 input, sensors that can be connected: PTC, KTY or Thermo-Click	1 input, sensors that can be connected: PTC, KTY or Thermo-Click	1 input, sensors that can be connected: PTC, KTY or Thermo-Click	1 input, sensors that can be connected: PTC, KTY or Thermo-Click	1 input, sensors that can be connected: PTC, KTY or Thermo-Click
Control of a mechanical motor brake (connection via Power Module)	✓	✓	✓	✓	✓	✓
Slot for SD or MMC memory card	✓	✓	✓	✓	✓	✓
Commissioning interface (mini USB)	✓	✓	✓	✓ Not with PP variant	✓	✓ Not with PP variant

¹⁾ The current consumption of connected encoders (HTL ≤ 100 mA or SSI ≤ 250 mA), sensors (total, max. 300 mA) as well as the current drawn from the digital outputs (total, max. 500 mA) must be added, where applicable.