

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 through CANopen using the Remote I/O Mode. This mode transforms the product into a non-programmable slave I/O device, which can then be connected to a XP3xx controller with CANopen Manager protocol. It can also be expanded using other available ports like Ethernet and RS-485.

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. Additionally, it is an ideal solution for complementing big applications and 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.



Main features:

- Compact design
- DIN rail mount
- High-speed 32-bit ARM-based processor
- 10/100 Mbps Ethernet interface with protocols like OPC UA, EtherNet/IP, MODBUS and MQTT (full list on this document)
- CAN interface
- User web pages (Webvisu)
- Remote I/O Mode, allowing I/O expansion through CANopen
- High density of I/O (43 I/O points)
- 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)

Ordering Information

Included Items

The product package contains the following items:

- Compact PLC module
- Connectors
- Installation guide

Product Code

The following code should be used to purchase the product:

Code	Description
BCS-XP300	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 1 Ethernet and 1 RS-485 Serial
BCS-XP315	High-Speed Compact PLC with 16 DI, 16 DO Transistor, 5 V/I AI, 2 RTD AI (3 wire), 1 Ethernet and 1 RS-485 Serial
BCS-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
BCS-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 (Webvisu)

Related Products

The following products must be purchased separately when necessary:


Code	Description
BCS Tools	BCS Tools engineering environment




Notes:

BCS Tools: BCS Tools is available in four different versions: LITE, BASIC, PROFESSIONAL and ADVANCED. For BCS-XP3xx series only the LITE (free) version is needed.

Product Features

General Features

	BCS-XP300	BCS-XP315	BCS-XP325	BCS-XP340
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	5	5
RTD analog inputs (AI)	-	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			
CANOpen Manager protocol	Yes			
IEC 60870-5-104 Server protocol	No	No	No	Yes
User web pages (Webvisu)	No	No	No	Yes
Remote I/O Mode	Yes			
Addressable input variables memory (%I)	2 KB			
Addressable output variables memory (%Q)	2 KB			
Addressable variables memory (%M)	1 KB			
Symbolic variables memory	2 MB			
Program memory	2 MB	2 MB	2 MB	6 MB
Retain/persistent memory (user configurable)	7.5KB			
Source code memory (backup)	26 MB			
User files memory	8 MB			
Maximum number of tasks	5			
Programming languages	Instruction List (IL) Structured Text (ST) Ladder Diagram (LD) Sequential Function Chart (SFC) Function Block Diagram (FBD) Continuous Function Chart (CFC)			
Online changes	Yes			
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
IP level	IP 20
Conformal coating	Yes
Operating temperature	-20 to 60 °C
Storage temperature	-25 to 75°C
Operating and storage relative humidity	5 to 96 %, non-condensing
Standards	IEC 61131-2 CE, Electromagnetic Compatibility (EMC) and Low-Voltage Directive (LVD)   
Module 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

Notes:

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.

RS-485

RS-485	
Connector	3-pin terminal block
Physical interface	RS-485
Communication direction	RS-485: half duplex
RS-485 maximum transceivers	32
Termination	Yes (Configurable)
Baud rate	2.400, 4.800, 9600, 19200, 38400, 57600, 115200 bps
Protocols	Master/Slave MODBUS RTU Open protocol

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	32
Termination	Yes (Configurable)
Baud rate	10, 20, 50, 100, 125, 250, 500, 800, 1000 Kbits/s
Protocols	CANopen Manager (Master) CANopen Slave CAN low level

USB

USB	
Connector	USB A Female
Physical interface	USB V2.0
Baud rate	Between 1.5 Mbps (Low Speed) and 280 Mbps (High Speed)
Maximum current	500 mA

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)
Application layer	MODBUS TCP Client and Server MODBUS RTU Master/Slave OPC DA Server OPC UA Server EtherNet/IP Scanner MQTT Client IEC 60870-5-104 Server HTTP Server BCS Tools programming protocol SNTP Client SNMP Agent (Ethernet Network Management)
Diagnostics	LED (Link/Activity)

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

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	2 ms to 255 ms – by software

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.

Fast Inputs

Fast Inputs	
Number of fast inputs	4 (can be used as high-speed counter, external interrupt or normal 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 Normal 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	By software or hardware
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	2 us

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 us - off-to-on transition @ 24 Vdc 500 us - 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

Note:

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

Fast Outputs

		Fast Outputs	
Number of fast outputs	4 (can be used as VFO/PWM, PTO or normal output)		
Max. number of PTO outputs	2		
Max number of VFO/PWM outputs	4		
Connector configuration	Q14, Q15, Q16 and Q17		
Maximum current	0.5 A @ 30 Vdc by output 2 A @ 30 Vdc 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 symbolic variables		
Protections	TVS diode at all transistor outputs		
Operation voltage	19.2 to 30 Vdc		
Output impedance	700 mΩ		
Output modes	Normal digital output, VFO/PWM and PTO		
Functions executed by software	PTO		VFO/PWM
	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.\

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 us (all V/I and RTD channels enabled)
Input state indication	Yes
Module protections	Yes, protection against surge voltages and polarity inversion

Voltage Input Mode			
Input range	Range	Engineering Scale	Resolution
	0 to 10 Vdc	0 to 30,000	2.5 mV
Precision	± 0.3 % of full scale rating @ 25 °C ± 0.010 % of full scale rating / °C		
Over scale	3 % of full scale rating		
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		

Current Input Mode			
Input ranges	Range	Engineering Scale	Resolution
	0 to 20 mA 4 to 20 mA	0 to 30,000	5.12 µA
Precision	± 0.3 % of full scale rating @ 25 °C ± 0.015 % of full scale rating / °C		
Over scale	3 % of full scale rating		
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		

RTD Input	
Precision	± 0.5 % of full scale rating @ 25 °C
Supported scales	PT100, PT1000, 0 to 400 Ω, 0 to 4,000 Ω
Excitation current	1 mA
Resistance range	0-4,000 Ω
Over scale	5 % of full scale rating
Configurable parameters	Signal type per input Filters
Low pass filter time constant	100 ms, 1 s, 10 s or disabled
Maximum sensor cable impedance	20 Ω

Notes:

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 BCS Tools 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 "30,000").

Maximum sensor cable impedance: maximum total resistance added by the two wires of the sensor.

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 us (all outputs enabled)
Output state indication	Yes
Module protections	Yes, protection against surge voltages and polarity inversion

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

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

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).

Compatibility with Other Products

Nexto Xpress requires BCS Tools version 3.10 or higher.

Installation

Electrical Installation

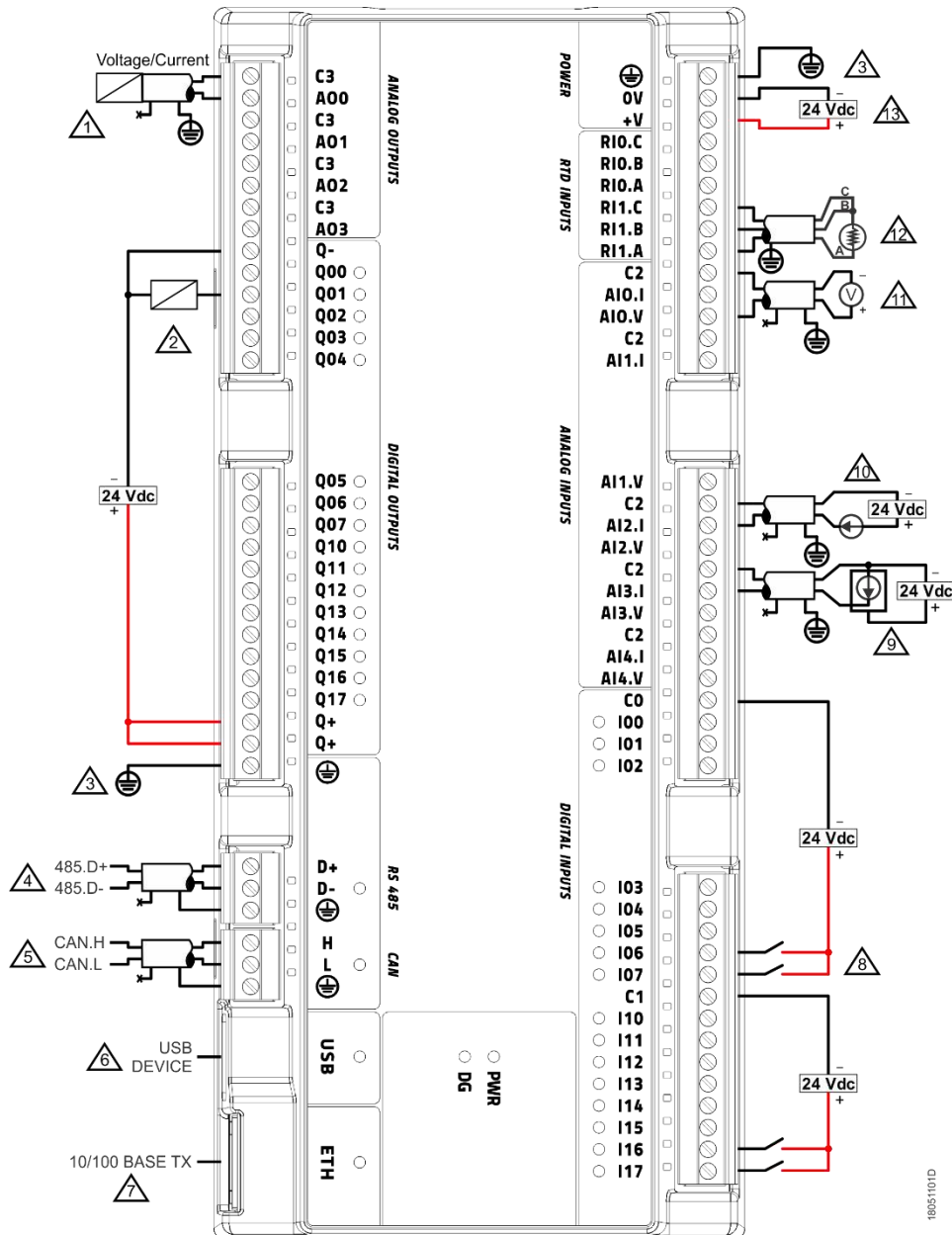


Diagram notes:

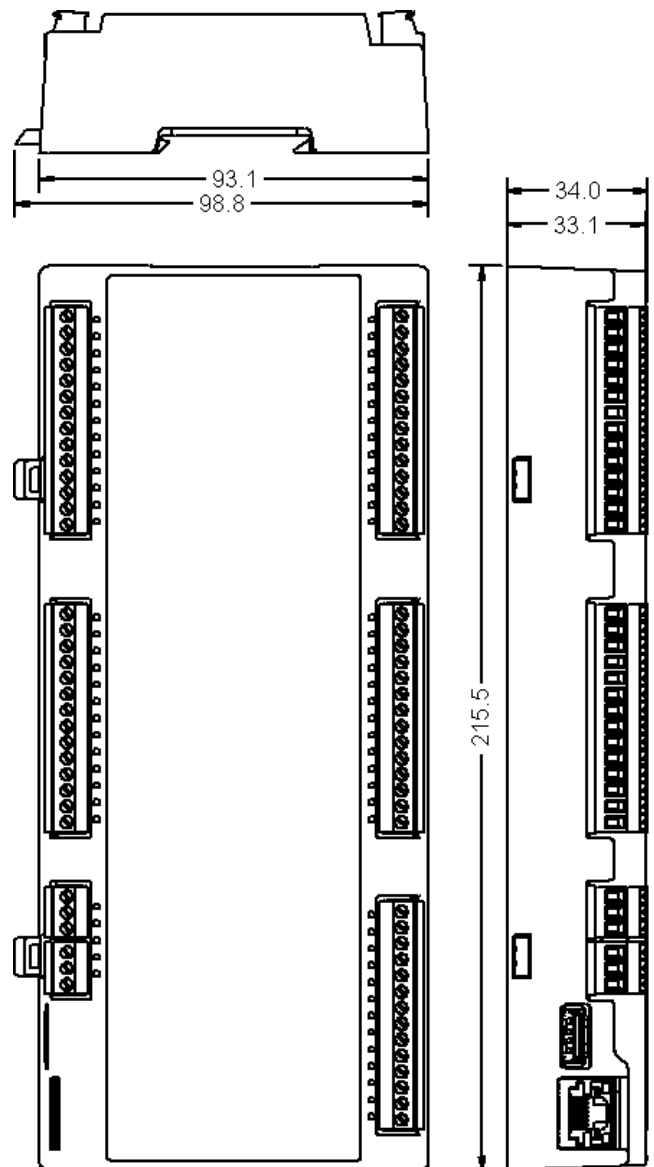
- 1 - Typical connection of analog output on voltage/current mode
- 2 - Typical connection of digital output (source type)
- 3 - Protective Earth terminals for power supply and communication ports. Both shall be externally connected to earth.
- 4 - Typical connection of RS-485 serial interface
- 5 - Typical connection of CAN interface. It's recommended to use a twisted pair shielded cable (like Belden 3105ENH)
- 6 - Only mass storage devices (please consult for support of additional devices)
- 7 - Use Ethernet cables informed on Related Products section
- 8 - Typical connection of digital input (sink type). C0 and C1 are the common points for the isolated groups I0x and I1x respectively
- 9 - Typical connection of current analog input (field device with power supplied separately from analog signal)
- 10 - Typical connection of current analog input (field device with power supplied with the analog signal, 2-wire)

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- 11 - Typical connection of voltage analog input
- 12 - Typical connection of RTD analog input (3-wire)
- 13 - External power supply connection

Physical Dimensions

Dimensions in mm.



Manuals

For correct application and utilization, Nexto Xpress User Manual – MU216600 must be consulted.

For further technical details, configuration, installation and programming of Nexto Series the table below should be consulted. This table is only a guide of some relevant documents that can be useful during the use, maintenance, and programming of Nexto Series controllers. The complete and updated table containing all documents of Nexto Series can be found at Nexto Series User Manual – MU214600.

Code	Description	Language
CE114000	Nexto Series – Technical Characteristics	English
CT114000	Série Nexto – Características Técnicas	Portuguese
CS114000	Serie Nexto – Especificaciones y Configuraciones	Spanish
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
MU214300	Manual del Usuario Serie Nexto	Spanish
MU214605	Nexto Series CPUs User Manual	English
MU214100	Manual de Utilização CPUs Série Nexto	Portuguese
MU214305	Manual del Usuario CPUs Serie Nexto	Spanish