PLCs, PLC Software and I/O Products

easyE4 Nano PLCs

XC152 Series PLCs

XC300 Small Modular PLCs

XN300 Series Remote I/O

easyE4 Nano Programmable Logic Controllers

Contents

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

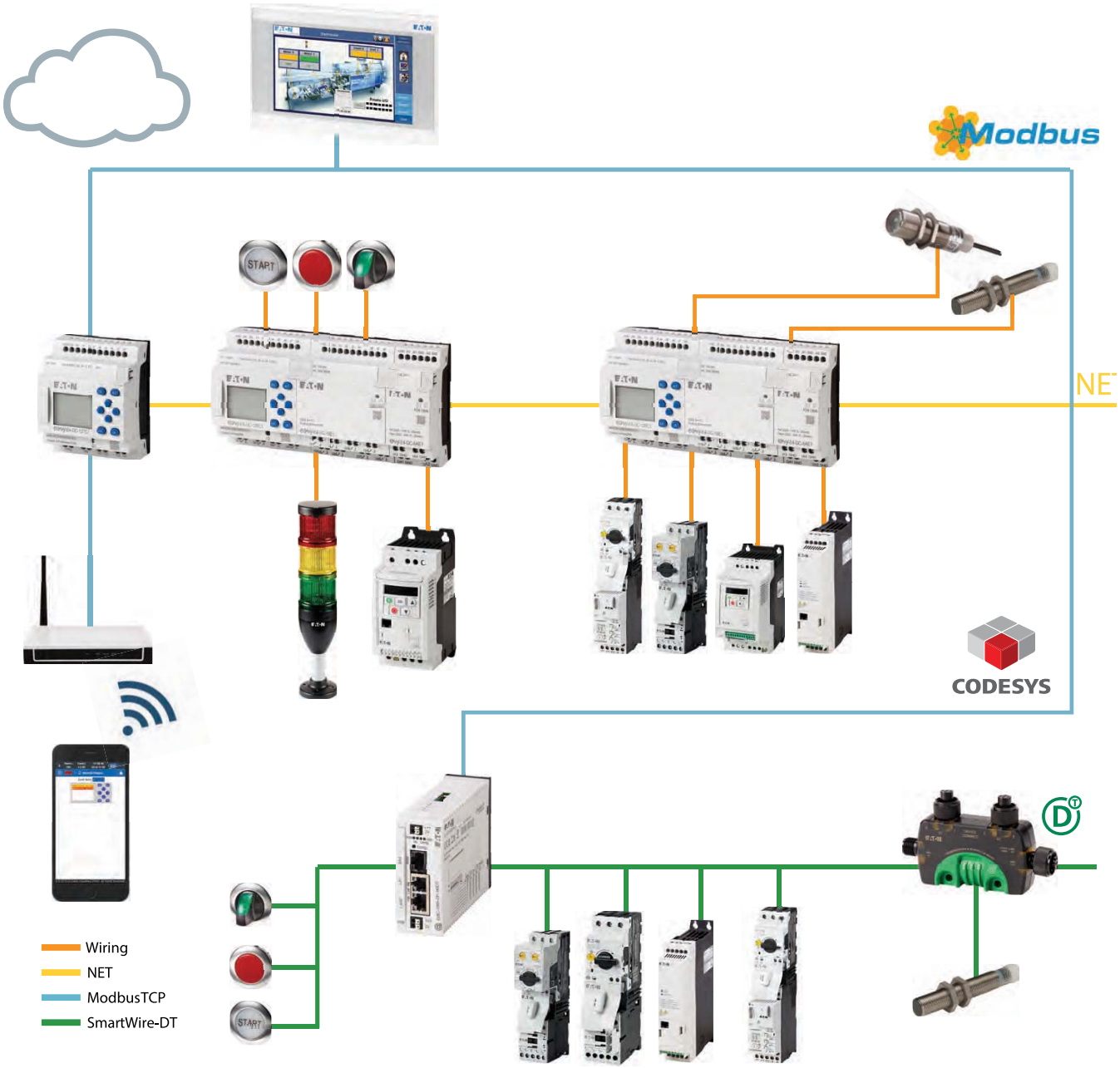
Standards and Certifications

- 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

c UL us Listed

System Overview

easyE4



Catalog Number Selection

easyE4 Nano Programmable Logic Controllers

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

Power Supply
AC = 100–240 Vac
DC = 24 Vdc
UC = 12/24 Vdc, 24 Vac

Number I/O
1 = 1
… = …
99 = 99

Function
R = Output relay
T = Output transistor
A = Analog device 0–10 V/0–20 mA IA/QA
P = Analog device PT100/100

Base/Extension
E = Extension module
C = Base device with clock

Display
X = Without display

Version Number
1 = 1
… = …
9 = 9

Push In
P = Push in connection

Product Selection

Basic Devices

EASY-E4-UC-12_

easyE4 Base Devices

Description	Input Digital	Input Digital Analog	Output Transistor	Output Relay (8 A)	Features Display + Keypad	Features Real-time Clock	Features Ethernet	Power Supply	Catalog Number
12/24 Vdc, 24 Vac, display, keypad, screw terminal	4	4	—	4	—	■	■	12/24 Vdc/ 24 Vac	**EASY-E4-UC-12RC1**
12/24 Vdc, 24 Vac, screw terminal	4	4	—	4	—	■	■	12/24 Vdc/ 24 Vac	**EASY-E4-UC-12RCX1**
24 Vdc, display, keypad, screw terminal	4	4	4	—	■	■	■	24 Vdc	**EASY-E4-DC-12TC1**
24 Vdc, screw terminal	4	4	4	—	—	■	■	24 Vdc	**EASY-E4-DC-12TCX1**
100–240 Vac/Vdc, display, keypad, screw terminal	8	—	—	4	■	■	■	100–240 Vac/Vdc	**EASY-E4-AC-12RC1**
100–240 Vac/Vdc, screw terminal	8	—	—	4	—	■	■	100–240 Vac/Vdc	**EASY-E4-AC-12RCX1**

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 basic device by plug-in connector.

EASY-E4_

easyE4 Expansion Devices

Description	Input Digital	Input Digital Analog	Output Relay (5 A)	Output Transistor	Output Analog	Power Supply	Catalog Number
Digital input/output 12/24 Vdc, 24 Vac screw terminal	4	—	4	—	—	12/ 24 Vdc 24 Vac	**EASY-E4-UC-8RE1**
Digital input/output 12/24 Vdc, 24 Vac screw terminal	8	—	8	—	—	12/ 24 Vdc 24 Vac	**EASY-E4-UC-16RE1**
Transistor input/output, 0.5 A screw terminal	4	—	—	4	—	24 Vdc	**EASY-E4-DC-8TE1**
Transistor input/output, 0.5 A screw terminal	8	—	—	8	—	24 Vdc	**EASY-E4-DC-16TE1**
Digital input/output 100/110/230/240 Vac screw terminal	4	—	4	—	—	100–240 Vac/Vdc	**EASY-E4-AC-8RE1**
Digital input/output 100/110/230/240 Vac screw terminal	8	—	8	—	—	100–240 Vac/Vdc	**EASY-E4-AC-16RE1**
Analog input/output; 0–10 V / 0/4–20 mA, 12 bit, each channel configurable screw terminal	—	4	—	—	2	24 Vdc	**EASY-E4-DC-6AE1**
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, screw terminal	—	4	—	—	—	24 Vdc	**EASY-E4-DC-4PE1**

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).

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
easyConnect—spare parts package	**EASY-E4-CONNECT1**
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**

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 Base unit	EASY-E4-UC-12RCX1 Base unit	EASY-E4-UC-8RE1 Expansion unit	EASY-E4-UC-16RE1 Expansion unit	EASY-E4-DC-6AE1 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				

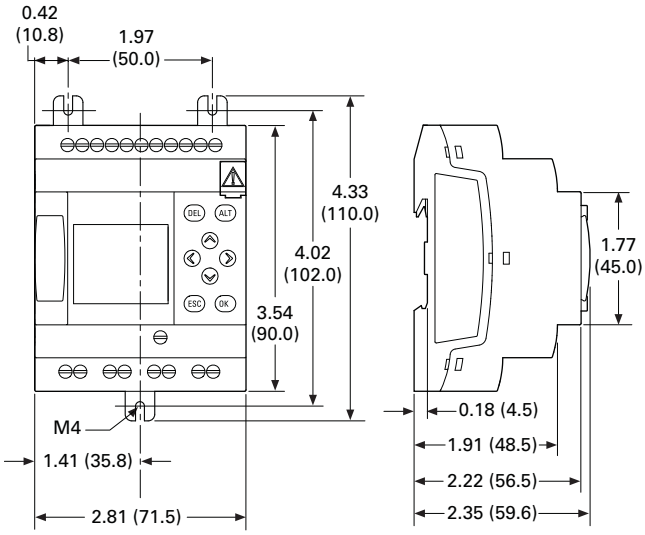
easyE4 Basic Devices, continued

Description Type of Device	EASY-E4-DC-12TC1 Base unit	EASY-E4-DC-12TCX1 Base unit	EASY-E4-DC-8TE1 Expansion unit	EASY-E4-DC-16TE1 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			

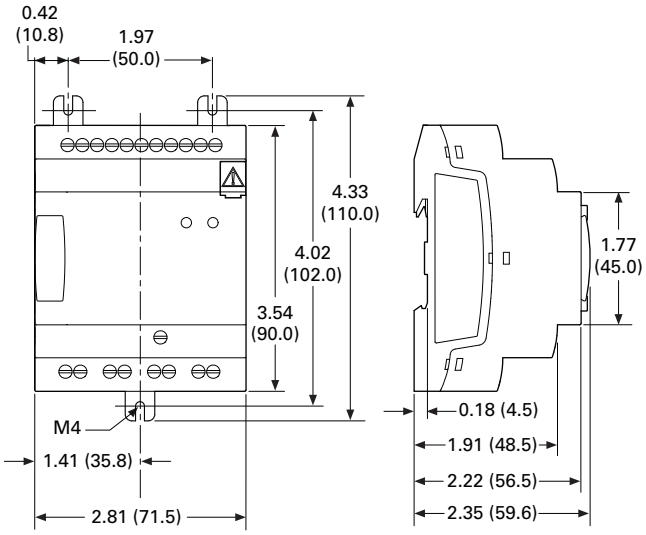
Dimensions

Approximate Dimensions in Inches (mm)

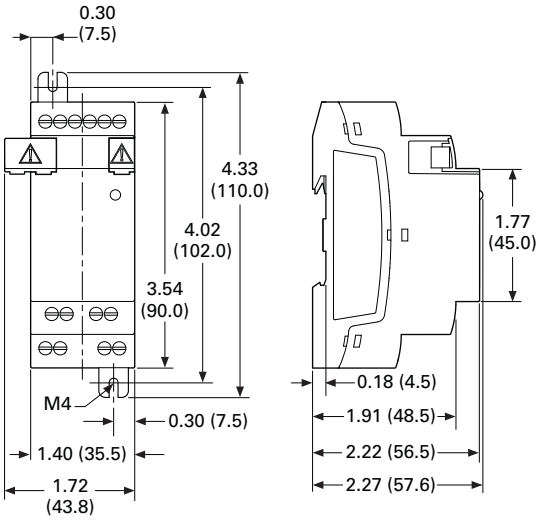
Base Devices—With Display



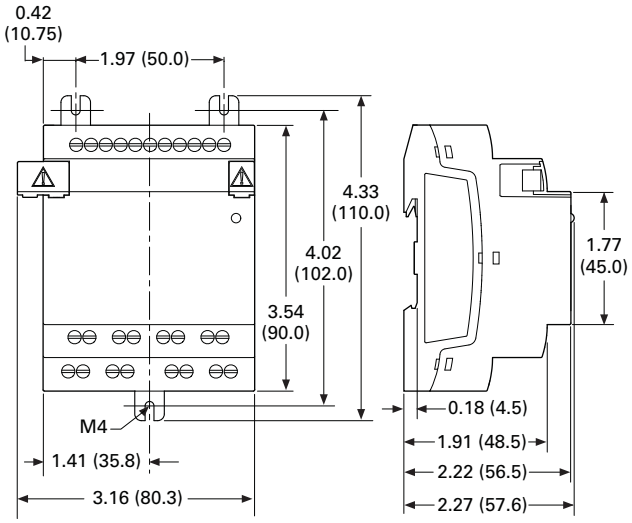
Base Devices—Without Display



Slim Expansion Module



Large Expansion Module



XC152 Series Programmable Logic Controllers

Contents

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

XC-152 – E6 – 11

Family
XC-152 = Windows CE OS CODESYS firmware

Features Base Unit Variant	Features Additional COMM Options
D = Ethernet, RS-485 and USB host **E** = SmartWire-DT, Ethernet and USB host	**3** = None **6** = 1-CANopen **8** = 1-PROFIBUS-DP

Mounting
11 = DIN rail or panel mount

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	Y	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

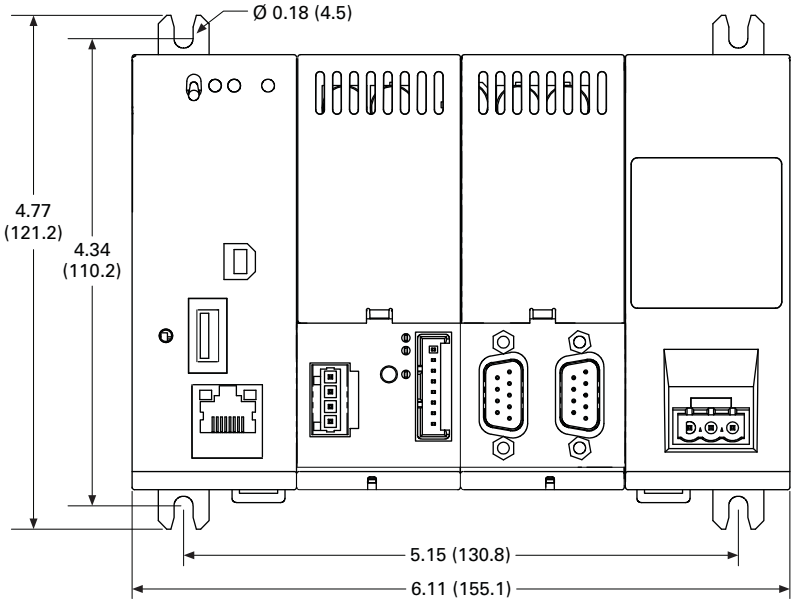
Note

① Interface not galvanically isolated.

Dimensions

Approximate Dimensions in Inches (mm)

XC152 Series Programmable Logic Controllers



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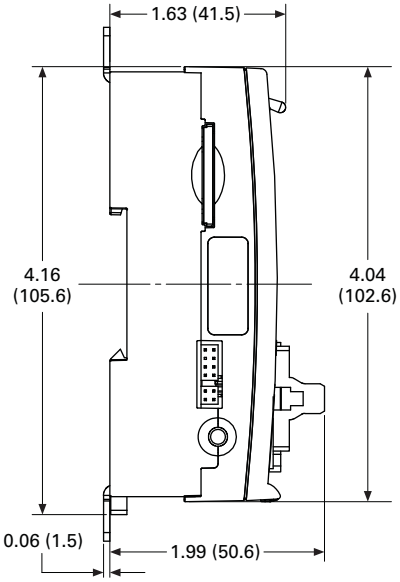


Without Fixing Brackets

XC300 Small Modular Programmable Logic Controllers

Contents

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

c UL us Listed 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	1 x 10/100/1000 MBit/s	—
	2 x 10/100 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) (iso)	—
	1 x CANopen (M/S)	—	1 x CANopen (M/S)
	1 x RS-485 (iso)	1 x RS-485 (iso)	—
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_

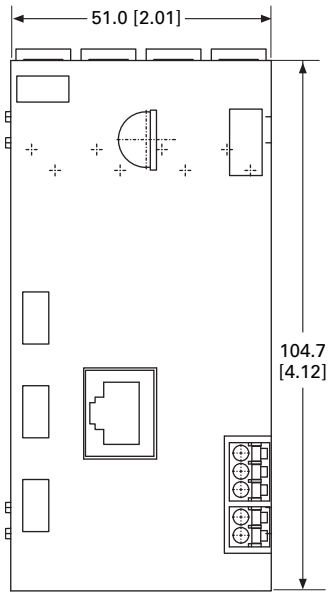
XC300 Small Modular Programmable Logic Controllers

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**

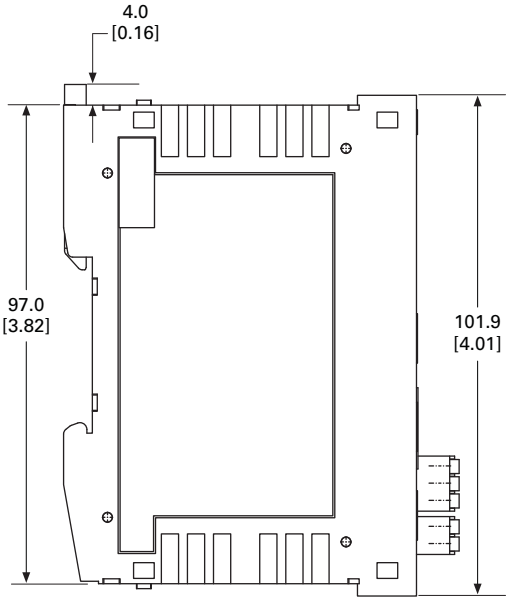
Dimensions

Approximate Dimensions in mm [Inches]

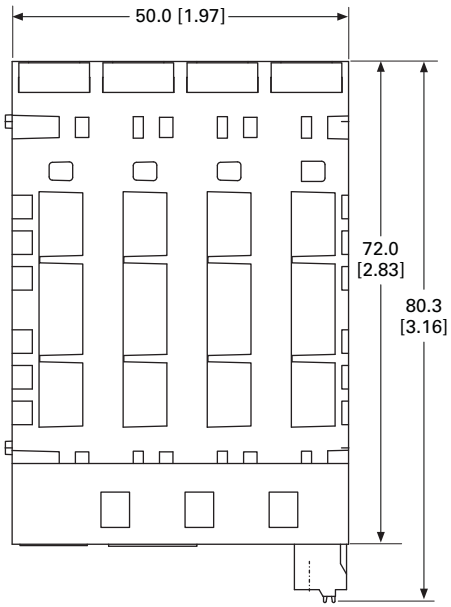
XC-303-C11-000_191082



Front View

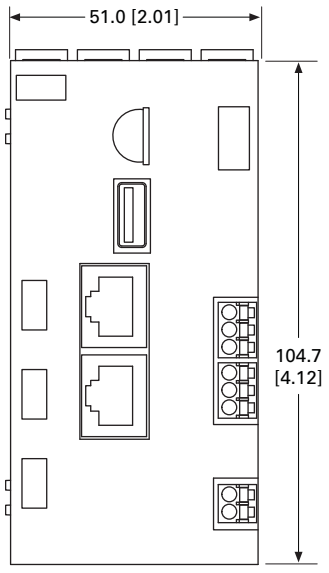


Left View

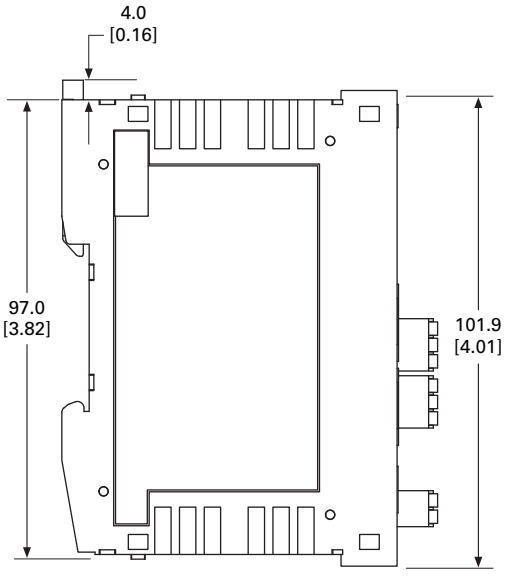


Top View

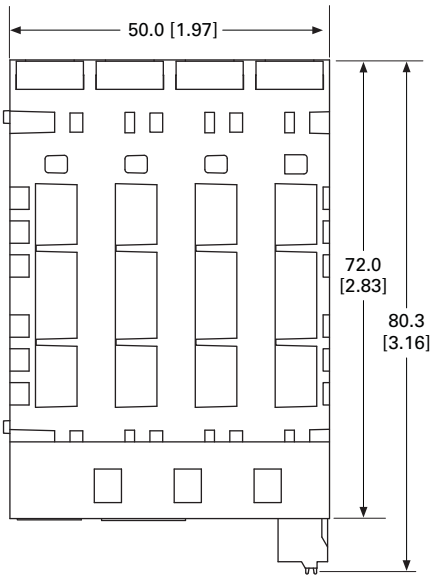
XC-303-C21-001_191081



Front View



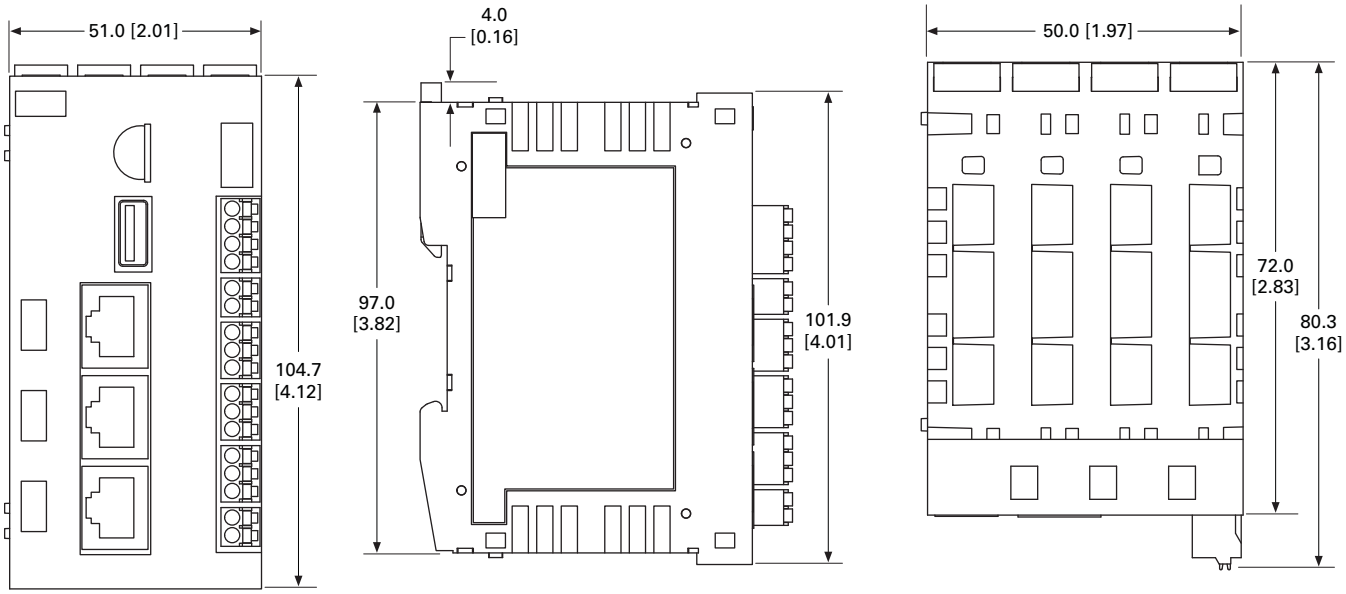
Left View



Top View

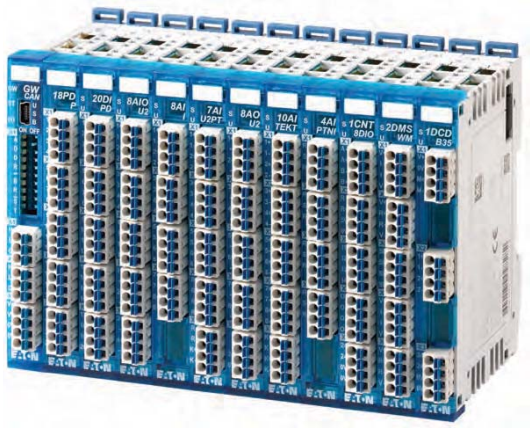
Approximate Dimensions in mm [Inches]

XC-303-C32-002_191080



Front View **Left View** **Top View**

XN300 Series Remote I/O



Contents

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.

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 Gateway connects 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
- 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**
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**

XN-322_

XN300 Series Remote I/O

Description	Style Number	Catalog Number
Digital Inputs		
Digital, 20 input, P, 24 Vdc, 5.0 ms	178786	**XN-322-20DI-PD**
Digital, 20 input, P, 24 Vdc, 0.5 ms	178768	**XN-322-20DI-PF**
Digital, 20 input, P, 24 Vdc, 2/4 cnt, 25 kHz	178767	**XN-322-20DI-PCNT**
Counters		
Counter, 1 cnt, 125 kHz, 16 bit, 4 DO, 4 DI	178795	**XN-322-1CNT-8DIO**
Digital Outputs		
Digital,16 output, P, 24 Vdc, 0.5 A, sp	178787	**XN-322-16DO-P05**
Digital,12 output, P, 24 Vdc, 1.7 A, sp	178788	**XN-322-12DO-P17**
Analog		
Analog, 6 input, ±10 V, 1 PT/KTY, U_{ref}	178789	**XN-322-7AI-U2PT**
Analog, 8 input, 0/4–20 mA	179288	**XN-322-8AI-I**
Analog, 8 input, thermo element, 2 KTY	178792	**XN-322-10AI-TEKT**
Analog, 4 input, PT/NI/KTY/R, 2/3 wire	178772	**XN-322-4AI-PTNI**
Analog, 8 output, ±10 V	178790	**XN-322-8AO-U2**
Analog, 4 In-/4 output, ±10 V, U_{ref}	178791	**XN-322-8AIO-U2**
Specialty		
Weigh module, 2 DMS, 24 bit	178793	**XN-322-2DMS-WM**
DC-motor driver, 12–30 V, brush, 3.5 A	178794	**XN-322-1DCD-B35**
Power		
Power supply, 4 x 24 Vdc / 2 A, sp	178796	**XN-322-4PS-20**
Power distribution, 18 channel, GND	178769	**XN-322-18PD-M**
Power distribution, 18 channel, VCC	178770	**XN-322-18PD-P**
Serial and SSI		
Serial, 2 SSI, RS-422, 32 bit	178773	**XN-322-2SSI**
Gateways		
CANopen Gateway module (supports 32 slices)	178782	**XN-312-GW-CAN**

easySoft 7

Contents

easySoft 7 Software

Product Description

The easySoft software is used to program 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. 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)

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

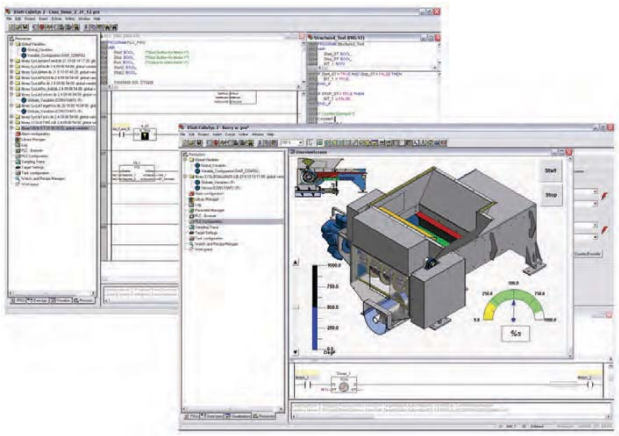
Description	Connector	Caps	Catalog Number
Spare parts package, easyConnect	3	3	**EASY-E4-CONNECT**

Software

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

4

XSoft-CODESYS-3 Software



Contents

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.

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**

Programmable Relays

Contents

Legacy PLCs

Product Overview

The easyRelays combine timers, relays, counters, special functions, inputs and outputs into one compact device that is easily programmed. The easyRelay family of products provides an exceptional level of flexibility together with a substantial savings of commissioning time and effort.

The easyRelays are available in more than 35 styles that support from 12 I/O up to a network of up to 320 I/O points, providing the ideal solution for lighting, energy management, industrial control, irrigation, pump control, HVAC and home automation.

Once easyRelays are installed, changes are easily accomplished through front panel programming, eliminating the need to change wiring and minimizing downtime.

The easy802/806 relays are even more powerful than the easy800 series and include an integrated SmartWire-DT gateway. Conventional hardwiring to pushbuttons, selector switches, pilot devices and contactors can now be eliminated, allowing for a dramatic increase in panel wiring productivity. For more information on SmartWire-DT and how it can increase productivity, go to *www.eaton.com/smartwiredt*.

Application Description

The easyRelays excel 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

See publication no. **AP05013001E** for the easyRelay application guide. Download from www.eaton.com/easyrelays.

easy500/700/800 Programmable Relays

Contents

easy500/700/800 Programmable Relays

Product Description

Three families make up the easyRelay programmable relay product line. All models are available with and without displays. DIN rail mounted.

easy500—for controlling small applications with up to 12 input/output signals. Connectable to Ethernet.

easy700—for controlling medium-sized applications with 20 I/O points (expandable to 40 I/O points). Connectable to Ethernet and bus systems.

easy800—for controlling large-scale applications with 20 points, expandable to 40 points locally, and expandable using the easyNet network up to 320 I/O points. Connectable to Ethernet and bus systems.

The easyNet integrated network provides easy and inexpensive linking of up to eight easy800 devices over a distance of up to 1000 meters. Each easy800 device can run its own program, or be used as a distributed input/output module. Connect up to eight controllers with up to 40 I/O to obtain 320 I/O.

Standards

- CSA C22.2 No. 142-M1987
- CSA C22.2 No. 213-M1987
- EN 55011
- EN 50178
- EN 61131-2
- IEC EN 61000-4
- IEC 60068-2-6
- IEC 60068-2-27
- UL 508

Certifications

- UL
- CSA
- CE
- CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C
- C-Tick
- GOST-R
- Ukrain-GOST

Shipping Approvals

- Bureau Veritas
- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register of Shipping

Catalog Number Selection

easy500/700/800

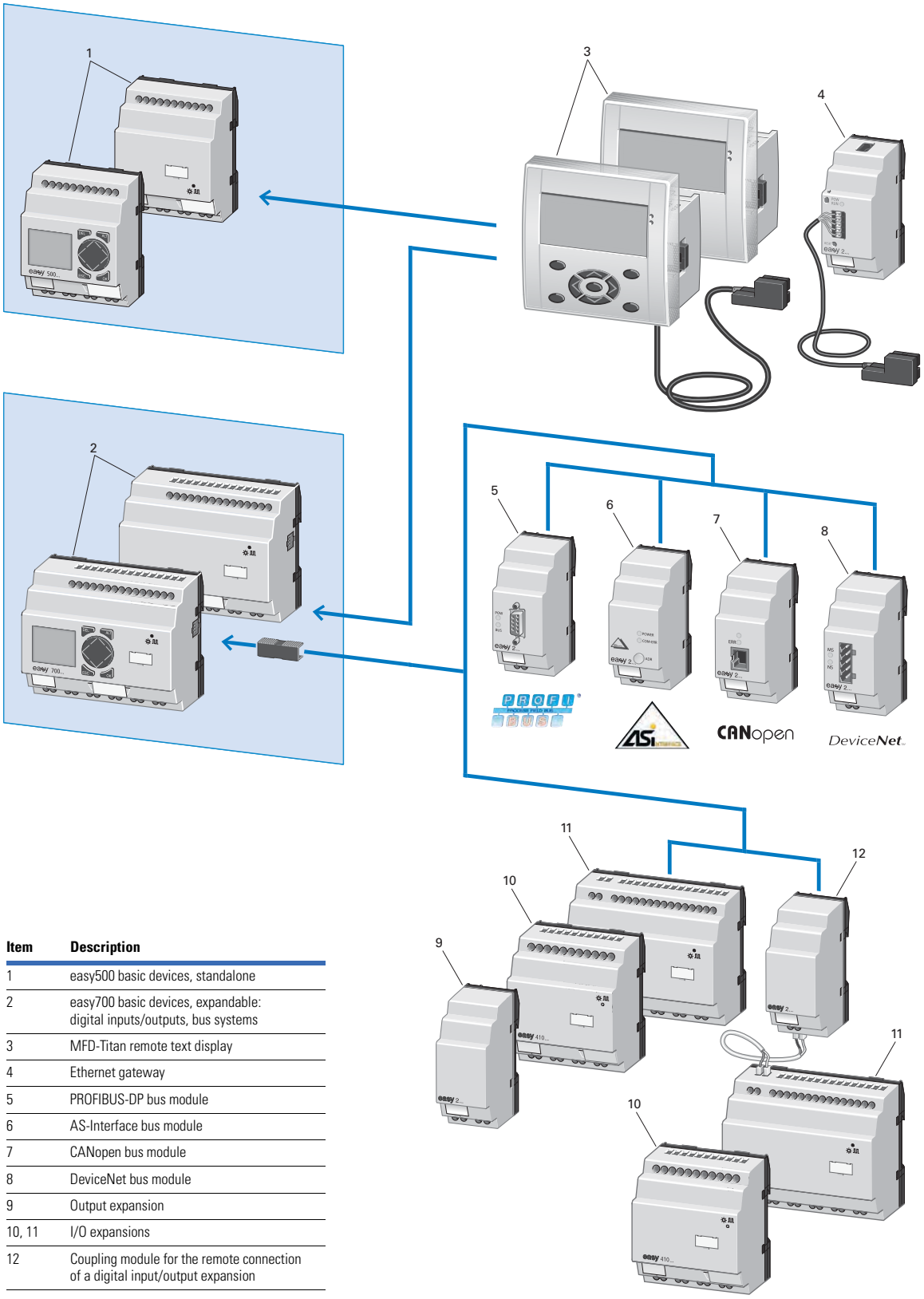
EASY512 - AC - R C _

Module Type	Digital Inputs	Digital Outputs	Clock	Display
EASY5xx = 500 Series **EASY7xx** = 700 Series **EASY8xx** = 800 Series	**AB** = 24 Vac **AC** = 110–240 Vac **DA** = 12 Vdc **DC** = 24 Vdc	**R** = Relay **T** = Transistor	**C** = Clock **Blank** = No clock	**Blank** = Display **X** = No display

Note: Not all combinations are possible. See selection tables.

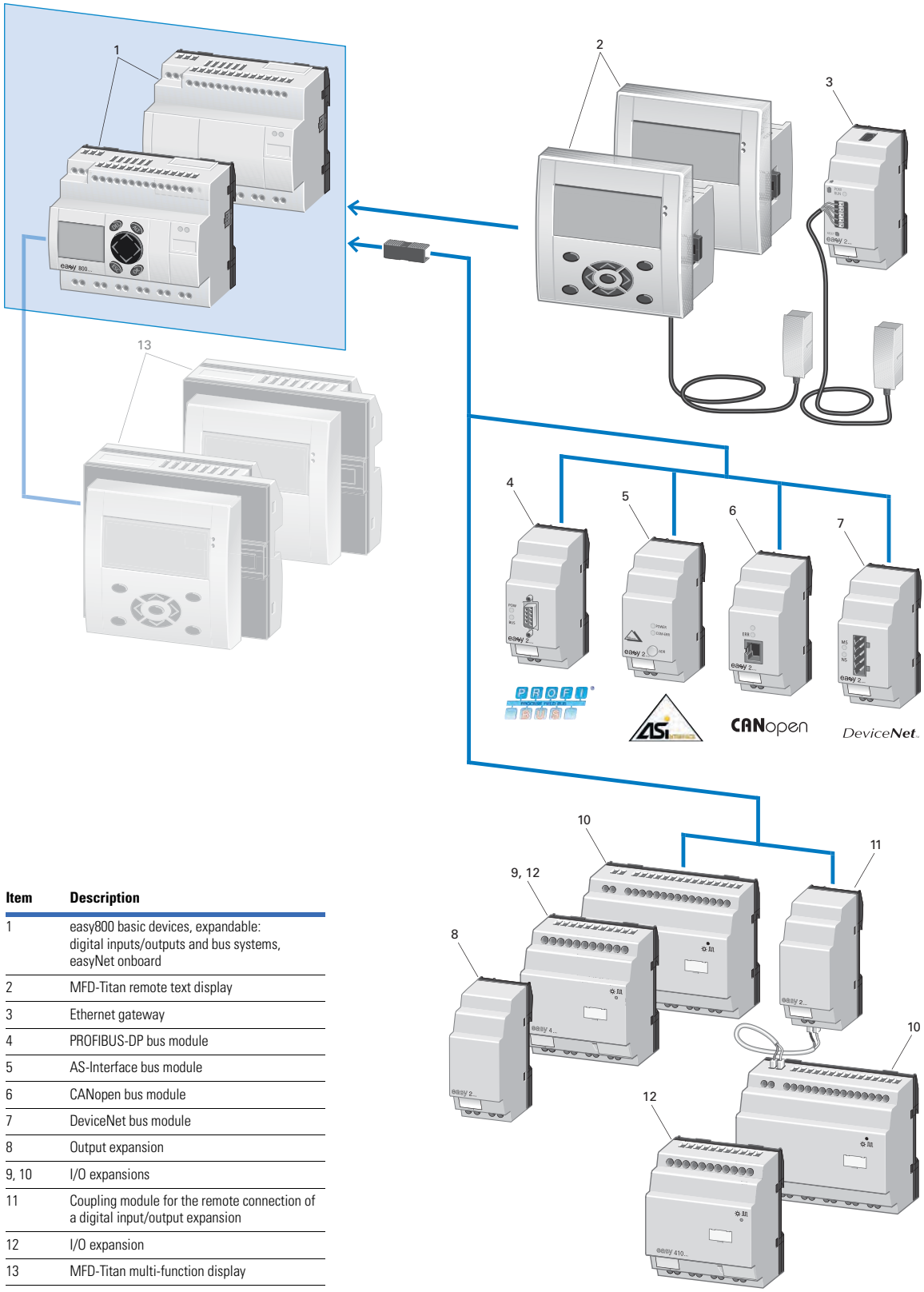
System Overview

easy500/700 Programmable Relays



Item	Description
1	easy500 basic devices, standalone
2	easy700 basic devices, expandable: digital inputs/outputs, bus systems
3	MFD-Titan remote text display
4	Ethernet gateway
5	PROFIBUS-DP bus module
6	AS-Interface bus module
7	CANopen bus module
8	DeviceNet bus module
9	Output expansion
10, 11	I/O expansions
12	Coupling module for the remote connection of a digital input/output expansion

easy800 Programmable Relay



Item	Description
1	easy800 basic devices, expandable: digital inputs/outputs and bus systems, easyNet onboard
2	MFD-Titan remote text display
3	Ethernet gateway
4	PROFIBUS-DP bus module
5	AS-Interface bus module
6	CANopen bus module
7	DeviceNet bus module
8	Output expansion
9, 10	I/O expansions
11	Coupling module for the remote connection of a digital input/output expansion
12	I/O expansion
13	MFD-Titan multi-function display

Product Selection

easy500—Display

easy500—No Display

easy500 Programmable Relays (Standalone)

Description	Inputs 24 Vac	110–240 Vac	12 Vdc	24 Vdc	Analog ①	Outputs Relay	Transistor	Catalog Number
Display								
12 I/O, no clock	—	8	—	—	—	4	—	**EASY512-AC-R**
	—	—	—	8	2	4	—	**EASY512-DC-R**
12 I/O, clock	8	—	—	—	2	4	—	**EASY512-AB-RC**
	—	8	—	—	—	4	—	**EASY512-AC-RC**
	—	—	8	—	2	4	—	**EASY512-DA-RC**
	—	—	—	8	2	4	—	**EASY512-DC-RC**
	—	—	—	8	2	—	4	**EASY512-DC-TC**
No Display								
12 I/O, clock	8	—	—	—	2	4	—	**EASY512-AB-RCX**
	—	8	—	—	—	4	—	**EASY512-AC-RCX**
	—	—	8	—	2	4	—	**EASY512-DA-RCX**
	—	—	—	8	2	4	—	**EASY512-DC-RCX**
	—	—	—	8	2	—	4	**EASY512-DC-TCX**

easy700—Display

easy700—No Display

easy700 Programmable Relays (Expandable and Networkable)

Description	Inputs 24 Vac	110–240 Vac	12 Vdc	24 Vdc	Analog ①	Outputs Relay	Transistor	Catalog Number
Display								
18 I/O, clock	12	—	—	—	4	6	—	**EASY719-AB-RC**
	—	12	—	—	—	6	—	**EASY719-AC-RC**
	—	—	12	—	4	6	—	**EASY719-DA-RC**
	—	—	—	12	4	6	—	**EASY719-DC-RC**
20 I/O, clock	—	—	—	12	4	—	8	**EASY721-DC-TC**
No Display								
18 I/O, clock	12	—	—	—	4	6	—	**EASY719-AB-RCX**
	—	12	—	—	—	6	—	**EASY719-AC-RCX**
	—	—	12	—	4	6	—	**EASY719-DA-RCX**
	—	—	—	12	4	6	—	**EASY719-DC-RCX**
20 I/O, clock	—	—	—	12	4	—	8	**EASY721-DC-TCX**

easy800—Display

easy800—No Display

easy800 Programmable Relays (Expandable and Networkable)

Description	Inputs 110–240 Vac	24 Vdc	Analog ①	Outputs Relay	Transistor	Analog	Catalog Number
Display							
18 I/O, clock	12	—	—	6	—	—	**EASY819-AC-RC**
	—	12	4	6	—	—	**EASY819-DC-RC**
19 I/O, clock	—	12	4	6	—	1	**EASY820-DC-RC**
20 I/O, clock	—	12	4	—	8	—	**EASY821-DC-TC**
21 I/O, clock	—	12	4	—	8	1	**EASY822-DC-TC**
No Display							
18 I/O, clock	12	—	—	6	—	—	**EASY819-AC-RCX**
	—	12	4	6	—	—	**EASY819-DC-RCX**
19 I/O, clock	—	12	4	6	—	1	**EASY820-DC-RCX**
20 I/O, clock	—	12	4	—	8	—	**EASY821-DC-TCX**
21 I/O, clock	—	12	4	—	8	1	**EASY822-DC-TCX**

Note

① Analog inputs optional. Use of analog inputs will result in a decrease in the same number of available digital inputs.

Technical Data and Specifications

easy500 Series

Type	EASY512-AB…	EASY512-AC…	EASY512-DA…	EASY512-DC-R…	EASY512-DC-TC.
Supply voltage	24 Vac	100–240 Vac	12 Vdc	24 Vdc	24 Vdc
Heat dissipation	5 VA	5 VA	2 W	2 W	2 W
Continuous current outputs ①	8 A	8 A	8 A	8 A	0.5 A
Short-circuit proof with power factor 1	Line protection B16, 600 A				—
Short-circuit proof with power factor 0.7…0.7	Line protection B16, 900 A				—
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet				
Connection cables					
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20	IP20	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1, 2, 3, 4				
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C
Hazardous location	CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C				

easy700 Series

Type	EASY719-AB…	EASY719-AC…	EASY719-DA…	EASY719-DC-RC…	EASY721-DC-TC.
Supply voltage	24 Vac	100–240 Vac	12 Vdc	24 Vdc	24 Vdc
Heat dissipation	7 VA	10 VA	3.5 W	3.5 W	3.5 W
Continuous current outputs ①	8 A	8 A	8 A	8 A	0.5 A
Short-circuit proof with power factor 1	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	—
Short-circuit proof with power factor 0.7…0.7	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	—
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet				
Connection cables					
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20	IP20	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1, 2, 3, 4				
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C
Hazardous location	CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C				

easy800 Series

Type	EASY819-AC…	EASY819-DC-RC…	EASY820-DC-RC…	EASY821-DC-TC…	EASY822-DC-TC.
Supply voltage	100–240 Vac	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Heat dissipation	10 VA	3.4 W	3.4 W	3.4 W	3.4 W
Continuous current outputs ①	8 A	8 A	8 A	8 A	0.5 A
Short-circuit proof with power factor 1	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	—
Short-circuit proof with power factor 0.7…0.7	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	—
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet				
Connection cables					
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20	IP20	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1, 2, 3, 4				
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C
Hazardous location	CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C				

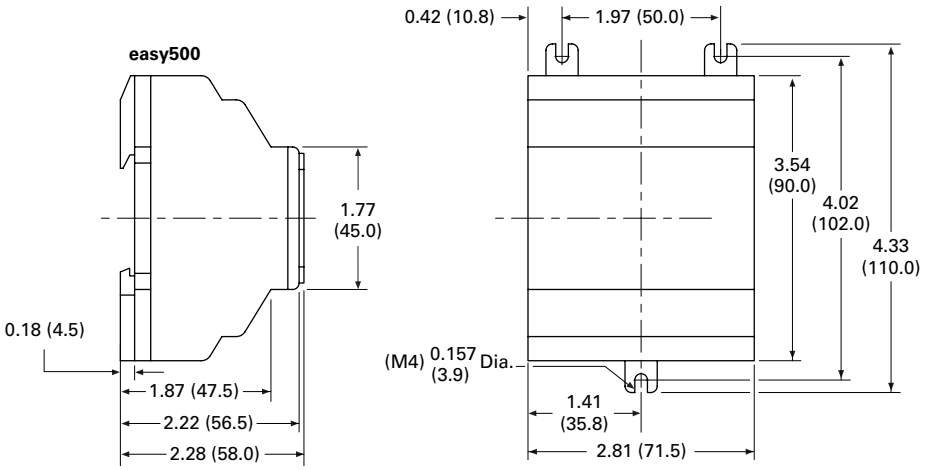
Note

① Relay = 8 A (10 A to UL) with resistive load, 3 A with inductive load. Transistor outputs = 0.5 A/24 Vdc, maximum four outputs switchable in parallel.

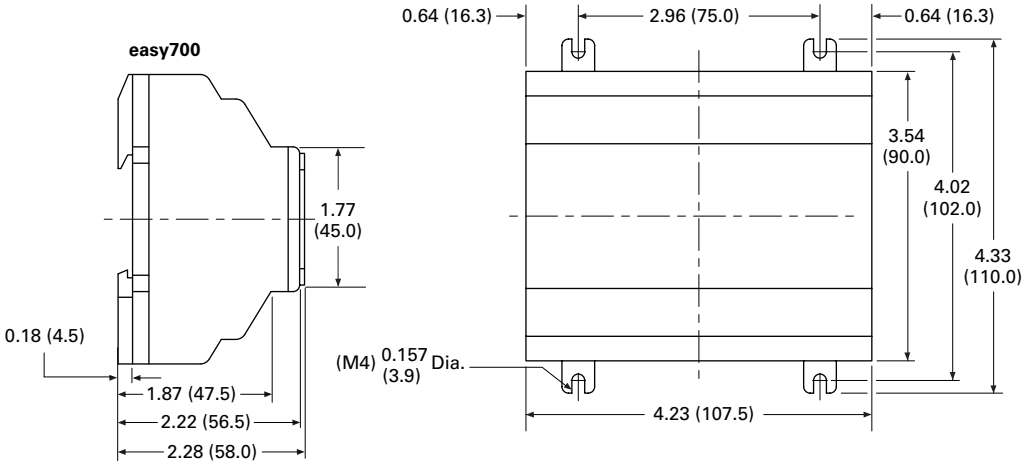
Dimensions

Approximate Dimensions in Inches (mm)

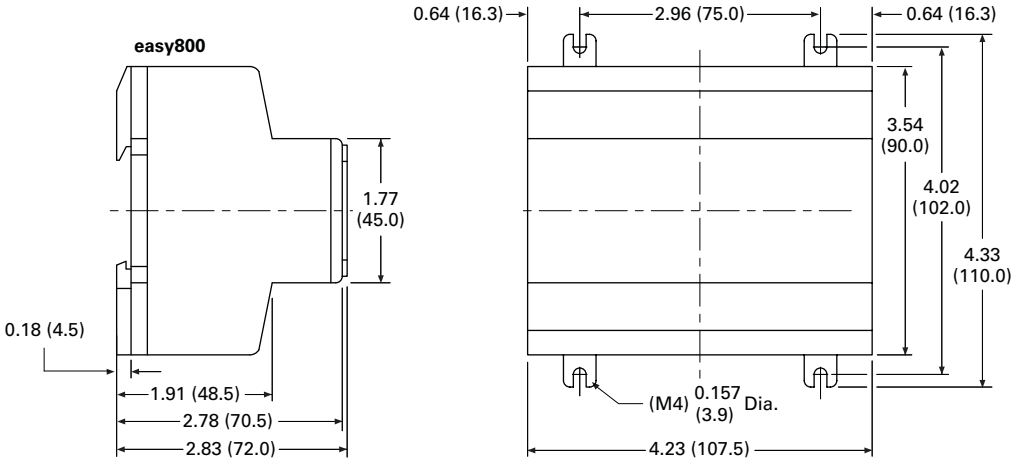
easy500 Series, Drawing Number MD05013001E



easy700 Series, Drawing Number MD05013002E



easy800 Series, Drawing Number MD05013003E



4

easy802/806 Programmable Relays with SmartWire-DT

Contents

easy802/806 Programmable Relays with SmartWire-DT

Product Description

SmartWire-DT is a high-performance system that can be used to quickly and easily connect motor control components such as relays, contactors, pilot devices, manual motor protectors, soft starters ① and variable frequency drives ① as well as digital and analog input/output modules. On the new easy800 with integrated SmartWire-DT master, up to 99 SmartWire-DT devices in total with up to 166 inputs/outputs can be connected via the SmartWire-DT line. All required supply voltages, including those for bus devices as well as 24 Vdc for the contactors, are provided directly with the flat eight-pole SmartWire-DT bus line. This reduces wiring effort and troubleshooting and saves time and costs.

The easy802 features a POW power feeder for regulating power to the device as well as the SmartWire-DT devices. A second AUX power feeder provides the connected contactors with 24 Vdc. A separate 24 Vdc power supply is required to provide 24 Vdc power to the easy802 or easy806 controllers. The configuration of the SmartWire-DT devices is undertaken at a touch of the provided Configuration button. LEDs provide feedback on the connecting states on the device and the SmartWire-DT line. The serial interface serves for programming as well as for connection of a remote text display, touch panel or for connection to the Ethernet.

In addition to the functionality of the easy802, the easy806 also features four fast inputs (5 kHz). Two of the four inputs can also be configured as fast outputs (5 kHz) (transistor 24 Vdc, 0.1 A). In addition to the additional inputs/outputs on easy806, there is a connection option to the easyNet. Up to eight EASY806-DC-SWD controllers can be connected via easyNet, allowing up to 1360 inputs/outputs.

For more information on SmartWire-DT and related components, see **Tab 9** of this volume or go to www.eaton.com/smartwiredt.

Standards

- EN 50178
- IEC/EN 60947
- UL 508

Certifications

- cULus
- CE
- C-Tick

c UL us Listed CE

Note

① Soft starters and variable frequency drives will be available with direct SmartWire-DT connectivity in late 2013.

Product Selection

Control relay for connection of SmartWire-DT and simultaneously for supply of power to the SmartWire-DT devices, such as switchgear and contactors.

easy800 with SmartWire-DT

EASY802-DC-SWD

Supply Voltage	Description	Catalog Number
24 Vdc	Control relay with SmartWire-DT	**EASY802-DC-SWD**

EASY806-DC-SWD

24 Vdc	Control relay with SmartWire-DT, four inputs, two of which can be used as outputs (transistor 24 Vdc, 0.1 A), easyNet onboard	**EASY806-DC-SWD**

Remote Displays

Both the easy802 and easy806 controllers can be connected to a MFD remote display or a XV touch panel display with Galileo.

Accessories

Accessories—easy800

MFD-80

Description	Catalog Number
MFD display, NEMA 4X indoor rated	**MFD-80**

MFD-CP4

24 Vdc power / communication module	**MFD-CP4**
easy802/806 to MFD-CP4 communication cable, 1.5m	**EU4A-RJ45-CAB2**
easy802/806 to XV HMI communication cable, 2m	**EU4A-RJ45-CAB1**

Technical Data and Specifications

easy802/806 Programmable Relays with SmartWire-DT

Description		Unit	Specification
Ambient Climatic Conditions			
Cold to IEC 60068-2-1, heat to IEC 60068-2-2, damp heat, constant, to IEC 60068-2-78; cyclical to IEC 60068-2-30; temperature change to IEC 68000-2-14			
Operating ambient temperature		°C (°F)	–25 ° to +55 ° (–13 ° to +131 °)
Condensation			Prevent condensation by means of suitable measures
LCD display (reliable legible)		°C (°F)	0 ° to +55 ° (32 ° to +131 °)
Storage		°C (°F)	–40 ° to +70 ° (–40 ° to +158 °)
Relative humidity, noncondensing (IEC EN 60068-2-30)		%	5 to 95
Air pressure (in operation)		hPa	795 up to 1080
Ambient Mechanical Conditions			
Protection type EN 50178, IEC 60529, VBG4			IP20
Vibrations (IEC EN 60068-2-6)			
Constant amplitude: easy800-SWD; 3.5 mm		Hz	5–8.4
Constant acceleration: easy800-SWD: 1g		Hz	8.4–150
Mechanical shock resistance (IEC EN 60068-2-27) semi-sinusoidal 15g / 11 ms	Shocks		18
Drop (IEC EN 60068-2-31)	Drop height	mm	50
Free fall, packaged (IEC EN 60068-2-32)		m	0.3
Electromagnetic Compatibility (EMC)			
Electrostatic discharge (ESD), to IEC EN 61000-4-2			
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (RFI), to IEC EN 61000-4-3			
0.8–1.0 GHz		V/m	10
1.4–2.0 GHz		V/m	3
2.0–2.7 GHz		V/m	1
Radio interference suppression			EN 55011 Class B
Burst, to IEC EN 61000-4-4			
Supply cables		kV	2
Signal cables		kV	2
easyNet		kV	2
SWD-line		kV	2
Power pulses (surge), to IEC EN 61000-4-5 (supply cables, symmetrical)		kV	1
Radiated RFI, to IEC EN 61000-4-6		V	10
Insulation Resistance			
Overvoltage category			III
Pollution degree			2
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142
Insulation resistance			EN 50178
Terminal Capacity			
Solid, minimum to maximum		mm^2	0.2 to 1.5 (AWG 24–16)
Flexible with ferrule, minimum to maximum		mm^2	0.2 to 1.5 (AWG 24–16)
DC POW Rated Operational Voltage			
Rated value U_e		Vdc, (%)	24 DC (–15/+20)
Permissible range ①		Vdc	20.4–28.8
Residual ripple		%	≤ 5
Protection against polarity reversal			Yes
Input current			
At rated operating voltage		mA	easy802: 500 / easy806: 900
Inrush current and duty factor			12.5 A for 6 ms
Voltage dips (IEC EN 61131-2)		ms	10

Note

① Use power-feed modules if the cable length of the SWD line causes excessive voltage drop.

easy802/806 Programmable Relays with SmartWire-DT, continued

Description	Unit	Specification
Heat dissipation		
At 24 Vdc	W	easy802: max. 5 / easy806: max. 6
Fuse	A	≥ 3
Potential isolation (easy800-SWD)		
To auxiliary ①		Yes
To easyNet ①		Yes
To serial interface		Yes
To easyLink ①		No
To inputs ①		No
To outputs ①		No
To SWD ①		No
DC AUX Rated Operational Voltage (easy800-SWD)		
Rated value U_e	Vdc, (%)	24 (–15/+20)
Permissible range U_{AUX}	Vdc	20.4–28.8
Residual ripple	%	≤ 5
Input current ② (max.)	A	2 (UL) / 3 (CE)
Rated operational voltage of the 24 Vdc stations	V	U_{AUX} –0.3 V
Protection against polarity reversal		Yes
Short-circuit strength		No
Fuse	A	≤ 2 (UL) external fuse with FAZ B2
Heat dissipation		
At 24 Vdc	W	Normally 1
Potential isolation (easy800-SWD)		
To POW power supply, inputs and outputs		Yes
To PC interface (COM), easyNet		Yes
To SWD		Yes

Notes

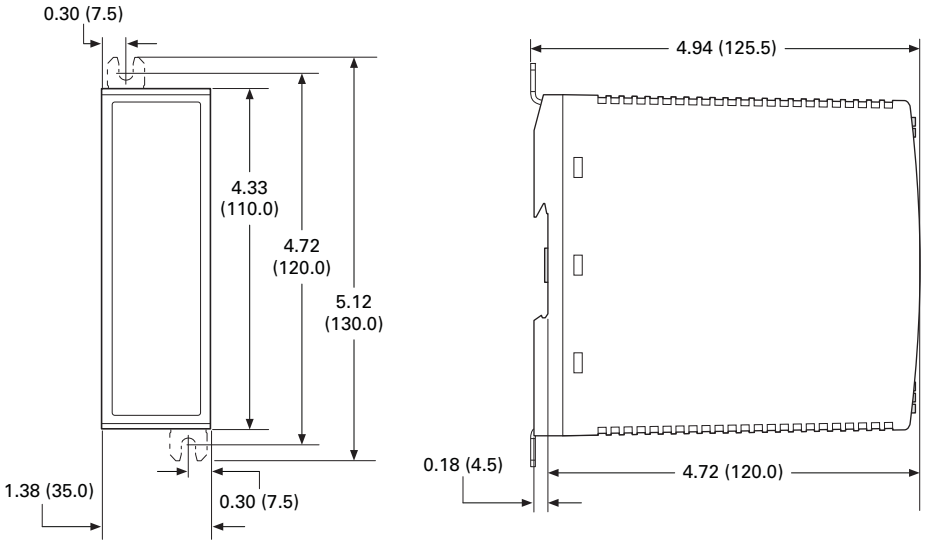
① If present.

② If contactors with a higher total power consumption are connected, an EU5C-SWD-PF1 or EU5C-SWD-PF2 power-feed module must be used.

Dimensions

Approximate Dimensions in Inches (mm)

easy802 and easy806 Controllers



easyRelay Expansion Modules

Contents

easyRelay and MFD Expansion Modules

Product Description

Expansion modules are available for increasing the input/output of the easy700/800 and MFD-Titan multi-function displays to 24 inputs and up to 16 outputs. Expansion modules can be mounted directly to the easy700 or easy800 relays or up to 98 ft (30m) away using coupling module EASY200-EASY.

Standards

- CSA C22.2 No. 142-M1987
- CSA C22.2 No. 213-M1987
- EN 55011
- EN 50178
- EN 61131-2
- IEC EN 61000-4
- IEC 60068-2-6
- IEC 60068-2-27
- UL 508

Certifications

- UL
- CSA
- CE
- CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C
- C-Tick
- GOST-R
- Ukrain-GOST

Shipping Approvals

- Bureau Veritas
- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register of Shipping

Product Selection

EASY618_

Digital I/O Expansion Modules

Can be used via easyLink.

Supply Voltage	Digital Inputs	Outputs Relay 10 A (UL)	Outputs Transistor	Catalog Number
100–240 Vac	12	6	—	**EASY618-AC-RE**
24 Vdc	12	6	—	**EASY618-DC-RE**
24 Vdc	12	—	8	**EASY620-DC-TE**
24 Vdc	6	4	—	**EASY410-DC-RE**
24 Vdc	6	—	4	**EASY410-DC-TE**
24 Vdc	—	2	—	**EASY202-RE**
For distributed connection of a digital input/output expansion at up to 98 ft (30m) distance				**EASY200-EASY**

EASY406_

Analog I/O Expansion Modules

Can be used via easyLink.

Supply Voltage	Inputs Digital/ Analog	Inputs Can Be Used for Digital	Digital Outputs Relay 10 A (UL)	Digital Outputs Transistor	Analog Outputs	Catalog Number
24 Vdc	1/2	2	—	2	1	**EASY406-DC-ME**
24 Vdc	1/6	2	—	2	2	**EASY411-DC-ME**

Technical Data and Specifications

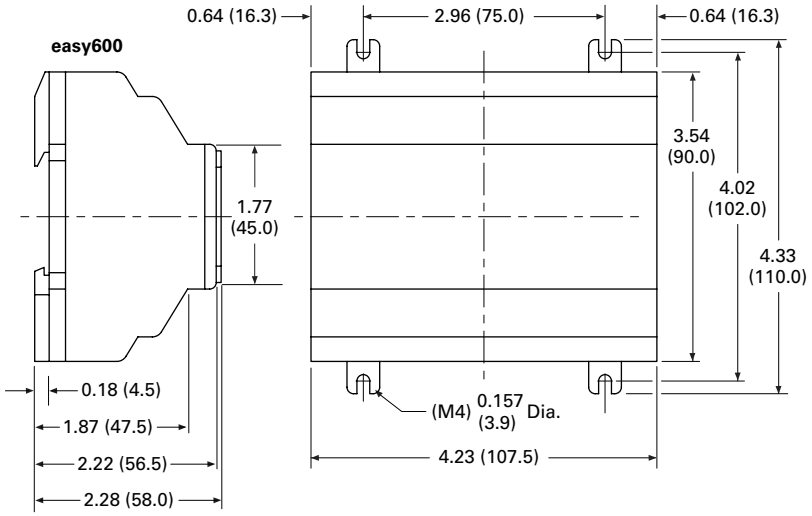
easyRelay I/O Expansion Modules

Type	EASY202-RE	EASY618-AC-RE	EASY618-DC-RE	EASY620-DC-TE	EASY200-EASY
Supply voltage	—	100 – 240 Vac	24 Vac	24 Vac	—
Heat dissipation	1 W	10 VA	4 W	4 W	1 W
Continuous current outputs ①	8 A	8 A	8 A	0.5 A	—
Short-circuit proof with power factor 1	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	—
Short-circuit proof with power factor 0.7…0.7	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	Line protection B16, 900 A	—
Connection cables					
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20	IP20	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1,2,3,4				
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C
Certification, standards	EN 50178, IEC/EN 60947, UL, CSA				
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet				

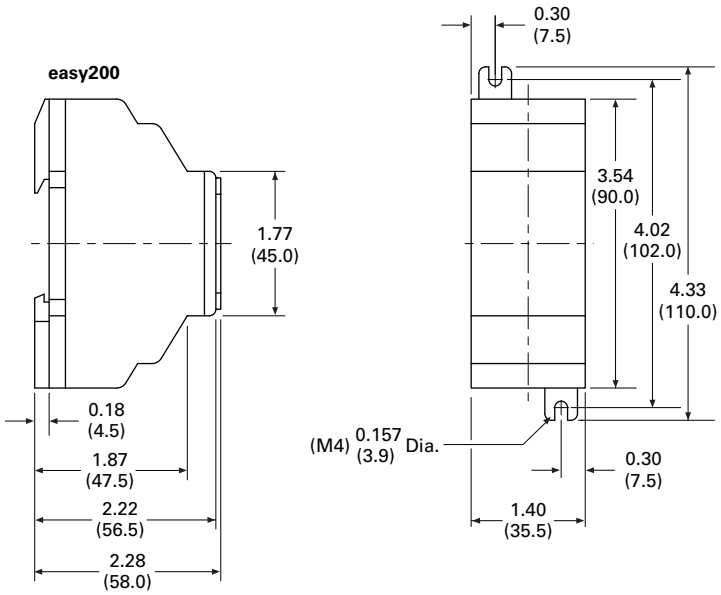
Dimensions

Approximate Dimensions in Inches (mm)

easy600 Series, Drawing Number MD05013002E



EASY202-RE/EASY200-EASY/EASY205-ASI Series, Drawing Number MD05013012E



MFD-Titan Multi-Function Displays

Contents

MFD-Titan Multi-Function Displays

Product Description

The MFD-Titan multi-function displays can be used as remote text displays for easy500, easy700, easy800 and easy802/806 relays or can be configured as standalone or networked multi-function displays. As a multi-function display, the MFD-Titan combines the control functions of an easy800 with a door-mounted graphics display.

MFD-Titan multi-function display is comprised of three parts: display, controller and I/O modules. Match each piece to the needs of your application. If you need to both monitor and modify parameters within your application, choose the MFD-80-B display. The preprogrammed and user programmable buttons give you the capability to make small changes to the way your application is running, start or stop a process, or change your program completely. Select a controller with or without easyNet support, and with AC or DC power. Finally, add the MFD I/O module that best suits your application.

MFD-Titan—for controlling small applications that require graphic visualization and for large-scale applications with 20 points, expandable to 40 points locally, and expandable using the easyNet network up to 320 I/O points.

The MFD-Titan display can be linked to the easy500/700/800 models to provide an enhanced text based operator interface.

The easyNet integrated network provides easy and inexpensive linking of up to eight MFD-Titan devices over a distance of up to 1000 meters. Each MFD-Titan device can run its program, or be used as a distributed input/output module. Connect up to eight controllers with up to 40 I/O to obtain 320 I/O.

Standards

- CSA C22.2 No. 142-M1987
- CSA C22.2 No. 213-M1987
- EN 55011
- EN 50178
- EN 61131-2
- IEC EN 61000-4
- IEC 60068-2-6
- IEC 60068-2-27
- UL 508

Certifications

- UL
- CSA
- CE
- CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C
- C-Tick
- GOST-R
- Ukrain-GOST

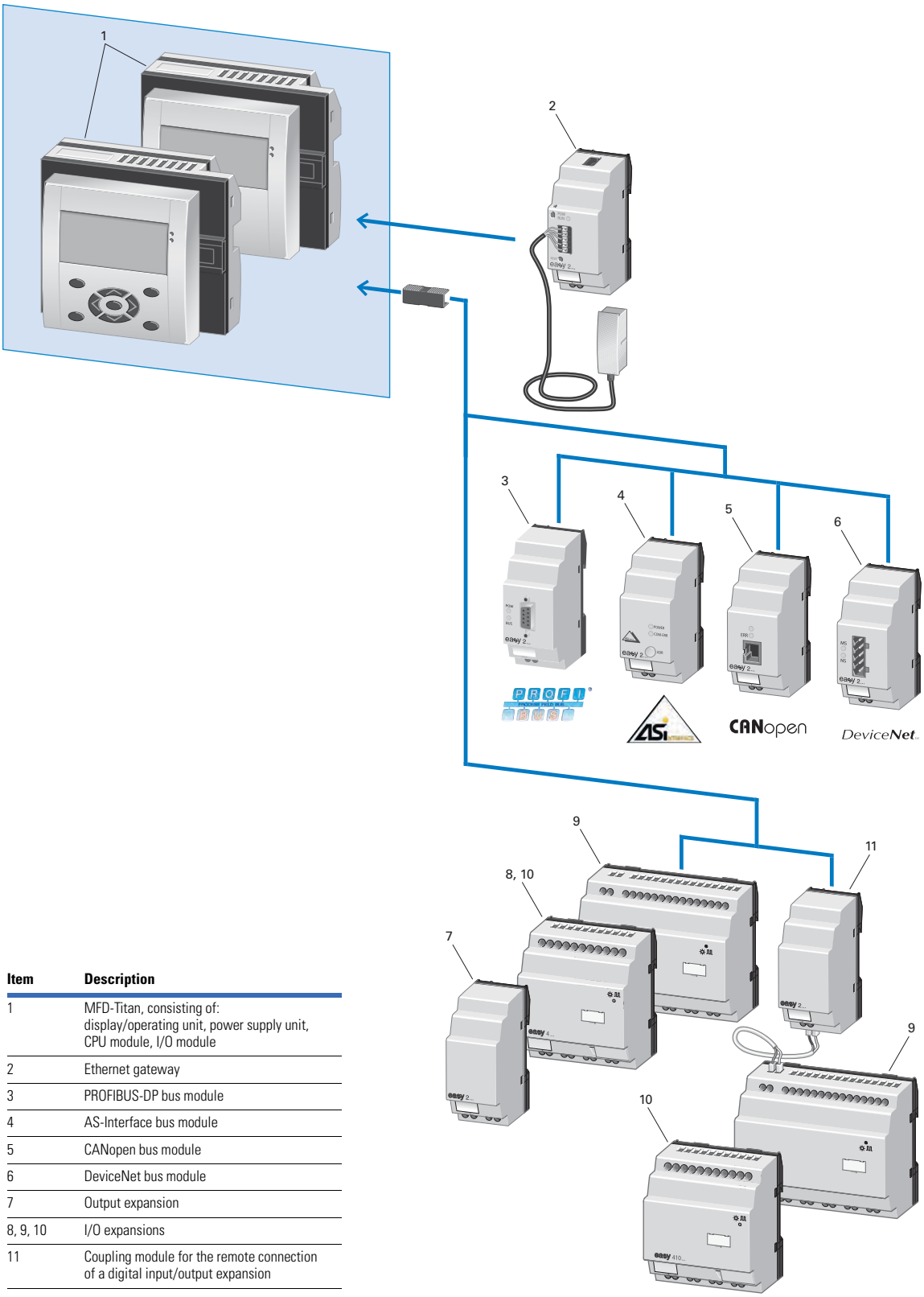
Shipping Approvals

- Bureau Veritas
- Det Norske Veritas
- Germanischer Lloyd
- Lloyd's Register of Shipping

4

System Overview

MFD-Titan Multi-Function Display



Item	Description
1	MFD-Titan, consisting of: display/operating unit, power supply unit, CPU module, I/O module
2	Ethernet gateway
3	PROFIBUS-DP bus module
4	AS-Interface bus module
5	CANopen bus module
6	DeviceNet bus module
7	Output expansion
8, 9, 10	I/O expansions
11	Coupling module for the remote connection of a digital input/output expansion

Product Selection

MFD-80-B

MFD-Titan Display/Operator Units

Monochrome display 132 x 64 pixels with switchable backlight and removable front frame.

Description	Keypad	Eaton Logo	Custom Engraving	Catalog Number
MFD display, NEMA 4X indoor rated	—	—	—	**MFD-80-X**
MFD display, NEMA 4X indoor rated	—	■	—	**MFD-80**
MFD display, NEMA 4X indoor rated	—	—	■	**MFD-80-ETCH** ①
MFD display with keypad ②	■	—	—	**MFD-80-B-X**
MFD display with keypad ②	■	■	—	**MFD-80-B**
MFD display with keypad ②	—	—	■	**MFD-80-B-ETCH** ①

MFD-CP4

MFD-Titan Text/Graphics Display Power Module

For use with MFD-Titan displays for use as remote text/graphics display.

Supply Voltage	Description	Catalog Number
100–240 Vac	AC power supply / communication module (no cable)	**MFD-AC-CP4**
	AC module for easy500/700 relays and cable MFD-CP4-500-CAB5	**MFD-AC-CP4-500**
	AC module for easy800 relays and cable MFD-CP4-800-CAB5	**MFD-AC-CP4-800**
24 Vdc	DC power supply / communication module (no cable)	**MFD-CP4**
	DC module for easy500/700 relays and cable MFD-CP4-500-CAB5	**MFD-CP4-500**
	DC module for easy800 relays and cable MFD-CP4-800-CAB5	**MFD-CP4-800**

MFD-CP

MFD-Titan Controller Modules

For use with MFD-Titan display/operator units.
Add MFD-Titan I/O modules as needed.

Supply Voltage	Description	Catalog Number
100–240 Vac	Program and screen memory	**MFD-AC-CP8-ME**
	Program and screen memory, with easyNet	**MFD-AC-CP8-NT**
24 Vdc	Program and screen memory	**MFD-CP8-ME**
	Program and screen memory, with easyNet	**MFD-CP8-NT**
	Double program and screen memory (as MFD-CP8)	**MFD-CP10-ME**
	Double program and screen memory (as MFD-CP8), with easyNet	**MFD-CP10-NT**

Notes

① To order an MFD display with custom engraving, a marking file with the required text and/or graphics must be created as a Labeleditor ZIP file. The ZIP file has to be sent to the Eaton factory, and the name of the file must be referenced in the order notes section. To download the Labeleditor configuration software, please visit www.eaton.com/software.

② To obtain a NEMA 4X indoor rating on MFD displays with keypads, use with a protective membrane cover MFD-XM-80.

MFD-R16

MFD-Titan I/O Modules

For use with MFD-Titan controller modules.

Supply Voltage	Description	Inputs Digital	Inputs Analog ①	Outputs Relay	Outputs Transistor	Outputs Analog	Catalog Number
100–240 Vac	16 I/O	12	—	4	—	—	**MFD-AC-R16**
24 Vdc		12	4	4	—	—	**MFD-R16**
		12	4	—	4	—	**MFD-T16**
24 Vdc	17 I/O	12	4	4	—	1	**MFD-RA17**
		12	4	—	4	1	**MFD-TA17**

MFD-TP_

MFD-Titan I/O Modules with Temperature Detection

For use with MFD-CP8-_ ② and MFD-CP10-_ MFD-Titan controller modules.

Supply Voltage	Inputs Digital	Inputs Can Be Used For Analog	Inputs Pt100	Outputs Relay 10 A (UL)	Outputs Transistor	Outputs Analog	Temperature Ranges	Catalog Number
24 Vdc	6	2	2	—	4	—	–40 ° to +90 °C/0 ° to +250 °C/0 ° to +400 °C	**MFD-TP12-PT-A**
	6	2	2	—	4	—	–200 ° to +200 °C/0 ° to +850 °C	**MFD-TP12-PT-B**
	6	2	—	—	4	—	–40 ° to +90 °C/0 ° to +250 °C	**MFD-TP12-NI-A**
	6	2	2	—	4	1	–40 ° to +90 °C/0 ° to +250 °C/0 ° to +400 °C	**MFD-TAP13-PT-A**
	6	2	2	—	4	1	–200 ° to +200 °C/0 ° to +850 °C	**MFD-TAP13-PT-B**
	6	2	—	—	4	1	–40 ° to +90 °C/0 ° to +250 °C	**MFD-TAP13-NI-A**

Accessories

Miscellaneous Parts

Description	Catalog Number
MFD-Titan display protective membrane cover	**MFD-XM-80**
MFD-Titan display protective plastic cover	**MFD-XS-80**
MFD-Titan display DIN rail mount kit	**MFD-TS-144**

Notes

① Analog inputs optional. Use of analog inputs will result in a decrease in the same number of available digital inputs

② Version 8 and higher MFD-CP8_ controllers are compatible with the temperature detection modules.

Technical Data and Specifications

MFD-80, MFD-CP4, MFD-CP8

Type	MFD-80…	MFD-CP4/CP8
Connection cables		
Solid	—	0.2–4.0 mm^2 (AWG 22–12)
Flexible	—	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP65	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1, 2, 3, 4	EN 55011, EN 55022 Class B, IEC 61000-6-1, 2, 3, 4
Ambient operating temperature	Clearly legible at –5 °C to +50 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C
Hazardous location	CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C	CSA Class I, Div. 2, Groups A, B, C, D; Temp. Code T3C

MFD-Titan I/O Modules

Type	MFD-AC-R16	MFD-R16	MFD-RA17	MFD-T16	MFD-TA17
Supply voltage	Supply via MFD-CP8 module	Supply via MFD-CP8 module	Supply via MFD-CP8 module	Supply via MFD-CP8 module	Supply via MFD-CP8 module
Heat dissipation	0.5 W	0.5 W	0.5 W	0.5 W	0.5 W
Continuous current outputs ①	8 A	8 A	8 A	0.5 A	0.5 A
Short-circuit proof with power factor 1	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	—	—
Short-circuit proof with power factor 0.7…0.7	Line protection B16, 600 A	Line protection B16, 600 A	Line protection B16, 600 A	—	—
Connection cables					
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20	IP20	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1,2,3,4				
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C	–40 °C to +70 °C
Mounting	Snap fitted to MFD-CP8 module	Snap fitted to MFD-CP8 module	Snap fitted to MFD-CP8 module	Snap fitted to MFD-CP8 module	Snap fitted to MFD-CP8 module

MFD-CP4 and CP8 Communication Modules

Type	MFD-80…	MFD-CP4-…	MFD-CP8…	MFD-AC-CP8…
Supply voltage	Supply from -CP	24 Vdc	24 Vdc	100–240 Vac
Heat dissipation	3 W	1.5 W	3 W	8 VA
Mounting	Front mounting in 2 x 22.5 mm Standard drill holes	Snap fitted to MFD-80	Snap fitted to MFD-80 or on 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet	

Note

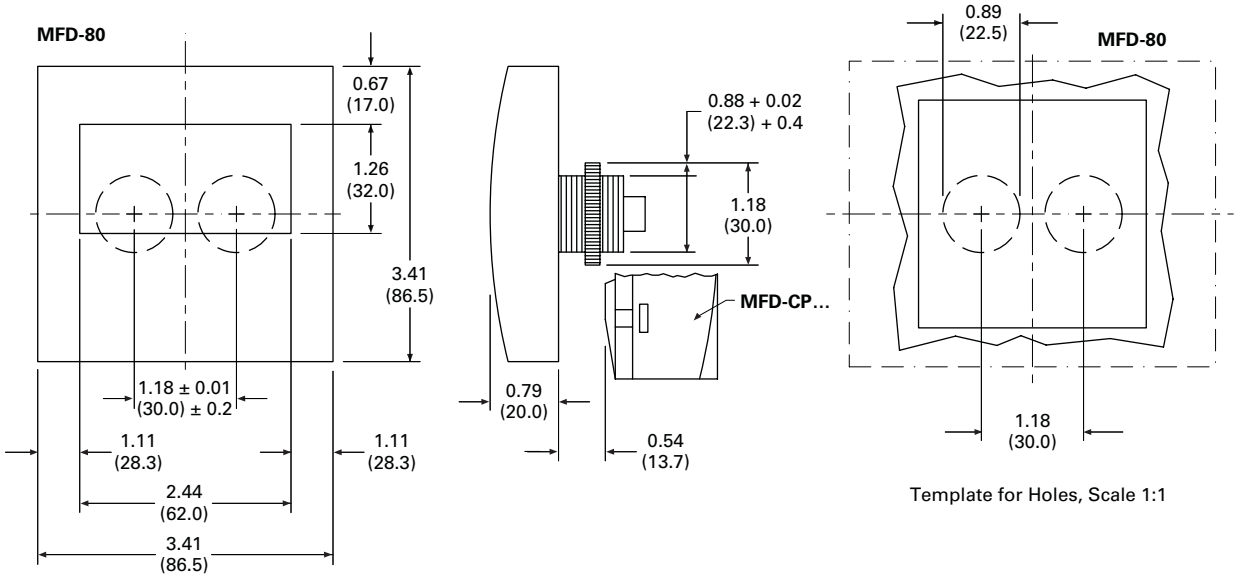
① Relay = 8 A with resistive load, 3 A with inductive load.
Transistor outputs = 0.5 A/24 Vdc, maximum four outputs switchable in parallel.

4

Dimensions

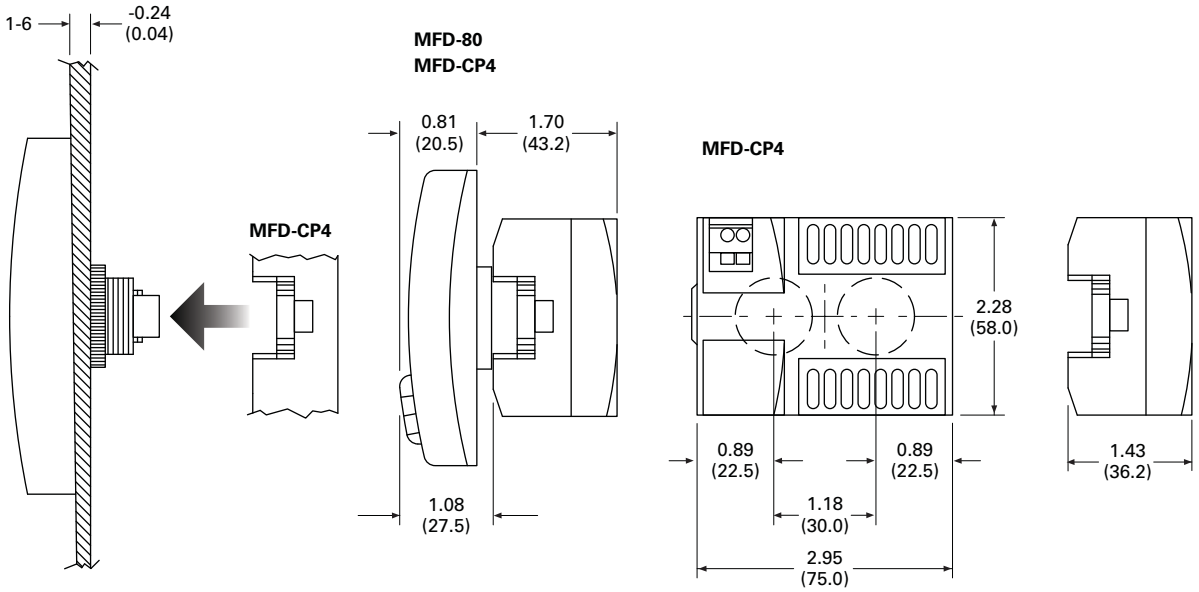
Approximate Dimensions in Inches (mm)

MFD-80 Series, Drawing Number MD05013005E



Template for Holes, Scale 1:1

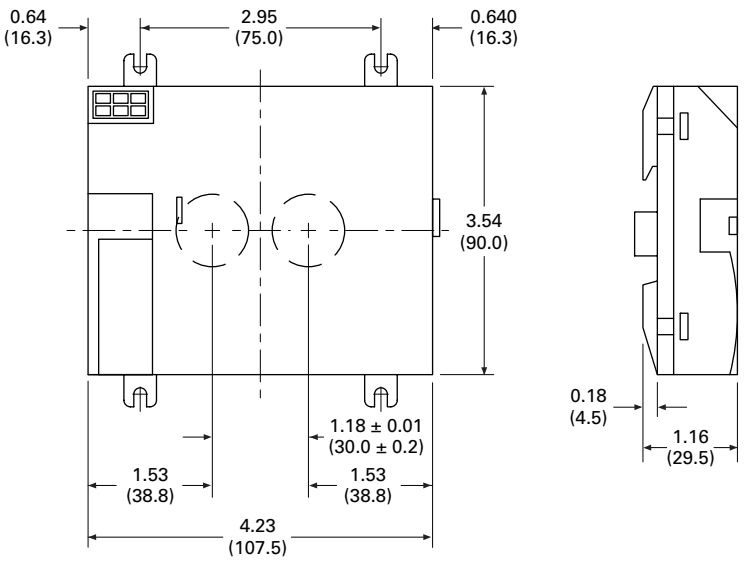
MFD-CP4, MFD-80 and MFD-CP4 Series Combined, Drawing Number MD013013E



Approximate Dimensions in Inches (mm)

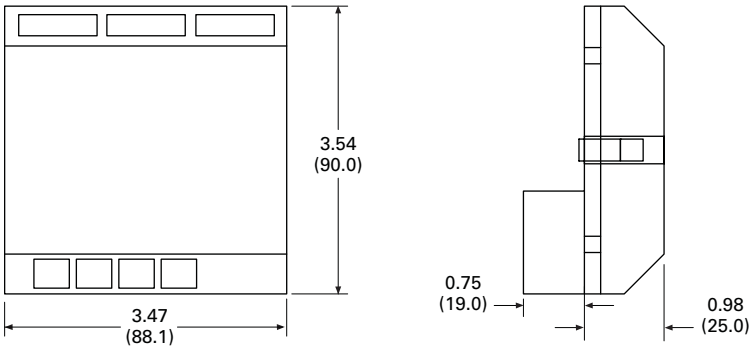
MFD-CP8 Series, Drawing Number MD05013006E

MFD-CP8



MFD-R/MFD-T I/O Module, Drawing Number MD05013007E

MFD-R and MFD-T I/O



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easyRelay Communication Modules

Contents

easyRelay Communication Modules

Product Description

Four network modules are available for easily connecting to world-standard networks. The network modules can be used with the easy700/800 programmable relays and MFD-Titan multi-function displays.

Available communication modules support:

- DeviceNet
- PROFIBUS-DP
- AS-Interface
- CANopen

All modules operate exclusively as nodes on the given network.

Product Selection

The Ethernet gateway connects devices provided with an RS-232 serial interface with the Ethernet network. This gateway can be used with easy500 as well as easy700/800 relays and MFD-Titan displays.

EASY209-SE

Ethernet Gateway Module

Description		Catalog Number
Ethernet gateway	Serial interface easyRelay or MFD-…CP8/CP10_ to Ethernet, for connecting to easyOPC server, easySoft or easyCom	**EASY209-SE** ①

EASY204-DP

Network Interface Modules

Description		Catalog Number
DeviceNet interface module	Addresses available 0 to 63	**EASY222-DN**
PROFIBUS-DP interface module	Device addresses available 1 to 126	**EASY204-DP**
AS-Interface interface module with 4 in and 4 out	Device: 4 inputs, 4 outputs, 4 parameter bits Addresses available 0 to 31	**EASY205-ASI**
CANopen interface module	Addresses available 1 to 127	**EASY221-CO**

Note

① To set up the Ethernet gateway, download the EASY209-SE configuration software at www.eaton.com/easyrelays.

Technical Data and Specifications

easy700/800/MFD Communication Interface Modules
EASY204-DP, EASY205-ASI, EASY221-CO, EASY222-DN, EASY209-SE ①

Description	Specification
Supply voltage	24 Vdc
Heat dissipation ②	1 W
Connection cables	
Solid	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20
RFI suppression	EN 55011, EN 55022 Class B, IEC 61000-6-1,2,3,4
Ambient operating temperature	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C
Certification, standards	EN 50178, IEC/EN 60947, UL, CSA
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet

Notes

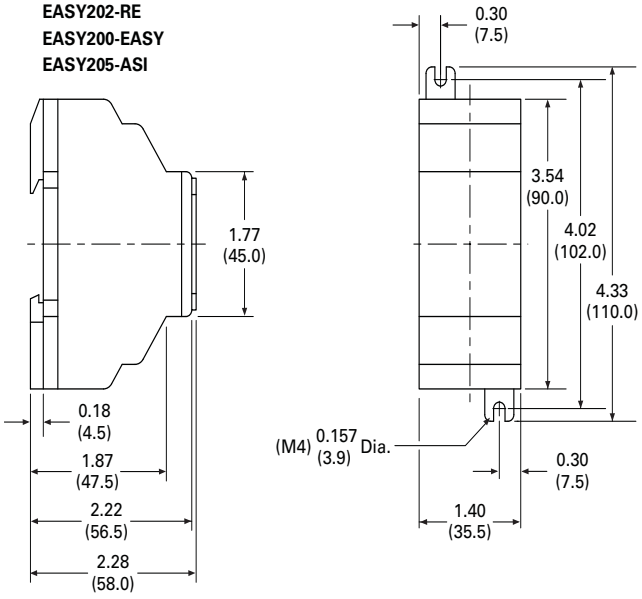
① EASY209-SE is also compatible with easy500 programmable relays.

② EASY204-DP dissipates 2 W.

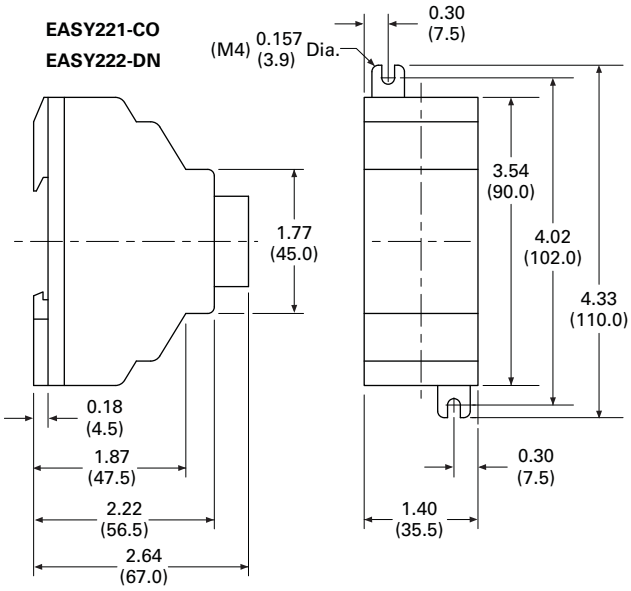
Dimensions

Approximate Dimensions in Inches (mm)

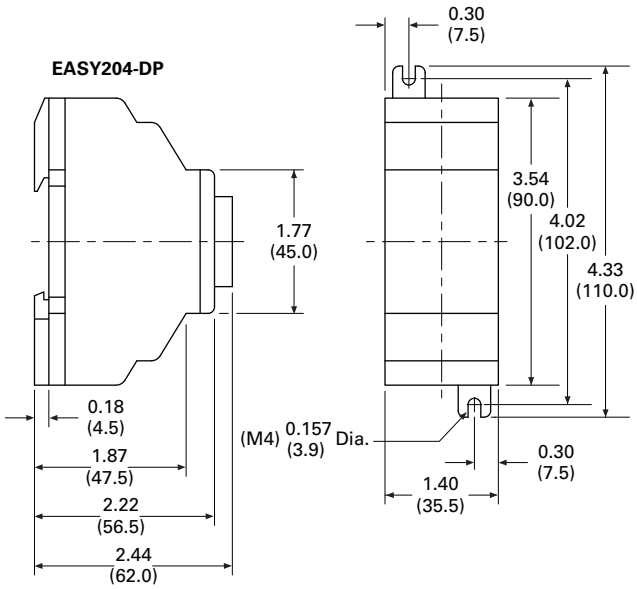
EASY202-RE/EASY200-EASY/EASY205-ASI/ EASY209-SE Series, Drawing Number MD05013012E



EASY221-CO/EASY222-DN Series, Drawing Number MD05013010E



EASY204-DP Series, Drawing Number MD05013011E



easyRelay Power Supplies, Accessories and Software

Contents

easyRelay Power Supplies, Accessories and Software

Product Description

Power Supplies—12 Vdc and 24 Vdc power supplies for applications where only 100–240 Vac is available.

Accessories—Memory modules, cables and other components to complete your automation solutions.

Software—The easySoft software is used to program all of the easyRelays 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. When easy800 and MFD-Titan controllers are connected using easyNet, all connected devices can be accessed and their programs loaded from a single controller.

easySoft includes an integrated offline simulation tool that allows users to test a circuit diagram before commissioning.

Product Selection

Power supply units are primary switched-mode power supplies that are optimally suited for the easyRelay and easySafety product series in terms of functions and design. The new and high-performance power supply units support safe operation in plants and machines. They are simple and flexible in handling.

Fast diagnosis of the voltage output: continuous light on the LED—fault-free operation; flashing on the LED—short circuit or overload on voltage output.

- Suitable for worldwide use due to wide range input from 85 V to 264 Vac, 50/60 Hz
- Output voltages can be connected in parallel to increase power output or for redundant operation to achieve greater system availability
- Compliance with international standards and approvals

The primary switched-mode power supply units can be used everywhere:

- Safety extra low voltage (SELV to EN 60 950)
- Radio interference Class B to EN 55 011 and EN 55 022 for use in industrial and public networks

EASY...-POW

Power Supply Units

Rated input voltage 100–240 Vac, single-phase.

Input Voltage Range	Rated Output Voltage	Output Voltage Setting Range	Rated Output Power	Rated Output Current	Catalog Number
100–240 Vac	24 Vdc/12 Vdc	—	8 W	0.35 A/20 mA	**EASY200-POW**
	24 Vdc	—	30 W	1.25 A	**EASY400-POW**
	24 Vdc	—	60 W	2.5 A	**EASY500-POW**
	24 Vdc	—	100 W	4.2 A	**EASY600-POW**

Bluetooth Adapter

Conveniently commission and service machines and other equipment remotely.

- Simple communication with easy800 or MFD-Titan from outside loud and/or dangerous areas
- An 8-digit PIN security code prevents unauthorized remote access
- Simple recognition in Windows 7
- Full online functionality with easySoft-Pro V6.91or higher
- Has all necessary radio type approvals for USA, Canada and Europe

EASY800-BLT-ADP

Bluetooth Adapter

Description	Catalog Number
easy800/MFD Bluetooth adapter	**EASY800-BLT-ADP**

The Blue tooth adapter provides wireless connectivity to easySoft-Pro for easy programming download and upload. Use it with the easyRemote Display Android App for simple and fast access to your easy800 relays up to a distance of 10 meters.

Accessories

easySoft

Programming Software

Description	Catalog Number
Programming software for easy500/700	**EASY-SOFT-BASIC**
Programming software for easy800, easy 802/806 and MFD-Titan includes SWD-Assist for configuration of the SmartWire-DT network	**EASY-SOFT-PRO**

EASY-USB-CAB

Programming Cables

Description	Catalog Number
easy500/700 to PC programming cable—USB	**EASY-USB-CAB**
easy500/700 to PC programming cable—RS-232	**EASY-PC-CAB**
easy800/MFD to PC programming cable—RS-232	**EASY800-PC-CAB**
easy800/MFD to PC programming cable—USB	**EASY800-USB-CAB**
easy802/806 to PC programming cable—USB, 2m	**EU4A-RJ45-USB-CAB1**

MFD-CP4-800-CAB5

EASY800-MO-CAB

Cables and Connectors

Description	Catalog Number
easy500/700 to MFD-CP4 communication cable, 5m	**MFD-CP4-500-CAB5**
easy800 to MFD-CP4 communication cable, 5m	**MFD-CP4-800-CAB5**
easy800 to MFD-CP8 communication cable, 2m	**MFD-800-CAB**
easy800 to MFD-CP8 communication cable, 5m	**MFD-800-CAB5**
easy800 modem, printer, programming cable	**EASY800-MO-CAB**
easy802/806 to MFD-CP4 communication cable, 1.5m	**EU4A-RJ45-CAB2**
easy802/806 to XV HMI communication cable, 2m	**EU4A-RJ45-CAB1**
easy800/MFD easyNet cable, 0.3m networking cable	**EASY-NT-30**
easy800/MFD easyNet cable, 0.8m networking cable	**EASY-NT-80**
easy800/MFD easyNet cable, 1.5m networking cable	**EASY-NT-150**
easy800/MFD easyNet cable (cable only, no connectors, see EASY-NT-RJ45), 100m	**EASY-NT-CAB**
RJ45 network connectors for easyNet cable (EASY-NT-CAB), 10/pack	**EASY-NT-RJ45**
easy800/MFD network termination resistor, 2/pack	**EASY-NT-R**

Memory Storage Modules

EASY-M-32K

EASY-M-256K

Description	Catalog Number
easy500/700 32K memory storage module	**EASY-M-32K**
easy800/MFD 256K memory storage module	**EASY-M-256K**
easy800/MFD 512K memory storage module	**EASY-M-512K**

Miscellaneous Parts

Panel Window

Mounting Kit

Simulator

Description	Catalog Number
easy500 panel window	**SKF-FF4**
easy700/800 panel window	**SKF-FF6**
easy500/700/800 panel window mounting kit to front mount units	**SKF-HA**
High current input adapter, six-channel	**EASY256-HCI**
Base to expander, interface connector	**EASY-LINK-DS**
easy500 relay simulator	**EASY412-DC-SIM-NA**
Mounting feet, 9/pack	**ZB4-101-GF1**
Grounding kit	**ZB4-102-KS1**

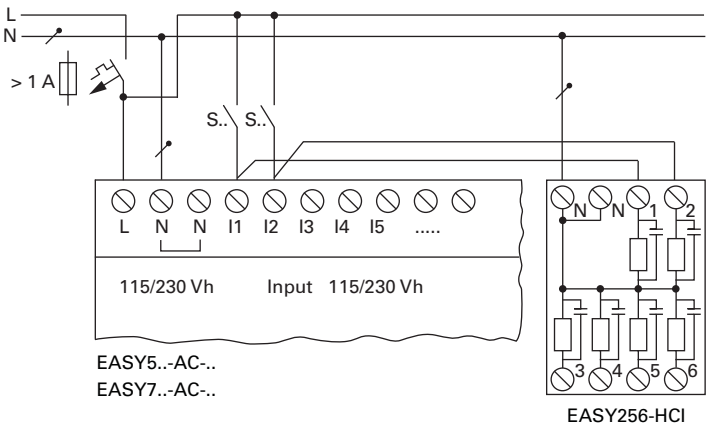
Technical Data and Specifications

easyRelay Power Supplies

Type	EASY200-POW	EASY400-POW
Supply voltage	100–240 Vac	100–240 Vac
Maximum range	85–264 Vac	85–264 Vac
Output voltage	24 Vdc (±3%)	24 Vdc (±3%)
Output current (rated value)	0.25 A	1.25 A
Overcurrent limitation form	0.3 A	1.4 A
Short-circuit proof (secondary)	Yes	Yes
Overload proof	Yes	Yes
Potential isolation (prim/sec.)	Yes, SELV, (to EN 600950, VDE 805)	Yes, SELV, (to EN 600950, VDE 805)
Others	Additional output voltage 12 DC, 20 mA	Additional output voltage 12 DC, 20 mA
Connection cables		
Solid	0.2–4.0 mm^2 (AWG 22–12)	0.2–4.0 mm^2 (AWG 22–12)
Flexible	0.2–2.5 mm^2 (AWG 22–12)	0.2–2.5 mm^2 (AWG 22–12)
Degree of protection	IP20	IP20
RFI suppression	EN 55011, EN 55022 Class B, IC 61000-6-1, 2, 3, 4	EN 55011, EN 55022 Class B, IC 61000-6-1, 2, 3, 4
Ambient operating temperature	–25 °C to +55 °C	–25 °C to +55 °C
Transport and storage temperature	–40 °C to +70 °C	–40 °C to +70 °C
Mounting	On 35 mm DIN rail or screw mounting with ZB4-101-GF1 mounting feet	

Wiring Diagram

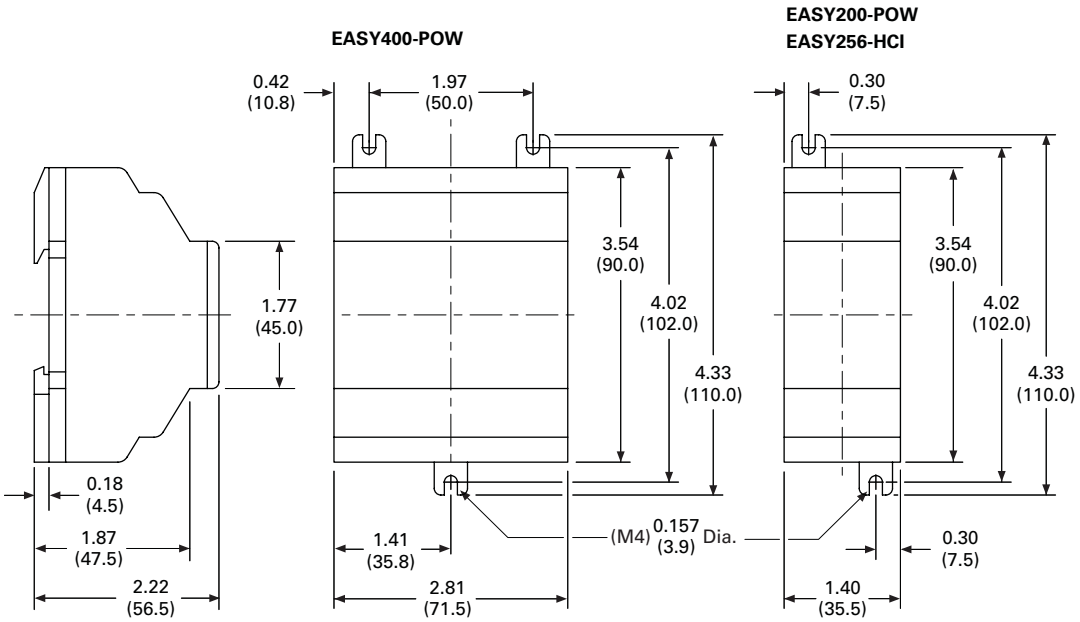
EASY256-HCI



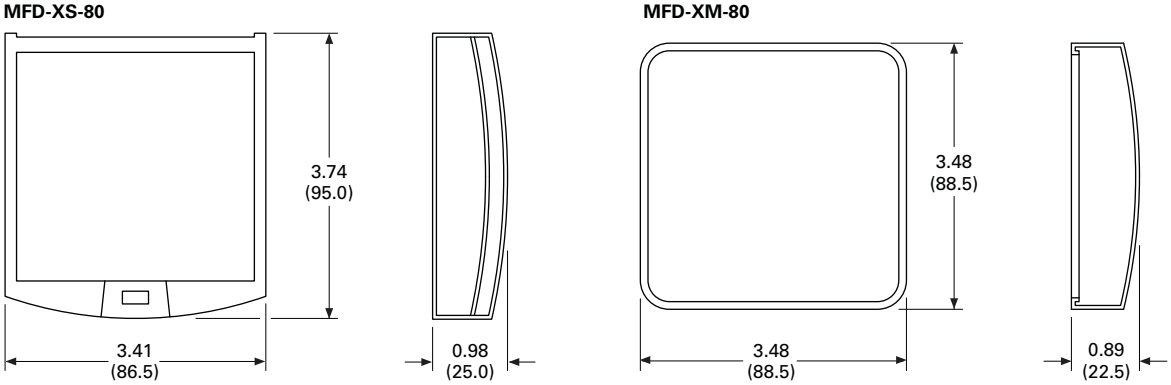
Dimensions

Approximate Dimensions in Inches (mm)

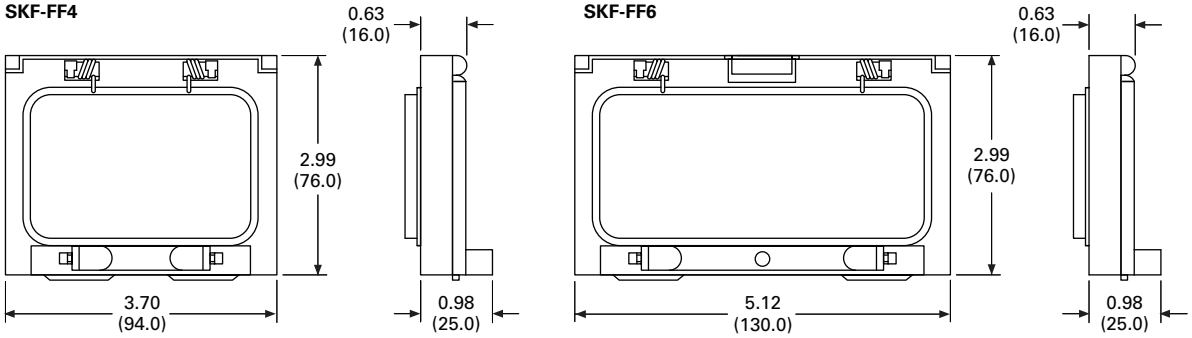
EASY200-POW/EASY256-HCI and EASY400-POW Series, Drawing Number MD05013004E



MFD-XS-80 and MFD-XM-80 Series, Drawing Number MD05013009E

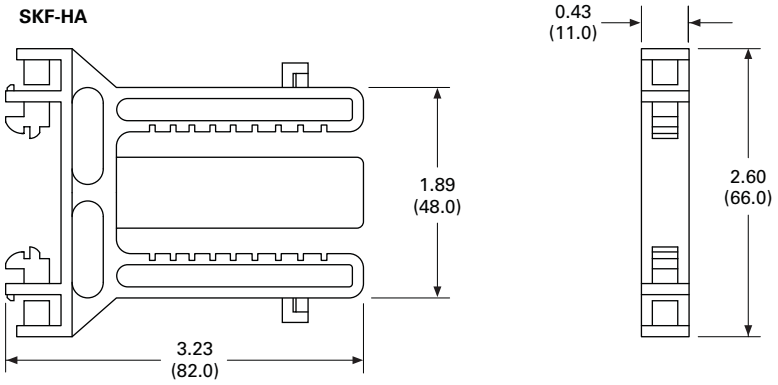


SKF-FF4 and SKF-FF6 Series, Drawing Number MD05013014E

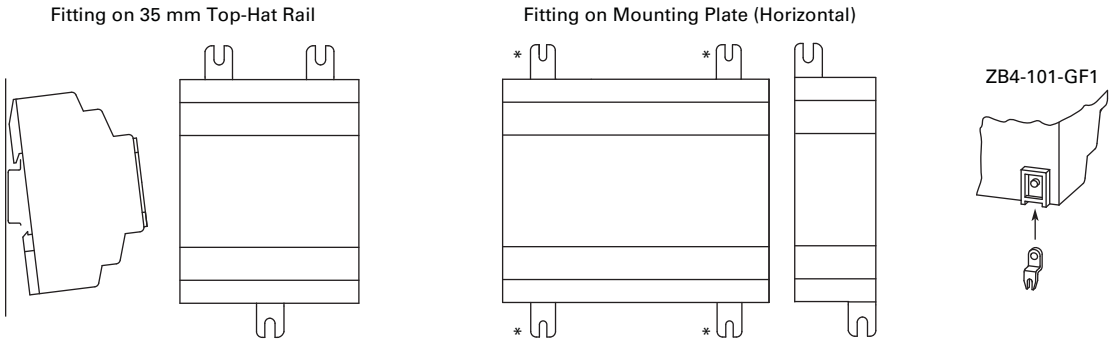


Approximate Dimensions in Inches (mm)

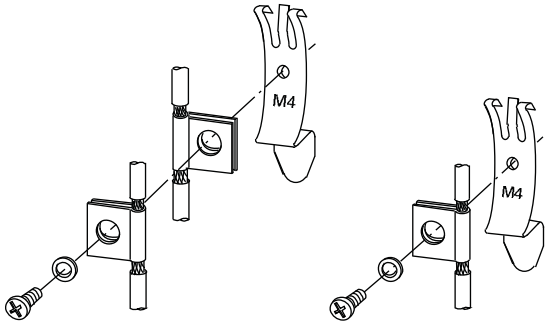
SKF-HA Series, Drawing Number MD05013015E



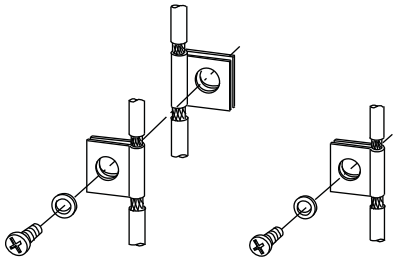
ZB4-101-GF1 Mounting Feet



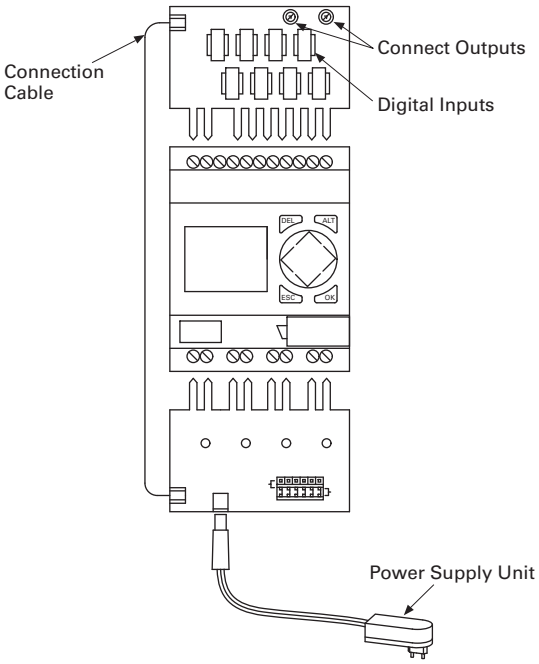
ZB4-102-KS1 Series— Grounding the Screen for Top-Hat Rail



ZB4-102-KS1 Series— Grounding the Screen for Mounting Plate



EASY412-DC-SIM-NA Series



XC100 and XC200 Modular Programmable Logic Controllers

Contents

4

XC100 and XC200 Modular Programmable Logic Controllers

Product Overview

The XC100 and XC200 series modular PLCs stand out on account of their highly scalable design. Different CPU performance classes and a wide range of expansion modules are available. An important feature is their ability to be integrated in modern communication systems. Innovative solutions can be created thanks to the possibility of exchanging data with OPC clients via the Ethernet interface and the integrated web server.

Features and Benefits

Flexible Range

- Compact and modular CPU versions to suit the needs of the application
- With or without on-board Ethernet and/or built-in web server
- Range of CPU performance
- Integrated CANopen interface for easy integration with XI/ON remote I/O

High Performance

- Parallel backplane bus for faster processing speed
- Fiber optic CANopen interface for environments with severe electromagnetic interference
- High performance XC202 CPU with
  - 10/100 Mbit Ethernet
  - XSoft-CODESYS programming software

Standards and Certifications

- IEC—UL508; CSA C22.2 No. 0-M; CSA C22.2 No. 142-M; CE marking
- UL File No.—E135462
- UL CCN—NRAQ
- CSA File No. 012528
- CSA Class No. 2252-01
- NA Certification—
  - UL Listed
  - CSA certified/cUL
- RoHS

4

Product Selection Guide

XC100 and XC200 Modular Programmable Logic Controllers

XC121 Compact PLC

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This PLC is particularly suitable for applications where space is at premium and with high communication requirements.

- Two serial and two CAN interfaces enable:
  - the coupling of two CAN networks
  - Modbus master/slave coupling (RS-232 or RS-485)—CAN
  - RS-232—CAN coupling
- I/O expansion with 18 digital and 8 analog inputs/outputs
- 6 interrupt inputs
- Expandable with standard XIOC modules

XC101 Modular PLCs

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The modular PLCs of the XC101 series are universal automation devices for small and medium-sized applications.

- Locally expandable with up to 15 XIOC modules
- Data storage on SD card
- CAN interface

XC201 Modular PLCs

Page V7-T4-56

The modular PLCs of the XC201 series offer a high CPU performance, a high speed and a wide range of communication options.

- Locally expandable with up to 15 XIOC modules
- Ethernet interface for communication and programming
- CAN interface
- Data storage on SD card or USB stick
- Web server enables visualization via CODESYS
- Operating system update SD card or USB

XC202 Modular PLCs

Page V7-T4-56

The modular PLCs of the XC202 series offer higher CPU performance and memory than the XC201 PLCs.

- Locally expandable with up to 15 XIOC modules
- Ethernet interface for communication and programming
- CAN interface
- Data storage on SD card or USB stick
- Operating system update via Ethernet, SD card or USB
- Up to three IP addresses can be configured
- 29-bit CAN identifier

Features	XC121	XC101	XC201	XC202
Input voltage	24 Vdc	24 Vdc	24 Vdc	24 Vdc
Memory size	256 kB	64, 128 or 256 kB	256 kB or 2 MB	4 MB
Microprocessor	Infineon CC161	Infineon C164	MIPS RISC	ARM11
Processor speed	36 MHz	24 MHz	131 MHz	532 MHz
Cycle time per 1k instructions	<0.3 ms	<0.5 ms	<0.15 ms	<0.025 ms
SD card slot	Yes	Yes	Yes	Yes
USB interface	No	No	Yes	Yes
Real time clock	Yes	Yes	Yes	Yes
On-board digital inputs	—	8	8	8
On-board digital outputs	—	6	6	6
Interrupt inputs	6	4	2	2
Expandability	XIO-EXT base module + Up to 15 XIOC modules	Up to 15 XIOC modules	Up to 15 XIOC modules	Up to 15 XIOC modules
Removable terminal blocks	Yes	Yes	Yes	Yes
Screw terminal option	No	Yes	Yes	Yes
Spring-cage terminal option	Yes	Yes	Yes	Yes
Serial interface	1, RS-232 1, RS-232/RS-485	1, RS-232	1, RS-232	1, RS-232
Ethernet port	No	No	Yes	Yes
CANopen interface	2	1	1	1
On-board high speed counters	No	No	Yes	Yes
On-board encoder inputs	No	No	Yes	Yes
OPC server	Yes	Yes	Yes	Yes
Integrated web server	No	No	On suffix "-XV" models	Yes
FTP server	No	No	On suffix "-XV" models	Yes
Networks master	CANopen/easyNet	CANopen/PROFIBUS-DP/easyNet	Ethernet/CANopen/PROFIBUS-DP/ easyNet	Ethernet/CANopen/PROFIBUS-DP/ easyNet
Networks node/device	CANopen/PROFIBUS-DP®/ easyNet	CANopen/PROFIBUS-DP/ easyNet	Ethernet/CANopen/PROFIBUS-DP/ easyNet	Ethernet/CANopen/PROFIBUS-DP/ easyNet
Operating system	Proprietary	Proprietary	Windows CE	Windows CE
X-Soft-CODESYS version	V2.3	V2.3	V2.3	V2.3 and 3.0

Catalog Number Selection

Controllers

XC - CPU 201 - EC 512K - XV

Model Number
101 = Modular (Infineon C164—16 bit at 24 MHz)
121 = Compact (Infineon XC161—16 bit at 36 MHz)
201 = Modular (MIPS RISC—32 bit at 131 MHz)
202 = Modular (ARM 11—32 bit at 532 MHz)

Communication Ports
C = 1 CANopen
2C = 2 CANopen
EC = Ethernet and CANopen

User Memory
64K = 64 kB
128K = 128 kB
256K = 256 kB
512K = 2 MB
4M = 4 MB

Visualization Option
XV = Web server

System Overview

System Configuration

①

CPU	1	2	3	4	5	6	7
XIOC-BP-XC	XIOC-BP-2		XIOC-BP-2		XIOC-BP-3		
XIOC-BP-XC1			XIOC-BP-3		XIOC-BP-3		

②

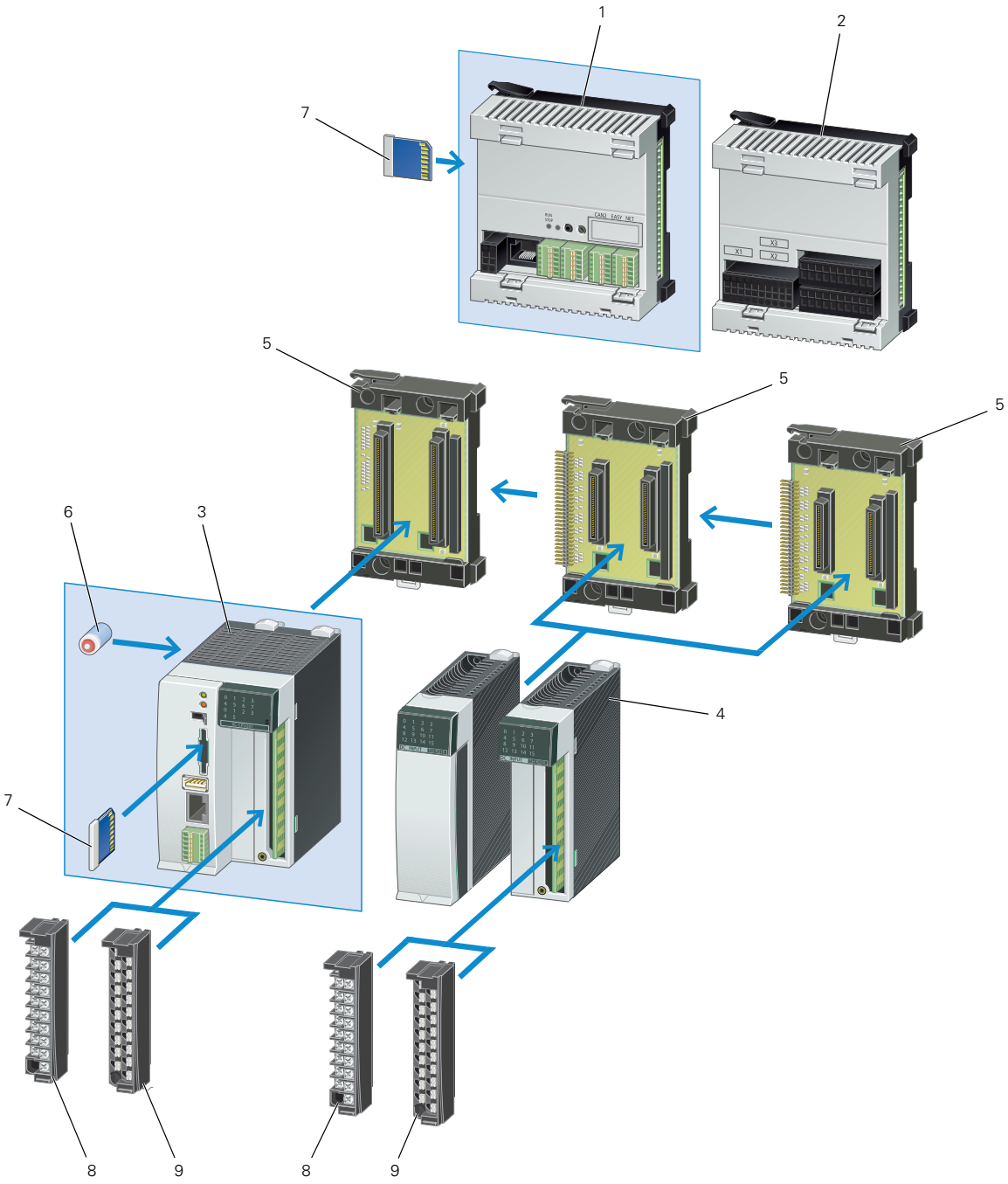
CPU	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
XIOC-BP-XC	XIOC-BP-2		XIOC-BP-3			XIOC-BP-EXT			XIOC-BP-3			XIOC-BP-2		XIOC-BP-2	
XIOC-BP-XC1		XIOC-BP-2		XIOC-BP-2		XIOC-BP-EXT			XIOC-BP-3			XIOC-BP-2		XIOC-BP-2	

Notes

① Maximum basic version, ≤7 signal modules.
② Maximum total version, ≤15 signal modules.

4

Product Identification



Item Number	Description
1	XC121 Compact PLC CPU
2	XC121 I.O Expansion module
3	XC100/XC200 Modular PLC
4	XIOC I/O modules
5	XIOC Module backplane

Item Number	Description
6	Battery
7	SD Memory card
8	XIOC Terminal block, screw terminals
9	XIOC Terminal block, spring-cage terminals

Product Selection

XC121 Compact PLC CPU

Can be locally expanded with I/O module XIO-EXT-121-1.

- 24 Vdc input supply
- Real time clock
- 2 CANopen interfaces (500 kB)
- RS-232 interface for programming and communication
- Second RS-232/RS-485 interface
- Slot for SD memory card
- Spring-cage terminal blocks
- OPC server
- RUN/STOP switch

XC121

XC121 Compact PLC

Program Memory Size	Cycle Time ①	Ethernet	CAN	Serial Interface	Web Server	Pkg. Qty.	Style Number	Catalog Number
256 kB	<0.3 ms	—	2	1, RS-232 1, RS-232/RS-485	—	1	290446	**XC-CPU121-2C256K**

XC121 I/O Expansion Module

Base I/O module for the XC121.

- 10 digital inputs 24 Vdc
- 6 interrupt inputs
- 8 digital inputs/outputs 24 Vdc 0.5A
- 2 analog inputs 0–10V
- 2 analog inputs 0–20 mA
- 2 analog inputs PT100 RTD
- 2 analog outputs 0–10V
- Removable spring-cage terminals
- Expandable with 15 XIOC modules ②

XC121 I/O Module

XC121 I/O Expansion Module

Digital Inputs	Digital Inputs/Outputs	Analog Inputs	Analog Outputs	Pkg. Qty.	Style Number	Catalog Number
10, 24 Vdc	8, 24 Vdc 0.5A	2, 0–10V 2, 0–20 mA 2, PT100 RTD	2, 0–10V	1	290450	**XIO-EXT121-1**

XC101 Modular PLCs

Order backplane, terminals and battery separately.

- 24 Vdc input supply
- Real time clock
- Expandable with 15 XIOC modules
- 8 digital inputs
- 4 interrupt inputs
- 6 digital outputs
- RS-232 interface for programming and communication
- CANopen interface (500 kB)
- Slot for SD memory card
- RUN/STOP switch and LED indicators

XC101

XC101 Modular PLCs

Program Memory Size	Cycle Time ①	Ethernet	CANOpen	Serial Interface	Web Server	Pkg. Qty.	Style Number	Catalog Number
64 kB	<0.5 ms	—	1	1, RS-232 typ.	—	1	262152	**XC-CPU101-C64K**
128 kB	<0.5 ms	—	1	1, RS-232 typ.	—	1	262146	**XC-CPU101-C128K**
256 kB	<0.5 ms	—	1	1, RS-232 typ.	—	1	274399	**XC-CPU101-C256K**

Notes

① Cycle time per 1k of instructions.
② Except the XIOC-NET-DP-M module.

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XC201 Modular PLCs

Order backplane, terminals and battery accessories separately.

- 24 Vdc input supply
- Real time clock
- Expandable with 15 XIOC modules
- 8 digital inputs
- 2 interrupt inputs
- Incremental encoder inputs
- High speed counter (50 kHz) inputs
- 6 digital outputs
- Ethernet and RS-232 interface for programming and communication
- CANopen interface (1 MB)
- Slot for SD memory card
- USB interface
- RUN/STOP switch and LED indicators
- Built-in Web server on XV models

XC201

XC201 Modular PLCs

Program Memory Size	Cycle Time ①	Ethernet	CANOpen	Serial Interface	Web Server	Pkg. Qty.	Style Number	Catalog Number
256 kB	<0.15 ms	✓	1	1, RS-232	—	1	262155	**XC-CPU201-EC256K**
2 MB	<0.15 ms	✓	1	1, RS-232	—	1	262157	**XC-CPU201-EC512K**
256 kB Integrated web server	<0.15 ms	✓	1	1, RS-232	✓	1	262156	**XC-CPU201-EC256K-XV**
2 MB Integrated web server	<0.15 ms	✓	1	1, RS-232	✓	1	262158	**XC-CPU201-EC512K-XV**

XC202 Modular PLCs

Order backplane, terminals and battery accessories separately.

- 24 Vdc input supply
- Real time clock
- Expandable with 15 XIOC modules
- 8 digital inputs
- 2 interrupt inputs
- Incremental encoder inputs
- High speed counter (50 kHz) inputs
- 6 digital outputs
- Ethernet and RS-232 interface for programming and communication
- CANopen interface (1 MB)
- Slot for SD memory card
- USB interface
- RUN/STOP switch and LED indicators
- Built-in Web server

XC202

XC202 Modular PLCs

Program Memory Size	Cycle Time ①	Ethernet	CANOpen	Serial Interface	Web Server	Pkg. Qty.	Style Number	Catalog Number
4 MB Integrated web server	<0.025 ms	✓	1	1, RS-232	✓	1	134238	**XC-CPU202-EC4M-XV**

XIOC Expansion Modules

Order screw, spring-cage terminals or 40-pin connector cable for 32 I/O modules separately.

- 8, 16 and 32 input modules
- 8, 16 and 32 output modules
- User configurable input/output module
- Isolated relay output module

XIOC—Digital

XIOC Digital Expansion Modules

Description	Pkg. Qty.	Style Number	Catalog Number
8 inputs, 24 Vdc	1	257891	**XIOC-8DI**
16 inputs, 24 Vdc	1	257892	**XIOC-16DI**
32 inputs, 24 Vdc	1	267411	**XIOC-32DI**
8 outputs, 24 Vdc, 0.3A	1	257894	**XIOC-8DO**
16 outputs, 24 Vdc, 0.3A	1	257896	**XIOC-16DO**
16 outputs, 24 Vdc, 0.8A, short-circuit protected	1	257895	**XIOC-16DO-S**
16 terminals, 4 inputs, 12 configurable as inputs/outputs, 24 Vdc—outputs 0.5A	1	262322	**XIOC-16DX**
32 outputs, 24 Vdc, 0.2A	1	267413	**XIOC-32DO**
12 relay outputs, isolated	1	257897	**XIOC-12DO-R**

Note

① Cycle time per 1k of instructions.

XIOC—Analog

XIOC Analog Modules

Description	Pkg. Qty.	Style Number	Catalog Number
Inputs: 8 inputs 4–20 mA	1	262549	**XIOC-8AI-I2**
Inputs: 8 voltage inputs 0–10V	1	257899	**XIOC-8AI-U1**
Inputs: 8 voltage inputs, ±10V	1	257900	**XIOC-8AI-U2**
Inputs: 4 inputs for temperature monitoring, PT100/1000	1	257901	**XIOC-4T-PT**
Inputs: 4 inputs for thermocouples Type K, J, L, B, N, E, R, S, T	1	289933	**XIOC-4AI-T**
Outputs: 2 outputs, ±10V	1	257904	**XIOC-2AO-U2**
Outputs: 2 outputs 0–10V, 2 outputs 4–20 mA	1	257902	**XIOC-2AO-U1-2AO-I2**
Outputs: 4 outputs 0–10 V	1	257903	**XIOC-4AO-U1**
Combination modules: 2 inputs and 1 output 0–10V/1 ms conversion time	1	262409	**XIOC-2AI-1AO-U1**
Combination modules: 2 inputs and 1 output 0–10V, 0–20 mA/1 ms conversion time, individual changeover	1	281545	**XIOC-2AI-1AO-U1-I1**
Combination modules: 4 inputs and 2 outputs 0–10V/1 ms conversion time	1	262405	**XIOC-4AI-2AO-U1**
Combination modules: 4 inputs and 2 outputs 0–10V, 0–20 mA/1 ms conversion time, individual changeover	1	281544	**XIOC-4AI-2AO-U1-I1**

XIOC—Counter

Counter Modules

Description	Pkg. Qty.	Style Number	Catalog Number
1 input up to 100 kHz, 24 Vdc, 5 Vdc, 2 digital transistor outputs, opto-isolated, 24 Vdc 30-pin connector required for counter module	1	257906	**XIOC-1CNT-100KHZ**
2 inputs up to 100 kHz, (24 Vdc or 5V diff), 4 digital transistor outputs, opto-isolated, 24 Vdc 30-pin connector required for counter module	1	257907	**XIOC-2CNT-100KHZ**
2 incremental encoders up to 400 kHz, 5 Vdc, 2 analog outputs ±10V	1	262417	**XIOC-2CNT-2AO-INC**

XIOC—Communication Card

Communication Modules

Description	Pkg. Qty.	Style Number	Catalog Number
PROFIBUS-DP master module	1	257908	**XIOC-NET-DP-M**
PROFIBUS-DP node module	1	286419	**XIOC-NET-DP-S**
Serial interfaces: RS-232C, RS-485, RS-422 (for XC101, XC201 and XC202) Modes of operation: Transparent mode, Modbus master/node	1	267191	**XIOC-SER**
Serial interfaces: RS-232C, RS-485, RS-422 (for XC201 and XC202 only) Modes of operation: Transparent mode, Modbus master/node	1	135265	**XIOC-TC1**

Accessories

Terminals

Terminals

One 18 pole terminal plug is required for each digital and analog module.

Description	Pkg. Qty.	Style Number	Catalog Number
18-pin connector with screw terminals for digital or analog I/O	10	258102	**XIOC-TERM-18S**
18-pin connector with spring-cage terminal for digital or analog I/O	10	258104	**XIOC-TERM-18T**
40-pin connector for digital module, with 4 m cable XIOC-32DI XIOC-32DO	1	267414	**XIOC-TERM32**
30-pin connector for counter module, with 4 m cable XIOC-1CNT-100KHZ XIOC-2CNT-100KHZ	1	262248	**XIOC-TERM30-CNT4**

Module Backplane

Backplane

Description	Pkg. Qty.	Style Number	Catalog Number
Basic backplane for mounting XC100/200 on top-hat rail, can be expanded Width: 2 slots for controller	1	260792	**XIOC-BP-XC**
Expansion backplane for mounting XIOC modules on top-hat rail, can be expanded Width: 2 slots for XIOC modules	1	260794	**XIOC-BP-2**

Backplane

Basic backplane for mounting XC100/200 on DIN rail, can be expanded Width: 3 slots for controller and one XIOC module	1	260793	**XIOC-BP-XC1**
Expansion backplane for mounting XIOC modules on DIN rail, can be expanded Width: 3 slots for XIOC modules	1	260795	**XIOC-BP-3**
Expansion backplane for mounting XIOC modules on DIN rail, can be expanded Width: 3 slots for XIOC modules ①	1	274291	**XIOC-BP-EXT**

Memory Card

Memory Card

For storage of programs, data, recipes for XC100, XC121, XC200.

Description	Pkg. Qty.	Style Number	Catalog Number
512 MB	1	138257	**XT-MEM-MM512M**
32 MB	1	262731	**XT-MEM-MM32M**

Note

① Module backplane for expansion with up to 15 modules, must be plugged into the 6th slot.

Battery

Battery

Description	Pkg. Qty.	Style Number	Catalog Number
Lithium 1/2 AA 3.6V battery for backup of real-time clock	1	256209	**XT-CPU-BAT1**

Programming Cables

Description	Pkg. Qty.	Style Number	Catalog Number
D-Sub 9-Pin			
2m, D-sub 9-pin, serial	1	262186	**XT-SUB-D/RJ45**
Ethernet Cross			
2m, Ethernet cross	1	256487	**XT-CAT5-X-2**
5m, Ethernet cross	1	256488	**XT-CAT5-X-5**
Programming			
Programming cable for XC through USB interface	1	115735	**EU4A-RJ45-USB-CAB1**

Connection Cable

Connection Cables

Description	Pkg. Qty.	Style Number	Catalog Number
0.3m: Connection cable for XC200 to interface switch	1	256283	**EASY-NT-30**
0.8m: Connection cable for XC200 to interface switch	1	256284	**EASY-NT-80**
1.5m: Connection cable for XC200 to interface switch	1	256285	**EASY-NT-150**

Empty Module

Empty Module

Description	Pkg. Qty.	Style Number	Catalog Number
Empty module to cover open XIOC slots	1	288894	**XIOC-NOP**

Interface Switch

Interface Switch

Description	Pkg. Qty.	Style Number	Catalog Number
Interface adapter to split the combined RS-232/Ethernet interface of the XC200 into RJ45 sockets. Connection cable EASY-NT-30/80/150 usable for connection to XC200	1	289170	**XT-RJ45-ETH-RS232**

Filter

Filter

Description	Pkg. Qty.	Style Number	Catalog Number
Interference suppression of the external 24 Vdc supply of the XC100/200. Maximum current consumption: 2.2A	1	285316	**XT-FIL-1**
Power supply interference suppression of I/O modules of XC100/200. Maximum current consumption: 12A	1	118980	**XT-FIL-2**

XSoft-CODESYS-2 Software

Combined Logic and Visualization Development for XC Series PLCs

IEC 61131-3 Programming Languages

- Ladder Diagram
- Structured Text
- Sequential function chart
- Function block diagram
- Freely definable function block chart/continuous function chart
- Instruction List

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-2 offers you a number of important functions for debugging, testing and commissioning your applications quickly and efficiently.

All these features are available as soon as you log on to the XV HMI-PLC or XC200 PLC (online mode) over an Ethernet connection.

Target Visualization

Integrated design of Operator Interface screens for the XV HMI-PLC 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-2 can automatically generate XML-based runtime screens to make the screens from the XV HMI-PLC accessible remotely using a web browser with a JavaScript plug-in such as Internet Explorer®, Firefox® and others.

Simulation

Users can also test the application when the XV HMI-PLC 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.

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/Node, email, SMS, and more)
- 8 level password protection
- Web access selectable per screen
- System function libraries (OS Storage Card, and more)
- On-line and historical alarms
- On-line and historical trends

System Requirements

Windows XP and Windows 7 32-bit systems

XSoft-CODESYS-2

XSoft-CODESYS-2 Software

Description	Catalog Number
Single Seat License	**SW-XSOFT-CODESYS-2-S**
Multiple Seat License (3)	**SW-XSOFT-CODESYS-2-M**

Technical Data and Specifications

XC121 Compact PLC

Description	Unit	XC-CPU121-2C256K
General		
Standards		IEC/EN 61131-2; EN 50178
Ambient temperature	°F (°C)	32° to 131° (0° to 55°)
Storage	°F (°C)	–13° to 158° (–25° to 70°)
Mounting position		Horizontal
Relative humidity, noncondensing (IEC/EN 60068-2-30)	%	10–95
Air pressure (in operation)	hPa	795–1080
Vibration resistance		Frequency 5–9 Hz; 3.5 mm amplitude 9–150 Hz; 1.0g constant acceleration
Mechanical shock resistance		15g/11 ms
Overvoltage category		II
Pollution degree		2
Degree of protection		IP20
Rated insulation voltage (U_i)	V	500
Emitted interference		EN 61000-6-4
Interference immunity		EN 61000-6-2
Backup time		At least 72 hours
Weight	kg	0.15
Electromagnetic Compatibility (EMC)		Refer to Page **V7-T4-76**
Connections		
Supply voltage		
Connection type		—
Terminal capacity	mm^2	0.14–1 (AWG28-18)
COM1 interface		
Connection type		RJ45
COM2, CAN1, CAN2 interfaces		
Connection type		Spring-loaded terminal block, 6-pole
Terminal capacity	mm^2	0.14–0.5 (AWG28-20)
Power Supply		
Input voltage	Vdc	24
Permissible range	Vdc	20.4–28.8
Input power	W	Max. 1.44
Input current	mA	60
Ripple	%	≤5
Maximum heat dissipation (without local I/O) (P_v)	W	6
Overvoltage protection		Yes
Protection against polarity reversal		Yes
Inrush current	x I_n	No limitation (limited only by upstream 24 Vdc power supply unit)
Supply failure bridging		
Duration of power failure	ms	10
Repetition rate	s	1
External supply filter		Part No.: XT-FIL-1, Refer to **Page V7-T4-59**
Memory		
Program code/program data	kByte	256/244
Marker/input/output/retain data	kByte	16/4/4/8
Cycle time for 1k of instructions (bits, bytes)	ms	<0.3

XC121 Compact PLC, continued

Description	Unit	XC-CPU121-2C256K
Interfaces		
Serial interface (RS-232) without handshake lines		
Baud rate	kbit/s	Programming (character format: 8 data bits, No parity, 1 stop bit) 19.2, 38.4 (default), 57.6
Connector type		RJ45
Potential isolation		No
In transparent mode		
Baud rate	kbit/s	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, 115.2
Character formats		8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1
Number of send bytes for block		190
Number of receive bytes for block		190
COM2 (RS-232/RS-485) without handshake lines		
Baud rate	kbit/s	Transparent mode (setting through function blocks) 0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6
Character formats		8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1 (setting through function blocks)
Potential isolation		No
Bus termination		External, for RS-485
CAN1/CAN2 interface		
Baud rate	kbit/s	10 – 500
Potential isolation		No
Stations		126
Bus termination		Adjustable for each interface (CAN1/CAN2)
PDO type		Asyn., cyc., acyc.
Power Supply of Local Inputs/Outputs (24 V_Q/0 V_Q)		
Input voltage	Vdc	24
Voltage range	Vdc	19.2–30, observe polarity
Potential isolation		
Between power supply and CPU voltage		Yes
Overvoltage protection		Yes

XC121 Expansion Module

Description	Unit	XIO-EXT121-1
General		
Standards		IEC/EN 61131-2; EN 50178
Ambient temperature	°F (°C)	32° to 131° (0° to 55°)
Storage	°F (°C)	–13° to 158° (–25° to 70°)
Mounting position		Horizontal
Relative humidity, noncondensing (IEC/EN 60068-2-30)	%	10–95
Air pressure (in operation)	hPa	795–1080
Vibration resistance		Frequency 5–9 Hz; 3.5 mm amplitude 9–150 Hz; 1.0g constant acceleration
Mechanical shock resistance		15g/11 ms
Overvoltage category		II
Pollution degree		2
Degree of protection		IP20
Rated insulation voltage (U_i)	V	500
Emitted interference		EN 61000-6-4
Interference immunity		EN 61000-6-2
Backup time		At least 72 hours
Weight	kg	0.15
Electromagnetic Compatibility (EMC)		Refer to Page **V7-T4-76**
Connections		
X1 connector		
Connector type		Spring-loaded terminal block, 20 pole, B2L 3.5
Terminal capacity (solid)	mm^2	0.5–1
X2/X3 connector		
Connector type		Spring-loaded terminal block, 10-pole, BLZF 3.5/180 or BLI/O 3.5/10F with LEDs
Terminal capacity (solid)	mm^2	0.5–1
Power Supply		
Supply failure bridging		
Duration of power failure	ms	10
Repetition rate	s	1
Input voltage	Vdc	24
Permissible range	Vdc	20.4 – 28.8
Input power	W	Max.1.68
Input current	mA	70
Ripple	%	≤5
Overvoltage protection		Yes
Protection against polarity reversal		Yes
Inrush current	x I_n	Max. 1A
Output voltage for signal modules		
Max. field current (I_L)	A	2
Digital Inputs		
Number		X2: 9 with plug BLI/O 3.5/10F or 10 with plug BLZF 3.5/180 X3: 8 (can also be used as outputs)
Rated voltage (U_e)	Vdc	24
At state "0" (U_e)	Vdc	<5
At state "1" (U_e)	Vdc	>15
Rated operational current		
At state "1" (I_e)	mA	3.3
Delay time		
X2: DI0–DI3	µs	20
X2: DI4–DI9	µs	250
X2: DX0–DX7	ms	20
Potential isolation		No

XC121 Expansion Module, continued

Description	Unit	XIO-EXT121-1
Digital Outputs		
Number		At X3: 8 (can also be used as inputs)
Rated voltage		
Rated voltage (U_e)	Vdc	24
Permissible range		20.4–28.8 Vdc
Ripple	%	≤5
Rated operational current		
At state "1" (I_e)	A	0.5 at 24 Vac
Utilization factor (%)	g	1
Maximum duty factor	ms	100%
Lamp load without (R_v)	W	5
Potential isolation		No
Residual current at state "0" per channel	mA	<0.1
Max. output voltage		
At state "0" with external load <10M ohms	V	2.5
At state "1" at I_e = 0.5A	V	U = U_e–1V
Short-circuit tripping current		
Short-circuit tripping current for R_a <10M ohms	A	0.7 ≤ I_e ≤2 for output
Total short-circuit current	A	16
Peak short-circuit current	A	32
Max. operating frequency	ops/h	40,000
Parallel connection capability		Yes
Analog Inputs 0–10V		
Number of channels		2
Primary voltage range	V	0–10
Resolution	bit	10
Conversion time	ms	≤5
Overall accuracy		≤ ± 1% (of full-scale value)
Input resistance	kohm	200
Analog Inputs 0–20 mA		
Number of channels		2
Primary voltage range	mA	0–20
Resolution	bit	10
Conversion time	ms	≤5
Overall accuracy		≤ ± 1% (of full-scale value)
Input resistance	ohm	50
PT100 RTD		
Number of channels		2
Temperature range	°F (°C)	–348° to 392° (–200° to 200°)
Resistance range	ohm	18.5–175.8
Resolution	bit	10
Overall accuracy		≤ ± 2%
Analog Outputs		
Number of channels		2
Secondary voltage range	V	0–10
Resolution	bit	12
Conversion time	ms	≤5
Overall accuracy		≤ ± 1% (of full-scale value)
External load resistance (R)	kohm	10

XC101 Modular PLCs

Description	Unit	XC-CPU101-C64K-8DI-6DO	XC-CPU101-C128K-8DI-6DO	XC-CPU101-FC128K-8DI-6DO	XC-CPU101-C256K-8DI-6DO
General					
Standards		IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178
Ambient temperature	°F (°C)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)
Storage	°F (°C)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)
Mounting position		Horizontal	Horizontal	Horizontal	Horizontal
Relative humidity, noncondensing (IEC/EN 60068-2-30)	%	10–95	10–95	10–95	10–95
Air pressure (in operation)	hPa	795–1080	795–1080	795–1080	795–1080
Vibration resistance		10–57 Hz ±0.075 mm/57–150 Hz ±1.0g			
Mechanical shock resistance		15g/11 ms	15g/11 ms	15g/11 ms	15g/11 ms
Overvoltage category		II	II	II	II
Pollution degree		2	2	2	2
Degree of protection		IP20	IP20	IP20	IP20
Rated insulation voltage (U_i)	V	500	500	500	500
Emitted interference	U_i	EN 61000-6-4, Class A	EN 61000-6-4, Class A	EN 61000-6-4, Class A	EN 61000-6-4, Class A
Interference immunity		EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Battery (lifespan)		Normally 5 years	Normally 5 years	Normally 5 years	Normally 5 years
Weight	kg	0.23	0.23	0.23	0.23
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Terminal capacity					
Screw terminals					
Flexible with ferrule	mm^2	0.5–1.5	0.5–1.5	0.5–1.5	0.5–1.5
Solid	mm^2	0.5–2.5	0.5–2.5	0.5–2.5	0.5–2.5
Spring-cage terminal					
Flexible	mm^2	0.34–1.0	0.34–1.0	0.34–1.0	0.34–1.0
Solid	mm^2	0.14–1.0	0.14–1.0	0.14–1.0	0.14–1.0
Electromagnetic Compatibility (EMC)		Refer to Page **V7-T4-76**			
Power Supply					
Mains failure duration	ms	10	10	10	10
Repetition rate	s	1	1	1	1
Input voltage	Vdc	24	24	24	24
Permissible range	Vdc	20.4–28.8	20.4–28.8	20.4–28.8	20.4–28.8
Input power	W	Max. 26	Max. 26	Max. 26	Max. 26
Ripple	%	≤5	≤5	≤5	≤5
Maximum heat dissipation (without local I/O) (P_v)	W	6	6	6	6
Overvoltage protection		Yes	Yes	Yes	Yes
Protection against polarity reversal		Yes	Yes	Yes	Yes
Mains filter (external)		Yes	Yes	Yes	Yes
Inrush current	x I_n	Not limited, (limiting only by a supply-side 24 Vdc PSU)			
Output voltage for signal modules					
Rated value	Vdc	5	5	5	5
Output current	A	3.2	3.2	3.2	3.2
Short-circuit rating		Yes	Yes	Yes	Yes
Isolated from supply voltage		No	No	No	No
CPU					
Microprocessor		Infineon C164	Infineon C164	Infineon C164	Infineon C164
Memory					
Program code/program data	kByte	64/64	128/128	128/128	256/256
Marker/retain data	kByte	4/4	8/8	8/8	8/8
Cycle time for 1k of instructions (bits, bytes)	ms	<0.5	<0.5	<0.5	<0.5

XC101 Modular PLCs, continued

Description	Unit	XC-CPU101-C64K-8DI-6DO	XC-CPU101-C128K-8DI-6DO	XC-CPU101-FC128K-8DI-6DO	XC-CPU101- C256K-8DI-6DO
Interfaces					
Serial interface (RS-232) without handshake lines					
Baud rate	kbit/s	Max. 57.6	Max. 57.6	Max. 57.6	Max. 57.6
Connections		RJ45	RJ45	RJ45	RJ45
Potential isolation		No	No	No	No
CANopen					
Maximum data transfer rate	bit/s	500,000	500,000	500,000	500,000
Potential isolation		Yes	Yes	Yes	Yes
Device profile		To DS 301 V4	To DS 301 V4	To DS 301 V4	To DS 301 V4
PDO type		Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection		Plug-in terminal block	Plug-in terminal block	Optical fiber interface, wavelength 660 mm, plug for example HFBR-4516 Agilent Technologies	Plug-in terminal block
Bus terminating resistors		External	External	External	External
Stations	Number	Max. 126	Max. 126	Max. 126	Max. 126
Watchdog		Yes	Yes	Yes	Yes
RTC (real-time clock)		Yes	Yes	Yes	Yes
Power Supply of Local Inputs/Outputs (24 V_Q/0 V_Q)					
Input voltage	Vdc	24	24	24	24
Voltage range	Vdc	19.2–30, observe polarity	19.2–30, observe polarity	19.2–30, observe polarity	19.2–30, observe polarity
Potential isolation					
Between power supply and CPU voltage		Yes	Yes	Yes	Yes
Overvoltage protection		Yes	Yes	Yes	Yes
Protection against polarity reversal		Yes	Yes	Yes	Yes
Digital Inputs					
Input current for channel at rated voltage	mA	Normally 3.5	Normally 3.5	Normally 3.5	Normally 3.5
Heat dissipation for channel	mW	Normally 85	Normally 85	Normally 85	Normally 85
Voltage level to IEC/EN 61131-2					
Limit value type 1		Low <5 Vdc/High >15 Vdc	Low <5 Vdc,/High >15 Vdc	Low <5 Vdc/High >15 Vdc	Low <5 Vdc/High >15 Vdc
Input delay					
OFF ⟶ ON	ms	Normally 0.1	Normally 0.1	Normally 0.1	Normally 0.1
ON ⟶ OFF	ms	Normally 0.1	Normally 0.1	Normally 0.1	Normally 0.1
Inputs	Number	8 (of which 4 interrupt inputs)	8 (of which 4 interrupt inputs)	8 (of which 4 interrupt inputs)	8 (of which 4 interrupt inputs)
Channels with the same reference potential	Number	8	8	8	8
Status indication		LED	LED	LED	LED
Digital Outputs					
Channels	Number	6	6	6	6
Heat dissipation for channel	W	0.08	0.08	0.08	0.08
Load circuits	A	0.5	0.5	0.5	0.5
Output delay					
OFF ⟶ ON		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
ON ⟶ OFF		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential	Number	6	6	6	6
Status indication		LED	LED	LED	LED
Switching capacity		IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13
Duty factor	% DF	100	100	100	100
Utilization factor	g	1	1	1	1

XC200 Series Modular PLCs

Description	Unit	XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)	XC-CPU202-EC4M-8DI-6DO-XV
General				
Standards		IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178
Ambient temperature	°F (°C)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)
Storage	°F (°C)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)
Mounting position		Horizontal	Horizontal	Horizontal
Relative humidity, noncondensing (IEC/EN 60068-2-30)	%	10–95	10–95	10–95
Air pressure (in operation)	hPa	795–1080	795–1080	795–1080
Vibration resistance		10–57 Hz ±0.075 mm 57–150 Hz ±1.0g	10–57 Hz ±0.075 mm 57–150 Hz ±1.0g	10–57 Hz ±0.075 mm 57–150 Hz ±1.0g
Mechanical shock resistance		15g/11 ms	15g/11 ms	15g/11 ms
Overvoltage category		II	II	II
Pollution degree		2	2	2
Degree of protection		IP20	IP20	IP20
Rated impulse withstand voltage (U_{imp})	V	850	850	850
Emitted interference		EN 61000-6-4, Class A	EN 61000-6-4, Class A	EN 61000-6-4, Class A
Interference immunity		EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Battery (lifespan)		Normally 5 years	Normally 5 years	Normally 5 years
Weight	kg	0.23	0.23	0.23
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Terminal capacity Screw terminals				
Flexible with ferrule	mm^2	0.5–1.5	0.5–1.5	0.5–1.5
Solid	mm^2	0.5–2.5	0.5–2.5	0.5–2.5
Spring-cage terminal				
Flexible	mm^2	0.34–1.0	0.34–1.0	0.34–1.0
Solid	mm^2	0.14–1.0	0.14–1.0	0.14–1.0
Electromagnetic Compatibility (EMC)			Refer to Page **V7-T4-76**	
Power Supply				
Duration of mains failure	ms	10	10	10
Repetition rate	s	1	1	1
Input voltage	Vdc	24	24	24
Permissible range	Vdc	20.4–28.8	20.4–28.8	20.4–28.8
Input power	W	Max. 33	Max. 33	Max. 33
Ripple	%	≤5	≤5	≤5
Maximum heat dissipation (P_v)	W	6	6	6
Overvoltage protection		Yes	Yes	Yes
Protection against polarity reversal		Yes	Yes	Yes
Line filter		Yes	Yes	Yes
Inrush current	x I_n		Not limited (limiting only by a supply-side 24 Vdc PSU)	
Output voltage for signal modules Rated value	Vdc	5	5	5
Output current	A	3.2	3.2	3.2
Short-circuit rating		Yes	Yes	Yes
Isolated from supply voltage		No	No	No
CPU				
Microprocessor		NEC VR4181 A MIPS	NEC VR4181 A MIPS	ARM 532 MHz
Memory				
Program code/program data		256 kByte/256 kByte	2 Mbyte/512 kByte	4 Mbyte/512 kByte
Marker/retain data	kByte	16/32	16/32	16/64
Cycle time for 1k of instructions (bits, bytes)	ms	<0.15	<0.15	<0.025

XC200 Series Modular PLCs, continued

Description	Unit	XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)	XC-CPU202-EC4M-8DI-6DO-XV
Interfaces				
Ethernet				
Baud rate	Mbit/s	10/100–Autodetect	10/100–Autodetect	10/100–Autodetect
Connector type		RJ45	RJ45	RJ45
Potential isolation		No	No	No
Serial interface (RS-232) without handshake lines				
Baud rate	kbit/s	Max. 115.2	Max. 115.2	Max. 115.2
Connector type		RJ45	RJ45	RJ45
Potential isolation		No	No	No
USB interface		1.0	1.0	2.0
CANopen				
Maximum data transfer rate	Mbit/s	1	1	1
Potential isolation		Yes	Yes	Yes
Device profile		To DS 301 V4	To DS 301 V4	To DS 301 V4
PDO type		Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Bus terminating resistors		External	External	Internal
Stations	Number	Max. 126	Max. 126	Max. 126
Watchdog		Yes	Yes	Yes
RTC (real-time clock)		Yes	Yes	Yes
Power Supply of Local Inputs/Outputs (24 V_Q/0 V_Q)				
Input voltage	Vdc	24	24	24
Voltage range	Vdc	19.2–30, observe polarity	19.2–30, observe polarity	19.2–30, observe polarity
Potential isolation				
Between power supply and CPU voltage		Yes	Yes	Yes
Between power supply and inputs/outputs		No	No	No
Status indication		LED	LED	LED
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Overvoltage protection		Yes	Yes	Yes
Protection against polarity reversal		Yes	Yes	Yes
Digital Inputs				
Input current per channel at rated voltage	mA	Normally 3.5	Normally 3.5	Normally 3.5
Heat dissipation per channel		Normally 85m W	Normally 85m W	Normally 85m W
Voltage level to IEC/EN 61131-2				
Limit value type 1		Low <5 Vdc/High >15 Vdc	Low <5 Vdc/High >15 Vdc	Low <5 Vdc/High >15 Vdc
Input delay				
OFF ⟶ ON	ms	Type 0.1	Type 0.1	Type 0.1
ON ⟶ OFF	ms	Type 0.1	Type 0.1	Type 0.1
Inputs	Number	8, of which parameterizable: 2 counters, 50 kHz, 2 interrupt inputs, 1 incremental input		
Channels with the same reference potential	Number	8	8	8
Status indication		LED	LED	LED
Digital Outputs				
Channels	Number	6	6	6
Heat dissipation per channel	W	0.08	0.08	0.08
Load circuits	A	0.5	0.5	0.5
Output delay				
OFF ⟶ ON		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
ON ⟶ OFF		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential	Number	6	6	6
Status indication		LED	LED	LED
Switching capacity			IEC/EN 60947-5-1, utilization category DC-13	
Duty factor	% DF	100	100	100
Utilization factor	g	1	1	1

XIOC Digital Input Modules

Description	Unit	XIOC-8DI	XIOC-16DI	XIOC-32DI
Modules				
Input type		DC input	DC input	DC input
Input voltage	Vdc	24	24	24
Permissible range	Vdc	20.4–28.8	20.4–28.8	20.4–28.8
Input voltage	Vac	—	—	—
Permissible range	Vac	—	—	—
Input resistance		Normally 3.5 kohm	Normally 5.9 kohm	Normally 5.6 kohm
Input current	mA	Normally 6.9	Normally 4.0	Normally 4.3
Voltage level to IEC 61131-2, limit value type 1				
ON	Vdc	≥15	≥15	≥15
OFF	Vdc	≤5	≤5	≤5
Input delay				
OFF ⟶ ON	ms	5 (normally 4)	5 (normally 4)	5 (normally 4)
OFF ⟶ ON	ms	5 (normally 4)	5 (normally 4)	5 (normally 4)
Input channels	Number	8	16	32
Channels with the same reference potential	Number	8	16	32
Potential isolation		With optocouplers	With optocouplers	With optocouplers
Indication		LED (green)	LED (green)	16 LEDs (green), switchable: 0–15, 16–31
Terminals		Plug-in terminal block	Plug-in terminal block	XIOC-TERM32 (connector and cable)
Internal current consumption (5 Vdc)	mA	Normally 26	Normally 51	Normally 100
Weight	kg	0.16	0.16	0.16

XIOC Digital Output Modules

Description	Unit	XIOC-8DO	XIOC-16DO	XIOC-16DO-S	XIOC-32DO
Modules					
Output type		Transistor (source type)	Transistor (source type)	Transistor (source type)	Transistor (source type)
Output voltage	Vdc	24 (–15 to +20%)	24 (–15 to +20%)	24 (–15 to +20%)	24 (–15 to +20%)
Switching current, minimum	mA	1	1	1	1
Leakage current	mA	0.1	0.1	0.1	0.1
Maximum load current					
Per circuit	A	0.3	0.3	0.8	0.2
Per common potential terminal	A	2.4	4	5	3.2
Output delay					
OFF ⟶ ON	ms	≤0.3	≤0.3	≤0.3	≤0.3
OFF ⟶ ON	ms	≤1	≤1	≤1	≤1
Output channels	Number	8	16	16	32
Channels with the same reference potential	Number	8	16	16	32
Overvoltage protection		Diode	Diode	Integrated	Diode
Fuse rating	A	4	8	None	8
Potential isolation		With optocouplers	With optocouplers	With optocouplers	With optocouplers
Indication		LED (green)	LED (green)	LED (green)	16 LEDs (green) switchable: 0–15, 16–31
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	XIOC-TERM32 (connector and cable)
Internal current consumption (5 Vdc)	mA	Normally 30	Normally 50	Normally 50	Normally 250
External voltage for outputs/module (30 mA for module supply) (U_s)	Vdc	24 (–15 to +20%)	24 (–15 to +20%)	24 (–15 to +20%)	24 (–15 to +20%)
Short-circuit protection		—	—	Yes	—
Weight	kg	0.16	0.16	0.16	0.16

XIOC Relay Output Module

Description	Unit	XIOC-12DO-R
Modules		
Output type		Relays
Output voltage	Vdc	24
Output voltage	Vac	100/240
Switching current, minimum	mA	1
Maximum load current		
Per circuit	A	2
Per common potential terminal	A	5
Output delay		
OFF ⟶ ON	ms	≤10
OFF ⟶ ON	ms	≤10
Output channels	Number	12
Channels with the same reference potential	Number	12
Overvoltage protection		External
Fuse rating	A	External
Potential isolation		With optocouplers
Indication		LED (green)
Terminals		Plug-in terminal block
Internal current consumption (5 Vdc)	mA	Normally 40
External voltage for operating the relay		24 Vdc (–15 to +20%, max. 70 mA)
Weight	kg	0.2

XIOC Digital Input/Output Module

Description	Unit	XIOC-16DX
Power Supply		
Supply voltage		24 Vdc (–15 to +20%)
Ripple	%	≤5
Overvoltage protection		Yes
Protection against polarity reversal		Yes
Potential isolation		
Between power supply and I/O bus		Yes
Between power supply and I/O		No
Internal current consumption (5 Vdc)	mA	Normally 80
Channels	Number	16
Terminals		Plug-in terminal block
Status indication		LED
Inputs		
Input type		DC input
Input voltage	Vdc	24
Inputs	Number	4, 12, configurable
Input current	mA	Normally 4
Voltage level to IEC 61131-2, limit value type 1		
ON	Vdc	≥15
OFF	Vdc	≤5
Input delay		
OFF ⟶ ON	ms	Normally 0.1
OFF ⟶ ON	ms	Normally 0.1
Outputs		
Output type		Transistor (source type)
Output voltage	Vdc	12/24 –15 to +20%)
Output current	A	Normally 0.5
Outputs	Number	Max. 12, configurable
Short-circuit tripping current	A	Max. 1.2 over 3 ms for output
Lamp load	W	Max. 3
Drop-out delay (High ⟶ Low)	µs	Normally 100
Switching capacity		IEC/EN 60947-5-1, utilization category DC-13
Short-circuit rating		Yes
Parallel connection of outputs		In groups 0 – 3, 4 – 7, 8 – 11; Actuation of the outputs within a group only in the same program cycle
Number of outputs that can be switched in parallel		Max. 3
Total maximum current	A	2 for group
Weight	kg	0.16

XIOC Analog Modules

Description	Unit	XIOC-8AI-I2	XIOC-8AI-U1	XIOC-8AI-U2	XIOC-4T-PT
Modules					
Input voltage	Vdc	—	0 to 10	–10 to +10	—
Input current	mA	4–20	—	—	—
Resolution, digital	bit	12	12	12	15 bit with sign
Conversion time		≤5 ms	≤5 ms	≤5 ms	—
Total errors	%	≤ ± 1 (of full-scale value)	≤ ± 1 (of full-scale value)	≤ ± 1 (of full-scale value)	≤ ± 1 (of full-scale value)
Input resistance	kohm	—	100	100	—
Potential isolation					
Circuit within each channel		With optocouplers	With optocouplers	With optocouplers	With optocouplers
Between the input channels		No	No	No	No
Input channels	Number	8	8	8	4
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
External power supply		24 Vdc (–15 to +20%), approx. 150 mA	24 Vdc (–15 to +20%), approx. 150 mA	24 Vdc (–15 to +20%), approx. 150 mA	24 Vdc (–15 to +20%), 100 mA
External resistance (R)	kohm	—	—	—	Max. 0.4, 4 channels
Connection type		2-core shielded cable (≤20m)	2-core shielded cable (≤20m)	2-core shielded cable (≤20m)	Shielded cable
Platinum RTD		—	—	—	PT100 (IEC 751), PT1000
Accuracy					
–20° to 40°C (PT100)	°C	—	—	—	±0.5
–50° to 400°C (PT100)	°C	—	—	—	±3
–50° to 400°C (PT1000)	°C	—	—	—	±6
Temperature measuring range		—	—	—	–20 to 40°/–50 to 400° (uninterrupted current: 2 mA)
Internal current consumption (5 Vdc)	mA	Normally 100	Normally 100	Normally 100	Max. 200
Additional function		—	—	—	Linearization
Fault detection					
–20° to 40°C		—	—	—	≤ –25°C or ≥ +45°C = resistance value 7FFFFhex
–50° to 400°C		—	—	—	≤ –60°C or ≥ +410°C = resistance value 7FFFFhex
Response to cable break or unused inputs		—	—	—	In these cases, the resistance value is 7FFFhex
Weight	kg	0.18	0.18	0.18	0.18

XIOC Thermocouple Module

Description	Unit	XIOC-4AI-T
Channels		
Number		4
Temperature measuring range	°C	Type K: –270 to 1370 Type J: –210 to 1200 Type B: 100 to 1800 Type N: –270 to 1300 Type E: –270 to 1000 Type R: –50 to 1760 Type T: –200 to 400
Voltage measurement	mV	–50 to 50 –100 to 100 –500 to 500 –1000 to 1000
Cold-junction compensation		Yes, built-in
Interference suppression		50 Hz, 60 Hz
Unit		0.1°C, 0.1 F
Resolution	bit	16
Total errors	%	±0.5 of measurement range
Conversion time		<1s
Temperature coefficient		<200 ppm/°C of measurement range

XIOC Analog Modules

Description	Unit	XIOC-2AO-U1-2AO-I2	XIOC-4AO-U1	XIOC-2AO-U2
Modules				
Output voltage	Vdc	0–10	0–10	–10 to 10
Output current	mA	4–20	—	—
Resolution	bit	12	12	12
Conversion time		≤5 ms	≤5 ms	≤5 ms
Total errors	%	≤±1 (of full-scale value)	≤±1 (of full-scale value)	≤±1 (of full-scale value)
External load resistance				
Voltage output		≥10 kohm	≥10 kohm	≥10 kohm
Current output	ohm	0 to 500 ohm	—	—
Potential isolation				
Circuit within each channel		With optocouplers		
Between channels		No	No	No
Number of outputs				
Output voltage		2 (channels 0 and 1)	4	2
Output current		2 (channels 2 and 3)	—	—
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Internal current consumption (5 Vdc)	mA	Normally 100	Normally 100	Normally 100
External power supply		24 Vdc (–15/+20%), approx. 150 mA	24 Vdc (–15/+20%), approx. 150 mA	24 Vdc (–15/+20%), approx. 150 mA
Connection type		2-core shielded cable (≤20m)	2-core shielded cable (≤20m)	2-core shielded cable (≤20m)

XIOC Analog Modules

Description	Unit	XIOC-2AI-1AO-U1	XIOC-2AI-1AO-U1-I1	XIOC-4AI-2AO-U1	XIOC-4AI-2AO-U1-I1
Inputs					
Input voltage	Vdc	0–10	0–10	0–10	0–10
Input current	mA	—	0–20	—	0–20
Resolution	bit	14	14	14	14
Conversion time		<1 ms	<1 ms	<1 ms	<1 ms
Total errors	%	Normally 0.4	Normally 0.4	Normally 0.4	Normally 0.4
Potential isolation					
Circuit within each channel		No	No	No	No
Between the input channels		No	No	No	No
Between input/output channels		No	No	No	No
Channels	Number	2	2	4	4
Input resistance	kohm	40	40	40	40
Outputs					
Output voltage	Vdc	0–10	0–10	0–10	0–10
Output current	mA	—	0–20	—	0–20
Resolution	bit	12	12	12	12
Errors		Normally 0.4%	Normally 0.4%	Normally 0.4%	Normally 0.4%
Potential isolation					
Circuit within each channel		No	No	No	No
Between the output channels		No	No	No	No
Number of channels		1	1	2	2
External load resistance		≥2 kohm	≥2 kohm	≥2 kohm	≥2 kohm
Short-circuit rating		Yes	Yes	Yes	Yes
Terminal Connection					
Terminals		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Internal current consumption (5 Vdc)	mA	Normally 200	Normally 200	Normally 200	Normally 200
Weight	kg	0.16	0.16	0.16	0.16

XIOC Communication Modules

Description	Unit	XIOC-NET-DP-M	XIOC-NET-DP-S	XIOC-SER	XIOC-TC1
Interfaces					
Interfaces		PROFIBUS-DP, RS-485, EN 50170	PROFIBUS-DP, RS-485, EN 50170	RS-232(C), RS-422, RS-485	RS-232(C), RS-422, RS-485
Protocol		PROFIBUS-DP master (class 1)	PROFIBUS-DP slave	Transparent mode, Modbus master/slave	Transparent mode, Modbus master/slave, DNP3 protocol
Character formats		—	—	8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1	8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1
Control and signal cables		—	—	RTS, CTS, DTR, DSR, DCD	RTS, CTS, DTR, DSR, DCD
Transfer rate	kbit/s	9.6 to 12,000	9.6 to 12,000	0.3 –57.6	0.3–57.6
Potential isolation		Yes	Yes	Yes (RS-485, RS-422)	Yes (RS-485, RS-422)
Number of slaves		124	—	—	—
Send/receive data		3500 Byte each	Max. 244 Byte	250 Byte per slave 120 Byte per slave	250/500
Bus terminating resistors		Switchable	Switchable	Switchable for RS-485, RS-422	Switchable for RS-485, RS-422
Connector type		D-sub 9-pin socket	D-sub 9-pin socket	RS-232: D-sub 9-pin RS-485, 422: plug-in terminal block	RS-232: D-sub 9-pin RS-485, 422: plug-in terminal block
Current consumption	mA	<300	<300	<275	<275
Weight	kg	Approx. 0.2	Approx. 0.2	Approx. 0.2	Approx. 0.2
Number of modules		XC100: 1/XC200: 3	XC100: 1/XC200: 3	XC100: 2/XC200: 4	XC200: 4
Slots		1, 2, 3	1, 2, 3	Any	Any

XIOC Counter Modules

Description	Unit	XIOC-1CNT-100KHZ	XIOC-2CNT-100KHZ	XIOC-2CNT-2AO-INC
Inputs				
Counter limits		0–4294967295 (32 bit)	0–4294967295 (32 bit)	0–4294967295 (32 bit)
Internal current consumption	mA	200	200	450
Frequency	kHz	100 (25 with four times resolution)	100 (25 with four times resolution)	400 (100 with four times resolution)
Number of channels		1	2	2
Input voltage	Vdc	12–24	12–24	—
Voltage for ON	Vdc	>10	>10	—
Voltage for OFF	VA/W	<4	<4	—
Input current	mA	≥4	≥4	—
Differential input voltage	Vdc	±5	±5	±5
Voltage for ON	Vdc	2–5	2–5	0.2–5
Voltage for OFF	Vdc	–5 to 8	–5 to 8	–5 to –0.2
Differential input current	mA	35	35	5
Minimum pulse width	µs	ON ≥4/OFF ≥4	ON ≥4/OFF ≥4	—
Potential isolation		With optocouplers	With optocouplers	—
Connection for external cabling		30-pin plug: XIOC-TERM30-CNT4	30-pin plug: XIOC-TERM30-CNT4	Plug-in terminal block
External cabling		Shielded, twisted pair cable	Shielded, twisted pair cable	Shielded, twisted pair cable
Outputs				
Output type		Transistor (open collector)	Transistor (open collector)	Analog
External power supply		12/24 Vdc (30 max.)	12/24 Vdc (30 max.)	—
Minimum load current	mA	1	1	—
Maximum load current (I_e)	mA	20	20	—
Max. leakage current	mA	0.5	0.5	—
Max. voltage drop at ON	V	1.5	1.5	—
Debounce OFF				
OFF ⟶ ON	ms	≤1	≤1	—
OFF ⟶ ON	ms	≤1	≤1	—
Output channels	Number	2	4	2
Potential isolation		With optocouplers	With optocouplers	—
Output voltage	Vdc	—	—	–10 to 10
Resolution	bit	—	—	12
Conversion time		—	—	≤1 ms
Total errors	%	—	—	Normally 0.4
Load resistance		—	—	≥1 kohm
Connection for external cabling		30-pin plug: XIOC-TERM30-CNT4	30-pin plug: XIOC-TERM30-CNT4	Plug-in terminal block
External cabling		Shielded, twisted pair cable	Shielded, twisted pair cable	Shielded 2-core cable
Current per channel	mA	—	—	≤300
Power supply of encoders		—	—	5 Vdc
Current consumption	mA	200	200	Max. 450
Weight	kg	0.16	0.16	0.18

Power Supply Suppression Filters

Description	Unit	XT-FIL-1	XT-FIL-2
General			
Standards		IEC/EN 61131-2; EN 50178	IEC/EN 61131-2; EN 50178
Ambient temperature	°F (°C)	32° to 131° (0° to 55°)	32° to 131° (0° to 55°)
Storage	°F (°C)	–13° to 158° (–25° to 70°)	–13° to 158° (–25° to 70°)
Mounting position		Vertical or horizontal	Vertical or horizontal
Vibration resistance		10–57 Hz ± 0.075 mm 57–150 Hz ± 1.0g	10–57 Hz ± 0.075 mm 57–150 Hz ± 1.0g
Mechanical shock resistance		15g/11 ms	15g/11 ms
Impact strength		500g /50 mm ±25g	500g/50 mm ±25g
Overvoltage category		II	II
Pollution degree		2	2
Protection type		IP20	IP20
Rated impulse withstand voltage (U_{imp})	V	850	850
Interference immunity		EN 61000-6-2	EN 61000-6-2
Weight	kg	0.1	0.1
Dimensions (W x H x D)	mm	35 x 90 x 30	35 x 90 x 57
Terminals		Screw terminals	Screw terminals
Terminal capacity Screw terminals			
Flexible with ferrule	mm^2	0.2–2.5 (AWG22–12)	0.2–2.5 (AWG22–12)
Solid	mm^2	0.2–2.5 (AWG22–12)	0.2–2.5 (AWG22–12)
Power Supply			
Input voltage	Vdc	24	24
Permissible range	Vdc	20.4–28.8	20.4–28.8
Ripple	%	≤5	≤5
Mains overvoltage protection		Yes	Yes
Potential isolation			
Between input voltage and PE		Yes	Yes
Between input voltage and output voltage		No	No
Between output voltage and PE		Yes	Yes
Rated value	Vdc	24	24
Output current	A	2.2	12

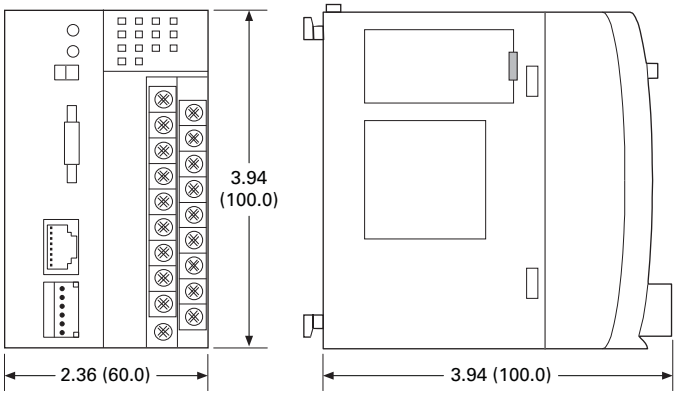
General Information on Electromagnetic Compatibility (EMC) of Automation Systems

Description	Specification			
Emitted interference	EN 55011/22 Class A (VDE 0875, Part 11)			
Interference immunity				
ESD	IEC/EN 61000-4-2	Contact discharge: 4 kV Air discharge 8 kV		
RFI	IEC/EN 61000-4-3	AM (80%)	80–1000 MHz	10V/m
Mobile phones/cellphones	IEC/EN 61000-4-3	PM	800–960 MHz	10V/m
Burst	IEC/EN 61000-4-4	Mains/digital I/O (direct): 2 kV Analog I/O, fieldbus (capacitive coupling): 1 kV		
Surge	IEC/EN 61000-4-5	Digital I/O, asymmetric, analog I/O, asymmetric, connection to shielding: 0.5 kV Mains DC, asymmetric: 1 kV Mains DC, symmetric: 1 kV Mains AC, asymmetric: 0.5 kV Mains AC, symmetric: 2 kV		
Conducted interference, induced by high-frequency fields	IEC/EN 61000-4-6; 2003	AM (80%)	150 kHz–80 MHz	3V

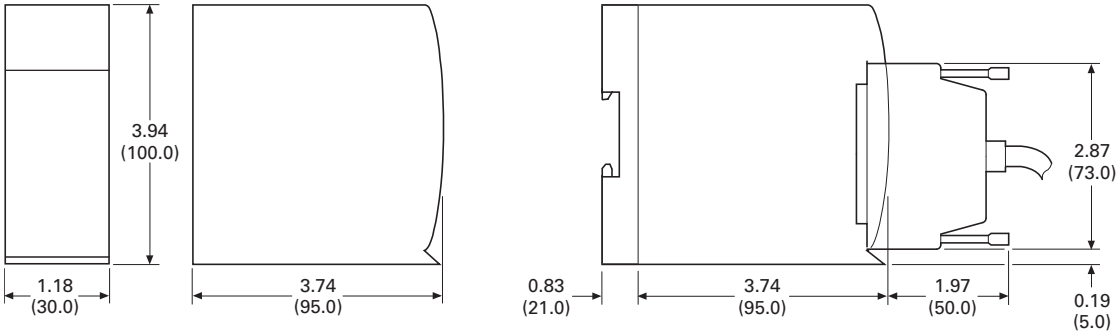
Dimensions

Approximate Dimensions in Inches (mm)

XC-CPU101, XC-CPU201, XC-CPU202

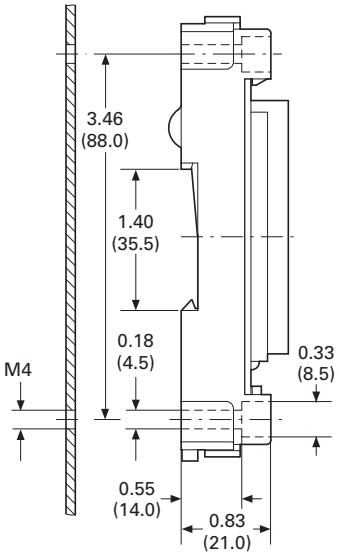


XIOC_

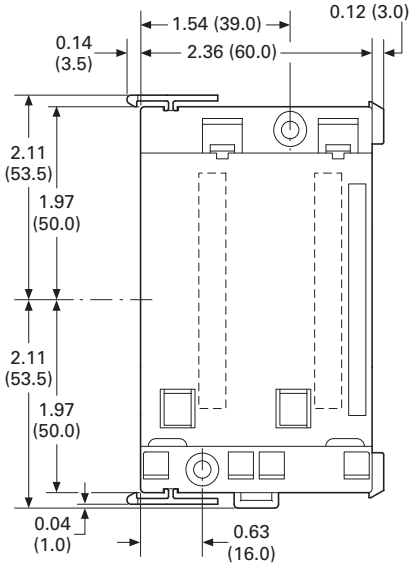


Backplates

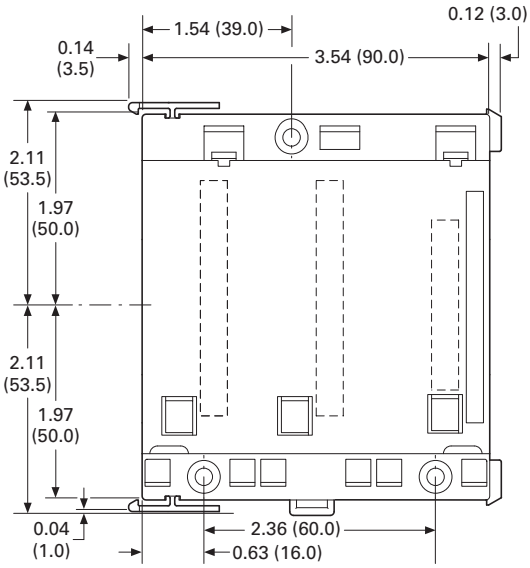
XIOC-BP-2
XIOC-BP-XC



XIOC-BP-3
XIOC-BP-EXT



XIOC-BP-XC1



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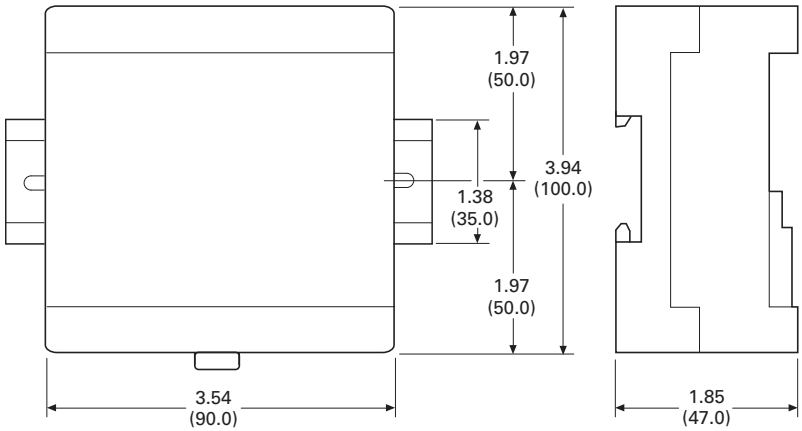
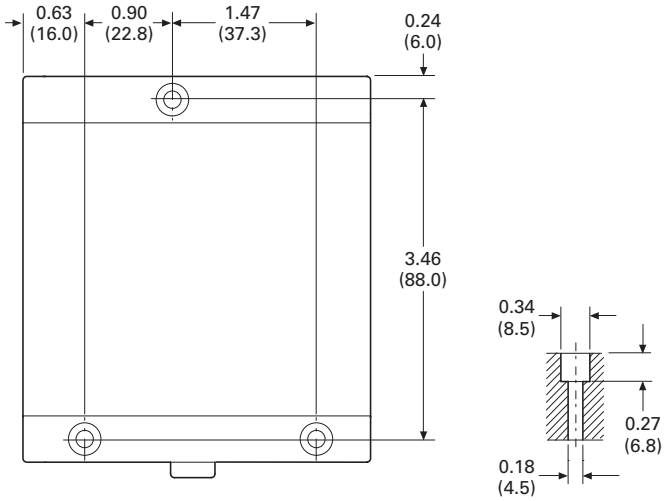
Approximate Dimensions in Inches (mm)

XC-CPU-121_, XIO-EXT121-1





XT-RJ45-ETH-RS232