

PLCs, PLC Software and I/O Products

easyE4 Nano PLCs



4.1 Programmable Logic Controllers

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XC152 Series PLCs



XC300 Small Modular PLCs



XN300 Series Remote I/O



easyE4 Nano Programmable Logic Controllers

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easyE4 Nano Programmable Logic Controllers

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XC300 Small Modular Programmable

Logic Controllers **V7-T4-13**XN300 Modular and Remote I/O **V7-T4-17**

easyE4 Nano Programmable Logic Controllers

Product Description

The easyE4 nano programmable logic controllers combine timers, relays, counters, special functions, inputs and outputs into one compact device that is easily programmed. It provides an exceptional level of flexibility together with a substantial savings of commissioning time and effort.

The easyE4 is available in six styles with 12 I/O that can be expanded to 188 I/O points, which provides the ideal solution for material handling, HVAC, pump control, irrigation, lighting, energy management, industrial control, and home automation.

After installation, changes are easily accomplished through front panel programming, which eliminates the need to change wiring and minimize downtime. Programming is easier with the ability to transfer existing programs onto other easyE4 devices via micro SD card.

Application Description

The easyE4 nano programmable logic controller excels in traditional applications where multiple relays, timers and pushbuttons are used.

Applications span residential, commercial and industrial installations.

Typical control applications are:

- Lighting controls
- Duplex pump controls
- Water fountain controls
- Parking garage access controls
- Refrigeration control system
- Greenhouse temperature and ventilation controls
- Booster pump controls

Features and Benefits

There are six basic devices that make up the easyE4 nano programmable logic controller family.

- The models come with or without display
- DIN rail mounted
- The easyE4 is for controlling small and medium sized applications with up to 12 I/O points (expandable to 188 I/O points)
- Connectable to Ethernet and bus systems
- Modbus® TCP Master and Slave
- Modbus RTU and SmartWire-DT™ communication modules

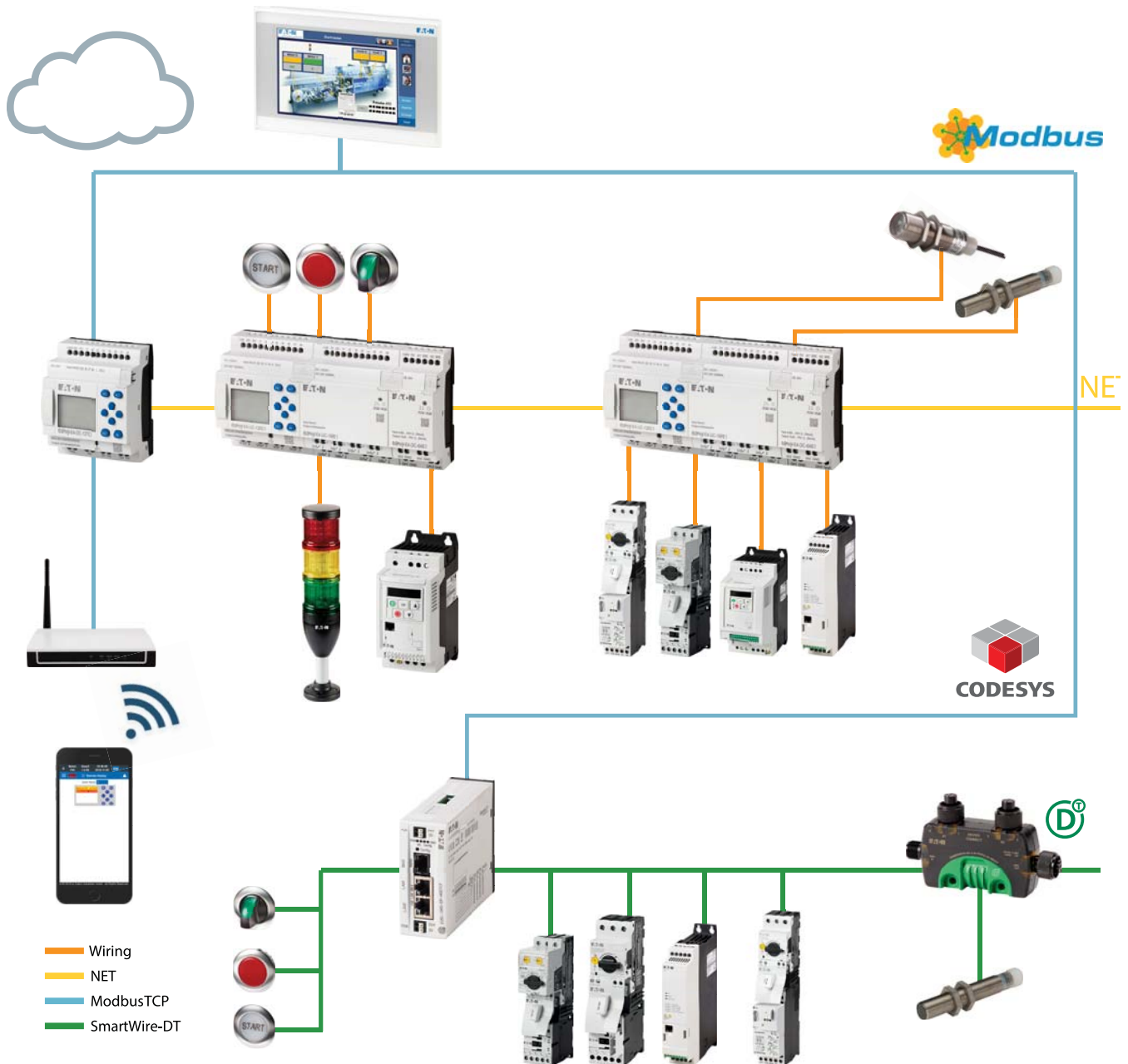
Standards and Certifications

- EN 61000-6-2
- EN 61000-6-3
- IEC 60068-2-6
- IEC 60068-2-27
- IEC 60068-2-30
- IEC 61131-2
- EN 61010 EN 50178
- cULus acc. to UL® 61010
- CSA® C22.2 No.61010



System Overview

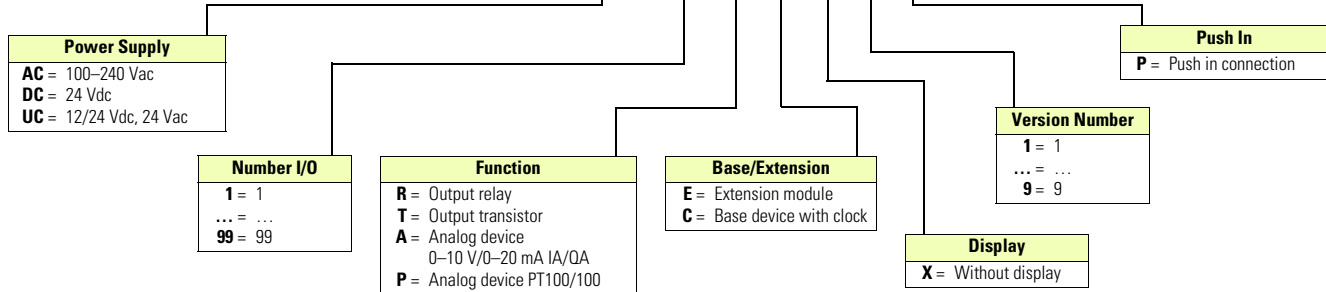
easyE4



Catalog Number Selection

easyE4 Nano Programmable Logic Controllers

EASY-E4 - AC - 12 R C X 1 P



Product Selection

Base Devices

EASY-E4-UC-12_

easyE4 Base Devices



Description	Input		Output		Features			Power Supply	Catalog Number	
	Digital	Analog	Transistor	Relay (8 A)	Display + Keypad	Real-time Clock	Ethernet		Screw Terminal	Push-in Clamp
12/24 Vdc, 24 Vac, display, keypad	4	4	—	4	■	■	■	12/24 Vdc/24 Vac	EASY-E4-UC-12RC1	EASY-E4-UC-12RC1P
12/24 Vdc, 24 Vac	4	4	—	4	—	■	■	12/24 Vdc/24 Vac	EASY-E4-UC-12RCX1	EASY-E4-UC-12RCX1P
24 Vdc, display, keypad	4	4	4	—	■	■	■	24 Vdc	EASY-E4-DC-12TC1	EASY-E4-UC-12TC1P
24 Vdc	4	4	4	—	—	■	■	24 Vdc	EASY-E4-DC-12TCX1	EASY-E4-DC-12TCX1P
100–240 Vac/Vdc, display, keypad	8	—	—	4	■	■	■	100–240 Vac/Vdc	EASY-E4-AC-12RC1	EASY-E4-AC-12RC1P
100–240 Vac/Vdc	8	—	—	4	—	■	■	100–240 Vac/Vdc	EASY-E4-AC-12RCX1	EASY-E4-AC-12RCX1P

Expansion Devices

Expansion modules are available for increasing the inputs and outputs of the easyE4 nano programmable logic controller. Expansion modules can be easily mounted directly to the easyE4 base device by the expansion module plug-in connector.

EASY-E4_

easyE4 Expansion Devices



Description	Input		Output		Power Supply	Catalog Number	
	Digital	Analog	Relay (5 A)	Transistor		Screw Terminal	Push-in Clamp
Digital input/output 12/24 Vdc, 24 Vac	4	—	4	—	12/ 24 Vdc 24 Vac	EASY-E4-UC-8RE1	EASY-E4-UC-8RE1P
	8	—	8	—	12/ 24 Vdc 24 Vac	EASY-E4-UC-16RE1	EASY-E4-UC-16RE1P
Transistor input/output, 0.5 A	4	—	—	4	24 Vdc	EASY-E4-DC-8TE1	EASY-E4-DC-8TE1P
	8	—	—	8	24 Vdc	EASY-E4-DC-16TE1	EASY-E4-DC-16TE1P
Digital input/output 100/110/230/240 Vac	4	—	4	—	100–240 Vac/Vdc	EASY-E4-AC-8RE1	EASY-E4-AC-8RE1P
	8	—	8	—	100–240 Vac/Vdc	EASY-E4-AC-16RE1	EASY-E4-AC-16RE1P
Analog input/output; 0–10 V / 0/4–20 mA, 12 bit, each channel configurable	—	4	—	—	24 Vdc	EASY-E4-DC-6AE1	EASY-E4-DC-6AE1P
Temperature input, 2- and 3-wire, Pt100/1000/Ni1000, ① 12 bit (1) [°C] or [°F], scaling, 12 bit, in 0.1°, in 1°, 0–4095, 0–65535	—	4	—	—	24 Vdc	EASY-E4-DC-4PE1	EASY-E4-DC-4PE1P

Note

① Measurement range selectable PT100, PT1000: –100 to +200 °C (–148 to 392 °F), –100 to +400 °C (–148 to 752 °F), –100 to +800 °C (–148 to +1472 °F); Ni1000: –50 to +100 °C (–58 to +212 °F), –50 to +250 °C (–58 to 482 °F).

Communication Devices

Communication modules are available for adding fieldbus communications to the base unit. Communication modules can be easily mounted directly to the easyE4 base device by the communication module plug-in connector.

EASY-COM-RTU-M1



Communication Devices

Description	Master	Slave	Catalog Number
Modbus RTU communication module up to 32 devices	■	■	EASY-COM-RTU-M1

EASY-COM-SWD-C1



SmartWire-DT communication module up to 99 devices	■	—	EASY-COM-SWD-C1
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Accessories

Starter Sets

Starter sets include a basic device with display, patch cable, easySoft license code and easyE4 flyer. There are three starter sets available for purchase—they both include a basic device with display, patch cable, easySoft license code, and easyE4 flyer.

easyE4 Starter Sets

Description	Catalog Number
Basic device—UC power supply (12/24 Vdc, 24 Vac), patch cable, easySoft license code, easyE4 flyer	EASY-BOX-E4-UC1
Basic device—DC power supply (24 Vdc), patch cable, easySoft license code, easyE4 flyer	EASY-BOX-E4-DC1
Basic device—AC power supply (100–240 Vac/Vdc), patch cable, easySoft license code, easyE4 flyer	EASY-BOX-E4-AC1

Memory Cards and Spare Parts

Memory cards and spare parts package are available to complete your automation solutions.

Memory Cards and Spare Parts

Description	Catalog Number
Spare parts package—3 expansion card connectors and 3 plugs	EASY-E4-CONNECT1
Spare parts package—3 communication card connectors and 3 plugs	EASY-E4-CONNECT-COM1
Memory card—2 GB, industrial-rated micro SD card	MEMORY-SDU-A1

Software

The easySoft software is used to program all of the easy programmable logic controllers and MFD-Titan displays. The Windows®-based software provides straightforward circuit diagram input and editing and the diagrams can be displayed in the format desired. easySoft includes an integrated offline simulation tool that allows users to test a circuit diagram before commissioning. easySoft 7 must be used with the easyE4 nano programmable logic controller. Software is available for download from the easySoft web page at www.eaton.com/easysoft

Software

Description	Catalog Number
Programming software license easySoft easyE range	EASYSOFT-SWLIC

Visualization

The XV-102-A0-35TQRB-1E4 and XV-102-A3-57TVRB-1E4 HMIs are used to display projects created with the easyE4 nano PLC conveniently and clearly. Users get a clear overview of the machine or system status and can adjust the according parameters conveniently on the touch display. The powerful XV-102 device is available with a 3.5-inch and 5.7-inch resistive touch surface.

Visualization is supported by Eaton's intuitive Galileo software. Simple and fast project planning is achieved through the exchange of variables between easySoft and Galileo. Via the integrated communication interfaces (Modbus TCP) of the XV-102 HMI, compact and powerful automation solutions can be implemented in conjunction with the easyE4 nano PLC.

The easyE4 Remote Touch Display offers a simple and cost-effective option for displaying easyE4 status information and text outside the control cabinet. The 4.3-inch display can be easily connected via a standard RJ45 Ethernet cable. Once the remote touch display has been connected, all that remains to be done is to select the respective nano PLC and the display integrated in the easyE4 can then be mirrored. No programming required—the display is immediately ready for use. In addition, the physical keypad of the easyE4 can also be displayed digitally, so that the resistive touch display can be used to modify values and navigate through the menus.

XV-102-A0-35TQRB-1E4



Visualization

Description	Catalog Number
Touch display for easyE4 nano PLC 3.5-inch resistive touch, Modbus TCP interface	XV-102-A0-35TQRB-1E4
Touch display for easyE4 nano PLC 5.7-inch resistive touch, Modbus TCP interface	XV-102-A3-57TVRB-1E4
Remote Touch Display for easyE4 4.3-inch resistive touch	EASY-RTD-DC-43-03B1

Power Supplies—PSL

Eaton's single-phase low profile DIN rail power supply series offers double-isolated input with no earth connection required, resulting in low leakage current and a longer lifespan.

PSL10E24RP



PSL Series Power Supplies

Power/description	Catalog Number
24 Vdc output, single-phase power supplies (100–240 Vac nominal input)—	
10 W, 0.42 A output, plastic housing	PSL10E24RP
30 W, 1.25 A output, plastic housing	PSL30E24RP
60 W, 2.5 A output, plastic housing	PSL60E24RP
100 W, 3.8 A output, plastic housing	PSL100E24RP

Technical Data and Specifications

easyE4 Basic Devices

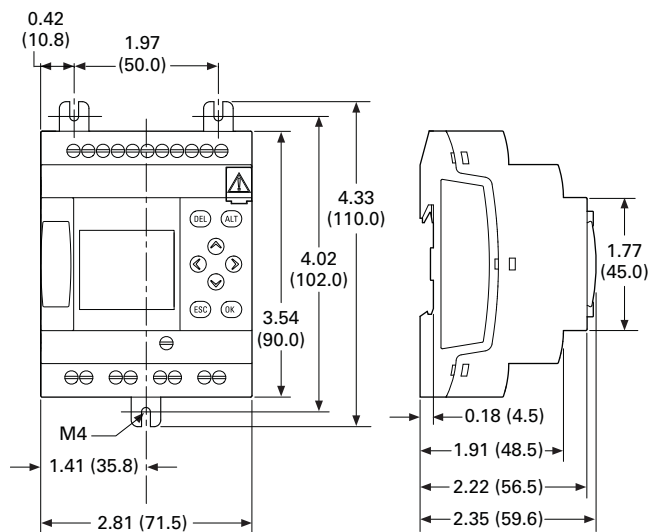
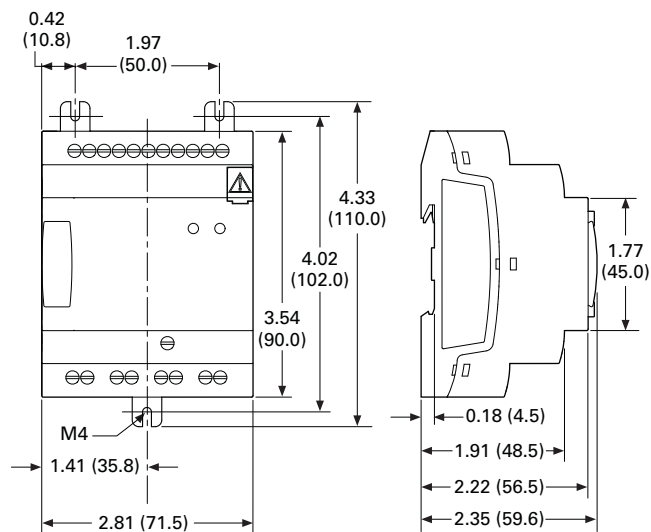
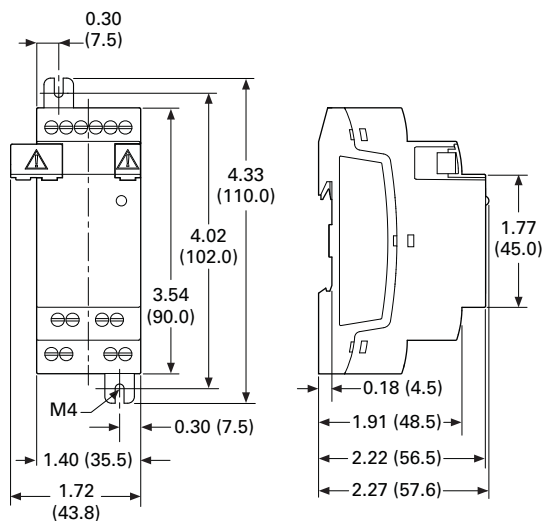
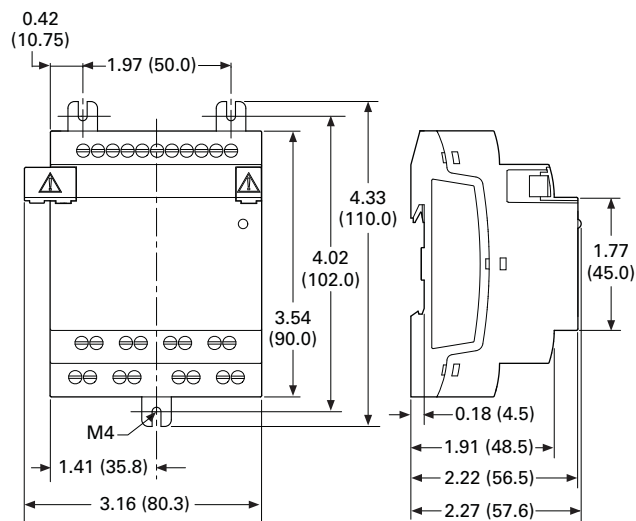
Description Type of Device	EASY-E4-UC-12RC1(P) Base unit	EASY-E4-UC-12RCX1(P) Base unit	EASY-E4-UC-8RE1(P) Expansion unit	EASY-E4-UC-16RE1(P) Expansion unit	EASY-E4-DC-6AE1(P) Expansion unit
Inputs					
Digital	8	8	4	8	—
Can be used as analog inputs	4	4	—	—	6
Outputs					
Transistor	—	—	—	—	—
Relay	4	4	4	8	—
Can be used as analog inputs	—	—	—	—	2
Display	With display	Without display	Without display	Without display	Without display
Rated operational voltage	12/24 Vdc, 24 Vac	12/24 Vdc, 24 Vac	12/24 Vdc, 24 Vac	12/24 Vdc, 24 Vac	24 Vdc
Operating ambient temperature (°C)	–25 to +55	–25 to +55	–25 to +55	–25 to +55	–25 to +55
Dimensions (L x H x D) mm	71.5 x 90 x 58	71.5 x 90 x 58	35.5 x 90 x 58	71.5 x 90 x 58	35.5 x 90 x 58
Weight (kg)	0.2	0.2	0.2	0.2	0.2
Degree of protection	IP20	IP20	IP20	IP20	IP20
Standards	EN 61000-6-2, EN 61000-6-3, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-30, IEC 61131-2, EN 61010, EN 50178, cULus according to UL 61010, CSA C22.2 No. 61010				

easyE4 Basic Devices, continued

Description Type of Device	EASY-E4-DC-12TC1(P) Base unit	EASY-E4-DC-12TCX1(P) Base unit	EASY-E4-DC-8TE1(P) Expansion unit	EASY-E4-DC-16TE1(P) Expansion unit
Inputs				
Digital	8	8	4	8
Can be used as analog inputs	4	4	—	—
Outputs				
Transistor	4	4	4	8
Relay	—	—	—	—
Can be used as analog inputs	—	—	—	—
Display	With display	Without display	Without display	Without display
Rated operational voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Operating ambient temperature (°C)	–25 to +55	–25 to +55	–25 to +55	–25 to +55
Dimensions (L x H x D) mm	71.5 x 90 x 58	71.5 x 90 x 58	35.5 x 90 x 58	71.5 x 90 x 58
Weight (kg)	0.2	0.2	0.2	0.2
Degree of protection	IP20	IP20	IP20	IP20
Standards	EN 61000-6-2, EN 61000-6-3, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-30, IEC 61131-2, EN 61010, EN 50178, cULus according to UL 61010, CSA C22.2 No. 61010			

Dimensions

Approximate Dimensions in Inches (mm)

Base Devices—With Display**Base Devices—Without Display****Slim Expansion Module****Large Expansion Module**

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XC152 Micro Programmable Logic Controllers**Product Description**

The XC152 compact PLC combines plenty of processing power with a large number of communication interfaces. This makes the device particularly well-suited to standardized automation solutions in modular machine building applications.

The XC152 not only provides machine segment control functions that can be programmed with CODESYS, but it can store module-specific visualizations. These visualizations can be retrieved and displayed on a central HMI or a computer as needed.

In addition, the XC152 connects SmartWire-DT systems to standard fieldbus systems via its interfaces. This enables the XC152 PLC to support Eaton's Lean Automation strategy while enabling users to design automation systems in a flexible manner and run them cost-effectively.

Application Description**Flexible Solutions for Modular Machine Units**

In the field of automation, complex processes are subdivided into easily manageable functional units to make programming, production and installation easier. For example, a packaging machine can be subdivided into infeed, positioning (erector), filling and sealing (gluing) modules. Other systems and machines can also be effectively subdivided to create a wide variety of different models or to delimit various expansion stages.

With the XC152, a powerful PLC controls individual system modules while making it possible to directly connect SmartWire-DT system devices and standard fieldbus components. Data transfers via the Ethernet interface to OPC clients, together with the available remote visualization system, support a connection to a central control and visualization system.

SmartWire-DT

The XC152 relies on Eaton's tried-and-true SmartWire-DT connection system, eliminating the need for control current wiring in every single machine module and simplifying the commissioning process by means of better diagnostic options. This results in significant design, commissioning and maintenance cost reductions.

Standard CAN and PROFIBUS Fieldbus Systems

Servo drives, frequency inverters and hydraulic components can all be easily connected using the large number of fieldbus interfaces available on the XC152.

Visualization

The integrated web visualization function offers a key advantage, as machine module diagnostic and visualization information can be displayed on a central HMI or a terminal.

Features and Benefits

- CODESYS PLC and web visualization
- Galileo/CODESYS remote visualization
- Ethernet port on all models
- Windows CE 5 operating system
- 32-bit RISC CPU at 400 MHz
- 64 MB internal memory
- SD card slot for external memory
- Run/Stop switch
- Optional: Integrated SmartWire-DT master for 99 nodes
- Optional: RS-232, RS-485, PROFIBUS-DP/MPI, CANopen/easyNet

Standards and Certifications

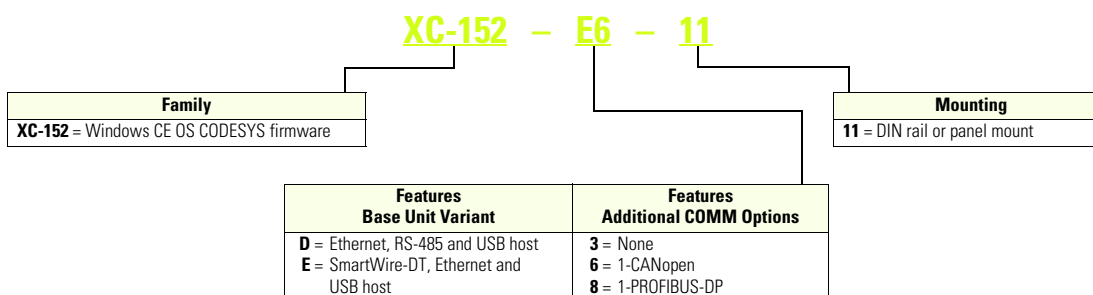
- IEC/EN 61131-2, EN 50178
- EN 61000-6-2, EN 61000-6-4
- cULus
- CE



Catalog Number Selection

XC152 PLCs with and without SmartWire-DT

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Product Selection

XC152 PLC



XC152 PLC

CODESYS Firmware	Fieldbus Type	RS-232	RS-485	Ethernet	Catalog Number
Yes	CANopen	Yes	Yes	Yes	XC-152-D6-11
Yes	PROFIBUS-DP	Yes	Yes	Yes	XC-152-D8-11

XC152 PLC SmartWire-DT



XC152 PLC SmartWire-DT

CODESYS Firmware	Fieldbus Type	RS-232	RS-485	Ethernet	SmartWire-DT	Catalog Number
Yes	None	Yes	None	Yes	Yes	XC-152-E3-11
Yes	CANopen	None	Yes	Yes	Yes	XC-152-E6-11
Yes	PROFIBUS-DP	None	Yes	Yes	Yes	XC-152-E8-11

Accessories

XC PLC Accessories

Description	Catalog Number
PLC programming software, single seat license	SW-XSOFT-CODESYS-2-S
PLC programming software, multiple seat license	SW-XSOFT-CODESYS-2-M
SD memory card	MEMORY-SD-A1-S

Technical Data and Specifications

XC152 Series Programmable Logic Controllers

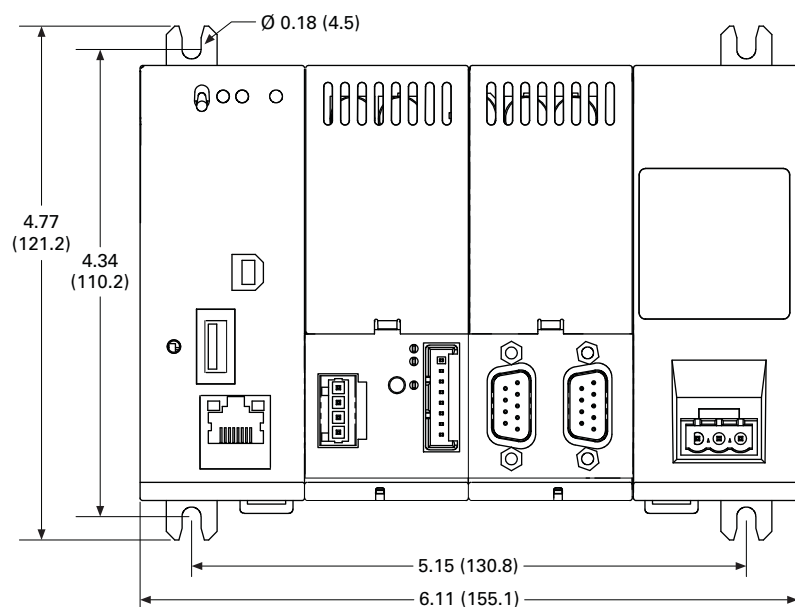
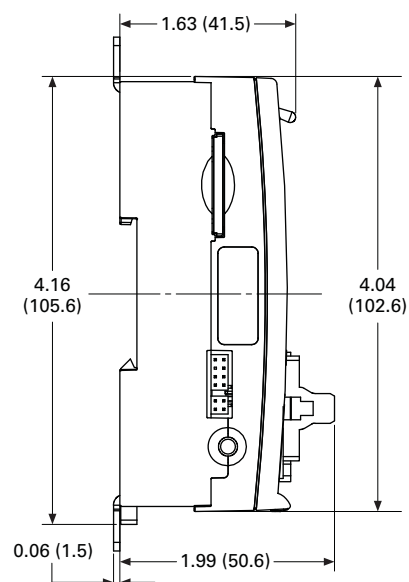
Description	Unit	XC-152-D6-11	XC-152-D8-11	XC-152-E3-11	XC-152-E6-11	XC-152-E8-11
System						
Processor		RISC, 32 bit at 400 MHz	RISC, 32 bit at 400 MHz	RISC, 32 bit at 400 MHz	RISC, 32 bit at 400 MHz	RISC, 32 bit at 400 MHz
Internal memory						
DRAM (OS-, program and data memory)	Mbyte	64	64	64	64	64
NAND FLASH (can be used for data security)	Mbyte	Approx. 128 available	Approx. 128 available	Approx. 128 available	Approx. 128 available	Approx. 128 available
NVRAM (retain)	kByte	Approx. 32 available	Approx. 32 available	Approx. 32 available	Approx. 32 available	Approx. 32 available
External memory						
SD memory card slot		SDA Specification 1.00	SDA Specification 1.00	SDA Specification 1.00	SDA Specification 1.00	SDA Specification 1.00
Real-time clock (battery backup)						
Battery (not rechargeable)		Zero maintenance	Zero maintenance	Zero maintenance	Zero maintenance	Zero maintenance
Backup time at zero voltage		Normally 10 years	Normally 10 years	Normally 10 years	Normally 10 years	Normally 10 years
Operating system		Windows CE 5	Windows CE 5	Windows CE 5	Windows CE 5	Windows CE 5
Engineering						
PLC-Programming software		CODESYS 2/3	CODESYS 2/3	CODESYS 2/3	CODESYS 2/3	CODESYS 2/3
Visualization						
WEB-VISU		CODESYS	CODESYS	CODESYS	CODESYS	CODESYS
Remote Client		Galileo/CODESYS	Galileo/CODESYS	Galileo/CODESYS	Galileo/CODESYS	Galileo/CODESYS
Communication Interfaces						
Ethernet		100Base-TX/10Base-T	100Base-TX/10Base-T	100Base-TX/10Base-T	100Base-TX/10Base-T	100Base-TX/10Base-T
USB host ①		—	—	—	—	—
USB device ①		USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
System port (RS-232) ①		■	■	■	—	—
SmartWire-DT ①		—	—	■	■	■
CAN ①		■	—	—	■	—
PROFIBUS/MP ①		—	■	—	—	■
RS-485 ①		■	■	—	■	■
General						
Rated operating voltage		24 Vdc SELV	24 Vdc SELV	24 Vdc SELV	24 Vdc SELV	24 Vdc SELV
Power consumption	W	Max. 5	Max. 5	Max. 5	Max. 5	Max. 5
Protect against polarity reversal		Yes	Yes	Yes	Yes	Yes
Approvals		CE, cULus	CE, cULus	CE, cULus	CE, cULus	CE, cULus
Ambient air temperature	°C	0 to 55	0 to 55	0 to 55	0 to 55	0 to 55
Storage temperature	°C	–40 to +70	–40 to +70	–40 to +70	–40 to +70	–40 to +70
Protection type		IP20	IP20	IP20	IP20	IP20
Flush mounting		DIN rail EN 60715, 35 mm	DIN rail EN 60715, 35 mm	DIN rail EN 60715, 35 mm	DIN rail EN 60715, 35 mm	DIN rail EN 60715, 35 mm
Dimensions (H x W x D)	mm	105 x 155 x 40	105 x 155 x 40	105 x 155 x 40	105 x 155 x 40	105 x 155 x 40
Weight (approximate)	kg	0.3	0.3	0.3	0.3	0.3
Applied standards and directives						
Product standard		IEC/EN 61131-2, EN50178	IEC/EN 61131-2, EN50178	IEC/EN 61131-2, EN50178	IEC/EN 61131-2, EN50178	IEC/EN 61131-2, EN50178
EMC		EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4

Note

① Interface not galvanically isolated.

Dimensions

Approximate Dimensions in Inches (mm)

XC152 Series Programmable Logic Controllers**With Fixing Brackets****Without Fixing Brackets**

XC300 Small Modular Programmable Logic Controllers



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XC300 Small Modular Programmable Logic Controllers

Product Description

The XC300 device series incorporates powerful and flexible PLCs (small controllers) with functional levels that can be modularly expanded via the I/O components of the XN300 system. This enables equipment and systems engineering to implement customized PLC solutions using a minimum amount of space.

The devices have extensive features such as visualization servers (HTML5) and OPC-UA servers. Integrated CAN and Ethernet interfaces enable the segmented access to the most varied of networks, while focusing operations by serving as equipment data nodes. PLC performance and communications requirements can be adapted individually to a given system.

Application Description

The XC300 PLC uses a high level of performance for its class, thereby improving equipment productivity. The available interfaces enable communication in various networks, which means that XC300 can be used in a wide range of systems. In addition, the PLC can be simply and flexibly expanded with components of the XN300 I/O system.

As a PLC and a data node, the XC300 allows a flexible, bespoke automation solution for equipment, systems and switch cabinet engineering. With respect to modular machine engineering, this provides a compact solution requiring only a minimum amount of space.

The XC300 has optional three independent Ethernet interfaces that enable the use of different network addresses. Segmenting, encoding and certificate-based transfer secure the equipment against unauthorized access. Additional on-board CAN interfaces and IO channels supplement the functions allowing for universal use.

Features

Programming and web visualization are carried out using CODESYS 3. The communication protocol OPC-UA (OPC Unified Architecture) is used for data exchange with other devices (M2M communication) or the cloud. This allows remote operation and maintenance.

- Operating system: LINUX
- Processor: ARM CORTEX A7 Dual Core at 960 MHz
- Internal memory: 512 MB RAM/ 128 MB flash/ 12 kB NV-RAM
- External memory: SD card
- Programming: CODESYS V3 (PLC and web visualization)
- Real-time clock: available (CAP buffered)
- RUN-/STOP-switch: available

Standards and Certifications

- cULus
- CE



Product Overview

XC300 Small Modular Programmable Logic Controllers



Catalog Number	XC-303-C32-002	XC-303-C21-001	XC-303-C11-000
Operating system	LINUX / NXP / 960 MHz	LINUX / NXP / 960 MHz	LINUX / NXP / 960 MHz
Memory (internal)	512 MB RAM / 128 MB flash / 128 kB NV-RAM	512 MB RAM / 128 MB flash / 128 kB NV-RAM	512 MB RAM / 128 MB flash / 128 kB NV-RAM
Memory (external)	Micro SD (maximum 32 GB)	Micro SD (maximum 32 GB)	Micro SD (maximum 32 GB)
EtherNet/IP	1 x 10/100/1000 MBit/s 2 x 10/100 MBit/s	1 x 10/100/1000 MBit/s 1 x 10/100 MBit/s	— 1 x 10/100 MBit/s
Interface	1 x CANopen (M/S) (iso) 1 x CANopen (M/S) 1 x RS-485 (iso)	1 x CANopen (M/S) (iso) — 1 x RS-485 (iso)	— 1 x CANopen (M/S) —
USB 2.0	1 x USB 2.0 Host (A)	1 x USB 2.0 Host (A)	—
Digital input/output	4 x 24 Vdc / 24 Vdc, 0.5 A	—	—
Real-time clock (RTC)	CAP (buffered)	CAP (buffered)	CAP (buffered)
Backplane	32 modules	32 modules	32 modules

Product Selection

The following variants are available:

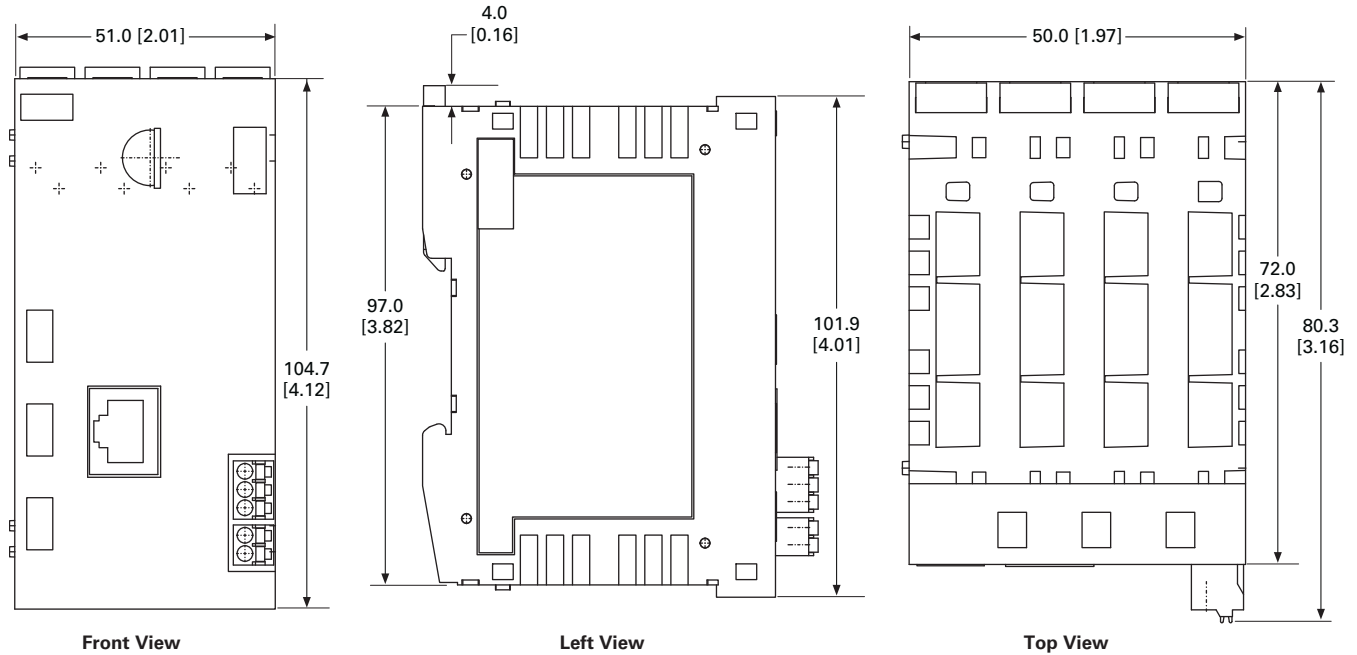
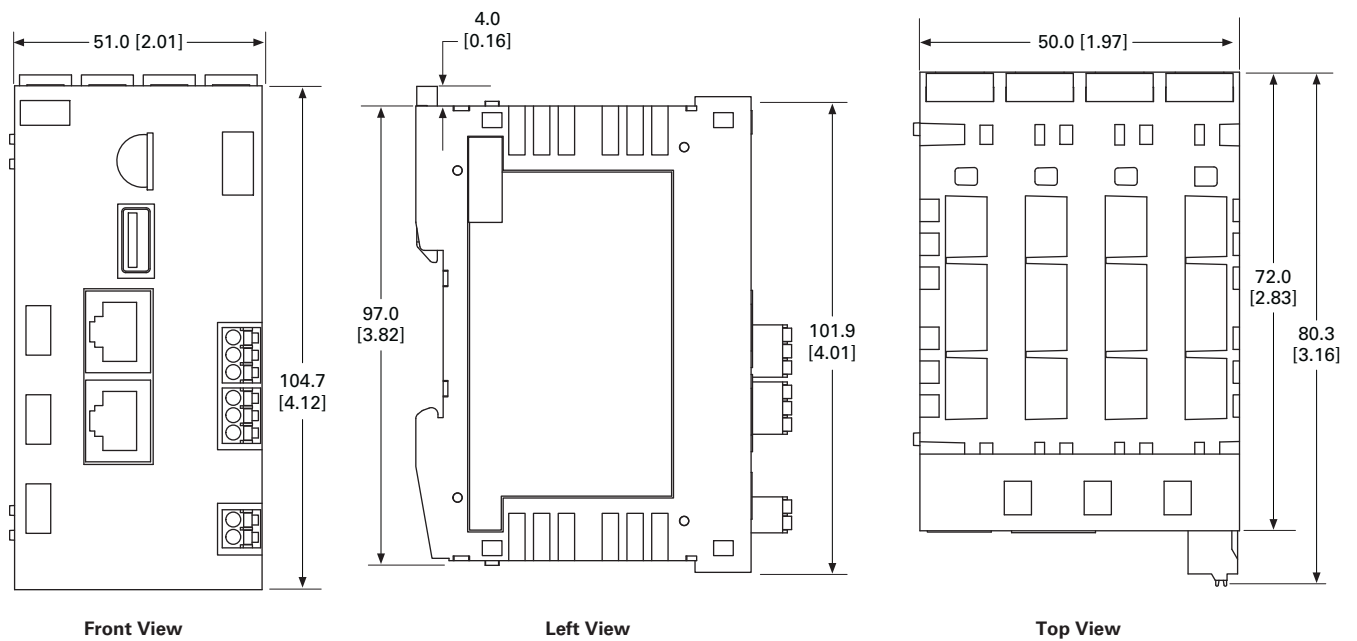
XC0-303-C_ XC300 Small Modular Programmable Logic Controllers



Description	Catalog Number
CAN1, CAN2, RS-485, ETH0, ETH1, ETH2, USB host, 4 input/output channels (24 Vdc, 0.5 A)	XC-303-C32-002
CAN1, RS-485, ETH1, ETH2, USB host	XC-303-C21-001
CAN2, ETH1	XC-303-C11-000

Dimensions

Approximate Dimensions in mm [Inches]

XC-303-C11-000_191082**XC-303-C21-001_191081**

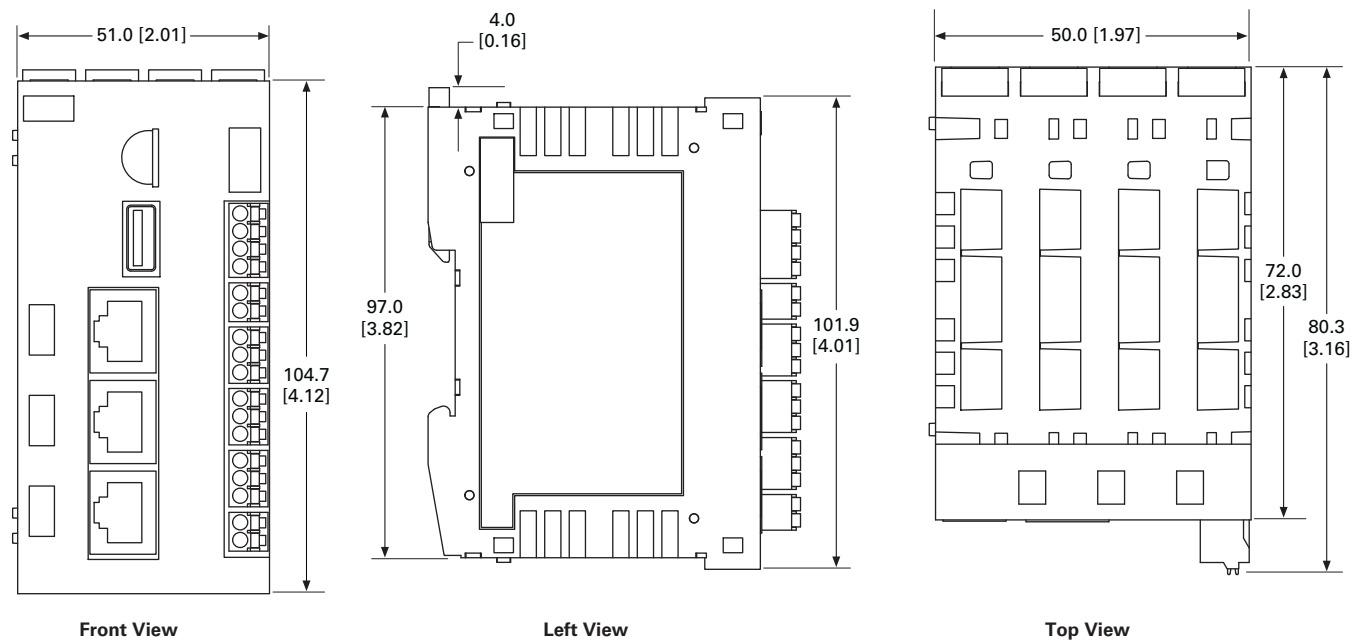
4.1

PLCs, PLC Software and I/O Products

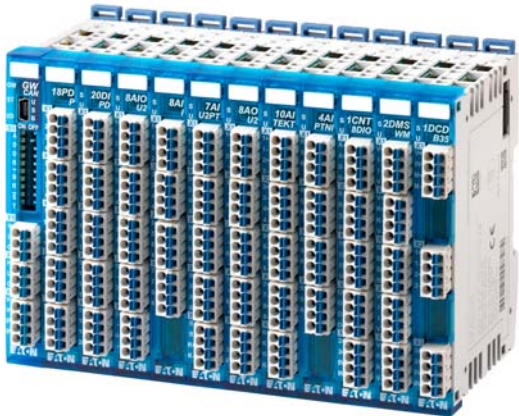
Programmable Logic Controllers

Approximate Dimensions in mm [Inches]

XC-303-C32-002_191080



XN300 Series Remote I/O



XN300 Modular and Remote I/ON

Product Description

The XN300 family of slice I/O modules offers the highest density I/O available on the market today. With a very cost-effective price per I/O point, it meets the needs of machinery OEMs for high-speed, low-cost and compact I/O systems. The CANopen Gateway provides a remote I/O connection that can connect to all Eaton XC PLCs and XV HMI-PLCs as well as many third-party PLCs. The tool-less assembly saves time in connecting modules on a DIN rail and the PUSH-IN technology makes wiring up the I/O a breeze. Status LEDs on all I/O points make it easy to quickly identify any wiring errors and to determine current signal conditions. The free XN300 Assist programming tool helps you to generate and check the I/O configuration and produce both electronic documentation and EDS files to simplify PLC configuration of XN300 I/O.

Coupled with the new XV-300 HMI-PLC, the XN300 I/O products provide a high-powered low-cost system solution for MOEMs. Bundled with Visual Designer and CODESYS 3 on an XV-300 HMI-PLC, you get the smallest, most cost-effective and powerful HMI-PLC and SCADA system available on the market. This industry-leading combination of compact I/O solutions and HMI-PLCs can significantly reduce the overall control panel size, helping MOEMs in the never-ending quest to reduce the size and cost of their machinery.

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Description	Page
Programmable Logic Controllers	
easyE4 Nano Programmable Logic Controllers . . .	V7-T4-2
XC152 Micro Programmable Logic Controllers . . .	V7-T4-9
XC300 Small Modular Programmable Logic Controllers	V7-T4-13
XN300 Modular and Remote I/ON Product Selection	V7-T4-18

Features

- Efficient—a wide range of discrete and analog input and output modules along with specialty modules focused on solving application needs
- Compact—up to 20 channels per slice (12.5 x 102 mm) helps reduce installation space and cost
- Simple—tool-free assembly with PUSH-IN & plug connection, with simple dismounting of plug connectors
- Fast identification of errors and signal conditions via LED status displays for all points
- Application specific, free, programmable module status LED
- CANopen or EtherCAT gateways connect up to 32 slices per block to connect I/O to both Eaton PLCs and HMI-PLCs and many third-party PLCs. Mini USB port to connect to XN300 Assist
- Ethernet switches to interconnect PLCs, HMIs and other devices
- XN300 Assist software tool to generate electronic documentation and EDS files for PLC configuration

Standards and Certifications

- CE Mark
- UL/cUL
- RoHS



Product Selection

XN-300

XN300

Description

Catalog Number

Gateway/Interface

Gateway to bus system CANopen

XN-312-GW-CAN

Gateway to bus system EtherCAT

XN-312-GW-EC

Digital Input

8 inputs, P, 24 Vdc, 5.0 ms

XN-322-8DI-PD

16 inputs, P, 24 Vdc, 5.0 ms

XN-322-16DI-PD

20 inputs, P, 24 Vdc, 5.0 ms

XN-322-20DI-PD

20 inputs, P, 24 Vdc, 0.5 ms

XN-322-20DI-PF

20 inputs, P, 24 Vdc, 2/4 CNT, 25 kHz

XN-322-20DI-PCNT

20 inputs, N, 24 Vdc, 5.0 ms

XN-322-20DI-ND

Digital Output

4 outputs, relay, N/O

XN-322-4DO-RNO

8 outputs, P, 24 Vdc, 0.5 A, sp

XN-322-8DO-P05

12 outputs, P, 24 Vdc, 1.7 A, sp

XN-322-12DO-P17

16 outputs, P, 24 Vdc, 0.5 A, sp

XN-322-16DO-P05

Digital Input/Output

4 inputs, 4 outputs, P, 24 Vdc

XN-322-8DIO-PD05

8 inputs, 8 outputs, P, 24 Vdc

XN-322-16DIO-PD05

8 inputs, 8 outputs, P, 24 Vdc, CNT

XN-322-16DIO-PC05

Analog Input

4 inputs, PT/NI/KTY/R, 2/3 cable

XN-322-4AI-PTNI

6 inputs, ± 10 V, 1 PT/KTY, U_{ref}

XN-322-7AI-U2PT

8 inputs, 0/4–20 mA

XN-322-8AI-I

8 inputs, thermocouple, 2 KTY

XN-322-10AI-TEKT

Analog Output

8 outputs, ± 10 V

XN-322-8AO-U2

Analog Input/Output

2 inputs, 2 outputs, ± 10 V, U_{ref}

XN-322-4AIO-U2

4 inputs, 4 outputs, ± 10 V, U_{ref}

XN-322-8AIO-U2

2 inputs, 2 outputs, 0/4–20 mA

XN-322-4AIO-I

4 inputs, 4 outputs, 0/4–20 mA

XN-322-8AIO-I

Technology Modules

Weigh module, 2 DMS, 24 bit

XN-322-2DMS-WM

DC motor driver, 12–30 V, brushed, 3.5 A

XN-322-1DCD-B35

Counter, 1 CNT, 125 kHz, 16 bit, 4 DO, 4 DI

XN-322-1CNT-8DIO

Serial, 2 SSI, RS-422, 32 bit

XN-322-2SSI

Power Supply Modules

Power supply, 4 x 24 Vdc/2 A, sp

XN-322-4PS-20

Passive Field Potential Distributors

Power distribution, 18 channels, GND

XN-322-18PD-M

Power distribution, 18 channels, VCC

XN-322-18PD-P

Ethernet Switches

Unmanaged 5x Ethernet 10/100 Mbit/s

XN-332-5ETH-UMS

easySoft 7



Contents

Description

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PLC Software

easySoft 7 Software

XSoft-CODESYS-3 Software **V7-T4-20**

4

easySoft 7 Software

Product Description

The easySoft software is used to program the easy programmable logic controllers. The Windows-based software provides straightforward circuit diagram input and editing, and the diagrams can be displayed in the format desired. It supports users who are configuring, programming and defining parameters for the easy nano PLCs. Selection menus and drag and drop functions simplify circuit diagram creation. easySoft 7 is only compatible with the easyE4 nano programmable logic controller.

Application Description

- Logic programming
- Ladder Diagram (LD)
- Structured Text (ST)
- Function Block Diagram (FBD)
- easy Device Programming (EDP)
- Modbus TCP Master and Slave programming

Features

User function blocks

There is a library with user function blocks already defined. Function blocks include:

- Weekly timer
- Year time switch
- Alarm function block
- Data logger
- Interrupt function blocks: counter-controller, timer-controller and edge-controlled

User-defined function blocks

The user creates the code for this subprogram and can reuse it as often as they want. The user-defined function blocks are added to the library. Different programming languages can be mixed by writing the user function block in a different language than the main program.

Simulation

Users can also test the application when the easyE4 is not connected to the process. easySoft includes an integrated offline simulation tool that allows users to test a circuit diagram before commissioning.

System Requirements

- Windows XP and Windows 7 32-bit systems

Product Selection

easyE4 Starter Sets

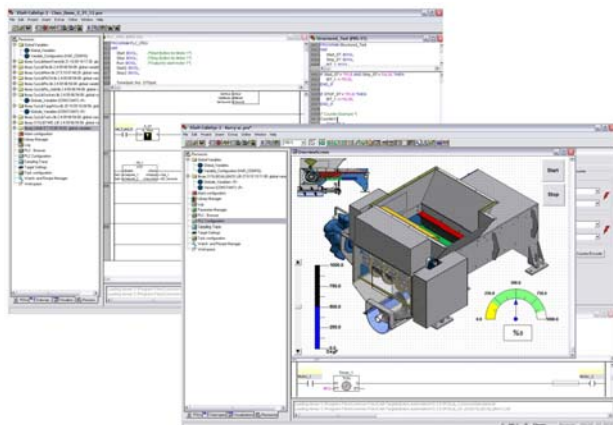
Description	Catalog Number
Basic device, UC, patch cable, easySoft license code, easyE4 flyer	EASY-BOX-E4-UC1
Basic device, DC, patch cable, easySoft license code, easyE4 flyer	EASY-BOX-E4-DC1

Accessories

Description	Connector	Caps	Catalog Number
Spare parts package, easyConnect	3	3	EASY-E4-CONNECT

Software

Description	Catalog Number
Programming software, easySoft, easyE4 range	EASYSOFT-SWLIC

XSoft-CODESYS-3 Software

4

XSoft-CODESYS-3 Software**Product Description****Combined Logic and Visualization Development****IEC 61131-3 Logic Programming**

- Ladder Diagram (LD)
- Structured Text (ST)
- Sequential function chart (SFC)
- Function block diagram (FBD)
- Freely definable function block chart/continuous function chart (CFC)
- Instruction List (IL)

Target Visualization

Integrated design of Operator Interface screens for the XV series. Visualization and logic developed as part of the same project. Simplifies screen design and always keeps the Logic and visualization in synch.

Web Visualization

Optionally XSoft-CODESYS-3 can automatically generate XML-based runtime screens to make the screens from the XV accessible remotely using a web browser with a JavaScript plug-in such as Internet Explorer®, Firefox® and others.

Features**Project Development**

- Automatic variable declaration
- On line editing
- Pop-up variable and function search/pick tools
- Automatic formatting and color coding of logic/declaration text
- Re-usable Visual-Logic Function Blocks

Debugging and commissioning

XSoft-CODESYS-3 offers you a number of important functions for debugging, testing and commissioning your XV applications quickly and efficiently.

All these features are available as soon as you log on to the XV (online mode) over an Ethernet connection.

Simulation

Users can also test the application when the XV is not connected to the process. This is possible thanks to the integrated online simulation feature. Simulation supports both the screens and logic that have been designed using XSoft-CODESYS.

Contents**Description**

PLC Software

easySoft 7 Software

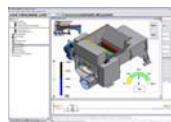
XSoft-CODESYS-3 Software

Page**V7-T4-19****Advanced Features**

- Up to 16 time and/or event driven tasks per project
- Each task can include multiple logic programs or subroutines
- Programs and screen designs can be exported and imported to support reuse
- Powerful, built-in function block libraries
- Ability to create user-defined function blocks
- Fieldbus Configurator for CANopen, PROFIBUS-DP and SmartWire-DT device I/O
- Ethernet and serial communication function blocks (OPC server, UDP, TCP/IP, FTP client/ server, Modbus Master/Slave, email, SMS, and more)
- 8-level password protection
- Web access selectable per screen
- System function libraries (OS Storage Card, and more)
- Online and historical alarms
- Online and historical trends

System Requirements

Windows XP and Windows 7
32-bit systems

Product Selection**XSoft-CODESYS-3****XSoft-CODESYS-3 Software**

Description	Catalog Number
Single Seat License	SW-XSOFT-CODESYS-3-S
Multiple Seat License (3)	SW-XSOFT-CODESYS-3-M