Catalog | November 2021

Modicon M340 automation platform

Mid-range PLC/PAC for industrial process and infrastructure control

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Modicon

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Industrial Edge control for IIoT

Modicon IIoT-native edge controllers manage complex interfaces across assets and devices or directly into the cloud, with embedded safety and cybersecurity. **Modicon** provides performance and scalability for a wide range of industrial applications up to high-performance multi-axis machines and high-available redundant processes.

Explore our offer

- **Modicon** HVAC Controllers
- **Modicon** PLC
- **Modicon** Motion Controllers
- **Modicon** PAC
- **Modicon** I/O
- **Modicon** Networking
- **Modicon** Power Supply
- **Modicon** Wiring

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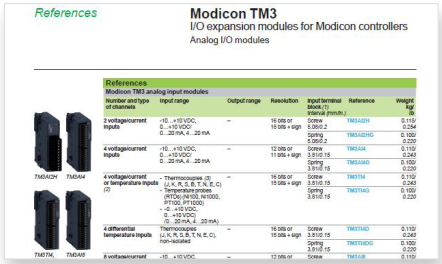
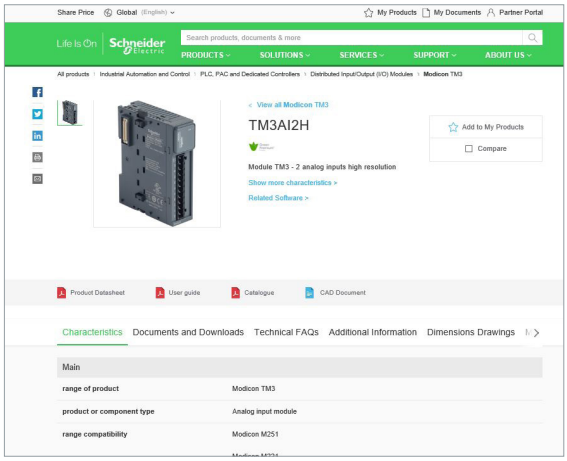
Quick access to product information

Get technical information about your product

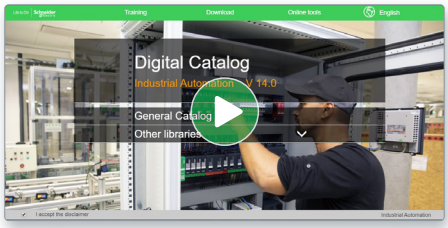




Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

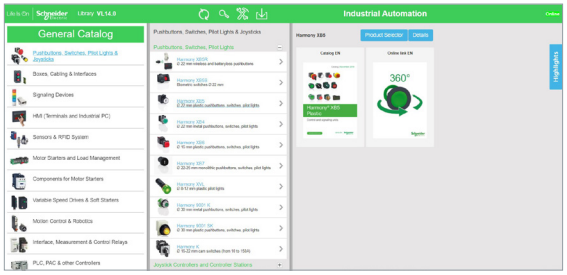
- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

Find your catalog



> With just 3 clicks, you can access the Industrial Automation and Control catalogs, in both English and French

> Consult digital automation catalogs at Digi-Cat Online

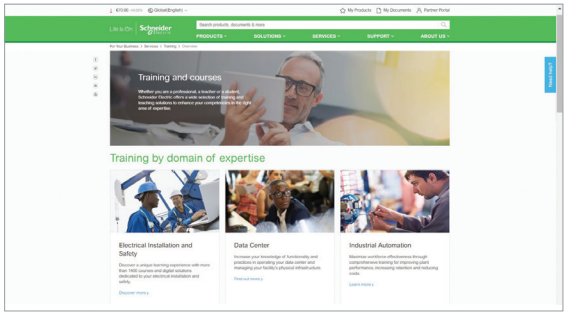


- Up-to-date catalogs
- Embedded product selectors,360° pictures
- Optimized search by commercial references

Select your training

> Find the right Training for your needs on our Global website

> Locate the training center with the selector tool, using this link



Life Is On Schneider Electric

General contents

EcoStruxure™
Innovation At Every Level

Schneider Electric's IoT-enabled, plug-and-play, open, secure, interoperable architecture and platform, in Industries, Infrastructures, Data Centers, and Buildings.

Innovation at every level

EcoStruxure is based on a three-tiered technology stack delivering innovation at every level, from connected products to edge control and apps, analytics, and services.

Together with our hybrid segments approach, this enhances your value around safety, reliability, operational efficiency, sustainability, and connectivity across 6 domains of expertise:

- Power
- IT
- Building
- Machine
- Plant
- Grid

Dedicated architectures and IoT

We tailor our solutions in the form of dedicated reference architectures for plants:

- Management systems
- Power systems
- Data center systems
- Industrial plant and machine systems
- Smart grid systems

The Industrial Internet of Things (IIoT) gives an additional boost to technologies. That's why we provide our customers with an IoT-enabled architecture and platform offering simple, reliable, productive, and cost-efficient solutions.

Cybersecurity solutions

Robust cybersecurity protection is a must, and Schneider Electric's solutions can deliver it, regardless of business type or industry.

The vendor-agnostic services provided by our skilled professionals help to protect your entire critical infrastructure. We help to assess your risk, implement cyber-specific solutions, and maintain your onsite defenses over time, while integrating appropriate IT policies and requirements.

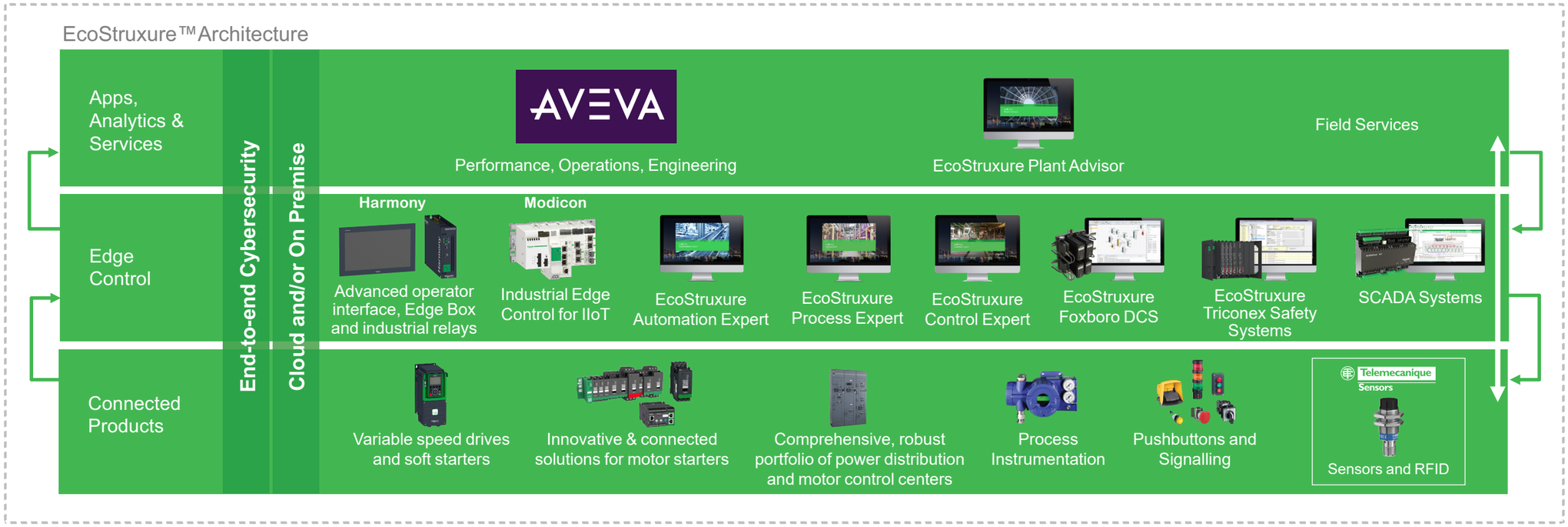
This is our difference and your advantage.

Enhanced safety

With the release of M580 Safety, Schneider Electric further expands the EcoStruxure platform.

This consolidates our position as one of the most trusted industrial safety vendor, with thousands of Modicon and Triconex safety systems protecting the most critical industrial processes globally.

EcoStruxure™ Innovation At Every Level **for Plant**



*The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

Contents

1 - Presentation

Modicon M340 automation platform
Mid-range PLC/PAC

Modicon M340 PAC
Mid-range PAC

Modicon M340 mid-range PAC (Programmable Automation Controller) offers compactness, flexibility, scalability, and robustness for the process industry and a wide range of demanding automation applications. With other PACs of Modicon range, it shares :

> EcoStruxure Control Expert as a common engineering software to configure the hardware and create application programs.

> Same X80 I/O system, racks and power supplies as Modicon M580 PAC

> Modular Modicon STB distributed I/O on multiple networks and fieldbus

Modicon M340 automation platform

Processor built-in native communication capabilities

Compact

Built-in field bus and/or Ethernet communication design

> Compact-shaped (100 mm high, 93 mm deep, 32 mm wide), M340 occupies only one slot in the rack

> Five variants with native integrated communication capabilities: CANopen, Modbus Serial link, Modbus/TCP

SD-card for application recovery or firmware upgrade

Flexible

Suits to all control needs

> Expand X80 local rack with 4, 6, 8, or 12 slot backplane (up to 4 backplanes supported)

> Hot swappable I/O modules during operation thanks to M340 rack architecture

> Recover applications or upgrade firmware via SD card

> Available in EcoStruxure Process Expert

> EcoStruxure Plant/Architecture Builder available and free to define the best control architecture

Easily design your process or application with scalable topology

Scalable

Develop your plant confidently

> Support a wide range of X80 modules
  > Communication modules
  > Expert modules
  > High density discreet I/O modules up to 64 channels

> Ethernet communication modules: Modbus/TCP, EtherNet/IP, DNP3

> Field bus communication modules: Modbus Serial, AS-Interface, Profibus DP

> Distributed STB I/O system on Ethernet or field bus

+ Native communication capabilities

Modicon M340 automation platform
Mid-range PLC/PAC

Robust

Modicon M340 design complies with automation standards

Robust

Strong experience as a field-proven controller

> M340 performances exceed certification standards

> Hardened version for more severe environments, conforming to:
  > IEC/EN 60721-3-3 class 3C1, 3C2, 3C3, 3C4
  > ISA S71.04 classes G1, G2, G3, Gx
  > IEC/EN 60068-2-52 salt mist, Kb test severity level

Characteristics	Modicon M340 automation platform	IEC standards Values required by
Mechanical constraints	**Levels reached**	**IEC 60068-2**
Shocks	30 g	> 15g
Vibrations	3 g	> 1 g
Electrical immunity	**Levels reached**	**IEC 61131-2-2**
Radiated fields	15 V/m	> 10 V/m
Electrostatic discharges by contact	6 kV	> 4 kV
Environmental immunity	**Working values**	**IEC 61131-2-2**
Temperature	0…60 °C/32… 140 °F	> 5…55 °C/41… 131 °F
Modicon M340 offer for severe environments	- 25…70 °C/32… 158 °F	> 5…55 °C/41… 131 °F
Corrosive environments (coated versions)		**Class Gx, 3C4, Kb, 3S4, 3B2**

Sustainable

Modicon family with common X80 modules

Sustainable

Environmental concerns as a global strategy

> Green Premium Eco Label

> Life cycle management support

> Common Modicon X80 modules reduce training and maintenance costs

For more details about Modicon product full capabilities when combined with Modicon M340 automation platform, see our catalogs:

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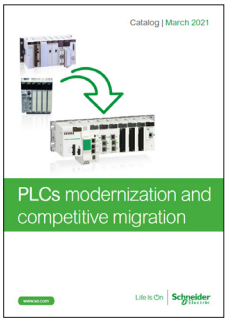
DIA6ED2131203EN



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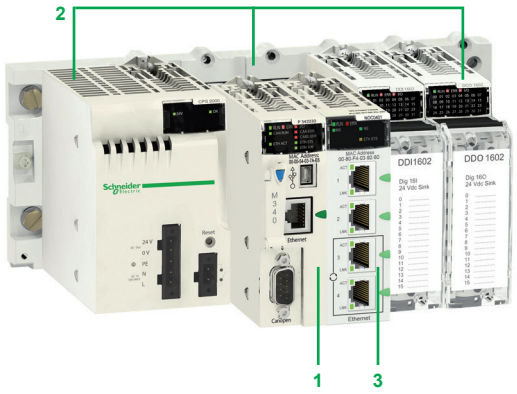
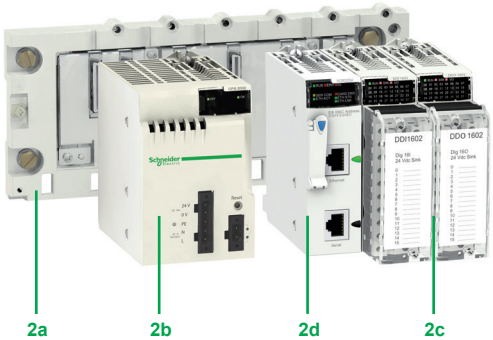
+ Scalable topology easily designed

Modicon M340 automation platform
Composition



Modicon M340 automation platform comprising:
- BMXP34 type processors,
- A single-rack or multi-rack Modicon X80 module platform,
- Additional dedicated modules.



Modicon X80 module platform

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Presentation

The Modicon M340 automation platform comprises:
1 **BMXP34●●●●●** dedicated processors
2 A Modicon X80 module platform, in a single-rack or multi-rack configuration
3 Additional modules for various applications (application-specific, Ethernet communication, etc.)

Modicon M340 processors

Five processor models comprising one Standard model (**BMXP341000)** and four Performance models (**BMXP3420●●●** or **BMXP3420●●●CL**) with different memory capacities, processing speeds, number of I/O and number and type of communication ports.

Depending on the model, they offer a maximum (non-cumulative) of:
- 512 or 1024 discrete I/O
- 128 or 256 analog I/O
- 20 or 36 application-specific channels *(1)* (process counter, motion control and serial link, or RTU)
- 0 to 3 Ethernet Modbus/TCP or EtherNet/IP networks (with or without integrated port and 2 network modules maximum)
- 4 “Full Extended master” AS-Interface V3 actuator/sensor buses, profile M4.0

Depending on the model, Modicon M340 processors include:
- A 10BASE-T/100BASE-TX Ethernet Modbus/TCP port
- A CANopen machine and installation bus port
- A Modbus or Character mode Serial link port

Each processor has a USB TER port (for connecting a programming terminal or a Harmony HMI terminal) *(2)*.

It is supplied with a memory card *(3)* that enables:
- Backing up the application (program, symbols and constants)
- Activating a standard Web server for the Transparent Ready class B10 integrated Ethernet port (depending on the model)

Depending on the model, this memory card can be replaced by another type of memory card (to be ordered separately) that supports:
- Backing up the application and activation of the standard Web server (same as other card)
- An 8 MB or 128 MB storage area, depending on the option card, for storing additional data organized in a file system (directories and sub-directories)

Modicon X80 module platform and additional modules *(4)*

The Modicon X80 module platform, which can be used in a local rack and/or in a remote I/O (RIO) drop depending on the type of automation platform (Modicon M340, Modicon M580, etc.), comprises the following elements:
- Racks with 4, 6, 8 or 12 slots (**2a**)
- Power supply modules, ⎓ or ∿ (**2b**)
- Discrete and analog I/O modules (**2c**)
- Communication modules, such as Ethernet (Modbus/TCP, EtherNet/IP), RTU (Remote Terminal Unit), Serial link, AS-Interface, etc. (**2d**)

Additional dedicated modules for the Modicon M340 automation platform that can be used on an Modicon X80 module platform are also available for application-specific purposes.

External modules, such as PROFIBUS DP communication as well as modules offered as part of TPP (Technology Partner Program) are also available.

Treatment for severe environments

Using the “ruggedized” modules enables the Modicon M340 automation platform to be used in severe environments or at extended operating temperatures from -25°C/*-13°F* to +70°C/*158°F*. See pages 5/2 to 5/3.

(1) Maximum number of application-specific channels per station. Only the application-specific channels actually configured in the EcoStruxure Control Expert application account.
(2) For details on the Harmony offer, please visit our website www.se.com.
(3) With the exception of 2 models supplied without memory card (see page 2/6).
(4) For further information, please consult our “Modicon X80 module platform” catalog.

Processor selection guide: page 2/2
Communication modules: page 3/20
M340 modules for severe environments: page 5/3

Modicon M340 automation platform

Software configuration and multi-rack configuration

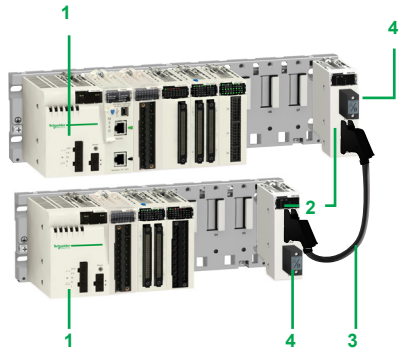
EcoStruxure Control Expert

Presentation (continued)

Design and setup of Modicon M340 applications

Setting up Modicon M340 automation platform processors requires the use of EcoStruxure Control Expert (*1*), the common configuration software for all Modicon PAC products.

The function block software libraries provide Modicon M340 processors with the processing capability to meet the specialized requirements within the motion control with multiple independent axis functions domain (MFB “Motion Function Blocks” library). The axes are controlled by Altivar variable speed drives or Lexium servo drives connected on the CANopen machine bus.



Composition of a multi-rack configuration

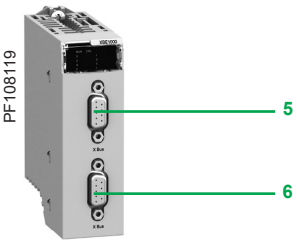
Multi-rack configurations are made up of standard **BM●XBP●●00** racks. They comprise:

- 2 racks maximum for a station with **BMXP341000** processor *(2)*
- 4 racks maximum for a station with **BMXP3420●●● or BMXP3420●●●CL** processor *(2)*

Each rack is equipped with:

1 A **BMXCPS●●●●●** power supply

2 A **BMXXBE1000** rack expansion module. This module, inserted in the right-hand end of the rack (**XBE** slot) does not occupy rack slots **00**…**11** (4, 6, 8 or 12 slots are still available). For further information, please consult our “Modicon X80 module platform” catalog available on our website www.se.com.



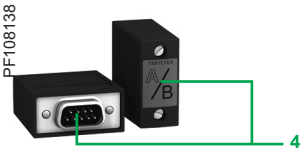
Rack expansion module BMXXBE1000

X-bus

The racks, distributed on the X-bus, are connected to each other by X-bus extension cordsets **3** with a total length of **30 m/*98.42 ft* maximum**.
The racks are connected in a daisy chain using **BMXXBC●●0K** *(3)* X-bus extension cordsets connected to the two 9-way SUB-D connectors **5** and **6** on the front panels of the **BMXXBE1000** rack expansion modules **2**.

Line terminators 4

Both expansion modules at the ends of the daisy chain must have a line terminator **4** **TSXTLYEX** on the unused 9-way SUB-D connector.



Line terminator TSXTLYEX

Cybersecurity

Schneider Electric has always taken care of the security of its systems. Security guidelines are available for our customers to ensure their systems are protected from attacks.

The Modicon M340 is a cybersecure platform thanks to its advanced built-in cybersecurity features and robustness.

The Modicon M340 automation platform also offers the following features:

- Protection against unauthorized remote connections via an online editable Access Control List
- Protection against remote programming changes via a password
- Option to enable or disable HTTP or FTP services
- Integrity of EcoStruxure Control Expert executable files
- Unnecessary services disabled by default
- Security features enabled by default

(1) EcoStruxure Control Expert replaces former Unity Pro software.
(2) The processor module is always positioned in the rack at address 0. However, in an X-bus daisy chain, the order of the racks has no effect on operation; the order of the daisy chain could be, for example 0-1-2-3, 2-0-3-1, 3-1-2-0, etc.
*(3) Extension cordsets **BMXXBC●●0K** in lengths of 0.8 m/2.62 ft, 1,5 m/4.92 ft, 3 m/9.84 ft, 5 m/16.40 ft or 12 m/39.37 ft with elbowed connectors or **TSXCBY●08K** in lengths of 1 m/3.28 ft, 3 m/9.84 ft, 5 m/16.40 ft or 12 m/39.37 ft, 18 m/59.05 ft ou 28 m/91.86 ft with straight connectors.*

Processor selection guide: page 2/2
Communication modules: page 3/20
M340 modules for severe environments: page 5/3

Modicon M580/M340/X80 platform
Product compatibility according to network architecture

Product type	Commercial reference	Module type	M340	M580								M340 + M580 + Quantum + Premium
				Local rack with CPU				X80 drops on Ethernet remote I/O				X80 drops on distributed I/O
				Standalone		Redundant (HSBY)		Standalone or redundant (HSBY) X-bus rack BMXXBP●●●●		Standalone	Redundant (HSBY)	X-bus rack BMXXBP●●●●
										X-bus + Ethernet rack BMEXBP●●●●		
				X-bus rack *(1)* BMXXBP●●●●	X-bus + Ethernet rack BMEXBP●●●●	X-bus rack *(1)* BMXXBP●●●●	X-bus + Ethernet rack BMEXBP●●●●	BMXCRA31200	BMXCRA31210	BMECRA31210		BMXPRA0100
Power supplies	BMXCPS2000	X80 Power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS2010	X80 Power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS3020 (H)	X80 Power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS3500 (H)	X80 Power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS3540T	X80 Power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS4002 (H)	X80 Redundant power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS4022 (H)	X80 Redundant power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXCPS3522 (H)	X80 Redundant power supply	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
Backplanes	BMXXBP0400 (H)	X80 X-bus backplane	Compatible	Compatible	Not compatible	Compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible
	BMXXBP0600 (H)	X80 X-bus backplane	Compatible	Compatible	Not compatible	Compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible
	BMXXBP0800 (H)	X80 X-bus backplane	Compatible	Compatible	Not compatible	Compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible
	BMXXBP1200 (H)	X80 X-bus backplane	Compatible	Compatible	Not compatible	Compatible	Not compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible
	BMXXBE1000 (H) *(2)*	X80 X-bus rack expansion module	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXXBE2005 *(3)*	X80 X-bus rack expansion kit	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMEXBP0400 (H)	X80 X-bus+Eth backplane	Compatible	Not compatible	Compatible	Not compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMEXBP0800 (H)	X80 X-bus+Eth backplane	Compatible	Not compatible	Compatible	Not compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMEXBP1200 (H)	X80 X-bus+Eth backplane	Compatible	Not compatible	Compatible	Not compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMEXBP0602 (H) *(4)*	X80 X-bus+Eth dual power supplies backplane	Compatible	Not compatible	Compatible	Not compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMEXBP1002 (H) *(4)*	X80 X-bus+Eth dual power supplies backplane	Compatible	Not compatible	Compatible	Not compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMXXEM010 *(5)*	Protective cover	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
I/O	BMXAMI0410 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMI0800	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMI0810 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMM0600 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMO0210 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMO0410 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXAMO0802 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXART0414 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXART0814 (H)	X80 Analog I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMEAHI0812 (H)	X80 Analog HART I/O	Not compatible	Not compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMEAHO0412 (C)	X80 Analog HART I/O	Not compatible	Not compatible	Compatible	Not compatible	Not compatible	Not compatible	Not compatible	Compatible	Compatible	Not compatible
	BMXDAI0805	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDAI0814	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDAI1602 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
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	BMXDAI16142	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDAI1615 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDAO1605 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDAO1615 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI1602 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI1603 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI1604T	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI3202K (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI3203 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI3232 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDI6402K (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDM16022 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDM16025 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDM3202K	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDO1602 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDO1612 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDO3202K (C)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDDO6402K (C)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDRA0804T	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDRA0805 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDRA0815 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDRA1605 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	BMXDRC0805 (H)	X80 Discrete I/O	Compatible	Compatible	Compatible	Not compatible	Not compatible	Compatible	Compatible	Compatible	Compatible	Compatible

(1) ***BMXXBP●●●●*** *with PV02 or later required*
(2) Extended rack can be any type of rack, but only X-bus modules (BMX) can be used
(3) Extended rack kit
(4) Not compatible with single power supplies
(5) Protective cover for all X-bus or Eth bus connectors

Compatible	Not compatible

Note*: Optional versions are (C) - "Coated ", (H) - "Hardened ", and (T) - "Extended Temperature"*

Modicon M580/M340/X80 platform

Product compatibility according to network architecture

Product type	Commercial reference	Module type	M340	M580		M580						M340 + M580 + Quantum + Premium
				Local rack with CPU		Local rack with CPU		X80 drops on Ethernet remote I/O				X80 drops on distributed I/O
				Standalone		Redundant (HSBY)		Standalone or redundant (HSBY) X-bus rack BMXXBP●●●●		Standalone	Redundant (HSBY)	X-bus rack BMXXBP●●●●
										X-bus + Ethernet rack BMEXBP●●●●		
				X-bus rack *(1)* BMXXBP●●●●	X-bus + Ethernet rack BMEXBP●●●●	X-bus rack *(1)* BMXXBP●●●●	X-bus + Ethernet rack BMEXBP●●●●	BMXCRA31200	BMXCRA31210	BMECRA31210		BMXPRA0100
Expert modules	BMXEAE0300 (H)	X80 SSI encoder interface module	■	■	■			■	■	■	■	
	BMXEHC0200 (H)	X80 Counter module	■	■	■				■	■	■	
	BMXEHC0800 (H)	X80 Counter module	■	■	■				■	■	■	
	BMXERT1604T/H	X80 Time-stamping module	■	■	■				■	■	■	
	BMXMSP0200	X80 Motion control module	■	■	■							
	BMXETM0200H	X80 Frequency input module	■	■	■				■	■	■	
	PMESWT0100	X80 Weighing module *(2)*			■					■	■	
Communication modules *(3)*	BMXNOM0200 (H)	X80 Serial link module	■	■	■				■	■	■	■
	BMXEIA0100	X80 AS-Interface module	■	■	■				■	■	■	
	BMECXM0100 (H)	X80 CANopen master module			■					■	■	
	BMXNRP0200 (C)	X80 Fiber converter module	■	■	■	■	■	■	■	■	■	■
	BMXNRP0201 (C)	X80 Fiber converter module	■	■	■	■	■	■	■	■	■	■
	PMEPXM0100 (H)	X80 PROFIBUS DP Master module			■		■			■		
	BMENOS0300 (C)	X80 Ethernet switch module			■		■			■		
	BMENOC0301 (C)	M580 Ethernet module			■		■					
	BMENOC0311 (C)	M580 Ethernet FactoryCast module			■		■					
	BMENOC0321 (C)	M580 Ethernet control router			■		■					
	BMENOP0300	M580 IEC 61850 module			■		■					
	BMXNGD0100	M580 Ethernet Global Data module			■		■					
	BMENUA0100	M580 OPC UA module			■		■					
	BMXNOR0200H	M580/M340 RTU module	■	■	■							
	BMENOR2200H	M580 Advanced RTU module			■		■					
	BMXNOE0100 (H)	M340 Ethernet module	■			■						■
	BMXNOE0110 (H)	M340 Ethernet FactoryCast module	■									
	BMXNOC0401	M340 Ethernet module	■									
I/O expansion modules	BMXCRA31200	X80 Remote I/O drop adapter						■				
	BMXCRA31210 (C)	X80 Remote I/O drop adapter							■			
	BMECRA31210 (C)	X80 Remote I/O drop adapter								■	■	
	BMXPRA0100	X80 Peripheral remote I/O adapter										■

(1) ***BMXXBP●●●●*** *with PV02 or later required*
(2) Products by our Technology Partners; see more information on our partner website page
(3) According to the module type, communication modules description is included within X80 catalog, M580 catalog, or M340 catalog.

Note*: Optional versions are (C) - "Coated ", (H) - "Hardened ", and (T) - "Extended Temperature"*

Compatible	Not compatible

1

Contents

2 - Processors

Modicon M340 automation platform

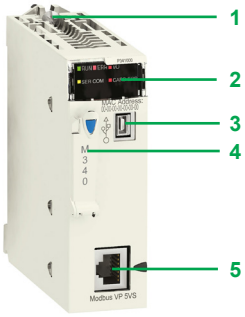
Modicon M340 processors

Modicon M340 automation platform			Standard processor	Performance processors with or without memory card
				
Racks		Max number of local racks (main + extension)	2 racks	4 racks
I/O	In-rack	Max number of discrete I/O *(1) (2)*	512 channels	1024 channels
		Max number of analog I/O *(1) (2)*	128 channels	256 channels
	Distributed	Max number of devices on CANopen bus	–	
		Max number of devices on Ethernet Modbus/TCP *(3)*	Via network module (63 devices with I/O scanning function)	
		Max number of devices on Modbus link	32 devices	
Integrated communication ports		Ethernet Modbus/TCP network (RJ45)	–	
		CANopen master (9-way SUB-D)	–	
		Serial link (Modbus and Character) (RJ45)	1 in RTU/ASCII Modbus master/slave mode or in Character mode (non-isolated RS232/RS485, 0.3…38.4 Kbps)	
		USB type mini B port	1 port for engineering console programming (EcoStruxure Control Expert) or HMI connection	
Communication modules	Ethernet	Max number *(4)*	2 modules	
		- Modbus/TCP	BMXNOE0100	
		- FactoryCast Modbus/TCP	BMXNOE0110	
		- EtherNet/IP and Modbus/TCP	BMXNOC0401	
		- RTU (DNP3 / IEC 60870-5-101/104)	BMXNOR0200H	
	AS-Interface	Max number	2 modules	4 modules
		- AS-Interface Master	BMXEIA0100	
	Serial Link (Modbus and Character)	Max number	Shared with other cumulative application-specific channels	
		- Serial link	BMXNOM0200 (2-channel)	
Application-specific channels		Max number *(5)*	20 channels	36 channels
		- Counter module	BMXEHC0200 2-channel (60 kHz) module, BMXEHC0800 8-channel (10 kHz) module	
		- Motion control module	BMXMSP0200 2-channel (200 kHz) PTO (Pulse Train Output) module for servo drives	
		- Serial link (Process or RTU) module or processor integrated serial link	BMXP34●0●0 Processor with integrated 1 serial channel, BMXNOM0200 2-channel serial module, BMXNOR0200H module with integrated 1 RTU serial channel	
Internal memory capacity (on processor)		Internal user RAM	2048 KB	4096 KB
		- Program, constants, and symbols	1792 KB	3584 KB
		- Located/unlocated data	128 KB	256 KB
Memory card capacity		Backup of program, constants and symbols	8 MB as standard	
		Hosting and display of user Web pages	*(6)*	
		File storage	–	8 or 128 MB (according to BMXRMS●●8MPF option card)
No. of K instructions executed per ms		100% Boolean (Kinstr/ms)	5.4 Kinstructions/ms	8.1 Kinstructions/ms
		65% Boolean + 35% fixed arithmetic (Kinstr/ms)	4.2 Kinstructions/ms	6.4 Kinstructions/ms
References			**BMXP341000**	**BMXP342000**
Pages			2/5	

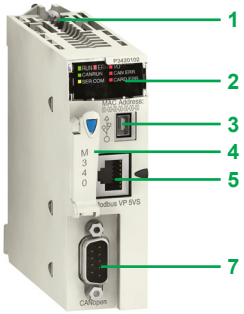
(1) Local X80 I/O are localized in local racks (main or extension).
(2) Maximum number of discrete and analog application-specific I/O channels is not cumulative.
(3) Via network module
(4) Maximum number of Ethernet modules is cumulative with different Ethernet communication modules
(5) Maximum number of application-specific channels is cumulative with channels in counter module, motion control module, serial link modules and processor integrated serial link.
(6) User Web pages with BMXNOE0110 Ethernet FactoryCast module (12 MB available).

Performance processors with or without memory card				
				
4 racks				
1024 channels				
256 channels				
63 devices	–		63 devices	
Via network module (63 devices with I/O scanning function)				
32 devices			–	
–	1 x 10BASE-T/100BASE-TX (Modbus/TCP, BOOTP/DHCP, FDR client, e-mail notification, class B10 standard web server)			
1 (63 slaves, 50…1000 Kbps, class M20)	–		1 (63 slaves, 50…1000 Kbps, class M20)	
1 in RTU/ASCII Modbus master/slave mode or in Character mode (non-isolated RS232/RS485, 0.3…38.4 Kbps)			–	
1 port for engineering console programming (EcoStruxure Control Expert) or HMI connection				
2 modules				
BMXNOE0100				
BMXNOE0110				
BMXNOC0401				
BMXNOR0200H				
4 modules				
BMXEIA0100				
Shared with other cumulative application-specific channels				
BMXNOM0200 (2-channel)				
36 channels				
BMXEHC0200 2-channel (60 kHz) module, BMXEHC0800 8-channel (10 kHz) module				
BMXMSP0200 2-channel (200 kHz) PTO (Pulse Train Output) module for servo drives				
BMXP34●0●0 Processor with integrated 1 serial channel, BMXNOM0200 2-channel serial module, BMXNOR0200H module with integrated 1 RTU serial channel				
4096 KB				
3584 KB				
256 KB				
8 MB as standard	Supplied without card	8 MB as standard		Supplied without card
(6)				
8 or 128 MB (according to BMXRMS●●8MPF option card)				
8.1 Kinstructions/ms				
6.4 Kinstructions/ms				
BMXP3420102	**BMXP3420102CL**	**BMXP342020**	**BMXP3420302**	**BMXP3420302CL**
2/5				

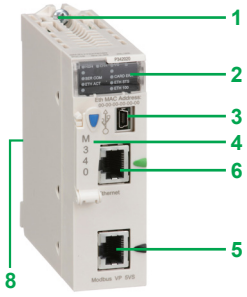
Modicon M340 automation platform
M340 Processors



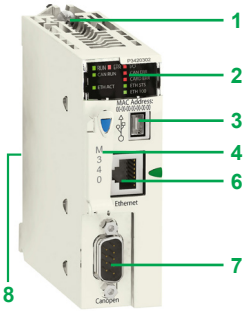
BMXP341000/2000



BMXP3420102/BMXP3420102CL



BMXP342020



BMXP3420302/BMXP3420302CL

Presentation

Dedicated processors **BMXP34●●●●●**, which form part of a Modicon M340 automation platform, are available in two types:
- Standard type processor
- Performance type processor

The main differences between these 2 types of processor are:
- Their number of I/O
- Their memory capacity
- The types of communication ports integrated in each model

Description of processors

BMXP34●●●● single-format processors feature the following parts:

1 Safety screw for locking the module in its slot (marked 0) in the rack.

2 A display block comprising from 5 to 10 LEDs, depending on the model

□ Common LEDs
- Run LED (green): processor in operation (program execution)
- ERR LED (red): processor or system fault
- I/O LED (red): I/O module fault
- SER COM LED (yellow): activity on the Modbus serial link
- CARD ERR LED (red): memory card missing or faulty

□ Specific LEDs depending on the model
- CAN RUN LED (green): integrated CANopen bus operational (**BMXP3420102, BMXP3420102CL, BMXP3420302,** and **BMXP3420302CL** models only)
- CAN ERR LED (red): integrated CANopen bus fault (**BMXP3420102, BMXP3420102CL, BMXP3420302,** and **BMXP3420302CL** models only)
- ETH ACT LED (green): activity on the Ethernet Modbus/TCP network (**BMXP342020, BMXP3420302, and BMXP3420302CL** models only**)**
- ETH STS LED (green): Ethernet Modbus/TCP network status (**BMXP342020, BMXP3420302, and BMXP3420302CL** models only**)**
- ETH 100 (red): Ethernet Modbus/TCP data rate (10 or 100 Mbps) (**BMXP342020, BMXP3420302, and BMXP3420302CL** models only**)**

3 A mini B USB connector for a programming terminal (or Harmony HMI terminal) *(1)*.

4 A slot equipped with its Flash memory card *(2)* for backing up the application (a LED, located above this slot, indicates recognition of or access to the memory card).

In addition, depending on the model:

5 An RJ45 connector for Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated) for **BMXP341000, BMXP342000, BMXP3420102, BMXP3420102CL,** and **BMXP342020** models

6 An RJ45 connector for connection to the 10BASE-T/100BASE-TX Ethernet Modbus/TCP network for **BMXP342020, BMXP3420302, and BMXP3420302CL**.

7 A 9-way SUB-D connector for the integrated CANopen master bus for **BMXP3420102, BMXP3420102CL, BMXP3420302,** and **BMXP3420302CL** models.

8 (on the rear) 2 rotary switches for selecting the IP address assignment method for the module

USB terminal port

The USB port **3**, offering a useful data rate of 12 Mbps, is compatible with EcoStruxure Control Expert programming software, the OPC Factory Server *(OFS),* and Harmony HMI terminals.

All **BMXP34●●●●●** processors can be connected to a USB bus comprising several peripheral devices. However:
- Only one processor can be connected to the USB bus
- No device on the USB bus can be controlled by the PLC (modem, printer)

1) For more detailed information, please refer to our website www.se.com.

(2) Except for model BMXP3420102CL, which is supplied without memory card.

Processor selection guide: page 2/2
Communication modules: page 3/20
M340 modules for severe environments: page 5/3

Modicon M340 automation platform
M340 Processors

Memory cards

BMXRMS008MP memory card (included as standard)

Modicon M340 processors are supplied as standard *(1)* with an SD *(Secure Digital)* type Flash memory card, formatted by Schneider Electric and referenced **BMXRMS008MP** as a replacement part. This card is intended for backing up the two memory areas on the processor internal RAM:

- Program, symbols and comments area, which contains the executable binary code and the IEC source code of the application program for the program part
- Constant area, which contains the constant data located by address.

The data is backed up automatically by duplication, when the PLC is turned off. Likewise, data restoration is transparent for the user, on return of power.

Capacity of the backup area on the memory card:

- 1792 KB for the **BMXP341000** Standard processor
- 3584 KB for the **BMXP342●●●●** Performance processors

BMXP342020/20302/20302CL processors with an integrated Ethernet port have an additional 2 MB memory area specifically for Standard Web services (Transparent Ready B10) (see page 3/8).

BMXRMS008MPF/128MPF optional memory cards

BMXP342●●●● Performance processors can take a **BMXRMS008MPF** or **BMXRMS128MPF** optional memory card, with greater memory capacity, in place of the standard memory card. These cards also provide a file storage area with a maximum capacity of 8 MB (for the **BMXRMS008MPF** card) or 128 MB (for the **BMXRMS128MPF** card).

This file storage area enables:

- Any user-defined Word, Excel, PowerPoint or Acrobat Reader document to be received via FTP (for example, maintenance manuals, diagrams. etc.)
- Additional data to be stored via EFB user function blocks (for example: production data, manufacturing recipes, etc.)

EcoStruxure Control Expert programming software helps the application designer manage the structure and memory space occupation of the Modicon M340 automation platform.

Protecting the application

If necessary, it is possible to prohibit access to the application in terms of reading and modifying the program by only loading the executable code in the PLC.

Additionally, a memory protection bit, set in configuration mode, is also available to prevent any program modification (via the programming terminal or downloading).

With EcoStruxure Control Expert, the user has function blocks for protecting know-how by means of a signature that can be loaded and stored in the M340 processor flash memory card (code not executed if the signature is not present).

Program modification in online mode

The online program modification function is available on the Modicon M340 automation platform with EcoStruxure Control Expert software. Program code and data can be added or modified in different places in the application in a single modification session, thus ensuring modification is homogenous and consistent with the controlled process.

A dedicated memory area of the application internal RAM authorizes these program modification or addition sessions while complying with the recommendation to structure the application program in several, reasonably-sized sections.

Modicon M340 automation platform
M340 Processors

BMXP341000

BMXP342000

BMXP3420102/20102CL
BMXP3420302/20302CL

BMXP342020

Modicon M340 processors

I/O capacity	Max. no. of communication modules	Integrated communication ports	Memory card	Reference	Weight kg/ *lb*
Standard BMXP3410, 2 racks					
512 discrete I/O **128 analog I/O** **20 application-specific channels**	2 Ethernet modules 2 AS-Interface modules	Modbus serial link	Included	BMXP341000	0.200/ *0.441*
Performance BMXP3420, 4 racks					
1024 discrete I/O **256 analog I/O** **36 application-specific channels**	2 Ethernet modules 4 AS-Interface modules	Modbus serial link	Included	BMXP342000	0.200/ *0.441*
		Modbus serial link CANopen bus	Included	BMXP3420102 *(1)*	0.210/ *0.463*
			Not included *(2)*	BMXP3420102CL *(1)*	0.210/ *0.463*
		Modbus serial link Ethernet Modbus/TCP	Included	BMXP342020	0.205/ *0.452*
		CANopen bus Ethernet Modbus/TCP	Included	BMXP3420302 *(1)*	0.215/ *0.474*
			Not included *(2)*	BMXP3420302CL *(1)*	0.215/ *0.474*

(1) **BMXP3420102/20302** *processors, combined EcoStruxure Control Expert software, can be used to customize configuration of the device Boot Up procedure compatible with all CANopen third-party products.*

(2) These products are supplied without integrated memory card. The memory card must be ordered separately.

Processor selection guide: page 2/2
Communication modules: page 3/20
M340 modules for severe environments: page 5/3

Modicon M340 automation platform
M340 Processors

BMXRMS008/128MPF

Accessories

Memory cards

Description	Use	Capacity	Reference	Weight kg/ *lb*
Standard flash memory card included as standard with processor *(1)*	- Backup of program, constants,symbols and data -Activation of class B10 Web server	8 MB	BMXRMS008MP	0.002/ *0.004*
Optional flash memory card	- Backup of program, constants,symbols and data -Activation of class B10 Web server -File storage	8 MB + 8 MB file storage	BMXRMS008MPF	0.002/ *0.004*
		8 MB + 128 MB file storage	BMXRMS128MPF	0.002/ *0.004*

BMXXCAUSBH0●●

Cordsets

Description	Use	Length m/ *ft*	Reference	Weight kg/ *lb*
USB PC or terminal connecting cable for processor	For connection: - From Mini B USB port on the Modicon M340 processor - To Type A USB port on PC terminal or Harmony HMI	1.8/ *5.91*	BMXXCAUSBH018	0.065/ *0.143*
		4.5/ *14.76*	BMXXCAUSBH045	0.110/ *0.243*

(1) This memory card will not be provided if order BMXP3420102CL or BMXP3420302CL processor.

Processor selection guide: page 2/2
Communication modules: page 3/20
M340 modules for severe environments: page 5/3

Contents

3 - Communication

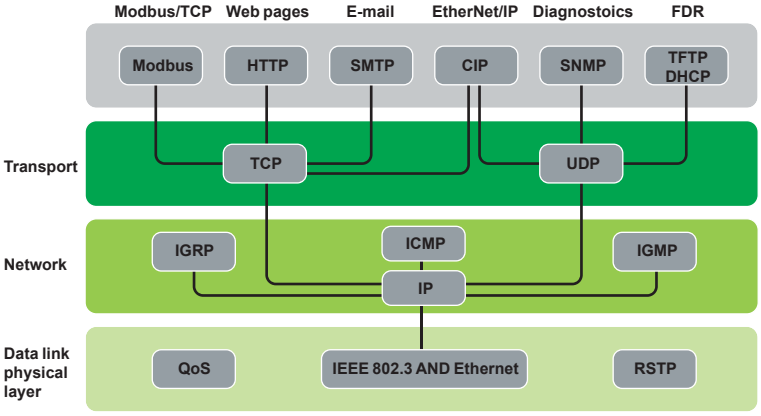
Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 communication services

Presentation

BMXP342020/20302/20302CL processors via their integrated Ethernet port, **BMXNOE0100/0110** and **BMXNOC0401** Ethernet modules and the **BMXNOR0200H** RTU module provide transparent communication on the Ethernet Modbus/TCP network using Transparent Ready communication services.



Ethernet communication services for the BMXNOE0100/0110 module

The following Transparent Ready communication services are designed for use in automation applications. They supplement the universal Ethernet services (HTTP, BOOTP/DHCP, FTP, etc):

- Modbus/TCP messaging for class 10 or 30 devices
- I/O Scanning service for class 30 devices
- FDR (Faulty Device Replacement) for class 10 or 30 devices
- SNMP *(Simple Network Management Protocol)* network management for class 10 or 30 devices
- Global Data, for class 30 devices
- Bandwidth management for class 10 or 30 devices
- NTP (*Network Time Protocol*) synchronization for class 30 devices
- E-mail alarm notification via SMTP server, via Unity Pro function block

Note: *See selection guide on pages 3/20 and 3/21 for the communication services supported by* ***BMXP342020/20302/20302CL*** *processors,* ***BMXNOE0100/0110*** *network modules and the* ***BMXNOR0200H*** *RTU module on the Modicon M340 platform.*

The following pages (3/3 to 3/7) present the various options available through all of these services in order to facilitate the optimum choice of solutions when defining a system integrating Transparent Ready devices.

Processor selection guide: page 2/2
Modules for severe environments: page 5/3

Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 communication services

Functions

Ethernet universal services

HTTP *(HyperText Transfer Protocol)*

- This protocol is used for transmitting Web pages between a server and a browser.
- Web servers embedded in Transparent Ready automation products provide easy access to products located anywhere in the world from a standard web browser such as Internet Explorer.

BOOTP/DHCP (RFC1531)

- These protocols are used to provide devices with IP parameters automatically. This avoids having to manage each device address individually by transferring this management to a dedicated IP address server.
- The DHCP protocol *(Dynamic Host Configuration Protocol)* is used to assign configuration parameters to devices automatically. DHCP is an extension of BOOTP.
- Schneider Electric devices can be "*BOOTP clients" (used to retrieve the IP address automatically from a server) or "BOOTP servers" (allowing the device to distribute IP addresses to the network stations*).
- Schneider Electric uses standard BOOTP/DHCP protocols for its FDR *(Faulty Device Replacement) service.*

FTP *(File Transfer Protocol)* (RFCs 959, 2228, and 2640)

- This protocol provides the basic elements for file sharing. Many systems use it to exchange files between devices.

TFTP *(File Transfer Protocol)* (RFCs 959, 2228, and 2640):

- This network transfer protocol can be used to connect to a device and download code to it.
- For example, it can be used to transfer a boot code to a workstation without a disk drive or to connect and download updates of network device firmware.
- Transparent Ready devices implement FTP and TFTP for transferring certain information to or from devices, in particular for downloads of firmware or user-defined Web pages.

SNMP *(Simple Network Management Protocol)* (RFCs 1155, 1156 and 1157)

- The SNMP standard manages the various network components via a single system.
- The network management system can exchange data with SNMP agent devices. This function allows the manager to display the status of the network and devices, modify their configuration and feed back alarms in the event of a fault.
- Transparent Ready devices are SNMP-compatible and can be integrated naturally in a network managed via SNMP.

COM/DCOM *(Distributed Component Object Model)* (RFCs 1155, 1156 and 1157)

- COM/DCOM or OLE *(Object Linking and Embedding)* protocol is the name of the technology consisting of Windows objects which enables transparent communication between Windows applications.
- These technologies are used in the OFS *(OLE for Process Control Factory Server)* data server software.

Modbus standard communication protocol

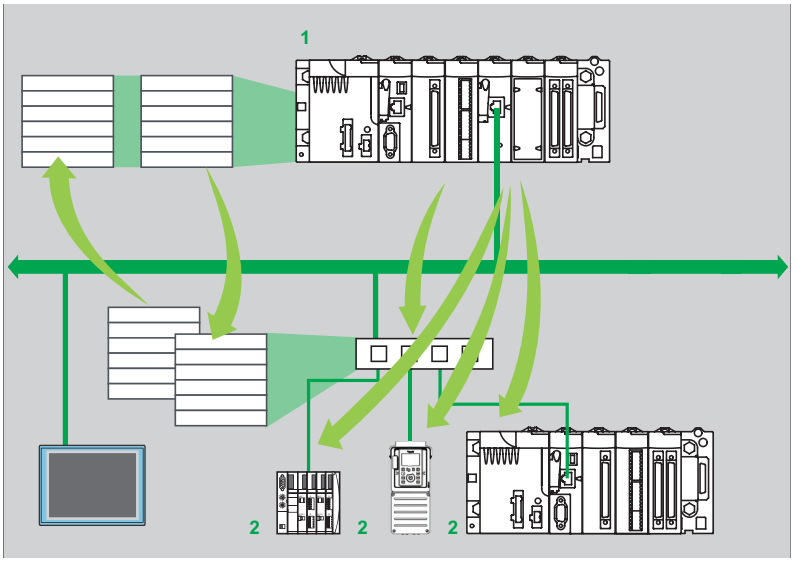
Modbus protocol, the industry communication standard since 1979, has been combined with Ethernet Modbus/TCP, the medium for the Internet revolution, to form Modbus/TCP, a completely open Ethernet protocol.
The development of a connection to Modbus/TCP does not require any proprietary component, nor purchase of a license.
This protocol can easily be combined with any product supporting a standard TCP communication stack. The specifications can be obtained free of charge from the following website: www.modbus.org.

Processor selection guide: page 2/2
Modules for severe environments: page 5/3

Modicon M340 automation platform
Industrial Ethernet services
Modicon M340 communication services

Functions (continued)

I/O Scanning service



The I/O Scanning Service is used to manage the exchange of remote I/O states on the Ethernet network after a simple configuration operation, with no need for special programming:

- I/O scanning is performed transparently by means of read/write requests according to the Modbus client/server protocol on the TCP profile (**1**, Modicon M340 with I/O Scanning service).
- This principle of scanning via a standard protocol enables a device with the I/O Scanning service to communicate with any device supporting Modbus/TCP messaging in server mode (**2**).

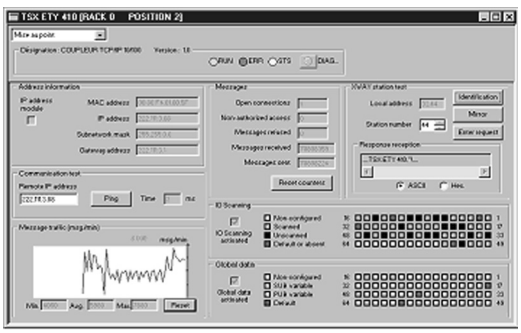
This service can be used to define:

- A word zone reserved for reading inputs
- A word zone reserved for writing outputs
- Refresh periods independent of the PLC scan

During operation, the module:

- Manages TCP connections with each remote device
- Scans devices and copies the I/O to the configured word zone
- Feeds back status words used to check that the service is working correctly from the PLC application
- Applies pre-configured fallback values if a communication problem occurs

A range of hardware and software products is available enabling the I/O Scanning protocol to be implemented on any type of device that can be connected to the Ethernet network.
Please consult the Modbus Organization website: www.modbus.org.



Characteristics

- Each Modicon M340 station can exchange a maximum of 100 words for writing and 125 words for reading.
- Maximum size in the Modicon M340 PLC that manages the service (64 stations max.) with **BMXNOE0100/0110** and **BMXNOC0401** network modules: 2 Kwords (input) and 2 Kwords (output).

I/O Scanning service diagnostics

I/O Scanning service diagnostics can be performed in one of five ways:

- Via the application program from a specific PLC data zone
- From the setup software debug screen
- From the PLC system diagnostic function displayed by means of an internet browser on a PC station
- Using standard SNMP manager software

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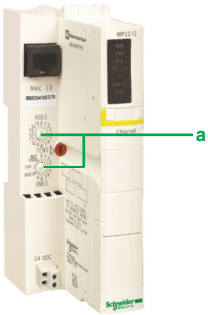
Modules for severe environments: page 5/3

Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 communication services



NIM network module for Modicon STB I/O

Functions (continued)

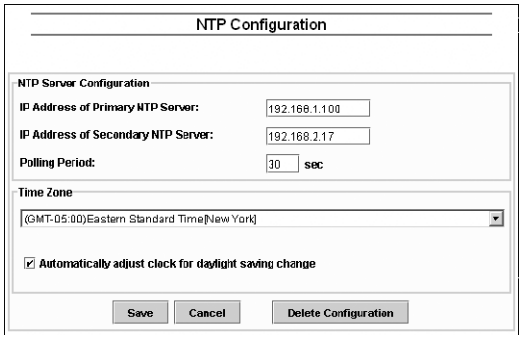
FDR *(Faulty Device Replacement)* service

The Faulty Device Replacement service uses standard address management technologies (BOOTP, DHCP) and the TFTP *(Trivial File Transfer Protocol)* file management service, with the aim of simplifying maintenance of Ethernet devices. The FDR service is used to replace a faulty device with a new device with the guarantee that it will be detected, reconfigured and automatically rebooted by the system.

The main steps in replacement are:

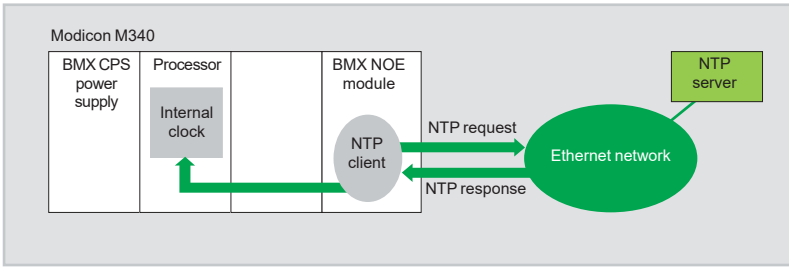
1. A device using the FDR service malfunctions.
2. Another similar device is taken from the maintenance store, preconfigured with the Device name for the faulty device, then reinstalled on the network. Depending on the device, addressing can be performed using rotary selector switches (as for Modicon STB distributed I/O a for example) or can be given using the keypad integrated in the device (as for Altivar variable speed drives for example).
3. The FDR server detects the new device, allocates it an IP address and transfers the configuration parameters to it.
4. The substituted device checks that all these parameters are indeed compatible with its own characteristics and switches to operational mode.

The FDR server can be **BMXNOE0100/0110** or **BMXNOC0401** Ethernet modules.



NTP time synchronization service

Presentation



The time synchronization service is based on NTP *(Network Time Protocol)* which is used to synchronize the time of a client or a server on Ethernet from a server or another reference time source (radio, satellite, etc).

Operation

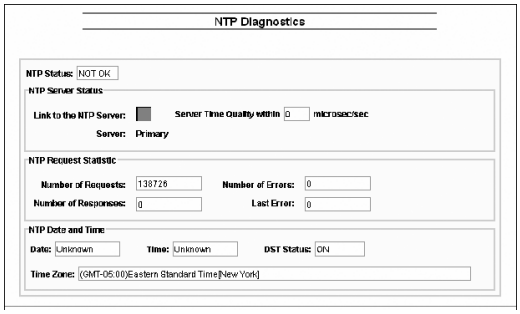
BMXNOE0100/0110, **BMXNOC0401** and **BMXNOR0200H** Ethernet Modbus/TCP modules have a NTP client component.

These modules connect to an NTP server using a client request (*Unicast*) in order to update their local time. The module clock is updated periodically (1 to 120 s) with typical precision of 5 ms. If the NTP server cannot be reached, the Ethernet TCP/IP module switches to a standby NTP server.

The PLC processor clock is therefore itself updated with a precision of 5 ms. A function block is used to read this clock, thus enabling Unity Pro application events or variables to be time and date stamped.

The Ethernet module is configured by means of a Web page. The time zone can be configured. A time synchronization service (NTP) diagnostic Web page is also available.

Information on the time synchronization service (NTP) is also available in the Transparent Ready private MIB, which can be accessed via the SNMP network management service.



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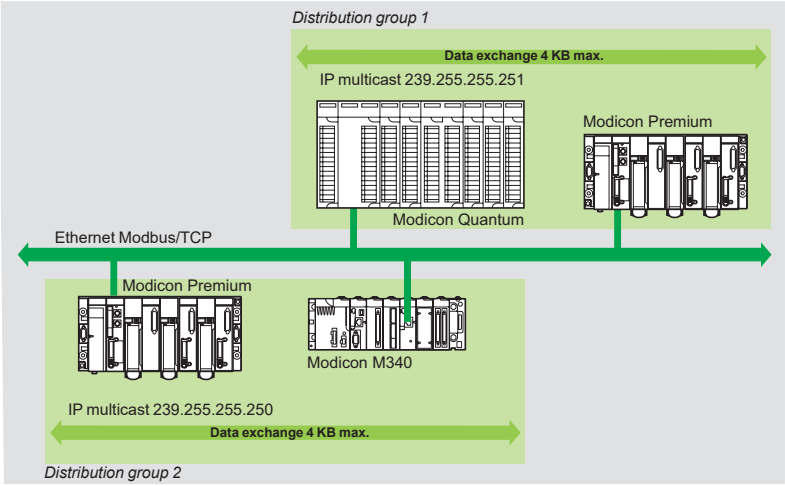
Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 communication services

Functions (continued)

Global Data service



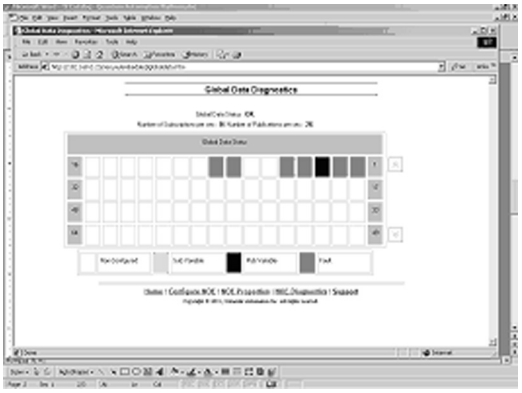
The Global Data service performs data exchanges in real time between stations belonging to the same distribution group. It is used to synchronize remote applications, or to share a common database between a number of distributed applications. Exchanges are based on a standard producer/consumer protocol, guaranteeing optimum performance with a minimum load on the network. This RTPS (*Real Time Publisher Subscriber*) protocol is promoted by Modbus Organization (*Interface for Distributed Automation*), and is already a standard adopted by several manufacturers.

Characteristics

A maximum of 64 stations can participate in Global Data within a single distribution group. Each station can:

- Publish one 1024-byte variable. The publication period can be configured from 1 to n processor master task *(Mast)* periods.
- Subscribe to between 1 and 64 variables. The validity of each variable is controlled by status bits *(Health Status bits)* linked to a refresh timeout configurable between 50 ms and 1s. Access to an element of the variable is not possible. The total size of subscribed variables amounts to 4 K contiguous bytes.

To further optimize the performance of the Ethernet network, Global Data can be configured with the “multicast filtering” option which, together with switches, broadcasts data only to Ethernet ports where there is a Global Data service subscriber station. If these switches are not used, Global Data is sent in “multicast” mode to all switch ports.



Global Data service diagnostics

The diagnostic screens use a colour code to show the Global Data status:

- Configured/not configured/faulty.
- Published/subscribed.

Global Data service diagnostics can be performed in one of five ways:

- Via the application program from a specific PLC data zone.
- From the setup software debug screen.
- From the PLC system diagnostic function displayed by means of an internet browser on a PC station.
- Using standard SNMP manager software.

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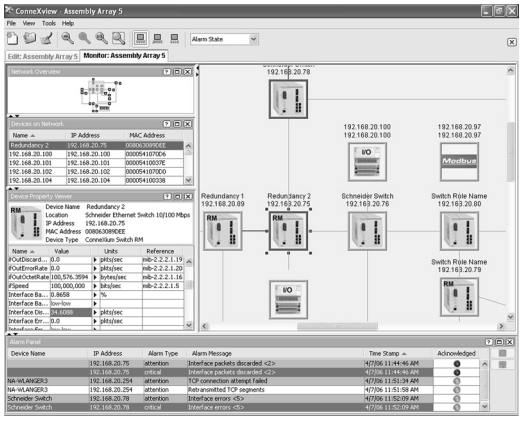
Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 communication services



Automatic recognition of IP devices via the ConneXview diagnostic software for Ethernet industrial networks

Functions (continued)

SNMP network management service

From a network management station, SNMP *(Simple Network Management Protocol)* monitors and checks all components of the Ethernet architecture and thus ensures quick diagnostics in the event of a problem.
It is used to:

- Interrogate network components such as computer stations, routers, switches, bridges or terminal devices in order to view their status.
- Obtain statistics about the network to which the devices are connected.

This network management software complies with the conventional client/server model. However, to avoid confusion with other communication protocols that use this terminology, we talk instead about:

- Network manager for the client application that operates on the computer station.
- SNMP agent for the network device server application.

Transparent Ready devices can be managed by any SNMP network manager, including HP Openview and IBM Netview.

Standard SNMP *(Simple Network Management Protocol)* is used to access configuration and management objects contained in the device MIBs (Management Information Bases). These MIBs must comply with certain standards to be accessed by any commercially-available manager, but depending on the complexity of products, manufacturers can add certain objects to private databases.

The Transparent Ready private MIB presents management objects specific to the Schneider Electric offer. These objects simplify the installation, setup and maintenance of Transparent Ready devices in an open environment using standard network management tools.

Transparent Ready devices support 2 levels of SNMP network management:

- The Standard MIB II interface: This interface accesses a first level of network management. It enables the manager to identify the devices making up the architecture and retrieve general information about the configuration and operation of Ethernet Modbus/TCP interfaces.
- The Transparent Ready MIB interface: This interface improves the management of Transparent Ready devices. This MIB has a set of data enabling the network management system to supervise all the Transparent Ready services.

The Transparent Ready MIB can be downloaded from the FTP server of any Transparent Ready Ethernet module in a PLC.

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Modicon M340 automation platform

Industrial Ethernet services

Modicon M340 standard Web services

Presentation of Web services

The standard Web server functions are integrated in a wide variety of Schneider Electric Ethernet products: Modicon automation platform processors and Ethernet modules, distributed I/O modules, variable speed drives and gateways. These functions are mainly integrated in **BMXP342020/20302/20302CL** processors, **BMXNOE0100/0110** and **BMXNOC0401** Ethernet modules, and **BMXNOR0200H** RTU module.

From a simple Internet browser, the standard Web server authorizes the following “ready-to-use” functions:

- Remote diagnostics and maintenance of products
- Display and adjustment of products (read/write variables, status)

With the **BMXNOE0110** FactoryCast module equipped as standard with the **BMXRWSFC032M** card, the Web server also offers the following functions:

- Management of PLC system and application alarms with partial or total acknowledgement (ready-to-use Alarm Viewer function pages)
- Hosting and display of Web pages created by the user

The embedded Web server is a real-time data server. All the data can be presented in the form of standard Web pages in HTML format and can therefore be accessed using any Web browser that supports the embedded Java code. The standard functions provided by the Web server are supplied “ready-to-use” and thus do not require any programming of either the PLC or the client PC device supporting a Web browser.

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Modicon M340 automation platform

Industrial Ethernet services

M340 Standard Web server

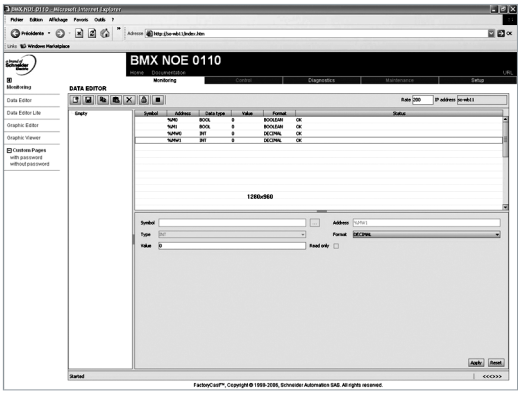
Modicon M340 hardware configuration

Standard Web server on the Modicon M340 platform

Rack Viewer PLC diagnostics function

The Rack Viewer function can be used for PLC system and I/O diagnostics. It displays the following in real time:

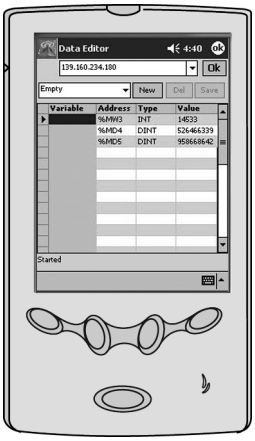
- Status of LEDs on the PLC front panel
- The PLC type and version
- Hardware configuration of the PLC including status of the system bits and words
- Detailed diagnostics of:
  - Each of the I/O module channels or application-specific channels in the configuration
  - Devices connected to the CANopen bus



Data Editor variables table

Data Editor read/write function for PLC data and variables

The Data Editor function can be used to create tables of animated variables for real-time read/write access to PLC data in the form of lists.



Various animation tables containing specific application variables to be monitored or modified can be created by the user and saved in the standard Web server module.In addition to the functions provided by the standard Web server, the **BMXNOE0110** Ethernet module's FactoryCast Web server offers the following:

- Display of variables: Variables can be entered and displayed either in their symbolic form (S_Pump 234) or as their address (%MW99).
- Write access to variables: This can be enabled or disabled for each of the variables using the FactoryCast module configuration software.
- Read/write function: This can be used on tools such as a pocket PC or PDA terminal.

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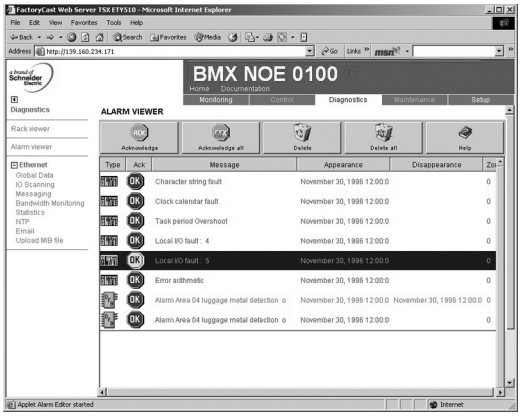
Modicon M340 automation platform

Industrial Ethernet services

FactoryCast Web services

BMXNOE0100 module FactoryCast Web server

In addition to the standard services, the embedded Web server in the **BMXNOE0110** FactoryCast module offers the functions described below.

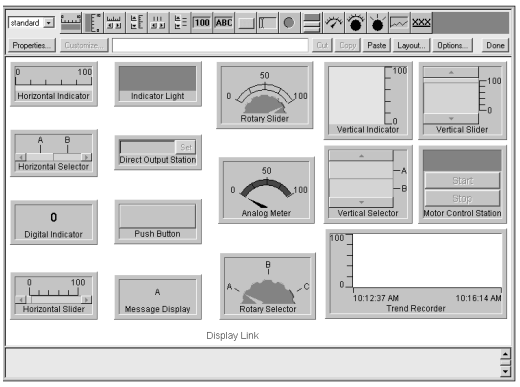


Alarm display from the diagnostic buffer

Alarm Viewer function

The alarm viewer is a ready to use, password-protected function. It is used to process alarms (display, acknowledgement and deletion) managed at PLC level by the system or using diagnostic function blocks known as DFBs (system-specific diagnostic function blocks and application-specific diagnostic function blocks created by the user).
These alarms are stored in the diagnostic buffer managed by the Modicon M340 platform (dedicated memory space for storing all the diagnostic events).
The diagnostic viewer is a Web page comprising a list of messages, which displays the following information for each alarm:

- Dates and times of the occurrence/removal of a fault
- Alarm message
- Alarm status
- Type of associated diagnostic function block (DFB)



Library of predefined graphic objects

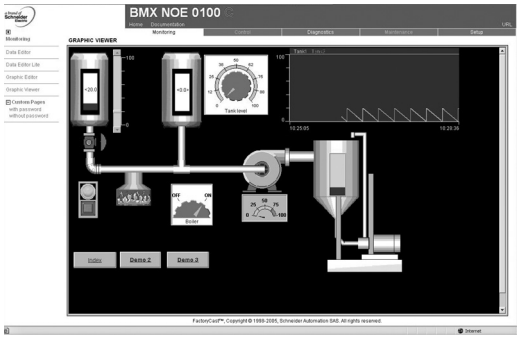
Graphic Data Editor function

This function is used to create the graphic views animated by the PLC variables that can be accessed via their address or via their symbol (access to located data). The ready-to-use graphic editor is available in online mode when connected to the **BMXNOE0110** module.

These views are created from a library of predefined graphic objects by simple copy/paste operations. The objects are configured to suit the user's requirements (colour, PLC variables, name, etc).
List of graphic objects available:

- Analog and digital indicators
- Horizontal and vertical bar charts
- Boxes for displaying messages and entering values
- Pushbutton boxes
- Trend recorders
- Vats, valves, motors, etc

Customized graphic objects can be added to this list and can be reused in user Web pages that have been created using standard software for editing HTML pages. The views thus created are saved in the **BMXNOE0110** module and can be displayed using any Web browser.



Real-time supervision graphic interface

User Web page hosting and display function

The **BMXNOE0110** FactoryCast module has a 16 Mbyte non-volatile memory which is accessed in the same way as a hard drive. This allows hosting of Web pages and any user-defined Word or Acrobat Reader document (for example, maintenance manuals, wiring diagrams, etc).

Web pages can be created using any standard tool for creation and editing in HTML format. They can be enhanced by inserting animated graphic objects linked to PLC variables. These animated objects are created using the Graphic Data Editor. They are then downloaded to the **BMXNOE0110** module via the FactoryCast Web server configuration software.

These user Web pages can be used, for example, to:

- Display and modify all PLC variables in real time
- Create hyperlinks to other external Web servers (documentation, suppliers, etc)

This function is particularly suitable for creating graphic interfaces used for the following purposes:

- Real-time display and supervision
- Production monitoring
- Diagnostics and help with maintenance
- Operator guides

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Modicon M340 automation platform

Industrial Ethernet services

Web Designer configuration software

Web Designer

Web Designer configuration software

The Web Designer software is supplied on CD-ROM with **BMXNOE0110** Ethernet module and **BMXNOR0200H** RTU module.

The software is used for the configuration and administration of the Web server embedded in the modules. It makes it easier to create customized Web human/machine interfaces (HMIs). It is also used for easy configuration of embedded advanced processing functions for numerous Web server modules and RTU modules.
Web Designer software is compatible with Windows 32-bit operating systems.
For optimum use, it requires Java Virtual Machine 1.4.2 minimum.

Web Designer software offers the following functions:

■ **Setting the Web Designer function parameters**:
- □ Definition of access security, passwords
- □ Importing of PLC symbol databases
- □ Definition of access to write-enabled variables

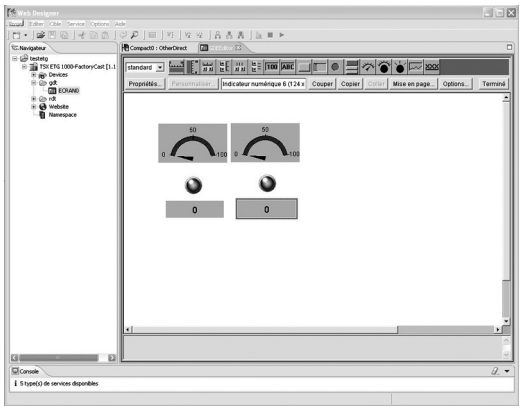
■ **Management of the Web site**:
- □ Management of default site Web pages
- □ Management of user site Web pages
- □ Graphic Data Editor for animating Web pages *(BMXNOE0110 module only)*. This integrated editor can be used for easy customization of graphic objects: bar charts, gauges, LEDs, curves, cursors, operator input fields, alphanumeric display fields, buttons, etc.
- □ Downloading of Web pages between the PC and the module
- □ Debugging of Web pages in online mode or in simulation mode (including animations and Java beans)

■ **Simulation mode**:
- □ The application and the Web site (including the Java animations) can be set up in online mode or in simulation mode.
- □ Simulation mode is used to test the operation of the Web application without a module (with no physical connection to a PLC) thereby simplifying debugging.

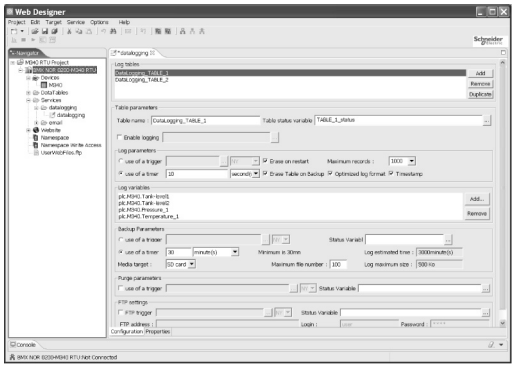
■ **Creation of user Web pages**:
- □ User Web pages are created graphically using an external HTML editor (FrontPage or similar, not supplied).
- □ User Web pages created with the graphic editor are actual animated supervisory control screens and can be used to monitor the process. Based on Web technologies (HTML and Java), they provide real-time access to PLC variables using the FactoryCast library of graphic objects (Java beans) *(BMXNOC0401 module only)*.

■ **Data Logging** *(for BMXNOR0200H module only)*:
- □ This service is used to archive the application data: events, alarms, process data, device states, process values, etc.
- □ The data are logged in CSV files in ASCII format, which are stored locally on the SD memory card in the BMXNOR0200H module.

■ **Sending alarm notifications or reports via Email or SMS** *(BMXNOR0200H module only)*:
- □ The BMXNOR0200H module can send e-mails or SMS messages automatically in real time in order to send alarm notifications, maintenance calls, production reports or factory status updates, etc to specified users.
- □ E-mails or SMS messages are sent when a predefined application or process is triggered.



Graphic Data Editor



Configuring the Data Logging *function for BMXNOR0200H module*

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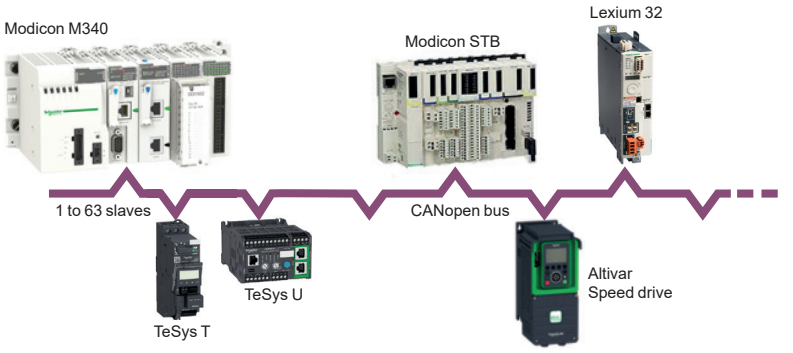
Modicon M340 automation platform

CANopen machine and installation bus

Presentation



Schneider Electric has selected CANopen for its machines and installations because of its wealth of functions and its resulting benefits in the automation world. This decision was based on the general acceptance of CANopen, and the fact that CANopen products are increasingly used in control system architectures.
CANopen is an open network supported by more than 400 companies worldwide, and promoted by CAN in Automation (CiA).
CANopen conforms to standards EN 50325-4 and ISO 15745-2.
Schneider Electric is heavily involved in working groups, which are important for machine and installation architectures, systems and products.

CANopen brings transparency to Ethernet

CAN in Automation and Modbus Organization have worked together to create a standard that ensures total transparency between CANopen and Modbus/TCP. The result of this collaboration has been the CiA DSP309-2 specification, which defines the communication standards between a Modbus/TCP network and a CANopen bus. The specification defines the mapping services which enable CANopen devices to communicate with a Modbus/TCP network through a gateway. The data in a CANopen device can be accessed in both read and write mode.

This specification is the first standard available for developing open standard communication between Modbus/TCP and CANopen. It is driving Schneider Electric network solutions toward better integration, diagnostics and configuration of distributed applications. It allows machines and installations to be connected to an Ethernet network continuously, while combining the advantages of each network in its specific area.

The CANopen bus is a multi-master bus which ensures reliable, deterministic access to real-time data in control system devices. The CSMA/CA protocol is based on broadcast exchanges, sent cyclically or on an event, to ensure optimum use of the bandwidth. A message handling channel can also be used to define slave parameters.

The bus uses a double shielded twisted pair on which, with the Modicon M340 platform, a maximum of 63 devices are connected by daisy-chaining or by tap junctions. The variable data rate between 20 Kbps and 1 Mbps depends on the length of the bus (between 2500 m and 200 m/*8202 and 66 ft*).

Each end of the bus must be fitted with a line terminator.

The Modicon M340 automation platform, via its **BMXP3420102/20302/20102CL/20302CL** processor with integrated CANopen link, performs the role of master on the bus.

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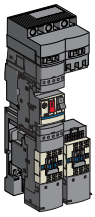
Modicon M340 automation platform

CANopen machine and installation bus



TeSys Quickfit

Altivar ATV320

Lexium 32

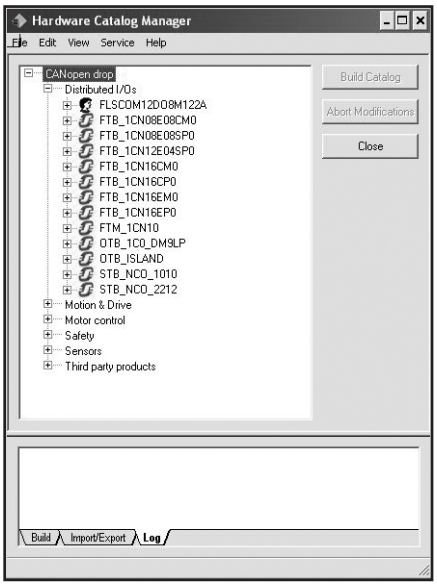
Modicon STB

Connectable Schneider Electric devices

The following Schneider Electric devices can be connected to the CANopen bus, depending on the model *(1)*:

- Absolute encoders
- TeSys U starter-controllers with **LULC08** communication module
- TeSys T motor management system, with LTM controller
- TeSys D motor-starters using the TeSys Quickfit installation help system with **APP1CCO0/O2** communication module
- Modicon STB IP 20 modular distributed I/O, with STB NIM interface module
- Altivar 320 variable speed drives for asynchronous motors
- Lexium 32 servo drives for BMH and BSH servo motors
- IcLA intelligent compact motor-drives

3



Hardware Catalog Manager for integration of third-party devices

Integration of third-party devices

EcoStruxure Control Expert offers the *Hardware Catalog Manager* tool which can be used to integrate third-party devices at an identical level to that of Schneider Electric devices. These third-party devices and their EDS file must conform to the CiA (*CAN In Automation*) standard.

The *Hardware Catalog Manager* tool is used to:

- Integrate third-party devices in Unity Pro
- Optimize the size of the **BMXP3420102/20302/20102CL/20302CL** processor memory area reserved for PDO (*Process Data Object*) process variables
- Customize the parameters specific to each third-party device

(1) See our website www.se.com for compatible device versions and their setup software.

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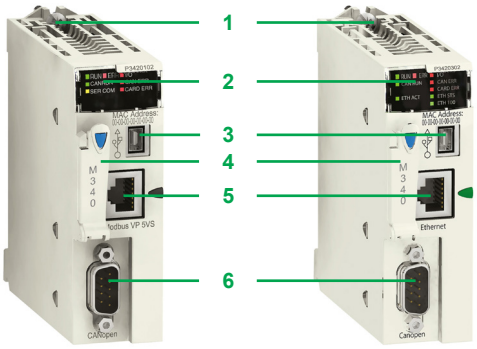
Modicon M340 automation platform

CANopen machine and installation bus



BMXP3420102
BMXP3420102CL

BMXP3420302
BMXP3420302CL

Description

BMXP3420102/20102CL and **BMXP3420302/20302CL** Performance processors on the Modicon M340 platform have an integrated CANopen communication port. They feature the following on the front panel:

1 A safety screw for locking the module in its slot in the rack, marked “00”.
2 A display block comprising at least:
- CAN RUN LED (green): Integrated machine/installation bus operational
- CAN ERR LED (red): Integrated machine/installation bus fault

3 A mini B USB connector for a programming terminal
4 A slot equipped with Flash memory card for backing up the application *(1)*
5 An RJ45 connector for serial link (with **BMXP3420102/20102CL** model) or Ethernet Modbus/TCP port (with **BMXP3420302/20302CL** model)
6 A 9-way SUB-D connector for the CANopen master machine and installation bus

Complementary characteristics

The following characteristics complement those introduced in the communication selection guide on page 3/20:

- Data rate: 20 Kbps to 1 Mbps
- Maximum length of CANopen bus *(2)*:
  - 20 m/*65.62 ft* at 1 Mbps, 40 m/*131.23 ft* at 800 Kbps, 100 m/*328.08 ft* at 500 Kbps, 250 m/*820.21 ft* at 250 Kbps
  - 500 m/*1640.42 ft* at 125 Kbps, 1000 m/*3280.83 ft* at 50 Kbps, 2500 m/*8202.08 ft* at 20 Kbps
- Maximum length of tap-offs on one tap junction *(3)*:
  - 0.6 m/*1.97 ft* at 1 Mbps, 6 m/*19.68 ft* at 800 Kbps, 10 m/*32.81 ft* at 500 Kbps, 10 m/*32.81 ft* at 250 Kbps
  - 10 m/*32.81 ft* at 125 Kbps, 120 m/*393.70 ft* at 50 Kbps, 300 m/*984.25 ft* at 20 Kbps
- Limitation per segment:
  - Max. number of products: 64 at 1 Mbps, 32 at 800 Kbps, 16 at 500 Kbps
  - Maximum length of segment *(4)*: 160 m/*524.93 ft* at 1 Mbps, 185 m/*606.95 ft* at 800 Kbps, 205 m/*672.57 ft* at 500 Kbps

Modicon M340 Performance processors with integrated CANopen bus link

Modicon M340 processor modules are supplied with the Flash card **BMXRMS008MP** *(1)*.

This card performs the following actions transparently:

- Backing up the application (program, symbols and constants) supported in the processor internal RAM that is not backed up
- Activation of the Transparent Ready class B10 standard web server (with **BMXP3420302/20302CL** processor)
- This card can be replaced by another card featuring a file storage option (see page 2/7).

BMXP3420102
BMXP3420102CL

BMXP3420302
BMXP3420302CL

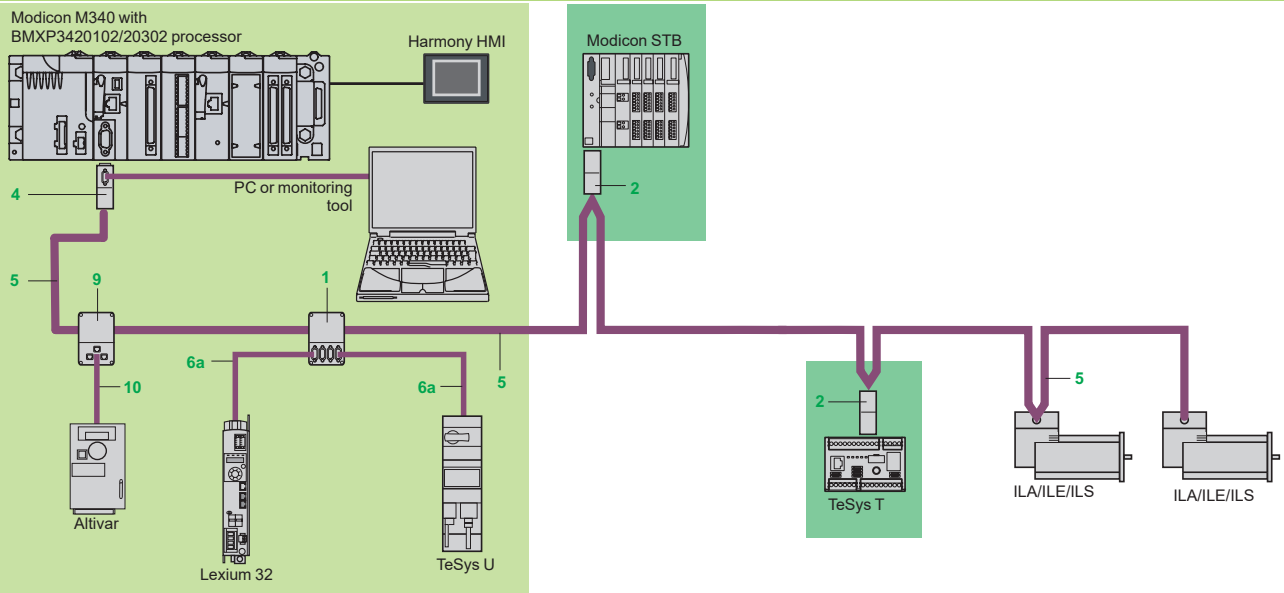
I/O capacity	Max. no. of communication modules	Integrated communication ports	Reference	Weight kg/ *lb*
Performance processors, 4 racks				
1024 discrete I/O 256 analog I/O 36 application-specific channels	2 Ethernet modules 4 AS-Interface buses	CANopen bus Modbus serial link	BMXP3420102	0.210/ *0.463*
			BMXP3420102CL *(1)*	
		CANopen bus Ethernet Modbus/ TCP	BMXP3420302	0.215/ *0.474*
			BMXP3420302CL *(1)*	

(1) Memory card must be ordered separately for the **BMXP3420102CL/302CL** *processors (see page 2/7).*
(2) Deduct 15 m/49.21 ft per repeater from the length of the bus.
(3) For other restrictions, please refer to the CANopen hardware setup manual available on our website www.se.com.
(4) With the use of TSXCANC●50/100/300 CANopen cables and TSXCANC●DD03/1/3/5 preformed cordsets.
(5) See “Integration of third-party devices” paragraph on page 3/13.

Modicon M340 automation platform

CANopen machine and installation bus

CANopen bus cabling system



Note: *For key and references* **1**, **2**, *…,* **17**, *see pages 3/16 to 3/17.*

Different types of cable are available, making it possible to create any type of application, including for severe environments *(1)*.
Several connectors are available to meet any requirement: straight or 90° angled connectors, or angled connectors with the option of connecting a PC or diagnostic pocket PC.

Power can be supplied to devices by means of cables, cordsets and tap junctions: one AWG24 pair for the CAN signals, one AWG22 pair for the power supply and the ground.

In addition to the IP20 cabling offer, there is also an IP67 cabling offer.

(1) ***Standard environment****:*
- Without any particular environmental constraints
- Operating temperature between + 5°C/41°F and + 60°C/140°F
- Fixed installation
Severe environment:
- Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- Relative humidity up to 100%
- Saline atmosphere
- Significant temperature variations
- Operating temperature between - 10°C/14°F and + 70°C/158°F
- Mobile installation

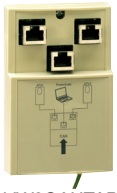
Processor selection guide: page 2/2
M340 modules for severe environments: page 5/3

Modicon M340 automation platform

CANopen machine and installation bus

Cabling system

TSXCANTDM4



VW3CANTAP2

TSXCANKCDF90T

TSXCANKCDF180T

TSXCANKCDF90TP

VW3CANA71

Standard tap junctions and connectors

Designation	Description	No. (1)	Reference	Weight kg/ lb
IP20 CANopen tap junction	4 SUB-D ports. Screw terminal block for connecting the trunk cables Line termination	1	TSXCANTDM4	0.196/ *0.432*
IP20 connectors CANopen female 9-way SUB-D. Switch for line termination	90° angled	2	TSXCANKCDF90T	0.046/ *0.101*
	Straight *(2)*	–	TSXCANKCDF180T	0.049/ *0.108*
	Right angle with 9-way SUB-D for connecting a PC or diagnostic tool	4	TSXCANKCDF90TP	0.051/ *0.112*
IP67 M12 connectors	Male	–	XZCC12MDB50R	0.020/ *0.044*
	Female	–	XZCC12FDB50R	0.020/ *0.044*
IP20 CANopen tap junctions for Altivar and Lexium 32	2 RJ45 ports	9	VW3CANTAP2	–

IP20 standard cables and preformed cordsets

Designation	Description	No. (1)	Length m/ ft	Unit reference	Weight kg/ lb
CANopen cables (AWG 24)	Standard, CE marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1)	5	50/ *164.04*	TSXCANCA50	4.930/ *10.869*
			100/ *328.08*	TSXCANCA100	8.800/ *19.401*
			300/ *984.25*	TSXCANCA300	24.560/ *54.145*
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	5	50/ *164.04*	TSXCANCB50	3.580/ *7.893*
			100/ *328.08*	TSXCANCB100	7.840/ *17.284*
			300/ *984.25*	TSXCANCB300	21.870/ *48.215*
	For harsh environments *(3)* or mobile installations, CE marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1). Oil-resistant	5	50/ *164.04*	TSXCANCD50	3.510/ *7.738*
			100/ *328.08*	TSXCANCD100	7.770/ *17.130*
			300/ *984.25*	TSXCANCD300	21.700/ *47.840*
CANopen preformed cordsets One 9-way female SUB-D connector at each end (AWG 24)	Standard, CE marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1)	6a	1/ *3.28*	TSXCANCADD1	0.143/ *0.315*
			3/ *9.84*	TSXCANCADD3	0.295/ *0.650*
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	6a	1/ *3.28*	TSXCANCBDD1	0.131/ *0.289*
			3/ *9.84*	TSXCANCBDD3	0.268/ *0.591*
CANopen preformed cordsets One 9-way SUB-D connector, One RJ45 connector (AWG 24)		6b	0.5/ *1.64*	TCSCCN4F3M05T	–
			1/ *3.28*	TCSCCN4F3M1T	–
				VW3M3805R010 *(2)*	–
			3/ *9.84*	TCSCCN4F3M3T	–

IP20 connection accessories

Designation	Description	No. (1)	Length m/ ft	Reference	Weight kg/ lb
CANopen connector for Altivar 71 drive *(3)*	9-way female SUB-D. Switch for line termination. Cables exit at 180°	–	–	VW3CANKCDF180T	–
Adaptor for Altivar 71 drive	SUB-D to RJ45 CANopen adaptor	–	–	VW3CANA71	–
Preformed CANopen cordsets for Altivar drives	One RJ45 connector at each end	10	0.3/ *0.98*	VW3CANCARR03	–
			1/ *3.28*	VW3CANCARR1	–
Y-connector	CANopen/Modbus	–	–	TCSCTN011M11F	–

(1) For key to numbers, see page 3/15.

(2) For connection to Controller Inside programmable card, the **VW3CANKCDF180T** *connector can also be used.*

(3) For **ATV71H●●●M3**, **ATV71HD11M3X**, **HD15M3X**, **ATV71H075N4** ... **HD18N4** *drives, this connector can be replaced by the* **TSXCANKCDF180T** *connector.*

Modicon M340 automation platform

CANopen machine and installation bus

Cabling system

IP67 standard preformed cordsets

Designation	Description	No. (1)	Length m/ ft	Unit reference	Weight kg/ lb
CANopen preformed cordsets	Preformed cordsets of two 5-way M12 A-coded angled connectors (one male connector and one female connector)	12	0.3/ *0.98*	TCSCCN2M2F03	0.09/ *0.198*
			1/ *3.28*	TCSCCN2M2F1	0.127/ *0.279*
			1/ *3.28*	TCSCCN2M2F1	0.127/ *0.279*
			2/ *6.56*	TCSCCN2M2F2	0.179/ *0.394*
			5/ *16.40*	TCSCCN2M2F5	0.337/ *0.742*
			5/ *16.40*	TCSCCN2M2F5	0.337/ *0.742*

IP67 connection accessories

For Modicon FTB monobloc splitter boxes

Designation	Composition	No. (1)	Length m/ ft	Reference	Weight kg/ lb
IP67 line terminator	Equipped with one M12 connector (for end of bus)	13	–	TM7ACTLA	0.010/ *0.022*

Separate parts

Designation	Composition		Sold in lots of	Reference	Weight kg/ lb
Connectors	Straight, M12 type, 5 screw terminals	Male	–	XZCC12MDM50B	0.020/ *0.044*
		Female	–	XZCC12FDM50B	0.020/ *0.044*
	Angled, M12 type, 5 screw terminals	Male	–	XZCC12MCM50B	0.020/ *0.044*
		Female	–	XZCC12FCM50B	0.020/ *0.044*
Y-connectors	Connection of two M8 connectors to M12 connector on splitter box		–	FTXCY1208	0.020/ *0.044*
	Connection of two M12 connectors to M12 connector on splitter box		–	FTXCY1212	0.030/ *0.066*

XZCC12●DM50B

XZCC12●CM50B

FTXCY1208

(1) For key to numbers, see page 3/15.

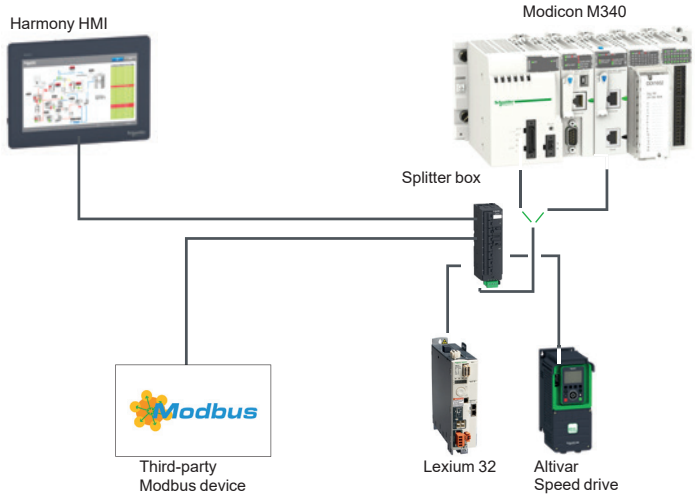
Processor selection guide: page 2/2

M340 modules for severe environments: page 5/3

Modicon M340 automation platform

Modbus and Character mode serial link

Presentation

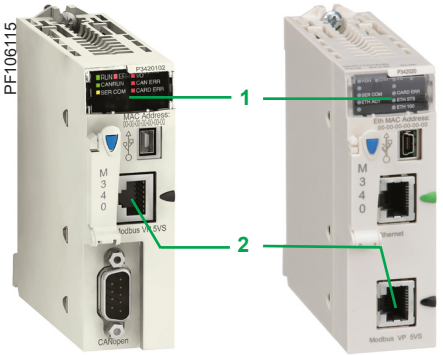


The Modbus serial link is used for master/slave architectures (it is necessary, however, to check that the Modbus services used by the application have been implemented on all relevant devices).

The bus consists of a master station and slave stations. Only the master station can initiate the exchange (direct communication between slave stations is not possible). Two exchange mechanisms are available:
- Question/response, where requests from the master are addressed to a given slave. The master then waits for the response from the slave which has been interrogated.
- Broadcasting, where the master broadcasts a message to all slave stations on the bus. The latter execute the order without transmitting a reply.

The Modicon M340 platform offers serial link connection options for Modbus or Character mode:
- Via the serial link integrated in the following processors:
  - Standard processor **BMXP341000**
  - Performance processors **BMXP342000/20102/2020/20102CL**

The number of serial link modules is limited by the maximum number of application-specific channels permitted per station, depending on the type of processor:
- Standard processor **BMXP341000**: maximum of 20 application-specific channels *(1)*.
- Performance processors **BMXP342●●●●**: maximum of 36 application-specific channels *(1)*.



BMXP3420102/20102CL *BMXP341000/2000/2020*

Description

Processors with integrated serial link

BMXP341000/2000/20102/2020/20102CL processors integrate a serial link which can be used with either the Modbus RTU/ASCII master/slave protocol or with the Character mode protocol.

These processors have the following elements on the front panel, relating to the serial port:

1 A display block including at least the following LEDs:
- SER COM LED (yellow): Activity on the serial link (lit) or fault on a device present on the serial link (flashing).

2 An RJ45 connector for Modbus serial link or Character mode link (non-isolated RS 232C/RS 485) with its black indicator *(2)*.

Note: *For more information about the processors, see* page 3/18

(1) Application-specific channels: **BMXEHC0200** *counter modules (2 channels),* **BMXEHC0800** *(8 channels),* **BMXMSP0200** *motion control modules (2 channels) and* **BMXNOR0200H** *RTU communication module (1 channel).*

(2) For isolated serial links, the **TWDXCAISO** *isolation box must be used.*

Processor selection guide: page 2/2
M340 modules for severe environments: page 5/3

Modicon M340 automation platform

Modbus and Character mode serial link

PF106119

BMXP341000/2000

BMXP342020_DA19

BMXP342020

Complementary characteristics

The following characteristics complement those indicated in the selection guide on page 3/20.

Serial link integrated in the processors

- ■ Physical interface:
  - □ In Modbus: RS 232 4-wire or RS 485 2-wire, non-isolated *(1)*
  - □ In Character mode: RS 232 4-wire or RS 485 2-wire
- ■ Frame:
  - □ In Modbus: RTU/ASCII half duplex
  - □ In Character mode: full duplex in RS 232, half duplex in RS 485
- ■ Maximum length of a tap link in RS 485 2-wire:
  - □ 15 m/*49.21 ft* in a non-isolated serial link
  - □ 40 m/*131.23 ft* in an isolated serial link *(1)*

References

I/O capacity	Memory capacity	Integrated communication ports	Reference	Weight kg/ *lb*
BMXP3410 Standard processor with integrated serial link, 2 racks				
512 discrete I/O 128 analog I/O 20 application-specific channels	2048 KB integrated	Modbus serial link	BMXP341000	0.200/ *0.441*
BMXP3420 Performance processors with integrated serial link, 4 racks				
1024 discrete I/O 256 analog I/O 36 application-specific channels	4096 KB integrated	Modbus serial link	BMXP342000	0.200/ *0.441*
		Modbus serial link CANopen bus	BMXP3420102	0.210/ *0.463*
			BMXP3420102CL *(2)*	0.210/ *0.463*
		Modbus serial link Ethernet Modbus/TCP	BMXP342020	0.205/ *0.452*

(1) For isolated serial links, the **TWDXCAISO** *isolation box must be used.*

(2) Memory card must be ordered separately for the BMXP3420102CL processor (see page 2/7).

Processor selection guide: page 2/2

M340 modules for severe environments: page 5/3

Modicon M340 automation platform
Communication, integrated ports and modules

Applications		Ethernet communication		
Type of device		**Processors with integrated Modbus/TCP port**	**Ethernet modules**	
				
Network protocols		**Ethernet Modbus/TCP**		
Structure	Physical interface	10BASE-T/100BASE-TX		
	Type of connector	RJ45		
	Access method	CSMA-CD		
	Data rate	10/100 Mbps		
Medium		Double twisted pair copper cable, category CAT 5E Optical fibre via ConneXium cabling system		
Configuration	Maximum number of devices	–		
	Max.	100 m/*328.08 ft* (copper cable), 4000 m/*13,123.32 ft* (multi-mode optical fibre), 32,500 m/*106,627 ft* (single-mode optical fibre)		
	Number of modules of the same type per station	1	2 Ethernet or RTU modules per station with any BMXP34 processor	
Standard services		Modbus/TCP messaging		
Transparent Ready conformity class		B10	B30	C30
Embedded Web server services	Standard services	Rack Viewer PLC diagnostics, Data Editor access to PLC data and variables		
	Configurable services	–		Alarm Viewer and Graphic Data Editor
				Hosting and display of user Web pages (14 MB)
Transparent Ready communication services	I/O Scanning service	–	Yes	
	Global Data service	–	Yes	
	NTP time synchronization	–	Yes (module version ≥ 2.0)	
	FDR service	Yes (client)	Yes (client/server)	
	SMTP e-mail notification service	Yes, via EF function block	–	
	SOAP/XML Web service	–	–	Server
	SNMP network management service	Yes	Yes	
	RSTP redundancy service	–	–	–
	QoS (Quality of Service) service	–	–	–
RTU communication services IEC 60870-5-104, DNP3 IP or IEC 60870-5-101, DNP3 serial	Master or Slave configuration	–		
	Time and date stamped data exchange	–		
	RTU time synchronization	–		
	Management and buffering of time and date stamped events	–		
	Automatic transfer of time and date stamped events to the Master/SCADA	–		
Data Logging service		–	–	–
Compatibility with processor		–	Standard and Performance (see page 2/2)	
Processor or module references depending on other type of integrated port	No other integrated port		**BMXNOE0100**	**BMXNOE0110**
	Serial link	**BMXP342020**		
	Ethernet Modbus/TCP			
	CANopen	**BMXP3420302/ BMXP3420302CL**		
Page		3/22	3/23	

Ethernet communication	RTU communication	
Ethernet modules	**RTU module**	
		
EtherNet/IP and Modbus/TCP	**Modbus/TCP, IEC 60870-5-104, DNP3 (subset level 3)**	**Serial link, External modem link, IEC 60870-5-101, DNP3 (subset level 3)**
10BASE-T/100BASE-TX	10BASE-T/100BASE-TX (Modbus/TCP), PPPoE (Point-to-Point Protocol over Ethernet) for ADSL external modem link	Non-isolated RS 232/485 (Serial link), Non-isolated RS 232 (Radio, PSTN, GSM, GPRS/3G external modem link)
Four RJ45 connectors (2 connectors for a ring topology)	One RJ45 connector	One RJ45 connector
CSMA-CD	CSMA-CD (Modbus/TCP), Master/slave (IEC 104/DNP3)	Master/slave (IEC 101/DNP3)
10/100 Mbps	10/100 Mbps (Modbus/TCP)	0.3…38.4 Kbps (Serial link)
Double twisted pair copper cable, category CAT 5E, optical fibre via ConneXium cabling system		Double shielded twisted pair copper cable, Crossover serial cable (Serial link), Direct serial cable (External modem link)
128 (EtherNet/IP or Modbus/TCP)	128 (Modbus/TCP), 64 slaves/servers (IEC 104/DNP3)	32 max.
100 m/*328.08 ft* (copper cable), 4000 m/*13,123.32 ft* (multi-mode optical fibre), 32,500 m/*106,627 ft* (single-mode optical fibre)		1000 m/*3280.83 ft* (Serial link with insulating case)
2 Ethernet or RTU modules per station with any BMXP34 processor		Depending on application-specific channels (20/36 application-specific channels with BMXP341000/ P342●●●●)
EtherNet/IP and Modbus/TCP messaging	Modbus/TCP messaging	Reading/writing digital and analog I/O, counters
B30	C30	–
Rack Viewer PLC diagnostics, Data Editor access to PLC data and variables		–
–	–	–
–	Hosting and display of user Web pages	–
Yes	–	
–	–	
–	Yes	
Yes (client/server)	Yes (client)	–
–	Yes	–
–	Server	–
Yes	Yes (agent)	–
Yes	–	
Yes	–	
–	Yes, IEC101/104 and DNP3	
–	Interrogation via polling and exchanges on change of status (RBE), unsolicited messaging	
–	Yes, IEC101/104 and DNP3	
–	Yes, IEC101/104 and DNP3	
–	Yes, IEC101/104 and DNP3 Buffer holding 10,000 events (per connected client, 4 clients max.)	
–	Yes, on SD 128 MB memory card, in CSV files, access via FTP or sent by e-mail	
Standard and Performance (see page 2/2)		
BMXNOC0401		
	BMXNOR0200H	
		BMXNOR0200H
3/25	For further information, please consult our "Modicon X80 I/O platform" catalog available on our website www.se.com.	

Modicon M340 automation platform
Communication, integrated ports and modules

Applications	CANopen communication	
Type of device	**Processors with integrated CANopen port**	
		
Network protocols	**CANopen**	
Structure — Physical interface	ISO 11898 (9-way SUB-D connector)	
Type of connector	9-way SUB-D	
Access method	CSMA/CA (multiple access)	
Data rate	20 Kbps...1 Mbps depending on distance	
Medium	Double shielded twisted pair copper cable	
Configuration — Maximum number of devices	63 depending on the devices connected	
Max. length	20 m/*65.62 ft* (1 Mbps)…2500 m/*8202.08 ft* (20 Kbps)	
Number of links of the same type per station	1	
Standard services	PDO implicit exchange (application data) SDO explicit exchange (service data)	
Conformity class	Class M20	
SMTP service notification by e-mail	–	Yes, via EF function block Unity Pro ≥ 4.0
Compatibility with processor	–	
Type of processor or module depending on other integrated port — None		
Serial link	**BMXP3420102/ BMXP3420102CL**	
Ethernet Modbus/TCP		**BMXP3420302/BMXP3420302CL**
CANopen		
Page	3/14	

Serial link communication	
Processors with integrated serial link	
	
Modbus and Character mode	
Non-isolated RS 232, 4-wire Non-isolated RS 485, 2-wire	
RJ45	
Master/slave with Modbus link, Full duplex (RS 232)/Half duplex (RS 485) in Character mode	
0.3...38.4 Kbps	
Double shielded twisted pair copper cable	
32 per segment, 247 max.	
15 m/*49.21 ft* (non-isolated), 1000 m/*3280.83 ft* with insulating case	
1	
Read/write bits and words, diagnostics in Modbus mode Send and receive character string in Character mode	
–	
–	
–	
BMXP341000/2000	
BMXP342020 **BMXP3420102/BMXP3420102CL**	
3/19	

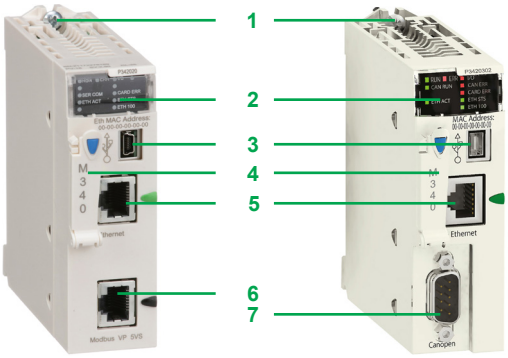
Modicon M340 automation platform

Communication modules

M340 Processors with integrated Ethernet Modbus/TCP link

Presentation

BMXP342020, **BMXP3420302** and **BMXP3420302CL** standard format Modicon M340 processors with integrated Ethernet port occupy a single slot marked “00” in the rack on the Modicon M340 platform.



Description

The front panel of **BMXP342020/20302/20302CL** Modicon M340 processors features:

1 A safety screw for locking the module in a slot in the rack.

2 A display block with 8 LEDs, including 3 relating to the Ethernet port:
- ETH ACT LED (green): Activity on the Ethernet network
- ETH STS LED (green): Ethernet network status

Depending on processor version:
- Version 1**:** ETH 100 LED (green): data rate on the Ethernet network (10 or 100 Mbps)
- Version 2 and later**:** ETH LNK LED (green): Ethernet link status

3 A mini B USB connector for a programming terminal (or Harmony HMI terminal).

4 A slot equipped with its Flash memory card for saving the application and activating the standard Web server (Transparent Ready class B10) *(1)*.

5 An RJ45 connector for the connection to the Ethernet network.

Depending on model:

6 **BMXP342020** processor: An RJ45 connector for the Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated)

7 **BMXP3420302/20302CL** processor: A 9-way SUB-D connector for the master CANopen machine and installation bus.

On the rear panel: 2 rotary switches for selecting the IP address using one of 3 assignment methods:
- □ Address set by the position of the two switches
- □ Address set by the application parameters
- □ Address set by the Ethernet network BOOTP server

BMXP342020

BMXP3420302
BMXP3420302CL

References

I/O capacity	Memory capacity	Integrated communication ports	Reference	Weight kg/ *lb*
BMXP3420 Performance processors with integrated serial link, 4 racks				
1024 discrete I/O 256 analog I/O 36 application-specific channels	4096 KB integrated	Modbus serial link Ethernet Modbus/TCP	BMXP342020	0.205/ *0.452*
		CANopen bus Ethernet Modbus/TCP	BMXP3420302	0.215/ *0.474*
			BMXP3420302CL *(1)*	0.215/ *0.474*

(1) Memory card must be ordered separately for the BMXP3420102CL processor (see page 2/7).

Processor selection guide: page 2/2
M340 modules for severe environments: page 5/3

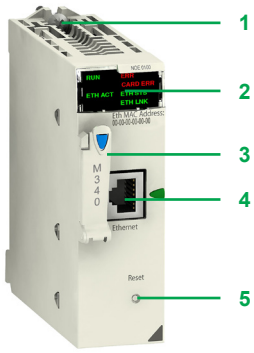
Modicon M340 automation platform

Communication modules

M340 Ethernet Modbus/TCP network modules

Presentation

BMXNOE0100 and **BMXNOE0110** standard format modules occupy a single slot in the rack on the Modicon M340 platform equipped with a Standard or Performance processor.



Description

The front panel of **BMXNOE0100** and **BMXNOE0110** modules features:

1 A safety screw for locking the module in a slot in the rack.

2 A display block with 6 LEDs, including 3 relating to the Ethernet port:
- ETH ACT LED (green): Activity on the Ethernet network
- ETH STS LED (green): Ethernet network status

Depending on processor version:
- Version 1**:** ETH 100 LED (green): data rate on the Ethernet network (10 or 100 Mbps)
- Version 2 and later**:** ETH LNK LED (green): Ethernet link status

3 A slot equipped with its Flash memory card for saving the application and activating the Web server (Transparent Ready class B30 or C30 depending on the model).

4 An RJ45 connector for connection to the Ethernet network.

5 A pencil-point RESET pushbutton for a cold restart of the module.

On the rear panel: 2 rotary switches for assigning the IP address in one of three ways:
- □ Address set by the position of the two switches
- □ Address set by the application parameters
- □ Address set by the Ethernet network BOOTP server

BMXNOE0100

References

Description	Data rate	Transparent Ready Class	Reference	Weight kg/ *lb*
Modbus/TCP Ethernet module	10/100 Mbps	B30	**BMXNOE0100**	0.200/ *0.441*
		C30	**BMXNOE0110** *(1)*	0.200/ *0.441*

Spare parts

Description	Size	Supplied as standard with	Reference	Weight kg/ *lb*
Flash memory card	8 MB	**BMXNOE0100**	**BMXRWSB000M**	0.002/ *0.004*
	32 MB	**BMXNOE0110**	**BMXRWSFC032M**	0.002/ *0.004*

(1) The Web Designer software is supplied on CD-ROM with the **BMXNOE0110** *module. This software is used for the configuration and administration of the Web server embedded in the module, see page 3/10.*

Processor selection guide: page 2/2
M340 modules for severe environments: page 5/3

Modicon M340 automation platform

Communication modules

M340 Ethernet Modbus/TCP network modules

Presentation

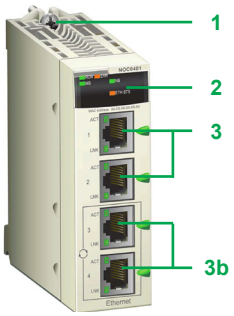
The **BMXNOC0401** network module acts as an interface between the M340 PLC and other Ethernet network devices via the Modbus/TCP and EtherNet/IP communication protocols.

The standard format **BMXNOC0401** network module occupies a single slot in the rack of the Modicon M340 platform.
This must be equipped with a Standard **BMXP341000** or Performance **BMXP342●●●●** processor.

Functions

The **BMXNOC0401** module offers the following functions:
- Modbus/TCP and EtherNet/IP protocols operating simultaneously.
- Ring topologies on 2 Ethernet ports using RSTP *(Rapid Spanning Tree Protocol).*
- Priority of Ethernet packets using QoS *(Quality of Service) service.*
- Automatic module configuration recovery using FDR *(Faulty Device Replacement) service.*
- Support for SCADA functions via the OPC *protocol.*
- Embedded Web server for application monitoring and module diagnostics.
- Sharing data between PLCs.
- Network management using SNMP *(Simple Network Management Protocol).*

Description



The front panel of the **BMXNOC0401** module features:
1 A safety screw for locking the module in a slot in the rack.
2 A display block with 5 LEDs:
  - RUN LED (green): Operating status
  - ERR LED (red): Error detected
  - MS LED (green/red): Module status
  - NS LED (green/red): Network connection status
  - ETH STS LED (amber): Ethernet link status
3 Four RJ45 connectors for connection to the Ethernet network. The two bottom connectors **3b** support ring topologies (RSTP protocol).

Each RJ45 connector has two associated LEDs:
- LNK LED (yellow): Ethernet link established
- ACT LED (green): Transmission/reception activity

On the rear panel, 2 rotary switches for selecting the IP address module using one of 4 assignment methods:
- IP address defined by the Ethernet network BootP server
- IP address configured by the application parameters
- Default IP address
- IP address defined by the position of the 2 rotary switches

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