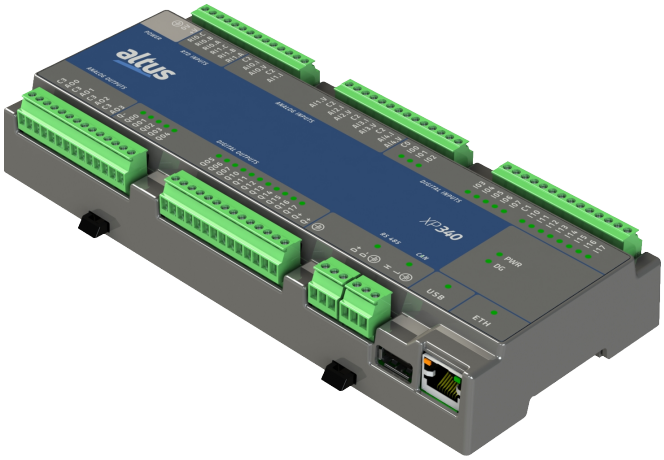
1. Product Description

Nexto Xpress is a powerful compact Programmable Logic Controller (PLC) part of Nexto Series family of controllers and I/O modules. Nexto Xpress delivers high-speed processing power in a compact design with embedded I/O. There are several options to choose from, allowing the best solution for entry-level applications.

This product portfolio targets small control systems, offering models containing from a few digital inputs and outputs up to options with 43 I/O points concentrated in a single controller, including analog inputs and outputs with temperature support (RTD sensors). In case of additional I/O needs, the system can be easily expanded using expansion modules (see section Related Products). Additionally, the number of I/O points can be further expanded through remote (distributed) I/O devices communicating via protocols such as CANopen, EtherNet/IP, PROFINET and MODBUS.

Nexto Xpress is suitable for small applications and remote distributed I/O. It may be applied in verticals such as infrastructure, building automation, water, wastewater, food, textiles, factory automation, machines and several other OEM solutions, including motion control applications. The inclusion of an integrated firewall provides enhanced protection and security for the systems, safeguarding data integrity and mitigating potential cyber threats. Additionally, the controller is an ideal solution for complementing big applications along with Nexto Series portfolio, extending the range of applications using the same technology and engineering environment. This is a great advantage for OEMs and systems integrators with needs of small to large applications.



Its main features are:

- Compact design
- DIN rail mount
- High-speed 32-bit ARM-based processor
- 10/100 Mpbs Ethernet interface with protocols like OPC UA, EtherNet/IP, PROFINET, MODBUS and MQTT (full list on this document)
- CAN interface
- User web pages (Webvisu)
- Firewall
- Remote I/O Mode, allowing I/O expansion through CANopen
- PLCopen Motion Control Part 1 function block support
- High density of I/O (up to 43 I/O points in a single controller)
- Optoisolated digital inputs
- Optoisolated transistor digital outputs
- Multi-purpose analog inputs (voltage and current)
- RTD analog inputs
- USB Host port
- LEDs for inputs/outputs state indication and diagnostics
- Real-time clock (RTC)

2. Ordering Information

2.1. Included Itens

The product package has the following items:

- Compact PLC module
- Connectors

2.2. Product Code

The following code should be used to purchase the product:

Code	Description
XP300	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 1 Ethernet, 1 RS-485 Serial and CANopen Master
XP315	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 5 V/I AI, 2 RTD AI (3 wire), 1 Ethernet, 1 RS-485 Serial and CANopen Master
XP325	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 5 V/I AI, 2 RTD AI (3 wire), 4 AO, 1 Ethernet, 1 RS-485 Serial and CANopen Master
XP340	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 5 V/I AI, 2 RTD AI (3 wire), 4 AO, 1 Ethernet, 1 RS-485 Serial, CANopen Master and user web pages support
XP350	High-Speed Compact PLC with Standard Softmotion, 16 DI, 16 DO transistor, 5 V/I AI, 2 RTD AI (3 wire), 1 Ethernet port, 1 RS-485 serial and CANopen Master
XP351	High-Speed Compact PLC with Advanced Softmotion (CNC), 16 DI, 16 DO transistor, 5 V/I AI, 2 RTD AI (3 wire), 1 Ethernet port, 1 RS-485 serial and CANopen Master

Table 1: Nexto Xpress Controller Models

3. Related Products

The following products must be purchased separately when necessary:

Code	Description
MT8500	MasterTool IEC XE
NX9202	RJ45-RJ45 2 m Cable
NX9205	RJ45-RJ45 5 m Cable
NX9210	RJ45-RJ45 10 m Cable
AL-2600	RS-485 network branch and terminator
AL-2306	RS-485 cable for MODBUS or CAN network
AL-1766	CFDB9-Terminal Block Cable
FBS-USB-232M9	Universal USB-Serial converter cable / 2m
XP900	TP-Link nano Wireless 150 Mbps USB Adapter TL-WN725N (only available in Brazil)
AMJG0808	Simple cable RJ45-RJ45 2 m
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
TLE3-21100	Gateway IoT Industrial

Table 2: Related Products

Notes:

MT8500: MasterTool IEC XE is available in four different versions: LITE, BASIC, PROFESSIONAL and ADVANCED. For more details, please check MasterTool IEC XE User Manual - MU299609.

NX92xx: Cable for programming the CPUs of the Nexto Series and Ethernet point-to-point with another device with Ethernet interface communication.

AL-2600: This module is used for branch and termination of RS-485 networks. For each network node, an AL-2600 is required. The AL-2600 that are at the ends of network must be configured with termination, except when there is a device with active internal termination, the rest must be configured without termination.

AL-2306: Two shielded twisted pairs cable without connectors, used for networks based on RS-485 or CAN.

AL-1766: Cable with a female DB9 connector and terminals for communication between HMI P2 and Nexto Xpress/NX3003 controllers.

FBS-USB-232M9: Cable for use as a USB-Serial converter on the USB interface of Xpress controllers.

AMJG0808: Cable for programming the CPUs.

XP101 / XP106 / XP201: CANopen expansion modules.

4. Product Features

4.1. General Features

	XP300	XP315	XP325	XP340	XP350	XP351
Digital Inputs	12					
Fast Inputs	4					
Digital Outputs	12					
Fast Outputs	4					
Max. number of high-speed counters	1					
Max. number of external interruptions	2					
Max. number of PTO outputs	2					
Max number of VFO/PWM outputs	4					
V/I analog inputs (AI)	-	5 to 10 See Notes	5 to 10 See Notes	5 to 10 See Notes	5 to 10 See Notes	5 to 10 See Notes
RTD analog inputs (AI)	-	2	2	2	2	2
V/I analog outputs (AO)	-	-	4	4	-	-
Ethernet TCP / IP interface	1					
RS-485 Serial interface	1					
CAN Interface	1					
USB Host port	1					
User web pages (Webvisu)	No	No	No	Yes	No	No
Motion control (Softmotion)	No	No	No	No	Yes, without CNC	Yes, with CNC
Remote I/O Mode	Yes	Yes	Yes	Yes	No	No
FTP	Yes					
Firewall	Yes					
VPN	Yes					
Maximum number of tasks	16					
Programming languages	Structured Text (ST) Ladder Diagram (LD) Sequential Function Chart (SFC) Function Block Diagram (FBD) Continuous Function Chart (CFC)					
Online changes	Yes					

	XP300	XP315	XP325	XP340	XP350	XP351
Watchdog	Yes					
Real-time clock (RTC)	Yes Resolution of 1 ms, max. variance of 3 seconds per day, retention time of 14 days.					
Status and diagnostic indication	LEDs, web pages and CPU's internal memory					
Isolation						
Protective earth ⏚ to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Logic/RS-485/CAN/USB to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Ethernet to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Power Supply/Analog I/O to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Digital Inputs to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Digital Inputs Group I0x to I1x	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Digital Outputs to all	1,500 Vdc / 1 minute (1,000 Vac / 1 minute)					
Maximum power dissipation	5 W					
Maximum wire size	0.5 mm^2 (20 AWG) with ferrule 1.5 mm^2 (16 AWG) without ferrule					
Minimum wire temperature rating	75 °C					
Wire material	Copper only					
IP level	IP 20					
Conformal coating	Yes					
Operating temperature	-20 to 60 °C					
Operating temperature (UL/cUL)	0 to 60 °C					
Storage temperature	-25 to 75 °C					
Operating and storage relative humidity	5% to 96%, non-condensing					
Vibration resistance (IEC 60068-2-6, sinus)	7 mm from 5 to 8.4 Hz 2 G from 8.4 to 500 Hz 10 sweeps each axis, 1 octave per minute					
Shock resistance (IEC 60068-2-27, half-sine)	15 G for 11 ms, 6 shocks in each of 3 axis					
Product dimensions (W x H x D)	215.5 x 98.8 x 34.0 mm					
Package dimensions (W x H x D)	270.0 x 102.0 x 40.0 mm					
Weight	370 g					
Weight with package	430 g					

Table 3: General Features

Notes:

V/I analog inputs (AI): By default, each analog input is composed by 2 terminals (AIx.V and AIx.I), and when selecting one mode (V, for example), the other pin (I, for example) becomes unused. With the function *AnalogInputProbe*, provided by the *LibIntegratedIoExt* library, it is possible to use these free inputs, allowing to have up to 10 analog inputs (5 on terminals AIx.V and other 5 on terminals AIx.I), with the same technical characteristics informed on this document. For additional information, please consult the Technical Support.

Motion control: PLCopen Motion Control Part 1 function block support for single-axis control, multi-axis synchronization, electronic gearing (CAME), special editor for motion planning (CAM), and others.

Maximum number of tasks: This value represents the maximum total of user and system tasks. The detailed description of possible user tasks can be found on Project Profiles section of User Manual. Before MasterTool IEC XE v3.30, this value was defined as "5".

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

Conformal coating: Conformal coating protects the electronic components inside the product from moisture, dust and other harsh elements to electronic circuits.

Operating temperature: The minimum operating temperature is 0°C for units with product revision inferior to AS/AS/AW/AE for XP300/XP315/XP325/XP340 respectively.

4.2. Standards and Certifications

Standards and Certifications	
IEC	61131-2: Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests 61131-3: Programmable controllers - Part 3: Programming languages
	DNV Type Approval – DNV-CG-0339 (TAA000034G) **(Except the XP350 and XP351)**
	2014/30/EU (EMC) 2014/35/EU (LVD) 2011/65/EU and 2015/863/EU (ROHS)
	S.I. 2016 No. 1091 (EMC) S.I. 2016 No. 1101 (Safety) S.I. 2012 No. 3032 (ROHS)
	Ordinary Locations: cULus LISTED, E473496 Hazardous Locations: cULus LISTED, E536282 Class I Division II, Groups A, B, C, D
	TR 004/2011 (LVD) CU TR 020/2011 (EMC)

Table 4: Standards and Certifications

4.3. Memory

	XP300	XP315	XP325	XP340	XP350	XP351
Addressable input variables memory (%I)	2 KB					
Addressable output variables memory (%Q)	2 KB					
Direct representation variable memory (%M)	1 KB					
Symbolic variable memory	2 MB	2 MB	2 MB	6 MB	6 MB	6 MB
Program memory	3 MB	3 MB	3 MB	8 MB	8 MB	8 MB
Total memory **Program memory (max. defined per model) +** **Source code memory (backup) +** **Webvisu files memory**	64 Mbytes					
Retain/persistent memory **(user configurable)**	7,5 KB (Expandable up to 64 KB using Recipes stored on User Files memory (see article on knowledge base))					
User files memory (backup)	8 MB					

Table 5: Memory

Note:

Program memory: From version 3.40 of MasterTool IEC XE, the memory has been increased from 2MB to 3MB in the XP300, XP315, and XP325 models, and from 6MB to 8MB in the XP340 model.

4.4. Protocols

		Interface
Open Protocol	✓	COM 1 / USB
MODBUS RTU Master	✓	COM 1
MODBUS RTU Slave	✓	COM 1
MODBUS TCP Client	✓	NET 1
MODBUS TCP Server	✓	NET 1
MODBUS RTU over TCP Client	✓	NET 1
MODBUS RTU over TCP Server	✓	NET 1
CANopen Master	✓	CAN
CANopen Slave	✓ (except XP350 and XP351)	CAN
CAN low level	✓	CAN
SAE J-1939	✓	CAN
OPC DA Server	✓	NET 1 / USB
OPC UA Server	✓	NET 1 / USB
EtherCAT Master	✓	NET 1
SNMP Agent	✓	NET 1 / USB
IEC 60870-5-104 Server	✓ (only XP340)	NET 1
EtherNet/IP Scanner	✓	NET 1
EtherNet/IP Adapter	✓	NET 1

		Interface
MQTT Client	✓	NET 1 / USB
SNTP Client (for clock synchronism)	✓	NET 1 / USB
PROFINET Controller	✓	NET 1
PROFINET Device	×	-
OpenVPN Client	✓	NET 1 / USB
OpenVPN Server	✓	NET 1 / USB
FTP Server	✓	NET 1 / USB

Table 6: Protocols

Notes:

USB: Need to use Serial Converter, WiFi, Modem or Ethernet Adapter.

PROFINET Controller: Enabled for use on a simple (not ring) network with up to 8 devices. For larger applications, consult technical support.

4.5. RS-485

	RS-485
Connector	3-pin terminal block
Physical interface	RS-485
Communication direction	RS-485: half duplex
RS-485 max. transceivers	32
Termination	Yes (Configurable)
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

Table 7: RS-485 Serial Interface Features

4.6. CAN

	CAN
Connector	3-pin terminal block
Physical interface	CAN bus
Supported standards	CAN 2.0A 2.0B (11-bit and 29-bit identifiers)
Max. number of nodes	64
Termination	Yes (Configurable)
Baud rate	10, 20, 50, 100, 125, 250, 500, 800, 1000 kbit/s

Table 8: CAN Interface Features

4.7. USB

	USB
Connector	USB A Female
Physical interface	USB V2.0
Baud rate	1.5 Mbps (Low Speed), 12 Mbps (Full Speed) and 480 Mbps (High Speed)
Maximum current	500 mA
Supported devices	Mass storage USB RS-232 Serial Converter USB 3G/4G Modem USB WiFi Adapter USB Ethernet Adapter

Table 9: USB Interface Features

ATTENTION:

The CPU supports the use of only one USB device at a time. Devices such as USB HUBs, for example, are not supported.

4.7.1. List of Supported Devices

4.7.1.1. RS-232 Converter

Controller	Manufacturer
FT232	FTDI
PL2303	Prolific

Table 10: Supported USB to RS-232 converters

4.7.1.2. 3G/4G Modem

Model	Manufacturer	Type	Remarks
E303	Huawei	Bridge	-
E3272	Huawei	Bridge	-
E3276	Huawei	Bridge	-
E8372	Huawei	Router	Redirection of the configuration web page (button *Open Modem Configuration*) is not supported for this model. In this case, the modem configuration must be done externally by plugging it directly on a PC.

Table 11: Supported USB modems

4.7.1.3. WiFi Adapter

Chipset	Manufacturer	Example of comercial products
RTL8188EU	Realtek	TP-LINK model TL-WN725N LM Technologies model LM007
RT28xx	Ralink/Mediatek	D-Link model DWA-125
AR9271	Atheros/Qualcomm	TP-LINK model TL-WN721N

Table 12: Supported chipsets for USB WiFi adapters

4.7.1.4. Ethernet Adapters

Adapter	Manufacturer
USB 3.0 to Gigabit SuperSpeed Ethernet Adapter UE300	TP-LINK
USB31000S USB 3.0 to Gigabit Ethernet Adapter	STAR TECH

Table 13: Supported USB to Ethernet adapters

4.8. Ethernet

	Ethernet
Connector	Shielded female RJ45
Auto crossover	Yes
Maximum cable length	100 m
Cable type	UTP or ScTP, category 5
Baud rate	10/100 Mbps
Physical layer	10/100 BASE-TX
Data link layer	LLC
Network layer	IP
Transport layer	TCP (Transmission Control Protocol) UDP (User Datagram Protocol)
Diagnostics	LED (Link/Activity)

Table 14: Ethernet Interface Features

4.9. Power Supply

	Power Supply
Nominal input voltage	24 Vdc
Input voltage	19.2 to 30 Vdc
Maximum input current (in-rush)	50 A / 300 us
Maximum input current	300 mA

Table 15: Power Supply Features

4.10. Digital Inputs

	Digital Inputs
Input type	Optoisolated sink type 1 Two isolated groups of 8 inputs each
Input voltage	24 Vdc 15 to 30 Vdc for logic level 1 0 to 5 Vdc for logic level 0
Input impedance	4.95 kΩ
Maximum input current	6.2 mA @ 30 Vdc
Input state indication	Yes
Response time	0.1 ms
Input filter	Disabled or 2 ms to 255 ms – by software

Table 16: Digital Inputs Features

Note:

Input filter: The filter sampling is performed on MainTask (or Refresh function), then it's recommended to use multiple values of the task interval.

4.11. Fast Inputs

	Fast Inputs
Number of fast inputs	4 (can be used as high-speed counter, External interrupt or standard digital input)
Max. number of high-speed counters	1
Max. number of external interrupts	2
Connector configuration	I00, I01, I02 and I03
Input voltage	24 Vdc 15 to 30 Vdc for logic level 1 0 to 5 Vdc for logic level 0
Input impedance	1.85 kΩ
Input maximum current	16.2 mA @ 30 Vdc
Configuration mode	**1-input modes** Standard digital input External interrupt **2-input modes** Up/Down (A count, B direction) with zero (uses I00, I01, I02) Quadrature 2x (uses I00, I01) Quadrature 2x with zero (uses I00, I01, I02) Quadrature 4x (uses I00, I01) Quadrature 4x with zero (uses I00, I01, I02)
Counting direction control	Hardware only
Counting input detection edge	Rising edge, active at logic level 1 (except for quadrature 4x, where it counts on both edges)
Data format	Signed 32-bit integer
Operation limit	From - 2,147,483,648 to 2,147,483,647
Maximum input frequency	100 kHz
Minimum pulse width @ 24 Vdc	2 μs

Table 17: Fast Inputs Features

4.12. Digital Outputs

	Digital Outputs
Output type	Optoisolated transistor source type
Maximum output current	1.5 A per output 12 A total
Leakage current	35 μA
On state resistance	105 mΩ
External power supply	19.2 to 30 Vdc
Switching time	20 μs - off-to-on transition @ 24 Vdc 500 μs - on-to-off transition @ 24 Vdc
Maximum switching frequency	250 Hz
Configurable parameters	Yes
Output state indication	Yes
Output protections	Yes, protection against surge voltages

Table 18: Digital Outputs Features

Note:
Switching time: The required time to turn off one specific output depends on the load.

4.13. Fast Outputs

	Fast Outputs	
Number of outputs	4 (can be used as VFO/PWM, PTO or standard digital output)	
Max. number of PTO outputs	2	
Max number of VFO/PWM outputs	4 when using no PTO 2 when using 1 PTO 0 when using 2 PTO	
Connector configuration	Q14, Q15, Q16 and Q17	
Maximum current	0 to 500 Hz: 1.5A per output / 6.0A total 500 to 200 KHz: 0.5A per output / 2.0A total	
Output type	Transistor source	
Pulse generation maximum frequency	200 kHz @ 60 mA	
Minimum pulse width @ 24 Vdc	MINIMUM LOAD	MINIMUM PULSE TIME
	400 Ω	320 ns
State indication	Through static reserved operands	
Protections	TVS diode at all transistor outputs	
Operation voltage	19.2 to 30 Vdc	
Output impedance	700 mΩ	
Output modes	Standard digital output VFO/PWM PTO (Q14 and Q16 only. Adjacent output is forced to standard digital output)	

	Fast Outputs	
	PTO	VFO/PWM
Functions executed by software	Writing of number of pulses to be generated Writing of acceleration and deceleration number of pulses Start/end outputs operation Fast outputs diagnostics Fast outputs current state monitoring	Writing of the frequency value to be generated (1 Hz to 200 kHz). Writing of outputs duty cycle (1% to 100%) Start/end of outputs operations Fast outputs diagnostics.

Table 19: Fast Outputs Features

4.14. Analog Inputs

	Analog Inputs
Input type	Voltage or current input, single ended, individually configured
Data format	16 bits in two's complement, justified to the left
Converter resolution	12 bits monotonicity guaranteed, no missing codes
Conversion time	400 μs (all V/I and RTD channels enabled)
Input state indication	Yes
Module protections	Yes, protection against surge voltages and polarity inversion

Table 20: Analog Inputs Features

	Voltage Input Mode		
Input ranges	Range	Engineering Scale	Resolution
	0 to 10 Vdc	0 to 30,000	2.5 mV
Precision	±0.3 % of full scale @ 25 °C ± 0.010 % of full scale / °C		
Over scale	3 % of full scale		
Maximum input voltage	12 Vdc		
Input impedance	21 kΩ		
Configurable parameters	Signal type per input Filters		
Low pass filter time constant	100 ms, 1 s, 10 s or disabled		

Table 21: Voltage Input Mode Features

	Current Input Mode		
Input ranges	Range	Engineering Scale	Resolution
	0 to 20 mA	0 to 30,000	5.12 μA
	4 to 20 mA	0 to 30,000	5.12 μA
Precision	$\pm$0.3 % of full scale @ 25 °C $\pm$ 0.015 % of full scale / °C		
Over scale	3 % of full scale		
Maximum input current	30 mA		
Input impedance	119 Ω		
Configurable parameters	Signal type per input Filters Open Loop Value		
Low pass filter time constant	100 ms, 1 s, 10 s or disabled		

Table 22: Current Input Mode Features

Note:

Input ranges: When configured as 4 to 20 mA, input signals lower than 4 mA will result in negative values (-7,500 for 0 mA). Starting from MasterTool IEC XE version 3.16, a new parameter called *Open Loop Value* was included to select the behavior in this situation. The default value is *Disabled* (which provides a linear reading as described above), having also the option to provide a fixed reading equal to lower and upper limits ("*0*" or "*30000*").

	RTD Input
Precision	$\pm$0.5 % of full scale @ 25 °C
Supported scales	Pt100, Pt1000, 0 to 400 Ω, 0 to 4000 Ω
Excitation current	1 mA
Resistance range (scale)	0 to 400 Ω (used for PT100) 0 to 4000 Ω (used for PT1000)
Over Scale	5 % of full scale
Configurable parameters	Signal type per input Filters
Low pass filter time constant	100 ms, 1 s, 10 s or disabled
Maximum sensor cable impedance (per wire)	5 Ω

Table 23: RTD Input Features

Input type	Temperature Coefficient (α)	Measurement Band	Count	Resolution
400 Ω	-	0 to 400 Ω	0 to 4000	0.1 Ω
4000 Ω	-	0 to 4000 Ω	0 to 4000	1 Ω
Pt100E, Pt1000E	0,00385	-200 to 850 °C -328 to 1562 °F	-2000 to 8500 -3280 to 15620	0.3 °C 0.6 °F
Pt100A, Pt1000A	0,003916	-200 to 630 °C -328 to 1166 °F	-2000 to 6300 -3280 to 11660	0.3 °C 0.6 °F

Table 24: RTD Input Types

4.15. Analog Outputs

	Analog Outputs
Output type	Voltage or current output, individually configured
Data format	16 bits in two's complement, justified to the left
Converter resolution	12 bits monotonicity guaranteed, no missing codes
Update time	450 μs (all outputs enabled)
Output state indication	Yes
Module protections	Yes, protection against surge voltages and polarity inversion

Table 25: Analog Outputs Features

	Voltage Output Mode		
Output ranges	Range	Engineering Scale	Resolution
	0 to 10 V	0 to 30,000	2.5 mV
Precision	$\pm$0.3 % of full scale @ 25 °C $\pm$ 0.025 % of full scale / °C		
Stabilization time	4 ms		
Maximum output value	+ 10.3 Vdc		
Load impedance	$>$ 1 kΩ		
Configurable parameters	Signal type per output		

Table 26: Voltage Output Mode Features

	Current Output Mode		
Output ranges	Range	Engineering Scale	Resolution
	0 to 20 mA	0 to 30,000	5.18 μA
	4 to 20 mA	0 to 30,000	5.18 μA
Precision	$\pm$0.3 % of full scale @ 25 °C $\pm$ 0.020 % of full scale / °C		
Stabilization time	4 ms		
Maximum output value	+ 20.6 mA		
Load impedance	$<$ 600 Ω		
Configurable parameters	Signal type per output		

Table 27: Current Output Mode Features

Note:

Output ranges: When configured as 4 to 20 mA, the output can be set to values lower than 4 mA by assigning negative values to the output variable (-7,500 for 0 mA).

5. Compatibility with Other Products

To develop an application for Nexto Xpress controllers, it is necessary to check the version of MasterTool IEC XE. The following table shows the minimum version required (where the controllers were introduced) and the respective firmware version at that time:

Controller model	MasterTool IEC XE	Firmware version
XP300, XP315 and XP325	3.10 or above	1.7.0.0 or above
XP340	3.18 or above	1.8.0.0 or above
XP350	3.50 or above	1.12.5.0 or above
XP351	3.52 or above	1.12.29.0 or above

Table 28: Compatibility with other products

Additionally, along the development roadmap of MasterTool IEC XE some features may be included (like special FunctionBlocks, etc...), which can introduce a requirement of minimum firmware version. During the download of the application, MasterTool IEC XE checks the firmware version installed on the controller and, if it does not meets the minimum requirement, will show a message requesting to update. The latest firmware version can be downloaded from Altus website, and it is fully compatible with previous applications.

6. Installation

6.1. Electrical Installation

DANGER

When executing any installation in an electric panel, certify that the main energy supply is OFF.

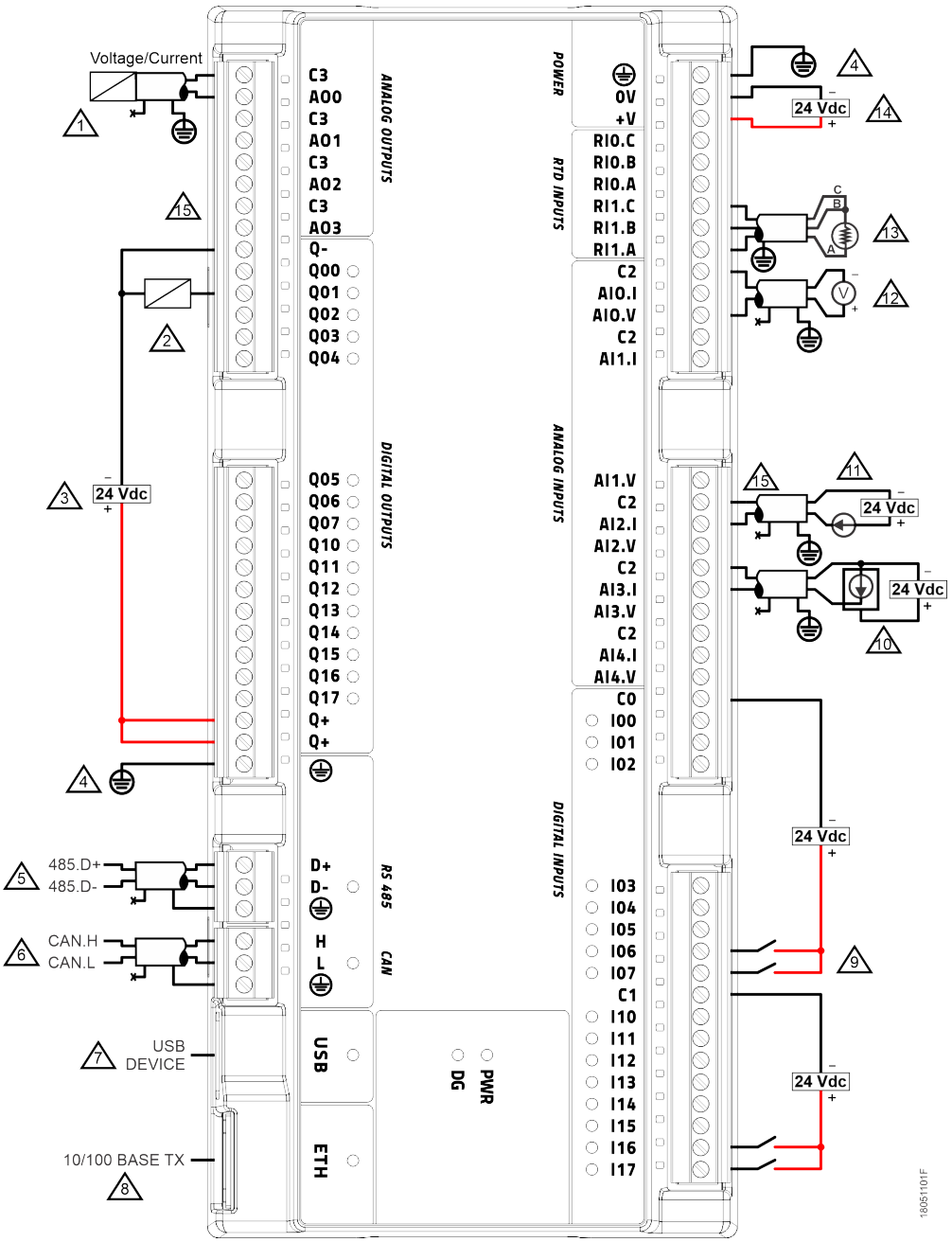


Figure 1: XP3xx Electrical Installation Diagram

Diagram Notes:

1. Typical connection of analog output on voltage/current mode.
2. Typical connection of digital output (source type).
3. External power supply to supply outputs Q00 to Q17, terminals Q + must be connected to +24 Vdc, and terminal Q- must be connected to 0 Vdc.
4. Protective Earth terminals for power supply and communication ports. Both shall be externally connected to ground.
5. Typical connection of RS-485 serial interface.
6. Typical connection of CAN interface.
7. Please check the technical characteristics table of USB port for the list of supported devices.
8. Use Ethernet cables informed on Related Products section.
9. Typical connection of digital input (sink type). C0 and C1 are the common points for the isolated groups I0x and I1x respectively.
10. Typical connection of current analog input (field device with power supplied separately from analog signal).
11. Typical connection of current analog input (field device with power supplied with the analog signal, 2-wire).
12. Typical connection of voltage analog input.
13. Typical connection of RTD analog input (3-wire).
14. External power supply connection.
15. The signals from the analog inputs and outputs are not isolated from the main power supply, so the C2 and C3 signals cannot have a potential difference from the 0V of the main power supply. It's recommended to connect the 0V of the main power supply to the analog references C2 and C3 before connecting to the Xpress.

Protective conductor terminal.

The product has in its mechanics a label that identifies it and in it are presented some symbols whose meaning is described below:

Attention! Before using the equipment and installing, read the documentation.

Direct Current.

ATTENTION

Products with broken warranty seal are not covered in warranty.

CAUTION

The device is sensitive to static electricity (ESD). Always touch in a metallic grounded object before handling it.

DANGER

Nexto Series can operate with voltage up to 250 Vac. Special care must be taken during the installation, which should only be done by qualified technical personnel. Do not touch on the wiring field when in operation.

6.2. Physical Dimensions

Dimensions in mm.

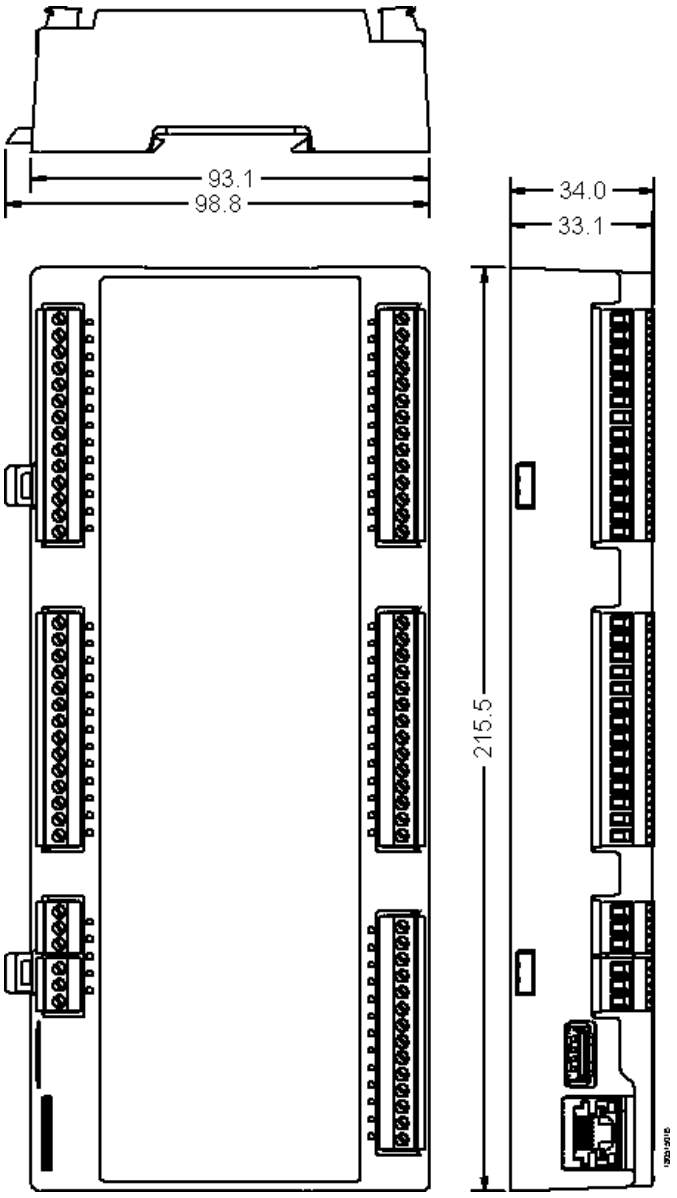


Figure 2: XP3xx Physical Dimensions

6.3. Protection Circuit

For further information, consult the *"Lightining Protection"* section of the Nexto Series User Manual - MU214600.

ATTENTION

Atmospheric discharges (thunders) may cause damages to the product although its protections. Additional protections should be used if the product's power comes from a power supply located outside the panel where it is installed because it could be vulnerable to this kind of discharges. If the field wiring of the output points is susceptible to this kind of discharge, surge suppressors should be used.

7. Motion Control (Softmotion)

The XP350 and XP351 Nexto Series PLCs, support Motion Control functionality (Softmotion), enabling applications with up to 3 axis at 8 ms. For more detailed information or examples of use, consult the CODESYS Help at: https://www.helpme-codesys.com/codesys-softmotion.html.

Due to memory limitations, the XP350 and XP351 do not support the AxisGroup Object.

8. Manuals

For further technical details, configuration, installation and programming, the table below should be consulted.

The table below is only a guide of some relevant documents that can be useful during the use, maintenance, and programming of this product.

Code	Description	Language
CE114000	Nexto Series – Technical Characteristics	English
CT114000	Série Nexto – Características Técnicas	Portuguese
MU216600	Nexto Xpress User Manual	English
MU216000	Manual de Utilização Nexto Xpress	Portuguese
MU214600	Nexto Series User Manual	English
MU214000	Manual de Utilização Série Nexto	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
MU214606	MQTT User Manual	English
MU214609	OPC UA Server for Altus Controllers User Manual	English
MU214610	PID - Advanced Control Functions User Manual	English
MU214621	Nexto Series PROFINET Manual	English
MU223603	IEC 60870-5-104 Server Device Profile Document	English
NAP151	Utilização do Tunneller OPC	Portuguese

Table 29: Documents Related