Expansion Modules *XP101, XP106, XP201, XP600 e XP610*

Cód. Doc.: CE157816 Revision: D

Product description

The XP101, XP106, XP201, XP600 and XP610 models are I/O modules that offer expansion solutions for the Nexto Xpress Programmable Controller family. With a compact design, they are connected to Nexto Xpress through the CANopen communication protocol, assuming the Slave mode and being configured through the MasterTool IEC XE programming software, the same used to configure Programmable Controllers.

The XP101 features 16 points of digital input, the XP106 offers 8 points of digital input and 6 points of digital relay output, the XP201 features 16 points of digital transistor output, the XP600 offers 4 channels of analog voltage/current input, while the XP610 adds 4 channels of analog voltage/current output. These models can be used in segments such as infrastructure, building automation, water, wastewater, food, textiles, factory automation, machinery and many other OEM solutions. Furthermore, it is an ideal solution to complement large applications along with the Nexto Series portfolio, using the same technology and engineering environment. This is a great advantage for OEMs and system integrators with small to large application needs.

In addition, the expansion modules has the following features:

- Compact design;
- Din rail mount;
- Dip switch for CANopen slave configuration;
- LEDs for inputs/outpus state indication and diagnostics;
- Low energy consumption.

Ordering Information

XP101 Included Items

The product package contains the following items:

- Nexto Xpress XP101 Expansion Module
- Connectors

XP106 Included Items

The product package contains the following items:

- Nexto Xpress XP106 Expansion Module
- Connectors

XP201 Included Items

The product package contains the following items:

- Nexto Xpress XP201 Expansion Module
- Connectors

XP600 Included Items

The product package contains the following items:

- Nexto Xpress XP600 Expansion Module
- Connectors

XP610 Included Items

The product package contains the following items:

- Nexto Xpress XP610 Expansion Module
- Connectors

Product Code

The following codes must be used to purchase the product:

Code	Description
XP101	Nexto Xpress Expansion, 16 DI 24 Vdc
XP106	Nexto Xpress Expansion, 8 DI 24 Vdc and 6 DO Relay
XP201	Nexto Xpress Expansion, 16 DO Transistor
XP600	Nexto Xpress Expansion, 4 AI Voltage/Current
XP610	Nexto Xpress Expansion, 4 AO Voltage/Current

Produtos Relacionados

The following products must be purchase separately, when necessary:

Code	Desciption
AL-2306	RS-485 cable for MODBUS or CAN
XP300	Compact controller with high speed CPU, 1 Ethernet port, 1 RS-485 serial channel, 1 CAN interface, 1 USB, 16 24 Vdc ED and 16 SD
XP315	Compact controller with high speed CPU, 1 Ethernet port, 1 RS-485 serial channel, 1 CAN interface, 1 USB, 16 DI 24 Vdc, 16 SD transistor, 5 AI voltage/current and 2 AI RTD
XP325	Compact controller with CPU high speed, 1 Ethernet port, 1 RS-485 serial channel, 1 CAN interface, 1 USB, 16 ED 24 Vdc, 16 SD transistor, 5 AI voltage/current, 2 AI RTD and 4 SA voltage/current
XP340	Compact controller with CPU high speed, 1 Ethernet port, 1 RS-485 serial channel, 1 CAN interface, 1 USB, 16 ED 24 Vdc, 16 SD transistor, 5 EA voltage/current, 2 EA RTD, 4 SA voltage/current and Web support Server
XP350	Compact controller with CPU high speed with softmotion, 1 Ethernet port, 1 RS-485 serial channel, 1 CAN interface, 1 USB, 16 ED 24 Vdc, 16 SD transistor, 5 EA voltage/current, 2 EA RTD, 4 SA voltage/current.

Notas:

AL-2306: Cabo blindado de dois pares trançados, sem conectores, para ser utilizado em redes RS-485 ou CAN.

Características do Produto

	XP101	XP106	XP201	XP600	XP610
Digital inputs	16	8	-	-	-
Digital outputs relay	-	6	-	-	-
Digital outputs transistor	-	-	16	-	-
Analog Inputs	-	-	-	4	-
Analog Outputs	-	-	-	-	4
CAN slave interface	1				
Status indication and diagnostic	Inputs and outputs, communication (STS)* and power status LEDs			Communication (STS)* and power status LEDs	
Heartbeat protection, node protection (Node-guarding)	Yes				
Isolation	Between I/O and logic (500V)				
Supply voltage	24 Vdc (18 to 30 Vdc)				
Maximum power dissipation	2 W			0,72 W	0,96 W
Maximum wiring area	0.5 mm2 (20 AWG) with ferrule 1.5 mm2 (16 AWG) without ferrule				
Minimum wire temperature rating	75 °C				
Wire materia	Copper only				
IP level	IP20				
Operating temperature	0 to 70 °C				
Storage temperature	-25 to 75 °C				
Relative operating and storage humidity	5% to 95% RH, non-condensing				
Standart	EN 61010-1, CE – 2011/65/EU (RoHS), 2014/35/EU (LVD) and 2014/30/EU (EMC) CE				
Product dimensions (W x H x D)	90,2 x 87,7 x 32 mm				
Package dimensions (W x H x D)	102 x 95 x 40 mm				
Weight	110 g	133,5 g	140 g	132,3 g	133 g
Weight with package	130,2 g	153,6 g	160,2 g	155 g	155,2 g

Note:

Isolation: The term Logic refers to the internal interfaces such as processors, memories and CAN communication interface.

Communication (STS): Fast blinking (Communication OK), Slow blinking (Communication error).

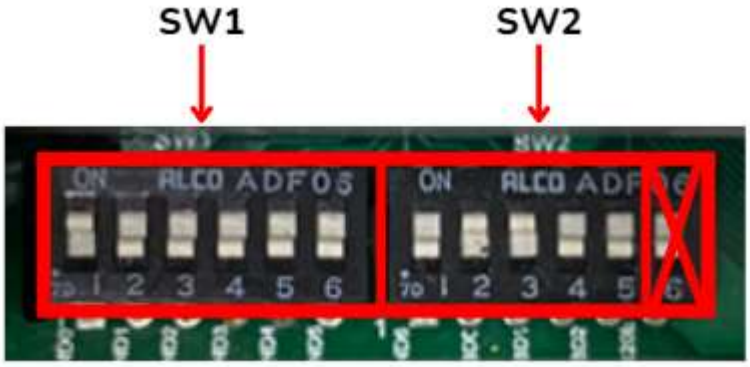
CAN

	CAN
Conector	3-pin termination block
Baud rate	20, 50, 125, 250, 500, 800, 1000 kbit/s (configurable)
Protocols	CANopen slave
NMT	Slave
Error Control	Node guarding
Node ID	1 to 127 (through DIP Switch)
Terminating resistor	120 ohms (configurable)
PDO	Synchronous, asynchronous, event-triggered, cyclic, acyclic, and remote frame dependent
PDO Mapping	Dynamic
PDO number	One TPDO and one RPDO (only TPDO on analogues)
SDO number	One SDO server
CANopen version	CIA Standard DS 301 4.0 version
Perfil do dispositivo	CIA Standard DS 401 2.0 version
CIA cerification	No
CAN transceiver and physical layer	ISO 11898

DIP switch CANopen Configuration

Switch SW1: 1 to SW2: 1 for address and switching. SW2: 2 to SW2:4 for the baud rate. Adjust the DIP as per the requirements. See the image and tables below.

Important: The two electronic components SW1 and SW2 have 6 DIP switches each. The image shows how to identify each of them to configure the ID, Baud Rate and Termination. (DIP switch SW2: 6 has **NO** function)



Note:
In some versions there is a protective cover for the DIP Switches, please consider the numbering in this document.

Configuração ID							
Node ID	**SW1: 1**	**SW1: 2**	**SW1: 3**	**SW1: 4**	**SW1: 5**	**SW1: 6**	**SW2: 1**
Programable ID	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF
...	...	...	...	...	...	...	...
127	ON	ON	ON	ON	ON	ON	ON

Note:
SW1: 1 = Switch 1 key 1

Baud Rate Configuration			
Baud Rate	**Switch 8**	**Switch 9**	**Switch 10**
1 Mbit/s	OFF	OFF	OFF
800 Kbit/s	ON	OFF	OFF
500 Kbit/s	OFF	ON	OFF
250 Kbit/s	ON	ON	OFF
125 Kbit/s	OFF	OFF	ON
50 Kbit/s	ON	OFF	ON
20 Kbit/s	OFF	ON	ON
Switch 11			
Termination 120 ohm			

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Digital Inputs

	XP101	XP106
Input Type	Two isolated groups of 8 inputs each	One group of 8 inputs
Input Voltage	24 Vdc (nominal) 12 to 28 Vdc for logic level 1 0 to 5 Vdc for logic level 0	
Maximum Input current	6 mA @ 24 Vdc	
Input Status Indication	Yes	
Update Time	2 ms	
Input Filter	Standart 5 ms	

Digital Outputs

	XP106	XP201
Output Type	One group of 6 outputs (relay)	Two groups of 8 outputs (transistor)
Maximmun Output current	1 A per @ 250 Vac (resistive load)	0,5 A @ 24 Vdc
External power supply	5 to 30 Vdc 24 to 250 Vac	18 to 30 Vdc
Output Status indication	Yes	Yes
Switching time	5 ms – transition on to off @ 24 Vdc 10 ms – transition off to on @ 24 Vdc	0,5 ms – transition on to off @ 24 Vdc 0,02 ms – transition off to on @ 24 Vdc
Maximmun switching frequency	1 Hz	250Hz
Output protection	Yes, protection against voltage surges	

Note:

Switching time: The time required to turn off an output depends on the load employed.

Analog Inputs

	XP600	
	Current mode	**Voltage mode**
Input Type	4 analog input channels (12 bits)	
Input Range	0 to 20 mA	0 to 10 Vdc
Resolution	4,88 uA	2,44 mV
Accuracy	± 1% of full-scale rating @ 25 °C	
Input Impedance	250 ohms	>1 Mohm
Noise Suppression Filter	50 Hz	
Min Value - Per Input	0 (Engineering scale)	
Max Value - Per Input	10000 (Engineering scale)	
Maximum Input	21 mA	10,5 Vdc

Note:
Input Range: The XP600 module supports current scaling from 4 to 20mA by using the function block already available in the Mastertool IEC XE programming software.

Analog Outputs

	XP610	
	Modo Corrente	**Modo Tensão**
Output Type	4 analog input channels (12 bits)	
Output Range	0 to 20 mA	0 to 10 Vdc
Resolution	4,88 uA	2,44 mV
Accuracy	± 1% of full-scale rating @ 25 °C	
Input Impedance	<500 ohms	>1 Kohm
Noise Suppression Filter	50 Hz	
Min Value - Per Input	0 (Engineering scale)	
Max Value - Per Input	10000 (Engineering scale)	
Maximum Input	20,5 mA	10,2 Vdc

Note:

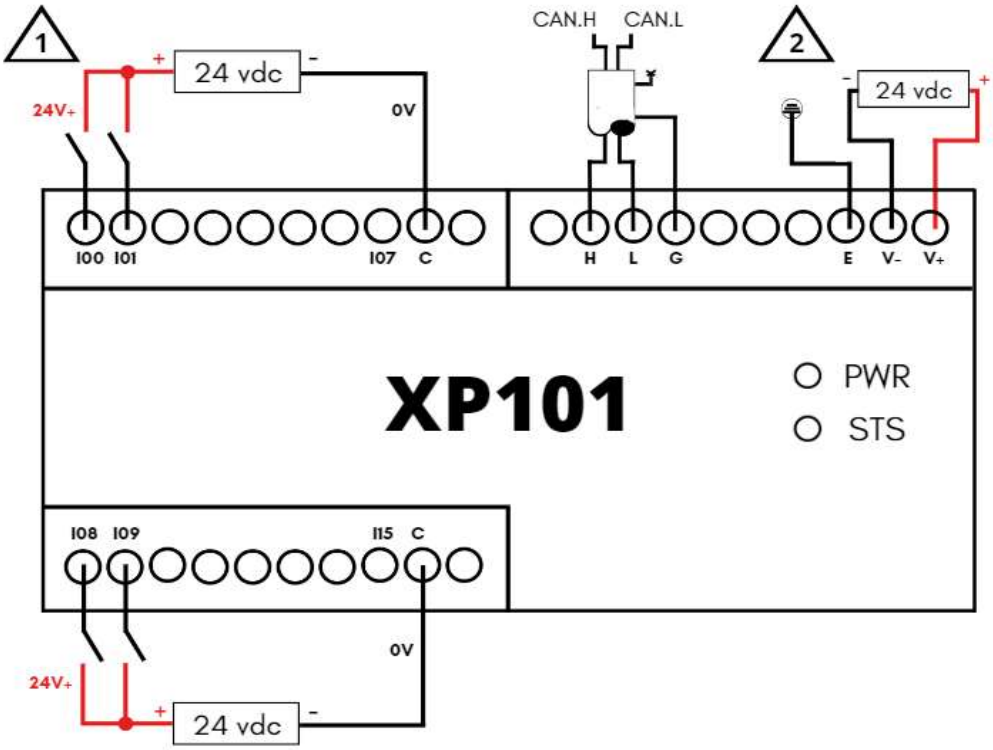
Output Range: The XP610 module supports current scaling from 4 to 20mA by using the function block already available in the Mastertool IEC XE programming software.

Electrical Installation

The electrical installation is characterized by the connection of the 24 Vdc power supply and the connection to the controller.

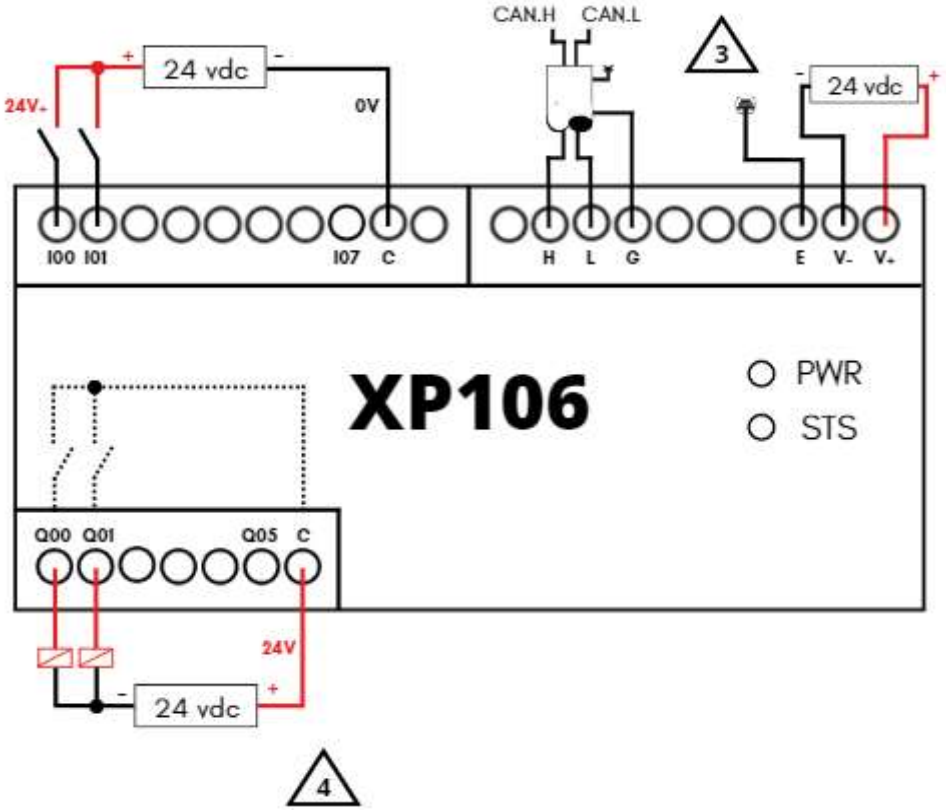
XP101: Nexto Xpress expansion, 16 DI 24 Vdc

Example of connecting inputs:

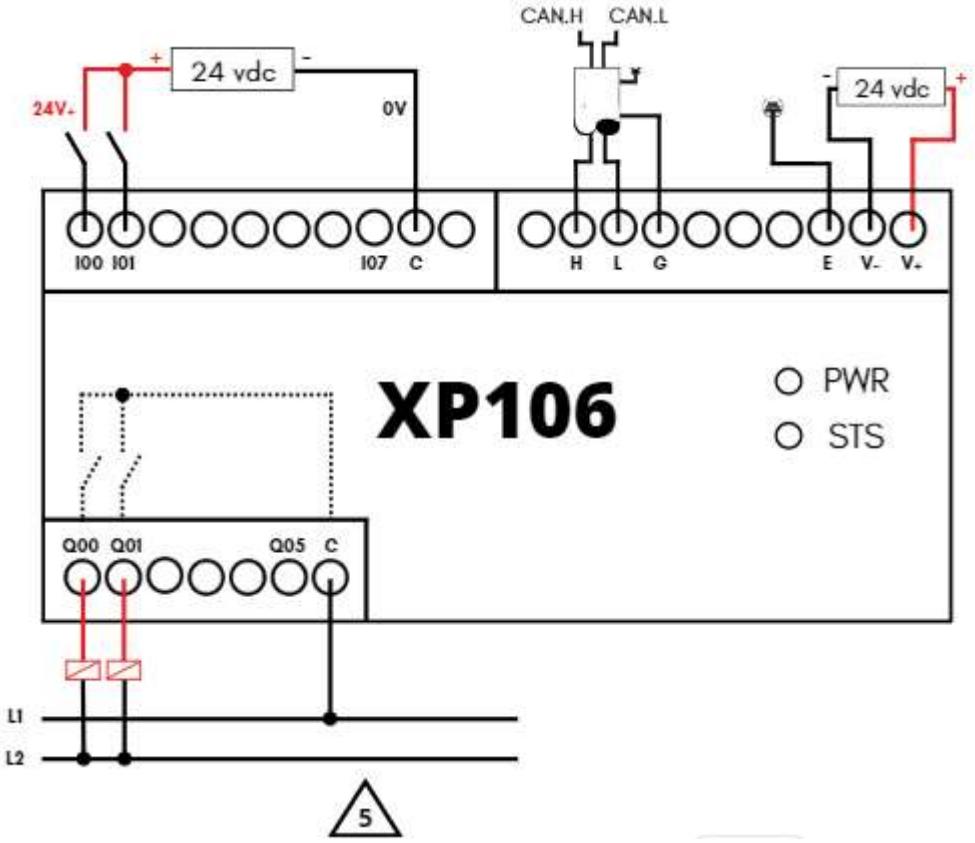


XP106: Nexto Xpress Expansion, 8 DI 24 Vdc and 6 DO Relay

Example 1: Connection of Direct Current (DC) inputs and outputs

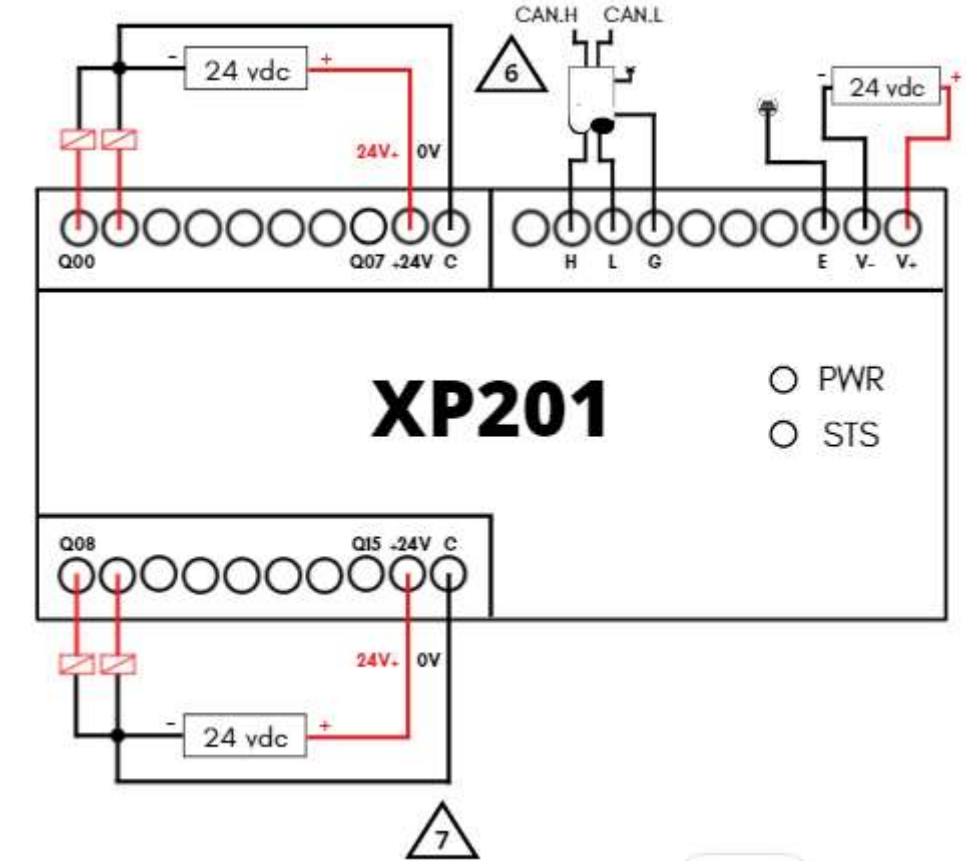


Example 2: Connection of Direct Current (DC) inputs and Alternating Current (AC) outputs



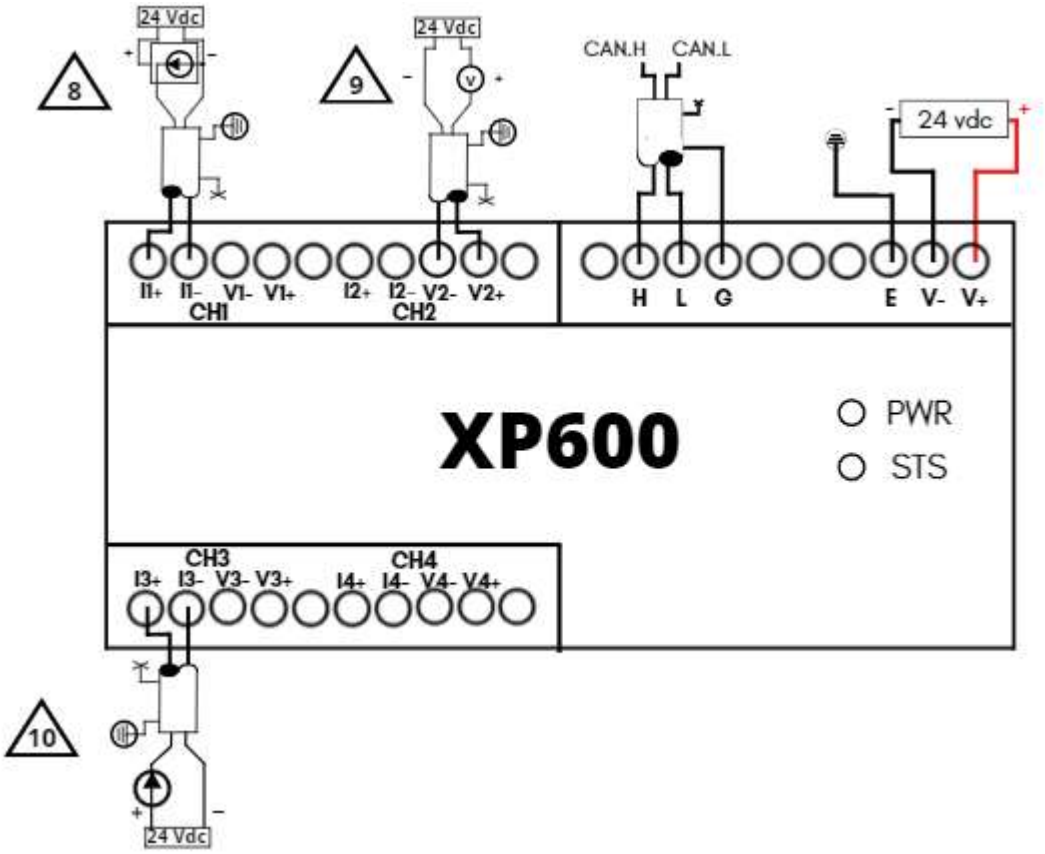
XP201: Nexto Xpress Expansion, 16 DO Transistor

Example of an output connection:



XP600: Nexto Xpress expansion, 4 AI voltage/current

Examples of connecting analog inputs:



XP610: Nexto Xpress expansion, 4 AO voltage/current

Nexto Xpress expansion, 4 AO voltage/current:

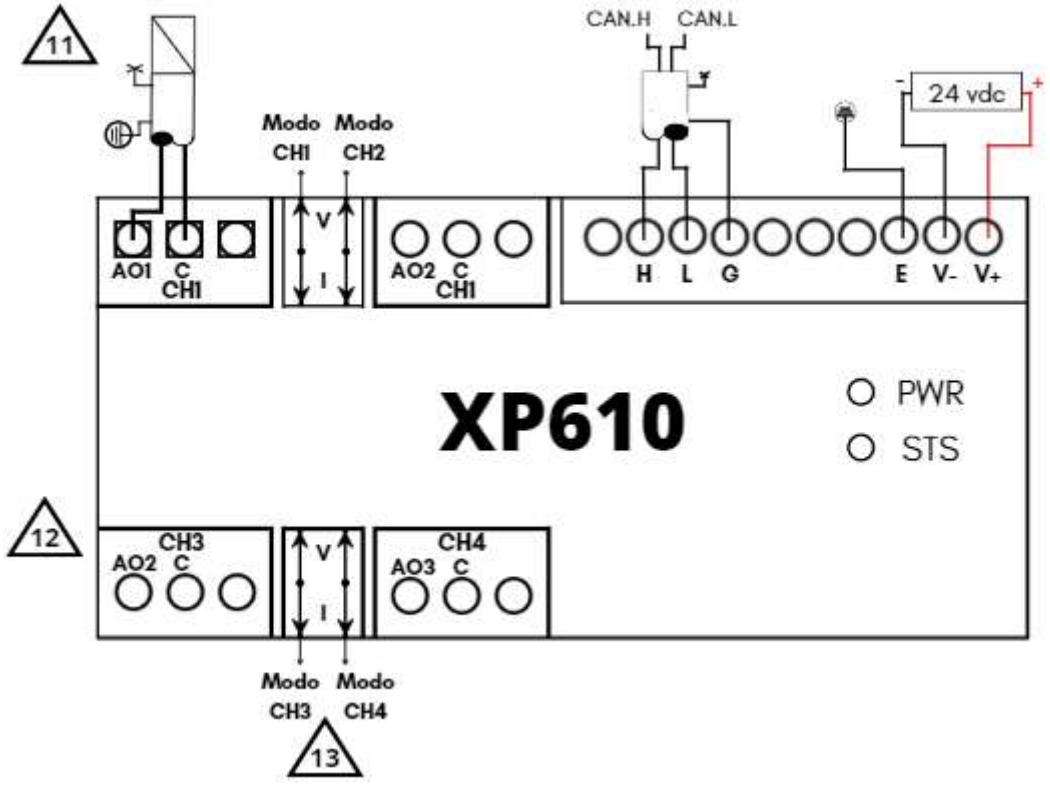


Diagram notes:

1. Typical digital input connection (sink type). The commons (C) are common points for the isolated groups I0x and I1x respectively.
2. Protective grounding terminals for the power supply and communication ports. Both must be connected externally to the ground connector.
3. Connecting an external power supply.
4. For an external power supply to supply outputs Q00 to Q05, terminal C must be connected to 24Vdc, when the output supplies a direct current load.
5. To supply outputs Q00 to Q05, external power supply terminal C must be connected to Phase (L1), when the output supplies an alternating current load.
6. Typical CAN interface connection.
7. External power supply: to supply outputs Q00 to Q15, the +24V terminals must be connected to +24 Vdc, and the C terminals must be connected to 0 Vdc.
8. Typical analog current input connection (field device with separate power supply from the analog signal).
9. Typical analog voltage input connection (field device with analog signal power supply, 2 wires).
10. Typical analog current input connection (field device with analog signal power supply, 2 wires).
11. Typical analog signal connection.
12. In analog expansions, the “CHx” channels have two analog signal modes, voltage “Vx” and current “Ix”, but only one of the signal types can be used per channel, voltage OR current.
13. The dip switch is responsible for selecting the output modes of the XP610 analog module.

ATTENTION:
Diferent or unconnected ground can cause communication errors.

ATTENTION:
Install the communication cable away from the power drive wiring to avoid communication interference.

ATTENTION:
Check the voltage and polarity of the power supply. Voltages outside the specified limits may cause irreversible damage and not covered by warranty.

CAUTION:
Wrong conncections can cause damage not covered by equipment warranty.

Manuals

For connection and use, the Nexto Xpress User Manual - MU216000 should be consulted. For more technical details, configuration, installation and programming of the Nexto Series, see the table below. This table is just a guide to some relevant document that may be useful during the use, maintenance and programming of Nexto Series controllers.

Code	Description	Language
MU216600	Nexto Xpress User Manual	English
MU216000	Manual de Utilização Nexto Xpress	Portuguese
CE116100	Nexto Xpress – Technical Characteristics	English
CT116100	Nexto Xpress – Características Técnicas	Portuguese
MU299609	MasterTool IEC XE User Manual	English
MU299048	Manual de Utilização MasterTool IEC XE	Portuguese
MP399609	MasterTool IEC XE Programming Manual	English
MP399048	Manual de Programação MasterTool IEC XE	Portuguese