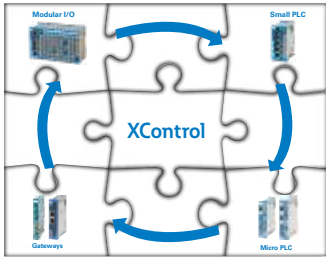# Communication is its strength

E·T·N

Powering Business Worldwide

XControl

The control system for series machine building

With the XControl system, Eaton offers machine and system builders compact, powerful and flexible PLCs for implementing lean and modern automation concept - expecially if used in combination with our modular I/O expansions XN300 and the innovative touch panels of the XV series. Simple and flexible: These are the best two words to describe how well the PLCs and gateways can be expanded with the I/O slice modules of the XN300 system to form a control configuration tailored to your solution. Ethernet interfaces with individual network adapters for connection in networks paired with the standard CAN and RS485 interfaces expand the features of the the devices to a universal control and communication point of the networked plant.

A wide variety of functions in a compact unit

Interfaces as required

- **Ethernet interfaces** with individual adapters for access to different networks

- **Standard serial interfaces** for setting up CAN and Modbus networks and for the integration of field devices

Ideal for series production

- System and program updates can be carried out via **USB and SD memory card**

XC100   **XC200**   **XC300**
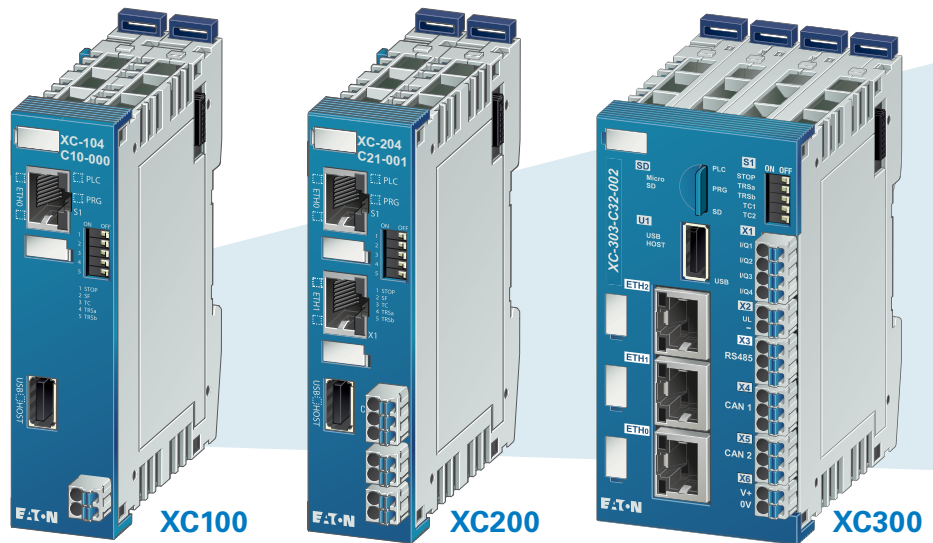
Clearly designed

- **Indicator lights** under the front ensure touch-safe status display

- Clear identification thanks to numerous **markers**

- Switch bank with **RUN-STOP switch** and **switchable terminating resistors**

Simple installation

- Tool-free mounting on the mounting rail using **locking tabs**

- Simple wiring due to the pluggable connection level using **push-in technology**

Flexible configuration

- Processing of time-critical signals via **I/Os on board**

- Expansion of the local I/O level using **XN300 I/O modules**
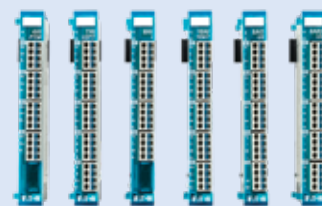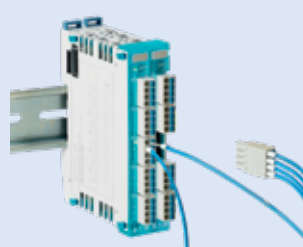
Excellent efficiency, minimum footprint

The components of the XN300 I/O system provide various functions that can be used as either local or remote I/Os.

Quick installation

Easy to use and replace thanks to pluggable connection level and mounting without tools. This way, you save time and can also pre-assemble the system.

Flexible solution

The I/O level of the XControl PLCs can be built and perfectly adapted to the application using the slice-based modules of the XN300 system with its digital, analog and technological functions.

The made-to-measure solution for your machine

Modular assembly for optimized system design

The local function level of the XControl system PLCs can be expanded to a high degree of flexibility using all components of the XN300 I/O system and can be individually adapted to suit your system requirements. This enables you to produce solutions with a minimum footprint and high connection density. Yet your solution also leaves the door open for you to expand at I/O level or switch to a different PLC version. In this way, plant versions can be easily adapted and efficiently maintained, even with step-by-step modernization.
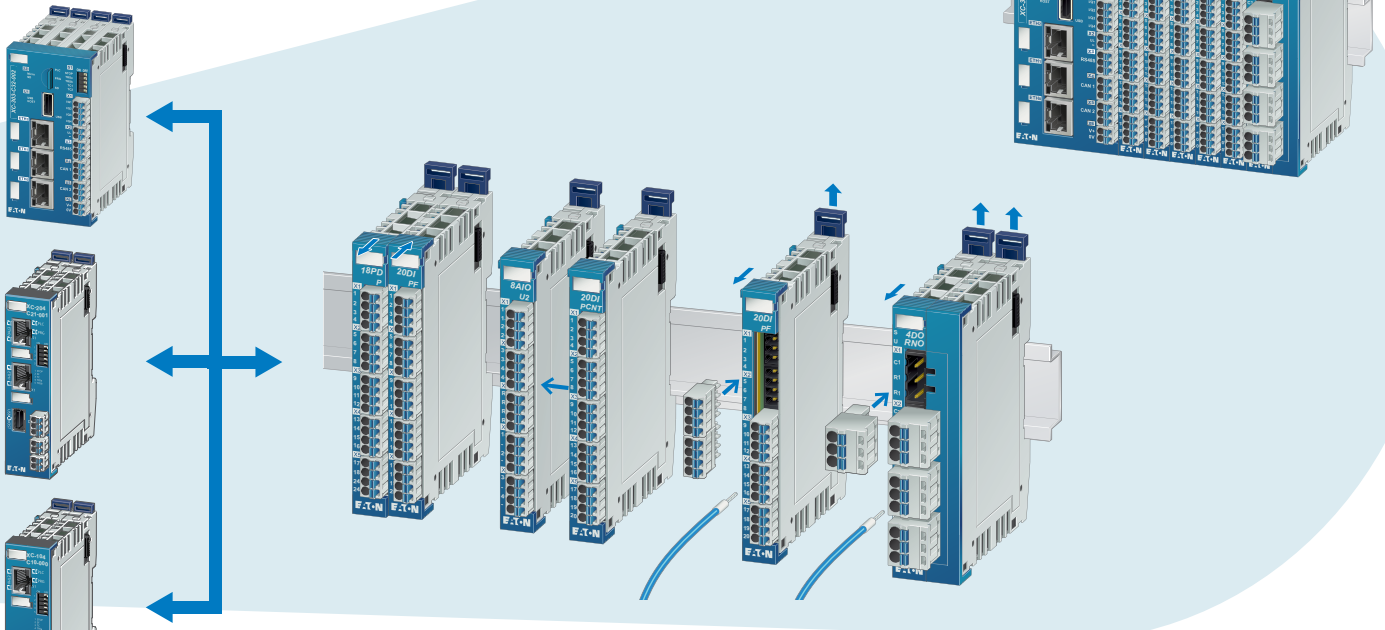
Interfaces to suit every requirement

The individual network adapters of the Ethernet interfaces enable the design of segmented machine architectures, simplify integration of the plant into existing factory networks and improve protection against unauthorized access. Safety and performance aspects can be ideally tailored by developing your own networks for cell, machine and SCADA communication.

Communicative field devices can be integrated into your automation solution via Ethernet, standard CAN or RS485 interfaces and complement the functions of the devices to form a universal control and communication point.

Simple programming

During series production, the device can be programmed using a USB stick or microSD card. In doing so, it automatically copies all relevant data to the internal memory.

Flexible application

The extensive range of control systems means that the system configuration can be designed for efficiency, making adaptations simple to implement.

Networking at field level

The compact design, the broad range of functions and the use of the XN300 system as a local and remote I/O create optimum system solutions with field networking in a minimum footprint.

XControl

The product family

The XControl family of PLCs concentrates on application solutions in the field of small and medium-sized series machinery and systems, and offers three performance levels: XC100, XC200 and XC300. The device operating system is based on a LINUX platform. CODESYS 3 is used to program the control and visualization functions.

Modular PLC XC100:
The rapid solution

The XC100 is perfect for solving simple automation tasks with Ethernet-based networking. The expansion with up to six snap-on I/O modules of the XN300 system enables flexible system configurations. Small PLC and control functions are ideal to implement with the device and networked with higher levels.

- Processor: ARM CORTEX A7 (solo) @800MHz

- Internal memory: 256 MB RAM, 4 GB eMMC FLASH, USB host

- 4k retain data (NVRAM) stored with no power required, capacitive back-up of real-time clock (RTC)

- 100 MBit/s Ethernet interface for networking

- Locally expandable with up to 6 x XN300 I/O modules

Modular PLC XC200:
### Flexible solutions to standards

Putting the XC200 PLC versions to use provides flexible solutions to standard automation tasks. The local I/O level can be configured with the XN300 I/O modules and the separate Ethernet interfaces simplify operation with standard serial interfaces in different networks and the integration of third-party devices.

- Processor: ARM CORTEX A7 (solo) @800MHz (types ..C10-000, ..C11-003), ARM CORTEX A7 (dual) @1000MHz (types ...C21-001, ...C20-002)

- Internal memory: 512 MB RAM, 4 GB eMMC FLASH, USB host

- Powerless stored 32k retain data (NVRAM), capacitive buffered real time clock (RTC)

- 100-Mbit/s Ethernet interfaces with own network adapter for integration into different networks

- Locally expandable with up to 16 x XN300 I/O modules

- Serial standard interfaces (CAN, RS485) for networking in the CANopen or Modbus RTU network and for the integration of third-party devices

- Two configurable digital in-/outputs enable the implementation of special, time-critical applications

XSOFT-CODESYS programming software

CODESYS programming is now practically established as standard thanks to its spread in open, industrial automation. Existing expertise and created programs can be easily and quickly ported.
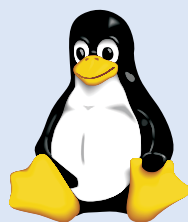
Linux operating system

The Eaton Embedded Linux platform with real-time expansion and the CODESYS run-time form the core of the products' software. The system is particularly reliable and its functions are constantly being developed.

Software XN300 Assist

The XN300-Assist ensures the greatest level of operator convenience in the planning of your plant. The online and offline functions of the practical software tool are helpful features for commissioning and installing the devices.

XC300 modular PLC: Powerful in communication

A wide range of functions and interfaces enable the flexible use of the compact, high-performance control system in modular automation solutions. Ethernet interfaces for connection to different networks, along with the standard CAN and RS485 interfaces, turn the XC300 device into a universal control and communication point within the networked facility.

- Processor: ARM CORTEX A7 Dual Core @960MHz
- Internal memory: 512 MB RAM, 128 MB FLASH, USB host, SD slot (32 GB)
- Powerless stored 128k retain data (NVRAM), capacitive buffered real time clock (RTC)
- 1 Gbit/100 Mbit Ethernet interfaces with individual network adapter for integration into different networks (SCADA, production and machine level)
- Locally expandable with up to 32 x XN300 I/O modules
- Serial interfaces (2xCAN, RS485) for networking in CANopen and Modbus RTU networks as well as for simple integration of third-party devices
- Four configurable digital inputs/outputs for implementing special, time-critical applications

XN300 I/O system: The compact system solution
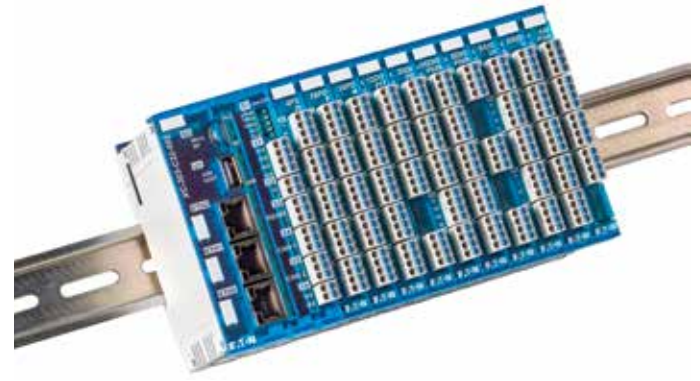
XN300, the ultra-compact, slice-modular I/O system with a pluggable connection level with high connection density complements the HMI/PLC products to a system solution that focuses on your application. The high functional and variant diversity reduce the device costs and enable the optimum system solution in the smallest possible space. At the same time, the XN300 I/O system can be used as a local I/O directly on the PLC and as a a as a decentralized I/O in the CAN or EtherCAT network. network.

- High connection density - 20 channels on 12.5x102 mm front area and 72 mm height
- Tool-less mounting and push-in plug-in connection technology
- Extensive range: Gateways (CAN, EtherCAT), digital and analog I/O modules as well as mixing functions for current, voltage and temperature measurement as well as for the operation of DC motor, counters and weighing cells
- Indicator LEDs for communication and signal states
- XN300-Assist with extensive off- and online functions

Designation	XN300 ext.	Retain Data	RTC	USB	SD SLOT	ETH 1GB/ 100MB	WEB-Visu	OPC-UA	Ethernet/IP	Modbus TCP	EtherCAT	CAN	CANOPEN	RS485	Modbus RTU
XC300 modular PLC															
XC-303-C32-002	32 modules	128kB	•	•	•	1x/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	2x	MGR/CL	•	MS/DEV
XC-303-C21-001	32 modules	128kB	•	•	•	-/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MGR/CL	•	MS/DEV
XC-303-C11-000	32 modules	128kB	•	•	•	-/1x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MGR/CL	-	-
XC200 modular PLC															
XC-204-C20-002	16 modules	32kB	•	•	-	-/2x	HTML5	Serve	Scanner (MS)	Server/Client	MS	-	-	•	MS/DEV
XC-204-C21-001	16 modules	32kB	•	•	-	-/2x	HTML5	Server	Scanner (MS)	Server/Client	MS	1x	MGR/CL	-	-
XC-204-C11-003	16 modules	32kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	1x	MGR/CL	•	MS/DEV
XC-204-C10-000	16 modules	32kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	-	-	-	-
XC100 modular PLC															
XC-104-C10-000	6 modules	4kB	•	•	-	-/1x	HTML5	Server	Scanner (MS)	Server/Client	-	-	-	-	-

Digitalizing automation systems

The right solution for your application

Global competition, progressive digitalization and specific customer requirements continually creating new challenges for series machine and system manufacturers in the design of their machine concepts. Automation solutions must deliver the modularity required in the hardware and software solution in order to satisfy customer specifications. In addition to component costs, the development, design and product maintenance work also needs to remain manageable throughout the life cycle.

Production machinery

Digital transformation, networked production, Industry 4.0

In modern production, people, machinery and processes are intelligently networked with each other through information and communication technology. Eaton is there to assist you by supplying components and offering support in the development of communicating series machines.

Heating, ventilation and air conditioning technology

Energy-efficient climate control

From the PLC and sensor systems through to the electrical drives: Eaton components are ideal for use in efficient climate control to create specified room conditions.

Pumps and compressors

Operate systems reliably and efficiently

OPC-UA represents a milestone in machine communication, playing a key role in significantly accelerating the digitalization process. Intelligent communication interfaces facilitate the flow of information and simplify the exchange of system components.
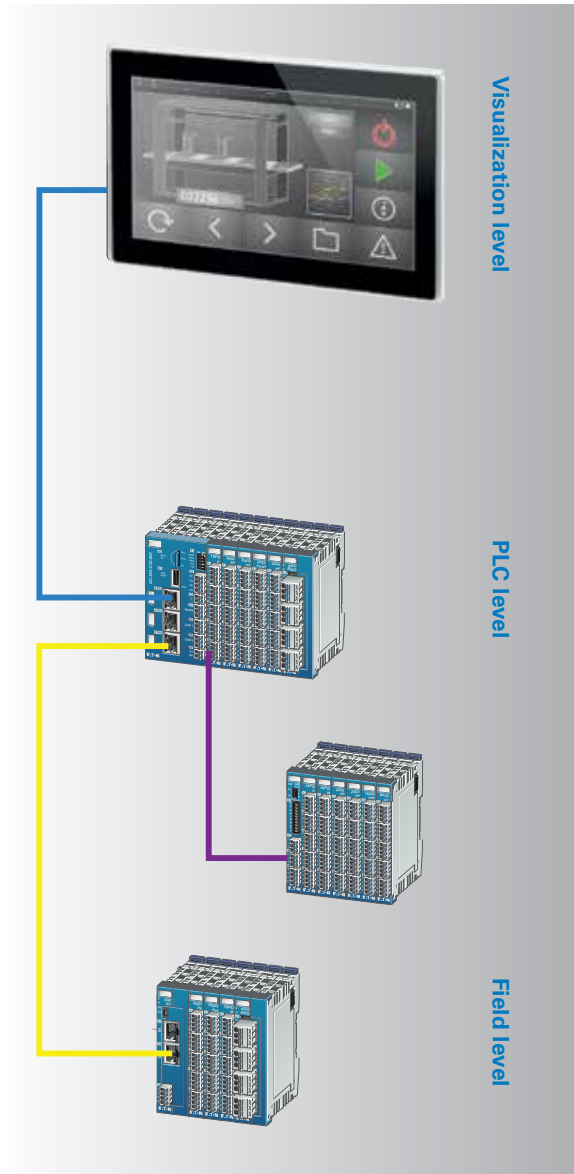
Networking systems

Eaton's XControl system comprises a product portfolio of PLCs, gateways and I/O modules. Various interfaces support modern communication concepts and make networking and maintenance of your system even easier.

Enhancing productivity

Optimized system performance through powerful processors with real-time-capable Linux enables short task cycle times and boosts machine productivity.

Visualization in HTML5 standard

The integrated web server offers remote visualization on mobile devices such as PCs, tablets and smartphones. The status of the system is transparent, and functions are easy to control - from (virtually) anywhere.

Implement Industry 4.0

The first revolution in industrial production took place with the introduction of mechanical production facilities at the end of the 18th century. This was the foundation for the later implementation of mass production and the subsequent automation of production processes.

Industry 4.0 is the fourth industrial revolution. Modern information and communication technologies are now used in production processes, and enable communication between humans, machines, plants, logistics, and products. This networking helps to optimize the entire value chain.
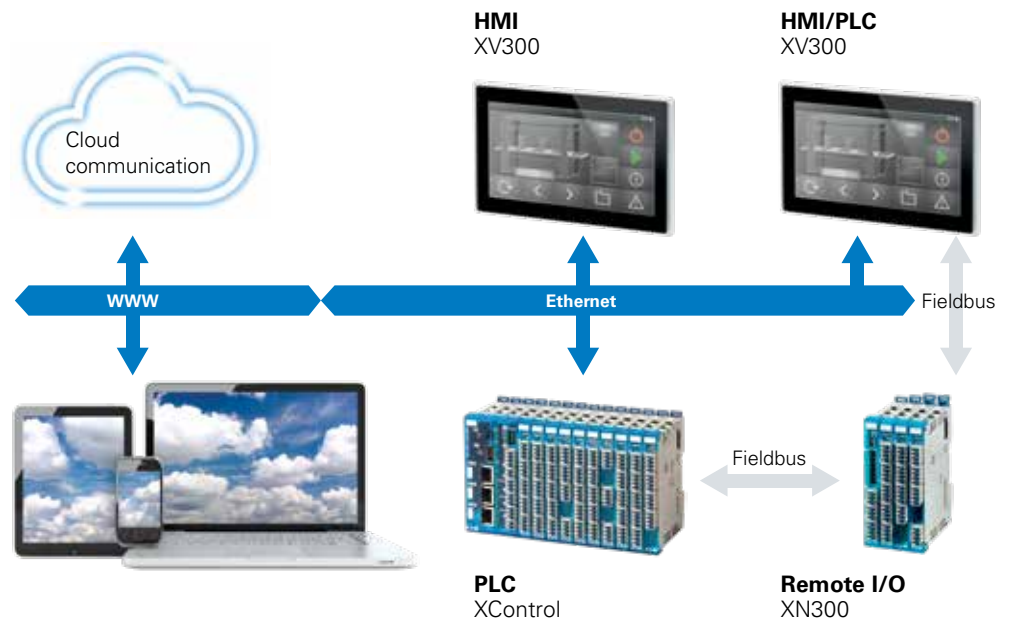
The transition to Industry 4.0 offers a range of advantages for machine and system operators:

- **Process optimization along the value chain**
- **Customized series production**
- **Improvement of machine availability**
- **Optimization of the product life cycle (big data)**

Entering digitalization with Xcontrol

Automation applications are often highly complex. With the Eaton PLC and visualization products, it is possible to realize flexible and varied system concepts.

For many users, the integration of Industry 4.0 into their systems is becoming increasingly important. Eaton will support you in this process to help you take a leap into the future. Benefit from a comprehensive portfolio of automation components, relevant software packages and qualified support before, during and after commissioning.

Cloud communication

HMI XV300

HMI/PLC XV300

WWW Ethernet Fieldbus

PLC XControl

Remote I/O XN300

Fieldbus

Standardized data exchange

The use of data exchange standards ensure that the devices are suitable for universal use. The OPC-UA server guarantees interoperability in the machine's M2M communication.
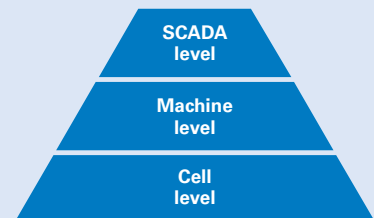
Cyber Security

An Eaton secure-by-design solution

Complies with rigorous cyber-security, process, requirements and testing standards

In order to protect machines and systems against access by unauthorized persons, Eaton is committed to complying with the latest standards in communications technology.

Data nodes across all levels

SCADA level

Machine level

Cell level

Eaton automation components support various system concepts for the horizontal and vertical networking, control and visualization of your machine.

Order information

XN300 I/O system

Description	Type	Article no.
Gateway/interface		
Gateway to the EtherCAT bus system	**XN-312-GW-EC**	178785
Gateway to the CANopen bus system	**XN-312-GW-CAN**	178782
Digital input		
8 inputs, P, 24 VDC, 5.0 ms	**XN-322-8DI-PD**	183172
16 inputs, P, 24 VDC, 5.0 ms	**XN-322-16DI-PD**	183173
20 inputs, P, 24 VDC, 5.0 ms	**XN-322-20DI-PD**	178786
20 inputs, P, 24 VDC, 0.5 ms	**XN-322-20DI-PF**	178768
20 inputs, P, 24 VDC, 2/4 CNT, 25 kHz	**XN-322-20DI-PCNT**	178767
20 inputs, N, 24 VDC, 5.0 ms	**XN-322-20DI-ND**	183174
Digital output		
4 outputs, relay, NO contacts	**XN-322-4DO-RNO**	178779
8 outputs, P, 24 VDC, 0.5 A, kf	**XN-322-8DO-P05**	183175
12 outputs, P, 24 VDC, 1.7 A, kf	**XN-322-12DO-P17**	178788
16 outputs, P, 24 VDC, 0.5 A, kf	**XN-322-16DO-P05**	178787
Digital input/output		
4 inputs, 4 outputs, P, 24 VDC	**XN-322-8DIO-PD05**	183178
8 inputs, 8 outputs, P, 24 VDC	**XN-322-16DIO-PD05**	183179
8 inputs, 8 outputs, P, 24 VDC, CNT	**XN-322-16DIO-PC05**	183180

Description	Type	Article no.
Analog input		
4 inputs, PT/NI/KTY/R, 2/3 core	**XN-322-4AI-PTNI**	178772
6 inputs, +/-10 V, 1 PT/KTY, Uref	**XN-322-7AI-U2PT**	178789
8 inputs, 0/4–20 mA	**XN-322-8AI-I**	179288
8 inputs, thermocouple, 2 KTY	**XN-322-10AI-TEKT**	178792
Analog output		
8 outputs, +/-10 V	**XN-322-8AO-U2**	178790
Analog input/output		
2 inputs, 2 outputs, +/-10 V, Uref	**XN-322-4AIO-U2**	183181
4 inputs, 4 outputs, +/-10 V, Uref	**XN-322-8AIO-U2**	178791
2 inputs, 2 outputs, 0/4–20 mA	**XN-322-4AIO-I**	183182
4 inputs, 4 outputs, 0/4–20 mA	**XN-322-8AIO-I**	178771
Technology modules		
Weighing module, 2DMS, 24 bit	**XN-322-2DMS-WM**	178793
DC motor driver, 12–30 V, brush, 3.5 A	**XN-322-1DCD-B35**	178794
Counter, 1 CNT, 125 kHz, 16 bit, 4 DO, 4 DI	**XN-322-1CNT-8DIO**	178795
Serial, 2 SSI, RS422, 32 bit	**XN-322-2SSI**	178773
Power supply modules		
Energy supply, 4 x 24 VDC/2 A, kf	**XN-322-4PS-20**	178796
Passive potential distributors		
Power distribution, 18 channels, GND	**XN-322-18PD-M**	178769
Power distribution, 18 channels, VCC	**XN-322-18PD-P**	178770

XControl PLCs

Description	Type	Article no.
XC300 modular PLC		
XC303 modular PLC, Small PLC, CODESYS 3 programmable, SD slot, USB, 3 x Ethernet, 2 x CAN, 1 x RS485, 4 digital inputs/outputs	**XC-303-C32-002**	191080
XC303 modular PLC, Small PLC, CODESYS 3 programmable, SD slot, USB, 2 x Ethernet, 1 x CAN, 1 x RS485	**XC-303-C21-001**	191081
XC303 modular PLC, Small PLC, CODESYS 3 programmable, SD slot, 1 x Ethernet, 1 x CAN	**XC-303-C11-000**	191082
XC200 modular PLC		
XC204 modular PLC, Micro PLC, CODESYS 3 programmable, USB, 2 x Ethernet, 1 x RS485, 2 digital inputs/outputs	**XC-204-C20-002**	199977
XC204 modular PLC, Micro PLC, CODESYS 3 programmable, USB, 2 x Ethernet, 1 x CAN, 2 digital inputs/outputs	**XC-204-C21-001**	199975
XC204 modular PLC, Micro PLC, CODESYS 3 programmable, USB, 1 x Ethernet, 1 x CAN, 1 x RS485	**XC-204-C11-003**	199974
XC204 modular PLC, Micro PLC, CODESYS 3 programmable, USB, 1 x Ethernet	**XC-204-C10-000**	199973
XC100 modular PLC		
XC104 modular PLC, Micro PLC, CODESYS 3 programmable, USB, 1 x Ethernet	**XC-104-C10-000**	199971
Startersets		
1 x XC-303-C32-002, 1 x XN-322-8DIO-PD05, patch cable, CODESYS V3 software license	**XC-303 Starter Set**	197871
1 x XC-204-C21-001, 1 x XN-322-8DIO-PD05, patch cable, CODESYS V3 software license	**XC-204 Starter Set**	199985
1 x XC-104-C10-000, 1 x XN-322-8DIO-PD05, patch cable, CODESYS V3 software license	**XC-104 Starter Set**	199983

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