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**XControl modular PLCs**
Expandable with the XN300 I/O system

Eaton.com/xc300
Eaton.com/xn300

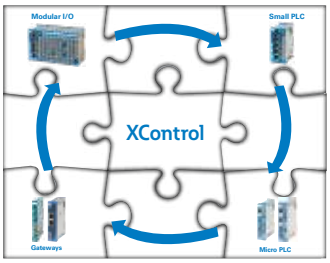


# Communication is its strength

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.

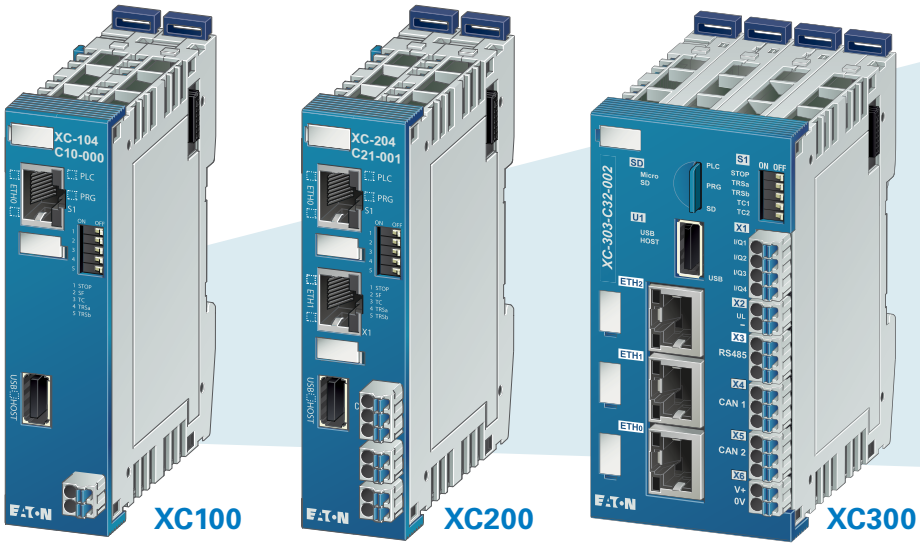
## A wide variety of functions in a compact unit

### 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**




### 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**

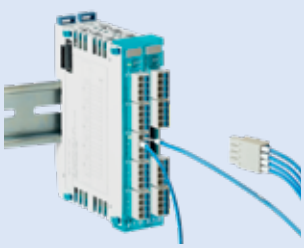
### Flexible configuration

- Processing of time-critical signals via **I/Os on board**
- Expansion of the local I/O level using **XN300 I/O modules**



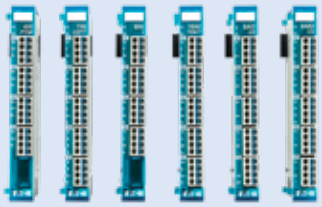
### Excellent efficiency, minimum footprint

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.



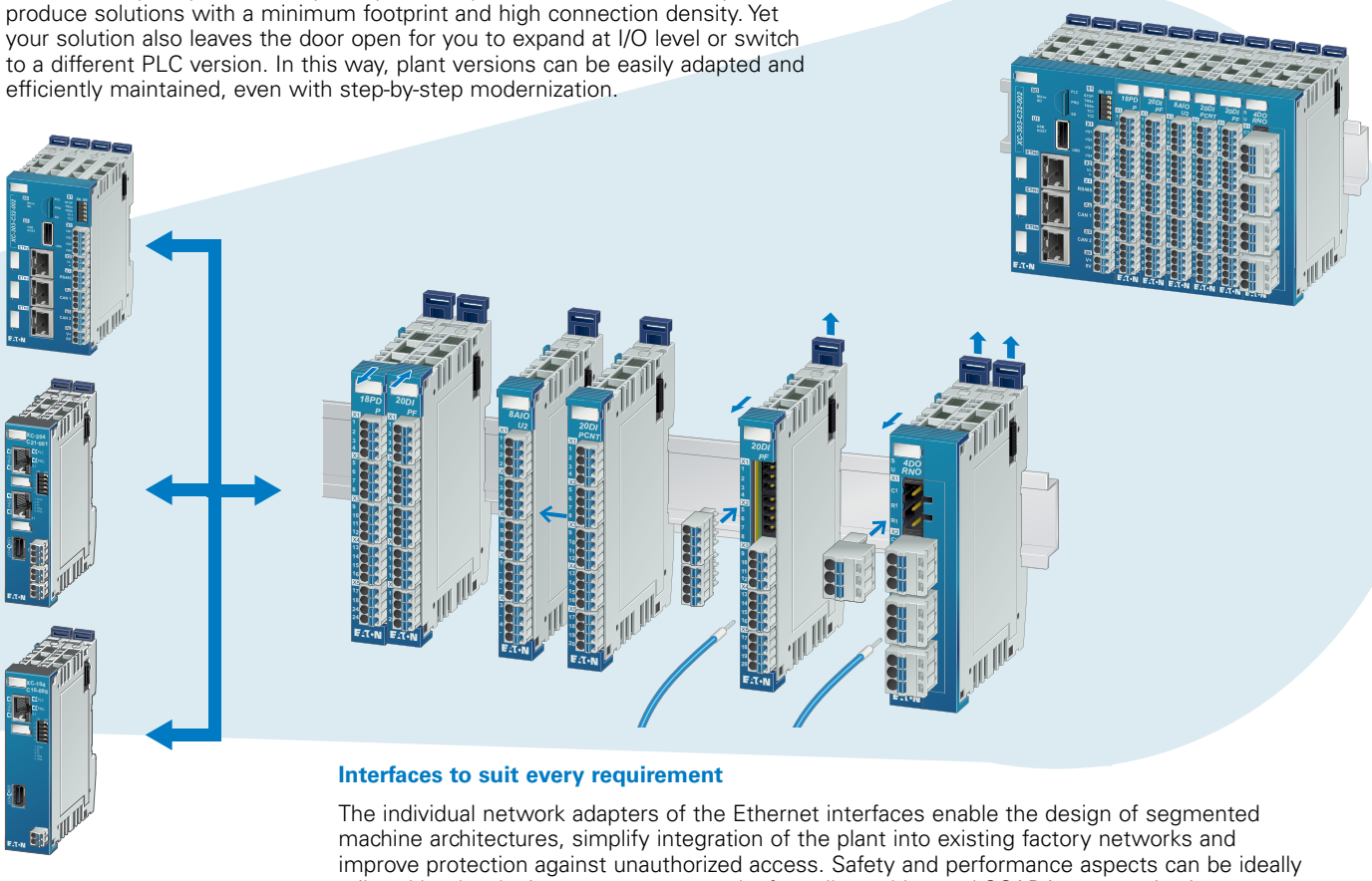
### Flexible solution

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.

EtherCAT® EtherNet/IP Modbus CANopen®

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.

EtherCAT® CANopen®

# 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



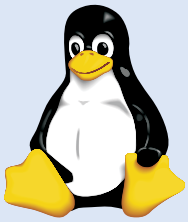
Putting the XC200 PLC versions to use provides flexible solutions to standard automation tasks. The local I/O level can be configured with the XN300 I/O modules and the separate Ethernet interfaces simplify operation with standard serial interfaces in different networks and the integration of third-party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

CODESYS

#### 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.

XN 300 Assist

#### 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.

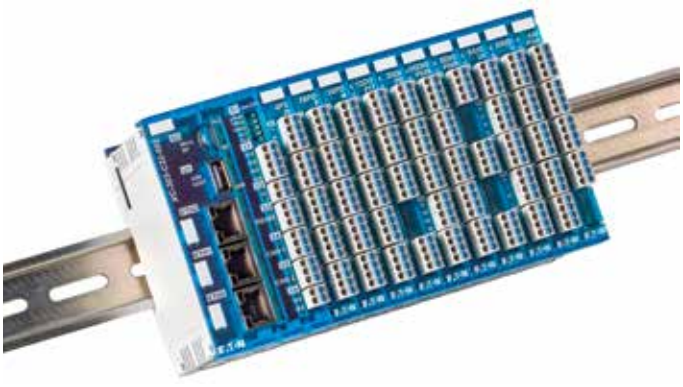
## XC300 modular PLC: Powerful in communication



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 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

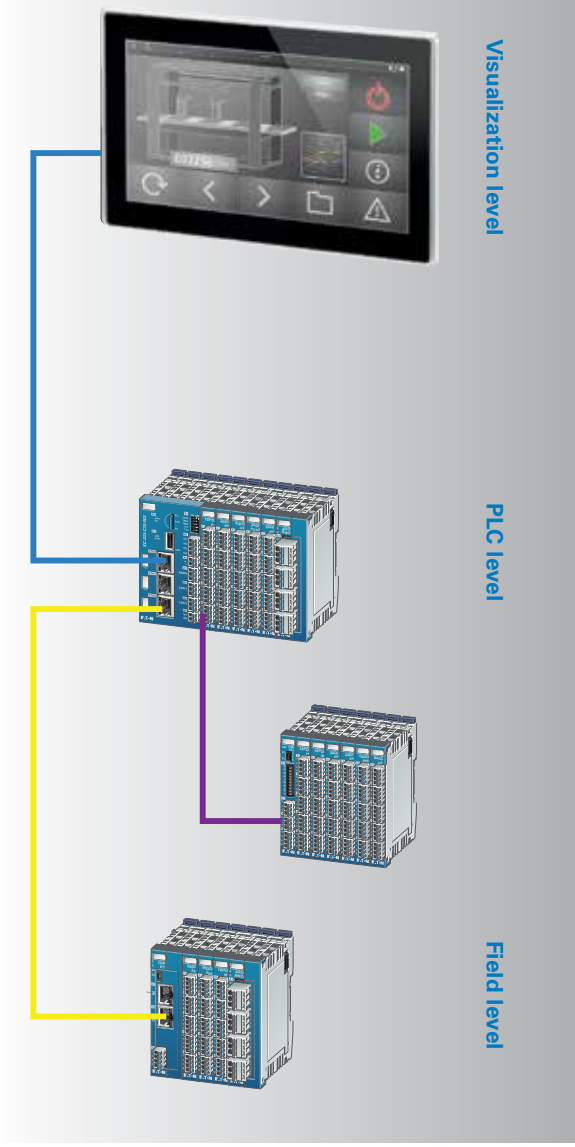
From the PLC and sensor systems through to the electrical drives: Eaton components are ideal for use in efficient climate control to create specified room conditions.



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.

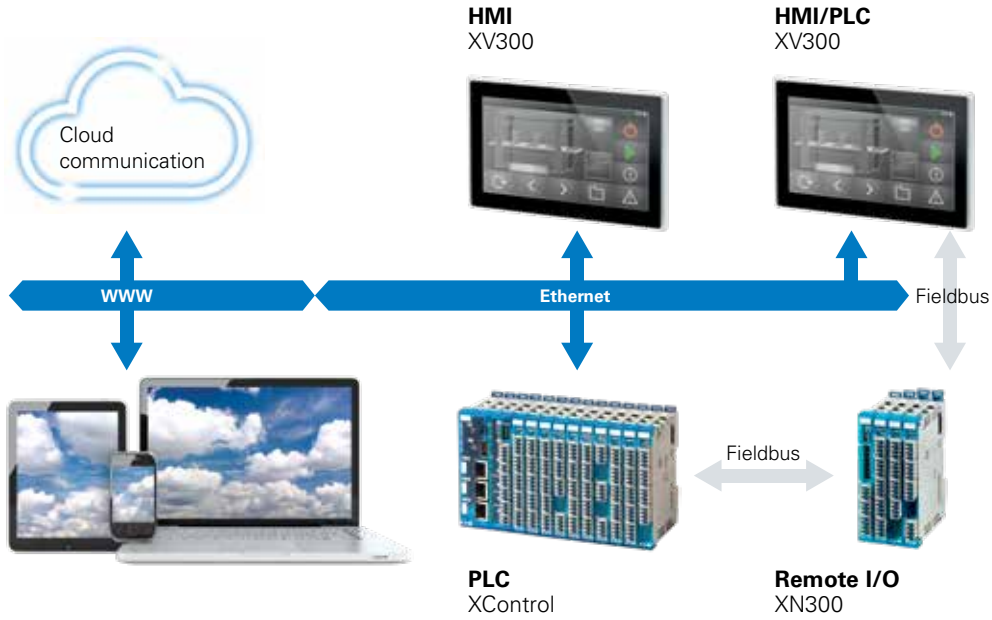
The transition to Industry 4.0 offers a range of advantages for machine and system operators:

- **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.







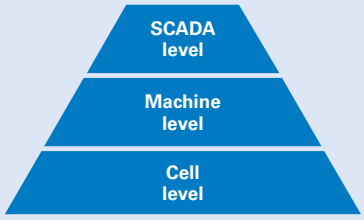
### Standardized data exchange

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

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

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** | 199984 |
| 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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