Modicon™ M340™ automation platform

Catalog

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Modicon™ M340™ automation platform

Product data website 0/4

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Go online to www.schneider-electric.com for technical information about products listed in this catalog, including:

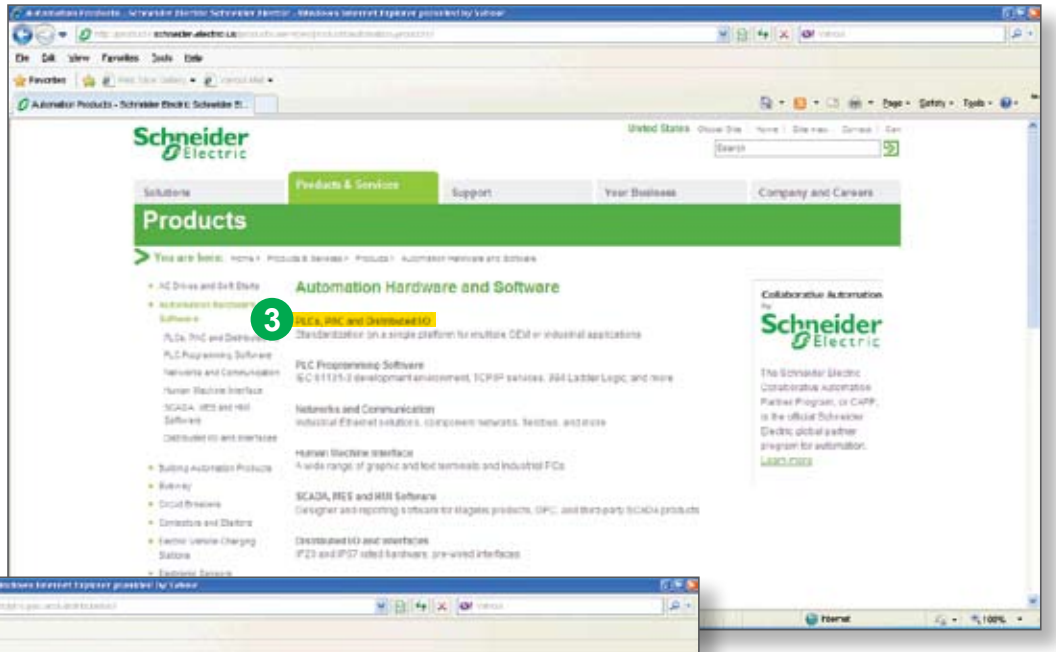
To learn more about Modicon™ M340™ automation platform solutions, follow these steps...

1 On the home page, click on the **"Products and Services"** tab.

2 From the drop-down menu select **"Products"**.

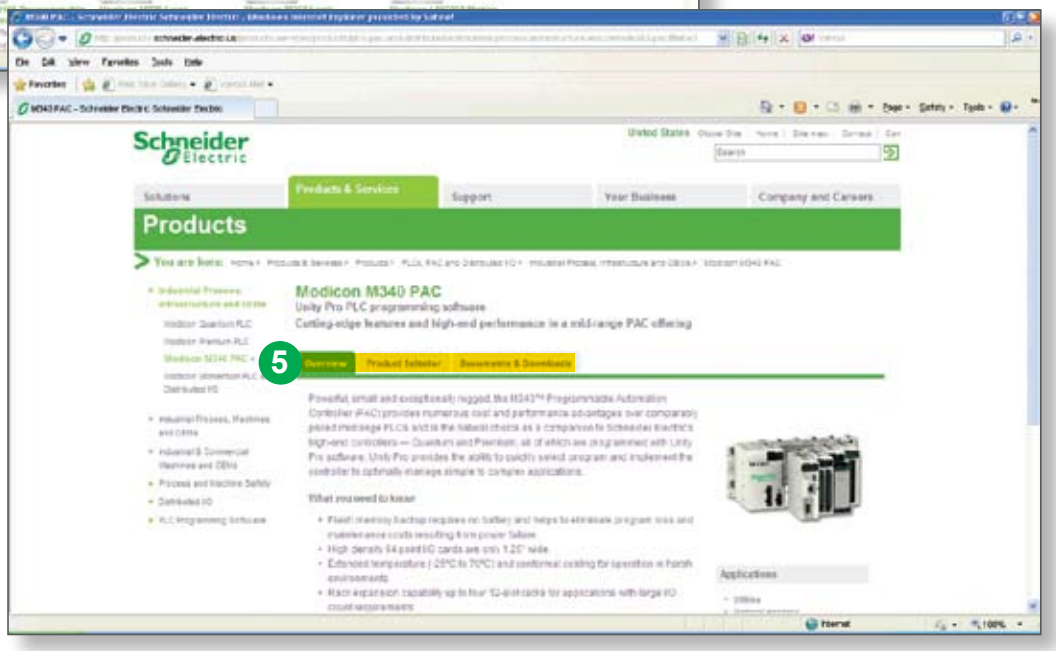
> Specifications > Dimensions > References
> Curves > Links to user guides and CAD files

3 From the "Products" page, click on "Automation Hardware and Software", then click on "PLCs, PAC and Distributed I/O".



4 From the "PLCs, PAC and Distributed I/O" page, click on "Modicon M340 PAC".

5 From the product details page, see "Overview", "Product Selector" and "Documents & Downloads".



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Modicon™ M340™ automation platform

Modicon M340 processors

Modicon™ M340™ platform for Unity™ Pro software offer			BMX3410 Standard processor	BMX3420 Performance processors
				
Racks	Number of racks		2 (with 4, 6, 8 or 12 slots)	4 (with 4, 6, 8 or 12 slots)
	Max. number of slots (excluding power supply module)		24	48
I/O	In-rack discrete I/O *(1)*		512 channels (modules with 8, 16, 32 or 64 channels)	1024 channels (modules with 8, 16, 32 or 64 channels)
	In-rack analog I/O *(1)*		128 channels (modules with 2, 4, 6 or 8 channels)	256 channels (modules with 2, 4, 6 or 8 channels)
	Distributed I/O		Limited depending on the type of medium: on Ethernet Modbus™/TCP network via network module (63 devices with I/O Scanning function), on Modbus link (32 devices)	
In-rack application-specific channels	No. of channels (counter, motion control, serial link)		20 max.	36 max.
	Counter *(1)*		BMXEHC0200 2-channel (60 kHz) or BMXEHC0800 8-channel (10 kHz) modules	
	Motion control *(1)*		BMXMSP0200 2-channel PTO (*Pulse Train Output*) modules for servo drives	
			–	
	Serial link (process or RTU) *(1)*		BMXNOM0200 2-channel module or BMXNOR0200H module with 1 RTU serial channel	
	Process control, programmable loops		Process control EFB library	
Integrated communication ports	Ethernet Modbus™/TCP network		–	
	CANopen™ master bus		–	
	Serial link (process or RTU)		1 in RTU/ASCII Modbus master/slave mode or in Character mode (non-isolated RS232/RS485, 0.3 to 38.4 Kbps)	
	USB port		1 programming port (PC terminal) or HMI connection port	
Communication modules *(1)*	Ethernet network	Max. no.	2	2
		Type of module	BMXNOE0100/0110 or BMXNOC0401 network modules or BMXNOR0200H module with 1 Ethernet RTU channel	
	AS-Interface™ bus	Max. no.	2	4
		Type of module	BMXEIA0100 master module	
Internal memory capacity	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 (on processor)	Backup of program, constants and symbols		8 MB as standard	
	Hosting and display of user web pages		*(3)*	
	File storage		–	8 or 128 MB (according to BMXRMS●●8MPF option card)
Application structure	Master task		1	
	Fast task		1	
	Event tasks		32	64
No. of K instructions executed per ms	100% Boolean		5.4 Kinstructions/ms	8.1 Kinstructions/ms
	65% Boolean + 35% mounted arithmetic		4.2 Kinstructions/ms	6.4 Kinstructions/ms
Rack power supply			24 V ⎓ isolated, 24 to 48 V ⎓ isolated or 100 to 240 V ∿ power supply module	
Modicon M340 processor			**BMXP341000**	**BMXP342000**
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*(1) The maximum values for the number of discrete I/O, analog I/O, counter/motion control/serial link channels and the number of networks are not cumulative (they are limited by the maximum number of slots in the configuration, 1 rack: **11**, 2 racks: **23**, 3 racks: **35** and 4 racks: **47**.*
*(3) User web pages with **BMXNOE0110** Ethernet FactoryCast™ module (12 MB available).*

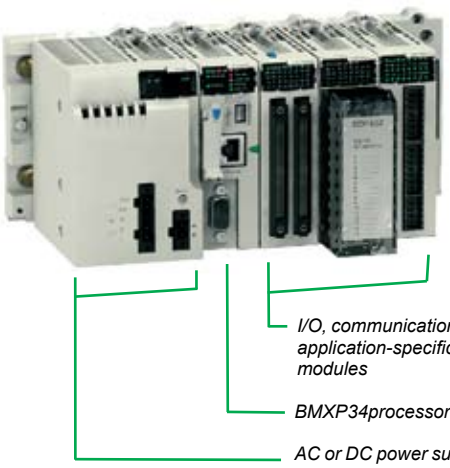
BMX3420 Performance processors (continued)



4 (with 4, 6, 8 or 12 slots)		
48		
1024 channels (modules with 8, 16, 32 or 64 channels)		
256 channels (modules with 2, 4, 6 or 8 channels)		
Limited depending on the type of medium: on CANopen bus (63 devices), on Ethernet Modbus™/TCP network via network module (63 devices with I/O Scanning function), on Modbus link (32 devices)		
36 max.		
BMXEHC0200 2-channel (60 kHz) or BMXEHC0800 8-channel (10 kHz) modules		
BMXMSP0200 2-channel PTO (*Pulse Train Output*) modules (200 kHz) for servo drives		
MFB (Motion Function Block) library (for drives or servo drives on CANopen bus)	–	MFB (Motion Function Block) library (for drives or servo drives on CANopen bus)
BMXNOM0200 2-channel module or BMXNOR0200H module with 1 RTU serial channel		
Process control EFB library		
–	1 x 10BASE-T/100BASE-TX (Modbus/TCP, BOOTP/DHCP, FDR client, e-mail notification, class B10 standard Web server)	
1 (63 slaves, 50 to 1000 Kbps, class M20) *(2)*	–	1 (63 slaves, 50 to 1000 Kbps, class M20) *(2)*
1 in RTU/ASCII Modbus master/slave mode or in Character mode (non-isolated RS232/RS485, 0.3 to 38.4 Kbps)		–
1 programming port (PC terminal) or HMI connection port		
2		
BMXNOE0100/0110 or BMXNOC0401 network modules or BMXNOR0200H module with 1 Ethernet RTU channel		
4		
BMXEIA0100 master module		
4096 KB		
3584 KB		
256 KB		
8 MB as standard		
(3)		
8 or 128 MB (according to BMXRMS●●8MPF option card)		
1		
1		
64		
8.1 Kinstructions/ms		
6.4 Kinstructions/ms		
24 V ⎓ isolated, 24 to 48 V ⎓ isolated or 100 to 240 V ∿ power supply module		
BMXP3420102	**BMXP342020**	**BMXP3420302**

(2) **BMXP3420102/20302** *processors can be used to customize configuration of the device Boot Up procedure compatible with CANopen third-party products. Requires Unity™ Pro software, version ≥ V4.1.*

Modicon™ M340™ automation platform
Processor modules



For severe environments, see the "ruggedized" Modicon M340 parts on pages 6/2 to 6/9.

Introduction

The robust Modicon™ M340™ automation platform includes both: Standard processors, **BMXP341000**, and Performance processors, **BMXP342●●●●**. These processors manage single-rack or multi-rack PAC stations whose slots can be equipped with:
- Discrete I/O modules
- Analog I/O modules
- Communication modules: Ethernet Modbus/TCP network, AS-Interface actuator/sensor buses and RTU *(Remote Terminal Unit)*
- Application-specific modules: counter, axis control and serial link

The five processors offered have different memory capacities, processing speeds, number of I/O and number and type of communication ports.
In addition, depending on the model, they offer a maximum (non-cumulative) of:
- 512 to 1024 discrete I/O
- 128 to 256 analog I/O
- 20 to 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 Magelis™ XBTGT/GK/GTW, GTW HMI, or STU/STO HMI terminal) and is supplied with a memory card used for:
- 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)

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)

Design and setup of Modicon M340 applications

To set up Modicon M340 automation platform processors, you need one of the following:
- Unity™ Pro Small programming software
- Unity Pro Medium, Large, Extra Large or XLS Safety programming software identical to that used to set up Modicon Premium™ and Modicon Quantum™ automation platforms

Depending on requirements, you may also need:
- Unity EFB toolkit software for developing EF and EFB libraries in C language
- Unity SFC View software for viewing and diagnostics of applications written in Sequential Function Chart (SFC) or Grafcet language

The function block software libraries provide Modicon M340 processors with the processing capability required to meet the needs of specializt applications in the following areas:
- Process control via programmable control loops (EF and EFB libraries)
- Motion control with multiple independent axis functions (MFB *(Motion Function Block)* library). The axes are controlled by Altivar™ 312/71 variable speed drives or Lexium 05/32 servo drives connected on the CANopen machine and installation bus.

***BMXP3420102/20302** processors with integrated CANopen bus are compatible with Unity Pro **version ≥ 4.1**. Both these processors can be used to customize configuration of the device Boot Up procedure compatible with CANopen third-party products.*

(1) Maximum number of application-specific channels per station. Only the application-specific channels actually configured in the Unity application count.

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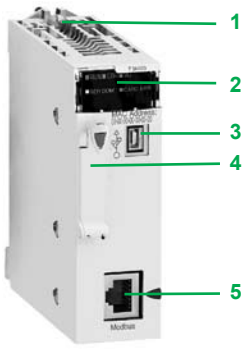
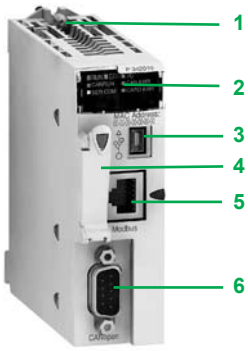
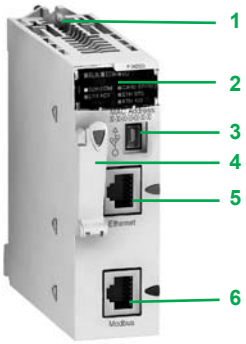
Modicon™ M340™ automation platform
Processor modules



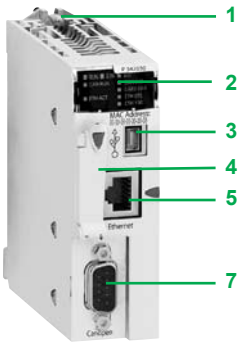
BMXP341000/2000



BMXP3420102



BMXP342020



BMXP3420302

(1) Magelis™ XBTGT/GK/GTW, GTW HMI and STU/STO HMIGraphic terminals with USB port and Vijeo™ Designer configuration software version ≥ 4.5. Please consult our "Human Machine Interfaces" catalog

Description: BMXP341000/2000/20102 processors

BMXP341000/2000/20102 Standard and Performance single-format processors include the following features:

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

2 Display block is comprised of 5 or 7 LEDs, depending on the model:
- RUN LED (green): processor in operation (program execution)
- ERR LED (red): incorrect processor or system operation detected
- I/O LED (red): incorrect I/O module operation detected
- SER COM LED (yellow): activity on the Modbus™ serial link
- CARD ERR LED (red): memory card missing or inoperative
- CAN RUN LED (green): integrated CANopen bus operational (**BMXP3420102** model only)
- CAN ERR LED (red): incorrect integrated CANopen bus operation detected (**BMXP3420102** model only)

3 Mini B USB connector for a programming terminal (or a Magelis™ XBTGT/GK/GTW, GTW HMI, STU/STO HMI terminal *(1)*)

4 Slot equipped with its Flash memory card for backing up the application (an LED, located above this slot, indicates recognition of or access to the memory card)

5 RJ45 connector for the Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated)

In addition, for model **BMXP3420102**:

6 9-way SUB-D connector for the integrated CANopen master bus

Description: BMXP342020/20302 processors with integrated Ethernet Modbus/TCP port

BMXP342020/20302 Performance single-format processors include the following features:

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

2 Display block is comprised of 8 or 10 LEDs, depending on the model:
- RUN LED (green): processor in operation (program execution)
- ERR LED (red): incorrect processor or system operation detected
- I/O LED (red): incorrect I/O module operation detected
- SER COM LED (yellow): activity on the Modbus serial link
- CARD ERR LED (red): memory card missing or inoperative
- ETH ACT LED (green): activity on the Ethernet Modbus/TCP network
- ETH STS LED (green): Ethernet Modbus/TCP network status
- ETH 100 LED (red): Ethernet Modbus/TCP data rate (10 or 100 Mbps)
- CAN RUN LED (green): integrated CANopen bus operational (**BMXP3420302** model only)
- CAN ERR LED (red): incorrect integrated CANopen bus operation detected (**BMXP3420302** model only)

3 Mini B USB connector for a programming terminal (or a Magelis™ XBTGT/GK/GTW, GTW HMI and STU/STO HMI terminal *(1)*)

4 Slot equipped with its Flash memory card for backing up the application (an LED, located above this slot, indicates recognition of or access to the memory card)

5 RJ45 connector for connection to the 10BASE-T/100BASE-TX Ethernet Modbus/TCP network

In addition, depending on the 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** processor: a 9-way SUB-D connector for the integrated CANopen master bus

On the back panel: 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 the Unity™ Pro programming software, the OPC Factory Server™ *(OFS™)* and Magelis XBTGT/GK/GTW, GTW HMI and STU/STO HMI terminals *(1)*.

BMXP34 processors can be connected to a USB bus is comprised of 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 PAC (modem, printer)

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Modicon™ M340™ automation platform
Processor modules

Memory cards

BMXRMS008MP memory card (supplied as standard)

Modicon™ M340™ processors come standard with an SD *(Secure Digital)* type Flash memory card, **BMXRMS008MP**. This card is used for backing up the two memory areas on the processor module's internal RAM:
- Program, symbols and comments area, that contains the executable binary code and the IEC source code of the application program for the program part
- Constants area, that contains the constant data located by address

The data is backed up automatically when the PAC is turned off. Likewise, restoration of data is transparent to 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 **BMXP342●●●●** Performance processors.

Processors with an integrated Ethernet port, **BMXP342020/20302, have an additional** 2 MB **memory area specifically for “**Standard Web services” (Transparent Ready™ B10) (see page 3/14).

The **BMXRMS008MP** memory card is formatted by Schneider Electric and supplied with each processor. It is referenced as a replacement part.

BMXRMS008MPF/128MPF optional memory cards

Performance processors, **BMXP342●●●●**, can accept a **BMXRMS008MPF** or **BMXRMS128MPF** optional memory card in place of the standard memory card. In addition to the features of the standard card, this card also provides 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 Microsoft Word®, Excel®, PowerPoint® or Acrobat Reader® document (for example, maintenance manuals, diagrams. etc.) to be received via FTP
- Additional data (for example: production data, manufacturing recipes, etc.) to be stored via EFB user function blocks

Unity Pro programming software helps the application designer manage the structure and memory space on the Modicon M340 automation platform.

Application security

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 PAC.

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

For Unity™ Pro V5.0 and later versions, the user has function blocks to help secure intellectual property by means of a signature that can be loaded and stored in the M340 processor module's Flash memory card. The code is not executed if the signature is not present.

Modifying the program in online mode

As with the Modicon Premium and Quantum platforms (with Unity Pro software), the online program modification function is available on the Modicon M340 with the option of adding or modifying the program code and data in different places in the application in a single modification session. This helps to ensure that the 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 supporting the structuring of the application program in several, reasonably-sized sections.

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Modicon™ M340™ automation platform
Processor modules

BMXP341000

BMXP342000

BMXP3420102
BMXP3420302

BMXP342020

BMXRMS008/128MPF

BMXXCAUSBH0●●

Modicon™ M340™ processors

I/O capacity	Max. no. of network and bus modules	Integrated communication ports	Compatibility with Unity™ Pro software	Reference	Weight kg
Standard BMXP3410, 2 racks					
512 discrete I/O 128 analog I/O 20 application-specific channels 2048 KB integrated (internal user memory)	2 Ethernet networks 2 AS-Interface buses	1 Modbus™ serial link	Version ≥ 3.0	**BMXP341000**	0.200
Performance BMXP3420, 4 racks					
1024 discrete I/O 256 analog I/O 36 application-specific channels 4096 KB integrated (internal user memory)	2 Ethernet networks 4 AS-Interface buses	1 Modbus serial link	Version ≥ 3.0	**BMXP342000**	0.200
		1 Modbus serial link 1 CANopen bus	Version ≥ 4.1	**BMXP3420102**	0.210
		1 Modbus serial link 1 Ethernet network	Version ≥ 3.0	**BMXP342020**	0.205
		1 Ethernet network 1 CANopen bus	Version ≥ 4.1	**BMXP3420302**	0.215

Memory cards

Description	Processor compatibility	Capacity	Reference	Weight kg
Flash memory cards (optional) *(2)*	BMXP342000 BMXP3420102 BMXP342020 BMXP3420302	8 MB + 8 MB file storage	**BMXRMS008MPF**	0.002
		8 MB + 128 MB file storage	**BMXRMS128MPF**	0.002

Separate parts

Description	Use		Length	Reference	Weight kg
	From	To			
Terminal port/ USB cordsets	Mini B USB port on the Modicon M340 processor	Type A USB port on: - PC terminal - Magelis XBTGT/GK/ GTW, GTW HMI, STU/ STO HMIGraphic terminal	1.8 m	**BMXXCAUSBH018**	0.065
			4.5 m	**BMXXCAUSBH045**	0.110

Replacement parts

Description	Use	Processor compatibility	Reference	Weight kg
8 MB standard Flash memory card	Supplied as standard with each processor. Used for: - Backing up the program, constants, symbols and data - Activation of class B10 Web server	BMXP341000 BMXP342020 BMXP3420102/20302	**BMXRMS008MP**	0.002

(1) ***BMXP3420102/20302*** *processors, combined with Unity Pro software version ≥ 4.1 can be used to customize configuration of the device Boot Up procedure compatible with CANopen third-party products.*
(2) Memory cards for ***BMXP342●●●●*** *processors, to replace the standard memory card, used for:*
- *Backing up the program, constants, symbols and data*
- *Activation of class B10 Web server*
- *File storage*

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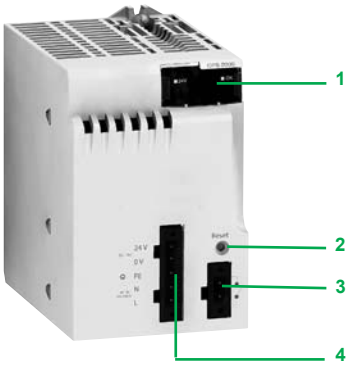
Modicon™ M340™ automation platform
Power supply modules



Introduction

BMXCPS●●●● power supply modules provide the power supply for each **BMXXBP●●00** Modicon™ M340™ rack and the modules installed on it.

The Modicon M340 power supply module offer includes:
- Three power supply modules for DC line supplies:
  - 24 V ⎓ isolated power supply module, **BMXCPS2010**
  - 24 to 48 V ⎓ isolated power supply module, **BMXCPS3020**
  - 125 V ⎓ power supply module, **BMXCPS3540T** (extended operating temperature -25° to +70°C)
- Two power supply modules for AC line supplies:
  - 100 to 240 V ∿, 20 W power supply module, **BMXCPS2000**
  - 100 to 240 V ∿, 36 W power supply module, **BMXCPS3500**

Description

The power supply module is selected according to:
- The electrical line supply: 24 V ⎓, 48 V ⎓, 125 V ⎓ or 100 to 240 V ∿
- The required power (see the power consumption table on page 7/16) *(1)*

BMXCPS●●●● power supply modules feature the following:
1. Display block is comprised of:
   - OK LED (green), lit if rack voltages are present and correct
   - 24 V LED (green), lit when the sensor voltage is present (BMXCPS2000/3500/3540T AC power supply modules only)
2. Pencil-point RESET push button for a cold restart of the application
3. 2-way connector that can take a removable terminal block (cage clamp or spring-type) for connecting the alarm relay
4. 5-way connector that can take a removable terminal block (cage clamp or spring-type) for connecting the following:
   - ⎓ or ∿ line supply
   - Protective earth ground
   - Dedicated 24 V ⎓ power supply for the input sensors (for BMXCPS2000/3500/3540T AC power supply modules only)

Included with each power supply module:
- Set of two cage clamp removable terminal blocks (5-way and 2-way) **BMXXTSCPS10**

To be ordered separately (if necessary)**:**
- Set of two spring-type removable terminal blocks (5-way and 2-way) **BMXXTSCPS20**

Functions

Alarm relay

The alarm relay incorporated in each power supply module has a volt-free contact, accessible on the front panel, on the 2-way connector.

This relay is operated is as follows:
In normal operation, with the PAC in RUN, the alarm relay is energized and its contact is closed (state 1).
The relay de-energizes and its associated contact opens (state 0) whenever the application stops, even partially, due to any of the following:
- Required interlock is not satisfied
- Incorrect rack output voltages
- Supply voltage missing or otherwise inoperative

(1) This power consumption calculation for the rack can also be performed by the Unity Pro programming software.

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Modicon™ M340™ automation platform
Power supply modules

Functions (continued)

RESET push button

The power supply module in each rack has a RESET button on the front panel that, when pressed, triggers an initialization sequence on the processor and the modules in the rack it supplies.
Pressing this push button triggers a sequence of service signals, that is the same as that for:
- A power break, when the push button is pressed
- A power-up, when the push button is released

In terms of the application, these operations represent a cold start (forcing the I/O modules to state 0 and initializing the processor).

Sensor power supply

BMXCPS2000/3500 AC power supply modules and **BMXCPS3540T** DC power supply modules have an integrated 24 V ⎓ supply for powering the input sensors.
Connection to this 24 V ⎓ sensor power supply is via the 5-way connector on the front panel.
The available power depends on the power supply module (0.45 A or 0.9 A).

References

Each **BMXXBP●●00** rack requires a power supply module. These modules are inserted in the first two slots of each rack (marked CPS).
The power required to supply each rack depends on the type and number of modules installed in the rack. It is therefore necessary to draw up a power consumption table for each rack to determine which **BMXCPS●●●0** power supply module is correct for each rack (see page 7/16).

BMXCPS2010/3020

Power supply modules *(1)*

Line supply	Available power *(2)*				Nominal current	Reference	Weight
	3.3 V ⎓ *(3)*	24 V ⎓ rack *(3)*	24 V ⎓ sensors *(4)*	Total	24 V ⎓ rack *(3)*		kg
24 V ⎓ isolated	8.3 W	16.8 W	–	16.8 W	0.7A	**BMXCPS2010**	0.290
24 to 48 V ⎓ isolated	15 W	31.2 W	–	31.2 W	1.3A	**BMXCPS3020**	0.340
100 to 150 V ⎓	15 W	31.2 W	21.6 W	36 W *(5)*	1.3A	**BMXCPS3540T** *(5)*	0.340
100 to 240 V ∿	8.3 W	16.8 W	10.8 W	20 W	0.7A	**BMXCPS2000**	0.300
	15 W	31.2 W	21.6 W	36 W	1.3A	**BMXCPS3500**	0.360

BMXCPS2000/3500

Separate part

Description	Type	Composition	Reference	Weight kg
Set of 2 removable connectors	Spring-type	One 5-way terminal block and one 2-way terminal block	**BMXXTSCPS20**	0.015

Replacement part

Description	Type	Composition	Reference	Weight kg
Set of 2 removable connectors	Cage clamp	One 5-way terminal block and one 2-way terminal block	**BMXXTSCPS10**	0.020

*(1) Include a set of 2 cage clamp removable connectors. Spring-type connectors available separately under reference **BMXXTSCPS20**.*
(2) The sum of the power consumed on each voltage (3.3 V ⎓ and 24 V ⎓) must not exceed the available power of the module. See the power consumption table on page 7/16.
(3) 3.3 V ⎓ and 24 V ⎓ rack voltages for powering modules in the Modicon™ M340™ PAC rack.
(4) 24 V ⎓ sensor voltage for powering the input sensors (voltage available via the 2-way removable connector on the front panel).
(5) Extended operating temperature -25° to +70°C (with power derating at extreme temperatures: 27 W between -25° and 0°C and between 60° and 70°C).

Modicon™ M340™ automation platform
Single-rack configuration

Introduction

BMXXBP●●00 racks are the basic element in Modicon™ M340™ single-rack and multi-rack configurations. They perform the following functions:

■ Mechanical function: they are used to install the modules in a PAC station (power supply, processor, discrete, analog and application-specific I/O). These racks can be mounted on a panel, plate or DIN rail:
- □ Inside enclosures
- □ On machine frames

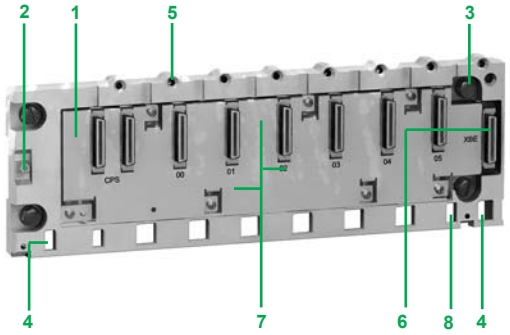
■ Electrical function: the racks incorporate a Bus X (proprietary bus). They are used to:
- □ Distribute the power supplies required for each module in the same rack
- □ Distribute data and service signals for the entire PAC station
- □ Hot swap modules during operation

Description

BMXXBP●●00 racks are available in 4, 6, 8 or 12-slot versions and feature:

1 Metal frame that performs the following functions:
- Holds the Bus X electronic card and helps to protect it against EMI and ESD type interference
- Holds the modules
- Gives the rack mechanical rigidity

2 Earth ground terminal for grounding the rack
3 4 holes (big enough for M6 screws) for mounting the rack on a frame
4 2 mounting points for the shielding connection bar
5 Tapped holes to take the locking screw on each module
6 Connector for a rack expansion module, marked **XBE**
7 40-way female ½ DIN connectors forming the electrical connection between the rack and each module, marked **CPS**, **00** to **11** (The rack is delivered with each connector covered. The cover is removed before inserting the module)
8 Slots for anchoring the module pins



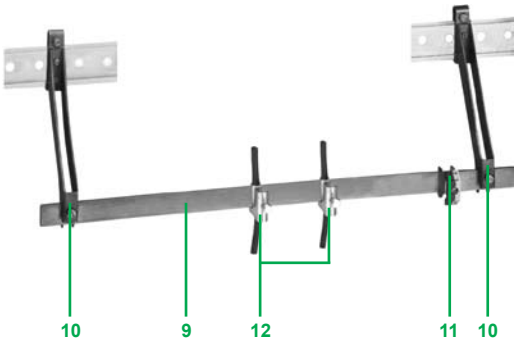
BMXXBP0600 rack with 6 slots

To be ordered separately:

A **BMXXSP●●00** cable shielding connection kit, used to help protect against electrostatic discharge when connecting the shielding on cordsets for connecting:
- □ Analog, counter and motion control modules
- □ A Magelis™ XBT operator interface to the processor (via **BMXXCAUSBH0●●** shielded USB cable)

The **BMXXSP●●00** shielding connection kit is comprised of:

9 Metal bar that takes the clamping rings and the grounding terminal
10 Two sub-bases to be mounted on the rack
11 Earth grounding terminal
12 Not included in the shielding connection kit, the **STBXSP30●0** clamping rings (sold in lots of 10, cross-section 1.5 to 6 mm² or 5 to 11 mm²)



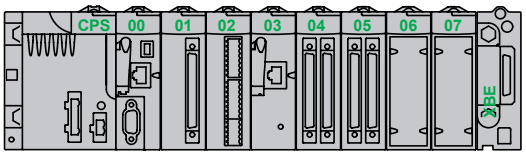
BMXXSP●●00 cable shielding connection kit

Function

Addressing modules in a single-rack configuration *(1)*

Each rack requires a power supply module and a processor module.

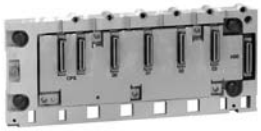
Installing the modules in the rack:
- □ The power supply module occupies the **CPS** slot
- □ The processor module is installed in slot **00**
- □ I/O modules and application-specific modules are installed from slot **01** to slot:
- **03** for a 4-slot rack
- **05** for a 6-slot rack
- **07** for an 8-slot rack
- **11** for a 12-slot rack



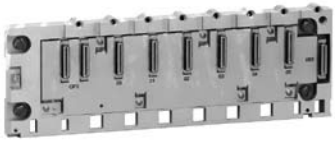
Example of installation with 8-slot rack

(1) For a multi-rack configuration with a BMXXBE1000 rack expansion module (XBE slot), see page 1/12.

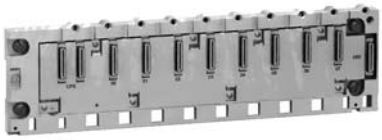
Modicon™ M340™ automation platform
Single-rack configuration



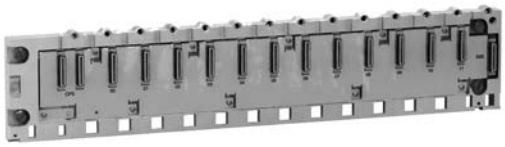
BMXXBP0400



BMXXBP0600



BMXXBP0800

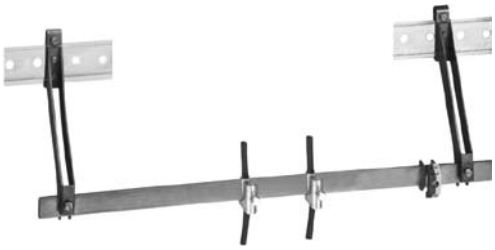


BMXXBP1200

Racks

Description	Type of module to be inserted	No. of slots *(1)*	Reference	Weight kg
Racks	BMXCPS power supply, BMXP34processor, I/O modules, communication modules and application-specific modules (counter, motion control and serial)	4	**BMXXBP0400**	0.630
		6	**BMXXBP0600**	0.790
		8	**BMXXBP0800**	0.950
		12	**BMXXBP1200**	1.270

(1) Number of slots taking the processor module, I/O modules, communication modules and application-specific modules (excluding power supply module).



STBXSP●●00 + STBXP30●0

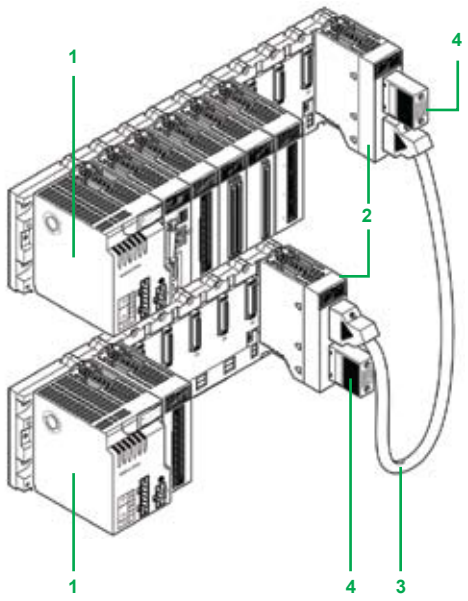
Accessories

Description	For use with	Reference	Weight kg
Shielding connection kits is comprised of: - 1 metal bar - 2 support sub-bases - 1 grounding terminal	BMXXBP0400 rack	**BMXXSP0400**	0.280
	BMXXBP0600 rack	**BMXXSP0600**	0.310
	BMXXBP0800 rack	**BMXXSP0800**	0.340
	BMXXBP1200 rack	**BMXXSP1200**	0.400
Spring clamping rings Sold in lots of 10	Cables, cross-section 1.5 to 6 mm²	**STBXSP3010**	0.050
	Cables, cross-section 5 to 11 mm²	**STBXSP3020**	0.070
Protective covers (replacement parts) Sold in lots of 5	Unoccupied slots on BMXXBP●●00 rack	**BMXXEM010**	0.005

I/O: pages 2/2 and 2/14
Communication: page 3/2
Software: page 4/2
Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform

Multi-rack configuration



Composition of a multi-rack configuration

Multi-rack configurations are made up of standard **BMXXBP●●00** racks.
They feature:
- 2 racks maximum for a station with **BMXP341000 processor**
- 4 racks maximum for a station with **BMXP342●●0 processor**

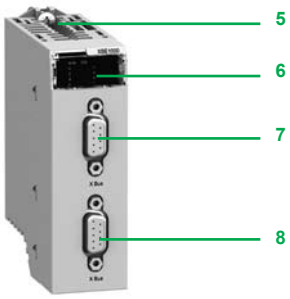
Each rack is equipped with:
1. **BMXCPS●●●●●** power supply
2. **BMXXBE1000** rack expansion module This module, inserted in the right-hand end of the rack (**XBE** slot, see page 1/10) does not occupy rack slots **00** to **11** (4, 6, 8 or 12 slots are still available)
3. **BMXXBE1000** rack expansion modules connected to each other by Bus X cordsets

Bus X

Racks, distributed on the Bus X, are connected to each other by Bus X extension cordsets **3** with a combined length of **30 m maximum**.
Racks are connected in a daisy chain using **BMXXBC●●0K** *(1)* Bus X extension cordsets connected to the two 9-way SUB-D connectors **7** and **8** on the front panels of the **BMXXBE1000 rack expansion modules 2**.

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

Note: *The processor module is positioned in the rack at address 0. However, in a Bus X daisy chain, the order of the racks has no effect on operation. For example, the order of the daisy chain can be 0-1-2-3, 2-0-3-1 or 3-1-2-0, etc.*



Description

The front panel of the **BMXXBE1000** rack expansion module features:
5. Safety screw for locking the module in its slot (at the far right-hand end of the rack)
6. Display block with 5 LEDs:
- RUN LED (green): module in operation
- COL LED (red): several racks have the same address, or rack address 0 does not contain the **BMXP34●●●0** processor module
- LEDs 0, 1, 2 and 3 (green): rack address 0, 1, 2 or 3

7. 9-way female SUB-D connector, marked Bus X, for the incoming Bus X cordset **3** connected to the upstream rack, or if it is the first rack, for the **A/** line terminator included in the **TSXTLYEX 4** pack
8. 9-way female SUB-D connector, marked Bus X, for the outgoing Bus X cordset **3** to the downstream rack, or if it is the last rack, for the **/B** line terminator included in the **TSXTLYEX 4** pack

On the right-hand side panel
A flap for accessing the 3 rack addressing micro-switches: 0 to 3.

Installation rules for BMXXBP●●●0 racks
Rules for installing racks in enclosures (see our website www.schneider-electric.com).

(1) ***BMXXBC●●0K*** *extension cordsets, length 0.8 m, 1.5 m, 3 m, 5 m or 12 m, with angled connectors or* ***TSXCBY●08K*** *extension cordsets, length 1 m, 3 m, 5 m, 12 m, 18 m or 28 m, with straight connectors.*

Modicon™ M340™ automation platform
Multi-rack configuration

BMXXBE1000

Rack expansion

Description	Use	Reference	Weight kg
Modicon™ M340™ rack expansion module	Standard module for mounting in each rack (**XBE** slot) and used to interconnect: - Up to 2 racks with BMXP341000 processor module - Up to 4 racks with BMXP342●●●● processor module	**BMXXBE1000**	0.178
Modicon M340 rack expansion kit	Complete kit for 2-rack configuration is comprised of: - 2 BMXXBE1000 rack expansion modules - 1 BMXXBC008K extension cordset, length 0.8 m - 1 TSXTLYEX line terminator (set of 2)	**BMXXBE2005**	0.700

BMXXBC●●●K

Cordsets and connection accessories

Description	Use	Composition	Type of connector	Length	Reference	Weight kg
Bus X extension cordsets combined length 30 m max.	Between 2 BMXXBE1000 rack expansion modules	2 x 9-way SUB-D connectors	Angled	0.8 m	**BMXXBC008K**	0.165
				1.5 m	**BMXXBC015K**	0.250
				3 m	**BMXXBC030K**	0.420
				5 m	**BMXXBC050K**	0.650
				12 m	**BMXXBC120K**	1.440
			Straight	1 m	**TSXCBY010K**	0.160
				3 m	**TSXCBY030K**	0.260
				5 m	**TSXCBY050K**	0.360
				12 m	**TSXCBY120K**	1.260
				18 m	**TSXCBY180K**	1.860
				28 m	**TSXCBY280K**	2.860
Cable reel	Length of cable to be fitted with TSXCBYK9 connectors	Cable with ends with flying leads, 2 line testers	–	100 m	**TSXCBY1000**	12.320

TSXTLYEX

Description	Use	Composition	Sold in lots of	Reference	Weight kg
Line terminators	Required on the 2 BMXXBP●●●0 modules located at either end of the daisy chain	2 x 9-way SUB-D connectors marked A/ and /B	2	**TSXTLYEX**	0.050
Bus X straight connectors	For TSXCBY1000 cables	2 x 9-way SUB-D straight connectors	2	**TSXCBYK9**	0.080
Connector assembly kit	Fitting TSXCBYK9 connectors	2 crimping pliers, 1 pen *(1)*	–	**TSXCBYACC10**	–

(1) To fit the connectors on the cable, you will also need a wire stripper, a pair of scissors and a digital ohmmeter.

I/O: pages 2/2 and 2/14 | Communication: page 3/2 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Contents ***chapter 2***

I/O modules, application-specific modules, quick wiring adapters

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Modicon™ M340™ automation platform

Discrete I/O modules

Input modules

Applications				
		Input module 8 channels	**16-channel input modules**	
		Connection via cage clamp, screw clamp or spring-type removable block terminal		
				
Type		∼	⎓	
Voltage		200 to 240 V	24 V	48 V
Current per channel		10.4 mA (for U = 220 V to 50 Hz)	3.5 mA	2.5 mA
Modularity (Number of channels and commons)		8 isolated inputs and 1 common	16 isolated inputs and 1 common	
Connection		Via 20-way cage clamp, screw clamp or spring-type removable terminal block BMXFTB2000/2010/2020		
Isolated inputs	IEC/EN 61131-2 conformity	Type 2	Type 3	Type 1
	Logic	–	Positive *(sink)*	
	Type of input	Capacitive	Current sink	
	Sensor compatibility IEC/EN 60947-5-2	2-wire ∼	2-wire ⎓, 3-wire ⎓ PNP any type	
Sensor power supply (ripple included)		170 to 264 V	19 to 30 V	38 to 60 V
Protection of inputs		Use one 0.5 A fast-blow fuse per group of channels		
Maximum dissipated power		4.73 W	2.5 W	3.6 W
Operating temperature		0 to 60°C		
Compatibility with installation help system TeSys™ Quickfit		–		
Compatibility with pre-wired system Modicon™ Telefast™ ABE7	Passive connection sub-bases	–		
	Adaptor sub-bases with relays	–		
References		**BMXDAI0805**	**BMXDDI1602**	**BMXDDI1603**
Page		2/12		

16-channel input modules

Connection via cage clamp, screw clamp or spring-type removable block terminal

∿ or ⎓	∿		⎓
24 V (∿ or ⎓)	48 V	100 to 120 V	125 V
3 mA (∿ or ⎓)	5 mA		2.4 mA
16 isolated inputs and 1 common			
Via BMXFTB2000/2010/2020 20-way cage clamp, screw clamp or spring-type removable block terminal			
Type 1 (∿)	Type 3		–
Negative *(source)* (⎓)	–		Positive *(sink)*
Resistive	Capacitive		Current sink
2-wire ⎓/∿, 3-wire ⎓ PNP or NPN any type	2-wire ∿		–
19 to 30 V ⎓ 20 to 26 V ∿	40 to 52 V	85 to 132 V	88 to 150 V
Use one 0.5 A fast-blow fuse per group of channels			
3 W	4 W	3.8 W	8.5 W (at 40°C)
0 to 60°C			-25 to 70°C
–			
–			
–			

BMXDAI1602	BMXDAI1603	BMXDAI1604	BMXDDI1604T
2/12			

Modicon™ M340™ automation platform

Discrete I/O modules

Input modules and mixed I/O modules

Applications		**32 or 64-channel high-density input modules** **Connection via 40-way connectors with pre-assembled cordsets**	
			
Type		⎓	
Voltage		24 V	
Current per channel	Inputs	2.5 mA	1 mA
	Outputs	–	–
Modularity (Number of channels and commons)		32 isolated inputs and 2 commons	64 isolated inputs and 4 commons
Connection		Via one 40-way connector	Via two 40-way connectors
Isolated inputs	IEC/EN 61131-2 conformity	Type 3	Non-IEC
	Logic	Positive *(sink)*	
	Type of input	Current sink	
	Sensor compatibility IEC/EN 60947-5-2	2-wire ⎓, 3-wire ⎓ PNP any type	–
Sensor power supply (ripple included)		19 to 30 V	
Protection of inputs		Use one 0.5 A fast-blow fuse per group of channels	
Isolated outputs	Fallback	–	
	IEC/EN 61131-2 conformity	–	
	Protection	–	
	Logic	–	
Preactuator power supply (ripple included)		–	
Output fuse protection		–	
Maximum dissipated power		3.9 W	4.3 W
Operating temperature		0 to 60°C	
Compatibility with installation help system TeSys™ Quickfit		LU9 G02 splitter boxes (8 motor starters) and BMXFCC●●1/●●3 pre-assembled cordsets. See pages 2/9 and 2/13.	
Compatibility with pre-wired system Modicon™ Telefast™ ABE7	Passive connection sub-bases	Depending on model, 8 or 16-channel passive sub-bases, with or without LED, with common or 2 terminals per channel. See pages 5/2 and 5/8.	
	Adaptor sub-bases with relays	Depending on model, active sub-bases with solid state or electromagnetic relays (mounted or removable), 16 channels, with common or 2 terminals per channel (screw or spring-type connection). See pages 5/2 and 5/8.	
References		**BMXDDI3202K**	**BMXDDI6402K**
Page		2/12	

16 or 32-channel mixed I/O module		
Connection via cage clamp, screw clamp or spring-type removable block terminal		**Connection via 40-way connector with pre-assembled cordsets**
		
⎓	⎓ and ∿ (outputs only)	⎓
Inputs: 24 V Solid-state outputs: 24 V	Inputs: 24 V ⎓ Relay outputs: 24 V ⎓ or 24 to 240 V ∿	Inputs: 24 V Solid-state outputs: 24 V
3.5 mA	3.5 mA	2.5 mA
0.5 A	2 A (⎓ or ∿)	0.1 A
8 isolated inputs and 1 common, 8 isolated outputs and 1 common		16 isolated inputs and 1 common, 16 isolated outputs and 1 common
Via BMXFTB2000/2010/2020 20-way cage clamp, screw clamp or spring-type removable terminal block		Via one 40-way connector
Type 3		
Positive *(sink)*	–	Positive *(sink)*
Current sink		
2-wire ⎓, 3-wire ⎓ PNP any type		
19 to 30 V		
Use one 0.5 A fast-blow fuse per group of channels		
Configurable output fallback, continuous monitoring of output control and resetting of outputs in case of detected internal fault		
Yes		
Overvoltage, short circuit and overload protection	–	Overvoltage, short circuit and overload protection
Positive	–	Positive
19 to 30 V	19 to 30 V ⎓ 24 to 240 V ∿	19 to 30 V
Use a 2 A fast-blow fuse	Use a 12 A fast-blow fuse	Use a 2 A fast-blow fuse
3.7 W	3.1 W	4 W
0 to 60°C		
–		LU9 G02 splitter boxes (8 motor starters) and BMXFCC●●1/●●3 pre-assembled cordsets. See pages 2/9 and 2/13.
–		Depending on model, 8 or 16-channel passive sub-bases, with or without LED, with common or 2 terminals per channel. See pages 5/2 and 5/8.
–		Depending on model, active sub-bases with solid state or electromagnetic relays (mounted or removable) 16 channels, with common or 2 terminals per channel (screw or spring-type connection). See pages 5/2 and 5/8.
BMXDDM16022	**BMXDDM16025**	**BMXDDM3202K**
2/13		

Modicon™ M340™ automation platform

Discrete I/O modules

Output modules

Applications		**32 or 64-channel high-density output modules** **Connection via 40-way connectors with pre-assembled cordsets**	
			
Type		⎓ transistor	
Voltage		24 V	
Current per channel		0.1 A	
Modularity (Number of channels and commons)		32 outputs and 2 commons with overvoltage, short-circuit and overload protection	64 outputs and 4 commons with overvoltage, short-circuit and overload protection
Connection		Via one 40-way connector	Via two 40-way connectors
Isolated outputs	Fallback	Configurable output fallback, continuous monitoring of output control and resetting of outputs in case of detected internal fault	
	IEC/EN 61131-2 conformity	Yes	
	Protection	Yes	
	Logic	Positive	
Preactuator power supply (ripple included)		19 to 30 V ⎓	
Output fuse protection		Use one 2 A fast-blow fuse per group of channels	
Maximum dissipated power		3.6 W	6.85 W
Operating temperature		0 to 60°C	
Compatibility with installation help system TeSys™ Quickfit		LU9 G02 splitter boxes (8 motor starters) and BMXFCC●●1/●●3 pre-assembled cordsets. See pages 2/9 and 2/13.	
Compatibility with pre-wired system Modicon™ Telefast™ ABE7	Passive connection sub-bases	Depending on model, passive sub-bases with 8 or 16 channels, with or without LED, with common or with 2 terminals per channel. See pages 5/2 and 5/8.	
	Adaptor sub-bases with relays	Depending on model, active sub-bases with solid state or electromagnetic relays (mounted or removable). 16 channels with 1 common or 2 terminals per channel, screw or spring-type connection. See pages 5/2 and 5/8	
References		**BMXDDO3202K**	**BMXDDO6402K**
Page		2/12	

16-channel output modules			8 or 16-channel output modules		
Connection via cage clamp, screw clamp or spring-type removable block terminal					
					
⎓ transistor		∿ triac	⎓ relay	⎓/∿ relay	
24 V		100 to 240 V	100 to 150 V	24 V ⎓, 24 to 240 V a	
0.5 A		0.6 A	0.3 A (Ith)	2 A (Ith)	
16 outputs and 1 commons with overvoltage, short-circuit and overload protection		16 outputs and 4 commons	8 outputs, without common	16 outputs and 2 commons	
Via BMXFTB2000/2010/2020 20-way cage clamp, screw clamp or spring-type removable block terminal					
Configurable output fallback, continuous monitoring of output control and resetting of outputs in case of detected internal fault		Configurable output fallback			
Yes		Yes			
Yes		–			
Positive *(source)*	Negative *(sink)*	–			
19 to 30 V		100 to 240 V	100 to 150 V	19 to 30 V ⎓ 24 to 240 V ∿	
Use one 6.3 A fast-blow fuse per group of channels		Use one 3 A fast-blow fuse per group of channels	Use one 0.5 A, 250 V DC fast-blow fuse on each relay	Use one 3 A fast-blow fuse on each channel	Use one 12 A fast-blow fuse on each group of channels
4 W	2.26 W	–	3.17 W	2.7 W	3 W
0 to 60°C			-25 to 70°C	0 to 60°C	
–					
–					
–					
BMXDDO1602	**BMXDDO1612**	**BMXDAO1605**	**BMXDRA0804T**	**BMXDRA0805**	**BMXDRA1605**

Modicon™ M340™ automation platform
Discrete I/O modules

Introduction

The Modicon™ M340™ discrete I/O modules are standard modules occupying a single slot on the rack. These modules are equipped with either of the following:
- Connector for a screw or spring-type 20-way removable terminal block
- One or two 40-way connectors

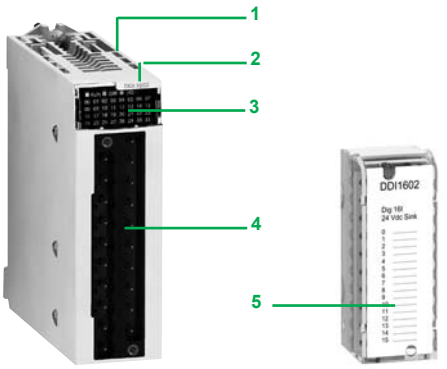
These discrete I/O modules can be used to meet multiple requirements, including:
- Functions, AC or DC I/O, positive or negative logic
- Modularity, 8, 16, 32 or 64 channels per module

The inputs receive signals from the sensors and perform the following functions:
- Acquisition
- Adaptation
- Electrical isolation
- Filtering
- Protection against interference signals

The outputs memorize commands issued by the processor to enable control of the preactuators via the decoupling and amplification circuits.

Description

BMXD●I/D●O/DRA discrete I/O modules are standard format (1 slot). They have a case, that helps to ensure IP 20 protection of the electronics, and are locked into position by a captive screw.

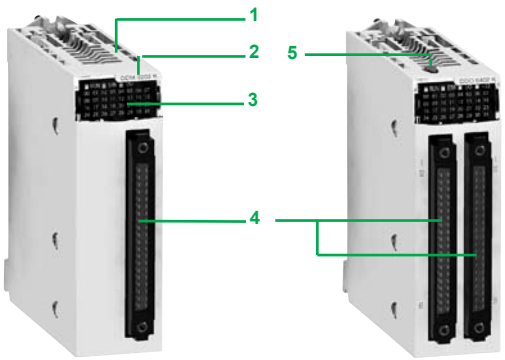


Module for connection via 20-way removable terminal block

I/O modules connected via 20-way removable terminal block

1 Rigid body providing support and protection for the electronic card
2 Module reference marking (a label is also visible on the right-hand side of the module)
3 Channel status display block
4 Connector taking the 20-way removable terminal block for connecting sensors or preactuators

To be ordered separately:
1 **BMXFTB20●0** 20-way removable terminal block (identification label supplied with each I/O module) or a pre-assembled cordset with a 20-way removable terminal block at one end and flying leads at the other (see page 2/9).



32 and 64-channel modules for connection via one or two 40-way connector(s)

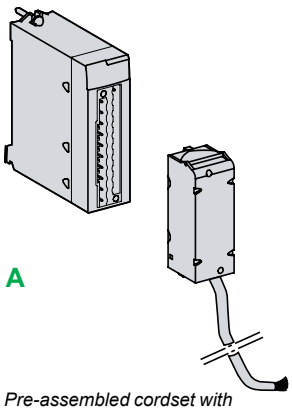
I/O modules connected via 40-way connector(s)

1 Rigid body providing support and protection for the electronic card
2 Module reference marking (a label is also visible on the right-hand side of the module)
3 Channel status display block
4 One or two 40-way connectors (32 or 64 channels) *(1)* for connecting sensors or preactuators
5 With the 64-channel module, a push button that, with successive presses, displays the state of channels 0 to 31 or 32 to 63 on the display block **3** (see page 2/10)

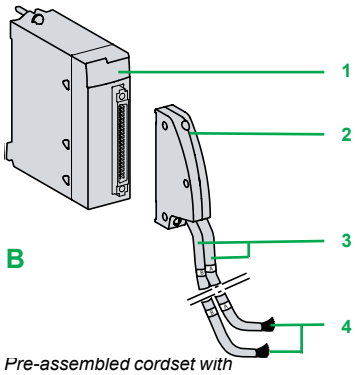
To be ordered separately, depending on the type of module:
One or two pre-assembled cordset(s) with a 40-way connector (see page 2/9)

(1) Fujitsu FCN 40-way connector

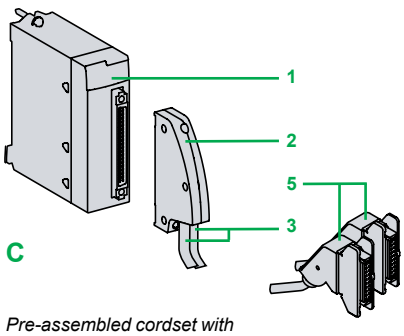
Modicon™ M340™ automation platform
Discrete I/O modules



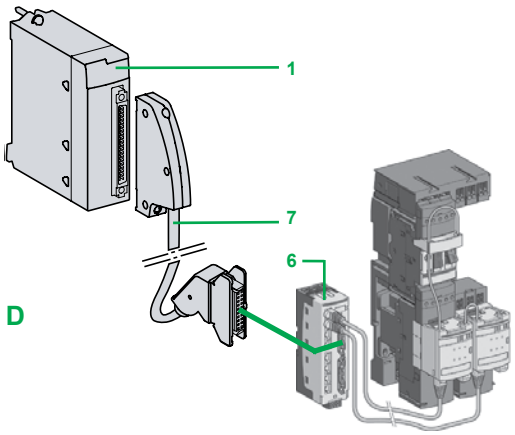
Pre-assembled cordset with 20-way removable terminal block at one end and flying leads at the other



Pre-assembled cordset with 40-way connector and two ends with flying leads



Pre-assembled cordset with 40-way connectors and HE10 connectors for Modicon Telefast ABE7 system



Example of connection to the TeSys Quickfit installation help system

Connecting modules with removable terminal blocks

There are three types of 20-way removable terminal block:
- Screw clamp terminal block
- Cage clamp terminal block
- Spring-type terminal block

Each removable terminal block can accept:
- Bare wires
- Wires equipped with **DZ5CE** cable ends

A : One version of the removable terminal block is equipped with 3, 5 or 10 m cordsets with color-coded flying leads (**BMXFTW●●1**). Use limited to voltages of ⩽ 48 V.

Cage clamp terminal blocks

The capacity of each terminal is:
- Minimum: One 0.34 mm²wire (AWG 22)
- Maximum: One 1 mm² wire (AWG 18)

BMXFTB2000 cage clamp connectors are equipped with captive screws (maximum tightening torque 0.5 N.m).

Screw clamp terminal blocks

The capacity of each terminal is:
- Minimum: One or two 0.34 mm² wires (AWG 22)
- Maximum: Two 1.5 mm² wires (AWG 15)

BMXFTB2010 screw clamp connectors are equipped with captive screws (maximum tightening torque 0.5 N.m).

Spring terminals

The capacity of each terminal in the **BMXFTB2020** spring-type terminal blocks is:
- Minimum: One 0.34 mm² wire (AWG 22)
- Maximum: One 1 mm² wire (AWG 18)

Connecting modules with 40-way connectors

Pre-assembled cordsets with 40-way connector at one end and flying leads at the other

B : Pre-assembled cordsets can be used for easy direct wire-to-wire connection between the I/O of modules with 40-way connectors **1** and the sensors, preactuators or intermediate terminal blocks.
These pre-assembled cordsets are comprised of:
- At one end, a 40-way connector **2** with either of the following:
  - One sheath containing 20 wires with a cross-section of 0.34 mm² (AWG 22) (**BMXFCW●●1**)
  - Two sheaths **3**, each containing 20 wires with a cross-section of 0.34 mm² (AWG 22) (**BMXFCW●●3**)
- At the other end, color-coded flying leads **4** conforming to standard DIN 47100.

Pre-assembled cordsets with 40-way connector and HE 10 connector(s)

C : Two types of cordset can be used for connecting the I/O of modules **1** with 40-way connectors to Modicon™ Telefast™ ABE7 rapid wiring connection and adaptation interfaces, (see page 5/8).
These pre-assembled cordsets are comprised of:
- At one end, a 40-way connector **2** with either of the following:
  - One sheath containing 20 wires (**BMXFCC●●1**)
  - Two sheaths **3** each containing 20 wires (**BMXFCC●●3**)
- At the other end, one or two HE 10 connectors **5**.

Connection to TeSys Quickfit system

D : **1** **BMXDDI3202K/6402K** input modules, **BMXDDO3202K/6402K** output modules and **BMXDDM3202K** mixed I/O modules with 40-way connectors are designed, among other things, for use in conjunction with the TeSys™ Quickfit mounting system via the **LU9 G02 splitter module** **6** (for 8 motor starters).
The splitter modules are easily connected using **7** **BMXFCC●●1**/**●●3** pre-assembled cordsets.

Processors: page 1/2
Communication: page 3/2
Software: page 4/2
Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform
Discrete I/O modules

Run		Err		I/O		+32	
0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31

Display block for module BMXDDO6402K

Functions *(1)*

The discrete I/O modules provide the following functions:

■ **Hot swapping**: Due to their special integrated devices, I/O modules (including application-specific modules) can be removed or added while the power is on.

■ **I/O assignment**: The channels of discrete I/O modules are grouped into blocks of 4, 8 or 16 consecutive channels depending on the type of module. Each group of channels can be assigned to a specific application task, namely master or fast.

■ **Protection of DC inputs**: The 24 V ⎓ and 48 V ⎓ inputs are constant-current type. This characteristic helps to limit the current consumed at the inputs.

■ **Protection of DC outputs**: Active transistor outputs have overload, short-circuit, reverse polarity and inductive over-voltage protection.

■ **Reactivation of DC outputs**: If a detected fault has caused an output to trip, the output can be reactivated using this parameter if no other detected terminal fault is present. Reactivation is controlled by means of a group of 8 channels. It can be programmed or automatic.

■ **RUN/STOP** command: An input can be configured to control the RUN/STOP changeover for the PAC.

■ **Output fallback**: This parameter defines the fallback mode used by the DC transistor outputs when the PAC stops. It can assume the “fallback” value at state 0 or state 1 for the corresponding group of 8 channels or the “maintain” value representing the state of the outputs before the PAC stops.

■ **I/O module diagnostics**: Each discrete I/O module is equipped with a display block on the front panel centralizing the information necessary for module control, diagnostics and maintenance.

Diagnostics via Unity Pro software:
Using the integrated diagnostics in Unity Pro programming software, this local diagnostics on the module front panel is complemented by system diagnostics based on predefined screens at global hardware configuration level, module level and channel level (see page 4/4).

Remote diagnostics using a web browser on a “Thin Client” PC:
In addition, the diagnostics described above can be performed remotely using a simple web browser thanks to the standard web server integrated in the Modicon™ M340™ platform (processor with integrated Ethernet port or Ethernet module), using the “ready-to-use” Rack Viewer function (see page 3/14).

■ **Compatibility with 2-wire and 3-wire sensors**: The discrete input modules can be used in conjunction with OsiSense™ XS inductive proximity sensors (for compatibility, see page 7/10) and with OsiSense XU photo-electric sensors (for compatibility, see page 7/8).

(1) For further information, please consult our website at www.schneider-electric.com.

Complementary Specifications

The following specifications are specific to the discrete I/O modules listed in the selection guide on pages 2/2 to 2/7.

DC input modules BMXDDI 16●●/1604T/3202K/6402K and BMXDAI1602

- Input impedance at nominal voltage: 6.4 to 19.2 kΩ, depending on model
- Reverse polarity: Protection for modules BMXDDI1602/1603/3202K
- Paralleling of inputs *(1)*, for modules BMXDDI1602/1603
- Dielectric strength between group of channels: 500 V ⎓ for modules BMXDDI3202K/6402K
- Temperature derating for module BMXDDI1604T: No derating up to 40°C, a maximum of 25% of inputs at state 1 at 70°C

AC input modules BMXDAI16●●/0805

- Input frequency: 47 to 63 Hz
- Current peak on activation at nominal voltage: 5 to 240 mA depending on model
- Input impedance at nominal voltage and F = 55 Hz: 6 to 21 kΩ, depending on model

Triac output modules BMXDAO1605

- Current via common: 2.4 A
- Current for 4 commons combined: 4.8 A

DC transistor output modules BMXDDO16●●/3202K/6402K

- Dielectric strength between groups of channels: 500 V ⎓ for modules BMXDDO3202K/6402K

Relay output modules BMXDRA080●●/1605

- Protection against AC inductive overvoltage: Use an RC circuit or ZNO surge limiter appropriate to the voltage in parallel on each output.
- Protection against DC inductive overvoltage: Use a discharge diode on each output.

Mixed I/O relay module BMXDDM16025

- Input impedance at nominal voltage: 6.8 kΩ
- Dielectric strength between groups of inputs: 500 V ⎓

DC mixed I/O modules BMXDDM16022/3202K

- Input impedance at nominal voltage: 6.8 to 9.6 kΩ, depending on model
- Reverse polarity on the inputs: Protection
- Paralleling of outputs: Yes, for a maximum of 2 outputs for module BMXDDI16022 and a maximum of 3 outputs for module BMXDDI3202K

(1) This characteristic allows several inputs to be wired in parallel on the same module or on different modules for input redundancy.

Modicon™ M340™ automation platform

Discrete I/O modules

Input modules and output modules

BMXDDI160●●
BMXDAI●●●●

BMXDDI3202K

BMXDDI6402K

References

Discrete input modules *(1)*

Type of current	Input voltage	Connection via *(2)*	IEC/EN 61131-2 conformity	No. of channels (common)	Reference	Weight kg
⎓	24 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDDI1602**	0.115
		One 40-way connector	Type 3	32 isolated inputs (2 x 16)	**BMXDDI3202K**	0.110
		Two 40-way connectors	Non-IEC	64 isolated inputs (4 x 16)	**BMXDDI6402K**	0.145
	24 V (negative logic)	Screw or spring-type 20-way removable terminal block	Non-IEC	16 isolated inputs (1 x 16)	**BMXDAI1602**	0.115
	48 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMXDDI1603**	0.115
	125 V (positive logic)	Screw or spring-type 20-way removable terminal block		16 isolated inputs (1 x 16)	**BMXDDI1604T**	0.144
∼	24 V	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMXDAI1602**	0.115
	48 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDAI1603**	0.115
	100 to 120 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDAI1604**	0.115
	200 to 240 V	Screw or spring-type 20-way removable terminal block	Type 2	8 isolated inputs (1 x 8)	**BMXDAI0805**	0.152

BMXDDO16●2

BMXDRA 0805/1605

BMXDDO3202K

BMX DDO6402K

Discrete output modules *(1)*

Type of current	Output voltage	Connection via *(2)*	IEC/EN 61131-2 conformity	No. of channels (common)	Reference	Weight kg
⎓ **transistor**	24 V/0.5 A (positive logic)	20-way removable terminal block, screw or spring-type	Yes	16 protected *(3)* outputs (1 x 16)	**BMXDDO1602**	0.120
	24 V/0.5 A (negative logic)	20-way removable terminal block, screw or spring-type	–	16 protected *(3)* outputs (1 x 16)	**BMXDDO1612**	0.120
	24 V/0.1 A (positive logic)	One 40-way connector	Yes	32 protected *(3)* outputs (2 x 16)	**BMXDDO3202K**	0.110
		Two 40-way connectors	Yes	64 protected *(3)* outputs (4 x 16)	**BMXDDO6402K**	0.150
∼ **triac**	100 to 240	20-way removable terminal block, screw or spring-type	–	16 outputs (4 x 4)	**BMXDAO1605**	0.140
⎓ **relay**	100 to 150 V ⎓/ 0.3 A	20-way removable terminal block, screw or spring-type	Yes	8 outputs	**BMXDRA0804T**	0.178
⎓ **or** ∼ **relay**	24 V ⎓/2 A 24 to 240 V ∼/ 2 A	20-way removable terminal block, screw or spring-type	Yes	8 outputs (without common)	**BMXDRA0805**	0.145
		20-way removable terminal block, screw or spring-type	Yes	16 outputs (2 x 8)	**BMXDRA1605**	0.150

(1) Typical consumption: See the power consumption table on page 7/16.
(2) 64-channel modules have 2 connectors and therefore require 2 connection cables.
(3) Includes overvoltage, short-circuit and overload protection.

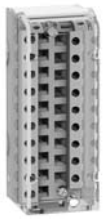

BMXDDM 1602●


BMX DDM3202K

References (continued)

Discrete mixed I/O modules (1)

Number of I/O	Connection	No. of input channels (common)	No. of output channels (common)	IEC/EN 61131-2 conformity	Reference	Weight kg
16	Screw or spring-type 20-way removable terminal block	8 (positive logic) (1 x 8)	8, transistor 24 V c/0.5 A (1 x 8)	Inputs, type 3	**BMXDDM16022**	0.115
			8, relay 24 V ⎓ or 24 to 240 V ∿ (1 x 8)	Inputs, type 3	**BMXDDM16025**	0.135
32	One 40-way connector	16 (positive logic) (1 x 16)	16, transistor 24 V ⎓/0.1 A (1 x 16)	Inputs, type 3	**BMXDDM3202K**	0.110


BMXFTB2●00

Removable terminal blocks

Description	For use with	Type	Reference	Weight kg
20-way removable terminal blocks	For module with 20-way removable terminal block	Cage clamp	**BMXFTB2000**	0.093
		Screw clamp	**BMXFTB2010**	0.075
		Spring	**BMXFTB2020**	0.060

Pre-assembled cordsets for 16-channel I/O modules with removable terminal block

Description	Composition	Cross-section	Length	Reference	Weight kg
Pre-assembled cordsets with one end with flying leads for 16-channel I/O modules Operating voltage ≤ 48 V	One 20-way spring-type removable terminal block (BMXFTB2020) and one end with color-coded flying leads	0.324 mm²	3 m	**BMXFTW301**	0.850
			5 m	**BMXFTW501**	1.400
			10 m	**BMXFTW1001**	2.780


BMXFTW●01

Pre-assembled cordsets for 16, 32 and 64-channel I/O modules with 40-way connectors

Description	No. of sheaths	Composition	Cross-section	Length	Reference	Weight kg
Pre-assembled cordsets with one end with flying leads	1 x 20 wires (16 channels)	One 40-way connector and one end with color-coded flying leads	0.324 mm²	3 m	**BMXFCW301**	0.820
				5 m	**BMXFCW501**	1.370
				10 m	**BMXFCW1001**	2.770
	2 x 20 wires (32 channels) (2)	One 40-way connector and two ends with color-coded flying leads	0.324 mm²	3 m	**BMXFCW303**	0.900
				5 m	**BMXFCW503**	1.490
				10 m	**BMXFCW1003**	2.960


BMXFCW●01


BMXFCW●03

Description	No. of sheaths	Composition	Cross-section	Length	Reference	Weight kg
Pre-assembled cordsets for Modicon Telefast ABE7 sub-bases	1 x 20 wires (16 channels)	One 40-way connector and one HE 10 connector	0.324 mm²	0.5 m	**BMXFCC051**	0.140
				1 m	**BMXFCC101**	0.195
				2 m	**BMXFCC201**	0.560
				3 m	**BMXFCC301**	0.840
				5 m	**BMXFCC501**	1.390
				10 m	**BMXFCC1001**	2.780
	2 x 20 wires (32 channels) (2)	One 40-way connector and two HE 10 connectors	0.324 mm²	0.5 m	**BMXFCC053**	0.210
				1 m	**BMXFCC103**	0.350
				2 m	**BMXFCC203**	0.630
				3 m	**BMXFCC303**	0.940
				5 m	**BMXFCC503**	1.530
				10 m	**BMXFCC1003**	3.000


BMXFCC●01

(1) Typical consumption: See the power consumption table on page 7/16.
(2) 64-channel modules have 2 connectors and therefore require 2 connection cables.

Modicon™ M340™ automation platform

Analog I/O modules

Input modules

Applications		Analog inputs	
			
Type of input		Isolated low-level inputs, voltage, thermocouples, temperature probes, resistors	
Type		Multi-range	
Range	Voltage	± 40 mV, ± 80 mV, ± 160 mV, ± 320 mV, ± 640 mV, ± 1.28 V	
	Current	–	
	Thermocouple Temperature probe Resistor	Thermocouples, type B, E, J, K, L, N, R, S, T, U 2, 3 or 4-wire temperature probes, type Pt100, JPt100, Pt1000, JPt1000, Ni100, Ni1000 (in accordance with DIN 43760) and Cu 10 2, 3 or 4-wire resistors, 400 Ω or 4000 Ω	
Modularity		4 inputs	8 inputs
Acquisition period		400 ms for the 4 inputs	400 ms for the 8 inputs
Conversion time		–	
Resolution		15 bits + sign	
Isolation	Between channels	750 V⎓	
	Between channels and bus	1400 V⎓	
	Between channels and earth ground	750 V⎓	
Connection	Directly to the module	Via 40-way connector	Via two 40-way connectors
	Via pre-assembled cordsets	Cordsets with one end with color-coded flying leads BMXFCW●01S (3 or 5 m long)	
Compatibility with pre-wired system Modicon™ Telefast™ ABE7	Connection sub-base	4-channel sub-base for direct connection of 4 thermocouples plus connection and provision of cold junction compensation. See page 5/8	
	Type of connection sub-base	ABE7CPA412	
	Type of pre-assembled cordsets	BMXFCA●●2 (1.5, 3 or 5 m long)	
References		**BMXART0414**	**BMXART0814**
Page		2/22	

Analog inputs

Isolated high-level inputs	Non-isolated high-level inputs	Isolated high-level inputs
Voltage/current		
± 10 V, 0 to 10 V, 0 to 5 V, 1..5 V, ± 5 V		
0 to 20 mA, 4 to 20 mA, ± 20 mA		
–		
4 inputs	8 inputs	
Fast: 1 + (1 x no. of declared channels) ms Default: 5 ms for the 4 channels	Fast: 1 + (1 x no. of declared channels) ms Default: 9 ms for the 8 channels	
–		
16 bits	15 bits + sign	
300 V⎓	–	300 V⎓
1400 V⎓		
1400 V⎓		
Via 20-way removable terminal block (screw or spring-type) BMXFTB20●0	Via 28-way removable terminal block (spring-type) BMXFTB2820	
Cordsets with one end with color-coded flying leads BMXFTW●01S (3 or 5 m long)	Cordsets with one end with color-coded flying leads BMXFTW●08S (3 or 5 m long)	
4-channel sub-base for direct connection of 4 inputs, delivers and distributes 4 isolated power supplies. See page 5/8	8-channel sub-base for direct connection of 8 current/voltage inputs. See page 5/8	
ABE7CPA410	ABE7CPA02/03/31/31E	ABE7CPA02/31/31E
BMXFCA●●0 (1.5, 3 or 5 m long)	BMXFTA●●0 (1.5 or 3 m long)	
BMXAMI0410	**BMXAMI0800**	**BMXAMI0810**
2/22		

Modicon™ M340™ automation platform

Analog I/O modules

Output modules and mixed I/O modules

Applications		Analog Outputs		
				
Type of I/O		Isolated high-level outputs	Isolated high-level outputs	High-level outputs non-isolated
Type		Voltage/current		Current
Range	Voltage	± 10 V		–
	Current	0 to 20 mA, 4 to 20 mA		
Modularity		2 outputs	4 outputs	8 outputs
Acquisition period (inputs)		–		
Conversion time (outputs)		≤ 1 ms		≤ 4 ms
Resolution	Inputs	–		
	Outputs	15 bits + sign		
Isolation		Between channels: 750 V ⎓		
		Between channels and bus: 1400 V ⎓		
		Between channels and earth ground: 1400 V ⎓		
Connection	Directly to the module	Via 20-way removable terminal block (screw or spring-type) BMXFTB20●0		
	Via pre-assembled cordsets	Cordsets with one end with color-coded flying leads BMXFTW●01S (3 or 5 m long)		
Compatibility with pre-wired system Modicon™ Telefast™ ABE7	Connection sub-base	4-channel sub-base for direct connection of 2/4 current/voltage outputs. See page 5/8		8-channel sub-base for direct connection of 8 current/voltage inputs. See page 5/8
	Type of connection sub-base	ABE7CPA21		ABE7CPA02
	Type of pre-assembled cordsets	BMXFCA●●0 (1.5, 3 or 5 m long)		BMXFTA●●2 (1.5 or 3 m long)
References		**BMXAMO0210**	**BMXAMO0410**	**BMXAMO0802**
Page		2/22		

Mixed analog I/O

Non-isolated high-level inputs and outputs
Voltage/current
Inputs: ± 10 V, 0 to 10 V, 0 to 5 V, 1..5 V Outputs: ± 10 V
Inputs: 0 to 20 mA, 4 to 20 mA Outputs: 0 to 20 mA, 4 to 20 mA
4 inputs and 2 outputs
Fast: 1 + (1 x no. of declared channels) ms Default: 5 ms for the 4 channels
≤ 1 ms
14 to 12-bit in U range 12-bit in I range
12-bit in U range 11-bit in I range
Between groups of input or output channels: 750 V ⎓
Between channels and bus: 1400 V ⎓
Between channels and earth ground: 1400 V ⎓
Via 20-way removable terminal block (screw or spring-type) BMXFTB20●0
BMXFTW●01S cordsets with one end with color-coded flying leads (3 or 5 m long)
–
–
–

BMXAMM0600

2/22

Modicon™ M340™ automation platform
Analog I/O modules

Introduction

The product offering for the Modicon™ M340™ Analog I/O modules features:

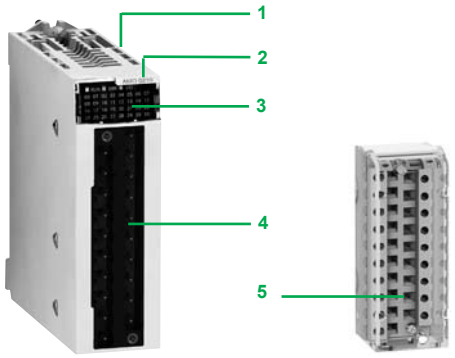
- 5 analog input modules:
  - 2 modules with 4 and 8 isolated channels, low-level voltage, thermocouples, Pt, JPt, Ni or Cu temperature probes and resistors, 15 bits + sign **BMXART0414/0814**
  - 1 module with 4 high-speed isolated analog channels, high-level voltage or current, 16 bits **BMXAMI0410**
  - 2 modules with 8 high-speed non-isolated analog channels, high-level voltage or current, 15 bits + sign **BMXAMI0800/0810**
- 3 analog output modules:
  - 1 module with 2 isolated analog channels, high-level voltage or current, 15 bits + sign **BMXAMO0210**
  - 1 module with 4 isolated analog channels, high-level voltage or current, 15 bits + sign **BMXAMO0410**
  - 1 module with 8 non-isolated analog channels, high-level current, 15 bits + sign **BMXAMO0802**
- 1 mixed analog I/O module with 4 input channels and 2 output channels (non-isolated), voltage or current, 12 to 14 bits according to type of channel and range **BMXAMM0600**

Analog I/O modules are equipped with a connector for a 20 or 28-way removable terminal block, except for **BMXART0414/0814** analog input modules for thermocouples/temperature probes that are equipped with one or two 40-way connector(s).

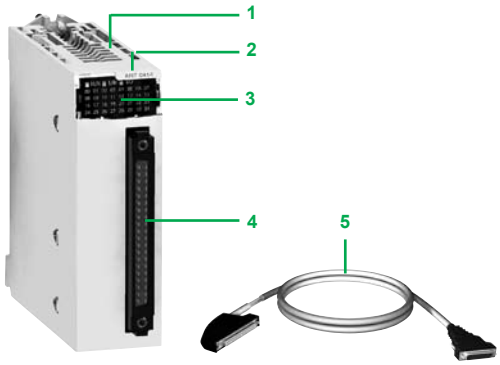
Analog modules occupy a single slot in **BMXXBP●●●** racks. These modules can be installed in any slot in the rack, except the first two (PS and 00) that are reserved for the power supply module in the **BMXCPS●●0** rack and the **BMXP34●●0** processor module respectively.

The power supply for the analog functions is supplied by the backplane bus (3.3 V and 24 V). Analog I/O modules are hot-swappable (see page 2/10).

Modicon™ M340™ automation platform
Analog I/O modules



Module for connection via 20 or 28-way removable terminal block



Module for connection for 40-way connector

Description

BMXAM●/ART analog I/O modules are standard format (1 slot). They have a case that helps to ensure IP 20 protection of the electronics, and are locked into position by a captive screw

I/O modules connected via 20 or 28-way removable terminal block

BMXAM● analog I/O modules feature the following:

1 Rigid body providing support and protection for the electronic card
2 Module reference marking (a label is also visible on the right-hand side of the module)
3 Module and channel status display block
4 Connector taking the 20 or 28-way removable screw or spring-type terminal block for directly connecting the sensors or preactuators to the module.

To be ordered separately:

1 A **BMXFTB20●0** or **BMXFTB2820** 20 or 28-way removable terminal block (referencing label supplied with each I/O module) or pre-wired cables with:
- 20-way terminal block at one end and flying leads at the other (**BMXFTW●01S)**
- 28-way terminal block at one end and flying leads at the other (**BMXFTW●08S)**
- 20 or 28-way terminal block and a 25-way SUB-D connector (**BMXFCA●●0** or **BMXFTA●●0**), for connection to Modicon™ Telefast ™ABE7 sub-bases (see page 2/23).

I/O modules connected via 40-way connector

BMXARTanalog input modules feature the following:

1 Rigid body providing support and protection for the electronic card
2 Module reference marking (a label is also visible on the right-hand side of the module)
3 Module and channel status display block
4 One (or two) 40-way connector(s) for connecting the sensors

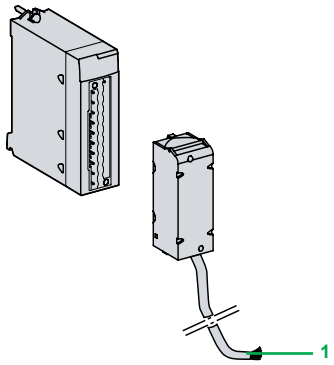
To be ordered separately:

1 Pre-wired cables with:
- 40-way connector at one end and flying leads at the other **BMXFCW●01S**
- 40-way connector and a 25-way SUB-D connector (**BMXFCA●●2**) for direct connection to the Modicon Telefast ABE7 sub-bases (see page 2/23)

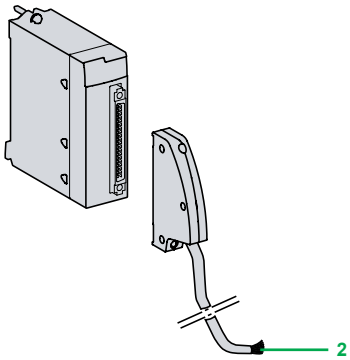
To be ordered separately:

■ Shielding connection kit to help protect against electrostatic discharge, consisting of a metal bar and two sub-bases for mounting on the rack supporting the analog modules
■ Set of **STBXSP3020** clamping rings for the shielding braids of analog signal cables

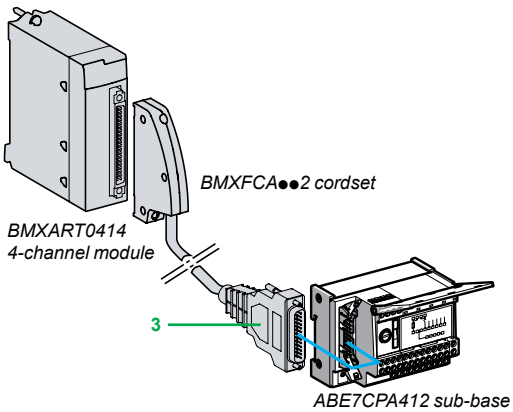
Modicon™ M340™ automation platform
Analog I/O modules



BMXFTW●01S cordset
(with 20-way removable terminal block at one end and flying leads at the other)



BMXFCW●01S cordset
(with 40-way connector at one end and flying leads at the other)



Connecting modules with removable terminal blocks

BMXAMI0410, BMXAMO and BMXAMM modules with 20-way terminal block

The 20-way removable terminal blocks (**BMXFTB20●0**) are the same as those used for discrete I/O modules (screw clamp, cage clamp or spring-type) (see page 2/9).

One version of the removable terminal block is equipped with a 3 or 5 m cordset with color-coded flying leads (**BMXFTW●01S**). These pre-assembled cordsets with reinforced shielding have color-coded flying leads at the other end **1**.

BMXAMI0800/0810 modules with 28-way terminal block

The 28-way removable terminal blocks (**BMXFTB2820**) are spring-type.
One version of the removable terminal block is equipped with a 3 or 5 m cordset with color-coded flying leads (**BMXFTW●08S**). These pre-assembled cordsets with reinforced shielding have color-coded flying leads at the other end **1**.

Connecting modules with 40-way connectors

BMXART0●14 modules with 40-way connectors

Two types of cordset are available:
■ Pre-assembled cordsets with reinforced shielding (**BMXFCW●01S**) have color-coded flying leads at the other end **2**. Available in 3 or 5 m lengths, they enable easy direct wire-to-wire connection of the analog sensors via terminal blocks.
■ Pre-assembled cordsets with reinforced shielding (**BMXFCA●02**) have a 25-way SUB-D connector at the other end **3**. Available in 1.5, 3 or 5 m lengths, they enable direct connection to the Modicon™ Telefast™ **ABE7CPA412** sub-base (see below).

Use with Modicon Telefast ABE7 sub-bases

Using the Modicon Telefast ABE7 pre-wired system makes it easier to install the modules since the inputs (or outputs) can be accessed via screw terminals. 7 special sub-bases are available:

Modicon Telefast ABE7CPA410 sub-base

The Modicon Telefast **ABE7CPA410** sub-base is mainly used in conjunction with the **BMXAMI0410** voltage/current analog 4-input module. This sub-base allows you to:
■ Directly connect 4 sensors
■ Remotely locate the input terminals in voltage mode
■ Power the 4 to 20 mA conditioning units one channel at a time with a 24 V voltage, limited to 25 mA, while maintaining isolation between channels
■ Help protect the current impedance matching resistors integrated in the sub-base against overvoltages
Connection is via the **BMXFCA●●0** cordset (1.5, 3 or 5 m long).

Modicon Telefast ABE7CPA412 sub-base

The Modicon Telefast **ABE7CPA412** sub-base is specially designed as a wiring interface for the **BMXART0414** and **BMXART0814** thermocouple modules. This sub-base allows you to:
■ Connect 4 thermocouple probes
■ Provide external cold junction compensation with a temperature probe integrated in the sub-base
■ Help ensure continuity of the shielding
The **BMXART0814** module requires two Modicon Telefast **ABE7CPA412** sub-bases. The connection with each sub-base is made via a **BMXFCA●●2** cordset (1.5, 3 or 5 m long).

Modicon Telefast ABE7CPA21 sub-base

The Modicon Telefast **ABE7CPA21** sub-base is compatible with the **BMXAMO0210** output module. This sub-base allows you to:
■ Directly connect 2 current/voltage outputs
■ Help ensure continuity of the shielding
Connection is via the **BMXFCA●●0 3** cordset (1.5, 3 or 5 m long).

Use with Modicon™ Telefast™ ABE7 sub-bases (continued)

Modicon Telefast ABE7CPA02 sub-base

The Modicon Telefast **ABE7CPA02** sub-base can be used in combination with:
- The **BMXAMI0800/0810** analog current input modules with 8 inputs
- The **BMXAMO0802** analog current output modules with 8 outputs

This sub-base allows you to:
- Connect the 8 analog inputs or outputs point-to-point
- Help ensure continuity of the shielding

The **BMXAMI0800/0810** modules are connected by means of the 1.5 or 3 m long **BMXFTA●●0** cables.
The **BMXAMO0802** module is connected by means of the 1.5, 3 or 5 m long **BMXFTA●●2** cables.

Modicon Telefast ABE7CPA03 sub-base

The Modicon Telefast **ABE7CPA03** sub-base can be used in combination with the **BMXAMI0800** voltage/current analog 8-input module. This sub-base allows you to:
- Directly connect 8 analog inputs
- Power the current inputs one channel at a time with a voltage of 24 V that is limited to 25 mA
- Help ensure continuity of the shielding

The **BMXAMI0800** module is connected by means of the 1.5 or 3 m long **BMXFTA●●0** cables.

Modicon Telefast ABE7CPA31/31E sub-bases

The Modicon Telefast **ABE7CPA31/31E** sub-bases can be used in combination with the **BMXAMI0800/0810** voltage/current analog 8-input modules. This sub-base allows you to:
- Directly connect 8 analog inputs
- Power the current inputs one channel at a time with 24 V converters
- Help ensure continuity of the shielding

The **BMXAMI0800/0810** modules are connected by means of the 1.5 or 3 m long **BMXFTA●●0** cables.

Complementary specifications

BMXART0414/0814 analog input modules

BMXART0414/0814 modules are multi-range input modules with 4 or 8 low-level isolated inputs (15 bits + sign) respectively. Depending on the choice made during configuration, the modules offer, for each of the inputs, the following ranges:
- Temperature probe: Pt100, JPt100, Pt1000, JPt1000, Cu10, Ni100 or Ni1000 (in accordance with DIN43760), with open-circuit detection
- Thermocouple: B, E, J, K, L, N, R, S, T or U with broken wire detection
- Resistor: 0 to 400 or 0 to 4000 Ω, 2, 3 or 4-wire
- Voltage: ± 40 mV, ± 80 mV, ± 160 mV, ± 320 mV, ± 640 mV, ± 1.28 V

BMXAMI0410 analog input modules

The **BMXAMI0410** module is a high-level analog input module with 4 isolated inputs (16 bits). Used with sensors or transmitters, it performs monitoring, measurement and process control functions for continuous processes.The module offers the following ranges for each of the inputs depending on the choice made during configuration:
- Voltage ± 10 V, ± 5 V, 0 to 10 V, 0 to 5 V and 1 to 5 V
- Current 0 to 20 mA, 4 to 20 mA and ± 20 mA, depending on the choice made during configuration

BMXAMI0800/0810 analog input modules

The **BMXAMI0800/0810** analog input modules are modules with 8 high-level isolated/non-isolated analog inputs (15 bits + sign). The modules offer the following ranges for each of the inputs depending on the choice made during configuration:
- Voltage: ± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, ± 5 V
- Current: 0 to 20 mA and 4 to 20 mA

2

Complementary specifications

BMXAMO0210 analog output module

The **BMXAMO0210** module is a module with 2 high-level isolated outputs (0.15 bits + sign).
The **BMXAMO0210** module offers the following ranges for each of the inputs depending on the choice made during configuration:
- Voltage: ± 10 V
- Current: 0 to 20 mA and 4 to 20 mA

BMXAMO0410/0802 analog output modules

The **BMXAMO0410/0802** analog output modules are modules with 4 or 8 high-level isolated/non-isolated analog outputs (16 bits/15 bits + sign).
The **BMXAMO0410** module offers the following ranges for each of the outputs depending on the choice made during configuration:
- Voltage: ± 10 V
- Current: 0 to 20 mA and 4 to 20 mA

The **BMXAMO0802** module offers the current ranges 0 to 20 mA and 4 to 20 mA.

BMXAMM0600 analog mixed I/O module

The **BMXAMM0600** mixed module is a non-isolated I/O module with 4 inputs (14/12) bits and 2 outputs (12 bits).
The module offers the following ranges for each of the inputs or outputs depending on the choice made during configuration:
- Voltage: ± 10 V, 0 to 10 V, 0 to 5 V and 1 to 5 V
- Current: 0 to 20 mA and 4 to 20 mA

References

BMXAM●0●●0

BMXART0414

Analog input modules *(1)*

Type of input	Input signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Isolated high-level inputs	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, ± 5 V, 0 to 20 mA, 4 to 20 mA, ± 20 mA	16 bits	Removable terminal block, 20-way cage clamp, screw clamp or spring-type	4 channels	**BMXAMI0410**	0.143
High-level inputs non-isolated	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, ± 5 V, 0 to 20 mA	15 bits + sign	Removable terminal block, 28-way, spring-type	8 channels	**BMXAMI0800**	0.175
Isolated high-level inputs	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, ± 5 V, 0 to 20 mA,	15 bits + sign	Removable terminal block, 28 way, spring-type	8 channels	**BMXAMI0810**	0.175
Isolated low-level inputs	Temperature probe, thermocouple, ± 40 mV, ± 80 mV, ± 160 mV, ± 320 mV, ± 640 mV, ± 1.28 V	15 bits + sign	40-way connector	4 channels	**BMXART0414**	0.135
				8 channels	**BMXART0814**	0.165

Analog output modules *(1)*

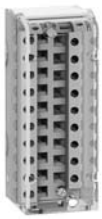
Type of outputs	Output signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Isolated high-level outputs	± 10 V, 0 to 20 mA, 4 to 20 mA	16 bits	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	2 channels	**BMXAMO0210**	0.144
High-level outputs isolated	± 10 V, 0 to 20 mA, 4 to 20 mA, ± 20 mA	15 bits + sign	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	4 channels	**BMXAMO0410**	0.175
High-level outputs non-isolated	0 to 20 mA, 4 to 20 mA	15 bits + sign	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	8 channels	**BMXAMO0802**	0.175

Analog mixed I/O module *(1)*

Type of I/O	Signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Mixed I/O, non-isolated	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, 0 to 20 mA, 4 to 20 mA	14 bits or 12 bits depending on the range	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	Inputs: 4 channels Outputs: 2 channels	**BMXAMM0600**	0.155

(1) Typical consumption: See the power consumption table on page 7/16.

Modicon™ M340™ automation platform
Analog I/O modules
Accessories


BMXFTB20●0


BMXFTW●01S


ABE7CPA41●/21


BMXFCA●●0


BMXFCA●●2

References (continued)

Connection accessories for analog modules (1)

Description	For use with modules	Type, composition	Length	Reference	Weight kg
20-way removable terminal blocks	BMXAMI0410 BMXAMO0210 MXAMO0410 MXAMO0802 BMXAMM0600	Cage clamp	–	**BMXFTB2000**	0.093
		Screw clamp	–	**BMXFTB2010**	0.075
		Spring	–	**BMXFTB2020**	0.060
28-way removable terminal block	BMXAMI0800 BMXAMI0810	Spring	–	**BMXFTB2820**	0.080
Pre-assembled cordsets	BMXAMI0410 BMXAMO0210 MXAMO0410 MXAMO0802 BMXAMM0600	One 20-way terminal block (BMXFTB2020) and one end with color-coded flying leads	3 m	**BMXFTW301S**	0.470
			5 m	**BMXFTW501S**	0.700
	BMXAMI0800 BMXAMI0810	1 removable terminal block, 28-way, BMXFTB2820, and one end with color-coded flying leads	3 m	**BMXFTW308S**	0.435
			5 m	**BMXFTW508S**	0.750
	BMXART0414 BMXART0814	One 40-way connector and one end with color-coded flying leads	3 m	**BMXFCW301S**	0.480
			5 m	**BMXFCW501S**	0.710

Modicon™ Telefast™ ABE7 pre-wired system

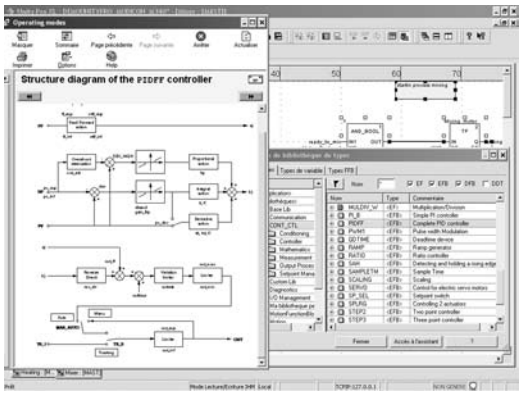
Description	For use with modules	Type, composition	Length or connection technology	Reference	Weight kg
Modicon Telefast ABE7 sub-bases	BMXAMI0410	Distribution of isolated power supplies Delivers 4 isolated power supplies for 4 to 20 mA inputs. Direct connection of 4 inputs	Screws	**ABE7CPA410**	0.180
	BMXART0414 BMXART0814 (2)	Connection and provision of cold-junction compensation for thermocouples Direct connection of 4 inputs	Screws	**ABE7CPA412**	0.180
	BMXAMO0210 BMXAMO0410	Direct connection of 2/4 outputs	Screws	**ABE7CPA21**	0.210
	BMXAMI0800 BMXAMI0810 BMXAMO0802	Point-to-point connection of 8 I/O	Screws	**ABE7CPA02**	0.317
	BMXAMI0800	Direct connection of 8 inputs Delivers 8x 24 V ⎓ power supplies limited to 25 mA to the 8 current inputs	Screws	**ABE7CPA03**	0.307
	BMXAMI0800 BMXAMI0810	Direct connection of 8 inputs Delivers 8x 24 V ⎓ power supplies isolated and limited to 25 mA to the 8 current inputs	Screws	**ABE7CPA31**	0.498
			Spring	**ABE7CPA31E**	0.508
Pre-assembled cordsets for Modicon Telefast ABE7 sub-bases	BMXAMI0410 BMXAMO0210 BMXAMO0410	One 20-way removable terminal block and one 25-way SUB-D connector for ABE7CPA410/ CPA21 sub-base	1.5 m	**BMXFCA150**	0.320
			3 m	**BMXFCA300**	0.500
			5 m	**BMXFCA500**	0.730
	BMXART0414 BMXART0814 (2)	One 40-way connector and one 25-way SUB-D connector for ABE7CPA412 sub-base	1.5 m	**BMXFCA152**	0.330
			3 m	**BMXFCA302**	0.510
			5 m	**BMXFCA502**	0.740
	BMXAMI0800 BMXAMI0810	One 28-way removable terminal block and one 25-way SUB-D connector for sub-bases ABE7CPA02/03/31/31E	1.5 m	**BMXFTA150**	0.374
			3 m	**BMXFTA300**	0.500
	BMXAMO0802	One 20-way removable terminal block and one 25-way SUB-D connector for ABE7CPA02 sub-bases	1.5 m	**BMXFTA152**	0.374
			3 m	**BMXFTA302**	0.500

*(1) The shielding on the cordsets carrying the analog should always be connected to the **BMXXSP●●00** shielding connection kit mounted under the rack holding the analog modules (see page 1/11).*
*(2) The **BMXART0814** 8-channel module requires two **ABE7CPA412** sub-bases and two **BMXFCA●●2** cordsets.*

Modicon™ M340™ automation platform

Programmable process control

Unity™ Pro software



CONT_CTL, programmable process control integrated in Unity Pro

Process control in machines

Versatile, functional Unity™ Pro software is a key ingredient in providing programmable process control. This software contains CONT_CTL, a library of 36 function blocks used to create control loops for machine control.

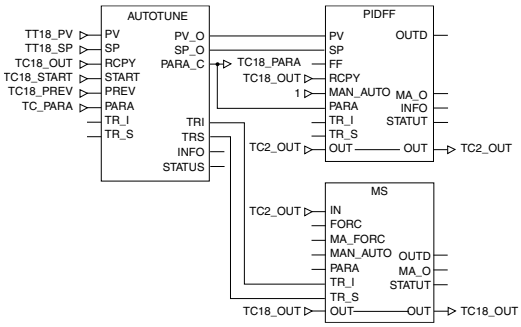
Requirements for closed loop control functions in machines are readily met by the Modicon™ M340™ PAC thanks to the wealth of functions in the library and the flexibility with which function blocks can be linked together through programming. This solution helps to eliminate the need for external controllers and simplifies the overall control architecture of the machine, as well as its design, roll-out and operation.

The function blocks, EF or EFB, can be used in the following Unity Pro languages: LD, ST, IL and FBD. FBD is particularly suitable for accessing control processing operations in Unity Pro through its assistant for entering and viewing parameters and function block variables.

CONT_CTL library functions

The library consists of five function families:

- Input data conditioning
- Controllers
- Mathematical functions
- Measurement processing
- Output value processing



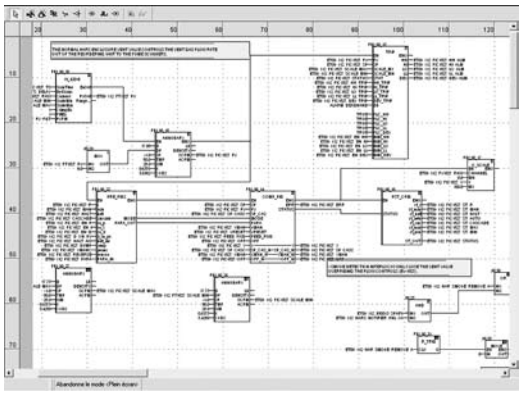
Example: PID controller with MS manual control

Input data conditioning	
DTIME	Pure delay time
INTEGRATOR	Integrator with limiting
LAG_FILTER	First order time lag
LDLG	Lead/lag function with smoothing
LEAD	Lead function with smoothing
MFLOW	Mass flow calculation based on the measurement of differential pressure or flow speed with pressure and temperature compensation
QDTIME	Dead time term
SCALING	Scaling
TOTALIZER	Integrator (typically of flow) until a limit (typically a volume) is reached, with automatic reset
VEL_LIM	Velocity limiter, with manipulated variable limiting

Controllers	
PI_B	Basic PI controller: PI algorithm with a mixed structure (series/parallel)
PIDFF	Complete PID controller: PID algorithm with a parallel or mixed structure (series/parallel)
AUTOTUNE	Automatic tuner setting for the PIDFF (complete PID) controller or the PI_B (basic PI) controller □ Identification using Ziegler Nichols type method □ Modelling based on first order process □ Building of control parameters with criterion for prioritizing either the reaction time to disturbance (dynamic) or the stability of the process
IMC	Model-based controller The model is a first order model with delay. This controller is useful: □ When there are serious delays compared with the main time constant of the process; this scenario cannot be satisfactorily resolved by standard PID process control □ For regulating a non-linear process IMC can handle any stable and aperiodic process of any order
SAMPLETM	Control of controller startup and sampling
STEP2	Simple two-position controller
STEP3	Three-position controller for temperature regulation

Mathematical functions	
COMP_DB	Comparison of two values, with dead zone and hysteresis
K_SQRT	Square root, with weighting and threshold, useful for linearization of flow measurements
MULDIV_W	Weighted multiplication/division of 3 numerical values
SUM_W	Weighted summation of 3 numerical values

Processors: page 1/2 | Communication: page 3/2 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2



Programming in Unity Pro in offline mode

CONT_CTL library functions (continued)

Measurement processing

AVGMV	Moving average with mounted number of samples (50 max.)
AVGMV_K	Moving average with constant correction factor, 10,000 samples max.
DEAD_ZONE	Dead zone
LOOKUP_TABLE1	Linearization of characteristic curves using first order interpolation
SAH	Detection of a rising edge
HYST_XXX *(1)*	Detection of high threshold with hysteresis
INDLIM_XXX *(1)*	Detection of high and low thresholds with hysteresis

Output value processing

MS	Manual control of an output
MS_DB	Manual control of an output with dead zone
PWM1	Control via pulse width modulation
SERVO	Control for servo motors
SPLRG	Control of two Split Range actuators

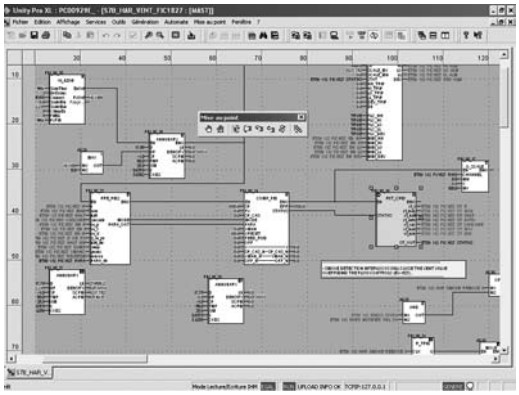
Setpoint management

RAMP	Ramp generator, with separate ascending and descending ramps
RATIO	Ratio controller
SP_SEL	Selection of setpoint value: local (operator) or *remote* (processing)

Configuration

Configuring process control function blocks

Based on the sequencing of function blocks, the FBD language integrated in Unity Pro is a programming language particularly suitable for building control loops. Designers can use FBD to easily associate blocks from the CONT_CTL library with their own DFB blocks written in Unity Pro's ST, IL or LD language, or in C language.



Programming in online mode

Debugging, operation

Unity™ Pro provides multiple, standard debugging services (see page 4/4). In particular, the Modicon™ M340™ processor simulator can be used to check correct execution of processing offline.

Compatibility

The CONT_CTL control function block library is available in Unity Pro. It is compatible with the processors in the Modicon M340 product ranges.

Resources

Supplied technical documentation provide many examples of how to set up programmable process control function blocks in FBD, LD, IL and ST languages.

The techniques for adjusting process control loops are described in the document "Process control" available online at **www.schneider-electric.com**

(1) XXX depending on the type of variable: DINT, INT, UINT, UDINT, REAL

Modicon™ M340™ automation platform
Distributed I/O

Type of splitter box/module		Monobloc IP 67 I/O splitter boxes		
		Modicon™ FTB	Modicon ETB	Modicon FTM
				
Available buses and networks		CANopen	Ethernet Modbus™ TCP/IP Ethernet/IP™	CANopen Profibus™ DP DeviceNet™
Max. number per connection point		1 monobloc splitter box		1 module with 1 monobloc splitter box
Discrete I/O	Modularity	Splitter box with 16 I, 8 I + 8 O, 12 I + 4 O, 16 I/O or 8 I + 8 I/O	Splitter box with 16 configurable I/O, 16 I, 12 I + 4 O, or 8 I + 8 O	8 I, 16 I, 8 configurable I/O, 16 configurable I/O,
	Input voltage	24 V ⎓		
	Output voltage	24 V ⎓		
Analog I/O		–		4 I/4 O
Application-specific I/O		–		
I/O connection		M12 connectors		M8 or M12 connectors, depending on models
Type of housing		Plastic and metal	Plastic	
Module type		FTB1	ETB1E●●●	FTM1
Page		Please consult the catalog pages on our website www.schneider-electric.com		

Monobloc IP 20 distributed I/O	Optimum IP 20 distributed I/O	Modular IP 20 distributed I/O
Modicon™ Momentum™	**Modicon OTB**	**Modicon STB**
		
Ethernet Modbus™ TCP/IP Modbus Plus FIPIO™ InterBus® Profibus™ DP DeviceNet™	Ethernet Modbus TCP/IP CANopen Modbus (RS 485)	Ethernet Modbus TCP/IP Ethernet/IP CANopen Modbus Plus FIPIO InterBus Profibus DP DeviceNet
1 sub-base with 1 processor or 1 communication module	1 interface module + 7 Twido expansion modules	1 “NIM” (Network Interface Module) + 32 I/O modules
Sub-base with 16 I, 32 I, 8 O, 16 O, 32 O, 10 I/8 O, 16 I/8 O, 16 I/12 O or 16 I/16 O	12 I/8 O (interface module) 8 I, 16 I, 32 I, 8 O, 16 O, 32 O, 4 I/4 O and 16 I/8 O (expansion modules)	Module with 2 I, 4 I, 6 I, 16 I, 2 O, 4 O, 6 O or 16 O
24 V ⎓, 120 V ∿ and 230 V ∿	24 V ⎓	24 V ⎓, 115 V ∿ and 230 V ∿
24 V ⎓, 120 V ∿ and 230 V ∿ and relay	24 V ⎓ and relay	24 V ⎓, 115/230 V ∿ and relay
8 I, 16 I or 4 O (voltage/current) sub-bases Sub-base with 4 thermocouple or probe inputs	2 I, 4 I, 8 I, 1 O, 2 O, 2 I/1 O and 4 I/2 O (expansion modules) voltage/current, thermocouple or temperature probe	Modules with 2, 4 or 8 inputs and 1 or 2 outputs (voltage/current) Module with 2 thermocouple or probe inputs
10 kHz/200 kHz 2-channel counter sub-base	Integrated in interface module: - 2 x 5 kHz/20 kHz channels - 2 PWM function channels	Counter module with 1 x 40 kHz channel
6 I/3 O 120 V ∿ sub-base with 1 Modbus port	–	Parallel interface modules for TeSys™ Quickfit and TeSys U motor starters, integrated connection for third-party CANopen products
Screw or spring-type removable terminal blocks	Removable screw terminal block (interface module) Removable screw terminal block, non-removable spring-type terminal block and HE 10 connector (expansion modules)	Removable screw or spring-type connectors, Telefast connectors.
Plastic		
170AD●	**OTB1●0DM9LP**	**STB●●●**

Please consult the catalog pages on our website **www.schneider-electric.com**

Modicon™ M340™ automation platform

BMXEHC0200/0800 counter modules

Introduction

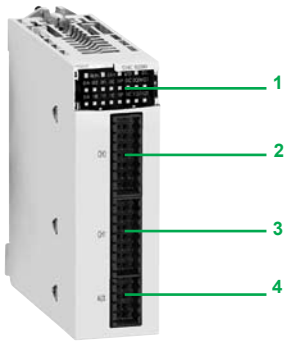
BMXEHC0200 and **BMXEHC0800** counter modules for the Modicon™ M340™ automation platform are used to count the pulses generated by a sensor or to process the signals from an incremental encoder.
The two modules differ in their number of counter channels, maximum input frequencies, functions and auxiliary input and output interfaces:

Counter Module	No. of channels	Maximum frequency	Integrated functions	No. of physical inputs	No. of physical outputs
BMXEHC0200	2	60 KHz	Upcounting Downcounting Period meter Frequency meter Frequency generator Axis control	6	2
BMXEHC0800	8	10 KHz	Upcounting Downcounting Measurement	2	–

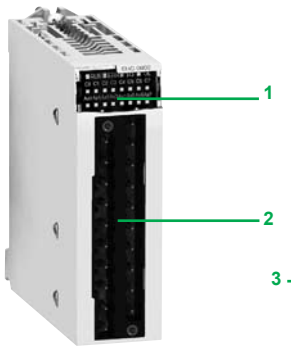
The sensors used on each channel can be:
- 2-wire 24 V proximity sensors
- 3-wire 24 V proximity sensors
- 10/30 V output signal incremental encoders with push-pull outputs

BMXEHC0200/0800 counter modules can be used to meet the demands of applications such as:
- Detcted alarm generation on empty unwinder status using the ratio
- Sorting small parts using the period meter
- Single electronic cam using the dynamic setting thresholds
- Speed control using the period meter

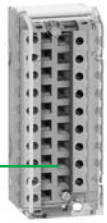
These standard format modules can be installed in any available slot of a Modicon M340 PAC. They are hot-swappable.
In a Modicon M340 PAC configuration, the number of **BMXEHC0200/0800** counter modules should be added to the number of application-specific modules (communication).
The function parameters are set by configuration using the Unity™ Pro software.



BMXEHC0200



BMXEHC0800



BMXFTB20●0

Description

BMXEHC0200/0800 counter modules are standard format. They occupy a single slot in **BMXXBP●●●** racks. They come in a plastic case that helps to ensure IP 20 protection of the electronics, and are locked into position by a captive screw.

BMXEHC0200 module, 2 channels, 60 KHz

The front panel of the **BMXEHC0200** counter module features:
1 Module and channel status display block
2 16-way connector for connecting the sensors of counter 0
3 16-way connector for connecting the sensors of counter 1
4 10-way connector for connecting:
  - Auxiliary outputs
  - Sensor power supplies

To be ordered separately:
- **BMXXTSHSC20** kit containing two 16-pin connectors and one 10-pin connector
- **BMXXSP●●00** shielding connection kit if the rack is not already equipped with one (see page 1/11).

BMXEHC0800 module, 8 channels, 10 KHz

The front panel of the **BMXEHC0800** counter module features:
1 Module and channel status display block
2 Connector taking the 3 **BMXFTB20●0** 20-way removable terminal block (same as that of I/O modules)

To be ordered separately:
- 20-way removable terminal block 3 (cage clamp, screw clamp or spring-type) **BMXFTB20●0**
- **BMXXSP●●00** shielding connection kit if the rack is not already equipped with one (see page 1/11).

Processors: page 1/2 | Communication: page 3/2 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform
BMXEHC0200/0800 counter modules

Operating modes for module BMXEHC0200

8 configurable modes	Frequency meter	This mode measures frequency, speed, data rate, or an event stream. As standard, this mode measures the frequency received on the IN A input. This frequency is expressed in Hz (number of pulses/second), with a precision of 1 Hz. The maximum frequency on the IN A input is 60 kHz. The maximum cyclic ratio at 60 kHz is 60%.
	Event counting	This mode is used to determine the number of events received. In this mode, the counter calculates the number of pulses applied to the IN_A input at time intervals defined by the user. The module counts the pulses applied to the IN_A input each time the pulse for this input lasts longer than 5 µs (without anti-bounce filter).
	Period measurement	This mode is used to: ■ Determine the duration of an event ■ Determine the time between 2 events ■ Time and measure the execution time of a process It measures the time elapsed during an event or between 2 events (IN_A input) according to a selectable time base of 1 µs, 100 µs or 1 ms. The IN_SYNC input can be used to enable or stop a measurement. The module can carry out a maximum of 1 measurement every 5 ms. The shortest measurable pulse is 100 µs, even if the unit defined by the user is 1 µs. The maximum measurable duration is 4,294,967,295 units (unit to be defined).
	Ratio counting	Ratio counting mode only uses the IN_A and IN_B inputs. There are 2 possible modes: ■ Ratio 1: Used to divide 2 frequencies. This is for applications such as flowmeters and mixers. ■ Ratio 2: Used to subtract 2 frequencies. This is for the same applications, but for those requiring more precise regulation (more similar frequencies). Ratio 1 mode gives the results in thousandths for better accuracy (a display of 2000 corresponds to a value of 2) and ratio 2 mode gives the results in Hz. The maximum frequency that the module can measure on the IN_A and IN_B inputs is 60 kHz.
	Downcounting	This mode is used to list a group of operations. In this mode, activating the synchronization function starts the counter from a user-defined preset and decreases with each pulse applied to the IN_A input, until it reaches 0. This downcounting is made possible when the enable function has been activated. The counting register is thus updated at 1 ms intervals. One basic use of this mode is to signal, using an output, the end of a group of operations (when the counter reaches 0). The shortest pulse applied to the IN_SYNC input is 100 µs. The maximum frequency applied to the IN_SYNC input is 1 pulse every 5 ms. The maximum user-defined preset value is 4,294,967,295. The maximum count value is 4,294,967,295 units.
	Loop (modulo) counting	This mode is used in packaging and labelling applications where actions are repeated on sets of moving objects: ■ In upcounting, the counter increases until it reaches the user-defined “modulo - 1” value. On the next pulse, the counter is reset to 0 and upcounting restarts. ■ In downcounting, the counter decreases until it reaches 0. On the next pulse, the counter is reset to the user-defined “modulo - 1” value. Downcounting can then restart. The maximum frequency applied to the IN_A and IN_B inputs is 60 kHz. The maximum frequency of the modulo event is 1 event every 5 ms. The maximum modulo value is 4,294,967,296 (possible by declaring 0 in the modulo adjust value).
	32-bit counter counting	This mode is mainly used in axis following. The maximum frequency applied simultaneously to the IN_A and IN_B inputs is 60 kHz. The maximum frequency of the referencing event is 1 event every 5 ms. The counter value is between - 2,147,483,648 and + 2,147,483,647.
	Width modulation	In this operating mode, the module uses an internal clock generator to supply a periodic signal on the module's O0 output. Only the O0 output is affected by this mode, as the O1 output is independent of it. The maximum output frequency is 4 kHz. As O0 is a source output, a load resistor is necessary for the O0 output signal to change to 0 at the correct frequency. The cyclic ratio adjustment range varies according to the frequency of the O0 output.

2

Operating modes for module BMXEHC0800

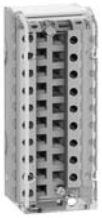
5 configurable 16-bit modes	Frequency meter	This mode measures frequency, speed, rate, or data stream control. As standard, this mode measures the frequency received on the IN A input. This frequency is expressed in Hz (number of pulses per second), with a precision of 1 Hz. The maximum frequency on the IN A input is 10 kHz. The maximum cyclic ratio at 10 kHz is 60%.
	Event counting	This mode is used to determine the number of events received. In this mode, the counter calculates the number of pulses applied to the IN_A input at time intervals defined by the user. As an option, it is possible to use the IN_AUX input during a period of time, provided that the enable bit has been configured. The module counts the pulses applied to the IN_A input each time the pulse for this input lasts longer than 50 µs (without anti-bounce filter). Pulses with less than 100 ms synchronization are lost.
	Downcounting	This mode is used to list a group of operations. In this mode, when counting is enabled (software validation via the valid_sync command), a rising or falling edge on the IN_AUX input causes a value, defined by the user, to be loaded in the counter. The latter decreases with each pulse applied to the IN_A input until it reaches the value 0. Downcounting is made possible when the force_enable command is high (software positioning). The smallest pulse applied to the IN_AUX input varies according to the selected filter level. The maximum frequency applied to the IN_AUX input is 1 pulse every 25 ms.
	Loop (modulo) counting	This mode is used in packaging and labelling applications where actions are repeated on sets of moving objects. The counter increases with each pulse applied to the IN_A input until it reaches the user-defined “modulo - 1” value. On the next pulse in the upcounting direction, the counter is reset to 0 and upcounting restarts. The maximum frequency applied to the IN_A input is 10 kHz. The smallest pulse applied to the IN_AUX input varies according to the selected filter level. The maximum frequency of the modulo event is 1 event every 25 ms. The maximum modulo value is 65,536 units.
	Up/down counter	This mode is used for an accumulation, upcounting or downcounting operation on a single input. Each pulse applied to the IN_A input produces: ■ Upcounting of pulses if the IN_AUX input is high ■ Downcounting of pulses if the IN_AUX input is low The counter values vary between the limits - 65,536 and + 65,535. The maximum frequency applied to the IN_A input is 10 kHz. Pulses applied to the IN_A input after a change of direction are only upcounted or downcounted after a period corresponding to the delay for taking account of the state of the IN_AUX input due to the programmable filter level on this input.
One 32-bit mode	32-bit counter counting	32-bit counter counting mode is available for channels 0, 2, 4 and 6 (channels 1, 3, 5 and 7 are now inactive). It behaves in the same way as the up/down counting mode using up to 3 physical inputs. It enables simultaneous upcounting and downcounting. The counter values vary between the limits - 2,147,483,648 and + 2,147,483,647 (31 bits + sign). The maximum frequency applied to the IN_A and IN_B inputs is 10 kHz. The smallest pulse applied to the IN_AUX input is defined according to the filtering applied to this input. The maximum frequency of loading the preset value is 1 every 25 ms.

Modicon™ M340™ automation platform

BMXEHC0200/0800 counter modules

BMXEHC0200

BMXEHC0800



BMXFTB20●0

References

BMXEHC0200/0800 counter modules *(1)*

Description	No. of channels	Specifications	Reference	Weight kg
Counter modules for 24 V ⎓ 2 and 3-wire sensors and 10/30 V ⎓ incremental encoders with push-pull outputs	2	60 kHz counting	**BMXEHC0200**	0.112
	8	10 kHz counting	**BMXEHC0800**	0.113

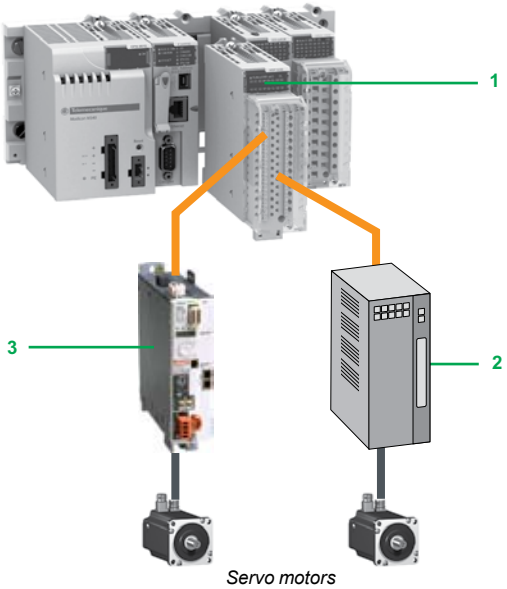
Connection accessories *(2)*

Description	Composition	Unit reference	Weight kg
Pack of connectors for BMXEHC0200 module	Two 16-way connectors and one 10-way connector	**BMXXTSHSC20**	0.021
20-way removable terminal blocks for BMXEHC0800 module	Cage clamp	**BMXFTB2000**	0.093
	Screw clamp	**BMXFTB2010**	0.075
	Spring	**BMXFTB2020**	0.060
Shielding connection kit for BMXEHC0200/0800 modules	Is comprised of a metal bar and two support bases for mounting on rack	See page1/11	–

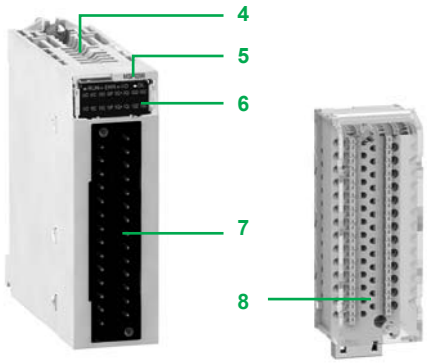
(1) Typical consumption: See the power consumption table on page 7/16.
*(2) The shielding on the cordsets carrying the counter signals should be connected to the **BMXXSP●●00** shielding connection kit mounted under the rack that holds the **BMXEHC0200** module (see page 1/11).*

Modicon™ M340™ automation platform

BMXMSP0200 motion control module



Servo motors



BMXMSP0200 *BMXFTB2820*

Introduction

The **BMXMSP0200** motion control *pulse train output* (PTO) module **1** for the Modicon™ M340™ automation platform is used for controlling third-party variable speed drives **2** that have an integrated position loop and inputs that are compatible with open collector outputs.

The **BMXMSP0200** control module is also directly compatible with the Lexium™ 32C and 32M **3** servo drive products that have an integrated pulse control interface.

The **BMXMSP0200** motion control PTO module has two independent PTO channels. Like any other application-specific module, it is installed in the rack slots (labelled 01 to 11). The number of modules is limited by the maximum number of application-specific channels permitted according to the CPU type:

- Standard **BMXP341000**: Maximum of 20 application-specific channels *(1)*
- Performance **BMXP3420●0**: Maximum of 36 application-specific channels *(1)*

Description

The **BMXMSP0200** motion control module is standard format (1 slot). Its housing provides IP 20 protection of the electronics and it is locked in each slot (01 to 11) by a captive screw.

The **BMXMSP0200** motion control module features:

4 Rigid body providing support and protection for the electronic card

5 Module reference marking (a label is also visible on the right-hand side of the module)

6 Display block indicating:

- Module status, 4 LEDs (RUN, ERR, I/O and DL)
- Status of the auxiliary inputs, 4 per channel
- Status of the PTO outputs, 2 per channel
- Status of the auxiliary outputs, 2 per channel

7 Connector for a 28-way terminal block, for connecting to a removable spring terminal block on sensors and preactuators

To be ordered separately:

8 28-way removable spring terminal block **BMXFTB2820**, supplied with a channel identification label

- Shielding connection kit to help protect against electrostatic discharge, consisting of a metal bar and two sub-bases for mounting on the rack: **BMXXSP●●00** (reference dependent on the number of slots in the rack) (see page 1/11)
- Set of clamping rings **STBXSP30●0** for the connection cable shielding braids (reference dependent on the cable Ø) (see page 1/11)

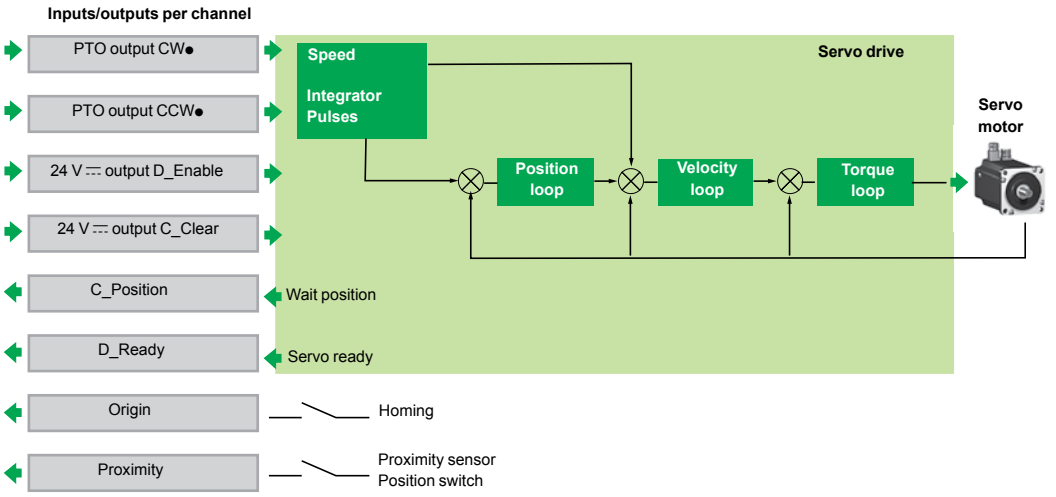
(1) Application-specific channels: BMXEHC0200 (2-channel) and BMXEHC0800 (8-channel) counter modules, BMXMSP0200 (2-channel) motion control module and BMXNOM0200 (2-channel) and BMXNOR0200H (1-channel) serial communication modules

Modicon™ M340™ automation platform
BMXMSP0200 motion control module

Operation

Block diagram of a BMXMSP0200 module channel

BMXMSP0200

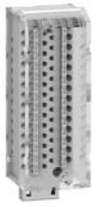


References

Motion control modules *(1)*

Description	Number of channels	Description per channel	Reference	Weight kg
PTO module *(PTO = Pulse Train Output)*	2	2 x 200 kHz max. PTO outputs 2 x 24 V ⎓/50 mA auxiliary outputs 4 x 24 V ⎓ auxiliary inputs	**BMXMSP0200**	0.145

BMXMSP0200



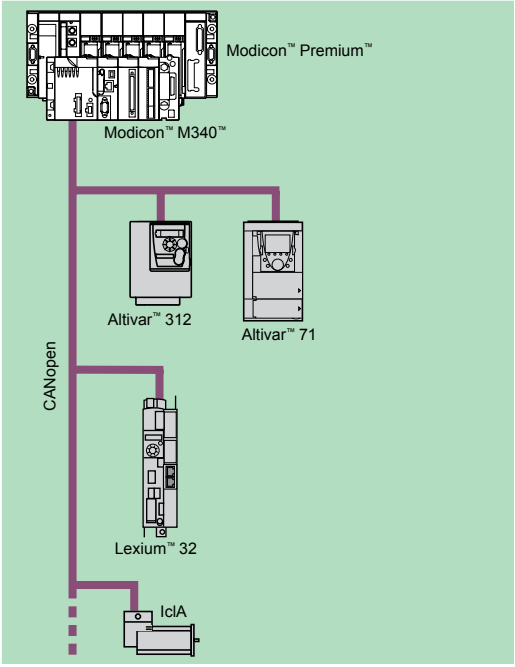
BMXFTB2820

Cabling accessories

Description	Description, use	Length	Reference	Weight kg
28-way removable terminal block	Spring	–	**BMXFTB2820**	0.080
Connection cable for daisy chain or pulse control *(2)*	From BMXMSP0200 (screw terminal block) module to Lexium 32C or 32M (RJ45 connector) *(cable with flying leads at one end and an RJ45 connector at the other)*	3 m *(3)*	**VW3M8223R30**	–
Shielding connection kit for module BMXMSP0200	Is comprised of a metal bar and two support bases for mounting on rack	–	See page1/11	–

(1) Typical consumption: See the power consumption table on page 7/16.
*(2) The shielding on the cordsets carrying the motion control signals should be connected to the **BMXXSP●●00** shielding connection kit mounted under the rack holding the **BMXMSP0200** module (see page 1/11).*

Modicon™ M340™ automation platform
MFB motion control



MFB: Motion control distributed over CANopen

Introduction

MFB *(Motion Function Blocks)* is a library of function blocks integrated in Unity™ Pro software that is used to set up motion control in the architectures of drives and servo drives on CANopen buses:
- Altivar™ 312: For asynchronous motors from 0.18 to 15 kW
- Altivar™ 71: For synchronous or asynchronous motors from 0.37 to 500 kW
- Lexium™ 32: For servo motors from 0.15 to 7 kW
- IclA IFA/IFE/IFS: For integrated motor drives from 0.05 to 0.25 kW

The MFB library, designed to PLCopen specifications, allows both easy and flexible motion programming with Unity Pro, as well as axis diagnosis. In maintenance operations, drives can be replaced quickly by using drive parameter download blocks. Configuring drives on the CANopen network is facilitated through *Motion Tree Manager* organization in the Unity Pro browser, making it easy for users to access the application drives.

Applications

The features of the *Motion Function Blocks* library are particularly suitable for machines with independent axes. In the case of these modular/special machines, MFB function blocks are the solution for controlling single axes. The following are typical applications for this type of architecture:
- Automatic storage/removal
- Material handling
- Palletizers/depalletizers
- Conveyors
- Packaging, simple label application
- Grouping/ungrouping
- Adjustment axes in flexible machines.

Functions

The table below lists the function blocks of the MFB library and the drives compatible with them. The premount indicates the block family:
- MC: Function block defined by the Motion Function Blocks PLCOpen standard
- TE: Function block specific to Schneider Electric products
- Lxm: Function block specific to Lexium servo drives

Type	Function	Function block	Altivar 312	Altivar 71	Lexium 32	IclA IFA/ IFE/IFS
Management and motion	Read an internal parameter	MC_ReadParameter				
	Write an internal parameter	MC_WriteParameter				
	Read the current position	MC_ReadActualPosition				
	Read the instantaneous speed	MC_ReadActualVelocity				
	Acknowledge detected error messages	MC_Reset				
	Stop active movement	MC_Stop				
	Axis coming to standstill	MC_Power				
	Movement to absolute position	MC_MoveAbsolute				
	Relative movement	MC_MoveRelative				
	Additional movement	MC_MoveAdditive				
	Homing	MC_Home				
	Movement at given speed	MC_MoveVelocity				
	Read diagnostic data	MC_ReadAxisError				
	Read servo drive status	MC_ReadStatus				
	Torque control	MC_TorqueControl				
	Read actual torque value	MC_ReadActualTorque				
	Manual control	MC_Jog				
Save and restore parameters (FDR)	Read parameters and store in PAC memory	TE_UploadDriveParam				
	Write parameters from the PAC memory	TE_DownloadDriveParam				
Advanced Lexium functions	Read a motion task	Lxm_UploadMTask				
	Write a motion task	Lxm_DownloadMTask				
	Start a motion task	Lxm_StartMTask			*(1)*	
	Set the reduction ratio, signed	Lxm_GearPosS			*(1)*	
System	Communication with the servo drive	TE_CAN_Handler				

Compatible

(1) The Lxm_StartMTask and Lxm_GearPosS function blocks are only compatible with the M type Lexium 32 (LXM 32M) servo drives.

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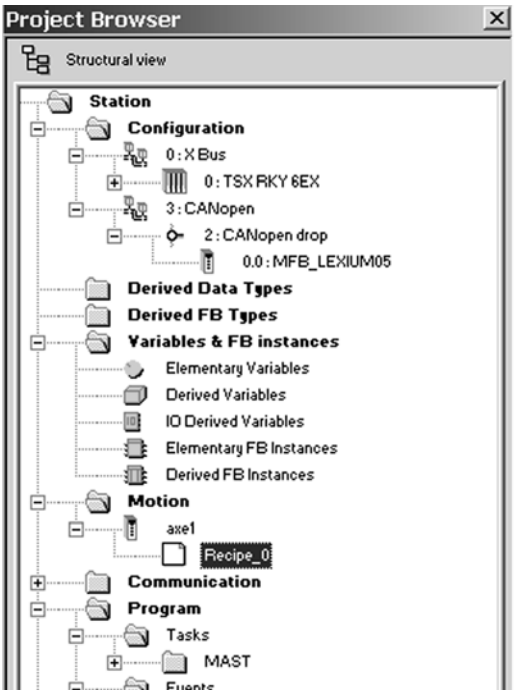
Modicon™ M340™ automation platform
MFB motion control



Motion Tree Manager integrated in the Unity Pro browser

Motion Tree Manager

Motion Tree Manager is part of Unity™ Pro's MFB library and is integrated into its browser. It provides specific assistance for:
- Axis object management
- Axis variable definition
- Drive parameter management

Motion Tree Manager automatically creates links between the CANopen bus configuration and the MFB function block data using a limited amount of configuration data.

General axis parameters

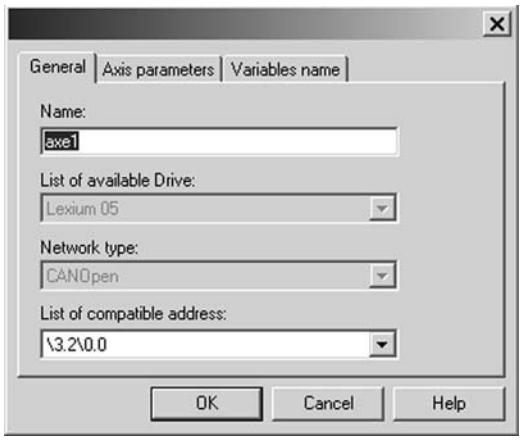
In this tab, the designer is prompted to define:
- The name of the axis that will identify it in the browser for the entire application
- The address of the drive on the CANopen bus

Axis parameters

The drop-down lists in this tab are used to determine the exact type of drive: Family, version.

Variable names

This last tab is used to identify data structures:
- **Axis_Reference:** Used by the instances of function blocks for the axis in question
- **CAN_Handler:** Used to manage communication with the drive via the CANopen network



General parameters: Axis name and address

Recipe definition

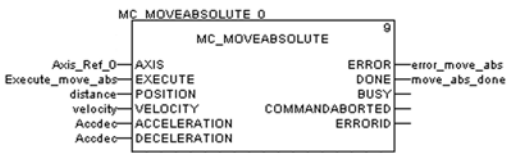
The "recipes" attached to the axis are the data structures containing the adjustment parameters of a given drive. This data is used when:
- Changing the drive with restoration of the context during *"Faulty Device Replacement"* (FDR) maintenance
- Changing the manufacturing program of the machine and calling up an appropriate set of parameters: servo control gains, limitations, etc. adapted to the weight and size of the moving parts
- Saving parameters in the initial values of the PAC application

Programming, diagnostics and maintenance

Communication between the PAC and drive is automatically set up by the system as soon as a TE_CAN_Handler instance is declared in the Unity Pro task with which the axis is associated. Movements are then programmed by sequencing function blocks from the library in the user's chosen Unity Pro editor (LD, ST, FBD).

The two function blocks, MC_ReadStatus, and in some cases MC_ReadAxisError, are useful for determining the overall status of the axis, as well as the code of active warnings or error messages.

The function blocks TE_UploadDriveParam and TE_DownloadDriveParam allow the application to save the parameters of a drive (recipe) and to then quickly reload them into another drive if the first one becomes inoperative.



MFB: Programming a movement in absolute mode

Modicon™ M340™ automation platform

Quick wiring adapters for Modicon M340 PAC

Introduction

Quick Wiring Adapters are a set of connectors for the Modicon™ M340™ automation platform. These connectors simplify the replacement of a legacy Modicon Compact™ PAC with our latest offer, the M340 PAC.
The adapters allow I/O field wiring connectors to be removed from the Compact PAC and plugged directly into the M340.
Thirteen new references make the necessary wiring translations between Compact and M340 I/O modules and fully meet the mechanical environmental specifications of the M340 range.

Quick Wiring Adapters Features

Quick Wiring Adapters have the same look and feel as the standard M340 I/O module connectors. The new connectors increase the depth and extend below the I/O module.
- The quick wiring adapters use the same mounting/retention screws to hold the adapter to the M340 module
- The adapter receptacles accept the two (2) Compact I/O module field wiring connectors
- A clear cover is sized to retain the wiring harness
- The cover also has features to accept and retain the wiring label that was used on the Compact I/O module

Compact modules/Modicon™ M340™ modules compatibility

Type of module	Compact Module		M340 Module		M340 Compatibility	Quick Wiring Adapter reference
	Reference	Comment	Reference	Comment		
Digital input	AS-BDE O 216	24 VDC 16 Point Input Module	BMXDDI1602	16 point 24 VDC input sink	O.K.	990XSM00206
	AS-BDEP 208	230 VAC 8 Point Input Module	–	–	No exact replacement but Modicon Telefast separate product line can handle it.	–
	AS-BDEP 209	120 VAC 8 Point Input Module	BMXDAI1604	16 point 110 VAC input	O.K.	990XSM00213
	AS-BDEP 210	115 VAC 8 Point Input Module	BMXDAI1604	16 point 110 VAC input	O.K.	990XSM00213
	AS-BDEP 211	115 VAC 8 Point Input Module	BMXDAI1604	16 point 110 VAC input	O.K.	None
	AS-BDEP 214	12-60 VDC 16 Point Input Module	BMXDDI1603	16 point 48 VDC input	No replacement for 12 V, 24 V and 60 V	990XSM00206
	AS-BDEP 215	5 VDC TTL 16 Point Input Module	–	–	No exact replacement but can be replaced with HMI functionality.	None
	AS-BDEP 216	24 VDC 16 Point Input Module	BMXDDI1602	16 point 24 VDC input sink	O.K.	990XSM00206
	AS-BDEP 217	24 VDC 16 Point Input Module	BMXDAI1602	16 point 24 VDC input sink	OK but need negative logic.	990XSM00201
	AS-BDEP 218	115 VAC 16 Point Input Module	BMXDAI1604	16 point 110 VAC input	O.K.	990XSM00201
	AS-BDEP 220	Fast 24 VDC 16 Point Input Module			Depending upon the response time there are replacements.	None
	AS-BDEP 254	12-60 VDC 16 Point Input Module	BMXDDI1603H	16 point 48 VDC input	BMXDDI1603 input threshold is 34 V versus 12 V for AS-BDEP254. Temperature is 0 to + 60 °C for BMXDDI1603 where AS-BDEP254 is rated for - 40 to + 70 °C	990XSM00206
	AS-BDEP 254C	12-60 VDC 16 Point Input Module, ext temp + Coated	BMXDDI1603H	16 point 48 VDC input	BMXDDI1603 input threshold is 34 V versus 12 V for AS-BDEP254. Temperature is 0 to + 60 °C for BMXDDI1603 where AS-BDEP254 is rated for - 40 to + 70 °C	990XSM00206
	AS-BDEP 256	24 VDC 16 Point Input Module	BMXDDI1602H	16 point 24 VDC input sink	BMXDDI1602 is only rated for 0 to + 60 °C versus - 40 to + 70 °C for AS-BDEP256.	990XSM00206
	AS-BDEP 256C	24 VDC 16 Point Input Module, ext temp + Coated	BMXDDI1602H	16 point 24 VDC input sink	BMXDDI1602 is only rated for 0 to + 60 °C versus - 40 to + 70 °C for AS-BDEP256C	990XSM00206
	AS-BDEP 257	110 VDC 16 inputs Ext. Temp	BMXDDI1604T	16 point 125 VDC input	Nominal input voltage for BMXDDI1604 is 100 to 150 VDC versus 55 to 170 VDC for AS-BDEP257. Response time for BMXDDI1604 is 9 ms versus 6 ms for the AS-BDEP257. Temperature for BMXDAI1604T is -25 to + 70 °C versus - 40 to + 70 °C.	990XSM00206
	AS-BDEP 257C	110 VDC 16 inputs, ext temp + Coated	BMXDDI1604T	16 point 125 VDC input	Nominal input voltage for BMXDDI1604 is 100 to 150 VDC versus 55 to 170 VDC for AS-BDEP257. Response time for BMXDDI1604 is 9 ms versus 6 ms for the AS-BDEP257. Temperature for BMXDDI1604T is -25 to + 70 °C versus - 40 to + 70 °C. No conformal coat available.	990XSM00206
	AS-BDEP 296	60 VDC 16 inputs	–	–	No replacement	–
	AS-BDEP 297	48 VDC 16 inputs	BMXDDI1603	16 point 48 VDC input	O.K.	990XSM00206

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Compact modules/Modicon™ M340™ modules compatibility

Type of module	Compact Module		M340 Module		M340 Compatibility	Quick Wiring Adapter reference
	Reference	Comment	Reference	Comment		
Digital output	AS-BDAO 216	24 VDC 16 Point Output Module	BMXDDO1602	16 point Output 24 VDC	O.K with slightly slower response. BMXDDO1602 response time 1.2 ms vs. < 1 ms for AS-BDAO216	990XSM00206
	AS-BDAP 204	4 Point Relay (NO) Module	BMXDRA0805	8 point relay outputs	O.K. 4 relay on Compact 8 on M340.	990XSM00203
	AS-BDAP 208	8 Point Relay (NO) Module	BMXDRA0805	8 point relay outputs	O.K.	990XSM00206
	AS-BDAP 258	8 Point Relay (NO) Module	BMXDRA0805H	8 point relay outputs	O.K. But Extended temperature differences	990XSM00206
	AS-BDAP 258C	24 VDC 8 Point Relay (NO) Module, ext temp + Coated	BMXDRA0805H	8 point relay outputs	O.K. Temperature limitation where 0 to + 60 °C versus - 40 to + 70 °C and the BMXDRA0805H.	990XSM00206
	AS-BDAP 209	120 VAC 8 Point 1A Output Module	BMXDAO1605	16 point output 110 VAC to 230 VAC	Less amperage available. BMXDAO1605 is limited to 600 mA vs. 1A for AS-BDAP 210 AS-BDAP210 nominal voltage goes down to 85 V vs. 100 V for BMXDAO1605	990XSM00204
	AS-BDAP 210	24-230 VAC 8 Point Output Module	BMXDAO1605	16 point output 110 VAC to 230 VAC	Less amperage available. BMXDAO1605 is limited to 600 mA vs. 1A for AS-BDAP210. AS-BDAP 210 nominal voltage goes down to 85 V vs. 100 V for BMXDAO1605	990XSM00204
	AS-BDAP 212	24 VDC 8 Point Input/4 Point Output 2A	BMXDDM16025	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. Input isolation is different.	990XSM00205
	AS-BDAP 252	24 VDC 8 Point Input/4 Point Output 2A	BMXDDM16025H	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. Input isolation is different. Extended temperature differences	990XSM00205
	AS-BDAP 216	24 VDC 16 Point Output Module	BMXBMXDDO1602	16 point 24 VDC output	Compact is 2 groups of 8, M340 1 group of 16. So difference inputs isolation	990XSM00206
	AS-BDAP 256	24 VDC 16 Point Output Module	BMXBMXDDO1602H	16 point 24 VDC output	Compact is 2 groups of 8, M340 1 group of 16. So difference inputs isolation Extended temperature differences	990XSM00206
	AS-BDAP 217	5-24 VDC 16 Point Output Module	BMXBMXDDO1612	16 point 24 VDC output sink	Response time is slightly slower. BMXDDO1612 at 1.2 ms versus <1 ms for AS-BDAP217. Also Compact is 2 groups of 8, M340 1 group of 16.	990XSM00206
	AS-BDAP 218	24-240 VAC 16 Point Output Module	BMXDAO1605	16 point output 110 VAC to 230 VAC	Less amperage available. BMXDAO1605 is limited to 600 mA vs. 1 A for AS-BDAP210 AS-BDAP 210 nominal voltage goes down to 24 V vs. 100 V for BMXDAO1605. If 24 V is needed select a different module.	990XSM00202
	AS-BDAP 211	120 VAC Mixed Press and Stamp Module, Inputs controlling Outputs	–	–	None	None
Digital input/output	AS-BDAP 220	24 VDC 8 Point Input/ Output Module 2A	BMXDDM16022	8 point 24 VDC input + 8 point 24 VDC output	BMXDDM16022 is limited to 0.625 A per channel versus AS-BDAP220 2 A. Also response time is 1.2 ms versus < 1 ms for AS-BDAP220	990XSM00207
	AS-BDAP 250	24 VDC 8 Point Input/ Output Module	BMXDDM16022H	8 point 24 VDC input + 8 point 24 VDC output	BMXDDM16022 is limited to 0.625 A per channel versus AS-BDAP250 2 A and is not conformally coated. Also response time is 1.2 ms versus < 1 ms for AS-BDAP220. BMXDDM16022 is 0 to + 60 °C versus - 40 to + 70 °C for AS-BDAP250C.	990XSM00207
	AS-BDAP 250C	24 VDC 8 Point Input/ Output Module, ext temp + Coated	BMXDDM16022H	8 point 24 VDC input + 8 point 24 VDC output	BMXDDM16022 is limited to per channel versus AS-BDAP250 2 A. Also response time is 1.2 ms versus <1 ms for AS-BDAP220. DDM16022 is 0 to + 60 °C versus - 40 to + 70 °C for AS-BDAP250C.	990XSM00207
	AS-BDAP 212	24 VDC 8 inputs 4 outputs	BMXDDM16025	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation.	990XSM00205
	AS-BDAP 252	24 VDC 8 inputs 4 outputs	BMXDDM16025H	8 point 24 VDC input + 8 point relay output	BMXDDM16025 is 0 to + 60 °C versus - 40 to + 70 °C. Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation.	990XSM00205
	AS-BDAP 252C	24 VDC 8 inputs 4 outputs, ext temp + Coated	BMXDDM16025H	8 point 24 VDC input + 8 point relay output	BMXDDM16025 is 0 to + 60 °C versus - 40 to + 70 °C. Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation.	990XSM00205
	AS-BDAP 253	110 VDC 8 inputs 4 outputs	BMXDDM16025H	8 point 24 VDC input + 8 point relay output	1) Compact inputs 110 VDC, M340 24 VDC 2) Compact 2 groups of 2 outputs, M340 1 group of 8. a) Output isolation is different b) 4 unused references,	None
	AS-BDAP 253C	110 VDC 8 inputs 4 outputs, ext temp + Coated	BMXDDM16025H	8 point 24 VDC input + 8 point relay output	1) Compact inputs 110 VDC, M340 24 VDC 2) Compact 2 groups of 2 outputs, M340 1 group of 8. a) Output isolation is different b) 4 unused references	None
	AS-BDAP 292	60 VDC 8 Inputs 4 outputs	–	–	No exact replacement but contact Schneider Electric Technical support for workarounds.	None

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Compact modules/Modicon™ M340™ modules compatibility

Type of module	Compact Module		M340 Module		M340 Compatibility	Quick Wiring Adapter reference
	Reference	Comment	Reference	Comment		
Analog input	AS-BADU 204	4 Channel, ± 0,5 V, Register, PT100, 11 Bit	BMXART0414	Analog 4 channel TC/RTD Isolated inputs	O.K., but ± 0.5V missing, also M340 has Channel to Channel and Channel to Bus Isolation	None
	AS-BADU 205	4 Channel Register Input	BMXAMI0410	Analog 4 channel Current/ Voltage Input Isolated	O.K. Scaling differences	990XSM00208
	AS-BADU 205	4 Channel Register Input	BMXAMM0600	Analog 4 channel Current/ voltage input non-isolated and 2 channel Current/ voltage output non-isolated	O.K. Scaling differences	990XSM00209
	AS-BADU 206	4 Channel Register Input isolated	BMXAMI0410	Analog 4 channel Current/ Voltage Input Isolated	O.K, however M340 does not have ± 1V range.	990XSM00210
	AS-BADU 206	4 Channel Register Input isolated	BMXAMM0600	Analog 4 channel Current/ voltage input non-isolated and 2 channel Current/ voltage output non-isolated	O.K, however M340 does not have ± 1V range. No isolation	990XSM00211
	AS-BADU 210	4 Channel Voltage/Current Input isolated	BMXAMI0410	Analog 4 channel Current/ Voltage Input Isolated	O.K. Scaling differences M340 does not match the voltage ranges.	990XSM00210
	AS-BADU 210	4 Channel Voltage/Current Input isolated	BMXAMM0600	Analog 4 channel Current/ voltage input non-isolated and 2 channel Current/ voltage output non-isolated	O.K. Scaling differences M340 does not match the voltage ranges. No isolation	990XSM00211
	AS-BADU 211	8 Channel Analog Input Module Thermo	BMXART0814	Analog 8 channel TC/RTD Isolated inputs	O.K. M340 missing 2, 5, or 10 V input capability or 4-20 mA , ± 20 mA and missing external 24 V	None
	AS-BADU 212	8 Channel Analog Input Module Thermo	BMXART0814	Analog 8 channel TC/RTD Isolated inputs	O.K. M340 missing 2, 5, or 10 V input capability or 4-20 mA , ± 20 mA and missing external 24 V	None
	AS-BADU 214	4/8 Channel Multi Range Analog/Digital Input	BMXART0414	Analog 4 channel TC/RTD Isolated inputs	M340 missing Voltage range 0 - 10 V, 1 to 5, 2 to 10. and no loop capability.	None
	AS-BADU 216	4/8 Channel Thermocouple isolated	BMXART0814	Analog 8 channel TC/RTD Isolated inputs	OK	None
	AS-BADU 254	4 Channel Register Input	BMXAMI0410H	Analog 4 channel Current/ Voltage Input Isolated	Ok, and M340 has CH/CH isolation and CH/Bus where Compact has none. Extended temperature differences	None
	AS-BADU 254	4 Channel Register Input	BMXAMM0600H	Analog 4 channel Current/ Voltage input and 2 channel Current Voltage Output	Ok. M340 has 4 inputs and 2 outputs. Extended temperature differences	None
	AS-BADU 254C	4 Channel Register Input, ext temp + Coated	BMXAMI0410H	Analog 4 channel Current/ Voltage Input Isolated	Ok, and M340 has CH/CH isolation and CH/Bus where Compact has none. Extended temperature differences	None
	AS-BADU 254C	4 Channel Register Input, ext temp + Coated	BMXAMM0600H	Analog 4 channel Current/ Voltage input and 2 channel Current Voltage Output	OK, M340 has 4 inputs and 2 outputs. With no isolation Extended temperature differences	None
	AS-BADU 256	4 Channel Register Input Isolated	BMXAMI0410H	Analog 4 channel Current/ Voltage Input Isolated	OK but Extended temperature differences	None
	AS-BADU 256	4 Channel Register Input Isolated	BMXAMM0600H	Analog 4 channel Current/ Voltage input and 2 channel Current Voltage Output	OK, M340 has 4 inputs and 2 outputs. With no isolation Extended temperature differences	None
	AS-BADU 256C	4 Channel Register Input Isolated, ext temp + Coated	BMXAMI0410H	Analog 4 channel Current/ Voltage Input Isolated	OK but Extended temperature differences	990XSM00210
	AS-BADU 256C	4 Channel Register Input Isolated, ext temp + Coated	BMXAMM0600H	Analog 4 channel Current/ Voltage input and 2 channel Current Voltage Output	OK M340 has 4 inputs and 2 outputs with no isolation	990XSM00211
	AS-BADU 257	8 Channel Thermocouple	BMXART0814H	Analog 8 channel TC/RTD Isolated inputs	Ok but extended temperature differences	None
	AS-BADU 257C	8 Channel Thermocouple, ext temp + Coated	BMXART0814H	Analog 8 channel TC/RTD Isolated inputs	Ok but extended temperature differences	None
Analog output	AS-BDAU 202	2 Point AN Outputs, ± 10 V, ± 20 mA	BMXAMO0210	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability.	990XSM00212
	AS-BDAU 204	4 Channel Analog Output,Opto-Isol.	BMXAMO0210	Analog 2 channel Current/ Voltage Output Isolated	M340 does not support 0 to 1 V, 0 to 5 V, ± 1V. +-5 V ranges	None
	AS-BDAU 208	8 Channel Register Output			No 8 point analog output Need to use two modules.	None
	AS-BDAU 252	2 Point AN Outputs, ± 10 V, ± 20 mA Extended Temperature	BMXAMO0210H	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability. Extended temperature differences	990XSM00212
	AS-BDAU 252C	2 Point AN Outputs, ± 10 V, ± 20 mA , ext temp + Coated	BMXAMO0210H	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability. Extended temperature differences	990XSM00212
Comm.	AS-BBKF 202	INTERBUS S Slave	–	–	No replacement	None
	AS-BBKF201-16	16 Word INTERBUS S Master	–	–	No replacement	None
	AS-BBKF201-64	64 Word INTERBUS S Master	–	–	No replacement	None
	CM900	Auto Interface	–	–	No replacement	None

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Compact modules/Modicon™ M340™ modules compatibility						
Type of module	**Compact Module**		**M340 Module**		**M340 Compatibility**	**Quick Wiring Adapter reference**
	Reference	**Comment**	**Reference**	**Comment**		
Ser. Comm.	AS-BKOS260-24	24 Word Universal Comm	–	–	Contact Schneider Electric Technical support for appropriate alternatives. READ_VAR functionality might replace this.	None
	AS-BKOS260-64	64 Word Universal Comm	–	–	Contact Schneider Electric Technical support for appropriate alternatives. READ_VAR functionality might replace this.	None
	M7251	Programmable limit switch	–	–	No replacement, No Motion	None
	M7350	Resolver Decoder	–	–	No replacement, No Motion	None
Motion	AS-BMOT 201	Axis Motion Control Module Encoder	–	–	Contact Schneider Electric Technical support for appropriate alternatives.	None
	AS-BMOT 202	Axis Motion Control Module Resolver & Encoder	–	–	Contact Schneider Electric Technical support for appropriate alternatives.	None
Counter	AS-BFRQ 204	4 point Frequency Module	BMXEHC0200	High Speed Counter 2 channel	No 5 V input. Also contact Schneider Electric Technical support for correct replacement	None
	AS-BFRQ 254C	4 point Frequency Module, ext temp + Coated	BMXEHC0200H	High Speed Counter 2 channel	No 5 V input. Also contact Schneider Electric Technical support for correct replacement	None
	AS-BVIC200 VRC200	4 High Speed Pulse or 4 VRC Inputs	–	–	Contact Schneider Electric Technical support for appropriate alternatives.	None
	AS-BVIC205 CTR205	4 High Speed Pulse or 4 5V TTL Inputs	–	–	Contact Schneider Electric Technical support for appropriate alternatives.	None
	AS-BVIC212 CTR212	4 High Speed Pulse or 12 VDC Inputs	–	–	Contact Schneider Electric Technical support for appropriate alternatives.	None
	AS-BVIC224 CTR224	4 High Speed Pulse or 24 VDC Inputs	BMXEHC0800	High Speed Counter 8 channel	Contact Schneider Electric Technical support for appropriate alternatives.	None
	AS-BZAE 201	High speed Counter/ Positioner (2 Relay)	BMXEHC0200	High Speed Counter 2 channel	Counter 12 V O.K., no relay outputs, no 5V, no positioning	None
	AS-BZAE 204	4 Channel High speed Counter/Positioner	BMXEHC0800	High Speed Counter 8 channel	O.K. No outputs	None
CPU	AS-B984-A145 up to E984-285		BMXP342020 + BMXCSP3020	–	Only 1 Modbus port on CPU. 2 port NOM serial module available.	None
	AS-P120 000	105 to 240 VAC inputs, 24 VDC 1.0A outputs	BMXCSP2000 / BMXCSP3500	–	–	None

***Notes**:*
- Extended temperature modules for M340 have an “H” suffix at the end of the part number.
- The Modicon Compact PAC line had an extended temperature range of - 40 °C to + 70 °C. The M340 line has an extended temperature of - 25 °C to + 70 °C. Derating of temperature might apply inputs certain applications.
- As with any PAC migration even an exact module to module replacement might not yield the same results (due to scan time, etc).

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3.2 - RTU communication systems

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3.3 - ConneXium™ cabling systems for Ethernet and Wi-Fi networks

- ConneXium cabling systems for Ethernet networks

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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 fiber via ConneXium cabling system		
Configuration	Maximum number of devices	–		
	Max. length	100 m (copper cable), 4000 m (multi-mode optical fiber), 32,500 m (single-mode optical fiber)		
	Number of modules of the same type per station	1	2 Ethernet or RTU modules per station with any BMXP34processor	
Standard services		Modbus/TCP messaging		
Transparent Ready conformity class		B10	B30	C30
Embedded Web server services	Standard services	Rack Viewer PAC diagnostics, Data Editor access to PAC 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 Unity Pro ≥ 4.0	–	
	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 1/2)	
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		
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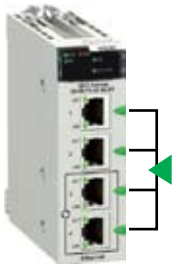
Ethernet communication	RTU communication	
Ethernet modules	**RTU module**	
		
Ethernet/IP and Modbus™/TCP	**Modbus/TCP, IEC 60870-5-104, DNP3 (subset level 3)**	**Serial link, External modem link, IEC 60870-5-101, DNP3 (subset level 3)**
10BASE-T/100BASE-TX	10BASE-T/100BASE-TX (Modbus/TCP), PPPoE (Point-to-Point 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 to 38.4 Kbps (Serial link)
Double twisted pair copper cable, category CAT 5E, optical fiber 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), 32 slaves/servers (IEC 104/DNP3)	32 max.
100 m (copper cable), 4000 m (multi-mode optical fiber), 32,500 m (single-mode optical fiber)		15 m (Non-isolated serial link), 1000 m (Serial link with insulating case)
2 Ethernet or RTU modules per station with any BMXP34processor		Depending on application-specific channels (20/36 application-specific channels with BMXP341000/P34 2●●●●)
Ethernet/IP and Modbus/TCP messaging	Modbus/TCP messaging	Reading/writing digital and analog I/O, counters
B30	C30	–
Rack Viewer PAC diagnostics, Data Editor access to PAC 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 1/2)		
BMXNOC0401		
	BMXNOR0200H	
		BMXNOR0200H
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Modicon™ M340™ automation platform

Communication, integrated ports and modules

Applications		CANopen communication		AS-Interface communication
Type of device		Processors with integrated CANopen port		AS-Interface actuator/sensor bus module

Network protocols		CANopen		AS-Interface
Structure	Physical interface	ISO 11898 (9-way SUB-D connector)		AS-Interface V3 standard
	Type of connector	9-way SUB-D		3-way SUB-D
	Access method	CSMA/CA (multiple access)		Master/slave
	Data rate	20 Kbps to 1 Mbps depending on distance		167 Kbps
Medium		Double shielded twisted pair copper cable		Two-wire AS-Interface cable
Configuration	Maximum number of devices	63 depending on the devices connected		62 slaves
	Max. length	20 m (1 Mbps) to 2500 m (20 Kbps)		100 m, 500 m max. with 2 repeaters
	Number of links of the same type per station	1		BMXP341000 processor: 2 AS-Interface modules
				BMXP3420●0 processor: 4 AS-Interface modules
Standard services		PDO implicit exchange (application data) SDO explicit exchange (service data)		Transparent exchanges with the sensors/actuators
Conformity class		Class M20		M4 profile
SMTP service notification by e-mail		–	Yes, via EF function block Unity™ Pro ≥ 4.0	–
Compatibility with processor		–		Standard and Performance (see page 1/2)
Type of processor or module depending on other integrated port	None			**BMXEIA0100**
	Serial link	**BMXP3420102**		
	Ethernet Modbus™/TCP		**BMXP3420302**	
	CANopen			
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Serial link communication	
Processors with integrated serial link	**2-channel serial link module**
	
Modbus™ and Character mode	
Non-isolated RS 232, 4-wire Non-isolated RS 485, 2-wire	Non-isolated RS 232, 8-wire Isolated RS 485, 2-wire
RJ45	2 RJ45 and 1 RJ45
Master/slave with Modbus link, Full duplex (RS 232)/Half duplex (RS 485) in Character mode	
0.3 to 38.4 Kbps	0.3 to 115.2 Kbps in RS 232 0.3 to 57.6 Kbps in RS 485
Double shielded twisted pair copper cable	Shielded twisted pair copper cable
32 per segment, 247 max.	
15 m (non-isolated), 1000 m with insulating case	15 m with non-isolated RS 232, 1000 m with non-isolated RS 485
1	20/36 application-specific channels with BMXP341000/P34 2●●●● (1 application-specific channel = 1 counter, motion control module or serial link channel)
Read/write bits and words, diagnostics in Modbus mode Send and receive character string in Character mode	
–	
–	
–	Standard and Performance (see page 1/2)
BMXP341000/2000	
	BMXNOM0200
BMXP342020	
BMXP3420102	

Modicon™ M340™ automation platform

Communication, integrated ports and modules

Applications		Modbus™ Plus communication	
Type of device		**M340 Modbus Plus proxy module (external)**	
			
Network protocols		**Ethernet Modbus/TCP**	**Modbus Plus**
Structure	Physical interface	10/100BASE-T	Modbus Plus standard
	Type of connector	Two RJ45 connectors	Two 9-way female SUB-D connectors
	Access method	CSMA-CD	Token ring
	Data rate	10/100 Mbps	1 Mbps
Medium		Double shielded twisted pair copper cable, category CAT 5E (direct or crossover)	Twisted pair copper cable
Configuration	Maximum number of devices	128	32 per segment 64 maximum for multiple segments
	Max. length	100 m	450 m per segment 1800 m with 3 repeaters
	Number of links of the same type per station	1 max.	
Standard services		Modbus/TCP messaging	Modbus Plus messaging
Conformity class		–	–
Embedded Web server service	Standard service	Configuration, diagnostics	
	Configurable services	–	
Communication services		Modbus Plus server (scanned by the PAC)	Reading/writing variables
		FDR service	Global database
		SNMP agent network management service	Peer Cop service
24 V ⎓ external power supply		19.2 to 31.2 V	
Module types		**TCSEGDB23F24FA**	
Page		3/61	

Profibus™ DP and Profibus PA communication

Profibus Remote Master (PRM) module (external)

Ethernet Modbus™/TCP	**Profibus DP V1** **Profibus PA (via gateway)**
10BASE-T/100BASE-TX	Isolated RS 485
Two RJ45 connectors (supporting daisy chain topology)	One 9-way female SUB-D connector
CSMA-CD	Master/slave
10/100 Mbps	9.6 Kbps to 12 Mbps
Double shielded twisted pair copper cable, category CAT 5E (direct or crossover)	Shielded twisted pair copper cable
Several PRMs can be connected to the Ethernet port on the M340, Premium or Quantum PAC, as long as the I/O scanner capacity is not exceeded	125 slaves
100 m (copper)	1200 (9.6 Kbps), 4800 m with 3 repeaters, 100 m (12 Mbps), 400 m with 3 repeaters
–	
Modbus/TCP messaging	Cyclic and acyclic data exchange with slaves
Transparent Ready Class A20	Class 1 and Class 2
–	
–	
Modbus server (scanned by the PAC)	Master/slave communication
FDR service	Global Control service
SNMP agent network management service	Acyclic communication (read/write) in Class 1 and Class 2
	Support for extended diagnostics
	Auto-scanning service of slaves on the bus
18 to 30 V	

TCSEGPA23F14F

3/63

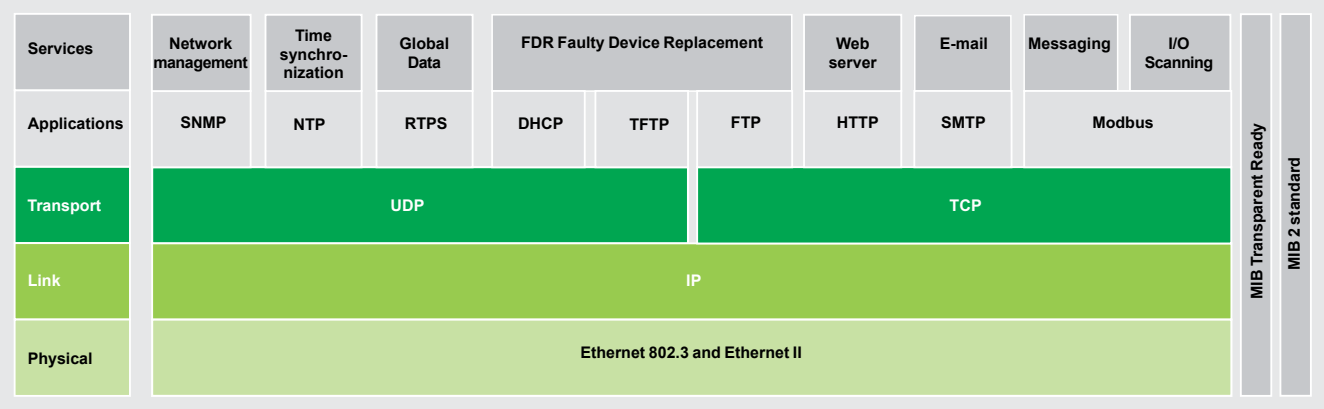
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP communication services

Introduction

BMXP342020/20302 processors via their integrated Ethernet port…
BMXNOE0100/0110 network modules…and the **BMXNOR0200H** RTU module… all 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 detected alarm notification via SMTP server, via Unity Pro function block

Note: *See selection guide on page 3/2 for the communication services supported by* ***BMXP342020/20302*** *processors,* ***BMXNOE0100/0110*** *network modules and the* ***BMXNOR0200H*** *RTU module on the Modicon M340 platform.*

The following pages (3/9 to 3/13) present the various options available through these services to facilitate the optimum choice of solutions when defining a system integrating Transparent Ready devices.

Processors: page 1/2 | I/O: pages 2/2 and2/14 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP communication services

Functions

Ethernet universal services

The Modicon M340 automation platform utilizes the following universal Ethernet 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 *(Trivial 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 detected alarms in the event of a detected 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 that enable transparent communication between Microsoft 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-ida.org**.

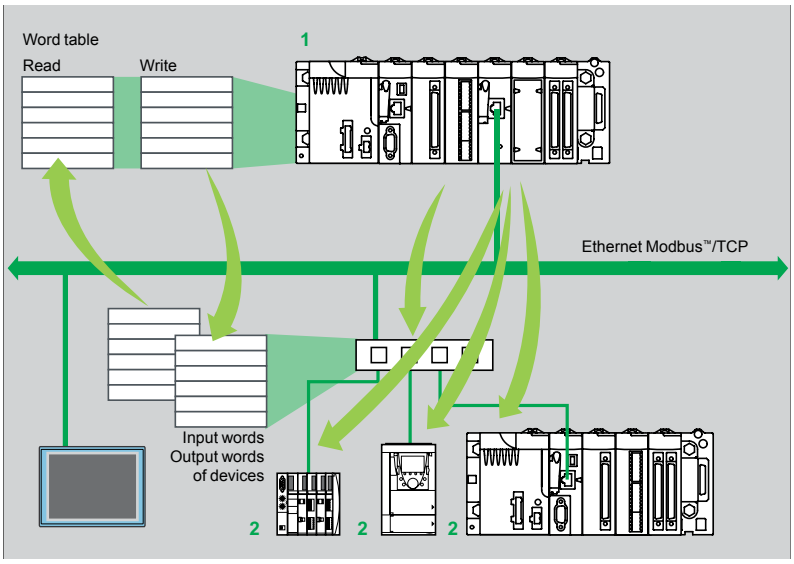
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP communication services

Functions (continued)

I/O Scanning Service



1 Modicon™ M340™ device with I/O Scanning service

2 Device with Modbus™ TCP messaging in server mode

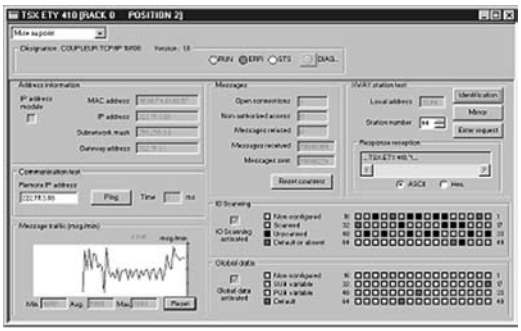
I/O Scanning Service is used to manage the exchange of remote I/O states on the Ethernet network after a simple configuration operation, with no need for special programming.
I/O scanning is performed transparently by means of read/write requests according to the Modbus™ client/server protocol on the TCP profile.
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.
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 PAC 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 PAC application
- Applies pre-configured fallback values if a communication become inoperative

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-IDA website: www.modbus-ida.org.

Specifications

- Each Modicon M340 station can exchange a maximum of 100 words for writing and 125 words for reading.
- Maximum size in the Modicon M340 PAC 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 PAC data zone
- From the setup software debug screen
- From the PAC system diagnostic function displayed by means of an internet browser on a PC station
- Using the **TCSEAZ01PSFE10** ConneXview diagnostic software
- Using standard SNMP manager software

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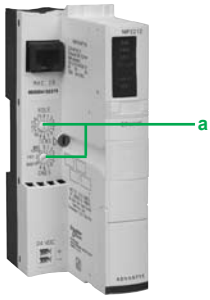
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP communication services



NIM network module for Modicon™ STB I/O

FDR *(Faulty Device Replacement)* service

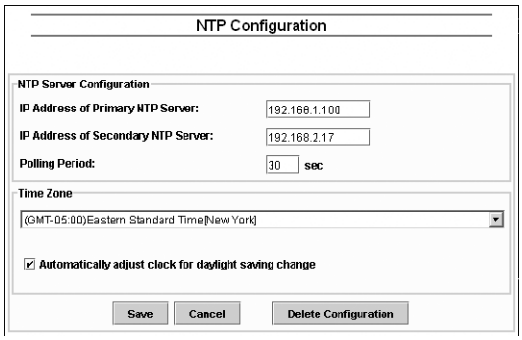
Faulty Device Replacement service uses standard address management technologies (BOOTP, DHCP) and the TFTP (Trivial File Transfer Protocol) file management service, to simplify the maintenance of Ethernet devices.
FDR service is used to replace an inoperative device with a new device that will be detected, reconfigured and automatically rebooted by the system.
The main steps in replacement are:

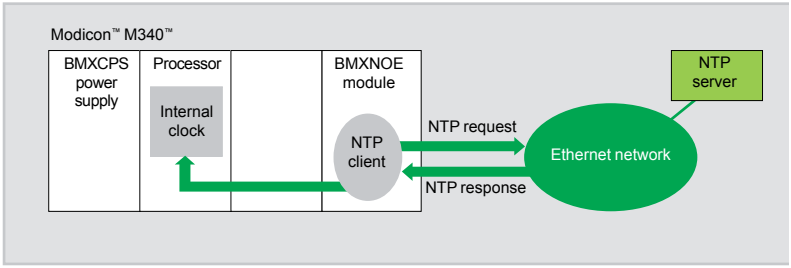
1. Device using the FDR service becomes inoperative.
2. Another similar device is taken from the maintenance store, preconfigured with the Device name for the inoperative device, then reinstalled on the network. Depending on the device, addressing can be performed using rotary selector switches (as for Modicon™ STB distributed I/O **a**, or Modicon OTB 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 these parameters are compatible with its own specifications and switches to operational mode.

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

NTP time synchronization service

Introduction





The time synchronization service is based on the NTP *(Network Time Protocol)* that 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).

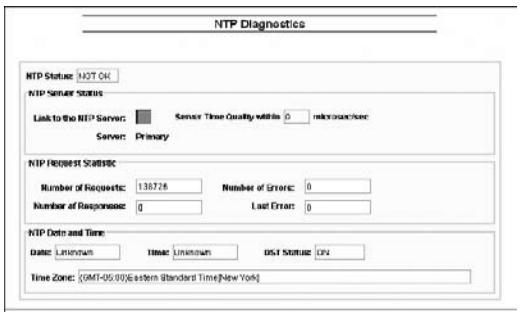
Operation

BMXNOE0100/0110, **BMXNOC0401** and **BMXNOR0200H** Ethernet Modbus/TCP modules have an NTP client component.
These modules connect to an NTP server using a client request (*Unicast*) 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 PAC processor clock is 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 that can be accessed via the SNMP network management service.



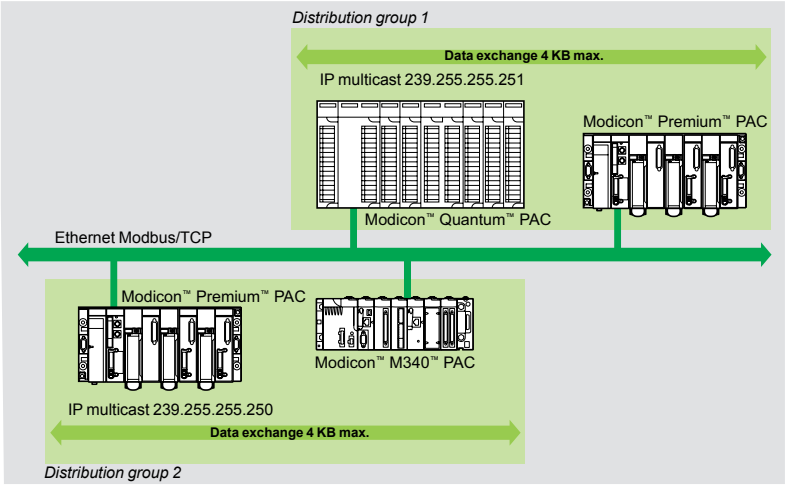
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP communication services

Functions (continued)

Global Data service



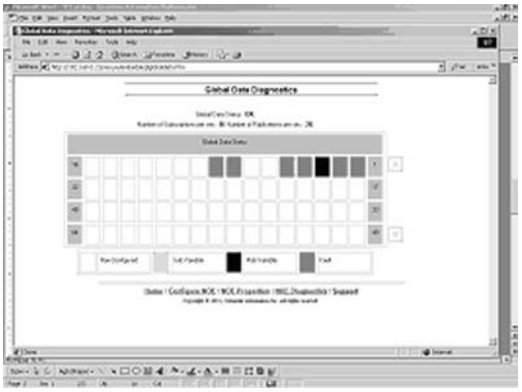
The Global Data service performs data exchanges in real-time between stations belonging to the same distribution group. It is used to synchronize remote applications, or to share a common database between a number of distributed applications. Exchanges are based on a standard producer/consumer protocol,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

Specifications

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 maximum 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 that, together with switches in the ConneXium™ range (see page 3/26), 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 each switch port.



Global Data service diagnostics

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

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

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

- Via the application program from a specific PAC data zone.
- From the setup software debug screen.
- From the PAC system diagnostic function displayed by means of an internet browser on a PC station.
- Using the **TCSEAZ01PSFE10** ConneXview diagnostic software.
- Using standard SNMP manager software.

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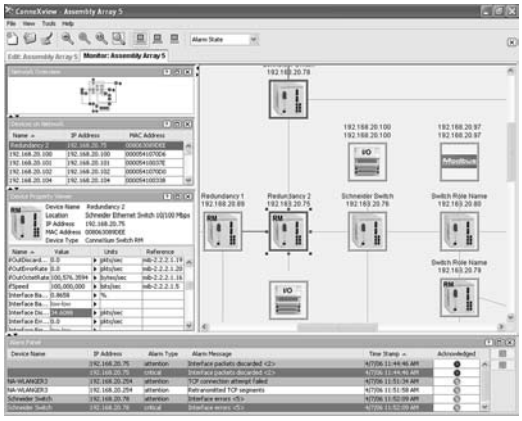
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Ethernet Modbus/TCP 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 components of the Ethernet architecture and thus helps ensures quick diagnostics.
It is used to:
- Interrogate network components such as computer stations, routers, switches, bridges or terminal devices 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:
- ConneXview™ network diagnostics software, **TCSEAZ01PSFE10**. For more information, please refer to the “Machines and installations, industrial communication networks” catalog.
- 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 comply with specific standards to allow access 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 the Transparent Ready services.

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

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Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Standard Web services

Introduction of Web services

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** processors, in **BMXNOE0100/ 0110** and **BMXNOC0401** Ethernet network modules, in the **BMXNOR0200H** RTU module, and the **TCSEGDB23F24FA** Modbus Plus™ proxy module on the Modicon M340™ platform.

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 PAC system and application detected alarms with partial or complete 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. 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 do not require programming of either the PAC or the client PC device supporting a Web browser.

Modicon M340 hardware configuration

Standard Web server on the Modicon M340 platform

Rack Viewer PAC diagnostics function

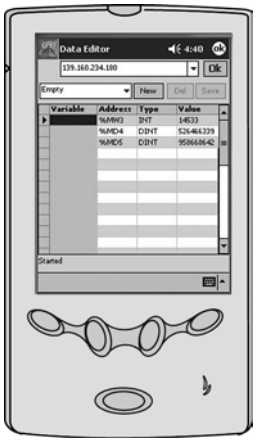
The Rack Viewer function can be used for PAC system and I/O diagnostics. It displays the following in real time:
- Status of LEDs on the PAC front panel
- PAC type and version
- Hardware configuration of the PAC including status of the system bits and words
- Detailed diagnostics of:
  - Each of the I/O module channels or application-specific channels in the configuration
  - Devices connected to the CANopen bus

Data Editor read/write function for PAC data and variables

The Data Editor function can be used to create tables of animated variables for real-time read/write access to PAC 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.

Data Editor variables table



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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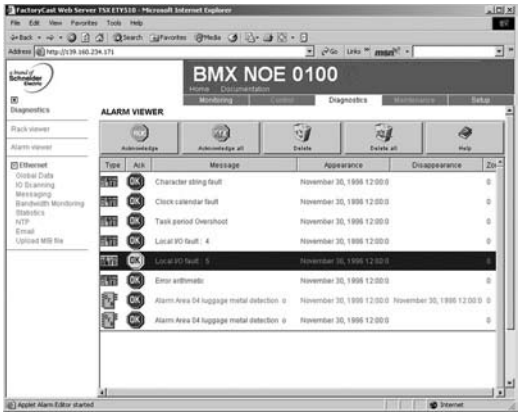
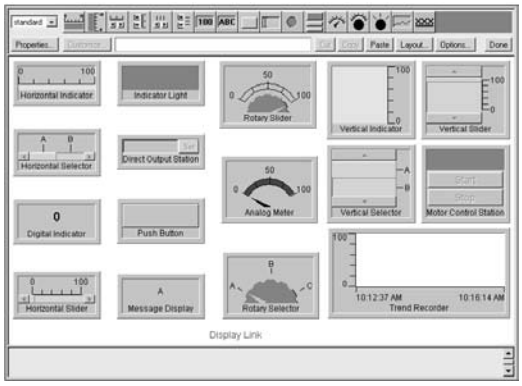
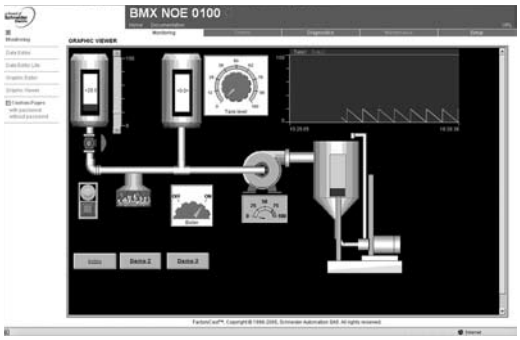


Alarm display from the diagnostic buffer



Library of predefined graphic objects



Real-time supervision graphic interface

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 Viewer function

The alarm viewer is a ready to use, password-protected function. It is used to process detected alarms (display, acknowledgement and deletion) managed at PAC 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 detected alarms are stored in the diagnostic buffer managed by the Modicon™ M340™ platform (dedicated memory space for storing the diagnostic events).

The diagnostic viewer is a Web page is comprised of a list of messages that displays the following information for each detected alarm:
- Dates and times of the occurrence/removal of a detected fault
- Alarm message
- Alarm status
- Type of associated diagnostic function block (DFB)

Graphic Data Editor function

This function is used to create the graphic views animated by the PAC 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 (color, PAC variables, name, etc).
List of graphic objects available:
- Analog and digital indicators
- Horizontal and vertical bar charts
- Boxes for displaying messages and entering values
- Push button boxes
- Trend recorders
- Vats, valves, motors

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.

User Web page hosting and display function

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

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 PAC 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 PAC variables in real time
- Create hyperlinks to other external Web servers (documentation, suppliers)

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

Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

Web Designer configuration software

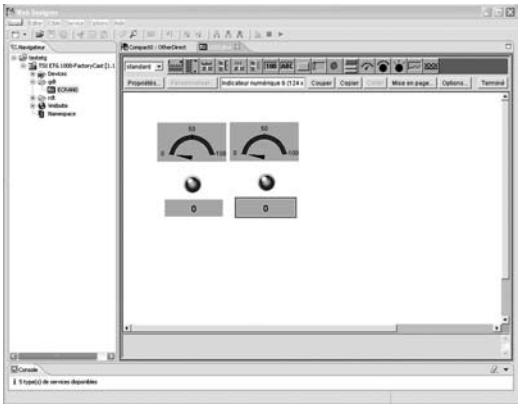
Web Designer

Web Designer configuration software

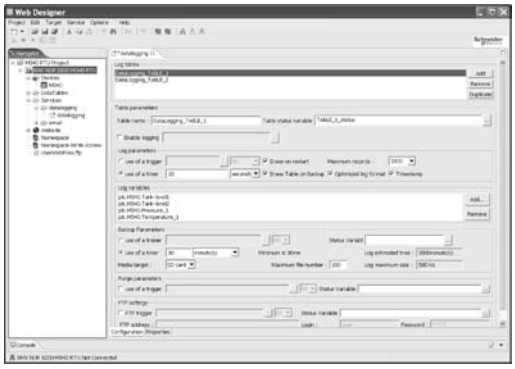
Web Designer configuration software is supplied on CD-ROM with the **BMXNOE0110**, **BMXNOC0401** Ethernet network modules and the **BMXNOR0200H** RTU module.

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:
- FactoryCast™ Web server modules for Modicon™ M340™, Quantum™ and Premium™ PACs
- FactoryCast HMI Web server modules for Modicon Premium and Quantum PACs
- ETG 1000/3000 FactoryCast Gateways for remote access
- RTU module for Modicon M340

Web Designer software is compatible with the Windows 2000 SP2, Windows XP Professional and Windows Vista® Professional 32-bit operating systems.
For optimum use, it requires Java Virtual Machine 1.4.2 minimum.



Graphic Data Editor



Configuring the Data Logging *function for BMXNOR0200H module*

Web Designer software offers the following functions:
- **Configuring the Web Designer function parameters**:
  - Definition of access security, passwords
  - Importing of PAC 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 PAC) – 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 PAC variables using the FactoryCast library of graphic objects (Java beans) *(BMXNOC0401 module only) (1)*.
- **Data Logging** *(for BMXNOR0200H module only)*:
  - This service is used to archive the application data: events, detected alarms, process data, device states, process values, etc.
  - Data is logged in CSV files in ASCII format that are stored locally on the SD memory card in the BMXNOR0200H module.
- **Sending detected 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 to send detected 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.

(1) Web Designer includes a plug-in for FrontPage 2000. This plug-in makes it easier to set up animations for real-time access to the PAC variables in HTML pages created by the user. They are created in the HTML editor by simply inserting customized graphic objects.

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Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network

SOAP/XML Web services

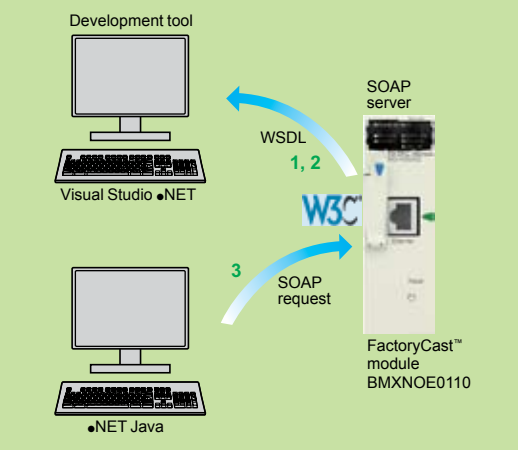
SOAP/XML Web services

BMXNOE0110, **BMXNOC0401** Ethernet network modules and **BMXNOR0200H** RTU modules incorporate a standard SOAP/XML data server that provides direct interoperability between control system devices and computer management applications (MES, ERP, SAP, .Net application, etc).

SOAP/XML Web services embedded in the PAC

These Web services conform to **W3C** *(World Wide Web Consortium)* Web service standards. They offer standard open communication resources allowing the control peripherals to interact directly with computer management applications using a non-proprietary SOAP protocol.

SOAP/XML Web services are based on the following standards:
- **SOAP** *(Simple Object Access Protocol)*, the exchange protocol executed via the HTTP *(HyperText Transfer Protocol)* channel
- **WSDL** *(Web Services Description Language)*, in XML format
- **XML** *(eXtensible Markup Language)*, the universal standard for data exchange



ModbusXMLDa Web services: SOAP server interface

The implementation of **ModbusXMLDa** *(Modbus XML Data access)* services in control system device Web servers means IT engineers can easily create their own application to access the desired information directly in the PAC, in real time.

Applications such as Microsoft.NET, SQL Server®, Microsoft Office (Excel®), IBM® (WebSphere®), SUN® (Java®, Eclipse™), Lotus®, Oracle®, SAP®, MES, and ERP can interact directly with the PAC module Web server.

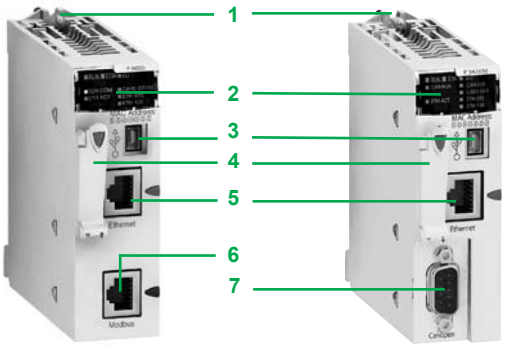
Exchanges are initiated by the SOAP client application (the server responds to these requests). Data exchanges are made in XML standard format in response to a request using the SOAP protocol.

- **Step 1: Creation of the client application and the learning of the Web services**. The development environment (for example, Visual Studio® .NET) looks in the FactoryCast server for the list of available services and their WSDL standard interfaces provided by the module.
- **Step 2: Development of the client application**. The developer integrates the Web service functions using the code retrieved at step 1 of the learning process.
- **Step 3: Execution of the client application**. The client application communicates in real time with the FactoryCast Web server module using the SOAP protocol.

3

Modicon™ M340™ automation platform

Processors with integrated Ethernet Modbus™/ TCP port



Introduction

BMXP342020 and **BMXP3420302** 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** Modicon M340 processors features:

1 Screw for locking the module in a slot in the rack.

2 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 Mini B USB connector for a programming terminal (or Magelis™ XBTGT/GK/ GTW HMI terminal).

4 Slot equipped with its Flash memory card for saving the application and activating the standard Web server (Transparent Ready™ class B10).

5 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** 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

References

Description	I/O capacity Memory capacity	Other integrated communication ports	Reference	Weight kg
Processors with integrated Ethernet Modbus/TCP link Transparent Ready class B10	1024 discrete I/O 256 analog I/O 36 app-specific channels 4096 KB integrated	Modbus serial link or Character mode	**BMXP342020**	0.205
		CANopen bus	**BMXP3420302**	0.215

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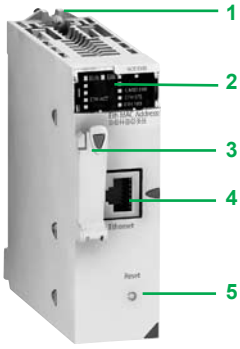
Modicon™ M340™ automation platform

Ethernet Modbus™/TCP network modules



BMXNOE0100/0110

Introduction

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 Screw for locking the module in a slot in the rack.

2 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 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 RJ45 connector for connection to the Ethernet network.

5 Pencil-point RESET push button 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

References

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

Spare parts

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

(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 3/16.

Modicon™ M340™ automation platform

Modbus™/TCP and Ethernet/IP network module

Introduction

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

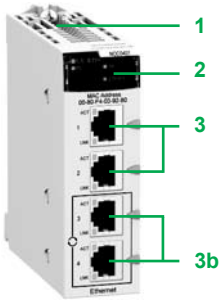
The standard format **BMXNOC0401** network module occupies a single slot in the rack of the Modicon™ M340™ platform. The **BMXNOC0401** will function correctly with either the Standard **BMXP341000** or Performance **BMXP342** processor.

Functions

The **BMXNOC0401** module includes 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 PACs.
- Network management using SNMP *(Simple Network Management Protocol).*

Description



The front panel of the **BMXNOC0401** module features:

1 Screw for locking the module in a slot in the rack.

2 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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Modicon™ M340™ automation platform

Modbus™/TCP and Ethernet/IP network module

BMXNOC0401

References

Description	Data rate	Transparent Ready™ Class	Reference	Weight kg
Ethernet/IP, Modbus™/TCP network module	10/100 Mbps	B30	**BMXNOC0401***(1)*	0.345

(1) The "Unity™ Pro configuration tool" software is supplied on CD-ROM with the module. This software is used to update the Unity Pro hardware catalog (addition of the new module DTMs).

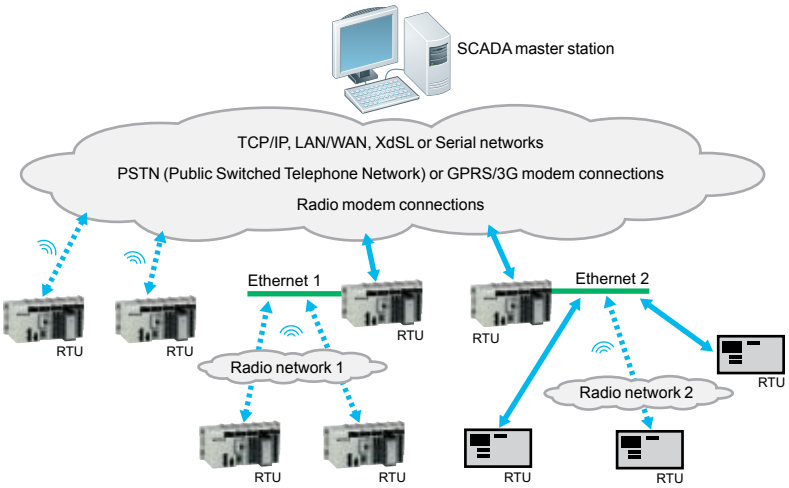
Modicon™ M340™ automation platform
RTU communication systems

Introduction

RTU communication systems are designed to meet the needs of the water/waste water industry, the oil and gas sector and other infrastructures, where remote monitoring and telecontrol are required to manage sites and substations spread over a wide geographical area.

RTU protocols and Telemetry systems provide communications suitable for the process values, maintenance and remote monitoring needs of infrastructures disseminated over a vast geographical area that may be difficult to access.

An RTU system consists of the following elements:
- A Telemetry Supervisor (SCADA) in a central control room
- A network infrastructure and a variety of suitable communication methods (LAN, WAN, modems, etc)
- A large number of RTU substations geographically distributed throughout the field



Example of an RTU system architecture

Main functions

Main RTU system functions include:

- Remote communications:
  - Between remote RTU sites (coordination, synchronization)
  - With the SCADA host system, controlling the central operator station (monitoring, detected alarm reports) and centralized databases (archiving of detected alarms or events)
  - With the on-call staff (detected alarm indication)
  - With the technical station (diagnostics, maintenance)
- Data acquisition, processing and memorization:
  - Process data sampling using standard or dedicated sensors, validation
  - Exchange of data with other devices within the station, including controllers and operator consoles
  - Use of digital or analog I/O, serial links, fieldbuses and LANs
  - Event detection, time and date stamping, prioritization and logging as required by the application
- Other functions:
  - IEC 1131-3 programmable control: forcing, access control, load sharing, servo control
  - Data logging
  - Detected alarm and report notification by e-mail/SMS
  - Web HMI: displaying the process, detected alarm handling, trend analysis, telecontrol

Processors: page 1/2 | I/O: pages 2/2 and2/14 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Introduction (continued)

Currently, people working in the industrial Telemetry sectors use standard protocols for communication between control centers (SCADA) and RTU stations.

The following protocols are commonly used:
- IEC 60870-5: IEC (International Electrotechnical Commission), in particular IEC 60870-5-101/104 (commonly known as IEC 101 or 104)
- DNP3: Distributed Network Protocol version 3

DNP3 is the predominant protocol in North America, Australia and South Africa whereas, in certain European countries, the IEC protocol is required by the legislation. IEC is also commonly used in the Middle East.

The geographical distribution of these protocols is as follows:
- DNP3: North America, Australia, New Zealand, UK, etc, *Asia*, *South America*
- IEC 60870-5: Europe, Middle East, etc, *Asia*, *South America*

These protocols offer similar functions.
They are both particularly suited to “transient communications” (modem, radio) and data exchanges with limited bandwidth for the following reasons:
- They transfer data between the SCADA system and the RTU devices
- They are essentially “event-triggered” protocols (exchanges on changes of state, exchanges of time and date stamped events).

They offer the following transmission modes:
- Interrogation via polling
- Data exchanges on changes of state *(RBE: Report By Exception)*
- Unsolicited messaging (a slave station can start an exchange of data with the master station).

Both protocols offer native data management and time and date stamped events:
- Time synchronization between the master station and auxiliary stations via protocol functions
- Time and date stamping of data and events
- Automatic transfer of time and date stamped events between the RTU stations and SCADA (control room).

3

Introduction (continued)

The **BMXNOR0200H** communication module integrates RTU *(Remote Terminal Unit)* functions and protocols into the Modicon™ M340™ platform – for industrial Telemetry applications and other widely distributed infrastructures.

The **BMXNOR0200H** module can be used to connect an RTU M340 PAC directly to a Telemetry supervisor or to other RTU stations, via the standard DPN3 protocols (subset level 3) or IEC 60870-5-101/104 with different connection methods: Ethernet TCP/IP, LAN, WAN, serial link or modem connections (radio, PSTN, GSM, GPRS/3G, ADSL).

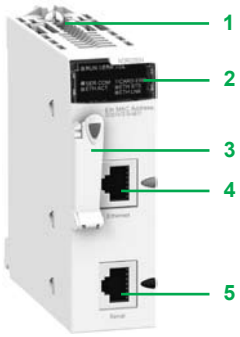
The **BMXNOR0200H** module is designed to operate in a harsh environment (conformal coating), in an extended temperature range (-25 to +70°C).

Functions

The **BMXNOR0200H** module offers the following functions:
- Upstream RTU communication to the SCADA (server or slave mode)
- Downstream RTU communication to field devices (master mode)
- RTU protocols: Time synchronization, exchanges of time and date stamped data via polling (on change of state and unsolicited), management of time and date stamped events
- Application Data Logging with time and date stamping in the module Flash memory card
- Event notifications via e-mail or SMS
- Embedded Web server for configuring the RTU protocol parameters, diagnostics and monitoring
- Communications on Ethernet port:
  - 10BASE-T/100BASE-TX physical interface
  - Modbus/TCP protocol (client and server)
  - Integrated RTU protocols for Ethernet communications: DNP3 IP (client or server) and IEC 60870-5-104 (over IP) (client or server)
  - Connection of ADSL external modem on the Ethernet port, via the PPPoE *(Point-to-Point Protocol over Ethernet) protocol*
  - Advanced Ethernet functions: NTP client, FTP client or server, HTTP server, SOAP/XML server, SNMP agent, SMTP agent
- Communications on serial port:
  - Non-isolated RS232/RS485 point-to-point serial links
  - Integrated RTU protocols for serial and modem communications: IEC 60870-5-101 (master or slave) and DNP3 serial (master or slave)
  - Connection of external modems (radio, PSTN, GSM, GPRS/3G) via the PPP (Point-to-Point Protocol) protocol

Description

The **BMXNOR0200H** module can be installed in either a standard or “ruggedized” configuration, equipped with a standard **BMXP34●●●●●** or “ruggedized” **BMXP34●●●●●H** processor.



The front panel of the **BMXNOR0200H** module features:
1. Screw for locking the module in a slot in the rack.
2. Display block with 8 LEDs, 4 relating to the serial and Ethernet communication ports.
3. Dlot for a Flash memory card (SD card), with protective cover.
4. RJ45 connector for the connection to the Ethernet network.
5. RJ45 connector for connection of the serial link or an external modem.

On the rear panel: 2 rotary switches for selecting the IP address assignment method for the module.

Modicon™ M340™ automation platform
RTU communication module

BMXNOR0200H

References

Description	Communication port	Protocol	Reference	Weight kg
RTU communi-cation module *(1)*	Ethernet 10BASE-100BASE-TX	■ Modbus™/TCP (client or server), Transparent Ready class C30 ■ DNP3 IP (client or server) ■ IEC 60870-5-104 (over IP) (client or server)	**BMXNOR0200H** *(2)*	0.205
	Serial, External modems	■ Non-isolated RS232/ RS485 point-to-point serial links ■ DNP3 serial (master or slave) ■ IEC 60870-5-101 (master or slave)		

Spare parts

Description	Usage	Supplied with module	Reference	Weight kg
128 MB Flash memory card supplied as standard with the module	Web pages, Storage of data logging files (CSV)	BMXNOR0200H	**BMXRWS128MWF**	0.002

(1) See ruggedized module specifications, pages 6/2 and 6/8.
(2) The Web Designer software is supplied on CD-ROM with the module. This software can be used to configure and download the embedded website and to configure advanced services: data logging, sending detected alarm notifications via SMS or e-mail, see page 3/16.

3

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ hub and transceiver

Type of device			**Hub**
			
Interfaces	Copper cable ports	Number and type	4 x 10BASE-T ports
		Shielded connectors	RJ45
		Medium	Shielded twisted pair, category CAT 5E
		Maximum length of pair	100 m
	Fiber optic ports	Number and type	–
		Connectors	–
		Medium	–
	Length of optical fiber	50/125 µm	–
		62.2/125 µm	–
	Optical fiber attenuation analysis	50/125 µm fiber	–
		62.2/125 µm fiber	–
Topology	Number of hubs	Cascaded	4 max.
		In a ring	–
Redundancy			P1 and P2 redundant power supplies
Power supply	Voltage		√2⊏⊐ ➡ ⎓ (18 to 32), safety extra low voltage (SELV)
	Consumption		80 mA (130 max. at 24 V ⎓)
	Removable terminal block		5-way
Operating temperature			0 to + 60°C
Relative humidity			10 to 95% non condensing
Degree of protection			IP 30
Dimensions		W x H x D	40 x 125 x 80 mm
Mounting			On symmetrical DIN rail, 35 mm wide
Weight			0.530 kg
Conformity to standards			cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CЄ, GL, C-Tick
			FM 3810, FM 3611 class 1 division 2
LED indicators			Power supply, activity, link
Alarm relay			Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)
Reference			**499NEH10410**
Pages			3/42

Transceiver

1 x 100BASE-TX port
RJ45
Shielded twisted pair, category CAT 5E
100 m
1 x 100BASE-FX port
SC
Multimode optical fiber
3000 m *(1)*
3000 m *(1)*
8 dB
11 dB
–
–
P1 and P2 redundant power supplies
√2⊏⊐ ➡ ⎓ (18 to 32), safety extra low voltage (SELV)
160 mA (190 max. at 24 V ⎓)
5-way
0 to + 60°C
10 to 95% non condensing
IP 20
47 x 135 x 111 mm
On symmetrical DIN rail, 35 mm wide
0.230 kg
cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CE, GL, C-Tick
P1 and P2 power supplies, Ethernet link/port status
Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)

499NTR10100

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(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ unmanaged switches

Type of device			**Unmanaged switches, copper twisted pair**	
				
Interfaces	Copper cable ports	Number and type	5 x 10BASE-T/100BASE-TX ports	8 x 10BASE-T/100BASE-TX ports
		Shielded connectors	M12 (type D)	RJ45
		Medium	Shielded twisted pair, category CAT 5E	
		Maximum length of pair	100 m	
	Fiber optic ports	Number and type	–	–
		Connectors	–	–
		Medium	–	–
	Length of optical fiber	50/125 µm	–	–
		62.2/125 µm	–	–
	Optical fiber attenuation analysis	50/125 µm fiber	–	–
		62.2/125 µm fiber	–	–
	Ethernet services		Storage and re-routing of received data, auto MDI/MDX, automatic negotiation of 10/100 Mbps and duplex mode (on each port)	–
Topology	Number of switches	Cascaded	Unlimited	
		Redundant in a ring	–	
Redundancy			–	P1 and P2 redundant power supplies
Power supply	Voltage		√2⊏⊐ ➡ ⎓ (18 to 32), safety extra low voltage (SELV)	
	Consumption		100 mA max.	125 mA (290 mA max.)
	Removable terminal block		5-way, M12 (type A, male)	5-way
Operating temperature			0 to + 60°C	
Relative humidity			–	10 to 95% non condensing
Degree of protection			IP 67	IP 20
Dimensions		W x H x D	60 x 126 x 31 mm	47 x 135 x 111 mm
Mounting			–	On symmetrical DIN rail, 35 mm wide
Weight			0.210 kg	0.230 kg
Conformity to standards			cUL 508 and CSA 22.2 No. 142	cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CE, GL, C-Tick
LED indicators			Power supply, link status, data rate	P1 and P2 power supplies, Ethernet link/port status
Alarm relay			–	Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)
Reference			**TCSESU051F0**	**499NES18100**
Pages			3/43	

Unmanaged switches, copper twisted pair (continued)	Unmanaged switches, 4 and 5 ports, copper twisted pair and fiber optic		
			
8 x 10BASE-T/100BASE-TX ports	3 x 10BASE-T/100BASE-TX ports	4 x 10BASE-T/100BASE-TX ports	5 x 10BASE-T/100BASE-TX ports
RJ45	RJ45		
Shielded twisted pair, category CAT 5E	Shielded twisted pair, category CAT 5E		
100 m	100 m		
–	–	1 x 100BASE-FX port	–
–	–	Duplex SC	–
–	–	Multimode optical fiber	–
–	–	5000 m *(1)*	–
–	–	4000 m *(1)*	–
–	–	8 dB	–
–	–	11 dB	
Storage and re-routing of received data, auto MDI/MDX, automatic negotiation of 10/100 Mbps and duplex mode (on each port), automatic change of polarity	Storage and re-routing of received data, auto MDI/MDX, automatic negotiation of 10/100 Mbps and duplex mode (on each port)		
Unlimited	Unlimited		
–	–		
–	–		
√2 ⌙ ➡ ⎓ (9.6 to 32) SELV	24 V ⎓ (9.6 to 32 V) safety extra low voltage (SELV)		
4.1 W max.	2.2 W max.	3.9 W max.	2.2 W max.
3-way	3-way removable screw terminal block		
0 to + 60°C	0 to + 60°C		
95% max. without condensation	95% max. without condensation		
IP 30	IP 30		
35 x 138 x 121 mm	25 x 114 x 79 mm		
On symmetrical DIN rail, 35 mm wide	On symmetrical DIN rail, 35 mm wide		
0.246 kg	0.113 kg	0.120 kg	0.113 kg
UL 508 and CSA 22.2 No.142 IEC/EN 61131-2, IEC 60825-1 class 1, CISPR 11A	UL 508 and CSA 22.2 No. 142 IEC/EN 61131-2, IEC 60825-1 class 1, CISPR 11A		
Power supply, copper port activity, 10 or 100 Mbps data rate	Power supply, copper port activity, 10 or 100 Mbps data rate		
	–	Fiber port activity and status	–
–	–		
TCSESU083FN0	**TCSESU033FN0**	**TCSESU043F1N0**	**TCSESU053FN0**
3/43	3/44		

(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed and unmanaged switches

Type of device			**Unmanaged switches, 5 ports, copper twisted pair and fiber optic**			
						
Interfaces	Copper cable ports	Number and type	4 x 10BASE-T/ 100BASE-TX ports	3 x 10BASE-T/ 100BASE-TX ports	4 x 10BASE-T/ 100BASE-TX ports	3 x 10BASE-T/ 100BASE-TX ports
		Shielded connectors	RJ45			
		Medium	Shielded twisted pair, category CAT 5E			
		Maximum length of pair	100 m			
	Fiber optic ports	Number and type	1 x 100BASE-FX port	2 x 100BASE-FX ports	1 x 100BASE-FX port	2 x 100BASE-FX ports
		Connectors	SC			
		Medium	Multimode optical fiber		Single mode optical fiber	
	Length of optical fiber	50/125 µm	5000 m *(1)*		–	
		62.2/125 µm	4000 m *(1)*		–	
		9/125 µm fiber	–		32,500 m *(2)*	
	Optical fiber attenuation analysis	50/125 µm fiber	8 dB		–	
		62.2/125 µm fiber	11 dB		–	
		9/125 µm fiber	–		16 dB	
	Ethernet services		–			
Topology	Number of switches	Cascaded	Unlimited			
		Redundant in a ring	–			
Redundancy			P1 and P2 redundant power supplies			
Power supply	Voltage		24 V ⎓ (18 to 32 V) safety extra low voltage (SELV)			
	Consumption		200 mA max.	240 mA max.	200 mA max.	240 mA max.
	Removable terminal block		5-way			
Operating temperature			- 40 to + 70°C			
Relative humidity			10 to 95% non condensing			
Degree of protection			IP 20			
Dimensions		W x H x D	47 x 135 x 111 mm			
Mounting			On symmetrical DIN rail, 35 mm wide			
Weight			0.330 kg	0.335 kg	0.330 kg	0.335 kg
Conformity to standards			cUL 60950, cUL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CE, GL, C-Tick			
LED indicators			P1 and P2 power supplies, Ethernet link status, transmission activity			
Alarm relay			Activity, power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)			
Reference			**499NMS25101**	**499NMS25102**	**499NSS25101**	**499NSS25102**
Pages			3/44			

(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)
(2) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 15,000 m)

Managed switches, 4 ports, copper twisted pair and fiber optic

			
3 x 10/100BASE-TX ports	2 x 10/100BASE-TX ports	3 x 10/100BASE-TX ports	2 x 10/100BASE-TX ports
RJ45			
Shielded twisted pair, category CAT 5E			
100 m			
1 x 100BASE-FX port	2 x 100BASE-FX ports	1 x 100BASE-FX port	2 x 100BASE-FX ports
Duplex SC			
Multimode optical fiber		Single mode optical fiber	
5000 m *(1)*		–	
4000 m *(1)*		–	
–		32,500 m *(2)*	
8 dB		–	
11 dB		–	
–		16 dB	
FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port			
Unlimited			
50 max.			
Redundant power supplies, redundant single ring, ring coupling			
9.6 to 60 V ⎓/18 to 30 V ∿ safety extra low voltage (SELV)			
6.5 W	7.3 W	6.5 W	7.3 W
6-way			
0 to + 60°C			
10 to 90% non-condensing			
IP 20			
47 x 131 x 111 mm			
On symmetrical DIN rail, 35 mm wide			
0.400 kg			
IEC 61131-2, IEC 61850-3, UL 508, UL 1604 class 1 division 2, CSA 22.2 No. 142 (cUL), CSA 22.2 No. 213 class 1 division 2 (cUL), CE, GL, C-Tick			
Power supply status, alarm relay status, active redundancy, redundancy management, copper port status and copper port activity			
Power supply detected fault, Ethernet network detected fault, communication port detected fault, redundancy detected fault (volt-free contact 1 A max. at 24 V ⎓)			
TCSESM043F1CU0	**TCSESM043F2CU0**	**TCSESM043F1CS0**	**TCSESM043F2CS0**
3/45			

(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)
(2) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 15,000 m)

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed switches

Type of device			**Managed switches, 4 and 8 ports, copper twisted pair**	
				
Interfaces	Copper cable ports	Number and type	4 x 10/100BASE-TX ports	3 x 10/100BASE-TX ports
		Shielded connectors	RJ45	
		Medium	Shielded twisted pair, category CAT 5E	
		Maximum length of pair	100 m	
	Fiber optic ports	Number and type	–	–
		Connectors	–	–
		Medium	–	–
	Length of optical fiber	50/125 µm	–	–
		62.2/125 µm	–	–
		9/125 µm fiber	–	–
	Attenuation analysis	50/125 µm fiber	–	–
		62.2/125 µm fiber	–	–
		9/125 µm fiber	–	–
	Ethernet services		FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access,VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port	
Topology	Number of switches	Cascaded	Unlimited	
		Redundant in a ring	50 max.	
Redundancy			P1 and P2 redundant power supplies, redundant single ring, ring coupling	
Power supply	Voltage		9.6 to 60 V ⎓/18 to 30 V ∿ safety extra low voltage (SELV)	
	Consumption		5.3 W	
	Removable terminal block,		6-way	
Operating temperature			0 to + 60°C	
Relative humidity			10 to 90% non-condensing	
Degree of protection			IP 20	
Dimensions		W x H x D	47 x 131 x 111 mm	74 x 131 x 111 mm
Mounting			On symmetrical DIN rail, 35 mm wide	
Weight			0.400 kg	0.410 kg
Conformity to standards			IEC/EN 61131-2, IEC 61850-3, UL 508, UL 1604 class 1 division 2, CSA 22.2 No. 214 (cUL), CSA 22.2 No. 213 class 1 division 2 (cUL), CE, GL, C-Tick	
LED indicators			Power supply status, alarm relay status, active redundancy, redundancy management, copper port status and copper port activity	Power supply status, alarm relay status, active redundancy, redundancy management, fiber port status and fiber port activity
Alarm relay			Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)	
Reference			**TCSESM043F23F0**	**TCSESM083F23F0**
Pages			3/45	

Managed switches, 8 ports, copper twisted pair and fiber optic

			
7 x 10/100BASE-TX ports	6 x 10/100BASE-TX ports	7 x 10/100BASE-TX ports	6 x 10/100BASE-T ports
RJ45			
Shielded twisted pair, category CAT 5E			
100 m			
1 x 100BASE-FX port	2 x 100BASE-FX ports	1 x 100BASE-FX port	2 x 100BASE-FX ports
Duplex SC			
Multimode optical fiber		Single mode optical fiber	
5000 m *(1)*		–	
4000 m *(1)*		–	
–		32,500 m *(2)*	
8 dB		–	
11 dB		–	
–		16 dB	
FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port			
Unlimited			
50 max.			
Redundant power supplies, redundant single ring, ring coupling			
9.6 to 60 V ⎓/18 to 30 V ∿, safety extra low voltage (SELV)			
6.5 W	7.3 W	6.5 W	7.3 W
6-way			
0 to + 60°C			
10 to 90% non-condensing			
IP 20			
75 x 131 x 111 mm			
On symmetrical DIN rail, 35 mm wide			
0.410 kg			
IEC/EN 61131-2, IEC 61850-3, UL 508, UL 1604 class 1 division 2, CSA 22.2 No. 214 (cUL), CSA 22.2 No. 213 class 1 division 2 (cUL), CE, GL, C-Tick			
Power supply status, alarm relay status, active redundancy, redundancy management, fiber port status and fiber port activity			
Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)			
TCSESM083F1CU0	**TCSESM083F2CU0**	**TCSESM083F1CS0**	**TCSESM083F2CS0**
3/46			

(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)
(2) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 15,000 m)

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed switches

Type of device			**Managed switches, 8 extended ports, copper twisted pair and fiber optic**		
					
Interfaces	Copper cable ports	Number and type	8 x 10/100BASE-TX ports	6 x 10/100BASE-TX ports	6 10/100BASE-T ports
		Shielded connectors	RJ45		
		Medium	Shielded twisted pair, category CAT 5E		
		Maximum length of pair	100 m		
	Fiber optic ports	Number and type	–	2 x 100BASE-FX ports	
		Connectors	–	Duplex SC	
		Medium	–	Multimode optical fiber	Single mode optical fiber
	Length of optical fiber	50/125 µm	–	5000 m *(1)*	–
		62.2/125 µm	–	4000 m *(1)*	–
		9/125 µm fiber	–	–	32,500 m *(2)*
	Attenuation analysis	50/125 µm fiber	–	8 dB	–
		62.2/125 µm fiber	–	11 dB	–
		9/125 µm fiber	–	–	16 dB
	Ethernet services		FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access,VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port		
Topology	Number of switches	Cascaded	Unlimited		
		Redundant in a ring	50 max.		
Redundancy			Redundant power supplies, redundant single ring, ring coupling, rings supporting MRP, Fast Hiper Ring and RSTP		
Power supply	Voltage		18 to 60 V ⎓		
	Consumption		10 W	12 W	
	Removable terminal block		2 terminal blocks, 2-way		
Operating temperature			0 to + 60°C		
Relative humidity			10 to 90% non-condensing		
Degree of protection			IP 30		
Dimensions		W x H x D	120 x 137 x 115 mm		
Mounting			On symmetrical DIN rail, 35 mm wide		
Weight			1 kg		
Conformity to standards			IEC/EN 61131-2, IEC 61850-3, UL 508, UL 1604 class 1 division 2, CSA 22.2 No. 214 (cUL), CSA 22.2 No. 213 class 1 division 2 (cUL), CE, GL, C-Tick, LR, BV		
LED indicators			Power supply status, alarm relay status, active redundancy, redundancy management, copper port status and copper port activity		
Alarm relay			Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓, 2-way)		
Reference			**TCSESM083F23F1**	**TCSESM063F2CU1**	**TCSESM063F2CS1**
Pages			3/46		

1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)

(2) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 15,000 m)

Managed switches, 16 and 24 ports, copper twisted pair and fiber optic

		
16 x 10/100BASE-TX ports	14 x 10/100BASE-TX ports	22 x 10/100BASE-TX ports
RJ45		
Shielded twisted pair, category CAT 5E		
100 m		
–	2 x 100BASE-FX ports	
–	Duplex SC	
–	Multimode optical fiber	
–	5000 m *(1)*	
–	4000 m *(1)*	
–	–	–
–	8 dB	
–	11 dB	
–	–	–
FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port		
Unlimited		
50 max.		
Redundant power supplies, redundant single ring, ring coupling		
9.6 to 60 V ⎓/18 to 30 V ∿ safety extra low voltage (SELV)		
9.4 W	11.8 W	15.5 W
6-way		
0 to + 60°C		
10 to 90% non-condensing		
IP 20		
111 x 131 x 111 mm		
On symmetrical DIN rail, 35 mm wide		
0.600 kg		0.650 kg
cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2		
Redundant power supplies, single ring	Redundant power supplies, single ring, double ring	
Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)		
TCSESM163F23F0	**TCSESM163F2CU0**	**TCSESM243F2CU0**
3/47		

(1) Length dependent on the attenuation analysis and attenuation of the optical fiber (typical value: 2000 m)

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed switches

Type of device			**Managed switches, 8 ports and 2 Gigabit ports, copper twisted pair and fiber optic**		
					
Interfaces	Copper cable ports	Number and type	8 x 10/100BASE-TX ports		
		Shielded connectors	RJ45		
		Medium	Shielded twisted pair, category CAT 5E		
		Maximum length of pair	100 m		
	Fiber optic Gigabit ports (with SFP fiber optic module to be mounted on SFP connector)	Number and type	2 x 1000BASE-SX ports *(1)*	2 x 1000BASE-LH ports *(2)*	2 x 1000BASE-LX ports *(3)*
		Connectors	LC		
		Medium	Multimode optical fiber	Single mode optical fiber	Single mode and multimode optical fiber
	Length of optical fiber	50/125 µm	550 m	–	550 m
		62.2/125 µm	275 m	–	550 m
		9/125 µm fiber	–	8 - 72,000 m	20,000 m
	Attenuation analysis	50/125 µm fiber	7.5 dB	–	11 dB
		62.2/125 µm fiber	7.5 dB	–	11 dB
		9/125 µm fiber	–	6 - 22 dB	11 dB
	Ethernet services		FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access,VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port		
Topology	Number of switches	Cascaded	Unlimited		
		Redundant in a ring	50 max.		
Redundancy			Redundant power supplies, redundant single ring, ring coupling		
Power supply	Voltage		9.6 to 60 V ⎓/18 to 30 V ∿ safety extra low voltage (SELV)		
	Consumption		8.9 W + 1 W per SFP fiber optic module		
	Removable terminal block		6-way		
Operating temperature			0 to + 60°C		
Relative humidity			10 to 90% non-condensing		
Degree of protection			IP 20		
Dimensions		W x H x D	111 x 131 x 111 mm		
Mounting			On symmetrical DIN rail, 35 mm wide		
Weight			0.410 kg		
Conformity to standards			cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CE, GL		
LED indicators			Power supply status, alarm relay status, active redundancy, redundancy management, fiber port status and fiber port activity		
Alarm relay			Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)		
Reference			**TCSESM103F2LG0**		
Pages			3/47		

*(1) With **TCSEAAF1LFU00** fiber optic module to be ordered separately (see page 3/41)*
*(2) With **TCSEAAF1LFH00** fiber optic module to be ordered separately (see page 3/41)*
*(3) With **TCSEAAF1LFS00** fiber optic module to be ordered separately (see page 3/41)*

Managed switches, 8 ports and 2 Gigabit ports, copper twisted pair and fiber optic

8 x 10/100BASE-TX ports and 2 x 10/100/1000BASE-TX (Gigabit) ports
RJ45
Shielded twisted pair, category CAT 5E
100 m
–
LC
–
–
–
–
–
–
–
FDR, SMTP V3, SNTP client, multicast filtering for optimization of the Global Data protocol, configuration via Web access,VLAN, IGMP Snooping, RSTP *(Rapid Scanning Tree Protocol)*, priority port, data stream control, secure port
Unlimited
50 max.
Redundant power supplies, redundant single ring, ring coupling
9.6 to 60 V ⎓/18 to 30 V ∿ safety extra low voltage (SELV)
8.3 W
6-way
0 to + 60°C
10 to 90% non-condensing
IP 20
111 x 131 x 111 mm
On symmetrical DIN rail, 35 mm wide
0.410 kg
cUL 60950, UL 508 and CSA 22.2 No. 142, UL 1604 and CSA 22.2 No. 213 class 1 division 2, CE, GL
Power supply status, alarm relay status, active redundancy, redundancy management, fiber port status and fiber port activity
Power supply detected fault, Ethernet network detected fault or communication port detected fault (volt-free contact 1 A max. at 24 V ⎓)

TCSESM103F23G0

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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

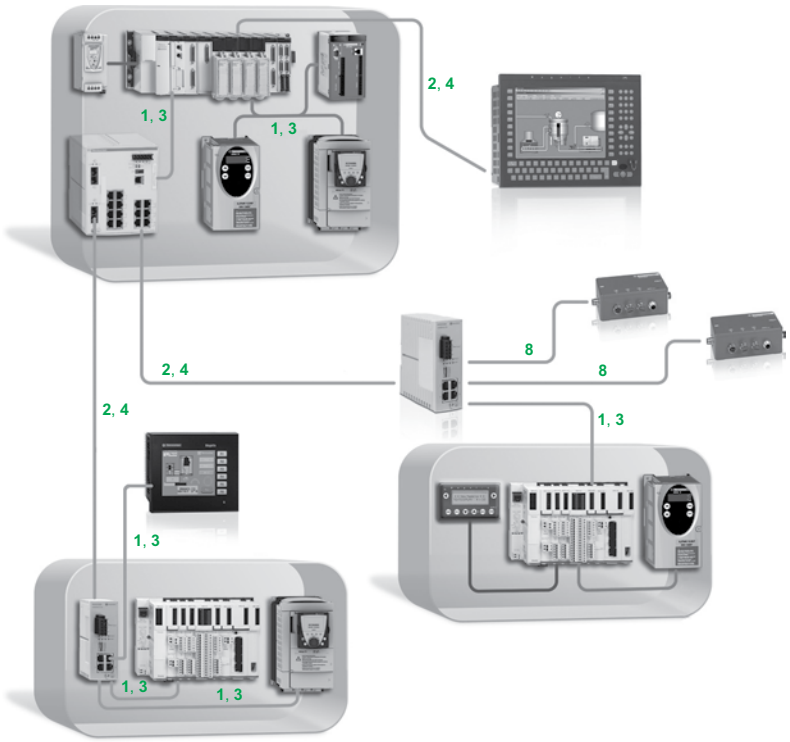
Infrastructure

Introduction

Schneider Electric offers copper and fiber optic cables for connecting IP 20 and IP 67 Ethernet devices.

Examples

Mixed IP 20 and IP 67 wiring (copper)



Key:
1, 3: Straight-through copper cables
2, 4: Crossover copper cables
8: Cables with IP 67 connector (see pages 3/40 and 3/41)

Wi-Fi network:
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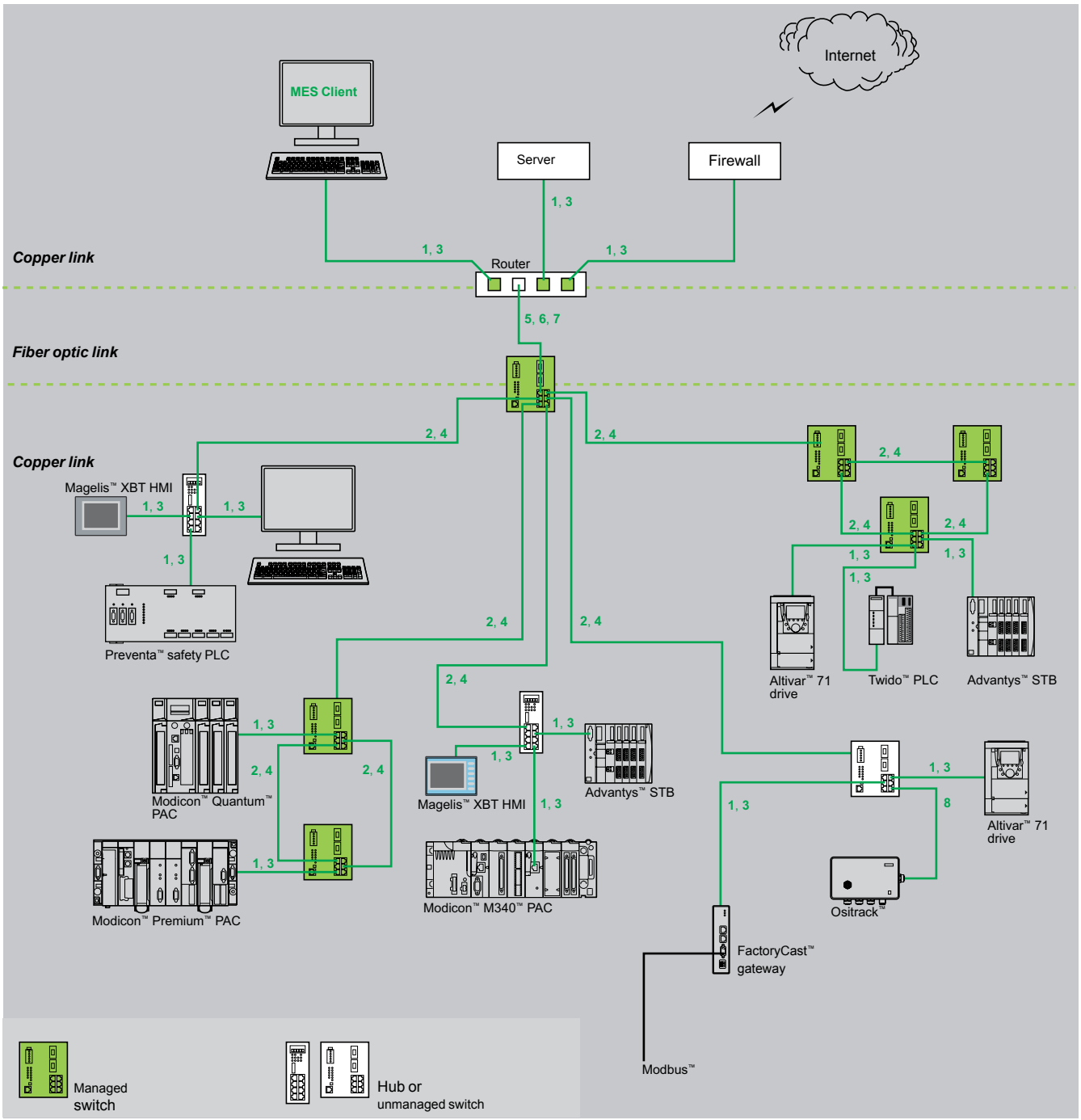
Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

Infrastructure

Examples (continued)

Mixed copper and fiber optic wiring



Key:
1, 3: Straight-through copper cables
2, 4: Crossover copper cables
5, 6, 7: Fiber optic cables
8: Cables with IP 67 connector (see pages 3/40 and 3/41)

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ connection components

Shielded copper connection cables

ConneXium™ shielded connection cables are available in two versions to meet current standards and approvals:

■ **EIA/TIA 568 shielded twisted pair cables for CE market**

These cables conform to:
- EIA/TIA-568 standard, category CAT 5E
- IEC 11801/EN 50173-1 standard, class D

Their fire resistance conforms to:
- NF C32-070 standard, class C2
- IEC 322/1 standards
- Low Smoke Zero Halogen (LSZH)

■ **EIA/TIA 568 shielded twisted pair cables for UL market**

These cables are:
- CEC type FT-1
- NEC type CM

490 NT● 000 ●●

EIA/TIA 568 shielded twisted pair cables for CE market

Description	Preformed with connectors at both ends	Marked	Length	Reference	Weight kg
Straight-through copper cables	2 RJ45 connectors For connection to terminal devices (DTE)	1	2 m	**490NTW00002**	–
			5 m	**490NTW00005**	–
			12 m	**490NTW00012**	–
			40 m	**490NTW00040**	–
			80 m	**490NTW00080**	–
Crossover copper cables	2 RJ45 connectors For connections between hubs, switches and transceivers	2	5 m	**490NTC00005**	–
			15 m	**490NTC00015**	–
			40 m	**490NTC00040**	–
			80 m	**490NTC00080**	–

Shielded twisted pair cables for UL market

Description	Preformed with connectors at both ends	Marked	Length	Reference	Weight kg
Straight-through copper cables	2 RJ45 connectors For connection to terminal devices (DTE)	3	2 m	**490NTW00002U**	–
			5 m	**490NTW00005U**	–
			12 m	**490NTW00012U**	–
			40 m	**490NTW00040U**	–
			80 m	**490NTW00080U**	–
Crossover copper cables	2 RJ45 connectors For connections between hubs, switches and transceivers	4	5 m	**490NTC00005U**	–
			40 m	**490NTC00040U**	–
			80 m	**490NTC00080U**	–

"Do it Yourself" copper cable and connectors

The ConneXium "Do it Yourself" offer consists of 2 references for "field-installable" connectors (M12 and RJ45) and one reference for spooled cable measuring 300 m, for wiring Ethernet 10/100 Mbps networks.

The maximum length of the cables created using these components is 80 m. They are quick to assemble using only a knife and simple wire cutters (no special tool is required).

Description	Specifications	Length	Reference	Weight kg
Ethernet copper cable 2 shielded twisted pairs 24 AWG	Conforms to the standards and approval listed above	300 m	**TCSECN300R2**	–
RJ45 connector	Conforms to EIA/TIA-568-D	–	**TCSEK3MDS**	–
M12 connector	Conforms to IEC 60176-2-101	–	**TCSEK1MDRS**	–

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ connection components

490NOC00005

490NOT00005

490NOR00005

TCSEAAF1LF●00

Glass fiber optic cables

Glass fiber optic cables are used for connections:
- To terminal devices (DTE)
- Between hubs, transceivers and switches

Description	Preformed with connectors at both ends	Marked	Length	Reference	Weight kg
Glass fiber optic cables	1 SC connector 1 MT-RJ connector	5	5 m	**490NOC00005**	–
	1 ST (BFOC) connector 1 MT-RJ connector	6	5 m	**490NOT00005**	–
	2 MT-RJ connectors	7	3 m	**490NOR00003**	–
			5 m	**490NOR00005**	–

Separate parts for TCSESMswitches

Description	Optical fiber	Type	Reference	Weight kg
Fiber optic modules for Gigabit ports with LC connector *(1)*	Multimode 50/125 µm or 62.5/125 µm	1000BASE-SX	**TCSEAAF1LFU00**	0.040
	Single mode 9/125 µm	1000BASE-LH	**TCSEAAF1LFH00**	0.040
	Multimode 50/125 µm or 62.5/125 µm Single mode 62.5/125 µm	1000BASE-LX	**TCSEAAF1LFS00**	0.040
Configuration backup key	Via the USB port on the front of the switch, used to: - Save and retrieve the switch configuration - Update the internal software		**TCSEAM0100**	–

(1) Dimensions: W x H x D = 20 x 18 x 50 mm

Connection components for IP 67 switch

Description	Preformed with connectors at both ends	Marked	Length	Reference	Weight kg
Straight-through copper cables	1 IP 67 4-way M12 connector and 1 RJ45 connector	8	1 m	**TCSECL1M3M1S2**	–
			3 m	**TCSECL1M3M3S2**	–
			10 m	**TCSECL1M3M10S2**	–
			25 m	**TCSECL1M3M25S2**	–
			40 m	**TCSECL1M3M40S2**	–
	2 IP 67 4-way M12 connectors	–	1 m	**TCSECL1M1M1S2**	–
			3 m	**TCSECL1M1M3S2**	–
			10 m	**TCSECL1M1M10S2**	–
			25 m	**TCSECL1M1M25S2**	–
			40 m	**TCSECL1M1M40S2**	–
Power supply cables	2 female M12 straight connectors	–	2 m	**XZCP1164L2**	–
			5 m	**XZCP1164L5**	–
	2 female M12 angled connectors	–	2.5 m	**XZCP1264L2**	–
			5 m	**XZCP1264L5**	–
Power supply cables	2 female M12 straight connectors	–	–	**XZCC12FDM50B**	–
	2 female M12 angled connectors	–	–	**XZCC12FCM50B**	–
M12/RJ45 adaptor	IP 67 female 4-way M12 connector and female RJ45 connector	–	–	**TCSEAAF11F13F00**	–

Wi-Fi network:
page 3/48

Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

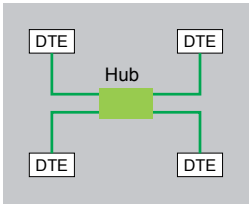
ConneXium™ hub and transceiver

ConneXium™ hub

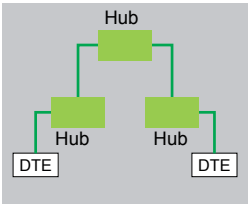
Introduction

Hubs *(concentrators)* are used for transmitting signals between several media (ports). Hubs are “plug and play” devices that do not require configuration by the user.

The use of hubs makes it possible to create the following topologies:
- Star topology
- Tree topology



Star topology



Tree topology


499NEH10410

Reference

Description	Interfaces	Reference	Weight kg
ConneXium hub	4 x 10BASE-T ports (copper cable), RJ45 shielded connectors	**499NEH10410**	0.530

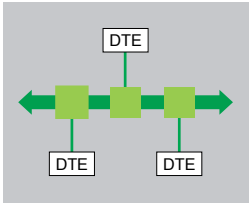
ConneXium transceiver

Introduction

ConneXium transceivers are used to:
- Create fiber optic linear bus topologies, for devices with a twisted pair cable Ethernet connection
- Interface devices with a twisted pair cable Ethernet connection with a fiber optic cable

Transceivers are “plug and play” devices that do not require configuration by the user.

ConneXium transceivers provide fiber optic connections for transmission in areas subject to interference (high levels of electromagnetic interference) and for long distance communications.



Linear topology on optical fiber


499NTR10100

Reference

Description	Interfaces	Reference	Weight kg
ConneXium transceiver	■ 1 x 10BASE-T port (copper cable), RJ45 shielded connector ■ 1 x 100BASE-FX port (multimode optical fiber), SC connector	**499NTR10100**	0.230

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

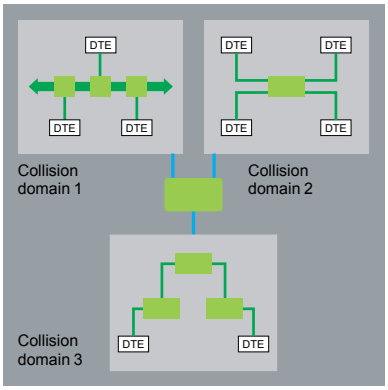
ConneXium™ unmanaged switches

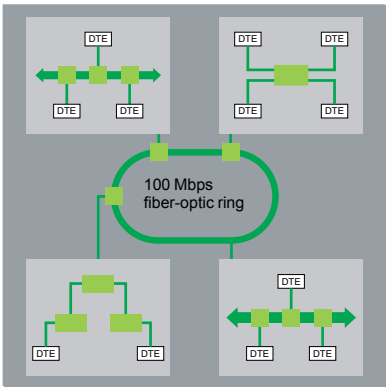
ConneXium™ unmanaged switches, twisted pair

Introduction

Switches are used to increase the limits of architectures based on hubs or transceivers, by separating collision domains.
Higher layer communication is provided between the ports, and collisions at link layer are not propagated (filtering).
They therefore improve performance by better allocation of the bandwidth due to the reduction of collisions and the network load.
Certain ConneXium switch models also enable redundant architectures to be created on twisted pair copper ring or optical fiber.

Unmanaged switches are “plug & play” devices that do not require configuration by the user. Certain models can also be managed remotely via SNMP or HTTP protocols for monitoring and diagnostic purposes.





Reference

Description	Interfaces	Reference	Weight kg
ConneXium unmanaged switches	5 x 10BASE-T/100BASE-TX ports (copper cable), shielded M12 type D connectors, IP67	**TCSESU051F0**	0.210
	8 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP20	**499NES18100**	0.230
	8 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30	**TCSESU083FN0**	0.246

TCSESU051F0

499NES18100

Description	Preformed with connectors at both ends	Length	Reference	Weight kg
IP67 power supply cables *(for ConneXium switch **TCSESU051F0**)*	Female M12 straight connector	2 m	**XZC P1164L2**	–
		5 m	**XZC P1164L5**	–
	Female M12 angled connector	2 m	**XZC P1264L2**	–
		5 m	**XZC P1264L5**	–
IP67 power supply connectors *(for ConneXium switch **TCSESU051F0**)*	Female M12 straight connector	–	**XZC C12 FDM 50B**	–
	Female M12 angled connector	–	**XZC C12 FCM 50B**	–

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ unmanaged switches

TCSESU053FN0

499NMS25101

499NSS25102

ConneXium™ unmanaged switches, 3, 4 and 5 ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium unmanaged switches	3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESU033FN0**	0.113
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fiber), duplex SC connector	**TCSESU043F1N0**	0.120
	5 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESU053FN0**	0.113

ConneXium unmanaged switches, 5 ports, twisted pair and fiber optic

Reference

Description	Interfaces	Reference	Weight kg
ConneXium unmanaged switches	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fiber), duplex SC connector	**499NMS25101**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**499NMS25102**	0.335
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fiber), duplex SC connector	**499NSS25101**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fiber), duplex SC connector	**499NSS25102**	0.335

Wi-Fi network:
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TCSESM043F1CU0

TCSESM043F2CS0

TCSESM083F23F0

ConneXium™ managed switches, 4 ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fiber), duplex SC connector	**TCSESM043F1CU0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**TCSESM043F2CU0**	0.400
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fiber), duplex SC connector	**TCSESU043F1CS0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fiber), duplex SC connector	**TCSESU043F2CS0**	0.400

ConneXium managed switches, 4 and 8 ports, twisted pair

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	4 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM043F23F0**	0.400
	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM083F23F0**	0.410

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Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed switches

TCSESM083F1CU0

TCSESM083F2CS0

TCSESM063F2CS1

ConneXium™ managed switches, 8 ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fiber), duplex SC connector	**TCSESM083F1CU0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**TCSESM083F2CU0**	0.410
	■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fiber), duplex SC connector	**TCSESM083F1CS0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fiber), duplex SC connector	**TCSESM083F2CS0**	0.410

ConneXium managed switches, 8 extended ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30	**TCSESM083F23F1**	1.000
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30 ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**TCSESM063F2CU1**	1.000
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30 ■ 2 x 100BASE-FX ports (single mode optical fiber), duplex SC connector	**TCSESM063F2CS1**	1.000

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Ethernet networks

ConneXium™ managed switches

TCSESM163F23F0

TCSESM243F2CU0

TCSESM103F2LG0

TCSESM103F23G0

ConneXium™ managed switches, 16 and 24 ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	16 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCSESM163F23F0**	0.600
	■ 14 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**TCSESM163F2CU0**	0.600
	■ 22 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fiber), duplex SC connector	**TCSESM243F2CU0**	0.650

ConneXium managed switches, 8 ports and 2 Gigabit ports, twisted pair and fiber optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 1000BASE-SX ports (multimode optical fiber) *(1)*, or ■ 2 x 1000BASE-LH ports (single mode optical fiber) (*2*), or ■ 2 x 1000BASE-LX ports (single mode and multimode optical fiber) (*3*)	**TCSESM103F2LG0**	0.410
	■ 8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 10/100/1000BASE-TX (Gigabit) ports (copper cable), RJ45 shielded connectors	**TCSESM103F23G0**	0.410

*(1) With **TCSEAAF1LFU000** fiber optic module to be ordered separately (see page 3/41)*
*(2) With **TCSEAAF1LFH000** fiber optic module to be ordered separately (see page 3/41)*
*(3) With **TCSEAAF1LFS000** fiber optic module to be ordered separately (see page 3/41)*

Wi-Fi network:
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Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi access points and clients

Type of device		Wi-Fi 802.11g Access Point	Wi-Fi 802.11g Access Point FCC
			
Description		Dual band industrial wireless LAN Access Point/Client with two independent radio modules based on IEEE 802.11a/b/g/h/i.	Dual band industrial wireless LAN Access Point/Client with two independent radio modules, based on IEEE 802.11a/b/g/h/i. With FCC-approval for USA and Canada.
Type		Access Point and Client	
Wireless standard		IEEE 802.11a/b/g/h/i	
Operating frequencies		2.4 GHz and 5 GHz	
Degree of protection		IP 40	
Regional approvals		–	FCC
Mounting		DIN rail	
Number of radios		2	
Nominal data rate		54 Mbps	
Antenna connections		4 x RP-SMA	
Ethernet connections		2 x 10/100BASE-TX	
Wireless connections		2 x WLAN interfaces, 8 SSIDs per interface *(1)*	
Range		Up to 20 km with external antenna (depending on type of antenna, frequency range and data rate)	
Dimensions		80 x 100 x 135 mm	
Operating temperature		-30°C to +50°C	
Storage temperature		-40°C to +70°C	
Humidity		Max. 95% (non-condensing)	
Power supplies		2 x 24 V ⎓; 12 V ⎓, redundant capable 2 x PoE per IEEE802.3af, redundant capable *(2)*	
Current consumption		12 V ⎓: 625 mA; 24 V ⎓: 417 mA PoE (48 V ⎓): 167 mA *(2)*	
Agency certifications	Safety	EN 60950	
	Radio	EN 300328, EN 301893, notified in EU countries	FCC identifier: U99BAT54RAIL, IC certification number: 4019A-BAT54R
	Environment	EN 61131, EN 61131 for operation in automation environment. EMC test documentation for E1 certification (cars and vehicles) available	
References		**TCSGWA242** *(3)*	**TCSGWA242F** *(3)*
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(1) SSID: Service Set IDentifier
(2) PoE: Power over Ethernet
(3) TCSG●●●●●● products are supplied with 2 pen-type antennas

Wi-Fi 802.11g Access Point IP 67	Wi-Fi 802.11g Client
	
Dual band industrial wireless LAN Access Point/Client with two independent radio modules based on IEEE 802.11a/b/g/h/i for installation in harsh environment, IP 67 rated.	Single band industrial wireless LAN Client with one radio module based on IEEE 802.11a/b/g/h/i.
Access Point and Client	Client only
IEEE 802.11a/b/g/h/i	
2.4 GHz and 5 GHz	
IP 67	IP 40
–	–
Wall/mast	DIN rail
2	1
54 Mbps	
4 x N-type	4 x RP-SMA
1 x 10/100BASE-TX	
2 x WLAN interfaces, 8 SSIDs per interface *(1)*	1 x WLAN interface
Up to 20 km with external antenna (depending on type of antenna, frequency range and data rate)	
261 x 189 x 55 mm	80 x 100 x 135 mm
-30°C to +55°C	
-40°C to +70°C	
Max. 95% (non-condensing)	
2 x 24 V ⎓; 12 V ⎓, redundant capable 2 x PoE per IEEE802.3af, redundant capable *(2)*	2 x 24 V ⎓; 12 V ⎓, redundant capable 1 x PoE per IEEE802.3af *(2)*
12 V ⎓: 625 mA; 24 V ⎓: 417 mA PoE (48 V ⎓): 167 mA *(2)*	
EN 60950	
EN 300328, EN 301893, notified in EU countries	
EN 61131, EN 61131 for operation in automation environment. EMC test documentation for E1 certification (cars and vehicles) available	
TCSGWA272 *(3)*	**TCSGWC241** *(3)*
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Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi access points and clients

Type of device		Wi-Fi 802.11n Access Point	Wi-Fi 802.11n Access Point FCC
			
Description		Dual band industrial high performance wireless LAN Access Point/Client with one radio module based on IEEE 802.11n (draft 2.0).	Dual band industrial high performance wireless LAN Access Point/Client with one radio module based on IEEE 802.11n (draft 2.0). With FCC-approval for USA and Canada.
Type		Access point and Client	
Wireless standard		IEEE 802.11a/b/g/h/n	
Operating frequencies		2.4 GHz and 5 GHz	
Degree of protection		IP 40	
Regional approvals		–	FCC
Mounting		DIN rail	
Number of radios		1	
Nominal data rate		300 Mbps	
Antenna connections		3 x RP-SMA	
Ethernet connections		2 x 10/100BASE-TX	
Wireless connections		1 x WLAN interface, 8 SSIDs per interface *(1)*	
Range		Up to 20 km with external antenna (depending on type of antenna, frequency range and data rate)	
Dimensions		80 x 100 x 135 mm	
Operating temperature		-30°C to +50°C	
Storage temperature		-40°C to +70°C	
Humidity		Max. 95% (non-condensing)	
Power supplies		2 x 24 V ⎓; 12 V ⎓, redundant capable 2 x PoE per IEEE802.3af, redundant capable *(2)*	
Current consumption		12 V ⎓: 625 mA; 24 V ⎓: 417 mA PoE (48 V ⎓): 167 mA *(2)*	
Agency certifications	Safety	EN 60950	
	Radio	EN 300328, EN 301893, notified in EU countries	Certifications for FCC
	Environment	EN 61131 for operation in automation environment	
References		**TCSNWA241** *(3)*	**TCSNWA241F** *(3)*
Page		3/58	

(1) SSID: Service Set IDentifier
(2) PoE: Power over Ethernet
(3) TCSN ●● ●●●● products are supplied with 3 pen-type antennas

Wi-Fi 802.11n Access Point IP 67	Wi-Fi 802.11n Access Point IP 67 FCC	Wi-Fi 802.11n Access Point IP 67 ATEX
		
Dual band industrial high performance wireless LAN Access Point/Client with one radio module based on IEEE 802.11n (draft 2.0). For installation in harsh environment, IP 67 rated.	Dual band industrial high performance wireless LAN Access Point/Client with one radio module based on IEEE 802.11n (draft 2.0). For installation in harsh environment, IP 67 rated. With FCC-approval for USA and Canada.	Dual band industrial high performance wireless LAN Access Point/Client with one radio module based on IEEE 802.11n (draft 2.0). For installation in harsh environment, IP 67 ATEX Zone II rated. With FCC-approval for USA and Canada
Access point and Client		
IEEE 802.11a/b/g/h/n		
2.4 GHz and 5 GHz		
IP 67		IP 67 ATEX
–	FCC	–
Wall/mast		
1		
300 Mbps		
3 x N-type		
2 x 10/100BASE-TX		
1 x WLAN interface, 8 SSIDs per interface *(1)*		
Up to 20 km with external antenna (depending on type of antenna, frequency range and data rate)		
261 x 189 x 55 mm		
-30°C to +55°C		
-40°C to +70°C		
Max. 95% (non-condensing)		
2 x 24 V ⎓, redundant capable 2 x PoE per IEEE802.3af, redundant capable *(2)*		
24 V ⎓: 417 mA PoE (48 V ⎓): 167 mA *(2)*		
EN 60950		
EN 300328, EN 301893, notified in EU countries		
EN 61000-6-2, EN 61131 EN 50155 (in preparation) E1 (in preparation)	EN 61131 for operation in automation environment	EN 61000-6-2, EN 61131 ATEX Zone II
TCSNWA271 *(3)*	**TCSNWA271F** *(3)*	**TCSNWA2A1** *(3)*

Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi antennas

Type of device		Dual band antennas	
			
Description		Dual band hemispherical antenna	5 GHz Very directional antenna
Frequency range		2300 - 2500 MHz 4900 - 5935 MHz	5150 - 5250 MHz 5250 - 5350 MHz 5350 - 5725 MHz 5725 - 5875 MHz
Antenna gain		6 dBi at 2.4 GHz 8 dBi at 5 GHz	18 dBi 19 dBi 18.5 dBi 18 dBi
VSWR *(1)*		1.8	1.5
Polarization		Linear, vertical	
HPBW Horizontal *(2)*		360° at 2.4 GHz	18°
HPBW Vertical *(2)*		173° at 5 GHz	18°
Max. power		75 W (CW) at 25°C	6 W (CW)
Impedance		50 Ω	
Connector		N female	N female
Operating temperature		-40°C to +80°C	-45°C to +70°C
Storage temperature		-40°C to +80°C	-45°C to +70°C
Radome color		RAL 7044 (Silk gray)	7035 (Light gray)
Radome material		LEXAN EXL 9330	Plastic
Weight		0.3 kg	0.107 kg
Dimensions		ø 86 x 43 mm	190 x 190 x 30.5 mm
Wind load		10 N at 160 km/h	104 N at 216 km/h
Degree of protection		IP 65	IP 65/IP 67
Shipping package contents	Cordset/cable	1 m cordset with N male connectors at both ends	
	Adapter cable	Adapter cable, R-SMA male connector to N female connector	
	Mounting kit	–	Yes
Compatibility of access points and clients		TCSG●●●●●●	
References		**TCSWABDH**	**TCSWAB5V**
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(1) VSWR: Voltage Standing Wave Ratio
(2) HPBW: Half Power BeamWidth

Dual band antenna

Dual band omni directional 11n antenna
2400 - 2500 MHz 5150 - 5875 MHz
3.5 dBi 5.5 dBi
1.8
3 x linear, vertical
360°
–
2 W
50 Ω
3 x N male, 1 m cable directly attached to antenna
-40°C to +80°C
-40°C to +80°C
7035 (Light gray)
Plastic
0.3 kg
310 x 110 x 40 mm
–
IP 65
3 x 90 cm cordset directly attached to antenna, with N male connector
3 x adapter cables, R-SMA male connector to N female connector
Yes
TCSN●●●●●●

TCSWABDON

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Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi antennas

Type of device		5 GHz antennas	
			
Description		5 GHz omni directional antenna	5 GHz dual slant antenna
Frequency range		5150 - 5875 MHz	5150 - 5925 MHz
Antenna gain		5 dBi	9 dBi
VSWR *(1)*		1.5	2
Polarization		Linear, vertical	2 x linear, ± 45° slant
HPBW Horizontal *(2)*		360°	70°
HPBW Vertical *(2)*		25°	60°
Max. power		6 W	10 W (CW) at 25°C
Impedance		50 Ω	
Connector		N female	2 x N female
Operating temperature		-45°C to +70°C	-40°C to +80°C
Storage temperature		-45°C to +70°C	-40°C to +80°C
Radome color		Gray-white	RAL 7044 (Silk gray)
Radome material		Polypropylene	ASA, LEXAN EXL 9330
Weight		0.300 kg	0.110 kg
Dimensions		16 x 160 mm	101 x 80 x 35 mm
Wind load		–	15 N at 160 km/h
Degree of protection		IP 65	
Shipping package contents	Cordset/cable	1 m cordset with N male connectors at both ends	2 x 1 m cordset with N male connectors at both ends
	Adapter cable	Adapter cable, R-SMA male connector to N female connector	2 x adapter cables, R-SMA male connector to N female connector
	Mounting kit	Yes	
Compatibility of access points and clients		TCSG●●●●●●	TCSG●●●●●● TCSN●●●●●●
References		**TCSWAB5O**	**TCSWAB5S**
Page		3/59	

(1) VSWR: Voltage Standing Wave Ratio
(2) HPBW: Half Power BeamWidth

5 GHz antennas

5 GHz directional - MiMo 11n antenna *(3)*	5 GHz Medium directional antenna	5 GHz Very directional 11n antenna
5150 - 5875 MHz	5150 - 5250 MHz 5250 - 5350 MHz 5350 - 5725 MHz 5725 - 5875 MHz	5150 - 5875 MHz
9 dBi	18 dBi 19 dBi 18.5 dBi 18 dBi	23 dBi
1.5	1.5	< 1.7
3 x linear vertical/horizontal/+45°	Linear, vertical	Dual linear, vertical and horizontal
65°	18°	9°
65°	18°	9°
2 W (CW) at 25°C	6 W (CW)	6 W
50 Ω		
N female	N female	2 x N female
-40°C to +80°C	-45°C to +70°C	
-40°C to +80°C	-45°C to +70°C	
RAL 7044 (Silk gray)	7035 (Light gray)	Gray-white
LEXAN EXL 9330	Plastic	
0.110 kg	0.107 kg	2.5 kg
101 x 80 x 35 mm	190 x 190 x 30.5 mm	371 x 371 x 40 mm
15 N at 160 km/h	–	264 N at 220 km/h
IP 65	IP 65/IP 67	
3 x 1 m cordset with N male connectors at both ends	1 m cordset with N male connectors at both ends	2 x 1 m cordset with N male connectors at both ends
3 x adapter cables, R-SMA male connector to N female connector	Adapter cable, R-SMA male connector to N female connector	2 x adapter cables, R-SMA male connector to N female connector
Yes		
TCSN●●●●●●	TCSG●●●●●●	TCSG●●●●●● TCSN●●●●●●
TCSWAB5DN	**TCSWAB5D**	**TCSWAB5VN**

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(3) MiMo: Multiple-Input Multiple-Output

Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi antennas

Type of device		2.4 GHz antennas		
				
Description		2.4 GHz omni directional antenna	2.4 GHz directional antenna	2.4 GHz dual slant antenna
Frequency range		2400 - 2500 MHz	2300 - 2500 MHz	2400 - 2485 MHz
Antenna gain		6.0 dBi	14 dBi	8 dBi
VSWR *(1)*		< 1.8	1.5	
Polarization		Linear, vertical	Vertical	Dual linear, ± 45° slant
HPBW Horizontal *(2)*		360°	35°	75°
HPBW Vertical *(2)*		–	30°	70°
Max. power		25 W	75 W (CW) at 25°C	10 W (CW) at 25°C
Impedance		50 Ω		
Connector		N female		2 x N female
Operating temperature		-40°C to +80°C		
Storage temperature		-40°C to +80°C		
Radome color		Gray-white	RAL 7044 (Silk gray)	
Radome material		Fiber glass	LEXAN EXL 9330	
Weight		0.340 kg	0.110 kg	
Dimensions		ø 22 mm x 250 mm	101 x 80 x 35 mm	
Wind load		–	15 N at 160 km/h	
Degree of protection		IP 65	IP 23	IP 65
Shipping package contents	Cordset/cable	1 m cordset with N male connectors at both ends		2 x 1 m cordset with N male connectors at both ends
	Adapter cable	Adapter cable, R-SMA male connector to N female connector		2 x adapter cables, R-SMA male to N female
	Mounting kit	Yes		
Compatibility of access points and clients		TCSG●●●●●●	TCSG●●●●●●	TCSG●●●●●● TCSN●●●●●●
References		**TCSWAB2O**	**TCSWAB2D**	**TCSWAB2S**
Page		3/59		

(1) VSWR: Voltage Standing Wave Ratio
(2) HPBW: Half Power BeamWidth

Antenna cables

2.4 GHz Leaky cable, 50 m	2.4 GHz Leaky cable, 100 m
2000 - 2900 MHz	
0.15 dB at 2.4 GHz	
–	
–	
–	
–	
–	
–	
2 x N male	
-40°C to +85°C	
-70°C to +85°C	
–	
–	
12 kg	24 kg
50 m, ø 15 mm	100 m, ø 15 mm
–	
IP 65	
50 m cable with N male connectors at both ends	100 m cable with N male connectors at both ends
–	
1 x 50 Ohm terminator, 50 fastening clips (mounting on flat surface)	
TCSG●●●●●●	

TCSWABC5	TCSWABC10
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Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi access points and clients

TCSGWA242

TCSNWA241

TCSNWA271

References

Wi-Fi Access Points and Clients

Description	Number of radios	Data rate	Degree of protection	Country approvals	Reference	Weight
		Mbps				kg
Wi-Fi 802.11g Access Point	2	54	IP 40	–	**TCSGWA242**	–
Wi-Fi 802.11g Access Point FCC	2	54	IP 40	US and Canada	**TCSGWA242F**	–
Wi-Fi 802.11g Access Point IP 67	2	54	IP 40	–	**TCSGWA272**	–
Wi-Fi 802.11g Client	1	54	IP 40	–	**TCSGWC241**	–
Wi-Fi 802.11n Access Point	1	300	IP 40	–	**TCSNWA241**	–
Wi-Fi 802.11n Access Point FCC	1	300	IP 40	US and Canada	**TCSNWA241F**	–
Wi-Fi 802.11n Access Point IP 67	1	300	IP 67	–	**TCSNWA271**	–
Wi-Fi 802.11n Access Point IP 67 FCC	1	300	IP 67	US and Canada	**TCSNWA271F**	–
Wi-Fi 802.11n Access Point IP 67 ATEX	1	300	IP 67 ATEX	–	**TCSNWA2A1**	–

TCSWABDH

TCSWAB5DN

TCSWAB5D

TCSWAB2O

Wi-Fi antennas

Description	Frequency range	Gain	Degree of protection	Reference	Weight
	MHz	dBi			kg
Dual band hemispherical antenna	2300 - 2500	6	IP 65	**TCSGWABDH**	0.300
	4900 - 5935	8			
5 GHz Very directional antenna	5150 - 5250	18	IP 67/IP 65	**TCSWAB5V**	0.107
	5250 - 5350	19			
	5350 - 5725	18.5			
	5725 - 5875	18			
Dual band omni directional 11n antenna	2400 - 2500	3.5	IP 65	**TCSWABDON**	0.300
	5150 - 5875	5.5			
5 GHz omni directional antenna	5150 - 5875	5	IP 65	**TCSWAB5O**	0.300
5 GHz dual slant antenna	5150 - 5925	9	IP 65	**TCSWAB5S**	0.110
5 GHz directional - MiMo 11n antenna	5150 - 5875	9	IP 65	**TCSWAB5DN**	0.110
5 GHz Medium directional antenna	5150 - 5250	18	IP 67/IP 65	**TCSWAB5D**	0.107
	5250 - 5350	19			
	5350 - 5725	18.5			
	5725 - 5875	18			
5 GHz Very directional 11n antenna	5150 - 5875	23	IP 67/IP 65	**TCSWAB5VN**	2.500
2.4 GHz omni directional antenna	2400 - 2500	6	IP 65	**TCSWAB2O**	0.340

Modicon™ M340™ automation platform

Cabling systems for Wi-Fi networks

Wi-Fi antennas, cables and accessories

TCSWAB2D

TCSWABC5

Wi-Fi antennas (continued)

Description	Frequency range MHz	Gain	Degree of protection	Reference	Weight kg
2.4 GHz directional antenna	2300 - 2500	14 dBi	IP 23	**TCSWAB2D**	0.110
2.4 GHz dual slant antenna	2400 - 2485	8 dBi	IP 65	**TCSWAB2S**	0.110
2.4 GHz Leaky cable 50 m	2000 - 2900	0.15 dB at 2.4 GHz	IP 65	**TCSWABC5**	12
2.4 GHz Leaky cable 100 m	2000 - 2900	0.15 dB at 2.4 GHz	IP 65	**TCSWABC10**	24

TCSWAAC

TCSWABAC2

Cables

Description	Type	Length m	Reference	Weight kg
Adapter cable	1 RP-SMA male connector 1 N female connector	0.520	**TCSWAAC**	0.340
Adapter cable N-plug to N-jack, 2 m	1 N female connector 1 N male connector	2.000	**TCSWABAC2**	0.340
Adapter cable N-plug to N-jack, 15 m	1 N female connector 1 N male connector	15.000	**TCSWABAC15**	0.340

TCSWABP

TCSWAMCD

TCSWABMK

Accessories

Description	Frequency range	Type	Cable length m	Reference	Weight kg
Overvoltage protector for antennas	–	N female, N male	–	**TCSWABP**	0.080
Overvoltage protector for LAN/PoE	IP 68	N female, N male	–	**TCSWABP68**	0.080
Memory card modules *(1)*	IP 40	Mini-DIN connector	0.315	**TCSWAMC67**	0.035
	IP 67	M12 connector	0.500	**TCSWAMCD**	0.025
Adapter kit for pole mounting	–	–	–	**TCSWABMK**	–

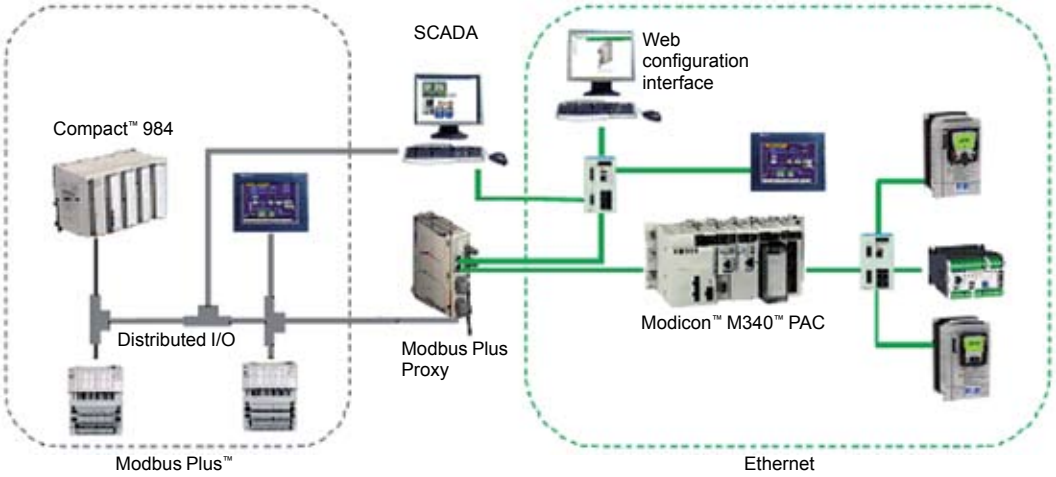
(1) Auto-configuration adapter that is used to save 2 different versions of the configuration and operating program data for the Wi-Fi access point to which it is connected. It enables managed Wi-Fi access points to be easily commissioned and quickly replaced.

Modicon™ M340™ automation platform
Modbus Plus™ Proxy module

Introduction

The **TCSEGDB23F24FA** Modbus Plus™ Proxy module (also called **M340EGD**) is a network gateway that allows the Modicon™ M340™ PAC to communicate with existing Modbus Plus devices.
It is not necessary to modify the applications for these devices to communicate with the Modicon M340 PAC, since the module automatically addresses the platforms and the various communication functions between the M340 and other PAC platforms (especially 984LL).

The M340 Modbus Plus Proxy offers Modbus Plus PAC users the chance to integrate the M340 PAC easily into their Modbus Plus network and thus access to advanced communications via Ethernet, or to migrate gradually from other PAC models to Modicon M340 and Unity™.



Key benefits

Reduced startup time

- Online configuration of the proxy via a simple Web browser
- Setup Web pages similar to the screens of the Modbus Plus Peer Cop utility, accessible under Concept/Unity for the Global Data transaction
- Simpler data exchange with Global Data transactions performed on network nodes
- Point-to-point communication without programming with Peer Cop

Increased network reliability and maintainability

- Standard diagnostics provide data on network nodes for easy troubleshooting
- Dual Modbus Plus ports provide Modbus Plus network redundancy

Reduced cost of ownership

- Helps protect your investment in Modbus Plus while migrating to Ethernet
- Dual Ethernet ports allow connection of both the M340 PAC and the configuration PC to the proxy, without any additional switches

Processors: page 1/2 | I/O: pages 2/2 and2/14 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform
Modbus Plus™ Proxy module

Embedded Web server

Web server functions

The **M340EGD** includes an embedded Web server that can be used to perform diagnostics and configure the module connection. The data is presented as standard Web pages in HTML format. To access a Web page, you need Internet Explorer 6.0 (or later version) and Java 1.5 (or later version).

Embedded Web server functions

1 - Setup: The Setup pages allow you to define the parameters for several different module services, including security, IP, SNMP, Global Data, Peer Cop and Ethernet ports.
2 - Diagnostics: These network diagnostic pages contain Ethernet, TCP and SNMP statistics, as well as a log of the diagnostics performed.

3

Complementary Specifications

The following specifications complement those introduced in the communication selection guide on page 3/6:
- External power supply voltage: 19.2 to 31.2 V ⎓
- Consumption: 300 mA max.
- Dissipated power: 6.2 W
- Conformity with standards: UL 508, CSA 22.2 No. 142 (cUL), EMI EN 55011, EN 61131-2, C-Tick

TCSEGDB23F24FA

References

System and network requirements

Unity™ Pro XL 3.x programming software (or later version)
Internet Explorer 6.0 (or later version)
Java 1.5 (or later version)
Microsoft Windows XP or Windows Vista

Modicon™ M340™ processor:
- BMXP342020 (Modbus™ and Ethernet version)
- BMXP3420302 (CANopen and Ethernet version)

Ethernet Modicon M340 communication modules:
- BMXNOE0100
- BMXNOE0110
- BMXNOC0401

Modicon M340 Modbus Plus Proxy module

Description	Type	Reference	Weight kg
Modbus Plus Proxy module for Modicon M340 PAC supplied with 2 front-mounted power supply connectors (2 positions)	Standard	**TCSEGDB23F24FA**	–
	Conformal coating	**TCS EGDB23F24FK**	–

Modicon™ M340™ automation platform
Profibus™ Remote Master modules

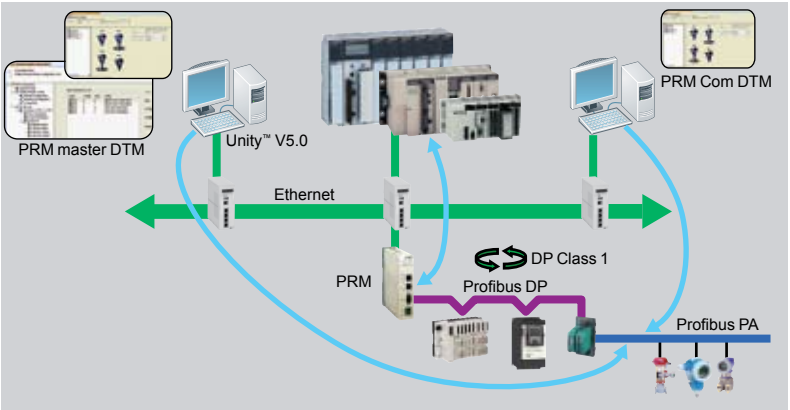
Profibus™ DP fieldbus

Profibus DP is one of the most widely used fieldbuses in the industry, and is based on a master/slave protocol.

Version V0 of Profibus only allows cyclic exchanges with I/O, whereas version V1 offers an acyclic message handling channel that can be used for adjustment or diagnostics of devices during operation.

The physical link is a single shielded twisted pair, but numerous interfaces are available for creating different types of topologies - tree, star or ring - including those using fiber optics or a non-physical link.

Gateways can be used to communicate transparently with Profibus PA. Profibus PA can be used to supply devices across the network and also to install sensors in potentially explosive zones (ATEX).



Profibus Remote Master (PRM) module

Introduction

The Profibus Remote Master (PRM) module is connected to the Ethernet Modbus™ TCP/IP network via its integrated 2-port switch, as close as possible to the process and the instrumentation.

The PRM module can be used to connect Quantum™, Premium™ and M340™ PACs to Profibus DP V1 via the I/O scanner function.
Regardless of the type of PAC, only one product reference is required and setup is identical, thus reducing training and maintenance costs.
Two versions are available, standard and "tropicalized", to adapt to any type of environment.

The PRM module is open to Asset Management tools.
A dedicated communication DTM is supplied with the product, thus allowing any compatible FDT standard tool to remotely adjust devices on Profibus using Ethernet (see page 4/4).

Configuration

From a single Unity tool, the user can create the Profibus configuration, the PAC application and configure or calibrate devices.
The latter are integrated in the Unity catalog via their DTMs if they exist, or their *gsd* files.

The I/O scanner configuration is created implicitly in Unity Pro using the Profibus configuration. The parameters assigned by default help to guarantee optimized performance, as well as providing consistency of I/O data in the PAC application, regardless of the PAC platform.
Similarly, the I/O variables defined and presymbolized in the DTMs can be used directly in the application. Finally, the screens integrated in Unity Pro, plus the diagnostic functions integrated in the device DTMs, simplify application maintenance.

Modicon™ M340™ automation platform

Profibus™ Remote Master modules

Connectable devices

The following Schneider Electric devices can be connected to the Profibus™ Remote Master:

- TeSys™ U and TeSys T starter-controllers
- Momentum™ and Modicon™ STB distributed I/O
- Modicon FTB/FTM I/O IP 67 monobloc and modular splitter boxes
- Altivar™ 312/61/71 variable speed drives for asynchronous motors
- Lexium™ 05 and 15 variable speed drives for brushless motors
- Altistart™ ATS 48 soft start-soft stop units
- Any third-party device compatible with Profibus™ DP and PA standard profiles

Limitations

Once saved, the Unity project incorporates the Profibus parameters as well as the slaves connected to the bus. Quantum, Premium and M340 PACs are capable of embedding this data so that an empty Unity terminal without any applications is able, after a simple transfer from the PAC, to locate the whole application, including the slave parameters. This function is called ETS *(Empty Terminal Service)*.

In certain cases, it may be that the memory size required to save the device parameters exceeds the PAC memory capacity (signalled by a “memory full” message during the build). This is particularly likely on devices that have DTM (common to instrumentation on PA). Typically, each device of this type consumes around 20 KB of the PAC memory.

Therefore, it is essential to create a memory map according to the type of configuration being used. This memory map can be adapted either by increasing the amount of memory dedicated to the application (by reducing the zone allocated to date), or by increasing the overall memory using cartridges available in this catalog.

If the ETS function is not required, Unity Pro can also be configured in such a way as to reduce the size of the embedded data by disabling comments and animation tables, or by disabling the upload function, so that the application does not include data relating to DTMs. In this case, the upload from an empty terminal function is no longer available.

References

The Profibus Remote Master module is supplied with a CD-ROM that includes:

- PRM master DTMs and generic Profibus DTMs (for configuration in Unity Pro V5.0 or later)
- The PRM communication DTM for third-party (non-Schneider Electric) FDT

TCSEGPA23F14F

490NAD91103

Profibus Remote Master modules

Description	Type	Reference	Weight kg
Profibus Remote Master modules	Standard	**TCSEGPA23F14F**	0.620
	Ruggedized *(1)*	**TCSEGPA23F14FK**	0.620

Pre-cabled connection components to the Profibus DP bus

Description	Type	Reference	Weight kg
Remote I/O on Profibus DP bus	Modicon STB network interface module	**STBNDP2112**	0.140
	Momentum communication module	**170DTN11000**	0.070
Connectors for remote I/O communication module	Line terminators	**490NAD91103**	–
	Intermediate connection	**490NAD91104**	–
	Intermediate connection and terminal port	**490NAD91105**	–

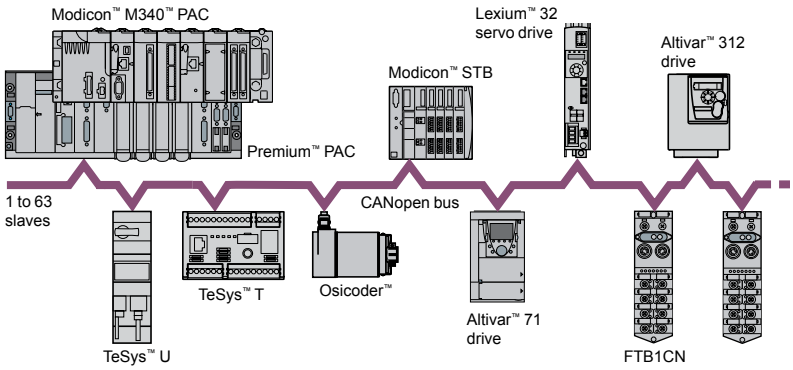
Description	Length	Reference	Weight kg
Profibus DP connection cables	100 m	**TCXPBSCA100**	–
	400 m	**TCXPBSCA400**	–

(1) Conformal coating and extended operating temperatures between -25 and +70°C.
See ruggedized module specifications, page 6/2.

Modicon™ M340™ automation platform

CANopen™ machine and installation bus

Introduction



Schneider Electric has selected CANopen™ for use with its machines and installations because of its wealth of functions and its adoption throughout 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.

CANopen brings transparency to Ethernet

CAN in Automation and Modbus™-IDA have worked together to create a standard that helps ensure transparency between CANopen and Modbus/TCP. The result of this collaboration has been the CiA DSP309-2 specification that defines the communication standards between a Modbus/TCP network and a CANopen bus. This specification defines the mapping services that 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 that helps to ensure 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 help 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 20 m and 2500 m). Each end of the bus requires a line terminator.

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

Processors: page 1/2
I/O: pages 2/2 and2/14
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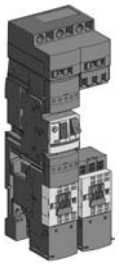
Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform

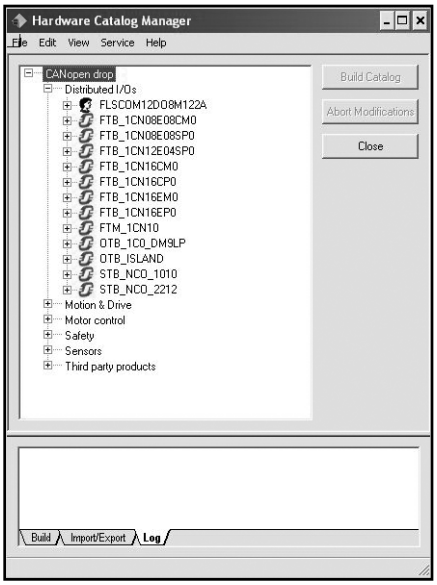
CANopen™ machine and installation bus



TeSys Quickfit

Modicon FTB

Modicon OTB



Hardware Catalog Manager for integration of third-party devices

Connectable Schneider Electric devices

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

- Osicoder™ absolute encoders
- TeSys™ U starter-controllers with LUL C08 communication module
- TeSys™ T motor management system, with LTM controller
- TeSys™ D motor-starters using the TeSys Quickfit installation help system with APP 1CCO0/O2 communication module
- Modicon ™OTB IP 20 distributed I/O, with Twido™ I/O expansion modules and OTB interface module
- Modicon™ STB IP 20 modular distributed I/O, with STB NIM interface module
- Modicon™ FTB monoblocand FTM modular IP 67 I/O splitter boxes
- Preventa™ configurable safety controllers
- 0.18 to 15 kW Altivar™ 312/71/61 variable speed drives for asynchronous motors:
- Lexium™ 32 servo drives for BMH and BSH servo motors
- IcLA intelligent compact motor-drives

Integration of third-party devices

- **Unity™ Pro software version ≥ 4.0** offers the Hardware Catalog Manager tool that 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 files conform to the CiA (CAN In Automation) standard.

The Hardware Catalog Manager tool is used to:

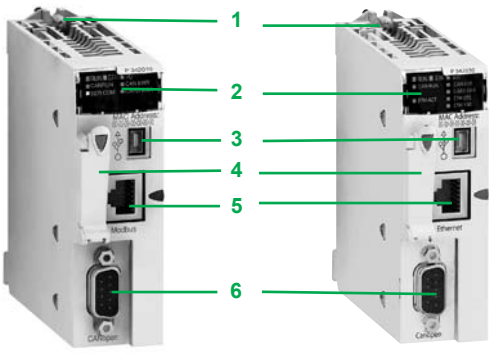
- Integrate third-party devices in Unity Pro
- Optimize the size of the **BMXP3420102/20302** processor memory area reserved for PDO (Process Data Object) process variables
- Customize the parameters specific to each third-party device

- **Unity Pro software version ≥ 4.1**, combined with **BMXP3420102/20302** processors with integrated CANopen link, can be used to customize configuration of the device Boot Up procedure, and thus be compatible with commercially-available CANopen third-party products.

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

Modicon™ M340™ automation platform

CANopen™ machine and installation bus



BMXP3420102 *BMXP3420302*

Description

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

1 Screw for locking the module in its slot in the rack, marked “00”.
2 Display block featuring:
- CAN RUN LED (green): Integrated machine/installation bus operational
- CAN ERR LED (red): Integrated machine/installation bus detected fault

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

Complementary specifications

The following specifications complement those introduced in the communication selection guide on page 3/4:

- Data rate: 20 Kbps to 1 Mbps
- Maximum length of CANopen bus (1):
  - 20 m at 1 Mbps, 40 m at 800 Kbps, 100 m at 500 Kbps, 250 m at 250 Kbps
  - 500 m at 125 Kbps, 1000 m at 50 Kbps, 2500 m at 20 Kbps
- Maximum length of tap-offs on one tap junction (2):
  - 0.6 m at 1 Mbps, 6 m at 800 Kbps, 10 m at 500 Kbps, 10 m at 250 Kbps
  - 10 m at 125 Kbps, 120 m at 50 Kbps, 300 m 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 (3): 160 m at 1 Mbps, 185 m at 800 Kbps, 205 m at 500 Kbps

Modicon M340 Performance processors with integrated CANopen bus link

Modicon M340 processor modules are supplied with the Flash card **BMXRMS008MP**. 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** processor)
- This card can be replaced by another card featuring a file storage option (see page 1/7).

BMXP3420102

BMXP3420302

Capacitance	Max. no. of network/ bus modules	Integrated communication ports	Compatibility with Unity software *(4)*	Reference	Weight kg
Performance BMXP3420, 4 racks					
1024 discrete I/O 256 analog I/O 36 application-specific channels 4096 KB integrated	2 Ethernet Modbus/ TCP networks 4 AS-Interface buses	CANopen bus Modbus serial link	Version ≥ 4.1	**BMXP3420102**	0.210
		CANopen bus Ethernet network Modbus/TCP	Version ≥ 4.1	**BMXP3420302**	0.215

(1) Deduct 15 m per repeater from the length of the bus.
(2) For other restrictions, please refer to the CANopen hardware setup manual available on our website www.schneider-electric.com.
*(3) With the use of **TSXCANC●50/100/300** CANopen cables and **TSXCANC●DD03/1/3/5** preformed cordsets.*
(4) See “Integration of third-party devices” paragraph on page 3/65.

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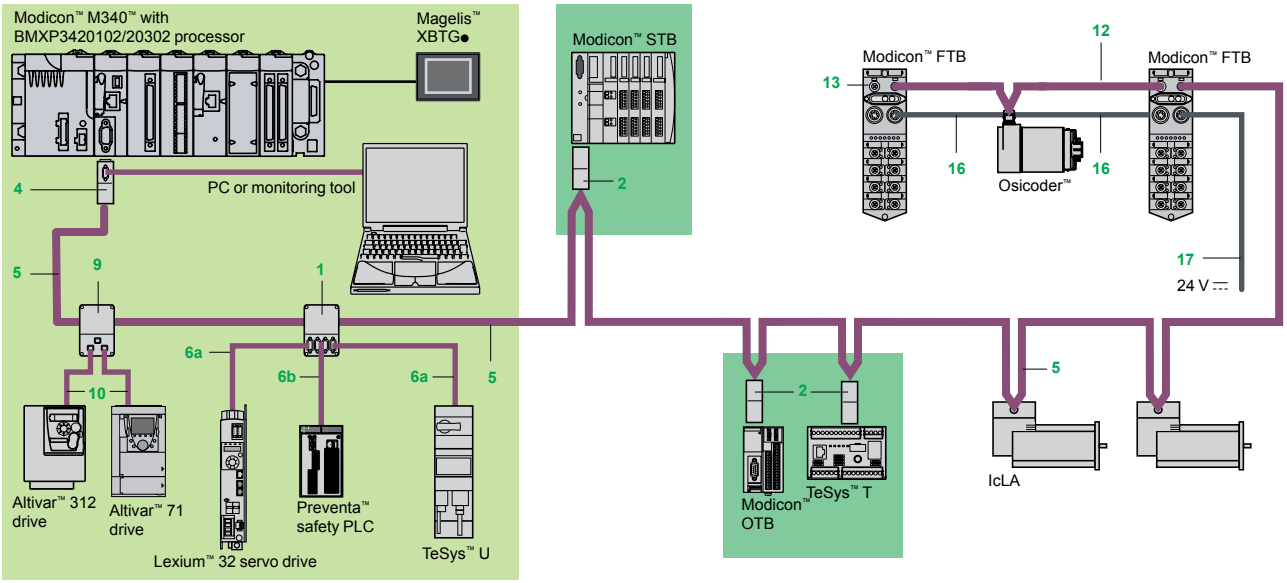
Modicon™ M340™ automation platform

CANopen™ machine and installation bus

CANopen™ bus cabling systems



Note: *For key and references* **1** *to* **17**, *see pages 3/68 and 3/69.*

Different types of cable are available, making it possible to create any type of application, including for harsh environments (for a definition of standard and harsh environments, see page 3/68).
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 IP 20 cabling offer, there is also an IP 67 cabling offer.

Modicon™ M340™ automation platform

CANopen machine and installation bus

Cabling systems

TSXCANTDM4

VW3CANTAP2

TSXCANKCDF90T

TSXCANKCDF180T

TSXCANKCDF90TP

3

Standard tap junctions and connectors

Designation	Description	No. (1)	Reference	Weight kg
IP 20 CANopen tap junction	4 SUB-D ports. Screw terminal block for connecting the trunk cables Line termination	1	**TSXCANTDM4**	0.196
IP 20 connectors CANopen female 9-way SUB-D. Switch for line termination	90° angled	2	**TSXCANKCDF90T**	0.046
	Straight *(2)*	–	**TSXCANKCDF180T**	0.049
	Right angle with 9-way SUB-D for connecting a PC or diagnostic tool	4	**TSXCANKCDF90TP**	0.051
IP 67 M12 connectors	Male	–	**FTXCN12M5**	0.050
	Female	–	**FTXCN12F5**	0.050
IP 20 CANopen tap junctions for Altivar and Lexium 32	2 RJ45 ports	9	**VW3CANTAP2**	–

IP 20 standard cables and preformed cordsets

Designation	Description	No. (1)	Length	Unit reference	Weight kg
CANopen cables (AWG 24)	Standard, CE marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1)	5	50 m	**TSXCANCA50**	4.930
			100 m	**TSXCANCA100**	8.800
			300 m	**TSXCANCA300**	24.560
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	5	50 m	**TSXCANCB50**	3.580
			100 m	**TSXCANCB100**	7.840
			300 m	**TSXCANCB300**	21.870
	For harsh environments *(3)* or mobile installations, CE marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1). Oil-resistant	5	50 m	**TSXCANCD50**	3.510
			100 m	**TSXCANCD100**	7.770
			300 m	**TSXCANCD300**	21.700
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	0.3 m	**TSXCANCADD03**	0.091
			1 m	**TSXCANCADD1**	0.143
			3 m	**TSXCANCADD3**	0.295
			5 m	**TSXCANCADD5**	0.440
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	6a	0.3 m	**TSXCANCBDD03**	0.086
			1 m	**TSXCANCBDD1**	0.131
			3 m	**TSXCANCBDD3**	0.268
			5 m	**TSXCANCBDD5**	0.400
CANopen preformed cordsets	One 9-way SUB-D connector, One RJ45 connector (AWG 24)	6b	0.5 m	**TCSCCN4F3M05T**	–
			1 m	**TCSCCN4F3M1T**	–
				VW3M3805R010 *(4)*	–
			3 m	**TCSCCN4F3M3T**	–
	Two 9-way SUB-D connectors, one male and one female	–	0.5 m	**TLACDCBA005**	–
			1.5 m	**TLACDCBA015**	–
			3 m	**TLACDCBA030**	–
			5 m	**TLACDCBA050**	–

IP 67 standard preformed cordsets

Designation	Description	No. (1)	Length	Unit reference	Weight kg
CANopen preformed cordsets	Preformed cordsets of two 5-way M12 A-coded angled connectors (one male connector and one female connector)	12	0.3 m	**FTXCN3203**	0.40
			0.6 m	**FTXCN3206**	0.70
			1 m	**FTXCN3210**	0.100
			2 m	**FTXCN3220**	0.160
			3 m	**FTXCN3230**	0.220
			5 m	**FTXCN3250**	0.430

(1) For key to numbers, see page 3/67.
(2) For connection to Controller Inside programmable card, the **VW3CANKCDF180T** *connector can also be used.*
(3) ***Standard environment****:*
- - Without any particular environmental constraints
- - Operating temperature between + 5°C and + 60°C
- - Mounted installation

Harsh environment:
- - Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- - Relative humidity up to 100%
- - Saline atmosphere
- - Significant temperature variations
- - Operating temperature between - 10°C and + 70°C
- - Mobile installation

(4) Cordset with line termination.

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VW3CANA71

IP 20 connection accessories

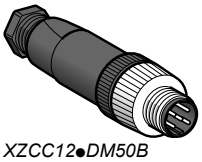
Designation	Description	No. (1)	Length	Reference	Weight kg
CANopen connector for Altivar™ 71 drive *(2)*	9-way female SUB-D. Switch for line termination. Cables exit at 180°	–	–	**VW3CANKCDF180T**	–
Adaptor for Altivar 71 drive	SUB-D to RJ45 CANopen adaptor	–	–	**VW3CANA71**	–
Preformed CANopen cordsets for Altivar drives	One RJ45 connector at each end	10	0.3 m	**VW3CANCARR03**	–
			1 m	**VW3CANCARR1**	–
Y-connector	CANopen/Modbus	–	–	**TCSCTN011M11F**	–

FTXDP21●●

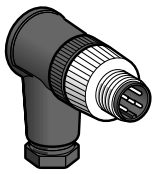
IP 67 connection accessories

For Modicon FTB monobloc splitter boxes

Designation	Composition	No. (1)	Length m	Reference	Weight kg
IP 67 line terminator	Equipped with one M12 connector (for end of bus)	13	–	**FTXCNTL12**	0.010
24 V ⎓ power supply connection cables	Equipped with two 5-way 7/8 connectors	16	0.6	**FTXDP2206**	0.150
			1	**FTXDP2210**	0.190
			2	**FTXDP2220**	0.310
			5	**FTXDP2250**	0.750
	Equipped with one 5-way 7/8 connector at one end and flying leads at the other end	17	1.5	**FTXDP2115**	0.240
			3	**FTXDP2130**	0.430
			5	**FTXDP2150**	0.700
T-connector for power supply	Equipped with two 5-way 7/8 connectors	–	–	**FTXCNCT1**	0.100



XZCC12●DM50B



XZCC12●CM50B

FTXCY1208

Separate parts

Designation	Composition		Sold in lots of	Reference	Weight kg
Connectors	7/8 type, 5-way	Male	–	**FTXC78M5**	0.050
		Female	–	**FTXC78F5**	0.050
	Straight, M12 type, 5 screw terminals	Male	–	**XZCC12MDM50B**	0.020
		Female	–	**XZCC12FDM50B**	0.020
	Angled, M12 type, 5 screw terminals	Male	–	**XZCC12MCM50B**	0.020
		Female	–	**XZCC12FCM50B**	0.020
Sealing plugs	For M8 connector (sold in packs of 10)		–	**FTXCM08B**	0.100
	For M12 connector (sold in packs of 10)		–	**FTXCM12B**	0.100
	For 7/8 connector		–	**FTXC78B**	0.020
Y-connectors	Connection of two M8 connectors to M12 connector on splitter box		–	**FTXCY1208**	0.020
	Connection of two M12 connectors to M12 connector on splitter box		–	**FTXCY1212**	0.030
Diagnostics adaptor	Equipped with two M12 connectors		–	**FTXDG12**	0.020
Marker labels	For plastic splitter boxes		10	**FTXBLA10**	0.010
	For metal splitter boxes		10	**FTXMLA10**	0.010

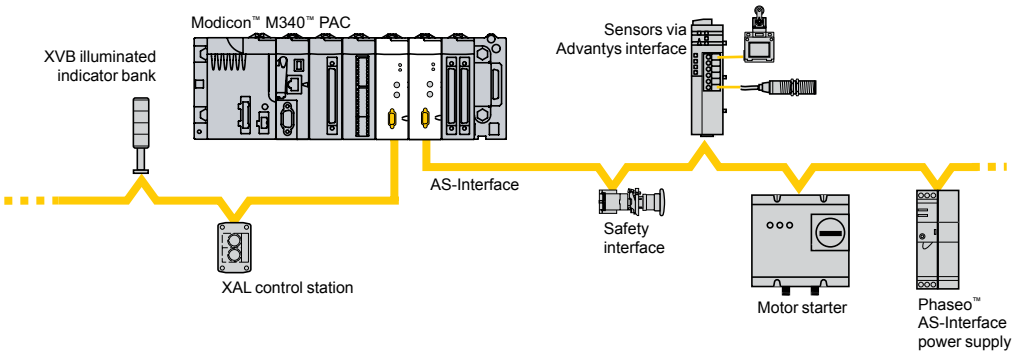
(1) For key to numbers, see page 3/67.
(2) For ATV71H●●●M3, ATV71HD11M3X, HD15M3X, ATV71H075N4 to HD18N4 drives, this connector can be replaced by the ***TSXCANKCDF180T connector.***

Modicon™ M340™ automation platform

BMXEIA0100 master module for AS-Interface cabling system

Introduction

The **BMXEIA0100** master module for AS-Interface cabling system provides the AS-Interface system master function for the Modicon™ M340™ automation platform.



The AS-Interface cabling system consists of a master station (Modicon M340 platform) and slave stations. The master supporting the AS-Interface profile interrogates the devices connected on the AS-Interface line one by one and stores the information (actuator/sensor status, device operating status) in the PAC memory. Communication on the AS-Interface line is managed transparently in relation to the application PAC program.

The **BMXEIA0100** master module supports the latest management profile for AS-Interface devices *(AS-Interface V3)* that are able to manage level V1, V2 and V3 AS-Interface slaves:

- Discrete slave devices (up to 62 devices of 4I/4Q organized in 2 banks (A/B) of 31 addresses each)
- Analog devices (up to 31 devices (4 channels) in bank A)
- Safety interfaces (up to 31 devices in bank A)

An AS-Interface power supply is required for powering the various devices on the line. Ideally it should be placed near stations that consume a great deal of energy. Please refer to the "Phaseo™ power supplies and transformers - AS-Interface range" catalog.

A Modicon M340 Performance configuration with **BMXP3420●0/20●02** processor can take 4 **BMXEIA0100** modules. A Standard configuration with **BMXP341000** processor can take 2 **BMXEIA0100** modules.

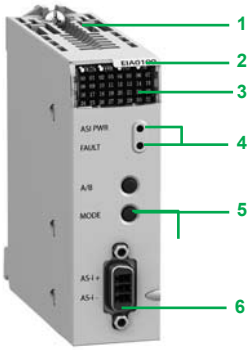
Description

The **BMXEIA0100** AS-Interface master module is standard format (1 slot). Its housing provides IP 20 protection of the electronics and it is locked into each rack slot **01** to **11**) by a captive screw.

The **BMXEIA0100** AS-Interface master module features:

1 Rigid body providing support and protection for the electronic card.
2 Module reference marking.
3 Display block with 5 LEDs indicating the module operating modes:
- □ RUN (green): Module running
- □ ERR (red): Module fault detected
- □ A/B (green): Displays the group of 31 slaves
- □ I/O (red): I/O fault detected on AS-Interface line
- □ 32 LEDs for diagnostics of the AS-Interface line and each slave connected on the line depending on the A/B push button selection *(1)*.

4 2 LEDs marked ASI POWER and FAULT: AS-Interface external power supply present and AS-Interface line fault: see diagnostics on page 3/71.
5 Two pushbuttons marked A/B and MODE: see diagnostics on page 3/71.
6 3-way male SUB-D connector for the AS-Interface cable (female screw connector supplied).

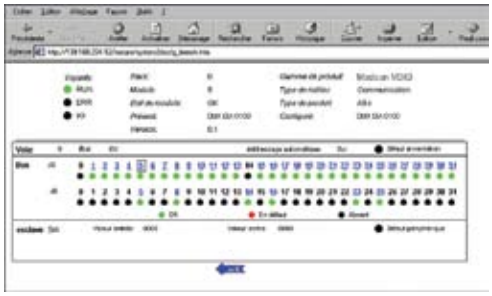


BMXEIA0100

(1) Depending on whether A or B is selected, this displays either the first 31 slaves (standard addressing) or the last 31 slaves (extended addressing).

Modicon™ M340™ automation platform

BMXEIA0100 master module for AS-Interface cabling system



Diagnostics

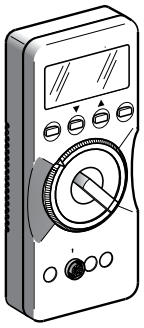
BMXEIA0100 module

The two LEDs **4** on the module front panel are used in conjunction with the two pushbuttons **5** for module diagnostics:

LEDs		Pushbuttons	
4 ASI PWR: AS-Interface power supply present	**4** FAULT: AS-Interface line fault	5 A/B: Selects the group of slaves on the display block 3	**5** MODE: Module Offline/Online

The display block on the front panel of the **BMXEIA0100** master module can be used to perform simplified local diagnostics by displaying the slave devices present on the AS-Interface line.
Detailed diagnostics of each of the slave devices is also possible using:

- The **ASITERV2** adjustment terminal
- A web browser using the Rack Viewer function in the standard Web server on the Modicon M340 platform (see page 3/14)



ASITERV2

References

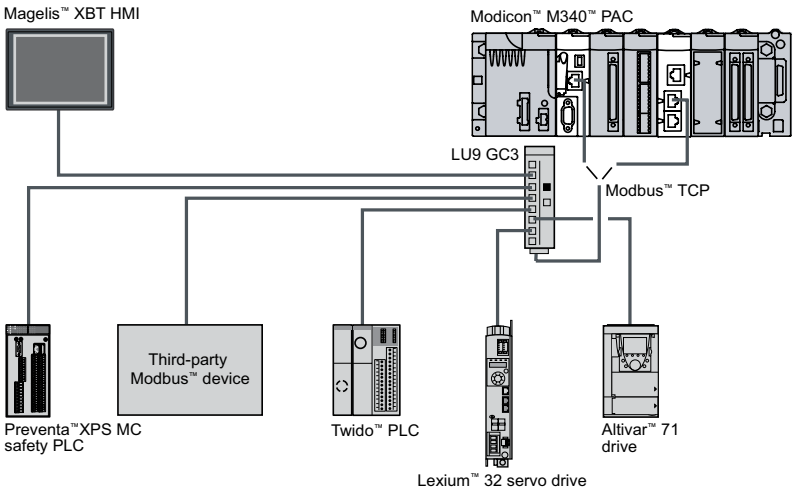
Description	Usage	Reference	Weight kg
AS-Interface master module supplied with 3-way male SUB-D connector	M4 AS-Interface profile for level V1, V2 and V3 slaves	**BMXEIA0100**	0.340
Adjustment terminal	For addressing and diagnostics of AS-Interface level V1, V2 and V3 interfaces Powered by LR6 batteries	**ASITERV2**	1.000

3

Modicon™ M340™ automation platform

Modbus™ and Character mode serial links

Introduction



The Modbus™ serial link is used for master/slave architectures on the Modicon™ M340™ automation platform. It is necessary, however, to check that the Modbus services used by the application have been implemented on 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 that has been interrogated.
- Broadcasting, where the master broadcasts a message to slave stations on the bus. The slave stations execute the order without transmitting a reply.

The Modicon M340 platform offers two 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**
- Via the 2-channel serial link module **BMXNOM0200.**

Although both these types of serial link can support modems, the **BMXNOM0200** module is particularly recommended for this type of use.
Its performance and numerous parameter options make it ideal for any type of configuration, especially when using radio modems.

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:

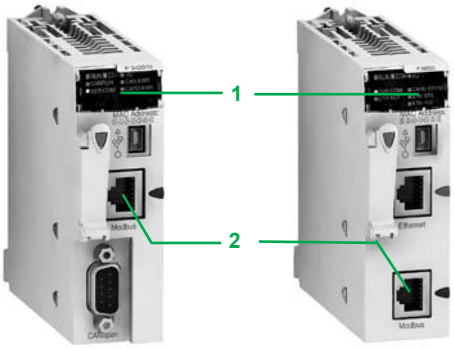
- Standard processor **BMXP341000**: maximum of 20 application-specific channels *(1)*.
- Performance processors **BMXP342●●●●:** maximum of 36 application-specific channels *(1)*.

*(1) Application-specific channels: **BMXEHC0200** counter modules (2 channels), **BMXEHC0800** (8 channels), **BMXMSP0200** motion control modules (2 channels), **BMXNOM0200** serial link module (2 channels) and **BMXNOR0200H** RTU communication module (1 channel).*

Processors: page 1/2 | I/O: pages 2/2 and2/14 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform

Modbus™ and Character mode serial links



BMXP3420102 *BMXP341000/2000/2020*

Description

Processors with integrated serial link

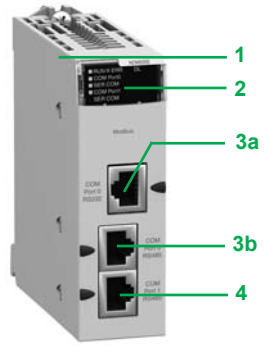
BMXP341000/2000/20102/2020 processors integrate a serial link that can be used with either the Modbus™ RTU/ASCII master/slave protocol or with the Character mode protocol.

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

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

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

Note: *For more information about the processors, see page 1/5.*



BMXNOM0200

BMXNOM0200 serial link module

The front panel of the **BMXNOM0200** serial link module features:

1 Screw for locking the module in a slot in the rack.

2 Display block with 4 LEDs:
- RUN (green) and ERR (red): Module status
- For each of the two channels: SER COM (green): Activity on the serial link (lit)/ detected fault on a device present on the serial link (flashing).

3 Two RJ45 connectors (exclusive use) for connection of channel 0 (with black indicator):
- **3a** A connector for RS 232C connection, marked COM Port 0 RS232
- **3b** A connector for RS 485 connection, marked COM Port 0 RS485

4 RJ45 connector for RS 485 connection of channel 1, marked COM Port 1 RS485, with black indicator.

To be ordered separately:
RS 485 cordsets (see page 3/76) or RS 232 cordsets for DCE terminal (see page 3/75).

*(1) For isolated serial links, use the **TWDXCAISO** isolation box.*

3

Modicon™ M340™ automation platform

Modbus™ and Character mode serial links

Complementary specifications

The following specifications complement those indicated in the selection guide on page 3/4.

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 in a non-isolated serial link
  - 40 m in an isolated serial link (1)

BMXNOM0200 module serial links

- Physical interface:
  - RS 232 port 0: RS 232 8-wire, non-isolated
  - RS 485 port 0 and port 1: RS 485 2-wire, isolated
- Frame:
  - Modbus: RTU/ASCII, full duplex in RS 232, half duplex in RS 485
  - Character mode: full duplex in RS 232, half duplex in RS 485
- Data rate:
  - RS 232 port 0: 0.3 to 115 Kbps (Modbus/Character mode)
  - RS 485 port 0 and port 1: 0.3 to 57.6 Kbps (Modbus/Character mode)
- Line polarization:
  - Modbus RS 485: automatic
  - RS 485 character mode: configurable with Unity™ Pro software
- Maximum length of a tap link in RS 485 2-wire:
  - 15 m in a non-isolated link
  - 40 m in an isolated link
- Expert mode (from version V1.2 of the module and version V5 of Unity Pro): used to configure the time out links individually from the application and thus adapt to the specific specifications of certain modems.

*(1) For isolated serial links, use the **TWDXCAISO** isolation box.*

Modicon™ M340™ automation platform

Modbus™ and Character mode serial links

BMXP341000/2000

BMXP342020

BMXNOM0200

References

I/O capacity	Memory capacity	Integrated communication ports	Reference	Weight kg
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
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
		Modbus serial link CANopen bus	**BMXP342010**	0.210
		Modbus serial link CANopen bus version V2.1 *(1)*	**BMXP3420102**	0.210
		Modbus serial link Ethernet Modbus/TCP network	**BMXP342020**	0.205

Designation	Protocol	Physical layer	Reference	Weight kg
Modbus serial link				
Modbus serial link 2 channels *(2)*	Modbus master/slave RTU/ASCII, Character mode, GSM/GPRS modem	1 non-isolated RS 232 channel (Port 0) 2 isolated RS 485 channels (Port 0 and Port 1)	**BMXNOM0200**	0.230

Designation	Description		Length	Reference	Weight kg
Cordsets for RS 232 serial link *(3)*					
Cordset for Data Terminal Equipment (DTE) (printer)	Equipped with an RJ45 connector and a 9-way female SUB-D connector		3 m	**TCSMCN3M4F3C2**	0.150
Cordset for Data Communication Equipment (DCE) (modem, etc.)	Equipped with an RJ45 connector and a 9-way male SUB-D connector	4-wire (RX, TX, RTS, CTS)	3 m	**TCSMCN3M4M3S2**	0.150
		8-wire (excluding RI signal)	3 m	**TCSXCN3M4F3S4**	0.165

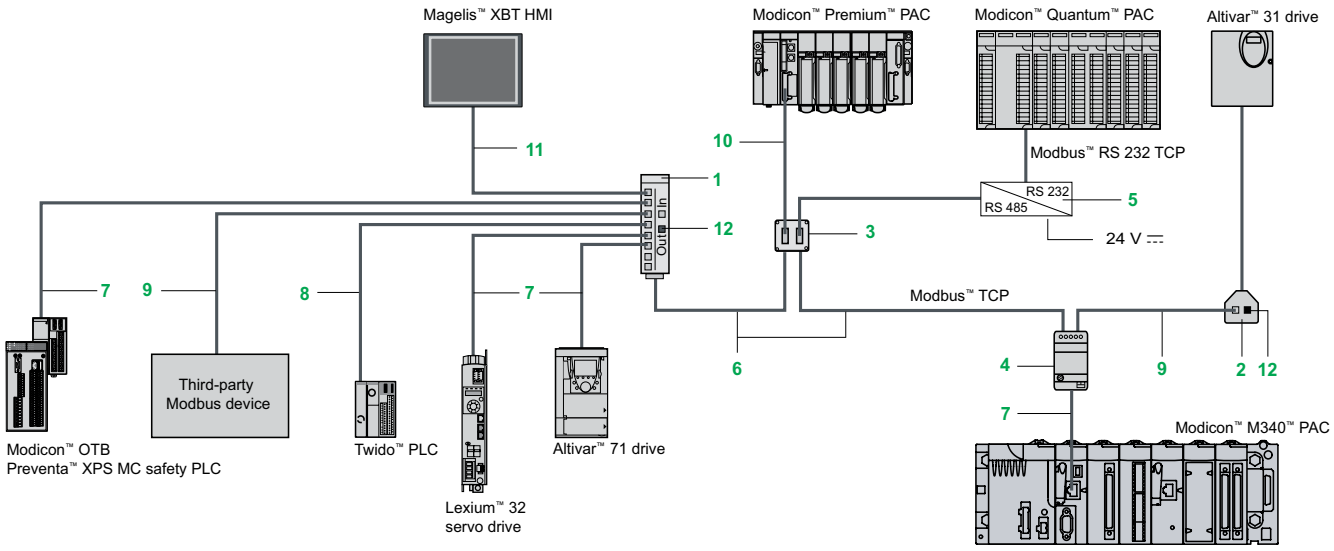
(1) Version that can be used to customize configuration of the device Boot Up procedure compatible with third-party CANopen products. Requires Unity™ Pro version V4.1.
*(2) For the ruggedized version, **BMXNOM0200H**, see specifications on pages 6/2 and 6/8.*
(3) RS 485 serial link connection (see pages 3/76 and 3/77).

Processors: page 1/2 | I/O: pages 2/2 and2/14 | Software: page 4/2 | Ruggedized Modicon M340 modules: page 6/2

Modicon™ M340™ automation platform

Modbus™ and Character mode serial link

Cabling systems



Extension and adaptation elements for RS 485 serial link

LU9GC3

TSXSCA50

TSXSCA62

VW3A8306TF●●

TWDXCAISO

TWDXCAT3RJ

VW3A8114

XGSZ24

Designation	Description	No.	Length	Unit reference	Weight kg
Modbus™ splitter box	- 1 screw terminal block for trunk cable: D(A), D(B), ⏚ and 0V - 8 x RJ45 connectors for tap-off - 2 x RJ45 connectors for series connection of LU9 GC3 splitter boxes Mounting on 35 mm DIN rail	1	–	**LU9GC3**	0.500
T-junction boxes dedicated to Altivar and Lexium	- 2 x RJ45 connectors - 1 integrated cable with RJ45 connector	2	0.3 m	**VW3A8306TF03**	0.190
			1 m	**VW3A8306TF10**	0.210
Passive T-junction box	- Tap-off and extension of the bus - Line termination	–	–	**TSXSCA50**	0.520
2-channel passive subscriber socket 2 x 15-way female SUB-D connectors and 2 screw terminal blocks	- 2-channel tap-off point and extension of trunk cable - Address coding - Line termination	3	–	**TSXSCA62**	0.570
Junction box Screw terminal block for trunk cable tap-off 1 x RJ45 connector for tap-off	- Isolation of the RS 485 serial link - Line termination (R = 120 Ω, C = 1 nF) - Line pre-polarization *(1)* (2 R = 620 Ω) 24 V ⎓ power supply *(2)* Mounting on 35 mm DIN rail	4	–	**TWDXCAISO**	0.100
Tap junction 3 x RJ45 connectors	- Line termination (R =120 Ω, C = 1 nF) - Line pre-polarization *(1)* (2 R = 620 Ω) Mounting on 35 mm DIN rail	–	–	**TWDXCAT3RJ**	0.080
Modbus/Bluetooth® adaptor	- 1 Bluetooth® adaptor (range 10 m, class 2) with 1 x RJ45 connector - 1 x0.1 m long cordset for PowerSuite with 2 x RJ45 connectors - 1 x0.1 m long cordset for TwidoSuite, with 1 x RJ45 connector and 1 mini-DIN connector - 1 RJ45/9-way male SUB-D adaptor for Altivar drives	–	–	**VW3A8114**	0.155
RS 232C/RS 485 line converter without modem signals	24 V ⎓/20 mA power supply, 19.2 Kbps Mounting on 35 mm DIN rail	5	–	**XGSZ24**	0.100
Line terminator	For RJ45 connector R = 120 Ω, C = 1 nF	12	Sold in packs of 2	**VW3A8306RC**	0.200

(1) Line polarization required for connection to the master Twido programmable controller.
(2) 24 V ⎓ power supply, or power supply via the serial port integrated in Modicon M340 processors.

Modicon™ M340™ automation platform

Modbus™ and Character mode serial link

Cabling systems

Cables and cordsets for RS 485 serial link

Designation	Description	No.	Length	Unit reference	Weight kg
RS 485 double shielded twisted pair trunk cables	Modbus™ serial link, supplied without connector	6	100 m	**TSXCSA100**	5.680
			200 m	**TSXCSA200**	10.920
			500 m	**TSXCSA500**	30.000
Modbus RS 485 cordsets	2 x RJ45 connectors	7	0.3 m	**VW3A8306R03**	0.030
			1 m	**VW3A8306R10**	0.050
			3 m	**VW3A8306R30**	0.150
	1 x RJ45 connector and 1 x 15-way SUB-D connector	–	3 m	**VW3A8306**	0.150
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector	8	0.3 m	**TWDXCARJ003**	0.040
			1 m	**TWDXCARJ010**	0.090
			3 m	**TWDXCARJ030**	0.160
	1 x RJ45 connector and 1 end with flying leads	9	3 m	**VW3A8306D30**	0.150
	1 miniature connector and 1 x 15-way SUB-D connector	10	3 m	**TSXSCPCM4530**	0.180
Cordsets for Magelis™ XBT display units and terminals	1 x RJ45 connector and 1 x 25-way SUB-D connector for: - XBTN200/N400/NU400 - XBTR410/411 - XBTGT2 to GT7 (COM1 port) *(1)*	11	2.5 m	**XBTZ938**	0.210
	2 x RJ45 connectors for: - XBTGT1 (COM1 port) - XBTGT2 to GT7 (COM2 port)	11	3 m	**VW3A8306R30**	0.150

Cordsets for RS 232 serial link

Designation	Description	Length	Reference	Weight kg
Cordset for Data Terminal Equipment (DTE) (printer)	Serial link for DTE (2) 1 x RJ45 connector and 1 x 9-way female SUB-D connector	3 m	**TCSMCN3M4F3C2**	0.150
Cordset for Data Communication Equipment (DCE) (modem, converter)	Serial link for DCE 1 x RJ45 connector and 1 x 9-way male SUB-D connector	3 m	**TCSMCN3M4M3S2**	0.150

*(1) For use with **XBTZG909** adaptor.*

Software

4.1 - Unity™ Pro software

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- FDT/DTM functions 4/4
- Functions 4/6
- Unity Pro XLS specific functions (SIL3 Modicon™ Quantum™) 4/14
- Communication drivers, Unity Developer's Edition 4/18
- Windows® OS compatibility 4/19
- Unity Pro update 4/19
- References 4/20

4.2 - RTU configuration software

- Introduction, setup, variables 4/24
- References 4/25

4.3 - Unity EFB Toolkit software

- Introduction, setup 4/26
- References 4/27

4.4 - Unity DIF software

- Introduction, setup 4/28
- References 4/29

4.5 - Unity Loader software and libraries

- Introduction 4/30
- References 4/31

4.6 - Unity Application Generator software

- Introduction, applications 4/32
- References 4/33

4.7 - Supervisory control and data acquisition software (SCADA): Vijeo™ Citect™

- Introduction 4/34
- Architectures 4/36
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4.8 - Vijeo™ Historian™ reporting software

- Introduction 4/48
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4.9 - OPC data server software

- Introduction 4/52
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Programmable process control . . . . . see page 2/24

MFB motion control . . . . . see page 2/34

Modicon™ M340™ automation platform
Unity™ Pro software

Unity™ Pro programming software for Modicon™ M340™ M, Premium ™ P, Quantum™ Q and SIL3 Quantum S and for Modicon distributed I/O D

IEC 61131-3 languages	Instruction List (IL)	**M - D**	**M - P - D**
	Ladder (LD)	**M - D**	**M - P - D**
	Structured Text (ST)	**M - D**	**M - P - D**
	Function Block Diagram (FBD)	**M - D**	**M - P - D**
	Sequential Function Chart (SFC)/Grafcet	**M - D**	**M - P - D**
Programming services	Multitask programming (Master, fast and event-triggered)	**M - D**	**M - P - D**
	Multitask programming (Master, fast, auxiliary and event-triggered)		
	Functional view and function modules	**M - D**	**M - P - D**
	DFB editor and instances	**M - D**	**M - P - D**
	DDT compound data editor	**M - D**	**M - P - D**
	Data structure instances and tables	**M - D**	**M - P - D**
	EF libraries and EFBs	**M - D**	**M - P - D**
	User-definable control loops		**P** (TSXP572●) **- D**
	Programmable control loops (with process control function block library)	**M - D**	**M - P - D**
	Safety function block libraries		
	Motion function block (MFB) libraries	**M - D**	**M - P - D**
	Hot Standby PAC redundancy system		**P** (TSXH5724M) **- D**
	System diagnostics	**M - D**	**M - P - D**
	Application diagnostics	**M - D**	**M - P - D**
	Diagnostics with location of detected error	**M - D**	**M - P - D**
	Bus and network configuration to slave devices (Modicon distributed I/O, etc)	**M - D**	**M - P - D**
Debugging and display services	PAC simulator	**M - D**	**M - P - D**
	Hypertext link animations in graphic languages	**M - D**	**M - P - D**
	Step by step execution, breakpoint	**M - D**	**M - P - D**
	Watchpoint	**M - D**	**M - P - D**
	Runtime screens	**M - D**	**M - P - D**
	Diagnostic viewer	**M - D**	**M - P - D**
Other services	Creation of hyperlinks	**M - D**	**M - P - D**
	XML import/export	**M - D**	**M - P - D**
	Application converters (Concept, PL7)		**M - P - D**
	Utilities for updating PAC operating systems and Advantys™	**M - D**	**M - P - D**
	Communication drivers for Windows 2000/XP	**M - D**	**M - P - D**
	Unity™ Pro servers - Openness		
UDE support OFS exchanges	Dynamic exchange with 3rd party tools, OFS		
	Static exchange via XML/XVM export files	**M - D**	**M - P - D**
Compatible Modicon platforms	Modicon M340 processors **M**	BMXP341000 BMXP3420●0/20●02	BMXP341000 BMXP3420●0/20●02
	Premium CPUs **P**	–	TSXP57C●0244/0244M TSXP57104/1634/154M TSXP57204/2634/254M TSXH5724M
	Quantum CPUs **Q**	–	–
	SIL3 Quantum CPUs **S**	–	–
Compatible Modicon distributed I/O D		STB, OTB, FTB, FTM, ETB, Momentum™	STB, OTB, FTB, FTM, ETB, Momentum
Software name		**Unity Pro Small**	**Unity Pro Medium**
Unity Pro software type		**UNYSPUSF●CD50**	**UNYSPUMF●CD50**
Page		4/20	4/21

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		S - D
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P (TSXH5724/44M) - D	P (TSXH5724/44M) - Q (140CPU67 160) - D	P (TSXH5724/44M) - Q (140CPU67 160) - S - D
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Unity™ Pro Large	Unity Pro Extra Large	Unity Pro XLS
UNYSPULF●CD50	UNYSPUEF●CD50	UNYSPUXF●CD41
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Modicon™ M340™ automation platform

Unity™ Pro software

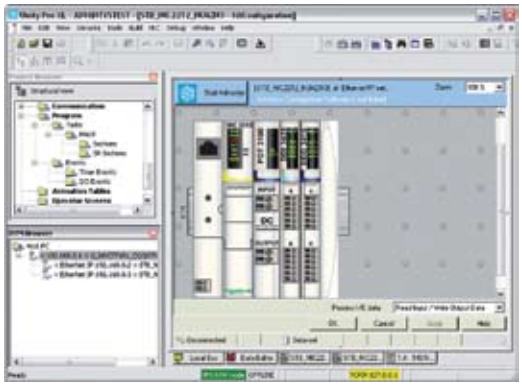
Small / Medium / Large / Extra Large / XLS

Unity Pro

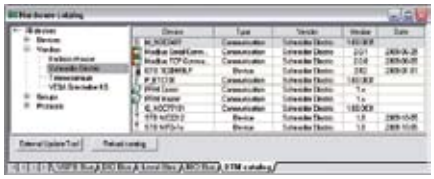
Introduction

Unity™ Pro is the common programming, debugging and operating software for the Modicon™ M340™, Premium™ and Quantum™ PAC automation platforms.

Unity Pro is multitasking software offering the following features:
- Five IEC 61131-3 programming languages
- Integrated, customizable DFB library
- PAC simulator on PC for program validation prior to installation
- Built-in tests and diagnostics
- Wide range of online services



DTM editor (Modicon STB island)



DTM hardware catalog

DTM Browser and DTM context menu

FDT/DTM functions

Unity Pro facilitates integration of fieldbus architectures into engineering control systems using FDT/DTM technology:
- FDT *(Field Device Tool)* is the container that supports the device DTMs.
- DTM *(Device Type Manager)* is the configuration tool for devices with integrated graphical interfaces. It contains the properties specific to each device.

In addition to the FDT/DTM standard, Unity Pro uses specific information from the Master DTM created for the Profibus Remote Master (PRM) module and the Modbus™/TCP and Ethernet/IP network module BMXNOC0401.

Use of the Master DTM allows Unity Pro to perform the following actions:
- Manage the PAC I/O scan
- Create the application variables based on the description of the process objects available from the connected DTM devices
- Manage synchronization with the PAC configuration
- Create a generic DTM from the description files (GDS or EDS)

The DTM configuration is stored in the PAC memory so that the application can be downloaded in its entirety. It is also saved in the PAC project file (STU) and the archive file (STA).

A third-party DTM can be installed in the DTM hardware catalog.
The DTM hardware catalog can be used to sort or filter the DTMs according to various criteria such as Device, Vendor, Groups or Protocols.

The DTM Browser in Unity Pro:
- Displays the fieldbus topologies in a tree structure
- Allows the user to configure the DTM devices:
  - Add and delete DTMs
  - Connect and disconnect DTMs to/from their physical devices
  - Display and print the properties of a DTM
  - Transfer DTM configuration data to and from the physical device
  - Functions specific to the DTM, via the Device menu

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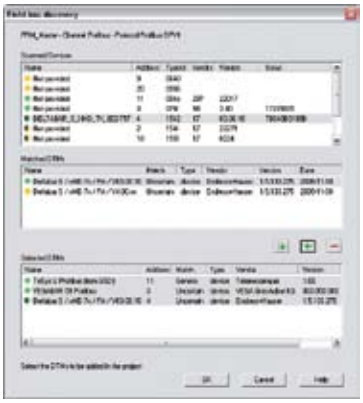

Fieldbus discovery screen

FDT/DTM function (continued)

The fieldbus discovery function scans the physical devices in a fieldbus network and adds the selected devices to the DTM Browser.

The five IEC languages

The five graphical or textual languages available in Unity™ Pro are used for programming Modicon™ M340™, Premium™ and Quantum™ automation platforms.

The three graphical languages are:
- Ladder (LD)
- Function Block Diagram (FBD)
- Sequential Function Chart (SFC) or Grafcet

The two textual languages are:
- Structured Text (ST)
- Instruction List (IL)

For these five languages, you can use the standard set of instructions compliant with IEC standard 61131-3 to create applications that can be transferred from one platform to another. Unity Pro software also provides extensions to this standard set of instructions. As they are specific to Modicon M340, Premium and Quantum PACs, these extensions support the development of more complex applications to maximize the potential of the specific features of each of these platforms.

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Modicon™ M340™ automation platform

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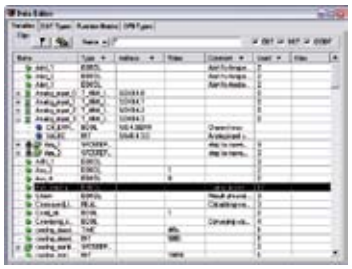

Data Editor

Data Properties

Data Editor

The data editor that can be accessed from the structural view of the project provides a single tool for performing the following editing tasks:

- Declaration of data including variables and function blocks (declaration of their type, instance and attributes)
- Use and archiving of function block data types in different libraries
- Hierarchical view of data structures
- Searching, sorting, and filtering of data
- Creation of a hyperlink to access a description from any variable comment

The data is displayed under four tabs:

- “Variables” for the creation and management of the following data instances: bits, words, double words, inputs/outputs, tables and structures
- “DDT Types” for the creation of derived data types (tables and structures)
- “Function Blocks” for the declaration of EFBs and DFBs
- “DFB Types” for the creation of DFB data types

Each data element has several attributes, of which:

- The variable name and type are mandatory
- The comment, physical address in the memory and initial values are optional

The data editor columns can be configured (number of columns, order). The attributes associated with a variable can be displayed in a properties window.

This editor can be accessed at any time during programming by selecting variables for data modification or creation.

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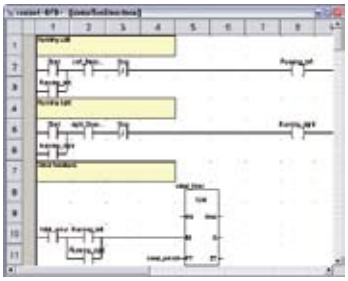
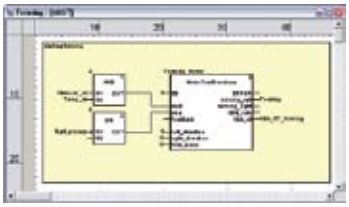
Design



Creating the code



Use within the program

DFB user function blocks

Using Unity™ Pro software, users can create their own function blocks for specific application requirements on Modicon™ M340™, Premium™ and Quantum™ PAC automation platforms.

Once created and saved in the library, these user function blocks can be reused as easily as EFBs (Elementary Function Blocks).

These user function blocks are used to structure an application. They are used when a program sequence is repeated several times in the application or for correcting a standard programming routine. They can be read-only or read/write. They can be exported to other Unity Pro applications.

Using a DFB in one or more applications:
- Simplifies program design and entry
- Improves program readability and understanding
- Facilitates program debugging (variables handled by the DFB are identified in the data editor)
- Enables the use of private variables specific to the DFBs that are independent of the application

A DFB is set up in several stages:
- The DFB is designed by assigning a name, a set of parameters (inputs, outputs, public and private internal variables) and a comment to it via the data editor.
- The code is created in one or more sections of the program, with the following languages selected according to requirements: Structured Text, Instruction List, Ladder or Function Block Diagram (ST, IL, LD or FBD).
- The DFB may be stored in a library with an associated version number.
- A DFB instance is created in the data editor or when the function is called in the program editor.
- This instance is used in the program in the same way as an EFB (Elementary Function Block). The instance can be created from within the program.

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Modicon™ M340™ automation platform

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Standard function block libraries

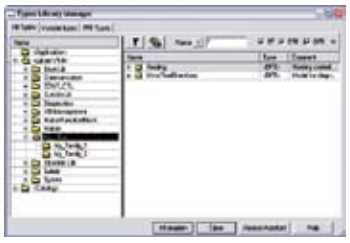
Function block libraries

The function and function block libraries manager contains the elements provided with Unity™ Pro software. The functions and function blocks are organized into libraries that consist of families. Depending on the type of PAC selected and the processor model, users will have a sub-set of these libraries available to write their applications. However, the “Base Lib” library contains a set of functions and function blocks, the majority of which are compatible with any Modicon PAC. In particular, it contains the blocks compliant with IEC 61131-3.
The “Base Lib” library is structured into families:

- Timers and counters
- Process control on integers
- Table management
- Comparison
- Date and time management
- Logic processing
- Mathematical processing
- Statistical processing
- Character string processing
- Type-to-type data conversion

The “Base Lib” library that covers standard automation functions, is supplemented by other, more application-specific libraries and platform-specific functions:

- **Communication library**. Provides an easy means of integrating communication programs from PACs with those used by HMIs from the PAC application program. Like other function blocks, these EFBs can be used in any language to exchange data among PACs or to deliver data to be displayed on an HMI.
- **Process control library**. The CONT_CTL library can be used to set up process-specific control loops. It offers controller, derivative and integral control functions plus additional algorithms, such as EFBs for calculating mean values, selecting a maximum value, detecting edges or assigning a hysteresis to process values, etc.
- **Diagnostics library**. Can be used to monitor actuators and contains EFBs for active diagnostics, reactive diagnostics, interlocking diagnostics, permanent process condition diagnostics, dynamic diagnostics, monitoring of signal groups, etc.
- **I/O management library**. Provides services to handle information exchanged with hardware modules (data formatting, scaling, etc.)
- **Motion Function Blocks library**. Contains a set of predefined functions and structures to manage motion controlled by drives and servo drives connected on CANopen.
- **Motion library.** Provides motion control and fast counting.
- **System library**. Provides EFBs for the execution of system functions, including evaluation of scan time, availability of several different system clocks, SFC section monitoring, display of system state, management of files on the memory cartridge of the Modicon M340 processor, etc.
- Finally, a library named “obsolete” containing function blocks used by legacy programming software needed to perform application conversions.



User libraries

Management of user standards

Users may create libraries and families to store their own DFBs and DDTs. This enhancement allows users to take advantage of programming standards adapted to their needs, along with version management. This means that it is possible to:

- Check the version of the elements used in an application program against those stored in the library
- Perform an upgrade, if necessary

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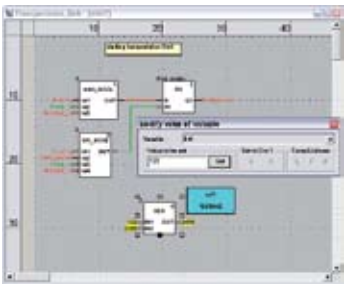
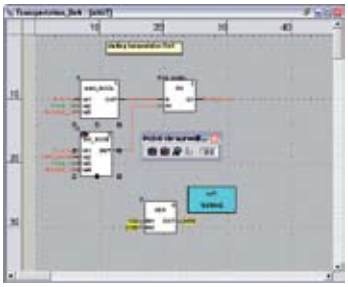
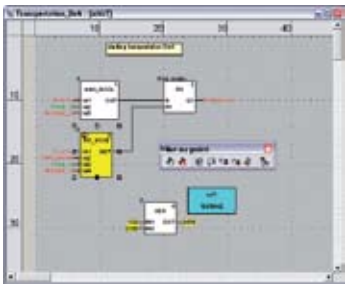


Dynamic animation/adjustment



Watchpoint



Breakpoints/step-by-step

Debugging tools

Unity™ Pro software offers a complete set of tools for debugging Modicon™ M340™, Premium™ or Quantum™ applications. A tool palette provides direct access to the main functions:

- Dynamic program animation
- Configuration of watchpoints or breakpoints (not authorized in event-triggered tasks)
- Step-by-step program execution. A function in this mode enables section-by-section execution. Instruction-by-instruction execution can be launched from the previous breakpoint. Three execution commands are therefore possible when the element to be processed is a subroutine (SR) or DFB user block instance:
  - Step Into: This command is used to move to the first element of the SR or DFB.
  - Step Over: This command is used to execute the entire SR or DFB.
  - Step Out: This command is used to move to the next instruction after the SR or DFB element.
- Independent execution of the master (MAST), fast (FAST), auxiliary (AUX) and event (EVTi) tasks

Animation of program elements

Dynamic animation is managed section by section. A button on the toolbar is used to activate or deactivate animation for each section.
When the PAC is in RUN, this mode can be used to view, simultaneously:

- The animation of a program section, regardless of the language used
- The variables window containing the application objects created automatically from the section viewed

Animation table

Tables containing the application variables to be monitored or modified can be created by data entry or automatically initialized from the selected program section. These tables can be stored in the application and retrieved from there at a later date.

Debugging DFB user function blocks

The parameters and public variables of these blocks are displayed and animated in real time using animation tables, with the possibility of modifying and forcing the required objects.
In exactly the same way as with other program elements, the watchpoint, breakpoint, step-by-step execution and program code diagnostics functions can be used to analyze the behavior of DFBs. Configuring a breakpoint in a DFB user function block instance stops the execution of the task containing this block.

Debugging in Sequential Function Chart (SFC) language

The various debugging tools are also available in SFC language. However, unlike other sections (IL, ST, LD, or FBD) an SFC section executed step-by-step does not stop execution of the task but instead freezes the SFC chart. Several breakpoints can be declared simultaneously within a single SFC section.

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Modicon™ M340™ automation platform

Unity™ Pro software

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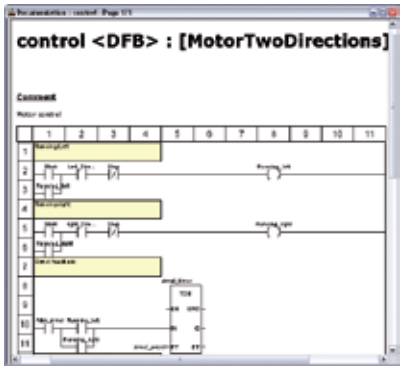
Simulator control panel

PAC simulator

Unity™ Pro's integrated simulator can be used to test the application program for Modicon™ M340™, Premium™ or Quantum™ PACs from the PC terminal without having to connect to the PAC processor. The functions provided by the debugging tools are available for debugging the master, fast, and auxiliary tasks.
Because the simulator does not manage the PAC I/O, animation tables can be used to simulate the state of inputs by forcing them to 0 or 1.
The simulator can be connected to third-party applications via an OPC server with OFS *(OPC Factory Server)* software.



Accessing the documentation editor

Documentation editor

The documentation editor is based on the Documentation Browser that shows the file structure in tree form.
It allows the application file or a portion of the file to be printed on any graphics printer accessible under Windows and using True Type technology, in A4 or US letter print format.
The documentation editor supports the creation of user-specific files using the following headings:

- Title page
- Contents
- General information
- Footer
- Configuration
- EF, EFB and DFB type function blocks
- User variables
- Communication
- Project structure
- Program
- Animation tables and cross references
- Runtime screens

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Modicon™ M340™ automation platform

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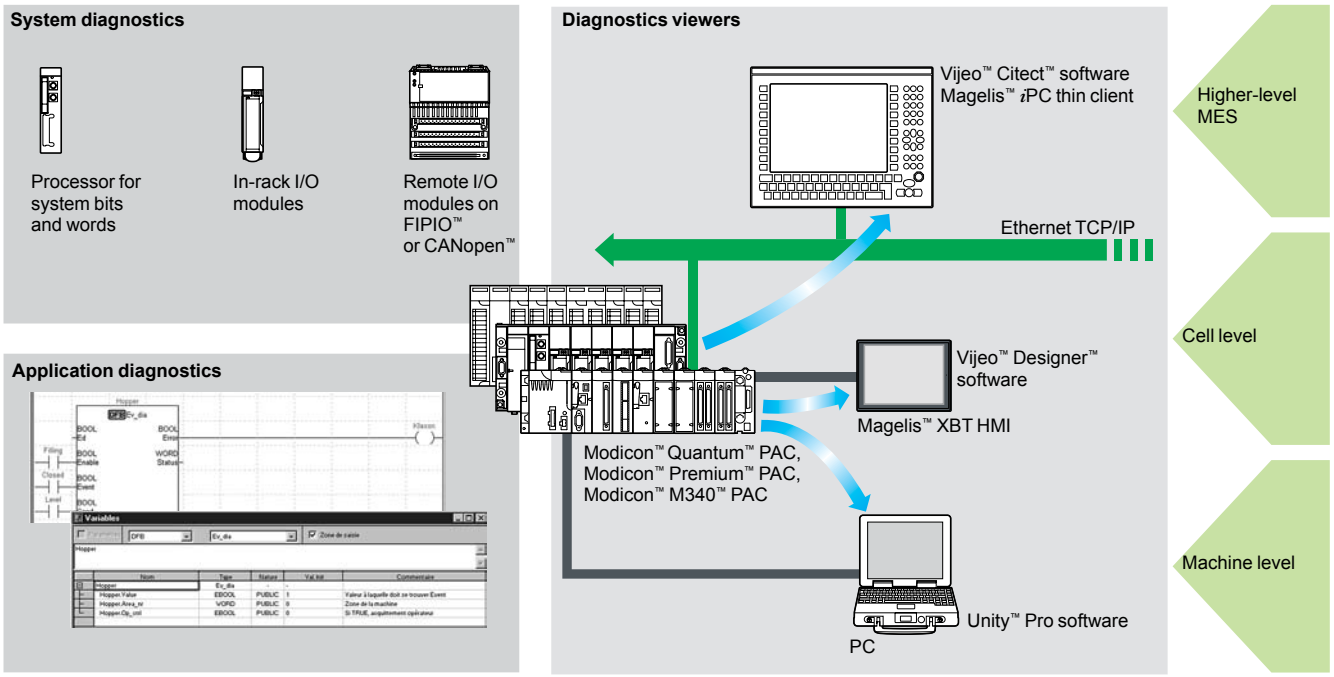
Integrated diagnostics

Diagnostics integrated into Modicon™ M340™, Premium™ and Quantum™ automation platforms

Introduction



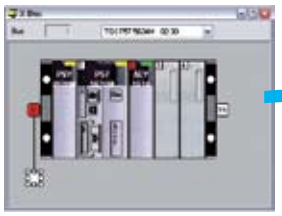
The diagnostics offer for Modicon M340, Premium and Quantum platforms is based on the following three components:

- System diagnostics
- DFB and EFB diagnostic function blocks (for system and application diagnostics)
- Error message display system, called viewers, supplied as a standard component of Magelis XBT terminals, Vijeo™ Citect™ supervisory software and Unity™ Pro setup software

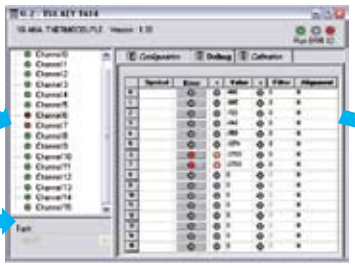
System diagnostics

The system diagnostics for Modicon M340, Premium and Quantum automation platforms support the monitoring of system bits/words, I/O modules and SFC step activity times (minimum/maximum). By simply choosing the relevant option during application configuration, any event will generate time-stamped messages logged in the diagnostic buffer of the PAC.
These events are displayed automatically in a diagnostics viewer *(1)* without requiring any additional programming.

With Unity Pro integrated diagnostics, this function can be used to perform first level diagnostics of the elements in the configuration, up to and including each I/O module channel.



Configuration level



Module level

Viewer window (example with Unity Pro software)

Channel level

(1) Diagnostics viewers are tools for displaying and acknowledging diagnostic error messages. They are supplied as a standard component of Unity Pro and Vijeo Designer software, with Magelis terminals and with the PAC Web server that can be accessed via a Magelis iPC thin client.

Modifying the program with the PAC in RUN mode

With Unity™ Pro, changes can be made to the program when the PAC connected to the programming terminal is in RUN mode. These modifications are performed with the following operations:
- The application contained in the PAC is transferred to the PC terminal running Unity Pro, if necessary.
- Program changes are prepared. These program modifications can be of any type and in any language (IL, ST, LD, FBD, and SFC), for example, addition or deletion of SFC steps or actions. The code of a DFB user function block can also be modified (however, modifications of its interface are not permitted).
- These program changes are updated in the PAC (in RUN mode).

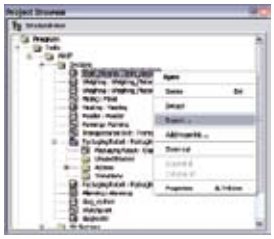
This function makes it possible to add or modify program code and data in different parts of the application in one single modification session (thus resulting in a unified, consistent modification with respect to the controlled process). This increased flexibility comes at a cost in terms of the amount of program memory required.

Cross references function

Cross references table

Unity Pro's cross references function is available in standalone mode (offline) and when connected to the PAC in Run (online). It allows users to view the elements of a PAC application when searching for any type of variable. This view indicates where the declared variable is used, as well as how it is used (for writing, reading, etc.).
This function also accesses the Search/Replace function for variable names.
The variable search can be initialized from any editor (language, data, runtime screen, animation table, etc.).

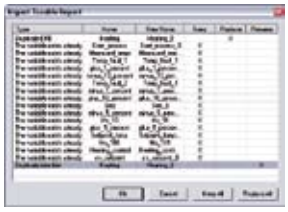
Import/export function



Data export shortcut menu

The import/export function available in Unity Pro supports the following operations from the structural and functional project views:
- Via the import function, reuse any portion of a project created previously
- Via the export function, copying any portion of the current project to a file for subsequent reuse

The files generated during export are generally in XML format *(1)*. However, in addition to XML, variables can be exported and imported in the following formats:
- .xvm format compatible with OFS data server software
- Source format, in an .scy file compatible with the PL7 design software
- Text format with separator (TAB) in a .txt file for compatibility with any other system



Data import wizard

During an import, a wizard can be used to reassign data to new instances of:
- DFBs
- DDTs
- Simple data

In addition, when a functional module is imported, the data associated with animation tables and runtime screens is also reassigned.

The XML import function also supports the transfer of a Modicon M340, Premium or Quantum PAC configuration prepared in the SIS Pro costing and configuration tool for use in the creation of a project in Unity Pro.
This import function spares the user from having to redefine the PAC configuration when the PAC has already been configured with the SIS Pro tool.

(1) XML language is an open, text-based language that provides structural and semantic information.

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Application converters

Unity™ Pro's integrated conversion tools can be used to convert PAC applications created with Concept™ and PL7™ programming software to Unity Pro applications.

Concept/Unity Pro converter (Quantum™ PAC)

This conversion is performed with a Concept application V2.5 or later (it can also be performed in V2.11 or later, but only after an update to V2.5). To perform the conversion, export the application to an ASCII file in Concept.
The export file is converted to a Unity Pro source file automatically. This source file is then analyzed by Unity Pro. At the end of the procedure, a conversion report is generated and an output window displays any detected conversion errors and provides direct access to the part of the program to be modified.
The Concept application converter converts the application to Unity Pro, but does not guarantee that it will operate correctly in real time. It is the responsibility of the user to test or debug converted applications.

PL7/Unity Pro converter (Premium PAC)

This conversion is performed with a PL7 application V4 or later (Premium slot-PAC). To perform the conversion, the source file (complete application) or source file (user function block) is exported in PL7.
The conversion procedure is similar to that of the Concept conversion described above.

Note: *Applications created with Concept™, Modsoft™ and ProWORX™ can be converted to LL984™. Consult your Customer Care Center.*

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Modicon™ M340™ automation platform
Unity™ Pro software
XLS

Unity Pro

Unity™ Pro XLS

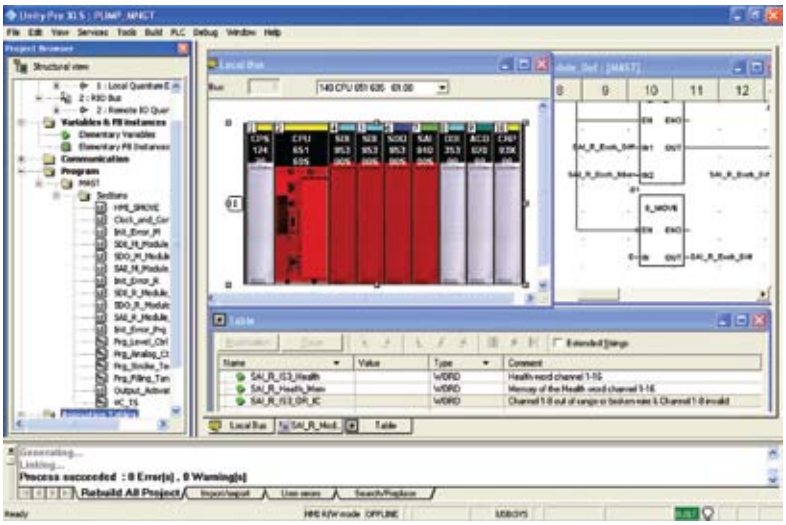
In addition to the functions of Unity Pro Extra Large, Unity Pro XLS provides a set of specific check and protection function blocks to facilitate the creation and debugging of SIL3 Quantum™ projects.
For a description of these specifications and their setup, as well as the functional limitations provided for within the framework of SIL3-certifiable safety projects according to IEC 61508, refer to the document entitled "*Quantum Safety PAC Safety Reference Manual*" 11/2007, No. 3303879.00, approved by TÜV Rheinland and available at **www.schneider-electric.com**.

The Unity Pro XLS programming tool is certified compliant with the requirements of IEC 61508 for the management of safety applications with Quantum **140CPU651 60S/67160S** PACs.
It offers the complete range of functions required to program a safety project:
- In-depth error diagnostics
- Project protection

During project creation, it is the selection of the Quantum processor that determines whether or not the project created will be a safety project.

Unity Pro XLS is capable of processing any Unity Pro application types.
No other programming tool is needed on the computer.

To program a safety project, Unity Pro XLS provides two IEC 61131-3 programming languages:
- Function Block Diagram (FBD)
- Ladder language (LD)



Safety program structure

A safety project must be programmed entirely in a master task (MAST).

It is not possible to:
- Program FAST, TIMER, INTERRUPT or AUX tasks
- Use subroutines (SR sections)

Selection guide:
page 4/2

Unity™ Pro XLS (continued)

Language elements

Unity Pro XLS provides a set of specific, certified functions and function blocks. These are available in the “Unity Pro safety function block library”.

Many of the language elements are available:
- Elementary data types (EDTs): BOOL, EBOOL, BYTE, WORD, DWORD, INT, UINT, DINT, UDINT and TIME
- Simple tables used exclusively for Ethernet Global Data communication
- Direct addressing, for example, writing to %MW memory via a coil in Ladder language (LD)
- Located variables

Project verification options

Unity Pro XLS provides the following different options for the checks performed by the language analyser:
- Unused variables
- Variables written multiple times
- Unassigned parameters
- FB instances used multiple times
- Address overlapping

It is advisable to enable each available option when checking a safety project.

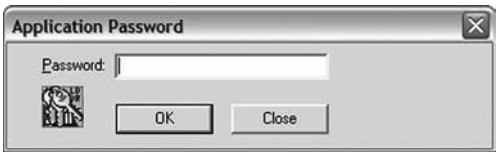
Selection guide:
page 4/2

Unity™ Pro XLS (continued)

Project security

Unity Pro XLS provides security functions to help protect against unauthorized access to safety projects, to the SIL3 Quantum™ PAC and to the Unity Pro XLS software.

■ The application password, defined when the safety project was created, is requested:
- □ When the safety application file is opened
- □ Upon connection to the SIL3 Quantum PAC



■ The safety editor integrated into Unity Pro XLS is used to define the access permissions and the list of authorized functions for each user, in particular:
- □ Creation and modification of the application password
- □ Activation of maintenance mode

■ Adjustment of the auto-lock period

Functions and function blocks for safety applications

Unity Pro XLS provides a set of elementary functions (EFs) and elementary function blocks (EFBs) certified for use in safety applications:

■ Standard functions certified for safety applications:
- □ Mathematical functions and functions for manipulating data from the unrestricted memory area in the safety logic
- □ Comparison functions
- □ Logic functions, rotations, shift operations
- □ Statistical functions
- □ Timer and counter setup
- □ Type conversions

■ Specific functions for safety architectures:
- □ High availability setup: choice of two inputs from a redundant discrete I/O module or a redundant analog input module
- □ Hot Standby PAC redundancy setup: to cause the two processors involved in a hot standby configuration to change roles from primary to standby and standby to primary respectively. The objective is to verify the capacity of each processor to take over in case the other processor becomes inoperative. With Unity Pro XLS, this function can easily be programmed in the application by configuring the S_HSBY_SWAP elementary function from the library.

4

Selection guide:
page 4/2

Unity™ Pro XLS (continued)

Special features and procedures

Software tool self-test

Unity Pro XLS provides the option of running a self-test to verify that the software components installed have not been corrupted, for example, due to a PC hard disk failure. This self-test is based on a CRC calculation.

Unity Pro XLS checks the version and CRC of the following:
- Its DLLs
- The safety FFB library database
- The hardware catalog database

Unity Pro XLS self-tests are performed on a user request, for example:
- After installing or uninstalling any program on the computer
- Before loading the final application program into the PAC
- Before modifying the application program executed on the SIL3 Quantum PAC

Time-stamping binary files

With Unity Pro XLS, every binary file generated for a safety project features a version management field that provides the date and time when it was generated.
This information is useful for checking the project.

Downloading a project to Unity Pro XLS

It is possible to upload a safety project from the PAC to Unity Pro XLS under the following conditions:
- This option was selected for the project.
- The user is required to know the application password to establish a connection to the SIL3 Quantum PAC.
- The SIL3 Quantum PAC has been placed in maintenance mode to perform the upload.

Unrestricted memory

The unrestricted memory area contains bits and words that are not protected against write operations from external equipment such as HMI terminals and PACs.

- It is located at the beginning of the memory.
- Its size can be configured with Unity Pro XLS.
- Values cannot be used directly in the unrestricted memory area and can only be used in conjunction with specific function blocks S_MOVE_BIT and S_MOVE_WORD.

Unity Pro XLS checks in both the application edit and generation phases to help make sure that only data from the unrestricted memory area is used at the input of the function blocks S_MOVE_BIT and S_MOVE_WORD.
Furthermore, Unity Pro XLS provides a useful list of cross references, allowing easy identification of the way in which variables are used and verification of the application of this rule.

***Note**: For safety applications, it is common practice to verify the correct transfer of data by writing the data twice (to two different variables) and then comparing it.*

Selection guide:
page 4/2

Modicon™ M340™ automation platform

Unity™ Pro software

Small / Medium / Large / Extra Large / XLS

Communication drivers

The drivers commonly used with the M340™, Premium™ and Quantum™ platforms are installed at the same time as the Unity™ Pro software.

Unity Pro also includes the following communication drivers that can be installed as required *(1)*:

Protocol - Hardware	Windows XP Professional	Windows Vista Business 32-bit Edition Windows 7 32-bit and 64-bit Editions
Ethway™ - Ethernet	■	
FIP - FPC10 ISA card	■	
FIP - FPC20 PCMCIA card	■	
FIP adaptor - CUSBFIP	■	■
ISAway™ - PCX57 ISA card	■	
Modbus™ **Serial** - COM port	■	■
PCIway™ - Atrium™ TPCI57 PCI card	■	■
Uni-Telway™ - COM port	■	■
Uni-Telway - SCP114 PCMCIA card	■	
USB for high end PAC	■	■
XWay™ on TCP/IP	■	■

■ Driver available ■ Driver not available

Unity Developer's Edition, advanced open access

Advanced open access is helpful for experienced IT engineers. It support the development of interfaces between Unity and expert tools and specific user-defined functions.
This type of development requires experience in the following IT areas:

- C++ or Visual Basic languages
- Client/server architectures
- XML and COM/DCOM technologies
- Database synchronization

As a supplement to the Unity Pro Extra Large software *(2)*, the UDE (Unity Developer's Edition) development kit **UNYUDEVFUCD21E** enables the development of customized solutions. In addition to the development kit, the Unity servers and accompanying documentation are also provided.

Unity Developer's Edition is compatible with:

- Unity Pro Extra Large
- Modicon M340 processors
- Premium Unity processors
- Quantum Unity processors

(1) Also available separately under reference **TLXCDDRV20M**
(2) Only the Unity Pro Extra Large version enables dynamic database management for data to be exchanged with the OFS data server or a third-party tool.

Selection guide:
page 4/2

Upgrade kits for Concept™, PL7™ Pro and ProWORX™ software

The Concept, PL7 Pro and ProWORX upgrade kits allow users who already have one of these programs from the installed base and who have a **current subscription** to obtain Unity Pro version V4.1 software at a reduced price.

These upgrades are only available for licenses of the same type (from Concept XL group license to Unity™ Pro Extra Large group license).

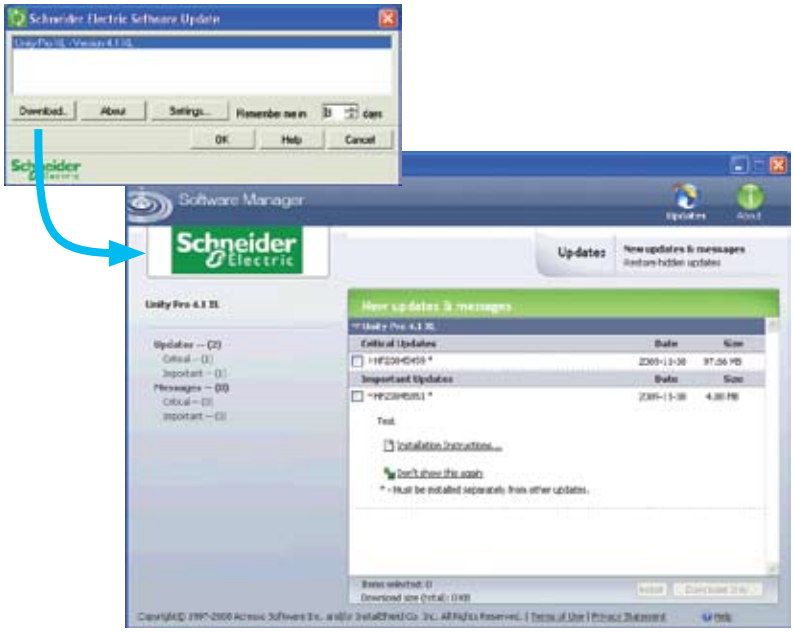
Composition and Windows OS compatibility

Unity Pro multilingual software packages are compatible with Windows 2000 Professional and Windows XP operating systems.
They include:
- Documentation in electronic format in six languages (English, German, Chinese, Spanish, French and Italian)
- Converters for converting applications created with Concept and PL7 Pro programming software
- PAC simulator

Cables for connecting the processor to the programming PC are ordered separately.

Unity Pro update

Customers are notified automatically when a new Unity Pro update becomes available.
They can then access the software updates manager directly, download the update, and install it on their workstation.



Selection guide:
page 4/2

Modicon™ M340™ automation platform

Unity™ Pro software

Small / Medium / Large / Extra Large / XLS

References

Unity™ Pro Small, Medium, Large, Extra Large and XLS software packages

These software packages are for programming and configuring Unity automation platforms. The software is available in five versions:

- **Unity Pro Small**, see page 4/20
- **Unity Pro Medium,** see page 4/21
- **Unity Pro Large** see page 4/21
- **Unity Pro Extra Large** see page 4/22
- **Unity Pro XLS** see page 4/22

Upgrade kits for Concept™, PL7™ Pro and ProWORX™ software

These upgrade kits allow users who already have these software programs from the installed base and who have a **current subscription** to obtain Unity Pro version V5.0 software at a reduced price. These upgrades are only available for licenses of the same type (from Concept XL group license to Unity Pro Extra Large group license). See pages 4/21 and 4/22.

Composition and Windows OS compatibility

Unity Pro multilingual software packages are compatible with Windows XP, Windows Vista Business Edition (32-bit) and Windows 7 (32-bit) operating systems.
They include:

- Unity Pro V5.0 DVD in six languages (English, French, German, Italian, Spanish and Chinese)
- Unity Loader V2.1 CD
- Ethernet/IP Configuration V1.1 CD (not included with Unity Pro Small)
- DVD containing the documentation in six languages (English, French, German, Italian, Spanish and Chinese)

Unity Pro Small version 5.0 software

For Modicon™ M340™: **BMXP341000/20●0/20●02**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum™**

Unity Pro Small version 5.0 software packages *(1)*

Designation	License type	Reference	Weight kg
Unity Pro Small software packages	Single (1 station)	**UNYSPUSFUCD50**	–
	Group (3 stations)	**UNYSPUSFGCD50**	–
	Team (10 stations)	**UNYSPUSFTCD50**	–
Software upgrades from: - Concept S - PL7 Micro - ProWORX NxT/32 Lite	Single (1 station)	**UNYSPUSZUCD50**	–
	Group (3 stations)	**UNYSPUSZGCD50**	–
	Team (10 stations)	**UNYSPUSZTCD50**	–

License type extensions for Unity Pro Small version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUSZUGCD50**	–
Group (3 stations)	Team (10 stations)	**UNYSPUSZGTCD50**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 4/2.

Selection guide:
page 4/2

Modicon™ M340™ automation platform

Unity™ Pro software

Medium / Large

Unity™ Pro Medium version 5.0 software

For Modicon™ M340™: **BMXP341000/20●0/20●02**
For Modicon Premium™: **TSX570● to 2●, TSXPCI572●**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum™**

Unity Pro Medium version 5.0 software packages *(1)*

Designation	License type	Reference	Weight kg
Unity Pro Medium software packages	Single (1 station)	**UNYSPUMFUCD50**	–
	Group (3 stations)	**UNYSPUMFGCD50**	–
	Team (10 stations)	**UNYSPUMFTCD50**	–
Software upgrades from: - Concept™ S, M - PL7™ Micro, Junior - ProWORX™ NxT/32 Lite	Single (1 station)	**UNYSPUMZUCD50**	–
	Group (3 stations)	**UNYSPUMZGCD50**	–
	Team (10 stations)	**UNYSPUMZTCD50**	–

License type extensions for Unity Pro Medium version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUMZUGCD50**	–
Group (3 stations)	Team (10 stations)	**UNYSPUMZGTCD50**	–

Upgrade to Unity Pro Medium from Unity Pro Small

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Small to Medium Single (1 station)	**UNYSPUMZSUCD50**	–
Small to Medium Group (3 stations)	**UNYSPUMZSGCD50**	–
Small to Medium Team (10 stations)	**UNYSPUMZSTCD50**	–

Unity Pro Large version 5.0 software

For Modicon M340: **BMXP341000/20●0/20●02**
For Modicon Premium: **TSX570● to 4●, TSXPCI572● to 3●**
For Modicon Quantum™: **140CPU311 10/434 12U/534 14U**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum**

Unity Pro Large version 5.0 software packages *(1)*

Designation	License type	Reference	Weight kg
Unity Pro Large software packages	Single (1 station)	**UNYSPULFUCD50**	–
	Group (3 stations)	**UNYSPULFGCD50**	–
	Team (10 stations)	**UNYSPULFTCD50**	–
	Site (⩽ 100 users)	**UNYSPULFFCD50**	–
Software upgrades from: - Concept S, M - PL7 Micro, Junior, Pro - ProWORX NxT/32 Lite	Single (1 station)	**UNYSPULZUCD50**	–
	Group (3 stations)	**UNYSPULZGCD50**	–
	Team (10 stations)	**UNYSPULZTCD50**	–
	Site (⩽ 100 users)	**UNYSPULZFCD50**	–

License type extensions for Unity Pro Large version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPULZUGCD50**	–
Group (3 stations)	Team (10 stations)	**UNYSPULZGTCD50**	–

Upgrade to Unity Pro Large from Unity Pro Medium

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Medium to Large Single (1 station)	**UNYSPULZMUCD50**	–
Medium to Large Group (3 stations)	**UNYSPULZMGCD50**	–
Medium to Large Team (10 stations)	**UNYSPULZMTCD50**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 4/2.

Selection guide:
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Modicon™ M340™ automation platform
Unity™ Pro software
Extra Large / XLS

Unity™ Pro Extra Large version 5.0 software

For Modicon™ M340™: **BMXP341000/20●0/20●02**
For Modicon Premium™: **TSX570● to 6●, TSXPCI572● to 3●**
For Modicon Quantum™: **140CPU311 10/434 12U/534 14U/651 50/651 60/652 60/671 60**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum™**

Unity Pro Extra Large version 5.0 software packages *(1)*

Designation	License type	Reference	Weight kg
Unity Pro Extra Large software packages	Single (1 station)	**UNYSPUEFUCD50**	–
	Group (3 stations)	**UNYSPUEFGCD50**	–
	Team (10 stations)	**UNYSPUEFTCD50**	–
	Site (≤ 100 users)	**UNYSPUEFFCD50**	–
Software upgrades from: - Concept™ S, M, XL - PL7™ Micro, Junior, Pro - ProWORX™ NxT Lite, Full - ProWORX 32 Lite, Full	Single (1 station)	**UNYSPUEZUCD50**	–
	Group (3 stations)	**UNYSPUEZGCD50**	–
	Team (10 stations)	**UNYSPUEZTCD50**	–
	Site (≤ 100 users)	**UNYSPUEZFCD50**	–

License type extensions for Unity Pro Extra Large

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNYSPUEZUGCD50**	–
Group (3 stations)	Team (10 stations)	**UNYSPUEZGTCD50**	–

Upgrade to Unity Pro Extra Large from Unity Pro Large

Type of upgrade The number of stations is unchanged	Reference	Weight kg
Large to Extra Large Single (1 station)	**UNYSPUEZLUCD50**	–
Large to Extra Large Group (3 stations)	**UNYSPUEZLGCD50**	–
Large to Extra Large Team (10 stations)	**UNYSPUEZLTCD50**	–

Unity Pro XLS version 4.1 software

For Modicon M340: **BMXP341000/20●0/20●02**
For Modicon Premium: **TSX570● to 6●, TSXPCI572● to 3●**
For Modicon Quantum: **140CPU311 10/434 12U/534 14U/651 50/651 60/652 60/671 60/651 60S/671 60S**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum**

Unity Pro XLS version 4.1 software packages *(1)*

Designation	License type	Reference	Weight kg
Unity Pro XLS software packages	Single (1 station)	**UNYSPUXFUCD41**	–
	Group (3 stations)	**UNYSPUXFGCD41**	–
	Team (10 stations)	**UNYSPUXFTCD41**	–
	Site (≤ 100 users)	**UNYSPUXFFCD41**	–
Software upgrades from: - Concept S, M, XL - PL7 Micro, Junior, Pro - ProWORX NxT Lite, Full - ProWORX 32 Lite, Full	Single (1 station)	**UNYSPUXZUCD41**	–
	Group (3 stations)	**UNYSPUXZGCD41**	–
	Team (10 stations)	**UNYSPUXZTCD41**	–
	Site (≤ 100 users)	**UNYSPUXZFCD41**	–

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 4/2.

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Selection guide:
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Modicon™ M340™ automation platform

Unity™ Pro software

Small / Medium / Large / Extra Large / XLS

Unity Pro

Unity™ Pro software

Description	License type	Reference	Weight kg
Unity Developer's Edition			
UDE Unity Developer's Edition For automating repetitive tasks or generating source code automatically from third-party applications Available for Unity Pro Small, Medium, Large, Extra Large and XLS	Single (1 station)	**UNYUDEVFUCD21E**	–
Unity SFC View software			
Unity SFC View software packages	Single (1 station)	**UNYSDUMFUCD20**	–

Unity Pro documentation, separate parts

Description	License type	Reference	Weight kg
Documentation for Unity Pro version 5.0			
Hardware and software manuals (on DVD) Platform setup for: - Modicon™ M340™ - Premium™ - Quantum™ - Momentum™ Electromagnetic compatibility of networks and fieldbuses Software setup for: - Unity™ Pro - Function block libraries	Multilingual (English, French, German, Italian, Spanish, Chinese)	**UNYUSE909CDM**	–

BMXXCAUSBH0●●

TSXPCX1031

TSXCUSB485

Separate parts

Description	From processor	To PC port	Length	Reference	Weight kg
PC connection cables (PC to PAC)	USB mini B port BMXP341000/20●0/20●02	USB port	1.8 m	**BMXXCAUSBH018**	0.065
			4.5 m	**BMXXCAUSBH045**	0.110
	Mini-DIN port Premium TSX571●/2●/3●/4● Atrium TSXPCI57	RS 232D (9-pin SUB-D connector)	2.5 m	**TSXPCX1031**	0.170
		USB port (USB/RS 485 converter)	0.4 m	**TSXCUSB485** *(2)*	0.144
		USB port (mini-DIN/RJ45 cordset)	2.5 m	**TSXCRJMD25** *(2)*	0.150
	Modbus™ port 15-way SUB-D Quantum 140CPU311 10 140CPU434 12A 140CPU534 14A	RS 232D (9-pin SUB-D connector)	3.7 m	**990NAA26320**	0.300
			15 m	**990NAA26350**	0.180
	USB port Premium TSX575●/6● Quantum 140CPU6●1	USB port	3.3 m	**UNYXCAUSB033**	–
	Modbus RJ45 connector port Quantum 140CPU6●1	RJ 45 connector	1 m	**110XCA28201**	–
			3 m	**110XCA28202**	–
			6 m	**110XCA28203**	–
PC connection cables (PC SUB-D to Modicon STB I/O)	HE13 connector Modicon STB I/O network interface module (NIM)	RS 232D *(3)* (9-way SUB-D connector)	2 m	**STBXCA4002**	0.210
USB/SUB-D adaptor (PC USB to Modicon STB I/O)	HE13 connector Modicon STB I/O network interface module (NIM) with STB XCA 4002 cable *(4)*	USB port *(4)*	–	**SR2CBL06**	0.185

(1) For compatibility of Unity software/automation platforms and distributed I/O, refer to the selection guide on page 4/2.
(2) The **TSXCUSB485** *converter requires use of the* **TSXCRJMD25** *mini-DIN/RJ45 cordset.*
(3) For connection on a USB port, the SR2 CBL 06 cable is required (4).
(4) Adaptor equipped with a USB connector (PC end) and a 9-way SUB-D connector (STB XCA 4002 cable end); requires the STB XCA 4002 cable (9-way SUB-D/HE 13) for connection to the HE13 connector on the Modicon STB NIM.

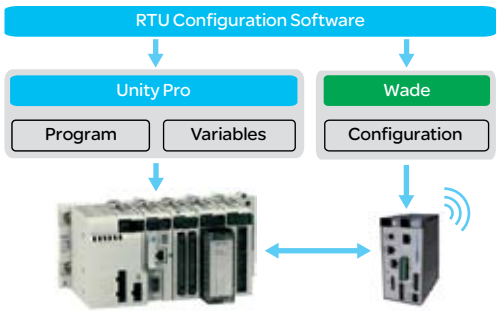
Selection guide: page 4/2

Modicon™ M340™ automation platform

Unity™ Pro software

RTU Configuration Software for Unity Pro and W@de modules

RTU Configuration Software



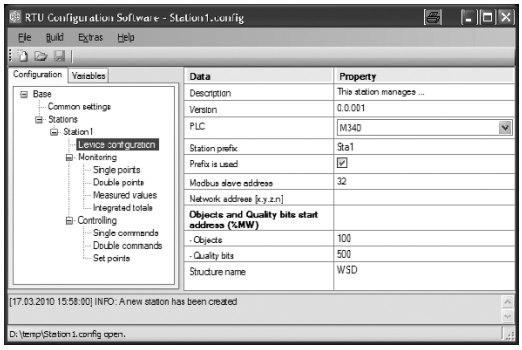
Introduction

W@de W315, W320 and W325 modules allow the configuration of RTU tags via a web interface. This process is time-consuming when dealing with a large number of tags. RTU Configuration Software provides an easy to use graphical user interface for:

- Creating several tags according to IEC 60870-5-101/104 (DNP3 supported by W@de modules) in just a few mouse clicks
- Creating W@de configuration files for direct import into the module
- Creating Unity™ Pro sections and variables, even Unity Pro applications, for communication between the PAC and W@de RTU module
- Creating user documentation based on MS Excel.

Software Setup

RTU Configuration Software can be used as a stand-alone utility or together with Unity Pro. In the later case it is integrated into the Unity Pro programming software on installation.



RTU Configuration screen

RTU variables

The software is used to create a large number of RTU variable tags automatically. It supports the following variable types:

- Single point/single command
- Double point/double command
- Measured value/set point command
- Integrated total.

Configuration of additional RTU-specific parameters is also possible.

The naming rules for the automatically generated variables are defined as follows:

- Optional PAC premount
- IEC variable data type specific premount followed by a four-digit incremental number
- Object address
- PAC address.

Communication parameters have to be configured directly in the W@de module web interface.

Modicon™ M340™ automation platform

Unity™ Pro software

RTU Configuration Software for Unity Pro and W@de modules

Reference

RTU Configuration Software for Unity™ Pro and W@de modules is compatible with Unity Pro V4.0 or higher and available for Microsoft Windows XP Professional and Windows Vista.
The software requires Microsoft .NET framework V3.5 or higher and Microsoft Internet Explorer V5.5 or higher.
W@de W315, W320 and W325 modules with firmware version V2.04 or higher are supported.

Designation	License type	Reference	Weight kg
RTU Configuration Software	Single (1 station)	**UNYSRTZFUCD10**	–

Modicon™ M340™ automation platform

Unity™ Pro software

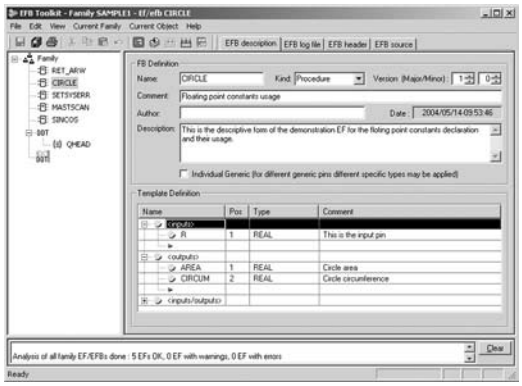
Unity EFB Toolkit software

Introduction

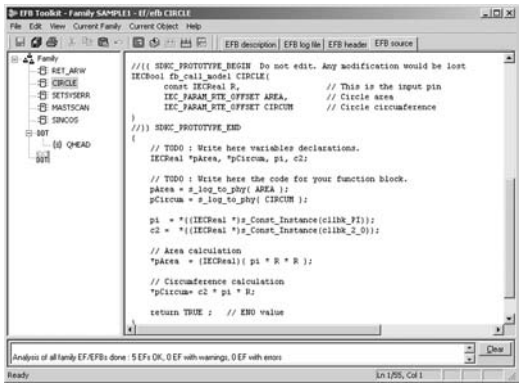
Unity™ EFB Toolkit is the software for developing EFs and EFBs in “C” programming language. It is optional for Unity Pro and is used to extend Unity Pro’s set of standard function blocks to offer additional functionality. This software is bundled with *Microsoft Visual Studio* for debugging function blocks developed in the Unity Pro PAC Simulator. Unity EFB Toolkit also includes a service for creating and managing function block families and integrating them in Unity Pro.

Setup

Unity EFB Toolkit handles the entire process of developing Unity Pro function blocks:
- A user-friendly graphical user interface with automatic file organization
- Powerful tools for testing and debugging
- Management of compatibilities and software versions of created functions
- Generation of files for subsequent installation of functions on other Unity Pro stations.



EFB Toolkit: Managing function families



EFB Toolkit: Editor

Managing function families

The software is used to create function block families. The developed function blocks, also known as EFs/EFBs, are stored in families, making it possible to create an organized library of function blocks written in “C”. After development, these function block families are installed on Unity Pro stations to extend the standard Unity Pro libraries. Integration into Unity Pro can be executed from Unity EFB Toolkit or by using the Unity Pro Types Library Update tool that makes it easy to distribute the families without additional software.

Developping functions blocks

The EFB Toolkit software allows the user to create a function block by:
- Declaring the function block interface in the same way as for DFBs in Unity Pro
- Defining the necessary data types (elementary, structures, arrays)
- Supporting public and private variables
- Generating the files and the “C” code frame of the block (the user only adds the functionality to this frame)
- Granting access to numerous internal PAC services such as real-time clock, PAC variables and data, system words and math functions, including high precision numerical processing in “double” format
- Building the function block family (compile/link for Unity Pro PAC platforms)
- Providing a debugging environment: created function blocks can be easily debugged in Microsoft Visual Studio by loading a Unity Pro application with the developed function into the Unity Pro PAC Simulator. Microsoft Visual Studio debugging functions, such as breakpoints, stepping operations, code/data visualization and data manipulation, are available without restriction.
- Supporting Unity Pro version management is important for the function block maintenance phase.

***Note**: To generate the code for a Modicon™ M340™ platform, a specific GNU compiler is used. It is supplied with the Unity EFB Toolkit.*

Compatibility

Unity EFB Toolkit is compatible with Unity Pro Small, Medium, Large and Extra Large.
EFs and EFBs can be developed for the Premium™, Modicon™ M340™ and Quantum™ platforms.

Modicon™ M340™ automation platform

Unity™ Pro software

Unity EFB Toolkit software

Reference

Unity EFB Toolkit is companion software for Unity™ Pro and is used to create Unity Pro function blocks in “C” programming language. Developed function blocks can then be integrated into Unity Pro standard function block libraries.
Unity EFB Toolkit software and its documentation are supplied in electronic form on CD-ROM in English.

Designation	License type	Language	Reference	Weight kg
Unity EFB Toolkit	Single (1 station)	English (software and electronic documentation)	**UNYSPUZFUCD31E**	–

Modicon™ M340™ automation platform

Unity™ Pro software

Unity Dif comparison application

Unity Dif comparison

Introduction

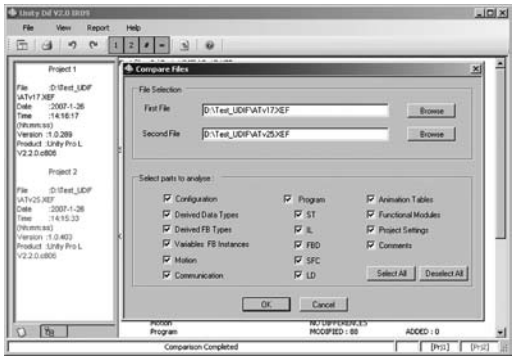
Unity™ Dif software is an optional program for Unity Pro supporting Unity Pro PAC platforms. It compares two Unity Pro applications and provides an exhaustive list of differences. The Unity Dif program increases productivity in the main life phases of a control system, mainly during application development and debugging and installation start-up, operation and maintenance.

Software setup

Unity Dif software can be launched in several ways:
- From within Unity Pro
- Via the Windows start menu
- Via a command line interface without graphical user interface.

Unity Dif locates the differences between two Unity Pro applications in terms of:
- The hardware configuration
- The network configuration (Modbus™/TCP, CANopen and RIO remote I/O [Quantum™ only])
- The entire set of variables and function block instances
- The application structure and its content regardless of the language
- The code for the DFBs and DDTs
- The project options

The result of the comparison can be displayed in the user interface, printed or saved in .txt file format.



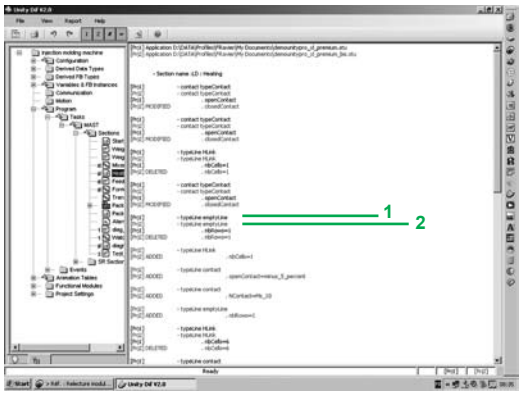
Comparison after selection of elements to be analyzed

Comparison

The end of the comparison operation is signalled by the appearance of the application browser with its two tabs:

1 Identification tab for accessing the Specifications of the two applications being compared. The differences are shown in a summary.

2 Browser tab for accessing the application tree structure reIntroduction.



Displaying results

Displaying results

The application structure reIntroduction is accessible after comparison via the browser tab. It shows the difference with the help of 4 symbols in which the information associated with application **1** appears in blue and those associated with application **2** appear in red:

This branch, found in this level of the tree structure, contains at least one difference

This block contains at least one difference

This section is only present in application 1

This section is only present in application 2

In the example opposite, a difference on the rung is detected:
1 The line displayed in blue belongs to application 1 [Prj1]
2 The line displayed in red belongs to application 2 [Prj2]

The source code extracts of both applications can be used to locate the differences precisely.

Modicon™ M340™ automation platform

Unity™ Pro software

Unity Dif comparison application

References

This Unity™ Dif software extension is used to compare two Unity applications generated by Unity Pro software version V2.1 or later.

Description	Target extension PAC target	Type	Reference	Weight kg
Unity Dif comparison software extension for Unity Pro applications CD-ROM containing software and electronic documentation (English-French)	Unity Pro versions Modicon™ M340™, Premium™, Quantum™	Single license (1 station)	**UNYSDUZFUCD22**	–
		Site license (100 stations)	**UNYSDUZFFCD22**	–

Modicon™ M340™ automation platform

Unity™ Pro software

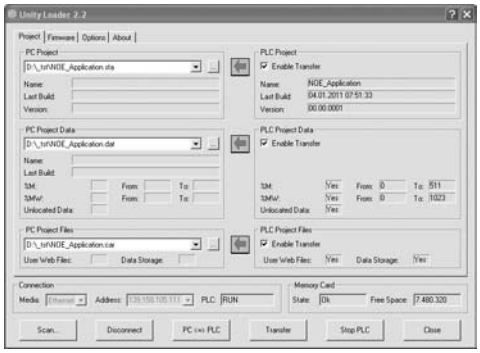
Unity Loader software

Unity Loader

Introduction

Unity™ Loader is companion software to Unity Pro and is used to perform maintenance operations on automation applications. Its easy setup and small size make it a useful tool for updating Unity Pro projects without using Unity Pro. It is also used to update the embedded software on Modicon™ M340™ modules. It performs the following main functions:

- Transfer of automation project components from PC to PAC or from PAC to PC, such as the program and data
- Transfer of files and user Web pages stored in the memory card of Modicon M340 PACs
- Transfer of embedded software (firmware) from the PC to Modicon M340 modules.



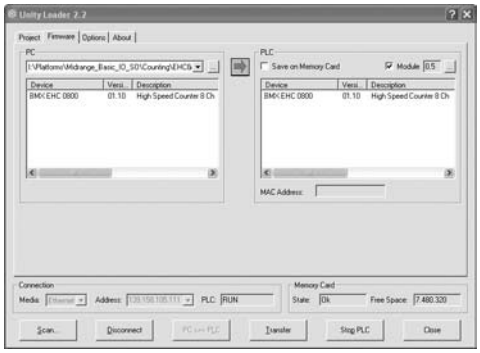
Unity Loader: "Project" tab

Software graphic interface

The Unity Loader software is easy to use and consists of four tabs to perform different operations:

- The "**Project**" tab is used for project transfers (program and data) between the PC and the PAC processor. The software transfers program (application file format *.stu* and archive file format *.sta*) and data (located and unlocated) files of a Unity Pro project in either direction. Program and data files created by Unity Loader are compatible with Unity Pro. When connected to the PAC, Unity Loader displays the information relating to the data read in the PAC. The same information is displayed for the selected files on the PC. The user decides which of the possible elements of the project are transferred in a single command after validation of the transfers.
  - *Modicon M340 PACs and BMXRMS●●8MFP memory card only*: User files and Web pages can be transferred from the memory card to the PC and vice versa.
  - *BMXNOE0110 with Flash Memory Card only*: Web pages stored inside the Flash Memory can be transferred from the module to the PC or vice versa.
- The "**Firmware**" tab is used to update the firmware in Modicon M340 modules. The screen displays the detailed content of the firmware versions inside the module and on the PC. The firmware update follows the same principle as for transferring projects.
- The "**Options**" tab is used to configure the working environment, such as the file location on the PC and selection of one of the six supported languages (English, French, German, Italian, Spanish, and Chinese) for the user interface and online help.
- The "**About to** " tab displays information about the software.

Note: *Regardless of which tab is selected, the connection status with the PAC is displayed, together with commands for connection/disconnection and changing the PAC operating mode.*



Unity Loader: "Firmware" tab

Modicon M340 PACs and BMXRMS●●8MFP memory card only

Unity Loader software can download the project components and firmware (PAC or module) simultaneously onto the flash memory card (BMXRMS●●8MFP memory card only) slotted in the processor.
This firmware download can subsequently be used to update a remote PAC.

Automation of Unity Loader commands

Project download/upload between a PAC and a supervisory station equipped with Unity Loader software is now possible through a command file included in the supervisory application.

Communication between the PC and the PAC

Unity™ Loader supports:
- Unity Pro Quantum™ PACs with Modbus™ communication
- Unity Pro Premium™ PACs with Unitelway™ communication
- Modicon™ M340™ PACs and modules via Ethernet and USB.

Reference	Type of module	Ethernet port	USB port
BMXP342000	Processor with Modbus		
BMXP342010/20103	Processor with CANopen		
BMXP342020	Processor with integrated Ethernet port		
BMXP342030/20302			
BMXNOE0100/0110	Ethernet Modbus/TCP		
BMXAMI/ART/AMO/AMM	Analog I/O		
BMXEHC0200/0800	Counter		
BMXMSP0200	Motion control		

Supported Supported if processor with integrated Ethernet port

For Ethernet networks Unity Loader contains a network scanner to scan a range of network addresses. By selecting a recognized Modicon M340 PAC the data transfer operations can be performed.

Reference

Unity Loader is included with Unity Pro Small, Medium, Large and Extra Large and can be ordered separately under a unit reference.

Compatibility

Unity Loader is independent of Unity Pro and compatible with Modicon M340 PACs, Unity Pro Quantum PACs via Modbus and Unity Pro Premium PACs via Unitelway. Program files and PAC data files are compatible between Unity Pro and Unity Loader.

Designation	Type	Reference	Weight kg
Unity Loader	Single license (1 station)	**UNYSMUZUCD22**	–

Specific libraries according to the software used

The specific libraries below may be acquired separately according to the software used.

Control Libraries

Designation	Target software	Type	Reference	Weight kg
Predictive Control Library	Unity Pro / Concept	Single license (1 station)	**UNYLPCZAUCD10**	–
Fuzzy Library	Unity Pro		**UNYLFZZAUWB12**	–
TeSys Library			**UNYLTSZAUWB10**	–
Heat Ventilation Air Condition Library			**UNYLHVZAUWB10**	–
Flow Calculation Library			**UNYLAGZAUWB20**	–

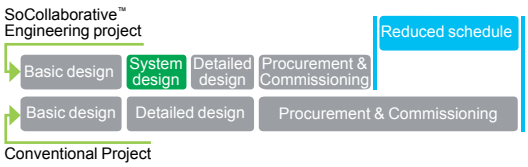
System Libraries

Designation	Target software	Type	Reference	Weight kg
Enhanced Process Library	UAG	Single license (1 station)	**UAGSBTCFUCD10**	–
Devices and Process Library			**UAGSBTDFUWB13**	–

Modicon™ M340™ automation platform

Unity™ software

Unity Application Generator



Business advantage

Working efficiently

Standards

Advanced design tool for automation solutions *(1)*

Deliver your automation projects faster and re-use your know-how!
Unity Application Generator (UAG) is an advanced design and generation software tool that integrates multiple PACs and HMI/SCADA systems to provide an automation solution similar to a distributed control system. Using an approach based upon reusable objects (application libraries) and automatic application generation, UAG helps to ensure consistent design and implementation of user-defined standards and specifications. Featuring change tracking and automatic documentation functions, UAG supports standards such as ISA-88 and GAMP.

Business advantage

UAG provides significant business advantages in terms of cost reduction, quality and performance improvement.

- **Cost**
  - Savings in system implementation cost
  - Improved time-to-market for the end user by allowing the project
  - Quicker return on investment
- **Quality**
  - Improved software quality,
  - Improved maintainability
  - Reduced risk and improved project schedules
- **Performance**
  - Standardized design and systematic improvement
  - Capture and re-use of your best practices
  - Integrated automation system design in your plant engineering workflow

Working efficiently

UAG provides the key features for an advanced automation solution to increase efficiency, and to share and re-use your know-how.

Structured project design - bridge from the process engineer to the control/automation designer (from the PID to the automation system).
It is possible to capture and re-use the customer's best practices within **application specific libraries** that reduce the dependency on experts, allows standardization and increases software robustness.
Single database entry helps to avoid duplicate effort and resulting errors.
Automatic application generation, including the **automatic configuration of networks** in multi device systems increases efficiency, improves software quality and shortens setup times while simultaneously **reducing project risk**. Integrated **change tracking** and **automatic documentation generation** reduces engineering effort and enables system validation.

Advanced automation platform

UAG integrates products from Schneider Electric and leading partners into an advanced automation platform based on standards, including: ISA-88, GAMP and IEC 61131-3.
Single data point entry and management integrates the process control, monitoring and supervision and helps to ensure data consistency and integrated communication among devices.

Applications *(1)*

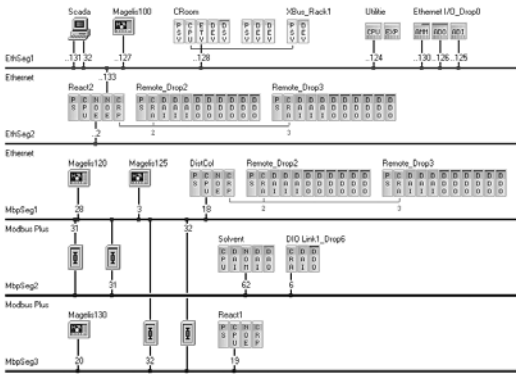
- **Methodology**: UAG allows you to capture and re-use your know-how. Through automatic generation, the project information is propagated to applications consistently, easily and quickly.
- **Creating user libraries**: libraries are based on re-usable control devices – **S**mart **C**ontrol **D**evices (SCoDs).
- **High level objects (template types) consisting of multiple SCoDs**: template types allow you to pre-define complex objects (e.g. a PID or a sequence) that consist of multiple SCoDs. A common graphic symbol can also be defined. This makes instantiation more efficient as the number of individual steps can be reduced by using the type definition.
- **Structuring your project**: a structured project design provides a bridge from the process engineer to the control automation designer (from the PID to the automation system) based on the ISA-88 standard. The PID drawing is mapped to the physical model in UAG.

(1) For more technical information, please consult our website at www.schneider-electric.com.

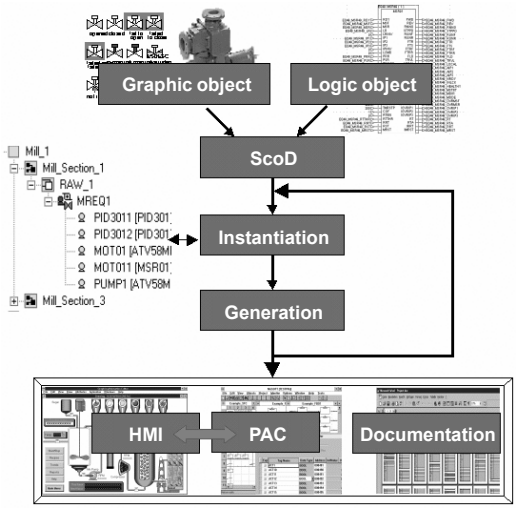
Modicon™ M340™ automation platform

Unity™ software

Unity Application Generator



Multi-station automation configuration



Generating the application

UAG

Applications (continued) *(1)*

■ **Multi-station automation configuration**: the entire process control, monitoring and supervision topology of the distributed automation system is managed within UAG.
■ **Generating the application**: the automation solution is generated based on the structured design and your standards contained within the pre-qualified UAG library, helping to ensure consistent information for the PACs and the HMI/SCADA. The use of resources (addresses, name space, etc.) is optimized to help avoid conflicts and errors. UAG can generate complete projects, as well as **incremental changes** when modifications occur.
■ **Validation**: UAG simplifies validation when required by regulation or to comply with GAMP (Good Automation Manufacturing Practice). UAG uses ISA 88 standard terminology for batch control and supports the GAMP methodology for creating an automation system.
■ **Process Application Library for Vijeo™ Citect™**: the Process Application Library for Vijeo Citect is shipped together with the UAG CD and can be installed from there. A separate order is not necessary; simply complete the registration details during installation.
■ **Device and Process Library**: the Device and Process Library is shipped together with the UAG CD and can be installed from there. A separate order is not necessary; simply complete the registration details during installation.

Segment/Application-specific libraries

A number of more specialized libraries have been developed to provide a more complete starting point for certain projects, such as:
■ Water & Wastewater
■ Mining, Minerals, Metals

Supported platforms and environment

■ **Supported platforms**
  □ PAC software: Unity™ Pro ≥ V4.0
  □ PAC hardware: M340™, Premium™ and Quantum™
  □ M340 I/O, Premium I/O, Quantum I/O and Modicon™ I/O
  □ Modbus™ TCP and Modbus Plus
  □ Fieldbus support
■ **HMI/SCADA**
  □ Vijeo Citect ≥ V6.1
  □ Wonderware Archestra V3.0
  □ OPC™ data server software (OFS)
  □ Other HMI/SCADA via the UAG "Plug-In" interface
■ **Export of information for other devices/applications**
  □ XML export file
  □ CSV export file
■ **Environment**: Compatible with Microsoft Windows® 7 Professional *(2)*, Windows Vista® Business and Windows® XP Professional operating systems

References *(1)*

Description	License type	Reference	Weight kg
UAG software suites *(3)* Comprising: ■ UAG (Unity Application Generator) software in English, French, German, ■ Documentation (electronic format)	Single (1 station)	**UAGSEWLFUCD33**	–
	Site (> 10 stations)	**UAGSEWLFFCD33**	–
SoCollaborative™ Engineering Includes Unity Pro, Vijeo Citect, Web Designer, UAG/sg² software	Single (1 station)	**EUSENG2CFUV11**	–
	Team (10 stations)	**EUSENG2CFTV11**	–

(1) For more technical information, please consult our website at www.schneider-electric.com.
(2) Please contact our Customer Care Center.
(3) The PAC/SCADA programming tools and/or communication drivers are ordered separately.

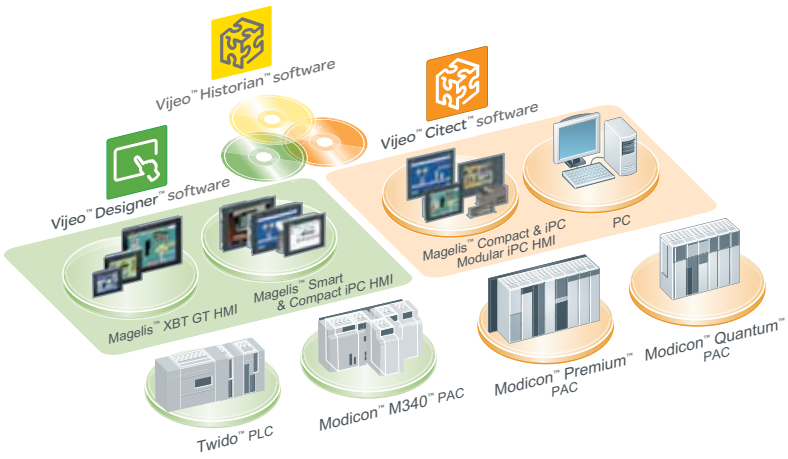
Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Vijeo Citect

Introduction



Vijeo™ Citect™ software is the operating and monitoring component of PlantStruxure™ , the new process automation architecture of Schneider Electric.

With its powerful display capabilities and its operational features, it delivers actionable insight faster, enabling operators to respond quickly to process disturbances, thereby increasing their efficiency. With its easy-to-use configuration tools and powerful features you can quickly develop and implement solutions for any size application.

Vijeo Citect software offers the functions of a modern supervisor. Its distributed client-server architecture is applicable to a multitude of applications in the following markets:

- Oil & Gas
- Mining, Minerals, Metals
- Water & Wastewater
- Power
- Food and beverage

Its flexibility also makes it suitable for numerous other application areas, such as infrastructures.

Redundancy

Vijeo Citect software offers redundancy for the components of the system. The redundancy functions are fully integrated in the system, providing exceptional performance and intuitive configuration.

Server license

Vijeo Citect software is available:

- In a **Client-Server** architecture, for configurations ranging from 75 points to an unlimited number of points
- In a **stand-alone** version called **Vijeo Citect Lite**, for configurations of 100 to 1200 points (see page 4/38).

Vijeo Citect software includes the installation (without registration) of the OFS™ software, Schneider Electric's integrated OPC server. This server can only be used with Vijeo Citect software.

The OFS software provides access to the structured variables and helps to ensure system consistency. This is one of the major benefits of Schneider Electric integration.

Server licenses **VJCNS1011 ●●** are purchased according to the number of points to be processed, not according to the number of I/O *(1)*.

An upgrade offer **VJCNS1011 ●●-●●** is also available to increase the number of client and server points, as required *(2)*.

(1) Vijeo Citect software counts the variables exchanged with external devices, such as PACs.
(2) If the server or client is upgraded, the keys must be reprogrammed.

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Client licenses

Four types of client license are available:
- **Control Client**, **VJCNS1020●●**: used by operators accessing the Vijeo™ Citect™ server via a local connection
- **View Only Client**, **VJCNS1030●●**: for users needing to view the Vijeo Citect application via a local connection, but not needing to control the system
- **Web Control Client**, **VJCNS1022●●**: similar to the Control Client, but via a Web browser
- **Web View Only Client**, **VJCNS1032●●**: similar to the View Only Client, but via a Web browser

Static, floating and redundant client licenses

A client license can be static, floating or redundant depending on requirements:
- **Static client license**: For operators needing access to the system, regardless of the number of connections already established by other clients.
A static client license provides permanent access to the system, as it physically resides in the key plugged into the client PC.
- **Floating client license**: Users who occasionally need to use a client for operator tasks can purchase floating licenses. Connections will be allowed until the number of valid licenses is reached. Floating client licenses are stored on the key plugged into the server.
- **Redundant client license**: Redundant client licenses **VJCNS10●●88** are used solely for the standby server in a redundant configuration. They are used to help ensure that the client licenses purchased are available.

Development workshop

The development workshop **VJC1099●●** is comprised of hardware components such as the DVD, hardware keys, installation guide and storage boxes.
The rules for use are as follows:
- Each server requires a hardware key (USB or parallel) to operate
- The server key is also used to store the floating client licenses
- The key controls the number of points that can be used
- The key is programmed to operate up to a predetermined version

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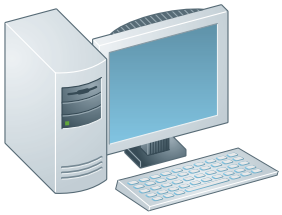
Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)



Single-station architecture

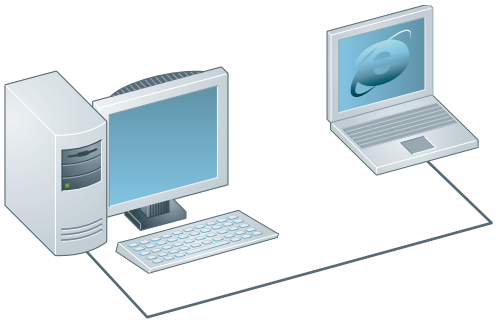
Architectures

Single station stand-alone SCADA system, 5000 points

Development workshop
- 1 x **VJC109922**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJCNS101114**, server license for 5000 points, including client server

Client license
- Not required (included in the server license)



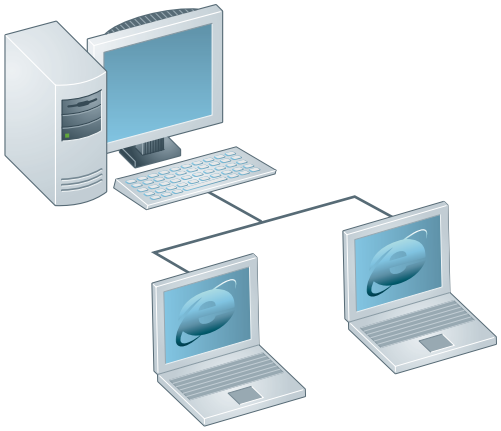
Single-server architecture with Web View Only Client access

Remote server system with remote access via the Web

Development workshop
- 1 x **VJC109922**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJCNS101115**, server license for 15000 points, including client server

Client license
- 1 x **VJCNS103299**, Web View Only Client license



Single-server architecture with
1 Web Control Client and 1 Web View Only Client

Networked server system with remote Web clients

E.g. Networked server system, 500 points, with 2 remote clients via the Web, one Web Control Client and one Web View Only Client

Development workshop
- 1 x **VJC109922**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJCNS101112**, server license for 500 points, including client server

Client licenses
- 1 x **VJCNS102212**, Web Control Client license for 500 points
- 1 x **VJCNS1032 99**, Web View Only Client license

Vijeo Historian:
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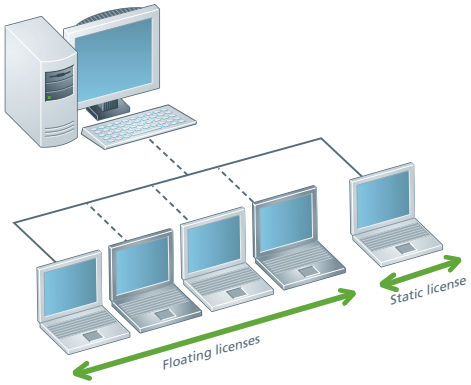
Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)



Single-server architecture with
2 floating Control Client licenses and 1 static license

Architectures (continued)

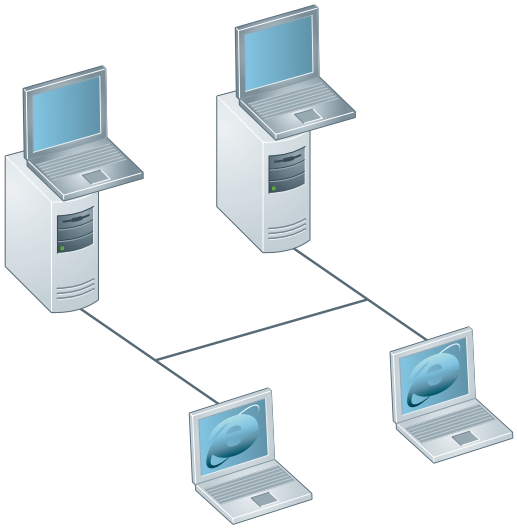
Networked server system with floating and static access

E.g. Networked server system, 5000 points, with 5 client PCs and 3 client licenses (2 floating and 1 static)

Development workshop
- 1 x **VJC109922**, hardware delivery of the DVD with USB key
- 1 x **VJC109921**, additional USB key for static client

Server license
- 1 x **VJCNS101114**, server license for 5000 points, including client server (local Control Client type on the server PC)

Client licenses
- 3 x **VJCNS102014**, Control Client licenses for 5000 points



Redundant architecture with
2 Control Clients on servers and 2 Web View Only Clients

Redundant server with Server Control Clients and Web View Only Clients

E.g. Redundant server, 1500 Points, with 2 Control Client licenses on the servers and 2 Web View Only Client licenses

Development workshop
- 1 x **VJC109922**, hardware delivery of the DVD with USB key (primary server key)
- 1 x **VJC109921**, additional USB key for standby server

(rule: 1 key per server)

Server licenses
- 2 x **VJCNS101113**, server licenses for 1500 points, including client server
  - The first server acts as the primary server
  - The second server acts as the standby server
  - One license is placed on each key (primary and standby)

Client licenses
- 2 x **VJCNS103299**, Web View Only Client licenses
  - Both licenses are placed on the primary server key

Redundant client license
- 2 x **VJCNS103288**, redundant Web View Only Client license
  - Floating redundant licenses for Web View Only Client licenses
  - Both licenses are placed on the standby server key

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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

VJC1099●2

Development workshop - Vijeo™ Citect™ Box and keys

The **VJC1099●2** Vijeo Citect Box is comprised of:
- DVD with the Vijeo Citect software
- Schneider Electric drivers pack
- Installation guide
- Hardware key (for USB or parallel port)

Additional keys are also supplied in the Vijeo Citect Box.

Development workshop - Vijeo Citect Box

Description	Type of key included	Reference	Weight kg
Vijeo Citect Box with USB key	USB	**VJC109922**	0.410
Vijeo Citect Box with parallel key	Parallel	**VJC109912**	0.420

Additional Vijeo Citect keys

Designation	Target license	Reference	Weight kg
Additional Vijeo Citect USB key Supplied in Vijeo Citect Box	Redundant server and static (non-floating) licenses	**VJC109921**	–
Additional Vijeo Citect parallel key Supplied in Vijeo Citect Box	Redundant server and static (non-floating) licenses	**VJC109911**	–
Vijeo Citect 10 Pack USB keys Supplied in Vijeo Citect Box	Blank keys and not licensed	**VJC109920** *(1)*	–
Vijeo Citect 10 Pack Parallel keys Supplied in Vijeo Citect Box	Blank keys and not licensed	**VJC109910** *(1)*	–

Vijeo Citect Demonstration software

Designation	Target license	Reference	Weight kg
Vijeo Citect Software DVD - 50 Pack Supplied in Vijeo Citect Box	Demonstration software DVD pack	**VJC109918**	–

Vijeo Citect Lite software, stand-alone

The Vijeo Citect Lite software stand-alone license for 100 to 1200 points includesf:
- DVD with the Vijeo Citect software
- Schneider Electric drivers pack
- Installation guide
- Hardware key

The Vijeo Citect Lite software license is a simple solution for stand-alone applications. This license is used to connect a single client to a single sector. It cannot be made redundant.

Vijeo Citect

Vijeo Citect Lite software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Lite software Stand-alone: no connectivity Key to be ordered separately	100	**VJCNS301156**	–
	150	**VJCNS301111**	–
	300	**VJCNS301127**	–
	600	**VJCNS301159**	–
	1200	**VJCNS301150**	–

(1) The 10 Packs Vijeo Citect keys VCJ 1099 20 and VCJ 1099 10 are not programmed.

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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Vijeo™ Citect™ Lite software upgrades

The references below are used for increasing the number of Vijeo Citect Lite software points available or to upgrade Lite server to Full server.

Designation	Number of points	Reference	Weight kg
Vijeo Citect Lite software upgrade (number of points)	100 to 150	**VJCNSL56-L11**	–
	150 to 300	**VJCNSL11-L27**	–
	300 to 600	**VJCNSL27-L59**	–
	600 *(1)* to 1200	**VJCNSL59-L50**	–
Vijeo Citect Lite software upgrade (Lite server to Full server)	Lite 150 to Full 150	**VJCNSL11-F11**	–
	Lite 300 to Full 500	**VJCNSL27-F12**	–
	Lite 600 to Full 1500	**VJCNSL59-F13**	–
	Lite 1200 to Full 1500	**VJCNSL50-F13**	–

Vijeo Citect Server software

The Vijeo Citect Server software full system licenses are segmented according to the number of points. They include:

- DVD with the Vijeo Citect software
- Schneider Electric drivers pack
- Installation guide
- Hardware key

Redundant system

- For a redundant system simply order 2 Vijeo Citect Server software licenses
- No other option is required for the servers
- The programmed key (USB or parallel) is ordered separately

Vijeo Citect Server software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Server software Full version Key to be ordered separately	75	**VJCNS101110**	–
	150	**VJCNS101111**	–
	500	**VJCNS101112**	–
	1500	**VJCNS101113**	–
	5000	**VJCNS101114**	–
	15000	**VJCNS101115**	–
	Unlimited	**VJCNS101199**	–

Vijeo Citect Server software upgrades

The references below are used for increasing the number of points on the server.

Designation	Number of points	Reference	Weight kg
Vijeo Citect Server softwrae upgrade Full server point expansion	75 to 150	**VJCNS101110-11**	–
	150 to 500	**VJCNS101111-12**	–
	500 to 1500	**VJCNS101112-13**	–
	1500 to 5000	**VJCNS101113-14**	–
	5000 to 15000	**VJCNS101114-15**	–
	15000 to unlimited	**VJCNS101115-99**	–

(1) Also for existing installed Lite 500 point versions.

Vijeo Historian:
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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Vijeo™ Citect™ Control Client software

Vijeo Citect Control Client software licenses are for operators. They are segmented according to the number of points to be displayed. There are two types:
- Floating license, residing on the server key
- Static license, requiring a separate key on the client PC

Redundant system
- The number of floating clients ordered is added to the primary server key
- For the standby server, the same number of redundant Control Client software licenses, **VJCNS103088**, are ordered separately

Vijeo Citect Control Client software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client software license	75	**VJCNS102010**	–
	150	**VJCNS102011**	–
	500	**VJCNS102012**	–
	1500	**VJCNS102013**	–
	5000	**VJCNS102014**	–
	15000	**VJCNS102015**	–
	Unlimited	**VJCNS102099**	–
Vijeo Citect redundant Control Client software license	Floating license only	**VJCNS102088**	–

Vijeo Citect View Only Client software

Vijeo Citect View Only Client software licenses are available for users who need to view the application, without controlling it. Licenses for these clients are segmented according to the number of points displayed. There are two types:
- Floating license, residing on the server key
- Static license, the hardware key being plugged into the client station

Redundant system
- The number of floating clients ordered is added to the primary server key
- For the standby server, the same number of redundant View Only Client software licenses, **VJCNS1030 88**, are ordered separately

Vijeo Citect View Only Client software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client software license	Unlimited	**VJCNS103099**	–
	250 simultaneous connections	**VJCNS103788**	–
Vijeo Citect redundant View Only Client software license	Floating license only	**VJCNS103088**	–
	250 simultaneous connections	**VJCNS103688**	–

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Vijeo™ Citect™ Web Control Client software

Vijeo Citect Web Control Client software licenses are for users who need control of the application but prefer the flexibility of access via a Web connection. These client licenses are segmented according to the number of points displayed and are the floating type (residing on the key plugged into the server).

Redundant system

- The number of floating clients ordered is added to the primary server key
- For the standby server, the same number of redundant View Only Client software licenses, **VJCNS103088**, are ordered separately

Vijeo Citect Web Control Client software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client software license	75	**VJCNS102210**	–
	150	**VJCNS102211**	–
	500	**VJCNS102212**	–
	1500	**VJCNS102213**	–
	5000	**VJCNS102214**	–
	15000	**VJCNS102215**	–
	Unlimited	**VJCNS102299**	–
Vijeo Citect redundant Web Control Client software license	Floating license only	**VJCNS102288**	–

Vijeo Citect Web View Only Client software

Vijeo Citect Web View Only Client software licenses are for users who need to view the application via a Web connection, without controlling the system. These client licenses are segmented according to the number of points displayed and are the floating type (the licenses reside on the key plugged into the server).

Redundant system

- The number of floating clients ordered is added to the primary server key
- For the standby server, the same number of redundant View Only Client software licenses, **VJCNS103288**, are ordered separately

Vijeo Citect Web View Only Client software license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client software license	Unlimited	**VJCNS103299**	–
	250 simultaneous connections	**VJCNS103988**	–
Vijeo Citect redundant Web Only Client View software license	Floating license only	**VJCNS103288**	–
	250 simultaneous connections	**VJCNS103888**	–

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Vijeo Historian:
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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Control Client software upgrades

The references below are used for increasing the number of points on:
- The server holding the hardware key, for floating licenses
- The client holding the hardware key, for static licenses

Vijeo™ Citect™ Control Client software upgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client software upgrade	75 to 150	**VJCNS102010-11**	–
	150 to 500	**VJCNS102011-12**	–
	500 to 1500	**VJCNS102012-13**	–
	1500 to 5000	**VJCNS102013-14**	–
	5000 to 15000	**VJCNS102014-15**	–
	15000 to unlimited	**VJCNS102015-99**	–

View Only Client software upgrade

The reference below is used for increasing the number of points on:
- The server holding the hardware key, for floating licenses
- The client holding the hardware key, for static licenses

Vijeo Citect View Only Client usoftware pgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client software upgrade	Unlimited	**VJCNS103099-99**	–

Web Control Client software upgrades

The references below are used for increasing the number of points on the server holding the hardware key.

Vijeo Citect Web Control Client software upgrade

Description	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client software upgrade	75 to 150	**VJCNS102210-11**	–
	150 to 500	**VJCNS102211-12**	–
	500 to 1500	**VJCNS102212-13**	–
	1500 to 5000	**VJCNS102213-14**	–
	5000 to 15000	**VJCNS102214-15**	–
	15000 to unlimited	**VJCNS102215-99**	–

Web View Only Client software upgrade

The reference below is used for increasing the number of points on the server holding the hardware key.

Vijeo Citect Web View Only Client software upgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client software upgrade	Unlimited	**VJCNS103299-99**	–

Connections, miscellaneous

The references below are used to expand the connection licenses.

Designation	Reference	Weight kg
OPC Server license	**VJC104188**	–
CtAPI license	**VJC104288**	–
Time scheduler *(1)*	**VJC903288**	–

(1) New version of the Time Scheduler software, available via web download only. Previous versions are not capable of being migrated to Vijeo Citect software version 7.20.

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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Vijeo™ Citect™ software - Specific drivers

The Vijeo Citect software offer includes a large number of drivers as standard. However, for copyright reasons, some drivers have a specific reference and are ordered separately.
The purchase of a specific driver includes access to the appropriate technical support for the driver for one year.

Designation	Protocol	Reference	Weight kg
Vijeo Citect software specific driver	IEC 60870-5-104	**VJCNS305141**	–
	PSDirect ETH	**VJCNS305140**	–
	PSDirect MPI	**VJCNS305142**	–
	Bailey	**VJCNS305144**	–
	SEMAPI	**VJCNS305148**	–
	MOSCAD	**VJCNS305149**	–
	KONNEX	**VJCNS305146**	–
	BACnet	**VJCNS305151**	–

Note: *Before ordering a Vijeo Citect software specific driver, please contact our Customer Care Center.*

Reprogramming for a Vijeo Citect software license transfer

Each time a license has to be transferred from an existing key to another key, transfer fees are applicable and the reference **VJC109401** is ordered separately (license transfer token).
Examples of cases in which these fees are applicable:
- Transfer of a client license from a static key to a floating license on a server
- Transfer of an existing floating license to a new static key

These fees are also applicable when transferring license(s) to a replacement key.
If a new key is required, you need to order a new hardware key **VJC1099●●**.

Designation	Reference	Weight kg
Reprogramming for Vijeo Citect software license transfer	**VJC109401**	–

Driver Development Kit

The driver development kit includes:
- The latest release of Vijeo Citect software, example source code, utilities and other Vijeo Citect software files required in developing a Citect driver.
- A hardware key that will allow runtime up to 8 hours and is a 42,000 pt. single user license.
- Access to “Citect Drivers Developers” area on Citect DriverWeb at scadasupport.citect.com/driverweb.

Designation	Reference	Weight kg
Driver Development Kit	**VJC109206**	–

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Modicon™ M340™ automation platform

Vijeo™ Citect™

Supervisory control and data acquisition software (SCADA)

Conversion of third-party applications

Conversion tools help to convert legacy applications (such as Monitor Pro) or other third-party applications to Vijeo™ Citect™ software. These programs convert the tag database and graphic information to make them compatible with Vijeo Citect software:

■ **Page Import** tool is targeted at customers who wish to perform the entire engineering portion of the legacy system migration themselves. The System Integrators perform the engineering themselves.

■ **Basic Sytem Conversion** tool is targeted at customers that want the new system to simply replace the legacy system without major changes. It includes an initial generic engineering component to produce a fully compiled Vijeo Citect software project that is ready for Factory Acceptance Tests.

Details of the coverage provided by these conversion tools can be found in our internet site **www.schneider-electric.com**.

Designation	Legacy System supported	Reference	Weight kg
Basic System Conversion (minimum 10 pages)	Tier 1 *(1)*	**VJC109081**	–
	Tier 2 *(2)*	**VJC109082**	–
	Tier 3 *(3)*	**VJC109083**	–
Page Import (minimum 10 pages)	Tiers 1, 2, and 3	**VJC109088**	–

Loan of Vijeo Citect software keys *(4)*

Designation	Content	Reference	Weight kg
Loan of single Vijeo Citect software key	- 1 server license, unlimited number of points, VJCNS101199 - 1 scheduler, VJC903288	**VJC109511**	–
Loan of multiple Vijeo Citect software keys	- 1 server license, unlimited number of points, VJCNS101199 - 5 floating Control Client licenses, VJCNS102099 - 5 floating View Only Client licenses, VJCNS103099 - 2 floating Web Control Client licenses, VJCNS102299 - 2 floating Web View Only Client licenses, VJCNS103299 - 1 scheduler, VJC903288	**VJC109512**	–

(1) Tier 1 = FactoryLink 5 to 6.x, MonitorPro 2, Mount32, Genesis32, Cimplicity, Moore APACS, Wonderware 5.x to 9.x.

(2) Tier 2 = iMount 3.5, Delta V (Mount32 & iMount 3.5), RSView32 6.4, FactoryLink 7.5, MonitorPro 7.2 & 7.6, VijeoLook 2.6, WinCC 6.0, Wizcon.

(3) Tier 3 = iMount 4.5, DeltaV (iMount 4.5), Telvent OASyS DNA / 6.x, Telvent OASyS 5.x, Telvent Vector (RTView & Ovision), Honeywell TDC3000, Vigile.

*(4) Available for customers requiring temporary access to a key. The hardware key is to be returned at the end of the loan period. Provides eight days of continuous use. Also requires an additional Vijeo Citect Box USB key, **VJC1099●●**, to obtain the hardware key. The quantity corresponds to the number of months of the loan.*

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Alliance Software Packs

Alliance Software Pack V1.0

The **Alliance Software Pack V1.0** offer is exclusively for systems integrators who are active partners in the new Schneider Electric Alliance program (i.e. those who pay the annual Alliance partnership subscription).

The package is comprised of:

- **SoCollaborative™ Alliance** *(DVD Box)*:
  - sg2 V3.5 (multi)
  - Unity™ Pro XL V4.1 (10 stations)
  - Unity™ Loader V2.1
  - Vijeo™ Citect™ Build-Time V7.10r2 (multi)
  - Vijeo™ Citect™ Run-Time (2x12-hour hardware keys)
  - Web Designer V2.15 (multi)
  - Advantys™ Configurator V4.5 (multi)
  - Ethernet/IP I/O Configurator V1.1 (multi)
  - DVD: electronic documentation V4.1
  - CD: Drivers V2.6

- **Legacy software suite** *(online download)*:
  - Concept™ XL V2.6 SR5 (10 stations)
  - PL7™ Pro V4.5 SP5 (10 stations)
  - ProWorx™ 32 V2.1 SP1 patch A (10 stations)
  - XBTL1003 V4.51 (multi)

- **Other software tools** *(online download)*:
  - Vijeo™ Historian™ Server/Client build V4.1
  - Vijeo™ Designer™ V5.0 for HMI (1 station)
  - Sycon™ V2.9 for network (10 stations)
  - Advantys™ PAC Image Generator V2.0
  - Advantys™ CANopen Symbol Exp. V2.0
  - TwidoSuite™ V2.20, TwidoSoft™ V3.5
  - ZelioSoft™ 2 V4.3, ZelioCom V2.08, ZelioAlarm 2 V1.5
  - PowerSuite for drives V2.6 patch1
  - Libraries for Unity™ Pro:
    - TeSys™, Fuzzy Control, HVAC, Predictive Control, Flow Calculation libraries
  - Application libraries for UAG and sg2:
    - Device & Process libraries

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Alliance Software Pack Pro V1.0

The **Alliance Software Pack Pro V1.0** offer is exclusively for systems integrators who are active partners in the Schneider Electric PlantStructure™ Certified Alliance Partners program.

The package is comprised of:

- **SoCollaborative™ Alliance Pro** *(DVD Box)*:
  - UAG V3.2 (10 stations)
  - sg2 V3.5 (10 stations)
  - Unity™ Pro XL V4.1 (10 stations)
  - Unity™ Loader V2.1
  - Vijeo™ Citect™ Build-Time V7.10r2 (multi)
  - Vijeo™ Citect™ Run-Time (4x12-hour hardware keys)
  - Web Designer V2.15 (multi)
  - Advantys™ Configurator V4.5 (multi)
  - Ethernet/IP I/O Configurator V1.1 (multi)
  - DVD: electronic documentation V4.1
  - CD: Drivers V2.6

- **Legacy software suite** *(online download)*:
  - Concept™ XL V2.6 SR5 (10 stations)
  - PL7™ Pro V4.5 SP5 (10 stations)
  - ProWorx™ 32 V2.1 SP1 patch A (10 stations)
  - XBTL1003 V4.51 (multi)

- **Other software tools** *(online download)*:
  - Vijeo™ Historian™ Server/Client build V4.1
  - Vijeo™ Designer™ V5.0 for HMI (1 station)
  - ConnexView™ Server/Client V2.0
  - Sycon™ V2.9 for network (10 stations)
  - Advantys™ PAC Image Generator V2.0
  - Advantys™ CANopen Symbol Exp. V2.0
  - TwidoSuite™ V2.20, TwidoSoft V3.5
  - ZelioSoft™ 2 V4.3, ZelioCom V2.08, ZelioAlarm 2 V1.5
  - PowerSuite™ for drives V2.6 patch1
  - Libraries for Unity™ Pro:
    - TeSys™, Fuzzy Control, HVAC, Predictive Control, Flow Calculation libraries
  - Application libraries for UAG and sg2:
    - Device & Process libraries

Alliance Software Packs References

Designation	Description	Reference	Weight kg
Alliance Software Pack V1.0	For systems integrators who are active partners in the Alliance program	**EUSENG1CFTAL10**	–
Alliance Software Pack Pro V1.0	For systems integrators who are active partners in the PlantStructure Certified Alliance Partner program.	**EUSENG3CFTAL10**	–

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Vijeo™ Citect™ software Academic licenses

The references below are for educational institutions for training students in Vijeo Citect software.

Training Manuals

Designation	Reference	Weight kg
Vijeo Citect software Configuration Training Manual - EN	VJC109310-02-00	–
Vijeo Citect software CICODE Training Manual - EN	VJC109320-02-00	–
Vijeo Citect software Architecture and Redundancy Training Manual - EN	VJC109330-02-00	–
Vijeo Citect software Upgrade Training Manual - EN	VJC109350-02-00	–
Vijeo Citect software Customization Training Manual - EN	VJC109370-02-00	–
Vijeo Citect software Diagnostics and Troubleshooting Manual - EN	VJC109390-02-00	–

Self-Paced Training Kits

Designation	Reference	Weight kg
Vijeo Citect software Configuration SPTK - EN	VJC109310-01-00	–
Vijeo Citect software CICODE SPTK - EN	VJC109320-01-000	–
Vijeo Citect software Customization SPTK - EN	VJC109370-01-00	–

E-Learning

Designation	Reference	Weight kg
Vijeo Citect software SCADA Overview	VJC309331-00-00	–

Exams

Designation	Reference	Weight kg
Vijeo Citect software Configuration Exam	VJC309350-00-00	–
Vijeo Citect software CICODE Fundamentals Exam	VJC309351-00-00	–
Vijeo Citect software Architecture and Redundancy Exam	VJC309352-00-00	–
Vijeo Citect software Customization and Design Exam	VJC309353-00-00	–
Vijeo Citect software Upgrade Exam	VJC309354-00-00	–
Vijeo Citect software Examination Re-sit	VJC309355-00-00	–
Vijeo Citect software Diagnostics and Troubleshooting Exam	VJC309356-00-00	–

Academic Agreements

Designation	Reference	Weight kg
Vijeo Citect software Academic Agreement - 12 months (10 keys) *(1)*	VJC309317	–
Vijeo Citect software Academic Agreement - 12 months renewal (10 keys) *(1)*	VJC309322	–

(1) Academic Agreements are to be included with each order for the Logistics team in Sydney to process the order. Any incomplete orders (with no Academic Agreement) will be rejected. This is only for tertiary education institutions. Licenses are valid for 12 months, each agreement is renewed annually.

Vijeo Historian:
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Modicon™ M340™ automation platform

Vijeo™ Historian™ reporting software

Introduction

Vijeo Historian

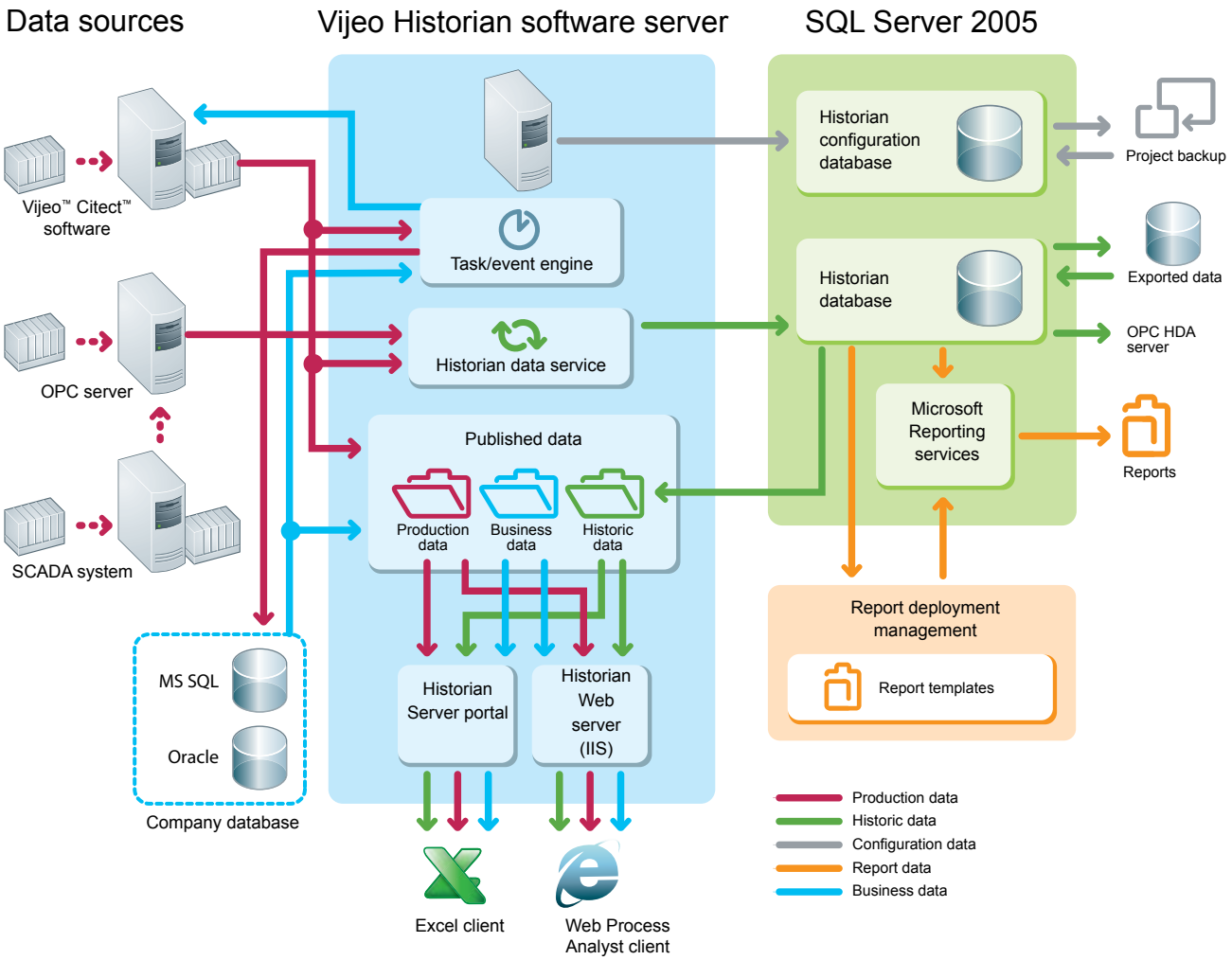
Vijeo™ Historian™ software is the information management component of PlantStruxure™, the new process automation architecture of Schneider Electric.

It is comprised of the historian and portal functions of the solution, enabling you to store data accurately for long-term reporting while connecting your production and business systems through its active data transfers and simple, easy-to-use reporting functions.

Vijeo Historian software helps your plant and your IT personnel optimize their operational efficiency by providing a powerful enterprise-wide reporting tool that collects, stores and delivers meaningful reporting data from multiple disparate systems.

In addition, Vijeo Historian software enables you to store data accurately for long-term reporting while also giving you the option of displaying and accessing the information via the Vijeo Historian software portal, MS Excel or Reporting Services.

Vijeo Historian software architecture



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Vijeo Citect:
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Modicon™ M340™ automation platform

Vijeo™ Historian™ reporting software

Applications

■ With Vijeo™ Historian™ reporting software, business managers can access meaningful, concise production system information from the plant floor in a familiar format they use for their financial or other business reports. This helps them make strategic decisions to optimize operational performance.
■ Plant managers can drill down into information to improve production efficiency or to minimize the number of spurious alarms.
■ Corporate and plant personnel can quickly and easily create and access meaningful reports **in a familiar format and create a single view of operation**.

Data sources supported

Vijeo Historian software supports the following data sources:
■ MS SQL (7.0, 2000, 2005)
■ Oracle (7, 8, 9, 10)
■ Vijeo™ Citect™ software and other SCADA servers
■ Various other devices

Vijeo Historian Web Client software and Excel Client software

Vijeo Historian software also provides two client tools to make it easier to view and manage the information issued by the Historian Server:
■ Using the **Web Client** you can display plant information from your control systems and the historian via the Intranet/Internet simply by using a browser such as Internet Explorer.
■ The **Excel Client** can also access linked information from the SCADA system or the historian directly in Microsoft Excel. The Excel Client user can select from the same plant hierarchy as the Web Client and request the values of any item within the tree structure.

Security

Once logged on, users can only access the published folders, data and Favorites for which they have permission.
Passwords are encrypted and user privileges are validated for every data request, helping to ensure that users cannot bypass the security matrix.

License keys

The licenses are programmed on a USB or parallel key that is plugged into the PC running the Vijeo Historian software.

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Modicon™ M340™ automation platform

Vijeo™ Historian™ reporting software

References

Development workshop

Description	Type of key included	Reference	Weight kg
Vijeo™ Historian™ software Box USB key	USB	**VJH209922**	–
Vijeo Historian software Box Parallel key	Parallel	**VJH209912**	–

Vijeo Historian software data transfer licenses

Description	Number of points	Reference	Weight kg
Vijeo Historian software data transfer license	150	**VJHNS211011**	–
	500	**VJHNS211012**	–
	1500	**VJHNS211013**	–
	5000	**VJHNS211014**	–
	15000	**VJHNS211015**	–
	50000	**VJHNS211016**	–
	100000	**VJHNS211045**	–
	Unlimited	**VJHNS211099**	–

Vijeo Historian sofwtare data transfer upgrades

Description	Number of points	Reference	Weight kg
Vijeo Historian software data transfer upgrade	150 to 500	**VJHNS211011-12**	–
	500 to 1500	**VJHNS211012-13**	–
	1500 to 5000	**VJHNS211013-14**	–
	5000 to 15000	**VJHNS211014-15**	–
	15000 to 50000	**VJHNS211015-16**	–
	50000 to 100000	**VJHNS211016-45**	–
	Unlimited	**VJHNS211045-99**	

Client access licenses

Description	Reference	Weight kg
Client Historian and Portal access license	**VJHNS212400**	–
Client Portal access license	**VJHNS212200**	–
Client Historian access license	**VJHNS212000**	–

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References (continued)

Control system connector

Description	Reference	Weight kg
MS SQL database connector (1 per database system)	**VJHNS204320**	–
Oracle database connector (1 per database system)	**VJHNS204321**	–
OPC DA V2 and V3 database connector (1 per database system)	**VJHNS204323**	–

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Modicon™ M340™ automation platform

OPC data server software

OPC Factory Server™ (OFS™)

Introduction

Based on the OLE for Process Control (OPC) standard, Schneider Electric's OPC Factory Server™ (OFS™) software allows "client" software applications, such as supervisors/SCADA and customized interfaces, to access the data of Schneider Electric automation system and electrical distribution devices connected to networks or fieldbuses in real time.
It also allows communication with third-party devices supporting Modbus and Modbus™/TCP protocols.

At the heart of the Transparent Ready™ offer, OFS enables simpler, more open and transparent communication between your software applications and your devices. These are just some of the advantages that help ensure an interoperable solution that is central to your process.

In version V3.3, the OFS data server integrates the recent specifications from the OPC Foundation:
- **OPC-DA** (OPC Data Access)
- **.NET API interface**
- **OPC XML-DA V1.0** (OPC XML Data Access)

The OFS V3.3 offer is available in two levels:
- **OFS Small:** Data server for 1000 items *(1)* that does not support the OPC XML-DA protocol
- **OFS Large:** Complete data server

Devices and protocols supported

OFS software is a multi-device data server: it allows simultaneous use of several communication protocols, and it provides client applications with a set of services for accessing control system items that may be local or remote, via physical address or via symbol.

Devices supported:
- Modicon™ Quantum™, Premium™, M340™, Micro, Compact™ and Momentum™ PACs
- Schneider Electric TSX Series 7 and April Series 1000 PACs
- Modbus™ serial devices connected via Schneider Electric gateways: TSXETG 10●●, EGX ●●● ranges, etc.
- Uni-Telway™ serial devices connected via Schneider Electric gateways (TSX ETG 1010)

Networks and protocols supported:
- Modbus: Modbus serial, Modbus Plus, Modbus/TCP
- X-Way™/Uni-TE™: Uni-Telway, FIPway™, ISAway, PCIway

Openness

The development of specialized interfaces is simpler with OFS V3.3 software that is aimed at two types of user in particular:

- **End users** who want either to interface their supervision or Human Machine Interface applications with Schneider Electric equipment, or to develop applications on a PC (supervisory control screens, Excel tables, etc.) requiring access to control system data.

- **Suppliers of control system or industrial data processing software** (supervision, Human Machine Interfaces, etc.) seeking to develop, within their standard products, an OPC Client interface capable of accessing data in Schneider Electric equipment via the OFS server.

(1) Item: A variable, structure, table, etc. in the Unity™ Pro application.

Modicon™ M340™ automation platform

OPC data server software

OPC Factory Server™ (OFS™)

OPC Factory Server™: home page

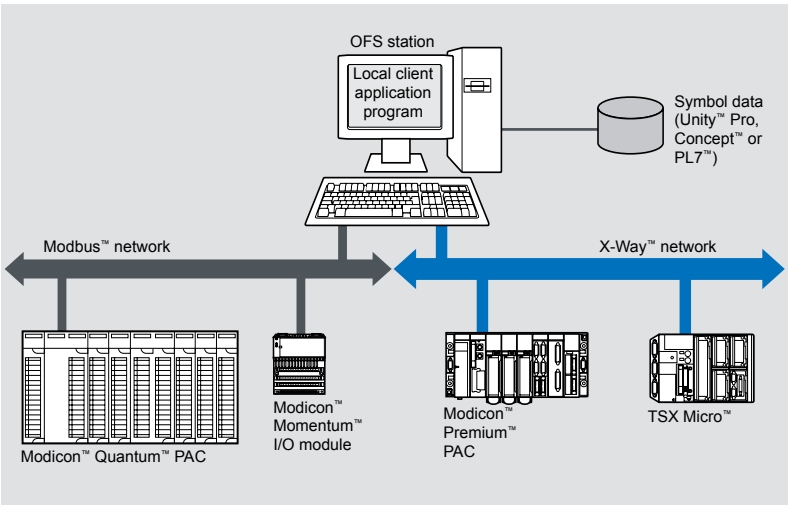
Supported architectures

The OFS™ server allows four access modes:

- A purely local mode
- Remote access from an OPC-DA client
- Remote access from an OPC .NET client
- Remote access from an OPC XML-DA client

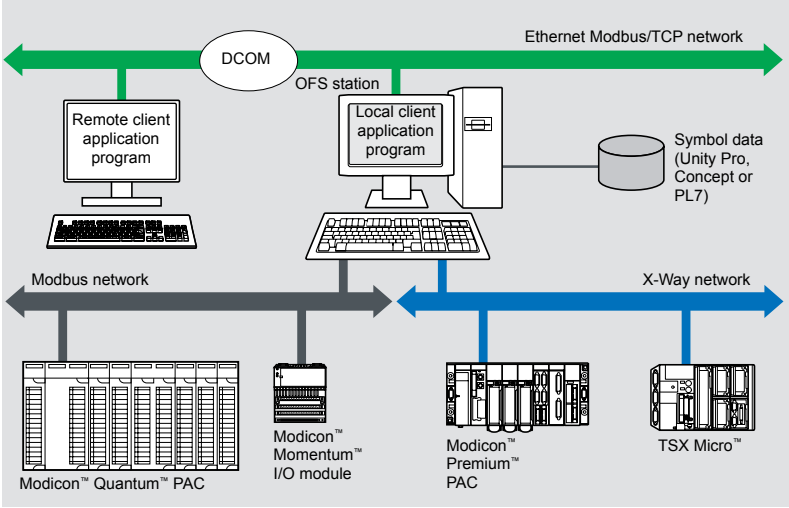
Local access

The client application program and the OFS server are on the same PC.



Remote access from an OPC-DA client

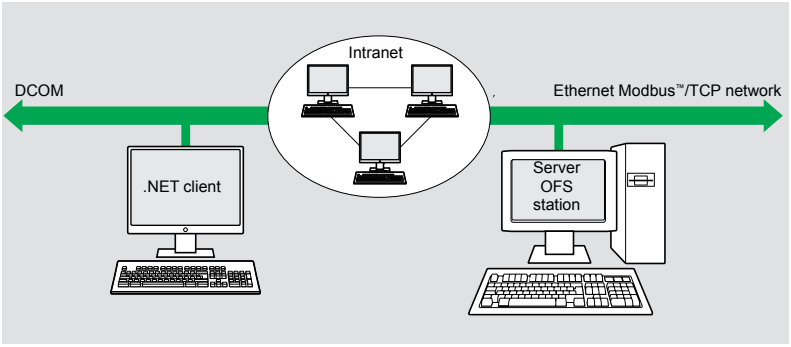
The client application program and the OFS data server are on remote stations. Communication between the client station and the OFS server is conducted through the DCOM layer (Microsoft) via the OPC-DA protocol.



Supported architectures (continued)

Remote access from an OPC.NET client

The .NET client application program and the OFS™ data server are on remote stations. Communication between the client station and the OFS server is conducted through the DCOM layer (Microsoft) via the OPC-DA protocol.

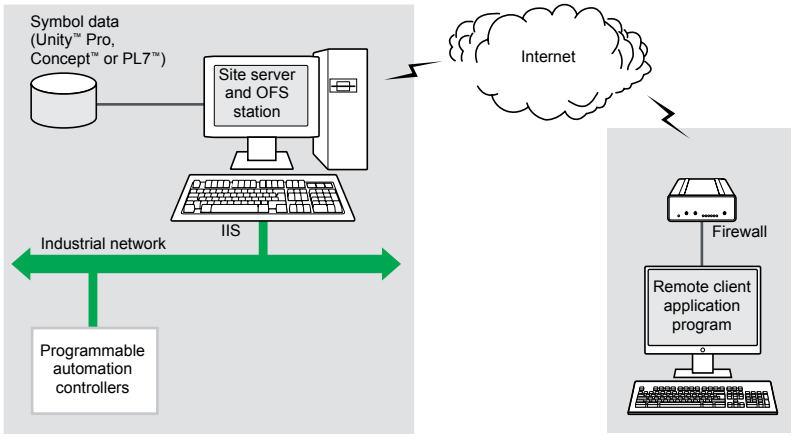


The .NET Microsoft compatibility of the OFS server has been developed to allow an OPC .NET client to access OFS server items on an Intranet network via the OPC .NET API interface.

This interface helps ensure interoperability between existing OPC applications and applications developed in the standard .NET environment.

Remote access from an OPC XML-DA client via HTTP

The client application program and the OFS server are on remote stations, using the SOAP protocol to communicate via the Internet in conformity with the OPC XML-DA V1.01 specification of the OPC Foundation.
The OFS data server is based on an HTTP server installed on the same station.



The OPC XML-DA V1.0 specifications are designed to overcome the limitations of COM/DCOM by providing:
- An OPC interface for Windows and non-Windows client applications
- Beyond the Intranet perimeter, remote access via the Internet through firewalls

The OPC XML-DA specification is based on Web Services standards such as SOAP, XML and WSDL *(1)*. A SOAP client can access data on the OFS server via Intranet or Internet using the SOAP protocol in conformity with the OPC XML-DA V1.01 specification of the OPC Foundation.

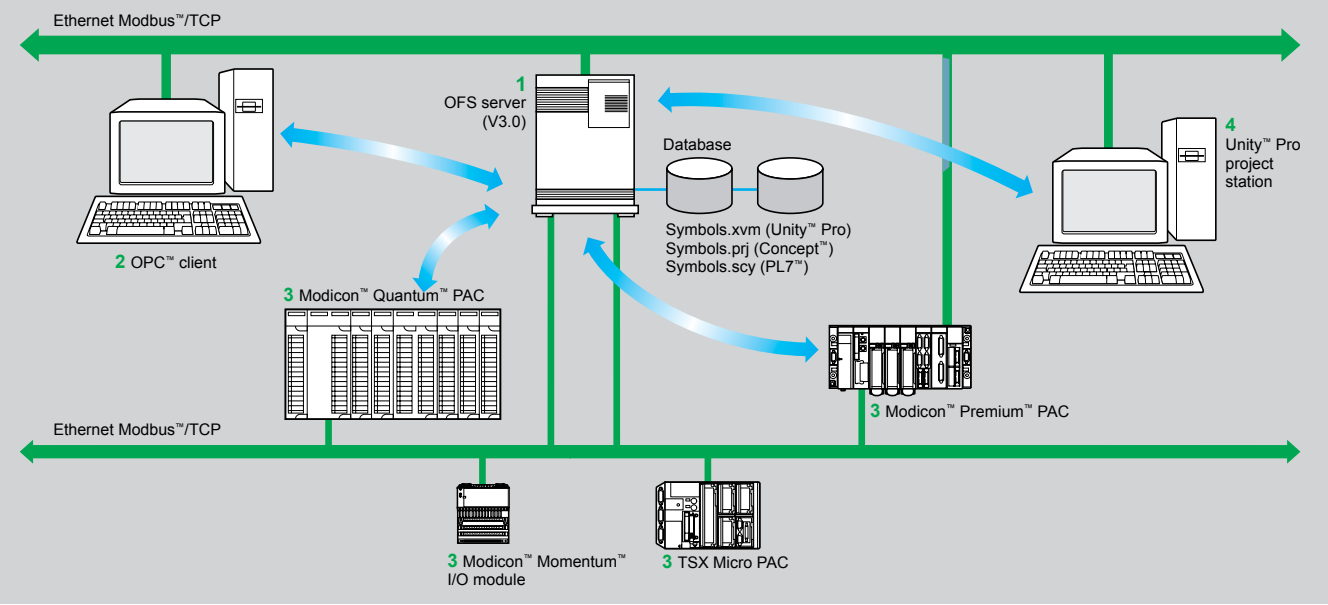
(1) SOAP: Simple Object Access Protocol
XML: Extensible Markup Language
WSDL: Web Services Description Language

Modicon™ M340™ automation platform

OPC data server software

OPC Factory Server™ (OFS™)

Setup



The OFS™ server **1** is at the center of the data exchanges. It helps ensure that variables exchanged between the OPC client **2** and the PAC **3** **are consistent,** in one of three ways using a symbol (or variables) database:

■ The variables database is either the Unity™ Pro project **4**, or the Concept™ project. In both these cases, Unity Pro or Concept needs to be installed on the OFS server station.

■ The variables database is an export file (SCY for PL7, XVM for Unity Pro). PL7™ and Unity Pro are not required in either of these cases.

■ The variables database is the PAC. In this case neither Unity Pro nor an export file is needed. The following minimum versions are required: OFS V3.33, Unity Pro V4.1, PACs version V2.7 (Premium™ or Quantum™) or V2.1 (M340). This does not apply to Momentum™ and TSX Micro PACs.

If an inconsistency is detected (following online modification of the PAC program for example), OFS resynchronizes automatically as soon as the database is available again.

Modicon™ M340™ automation platform

OPC data server software

OPC Factory Server™ (OFS™)

Functions

Development of client applications

OFS™ software has 4 types of interfaces:

■ **OLE Automation interface (OPC-DA).**
Particularly suitable for end users, this enables the development of OPC client applications in Visual Basic, in Visual Basic for Excel, and in C++.

■ **OLE Custom interface (OPC-DA).**
Used primarily by suppliers of automated control system or industrial IT products, It enables the development of applications in C++ to access the OFS software OPC server. This interface is particularly aimed at software development experts, so that they can integrate the client application into their standard products. This is the interface offering the fastest times for accessing data stored in the OPC server. It requires extensive knowledge of C++ programming to set up.

■ **OPC .NET API wrapper interface**
The .NET Microsoft compatibility of the OFS data server gives an OPC .NET client standard access to items on the OFS server via an Intranet network, thus helping to ensure greater interoperability with standard .NET environments.

Note: *In this case, communication between the OPC .NET client and the OFS server is conducted through the DCOM layer (or COM layer in a local configuration) via the OPC-DA protocol.*

■ **OPC XML-DA interface** *(1)*
The OPC XML-DA V1.0 specifications are designed to overcome the limitations of the OPC-DA specification and COM/DCOM by providing:
- □ An interface for Windows and non-Windows client applications
- □ Remote access via the Internet through firewalls (beyond the Intranet perimeter)

The OPC XML-DA specification is based on Web Services standards such as SOAP, XML, WSDL. A SOAP client can access data on the OFS server via Intranet or Internet using the SOAP protocol in conformity with the OPC XML-DA V1.01 specification of the OPC Foundation.

(1) Only available with the Large version of OPC Factory Server™ V3.3

Modicon™ M340™ automation platform

OPC data server software

OPC Factory Server™ (OFS™)

References

OFS™ V3.3 software for PC compatible stations (minimum configuration: Pentium 566 MHz processor, 128 MB RAM) running Windows 2000 Professional *(1)*, Windows XP Professional, Windows 7 (32-bit) *(3)*, or Windows Server 2008 *(3)*.

The OFS V3.3 offer is comprised of:
- OPC™ server software
- OPC server simulator (for debugging the application when no PACs are present)
- OFS configuration software
- Example of OPC client for configuring applications
- Setup documentation on CD-ROM

Supplied on CD-ROM, the software operates independently on a PC. It interfaces with the variables export files generated by PL7™, ProWORX™, Concept™ and Unity™ Pro software.
It also provides a direct dynamic link to the Unity Pro and Concept applications *(2)*.

OFS V3.3 software is available in two versions:
- **Small version TLX CD S●OFS 33**
  - Maximum of 1000 items
  - Supports any protocol except OPC XML-DA
  - Single station and 10-station site licenses
- **Large version TLX CD L●OFS 33**
  - Full version
  - Single station, 10-station and 200-station site licenses

OPC Factory Server V3.3 Small

Description	License type	Reference	Weight kg
OPC Factory Server V3.3 Small software	Single station	**TLXCDSUOFS33**	–
	10-station	**TLXCDSTOFS33**	–

OPC Factory Server V3.3 Large

Description	License type	Reference	Weight kg
OPC Factory Server V3.3 Large software Full version	Single station	**TLXCDLUOFS33**	–
	10-station	**TLXCDLTOFS33**	–
	200-station	**TLXCDLFOFS33**	–

(1) Updated with Service Pack 1 or higher
(2) Requires Concept software version 2.0 or later to be installed on the same station
(3) OFS is compatible with both these operating systems from version V3.34 or later.

Contents ***chapter 5***

Connection interfaces, regulated switch mode power supplies, Human/Machine interfaces

5.1 - Modicon™ Telefast™ ABE7 pre-wired system

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■ References

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- □ Adaptor sub-bases with mounted relays and removable terminal blocks . . . 5/14
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- □ Output adaptor sub-bases for plug-in relays 5/16
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5.2 - Phaseo™ power supplies and transformers

Regulated switch mode power supply selection guide 5/20

■ Regulated switch mode power supplies: ABL8 range

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■ Regulated switch mode power supplies: ABL4 range

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5.3 - Operator dialog terminals and HMI software

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Discrete input and/or output sub-bases

Applications	**Discrete inputs or outputs**				
	Optimum "Economy"	**Optimum "Miniature"**	**Universal**		
					
Compatibility	TSX Micro™, Modicon™ Premium™, Modicon™ M340™	TSX Micro, Modicon™ Premium™, Modicon™ Quantum™, Modicon M340			
Sub-base type	Passive connection sub-bases				
Equipped with relays	–				
Control voltage	24 V ⎓				
Output voltage	24 V ⎓				
Output current per channel	0.5 A				
Modularity	16		8 -12 -16		
No. of terminals per channel	1	1 to 3	1	2	
Type of connection terminals	Signal	Signal, common (configurable as 24 V or 0 V ⎓)	Signal	Signal, common (configurable as 24 V or 0 V ⎓)	
Connectors	20-way HE10 connector				
Terminal block Removable	No		No		
Terminal block Type of terminals	Screw				
Additional or optional* function	Low-cost version fitted with cable	Miniature sub-bases	Compact size *	Input type 2 * *(1)*	Isolator *
Type of device	**ABE7H••E•00**	**ABE7H16C••**	**ABE7H••R1• ABE7H••R50**	**ABE7H••R2•**	**ABE7H••S21**
Page	5/12		5/13		

(1) For Modicon TSX Micro and Modicon Premium PACs.

Discrete inputs or outputs		Outputs for solid state and/or electromechanical relays	
Optimum "Miniature"		**Optimum and Universal**	
			
TSX Micro™, Modicon™ Premium™, Modicon™ Quantum™, Modicon™ M340™			
Passive connection sub-bases		Plug-in electromechanical or solid state relays	
–		No	Yes
24 V ⎓			
24 V ⎓		24V ⎓ (solid state) 5 to 24 V ⎓, 230 V ∿ (electromechanical)	
0.5 A	0.5 A	5 A (E.M.), 2 A (solid state)	5 A (th)
16		16 8 passive inputs 8 relay outputs	
1	2	1	
Signal, 2 common connections between the inputs and the outputs.	Signal, common, 2 common connections between the inputs and the outputs.	1 N/O contact and common, 4 output channels 2 input connection points	
20-way HE10 connectors			
No			
Screw			
Miniature sub-base Synergy with Tego™ Power and Micro PAC		Miniature sub-base - Common per 4 channels Synergy with Tego Power and Micro PAC	
ABE7H16CM11	**ABE7H16CM21**	**ABE7P16M111**	**ABE7R16M111**
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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Discrete input and/or output sub-bases

Applications	Discrete outputs					
	Optimum		Universal	Optimum		Universal
						
Compatibility	TSX Micro™, Modicon™ Premium™, Modicon™ Quantum™, Modicon™ M340™					
Relay sub-base	Electromechanical, mounted			Electromechanical or solid state		
Equipped with relays	Yes			Yes	No	No
Control voltage	24 V ⎓					
Output voltage	5 V to 30 V ⎓ 230 V ∿		5 V to 150 V ⎓ 230 V ∿	24 V ⎓ (solid state) 5 V to 24 V ⎓, 230 V ∿ (E.M.)		5 V to 150 V ⎓ 230 V ∿
Output current per channel	2 A (th)	3 A (th)	5 A (th)	2 A (solid state) 6 A (electromechanical)		0.5 to 10 A (dependent on relay)
Modularity	8	8 - 16		16		8 or 16
No. of terminals per channel	2	1	2	1		2 to 3
Type of connection terminals	1 N/O contact and common Volt-free	1 N/O contact	1 N/O contact and common	1 N/O contact		Signal, Polarities
Connectors	20-way HE 10 connector					
Terminal block — Removable	Yes	Yes	Yes	No		No
Terminal block — Terminal type	Screw or spring			Screw		
Additional or optional* function	Miniature sub-base Latching relay	Volt-free or common per group of 8 channels		Miniature sub-bases Common per group of 4 channels		Isolator and fuse
Type of device	**ABE7R08S216●**	**ABE7R●●S1●●**	**ABE7R●●S2●●**	**ABE7R16T111**	**ABE7P16T111**	**ABE7P16T2●●●** **ABE7P08T3●●●**
Page	5/14			5/15	5/16	

(1) For TSX Micro and Modicon Premium PACs

Discrete outputs				Discrete inputs or outputs			
Universal				**Universal**			
							
TSX Micro™, Modicon™ Premium™, Modicon™ Quantum™, Modicon™ M340™							
Electromechanical, plug-in		Solid state, mounted	–	–		Solid state, mounted	Solid state, plug-in
Yes		Yes	–	–		Yes	No
24 V ⎓						From 24 V ⎓ to 230 V ∿	From 5 V TTL to 230 V ∿
5 V to 150 V ⎓ 230 V ∿		24 V ⎓					
5 A (th)	8 A (th)	0.5 to 2 A	125 mA	0.5 A	125 mA	12 mA	
16							
2 to 3	2 to 6	2		3	2		
1 C/O contact or 1 N/O contact and common	1 C/O contact or 2 C/O contacts and common	Signal and 0 V		24 V and 0 V ⎓ signal	Signal can be isolated, Protected common	Signal	Signal and common
20-way HE 10 connector							
No		Yes	No	No		Yes	No
Screw		Screw or spring		Screw		Screw or spring	
Volt-free or common per group of: 8 channels	4 channels	Detected fault signal	Isolator and fuse (indicator)	3-wire proximity sensor	Isolator and fuse (indicator)	–	
ABE7R16T2●●	**ABE7R16T3●●**	**ABE7S●●S2B●**	**ABE7H16F43**	**ABE7H16R3●**	**ABE7H16S43**	**ABE7S16E2●●E**	**ABE7P16F31●**
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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Analog and application-specific sub-bases

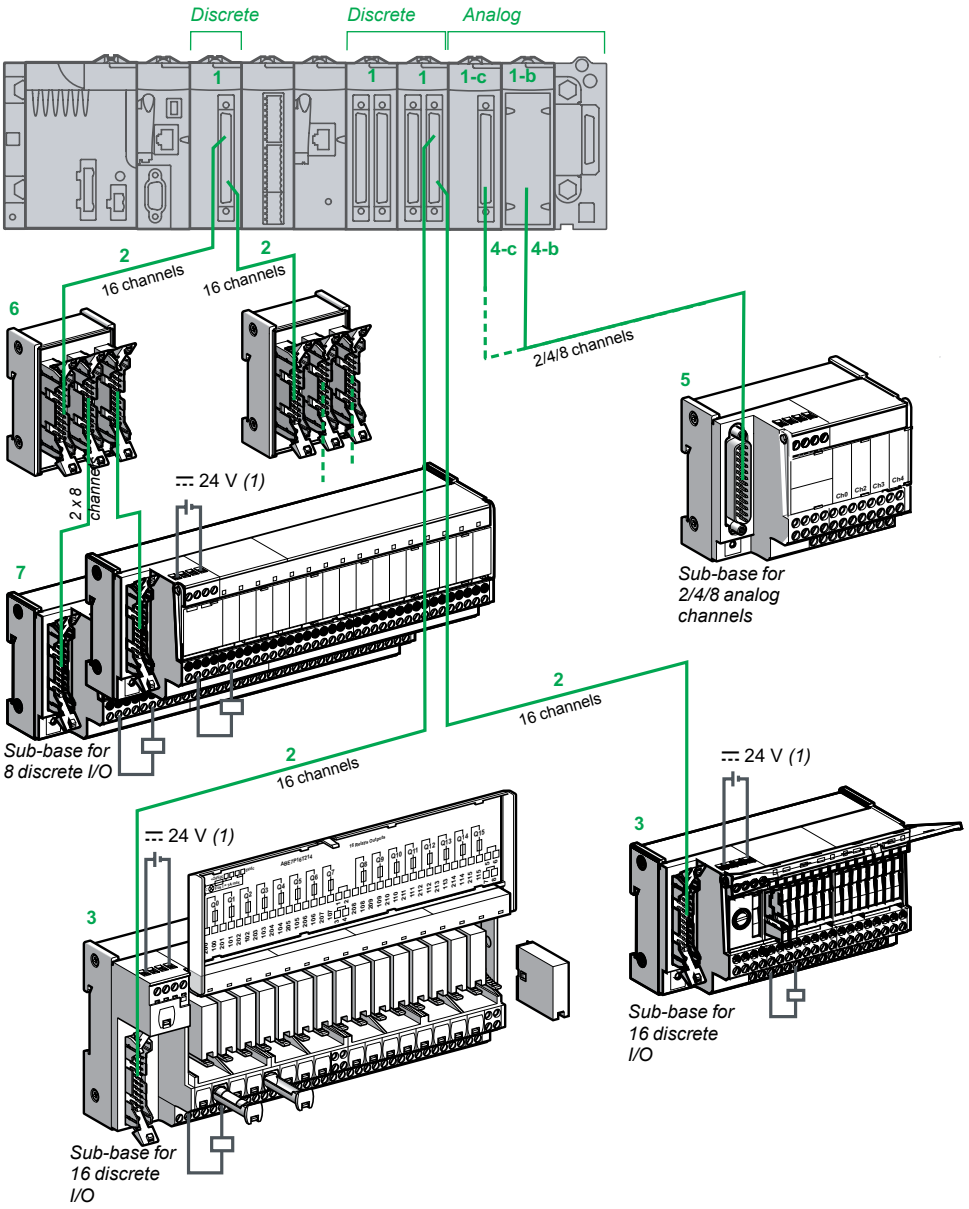
Applications	Analog signals and special functions				
					
Compatibility	TSX Micro™: TSX3722, TSXCTZ●A	Modicon™ Premium™: TSXCTY●A, TSXCAY●1	Modicon Premium: TSXASY810, TSXAE1600, TSXA●Y800 Modicon™ M340™: BMXAMI0800, BMXAMI0810, BMXAMO0802	Modicon Premium: TSXASY410, TSXAEY420 Modicon M340: BMXAMO0410	Modicon M340: BMXART0414, BMXART0814 Modicon Premium: TSXAEY1614
Type of signal	Counter inputs and analog I/O	Counter inputs Axis control Position control	Analog inputs Current/Voltage Pt 100	Analog outputs Current Voltage	Analog inputs
Functions	Passive connection, point-to-point with shield continuity				Connection of cold junction compensation or provision, distribution of isolated power supplies
Modularity	1 counter channel or 8 analog inputs + 2 analog outputs		8 channels	4 channels	4 channels
Control voltage	24 V ⎓				–
Output voltage	24 V ⎓				–
Output current per channel	25 mA				–
No. of terminals per channel	2		2 or 4	2 or 4	2 or 4
Type of connector	15-way SUB-D + 9-way SUB-D		25-way SUB-D		25-way SUB-D
Terminal block – Removable	No		No		No
Terminal block – Type of terminals	Screw		Screw		Screw
Type of device	**ABE7CPA01**		**ABE7CPA02**	**ABE7CPA21**	**ABE7CPA412 ABE7CPA410**
Page	5/18				

Modicon™ Premium™: TSXAEY800, TSXAEY1600	Modicon Premium: TSXAEY810 Modicon™ M340™: BMXAMI0800, BMXAMI0810, BMXAMO0802	Modicon Premium: TSXCAY●1, TSXCTY●A	Modicon Premium: TSXAEY1614	Modicon Premium: TSXPAY2●2
Analog inputs Current Voltage Pt 100	Isolated analog inputs	Counter inputs	Inputs for thermocouples	Inputs/outputs
Distribution of sensor power supplies per limiter (25 mA)	Distribution of isolated sensor power supplies per converter	Acquisition of value from an absolute encoder	Connection of 16 thermocouples with cold junction compensation	Safety module (BG)
8 channels	8 channels	1 channel	16 channels	12 Emergency stops
24 V ⎓				
24 V ⎓				
25 mA				–
2 or 4		–	2 or 4	1
25-way SUB-D	25-way SUB-D	15-way SUB-D	25-way SUB-D	50-way SUB-D
No	No	No	No	No
Screw	Screw or spring	Screw	Screw	Screw
ABE7CPA03	**ABE7CPA31●**	**ABE7CPA11**	**ABE7CPA12**	**ABE7CPA13**
5/18				

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system
Interface with Modicon M340 I/O modules



(1) Connection of the 24 V ⎓ power supply is only possible using Modicon™ Telefast™ ABE7 sub-bases. The 0 V ⎓ connections are required to be equipotential.

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system
Interface with Modicon M340 I/O modules

Introduction

I/O modules on the Modicon™ M340™ platform

1 Discrete input modules (BMXDDI ●●02K), discrete output modules (BMXDDO ●●02K) and discrete mixed I/O modules (BMXDDM3202K) equipped with one or two 40-way FCN connectors. The modularity of each module (●●) is 32 or 64 channels.

□ **1-b:** Analog input or output modules:
- Analog inputs: **BMXAMI0410** (4 channels), **BMXAMI0800** (4 channels) and **BMXAMI0810** (8 channels)
- Analog outputs: **BMXAMO0210** (2 channels), **BMXAMO0410** (4 channels) and **BMXAMO0802** (8 channels)

□ **1-c:** Analog input modules **BMXART0414** (4 channels) and **BMXART0814** (8 channels)

2 2 types of cordset are available depending on the type of discrete module connected to the sub-base (for combinations, see page 5/10). These cordsets are available in 0.5, 1, 2, 3, 5 or 10 m lengths:
- **BMXFCC●●●1** cordsets with one 20-wire sheath (AWG 22) equipped with one 40-way FCN connector and one HE 10 molded connector on the Telefast™ sub-base end
- **BMXFCC●●●3** cordsets with two 20-wire sheaths (AWG 22) equipped with one common 40-way FCN connector on the module end and two HE 10 molded connectors on the Telefast sub-base end

3 16-channel Modicon Telefast ABE7 Optimum or Universal passive connection sub-bases or adaptor sub-bases.

4 4 types of cordset are available depending on the type of analog module connected to the sub-base (for combinations, see page 5/11).

□ **4-b:** Connection to analog module with removable terminal block 20-way or 28-way:
- **BMXFCA●●0** cordsets with a 20-way removable terminal block on the module end and a 25-way SUB-D connector on the Telefast sub-base end Cordsets available in 1.5, 3 or 5 m lengths.
- **BMXFTA●●2** cordsets with a 20-way removable terminal block on the module end and a 25-way SUB-D connector on the Telefast sub-base end Cordsets available in 1.5 or 3 m lengths.
- **BMXFTA●●0** cordsets with a 28-way removable terminal block on the module end and a 25-way SUB-D connector on the Telefast sub-base end Cordsets available in 1.5 or 3 m lengths.

□ **4-c**: Connection to analog module with 40-way FCN connector:
- **BMXFCA●●2** cordsets with a 40-way FCN connector on the module end and a 25-way SUB-D connector on the Telefast sub-base end Cordsets available in 1.5, 3 or 5 m lengths.

5 Modicon Telefast ABE7CPA analog and application-specific connection sub-bases (for combinations, see pages 5/11):
- **ABE7CPA410** allows connection on a screw terminal block of 4 current/voltage inputs, with provision and distribution of 4 isolated protected power supplies for the current loop inputs
- **ABE7CPA412** allows connection on a screw terminal block of 4 thermocouple inputs, with supply of cold-junction compensation for these inputs
- **ABE7CPA21** allows connection on a screw terminal block of 4 current/voltage outputs
- **ABE7CPA02** allows connection on a screw terminal block of 8 current/voltage I/O
- **ABE7CPA03** allows connection on a screw terminal block of 8 inputs, with provision and distribution of the power supply (with limitation of each current loop) for the current/voltage outputs of the **BMXAMO0210** analog module
- **ABE7CPA31/31E** allows connection on a screw terminal block (ABE7CPA31) or a spring-type terminal block (ABE7CPA31E) of 8 inputs, with provision and distribution of the power supply (limited to 25 mA per input)

6 **ABE7ACC02** sub-base for splitting 16 into 2 x 8 channels, allowing connection of 8-channel sub-bases.

7 8-channel Modicon Telefast ABE7 Optimum or Universal passive connection sub-bases or adaptor sub-bases.

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system
Modicon M340 I/O modules with ABE7 sub-bases

Combinations of discrete inputs/outputs on the Modicon™ M340™ platform with ABE7 sub-bases.

(items 1 to 7), see Introduction on page 5/8

		Discrete I/O modules on the Modicon M340 platform				
		Reference for 24 V ⎓ discrete I/O modules (item 1)				
		Inputs		Outputs		Inputs/outputs
		2 x 16 I	4 x 16 I	2 x 16 Q	4 x 16 Q	1 x 16 I, 1 x 16 Q
		BMXDDI3202K	BMXDDI6402K	BMXDDO3202K	BMXDDO6402K	BMXDDM3202K
Required cordsets						
Pre-assembled cordsets (at both ends)	**BMXFCC●●1/FCC●●3 (item 2)** *(1)*	Yes	Yes	Yes	Yes	No
	BMXFCC●●3 (item 2) *(1)*	No	No	No	No	Yes
	Quantities to be ordered	1	2	1	2	1
Passive connection sub-bases						
Optimum 16 channels (item 3)	**ABE7H34E●00 "economy"** *(2)*					
	ABE7H16C●● "miniature"					
Universal 8 channels (item 7)	**ABE7H08R●●**	*(3)*	*(3)*	*(3)*	*(3)*	*(3)*
	ABE7H08S21	*(3)*	*(3)*	*(3)*	*(3)*	*(3)*
Universal 16 channels (item 3)	**ABE7H16R1●●**					
	ABE7H16R50●					
	ABE7H16R2●●					
	ABE7H16S21●					
	ABE7H16R3●					
	ABE7H16R23					
	ABE7H16S43					
	ABE7H16F43					
Input adaptor sub-bases with solid state relays						
Universal 16 channels (item 3)	**ABE7S16E2●●●** Mounted solid state relays, removable terminal blocks					
	ABE7P16F31● Plug-in solid state relays					
Output adaptor sub-bases with mounted relays, removable terminal blocks						
Optimum & Universal 8 channels (item 7)	**ABE7S08S2B●●** Solid state relays			*(3)*	*(3)*	*(3)*
	ABE7R08S111●/7R08S21●● Electromechanical relays			*(3)*	*(3)*	*(3)*
Optimum & Universal 16 channels (item 3)	**ABE7S16S●B●●** Solid state relays					
	ABE7R16S111●/7R16S21●● Electromechanical relays					
Output adaptor sub-bases with plug-in relays						
Universal 8 channels (item 7)	**ABE7P08T330●** Solid state relays			*(3)*	*(3)*	*(3)*
Optimum & Universal 16 channels (item 3)	**ABE7R16T●●●/7R16M111** Electromechanical relays					
	ABE7P16T●●●/7P16M111 Solid state and/or electromechanical relays					
Sub-bases for analog I/O						
4 channels (item 5)	**ABE7CPA410**					
	ABE7CPA412					
2 channels (item 5)	**ABE7CPA21**					
8 channels (item 5)	**ABE7CPA02**					
	ABE7CPA03					
	ABE7CPA31/31E					

Compatible

Not compatible

(1) References for cordsets: to be completed, see page 2/13.
(2) ABE7H34E●00 "economy" sub-bases: the cordset is supplied.
(3) Via the splitter sub-base **6** **ABE7ACC02** *used to separate 16 channels into 2 x 8 channels*

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system
ABE7 interfaces with Modicon™ M340 I/O modules

Combinations of analog inputs/outputs on the Modicon™ M340™ platform with ABE7 sub-bases

(items 1 to 7), see Introduction on page 5/8

		Analog I/O modules on the Modicon M340 platform							
		Reference for analog I/O modules (item 1-b and 1-c)							
		Inputs					Outputs		
		4 I	4 I	2 x 4 I	8 I	8 I	2 Q	4 Q	8 Q
		BMXAMI 0410	**BMXART 0414**	**BMX ART 0814**	**BMXAMI 0800**	**BMXAMI 0810**	**BMXAMO 0210**	**BMXAMO 0410**	**BMXAMO 0802**
Required cordsets									
Pre-assembled cordsets (at both ends)	**BMXFCA••0** (item 4-b) *(1)*	Yes	No	No	No	No	Yes	Yes	No
	BMXFCA••2 (item 4-c) *(1)*	No	Yes	Yes	No	No	No	No	Yes
	BMXFTA••0 (item 4-c) *(1)*	No	No	No	Yes	Yes	No	Yes	No
	BMXFTA••2 (item 4-c) *(1)*	No	No	No	No	No	No	No	Yes
	Quantities to be ordered	1	1	2	1	1	1	1	1
Passive connection sub-bases									
Optimum 16 channels (item 3)	**ABE7H34E•00 "economy"** *(2)*								
	ABE7H16C•• "miniature"								
Universal 8 channels (item 7)	**ABE7H08R••**								
	ABE7H08S21								
Universal 16 channels (item 3)	**ABE7H16R1••**								
	ABE7H16R50•								
	ABE7H16R2••								
	ABE7H16S21•								
	ABE7H16R3•								
	ABE7H16R23								
	ABE7H16S43								
	ABE7H16F43								
Input adaptor sub-bases with solid state relays									
Universal 16 channels (item 3)	**ABE7S16E2•••** Mounted solid state relays, removable terminal blocks								
	ABE7P16F31• Plug-in solid state relays								
Output adaptor sub-bases with mounted relays, removable terminal blocks									
Optimum & Universal 8 channels (item 7)	**ABE7S08S2B••** Solid state relays								
	ABE7R08S111•/7R08S21•• Electromechanical relays								
Optimum & Universal 16 channels (item 3)	**ABE7S16S•B••** Solid state relays								
	ABE7R16S111•/7R16S21•• Electromechanical relays								
Output adaptor sub-bases with plug-in relays									
Universal 8 channels (item 7)	**ABE7P08T330•** Solid state relays								
Optimum & Universal 16 channels (item 3)	**ABE7R16T•••/7R16M111** Electromechanical relays								
	ABE7P16T•••/7P16M111 Solid state and/or electromechanical relays								
Sub-bases for analog I/O									
4 channels (item 5)	**ABE7CPA410**	■							
	ABE7CPA412		■	■					
2 channels (item 5)	**ABE7CPA21**						■	■	
8 channels (item 5)	**ABE7CPA02**				■	■			■
	ABE7CPA03				■				
	ABE7CPA31/31E				■	■			

■ Compatible

Not compatible

(1) References for cordsets: to be completed, see page 2/23.
(2) ABE7H34E•00 "economy" sub-bases: the cordset is supplied.

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Passive connection sub-bases

ABE7H20E●●●

ABE7H16C21

ABE7H16CM21

Passive connection sub-bases for discrete signals

Optimum "Economy" sub-bases

Function	No. of channels	No. of terminals per channel	No. of terminals on row number	For PACs	Length of PAC connection cable	Type of connection	Reference	Weight kg
Input or output	16	1	2	Modicon™ TSX Micro Modicon Premium™	1 m	Screw	**ABE7H20E100**	0.330
					2 m	Screw	**ABE7H20E200**	0.410
					3 m	Screw	**ABE7H20E300**	0.480
				Modicon M340™	– *(1)*	Screw	**ABE7H34E000**	0.150
					1 m	Screw	**ABE7H34E100**	0.330
					2 m	Screw	**ABE7H34E200**	0.410
					3 m	Screw	**ABE7H34E300**	0.480
				Siemens S7	1.5 m	Screw	**ABE7H32E150**	0.360
					3 m	Screw	**ABE7H32E300**	0.460

Optimum "Miniature" sub-bases

Function	No. of channels	No. of terminals per channel	No. of terminals on row number	LED per channel	Polarity distribution	Type of connection	Reference	Weight kg
Input or output	16	1	1	No	No	Screw	**ABE7H16C10**	0.160
				Yes	No	Screw	**ABE7H16C11**	0.160
		2	2	Yes	0 or 24 V	Screw	**ABE7H16C21**	0.205
		3	3	Yes	0 or 24 V	Screw	**ABE7H16C31**	0.260
Input and output *(2)*	16	1	1	Yes	No	Screw	**ABE7H16CM11**	0.160
		2	2	Yes	0 or 24 V	Screw	**ABE7H16CM21**	0.200

(1) Sub-base supplied without cordset.
(2) 8 I + 8 Q: these products have 2 common connections that enable inputs and outputs to be connected to the same sub-base at the same time.

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Passive connection sub-bases

ABE7H●●R1●

Passive connection sub-bases for discrete signals (continued)

Universal sub-bases

Function	No. of channels	No. of terminals per channel	No. of terminals on row number	LED per channel	Polarity distribution	Isolator (I) Fuse (F) per channel	Type of connection	Reference	Weight kg
Input or output	8	1	1	No	No	–	Screw	**ABE7H08R10**	0.187
				Yes	No	–	Screw	**ABE7H08R11**	0.187
		2	2	Yes	0 or 24 V	–	Screw	**ABE7H08R21**	0.218
						I	Screw	**ABE7H08S21**	0.245
	12	1	1	No	No	–	Screw	**ABE7H12R10**	0.274
				Yes	No	–	Screw	**ABE7H12R11**	0.274
			2	No	No	–	Screw	**ABE7H12R50**	0.196
		2	2	No	0 or 24 V	–	Screw	**ABE7H12R20**	0.300
				Yes	0 or 24 V	–	Screw	**ABE7H12R21**	0.300
						I	Screw	**ABE7H12S21**	0.375
	16	1	1	No	No	–	Screw	**ABE7H16R10**	0.274
				Yes	No	–	Screw	**ABE7H16R11**	0.274
			2	No	No	–	Screw	**ABE7H16R50**	0.196
		2	2	No	0 or 24 V	–	Screw	**ABE7H16R20**	0.300
				Yes	0 or 24 V	–	Screw	**ABE7H16R21**	0.300
						I	Screw	**ABE7H16S21**	0.375
		3	3	No	0 or 24 V	–	Screw	**ABE7H16R30**	0.346
				Yes	0 or 24 V	–	Screw	**ABE7H16R31**	0.346
Input type 2 *(1)*	16	2	2	Yes	0 or 24 V	–	Screw	**ABE7H16R23**	0.320
Input	16	2	1	Yes	24 V	I, F *(2)*	Screw	**ABE7H16S43**	0.640
Output	16	2	1	Yes	0 V	I, F *(2)*	Screw	**ABE7H16F43**	0.640

(1) For TSX Micro™, Modicon™ Premium™.
(2) With LED to indicate open fuse.

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system: Adaptor sub-bases w/ mounted relays, removable terminal blocks

ABE7H16E2●●

Adaptor sub-bases with mounted solid state relays, removable terminal blocks

Universal input sub-bases with solid state relays

Number of channels	No. of terminals per channel	Isolation of PAC/ Operative part	Voltage	Type of connection	Reference	Weight kg
16	2	Yes	⎓ 24 V	Screw	**ABE7S16E2B1**	0.370
				Spring	**ABE7S16E2B1E**	0.370
			⎓ 48 V	Screw	**ABE7S16E2E1**	0.370
			∿ 48 V	Screw	**ABE7S16E2E0**	0.386
			∿ 110 V	Screw	**ABE7S16E2F0**	0.397
			∿ 230 V	Screw	**ABE7S16E2M0**	0.407
				Spring	**ABE7S16E2M0E**	0.407

Universal output sub-bases with solid state relays

Number of channels	Isolation of PAC/ Operative part	Output voltage	Output current	Fault detection signal *(1)*	Type of connection	Reference	Weight kg
16	No	24 V ⎓	0.5 A	Yes *(2)*	Screw	**ABE7S16S2B0**	0.405
					Spring	**ABE7S16S2B0E**	0.405
				No	Screw	**ABE7S16S1B2**	0.400
					Spring	**ABE7S16S1B2E**	0.400

Optimum and Universal output sub-bases with electromechanical relays

Number of channels	Number of contacts	Output current	Polarity distribution/ operative part	Type of connection	Reference	Weight kg
8	1 N/O	2 A	Contact common per group of 4 channels	Screw	**ABE7R08S111**	0.252
	Latching	2 A	Volt-free	Screw	**ABE7R08S216**	0.448
	1 N/O	5 A	Volt-free	Screw	**ABE7R08S210**	0.448
16	1 N/O	2 A	Contact common per group of 8 channels	Screw	**ABE7R16S111**	0.405
				Spring	**ABE7R16S111E**	0.405
	1 N/O	5 A	Volt-free	Screw	**ABE7R16S210**	0.405
				Spring	**ABE7R16S210E**	0.405
			Common per group of 8 channels on both poles	Screw	**ABE7R16S212**	0.400

ABE7R08S216

(1) A detected fault on a sub-base output Qn will set PAC output Qn to safe mode that will be detected by the PAC.
(2) Can only be used with modules with protected outputs.

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Input/output adaptor sub-bases for or with plug-in relays

ABE7R16M111

ABE7R16T210

Adaptor sub-bases with plug-in relays

Universal input sub-bases for solid state relays, supplied without relays

Number of channels	No. of terminals per channel	For relay type	Isolation of PAC/ Operative part	Input connection	Type of connection	Reference	Weight kg
16	2	ABS7E ABR7 ABS7S33E	Yes	Volt-free	Screw	**ABE7P16F310**	0.850
				Polarity distribution	Screw	**ABE7P16F312**	0.850

Optimum and Universal output sub-bases, supplied with electromechanical relays *(1)*

Number of channels	Relay width	Relay type supplied	Number and type of contacts	Polarity distribution/operative part	Reference	Weight kg
16	5 mm	ABR7S11	1 N/O	Contact common per group of 4 channels	**ABE7R16T111**	0.600
				Contact common per group of 4 output channels + 2 common input terminals	**ABE7R16M111** *(2)*	0.600
	10 mm	ABR7S21	1 N/O	Volt-free	**ABE7R16T210**	0.735
				Common on both poles *(3)*	**ABE7R16T212**	0.730
		ABR7S23	1 C/O	Volt-free	**ABE7R16T230**	0.775
				Contact common *(3)*	**ABE7R16T231**	0.730
	12 mm	ABR7S33	1 C/O	Volt-free	**ABE7R16T330**	1.300
				Common on both poles *(4)*	**ABE7R16T332**	1.200
		ABR7S37	2 C/O	Volt-free	**ABE7R16T370**	1.300

(1) The sub-bases are supplied as standard with electromechanical relays that can be replaced by solid state relays of the same width (it is possible to combine these different technologies on a single sub-base).
(2) Two connection methods are available, enabling inputs and outputs to be connected to the same sub-base at the same time.
(3) Per group of 8 channels.
(4) Per group of 4 channels.

Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Output adaptor sub-bases for plug-in relays

ABE7P16T2●●

Output adaptor sub-bases for plug-in relays

Optimum and Universal output sub-bases for solid state relays and/or electromechanical relays *(1)*

No. of channels	Relay width	For relay type	Isolator per channel	Fuse per channel	Polarity distribution/ operative part	Type of connection	Reference	Weight
	mm							kg
16	5 mm	ABR7S11 ABS7SC1B	No	No	Contact common per group of 4 channels	Screw	**ABE7P16T111**	0.550
	10 mm	ABR7S2● ABS7SA2● ABS7SC2● ABE7ACC20	No	No	Volt-free	Screw	**ABE7P16T210***(2)*	0.615
							ABE7P16T230*(2)*	0.655
				Yes	Volt-free	Screw	**ABE7P16T214**	0.675
				No	Common on both poles *(3)*	Screw	**ABE7P16T212**	0.615
				Yes	Common on both poles *(3)*	Screw	**ABE7P16T215**	0.670
8	12 mm	ABR7S33 ABS7A3● ABS7SC3●● ABE7ACC21	No	No	Volt-free	Screw	**ABE7P08T330**	0.450
16	12 mm	ABR7S33 ABS7A3● ABS7SC3●● ABE7ACC21	No	No	Volt-free	Screw	**ABE7P16T330**	0.900
					Common on both poles *(4)*	Screw	**ABE7P16T332**	0.900
		ABR7S33 ABS7A3M ABS7SC3E ABE7ACC21	No	Yes	Volt-free	Screw	**ABE7P16T334**	0.900
			Yes	Yes	Common on both poles *(4)*	Screw	**ABE7P16T318**	1.000

(1) Not equipped with relays.
(2) With relay ABR7S21 for sub-base ABE7P16T210, with relay ABR7S23 for sub-base ABE7P16T230●.
(3) Per group of 8 channels.
(4) Per group of 4 channels.

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Plug-in relays

ABS7SC1B

Plug-in solid state relays

Relay width	Functions	Input circuit		Output circuit		Unit reference	Weight
		Current	Nominal voltage	Current	Nominal voltage	Order in multiples of 4	kg
5 mm	Output	⎓	24 V	2 A	24 V ⎓	**ABS7SC1B**	0.010
10 mm	Output	⎓	24 V	0.5 A	5 to 48 V ⎓	**ABS7SC2E**	0.016
					24 to 240 V ∿	**ABS7SA2M**	0.016
12 mm	Input	⎓	5 V TTL	–	24 V ⎓	**ABS7EC3AL**	0.014
			24 V Type 2	–	24 V ⎓	**ABS7EC3B2**	0.014
			48 V Type 2	–	24 V ⎓	**ABS7EC3E2**	0.014
		50 Hz ∿	48 V	–	24 V ⎓	**ABS7EA3E5**	0.014
		60 Hz ∿	110 to 130 V	–	24 V ⎓	**ABS7EA3F5**	0.014
		50 Hz ∿	230 to 240 V	–	24 V ⎓	**ABS7EA3M5**	0.014
	Output	⎓	24 V	2 A Self-protected	24 V ⎓	**ABS7SC3BA**	0.016
				1.5 A	5 to 48 V ⎓	**ABS7SC3E**	0.016
				1.5 A	24 to 240 V ∿	**ABS7SA3MA**	0.016

ABR7S2●

ABR7S3●

Plug-in electromechanical relays

Relay width	Control voltage	Output current (1)	Number of contacts	Order in multiples	Unit reference	Weight kg
5 mm	24 V ⎓	5 A (Ith)	1 N/O	4	**ABR7S11**	0.005
10 mm	24 V ⎓	5 A (Ith)	1 N/O	4	**ABR7S21**	0.008
			1 C/O	4	**ABR7S23**	0.008
12 mm	2 V ⎓	10 A (Ith)	1 C/O	4	**ABR7S33**	0.017
		8 A (Ith)	2 C/O	4	**ABR7S37**	0.017
	48 V ⎓	8 A (Ith)	1 C/O	4	**ABR7S33E**	0.017

Accessory

Description	Reference	Weight kg
Extractor for 5 mm miniature relay	**ABE7ACC12**	0.010

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Modicon™ M340™ automation platform

Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

Connection sub-bases for counter and analog channels

ABE7CPA11

ABE7CPA 21/410/412

ABE7CPA01

Connection sub-bases for counter and analog channels

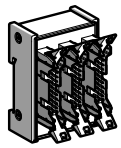
Functions	For PACs	Compatible modules	Type of connector on Telefast™ end	Type of connection	Reference	Weight kg
Counter and analog channels	TSX Micro™	Integrated analog and counting functions TSX3722 TSXCTZ●A	15-way SUB-D	Screw	**ABE7CPA01**	0.300
Counter, axis control, position control	Modicon™ Premium™	TSXCTY●A TSXCAY●1	15-way SUB-D	Screw	**ABE7CPA01**	0.300
Connection of absolute encoder with parallel output	Modicon Premium	TSXCTY●A TSXCAY●1	15-way SUB-D	Screw	**ABE7CPA11**	0.330
Distribution of 4 thermocouples	Modicon M340™	BMXART0414 BMXART0814	25-way SUB-D	Screw	**ABE7CPA412**	0.180
Distribution of 16 thermocouples	Modicon Premium	TSXAEY1614	25-way SUB-D	Screw	**ABE7CPA12**	0.300
Passive distribution of 8 analog EIS channels on screw terminals, with shield continuity	Modicon Premium	TSXASY810 TSXAEY1600 TSXA●Y800	25-way SUB-D	Screw	**ABE7CPA02**	0.290
	Modicon M340	BMXAMI0800 BMXAMI0810 BMXAMO0802				
Provision and distribution of protected isolated power supplies for 4 analog input channels	Modicon M340	BMXAMI0410	25-way SUB-D	Screw	**ABE7CPA410**	0.180
Distribution of 4 analog output channels	Modicon Premium	TSXASY410 TSXAEY420	25-way SUB-D	Screw	**ABE7CPA21**	0.210
	Modicon M340	BMXAMO0410				
Distribution and supply of 8 analog input channels with limitation of each current loop	Modicon Premium	TSXAEY800 TSXAEY1600	25-way SUB-D	Screw	**ABE7CPA03**	0.330
Distribution and supply of 8 analog input channels isolated from one another with 25 mA/ channel limitation	Modicon Premium	TSXAEY810	25-way SUB-D	Screw	**ABE7CPA31**	0.410
	Modicon M340	BMXAMI0800 BMXAMI0810 BMXAMO0802		Spring	**ABE7CPA31E**	0.410
Safety	Modicon Premium	TSXPAY2●2	25-way SUB-D	Screw	**ABE7CPA13**	0.290

Modicon™ M340™ automation platform

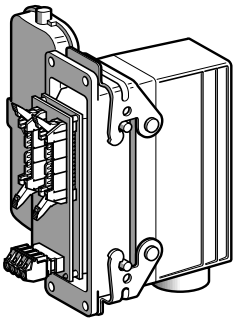
Connection interfaces

Modicon™ Telefast™ ABE7 pre-wired system

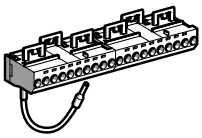
Accessories for connection sub-bases



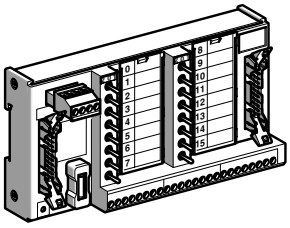
ABE7ACC02



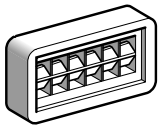
ABE7ACC80 + ABE7ACC81



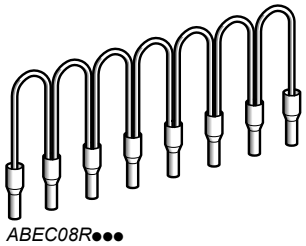
ABE7BV20



ABE7TES160



AR1SB3



ABEC08R●●●

Accessories

Description	No. of channels	Specifications	Order in multiples of	Unit reference	Weight kg
Kit for mounting on solid plate	–	–	10	**ABE7ACC01**	0.008
Splitter sub-base	–	16 as 2 x 8 channels	1	**ABE7ACC02**	0.075
Redundant output sub-base	–	16 as 2 x 16 channels	1	**ABE7ACC10**	0.075
Redundant input sub-base	–	16 as 2 x 16 channels	1	**ABE7ACC11**	0.075
Plug-in continuity blocks	–	Width 10 mm	4	**ABE7ACC20**	0.007
		Width 12 mm	4	**ABE7ACC21**	0.010
Enclosure feedthrough with CNOMO M23 connector (1 x 20-way HE 10 connector, PAC end)	16	19-way	1	**ABE7ACC82**	0.150
Impedance adaptor for compatibility Type 2	–	Used with ABE7ACC82 and ABE7ACC83	1	**ABE7ACC85**	0.012
IP 65 cable gland	–	For 3 cables	5	**ABE7ACC84**	0.300
Additional snap-on terminal blocks (shunted terminals)	8	10 screw terminals	5	**ABE7BV10**	0.030
	16	20 screw terminals	5	**ABE7BV20**	0.060
I/O simulator sub-base	16	For display, forcing inhibition, continuity	1	**ABE7TES160**	0.350
Self-adhesive marker tag holder	–	For 6 characters	50	**AR1SB3**	0.001
Quick-blow fuses 5 x 20, 250 V, UL	–	0.125 A	10	**ABE7FU012**	0.010
		0.5 A	10	**ABE7FU050**	0.010
		1 A	10	**ABE7FU100**	0.010
		2 A	10	**ABE7FU200**	0.010
		4 A	10	**ABE7FU400**	0.010
		6.3 A	10	**ABE7FU630**	0.010

Commoning link accessories

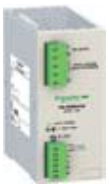
Description	For common	Color	Distance between cable ends	Reference	Weight kg
Commoning links Modularity 8 x 1 mm²	Coil	White	12 cm	**ABFC08R12W**	0.020
			2 cm	**ABFC08R02W**	0.010
	~	Red	12 cm	**ABFC08R12R**	0.020
			2 cm	**ABFC08R02R**	0.010
	⎓	Blue	12 cm	**ABFC08R12B**	0.020
			2 cm	**ABFC08R02B**	0.010

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies

Power supplies		Regulated switch mode power supplies			
		ABL8MEM, ABL7RM: 7 to 60 W - Rail mounting ABL8REM, ABL7RP: 60 to 144 W - Rail mounting			
					
Nominal input voltage		∿ 100 to 240 V ⎓ 120 to 250 V			
Connection to worldwide line supplies	United States - 120 V (phase-to-neutral) - 240 V (phase-to-phase)	Single-phase (N-L1) connection or 2-phase (L1-L2) connection			
	Europe - 230 V (phase-to-neutral) - 400 V (phase-to-phase)	Single-phase (N-L1) connection			
	United States - 277 V (phase-to-neutral) - 480 V (phase-to-phase)	–			
Undervoltage control		Yes			
Protection against overloads and short-circuits		Yes, voltage detection. Automatic reset on elimination of the detected fault			
Diagnostics relay		–			
Compatibility with function modules		–			
Power reserve (Boost)		1.25 to 1.4 In for 1 minute, depending on model (for ABL8MEM)			No
Output voltage		⎓ 5 V	⎓ 12 V	⎓ 24 V	⎓ 48 V
Output current	0.3 A			ABL8MEM24003	
	0.6 A			ABL8MEM24006	
	1.2 A			ABL8MEM24012	
	2 A		ABL8MEM12020		
	2.5 A			ABL7RM24025	ABL7RP4803
	3 A			ABL8REM24030	
	3.5 A				
	4 A	ABL8MEM05040			
	5 A		ABL7RP1205	ABL8REM24050	
	6 A				
	10 A				
	20 A				
	30 A				
	40 A				
Pages		5/25			

ABL4: 85 to 960 W - Compact - Rail mounting			Function modules ABL8DCC: converters ⎓/⎓	
				
∼ 100 to 230 V	∼ 120 V or ∼ 230 V	∼ 400 to 500 V	⎓ 24 V	
Single-phase (N-L1) connection	Single-phase (N-L1) connection or 2-phase (L1-L2) connection	–	–	
–	Single-phase (N-L1) connection	3-phase (L1-L2-L3) connection	–	
–	–	3-phase (L1-L2-L3) connection	–	
No	No	No	–	
Yes, current limitation Automatic reset on elimination of the detected fault			Yes, current limitation	
Yes	Yes	Yes	Yes, depending on model	
Yes with buffer module, battery and battery check modules, redundancy module and discriminating downstream protection module				
Depending on model: 1.5 to 1.7 In for 5 to 30 seconds			No	

⎓ 24 V			⎓ 5 V	⎓ 7 to 12 V
				ABL8DCC12020 *(1)*
ABL4RSM24035				
ABL4RSM24050				
			ABL8DCC05060 *(1)*	
	ABL4RSM24100			
	ABL4RSM24200	**ABL4WSR24200**		
		ABL4WSR24300		
		ABL4WSR24400		

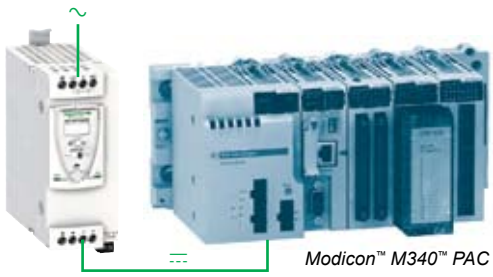
5/28 *(2)*

(1) Converter module ⎓/⎓, is to be used with a Phaseo power supply.
(2) Certain offers can not be marketed in certain countries, please consult your "Customer Care Center".

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies
ABL8RP, ABL8WP



Modicon™ M340™ PAC

ABL8RPS24050

Switch mode power supplies: ABL8RP/8WP range

The **ABL8RPS/RPM/WPS** power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment. Is comprised of six products, this range meets the needs encountered in industrial and commercial applications. These compact electronic switch mode power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the **Modicon™ M340™**, Premium™ and Quantum™ automation platforms. When used with additional function modules, they help ensure continuity of service in the event of network power outages or inappropriate application performance. Clear guidelines are given on selecting the function modules and upstream protection devices that are often used with them, providing a comprehensive solution.

The ABL8RP/8WP range of Phaseo™ power supplies are to be connected in phase-to-neutral or phase-to-phase for **ABL8RPS/RPM**, and in three-phase for **ABL8WPS**. They deliver a voltage that is precise to 3%, whatever the load and whatever the type of line supply, within the ranges:

- 85 to 132 V ∼ and 170 to 550 V ∼ for **ABL8RPS**
- 85 to 132 V ∼ and 170 to 264 V ∼ for **ABL8RPM**
- 340 to 550 V ∼ for **ABL8WPS**

Their very wide input voltage range allows a considerable reduction of parts held in stock and offers a distinct advantage in terms of machine design.

Conforming to IEC standards and UL and CSA certified, they are suitable for ABL8RP/8WP use.

ABL8RPS/RPM and **ABL8WPS** power supplies are equipped with a harmonic filter, helping to ensure compliance with standard IEC/EN 61000-3-2 concerning harmonic pollution.

The ABL8RP/8WP range of Phaseo power supplies has protection devices to help ensure optimum performance of the automation system. Their operating mode can be configured as required by the user:

- **Manual reset protection mode:** Priority is given to the voltage to help maintain the PAC logic states and nominal operation of the supplied actuators.
- **Automatic reset protection mode:** Priority is given to the current to allow troubleshooting for example, or to help ensure continuity of service until the arrival of the maintenance team.

The ABL8RP/8WP range of Phaseo power supplies also has a power reserve, allowing them to deliver a current of 1.5 In at regular intervals. This avoids the need to oversize the power supply if the device has a high inrush current, while ensuring optimum performance of the automation system.

The diagnostics for the ABL8RP/8WP range of Phaseo power supplies are available on the front of the device via LEDs (U_{out} and I_{out}) and via a volt-free relay contact (whether or not the PAC states are verified).

Products are equipped with an output voltage adjustment potentiometer to compensate for any line voltage drops in installations with long connection cable runs.

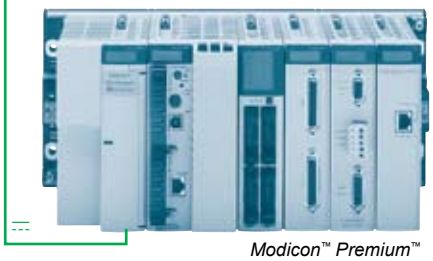
These power supplies are designed for direct mounting on a 35 mm DIN rail.

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies ABL8RP, ABL8WP

ABL8WPS24200



Modicon™ Premium™

Switch mode power supplies: ABL8RP/8WP range (continued)

There are four references available in the ABL8RP/8WP range of Phaseo™ power supplies for phase-to-neutral or phase-to-phase connection:

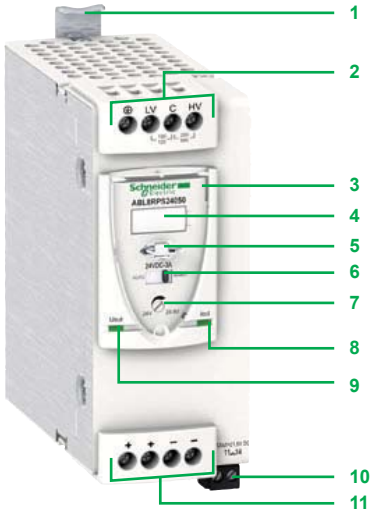
■ **ABL8RPS24030**	72 W	3 A	24 V ⎓
■ **ABL8RPS24050**	120 W	5 A	24 V ⎓
■ **ABL8RPS24100**	240 W	10 A	24 V ⎓
■ **ABL8RPM24200**	480 W	20 A	24 V ⎓

The ABL8RP/8WP range of Phaseo power supplies also features two references for three-phase connection:

■ **ABL8WPS24200**	480 W	20 A	24 V ⎓
■ **ABL8WPS24400**	960 W	40 A	24 V ⎓

A range of function modules also allows functions to be added to the ABL8RP/8WP range of Phaseo power supplies to help ensure continuity of service:

- Buffer module or Battery control modules combined with their batteries to help ensure continuity of service in the event of a network power outage
- Redundancy module to meet the demanding requirements for continuity of service even if the power supply becomes inoperative
- Downstream electronic Protection modules to help ensure that the protection in the application is discriminating
- Converter modules delivering nominal voltages of 5 and 12 V ⎓ from the 24 V ⎓ output of the ABL8RP/8WP range of Phaseo power supplies



Description

ABL8RP/8WP range of power supplies

The ABL8RP/8WP range of Phaseo regulated switch mode power supplies, **ABL8RPS24●●0/RPM24200/WPS24●00**, feature:

1 Spring clip for 35 mm DIN rail
2 4 mm² enclosed screw terminals for connection of the AC voltage (single-phase, phase-to-phase or three-phase connection)
3 Protective glass flap
4 Clip-on marker label
5 Locking catch for the glass flap (sealable)
6 Protection mode selector
7 Output voltage adjustment potentiometer
8 Output voltage status LED (green and red)
9 Output current status LED (green, red and orange)
10 Screw terminals for connection of the diagnostic relay contact, except **ABL8RPS24030**
11 4 mm² (10 mm² on **ABL8WPS24●00** and **ABL8RPM24200**) enclosed screw terminals for connection of the DC output voltage

5

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies ABL8RP, ABL8WP

Selection of protection on the power supply primaries

Type of line supply	115 V ∼ phase-to-neutral			230 V ∼ phase-to-phase			400 V ∼ phase-to-phase	
Type of protection	Thermal-magnetic circuit-breaker		gG/gL fuse	Thermal-magnetic circuit-breaker		gG/gL fuse	Thermal-magnetic circuit-breaker	gG/gL fuse
	(1) GB2 (IEC) (4)	*(2) C60N (IEC/UL)*	–	*(1) GB2 (IEC) (3)*	*(2) C60N (IEC/UL)*	–	*(1) GV2 (IEC/UL)*	–
ABL8RPS24030	GB2CD07	MG24443	2 A (8 x 32)	GB2CD07	MG24443	2 A (8 x 32)	GV2RT06 GV2ME06 *(4)*	2 A (14 x 51)
ABL8RPS24050	GB2CD08	MG24444	4 A (8 x 32)	GB2CD07	MG24443	2 A (8 x 32)	GV2RT06 GV2ME06 *(4)*	2 A (14 x 51)
ABL8RPS24100	GB2CD12	MG24447	6 A (8 x 32)	GB2CD08	MG24444	4 A (8 x 32)	GV2RT07 GV2ME07 *(4)*	4 A (14 x 51)
ABL8RPM24200	GB2CD16	MG24449	10 A (8 x 32)	GB2CD12	MG24447	6 A (8 x 32)	–	–
ABL8WPS24200	–	–	–	–	–	–	GV2ME06 *(5)*	2 A (14 x 51)
ABL8WPS24400	–	–	–	–	–	–	GV2ME07 *(5)*	4 A (14 x 51)

(1) Automation and Control offer.
(2) Electrical Distribution offer.
(3) UL certification pending.
(4) Connection in single-phase (L-N) or phase-to-phase (L1-L2).
(5) Connection in 3 phase (L1-L2-L3).

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies
ABL8RP, ABL8WP

ABL8RPS24050

ABL8RPM24200

ABL8WPS24200

ABL8BUF24400

ABL8BBU24200

ABL8RED24400

Regulated switch mode power supplies: Phaseo ABL8RP/8WP range

Input voltage	Secondary			Reset	Conforming to standard IEC/EN 61000-3-2	Reference	Weight kg
	Output voltage	Nominal power	Nominal current				
Single-phase (N-L1) **or 2-phase** (L1-L2) **connection**							
100 to 120 V - 200 to 500 V ∼ - 15%,+ 10% 50/60 Hz	24 to 28.8 V ⎓	72 W	3 A	Auto/man	Yes	**ABL8RPS24030**	0.300
		120 W	5 A	Auto/man	Yes	**ABL8RPS24050**	0.700
		240 W	10 A	Auto/man	Yes	**ABL8RPS24100**	1.000
100 to 120 V - 200 to 240 V ∼ - 15%,+ 10% 50/60 Hz	24 to 28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL8RPM24200**	1.600
Three-phase connection (L1-L2-L3)							
380 to 500 V ∼ ± 10 % 50/60 Hz	24 to 28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL8WPS24200**	1.600
		960 W	40 A	Auto/man	Yes	**ABL8WPS24400**	2.700

Function modules for continuity of service *(1)*

Function	Use	Designation	Reference	Weight kg
Continuity after a power outage	Holding time 100 ms at 40 A and 2 s at 1 A	Buffer module	**ABL8BUF24400**	1.200
	Holding time 9 min at 40 A to 2 hrs at 1 A (depending on use with a Battery control module-battery unit and load) *(2)*	Battery control module 20 A output current	**ABL8BBU24200**	0.500
		Battery control module 40 A output current	**ABL8BBU24200**	0.700
		3.2 Ah battery module *(3)*	**ABL8BPK24A03**	3.500
		7 Ah battery module *(3)*	**ABL8BPK24A03**	6.500
		12 Ah battery module *(3)*	**ABL8BPK24A12**	12.000
Continuity after a detected malfunction	Paralleling and redundancy of the power supply to help ensure uninterrupted operation of the application excluding AC line failures and application overloads	Redundancy module	**ABL8RED24400**	0.700
Downstream protection	Electronic protection (1 to 10 A overload or short-circuit) with 4 output terminals from a ABL8RP/8WP range Phaseo power supply	Protection module with 2-pole breaking *(4) (5)*	**ABL8PRP24100**	0.270

⎓ / ⎓ converters *(1)*

Primary *(6)*		Secondary		Reference	Weight kg
Input voltage	ABL8RP/8WP range power supply module output current	Output voltage	Nominal current		
24 V ⎓ - 9%, + 24%	2.2 A	5 to 6.5 V ⎓	6 A	**ABL8DCC05060**	0.300
	1.7 A	7 to 15 V ⎓	2 A	**ABL8DCC12020**	0.300

Separate and replacement parts

Designation	Use	Composition	Unitreference	Weight kg
Fuse assemblies	For ABL8PRP24100 discriminating Protection modules	4 x 5 A, 4 x 7.5 A and 4 x 10 A	**ABL8FUS01**	–
	For ABL8BKP24A●● Battery	4 x 20 A and 6 x 30 A	**ABL8FUS02**	–
Clip-on marker labels	For ABL8s excluding ABL8PRP24100	Order in multiples of 100	**LAD90**	0.030
	ABL8PRP24100 selective Protection Module	Order in multiples of 22	**ASI20MACC5**	–
DIN rail mounting kit	ABL8BPK2403 Battery Module	–	**ABL1A02**	–
EEPROM memory	Backup and duplication of ABL8 BBU24●00 battery control module parameters	–	**SR2MEM02**	0.010

(1) For use with ABL8RP/8WP range of Phaseo™ power supplies.
(2) For table of compatibility of Battery control module-battery unit with holding time depending on the load.
(3) Supplied with 20 or 30 A fuse depending on the model.
(4) Supplied with four 15 A fuses.
(5) Local reset via push button or automatic reset on elimination of the detected fault.
(6) Voltage from a 24 V ⎓ ABL8RP/8WP range Phaseo power supply.

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies
ABL4

Introduction

The range

The Phaseo™ regulated switch mode power supplies ABL4 offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment consuming 85 W to 960 W on ⎓ 24 V.
This range of power supplies, comprised of 7 products, meets the needs encountered in industrial applications.
Using electronic switch mode technology, these power supplies provide a quality of output current that is suitable for the loads supplied and compatible with the following products:
- Twido™ programmable controllers
- Modicon™ logic controllers M238™ and M258™
- Modicon motion controllers LMC 058
- Automation platforms M340™, Premium™ and Quantum™

Due to their high overload withstand, the power supplies ABL4 are the power supply solution for stepper motors, servo motors and integrated drives.
When used with function modules ABL8B/RED/D/P, they help ensure continuity of service in the event of power outages or detected application malfunction. In addition, the ABL4RSM24200 model can be used in a redundant power supply without an additional redundancy module due to its integrated diode.

Their high effectiveness enables us to offer power supplies that are among the smallest on the market, thus considerably reducing the space required in enclosures.

Compatibility with distribution systems

Power supplies ABL4 are connected in phase-to-neutral, phase-to-phase *(1)* for the ABL4R, and in 3-phase for the ABL4W.

They deliver a voltage that is precise to within ± 1% whatever the load and whatever the type of line supply, within the following ranges:
- ∿ 90 to 264 V for the ABL4RSM24035 and ABL4RSM24050,
- ∿ 90 to 132 V and ∿ 185 to 264 V for the ABL4RSM24100 and ABL4RSM24200,
- ∿ 340 to 550 V for the ABL4W.

Standards and certifications

Conforming to IEC standards and UL certified, the power supplies ABL4 are suitable for universal use. They can be used to supply Protection Extra Low Voltage (PELV) or Safety Extra Low Voltage (SELV) circuits in compliance with standard IEC/EN 60364-4-41. Due to their double insulation between the input circuit (connected to the line supply) and the output circuit and their internal device,voltage is limited to less than 60 V in the event of a detected internal fault.

Diagnostics

The operation of the power supply ABL4 can be checked using 2 LEDs located on the front face.
A normally open contact (NO) relay also enables checking of the output voltage compliance (contact closed if the output voltage exceeds 90% of the nominal voltage).

Protection

Power supplies ABL4 have the following continuous protection *(2)*:
- protection against overvoltages on the output circuit,
- thermal protection,
- protection against overcurrents and short-circuits on the output circuit.

Mounting

Power supplies ABL4 are mounted on Omega (DIN 35 mm) rail.

(1) Only on certain American line supplies.
(2) With automatic restarting.

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

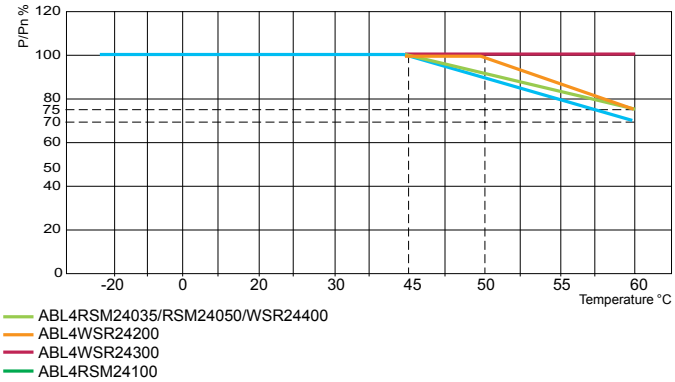
Regulated switch mode power supplies ABL4

Specifications

Derating

The ambient temperature is a determining factor that limits the power that an electronic power supply can deliver continuously. If the temperature around the electronic components is too high, their life will be significantly reduced.
The nominal ambient temperature for power supplies ABL4 is, depending on the reference, 45, 50 or 60°C.
Above this temperature, derating is necessary up to a maximum temperature of 60°C.

The adjacent graph shows the power as a percentage of the nominal power that the power supply can deliver continuously, in relation to the ambient temperature.



Adequate convection is required around the products to assist cooling.
Sufficient clearance is required around power supplies ABL4: refer to instruction sheet supplied with each power supply, also available at www.schneider-electric.com

Temporary overcurrents

Power supplies ABL4 have an energy reserve allowing them to supply the application, according to the references, from 150% to 170% of the nominal current for 5 seconds and up to 30 seconds, while guaranteeing an output voltage higher then 90% of the nominal voltage.

Power supply	Maximum temporary overcurrent	Maximum time of temporary overcurrent
ABL4RSM24035	170% of nominal current	30 seconds
ABL4RSM24050	160% of nominal current	30 seconds
ABL4RSM24100	150% of nominal current	30 seconds
ABL4RSM24200 **ABL4WSR24●00**	150% of nominal current	5 seconds

The time interval between each overcurrent cannot be less than 10 seconds.
When the overcurrent value exceeds the reserve energy value or when the overcurrents are too closely spaced or when the overcurrent is prolonged (depending on the reference), more than 5 seconds and up to 30 seconds, the power supply switches to protection mode.

Behavior in event of overcurrents and short-circuits

In the event of overcurrent or short-circuit, the power supply ABL4 switches to protection mode and periodically attempts a reset (“Hiccup” mode) until the detected fault disappears. Once the output circuit load conditions return to normal, the power supply automatically resets.

Power supply	Periodic reset frequency type
ABL4RSM24035 **ABL4RSM24050** **ABL4RSM24100**	Variable: depends on the overcurrent value and the ambient temperature. In the event of a short-circuit (output voltage close to 0 V), the current is established for 50 ms approximately every 1.8 seconds.
ABL4RSM24200 **ABL4WSR24●00**	Mounted: the current is established for 5 seconds every 15 seconds either in the event of an overcurrent or a short-circuit.

Connecting in parallel

To increase the current available, the outputs of two power supplies with identical references can be connected in parallel.
Equitable sharing of the current between the two power supplies is accomplished performing the following tasks:
■ Use two power supplies bearing the same date code and same reference.
■ Adjust the output voltages to obtain the same voltage value, to within plus or minus 20 mV, 10 minutes after power-up with a load consumption of less than 20% connected on each power supply output.
■ Connect one of the “+” terminals and one of the “-” terminals of each power supply to a terminal using wires of the same length and diameter.
■ Use wires with the largest cross-section as possible.

The maximum usable current is 1.8 times the nominal current of the power supply.
Redundancy of the power supply ABL4RSM24200 can be achieved without adding a specific module, due to the specific diode that is integrated in these products.
For other power supply references, use redundancy module ABL8RED24400.

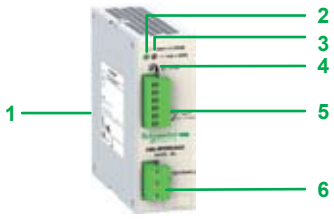
Additional technical information is available at www.schneider-electric.com.

Specifications (continued)

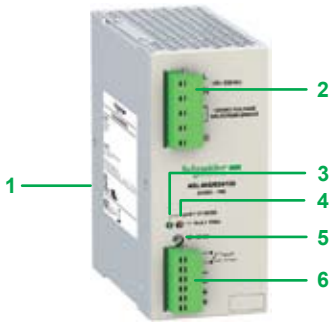
Selection of protection on the power supply primaries

Power supply	Type of protection		
	Miniature circuit-breakers C60N (Icn > 1.5 kA)	**Fuses**	**Class CC fuses with rejection system**
	Zone where equipment is used		
	Rest of the world		USA & Canada
ABL4RSM24035	4 A curve C	4 A time-lag	6 A
ABL4RSM24050	4 A curve C	4 A time-lag	6 A
ABL4RSM24100	6 A curve C	6.3 A time-lag	6 A
ABL4RSM24200	16 A curve C 10 A curve D	15 A time-lag	10 A
ABL4WSR24200	3 x 10 A curve C	3 x 3.15 A time-lag	3 x 10 A
ABL4WSR24300	3 x 10 A curve C	3 x 5 A time-lag	3 x 10 A
ABL4WSR24400	3 x 10 A curve C	3 x 6.3 A time-lag	3 x 10 A

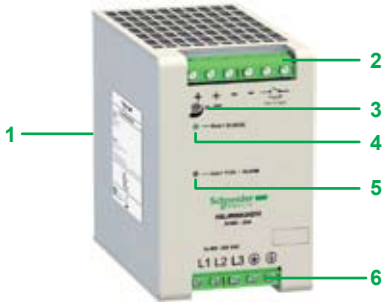
Description



The regulated switch mode power supplies ABL4RSM24035 and ABL4RSM24050 feature:
1 Spring clip for Omega (35 mm DIN) rail.
2 Output voltage status LED (green).
3 Output circuit overcurrent LED (red).
4 Output voltage adjustment potentiometer.
5 Removable screw terminal block for connection of the DC output voltage and diagnostics contact.
6 Removable screw terminal block for connection of the AC input voltage on single-phase *(1)*.



The regulated switch mode power supplies ABL4RSM24100 feature:
1 Spring clip for Omega (35 mm DIN) rail.
2 Removable screw terminal block for connection of the AC input voltage (on single-phase) *(1)*) and for connection of 120/230 V selection link.
3 Output voltage status LED (green).
4 Output circuit overcurrent LED (red).
5 Output voltage adjustment potentiometer.
6 Removable screw terminal block for connection of the DC output voltage and diagnostics contact.



The regulated switch mode power supplies ABL4RSM24200, ABL4WSR24200, ABL4WSR24300 and ABL4WSR24400 feature:
1 Spring clip for Omega (35 mm DIN) rail.
2 Enclosed screw terminals for connection of the DC output voltage and diagnostics contact.
3 Output voltage adjustment potentiometer.
4 Output voltage status LED (green).
5 Output circuit overcurrent and detected alarm LED (red).
6 Enclosed screw terminals for connection of the AC input voltage:
- single-phase connection for ABL4RSM24200 *(1)*,
- 3-phase connection for ABL4W●●●●.

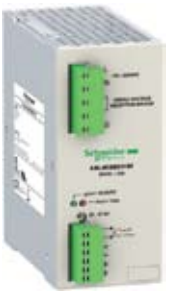
(1) Connection between 2 phases only on certain American line supplies.

Modicon™ M340™ automation platform

Phaseo™ power supplies and transformers

Regulated switch mode power supplies ABL4

ABL4RSM24050



ABL4RSM24100

ABL4WSR24200

ABL8BUF24400

ABL8BBU24200

ABL8RED24400

Phaseo regulated switch mode power supplies ABL4, 85 to 960 W

Input voltage	Secondary			Reset	Reference	Weight
	Output voltage	Nominal power	Nominal current			kg
Single-phase (N-L1) *connection (1)*						
~ 100 to 230 V - 10%, + 15%	⎓ 23 to 27.4 V	85 W	3.5 A	Automatic	**ABL4RSM24035**	0.500
		120 W	5 A	Automatic	**ABL4RSM24050**	0.500
~ 120 V - 25%, + 10% and **~ 230 V** - 20%, + 15%	⎓ 23 to 27.4 V	240 W	10 A	Automatic	**ABL4RSM24100**	0.800
	⎓ 24 to 27.8 V	480 W	20 A	Automatic	**ABL4RSM24200** *(2)*	1.300
3-phase (L1-L2-L3) connection						
~ 400 to 500 V - 15%, + 10%	⎓ 24 to 27.8 V	480 W	20 A	Automatic	**ABL4WSR24200**	1.300
		720 W	30 A	Automatic	**ABL4WSR24300**	1.300
		960 W	40 A	Automatic	**ABL4WSR24400**	1.300

Function modules for continuity of service *(3)*

Function	Use	Description	Reference	Weight kg
Continuity after a power outage *(5)*	Holding time 100 ms at 40 A and 2 s at 1 A	Buffer module	**ABL8BUF24400**	1.200
	Holding time 9 min at 40 A to 2 hrs at 1 A (depending on use with a battery check module-battery unit and load) *(4)*	Battery check module, output current 20 A	**ABL8BBU24200**	0.500
		Battery check module, output current 40 A	**ABL8BBU24400**	0.700
		Battery module, 3.2 Ah *(6)*	**ABL8BPK24A03**	3.500
		Battery module, 7 Ah *(6)*	**ABL8BPK24A07**	6.500
		Battery module, 12 Ah *(6)*	**ABL8BPK24A12**	12.000
Continuity after a detected malfunction	Paralleling and redundancy of the power supply to help ensure uninterrupted operation of the application excluding AC line failures and application overcurrents	Redundancy module	**ABL8RED24400**	0.700
Downstream protection	Electronic protection (1 to 10 A overcurrent or short-circuit) of 4 output terminals from an ABL4 power supply	Protection module with 2-pole breaking *(7) (8)*	**ABL8PRP24100**	0.270

Converters ⎓ / ⎓ *(3)*

Primary *(9)*		Secondary		Reference	Weight
Input voltage	Power supply module output current	Output voltage	Nominal current		kg
⎓ 24 V - 9%,+ 24%	2.2 A	⎓ 5 to 6.5 V	6 A	**ABL8DCC05060**	0.300
	1.7 A	⎓ 7 to 15 V	2 A	**ABL8DCC12020**	0.300

Separate and replacement parts

Description	Use	Composition	Unitreference	Weight kg
Fuse assemblies	Discriminating Protection module ABL8PRP24100	4 x 5 A, 4 x 7.5 A and 4 x 10 A	**ABL8FUS01**	–
	Battery ABL8BKP24A●●	4 x 20 A and 6 x 30 A	**ABL8FUS02**	–
Clip-on marker labels	For ABL8s excluding ABL8PRP24100	Sold in lots of 100	**LAD90**	0.030
	Discriminating Protection module ABL8PRP24100	Sold in lots of 22	**ASI20MACC5**	–
Rail mounting kit	Battery module ABL8BPK2403	–	**ABL1A02**	–
EEPROM memory	Backup and duplication of ABL8 BBU24●00 battery check module parameters	–	**SR2MEM02**	0.010

(1) 2-phase connection possible on certain American line supplies.
(2) Power supply reference **ABL4RSM24200** *has an integrated redundancy diode.*
(3) For use with power supply ABL4.
(4) Compatibility table for battery check module-battery unit with holding time depending on the load.
More technical information is available at www.schneider-electric.com.
(5) Technical appendices are available at www.schneider-electric.com.
(6) Supplied with 20 or 30 A fuse depending on the model.
(7) Supplied with four 15 A fuses.
(8) Local reset via push button or automatic reset on elimination of the detected fault.
(9) Voltage from power supply ABL4.

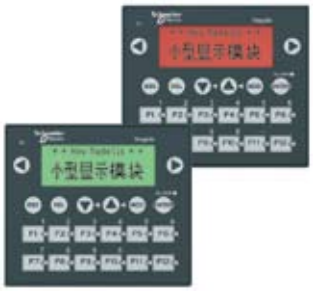
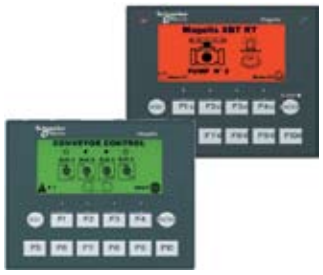
Modicon™ M340™ automation platform

Operator dialog terminals

Magelis™ Small Panels

Applications		**Display of graphic pages Control and configuration of data**		
Type of terminal		**Small Panels with touch screen**		
				
Display	Type	Monochrome LCD STN (200 x 80 pixels), backlit - Green, orange and red or - White, pink and red	Color QVGA TFT LCD (320 x 240 pixels)	
	Capacity	3.4” (monochrome)	3.5” (color)	5.7” (color)
Data entry		Via touch screen		
Memory capacity	Application	16 MB Flash		
	Extension	–		
Functions	Maximum number of pages	Limited by internal FLASH EPROM memory capacity		
	Variables per page	Unlimited		
	ReIntroduction of variables	Alphanumeric, bitmap, bar chart, gauge, curves, buttons, LEDs		
	Recipes	32 groups of 64 recipes		
	Curves	Yes, with log		
	Alarm logs	Yes		
	Real-time clock	Access to the PAC real-time clock		
	Alarm relay	–		
	Buzzer	Yes		
Communication	Asynchronous serial link	RS 232C/RS 485		
	Downloadable protocols	Uni-TE™, Modbus™and for PAC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
	Printer link	USB for serial or parallel printer		
	USB ports	1 host type A and 1 device type mini B		
	Networks	–	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX)	
Development software		Vijeo™ Designer™ (on Windows XP, Windows Vista and Windows 7)		
Operating systems		Magelis™		
Type of terminal		**Magelis STO**	**Magelis STU**	
Pages		Please consult the “Human/Machine Interfaces” catalog.		

5

Display of text messages and/or semi-graphic pages	Display of text messages and/or semi-graphic pages Control and configuration of data	
Small Panels with keypad	**Small Panels with keypad**	**Small Panels with touch screen and keypad**
		
Green backlit monochrome LCD, height 5.5 mm or Green, orange and red backlit monochrome LCD, height 4.34 to 17.36 mm	Green, orange and red backlit monochrome LCD, height 4.34 to 17.36 mm	Green, orange and red backlit monochrome matrix LCD (198 x 80 pixels), height 4 to 16 mm
2 lines of 20 characters or 1 to 4 lines of 5 to 20 characters (monochrome)	1 to 4 lines of 5 to 20 characters (monochrome)	2 to 10 lines of 5 to 33 characters (monochrome)
Via keypad with 8 keys (4 customizable)	Via keypad with ■ 12 function keys or numeric entry (depending on context) ■ 8 service keys	Via keypad with ■ 4 function keys ■ 8 service keys Via touch screen and keypad with ■ 10 function keys ■ 2 service keys
512 KB Flash		512 KB Flash EPROM
–		
128/200 application pages 256 alarm pages	128/200 application pages 256 alarm pages	200 application pages 256 alarm pages
40 to 50		50
Alphanumeric		Alphanumeric, bar chart, buttons, LEDs
–		
Yes		
Yes *(2)*	Yes	
Access to the PAC real-time clock	Access to the PAC real-time clock	
–		
–		Yes *(1)*
RS 232C/RS 485		
Uni-TE, Modbus and for PAC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
RS 232C serial link *(2)*		
–		
–		
Vijeo™ Designer™ Lite (on Windows 2000, Windows XP or Windows Vista)		
Magelis™		
XBTN	**XBTR**	**XBTRT**
Please consult the “Human/Machine Interfaces” catalog.		

(1) Only XBTRT511.
(2) Depending on model.

Modicon™ M340™ automation platform

Operator dialog terminals

Magelis™ GT, GK, GH and GTW Advanced Panels

Applications		**Display of text messages, graphic objects and synoptic views Control and configuration of data**		
Type of terminal		**Touch screen Advanced Panels**		
				
Display	Type	Backlit monochrome (amber or red mode) STN LCD (320 x 240 pixels) or TFT LCD	Backlit monochrome or color STN LCD or backlit color TFT LCD (320 x 240 pixels or 640 x 480 pixels) *(3)*	Backlit color STN LCD or TFT LCD (640 x 480 pixels)
	Capacity	3.8” (monochrome or color)	5.7” (monochrome or color)	7.5” (color)
Data entry		Via touch screen		
	Static function keys	–		
	Dynamic function keys	–		
	Service keys	–		
	Alphanumeric keys	–		
Memory capacity	Application	32 MB Flash EPROM	16 MB Flash EPROM *(3)*	32 MB Flash EPROM
	Expansion	–	By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card (except XBTGT2110)	
Functions	Maximum number of pages	Limited by internal Flash EPROM memory capacity	Limited by capacity of internal Flash EPROM memory or CF card memory	
	Variables per page	Unlimited (8000 variables max.)		
	ReIntroduction of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED		
	Recipes	32 groups of 64 recipes is comprised of 1024 ingredients max.		
	Curves	Yes, with log		
	Alarm logs	Yes		
	Real-time clock	Built-in		
	Discrete I/O	–		1 input (reset) and 3 outputs (alarm, buzzer, run)
	Multimedia I/O	–	*(3)*	1 audio input (microphone), 1 composite video input (digital or analog video camera), 1 audio output (loudspeaker) *(1)*
Communication	Downloadable protocols	Uni-TE™ *(2)*, Modbus™, Modbus TCP/IP *(1)* and for PAC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
	Asynchronous serial link	RS 232C/485 (COM1)	RS 232C/RS 422/485 (COM1) and RS 485 (COM2)	
	USB ports	1	1 *(3)*	2
	Buses and networks	–	Modbus Plus and FIPway™ with USB gateway, Profibus™ DP and DeviceNet™ with optional card	
		Ethernet TCP/IP (10BASE-T/100BASE-TX) *(1)*		
	Printer link	USB port for parallel printer	RS 232C (COM1) serial link, USB port for parallel printer	
Development software		Vijeo™ Designer™ (36349/11) (on Windows XP, Windows Vista and Windows 7)		
Operating system		Magelis™ (200 MHz RISC CPU)	Magelis (133 MHz RISC CPU) *(3)*	Magelis (266 MHz RISC CPU)
Type of terminal		**XBTGT11/13**	**XBTGT21/22/23/24/29**	**XBTGT42/43**
Pages		Please consult the “Human/Machine Interfaces” catalog.		

(1) Depending on model.
(2) Uni-TE version V2 for Twido™ controller and TSX Micro/Premium™ platform.
(3) For XBTGT 2430, 32 MB Flash EPROM, 1 sound output, 2 USB ports, 266 MHz RISC CPU
(4) For XBTGT 5430

Display of text messages, graphic objects and synoptic views
Control and configuration of data

Touch screen Advanced Panels

Backlit color STN LCD or TFT LCD (640 x 480 pixels or 800 x 600 pixels) *(4)*	Backlit color TFT LCD (800 x 600 pixels)	Backlit color TFT LCD (1024 x 768 pixels)
10.4" (color)	12.1" (color)	15" (color)
Via touch screen		
–		
–		
–		
–		
32 MB Flash EPROM		
By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card		
Limited by capacity of internal Flash EPROM memory or CF card memory		
Unlimited (8000 variables max.)		
Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED		
32 groups of 64 recipes is comprised of 1024 ingredients max.		
Yes, with log		
Yes		
Built-in		
1 input (reset) and 3 outputs (alarm, buzzer, run)		
1 audio input (microphone), 1 composite video input (digital or analog video camera), 1 audio output (loudspeaker) *(1)*		
Uni-TE™ *(2)*, Modbus™, Modbus TCP/IP *(1)* and for PAC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
RS 232C/RS 422/485 (COM1) and RS 485 (COM2)		
2		
Modbus Plus with USB gateway		
Ethernet TCP/IP (10BASE-T/100BASE-TX)		
RS 232C (COM1) serial link, USB port for parallel printer		
Vijeo™ Designer™ (36349/11) (on Windows XP, Windows Vista and Windows 7)		
Magelis™ (266 MHz RISC CPU)		
XBTGT52/53/54	**XBTGT63**	**XBTGT73**
Please consult the "Human/Machine Interfaces" catalog.		

Modicon™ M340™ automation platform

Operator dialog terminals

Magelis™ GT, GK, GH and GTW Advanced Panels

Applications		**Display of text messages, graphic objects and synoptic views Control and configuration of data**	
Type of terminal		**Advanced Panels with keypad**	
			
Display	Type	Color TFT LCD (320 x 240 pixels) or monochrome STN	Color TFT LCD (640 x 480 pixels)
	Capacity	5.7" (monochrome or color)	10.4" (color)
Data entry		Via keypad and/or touch screen (configurable) and/or by industrial pointer	
	Static function keys	10	12
	Dynamic function keys	14	18
	Service keys	8	
	Alphanumeric keys	12	
Memory capacity	Application	16 MB Flash EPROM	32 MB Flash EPROM
	Expansion	By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card	
Functions	Maximum number of pages	Limited by capacity of internal Flash EPROM memory or CF card memory	
	Variables per page	Unlimited (8000 variables max.)	
	ReIntroduction of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED	
	Recipes	32 groups of 64 recipes is comprised of 1024 ingredients max.	
	Curves	Yes, with log	
	Alarm logs	Yes	
	Real-time clock	Built-in	
	Discrete I/O	–	1 input - 3 outputs
	Multimedia I/O	–	–
Communication	Downloadable protocols	Uni-TE™ (2), Modbus™, Modbus TCP/IP (1) and for PAC brands: Mitsubishi, Omron, Allen-Bradley and Siemens	
	Asynchronous serial link	RS 232C/RS 422/485 (COM1) RS 485 (COM2)	
	USB ports	1	2
	Buses and networks	Modbus Plus, FIPway™ with USB gateway, Profibus™ DP and DeviceNet™ with optional card	
		Ethernet TCP/IP (10BASE-T/100BASE-TX)	
	Printer link	RS 232C (COM1) serial link, USB port for parallel printer	
Development software		Vijeo™ Designer™ (36349/11) (on Windows XP, Windows Vista and Windows 7)	
Operating system		Magelis™ (266 MHz RISC CPU)	
Type of terminal		**XBTGK 21/23**	**XBTGK 53**
Pages		Please consult the "Human/Machine Interfaces" catalog.	

(1) Depending on model.
(2) Uni-TE version V2 for Twido™ controller and TSX Micro/Premium™ platform.

Display of text messages, graphic objects and synoptic views
Control and configuration of data

Portable Advanced Panels	Open touch screen Advanced Panels		
			
Color TFT LCD (640 x 480 pixels)	Color TFT LCD (800 x 600 pixels)	Color TFT LCD (800 x 600 pixels)	Color TFT LCD (1024 x 768 pixels)
5.7” (color)	8.4” (color)	12” (color)	15” (color)
Via touch screen	Via touch screen		
11	–		
–	–		
–	–		
–	–		
32 MB Flash EPROM	1 GB CF system card included with terminal, expandable to 4 GB	2 GB CF system card included with terminal, expandable to 4 GB	
By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card			
Limited by capacity of internal Flash EPROM memory or CF card memory			
Unlimited (8000 variables max.)			
Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED			
32 groups of 64 recipes is comprised of 1024 ingredients max.			
Yes, with log			
Yes			
Built-in			
–			
1 audio output			
Uni-TE™ (2), Modbus™, Modbus TCP/IP and for PAC brands: Mitsubishi, Omron, Rockwell Automation and Siemens	Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PAC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
RS 232C/RS 422-485 (COM1)	RS 232C (COM1) RS 232C (COM2)	RS 232C (COM1)	RS 232C (COM1) RS 232C (COM2)
1	4	4 + 1 front-mounted	
–	Modbus Plus with USB gateway		
1 Ethernet port (10BASE-T/100BASE-TX)	1 TCP/IP Ethernet port (10BASE-T/100BASE-TX) and 1 Ethernet port (10BASE-T/100BASE-TX/1 GB)		
–	RS 232C (COM1 or COM2) serial link, USB port for parallel printer		
Vijeo™ Designer™ (36349/11) (on Windows XP, Windows Vista and Windows 7)			
Magelis™ (266 MHz RISC CPU)	Windows XP Embedded		
XBTGH 2460	**XBTGTW 450**	**XBTGTW 652**	**HMIGTW 7353**
Please consult the “Human/Machine Interfaces” catalog.			

(1) Depending on model.
(2) Uni-TE version V2 for Twido™ controller and TSX Micro/Premium™ platform.

Modicon™ M340™ automation platform
HMI software

Applications			**Traditional architecture, HMI executed on dedicated terminal or PC platform** **Configuration software for operator dialog applications**
			
Target products	Type		Magelis™ XBTN (1) Magelis XBTR/RT (1)
	Operating system on terminals		Proprietary Magelis
Functions	Reading/writing of PAC variables		Yes
	Display of variables		Yes
	Data processing		–
	Sharing of variables between HMI applications		–
	Saving of variables to external database		–
Development of graphic applications	Native library of graphic objects		Yes
	Container	Active X	–
		Java Beans	–
	Curves and detected alarms		Yes *(2)*
	Scripts		–
Online modification of applications			–
Communication between PACs and HMI application			Via I/O drivers
Uploading of applications			Yes
Simulation of HMI applications			Yes
Redundancy			–
Recipe management			–
Report printing			–
Access security			Linked to user profile
Software compatible with OS			Windows 2000, Windows XP or Windows Vista
Software type			**Vijeo™ Designer™ Lite**
Pages			Please consult the “Human/Machine Interfaces” catalog.

(1) Magelis XBT terminals behave transparently on restoration of power.
(2) Depending on model.

Traditional architecture, HMI executed on dedicated terminal or PC platform

Configuration software for operator dialog applications

Magelis™ STO & Magelis STU Magelis XBTGT *(1)*, Magelis XBTGK *(1)* Magelis XBTGH *(1)*, Magelis GTW *(1)*
Proprietary for Magelis STO/STU, Magelis XBTGT/GK/GH Windows XP embedded for Magelis GTW
Yes
Yes
Yes, using expression editor or Java programming
–
–
Yes
–
Yes
Yes, with log
Java
–
Via I/O drivers
Yes
Yes
–
Yes
Real-time detected alarms, log data
Linked to user profile
Windows XP, Windows Vista or Windows 7

Vijeo™ Designer™

Please consult the “Human/Machine Interfaces” catalog.

Contents **chapter 6**

"Ruggedized" Modicon™ M340™ modules

6.1 - Treatment for severe environments

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- Harsh chemical environments 6/2
- Extreme climatic environments 6/2

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6.3 - "Ruggedized" power supply modules

- References 6/4

6.4 - "Ruggedized" racks and rack expansion module

- References 6/5

6.5 - "Ruggedized" discrete I/O modules

- References 6/6

6.6 - "Ruggedized" analog I/O modules

- References 6/7

6.7 - "Ruggedized" communication modules and network gateway

- References 6/8

6.8 - "Ruggedized" counter modules

- References 6/9

Modicon™ M340™ automation platform

Treatment for severe environments

‘‘Ruggedized’’ modules

Introduction

Protective treatment of Modicon™ M340™ PACs

Modicon M340 PACs comply with “**TC**” treatment requirements (**T**reatment for **C**limates). They are designed as standard to operate in temperatures of 0 to + 60°C.

For installations in industrial production workshops or environments corresponding to “**TH**” (**T**reatment for **H**ot and humid environments), PACs are housed in enclosures providing at least IP 54 protection as specified by standard IEC/EN 60529, or an equivalent level of protection according to NEMA 250.

Modicon M340 PACs offer **IP 20 degree of protection** *(1)*. They can be installed without an enclosure in reserved access areas up to and including **pollution level 2** (control room with no dust-producing machinery or activity). **Pollution level 2** does not take account of harsher environments, such as those where the air is polluted with dust, fumes, corrosive or radioactive particles, vapors or salts, molds, and insects.

Treatment for more severe environments

If the Modicon M340 automation platform has to be used in more severe environments or is required to start and operate in an extended temperature range, from **- 25°C to + 70°C**, the “***ruggedized***” offer features industrially hardened processor and power supply modules, Bus X I/O modules and racks that have protective coating on their circuit boards.

***Note**: Capable of **starting** within an extended temperature range (from **- 25°C to + 70°C**), a single-rack configuration is also able to **operate at extremely low temperatures (to - 40°C)** if placed in an appropriate enclosure. Please consult our Customer Care Center.*

This treatment increases the isolation capability of the circuit boards and their resistance to:
- Condensation
- Dusty atmospheres (conducting foreign particles)
- Chemical corrosion, in particular during use in sulphurous atmospheres (oil refinery, purification plant, etc.) or atmospheres containing halogens (chlorine, etc.)

This protection, combined with appropriate installation and maintenance, enables Modicon M340 products to be used in the following environments:
- **Harsh chemical environments:**
  - **IEC/EN 60721-3-3 class 3C3:**
    - 14 days; 25°C/relative humidity 75%
    - Concentrations (mm^3/m^3): H_2S: 2100/SO_2: 1850/Cl_2: 100
  - **ISA S71.04 classes G1 to G3:**
    - 14 days; 25°C/relative humidity 75%
    - Concentrations (mm^3/m^3): H_2S: 50/SO_2: 300/Cl_2: 10/NO_2: 1250
  - **IEC/EN 60068-2-52 salt mist, Kb test severity level 2:**
    - 3 x 24-hour cycles
    - 5% NaCl
    - 40°C/relative humidity 93%
- **Extreme climatic environments:**
  - Temperatures from - 25 to + 70°C
  - Relative humidity levels up to 93% (95% depending on the device), from + 25 to + 70°C during operation
  - Formation of ice
  - Altitudes from 0 to 5000 m

Three modules are specifically designed for extended temperature ranges from **- 25** to **+ 70°C** (the product references include the suffix “T”) :
- 125 V ⎓ power supply module **BMXCPS3540T** (see page 1/9)
- 125 V ⎓ discrete input module, 16 channels, **BMXDDI1604T** (see page 2/12)
- 125 V c discrete relay output module, 8 channels, **BMXDRA 0804T** (see page 2/12)

*(1) Each slot in a **BMXXSP ●●●0** rack is equipped as standard with a protective cover that should only be removed when inserting a module. If any covers are subsequently misplaced, replacements can be ordered under reference **BMXXEM010** (sold in lots of 5).*

Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" processor modules

BMXP341000H

BMXP342020H

BMXP3420302H

BMXRMS008/128MPF

BMXXCAUSBH0●●

Introduction (continued)

References and Specifications

To order ruggedized modules and racks, see pages 6/3 to 6/9 (the references of the ruggedized products available include the suffix "**H**").

Standard separate parts (cordsets, cables, memory cards, sub-bases, etc.) that are compatible with the ruggedized modules offer are listed in the reference pages (see pages 6/3 to 6/9).

The majority of operating and electrical specifications of ruggedized modules are identical to those of their equivalent standard versions. However, some specifications are subject to either derating or limitation. Please consult our website www.schneider-electric.com.

BMXP34Modicon™ M340™ "ruggedized" processors *(1)*

Modicon M340 processor modules are supplied with the **BMXRMS008MP** Flash memory card. This card performs the following actions transparently:

- Backup of the application (program, symbols and constants) supported in the processor's internal RAM that is not backed up
- Activation of the Transparent Ready™ class B10 standard Web server with **BMXP341000H** Standard processors and **BMXP342020H**/**20302H** Performance processors.

This card can be replaced by either of the **BMXRMS008 or BMXRMS128MPF** cards that feature a file storage option.

Max. capacity	Memory capacity	Max. no. of network modules	Integrated communication ports	Reference	Weight kg
2 racks 512 discrete I/O 128 analog I/O 20 application-specific channels	2048 KB integrated	2 Ethernet networks	Modbus™ serial link	**BMXP341000H**	0.200
4 racks 1024 discrete I/O 256 analog I/O 36 application-specific channels	4096 KB integrated	2 Ethernet networks	Modbus serial link Ethernet network	**BMXP342020H**	0.205
			Ethernet network CANopen bus	**BMXP3420302H**	0.215

Standard memory cards

Description	Processor compatibility	Capacity	Reference	Weight kg
Flash memory cards *(2)*	BMXP342020H BMXP3420302H	8 MB/8 MB files	**BMXRMS008MPF**	0.002
		8 MB/128 MB files	**BMXRMS128MPF**	0.002

Standard separate parts

Description	Use		Length	Reference	Weight kg
	From	To			
Terminal port/USB cordsets	Mini B USB port on the Modicon M340 processor	Type A USB port on: - PC terminal - Magelis™ XBTGT/ GK/GTW, GTW HMI, STU/STO HMIGraphic terminal	1.8 m	**BMXXCAUSBH018**	0.065
			4.5 m	**BMXXCAUSBH045**	0.110

Standard replacement part

Description	Use	Processor compatibility	Reference	Weight kg
8 MB Flash memory card	Supplied as standard with each processor. Used for: - Backing up the program, constants, symbols and data - Activation of class B10 Web server	BMXP342020H BMXP3420302H	**BMXRMS008MP**	0.002

(1) General specifications are the same as those of the standard equivalent versions (see page 1/2).
(2) Cards to replace the memory card supplied as standard with each processor, used for:
- Backing up the program, constants, symbols and data
- File storage
- Activation of class B10 Web server

Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" power supply modules

BMXCPS3020H

BMXCPS3500H

"Ruggedized" power supply modules

BMXXBP●●00H racks are equipped with a power supply module. These modules are inserted in the first two slots of each rack (marked CPS).
The available power values given below in ***bold italic*** correspond to operation at - 25°C and + 70°C (see temperature derating curves on our website www.schneider-electric.com).
The power required to supply each rack depends on the type and number of modules installed in the rack. It is therefore necessary to draw up a power consumption table for each rack to determine which is the appropriate **BMXCPS●●●0H** power supply module for your requirements (see page 7/16).

Power supply modules *(1)*

Line supply	Available power *(2)*				Reference	Weight kg
	3.3 V ⎓ *(3)*	24 V ⎓ rack *(3)*	24 V ⎓ sensors *(4)*	Total		
24 to 48 V ⎓ isolated	15 W ***11.3 W***	31.2 W ***23.4 W***	–	31.2 W ***23.4 W***	**BMXCPS3020H**	0.340
100 to 240 V ∿	15 W ***11.3 W***	31.2 W ***23.4 W***	21.6 W ***16.2 W***	36 W ***27 W***	**BMXCPS3500H**	0.360

Standard separate part

Description	Type	Composition	Reference	Weight kg
Set of 2 removable connectors	Spring-type	One 5-way terminal block and one 2-way terminal block	**BMXXTSCPS20**	0.015

Standard replacement part

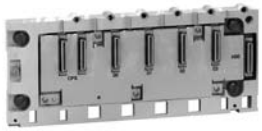
Description	Type	Composition	Reference	Weight kg
Set of 2 removable connectors	Cage clamp	One 5-way terminal block and one 2-way terminal block	**BMXXTSCPS10**	0.020

*(1) Includes a set of 2 cage clamp removable connectors **BMXXTSCPS10.***
(2) The combined power consumed on each voltage (3.3 V ⎓ and 24 V ⎓) cannot exceed the maximum power of the module. See the power consumption table on page 7/16.
(3) 3.3 V ⎓ and 24 V ⎓ rack voltages for powering Modicon M340 PAC modules.
(4) 24 V ⎓ sensor voltage for powering the input sensors (voltage available via the 2-way removable connector on the front panel).

Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" racks and rack expansion module



BMXXBP0400H

BMXXBE1000H

BMXXSP0●00 + BMXXSP30●0

Angled connector on extension cordsets

TSXTLYEX

"Ruggedized" racks

Description	Type of module to be inserted	No. of slots *(1)*	Power consumption *(2)*	Reference	Weight kg
Ruggedized racks	BMXCPS power supply, BMXP34processor, I/O modules and application-specific (counter and communication) modules	4	1 W	**BMXXBP0400H**	0.630
		6	1.5 W	**BMXXBP0600H**	0.790
		8	2 W	**BMXXBP0800H**	0.950

Description	Use	Reference	Weight kg
Ruggedized rack expansion module *(3)*	Standard module to be installed in each rack (**XBE** slot) Used to daisy chain up to 4 racks	**BMXXBE1000H**	0.178

Standard accessories for racks

Description	For use with	Sold in lots of	Reference	Weight kg
Shielding connection kits are comprised of: - A metal bar - 2 support bases	BMXXBP0400H rack	–	**BMXXSP0400**	0.280
	BMXXBP0600H rack	–	**BMXXSP0600**	0.310
	BMXXBP0800H rack	–	**BMXXSP0800**	0.340
Spring clamping rings	Cables, cross-section 1.5 to 6 mm²	10	**STBXSP3010**	0.050
	Cables, cross-section 5 to 11 mm²	10	**STBXSP3020**	0.070
Protective covers (replacement parts)	Unoccupied slots on BMXXBP●●00H rack	5	**BMXXEM010**	0.005

Standard cordsets and connection accessories

Description	Use	Composition	Type of connector	Length	Reference	Weight kg
Bus X extension cordsets maximum length 30 m max. *(3)*	Between two BMXXBE1000H rack expansion modules.	2 x 9-way SUB-D connectors	Angled	0.8 m	**BMXXBC008K**	0.165
				1.5 m	**BMXXBC015K**	0.250
				3 m	**BMXXBC030K**	0.420
				5 m	**BMXXBC050K**	0.650
				12 m	**BMXXBC120K**	1.440
			Straight	1 m	**TSXCBY010K**	0.160
				3 m	**TSXCBY030K**	0.260
				5 m	**TSXCBY050K**	0.360
				12 m	**TSXCBY120K**	1.260
				18 m	**TSXCBY180K**	1.860
				28 m	**TSXCBY280K**	2.860
Cable reel *(3)*	Length of cable to be fitted with TSXCBYK9 connectors.	Ends with flying leads, 2 line testers		100 m	**TSXCBY1000**	12.320

Description	Use	Composition	Sold in lots of	Reference	Weight kg
Line terminator	Required on both BMXXBP●●●0H modules at each end of the daisy chain	2 x 9-way SUB-D connectors marked A/ and /B	2	**TSXTLYEX**	0.050
Bus X straight connectors	For ends of TSXCBY1000 cables	2 x 9-way SUB-D straight connectors	2	**TSXCBYK9**	0.080
Connector assembly kit	Fitting TSXCBYK9 connectors	2 crimping pliers, 1 pen *(4)*	–	**TSXCBYACC10**	–

(1) Number of slots taking the processor module, I/O modules and application-specific modules (excluding power supply module).
(2) Power consumption of anti-condensation resistor(s)
*(3) Modules and cordsets operate properly at temperatures **at or above - 25°C**.*
(4) To fit the connectors on the cable, you will also need a wire stripper, a pair of scissors and a digital ohmmeter.

Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" discrete I/O modules

BMXD●I 160●H

References

"Ruggedized" discrete input modules

Type of current	Input voltage	Connection via (1)	IEC/EN 61131-2 conformity	No. of channels (common)	Reference	Weight kg
⎓	24 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDDI1602H**	0.115
	24 V (negative logic)	Screw or spring-type 20-way removable terminal block	Non-IEC	16 isolated inputs (1 x 16)	**BMXDAI1602H**	0.115
	48 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMXDDI1603H**	0.115
∼	24 V	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMXDAI1602H**	0.115
	48 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDAI1603H**	0.115
	100 to 120 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMXDAI1604H**	0.115

BMXDDO16●2H

BMXDRA 0805H/1605H

Ruggedized discrete output modules

Type of current	Output voltage	Connection via (1)	IEC/EN 61131-2 conformity	No. of channels (common)	Reference	Weight kg
⎓ **transistor**	24 V/0.5 A (positive logic)	Screw or spring-type 20-way removable terminal block	Yes	16 protected outputs (1 x 16)	**BMXDDO1602H**	0.120
	24 V/0.5 A (negative logic)	Screw or spring-type 20-way removable terminal block	–	16 protected outputs (1 x 16)	**BMXDDO1612H**	0.120
∼ **triac**	100 to 240	Screw or spring-type 20-way removable terminal block	–	16 outputs (4 x 4)	**BMXDAO1605H**	0.140
⎓ **or** ∼ **relay**	12 to 24 V ⎓/2 A 24 to 240 V ∼/2 A	Screw or spring-type 20-way removable terminal block	Yes	8 non-protected outputs (without common)	**BMXDRA0805H**	0.145
	24 V ⎓/2 A, 240 V ∼/2 A	Screw or spring-type 20-way removable terminal block	Yes	16 non-protected outputs (2 x 8)	**BMXDRA1605H**	0.150

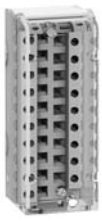
BMXDDM 1602●H

Ruggedized mixed discrete I/O modules

Number of I/O	Connection via (1)	No. of input channels (common)	No. of output channels (common)	IEC/EN 61131-2 conformity	Reference	Weight kg
16	Screw or spring-type 20-way removable terminal block	8 (positive logic) (1 x 8)	8, transistor 24 V ⎓/0.5 A (1 x 8)	Inputs, type 3	**BMXDDM16022H**	0.115
			8, 24 V ⎓ or 24 to 240 V ∼ relay (1 x 8)	Inputs, type 3	**BMXDDM16025H**	0.135

Standard removable connection blocks

Description	Use	Type	Reference	Weight kg
20-way removable terminal blocks	For module with 20-way removable terminal block	Cage clamp	**BMXFTB2000**	0.093
		Screw clamp	**BMXFTB2010**	0.075
		Spring-type	**BMXFTB2020**	0.060



BMXFTB2●00

Standard preformed cordsets for I/O modules with removable terminal block

Description	Composition	Length	Reference	Weight kg
Pre-assembled cordsets with one end with flying leads	One 20-way spring-type removable terminal block (BMXFTB2020) One end with color-coded flying leads	3 m	**BMXFTW301**	0.850
		5 m	**BMXFTW501**	1.400
		10 m	**BMXFTW1001**	2.780

(1) By connector, module supplied with cover(s)

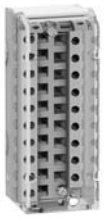
Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" analog I/O modules

BMXAM●0●●0H

BMXART0414H



BMXFTB20●0

BMXFTW●01S

ABE7CPA41●

BMXFCA●●0

BMXFCA●●2

References

"Ruggedized" analog input modules

Type of inputs	Input signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Isolated high-level inputs	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, ± 5 V 0 to 20 mA, 4 to 20 mA, ± 20 mA	16 bits	Via cage clamp, screw clamp or spring-type removable terminal block	4 high-speed channels	**BMXAMI0410H**	0.143
Isolated low-level inputs	Temperature probe, thermocouple ± 40 mV, ± 80 mV, ± 160 mV, ± 320 mV, ± 640 mV, ± 1.28 V	15 bits + sign	40-way connector	4 channels	**BMXART0414H**	0.135
				8 channels	**BMXART0814H**	0.165

Ruggedized analog output module

Type of outputs	Output signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Isolated high-level outputs	± 10 V, 0 to 20 mA, 4 to 20 mA	16 bits	Via cage clamp, screw clamp or spring-type removable terminal block	2 channels	**BMXAMO0210H**	0.144

Ruggedized mixed analog I/O module

Type of outputs	Signal range	Resolution	Connection	No. of channels	Reference	Weight kg
Mixed I/O, non-isolated	± 10 V, 0 to 10 V, 0 to 5 V, 1 to 5 V, 0 to 20 mA, 4 to 20 mA	14 bits or 12 bits depending on the range	Via cage clamp, screw clamp or spring-type removable terminal block	I: 4 channels Q: 2 channels	**BMXAMM0600H**	0.155

Standard connection accessories for analog modules *(1)*

Description	For use with modules	Type, composition	Length	Reference	Weight kg
20-way removable terminal blocks	BMXAMI0410H BMXAMO0210H BMXAMM0600H	Cage clamp	–	**BMXFTB2000**	0.093
		Screw clamp	–	**BMXFTB2010**	0.075
		Spring-type	–	**BMXFTB2020**	0.060
Pre-assembled cordsets	BMXAMI0410H BMXAMO0210H BMXAMM0600H	One 20-way removable terminal block (BMXFTB2020) One end with color-coded flying leads	3 m	**BMXFTW301S**	0.470
			5 m	**BMXFTW501S**	0.700
	BMXART0414H BMXART0814H *(2)*	One 40-way connector One end with color-coded flying leads	3 m	**BMXFCW301S**	0.480
			5 m	**BMXFCW501S**	0.710

Modicon™ Telefast™ ABE7 pre-wired system

Modicon Telefast ABE7 sub-bases	BMXAMI0410H	Distribution of isolated power supplies Delivers 4 protected isolated power supplies for 4 to 20 mA inputs Direct connection of 4 inputs	–	**ABE7CPA410**	0.180
	BMXART0414H BMXART0814H	Connection and provision of cold-junction compensation for thermocouples Direct connection of 4 inputs	–	**ABE7CPA412**	0.180
Preformed cordsets for Modicon Telefast ABE7CPA41●	BMXAMI0410H BMXAMO0210H	One 20-way removable terminal block and one 25-way SUB-D connector for ABE7CPA410/ CPA21 sub-base	1.5 m	**BMXFCA150**	0.320
			3 m	**BMXFCA300**	0.500
			5 m	**BMXFCA500**	0.730
	BMXART0414H BMXART0814H	One 40-way connector and one 25-way SUB-D connector for ABE7CPA412 sub-base	1.5 m	**BMXFCA152**	0.330
			3 m	**BMXFCA302**	0.510
			5 m	**BMXFCA502**	0.740

*(1) The shielding on the cordsets carrying the analog signals is connected to the **BMXXSP●●00** shielding connection kit mounted under the rack holding the analog modules (see page 1/11).*

*(2) The **BMXART0814H** 8-channel module requires two **ABE7CPA412** sub-bases and two **BMXFCA●●2** cordsets.*

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Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" communication modules and network gateway

BMXNOE0100H/0110H

BMXNOM0200H

BMXNOR0200H

TCSEGPA23F14FK

Communication

BMXNOE0100H/0110H "ruggedized" Ethernet communication modules

Description	Data rate	Transparent Ready Class	Reference	Weight kg
Ethernet Modbus™/ TCP network modules	10/100 Mbps	B30	**BMXNOE0100H**	0.200
		C30	**BMXNOE0110H**	0.200

BMXNOM0200H ruggedized serial link module

Description	Protocol	Physical layer	Reference	Weight kg
Serial link module 2-channels	Modbus master/slave RTU/ASCII, Character mode, Modem GSM/GPRS	1 non-isolated RS 232 channel (SL0) 2 isolated RS 485 channels (SL0 and SL1)	**BMXNOM0200H**	0.230

RTU BMXNOR0200H ruggedized communication module

Description	Protocols	Physical layer	Reference	Weight kg
RTU communication module	Modbus TCP, IEC 60870-5-104 or DNP3 IP (client or server)	1 Ethernet port 10BASE-T/ 100BASE-TX	**BMXNOR0200H**	0.205
	IEC 60870-5-101 or DNP3 serial (master or slave)	1 non-isolated RS 232/485 serial link port		

Ruggedized Profibus DP network gateway

Description	Protocols	Physical layer	Reference	Weight kg
Profibus Remote Master (PRM) module	Modbus TCP	1 Ethernet switch, 2 ports 10BASE-T/ 100BASE-TX	**TCSEGPA23F14FK**	–
	Profibus™ DP V1 and Profibus PA (via gateway)	1 isolated RS 485 Profibus DP port		

Standard connection accessory

Designation	Description	RS 232 interface	Reference	Weight kg
Cordset for DCE terminal (modem, etc.)	Equipped with 1 x RJ45 connector and 1 x 9-way male SUB-D connector Length 3 m	Simplified 4-wire (RX, TX, RTS and CTS)	**TCSMCN3M4M3S2**	0.150
		8-wire (except RI signal)	**TCSXCN3M4F3S4**	0.165

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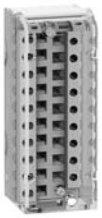
Modicon™ M340™ automation platform

Dedicated parts for severe environments

"Ruggedized" counter modules

BMXEHC0200H

BMXEHC0800H



BMXFTB20●0

Counter

BMXEHC0200H/0800H "ruggedized" counter modules

Description	No. of channels	Specifications	Reference	Weight kg
Counter modules for 24 V ⎓ 2 and 3 wire sensors and 10/30 V ⎓ incremental encoders with push-pull outputs	2	60 kHz counting	**BMXEHC0200H**	0.112
	8	10 kHz counting	**BMXEHC0800H**	0.113

Standard connection accessories *(1)*

Description	Composition	Unit reference	Weight kg
Connector kit for BMXEHC0200H module	Two 16-way connectors and one 10-way connector	**BMXXTSHSC20**	0.021
20-way removable terminal blocks for BMXEHC0800H module	Cage clamp	**BMXFTB2000**	0.093
	Screw clamp	**BMXFTB2010**	0.075
	Spring-type	**BMXFTB2020**	0.060
Shielding connection kits for BMXEHC0200H/0800H modules	A metal bar and two support bases for mounting on rack	See page 1/11	–

*(1) The shielding on the cordsets carrying the counter signals is connected to the **BMXXSP●●00** shielding connection kit mounted under the rack holding the **BMXEHC0200H** module (see page 1/11).*

6

Services

7.1 - Technical appendices

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Modicon™ M340™ automation platform

Standards, certifications and environment conditions

Standards and certifications

Modicon™ M340™ PACs have been developed to conform to the principal national and international standards concerning electronic equipment for industrial automation systems.

- Requirements specific to programmable controllers: functional Specifications, immunity, resistance, safety, etc.: IEC/EN 61131-2, CSA 22.2 N° 142, UL 508.
- Merchant navy requirements of the main international bodies (with ABS, BV, DNV, GL, LR, RINA, RMRS): IACS *(International Association of Classification Societies)*.
- Compliance with European Directives:
  - Low Voltage: 2006/95/EC,
  - Electromagnetic Compatibility: 2004/108/EC.
- Electrical qualities and self-extinguishing capacity of insulating materials: UL 746C, UL 94.
- Hazardous areas classification: CSA 22.2 No. 213, Class I, Division 2, Groups A, B, C and D.

Specifications

Service conditions and recommendations relating to environment

Temperature	Operation	**° C**	0 to + 60				
	Storage	**° C**	- 40 to + 85				
Relative humidity	Operation	**%**	93 to 95 without condensation according to IEC/EN 60068-2-30 Db				
	Storage	**%**	93 to 95 without condensation according to IEC/EN 60068-2-30 Db				
Altitude		**m**	0 to 4000, temperature derating from 3000 m: 1 °C / 400 m, equals to + 55 °C at 4000 m				
Supply voltage ~: according to IEC/EN 61131-2 ⎓: according to IACS E10 battery without charge			**Power supply modules**				
			BMXCPS2010	**BMXCPS3020**	**BMXCPS3540T**	**BMXCPS2000**	**BMXCPS3500**
	Nominal voltage	**V**	⎓ 24	⎓ 24 to 48	⎓ 24	~ 100 to 240	~ 100 to 240
	Limit voltages		⎓ 18 to 31.2	⎓ 18 to 62.4	⎓ 23.3 to 24.7	~ 85 to 264	~ 85 to 264
	Nominal frequencies	**Hz**	–	–	–	50/60	50/60
	Limit frequencies	**Hz**	–	–	–	47/63	47/63

Protective treatment of Modicon Premium PACs

Modicon M340 PACs meet the requirements of “TC” treatment *(Treatment for Climates)*.
For installations in industrial production workshops or environments corresponding to “TH” treatment *(Treatment for Hot and humid environments)*, Modicon M340 PACs are embedded in envelopes with a minimum IP 54 protection, in compliance with IEC/EN 60664 and NF C 20 040.

Modicon M340 PACs offer **protection to IP 20 level** and **protection against pins** (encloset equipement) *(1)*. They can be installed without an envelope in reserved-access areas up to and including **pollution level 2** (control room with no dust-producing machine or activity). The pollution level 2 does not take into account more severe environmental conditions such as: air pollution by dust, smoke, corrosive or radioactive particles, vapors or salts, attack by fungi, or insects.

(1) In the case where a position is not occupied by a module, install a **BMXXEM010** *protection cover.*

Modicon™ M340™ automation platform

Standards, certifications and environment conditions

Environment tests

Name of test	Standards	Levels
Immunity to LF interference (CE) *(1)*		
Voltage and frequency variation	IEC/EN 61000-4-11 IACS E10 / IEC 60092-504	0.85 Un/0.95 Fn for 30 minutes; 1.10 Un/1.05 Fn for 30 minutes; 0.8 Un/0.9 Fn for 1,5/5 seconds; 1.2 Un/1.1 Fn for 1,5/5 seconds
Direct voltage variation	IEC/EN 61131-2 IEC/EN 61000-4-11 IEC 60092-504 IACS E10 (battery without charge)	0.85 Un to 1.2 Un for 30 minutes with 5% ripple (peak values)
Harmonic 3	IEC/EN 61131-2	10 % Un; 0° for 5 min to 180° for 5 min
Inter harmonic	IACS E10 / IEC 60092-504	H2 to H200 - 10 % (H15), - 10 % to 1 % (H15 to H100) and 1 % (H100 to H200)
Short momentary interrupt	IEC/EN 61131-2 IEC/EN 61000-4-11/-6-2	10 ms with ∿ supply; 1 ms with ⎓ supply
Voltage shut-down/start-up	IEC/EN 61131-2	Un-0-Un; Un for 60 s; 3 cycles separated by 10 s Un-0-Un; Un for 5 s; 3 cycles separated by 1 to 5 s Un-0.9-Udl; Un for 60 s; 3 cycles separated by 1 to 5 s
		Where: Un: nominal voltage Fn: nominal frequency Udl: detection level when powered

Name of test	Standards	Levels
Immunity to HF interference. (CE) *(1)*		
Damped oscillatory wave	IEC/EN 61000-4-18 IEC/EN 61131-2 Zone C	∿ / ⎓ main supply, ∿ auxiliary supply, discrete ∿ I/O (unshielded): 2.5 kV in common mode, 1 kV in differential mode ⎓ auxiliary supply, discrete ∿ I/O (unshielded) and analog I/O: 1 kV in common mode, 0.5 kV in differential mode Shielded cable: 0.5 kV in common mode
Electrical fast transient bursts	EC/EN 61000-4-4 IEC 61131-2 / IACS E10	∿ / ⎓ main and auxiliary supplies, discrete ∿ I/O (unshielded): 2 kV in wire mode, 2 kV in common mode Discrete ⎓ I/O (unshielded), analog I/O and shielded cable: 1 kV in common mode
Surge	IEC/EN 61000-4-5 IEC/EN 61131-2 Zone B IACS E10	∿ / ⎓ main and auxiliary supplies, discrete ∿ I/O (unshielded): 2 kV in common mode, 1 kV in differential mode Discrete ∿ I/O (unshielded) and analog I/O: 0.5 kV in common mode, 0.5 kV in differential mode Shielded cable: 1 kV in common mode
Electrostatic discharges	IEC/EN 61000-4-2 IEC/EN 61131-2 Zone B IACS E10	6 kV contact, 8 kV air
Radiated electromagnetic field	IEC/EN 61000-4-3	15 V/m: 80 MHz to 2 GHz Sinusoidal modulation amplitude 80 %/1 kHz + internal clock frequency
Conducted interference induced by radiated field	IEC/EN 61000-4-6 IEC/EN 61131-2 IACS E10	10 V ; 0,15 MHz to 80 MHz Sinusoidal modulation amplitude 80%/1 kHz + spot frequency
Electromagnetic emissions (CE) *(1) (2)*		
Interference voltage	EN 55011, Classe A IEC/EN 61131-2 IEC/EN 61000-6-4 FCC part 15	150 kHz to 500 kHz quasi-peak 79 dB (µV); average 66 dB (µV) 500 kHz to 30 MHz quasi-peak 73 dB (µV); average 60 dB (µV)
	IACS E10	Values according general power distribution zone
Interference field	EN 55011, Classe A IEC/EN 61131-2 IEC/EN 61000-6-4 FCC part 15	30 MHz to 230 MHz: quasi-peak 40 dB (measurement at 10 m), quasi-peak 50 dB (measurement at 3 m) 230 MHz to 2 GHz: quasi-peak 47 dB (measurement at 10 m), quasi-peak 57 dB (measurement at 3 m)
	IACS E10	Values depending on general power distribution zone

(1) Install and wire devices in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PAC systems", pdf format on CD-ROM support included in Unity Pro/PL7 software or on DVD **UNYUSE909CDM** *reference (see page 4/23).*

(2) These tests are performed without a cabinet, with devices ***mounted on a metal grid*** *and wired as per the recommendations in the manual "Grounding and Electromagnetic Compatibility of PAC systems".*

(CE): *tests required by European directives CE. and based on IEC/EN 61131-2 standards.*

Environment tests (continued)

Name of test	Standards	Levels
Immunity to climatic variations		
Dry heat	IEC/EN 60068-2-2 Bd IACS E10	60 °C for 16 hours
Cold	IEC/EN 60068-2-1 Ab & Ad IACS E10	0 °C for 16 hours with start at 0°C
Continuous humid heat	IEC/EN 60068-2-78 Ca	60 °C with 93 % relative humidity for 96 hours
Cyclical humid heat	IEC/EN 60068-2-30 Db	55 °C, 25 °C with 93 to 95 % relative humidity with 2 cycles of 12 hours/12 hours
Cyclical temperature variations	IEC/EN 60068-2-14 Na & Nb IEC/EN 61131-2	0 to 60 °C with 5 cycles of 3 hours/3 hours
Withstand to climatic variations		
Dry heat (power off)	IEC/EN 60068-2-2 Bb & Bd	85 ° C for 96 hours
Cold (power off)	IEC/EN 60068-2-1 Ab & Ad IEC/EN 60068-2-48	- 40 ° C for 96 hours
Humid heat (power off)	IEC/EN 60068-2-30 dB	25 to 60 °C with 93 to 95 % relative humidity; 2 cycles: 12 hours/12 hours
Heat shocks (power off)	IEC/EN 60068-2-14 Na & Nb	- 40 to 85 °C with 2 cycles of 3 hours/3 hours

Environment tests (continued)

Name of test	Standards	Levels
Immunity to mechanical constraints *(1)* (power on)		
Sinusoidal vibrations	IEC/EN 60068-2-6 Fc IACS E10	3 Hz to 100 Hz/1 mm amplitude / 0.7 g, transistion frequency 13.2 Hz Endurance to resonance frequency 90 min/axis Application coefficient < 10
Sinusoidal vibrations (Class 3M7)	IEC/EN 60068-2-6 Fc IEC/EN 61131-2 Specific profile	5 to 150 Hz with 10 mm amplitude / 3 g, transistion frequency 9 Hz Endurance: 10 cycles of 1 octave/min
Shocks	IEC/EN 60068-2-27 Ea	30 g - 11 ms; 3 shocks/direction/axis *(2)*
Bumps	IEC/EN 60068-2-29 Eb	25 g - 6 ms; 100 shocks/direction/axis *(3)*
Plugging / unplugging	IEC/EN 61131-2	For modules and connectors 50 operations for permanent connections 500 operations for non permanent connections
Withstand to mechanical constraints (power off)		
Flat freefall	IEC/EN 60068-2-32 Ed method 1 IEC/EN 61131-2	10 cm/2 falls
Controlled position freefall (for handheld product)	IEC/EN 60068-2-31 Ec IEC/EN 61131-2	30 ° or 10 cm/2 falls
Random freefall (equipment in packaging)	IEC/EN 60068-2-32 method 1 IEC/EN 61131-2	1 m/5 falls
Vibrations, transports (Class 2M3)	IEC/EN 60721-4-2 IEC/EN 60068-2-64 Fh	Stationary vibrations, random: 5 m^2/s^3 from 10 to 100 Hz, 7 dB/octave from 100 to 200 Hz, 1 m^2/s^3 de 200 to 2000 Hz, 30 min duration per axe
Equipment and personnel safety *(1)* (CE)		
Dielectric strength	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	2 Un + 1000 V / 1 min
Insulation resistance	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	Un ≤ 50 V: 10 MΩ 50 V ≤ Un ≤ 250 V: 10 MΩ
Continuity of earth ground	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	30 A for 2 min, R < 0,1 Ω
Leakage current	IEC/EN 61131-2	I < 3.5 mA after disconnecting
Protection offered by enclosures	IEC/EN 61131-2	IP 20 and protection against standardize pins
Withstand to impacts	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	500 g sphere: fall from 1.3 m
Stored energy injury risk	IEC/EN 61131-2	After 10 s, max. 37 % Un
Overload	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	50 cycles 1 s / 9 s to Un and 1.5 In
Endurance	UL 508/CSA 22-2 No.142 / FM IEC/EN 61131-2	12 cycles 100 ms / 100 ms, 988 cycles 1 s / 1 s and 5000 cycles 1 s / 9 s to Un and In
Temperature rise	IEC/EN 61131-2/UL 508 CSA 22-2 No.142/UL 1604 CSA 22-2 No.213 / FM	Ambient temperature 60 °C

(1) Install, wire and maintain devices in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PAC Systems".
(2) In case of using fast actuators (response time ≤ 15 ms) driven by relay outputs: 15 g - 11 ms; 3 shocks/direction/axis
(3) In case of using fast actuators (response time ≤ 15 ms) driven by relay outputs: 15 g - 6 ms; 100 bumps/direction/axis.

(CE): tests required by European directives CE. and based on IEC/EN 61131-2 standards.

Technical appendices
Certifications for automation products
EC regulations

Some countries require certain electrical components to undergo certification by law. This certification takes the form of a certificate of conformity to the relevant standards and is issued by the official body in question. Where applicable, label certified devices accordingly. Use of electrical equipment on board merchant vessels generally implies that it has gained prior approval (i.e. certification) by certain shipping classification societies.

Abbreviated name	Certification body	Country
CSA	Canadian Standards Association	Canada
C-Tick	Australian Communication Authority	Australia, New Zealand
GOST	Scientific research institute for GOST standards	CIS, Russia
UL	Underwriters Laboratories	USA
Abbreviated name	**Classification society**	**Country**
IACS	International Association of Classification Societies	International
ABS	American Bureau of Shipping	USA
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
LR	Lloyd's Register	UK
RINA	Registro Italiano Navale	Italy
RMRS	Russian Maritime Register of Shipping	CIS, Russia
RRR	Russian River Register	

The tables below provide an overview of the situation as of 1st June 2010 in terms of which certifications (listed next to their respective bodies) have been granted or are pending for our automation products.
Up-to-date information on which certifications have been obtained by Schneider Electric branded products can be viewed on our website: www.schneider-electric.com.

Product certifications

Certified *Certification pending*	Certifications									
	UL	CSA	ACA	GOST	Hazardous locations (1) Class I, div 2	INERIS	TÜV Rheinland	BG	SIMTARS	AS-Interface
	USA	Canada	Australia	CIS, Russia	USA, Canada	Europe		Germany	Australia	Europe
Modicon™ OTB										
Modicon STB					FM	Cat. 3 G *(2) (5)*				
Modicon Telefast™ ABE7										
ConneXium™					*(2)*					
Magelis™ iPC/GTW	*(3)*	*(2)*		*(2)*	UL	*(2) (5)*				
Magelis XBTGT		*(2)*		*(2)*	CSA/UL	Cat. 3 G-D/ 3D *(2) (5)*				
Magelis XBTGK	*(3)*				CSA/UL					
Magelis XBTN/R/RT					CSA/UL	Cat. 3 G-D *(5)*				
Modicon M340™					CSA	IEC Ex ia I (2) *(2) (6)*				*(2)*
Modicon Momentum™										
Modicon Premium™				*(2)*	CSA			*(2)*	*(2)*	*(2)*
Modicon Quantum™				*(2)*	FM *(2)*					
Modicon Quantum Safety				*(2)*	CSA		SIL 2, SIL 3 *(7)*			
Preventa™ XPSMF							SIL 3 *(7)*			
Modicon TSX Micro™								*(2)*		*(2)*
Phaseo™	*(3)*									
Twido™	*(4)*	*(4)*			CSA/UL *(4)*					*(2)*

*(1) **Hazardous locations**: According to UL 1604, CSA 22.2 No. 213 and FM 3611, certified products are only approved for use in hazardous locations categorized as Class I, division 2, groups A, B, C and D, or in non-classified locations.*
(2) Depends on product; please visit our website: www.schneider-electric.com.
*(3) North American certification **cULus** (Canada and United States).*
*(4) Except for AS-Interface module **TWD NOI 10M3**; CE only.*
(5) For ATEX zones not covered by this specification, Schneider Electric offers a solution under the CAPP program (Collaborative Automation Partner Program). Please consult our Customer Care Center.
(6) Certified by Test Safe.
(7) According to IEC 61508. Certified by TÜV Rheinland for integration into a safety function of up to SIL 2 or SIL 3.

Technical appendices
Certifications for automation products
EC regulations

Merchant navy certifications

Certified
Certification pending

	Shipping classification societies									
	ABS	BV	DNV	GL	Korean Register of Shipping	LR	RINA	RMRS	RRR	PRS
	USA	France	Norway	Germany	Korea	UK	Italy	CIS	CIS	Poland
Modicon™ OTB										
Modicon STB	*(1) (2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*	
Modicon Telefast™ ABE7										
ConneXium™		*(2)*		*(2)*		*(2)*				
Magelis™ *i*PC/GTW			*(2)*							
Magelis XBTGT										
Magelis XBTGK										
Magelis XBTN/R										
Magelis XBTRT										
Modicon M340™	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*	*(2)*	
Modicon Momentum™										
Modicon Premium™	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*			
Modicon Quantum™	*(2)*	*(2)*	*(2)*	*(2)*		*(2)*	*(2)*	*(2)*		
Modicon TSX Micro™										
Phaseo™										
Twido™			*(2)*	*(2)*		*(2)*				

(1) Also covers US Navy requirements **ABS-NRV** part 4.
(2) Depends on product; please visit our website: www.schneider-electric.com.
(3) Except XBTGT2430/2930/5430/1105/1135/1335.

EC regulations

European Directives

The open nature of the European markets assumes harmonization between the regulations set by different European Union member states.
European Directives are texts whose aim is to remove restrictions on free circulation of goods and are applied within the European Union states.
Member states are obligated to incorporate each Directive into their national legislation, while at the same time withdrawing any regulation that contradicts it.
Directives - and particularly those of a technical nature with which we are concerned - merely set out the objectives to be fulfilled (referred to as “essential requirements”).
The manufacturer is obligated to implement any and measures to help ensure that his products meet the requirements of each Directive that applies to his equipment.
As a general rule, the manufacturer certifies compliance with essential requirements of the Directive(s) that apply to his product by applying a CE mark.
The CE mark has been applied to our products where applicable.

Significance of the CE mark

- The appearance of a CE mark on a product indicates the manufacturer's certification that the product conforms to the relevant European Directives; this is a prerequisite for placing a product that is subject to the requirements of one or more Directives on the market and for allowing its free circulation within European Union states.
- The CE mark is intended for use by those responsible for regulating national markets.

Where electrical equipment is concerned, conformity to standards indicates that the product is fit for use.
As far as our products are concerned, one or more Directives are likely to apply in each case; in particular:
- The Low Voltage Directive (2006/95/EC).
- The Electromagnetic Compatibility Directive (2004/108/EC).
- The ATEX CE Directive (94/9/EC).

Modicon™ M340™ automation platform

Inputs and OsiSense™ XU photo-electric sensors

Photo-electric sensors				⎓ Inputs, BMXDDI				
Type			Reference	1602	1603	1604T	3202K	6402K
General purpose								
Design Ø 18	Metal	3 wire, PNP 24V	XUB0/1/2/4/5/9B●P●●●	■			■	■
		3 wire, NPN 24V	XUB0/1/2/4/5/9B●N●●●					
	Plastic	3 wire, PNP 24V	XUB0/1/2/4/5/9A●P●●●	■			■	■
		3 wire, NPN 24V	XUB0/1/2/4/5/9A●N●●●					
Design	Miniature	3 wire, PNP 24V	XUM0/2/5/9AP●●●●	■			■	■
		3 wire, NPN 24V	XUM0/2/5/9AN●●●●					
	Compact 50x50	3 wire, PNP 24V	XUK1/2/5/8/9AP●●●	■			■	■
		3 wire, NPN 24V	XUK1/2/5/8/9AN●●●					
		3 wire, programmable PNP/NPN DC	XUK0AK●●●	■	■		■	■
		5 wire, programmable AC/DC	XUK0/1/2/5/8/9AR					
	Compact 92x71	3 wire, programmable PNP/NPN DC	XUX0/1/2/5/8/9AK	■	■		■	■
		5 wire, programmable AC DC	XUX0/1/2/5/8/9AR					
Application								
Material handling	Optical fork	3 wire, PNP 24V	XUVR●●●●P●●	■			■	■
		3 wire, NPN 24V	XUVR●●●●N●●					
		3 wire, PNP 24V	XUVA●●●●P●●	■			■	■
		3 wire, NPN 24V	XUVA●●●●N●●					
		4 wire, PNP or NPN 24V	XUYF●●●●●	■			■	■
		4 wire, PNP or NPN 24V	XUVU06●●●	■			■	■
		4 wire, PNP or NPN 24V	XUVK●●●	■			■	■
		3 wire, PNP 24V	XUVH●●●	■			■	■
		3 wire, NPN 24V	XUVJ●●●					
		4 wire, PNP or NPN 24V	XUVF●●●	■			■	■
Packaging	Fiber	4 wire, PNP or NPN 24V	XUYDCF●●●	■			■	■
	Compact	4 wire, PNP or NPN 24V	XURK	■			■	■
	M 18, threaded	3 wire, PNP 24V	XU5M18U1D	■			■	■
	Fiber	4 wire, PNP or NPN 24V	XUYAFL●●●	■			■	■
	M 18, threaded	3 wire, PNP 24V	XUBT●P●●●	■			■	■
		3 wire, NPN 24V	XUBT●N●●●					
	Compact	4 wire, PNP or NPN 24V	XUKT●●●	■			■	■
		3 wire, PNP 24V	XUKC1N●●●	■			■	■
		3 wire, NPN 24V	XUKC1P●●●					
		3 wire, PNP 24V	XURC3P●●●	■			■	■
		3 wire, NPN 24V	XURC3N●●●					
		4 wire, PNP or NPN 24V	XUMW●●●	■			■	■
	M 18, threaded	3 wire, PNP 24V	XUB0SP●●●	■			■	■
		3 wire, NPN 24V	XUB0SN●●●					
		3 wire, PNP 24V	XU●N18P●●●	■			■	■
		3 wire, NPN 24V	XU●N18N●●●					
	M 8, threaded	3 wire, PNP 24V	XUAH●●●	■			■	■
		3 wire, NPN 24V	XUAJ●●●					
	Miniature	3 wire, PNP 24V	XUYP●●●●P●●	■			■	■
		3 wire, NPN 24V	XUYP●●●●N●●					
		3 wire, PNP 24V	XUM2/5/9BP●●●	■			■	■
		3 wire, NPN 24V	XUM2/5/9BN●●●					
		3 wire, PNP 24V	XUY●●●929●●	■			■	■
Hoisting	M 18, threaded	3 wire, PNP 24V	XUBLBP●●●	■			■	■
		3 wire, NPN 24V	XUBLBN●●●					
	Compact	2 wire 4 to 20 mA ; 3 wire 0 to 10V	XUJK803538					
	M 18, threaded	2 wire 4 to 20 mA	XU5M18AB20D					
		PNP, 2 wire 4 to 20 mA	XU2M18AB20D					
	Compact	PNP, 2 wire 4 to 20 mA	XUYP●●●925					
		4 wire, PNP or NPN 24V	XUYPS●●●	■			■	■
	Fiber	3 wire, PNP 24V	XUDA●P●●●	■			■	■
		3 wire, NPN 24V	XUDA●N●●●					
		4 wire, PNP or NPN 24V	XUYAF●●●	■			■	■
	Other formats	3 wire, programmable PNP/NPN DC	XUC2/8/9AK●●●	■	■		■	■
		5 wire, programmable AC/DC	XUC2/8/9ARC●●●					
		3 wire, PNP 24V	XULH●●●	■			■	■
		3 wire, NPN 24V	XULJ●●●					
		2 wire, AC	XULA●●●					
		5 wire, programmable AC/DC	XULM●●●					
		3 wire, programmable PNP/NPN DC	XUYB●●●S	■	■		■	■
		5 wire, programmable AC/DC	XUYB●●●R					
	M 18, threaded	2 wire, AC/DC	XU5/8/9M18MA●●●					

Compatible
Non compatible

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⎓ Inputs, BMXDDM			⎓ Inputs, BMXAMI		∿ Inputs, BMXDAI			
16022	16025	3202K	0810	0800	1602	1603	1604	0805
■	■	■						
					■			
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Modicon™ M340™ automation platform

Inputs and OsiSense™ XS inductive proximity sensors

Proximity sensors				⎓ Inputs, BMXDDI			
Type			Reference	1602	1603	1604T	3202K
General purpose							
Cylindrical, flush, sensing distance standard, barel short	Ø 6,5 plain short	3 wire, PNP 24V	XS506B1P●●●	■			■
		3 wire, NPN 24V	XS506B1N●●●				
		2 wire, DC 24V	XS506BSC●●●	■			■
	M8, threaded short	3 wire, PNP 24V	XS508B1P●●●	■			■
		3 wire, NPN 24V	XS508B1N●●●				
		2 wire, DC 24V	XS508BSC●●●	■			■
	M12, threaded short	3 wire, PNP 24V	XS512B1P●●●	■			■
		3 wire, NPN 24V	XS512B1N●●●				
		2 wire, DC 24V	XS512BSD/C●●●	■			■
	M18, threaded short	3 wire, PNP 24V	XS518B1P●●●	■			■
		3 wire, NPN 24V	XS518B1N●●●				
		2 wire, DC 24V	XS518BSD/C●●●	■			■
	M30, threaded short	3 wire, PNP 24V	XS530B1P●●●	■			■
		3 wire, NPN 24V	XS530B1N●●●				
		2 wire, DC 24V	XS530BSD/C●●●	■			■
Cylindrical, flush, sensing distance standard, barel long	M8, threaded long	3 wire, PNP 24V-48V	XS508BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS508BLN●●●				
		2 wire, DC 24V-48V	XS508B1D/C●●●	■	■		■
	M12, threaded long	3 wire, PNP 24V-48V	XS512BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS512BLN●●●				
		2 wire, DC 24V-48V	XS512B1D/C●●●	■	■		■
	M18, threaded long	3 wire, PNP 24V-48V	XS518BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS518BLN●●●				
		2 wire, DC 24V-48V	XS518B1D/C●●●	■	■		■
	M30, threaded long	3 wire, PNP 24V-48V	XS530BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS530BLN●●●				
		2 wire, DC 24V-48V	XS530B1D/C●●●	■	■		■
	M12, threaded long	2 wire, AC/DC	XS512B1M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS518B1M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS530B1M●●●			■	
Cylindrical, flush, sensing distance extending, barel short	Ø 6,5 plain short	3 wire, PNP 24V	XS106B3P●●●	■			■
		3 wire, NPN 24V	XS106B3N●●●				
		2 wire, DC 24V	XS606B3C●●●	■			■
	M8, threaded short	3 wire, PNP 24V	XS108B3P●●●	■			■
		3 wire, NPN 24V	XS108B3N●●●				
		2 wire, DC 24V	XS608B3C●●●	■			■
	M12, threaded short	3 wire, PNP 24V	XS112B3P●●●	■			■
		3 wire, NPN 24V	XS112B3N●●●				
		2 wire, DC 24V	XS612B3D●●●	■			■
	M18, threaded short	3 wire, PNP 24V	XS118B3P●●●	■			■
		3 wire, NPN 24V	XS118B3N●●●				
		2 wire, DC 24V	XS618B3D●●●	■			■
	M30, threaded short	3 wire, PNP 24V	XS130B3P●●●	■			■
		3 wire, NPN 24V	XS130B3N●●●				
		2 wire, DC 24V	XS630B3D●●●	■			■
Cylindrical, flush, sensing distance extending, barel long	M8, threaded long	3 wire, PNP 24V-48V	XS608B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS608B1N●●●				
		2 wire, DC 24V-48V	XS608B1D●●●	■	■		■
	M12, threaded long	3 wire, PNP 24V-48V	XS612B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS612B1N●●●				
		2 wire, DC 24V-48V	XS612B1D●●●	■	■		■
	M18, threaded long	3 wire, PNP 24V-48V	XS618B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS618B1N●●●				
		2 wire, DC 24V-48V	XS618B1D●●●	■	■		■
	M30, threaded long	3 wire, PNP 24V-48V	XS630B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS630B1N●●●				
		2 wire, DC 24V-48V	XS630B1D●●●	■	■		■
	M12, threaded long	2 wire, AC/DC	XS612B1M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS618B1M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS630B1M●●●			■	
Cylindrical, non flush, sensing distance extending, barel long	M12, threaded long	3 wire, PNP 24V-48V	XS612B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS612B4N●●●				
	M18, threaded long	3 wire, PNP 24V-48V	XS618B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS618B4N●●●				
	M30, threaded long	3 wire, PNP 24V-48V	XS630B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS630B4N●●●				
	M12, threaded long	2 wire, AC/DC	XS612B4M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS618B4M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS630B4M●●●			■	

■ Compatible
Non compatible

	⎓ Inputs, BMXDDM			⎓ Inputs, BMXAMI		∿ Inputs, BMXDAI			
6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805

Modicon™ M340™ automation platform

Inputs and OsiSense™ XS inductive proximity sensors

Proximity sensors				⎓ Inputs, BMXDDI			
Type			Reference	1602	1603	1604T	3202K
General purpose							
Flat, flush montable, sensing distance standard	Format J 8x22x8	3 wire, PNP 24V	XS7J1A1P●●●	■			■
		3 wire, NPN 24V	XS7J1A1N●●●				
		2 wire, DC 24V	XS7J1A1D●●●	■			■
	Format F 15x22x8	3 wire, PNP 24V	XS7F1A1P●●●	■			■
		3 wire, NPN 24V	XS7F1A1N●●●				
		2 wire, DC 24V	XS7F1A1D●●●	■			■
	Format E 26x26x13	3 wire, PNP 24V	XS7E1A1P●●●	■			■
		3 wire, NPN 24V	XS7E1A1N●●●				
		2 wire, DC 24V	XS7E1A1D/C●●●	■			■
	Format C 40x40x15	3 wire, PNP 24V	XS7C1A1P●●●	■			■
		3 wire, NPN 24V	XS7C1A1N●●●				
		2 wire, DC 24V	XS7C1A1D/C●●●	■			■
	Format D 80x80x26	3 wire, PNP 24V	XS7D1A1P●●●	■			■
		3 wire, NPN 24V	XS7D1A1N●●●				
		2 wire, DC 24V	XS7D1A1D/C●●●	■			■
Format 40X40X117 Plastic, with turret head: 5 positions	NO + NC	4 wire, PNP 24V-48V	XS7/XS8C40PC44●	■	■		■
		4 wire, NPN 24V-48V	XS7/XS8C40NC44●				
	NO/NC programable	2 wire, DC 24V-48V	XS7/XS8C40D●●●●●	■	■		■
		2 wire, AC	XS7/XS8C40F●●●●●				
		2 wire, AC/DC	XS7/XS8C40M●●●●●			■	
Flat, flush montable, sensing distance extending	Format E 26x26x13	3 wire, PNP 24V	XS8E1A1P●●●	■			■
		3 wire, NPN 24V	XS8E1A1N●●●				
		2 wire, AC/DC	XS8E1A1M●●●			■	
	Format C 40x40x15	3 wire, PNP 24V	XS8C1A1P●●●	■			■
		3 wire, NPN 24V	XS8C1A1N●●●				
		2 wire, AC/DC	XS8C1A1M●●●			■	
	Format D 80x80x26	3 wire, PNP 24V	XS8D1A1P●●●	■			■
		3 wire, NPN 24V	XS8D1A1N●●●				
		2 wire, AC/DC	XS8D1A1M●●●			■	
Cylindrical multi tension	M12, threaded	2 wire, AC/DC	XS1/2M12M●250			■	
	M18, threaded	2 wire, AC/DC	XS1/2M18M●250			■	
	M30, threaded	2 wire, AC/DC	XS1/2M30M●250			■	
Cylindrical Metal, 4 wire	Ø 6,5, plain	4 wire, PNP 24V	XS1L06PC410	■			■
		4 wire, NPN 24V	XS1L06NC410				
	M8, threaded	4 wire, PNP 24V	XS1/2M08PC410●	■			■
		4 wire, NPN 24V	XS1/2M08NC410●				
	M12, threaded	4 wire, PNP 24V	XS1/2N12PC410●	■			■
		4 wire, NPN 24V	XS1/2N12NC410●				
	M18, threaded	4 wire, PNP 24V	XS1/2N18PC410●	■			■
		4 wire, NPN 24V	XS1/2N18NC410●				
	M30, threaded	4 wire, PNP 24V	XS1/2N30PC410●	■			■
		4 wire, NPN 24V	XS1/2N30NC410●				
Cylindrical Metal, 4 wire PNP + NPN	M12, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4M12KP340●	■			■
	M18, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4M18KP340●	■			■
	M30, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4M30KP340●	■			■
Cylindrical Plastic, non flush, sensing distance standard	M8, threaded	3 wire, PNP 24V	XS4P08P●340●	■			■
		3 wire, PNP 24V-48V	XS4P08P●370●	■	■		■
		3 wire, NPN 24V	XS4P08N●340●				
		3 wire, NPN 24V-48V	XS4P08N●370●				
		2 wire, AC/DC	XS4P08M●230●●●			■	
	M12, threaded	3 wire, PNP 24V	XS4P12P●340●	■			■
		3 wire, PNP 24V-48V	XS4P12P●370●	■	■		■
		3 wire, NPN 24V	XS4P12N●340●				
		3 wire, NPN 24V-48V	XS4P12N●370●				
		2 wire, AC/DC	XS4P12M●230●●●			■	
	M18, threaded	3 wire, PNP 24V	XS4P18P●340●	■			■
		3 wire, PNP 24V-48V	XS4P18P●370●	■	■		■
		3 wire, NPN 24V	XS4P18N●340●				
		3 wire, NPN 24V-48V	XS4P18N●370●				
		2 wire, AC/DC	XS4P18M●230●●●			■	
	M30, threaded	3 wire, PNP 24V	XS4P30P●340●	■			■
		3 wire, PNP 24V-48V	XS4P30P●370●	■	■		■
		3 wire, NPN 24V	XS4P30N●340●				
		3 wire, NPN 24V-48V	XS4P30N●370●				
		2 wire, AC/DC	XS4P30M●230●●●			■	

■ Compatible
Non compatible

	⎓ Inputs, BMXDDM			⎓ Inputs, BMXAMI		~ Inputs, BMXDAI			
6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805

Modicon™ M340™ automation platform

Inputs and OsiSense™ XS inductive proximity sensors

Proximity sensors				⎓ Inputs, BMXDDI			
Type			Reference	1602	1603	1604T	3202K
General purpose							
Cylindrical basic flush or non flush, sensing distance standard, Plastic or Metal	Ø 6,5 plain	3 wire, PNP 24V	XS1/206BLP●●●	■			■
		3 wire, NPN 24V	XS1/206BLN●●●				
	M8, threaded	3 wire, PNP 24V	XS1/208A/BLP●●●	■			■
		3 wire, NPN 24V	XS1/208A/BLN●●●				
	M12, threaded	3 wire, PNP 24V	XS1/212A/BLP●●●	■			■
		3 wire, NPN 24V	XS1/212A/BLN●●●				
	M18, threaded	3 wire, PNP 24V	XS1/218A/BLP●●●	■			■
		3 wire, NPN 24V	XS1/218A/BLN●●●				
	M30, threaded	3 wire, PNP 24V	XS1/230A/BLP●●●	■			■
		3 wire, NPN 24V	XS1/230A/BLN●●●				
Cylindrical, almost flush, sensing distance extending	Ø 6,5 plain	3 wire, PNP 24V	XS1L06P●349●	■			■
		3 wire, NPN 24V	XS1L06N●349●				
	M8, threaded	3 wire, PNP 24V	XS1N08P●349●	■			■
		3 wire, NPN 24V	XS1N08N●349●				
	M12, threaded	3 wire, PNP 24V	XS1N12P●349●	■			■
		3 wire, NPN 24V	XS1N12N●349●				
	M18, threaded	3 wire, PNP 24V	XS1N18P●349●	■			■
		3 wire, NPN 24V	XS1N18N●349●				
	M30, threaded	3 wire, PNP 24V	XS1N30P●349●	■			■
		3 wire, NPN 24V	XS1N30N●349●				
Cylindrical, miniature	Ø 4 plain	3 wire, PNP 24V	XS1L04P●31●●	■			■
		3 wire, NPN 24V	XS1L04N●31●●				
	M5, threaded	3 wire, PNP 24V	XS1N05P●31●●	■			■
		3 wire, NPN 24V	XS1N05N●31●●				
	Ø 6,5 plain	3 wire, PNP 24V	XS2L06P●340●	■			■
		3 wire, NPN 24V	XS2L06N●340●				
Application							
Cylindrical, adjustable sensing distance,	M12, threaded	3 wire, PNP 24V	XS612B2P●●●	■			■
		3 wire, NPN 24V	XS612B2N●●●				
	M18, threaded	3 wire, PNP 24V	XS618B2P●●●	■			■
		3 wire, NPN 24V	XS618B2N●●●				
	M30, threaded	3 wire, PNP 24V	XS630B2P●●●	■			■
		3 wire, NPN 24V	XS630B2N●●●				
Rotation monitoring	M18, threaded	3 wire, PNP 24V-48V	XSAV11/2373	■	■		■
		2 wire, AC/DC	XSAV11/2801			■	
	Format E 26x26x13	3 wire, PNP 24V	XS9●11RP●●●●	■			■
	Format C 40x40x15	2 wire, AC/DC	XS9●11RM●●●●			■	
Analog output	M12, threaded	2 wire 4 to 20mA; 3 wire 0 to 10V	XS●12AB●●●●				
	M18, threaded	2 wire 4 to 20mA; 3 wire 0 to 10V	XS●18AB●●●●				
	M30, threaded	2 wire 4 to 20mA; 3 wire 0 to 10V	XS●30AB●●●●				
	Block format	2 wire 4 to 20mA; 3 wire 0 to 10V	XS9●111A●●●●				
Food and beverage	Cylindrical threaded Metal	3 wire, PNP 24V	XS2●●SAP●●●	■			■
		3 wire, NPN 24V	XS2●●SAN●●●				
		2 wire, AC/DC	XS2●●SAMA●●●			■	
	Cylindrical threaded Plastic	3 wire, PNP 24V-48V	XS2●●AAP●●●	■	■		■
		3 wire, NPN 24V	XS2●●AAN●●●				
		2 wire, AC/DC	XS2●●AAMA●●●			■	
Factor 1	Cylindrical threaded Metal	4 wire, PNP+NPN 24V	XS1M●●KPM40	■			■
	Forme C, 40 x 117 x 41	4 wire, PNP+NPN 24V	XS7C40KPM40	■			■
	Cylindrical threaded Metal	3 wire, PNP 24V	XS1M18PAS●●	■			■
Packaging	Format 12x26x40	3 wire, PNP 24V	XS7G12P●140	■			■
		3 wire, NPN 24V	XS7G12N●140				
		4 wire, PNP 24V-48V	XS7G12P●440	■	■		■
		4 wire, NPN 24V-48V	XS7G12N●440				
		2 wire, AC/DC	XS7G12M●230			■	
Material handling	Format C 40x40x40	2 wire, DC 24V-48V	XS7T4DA●●●	■	■		■
		4 wire, PNP 24V-48V	XS7T4PC●●●	■			■
		4 wire, NPN 24V-48V	XS7T4NC●●●				
	Format D 80x80x26	2 wire, DC 24V-48V	XS7D1●●●●	■	■		■
Welding	Cylindrical Metal	3 wire, PNP 24V	XS1M●●PAW●●	■			■
		2 wire, DC 24V-48V	XSLC●●●	■	■		■

Compatible
Non compatible

	⎓ Inputs, BMXDDM			⎓ Inputs, BMXAMI		∿ Inputs, BMXDAI			
6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805

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Modicon™ M340™ automation platform
Power consumption table

Introduction

The power required to supply each **BMXXBP●●00** rack depends on the type and number of modules installed in the racks. It is therefore necessary to draw up a power consumption table rack-by-rack to determine the **BMXCPS●●●●●** power supply module that best fits each rack.

The calculation sheet on the page opposite can be used to calculate the power consumption of the 2 or 3 voltages provided (depending on the model) by the **BMXCPS●●●●●** power supply module: 3.3 V ⎓, 24 V ⎓ (rack) and 24 V ⎓ (sensors).

Method

■ Check and select a power supply module corresponding to the power available on the 2 or 3 voltages.
■ Check that the sum of the absorbed power on these three voltages does not exceed the maximum power of the power supply module.
■ Values to be entered depending on the Modicon M340 PAC configuration.

Modicon™ M340™ automation platform

Power consumption table
Calculation sheet

Photocopy this document or use the **M340 Design** *software, available on our website:* www.schneider-electric.com

Rack no. 0 - 1 - 2 - 3	Module reference	Format S: Standard D: Double	Number	Consumption in mA *(1)* 3.3 V ⎓ voltage Module	3.3 V ⎓ voltage Total	24 V ⎓ rack voltage Module	24 V ⎓ rack voltage Total	24 V ⎓ sensor voltage Module	24 V ⎓ sensor voltage Total
Processor (rack **0**)	**BMXP341000(H)**	S				72			
	BMXP342000	S				72			
	BMXP342010/20102	S				90			
	BMXP342020(H)	S				95			
	BMXP342030/20302(H)	S				135			
Rack expansion (rack 0, 1, 2 or 3)	**BMXXBE1000**	–		22		160			
Discrete I/O	**BMXDAI0805**	S		76		13			
	BMXDAI1602(H)	S		90		60			
	BMXDAI1603(H)	S		90		60			
	BMXDAI1604(H)	S		90		60			
	BMXDAO1605(H)	S		100		95			
	BMXDDI1602(H)	S		90					
	BMXDDI1603(H)	S		90					
	BMXDDI1604T	S		76					
	BMXDDI3202K	S		140				110	
	BMXDDI6402K	S		200				110	
	BMXDDM16022(H)	S		100				30	
	BMXDDM16025(H)	S		100		50		30	
	BMXDDM3202K	S		150				55	
	BMXDDO1602(H)	S		100					
	BMXDDO1612(H)	S		100					
	BMXDDO3202K	S		150					
	BMXDDO6402K	S		240					
	BMXDRA0804T	S		61		104			
	BMXDRA0805(H)	S		100		55			
	BMXDRA1605(H)	S		100		95			
Analog I/O	**BMXAMI0410(H)**	S		150		45			
	BMXAMI0800	S		150		30			
	BMXAMI0810	S		150		45			
	BMXAMM0600(H)	S		150		130			
	BMXAMO0210(H)	S		150		110			
	BMXAMO0410	S		150		84			
	BMXAMO0802	S		150		74			
	BMXART0414(H)	S		150		40			
	BMXART0814(H)	S		150		100			
Counting	**BMXEHC0200(H)**	S		200		40		80	
	BMXEHC0800(H)	S		200				80	
Motion control	**BMXMSP0200**	S		200		150			
Communication	**BMXEIA0100**	S		160					
	BMXNOE0100(H)	S				90			
	BMXNOE0110(H)	S				90			
	BMXNOM0200(H)	S				80			
	BMXNOC0401	S		555					
	BMXNOR0200(H)	S				95			
Power consumption			Total current (mA)						
				x 3.3 V		x 24 V		x 24 V	
			Power consumed (mW)		+		+		=
				Available power (mW)					Total power (mW)
Choice of power supply module	**BMXCPS2010**	D	24 V ⎓ isolated	**8250**		**16,800**			**17,000**
	BMXCPS3020(H)	D	24 to 48 V ⎓ isolated	**14,850**		**31,200**			**32,000**
	BMXCPS2000	D	100 to 240 V ∿	**8250**		**16,800**		**10,800**	**20,000**
	BMXCPS3500(H)	D		**14,850**		**31,200**		**21,600**	**36,000**
	BMXCPS3540T	D	125 V ⎓	**14,850**		**31,200**		**21,600**	**36,000**

(1) Typical value given for 100% of inputs or outputs at state 1.

Modicon™ M340™ automation platform

Dedicated services offer for your installed base

Operation services

Our competent and efficient experts can provide effective maintenance, upgrading and modernization of your facilities.

Our services offer is structured around two phases of your installation life cycle:
- Operation:
  - Spare parts and repairs
  - Maintenance contracts
  - Training
- Modernization:
  - Consultancy and expertise
  - Project management

Customization services are also available to accommodate your specific requirements.

Operation services

Spare parts and repairs

Everything you need to get your equipment back to work as quickly as possible

We are able to respond very quickly to requests for spare parts, exchanges and repairs to your installed automation equipment (automation platforms, Human Machine Interfaces, drives, distributed I/O) with:
- Supply of tested, certified and compatible spare parts
- Repaired parts will be of the same quality as new products
- Availability of our teams to respond to your requests 24/7
- Standard replacements or fast exchange service for certain parts with the option to receive the replacement product the next business day

Maintenance contracts

Improving the long-term reliability and performance of your installations

We provide a contract solution to fulfil your logistical, technical, human and financial requirements. This solution is based around the following services:
- Hotline with priority access to our group of experts
- Software via the Internet with access to the latest upgrades of the current software
- Spare parts stock - a Schneider Electric owned stock of spare parts on your site or in one of our warehouses
- On-site assistance with agreed upon servicing time *(1)*
- Extended warranty offering up to 5 years manufacturer warranty on installed equipment ranges on your site *(1)*
- Maintenance & Modernization Consultancy providing analysis of existing systems and proposal of a detailed improvement plan *(1)*
- Modernization - a complete process to update your legacy systems based upon your specific requirements *(1)*

(1) Also available as a stand alone offer. Please consult our Customer Care Center.

Training

Dedicated training plans to allow you to acquire the necessary competencies to optimize productivity of your installed base

We are committed to providing your teams with the necessary competencies to operate more effectively, make the operations more secure and optimize the efficiency of your installed equipment:
- Identification of your needs by systematic analysis of the competency and functions of your teams
- Proposal of a set of training modules covering your entire installed automation equipment base
- Preparation of customized modules to suit your needs (content, schedule, etc.).

***Note**: To check availability of services required, please contact our Customer Care Center.*

Modicon™ M340™ automation platform

Dedicated services offer for your installed base

Modernization services
Customization services

Modernization services

Consultancy and expertise

Proven expertise, tools and methods to give you a clear vision of the improvement opportunities and guide you toward a successful modernization project

With our M2C (Maintenance & Modernization Consultancy) offer, we help you check the state of your installed base by:

- Defining the scope and depth of the analysis in collaboration with you
- Collecting the technical data without shutting down production
- Analyzing and identifying avenues for improvement
- Producing a recommendation

Customer benefits:

- Reduction in the impact of of lost system availability
- Improved system availability
- Improved performance

The M2C (Maintenance & Modernization Consultancy) offer

Our experts will analyze your existing systems, propose an action plan and deploy the appropriate solutions.

■ **Process consultancy**
Based on audit implementation dedicated to your application, our consultants will help you assess opportunities, define various solutions, estimate budgets and draw up a deployment plan.

■ **Installed base consultancy**
For preventive maintenance operations or in case of detected failures or detected malfunctions, our tools and methods can be used for diagnosis and control of critical automation functions, such as communication networks, high-power drives and process control automation.
A detailed report with comments is submitted as part of our service.

Project management

Professional tools, methods and a proven experience in project management to help reduce risks and improve performance.

Our services are provided by experienced project managers who have a precise knowledge of the evolution of our equipment and use efficient tools and methods with proven effectiveness to:

- Limit production down time by using our conversion and software/hardware migration solutions
- Improve performance of existing tools by:
  - Analyzing the performance levels to be achieved and designing, validating and implementing the new architecture
  - Updating your application following modernization of your equipment
- Provide long-term support by helping to ensure:
  - The design and deployment of a standardized solution for projects spanning several production sites
  - A contractual approach that provides a change from the usual investment process, combining maintenance of existing facilities and scheduled modernization
  - Training of maintenance teams on the operation of the new system

Wide range of migration offers

Solution		Change the CPU	Keep the I/O racks & wiring	Change the I/O racks & keep the wiring	Migrate your application	Manage your project	Execute your project
Platform *(1)*	TSX47 to TSX107	⊖	⊖	⊖	⊖	⊖	⊖
	April series 1000			⊖	⊖	⊖	⊖
	Modicon ●84, compact	⊖	⊖	⊖	⊖	⊖	⊖
	April SMC				⊖	⊖	⊖
	Merlin Gerin™ PB				⊖	⊖	⊖
	AEG	⊖	⊖	⊖	⊖	⊖	⊖
	Symax™	⊖			⊖	⊖	⊖

⊖ Service available

(1) Our migration service offer also includes SCADA, Human Machine Interfaces, drives, communication networks and distributed I/O.

Customization services

We are able to meet your specific requirements and provide you with adapted products:

- Protective coating for Human Machine Interfaces, automation platforms and distributed I/O modules for use in harsh environments
- Customized cable lengths to match your specific needs
- Customized front panels for Human Machine Interfaces

***Note**: To check availability of services required, please contact our Customer Care Center.*

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