Modicon M340 automation platform

Catalogue

January 2011

Schneider Electric

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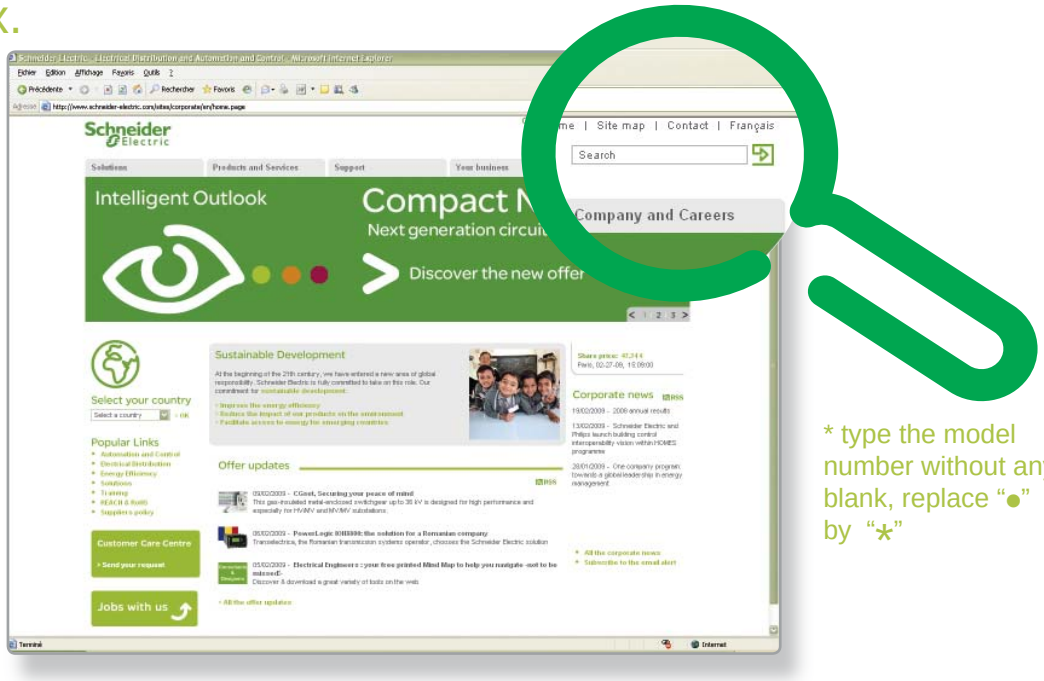
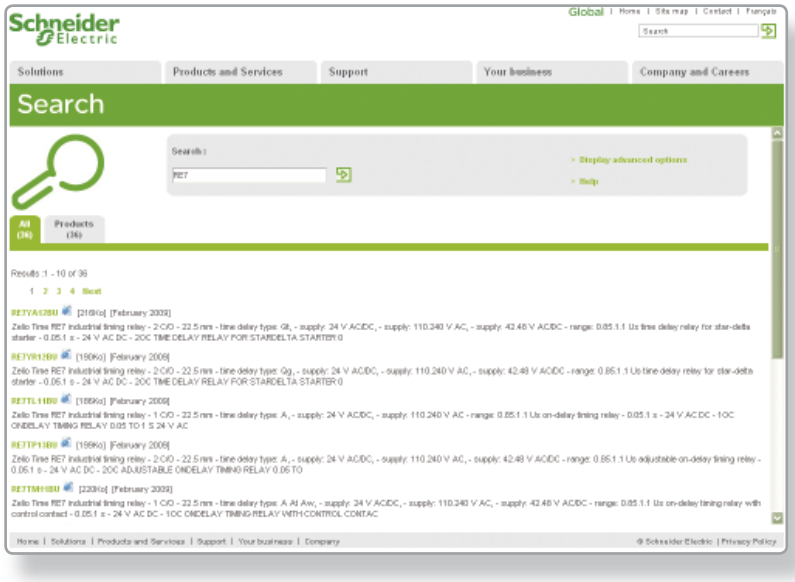
- characteristics,
- dimensions,
- curves, ...
- and also the links to the user guides and the CAD files.

1 From the home page, type the model number* into the “Search” box.



* type the model number without any blank, replace “●” by “*”

2 Under ”All” tab, click the model number that interests you.



3 The product data sheet displays.

Example : Zelio Time data sheet

Example : Zelio Time data sheet

Example : Zelio Time data sheet

☑ You can get this information in one single pdf file.

Modicon M340 automation platform

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Modicon M340 processors

Modicon M340 platform for Unity Pro software offer			BMX 34 10 Standard processor	BMX 34 20 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)*		BMX EHC 0200 2-channel (60 kHz) or BMX EHC 0800 8-channel (10 kHz) modules	
	Motion control *(1)*		BMX MSP 0200 2-channel PTO (*Pulse Train Output*) modules for servo drives	
			–	
	Serial link (process or RTU) *(1)*		BMX NOM 0200 2-channel module or BMX NOR 0200H 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…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	BMX NOE 0100/0110 or BMX NOC 0401 network modules or BMX NOR 0200H module with 1 Ethernet RTU channel	
	AS-Interface bus	Max. no.	2	4
		Type of module	BMX EIA 0100 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 BMX RMS ●●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% fixed arithmetic		4.2 Kinstructions/ms	6.4 Kinstructions/ms
Rack power supply			24 V ⎓ isolated, 24…48 V ⎓ isolated or 100…240 V ∿ power supply module	
Modicon M340 processor			**BMX P34 1000**	**BMX P34 2000**
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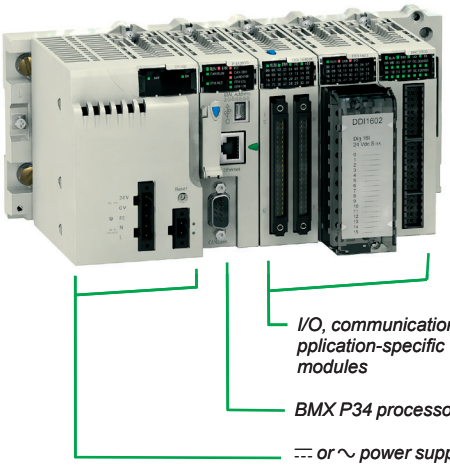
*(1) The maximum values for the number of discrete I/O, analog I/O, counter/motion control/serial link channels and the number of networks are not cumulative (they are limited by the maximum number of slots in the configuration, 1 rack: **11**, 2 racks: **23**, 3 racks: **35** and 4 racks: **47**.*
*(3) User web pages with **BMX NOE 0110** Ethernet FactoryCast module (12 MB available).*

BMX 34 20 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.		
BMX EHC 0200 2-channel (60 kHz) or BMX EHC 0800 8-channel (10 kHz) modules		
BMX MSP 0200 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)
BMX NOM 0200 2-channel module or BMX NOR 0200H 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…1000 Kbps, class M20) *(2)*	–	1 (63 slaves, 50…1000 Kbps, class M20) *(2)*
1 in RTU/ASCII Modbus master/slave mode or in Character mode (non-isolated RS232/RS485, 0.3…38.4 Kbps)		–
1 programming port (PC terminal) or HMI connection port		
2		
BMX NOE 0100/0110 or BMX NOC 0401 network modules or BMX NOR 0200H module with 1 Ethernet RTU channel		
4		
BMX EIA 0100 master module		
4096 KB		
3584 KB		
256 KB		
8 MB as standard		
(3)		
8 or 128 MB (according to BMX RMS ●●8MPF option card)		
1		
1		
64		
8.1 Kinstructions/ms		
6.4 Kinstructions/ms		
24 V ⎓ isolated, 24…48 V ⎓ isolated or 100…240 V ∿ power supply module		
BMX P34 20102	**BMX P34 2020**	**BMX P34 20302**

(2) **BMX P34 20102/20302** *processors can be used to customize configuration of the device Boot Up procedure compatible with all CANopen third-party products. Requires Unity Pro software, version ≥ V4.1.*

Modicon M340 automation platform
Processor modules



Presentation

Modicon M340 automation platform Standard processors, **BMX P34 1000**, and Performance processors, **BMX P34 2●●●●** , manage single-rack or multi-rack PLC 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 XBT GT/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)

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

Design and setup of Modicon M340 applications

To set up Modicon M340 automation platform processors, you need either:
- Unity Pro Small programming software
- Unity Pro Medium, Large, Extra Large or XL 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 specialist 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.

Note: Compatibility of BMX P34 20102/20302 processors with the Unity Pro software version. ***BMX P34 20102/20302*** *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 all 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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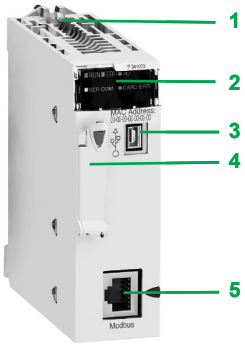
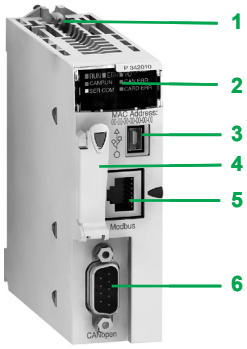
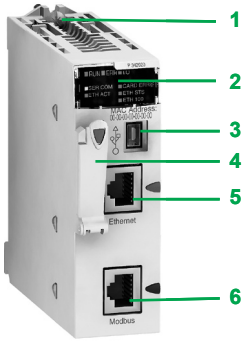
Modicon M340 automation platform
Processor modules



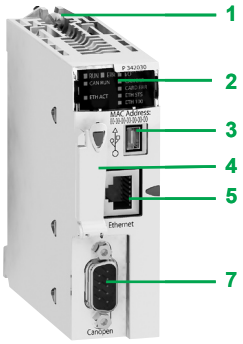
BMX P34 1000/2000



BMX P34 20102



BMX P34 2020



BMX P34 20302

Description of BMX P34 1000/2000/20102 processors

BMX P34 1000/2000/20102 Standard and Performance single-format processors have the following on the front panel:

1 Safety screw for locking the module in its slot (marked 0) in the rack
2 A display block comprising 5 or 7 LEDs, depending on the model:
- RUN LED (green): processor in operation (program execution)
- ERR LED (red): processor or system fault
- I/O LED (red): I/O module fault
- SER COM LED (yellow): activity on the Modbus serial link
- CARD ERR LED (red): memory card missing or faulty
- CAN RUN LED (green): integrated CANopen bus operational (**BMX P34 20102** model only)
- CAN ERR LED (red): integrated CANopen bus fault (**BMX P34 20102** model only)

3 A mini B USB connector for a programming terminal (or a Magelis XBT GT/GK/GTW, GTW HMI, STU/STO HMI terminal *(1)*)
4 A 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 An RJ45 connector for the Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated)

With, in addition, for model **BMX P34 20102**:
6 A 9-way SUB-D connector for the integrated CANopen master bus

Description of BMX P34 2020/20302 processors with integrated Ethernet Modbus/TCP port

BMX P34 2020/20302 Performance single-format processors have the following on the front panel:

1 Safety screw for locking the module in its slot (marked 0) in the rack
2 A display block comprising 8 or 10 LEDs, depending on the model:
- RUN LED (green): processor in operation (program execution)
- ERR LED (red): processor or system fault
- I/O LED (red): I/O module fault
- SER COM LED (yellow): activity on the Modbus serial link
- CARD ERR LED (red): memory card missing or faulty
- 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 (**BMX P34 20302** model only)
- CAN ERR LED (red): integrated CANopen bus fault (**BMX P34 20302** model only)

3 A mini B USB connector for a programming terminal (or a Magelis XBT GT/GK/GTW, GTW HMI and STU/STO HMI terminal *(1)*)
4 A 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 An RJ45 connector for connection to the 10BASE-T/100BASE-TX Ethernet Modbus/TCP network

With, in addition, depending on the model:
6 **BMX P 34 2020** processor: an RJ45 connector for the Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated)
7 **BMX P 34 20302** 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 XBT GT/GK/GTW, GTW HMI and STU/STO HMI terminals *(1)*.

All **BMX P34** processors can be connected to a USB bus comprising several peripheral devices. However:
- Only one processor must be connected to the USB bus
- No device on the USB bus can be controlled by the PLC (modem, printer)

(1) Magelis XBT GT/GK/GTW, GTW HMI and STU/STO HMI graphic terminals with USB port and Vijeo Designer configuration software version ≥ 4.5. Please consult our "Human Machine Interfaces" catalogue

Modicon M340 automation platform
Processor modules

Memory cards

BMX RMS 008MP memory card (supplied as standard)

Modicon M340 processors are supplied as standard with an SD *(Secure Digital)* type Flash memory card, **BMX RMS 008MP**. This card is intended for backing up the two memory areas on the processor module's internal RAM:
- Program, symbols and comments area, which contains the executable binary code and the IEC source code of the application program for the program part
- Constants area, which contains the constant data located by address

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

Capacity of the "backup area" on the memory card: 1792 KB for the **BMX P34 1000** Standard processor, 3584 KB for **BMX P34 2●●●●** Performance processors.

Processors with an integrated Ethernet port, **BMX P34 2020/20302,** have an additional 2 MB memory area specifically for "Standard Web services" (Transparent Ready B10) (see page 3/14).

The **BMX RMS 008MP** memory card is formatted by Schneider Electric and supplied with each processor. It is referenced as a replacement part.

BMX RMS 008MPF/128MPF optional memory cards

Performance processors, **BMX P34 2●●●●**, can take a **BMX RMS 008MPF** or **BMX RMS 128MPF** 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 **BMX RMS 008MPF** card) or 128 MB (for the **BMX RMS 128MPF** card).

This "file storage area" enables:
- Any user-defined 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 occupation of the Modicon M340 automation platform.

Protecting the application

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

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

From Unity Pro V5.0 on, the user has function blocks for protecting know-how by means of a signature that can be loaded and stored in the M340 processor module's Flash memory card (code 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 automation platform with the option of adding or modifying the program code and data in different places in the application in a single modification session (thus ensuring modification is homogenous and consistent with the controlled process).
A dedicated memory area of the application internal RAM authorizes these program modification or addition sessions while complying with the recommendation to structure the application program in several, reasonably-sized sections.

Modicon M340 automation platform
Processor modules

BMX P34 1000

BMX P34 2000

BMX P34 20102
BMX P34 20302

BMX P34 2020

BMX RMS 008/128MPF

BMX XCA USB H0●●

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 BMX P34 10, 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	**BMX P34 1000**	0.200
Performance BMX P34 20, 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	**BMX P34 2000**	0.200
		1 Modbus serial link 1 CANopen bus	Version ≥ 4.1	**BMX P34 20102**	0.210
		1 Modbus serial link 1 Ethernet network	Version ≥ 3.0	**BMX P34 2020**	0.205
		1 Ethernet network 1 CANopen bus	Version ≥ 4.1	**BMX P34 20302**	0.215

Memory cards

Description	Processor compatibility	Capacity	Reference	Weight kg
Flash memory cards (optional) *(2)*	BMX P34 2000 BMX P34 20102 BMX P34 2020 BMX P34 20302	8 MB + 8 MB file storage	**BMX RMS 008MPF**	0.002
		8 MB + **128 MB file** storage	**BMX RMS 128MPF**	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 XBT GT/GK/ GTW, GTW HMI, STU/ STO HMI graphic terminal	1.8 m	**BMX XCA USB H018**	0.065
			4.5 m	**BMX XCA USB H045**	0.110

Replacement part

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	BMX P34 1000 BMX P34 2020 BMX P34 20102/20302	**BMX RMS 008MP**	0.002

(1) ***BMX P34 20102/20302*** *processors, combined with Unity Pro software version ≥ 4.1 can be used to customize configuration of the device Boot Up procedure compatible with all CANopen third-party products.*
(2) Memory cards for ***BMX P34 2●●●●*** *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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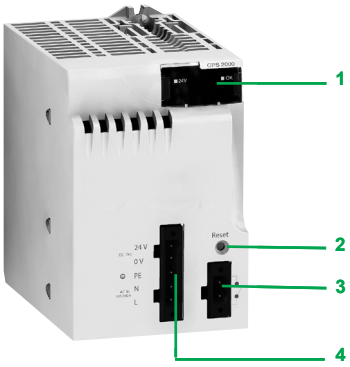
Modicon M340 automation platform
Power supply modules



Presentation

BMX CPS ●●●● power supply modules provide the power supply for each **BMX XBP ●●00** Modicon M340 rack and the modules installed on it.

The Modicon M340 power supply module offer comprises:
- Three power supply modules for DC line supplies:
  - 24 V ⎓ isolated power supply module, **BMX CPS 2010**
  - 24...48 V ⎓ isolated power supply module, **BMX CPS 3020**
  - 125 V ⎓ power supply module, **BMX CPS 3540T** (extended operating temperature -25° to +70°C)
- Two power supply modules for AC line supplies:
  - 100...240 V ∿, 20 W power supply module, **BMX CPS 2000**
  - 100...240 V ∿, 36 W power supply module, **BMX CPS 3500**

Description

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

BMX CPS ●●●● power supply modules have the following on the front panel:
1 A display block comprising:
- OK LED (green), lit if rack voltages are present and correct
- 24 V LED (green), lit when the sensor voltage is present (BMX CPS 2000/3500/3540T AC power supply modules only)

2 A pencil-point RESET pushbutton for a cold restart of the application

3 A 2-way connector that can take a removable terminal block (cage clamp or spring-type) for connecting the alarm relay

4 A 5-way connector that can take a removable terminal block (cage clamp or spring-type) for connecting the following:
- ⎓ or ∿ line supply
- Protective earth
- Dedicated 24 V ⎓ power supply for the input sensors (for BMX CPS 2000/3500/3540T AC power supply modules only)

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

BMX XTS CPS10

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

BMX XTS CPS20

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.

The operating principle is as follows:
In normal operation, with the PLC 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:
- Occurrence of a blocking fault
- Incorrect rack output voltages
- Loss of supply voltage

(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 pushbutton

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

BMX CPS 2000/3500 AC power supply modules and **BMX CPS 3540T** 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 **BMX XBP ●●00** rack must be equipped with 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 in order to determine which **BMX CPS ●●●0** power supply module is the most suitable for each rack (see page 7/16).

BMX CPS 2010/3020

BMX CPS 2000/3500

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	0.7 A	**BMX CPS 2010**	0.290
24...48 V ⎓ isolated	15 W	31.2 W	–	31.2 W	1.3 A	**BMX CPS 3020**	0.340
100...150 V ⎓	15 W	31.2 W	21.6 W	36 W *(5)*	1.3 A	**BMX CPS 3540T** *(5)*	0.340
100...240 V ∿	8.3 W	16.8 W	10.8 W	20 W	0.7 A	**BMX CPS 2000**	0.300
	15 W	31.2 W	21.6 W	36 W	1.3 A	**BMX CPS 3500**	0.360

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	**BMX XTS CPS20**	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	**BMX XTS CPS10**	0.020

*(1) Include a set of 2 cage clamp removable connectors. Spring-type connectors available separately under reference **BMX XTS CPS20**.*
(2) The sum of the power consumed on each voltage (3.3 V ⎓ and 24 V ⎓) must not exceed the total 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 PLC 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).

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
Single-rack configuration

Presentation

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

■ Mechanical function: they are used to install all the modules in a PLC 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

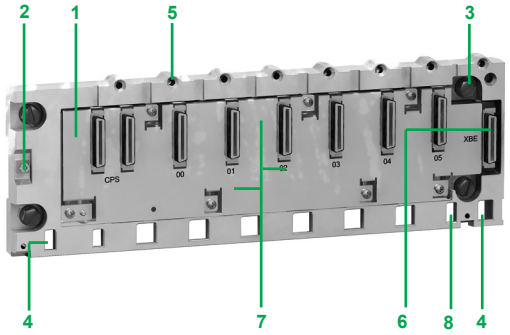
□ On machine frames, etc.

■ 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 PLC station

□ Hot swap modules during operation



BMX XBP 0600 rack with 6 slots

Description

BMX XBP ●●00 racks are available in 4, 6, 8 or 12-slot versions and comprise:

1 A metal frame that performs the following functions:
- Holds the Bus X electronic card and protects it against EMI and ESD type interference
- Holds the modules
- Gives the rack mechanical rigidity

2 An earth terminal for earthing the rack

3 4 holes (big enough for M6 screws) for mounting the rack on a frame

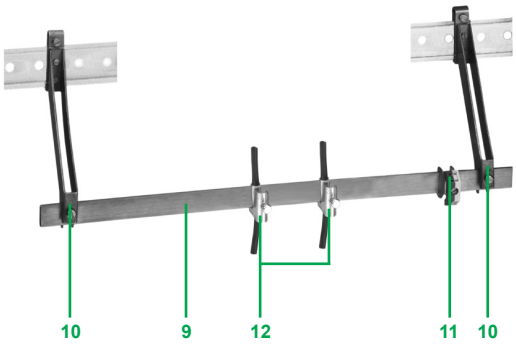
4 2 fixing points for the shielding connection bar

5 Tapped holes to take the locking screw on each module

6 A 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**…**11** (the rack is delivered with each connector protected by a cover, which must be removed before inserting the module)

8 Slots for anchoring the module pins



BMX XSP ●●00 cable shielding connection kit

To be ordered separately:

A **BMX XSP ●●00** cable shielding connection kit, used to 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 **BMX XCA USBH0●●** shielded USB cable)

The **BMX XSP ●●00** shielding connection kit comprises:

9 A metal bar that takes the clamping rings and the earthing terminal

10 Two sub-bases to be mounted on the rack

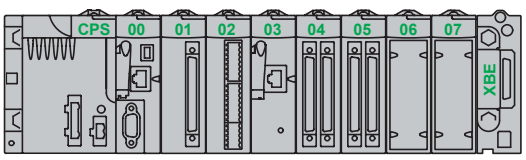
11 An earthing terminal

12 Not included in the shielding connection kit, the **STB XSP 30●0** clamping rings (sold in lots of 10, cross-section 1.5…6 mm² or 5…11 mm²)

Function

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

Each rack must contain a power supply module and a processor module.



Example of installation with 8-slot rack

Installing the modules in the rack:

□ The power supply module always occupies the **CPS** slot

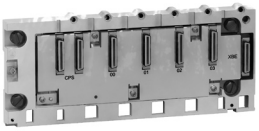
□ The processor module must always be installed in slot **00**

□ 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

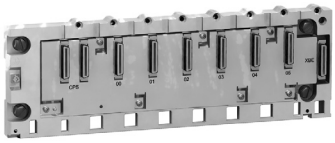
(1) For a multi-rack configuration with a BMX XBE 1000 rack expansion module (XBE slot), see page 1/12.

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

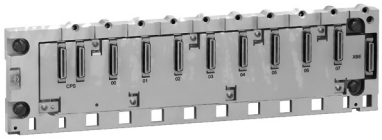
Modicon M340 automation platform
Single-rack configuration



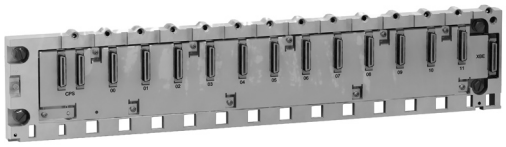
BMX XBP 0400



BMX XBP 0600



BMX XBP 0800

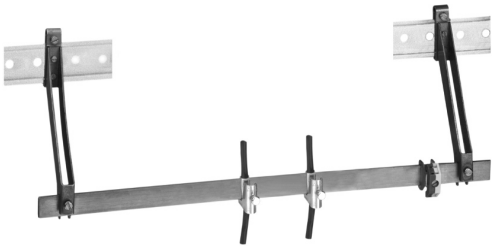


BMX XBP 1200

Racks

Description	Type of module to be inserted	No. of slots *(1)*	Reference	Weight kg
Racks	BMX CPS power supply, BMX P34 processor, I/O modules, communication modules and application-specific modules (counter, motion control and serial)	4	**BMX XBP 0400**	0.630
		6	**BMX XBP 0600**	0.790
		8	**BMX XBP 0800**	0.950
		12	**BMX XBP 1200**	1.270

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



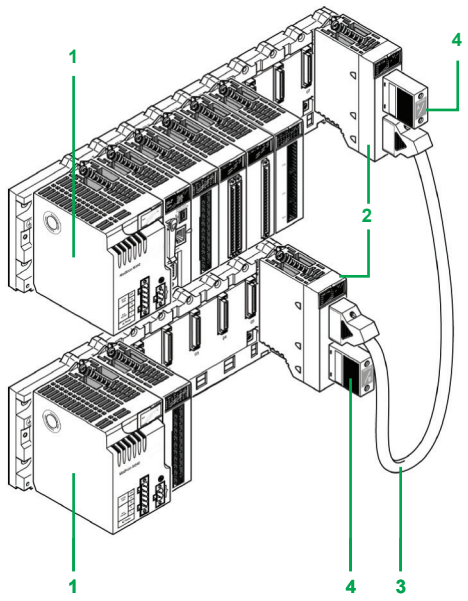
STB XSP ●●00 + STB XP 30●0

Accessories

Description	For use with	Reference	Weight kg
Shielding connection kits comprising: - 1 metal bar - 2 support sub-bases - 1 earthing terminal	BMX XBP 0400 rack	**BMX XSP 0400**	0.280
	BMX XBP 0600 rack	**BMX XSP 0600**	0.310
	BMX XBP 0800 rack	**BMX XSP 0800**	0.340
	BMX XBP 1200 rack	**BMX XSP1200**	0.400
Spring clamping rings Sold in lots of 10	Cables, cross-section 1.5...6 mm^2	**STB XSP 3010**	0.050
	Cables, cross-section 5...11 mm^2	**STB XSP 3020**	0.070
Protective covers (replacement parts) Sold in lots of 5	Unoccupied slots on BMX XBP ●●00 rack	**BMX XEM 010**	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 **BMX XBP ●●00** racks. They comprise:
- 2 racks maximum for a station with **BMX P34 1000 processor**
- 4 racks maximum for a station with **BMX P34 2●●0 processor**

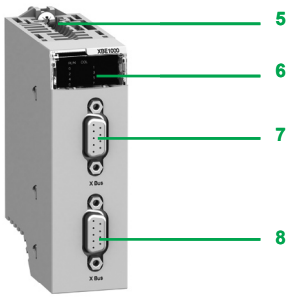
Each rack is equipped with:
1. A **BMX CPS ●●●●●** power supply
2. A **BMX XBE 1000** rack expansion module This module, inserted in the right-hand end of the rack (**XBE** slot, see page 1/10) does not occupy rack slots **00**…**11** (4, 6, 8 or 12 slots are still available)
3. The **BMX XBE 1000** rack expansion modules are connected to each other by Bus X cordsets

Bus X

The racks, distributed on the Bus X, are connected to each other by Bus X extension cordsets **3** with a total length of **30 m maximum**.
The racks are connected in a daisy chain using **BMX XBC ●●0K** *(1)* Bus X extension cordsets connected to the two 9-way SUB-D connectors **7** and **8** on the front panels of the **BMX XBE 1000 rack expansion modules 2**.

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

Note: *The processor module is always 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 **BMX XBE 1000** rack expansion module comprises:
5. Safety screw for locking the module in its slot (at the far right-hand end of the rack)
6. A 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 **BMX P34 ●●●0** processor module
- LEDs 0, 1, 2 and 3 (green): rack address 0, 1, 2 or 3

7. A 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 **TSX TLY EX 4** pack
8. A 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 **TSX TLY EX 4** pack

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

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

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

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

BMX XBE 1000

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 BMX P34 1000 processor module - Up to 4 racks with BMX P34 2●●●● processor module	**BMX XBE 1000**	0.178
Modicon M340 rack expansion kit	Complete kit for 2-rack configuration comprising: - 2 BMX XBE 1000 rack expansion modules - 1 BMX XBC 008K extension cordset, length 0.8 m - 1 TSX TLY EX line terminator (set of 2)	**BMX XBE 2005**	0.700

BMX XBC ●●●K

Cordsets and connection accessories

Description	Use	Composition	Type of connector	Length	Reference	Weight kg
Bus X extension cordsets total length 30 m max.	Between 2 BMX XBE 1000 rack expansion modules	2 x 9-way SUB-D connectors	Angled	0.8 m	**BMX XBC 008K**	0.165
				1.5 m	**BMX XBC 015K**	0.250
				3 m	**BMX XBC 030K**	0.420
				5 m	**BMX XBC 050K**	0.650
				12 m	**BMX XBC 120K**	1.440
			Straight	1 m	**TSX CBY 010K**	0.160
				3 m	**TSX CBY 030K**	0.260
				5 m	**TSX CBY 050K**	0.360
				12 m	**TSX CBY 120K**	1.260
				18 m	**TSX CBY 180K**	1.860
				28 m	**TSX CBY 280K**	2.860
Cable reel	Length of cable to be fitted with TSX CBY K9 connectors	Cable with ends with flying leads, 2 line testers	–	100 m	**TSX CBY 1000**	12.320

TSX TLY EX

Description	Use	Composition	Sold in lots of	Reference	Weight kg
Line terminators	Required on the 2 BMX XBP ●●●0 modules located at either end of the daisy chain	2 x 9-way SUB-D connectors marked A/ and /B	2	**TSX TLY EX**	0.050
Bus X straight connectors	For TSX CBY 1000 cables	2 x 9-way SUB-D straight connectors	2	**TSX CBY K9**	0.080
Connector assembly kit	Fitting TSX CBY K9 connectors	2 crimping pliers, 1 pen *(1)*	–	**TSX CBY ACC 10**	–

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

Processors: pages 2/2 and 2/14
Communication: page 3/2
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Ruggedized Modicon M340 modules: page 6/2

Contents

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

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…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 BMX FTB 2000/2010/2020		
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…264 V	19…30 V	38…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…60°C		
Compatibility with installation help system TeSys Quickfit		–		
Compatibility with pre-wired system Modicon Telefast ABE 7	Passive connection sub-bases	–		
	Adaptor sub-bases with relays	–		
References		**BMX DAI 0805**	**BMX DDI 1602**	**BMX DDI 1603**
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…120 V	125 V
3 mA (∿ or ⎓)	5 mA		2.4 mA
16 isolated inputs and 1 common			
Via BMX FTB 2000/2010/2020 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...30 V ⎓ 20…26 V ∿	40…52 V	85…132 V	88…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…60°C			-25…70°C
–			
–			
–			

BMX DAI 1602	BMX DAI 1603	BMX DAI 1604	BMX DDI 1604T
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 preassembled 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…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…60°C	
Compatibility with installation help system TeSys Quickfit		LU9 G02 splitter boxes (8 motor starters) and BMX FCC ●●1/●●3 preassembled 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 (fixed or removable), 16 channels, with common or 2 terminals per channel (screw or spring-type connection). See pages 5/2 and 5/8.	
References		**BMX DDI 3202K**	**BMX DDI 6402K**
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 preassembled cordsets**
		
⎓	⎓ and ∿ (outputs only)	⎓
Inputs: 24 V Solid-state outputs: 24 V	Inputs: 24 V ⎓ Relay outputs: 24 V ⎓ or 24…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 BMX FTB 2000/2010/2020 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…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 internal fault		
Yes		
Protected	Not protected	Protected
Positive	–	Positive
19…30 V	19...30 V ⎓ 24...240 V ∿	19…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…60°C		
–		LU9 G02 splitter boxes (8 motor starters) and BMX FCC ●●1/●●3 preassembled 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 (fixed or removable) 16 channels, with common or 2 terminals per channel (screw or spring-type connection). See pages 5/2 and 5/8.
BMX DDM 16022	**BMX DDM 16025**	**BMX DDM 3202K**
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 preassembled cordsets**	
			
Type		⎓ transistor	
Voltage		24 V	
Current per channel		0.1 A	
Modularity (Number of channels and commons)		32 **protected outputs and** 2 **commons**	64 **protected outputs and** 4 **commons**
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 internal fault	
	IEC/EN 61131-2 conformity	Yes	
	Protection	Yes	
	Logic	Positive	
Preactuator power supply (ripple included)		19…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…60°C	
Compatibility with installation help system TeSys Quickfit		LU9 G02 splitter boxes (8 motor starters) and BMX FCC ●●1/●●3 preassembled 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 (fixed 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		**BMX DDO 3202K**	**BMX DDO 6402K**
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…240 **V**		100…150 **V**	24 **V** ⎓, 24…240 **V a**
0.5 A		0.6 **A**		0.3 **A (Ith)**	2 **A (Ith)**
16 protected outputs and 1 common		16 non-protected outputs and 4 commons		8 non-protected outputs, without common	16 non-protected outputs and 2 commons
Via BMX FTB 2000/2010/2020 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 internal fault		Configurable output fallback			
Yes		Yes			
Yes		–			
Positive *(source)*	Negative *(sink)*	–			
19…30 V		100…240 V	100…150 V	19...30 V ⎓ 24...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…60°C			-25…70°C	0…60°C	
–					
–					
–					

BMX DDO 1602	BMX DDO 1612	BMX DAO 1605	BMX DRA 0804T	BMX DRA 0805	BMX DRA 1605

Modicon M340 automation platform
Discrete I/O modules

Presentation

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

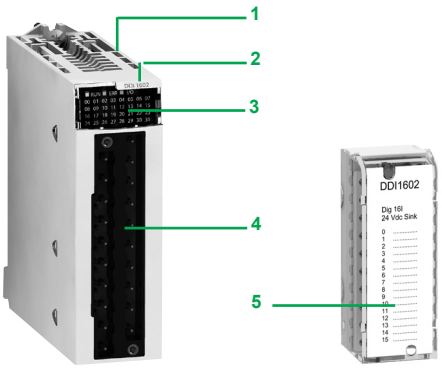
This wide range of "discrete" I/O can be used to meet whatever requirements arise in terms of:
- Functions, AC or DC I/O, positive or negative logic
- Modularity, 8, 16, 32 or 64 channels per module

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

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

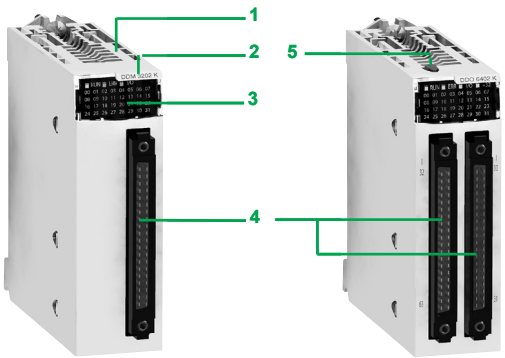


Module for connection via 20-way removable terminal block

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:
5 A **BMX FTB 20●0** 20-way removable terminal block (identification label supplied with each I/O module) or a preassembled 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)

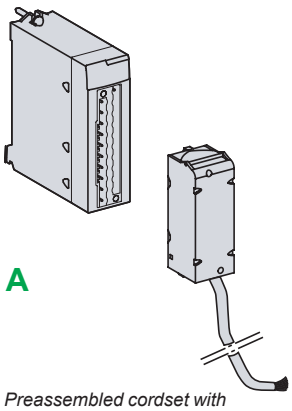
I/O modules connected via 40-way connector(s)

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 pushbutton which, with successive presses, displays the state of channels 0...31 or 32...63 on the display block **3** (see page 2/10)

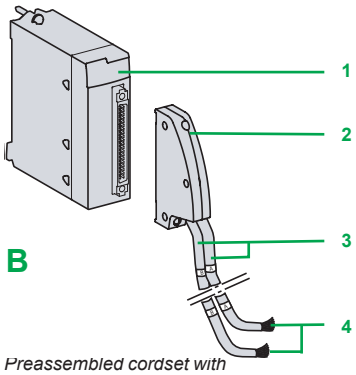
To be ordered separately, depending on the type of module:
One or two preassembled cordset(s) with a 40-way connector (see page 2/9)

(1) Fujitsu FCN 40-way connector

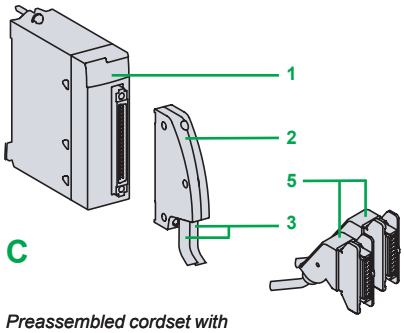
Modicon M340 automation platform
Discrete I/O modules



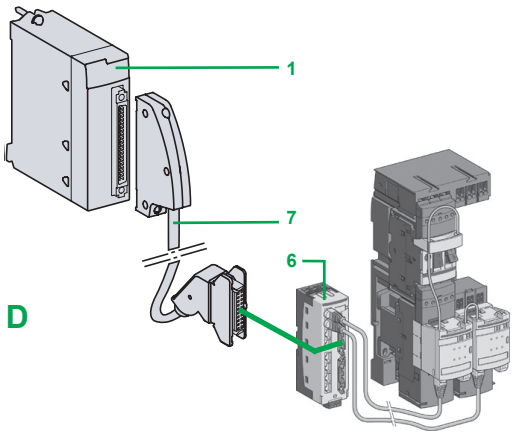
Preassembled cordset with 20-way removable terminal block at one end and flying leads at the other



Preassembled cordset with 40-way connector and two ends with flying leads



Preassembled cordset with 40-way connectors and HE10 connectors for Modicon Telefast ABE 7 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 take:
- Bare wires
- Wires equipped with **DZ5 CE** cable ends

A : One version of the removable terminal block is equipped with 3, 5 or 10 m cordsets with colour-coded flying leads (**BMX FTW●●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)

BMX FTB 2000 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)

BMX FTB 2010 screw clamp connectors are equipped with captive screws (maximum tightening torque 0.5 N.m).

Spring terminals

The capacity of each terminal in the **BMX FTB 2020** 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

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

B : Preassembled 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 preassembled cordsets comprise:
- 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) (**BMX FCW ●●1**)
  - Two sheaths **3**, each containing 20 wires with a cross-section of 0.34 mm² (AWG 22) (**BMX FCW ●●3**)
- At the other end, colour-coded flying leads **4** conforming to standard DIN 47100.

Preassembled 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 ABE 7 rapid wiring connection and adaptation interfaces, (see page 5/8).
These preassembled cordsets comprise:
- At one end, a 40-way connector **2** with either of the following:
  - One sheath containing 20 wires (**BMX FCC ●●1**)
  - Two sheaths**3** each containing 20 wires (**BMX FCC ●●3**)
- At the other end, one or two HE 10 connectors **5**.

Connection to TeSys Quickfit system

D : **1 BMX DDI 3202K/6402K** input modules, **BMX DDO 3202K/6402K** output modules and **BMX DDM 3202K** mixed I/O modules with 40-way connectors are designed, amongst 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 BMX FCC ●●1**/**●●3** preassembled 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 BMX DDO 6402K

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 ensures and limits the current consumed at the inputs.

■ **Protection of DC outputs**: All active transistor outputs are protected against overload, short-circuits, reverse polarity and inductive over-voltage.

■ **Reactivation of DC outputs**: If a fault has caused an output to trip, the output can be reactivated using this parameter if no other 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 PLC.

■ **Output fallback**: This parameter defines the fallback mode used by the DC transistor outputs when the PLC 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 PLC stops.

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

Diagnostics via Unity Pro:
Using the integrated diagnostics in Unity Pro, 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

Modicon M340 automation platform
Discrete I/O modules

Complementary characteristics

The following characteristics complement those introduced in the selection guide on pages 2/2 to 2/7.

DC input modules BMX DDI 16●●/1604T/3202K/6402K and BMX DAI 1602

- Input impedance at nominal voltage: 6.4 to 19.2 kΩ, depending on model
- Reverse polarity: Protection for modules BMX DDI 1602/1603/3202K
- Paralleling of inputs *(1)*: Yes, for modules BMX DDI 1602/1603
- Dielectric strength between group of channels: 500 V ⎓ for modules BMX DDI 3202K/6402K
- Temperature derating for module BMX DDI 1604T: No derating up to 40°C, a maximum of 25% of inputs at state 1 at 70°C

AC input modules BMX DAI 16●●/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 BMX DAO 1605

- Current via common: 2.4 A
- Current for all 4 commons together: 4.8 A

DC transistor output modules BMX DDO 16●●/3202K/6402K

- Dielectric strength between groups of channels: 500 V ⎓ for modules BMX DDO 3202K/6402K

Relay output modules BMX DRA 080●●/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 BMX DDM 16025

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

DC mixed I/O modules BMX DDM 16022/3202K

- 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 BMX DDI 16022 and a maximum of 3 outputs for module BMX DDI 3202K

(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

BMX DDI 160●●
BMX DAI ●●●●

BMX DDI 3202K

BMX DDI 6402K

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)	**BMX DDI 1602**	0.115
		One 40-way connector	Type 3	32 isolated inputs (2 x 16)	**BMX DDI 3202K**	0.110
		Two 40-way connectors	Non-IEC	64 isolated inputs (4 x 16)	**BMX DDI 6402K**	0.145
	24 V (negative logic)	Screw or spring-type 20-way removable terminal block	Non-IEC	16 isolated inputs (1 x 16)	**BMX DAI 1602**	0.115
	48 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMX DDI 1603**	0.115
	125 V (positive logic)	Screw or spring-type 20-way removable terminal block		16 isolated inputs (1 x 16)	**BMX DDI 1604T**	0.144
∼	24 V	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMX DAI 1602**	0.115
	48 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMX DAI 1603**	0.115
	100…120 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMX DAI 1604**	0.115
	200…240 V	Screw or spring-type 20-way removable terminal block	Type 2	8 isolated inputs (1 x 8)	**BMX DAI 0805**	0.152

BMX DDO 16●2

BMX DRA 0805/1605

BMX DDO 3202K

BMX DDO 6402K

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 outputs (1 x 16)	**BMX DDO 1602**	0.120
	24 V/0.5 A (negative logic)	20-way removable terminal block, screw or spring-type	–	16 protected outputs (1 x 16)	**BMX DDO 1612**	0.120
	24 V/0.1 A (positive logic)	One 40-way connector	Yes	32 protected outputs (2 x 16)	**BMX DDO 3202K**	0.110
		Two 40-way connectors	Yes	64 protected outputs (4 x 16)	**BMX DDO 6402K**	0.150
∼ triac	100…240	20-way removable terminal block, screw or spring-type	–	16 outputs (4 x 4)	**BMX DAO 1605**	0.140
⎓ relay	100…150 V ⎓/ 0.3 A	20-way removable terminal block, screw or spring-type	Yes	8 non-protected outputs	**BMX DRA 0804T**	0.178
⎓ or ∼ relay	24 V ⎓/2 A 24…240 V ∼/ 2 A	20-way removable terminal block, screw or spring-type	Yes	8 non-protected outputs (without common)	**BMX DRA 0805**	0.145
		20-way removable terminal block, screw or spring-type	Yes	16 non-protected outputs (2 x 8)	**BMX DRA 1605**	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.

Modicon M340 automation platform

Discrete I/O modules

Mixed I/O modules, accessories

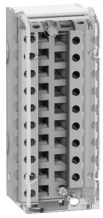
BMX DDM 1602●

BMX DDM 3202K

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	**BMX DDM 16022**	0.115
			8, relay 24 V ⎓ or 24…240 V ∿ (1 x 8)	Inputs, type 3	**BMX DDM 16025**	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	**BMX DDM 3202K**	0.110



BMX FTB 2000

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	**BMX FTB 2000**	0.093
		Screw clamp	**BMX FTB 2010**	0.075
		Spring	**BMX FTB 2020**	0.060

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

Description	Composition	Cross-section	Length	Reference	Weight kg
Preassembled 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 (BMX FTB 2020) and one end with colour-coded flying leads	0.324 mm²	3 m	**BMX FTW 301**	0.850
			5 m	**BMX FTW 501**	1.400
			10 m	**BMX FTW 1001**	2.780

BMX FTW ●01

Preassembled 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
Preassembled cordsets with one end with flying leads	1 x 20 wires (16 channels)	One 40-way connector and one end with colour-coded flying leads	0.324 mm²	3 m	**BMX FCW 301**	0.820
				5 m	**BMX FCW 501**	1.370
				10 m	**BMX FCW 1001**	2.770
	2 x 20 wires (32 channels) (2)	One 40-way connector and two ends with colour-coded flying leads	0.324 mm²	3 m	**BMX FCW 303**	0.900
				5 m	**BMX FCW 503**	1.490
				10 m	**BMX FCW 1003**	2.960

BMX FCW ●03

Preassembled cordsets for Modicon Telefast ABE 7 sub-bases	1 x 20 wires (16 channels)	One 40-way connector and one HE 10 connector	0.324 mm²	0.5 m	**BMX FCC 051**	0.140
				1 m	**BMX FCC 101**	0.195
				2 m	**BMX FCC 201**	0.560
				3 m	**BMX FCC 301**	0.840
				5 m	**BMX FCC 501**	1.390
				10 m	**BMX FCC 1001**	2.780
	2 x 20 wires (32 channels) (2)	One 40-way connector and two HE 10 connectors	0.324 mm²	0.5 m	**BMX FCC 053**	0.210
				1 m	**BMX FCC 103**	0.350
				2 m	**BMX FCC 203**	0.630
				3 m	**BMX FCC 303**	0.940
				5 m	**BMX FCC 503**	1.530
				10 m	**BMX FCC 1003**	3.000

BMX FCC ●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		Multirange	
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	750 V⎓	
Connection	Directly to the module	Via 40-way connector	Via two 40-way connectors
	Via preassembled cordsets	Cordsets with one end with colour-coded flying leads BMX FCW ●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	ABE 7CPA412	
	Type of preassembled cordsets	BMX FCA ●●2 (1.5, 3 or 5 m long)	
References		**BMX ART 0414**	**BMX ART 0814**
Page		2/22	

Analog inputs

Isolated high-level inputs	Non-isolated high-level inputs	Isolated high-level inputs
Voltage/current		
± 10 V, 0…10 V, 0...5 V, 1..5 V, ± 5 V		
0...20 mA, 4…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) BMX FTB 20●0	Via 28-way removable terminal block (spring-type) BMX FTB 2820	
Cordsets with one end with colour-coded flying leads BMX FTW ●01S (3 or 5 m long)	Cordsets with one end with colour-coded flying leads BMX FTW ●08S (3 or 5 m long)	
4-channel sub-base for direct connection of 4 inputs, delivers and distributes 4 protected isolated power supplies. See page 5/8	8-channel sub-base for direct connection of 8 current/voltage inputs. See page 5/8	
ABE 7CPA410	ABE 7CPA02/03/31/31E	ABE 7CPA02/31/31E
BMX FCA ●●0 (1.5, 3 or 5 m long)	BMX FTA ●●0 (1.5 or 3 m long)	

BMX AMI 0410	BMX AMI 0800	BMX AMI 0810
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...20 mA, 4…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: 1400 V ⎓		
Connection	Directly to the module	Via 20-way removable terminal block (screw or spring-type) BMX FTB 20●0		
	Via preassembled cordsets	Cordsets with one end with colour-coded flying leads BMX FTW ●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	ABE 7CPA21		ABE 7CPA02
	Type of preassembled cordsets	BMX FCA ●●0 (1.5, 3 or 5 m long)		BMX FTA ●●2 (1.5 or 3 m long)
References		**BMX AMO 0210**	**BMX AMO 0410**	**BMX AMO 0802**
Page		2/22		

Mixed analog I/O

Non-isolated high-level inputs and outputs
Voltage/current
Inputs: ± 10 V, 0…10 V, 0...5 V, 1..5 V Outputs: ± 10 V
Inputs: 0...20 mA, 4…20 mA Outputs: 0...20 mA, 4…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…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: 1400 V ⎓
Via 20-way removable terminal block (screw or spring-type) BMX FTB 20●0
BMX FTW ●01S cordsets with one end with colour-coded flying leads (3 or 5 m long)
–
–
–

BMX AMM 0600

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Modicon M340 automation platform
Analog I/O modules

Presentation

The Modicon M340 analog I/O module offer comprises:

■ 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 **BMX ART 0414/0814**

□ 1 module with 4 high-speed isolated analog channels, high-level voltage or current, 16 bits **BMX AMI 0410**

□ 2 modules with 8 high-speed non-isolated analog channels, high-level voltage or current, 15 bits + sign **BMX AMI 0800/0810**

■ 3 analog output modules:

□ 1 module with 2 isolated analog channels, high-level voltage or current, 15 bits + sign **BMX AMO 0210**

□ 1 module with 4 isolated analog channels, high-level voltage or current, 15 bits + sign **BMX AMO 0410**

□ 1 module with 8 non-isolated analog channels, high-level current, 15 bits + sign **BMX AMO 0802**

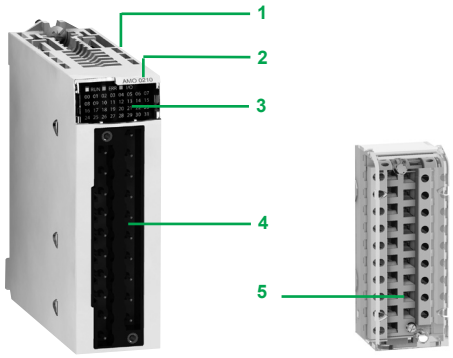
■ 1 mixed analog I/O module with 4 input channels and 2 output channels (non-isolated), voltage or current, 12 to 14 bits according to type of channel and range **BMX AMM 0600**

Analog I/O modules are equipped with a connector for a 20 or 28-way removable terminal block, except for **BMX ART 0414/0814** analog input modules for thermocouples/temperature probes, which are equipped with one or two 40-way connector(s).

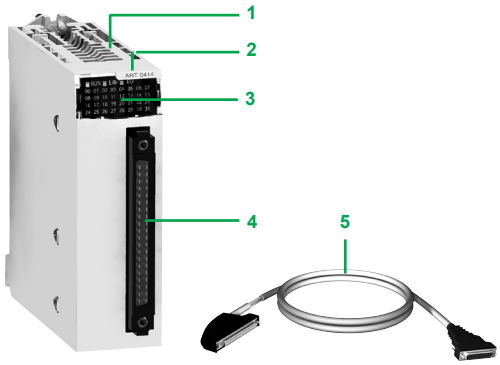
All analog modules occupy a single slot in **BMX XBP ●●●** racks. These modules can be installed in any slot in the rack, except the first two (PS and 00) which are reserved for the power supply module in the **BMX CPS●●0** rack and the **BMX P34●●0** processor module respectively.

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

BMX AM●/ART analog I/O modules are standard format (1 slot). They have a case, which ensures 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

BMX AM● analog I/O modules feature the following:

1 A rigid body providing support and protection for the electronic card
2 A module reference marking (a label is also visible on the right-hand side of the module)
3 A module and channel status display block
4 A 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:

5 A **BMX FTB 20●0** or **BMX FTB 2820** 20 or 28-way removable terminal block (referencing label supplied with each I/O module) or pre-wired cables with:
- A 20-way terminal block at one end and flying leads at the other (**BMX FTW ●01S)**
- A 28-way terminal block at one end and flying leads at the other (**BMX FTW ●08S)**
- A 20 or 28-way terminal block and a 25-way SUB-D connector (**BMX FCA ●●0** or **BMX FTA ●●0**), for connection to Modicon Telefast ABE 7 sub-bases (see page 2/23).

I/O modules connected via 40-way connector

BMX ART analog input modules have the following on the front panel:

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

To be ordered separately:

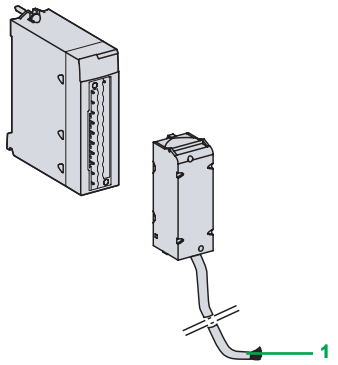
5 Pre-wired cables with:
- A 40-way connector at one end and flying leads at the other **BMX FCW ●01S**
- A 40-way connector and a 25-way SUB-D connector (**BMX FCA ●●2**) for direct connection to the Modicon Telefast ABE 7 sub-bases (see page 2/23)

Must be ordered separately:

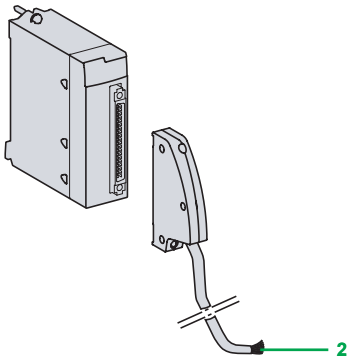
■ A shielding connection kit to protect against electrostatic discharge, consisting of a metal bar and two sub-bases for mounting on the rack supporting the analog modules

■ A set of **STB XSP 3020** clamping rings for the shielding braids of analog signal cables

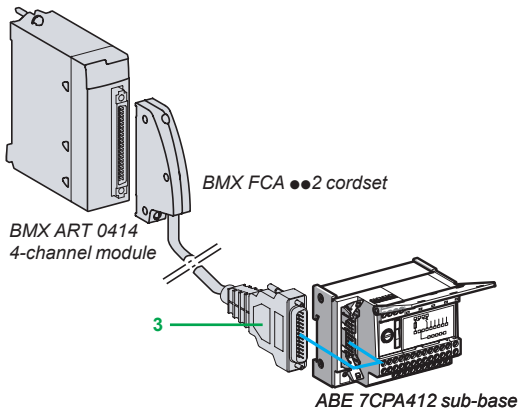
Modicon M340 automation platform
Analog I/O modules



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



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



Connecting modules with removable terminal blocks

BMX AMI 0410, BMX AMO and BMX AMM modules with 20-way terminal block

The 20-way removable terminal blocks (**BMX FTB 20●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 colour-coded flying leads (**BMX FTW ●01S**). These preassembled cordsets with reinforced shielding have colour-coded flying leads at the other end **1**.

BMX AMI 0800/0810 modules with 28-way terminal block

The 28-way removable terminal blocks (**BMX FTB 2820**) are spring-type.

One version of the removable terminal block is equipped with a 3 or 5 m cordset with colour-coded flying leads (**BMX FTW ●08S**). These preassembled cordsets with reinforced shielding have colour-coded flying leads at the other end **1**.

Connecting modules with 40-way connectors

BMX ART 0●14 modules with 40-way connectors

Two types of cordset are available:

- Preassembled cordsets with reinforced shielding (**BMX FCW ●01S**) which have colour-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.
- Preassembled cordsets with reinforced shielding (**BMX FCA ●02**) which 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 **ABE 7CPA412** sub-base (see below).

Use with Modicon Telefast ABE 7 sub-bases

Using the Modicon Telefast ABE 7 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 ABE 7CPA410 sub-base

The Modicon Telefast **ABE 7CPA410** sub-base is mainly used in conjunction with the **BMX AMI 0410** 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, protected and limited to 25 mA, while maintaining isolation between channels
- Protect the current impedance matching resistors integrated in the sub-base against overvoltages

Connection is via the **BMX FCA ●●0** cordset (1.5, 3 or 5 m long).

Modicon Telefast ABE 7CPA412 sub-base

The Modicon Telefast **ABE 7CPA412** sub-base is specially designed as a wiring interface for the **BMX ART 0414** and **BMX ART 0814** 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
- Ensure continuity of the shielding

The **BMX ART 0814** module requires two Modicon Telefast **ABE 7CPA412** sub-bases. The connection with each sub-base is made via a **BMX FCA ●●2** cordset (1.5, 3 or 5 m long).

Modicon Telefast ABE 7CPA21 sub-base

The Modicon Telefast **ABE 7CPA21** sub-base is compatible with the **BMX AMO 0210** output module. This sub-base allows you to:

- Directly connect 2 current/voltage outputs
- Ensure continuity of the shielding

Connection is via the **BMX FCA ●●0 3** cordset (1.5, 3 or 5 m long).

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Use with Modicon Telefast ABE 7 sub-bases (continued)

Modicon Telefast ABE 7CPA02 sub-base

The Modicon Telefast **ABE 7CPA02** sub-base can be used in combination with:
- The **BMX AMI 0800/0810** analog current input modules with 8 inputs
- The **BMX AMO 0802** analog current output modules with 8 outputs

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

The **BMX AMI 0800/0810** modules are connected by means of the 1.5 or 3 m long **BMX FTA ●●0** cables.

The **BMX AMO 0802** module is connected by means of the 1.5, 3 or 5 m long **BMX FTA ●●2** cables.

Modicon Telefast ABE 7CPA03 sub-base

The Modicon Telefast **ABE 7CPA03** sub-base can be used in combination with the **BMX AMI 0800** 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 protected and limited to 25 mA
- Ensure continuity of the shielding

The **BMX AMI 0800** module is connected by means of the 1.5 or 3 m long **BMX FTA ●●0** cables.

Modicon Telefast ABE 7CPA31/31E sub-bases

The Modicon Telefast **ABE 7CPA31/31E** sub-bases can be used in combination with the **BMX AMI 0800/0810** 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
- Ensure continuity of the shielding

The **BMX AMI 0800/0810** modules are connected by means of the 1.5 or 3 m long **BMX FTA ●●0** cables.

Complementary characteristics

BMX ART 0414/0814 analog input modules

BMX ART 0414/0814 modules are multirange 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…400 or 0…4000 Ω, 2, 3 or 4-wire
- Voltage: ± 40 mV, ± 80 mV, ± 160 mV, ± 320 mV, ± 640 mV, ± 1.28 V

BMX AMI 0410 analog input modules

The **BMX AMI 0410** 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…10 V, 0…5 V and 1…5 V
- Current 0…20 mA, 4…20 mA and ± 20 mA, depending on the choice made during configuration

BMX AMI 0800/0810 analog input modules

The **BMX AMI 0800/0810** 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…10 V, 0…5 V, 1…5 V, ± 5 V
- Current: 0…20 mA and 4…20 mA

Modicon M340 automation platform

Analog I/O modules

Input modules, output modules and mixed module

Complementary characteristics

BMX AMO 0210 analog output module

The **BMX AMO 0210** module is a module with 2 high-level isolated outputs (0.15 bits + sign).

The **BMX AMO 0210** module offers the following ranges for each of the inputs depending on the choice made during configuration:

- Voltage: ± 10 V
- Current: 0…20 mA and 4…20 mA

BMX AMO 0410/0802 analog output modules

The **BMX AMO 0410/0802** analog output modules are modules with 4 or 8 high-level isolated/non-isolated analog outputs (16 bits/15 bits + sign).

The **BMX AMO 0410** module offers the following ranges for each of the outputs depending on the choice made during configuration:

- Voltage: ± 10 V
- Current: 0…20 mA and 4…20 mA

The **BMX AMO 0802** module offers the current ranges 0…20 mA and 4…20 mA.

BMX AMM 0600 analog mixed I/O module

The **BMX AMM 0600** 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…10 V, 0…5 V and 1…5 V
- Current: 0…20 mA and 4…20 mA

References

BMX AM● 0●●0

BMX ART 0414

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…10 V, 0…5 V, 1…5 V, ± 5 V, 0…20 mA, 4…20 mA, ± 20 mA	16 bits	Removable terminal block, 20-way cage clamp, screw clamp or spring-type	4 channels	**BMX AMI 0410**	0.143
High-level inputs non-isolated	± 10 V, 0…10 V, 0…5 V, 1…5 V, ± 5 V, 0…20 mA	15 bits + sign	Removable terminal block, 28-way, spring-type	8 channels	**BMX AMI 0800**	0.175
Isolated high-level inputs	± 10 V, 0…10 V, 0…5 V, 1…5 V, ± 5 V, 0…20 mA,	15 bits + sign	Removable terminal block, 28 way, spring-type	8 channels	**BMX AMI 0810**	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	**BMX ART 0414**	0.135
				8 channels	**BMX ART 0814**	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…20 mA, 4…20 mA	16 bits	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	2 channels	**BMX AMO 0210**	0.144
High-level outputs isolated	± 10 V, 0…20 mA, 4…20 mA, ± 20 mA	15 bits + sign	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	4 channels	**BMX AMO 0410**	0.175
High-level outputs non-isolated	0…20 mA, 4…20 mA	15 bits + sign	Removable terminal block, 20-way, cage clamp, screw clamp or spring-type	8 channels	**BMX AMO 0802**	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…10 V, 0…5 V, 1…5 V, 0…20 mA, 4…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	**BMX AMM 0600**	0.155

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

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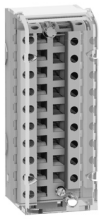
Modicon M340 automation platform

Analog I/O modules

Accessories



BMX FTB 20●0

BMX FTW ●01S

ABE 7CPA41●/21

BMX FCA ●●0

BMX FCA ●●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	BMX AMI 0410 BMX AMO 0210 MX AMO 0410 MX AMO 0802 BMX AMM 0600	Cage clamp	–	**BMX FTB 2000**	0.093
		Screw clamp	–	**BMX FTB 2010**	0.075
		Spring	–	**BMX FTB 2020**	0.060
28-way removable terminal block	BMX AMI 0800 BMX AMI 0810	Spring	–	**BMX FTB 2820**	0.080
Preassembled cordsets	BMX AMI 0410 BMX AMO 0210 MX AMO 0410 MX AMO 0802 BMX AMM 0600	One 20-way terminal block (BMX FTB 2020) and one end with colour-coded flying leads	3 m	**BMX FTW 301S**	0.470
			5 m	**BMX FTW 501S**	0.700
	BMX AMI 0800 BMX AMI 0810	1 removable terminal block, 28-way, MX FTB 2820, and one end with colour-coded flying leads	3 m	**BMX FTW 308S**	0.435
			5 m	**BMX FTW 508S**	0.750
	BMX ART 0414 BMX ART 0814	One 40-way connector and one end with colour-coded flying leads	3 m	**BMX FCW 301S**	0.480
			5 m	**BMX FCW 501S**	0.710

Modicon Telefast ABE 7 pre-wired system

Description	For use with modules	Type, composition	Length or connection technology	Reference	Weight kg
Modicon Telefast ABE 7 sub-bases	BMX AMI 0410	Distribution of isolated power supplies Delivers 4 protected isolated power supplies for 4…20 mA inputs. Direct connection of 4 inputs	Screws	**ABE 7CPA410**	0.180
	BMX ART 0414 BMX ART 0814 *(2)*	Connection and provision of cold-junction compensation for thermocouples Direct connection of 4 inputs	Screws	**ABE 7CPA412**	0.180
	BMX AMO 0210 BMX AMO 0410	Direct connection of 2/4 outputs	Screws	**ABE 7CPA21**	0.210
	BMX AMI 0800 BMX AMI 0810 BMX AMO 0802	Point-to-point connection of 8 I/O	Screws	**ABE 7CPA02**	0.317
	BMX AMI 0800	Direct connection of 8 inputs Delivers 8x 24 V ⎓ power supplies limited to 25 mA to the 8 current inputs	Screws	**ABE 7CPA03**	0.307
	BMX AMI 0800 BMX AMI 0810	Direct connection of 8 inputs Delivers 8x 24 V ⎓ power supplies isolated and limited to 25 mA to the 8 current inputs	Screws	**ABE 7CPA31**	0.498
			Spring	**ABE 7CPA31E**	0.508
Preassembled cordsets for Modicon Telefast ABE 7 sub-bases	BMX AMI 0410 BMX AMO 0210 BMX AMO 0410	One 20-way removable terminal block and one 25-way SUB-D connector for ABE 7CPA410/ CPA21 sub-base	1.5 m	**BMX FCA150**	0.320
			3 m	**BMX FCA300**	0.500
			5 m	**BMX FCA500**	0.730
	BMX ART 0414 BMX ART 0814 *(2)*	One 40-way connector and one 25-way SUB-D connector for ABE 7CPA412 sub-base	1.5 m	**BMX FCA152**	0.330
			3 m	**BMX FCA302**	0.510
			5 m	**BMX FCA502**	0.740
	BMX AMI 0800 BMX AMI 0810	One 28-way removable terminal block and one 25-way SUB-D connector for sub-bases ABE 7CPA02/03/31/31E	1.5 m	**BMX FTA 150**	0.374
			3 m	**BMX FTA 300**	0.500
	BMX AMO 0802	One 20-way removable terminal block and one 25-way SUB-D connector for ABE 7CPA02 sub-bases	1.5 m	**BMX FTA 152**	0.374
			3 m	**BMX FTA 302**	0.500

*(1) The shielding on the cordsets carrying the analog signals must always be connected to the **BMX XSP●●00** shielding connection kit mounted under the rack holding the analog modules (see page 1/11).*

*(2) The **BMX ART 0814** 8-channel module requires two **ABE 7CPA412** sub-bases and two **BMX FCA●●2** cordsets.*

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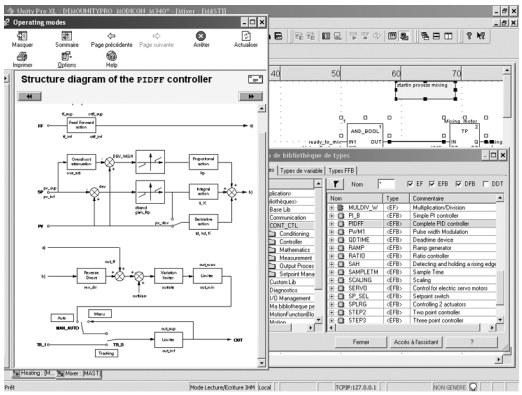
Modicon M340 automation platform
Programmable process control
Unity Pro software



CONT_CTL, programmable process control integrated in Unity Pro

Process control in machines

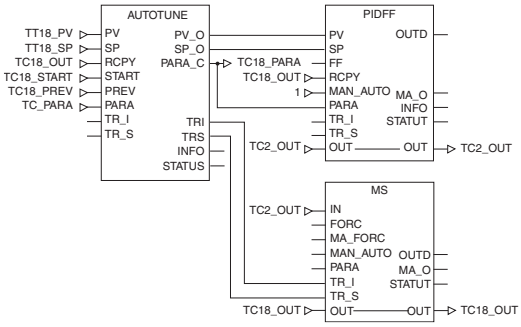
Unity Pro contains CONT_CTL, a library of 36 function blocks used to create control loops for machine control.

All requirements for closed loop control functions in machines are adequately met by Modicon M340 thanks to the wealth of functions in the library and the flexibility with which function blocks can be linked together through programming. This solution therefore eliminates 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 all Unity Pro languages i.e. 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

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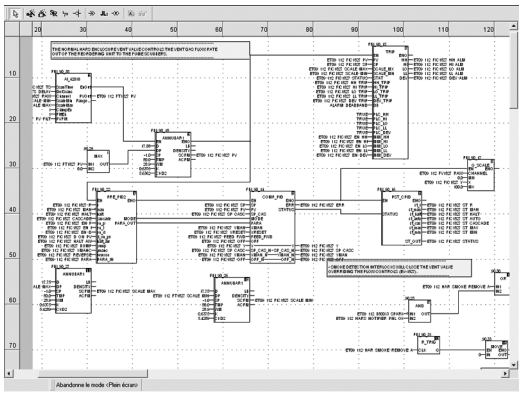


Programming in Unity Pro in offline mode

CONT_CTL library functions (continued)

Measurement processing

AVGMV	Moving average with fixed 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

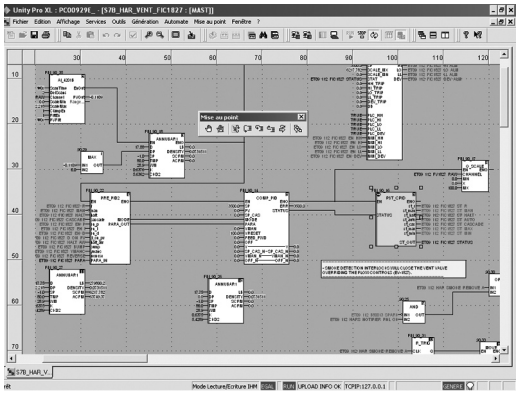
Setpoint management

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

Setting-up

Setting up 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

All Unity Pro's standard debugging services (see page 4/4) are available.
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 all versions of Unity Pro. It is compatible with all processors in the Modicon M340, Premium, Quantum and Atrium ranges.

Resources

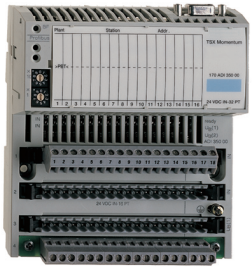
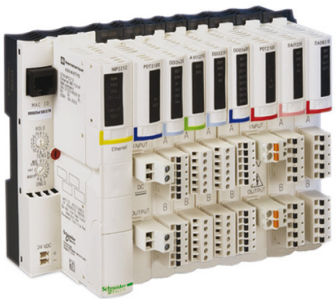
The technical documentation provides many examples of how to set up programmable process control function blocks in FBD, LD, IL and ST languages.

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		**FTB 1**	**ETB 1E●●●**	**FTM 1**
Page		Please consult the catalogue 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		
170 AD●	**OTB 1●0 DM9LP**	**STB ●●●**

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

Modicon M340 automation platform

BMX EHC 0200/0800 counter modules

Presentation

BMX EHC 0200 and **BMX EHC 0800** 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
BMX EHC 0200	2	60 KHz	Upcounting Downcounting Period meter Frequency meter Frequency generator Axis control	6	2
BMX EHC 0800	8	10 KHz	Upcounting Downcounting Measurement	2	–

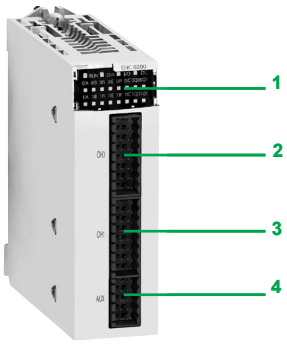
The sensors used on each channel can be:
- 2-wire 24 V proximity sensors
- 3-wire 24 V proximity sensors
- 10/30 V output signal incremental encoders with push-pull outputs

BMX EHC 0200/0800 counter modules can be used to meet the demands of applications such as:
- 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

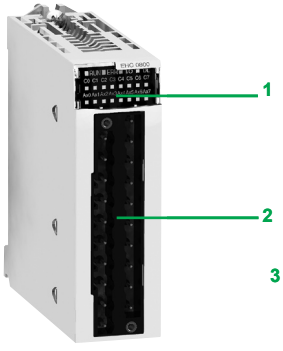
These standard format modules can be installed in any available slot of a Modicon M340 PLC. They are hot-swappable.

In a Modicon M340 PLC configuration, the number of **BMX EHC 0200/0800** 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.



BMX EHC 0200



BMX EHC 0800

BMX FTB 20●0

Description

BMX EHC 0200/0800 counter modules are standard format. They occupy a single slot in **BMX XBP ●●●** racks. They come in a plastic case, which ensures IP 20 protection of the electronics, and are locked into position by a captive screw.

BMX EHC 0200 module, 2 channels, 60 KHz

The front panel of the **BMX EHC 0200** 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:
- **A BMX XTS HSC 20** kit containing two 16-pin connectors and one 10-pin connector
- A **BMX XSP ●●00** shielding connection kit if the rack is not already equipped with one (see page 1/11).

BMX EHC 0800 module, 8 channels, 10 KHz

The front panel of the **BMX EHC 0800** counter module features:
1. Module and channel status display block
2. Connector taking the 3 **BMX FTB 20●0** 20-way removable terminal block (same as that of I/O modules)

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

Modicon M340 automation platform
BMX EHC 0200/0800 counter modules

Operating modes for module BMX EHC 0200

8 configurable modes	Frequency meter	This mode measures a frequency, speed, data rate or an event stream. As standard, this mode measures the frequency received on the IN A input. This frequency is always 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 intended for applications such as flowmeters, mixers, etc. ■ Ratio 2: Used to subtract 2 frequencies. This is intended 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 which, starting from a user-defined preset value, 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 BMX EHC 0800

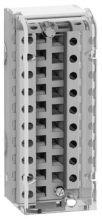
5 configurable 16-bit modes	Frequency meter	This mode measures a frequency, speed, rate or data stream control. As standard, this mode measures the frequency received on the IN A input. This frequency is always expressed in Hz (number of pulses per second), with a precision of 1 Hz. The maximum frequency 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

BMX EHC 0200/0800 counter modules

BMX EHC 0200

BMX EHC 0800



BMX FTB 20●0

References

BMX EHC 0200/0800 counter modules *(1)*

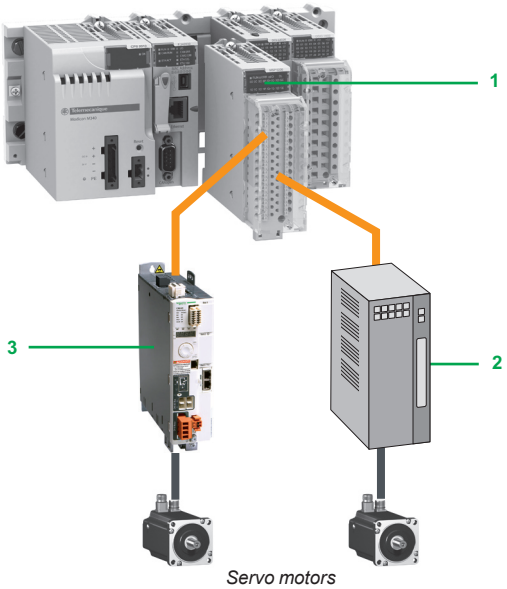
Description	No. of channels	Characteristics	Reference	Weight kg
Counter modules for 24 V ⎓ 2 and 3-wire sensors and 10/30 V ⎓ incremental encoders with push-pull outputs	2	60 kHz counting	**BMX EHC 0200**	0.112
	8	10 kHz counting	**BMX EHC 0800**	0.113

Connection accessories *(2)*

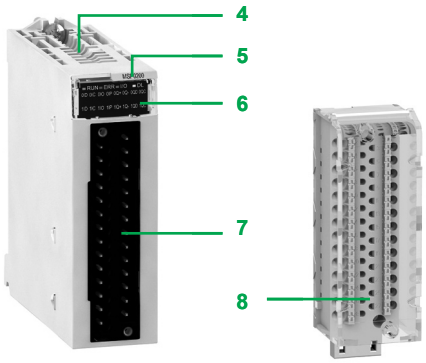
Description	Composition	Unit reference	Weight kg
Pack of connectors for BMX EHC 0200 module	Two 16-way connectors and one 10-way connector	**BMX XTS HSC 20**	0.021
20-way removable terminal blocks for BMX EHC 0800 module	Cage clamp	**BMX FTB 2000**	0.093
	Screw clamp	**BMX FTB 2010**	0.075
	Spring	**BMX FTB 2020**	0.060
Shielding connection kit for BMX EHC 0200/0800 modules	Comprising a metal bar and two support bases for mounting on rack	See page 1/11	–

(1) Typical consumption: See the power consumption table on page 7/16.
(2) The shielding on the cordsets carrying the counter signals must always be connected to the ***BMX XSP●●00*** *shielding connection kit mounted under the rack which holds the* ***BMX EHC 0200*** *module (see page 1/11).*

Modicon M340 automation platform
BMX MSP 0200 motion control module



Servo motors



BMX MSP 0200 *BMX FTB 2820*

Presentation

The 1 **BMX MSP 0200** motion control *pulse train output* (PTO) module for the Modicon M340 automation platform is used for controlling third-party variable speed drives 2 which have an integrated position loop and inputs that are compatible with open collector outputs.

The **BMX MSP 0200** control module is also directly compatible with the Lexium 32C and 32M 3 servo drive ranges, which have an integrated pulse control interface.

The **BMX MSP 0200** 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 **BMX P34 1000**: Maximum of 20 application-specific channels *(1)*
- Performance **BMX P34 20●0**: Maximum of 36 application-specific channels *(1)*

Description

The **BMX MSP 0200** 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 front panel of the **BMX MSP 0200** motion control module features:

4 A rigid body providing support and protection for the electronic card

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

6 A 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 A connector for a 28-way terminal block, for connecting to a removable spring terminal block on sensors and preactuators

To be ordered separately:

8 A 28-way removable spring terminal block **BMX FTB 2820**, supplied with a channel identification label

- A shielding connection kit to protect against electrostatic discharge, consisting of a metal bar and two sub-bases for mounting on the rack: **BMX XSP ●●00** (reference dependent on the number of slots in the rack) (see page 1/11)
- A set of clamping rings **STB XSP 30●0** for the connection cable shielding braids (reference dependent on the cable Ø) (see page 1/11)

(1) Application-specific channels: BMX EHC 0200 (2-channel) and BMX EHC 0800 (8-channel) counter modules, BMX MSP 0200 (2-channel) motion control module and BMX NOM 0200 (2-channel) and BMX NOR 0200H (1-channel) serial communication modules

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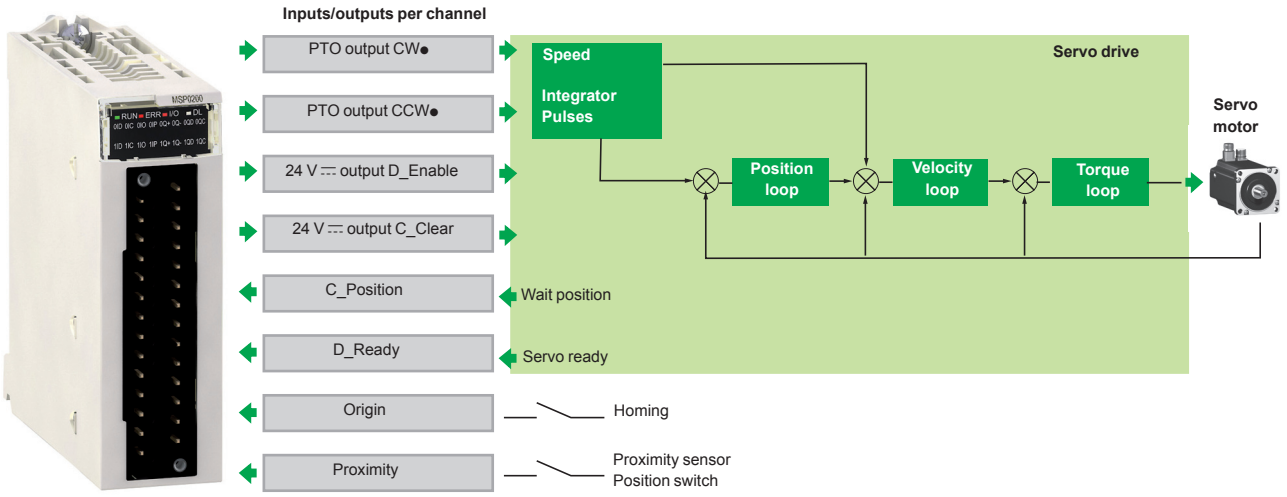
Modicon M340 automation platform
BMX MSP 0200 motion control module

Operation

Block diagram of a BMX MSP 0200 module channel



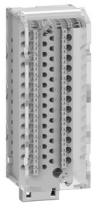
BMX MSP 0200

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	**BMX MSP 0200**	0.145

BMX MSP 0200



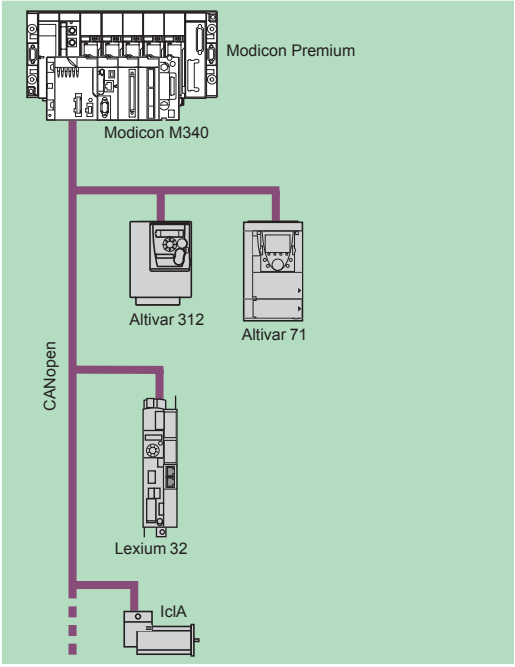
BMX FTB 2820

Cabling accessories

Description	Description, use	Length	Reference	Weight kg
28-way removable terminal block	Spring	–	**BMX FTB 2820**	0.080
Connection cable for daisy chain or pulse control *(2)*	From BMX MSP 0200 (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)*	**VW3 M8 223 R30**	–
Shielding connection kit for module BMX MSP 0200	Comprising a metal bar and two support bases for mounting on rack	–	See page 1/11	–

(1) Typical consumption: See the power consumption table on page 7/16.
*(2) The shielding on the cordsets carrying the motion control signals must always be connected to the **BMX XSP ●●00** shielding connection kit mounted under the rack holding the **BMX MSP 0200** module (see page 1/11).*

Modicon M340 automation platform
MFB motion control



MFB: Motion control distributed over CANopen

Presentation

MFB *(Motion Function Blocks)* is a library of function blocks integrated in Unity Pro 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

In compliance with PLCopen specifications, the MFB library allows both easy and flexible motion programming with Unity Pro, as well as axis diagnosis. In maintenance operations, drives can be replaced quickly and safely thanks to drive parameter download blocks.
Setting up 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 perfect 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, etc.

Functions

The table below lists the function blocks of the MFB library and the drives compatible with them. The prefix indicates the block family:
- MC: Function block defined by the Motion Function Blocks PLC Open 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 error messages	MC_Reset	■	■	■	■
	Stop all 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 all parameters and store in PLC memory	TE_UploadDriveParam	■	■	■	■
	Write all parameters from the PLC 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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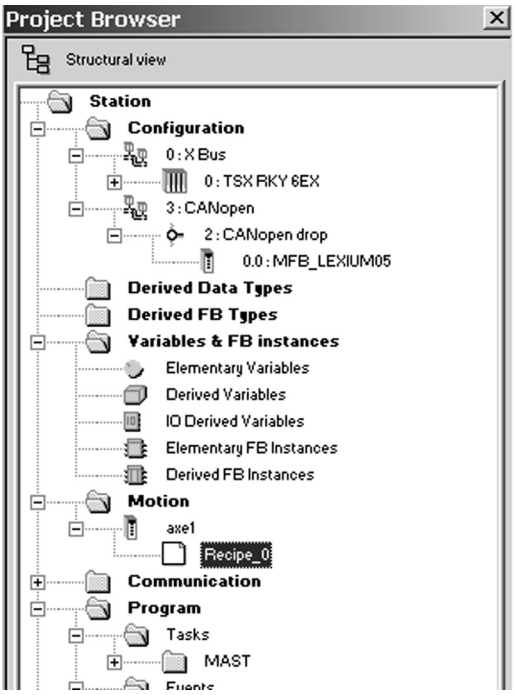
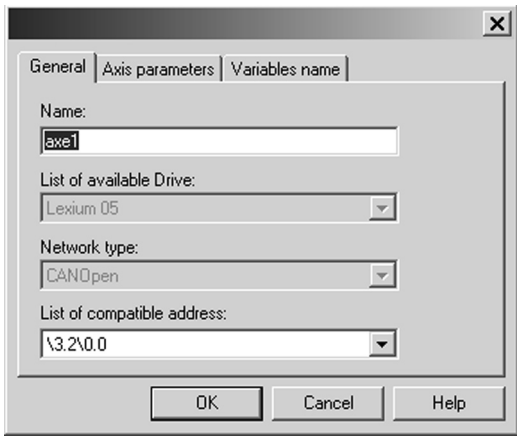
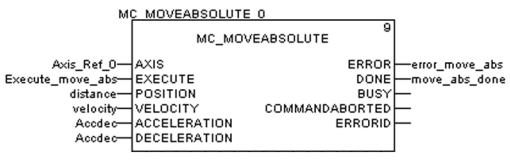
Modicon M340 automation platform
MFB motion control



Motion Tree Manager integrated in the Unity Pro browser



General parameters: Axis name and address



MFB: Programming a movement in absolute mode

Motion Tree Manager

Motion Tree Manager is associated with Unity Pro's MFB library and integrated in 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 all the instances of function blocks for the axis in question
- **CAN_Handler:** Used to manage communication with the drive via the CANopen network

Recipe definition

The "recipes" attached to the axis are the data structures containing all 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 PLC application

Programming, diagnostics and maintenance

Communication between the PLC 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 errors.

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

Modicon M340 automation platform

Quick wiring adapters for Modicon M340 PLC

Presentation

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

Quick Wiring Adapters Features

The Quick Wiring Adapters have the same look and feel as the standard M340 IO module connectors. The new connectors increase the depth and extend below the IO 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 IO 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 IO module

Compact modules/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	BMX DDI 1602	16 point 24 VDC input sink	O.K.	990 XSM00206
	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	BMX DAI 1604	16 point 110 VAC input	O.K.	990 XSM00213
	AS-BDEP 210	115 VAC 8 Point Input Module	BMX DAI 1604	16 point 110 VAC input	O.K.	990 XSM00213
	AS-BDEP 211	115 VAC 8 Point Input Module	BMX DAI 1604	16 point 110 VAC input	O.K.	None
	AS-BDEP 214	12-60 VDC 16 Point Input Module	BMX DDI 1603	16 point 48 VDC input	No replacement for 12 V, 24 V and 60 V	990 XSM00206
	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	BMX DDI 1602	16 point 24 VDC input sink	O.K.	990 XSM00206
	AS-BDEP 217	24 VDC 16 Point Input Module	BMX DAI 1602	16 point 24 VDC input sink	OK but need negative logic.	990 XSM00201
	AS-BDEP 218	115 VAC 16 Point Input Module	BMX DAI 1604	16 point 110 VAC input	O.K.	990 XSM00201
	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	BMX DDI 1603H	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	990 XSM00206
	AS-BDEP 254C	12-60 VDC 16 Point Input Module, ext temp + Coated	BMX DDI 1603H	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	990 XSM00206
	AS-BDEP 256	24 VDC 16 Point Input Module	BMX DDI 1602H	16 point 24 VDC input sink	BMXDDI1602 is only rated for 0 to + 60 °C versus - 40 to + 70 °C for AS-BDEP256.	990 XSM00206
	AS-BDEP 256C	24 VDC 16 Point Input Module, ext temp + Coated	BMX DDI 1602H	16 point 24 VDC input sink	BMXDDI1602 is only rated for 0 to + 60 °C versus - 40 to + 70 °C for AS-BDEP256C	990 XSM00206
	AS-BDEP 257	110 VDC 16 inputs Ext. Temp	BMX DDI 1604T	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.	990 XSM00206
	AS-BDEP 257C	110 VDC 16 inputs, ext temp + Coated	BMX DDI 1604T	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.	990 XSM00206
	AS-BDEP 296	60 VDC 16 inputs	–	–	No replacement	–
	AS-BDEP 297	48 VDC 16 inputs	BMX DDI 1603	16 point 48 VDC input	O.K.	990 XSM00206

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Compact modules/M340 modules compatibility

Type of module	Compact Module reference	Compact Module Comment	M340 Module reference	M340 Module Comment	M340 Compatibility	Quick Wiring Adapter reference
Digital output	AS-BDAO 216	24 VDC 16 Point Output Module	BMX DDO 1602	16 point Output 24 VDC	O.K with slightly slower response. BMXDDO1602 response time 1.2 ms vs. < 1 ms for AS-BDAO216	990 XSM00206
	AS-BDAP 204	4 Point Relay (NO) Module	BMX DRA 0805	8 point relay outputs	O.K. 4 relay on Compact 8 on M340.	990 XSM00203
	AS-BDAP 208	8 Point Relay (NO) Module	BMX DRA 0805	8 point relay outputs	O.K.	990 XSM00206
	AS-BDAP 258	8 Point Relay (NO) Module	BMX DRA 0805H	8 point relay outputs	O.K. But Extended temperature differences	990 XSM00206
	AS-BDAP 258C	24 VDC 8 Point Relay (NO) Module, ext temp + Coated	BMX DRA 0805H	8 point relay outputs	O.K. Temperature limitation where 0 to + 60 °C versus - 40 to + 70 °C and the BMXDRA0805H.	990 XSM00206
	AS-BDAP 209	120 VAC 8 Point 1A Output Module	BMX DAO 1605	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	990 XSM00204
	AS-BDAP 210	24-230 VAC 8 Point Output Module	BMX DAO 1605	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	990 XSM00204
	AS-BDAP 212	24 VDC 8 Point Input/4 Point Output 2A	BMX DDM 16025	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation issue	990 XSM00205
	AS-BDAP 252	24 VDC 8 Point Input/4 Point Output 2A	BMX DDM 16025H	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation issue Extended temperature differences	990 XSM00205
	AS-BDAP 216	24 VDC 16 Point Output Module	BMX BMX DDO 1602	16 point 24 VDC output	Compact is 2 groups of 8, M340 1 group of 16. So difference inputs isolation	990 XSM00206
	AS-BDAP 256	24 VDC 16 Point Output Module	BMX BMX DDO 1602H	16 point 24 VDC output	Compact is 2 groups of 8, M340 1 group of 16. So difference inputs isolation Extended temperature differences	990 XSM00206
	AS-BDAP 217	5-24 VDC 16 Point Output Module	BMX BMX DDO 1612	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.	990 XSM00206
	AS-BDAP 218	24-240 VAC 16 Point Output Module	BMX DAO 1605	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.	990 XSM00202
	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	BMX DDM16022	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	990 XSM00207
	AS-BDAP 250	24 VDC 8 Point Input/ Output Module	BMX DDM16022H	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.	990 XSM00207
	AS-BDAP 250C	24 VDC 8 Point Input/ Output Module, ext temp + Coated	BMX DDM16022H	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.	990 XSM00207
	AS-BDAP 212	24 VDC 8 inputs 4 outputs	BMX DDM 16025	8 point 24 VDC input + 8 point relay output	Compact 2 groups of 2 outputs, M340 1 group of 8. So difference inputs isolation.	990 XSM00205
	AS-BDAP 252	24 VDC 8 inputs 4 outputs	BMX DDM 16025H	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.	990 XSM00205
	AS-BDAP 252C	24 VDC 8 inputs 4 outputs, ext temp + Coated	BMX DDM 16025H	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.	990 XSM00205
	AS-BDAP 253	110 VDC 8 inputs 4 outputs	BMX DDM 16025H	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) isolation issue b) 4 unused references,	None
	AS-BDAP 253C	110 VDC 8 inputs 4 outputs, ext temp + Coated	BMX DDM 16025H	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) isolation issue 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/M340 modules compatibility

Type of module	Compact Module reference	Comment	M340 Module reference	Comment	M340 Compatibility	Quick Wiring Adapter reference
Analog input	AS-BADU 204	4 Channel, ± 0,5 V, Register, PT100, 11 Bit	BMX ART 0414	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	BMX AMI 0410	Analog 4 channel Current/ Voltage Input Isolated	O.K. Scaling differences	990 XSM00208
	AS-BADU 205	4 Channel Register Input	BMX AMM0600	Analog 4 channel Current/ voltage input non-isolated and 2 channel Current/ voltage output non-isolated	O.K. Scaling differences	990 XSM00209
	AS-BADU 206	4 Channel Register Input isolated	BMX AMI 0410	Analog 4 channel Current/ Voltage Input Isolated	O.K, however M340 does not have ± 1V range.	990 XSM00210
	AS-BADU 206	4 Channel Register Input isolated	BMX AMM0600	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	990 XSM00211
	AS-BADU 210	4 Channel Voltage/Current Input isolated	BMX AMI 0410	Analog 4 channel Current/ Voltage Input Isolated	O.K. Scaling differences M340 does not have all voltage ranges matched	990 XSM00210
	AS-BADU 210	4 Channel Voltage/Current Input isolated	BMX AMM0600	Analog 4 channel Current/ voltage input non-isolated and 2 channel Current/ voltage output non-isolated	O.K. Scaling differences M340 does not have all voltage ranges matched No isolation	990 XSM00211
	AS-BADU 211	8 Channel Analog Input Module Thermo	BMX ART 0814	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	BMX ART 0814	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	BMX ART 0414	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	BMX ART 0814	Analog 8 channel TC/RTD Isolated inputs	OK	None
	AS-BADU 254	4 Channel Register Input	BMX AMI 0410H	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	BMX AMM0600H	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	BMX AMI 0410H	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	BMX AMM0600H	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	BMX AMI 0410H	Analog 4 channel Current/ Voltage Input Isolated	OK but Extended temperature differences	None
	AS-BADU 256	4 Channel Register Input Isolated	BMX AMM0600H	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	BMX AMI 0410H	Analog 4 channel Current/ Voltage Input Isolated	OK but Extended temperature differences	990 XSM00210
	AS-BADU 256C	4 Channel Register Input Isolated, ext temp + Coated	BMX AMM0600H	Analog 4 channel Current/ Voltage input and 2 channel Current Voltage Output	OK M340 has 4 inputs and 2 outputs with no isolation	990 XSM00211
	AS-BADU 257	8 Channel Thermocouple	BMX ART 0814H	Analog 8 channel TC/RTD Isolated inputs	Ok but extended temperature differences	None
	AS-BADU 257C	8 Channel Thermocouple, ext temp + Coated	BMX ART 0814H	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	BMX AMO 0210	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability.	990 XSM00212
	AS-BDAU 204	4 Channel Analog Output,Opto-Isol.	BMX AMO 0210	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	BMX AMO 0210H	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability. Extended temperature differences	990 XSM00212
	AS-BDAU 252C	2 Point AN Outputs, ± 10 V, ± 20 mA , ext temp + Coated	BMX AMO 0210H	Analog 2 channel Current/ Voltage Output Isolated	M340 has no negative 20 mA capability. Extended temperature differences	990 XSM00212
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/M340 modules compatibility

Type of module	Compact Module reference	Compact Module Comment	M340 Module reference	M340 Module Comment	M340 Compatibility	Quick Wiring Adapter reference
Ser. Comm.	AS-BKOS260-24	24 Word Universal Comm	–	–	Contact Schneider Electric Technical support for clarification of the best fit. READ_VAR functionality might replace this.	None
	AS-BKOS260-64	64 Word Universal Comm	–	–	Contact Schneider Electric Technical support for clarification of the best fit. 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 clarification of the best fit.	None
	AS-BMOT 202	Axis Motion Control Module Resolver & Encoder	–	–	Contact Schneider Electric Technical support for clarification of the best fit.	None
Counter	AS-BFRQ 204	4 point Frequency Module	BMX EHC 0200	High Speed Counter 2 channel	No 5 V input. Also contact Schneider Electric Technical support for exact replacement	None
	AS-BFRQ 254C	4 point Frequency Module, ext temp + Coated	BMX EHC 0200H	High Speed Counter 2 channel	No 5 V input. Also contact Schneider Electric Technical support for exact replacement	None
	AS-BVIC200 VRC200	4 High Speed Pulse or 4 VRC Inputs	–	–	Contact Schneider Electric Technical support for clarification of the best fit.	None
	AS-BVIC205 CTR205	4 High Speed Pulse or 4 5V TTL Inputs	–	–	Contact Schneider Electric Technical support for clarification of the best fit.	None
	AS-BVIC212 CTR212	4 High Speed Pulse or 12 VDC Inputs	–	–	Contact Schneider Electric Technical support for clarification of the best fit.	None
	AS-BVIC224 CTR224	4 High Speed Pulse or 24 VDC Inputs	BMX EHC 0800	High Speed Counter 8 channel	Contact Schneider Electric Technical support for clarification of the best fit.	None
	AS-BZAE 201	High speed Counter/ Positioner (2 Relay)	BMX EHC 0200	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	BMX EHC 0800	High Speed Counter 8 channel	O.K. No outputs	None
CPU	AS-B984-A145 up to E984-285		BMX P34 2020 + BMX CSP3020	–	Only 1 Modbus port on CPU. 2 port NOM serial module available.	None
	AS-P120 000	105...240 VAC inputs, 24 VDC 1.0A outputs	BMX CSP2000 / BMX CSP3500	–	–	None

Nota:
- Extended temperature modules for M340 have an H suffix at the end of the part number.
- The Modicon Compact PLC 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 PLC migration even an exact module to module replacement might not yield the same results (due to scan time, etc).

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Contents

3 - Communication

Profibus DP bus

CANopen machine and installation bus

AS-Interface bus

Modbus and Character mode serial links

Modicon M340 automation platform

Communication, integrated ports and modules

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Applications				
Type of device		Ethernet communication		
		Processors with integrated Modbus/TCP port	Ethernet modules	
				
Network protocols		Ethernet Modbus/TCP		
Structure	Physical interface	10BASE-T/100BASE-TX		
	Type of connector	RJ45		
	Access method	CSMA-CD		
	Data rate	10/100 Mbps		
Medium		Double twisted pair copper cable, category CAT 5E Optical fibre via ConneXium cabling system		
Configuration	Maximum number of devices	–		
	Max. length	100 m (copper cable), 4000 m (multi-mode optical fibre), 32,500 m (single-mode optical fibre)		
	Number of modules of the same type per station	1	2 Ethernet or RTU modules per station with any BMX P34 processor	
Standard services		Modbus/TCP messaging		
Transparent Ready conformity class		B10	B30	C30
Embedded Web server services	Standard services	Rack Viewer PLC diagnostics, Data Editor access to PLC data and variables		
	Configurable services	–		Alarm Viewer and Graphic Data Editor
				Hosting and display of user Web pages (14 MB)
Transparent Ready communication services	I/O Scanning service	–	Yes	
	Global Data service	–	Yes	
	NTP time synchronization	–	Yes (module version ≥ 2.0)	
	FDR service	Yes (client)	Yes (client/server)	
	SMTP e-mail notification service	Yes, via EF function block 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		BMX NOE 0100	BMX NOE 0110
	Serial link	BMX P34 2020		
	Ethernet Modbus/TCP			
	CANopen	BMX P34 20302		
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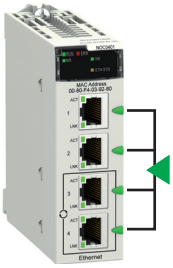
Ethernet communication	RTU communication	
Ethernet modules	**RTU module**	
		
◀ EtherNet/IP and Modbus/TCP	**◀ Modbus/TCP, IEC 60870-5-104, DNP3 (subset level 3)**	**◀ Serial link, External modem link, IEC 60870-5-101, DNP3 (subset level 3)**
10BASE-T/100BASE-TX	10BASE-T/100BASE-TX (Modbus/TCP), PPPoE (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…38.4 Kbps (Serial link)
Double twisted pair copper cable, category CAT 5E, optical fibre via ConneXium cabling system		Double shielded twisted pair copper cable, Crossover serial cable (Serial link), Direct serial cable (External modem link)
128 (EtherNet/IP or Modbus/TCP)	128 (Modbus/TCP), 32 slaves/servers (IEC 104/DNP3)	32 max.
100 m (copper cable), 4000 m (multi-mode optical fibre), 32,500 m (single-mode optical fibre)		15 m (Non-isolated serial link), 1000 m (Serial link with insulating case)
2 Ethernet or RTU modules per station with any BMX P34 processor		Depending on application-specific channels (20/36 application-specific channels with BMX P34 1000/P34 2●●●●)
EtherNet/IP and Modbus/TCP messaging	Modbus/TCP messaging	Reading/writing digital and analog I/O, counters
B30	C30	–
Rack Viewer PLC diagnostics, Data Editor access to PLC data and variables		–
–	–	–
–	Hosting and display of user Web pages	–
Yes	–	
–	–	
–	Yes	
Yes (client/server)	Yes (client)	–
–	Yes	–
–	Server	–
Yes	Yes (agent)	–
Yes	–	
Yes	–	
–	Yes, IEC101/104 and DNP3	
–	Interrogation via polling and exchanges on change of status (RBE), unsolicited messaging	
–	Yes, IEC101/104 and DNP3	
–	Yes, IEC101/104 and DNP3	
–	Yes, IEC101/104 and DNP3 Buffer holding 10,000 events (per connected client, 4 clients max.)	
–	Yes, on SD 128 MB memory card, in CSV files, access via FTP or sent by e-mail	
Standard and Performance (see page 1/2)		
BMX NOC 0401		
	BMX NOR 0200H	
		BMX NOR 0200H
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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...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)…2500 m (20 Kbps)	100 m, 500 m max. with 2 repeaters
	Number of links of the same type per station	1	BMX P34 1000 processor: 2 AS-Interface modules
			BMX P34 20●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		BMX EIA 0100
	Serial link	BMX P34 20102	
	Ethernet Modbus/TCP	BMX P34 20302	
	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...38.4 Kbps	0.3...115.2 Kbps in RS 232 0.3...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 BMX P34 1000/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)
BMX P34 1000/2000	
	BMX NOM 0200
BMX P34 2020	
BMX P34 20102	

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 for all 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 PLC)	Reading/writing variables
		FDR service	Global database
		SNMP agent network management service	Peer Cop service
24 V ⎓ external power supply		19.2…31.2 V	
Module types		TCS EGDB23F24FA	
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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...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 PLC, 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 PLC)	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…30 V	

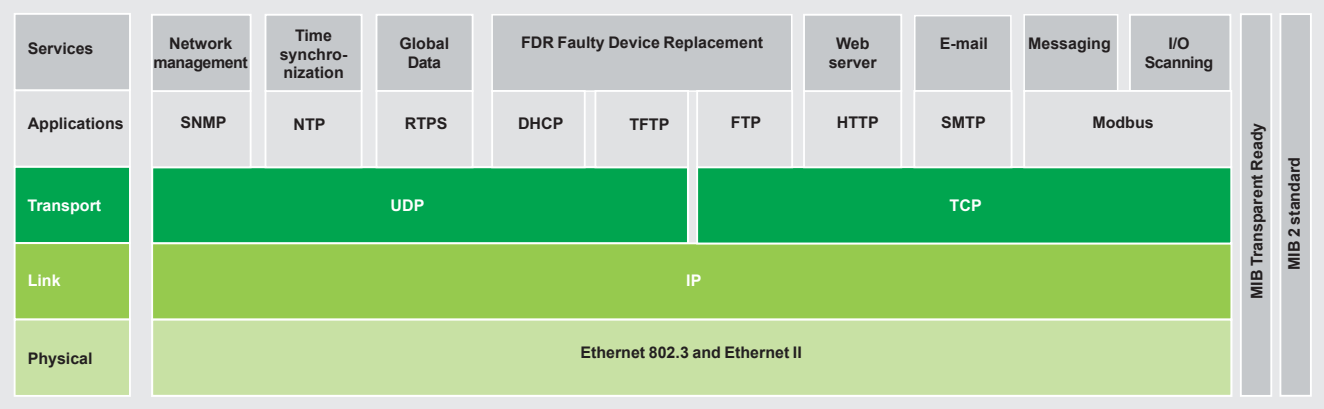
TCS EGPA23F14F

3/63

Modicon M340 automation platform
Ethernet Modbus/TCP network
Ethernet Modbus/TCP communication services

Presentation

BMX P34 2020/20302 processors via their integrated Ethernet port, **BMX NOE 0100/0110** network modules and the **BMX NOR 0200H** RTU module provide transparent communication on the Ethernet Modbus/TCP network using Transparent Ready communication services.



Ethernet communication services for the BMX NOE 0100/0110 module

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

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

Note: *See selection guide on pages 3/2 and* ***3/3 for the communication services supported by BMX P34 2020/20302*** *processors,* ***BMX NOE 0100/0110*** *network modules and the* ***BMX NOR 0200H*** *RTU module on the Modicon M340 platform.*

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

Processors: page 1/2 | I/O: pages 2/2 and 2/14 | 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 universal Ethernet services used are as follows:

■ **HTTP *(HyperText Transfer Protocol)***:
□ This protocol is used for transmitting Web pages between a server and a browser.
□ Web servers embedded in Transparent Ready automation products provide easy access to products located anywhere in the world from a standard web browser such as Internet Explorer.

■ **BOOTP/DHCP** (**RFC1531**):
□ These protocols are used to provide devices with IP parameters automatically. This avoids having to manage each device address individually by transferring this management to a dedicated IP address server.
□ The DHCP protocol *(Dynamic Host Configuration Protocol)* is used to assign configuration parameters to devices automatically. DHCP is an extension of BOOTP.
□ Schneider Electric devices can be "BOOTP clients" (used to retrieve the IP address automatically from a server) or "BOOTP servers" (allowing the device to distribute IP addresses to the network stations).
□ Schneider Electric uses standard BOOTP/DHCP protocols for its FDR *(Faulty Device Replacement) service*.

■ **FTP *(File Transfer Protocol)*** **(RFCs 959, 2228, and 2640)**:
□ This protocol provides the basic elements for file sharing. Many systems use it to exchange files between devices.

■ **TFTP *(File Transfer Protocol)*** **(RFCs 959, 2228, and 2640)**:
□ This network transfer protocol can be used to connect to a device and download code to it.
□ For example, it can be used to transfer a boot code to a workstation without a disk drive or to connect and download updates of network device firmware.
□ Transparent Ready devices implement FTP and TFTP for transferring certain information to or from devices, in particular for downloads of firmware or user-defined Web pages.

■ **SNMP *(Simple Network Management Protocol)*** **(RFCs 1155, 1156 and 1157)**:
□ The SNMP standard manages the various network components via a single system.
□ The network management system can exchange data with SNMP agent devices. This function allows the manager to display the status of the network and devices, modify their configuration and feed back alarms in the event of a fault.
□ Transparent Ready devices are SNMP-compatible and can be integrated naturally in a network managed via SNMP.

■ **COM/DCOM *(Distributed Component Object Model)*** **(RFCs 1155, 1156 and 1157)**:
□ COM/DCOM or OLE *(Object Linking and Embedding)* protocol is the name of the technology consisting of Windows objects which enables transparent communication between Windows applications.
□ These technologies are used in the OFS *(OLE for Process Control Factory Server)* data server software.

Modbus standard communication protocol

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

Modicon M340 automation platform

Ethernet Modbus/TCP network

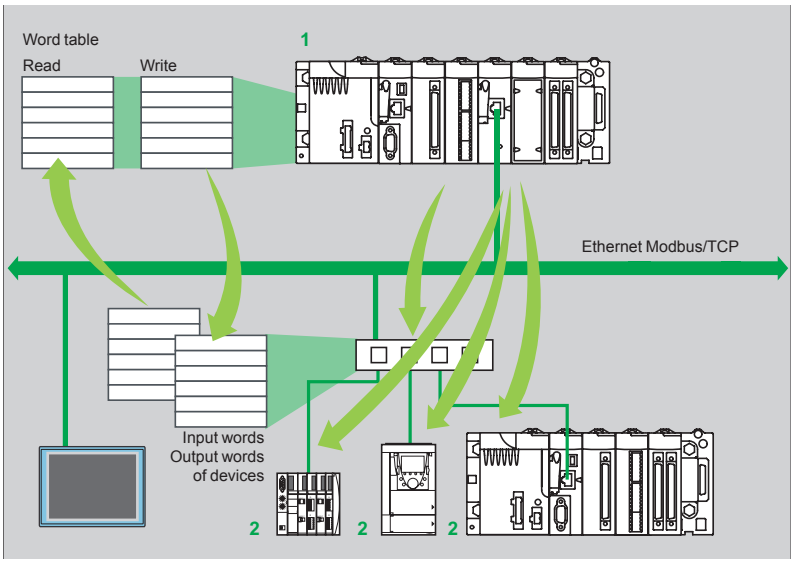
Ethernet Modbus/TCP communication services

1 Modicon M340 device with I/O Scanning service

2 Device with Modbus TCP messaging in server mode

Functions (continued)

I/O Scanning service



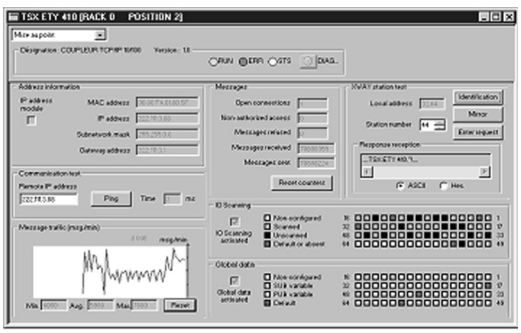
The I/O Scanning Service is used to manage the exchange of remote I/O states on the Ethernet network after a simple configuration operation, with no need for special programming.
I/O scanning is performed transparently by means of read/write requests according to the Modbus client/server protocol on the TCP profile.
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 PLC scan

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

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

Characteristics

- Each Modicon M340 station can exchange a maximum of **100 words for writing** and 125 words for reading.
- Maximum size in the Modicon M340 PLC that manages the service (64 stations max.) with **BMX NOE 0100/0110** and **BMX NOC 0401** network modules: 2 Kwords (input) and 2 Kwords (output).



I/O Scanning service diagnostics

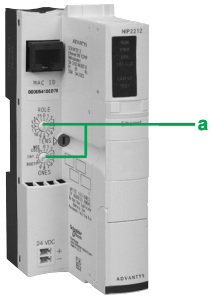
I/O Scanning service diagnostics can be performed in one of five ways:
- Via the application program from a specific PLC data zone
- From the setup software debug screen
- From the PLC system diagnostic function displayed by means of an internet browser on a PC station
- Using the **TCS EAZ 01P SFE10** ConneXview diagnostic software
- Using standard SNMP manager software

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

Modicon M340 automation platform

Ethernet Modbus/TCP network

Ethernet Modbus/TCP communication services



NIM network module for Modicon STB I/O

FDR *(Faulty Device Replacement)* service

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

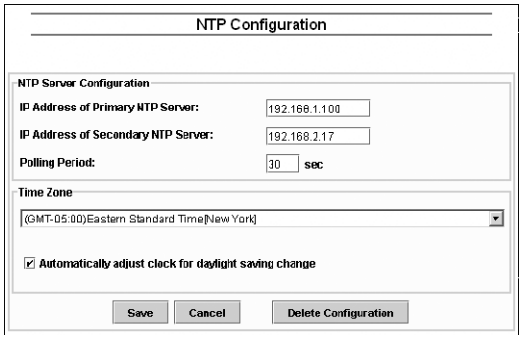
The main steps in replacement are:

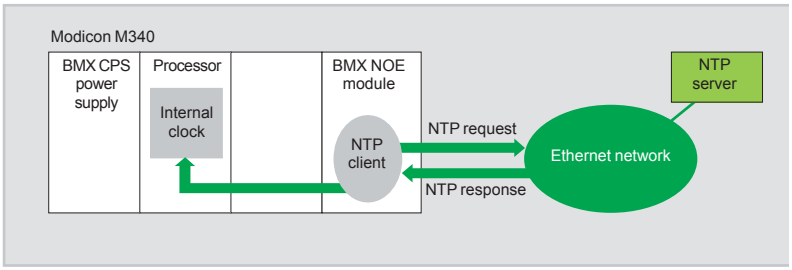
1. A device using the FDR service malfunctions.
2. Another similar device is taken from the maintenance store, preconfigured with the Device name for the faulty device, then reinstalled on the network. Depending on the device, addressing can be performed using rotary selector switches (as for Modicon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

The FDR server can be the **BMX NOE 0100/0110** Ethernet module or the **BMX NOC 0401** module.

NTP time synchronization service

Presentation





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

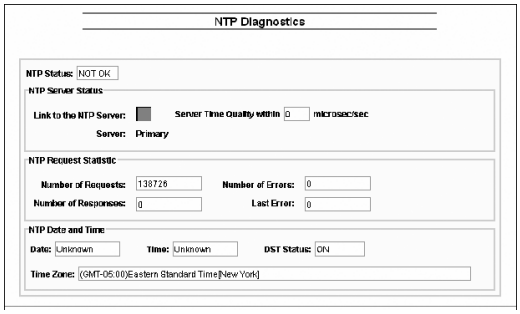
Operation

BMX NOE 0100/0110, **BMX NOC 0401** and **BMX NOR 0200H** Ethernet Modbus/TCP modules have an NTP client component.
These modules connect to an NTP server using a client request (*Unicast*) in order to update their local time. The module clock is updated periodically (1 to 120 s) with typical precision of 5 ms. If the NTP server cannot be reached, the Ethernet TCP/IP module switches to a standby NTP server.

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

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

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



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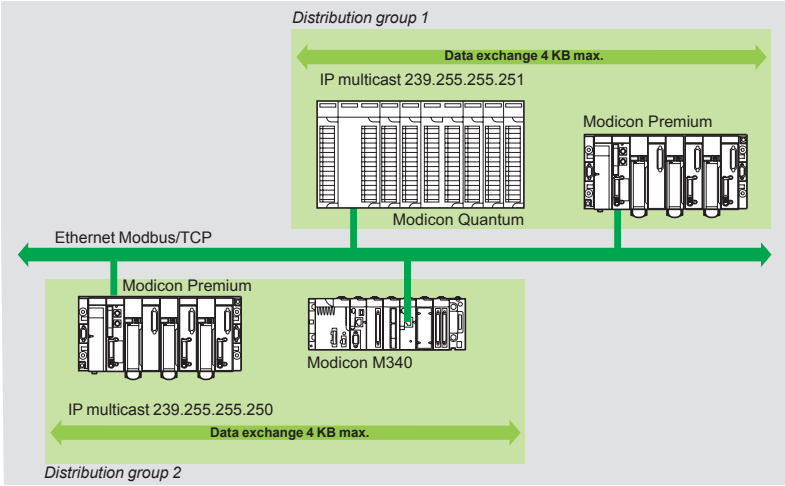
Modicon M340 automation platform

Ethernet Modbus/TCP network

Ethernet Modbus/TCP communication services

Functions (continued)

Global Data service



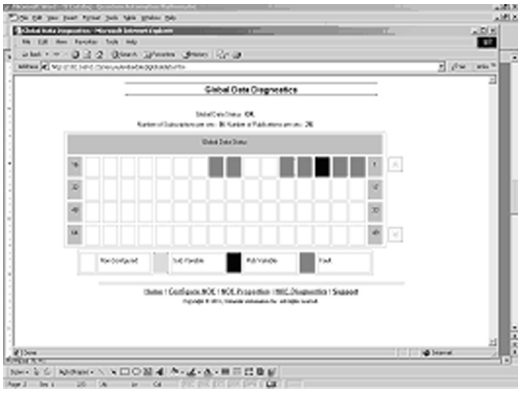
The Global Data service performs data exchanges in real time between stations belonging to the same distribution group. It is used to synchronize remote applications, or to share a common database between a number of distributed applications. Exchanges are based on a standard producer/consumer protocol, 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.

Characteristics

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

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

To further optimize the performance of the Ethernet network, Global Data can be configured with the “multicast filtering” option which, together with switches in the ConneXium range (see pages 3/26 to 3/37), broadcasts data only to Ethernet ports where there is a Global Data service subscriber station. If these switches are not used, Global Data is sent in “multicast” mode to all switch ports.



Global Data service diagnostics

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

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

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

- Via the application program from a specific PLC data zone.
- From the setup software debug screen.
- From the PLC system diagnostic function displayed by means of an internet browser on a PC station.
- Using the **TCS EAZ 01P SFE10** ConneXview diagnostic software.
- Using standard SNMP manager software.

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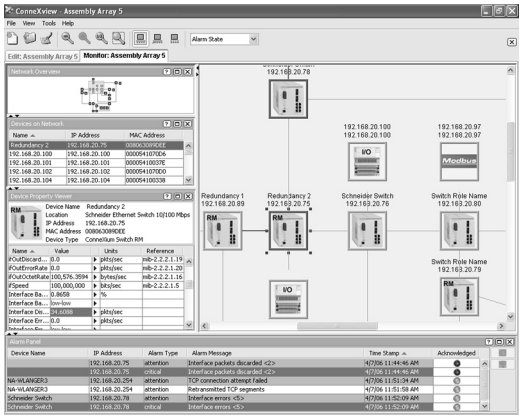
Modicon M340 automation platform

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 all components of the Ethernet architecture and thus ensures quick diagnostics in the event of a problem.
It is used to:
- Interrogate network components such as computer stations, routers, switches, bridges or terminal devices in order to view their status.
- Obtain statistics about the network to which the devices are connected.

This network management software complies with the conventional client/server model. However, to avoid confusion with other communication protocols that use this terminology, we talk instead about:
- ConneXview network diagnostics software, **TCS EAZ 01PSFE10**. For more information, please refer to the “Machines and installations, industrial communication networks” catalogue.
- Network manager for the client application that operates on the computer station.
- SNMP agent for the network device server application.

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

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

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

Transparent Ready devices support 2 levels of SNMP network management:
- The Standard MIB II interface: This interface accesses a first level of network management. It enables the manager to identify the devices making up the architecture and retrieve general information about the configuration and operation of Ethernet Modbus/TCP interfaces.
- The Transparent Ready MIB interface: This interface improves the management of Transparent Ready devices. This MIB has a set of data enabling the network management system to supervise all the Transparent Ready services.

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

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Modicon M340 automation platform

Ethernet Modbus/TCP network

Standard Web services

Presentation of Web services

The standard Web server functions are integrated in a wide variety of Schneider Electric Ethernet products: Modicon automation platform processors and Ethernet modules, distributed I/O modules, variable speed drives and gateways. These functions are mainly integrated in **BMX P34 2020/20302** processors, in **BMX NOE 0100/ 0110** and **BMX NOC 0401** Ethernet network modules, in the **BMX NOR 0200H** RTU module, and the **TCS EGDB23F24FA** 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 **BMX NOE 0110** FactoryCast module equipped as standard with the **BMX RWS FC032M** card, the Web server also offers the following functions:
- Management of PLC system and application alarms with partial or total acknowledgement (ready-to-use Alarm Viewer function pages)
- Hosting and display of Web pages created by the user

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

Modicon M340 hardware configuration

Standard Web server on the Modicon M340 platform

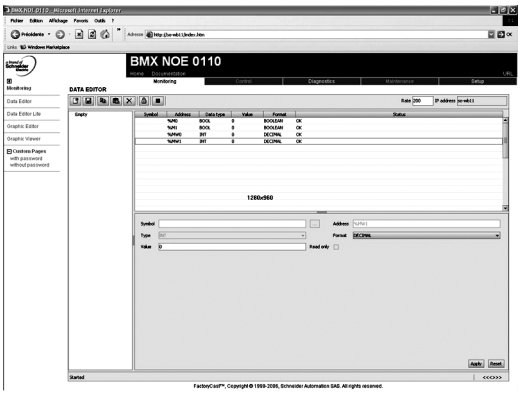
Rack Viewer PLC diagnostics function

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

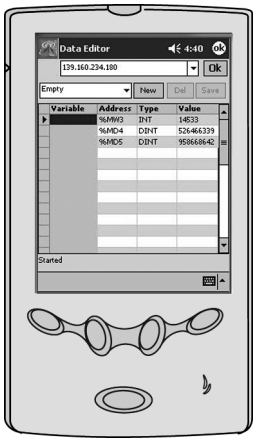
Data Editor read/write function for PLC data and variables

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

Various animation tables containing specific application variables to be monitored or modified can be created by the user and saved in the standard Web server module.



Data Editor variables table



In addition to the functions provided by the standard Web server, the **BMX NOE 0110** Ethernet module's FactoryCast Web server offers the following:
- Display of variables: Variables can be entered and displayed either in their symbolic form (S_Pump 234) or as their address (%MW99).
- Write access to variables: This can be enabled or disabled for each of the variables using the FactoryCast module configuration software.
- Read/write function: This can be used on tools such as a pocket PC or PDA terminal.

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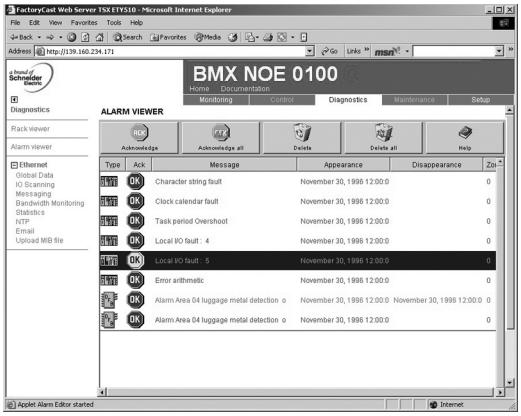
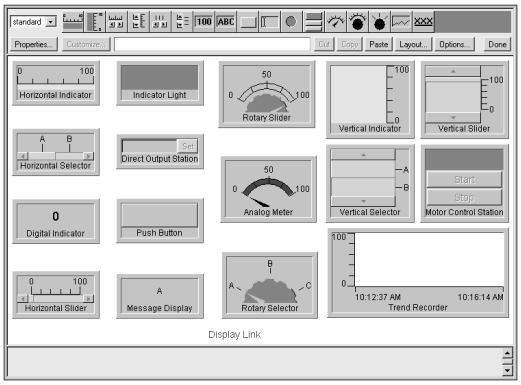
Modicon M340 automation platform

Ethernet Modbus/TCP network

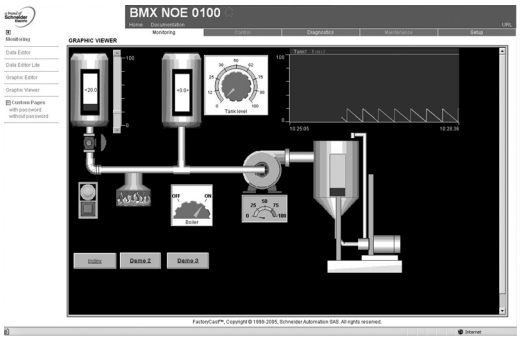
FactoryCast Web services



Alarm display from the diagnostic buffer



Library of predefined graphic objects



Real-time supervision graphic interface

BMX NOE 0100 module FactoryCast Web server

In addition to the standard services, the embedded Web server in the **BMX NOE 0110** 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 alarms (display, acknowledgement and deletion) managed at PLC level by the system or using diagnostic function blocks known as DFBs (system-specific diagnostic function blocks and application-specific diagnostic function blocks created by the user).
These alarms are stored in the diagnostic buffer managed by the Modicon M340 platform (dedicated memory space for storing all the diagnostic events).

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

Graphic Data Editor function

This function is used to create the graphic views animated by the PLC variables that can be accessed via their address or via their symbol (access to located data). The ready-to-use graphic editor is available in online mode when connected to the **BMX NOE 0110** module.

These views are created from a library of predefined graphic objects by simple copy/paste operations. The objects are configured to suit the user's requirements (colour, PLC variables, name, etc).
List of graphic objects available:
- Analog and digital indicators
- Horizontal and vertical bar charts
- Boxes for displaying messages and entering values
- Pushbutton boxes
- Trend recorders
- Vats, valves, motors, etc

Customized graphic objects can be added to this list and can be reused in user Web pages that have been created using standard software for editing HTML pages. The views thus created are saved in the **BMX NOE 0110** module and can be displayed using any Web browser.

User Web page hosting and display function

The **BMX NOE 0110** FactoryCast module has a 16 Mbyte non-volatile memory which is accessed in the same way as a hard drive. This allows hosting of Web pages and any user-defined Word or Acrobat Reader document (for example, maintenance manuals, wiring diagrams, etc).

Web pages can be created using any standard tool for creation and editing in HTML format. They can be enhanced by inserting animated graphic objects linked to PLC variables. These animated objects are created using the Graphic Data Editor. They are then downloaded to the **BMX NOE 0110** module via the FactoryCast Web server configuration software.

These user Web pages can be used, for example, to:
- Display and modify all PLC variables in real time
- Create hyperlinks to other external Web servers (documentation, suppliers, etc)

This function is particularly suitable for creating graphic interfaces used for the following purposes:
- Real-time display and supervision
- Production monitoring
- Diagnostics and help with maintenance
- Operator guides

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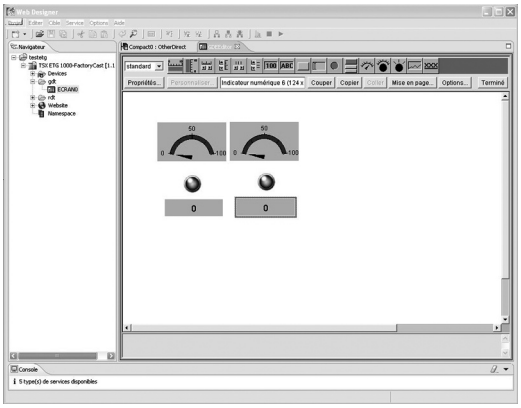
Modicon M340 automation platform

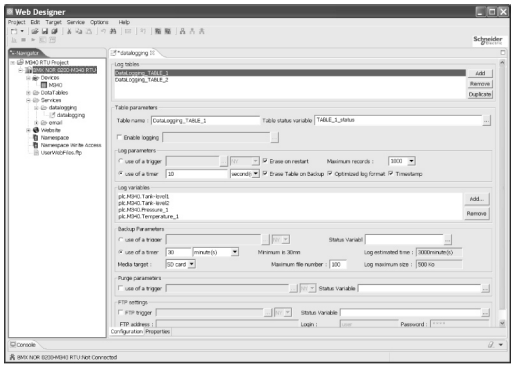
Ethernet Modbus/TCP network

Web Designer configuration software

Web Designer



Graphic Data Editor



Configuring the Data Logging *function for BMX NOR 0200H module*

Web Designer configuration software

The Web Designer software is supplied on CD-ROM with the **BMX NOE 0110**, **BMX NOC 0401** Ethernet network modules and the **BMX NOR 0200H** 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 PLCs
- FactoryCast HMI Web server modules for Modicon Premium and Quantum PLCs
- 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.

Web Designer software offers the following functions:
- **Setting the Web Designer function parameters**:
  - Definition of access security, passwords
  - Importing of PLC symbol databases
  - Definition of access to write-enabled variables
- **Management of the Web site**:
  - Management of default site Web pages
  - Management of user site Web pages
  - Graphic Data Editor for animating Web pages *(BMX NOE 0110 module only)*. This integrated editor can be used for easy customization of graphic objects: bar charts, gauges, LEDs, curves, cursors, operator input fields, alphanumeric display fields, buttons, etc.
  - Downloading of Web pages between the PC and the module
  - Debugging of Web pages in online mode or in simulation mode (including animations and Java beans)
- **Simulation mode**:
  - The application and the Web site (including the Java animations) can be set up in online mode or in simulation mode.
  - Simulation mode is used to test the operation of the Web application without a module (with no physical connection to a PLC) thereby simplifying debugging.
- **Creation of user Web pages**:
  - User Web pages are created graphically using an external HTML editor (FrontPage or similar, not supplied).
  - User Web pages created with the graphic editor are actual animated supervisory control screens and can be used to monitor the process. Based on Web technologies (HTML and Java), they provide real-time access to PLC variables using the FactoryCast library of graphic objects (Java beans) *(BMX NOC 0401 module only) (1)*.
- **Data Logging** *(for BMX NOR 0200H module only)*:
  - This service is used to archive the application data: events, alarms, process data, device states, process values, etc.
  - The data are logged in CSV files in ASCII format, which are stored locally on the SD memory card in the BMX NOR 0200H module.
- **Sending alarm notifications or reports via Email or SMS** *(BMX NOR 0200H module only)*:
  - The BMX NOR 0200H module can send e-mails or SMS messages automatically in real time in order to send alarm notifications, maintenance calls, production reports or factory status updates, etc to specified users.
  - E-mails or SMS messages are sent when a predefined application or process is triggered.

(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 PLC variables in HTML pages created by the user. They are created in the HTML editor by simply inserting customized graphic objects.

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

Modicon M340 automation platform

Ethernet Modbus/TCP network

SOAP/XML Web services

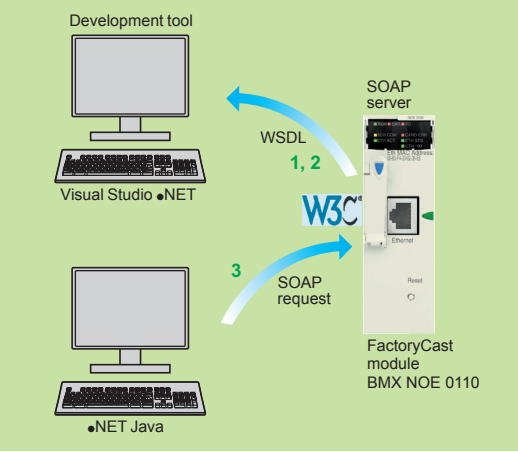
SOAP/XML Web services

BMX NOE 0110, **BMX NOC 0401** Ethernet network modules and **BMX NOR 0200H** 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 PLC

These Web services conform to the **W3C** *(World Wide Web Consortium)* Web service standards. They offer standard open communication resources thanks to which the control peripherals can 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 PLC, in real time.

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

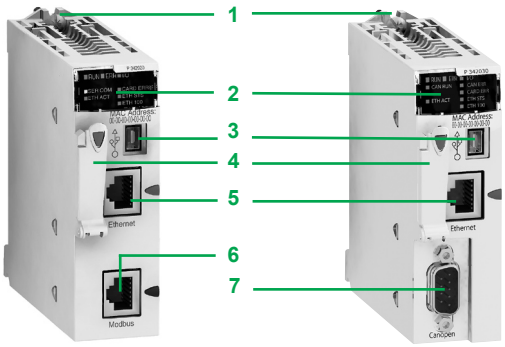
Exchanges are initiated by the SOAP client application (the server responds to these requests). Data exchanges are made in XML standard format in response to a request using the SOAP protocol.

- **Step 1: Creation of the client application with 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



Presentation

BMX P34 2020 and **BMX P34 20302** 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 **BMX P34 2020**/**20302** Modicon M340 processors features:

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

2 A display block with 8 LEDs, including 3 relating to the Ethernet port:

- ETH ACT LED (green): Activity on the Ethernet network
- ETH STS LED (green): Ethernet network status

Depending on processor version:

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

3 A mini B USB connector for a programming terminal (or Magelis XBT GT/GK/GTW HMI terminal).

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

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

Depending on model:

6 **BMX P34 2020** processor: An RJ45 connector for the Modbus serial link or Character mode link (RS 232C/RS 485, 2-wire, non-isolated)

7 **BMX P34 20302** 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

BMX P34 2020

BMX P34 20302

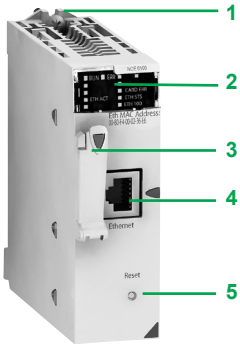
References

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	**BMX P34 2020**	0.205
		CANopen bus	**BMX P34 20302**	0.215

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

Modicon M340 automation platform

Ethernet Modbus/TCP network modules



BMX NOE 0100/0110

Presentation

BMX NOE 0100 and **BMX NOE 0110** 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 **BMX NOE 0100** and **BMX NOE 0110** modules features:

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

2 A display block with 6 LEDs, including 3 relating to the Ethernet port:

- ETH ACT LED (green): Activity on the Ethernet network
- ETH STS LED (green): Ethernet network status

Depending on processor version:

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

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

4 An RJ45 connector for connection to the Ethernet network.

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

On the rear panel: 2 rotary switches for assigning the IP address in one of three ways:

- Address set by the position of the two switches
- Address set by the application parameters
- Address set by the Ethernet network BOOTP server

References

Description	Data rate	Transparent Ready Class	Reference	Weight kg
Ethernet Modbus/ TCP network modules	10/100 Mbps	B30	**BMX NOE 0100**	0.200
		C30	**BMX NOE 0110** *(1)*	0.200

Spare parts

Description	Size	Supplied as standard with	Reference	Weight kg
Flash memory cards	8 MB	**BMX NOE 0100**	**BMX RWS B000M**	0.002
	32 MB	**BMX NOE 0110**	**BMX RWS FC032M**	0.002

(1) The Web Designer software is supplied on CD-ROM with the BMX NOE 0110 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

Presentation

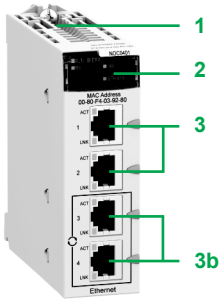
The **BMX NOC 0401** network module acts as an interface between the M340 PLC and other Ethernet network devices via the Modbus/TCP and EtherNet/IP communication protocols.

The standard format **BMX NOC 0401** network module occupies a single slot in the rack of the Modicon M340 platform.
This must be equipped with a Standard **BMX P34 1000** or Performance **BMX P34 2●●●●** processor.

Functions

The **BMX NOC 0401** module offers the following functions:
- Modbus/TCP and EtherNet/IP protocols operating simultaneously.
- Ring topologies on 2 Ethernet ports using RSTP *(Rapid Spanning Tree Protocol)*.
- Priority of Ethernet packets using QoS *(Quality of Service) service*.
- Automatic module configuration recovery using FDR *(Faulty Device Replacement) service*.
- Support for SCADA functions via the OPC *protocol*.
- Embedded Web server for application monitoring and module diagnostics.
- Sharing data between PLCs.
- Network management using SNMP *(Simple Network Management Protocol)*.

Description



The front panel of the **BMX NOC 0401** module features:
1 A safety screw for locking the module in a slot in the rack.
2 A display block with 5 LEDs:
- RUN LED (green): Operating status
- ERR LED (red): Error detected
- MS LED (green/red): Module status
- NS LED (green/red): Network connection status
- ETH STS LED (amber): Ethernet link status

3 Four RJ45 connectors for connection to the Ethernet network. The two bottom connectors **3b** support ring topologies (RSTP protocol).

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

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

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

Modicon M340 automation platform

Modbus/TCP and EtherNet/IP network module

BMX NOC 0401

References

Description	Data rate	Transparent Ready Class	Reference	Weight kg
EtherNet/IP, Modbus/TCP network module	10/100 Mbps	B30	**BMX NOC 0401** *(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 catalogue (addition of the new module DTMs).

Processors: page 1/2
I/O: pages 2/2 and 2/14
Software: page 4/2
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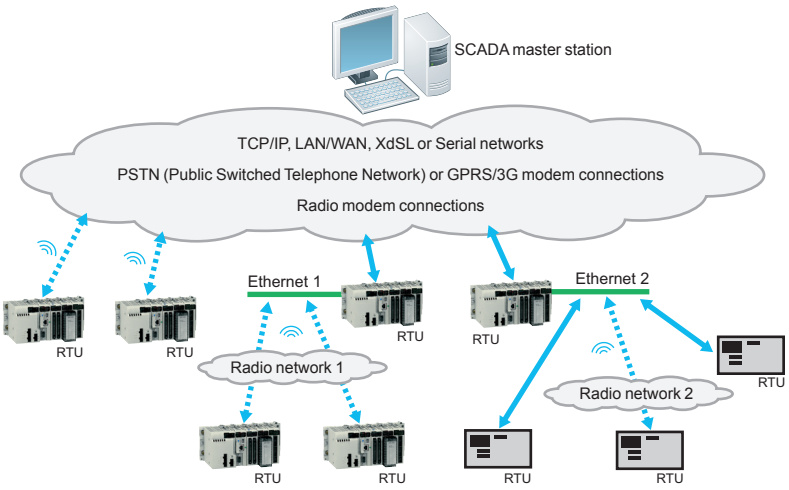
Modicon M340 automation platform
RTU communication systems

Presentation

RTU systems are designed to meet the needs of the water industry, the oil and gas sector and other infrastructures, where remote monitoring and telecontrol are essential to the good management of sites and substations spread over a wide geographical area.

RTU protocols and Telemetry systems provide robust, reliable means of communication which are suitable for the process values, maintenance and remote monitoring needs of infrastructures disseminated over a vast geographical area which 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

The main RTU system functions are as follows:
- Remote communications:
  - Between remote RTU sites (coordination, synchronization)
  - With the SCADA host system, controlling the central operator station (monitoring, alarm reports) and centralized databases (archiving of alarms or events)
  - With the on-call staff (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
  - Alarm and report notification by e-mail/SMS
  - Web HMI: displaying the process, alarm handling, trend analysis, telecontrol

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

Modicon M340 automation platform
RTU communication protocols

Presentation (continued)

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

The most commonly used protocols are as follows:
- 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 in a very robust and reliable manner 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).

Modicon M340 automation platform
RTU communication module

Presentation (continued)

The **BMX NOR 0200H** communication module integrates the RTU *(Remote Terminal Unit)* functions and protocols in the Modicon M340 platform, for industrial Telemetry applications and other widely distributed infrastructures.

The **BMX NOR 0200H** module can be used to connect an RTU M340 PLC 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 **BMX NOR 0200H** module is designed to operate in a harsh environment (conformal coating), in an extended temperature range (-25 to +70°C).

Functions

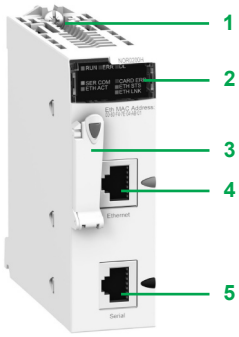
The **BMX NOR 0200H** module offers the following functions:
- Upstream RTU communication to the SCADA (server or slave mode)
- Downstream RTU communication to field devices (master mode)
- RTU protocols: Time synchronization, exchanges of time and date stamped data via polling (on change of state and 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 setting 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 **BMX NOR 0200H** module can be installed in either a standard or “ruggedized” configuration, equipped with a standard **BMX P34 ●●●●●** or “ruggedized” **BMX P34 ●●●●●H** processor.



The front panel of the **BMX NOR 0200H** module features:
1. A safety screw for locking the module in a slot in the rack.
2. A display block with 8 LEDs, 4 of which relate to the serial and Ethernet communication ports.
3. A slot for a Flash memory card (SD card), with protective cover.
4. An RJ45 connector for the connection to the Ethernet network.
5. An 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.

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

Modicon M340 automation platform

RTU communication module

BMX NOR 0200H

References

Description	Communication port	Protocol	Reference	Weight kg
RTU communication 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)	**BMX NOR 0200H** *(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)	BMX NOR 0200H	**BMX RWS 128MWF**	0.002

(1) See ruggedized module characteristics, 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 alarm notifications via SMS or e-mail, see page 3/16.

3

Ethernet network
Cabling system
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
		Total length of pair	100 m
	Fibre optic ports	Number and type	–
		Connectors	–
		Medium	–
	Length of optical fibre	50/125 µm	–
		62.2/125 µm	–
	Optical fibre attenuation analysis	50/125 µm fibre	–
		62.2/125 µm fibre	–
Topology	Number of hubs	Cascaded	4 max.
		In a ring	–
Redundancy			P1 and P2 redundant power supplies
Power supply	Voltage		24 V ⎓ (18…32), safety extra low voltage (SELV)
	Consumption		80 mA (130 max. at 24 V ⎓)
	Removable terminal block		5-way
Operating temperature			0…+ 60°C
Relative humidity			10…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, CE, GL, C-Tick
			FM 3810, FM 3611 class 1 division 2
LED indicators			Power supply, activity, link
Alarm relay			Power supply fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)
Reference			**499 NEH 104 10**
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 fibre
3000 m *(1)*
3000 m *(1)*
8 dB
11 dB
–
–
P1 and P2 redundant power supplies
24 V ⎓ (18…32), safety extra low voltage (SELV)
160 mA (190 max. at 24 V ⎓)
5-way
0…+ 60°C
10…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 fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)

499 NTR 101 00

3/42

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

Ethernet network
Cabling system
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	
		Total length of pair	100 m	
	Fibre optic ports	Number and type	–	
		Connectors	–	
		Medium	–	
	Length of optical fibre	50/125 µm	–	
		62.2/125 µm	–	
	Optical fibre attenuation analysis	50/125 µm fibre	–	
		62.2/125 µm fibre	–	
	Ethernet services		Storage and re-routing of received data, auto MDI/MDX, automatic negotiation of 10/100 Mbps and duplex mode (on all ports)	–
Topology	Number of switches	Cascaded	Unlimited	
		Redundant in a ring	–	
Redundancy			–	P1 and P2 redundant power supplies
Power supply	Voltage		24 V ⎓ (18…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…+ 60°C	
Relative humidity			–	10…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 fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)
Reference			**TCS ESU 051F0**	**499 NES 181 00**
Pages			3/43	

Unmanaged switches, copper twisted pair (continued)	Unmanaged switches, 4 and 5 ports, copper twisted pair and fibre 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 fibre	–
–	–	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 all ports), automatic change of polarity	Storage and re-routing of received data, auto MDI/MDX, automatic negotiation of 10/100 Mbps and duplex mode (on all ports)		
Unlimited	Unlimited		
–	–		
–	–		
24 V ⎓ (9.6…32) SELV	24 V ⎓ (9.6…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…+ 60°C	0…+ 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		
	–	Fibre port activity and status	–
–	–		
TCS ESU 083FN0	**TCS ESU 033FN0**	**TCS ESU 043F1N0**	**TCS ESU 053FN0**
3/43	3/44		

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

Ethernet network
Cabling system
Managed and unmanaged ConneXium switches

Type of device			**Unmanaged switches, 5 ports, copper twisted pair and fibre 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			
		Total length of pair	100 m			
	Fibre 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 fibre		Single mode optical fibre	
	Length of optical fibre	50/125 µm	5000 m *(1)*		–	
		62.2/125 µm	4000 m *(1)*		–	
		9/125 µm fibre	–		32,500 m *(2)*	
	Optical fibre attenuation analysis	50/125 µm fibre	8 dB		–	
		62.2/125 µm fibre	11 dB		–	
		9/125 µm fibre	–		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…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...+ 70°C			
Relative humidity			10…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 fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)			
Reference			**499 NMS 251 01**	**499 NMS 251 02**	**499 NSS 251 01**	**499 NSS 251 02**
Pages			3/44			

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

Managed switches, 4 ports, copper twisted pair and fibre 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 fibre		Single mode optical fibre	
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...60 V ⎓/18…30 V ∿ safety extra low voltage (SELV)			
6.5 W	7.3 W	6.5 W	7.3 W
6-way			
0…+ 60°C			
10… 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 fault, Ethernet network fault, communication port fault, redundancy fault (volt-free contact 1 A max. at 24 V ⎓)			
TCS ESM 043F1CU0	**TCS ESM 043F2CU0**	**TCS ESM 043F1CS0**	**TCS ESM 043F2CS0**
3/45			

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

Ethernet network
Cabling system
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	
		Total length of pair	100 m	
	Fibre optic ports	Number and type	–	
		Connectors	–	
		Medium	–	
	Length of optical fibre	50/125 µm	–	
		62.2/125 µm	–	
		9/125 µm fibre	–	
	Attenuation analysis	50/125 µm fibre	–	
		62.2/125 µm fibre	–	
		9/125 µm fibre	–	
	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...60 V ⎓/18…30 V ∼ safety extra low voltage (SELV)	
	Consumption		5.3 W	
	Removable terminal block,		6-way	
Operating temperature			0...+ 60°C	
Relative humidity			10…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, fibre port status and fibre port activity
Alarm relay			Power supply fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)	
Reference			**TCS ESM 043F23F0**	**TCS ESM 083F23F0**
Pages			3/45	

Managed switches, 8 ports, copper twisted pair and fibre 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 fibre		Single mode optical fibre	
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...60 V ⎓/18…30 V ∿, safety extra low voltage (SELV)			
6.5 W	7.3 W	6.5 W	7.3 W
6-way			
0…+ 60°C			
10… 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, fibre port status and fibre port activity			
Power supply fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)			
TCS ESM 083F1CU0	**TCS ESM 083F2CU0**	**TCS ESM 083F1CS0**	**TCS ESM 083F2CS0**
3/46			

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

Ethernet network
Cabling system
ConneXium managed switches

Type of device			**Managed switches, 8 extended ports, copper twisted pair and fibre 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		
		Total length of pair	100 m		
	Fibre optic ports	Number and type	–	2 x 100BASE-FX ports	
		Connectors	–	Duplex SC	
		Medium	–	Multimode optical fibre	Single mode optical fibre
	Length of optical fibre	50/125 µm	–	5000 m *(1)*	–
		62.2/125 µm	–	4000 m *(1)*	–
		9/125 µm fibre	–	–	32,500 m *(2)*
	Attenuation analysis	50/125 µm fibre	–	8 dB	–
		62.2/125 µm fibre	–	11 dB	–
		9/125 µm fibre	–	–	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...60 V ⎓		
	Consumption		10 W	12 W	
	Removable terminal block		2 terminal blocks, 2-way		
Operating temperature			0...+ 60°C		
Relative humidity			10…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 fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓, 2-way)		
Reference			**TCS ESM 083F23F1**	**TCS ESM 063F2CU1**	**TCS ESM 063F2CS1**
Pages			3/46		

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

Managed switches, 16 and 24 ports, copper twisted pair and fibre 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 fibre	
–	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...60 V ⎓/18…30 V ∿ safety extra low voltage (SELV)		
9.4 W	11.8 W	15.5 W
6-way		
0…+ 60°C		
10… 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 fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)		
TCS ESM 163F23F0	**TCS ESM 163F2CU0**	**TCS ESM 243F2CU0**
3/47		

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

Ethernet network
Cabling system
ConneXium managed switches

Type of device			**Managed switches, 8 ports and 2 Gigabit ports, copper twisted pair and fibre optic**		
					
Interfaces	Copper cable ports	Number and type	8 x 10/100BASE-TX ports		
		Shielded connectors	RJ45		
		Medium	Shielded twisted pair, category CAT 5E		
		Total length of pair	100 m		
	Fibre optic Gigabit ports (with SFP fibre 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 fibre	Single mode optical fibre	Single mode and multimode optical fibre
	Length of optical fibre	50/125 µm	550 m	–	550 m
		62.2/125 µm	275 m	–	550 m
		9/125 µm fibre	–	8 - 72,000 m	20,000 m
	Attenuation analysis	50/125 µm fibre	7.5 dB	–	11 dB
		62.2/125 µm fibre	7.5 dB	–	11 dB
		9/125 µm fibre	–	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...60 V ⎓/18…30 V ∿ safety extra low voltage (SELV)		
	Consumption		8.9 W + 1 W per SFP fibre optic module		
	Removable terminal block		6-way		
Operating temperature			0...+ 60°C		
Relative humidity			10…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, fibre port status and fibre port activity		
Alarm relay			Power supply fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)		
Reference			**TCS ESM 103F2LG0**		
Pages			3/47		

*(1) With **TCS EAA F1LFU00** fibre optic module to be ordered separately (see page 3/41)*
*(2) With **TCS EAA F1LFH00** fibre optic module to be ordered separately (see page 3/41)*
*(3) With **TCS EAA F1LFS00** fibre optic module to be ordered separately (see page 3/41)*

Managed switches, 8 ports and 2 Gigabit ports, copper twisted pair and fibre 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...60 V ⎓/18…30 V ∿ safety extra low voltage (SELV)
8.3 W
6-way
0...+ 60°C
10…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, fibre port status and fibre port activity
Power supply fault, Ethernet network fault or communication port fault (volt-free contact 1 A max. at 24 V ⎓)

TCS ESM 103F23G0

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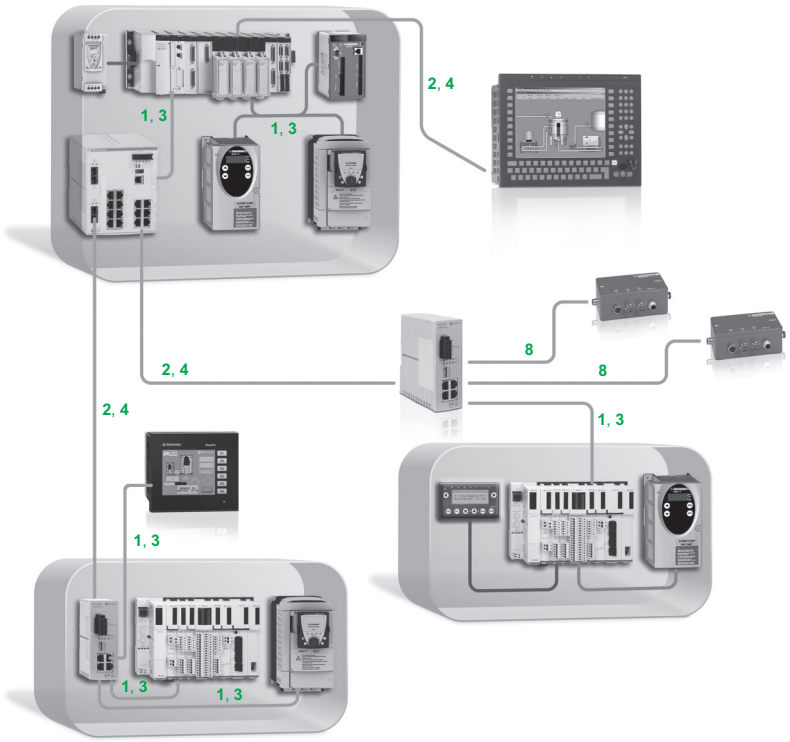
Ethernet network
Infrastructure

Presentation

Schneider Electric offers copper and fibre 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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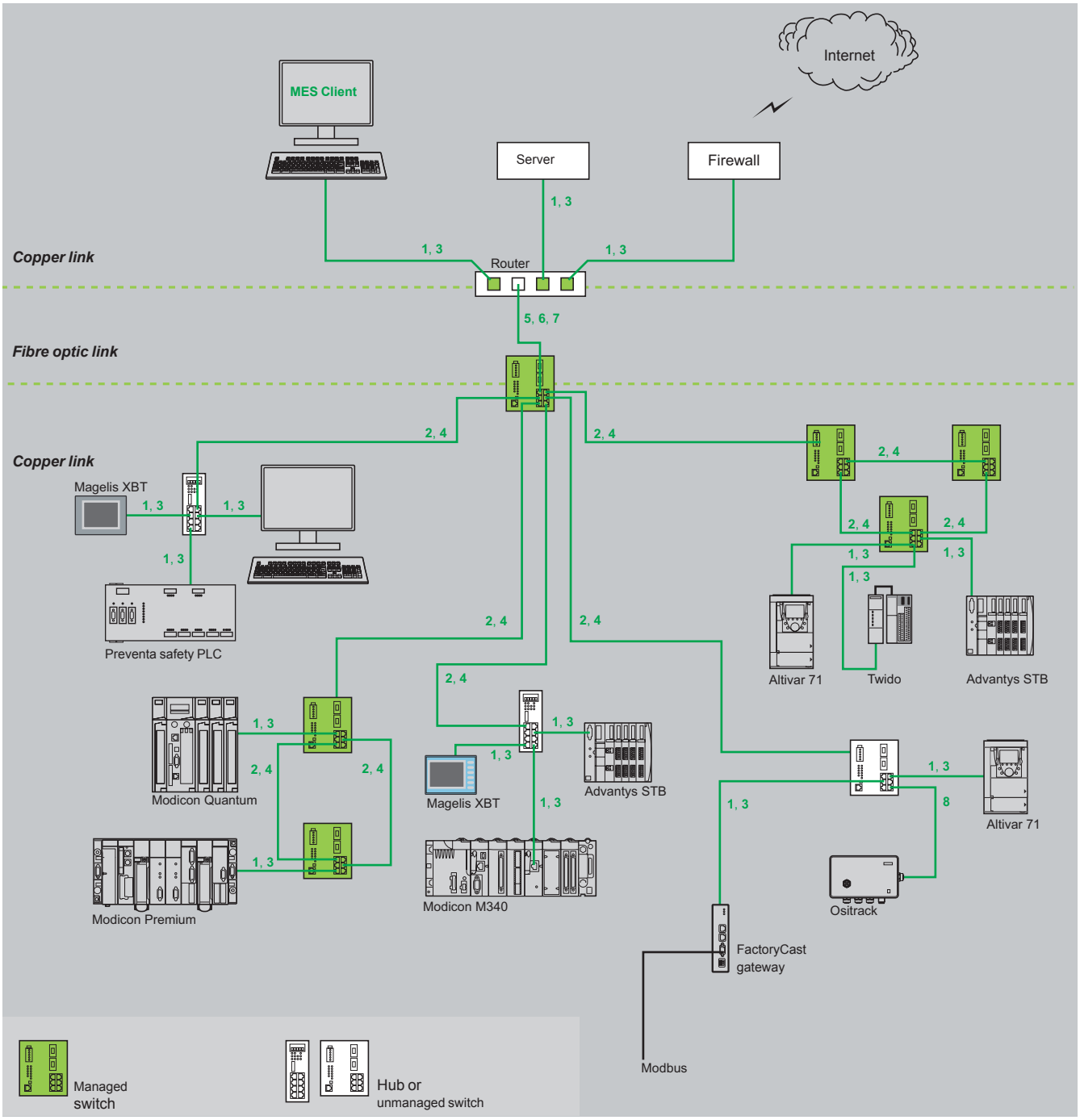
Examples (continued)

Mixed copper and fibre optic wiring



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

Wi-Fi network:
page 3/48

Ethernet network
Cabling system
ConneXium connection components

490 NT● 000 ●●

Shielded copper connection cables

ConneXium shielded connection cables are available in two versions to meet the various 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

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	**490 NTW 000 02**	–
			5 m	**490 NTW 000 05**	–
			12 m	**490 NTW 000 12**	–
			40 m	**490 NTW 000 40**	–
			80 m	**490 NTW 000 80**	–
Crossover copper cables	2 RJ45 connectors For connections between hubs, switches and transceivers	2	5 m	**490 NTC 000 05**	–
			15 m	**490 NTC 000 15**	–
			40 m	**490 NTC 000 40**	–
			80 m	**490 NTC 000 80**	–

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	**490 NTW 000 02U**	–
			5 m	**490 NTW 000 05U**	–
			12 m	**490 NTW 000 12U**	–
			40 m	**490 NTW 000 40U**	–
			80 m	**490 NTW 000 80U**	–
Crossover copper cables	2 RJ45 connectors For connections between hubs, switches and transceivers	4	5 m	**490 NTC 000 05U**	–
			40 m	**490 NTC 000 40U**	–
			80 m	**490 NTC 000 80U**	–

"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	Characteristics	Length	Reference	Weight kg
Ethernet copper cable 2 shielded twisted pairs 24 AWG	Conforms to the standards and approval listed above	300 m	**TCS ECN 300R2**	–
RJ45 connector	Conforms to EIA/TIA-568-D	–	**TCS EK3 MDS**	–
M12 connector	Conforms to IEC 60176-2-101	–	**TCS EK1 MDRS**	–

Wi-Fi network:
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490 NOC 000 05

490 NOT 000 05

490 NOR 000 05

TCS EAA F1LF● 00

Glass fibre optic cables

Glass fibre optic cables are intended for connection:
- To terminal devices (DTE)
- Between hubs, transceivers and switches

Description	Preformed with connectors at both ends	Marked	Length	Reference	Weight kg
Glass fibre optic cables	1 SC connector 1 MT-RJ connector	5	5 m	**490 NOC 000 05**	–
	1 ST (BFOC) connector 1 MT-RJ connector	6	5 m	**490 NOT 000 05**	–
	2 MT-RJ connectors	7	3 m	**490 NOR 000 03**	–
			5 m	**490 NOR 000 05**	–

Separate parts for TCS ESM switches

Description	Optical fibre	Type	Reference	Weight kg
Fibre optic modules for Gigabit ports with LC connector *(1)*	Multimode 50/125 µm or 62.5/125 µm	1000BASE-SX	**TCS EAA F1LFU00**	0.040
	Single mode 9/125 µm	1000BASE-LH	**TCS EAA F1LFH00**	0.040
	Multimode 50/125 µm or 62.5/125 µm Single mode 62.5/125 µm	1000BASE-LX	**TCS EAA F1LFS00**	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		**TCS EAM 0100**	–

(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	**TCS ECL 1M3M 1S2**	–
			3 m	**TCS ECL 1M3M 3S2**	–
			10 m	**TCS ECL 1M3M 10S2**	–
			25 m	**TCS ECL 1M3M 25S2**	–
			40 m	**TCS ECL 1M3M 40S2**	–
	2 IP 67 4-way M12 connectors	–	1 m	**TCS ECL 1M1M 1S2**	–
			3 m	**TCS ECL 1M1M 3S2**	–
			10 m	**TCS ECL 1M1M 10S2**	–
			25 m	**TCS ECL 1M1M 25S2**	–
			40 m	**TCS ECL 1M1M 40S2**	–
Power supply cables	2 female M12 straight connectors	–	2 m	**XZC P1164L2**	–
			5 m	**XZC P1164L5**	–
	2 female M12 angled connectors	–	2.5 m	**XZC P1264L2**	–
			5 m	**XZC P1264L5**	–
Power supply cables	2 female M12 straight connectors	–	–	**XZC C12 FDM 50B**	–
	2 female M12 angled connectors	–	–	**XZC C12 FCM 50B**	–
M12/RJ45 adaptor	IP 67 female 4-way M12 connector and female RJ45 connector	–	–	**TCS EAA F11F13F00**	–

Wi-Fi network:
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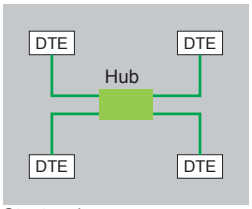
Ethernet network
Cabling system
ConneXium Hub and Transceiver

ConneXium hub

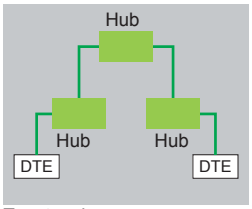
Presentation

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

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



Star topology



Tree topology


499 NEH 104 10

Reference

Description	Interfaces	Reference	Weight kg
ConneXium hub	4 x 10BASE-T ports (copper cable), RJ45 shielded connectors	**499 NEH 104 10**	0.530

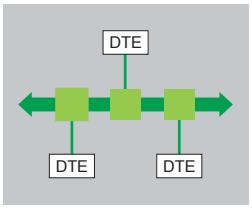
ConneXium transceiver

Presentation

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

Transceivers are “plug and play” devices that do not need to be configured by the user.

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



Linear topology on optical fibre


499 NTR 101 00

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 fibre), SC connector	**499 NTR 101 00**	0.230

Wi-Fi network:
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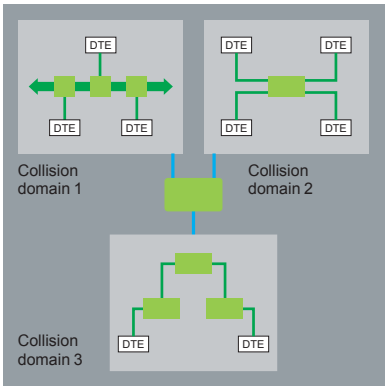
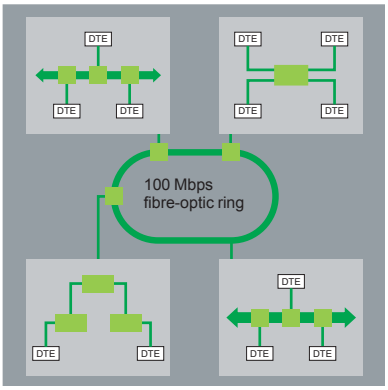
ConneXium unmanaged switches, twisted pair

Presentation

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 fibre.

Unmanaged switches are “plug & play” devices that do not need to be configured 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	**TCS ESU 051F0**	0.210
	8 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP20	**499 NES 181 00**	0.230
	8 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30	**TCS ESU 083FN0**	0.246

TCS ESU 051F0

499 NES 181 00

Description	Preformed with connectors at both ends	Length	Reference	Weight kg
IP67 power supply cables *(for ConneXium switch **TCS ESU 051F0**)*	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 **TCS ESU 051F0**)*	Female M12 straight connector	–	**XZC C12 FDM 50B**	–
	Female M12 angled connector	–	**XZC C12 FCM 50B**	–

Wi-Fi network:
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TCS ESU 053FN0

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

References

Description	Interfaces	Reference	Weight kg
ConneXium unmanaged switches	3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCS ESU 033FN0**	0.113
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fibre), duplex SC connector	**TCS ESU 043F1N0**	0.120
	5 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCS ESU 053FN0**	0.113

499 NMS 251 01

499 NSS 251 02

ConneXium unmanaged switches, 5 ports, twisted pair and fibre 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 fibre), duplex SC connector	**499 NMS 251 01**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**499 NMS 251 02**	0.335
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fibre), duplex SC connector	**499 NSS 251 01**	0.330
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**499 NSS 251 02**	0.335

Wi-Fi network:
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TCS ESM 043F1CU0

TCS ESM 043F2CS0

TCS ESM 083F23F0

ConneXium managed switches, 4 ports, twisted pair and fibre 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 fibre), duplex SC connector	**TCS ESM 043F1CU0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCS ESM 043F2CU0**	0.400
	■ 3 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fibre), duplex SC connector	**TCS ESU 043F1CS0**	0.400
	■ 2 x 10BASE-T/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCS ESU 043F2CS0**	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	**TCS ESM 043F23F0**	0.400
	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCS ESM 083F23F0**	0.410

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TCS ESM 083F1CU0

TCS ESM 083F2CS0

TCS ESM 063F2CS1

ConneXium managed switches, 8 ports, twisted pair and fibre 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 fibre), duplex SC connector	**TCS ESM 083F1CU0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCS ESM 083F2CU0**	0.410
	■ 7 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 1 x 100BASE-FX port (single mode optical fibre), duplex SC connector	**TCS ESM 083F1CS0**	0.410
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCS ESM 083F2CS0**	0.410

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

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	8 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30	**TCS ESM 083F23F1**	1.000
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30 ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCS ESM 063F2CU1**	1.000
	■ 6 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors, IP30 ■ 2 x 100BASE-FX ports (single mode optical fibre), duplex SC connector	**TCS ESM 063F2CS1**	1.000

Wi-Fi network:
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TCS ESM 163F23F0

TCS ESM 243F2CU0

ConneXium managed switches, 16 and 24 ports, twisted pair and fibre optic

References

Description	Interfaces	Reference	Weight kg
ConneXium managed switches	16 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors	**TCS ESM 163F23F0**	0.600
	■ 14 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCS ESM 163F2CU0**	0.600
	■ 22 x 10/100BASE-TX ports (copper cable), RJ45 shielded connectors ■ 2 x 100BASE-FX ports (multimode optical fibre), duplex SC connector	**TCS ESM 243F2CU0**	0.650

TCS ESM 103F2LG0

TCS ESM 103F23G0

ConneXium managed switches, 8 ports and 2 Gigabit ports, twisted pair and fibre 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 fibre) *(1)*, or ■ 2 x 1000BASE-LH ports (single mode optical fibre) (*2*), or ■ 2 x 1000BASE-LX ports (single mode and multimode optical fibre) (*3*)	**TCS ESM 103F2LG0**	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	**TCS ESM 103F23G0**	0.410

*(1) With **TCS EAA F1LFU000** fibre optic module to be ordered separately (see page 3/41)*
*(2) With **TCS EAA F1LFH000** fibre optic module to be ordered separately (see page 3/41)*
*(3) With **TCS EAA F1LFS000** fibre optic module to be ordered separately (see page 3/41)*

3

Wi-Fi network:
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Wi-Fi network
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 all countries of EU	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		**TCSG WA 242** *(3)*	**TCSG WA 242F** *(3)*
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(1) SSID: Service Set IDentifier
(2) PoE: Power over Ethernet
(3) All 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 all countries of EU	
EN 61131, EN 61131 for operation in automation environment. EMC test documentation for E1 certification (cars and vehicles) available	
TCSG WA 272 *(3)*	**TCSG WC 241** *(3)*
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Wi-Fi network
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 all countries of EU	Certifications for FCC
	Environment	EN 61131 for operation in automation environment	
References		**TCSN WA 241** *(3)*	**TCSN WA 241F** *(3)*
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(1) SSID: Service Set IDentifier
(2) PoE: Power over Ethernet

(3) All 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 all countries of EU		
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
TCSN WA 271 *(3)*	**TCSN WA 271F** *(3)*	**TCSN WA 2A1** *(3)*

Wi-Fi network
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 colour		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		**TCS WAB DH**	**TCS WAB 5V**
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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 ●● ●●●●

TCS WAB DON

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3

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 colour		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		**TCS WAB 5O**	**TCS WAB 5S**
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(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 ●● ●●●●
TCS WAB 5DN	**TCS WAB 5D**	**TCS WAB 5VN**

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(3) MiMo: Multiple-Input Multiple-Output

Wi-Fi network
Wi-Fi antennas

3

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 colour		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		**TCS WAB 2O**	**TCS WAB 2D**	**TCS WAB 2S**
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(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 ●● ●●●●	
TCS WAB C5	**TCS WAB C10**
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Wi-Fi network
Wi-Fi Access Points and Clients

TCSG WA 242

TCSN WA 241

TCSN WA 271

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	–	**TCSG WA 242**	–
Wi-Fi 802.11g Access Point FCC	2	54	IP 40	US and Canada	**TCSG WA 242F**	–
Wi-Fi 802.11g Access Point IP 67	2	54	IP 40	–	**TCSG WA 272**	–
Wi-Fi 802.11g Client	1	54	IP 40	–	**TCSG WC 241**	–
Wi-Fi 802.11n Access Point	1	300	IP 40	–	**TCSN WA 241**	–
Wi-Fi 802.11n Access Point FCC	1	300	IP 40	US and Canada	**TCSN WA 241F**	–
Wi-Fi 802.11n Access Point IP 67	1	300	IP 67	–	**TCSN WA 271**	–
Wi-Fi 802.11n Access Point IP 67 FCC	1	300	IP 67	US and Canada	**TCSN WA 271F**	–
Wi-Fi 802.11n Access Point IP 67 ATEX	1	300	IP 67 ATEX	–	**TCSN WA 2A1**	–

TCS WAB DH

TCS WAB 5DN

TCS WAB 5D

TCS WAB 2O

Wi-Fi antennas

Description	Frequency range	Gain	Degree of protection	Reference	Weight
	MHz	dBi			kg
Dual band hemispherical antenna	2300 - 2500	6	IP 65	**TCSG WAB DH**	0.300
	4900 - 5935	8			
5 GHz Very directional antenna	5150 - 5250	18	IP 67/IP 65	**TCS WAB 5V**	0.107
	5250 - 5350	19			
	5350 - 5725	18.5			
	5725 - 5875	18			
Dual band omni directional 11n antenna	2400 - 2500	3.5	IP 65	**TCS WAB DON**	0.300
	5150 - 5875	5.5			
5 GHz omni directional antenna	5150 - 5875	5	IP 65	**TCS WAB 5O**	0.300
5 GHz dual slant antenna	5150 - 5925	9	IP 65	**TCS WAB 5S**	0.110
5 GHz directional - MiMo 11n antenna	5150 - 5875	9	IP 65	**TCS WAB 5DN**	0.110
5 GHz Medium directional antenna	5150 - 5250	18	IP 67/IP 65	**TCS WAB 5D**	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	**TCS WAB 5VN**	2.500
2.4 GHz omni directional antenna	2400 - 2500	6	IP 65	**TCS WAB 2O**	0.340

Ethernet network:
page 3/26

Wi-Fi network
Wi-Fi antennas, cables and accessories

TCS WAB 2D

TCS WAB C5

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	**TCS WAB 2D**	0.110
2.4 GHz dual slant antenna	2400 - 2485	8 dBi	IP 65	**TCS WAB 2S**	0.110
2.4 GHz Leaky cable 50 m	2000 - 2900	0.15 dB at 2.4 GHz	IP 65	**TCS WAB C5**	12
2.4 GHz Leaky cable 100 m	2000 - 2900	0.15 dB at 2.4 GHz	IP 65	**TCS WAB C10**	24

TCS WAAC

TCS WABAC2

Cables

Description	Type	Length m	Reference	Weight kg
Adapter cable	1 RP-SMA male connector 1 N female connector	0.520	**TCS WAAC**	0.340
Adapter cable N-plug to N-jack, 2 m	1 N female connector 1 N male connector	2.000	**TCS WABAC2**	0.340
Adapter cable N-plug to N-jack, 15 m	1 N female connector 1 N male connector	15.000	**TCS WABAC15**	0.340

TCS WABP

TCS WAMCD

TCS WABMK

Accessories

Description	Frequency range	Type	Cable length m	Reference	Weight kg
Overvoltage protector for antennas	–	N female, N male	–	**TCS WABP**	0.080
Overvoltage protector for LAN/PoE	IP 68	N female, N male	–	**TCS WABP68**	0.080
Memory card modules *(1)*	IP 40	Mini-DIN connector	0.315	**TCS WAMC67**	0.035
	IP 67	M12 connector	0.500	**TCS WAMCD**	0.025
Adapter kit for pole mounting	–	–	–	**TCS WABMK**	–

(1) Auto-configuration adapter which 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.

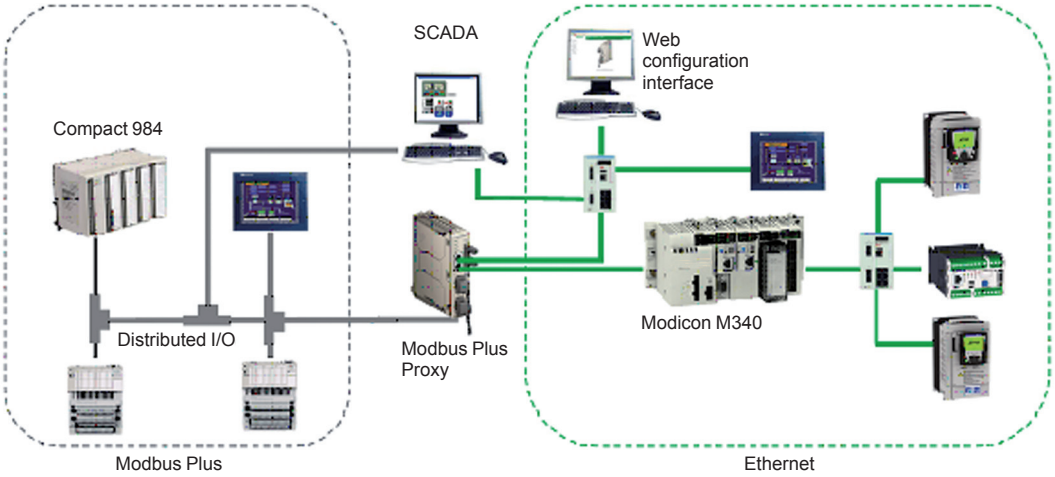
Ethernet network:
page 3/26

Modicon M340 automation platform
Modbus Plus Proxy module

Presentation

The **TCS EGDB23F24FA** Modbus Plus Proxy module (also called **M340 EGD**) is a network gateway which allows the Modicon M340 PLC to communicate with existing Modbus Plus devices.
It is not necessary to modify the applications for these devices to communicate with the Modicon M340 PLC, since the module automatically addresses the platforms and the various communication functions between the M340 and other PLC platforms (especially 984LL).

The M340 Modbus Plus Proxy offers Modbus Plus PLC users the chance to integrate the M340 PLC easily into their Modbus Plus network and thus access to advanced communications via Ethernet, or to migrate gradually from other PLC 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 all network nodes
- Point-to-point communication without programming with Peer Cop

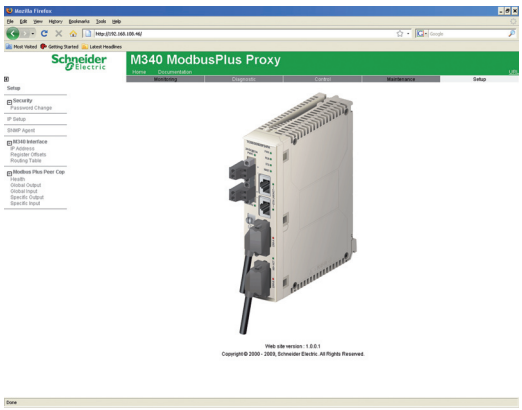
Increased network reliability and maintainability

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

Reduced total cost of ownership

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

Modicon M340 automation platform
Modbus Plus Proxy module



Embedded Web server

Web server functions

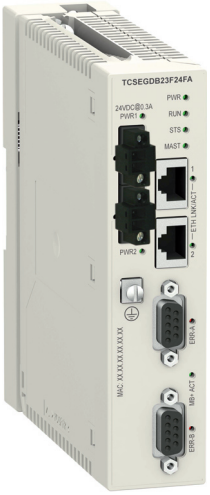
The **M340 EGD** includes an embedded Web server which can be used to perform diagnostics and configure the module connection. All the data is presented in the form of standard Web pages in HTML format. To access a Web page, you need Internet Explorer 6.0 (or later version) and Java 1.5 (or later version).

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.

Complementary characteristics

The following characteristics complement those introduced in the communication selection guide on page 3/6:
- External power supply voltage: 19.2...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



TCS EGDB23F24FA

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 Vista

Modicon M340 processor:
- BMX P34 2020 (Modbus and Ethernet version)
- BMX P34 20302 (CANopen and Ethernet version)

Ethernet Modicon M340 communication modules:
- BMX NOE 0100
- BMX NOE 0110
- BMX NOC 0401

Modicon M340 Modbus Plus Proxy module

Description	Type	Reference	Weight kg
Modbus Plus Proxy module for Modicon M340 PLC supplied with 2 front-mounted power supply connectors (2 positions)	Standard	**TCS EGDB23F24FA**	–
	Conformal coating	**TCS EGDB23F24FK**	–

Modicon M340 automation platform
Profibus Remote Master modules

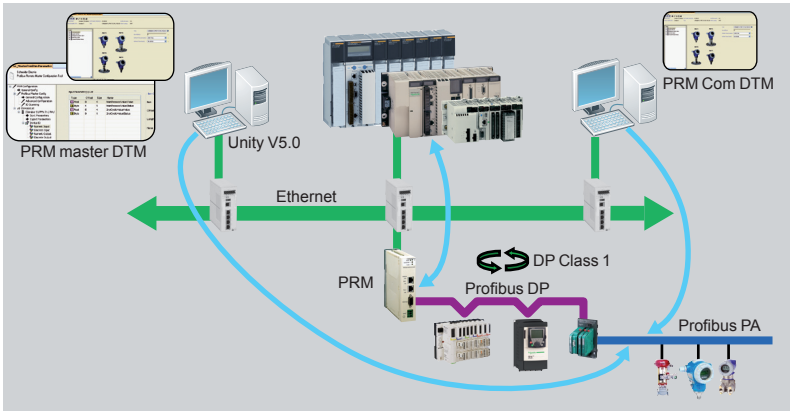
PROFIBUS DP fieldbus

PROFIBUS DP is one of the most widely used fieldbuses in industry.
Based on a master/slave protocol, only master stations, sometimes called active stations, have the right to access the bus, with slave, or passive, stations being limited to responding to interrogations.

Version V0 of PROFIBUS only allows cyclic exchanges with I/O, whereas version V1 offers an acyclic message handling channel which 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 all sorts of topologies - tree, star or ring - including those using fibre optics or a non-physical link.

Gateways can be used to communicate transparently with PROFIBUS PA, one of the most commonly used standards in process applications for connecting instrumentation. 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

Presentation

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 PLCs to PROFIBUS DP V1 via the I/O scanner function.
Irrespective of the type of PLC, only one product reference is required and setup is identical, thus reducing training and maintenance costs.
Two versions are available, standard and tropicalized, so as 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 PLC application and configure or calibrate devices.
The latter are integrated in the Unity catalogue 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 guarantee optimized performance, as well as the consistency of I/O data in the PLC application, irrespective of the PLC 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 this bus:
- 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
- And any third-party device compatible with Profibus DP and PA standard profiles

Limitations

Once saved, the Unity project incorporates all the PROFIBUS parameters as well as the slaves connected to the bus. Quantum, Premium and M340 PLCs are capable of embedding all this data so that an empty Unity terminal without any applications is able, after a simple transfer from the PLC, 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 PLC memory capacity (signalled by a “memory full” message during the build). This is particularly likely on devices which have DTM (the most common instrumentation on PA). Typically, each device of this type consumes around 20 KB of the PLC memory.

It is therefore essential to create a memory map according to the type of configuration used and possibly adapt it in consequence, either by increasing the amount of memory dedicated to the application (by reducing the zone allocated to data), or by increasing the overall memory via cartridges available in the catalogue.

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, which 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

TCS EGPA23F14F

490 NAD 911 03

Profibus Remote Master modules

Description	Type	Reference	Weight kg
Profibus Remote Master modules	Standard	**TCS EGPA23F14F**	0.620
	Ruggedized *(1)*	**TCS EGPA23F14FK**	0.620

Pre-cabled connection components to the PROFIBUS DP bus

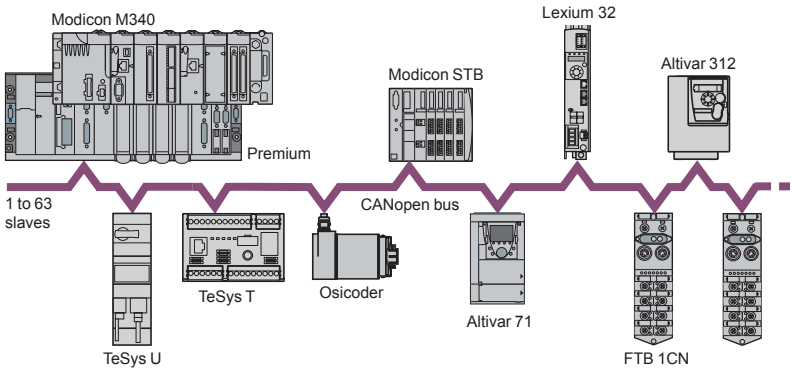
Description	Type	Reference	Weight kg
Remote I/O on PROFIBUS DP bus	Modicon STB network interface module	**STB NDP 2112**	0.140
	Momentum communication module	**170 DTN 110 00**	0.070
Connectors for remote I/O communication module	Line terminators	**490 NAD 911 03**	–
	Intermediate connection	**490 NAD 911 04**	–
	Intermediate connection and terminal port	**490 NAD 911 05**	–

Description	Length	Reference	Weight kg
PROFIBUS DP connection cables	100 m	**TCX PBS CA 100**	–
	400 m	**TCX PBS CA 400**	–

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

Modicon M340 automation platform
CANopen machine and installation bus

Presentation



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

CANopen brings transparency to Ethernet

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

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

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

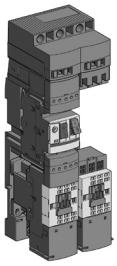
The bus uses a double shielded twisted pair on which, with the Modicon M340 platform, a maximum of 63 devices are connected by daisy-chaining or by tap junctions. The variable data rate between 20 Kbps and 1 Mbps depends on the length of the bus (between 20 m and 2500 m).
Each end of the bus must be fitted with a line terminator.

The Modicon M340 automation platform, via its **BMX P34 20102/20302** processor with integrated CANopen link, performs the role of master on the bus.

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

Modicon M340 automation platform

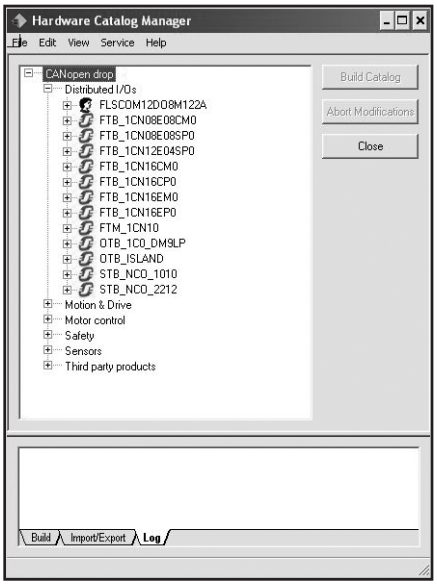
CANopen machine and installation bus



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…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 version ≥ 4.0** offers the *Hardware Catalog Manager* tool which can be used to integrate third-party devices at an identical level to that of Schneider Electric devices. These third-party devices and their EDS file must conform to the CiA (*CAN In Automation*) standard.

The *Hardware Catalog Manager* tool is used to:

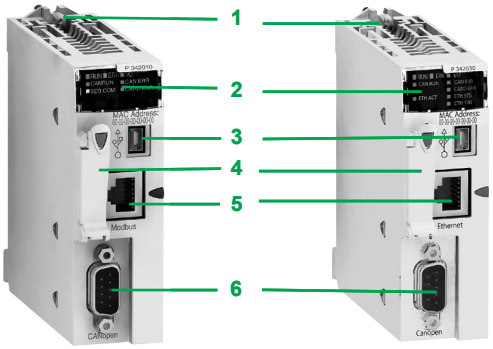
- ☐ Integrate third-party devices in Unity Pro
- ☐ Optimize the size of the **BMX P34 20102/20302** processor memory area reserved for PDO (*Process Data Object*) process variables
- ☐ Customize the parameters specific to each third-party device

- **Unity Pro version ≥ 4.1**, combined with **BMX P34 20102/20302** processors with integrated CANopen link, can be used to customize configuration of the device *Boot Up* procedure, and thus be compatible with all commercially-available CANopen third-party products.

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

Modicon M340 automation platform

CANopen machine and installation bus



BMXP3420102 *BMXP3420302*

Description

BMX P34 20102 and **BMX P34 20302** Performance processors on the Modicon M340 platform have an integrated CANopen communication port. They feature the following on the front panel:

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

3 A mini B USB connector for a programming terminal
4 A slot equipped with Flash memory card for backing up the application
5 An RJ45 connector for serial link (with **BMX P34 20102** model) or Ethernet Modbus/TCP port (with **BMX P34 20302** model)
6 A 9-way SUB-D connector for the CANopen master machine and installation bus

Complementary characteristics

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

- 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 **BMX RMS 008MP**.

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 **BMX P34 20302** processor)
- This card can be replaced by another card featuring a file storage option (see page 1/7).

BMX P34 20102

BMX P34 20302

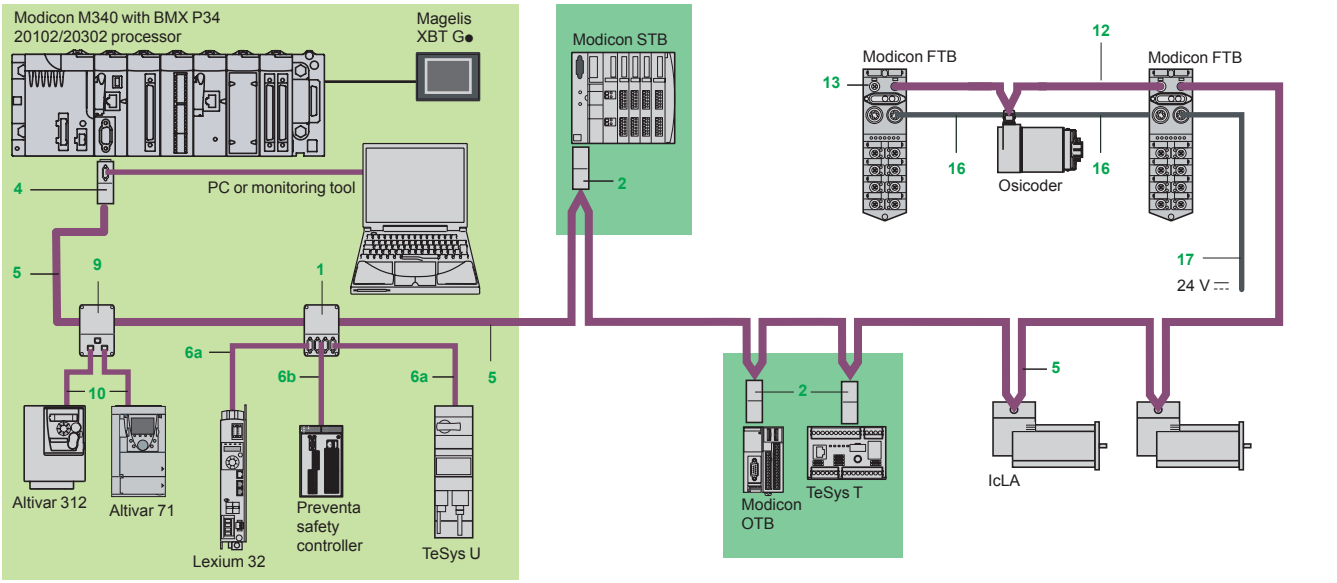
Capacitance	Max. no. of network/ bus modules	Integrated communication ports	Compatibility with Unity software *(4)*	Reference	Weight kg
Performance BMX P34 20, 4 racks					
1024 discrete I/O **256 analog I/O** **36 application-specific channels** 4096 KB integrated	2 Ethernet Modbus/ TCP networks 4 AS-Interface buses	CANopen bus Modbus serial link	Version ≥ 4.1	**BMX P34 20102**	0.210
		CANopen bus Ethernet network Modbus/TCP	Version ≥ 4.1	**BMX P34 20302**	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 **TSX CAN C●50/100/300** CANopen cables and **TSX CAN C●DD03/1/3/5** preformed cordsets.*
(4) See "Integration of third-party devices" paragraph on page 3/65.

Modicon M340 automation platform

CANopen machine and installation bus

CANopen bus cabling system



Note: *For key and references* **1**, **2**, …, **17**, *see pages 6/68 and 6/69.*

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 6/68).
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 system


TSX CAN TDM4


VW3 CAN TAP2


TSX CAN KCD F90T


TSX CAN KCD F180T


TSX CAN KCD F90TP

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	**TSX CAN TDM4**	0.196
IP 20 connectors CANopen female 9-way SUB-D. Switch for line termination	90° angled	2	**TSX CAN KCDF 90T**	0.046
	Straight *(2)*	–	**TSX CAN KCDF 180T**	0.049
	Right angle with 9-way SUB-D for connecting a PC or diagnostic tool	4	**TSX CAN KCDF 90TP**	0.051
IP 67 M12 connectors	Male	–	**FTX CN 12M5**	0.050
	Female	–	**FTX CN 12F5**	0.050
IP 20 CANopen tap junctions for Altivar and Lexium 32	2 RJ45 ports	9	**VW3 CAN TAP2**	–

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	**TSX CAN CA50**	4.930
			100 m	**TSX CAN CA100**	8.800
			300 m	**TSX CAN CA300**	24.560
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	5	50 m	**TSX CAN CB50**	3.580
			100 m	**TSX CAN CB100**	7.840
			300 m	**TSX CAN CB300**	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	**TSX CAN CD50**	3.510
			100 m	**TSX CAN CD100**	7.770
			300 m	**TSX CAN CD300**	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	**TSX CAN CADD03**	0.091
			1 m	**TSX CAN CADD1**	0.143
			3 m	**TSX CAN CADD3**	0.295
			5 m	**TSX CAN CADD5**	0.440
	Standard, UL certification, CE marking: flame-retardant (IEC 60332-2)	6a	0.3 m	**TSX CAN CBDD03**	0.086
			1 m	**TSX CAN CBDD1**	0.131
			3 m	**TSX CAN CBDD3**	0.268
			5 m	**TSX CAN CBDD5**	0.400
CANopen preformed cordsets	One 9-way SUB-D connector, One RJ45 connector (AWG 24)	6b	0.5 m	**TCS CCN 4F3M05T**	–
			1 m	**TCS CCN 4F3M1T**	–
				VW3 M38 05 R010 *(4)*	–
			3 m	**TCS CCN 4F3M3T**	–
	Two 9-way SUB-D connectors, one male and one female	–	0.5 m	**TLA CD CBA 005**	–
			1.5 m	**TLA CD CBA 015**	–
			3 m	**TLA CD CBA 030**	–
			5 m	**TLA CD CBA 050**	–

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	**FTX CN 3203**	0.40
			0.6 m	**FTX CN 3206**	0.70
			1 m	**FTX CN 3210**	0.100
			2 m	**FTX CN 3220**	0.160
			3 m	**FTX CN 3230**	0.220
			5 m	**FTX CN 3250**	0.430

(1) For key to numbers, see page 3/67.
(2) For connection to Controller Inside programmable card, the **VW3 CAN KCDF 180T** *connector can also be used.*
(3) ***Standard environment****:*
– Without any particular environmental constraints
– Operating temperature between + 5°C and + 60°C
– Fixed 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.

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

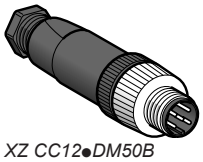
Modicon M340 automation platform
CANopen machine and installation bus
Cabling system

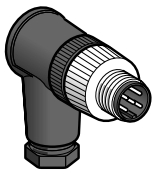

VW3 CAN A71

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°	–	–	**VW3 CAN KCDF 180T**	–
Adaptor for Altivar 71 drive	SUB-D to RJ45 CANopen adaptor	–	–	**VW3 CAN A71**	–
Preformed CANopen cordsets for Altivar drives	One RJ45 connector at each end	10	0.3 m	**VW3 CAN CARR03**	–
			1 m	**VW3 CAN CARR1**	–
Y-connector	CANopen/Modbus	–	–	**TCS CTN011M11F**	–


FTX DP21●●


XZ CC12●DM50B


XZ CC12●CM50B


FTX CY1208

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	–	**FTX CNTL12**	0.010
24 V ⎓ power supply connection cables	Equipped with two 5-way 7/8 connectors	16	0.6	**FTX DP2206**	0.150
			1	**FTX DP2210**	0.190
			2	**FTX DP2220**	0.310
			5	**FTX DP2250**	0.750
	Equipped with one 5-way 7/8 connector at one end and flying leads at the other end	17	1.5	**FTX DP2115**	0.240
			3	**FTX DP2130**	0.430
			5	**FTX DP2150**	0.700
T-connector for power supply	Equipped with two 5-way 7/8 connectors	–	–	**FTX CNCT1**	0.100

Separate parts

Designation	Composition		Sold in lots of	Reference	Weight kg
Connectors	7/8 type, 5-way	Male	–	**FTX C78M5**	0.050
		Female	–	**FTX C78F5**	0.050
	Straight, M12 type, 5 screw terminals	Male	–	**XZ CC12MDM50B**	0.020
		Female	–	**XZ CC12FDM50B**	0.020
	Angled, M12 type, 5 screw terminals	Male	–	**XZ CC12MCM50B**	0.020
		Female	–	**XZ CC12FCM50B**	0.020
Sealing plugs	For M8 connector (sold in packs of 10)		–	**FTX CM08B**	0.100
	For M12 connector (sold in packs of 10)		–	**FTX CM12B**	0.100
	For 7/8 connector		–	**FTX C78B**	0.020
Y-connectors	Connection of two M8 connectors to M12 connector on splitter box		–	**FTX CY1208**	0.020
	Connection of two M12 connectors to M12 connector on splitter box		–	**FTX CY1212**	0.030
Diagnostics adaptor	Equipped with two M12 connectors		–	**FTX DG12**	0.020
Marker labels	For plastic splitter boxes		10	**FTX BLA10**	0.010
	For metal splitter boxes		10	**FTX MLA10**	0.010

(1) For key to numbers, see page 3/67.
(2) For ATV 71H●●●M3, ATV 71HD11M3X, HD15M3X, ATV 71H075N4... HD18N4 drives, this connector can be replaced by the ***TSX CAN KCDF 180T connector.***

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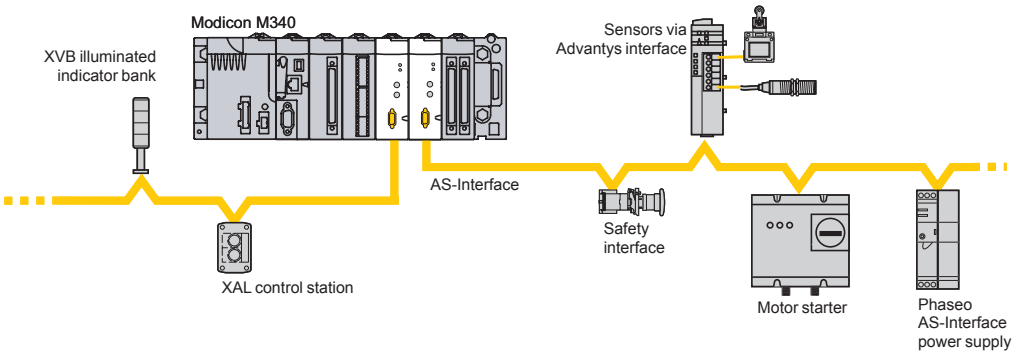
Modicon M340 automation platform

BMX EIA 0100 master module for AS-Interface cabling system

Presentation

The **BMX EIA 0100** 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 PLC memory. Communication on the AS-Interface line is managed totally transparently in relation to the application PLC program.

The **BMX EIA 0100** master module supports the latest management profile for AS-Interface devices *(AS-Interface V3)* that are able to manage all 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 essential 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” catalogue.

A Modicon M340 Performance configuration with **BMX P34 20●0/20●02** processor can take 4 **BMX EIA 0100** modules. A Standard configuration with **BMX P34 1000** processor can take 2 **BMX EIA 0100** modules.

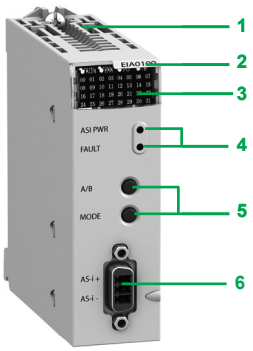
Description

The **BMX EIA 0100** 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** ….**11**) by a captive screw.

The front panel of the **BMX EIA 0100** AS-Interface master module features:

1 A rigid body providing support and protection for the electronic card.
2 A module reference marking.
3 A display block with 5 LEDs indicating the module operating modes:
- RUN (green): Module running
- ERR (red): Module faulty
- A/B (green): Displays the group of 31 slaves
- I/O (red): I/O fault 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 pushbutton 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 A 3-way male SUB-D connector for the AS-Interface cable (female screw connector supplied).

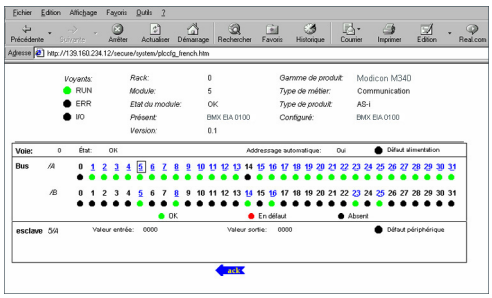


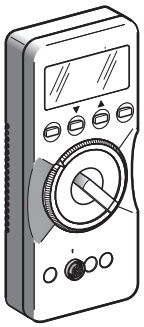
BMX EIA 0100

(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

BMX EIA 0100 master module for AS-Interface cabling system





ASI TERV2

Diagnostics

BMX EIA 0100 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 **BMX EIA 0100** 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:

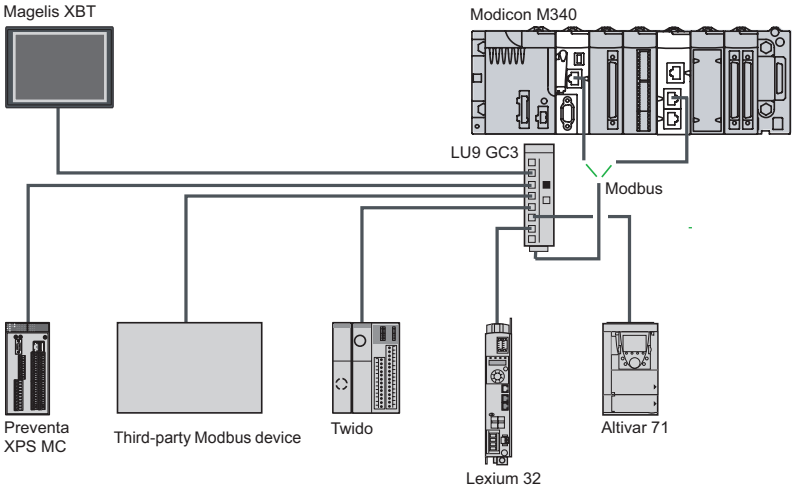
- The **ASI TERV2** adjustment terminal
- A web browser using the Rack Viewer function in the standard Web server on the Modicon M340 platform (see page 3/14)

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	**BMX EIA 0100**	0.340
Adjustment terminal	For addressing and diagnostics of AS-Interface level V1, V2 and V3 interfaces Powered by LR6 batteries	**ASI TERV2**	1.000

Modicon M340 automation platform
Modbus and Character mode serial links

Presentation



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

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

The Modicon M340 platform offers two serial link connection options for Modbus or Character mode:
- Via the serial link integrated in the following processors:
  - Standard processor **BMX P34 1000**
  - Performance processors **BMX P34 2000/20102/2020**
- Via the 2-channel serial link module **BMX NOM 0200.**

Although both these types of serial link can support modems, the **BMX NOM 0200** module is particularly recommended for this type of use.
Its performance and numerous parameter-setting 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 **BMX P34 1000**: maximum of 20 application-specific channels *(1)*.
- Performance processors **BMX P34 2●●●●:** maximum of 36 application-specific channels *(1)*.

*(1) Application-specific channels: **BMX EHC 0200** counter modules (2 channels), **BMX EHC 0800** (8 channels), **BMX MSP 0200** motion control modules (2 channels), **BMX NOM 0200** serial link module (2 channels) **and BMX NOR 0200H** RTU communication module (1 channel).*

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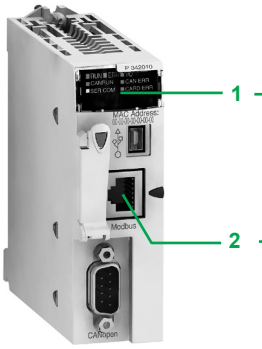
Modicon M340 automation platform

Modbus and Character mode serial links



BMX P34 20102

BMX P34 1000/2000/2020

Description

Processors with integrated serial link

BMX P34 1000/2000/20102/2020 processors integrate a serial link which can be used with either the Modbus RTU/ASCII master/slave protocol or with the Character mode protocol.

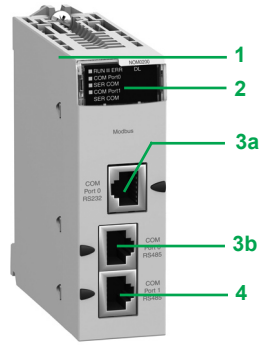
These processors have the following elements on the front panel, relating to the serial port:

1 A display block including at least the following LEDs:

□ SER COM LED (yellow): Activity on the serial link (lit) or fault on a device present on the serial link (flashing).

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

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



BMX NOM 0200

BMX NOM 0200 serial link module

The front panel of the **BMX NOM 0200** serial link module features:

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

2 A 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)/ 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 An 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, the **TWD XCA ISO** isolation box must be used.*

3

Modicon M340 automation platform
Modbus and Character mode serial links

Complementary characteristics

The following characteristics complement those indicated in the selection guide on page 3/5.

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)*

BMX NOM 0200 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...115 Kbps (Modbus/Character mode)
□ RS 485 port 0 and port 1: 0.3...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 characteristics of certain modems.

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

Modicon M340 automation platform
Modbus and Character mode serial links

BMX P34 1000/2000

BMX P34 2020

BMX NOM 0200

References

I/O capacity	Memory capacity	Integrated communication ports	Reference	Weight kg
BMX P34 10 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	**BMX P34 1000**	0.200
BMX P34 20 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	**BMX P34 2000**	0.200
		Modbus serial link CANopen bus	**BMX P34 2010**	0.210
		Modbus serial link CANopen bus version V2.1 *(1)*	**BMX P34 20102**	0.210
		Modbus serial link Ethernet Modbus/TCP network	**BMX P34 2020**	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)	**BMX NOM 0200**	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	**TCS MCN 3M4F3C2**	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	**TCS MCN 3M4M3S2**	0.150
		8-wire (excluding RI signal)	3 m	**TCS XCN 3M4F3S4**	0.165

(1) Version which can be used to customize configuration of the device Boot Up procedure compatible with all third-party CANopen products. Requires Unity Pro version V4.1.

*(2) For the ruggedized version, **BMX NOM 0200H**, see characteristics on pages 6/2 and 6/8.*

(3) RS 485 serial link connection (see pages 3/76 and 3/77).

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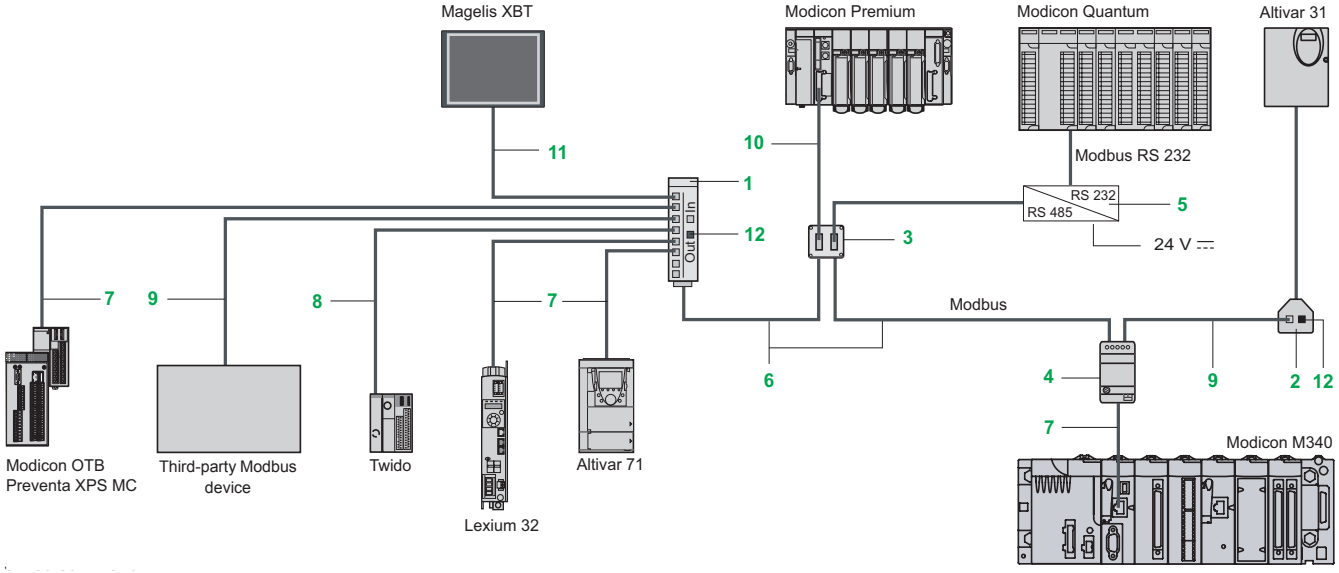
Modicon M340 automation platform

Modbus and Character mode serial link

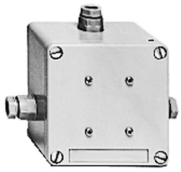
Cabling system

Cabling system



Extension and adaptation elements for RS 485 serial link

LU9 GC3



TSX SCA 50

TSX SCA 62

VW3 A8 306 TF●●

TWD XCA ISO

TWD XCA T3RJ

VW3 A8 114

XGS Z24

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 ⊥ rail	1	–	**LU9 GC3**	0.500
T-junction boxes dedicated to Altivar and Lexium	- 2 x RJ45 connectors - 1 integrated cable with RJ45 connector	2	0.3 m	**VW3 A8 306 TF03**	0.190
			1 m	**VW3 A8 306 TF10**	0.210
Passive T-junction box	- Tap-off and extension of the bus - Line termination	–	–	**TSX SCA 50**	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	–	**TSX SCA 62**	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 ⊥ rail	4	–	**TWD XCA ISO**	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 ⊥ rail	–	–	**TWD XCA T3RJ**	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	–	–	**VW3 A8 114**	0.155
RS 232C/RS 485 line converter without modem signals	24 V ⎓/20 mA power supply, 19.2 Kbps Mounting on 35 mm ⊥ rail	5	–	**XGS Z24**	0.100
Line terminator	For RJ45 connector R = 120 Ω, C = 1 nF	12	Sold in packs of 2	**VW3 A8 306 RC**	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 system

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	**TSX CSA 100**	5.680
			200 m	**TSX CSA 200**	10.920
			500 m	**TSX CSA 500**	30.000
Modbus RS 485 cordsets	2 x RJ45 connectors	**7**	0.3 m	**VW3 A8 306 R03**	0.030
			1 m	**VW3 A8 306 R10**	0.050
			3 m	**VW3 A8 306 R30**	0.150
	1 x RJ45 connector and 1 x 15-way SUB-D connector	**–**	3 m	**VW3 A8 306**	0.150
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector	**8**	0.3 m	**TWD XCA RJ003**	0.040
			1 m	**TWD XCA RJ010**	0.090
			3 m	**TWD XCA RJ030**	0.160
	1 x RJ45 connector and 1 end with flying leads	**9**	3 m	**VW3 A8 306 D30**	0.150
	1 miniature connector and 1 x 15-way SUB-D connector	**10**	3 m	**TSX SCP CM 4530**	0.180
Cordsets for Magelis XBT display units and terminals	1 x RJ45 connector and 1 x 25-way SUB-D connector for: - XBT N200/N400/NU400 - XBT R410/411 - XBT GT2...GT7 (COM1 port) *(1)*	**11**	2.5 m	**XBT Z938**	0.210
	2 x RJ45 connectors for: - XBT GT1 (COM1 port) - XBT GT2...GT7 (COM2 port)	**11**	3 m	**VW3 A8 306 R30**	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	**TCS MCN 3M4F3C2**	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	**TCS MCN 3M4M3S2**	0.150

*(1) For use with **XBT ZG909** adaptor.*

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Contents

4 - Software

Software
Unity Pro software

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

IEC 61131-3 languages	Instruction List (IL)	**M - D**	**M - A - P - D**
	Ladder (LD)	**M - D**	**M - A - P - D**
	Structured Text (ST)	**M - D**	**M - A - P - D**
	Function Block Diagram (FBD)	**M - D**	**M - A - P - D**
	Sequential Function Chart (SFC)/Grafcet	**M - D**	**M - A - P - D**
Programming services	Multitask programming (Master, fast and event-triggered)	**M - D**	**M - A - P - D**
	Multitask programming (Master, fast, auxiliary and event-triggered)		
	Functional view and function modules	**M - D**	**M - A - P - D**
	DFB editor and instances	**M - D**	**M - A - P - D**
	DDT compound data editor	**M - D**	**M - A - P - D**
	Data structure instances and tables	**M - D**	**M - A - P - D**
	EF libraries and EFBs	**M - D**	**M - A - P - D**
	User-definable control loops		**A** (TSX PCI 2●) - **P** (TSX P57 2●) - **D**
	Programmable control loops (with process control function block library)	**M - D**	**M - A - P - D**
	Safety function block libraries		
	Motion function block (MFB) libraries	**M - D**	**M - A - P - D**
	Hot Standby PLC redundancy system		**P** (TSX H57 24M) - **D**
	System diagnostics	**M - D**	**M - A - P - D**
	Application diagnostics	**M - D**	**M - A - P - D**
	Diagnostics with location of error source	**M - D**	**M - A - P - D**
	Bus and network configuration to slave devices (Modicon distributed I/O, etc)	**M - D**	**M - A - P - D**
Debugging and display services	PLC simulator	**M - D**	**M - A - P - D**
	Hypertext link animations in graphic languages	**M - D**	**M - A - P - D**
	Step by step execution, breakpoint	**M - D**	**M - A - P - D**
	Watchpoint	**M - D**	**M - A - P - D**
	Runtime screens	**M - D**	**M - A - P - D**
	Diagnostic viewer	**M - D**	**M - A - P - D**
Other services	Creation of hyperlinks	**M - D**	**M - A - P - D**
	XML import/export	**M - D**	**M - A - P - D**
	Application converters (Concept, PL7)		**M - A - P - D**
	Utilities for updating PLC operating systems and Advantys	**M - D**	**M - A - P - D**
	Communication drivers for Windows 2000/XP	**M - D**	**M - A - 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 - A - P - D**

Compatible Modicon platforms	Modicon M340 processors **M**	BMX P34 1000 BMX P34 20●0/20●02	BMX P34 1000 BMX P34 20●0/20●02
	Atrium slot-PLCs **A**	–	TSX PCI 57204M
	Premium CPUs **P**	–	TSX P57 C● 0244/0244M TSX P57 104/1634/154M TSX P57 204/2634/254M TSX H57 24M
	Quantum CPUs **Q**	–	–
	Safety 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	**UNY SPU SF● CD50**	**UNY SPU MF● CD50**
Page	4/20	4/21

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

M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
	P (TSX P57 5●) - Q (140 CPU 651/671) - D	P (TSX P57 5●) - Q (140 CPU 651/671) - D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
A (TSX PCI 2●/3●) - P (TSX P57 2●/3●/4●) - D	P (TSX P57 2●/3●/4●/5●) - D	P (TSX P57 2●/3●/4●/5●) - D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
		S-D
M-A-P-D	M-A-P-D	M-A-P-D
P (TSX H57 24/44M) - D	P (TSX H57 24/44M) - Q (140 CPU 67 160) - D	P (TSX H57 24/44M) - Q (140 CPU 67 160) - S - D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D
	M-A-P-Q-D	M-A-P-Q-S-D
	M-A-P-Q-D	M-A-P-Q-S-D
M-A-P-Q-D	M-A-P-Q-D	M-A-P-Q-S-D

BMX P34 1000 BMX P34 20●0/20●02	BMX P34 1000 BMX P34 20●0/20●02	BMX P34 1000 BMX P34 20●0/20●02
TSX PCI 57204M TSX PCI 57354M	TSX PCI 57204M TSX PCI 57354M	TSX PCI 57204M TSX PCI 57354M
TSX P57 C● 0244/0244M TSX P57 104/1634/154M TSX P57 204/2634/254M TSX P57 304/3634/354M TSX P57 4634/454M TSX H57 24/44M	TSX P57 C● 0244/0244M TSX P57 104/1634/154M TSX P57 204/2634/254M TSX P57 304/3634/354M TSX P57 4634/454M TSX P57 5634/554M TSX P57 6634M TSX H57 24/44M	TSX P57 C● 0244/0244M TSX P57 104/1634/154M TSX P57 204/2634/254M TSX P57 304/3634/354M TSX P57 4634/454M TSX P57 5634/554M TSX P57 6634M TSX H57 24/44M
140 CPU 311 10 140 CPU 434 12U 140 CPU 534 14U	140 CPU 311 10 140 CPU 434 12U 140 CPU 534 14U 140 CPU 651 50/60 140 CPU 652 60 140 CPU 671 60	140 CPU 311 10 140 CPU 434 12U 140 CPU 534 14U 140 CPU 651 50/60 140 CPU 652 60 140 CPU 671 60
–	–	140 CPU 651 60S 140 CPU 671 60S
STB, OTB, FTB, FTM, ETB, Momentum	STB, OTB, FTB, FTM, ETB, Momentum	STB, OTB, FTB, FTM, ETB, Momentum

Unity Pro Large	Unity Pro Extra Large	Unity Pro XL Safety
UNY SPU LF● CD50	UNY SPU EF● CD50	UNY SPU XF● CD41
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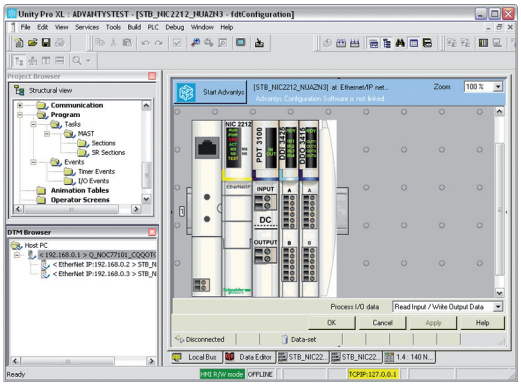
Software
Unity Pro software
Small / Medium / Large / Extra Large / XL Safety

Unity Pro

Presentation

Unity Pro is the common programming, debugging and operating software for the Modicon M340, Premium and Quantum PLC ranges.

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



DTM editor (Modicon STB island)

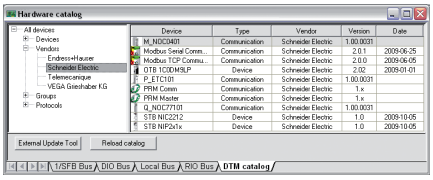
FDT/DTM function

Unity Pro facilitates integration of fieldbus architectures into engineering control systems using FDT/DTM technology:
- FDT *(Field Device Tool)* is the container which supports the device DTMs.
- DTM *(Device Type Manager)* is the configuration tool for devices with integrated graphical interfaces. It contains all 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 BMX NOC 0401.

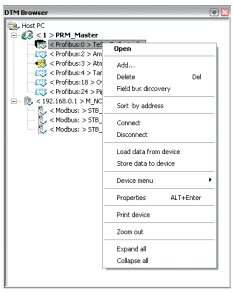
Use of the Master DTM allows Unity Pro to perform the following actions:
- Manage the PLC I/O scan
- Create the application variables based on the description of the process objects available from the connected DTM devices
- Manage synchronization with the PLC configuration
- Create a generic DTM from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

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



DTM hardware catalogue

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



DTM Browser and DTM context menu

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

Selection guide:
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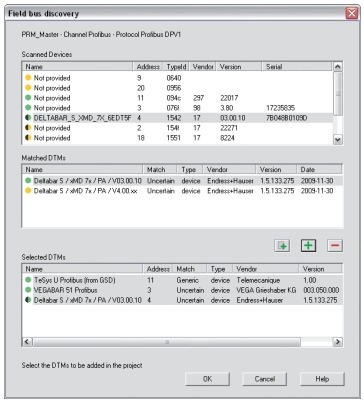

Fieldbus discovery screen

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, Atrium, 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 which 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, Atrium/Premium and Quantum PLCs, these extensions support the development of more complex applications in order to maximize the potential of the specific features of each of these platforms.

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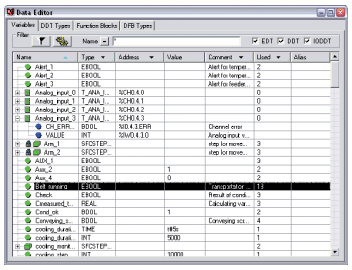
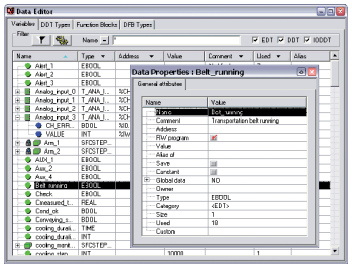


Data Editor



Data Properties

Data Editor

The data editor, which 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). All 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.

4

Selection guide:
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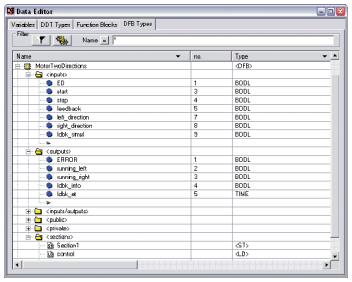
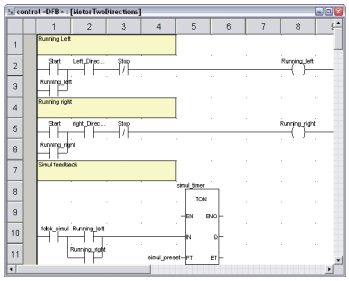
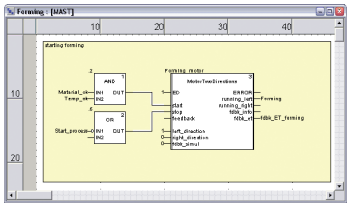


Design



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, Atrium, Premium and Quantum 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 fixing a standard programming routine. They can be read-only or read/write. They can be exported to all 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 (all variables handled by the DFB are identified in the data editor)
- Enables the use of private variables specific to the DFBs, which 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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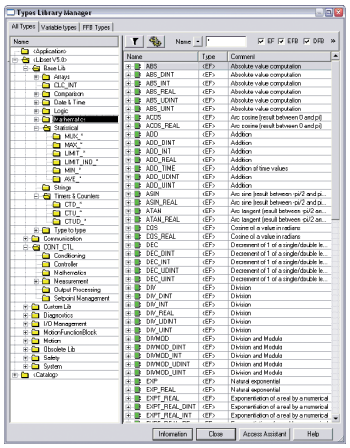
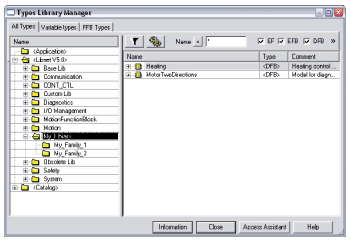


Standard function block libraries

Function block libraries

The function and function block libraries manager contains all the elements provided with Unity Pro software. The functions and function blocks are organized into libraries, which themselves consist of families. Depending on the type of PLC 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 all platforms. 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, which covers standard automation functions, is supplemented by other, more application-specific libraries and platform-specific functions:
- **Communication library**, providing an easy means of integrating communication programs from PLCs with those used by HMIs from the PLC application program. Like other function blocks, these EFBs can be used in all languages to exchange data among PLCs 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**, which 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**, providing services to handle information exchanged with hardware modules (data formatting, scaling, etc.)
- **Motion Function Blocks library**, containing a set of predefined functions and structures to manage motion controlled by drives and servo drives connected on CANopen.
- **Motion library** for motion control and fast counting.
- **System library**, which 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 all function blocks used by legacy programming software needed to perform application conversions.



User libraries

Management of user standards

Users may create libraries and families in order 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

Selection guide:
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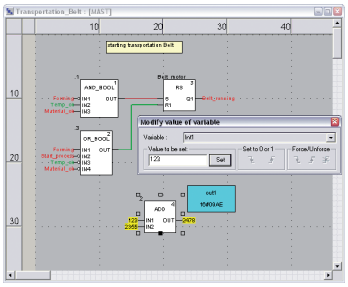
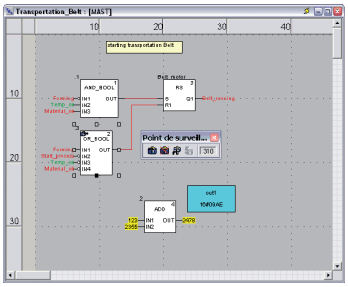
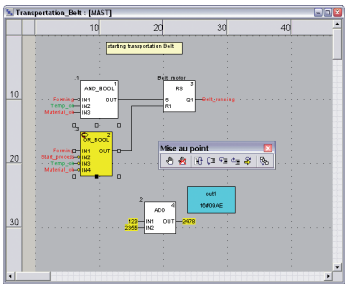


Dynamic animation/adjustment



Watchpoint



Breakpoints/step-by-step

Debugging tools

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

- Dynamic program animation
- Setting 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 PLC 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 behaviour of DFBs. Setting 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.

4

Selection guide:
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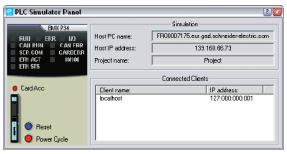
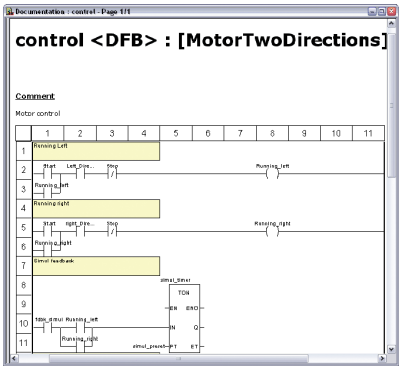
Software
Unity Pro software
Small / Medium / Large / Extra Large / XL Safety



Simulator control panel

PLC simulator

Unity Pro's integrated simulator can be used to test the application program for Modicon M340, Atrium, Premium or Quantum PLCs from the PC terminal without having to connect to the PLC 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 PLC 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, which shows the file structure in tree form.
It allows all or part of the application 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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Software
Unity Pro software
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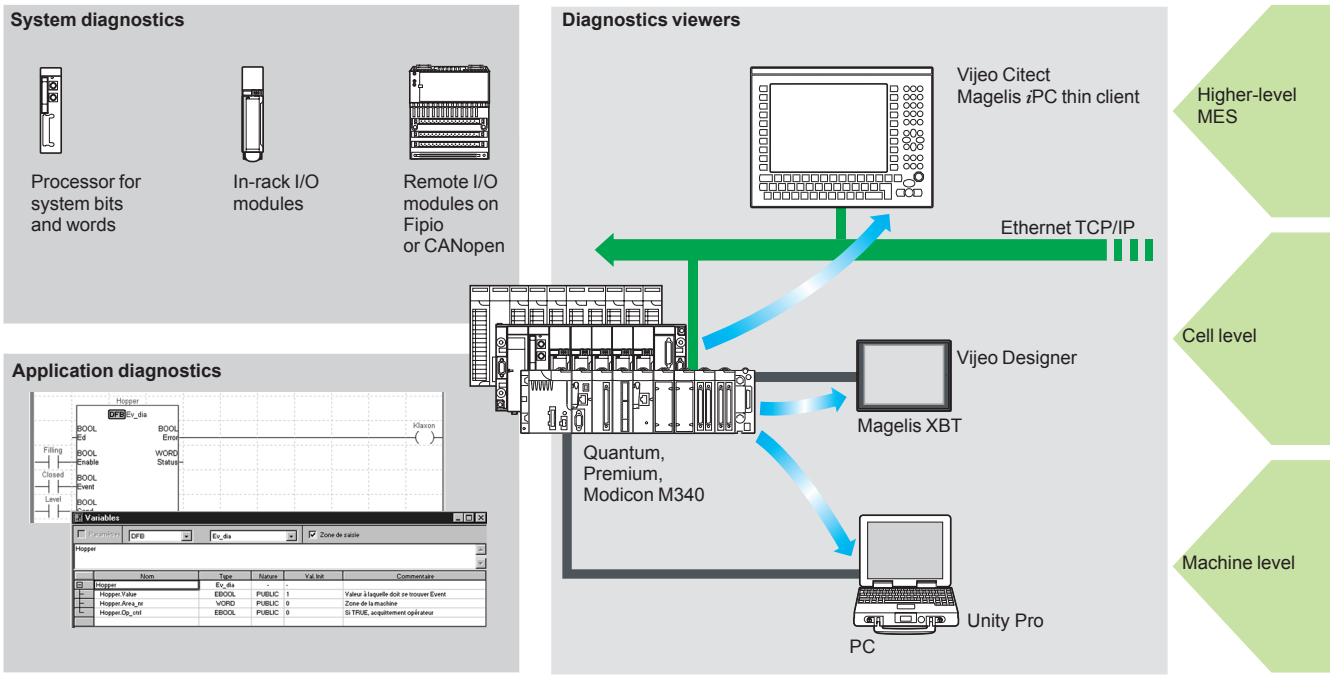
Integrated diagnostics

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

Presentation

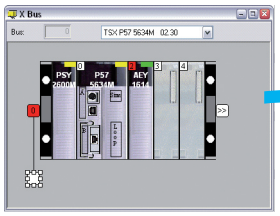


The diagnostics offer for Modicon M340, Atrium, Premium and Quantum platforms is based on the following three components:
- System diagnostics
- DFB and EFB diagnostic function blocks (for system and application diagnostics)
- Error message display system, called viewers, supplied as a standard component of Magelis XBT terminals, Vijeo Citect supervisory software and Unity Pro setup software

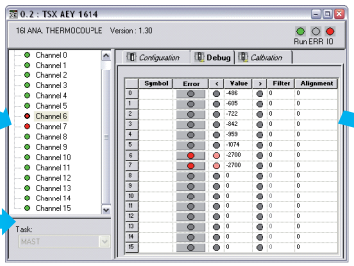
System diagnostics

The system diagnostics for Modicon M340, Atrium, Premium and Quantum 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 PLC.
These events are displayed automatically in a diagnostics viewer *(1)* without requiring any additional programming.

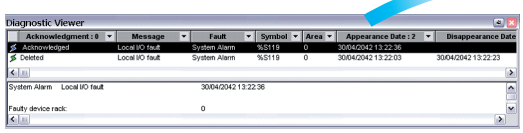
With Unity Pro integrated diagnostics, this function can be used to perform first level diagnostics of the elements in the configuration, up to and including each I/O module channel.



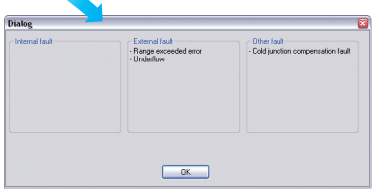
Configuration level



Module level



Viewer window (example with Unity Pro software)



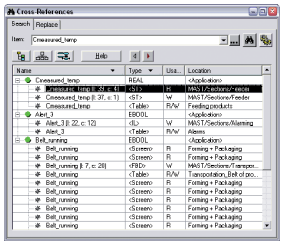
Channel level

(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 PLC Web server that can be accessed via a Magelis iPC thin client.

Modifying the program with the PLC in RUN mode

With Unity Pro, changes can be made to the program when the PLC connected to the programming terminal is in RUN mode. These modifications are performed with the following operations:
- The application contained in the PLC 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 PLC (in RUN mode).

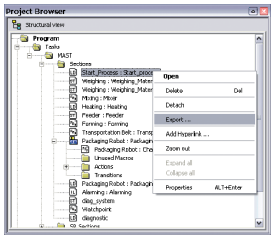
This function makes it possible to add or modify program code and data in different parts of the application in one single modification session (thus resulting in a unified, consistent modification with respect to the controlled process). This increased flexibility comes at a cost in terms of the amount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



Cross references table

Cross references function

Unity Pro's cross references function, which is available in standalone mode (offline) and when connected to the PLC in Run (online), allows users to view all the elements of a PLC 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.).

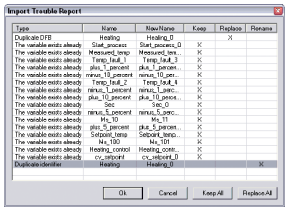


Data export shortcut menu

Import/export function

The import/export function available in Unity Pro supports the following operations from the structural and functional project views:
- Via the import function, reuse in the current project of all or part of a project created previously
- Via the export function, copying of all or part 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, Atrium, Premium or Quantum PLC 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 PLC configuration when the PLC has already been configured with the SIS Pro tool.

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

Selection guide:
page 4/2

Application converters

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

Concept/Unity Pro converter (Quantum PLC)

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). In order to perform the conversion, the application must be exported 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 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 therefore essential to test or debug all converted applications.

PL7/Unity Pro converter (Premium PLC and Atrium slot-PLC)

This conversion is performed with a PL7 application V4 or later (Premium or Atrium slot-PLC). In order to perform the conversion, the source file (complete application) or source file (user function block) must be 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 Centre.*

Selection guide:
page 4/2

Unity Pro

Unity Pro XL Safety

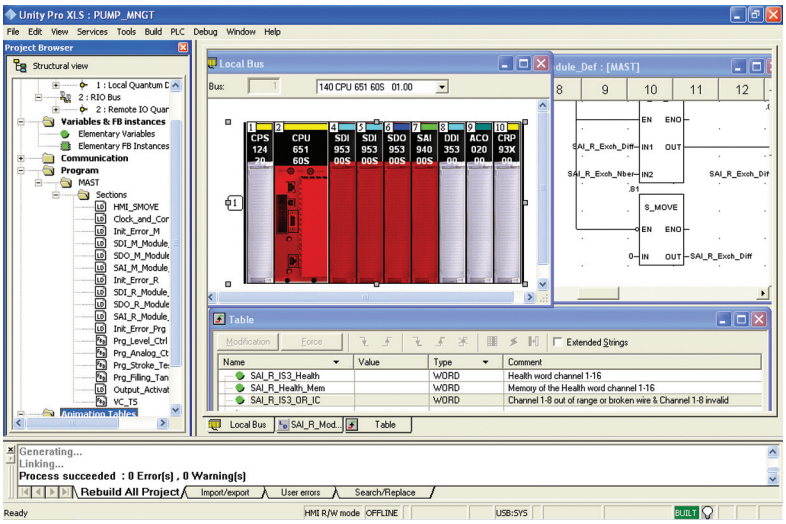
In addition to the functions of Unity Pro Extra Large, Unity Pro XL Safety provides a set of specific check and protection function blocks to facilitate the creation and debugging of Quantum safety projects.
For a description of these characteristics and their setup, as well as the functional limitations provided for within the framework of SIL 2-certifiable safety projects according to IEC 61508, refer to the document entitled "*Quantum Safety PLC 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 **140 CPU 651 60S/671 60S** PLCs.
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 which determines whether or not the project created will be a safety project.

Unity Pro XLS is capable of processing all 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 XL Safety (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”.

Moreover, most 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 all options when checking a safety project.

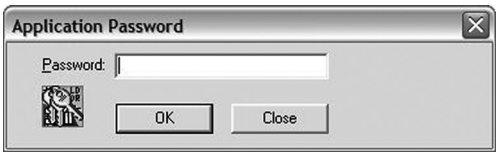
Selection guide:
page 4/2

Unity Pro XL Safety (continued)

Protecting the project

Unity Pro XLS provides protective functions against unauthorized access to safety projects, to the Quantum safety PLC and to Unity Pro XLS itself.

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



■ 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 PLC 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 fails. With Unity Pro XLS, this function can easily be programmed in the application by setting up the S_HSBY_SWAP elementary function from the library.

Selection guide:
page 4/2

Unity Pro XL Safety (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 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 catalogue 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 onto the safety PLC
- Before modifying the application program executed on the safety PLC

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 at which it was generated.
This information is useful for checking the project.

Downloading a project to Unity Pro XLS

It is possible to download a safety project from the PLC to Unity Pro XLS under the following conditions:
- This must have been defined as an option for the safety project.
- The user must know the application password to establish a connection to the safety PLC.
- The safety PLC must be placed in maintenance mode to perform the download.

Unrestricted memory

The unrestricted memory area contains bits and words which are not protected against write operations from external equipment such as HMI terminals and PLCs, etc.

- 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 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

Software
Unity Pro software
Small / Medium / Large / Extra Large / XL Safety

Communication drivers

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

Unity Pro also includes the following communication drivers, which 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 PLC	■	■
XIP - XWay on TCP/IP	■	■

■ Driver available ☐ Driver not available

Unity Developer's Edition, advanced open access

Advanced open access, intended for experienced IT engineers, supports the development of interfaces between Unity and expert tools, as well as 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 **UNY UDE VFU CD21E** 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
- All Modicon M340 processors
- All Atrium slot-PLCs
- All Premium Unity processors
- All Quantum Unity processors

(1) Also available separately under reference **TLX CD DRV 20M**
(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 licences of the same type (from Concept XL group licence to Unity Pro Extra Large group licence).

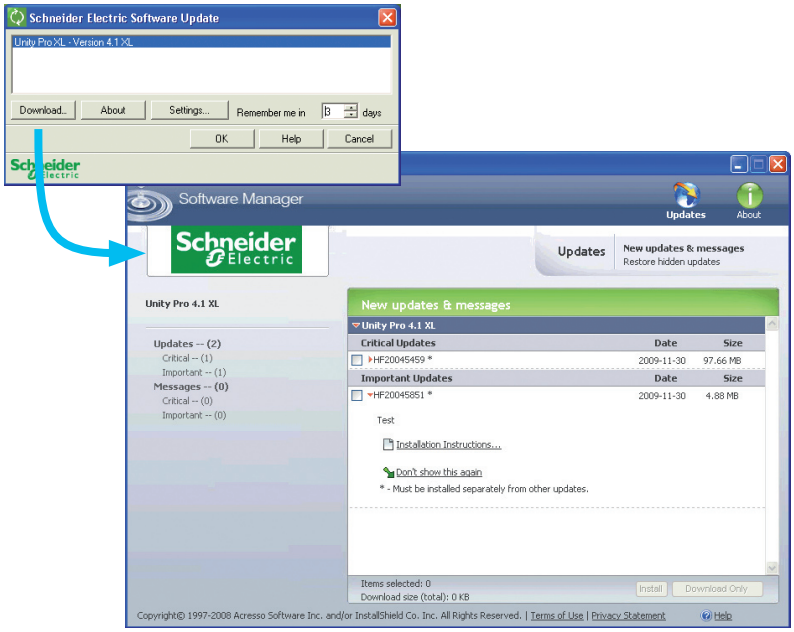
Composition and Windows OS compatibility

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
- PLC simulator

Cables for connecting the processor to the programming PC must be 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 locally on their workstation.



4

Selection guide:
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Software
Unity Pro software
Small / Medium / Large / Extra Large / XL Safety

Unity Pro

References

Unity Pro Small, Medium, Large, Extra Large and XL Safety software packages

These software packages are for programming and setting up 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 XL Safety** 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 licences of the same type (from Concept XL group licence to Unity Pro Extra Large group licence).
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:
- A Unity Pro V5.0 DVD in six languages (English, French, German, Italian, Spanish and Chinese)
- A Unity Loader V2.1 CD
- An Ethernet/IP Configuration V1.1 CD (not included with Unity Pro Small)
- A DVD containing the documentation in six languages (English, French, German, Italian, Spanish and Chinese)

Unity Pro Small version 5.0 software

For Modicon M340: **BMX P34 1000/20●0/20●02**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum**

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

Designation	Licence type	Reference	Weight kg
Unity Pro Small software packages	Single (1 station)	**UNY SPU SFU CD 50**	–
	Group (3 stations)	**UNY SPU SFG CD 50**	–
	Team (10 stations)	**UNY SPU SFT CD 50**	–
Software upgrades from: - Concept S - PL7 Micro - ProWORX NxT/32 Lite	Single (1 station)	**UNY SPU SZU CD 50**	–
	Group (3 stations)	**UNY SPU SZG CD 50**	–
	Team (10 stations)	**UNY SPU SZT CD 50**	–

Licence type extensions for Unity Pro Small version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNY SPU SZUG CD 50**	–
Group (3 stations)	Team (10 stations)	**UNY SPU SZGT CD 50**	–

(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

Software
Unity Pro software
Medium / Large

Unity Pro Medium version 5.0 software

For Modicon M340: **BMX P34 1000/20●0/20●02**
For Modicon Premium, Atrium: **TSX 57 0●...2●, TSX PCI 57 2●**
For distributed I/O: **Modicon ETB, FTB, FTM, OTB, STB, Momentum**

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

Designation	Licence type	Reference	Weight kg
Unity Pro Medium software packages	Single (1 station)	**UNY SPU MFU CD 50**	–
	Group (3 stations)	**UNY SPU MFG CD 50**	–
	Team (10 stations)	**UNY SPU MFT CD 50**	–
Software upgrades from: - Concept S, M - PL7 Micro, Junior - ProWORX NxT/32 Lite	Single (1 station)	**UNY SPU MZU CD 50**	–
	Group (3 stations)	**UNY SPU MZG CD 50**	–
	Team (10 stations)	**UNY SPU MZT CD 50**	–

Licence type extensions for Unity Pro Medium version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNY SPU MZUG CD 50**	–
Group (3 stations)	Team (10 stations)	**UNY SPU MZGT CD 50**	–

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)	**UNY SPU MZSU CD 50**	–
Small to Medium Group (3 stations)	**UNY SPU MZSG CD 50**	–
Small to Medium Team (10 stations)	**UNY SPU MZST CD 50**	–

Unity Pro Large version 5.0 software

For Modicon M340: **BMX P34 1000/20●0/20●02**
For Modicon Premium, Atrium: **TSX 57 0●...4●, TSX PCI 57 2●...3●**
For Modicon Quantum: **140 CPU 311 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	Licence type	Reference	Weight kg
Unity Pro Large software packages	Single (1 station)	**UNY SPU LFU CD 50**	–
	Group (3 stations)	**UNY SPU LFG CD 50**	–
	Team (10 stations)	**UNY SPU LFT CD 50**	–
	Site (≤ 100 users)	**UNY SPU LFF CD 50**	–
Software upgrades from: - Concept S, M - PL7 Micro, Junior, Pro - ProWORX NxT/32 Lite	Single (1 station)	**UNY SPU LZU CD 50**	–
	Group (3 stations)	**UNY SPU LZG CD 50**	–
	Team (10 stations)	**UNY SPU LZT CD 50**	–
	Site (≤ 100 users)	**UNY SPU LZF CD 50**	–

Licence type extensions for Unity Pro Large version 5.0

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNY SPU LZUG CD 50**	–
Group (3 stations)	Team (10 stations)	**UNY SPU LZGT CD 50**	–

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)	**UNY SPU LZMU CD 50**	–
Medium to Large Group (3 stations)	**UNY SPU LZMG CD 50**	–
Medium to Large Team (10 stations)	**UNY SPU LZMT CD 50**	–

(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

Software
Unity Pro software
Extra Large / XL Safety

Unity Pro Extra Large version 5.0 software

For Modicon M340: **BMX P34 1000/20●0/20●02**
For Modicon Premium, Atrium: **TSX 57 0●...6●, TSX PCI 57 2●...3●**
For Modicon Quantum: **140 CPU 311 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	Licence type	Reference	Weight kg
Unity Pro Extra Large software packages	Single (1 station)	**UNY SPU EFU CD 50**	–
	Group (3 stations)	**UNY SPU EFG CD 50**	–
	Team (10 stations)	**UNY SPU EFT CD 50**	–
	Site (≤ 100 users)	**UNY SPU EFF CD 50**	–
Software upgrades from: - Concept S, M, XL - PL7 Micro, Junior, Pro - ProWORX NxT Lite, Full - ProWORX 32 Lite, Full	Single (1 station)	**UNY SPU EZU CD 50**	–
	Group (3 stations)	**UNY SPU EZG CD 50**	–
	Team (10 stations)	**UNY SPU EZT CD 50**	–
	Site (≤ 100 users)	**UNY SPU EZF CD 50**	–

Licence type extensions for Unity Pro Extra Large

From	To	Reference	Weight kg
Single (1 station)	Group (3 stations)	**UNY SPU EZUG CD 50**	–
Group (3 stations)	Team (10 stations)	**UNY SPU EZGT CD 50**	–

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)	**UNY SPU EZLU CD 50**	–
Large to Extra Large Group (3 stations)	**UNY SPU EZLG CD 50**	–
Large to Extra Large Team (10 stations)	**UNY SPU EZLT CD 50**	–

Unity Pro XL Safety version 4.1 software

For Modicon M340: **BMX P34 1000/20●0/20●02**
For Modicon Premium, Atrium: **TSX 57 0●...6●, TSX PCI 57 2●...3●**
For Modicon Quantum: **140 CPU 311 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 XL Safety version 4.1 software packages *(1)*

Designation	Licence type	Reference	Weight kg
Unity Pro XL Safety software packages	Single (1 station)	**UNY SPU XFU CD 41**	–
	Group (3 stations)	**UNY SPU XFG CD 41**	–
	Team (10 stations)	**UNY SPU XFT CD 41**	–
	Site (≤ 100 users)	**UNY SPU XFF CD 41**	–
Software upgrades from: - Concept S, M, XL - PL7 Micro, Junior, Pro - ProWORX NxT Lite, Full - ProWORX 32 Lite, Full	Single (1 station)	**UNY SPU XZU CD 41**	–
	Group (3 stations)	**UNY SPU XZG CD 41**	–
	Team (10 stations)	**UNY SPU XZT CD 41**	–
	Site (≤ 100 users)	**UNY SPU XZF CD 41**	–

(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

Software
Unity Pro software
Small / Medium / Large / Extra Large / XL Safety

Unity Pro

Unity Pro software

Description	Licence 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 XL Safety	Single (1 station)	**UNY UDE VFU CD21E**	–
Unity SFC View software			
Unity SFC View software packages	Single (1 station)	**UNY SDU MFU CD20**	–

Unity Pro documentation, separate parts

Documentation for Unity Pro version 5.0

Description	Licence type	Reference	Weight kg
Hardware and software manuals (on DVD) Platform setup for: - Modicon M340 - Atrium/Premium - Quantum - Momentum Electromagnetic compatibility of networks and fieldbuses Software setup for: - Unity Pro - Function block libraries	Multilingual (English, French, German, Italian, Spanish, Chinese)	**UNY USE 909 CD M**	–

Separate parts

BMX XCA USB H0●●

TSX PCX 1031

TSX CUSB 485

Description	From processor	To PC port	Length	Reference	Weight kg
PC connection cables (PC to PLC)	USB mini B port BMX P34 1000/20●0/20●02	USB port	1.8 m	**BMX XCA USB H018**	0.065
			4.5 m	**BMX XCA USB H045**	0.110
	Mini-DIN port Premium TSX 57 1●/2●/3●/4● Atrium TSX PCI 57	RS 232D (9-pin SUB-D connector)	2.5 m	**TSX PCX 1031**	0.170
		USB port (USB/RS 485 converter)	0.4 m	**TSX CUSB 485** *(2)*	0.144
		USB port (mini-DIN/RJ45 cordset)	2.5 m	**TSX CRJMD 25** *(2)*	0.150
	Modbus port 15-way SUB-D Quantum 140 CPU 311 10 140 CPU 434 12A 140 CPU 534 14A	RS 232D (9-pin SUB-D connector)	3.7 m	**990 NAA 263 20**	0.300
			15 m	**990 NAA 263 50**	0.180
	USB port Premium TSX 57 5●/6● Quantum 140 CPU 6●1	USB port	3.3 m	**UNY XCA USB 033**	–
	Modbus RJ45 connector port Quantum 140 CPU 6●1	RJ 45 connector	1 m	**110 XCA 282 01**	–
			3 m	**110 XCA 282 02**	–
			6 m	**110 XCA 282 03**	–
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	**STB XCA 4002**	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)*	–	**SR2 CBL 06**	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 **TSX CUSB 485** *converter requires use of the* **TSX CRJMD 25** *mini-DIN/RJ45 cordset.*
(3) For connection on a USB port, the SR2 CBL 06 cable must also be used (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:
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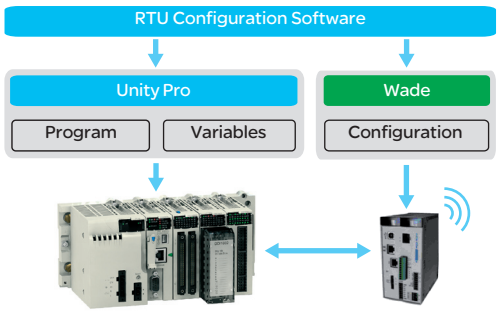
Software
Unity Pro software
RTU Configuration Software for Unity Pro and W@de modules

RTU Configuration Software



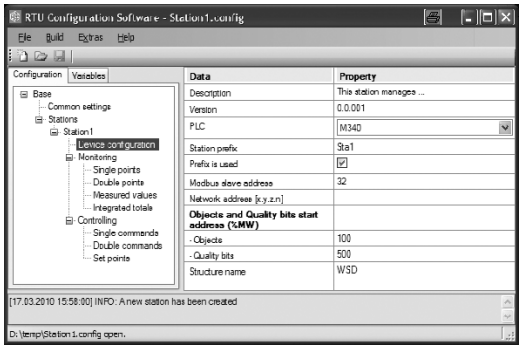
Presentation

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 PLC 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 PLC prefix
- IEC variable data type specific prefix followed by a four-digit incremental number
- Object address
- PLC address.

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

Software
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 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	Licence type	Reference	Weight kg
RTU Configuration Software	Single (1 station)	**UNY SRT ZFU CD10**	–

Software
Unity Pro software
Unity EFB Toolkit software

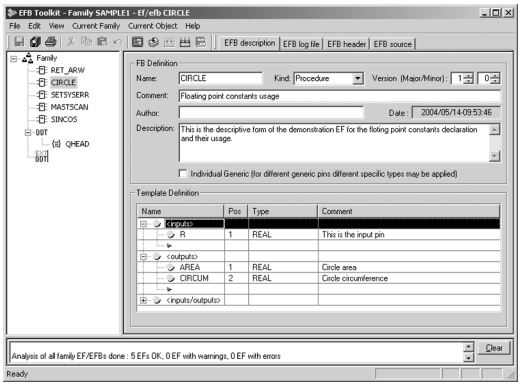
Unity EFB Toolkit

Presentation

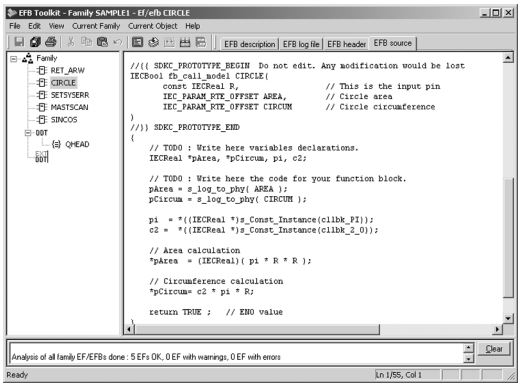
Unity EFB Toolkit is the software for developing EFs and EFBs in “C” programming language. It is optional for Unity Pro and is used to extend Unity Pro’s set of standard function blocks to offer additional functionality. This software is bundled with *Microsoft Visual Studio* for debugging function blocks developed in the Unity Pro PLC 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 which 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 all necessary data types (elementary, structures, arrays)
- Supporting public and private variables
- Generating all files and the “C” code frame of the block (the user only adds the functionality to this frame)
- Granting access to numerous internal PLC services such as real-time clock, PLC variables and data, system words and math functions, including high precision numerical processing in “double” format
- Building the function block family (compile/link for all Unity Pro PLC 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 PLC Simulator. All 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, which 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.

Software
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	Licence type	Language	Reference	Weight kg
Unity EFB Toolkit	Single (1 station)	English (software and electronic documentation)	**UNY SPU ZFU CD 31E**	–

Software
Unity Pro software
Unity Dif comparison application

Unity Dif comparison

Presentation

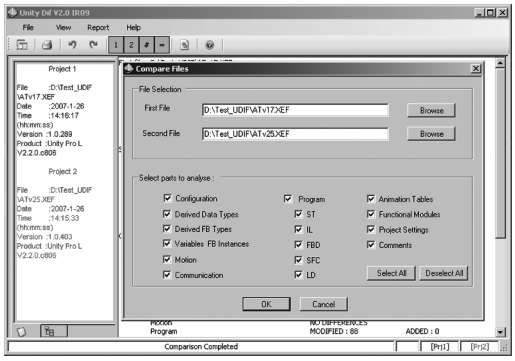
Unity Dif software is an optional program for Unity Pro supporting all Unity Pro PLC platforms. It compares two Unity Pro applications and provides an exhaustive list of all differences. The Unity Dif program increases productivity in the main life phases of a control system, mainly during application 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 all 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.



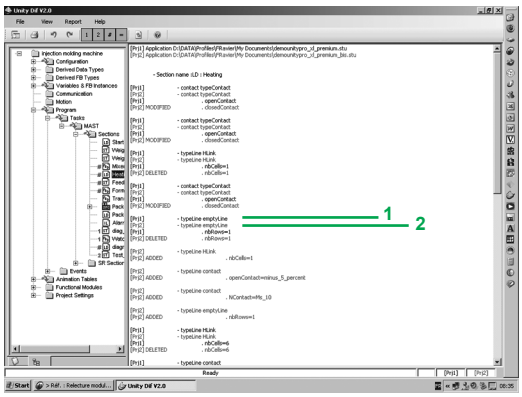
Comparison after selection of elements to be analyzed

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 characteristics of the two applications being compared. The differences are shown in a summary.

2 Browser tab for accessing the application tree structure representation.



Displaying results

Displaying results

The application structure representation 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.

Software
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 PLC target	Type	Reference	Weight kg
Unity Dif comparison software extension for Unity Pro applications CD-ROM containing software and electronic documentation (English-French)	All Unity Pro versions Modicon M340, Premium, Quantum	Single licence (1 station)	**UNY SDU ZFU CD22**	–
		Site licence (100 stations)	**UNY SDU ZFF CD22**	–

Software
Unity Pro software
Unity Loader software

Unity Loader

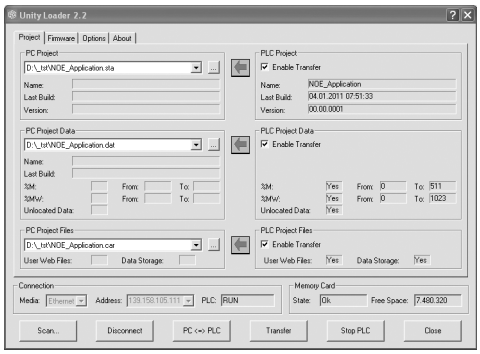
Presentation

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 an essential 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:

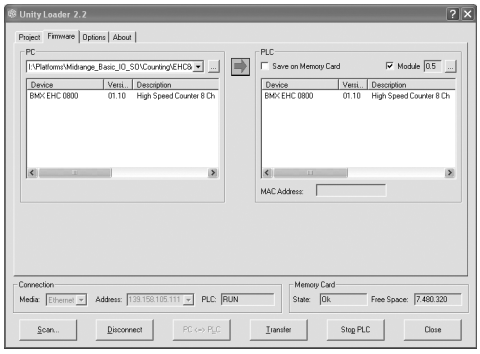
■ Transfer of automation project components from PC to PLC or from PLC to PC, such as the program and data

■ Transfer of files and user Web pages stored in the memory card of Modicon M340 PLCs

■ Transfer of embedded software (firmware) from the PC to Modicon M340 modules.



Unity Loader: "Project" tab



Unity Loader: "Firmware" tab

Software graphic interface

The 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 PLC 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 PLC, Unity Loader displays the information relating to the data read in the PLC. 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 intended transfers.

□ *Modicon M340 PLCs and BMX RMS ●●8MFP memory card only*: User files and Web pages can be transferred from the memory card to the PC and vice versa.

□ *BMX NOE 0110 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…**" tab displays information about the software.

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

Modicon M340 PLCs and BMX RMS ●●8MFP memory card only

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

Automation of Unity Loader commands

Project download/upload between a PLC 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 PLC

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

Reference	Type of module	Ethernet port	USB port
BMX P34 2000	Processor with Modbus		
BMX P34 2010/20103	Processor with CANopen		
BMX P34 2020	Processor with integrated Ethernet port		
BMX P34 2030/20302			
BMX NOE 0100/0110	Ethernet Modbus/TCP		
BMX AMI/ART/AMO/AMM	Analog I/O		
BMX EHC 0200/0800	Counter		
BMX MSP 0200	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 PLC 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 all Modicon M340 PLCs, Unity Pro Quantum PLCs via Modbus and Unity Pro Premium PLCs via Unitelway. Program files and PLC data files are compatible between Unity Pro and Unity Loader.

Designation	Type	Reference	Weight kg
Unity Loader	Single licence (1 station)	**UNY SMU ZU CD22**	–

Specific libraries according to the software used

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

Control Libraries

Designation	Target software	Type	Reference	Weight kg
Predictive Control Library	Unity Pro / Concept	Single licence (1 station)	**UNY LPC ZAU CD10**	–
Fuzzy Library	Unity Pro		**UNY LFZ ZAU WB12**	–
TeSys Library			**UNY LTS ZAU WB10**	–
Heat Ventilation Air Condition Library			**UNY LHV ZAU WB10**	–
Flow Calculation Library			**UNY LAG ZAU WB20**	–

System Libraries

Designation	Target software	Type	Reference	Weight kg
Enhanced Process Library	UAG	Single licence (1 station)	**UAG SBT CFU CD10**	–
Devices and Process Library			**UAG SBT DFU WB13**	–

Software
Unity software
Unity Application Generator

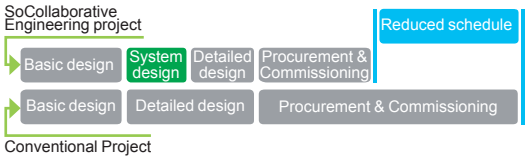
Advanced design tool for automation solutions *(1)*

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 PLCs 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 ensures 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



Business advantage

Working efficiently

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

Working efficiently

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** which reduces the dependency on experts, allows standardization and increases software robustness.
Single database entry avoids 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 best in class 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 ensures data consistency and integrated communication between all devices.

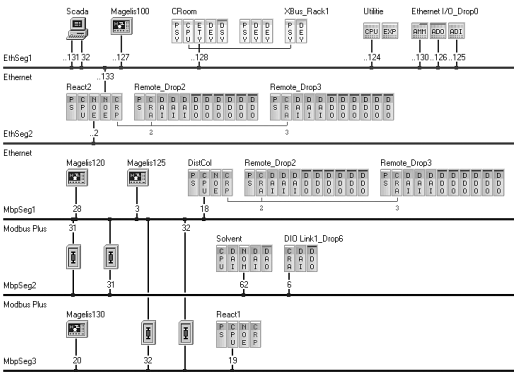
Standards

Applications *(1)*

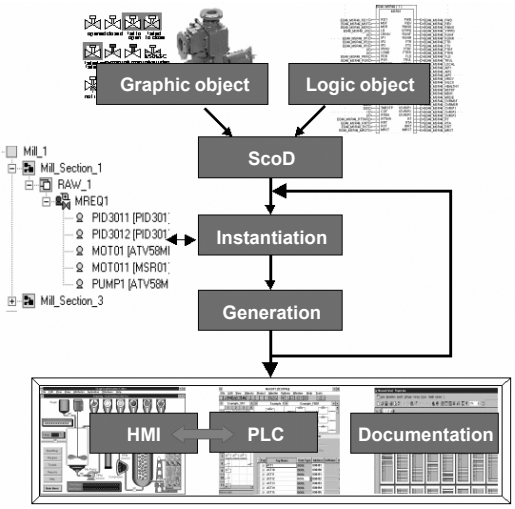
- **Methodology**: UAG allows you to capture and re-use your know-how. Through automatic generation, the project information is propagated to all applications consistently, easily and quickly.
- **Creating user libraries**: libraries are based on re-usable control devices – **S**mart **C**ontrol **D**evices (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, which 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 www.schneider-electric.com.

Software
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, ensuring consistent information for the PLCs and the HMI/SCADA. The use of resources (addresses, name space, etc.) is optimized to 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
- etc.

Supported platforms and environment

■ **Supported platforms**
- □ PLC software: Unity Pro ≥ V4.0
- □ PLC 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)*

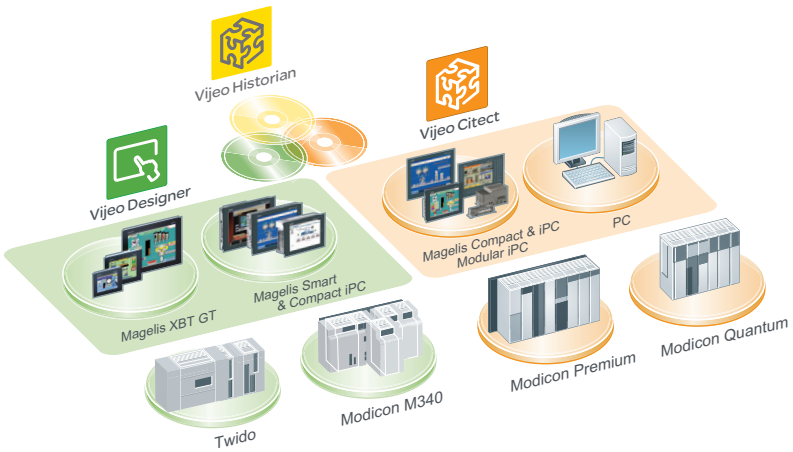
Description	License type	Reference	Weight kg
UAG software suites *(3)* Comprising: ■ UAG (Unity Application Generator) software in English, French, German, ■ Documentation (electronic format)	Single (1 station)	**UAG SEW LFU CD33**	–
	Site (> 10 stations)	**UAG SEW LFF CD33**	–
SoCollaborative Engineering Includes Unity Pro, Vijeo Citect, Web Designer, UAG/sg² software	Single (1 station)	**EUS ENG2 CFU V11**	–
	Team (10 stations)	**EUS ENG2 CFT V11**	–

(1) For more technical information, please consult our website www.schneider-electric.com.
(2) Please contact our Customer Care Centre.
(3) The PLC/SCADA programming tools and/or communication driver must be ordered separately.

Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

Vijeo Citect

Presentation



Vijeo Citect is the operating and monitoring component of Schneider Electric's PlantStruxure™.

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 offers all 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.

Vijeo Citect offers true redundancy for all system components. The redundancy functions are full integrated in the system, providing exceptional performance and intuitive configuration.

Redundancy

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

Server license

Vijeo Citect 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 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 ensures system consistency. This is one of the major benefits of Schneider Electric integration.

Server licenses **VJC NS 1011 ●●** are purchased according to the number of points to be processed, not according to the number of I/O *(1)*.

An upgrade offer **VJC NS 1011 ●●-●●** is also available to increase the number of client and server points, as required *(2)*.

(1) Vijeo Citect counts all the variables exchanged with external devices, such as PLCs.
(2) If the server or client is upgraded, the keys must be reprogrammed.

Vijeo Historian:
page 4/48

Client licenses

Four types of client license are available:

■ **Control Client**, **VJC NS 1020 ●●**: used by operators accessing the Vijeo Citect server via a local connection
■ **View Only Client**, **VJC NS 1030 ●●**: for users needing to view the Vijeo Citect application via a local connection, but not needing to control the system
■ **Web Control Client**, **VJC NS 1022 ●●**: similar to the Control Client, but via a Web browser
■ **Web View Only Client**, **VJC NS 1032 ●●**: 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 at all times, irrespective 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 **VJC NS 10●● 88** are intended solely for the standby server in a redundant configuration. They are used to ensure that the client licenses purchased are all available.

Development workshop

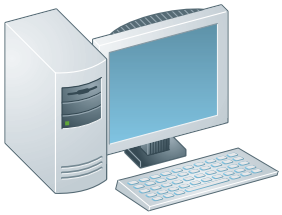
The development workshop **VJC 1099 ●●** comprises hardware components such as the DVD, hardware keys, installation guide and storage boxes.

The rules for use are as follows:

■ Each server requires a hardware key (USB or parallel) in order 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

Vijeo Historian:
page 4/48

Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect



Single-station architecture

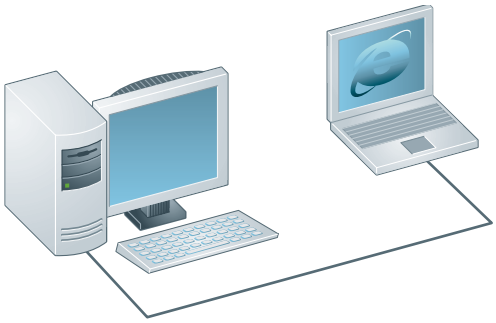
Architectures

Single station stand-alone SCADA system, 5000 points

Development workshop
- 1 x **VJC 1099 22**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJC NS 1011 14**, server license for 5000 points, including client server

Client license
- Not required (included in the server license)



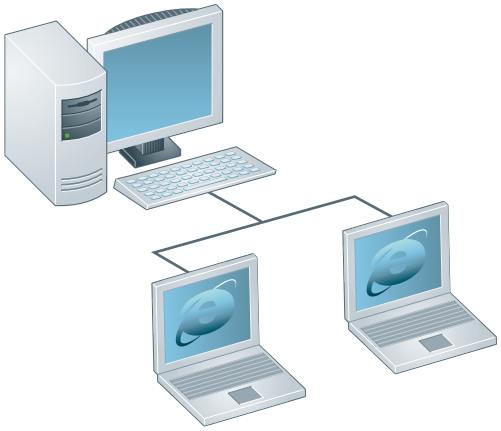
Single-server architecture with Web View Only Client access

Remote server system with remote access via the Web

Development workshop
- 1 x **VJC 1099 22**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJCNS 1011 15**, server license for 15000 points, including client server

Client license
- 1 x **VJCNS 1032 99**, 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

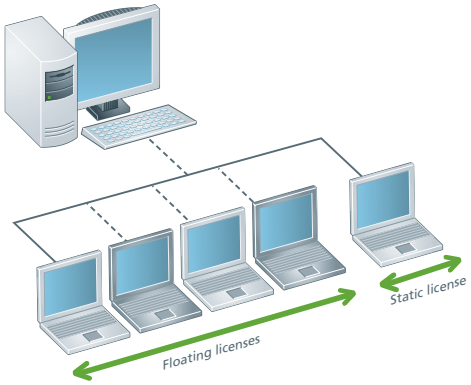
Development workshop
- 1 x **VJC 1099 22**, hardware delivery of the DVD with USB key

Server license
- 1 x **VJC NS 1011 12**, server license for 500 points, including client server

Client licenses
- 1 x **VJC NS 1022 12**, Web Control Client license for 500 points
- 1 x **VJC NS 1032 99**, Web View Only Client license

Vijeo Historian:
page 4/48

Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect



Single-server architecture with
2 floating Control Client licenses and 1 static license

Architectures (continued)

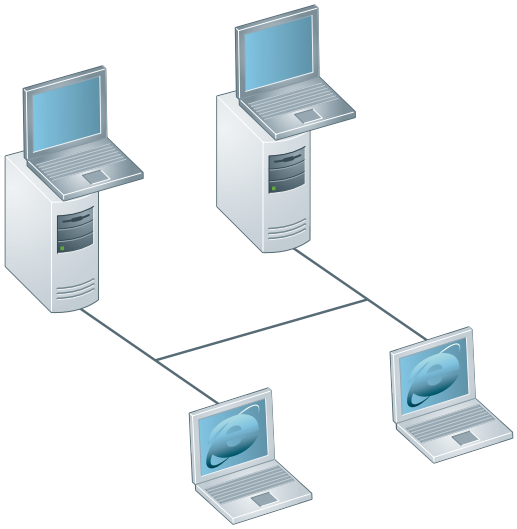
Networked server system with floating and static access

E.g. Networked server system, 5000 points, with 5 client PCs and 3 client licenses, 2 of which are floating and 1 static

Development workshop
- 1 x **VJC 1099 22**, hardware delivery of the DVD with USB key
- 1 x **VJC 1099 21**, additional USB key for static client

Server license
- 1 x **VJC NS 1011 14**, server license for 5000 points, including client server (local Control Client type on the server PC)

Client licenses
- 3 x **VJC NS 1020 14**, 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 **VJC 1099 22**, hardware delivery of the DVD with USB key (primary server key)
- 1 x **VJC 1099 21**, additional USB key for standby server

(rule: 1 key per server)

Server licenses
- 2 x **VJC NS 1011 13**, 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 **VJC NS 1032 99**, Web View Only Client licenses
  - Both licenses are placed on the primary server key

Redundant client license
- 2 x **VJC NS 1032 88**, 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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Vijeo Historian:
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Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

VJC 1099 ●2

Development workshop - Vijeo Citect Box and keys

The **VJC 1099 ●2** Vijeo Citect Box comprises:

- 1 DVD with the Vijeo Citect software
- A Schneider Electric drivers pack
- An installation guide
- A 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	**VJC 1099 22**	0.410
Vijeo Citect Box with parallel key	Parallel	**VJC 1099 12**	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	**VJC 1099 21**	–
Additional Vijeo Citect parallel key Supplied in Vijeo Citect Box	Redundant server and static (non-floating) licenses	**VJC 1099 11**	–
Vijeo Citect 10 Pack USB keys Supplied in Vijeo Citect Box	Blank keys and not licensed	**VJC 1099 20** *(1)*	–
Vijeo Citect 10 Pack Parallel keys Supplied in Vijeo Citect Box	Blank keys and not licensed	**VJC 1099 10** *(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	**VJC 1099 18**	–

Vijeo Citect

Vijeo Citect Lite, stand-alone

The Vijeo Citect Lite stand-alone license for 100 to 1200 points comprises:

- 1 DVD with the Vijeo Citect software
- A Schneider Electric drivers pack
- An installation guide
- A hardware key

The Vijeo Citect Lite 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 Lite license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Lite Stand-alone: no connectivity Key to be ordered separately	100	**VJC NS 3011 56**	–
	150	**VJC NS 3011 11**	–
	300	**VJC NS 3011 27**	–
	600	**VJC NS 3011 59**	–
	1200	**VJC NS 3011 50**	–

(1) The 10 Packs Vijeo Citect keys VCJ 1099 20 and VCJ 1099 10 are not programmed.

Vijeo Historian:
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Vijeo Citect Lite upgrades

The references below are used for increasing the number of Vijeo Citect Lite points available or to upgrade Lite server to Full server.

Designation	Number of points	Reference	Weight kg
Vijeo Citect Lite upgrade (number of points)	100 to 150	**VJC NS L56-L11**	–
	150 to 300	**VJC NS L11-L27**	–
	300 to 600	**VJC NS L27-L59**	–
	600 *(1)* to 1200	**VJC NS L59-L50**	–
Vijeo Citect Lite upgrade (Lite server to Full server)	Lite 150 to Full 150	**VJC NS L11-F11**	–
	Lite 300 to Full 500	**VJC NS L27-F12**	–
	Lite 600 to Full 1500	**VJC NS L59-F13**	–
	Lite 1200 to Full 1500	**VJC NS L50-F13**	–

Vijeo Citect

Vijeo Citect Server

The Vijeo Citect Server full system licenses are segmented according to the number of points. They include:

- 1 DVD with the Vijeo Citect software
- A Schneider Electric drivers pack
- An installation guide
- A hardware key

Redundant system

- For a redundant system simply order 2 Vijeo Citect Server licenses
- No other option is required for the servers
- The programmed key (USB or parallel) must be ordered separately

Vijeo Citect Server license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Server Full version Key to be ordered separately	75	**VJC NS 1011 10**	–
	150	**VJC NS 1011 11**	–
	500	**VJC NS 1011 12**	–
	1500	**VJC NS 1011 13**	–
	5000	**VJC NS 1011 14**	–
	15000	**VJC NS 1011 15**	–
	Unlimited	**VJC NS 1011 99**	–

Vijeo Citect Server 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 upgrade Full server point expansion	75 to 150	**VJC NS 1011 10-11**	–
	150 to 500	**VJC NS 1011 11-12**	–
	500 to 1500	**VJC NS 1011 12-13**	–
	1500 to 5000	**VJC NS 1011 13-14**	–
	5000 to 15000	**VJC NS 1011 14-15**	–
	15000 to unlimited	**VJC NS 1011 15-99**	–

(1) Also for existing installed Lite 500 point versions.

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Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

Vijeo Citect Control Client

Vijeo Citect Control Client licenses are intended 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 licenses, **VJC NS 1030 88**, must be ordered

Vijeo Citect Control Client license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client license	75	**VJC NS 1020 10**	–
	150	**VJC NS 1020 11**	–
	500	**VJC NS 1020 12**	–
	1500	**VJC NS 1020 13**	–
	5000	**VJC NS 1020 14**	–
	15000	**VJC NS 1020 15**	–
	Unlimited	**VJC NS 1020 99**	–
Vijeo Citect redundant Control Client license	Floating license only	**VJC NS 1020 88**	–

Vijeo Citect View Only Client

Vijeo Citect View Only Client 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 licenses, **VJC NS 1030 88**, must be ordered

Vijeo Citect View Only Client license

Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client license	Unlimited	**VJC NS 1030 99**	–
	250 simultaneous connections	**VJC NS 1037 88**	–
Vijeo Citect redundant View Only Client license	Floating license only	**VJC NS 1030 88**	–
	250 simultaneous connections	**VJC NS 1036 88**	–

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Vijeo Citect Web Control Client

Vijeo Citect Web Control Client licenses are intended for users who need full 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 must be 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 licenses, **VJC NS 1030 88**, must be ordered

Vijeo Citect Web Control Client license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client license	75	**VJC NS 1022 10**	–
	150	**VJC NS 1022 11**	–
	500	**VJC NS 1022 12**	–
	1500	**VJC NS 1022 13**	–
	5000	**VJC NS 1022 14**	–
	15000	**VJC NS 1022 15**	–
	Unlimited	**VJC NS 1022 99**	–
Vijeo Citect redundant Web Control Client license	Floating license only	**VJC NS 1022 88**	–

Vijeo Citect Web View Only Client

Vijeo Citect Web View Only Client licenses are intended 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 must be 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 licenses, **VJC NS 1032 88**, must be ordered

Vijeo Citect Web View Only Client license

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client license	Unlimited	**VJC NS 1032 99**	–
	250 simultaneous connections	**VJC NS 1039 88**	–
Vijeo Citect redundant Web Only Client View license	Floating license only	**VJC NS 1032 88**	–
	250 simultaneous connections	**VJC NS 1038 88**	–

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Vijeo Historian:
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Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

Control Client 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 upgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect Control Client upgrade	75 to 150	**VJC NS 1020 10-11**	–
	150 to 500	**VJC NS 1020 11-12**	–
	500 to 1500	**VJC NS 1020 12-13**	–
	1500 to 5000	**VJC NS 1020 13-14**	–
	5000 to 15000	**VJC NS 1020 14-15**	–
	15000 to unlimited	**VJC NS 1020 15-99**	–

View Only Client 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 upgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect View Only Client upgrade	Unlimited	**VJC NS 1030 99-99**	–

Web Control Client upgrades

The references below are used for increasing the number of points on the server holding the hardware key.

Vijeo Citect Web Control Client upgrade

Description	Number of points	Reference	Weight kg
Vijeo Citect Web Control Client upgrade	75 to 150	**VJC NS 1022 10-11**	–
	150 to 500	**VJC NS 1022 11-12**	–
	500 to 1500	**VJC NS 1022 12-13**	–
	1500 to 5000	**VJC NS 1022 13-14**	–
	5000 to 15000	**VJC NS 1022 14-15**	–
	15000 to unlimited	**VJC NS 1022 15-99**	–

Web View Only Client 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 upgrade

Designation	Number of points	Reference	Weight kg
Vijeo Citect Web View Only Client upgrade	Unlimited	**VJC NS 1032 99-99**	–

Connections, miscellaneous

The references below are used to expand the connection licenses.

Designation	Reference	Weight kg
OPC Server licence	**VJC 1041 88**	–
CtAPI license	**VJC 1042 88**	–
Time scheduler *(1)*	**VJC 9032 88**	–

(1) New version of the Time Scheduler software, available via web download only. Previous versions are not capable of being migrated to Vijeo Citect version 7.20.

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Vijeo Citect - Specific drivers

The Vijeo Citect offer includes a large number of drivers as standard.
However, for copyright reasons, some drivers have a specific reference and must be 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 specific driver	IEC 60870-5-104	**VJC NS 3051 41**	–
	PSDirect ETH	**VJC NS 3051 40**	–
	PSDirect MPI	**VJC NS 3051 42**	–
	Bailey	**VJC NS 3051 44**	–
	SEMAPI	**VJC NS 3051 48**	–
	MOSCAD	**VJC NS 3051 49**	–
	KONNEX	**VJC NS 3051 46**	–
	BACnet	**VJC NS 3051 51**	–

Note: *Before ordering a Vijeo Citect specific driver, please contact our Customer Care Centre.*

Reprogramming for a Vijeo Citect license transfer

Each time a license has to be transferred from an existing key to another key, transfer fees are applicable and the reference **VJC 1094 01** must be ordered (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 must order a new hardware key **VJC 1099 ●●**.

Designation	Reference	Weight kg
Reprogramming for Vijeo Citect license transfer	**VJC 1094 01**	–

Driver Development Kit

The driver development kit includes:

- The latest release of Vijeo Citect, example source code, utilities and all other Vijeo Citect 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	**VJC 1092 06**	–

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Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

Conversion of third-party applications

Conversion tools help to convert legacy applications (such as Monitor Pro) or other third-party applications to Vijeo Citect. These programs convert the tag database and graphic information to make them compatible with Vijeo Citect :

■ **Page Import** tool is is targeted at customers who wish to perform the entire engineering portion of the legacy system migration themselves. The System Integrators must 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 project that is ready for Factory Acceptance Tests.

Full 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)*	**VJC 1090 81**	–
	Tier 2 *(2)*	**VJC 1090 82**	–
	Tier 3 *(3)*	**VJC 1090 83**	–
Page Import (minimum 10 pages)	All Tiers	**VJC 1090 88**	–

Loan of Vijeo Citect keys *(4)*

Designation	Content	Reference	Weight kg
Loan of single Vijeo Citect key	- 1 server license, unlimited number of points, VJC NS 1011 99 - 1 scheduler, VJC 9032 88	**VJC 1095 11**	–
Loan of multiple Vijeo Citect keys	- 1 server license, unlimited number of points, VJC NS 1011 99 - 5 floating Control Client licenses, VJC NS1020 99 - 5 floating View Only Client licenses, VJC NS1030 99 - 2 floating Web Control Client licenses, VJC NS1022 99 - 2 floating Web View Only Client licenses, VJCNS1032 99 - 1 scheduler, VJC 9032 88	**VJC 1095 12**	–

(1) Tier 1 = FactoryLink 5 to 6.x, MonitorPro 2, Fix32, Genesis32, Cimplicity, Moore APACS, Wonderware 5.x to 9.x.

(2) Tier 2 = iFIX 3.5, Delta V (Fix32 & iFIX 3.5), RSView32 6.4, FactoryLink 7.5, MonitorPro 7.2 & 7.6, VijeoLook 2.6, WinCC 6.0, Wizcon.

(3) Tier 3 = iFIX 4.5, DeltaV (iFIX 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 must be returned at the end of the loan period. Provides eight days' continuous use. Also requires an additional Vijeo Citect Box USB key, **VJC 1099 ●●**, 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 intended 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 comprises:

■ **SoCollaborative Alliance** *(DVD Box)*:
□ sg² V3.5 (multi)
□ UnityPro XL V4.1 (10 stations)
□ Unity Loader V2.1
□ VijeoCitect Build-Time V7.10r2 (multi)
□ VijeoCitect Run-Time (2x12-hour hardware keys)
□ WebDesigner 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)
□ PL7Pro V4.5 SP5 (10 stations)
□ ProWorx32 V2.1 SP1 patch A (10 stations)
□ XBTL1003 V4.51 (multi)

■ **Other software tools** *(online download)*:
□ VijeoHistorian Server/Client build V4.1
□ VijeoDesigner V5.0 for HMI (1 station)
□ Sycon V2.9 for network (10 stations)
□ Advantys PLC Image Generator V2.0
□ Advantys CanOpen Symbol Exp. V2.0
□ TwidoSuite V2.20, TwidoSoft V3.5
□ ZelioSoft2 V4.3, ZelioCom V2.08, ZelioAlarm2 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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Software
Supervisory control and data acquisition software (SCADA)
Vijeo Citect

Alliance Software Pack Pro V1.0

The **Alliance Software Pack Pro V1.0** offer is intended exclusively for systems integrators who are active partners in the Schneider Electric PlantStructure Certified Alliance Partners program.

The package comprises:

■ **SoCollaborative Alliance Pro** (*DVD Box*):
□ UAG V3.2 (10 stations)
□ sg² V3.5 (10 stations)
□ UnityPro XL V4.1 (10 stations)
□ Unity Loader V2.1
□ VijeoCitect Build-Time V7.10r2 (multi)
□ VijeoCitect Run-Time (4x12-hour hardware keys)
□ WebDesigner 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)
□ PL7Pro V4.5 SP5 (10 stations)
□ ProWorx32 V2.1 SP1 patch A (10 stations)
□ XBTL1003 V4.51 (multi)

■ **Other software tools** *(online download)*:
□ VijeoHistorian Server/Client build V4.1
□ VijeoDesigner V5.0 for HMI (1 station)
□ ConnexView Server/Client V2.0
□ Sycon V2.9 for network (10 stations)
□ Advantys PLC Image Generator V2.0
□ Advantys CanOpen Symbol Exp. V2.0
□ TwidoSuite V2.20, TwidoSoft V3.5
□ ZelioSoft2 V4.3, ZelioCom V2.08, ZelioAlarm2 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 Academic licenses

The references below are intended for educational institutions for training students in Vijeo Citect.

Training Manuals		
Designation	**Reference**	**Weight kg**
Vijeo Citect Configuration Training Manual - EN	**VJC 1093 10-02-00**	–
Vijeo Citect CICODE Training Manual - EN	**VJC 1093 20-02-00**	–
Vijeo Citect Architecture and Redundancy Training Manual - EN	**VJC 1093 30-02-00**	–
Vijeo Citect Upgrade Training Manual - EN	**VJC 1093 50-02-00**	–
Vijeo Citect Customisation Training Manual - EN	**VJC 1093 70-02-00**	–
Vijeo Citect Diagnostics and Troubleshooting Manual - EN	**VJC 1093 90-02-00**	–

Self-Paced Training Kits		
Designation	**Reference**	**Weight kg**
Vijeo Citect Configuration SPTK - EN	**VJC 1093 10-01-00**	–
Vijeo Citect CICODE SPTK - EN	**VJC 1093 20-01-000**	–
Vijeo Citect Customisation SPTK - EN	**VJC 1093 70-01-00**	–

E-Learning		
Designation	**Reference**	**Weight kg**
Vijeo Citect SCADA Overview	**VJC 3093 31-00-00**	–

Exams		
Designation	**Reference**	**Weight kg**
Vijeo Citect Configuration Exam	**VJC 3093 50-00-00**	–
Vijeo Citect CICODE Fundamentals Exam	**VJC 3093 51-00-00**	–
Vijeo Citect Architecture and Redundancy Exam	**VJC 3093 52-00-00**	–
Vijeo Citect Customisation and Design Exam	**VJC 3093 53-00-00**	–
Vijeo Citect Upgrade Exam	**VJC 3093 54-00-00**	–
Vijeo Citect Examination Re-sit	**VJC 3093 55-00-00**	–
Vijeo Citect Diagnostics and Troubleshooting Exam	**VJC 3093 56-00-00**	–

Academic Agreements		
Designation	**Reference**	**Weight kg**
Vijeo Citect Academic Agreement - 12 months (10 keys) *(1)*	**VJC 3093 17**	–
Vijeo Citect Academic Agreement - 12 months renewal (10 keys) *(1)*	**VJC 3093 22**	–

(1) Academic Agreements must be included with each order for the ogistics 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 must be renewed every year.

Vijeo Historian:
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Software
Vijeo Historian reporting software

Presentation

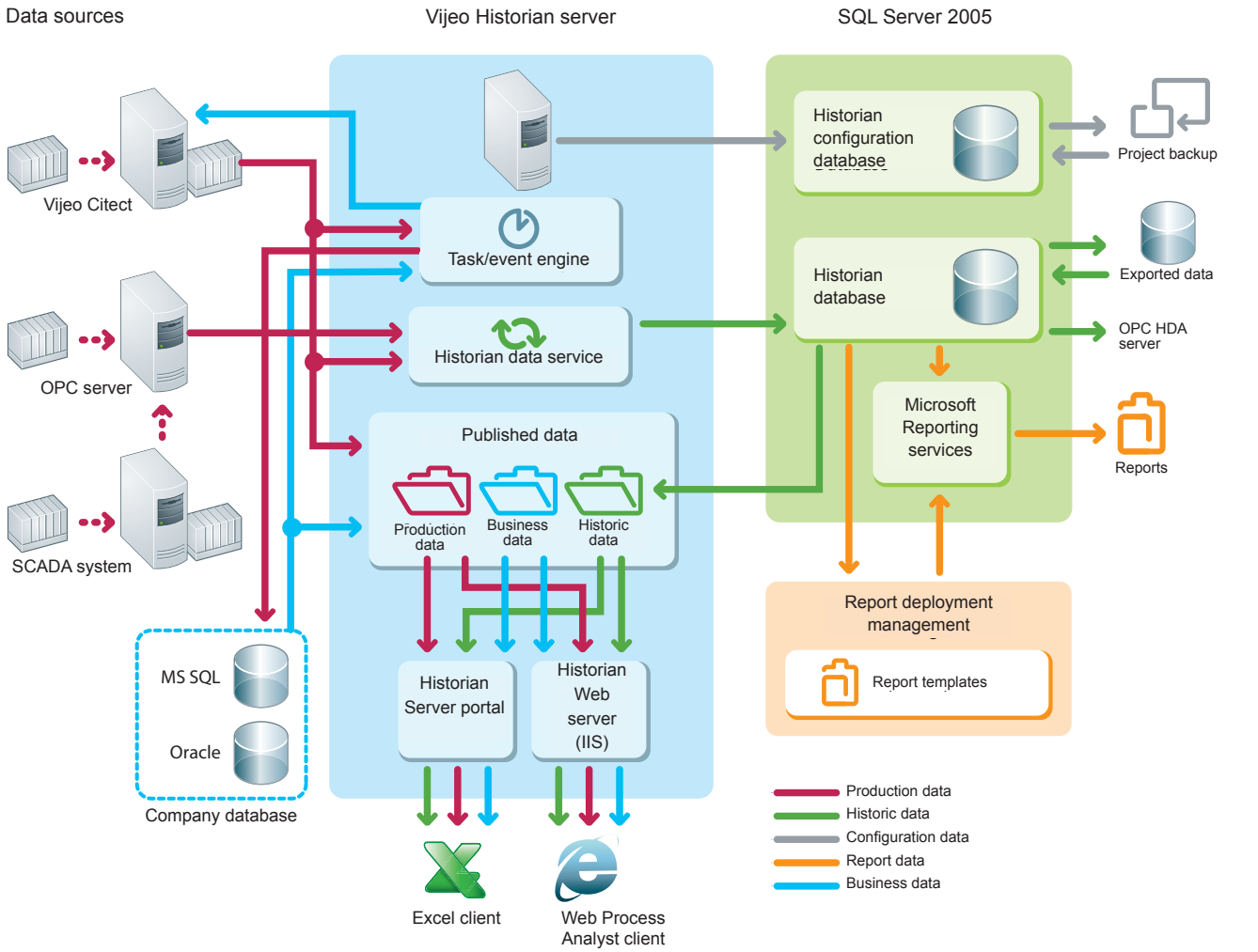
Vijeo Historian

Vijeo Historian is the information management component of Schneider Electric's PlantStruxure™.
It comprises 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 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.

Comprising historian and portal functionalities, Vijeo Historian enables you to store data accurately for long-term reporting whilst also giving you the option of displaying and accessing the information via the Vijeo Historian portal, MS Excel or Reporting Services.

Vijeo Historian architecture



Vijeo Citect:
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Applications

■ 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, to help them make strategic decisions to optimize operational performance.
■ Plant managers can drill down into information or problem areas to improve production efficiency or eliminate 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 supports the following data sources:
■ MS SQL (7.0, 2000, 2005)
■ Oracle (7, 8, 9, 10)
■ Vijeo Citect and other SCADA servers
■ Various other devices

Vijeo Historian Web Client and Excel Client

Vijeo Historian 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 Favourites for which they have permission.
Passwords are encrypted and user privileges are validated for every data request, ensuring that users cannot bypass the security matrix.

Licence keys

The licenses are programmed on a USB or parallel key, which is plugged into the PC running the Vijeo Historian software.

Vijeo Citect:
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Software
Vijeo Historian reporting software

References

Development workshop

Description	Type of key included	Reference	Weight kg
Vijeo Historian Box USB key	USB	**VJH 2099 22**	–
Vijeo Historian Box Parallel key	Parallel	**VJH 2099 12**	–

Vijeo Historian data transfer licenses

Description	Number of points	Reference	Weight kg
Vijeo Historian data transfer license	150	**VJH NS 2110 11**	–
	500	**VJH NS 2110 12**	–
	1500	**VJH NS 2110 13**	–
	5000	**VJH NS 2110 14**	–
	15000	**VJH NS 2110 15**	–
	50000	**VJH NS 2110 16**	–
	100000	**VJH NS 2110 45**	–
	Unlimited	**VJH NS 2110 99**	–

Vijeo Historian data transfer upgrades

Description	Number of points	Reference	Weight kg
Vijeo Historian data transfer upgrade	150 to 500	**VJH NS 2110 11-12**	–
	500 to 1500	**VJH NS 2110 12-13**	–
	1500 to 5000	**VJH NS 2110 13-14**	–
	5000 to 15000	**VJH NS 2110 14-15**	–
	15000 to 50000	**VJH NS 2110 15-16**	–
	50000 to 100000	**VJH NS 2110 16-45**	–
	Unlimited	**VJH NS 2110 45-99**	

Client access licenses

Description	Reference	Weight kg
Client Historian and Portal access license	**VJH NS 2124 00**	–
Client Portal access license	**VJH NS 2122 00**	–
Client Historian access license	**VJH NS 2120 00**	–

Vijeo Citect:
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References (continued)

Control system connector

Description	Reference	Weight kg
MS SQL database connector (1 per database system)	**VJH NS 2043 20**	–
Oracle database connector (1 per database system)	**VJH NS 2043 21**	–
OPC DA V2 and V3 database connector (1 per database system)	**VJH NS 2043 23**	–

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Software
OPC data server software
OPC Factory Server

Presentation

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 ensure a complete interoperability solution that is central to your process.

In version V3.3, the OFS data server integrates the most recent specifications of 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 PLCs
- Schneider Electric TSX Series 7 and April Series 1000 PLCs
- Modbus serial devices connected via Schneider Electric gateways: TSX ETG 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

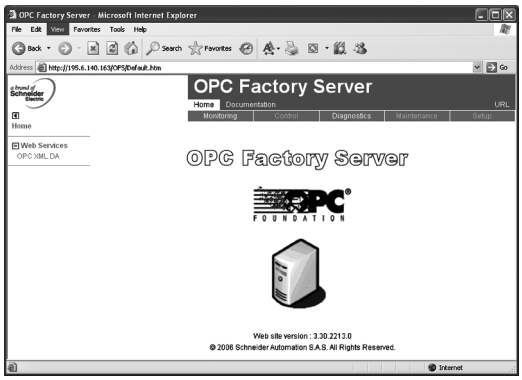
The development of specialized interfaces is simpler with OFS V3.3 software, which is aimed at two types of user in particular:

- **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.

Software
OPC data server software
OPC Factory Server



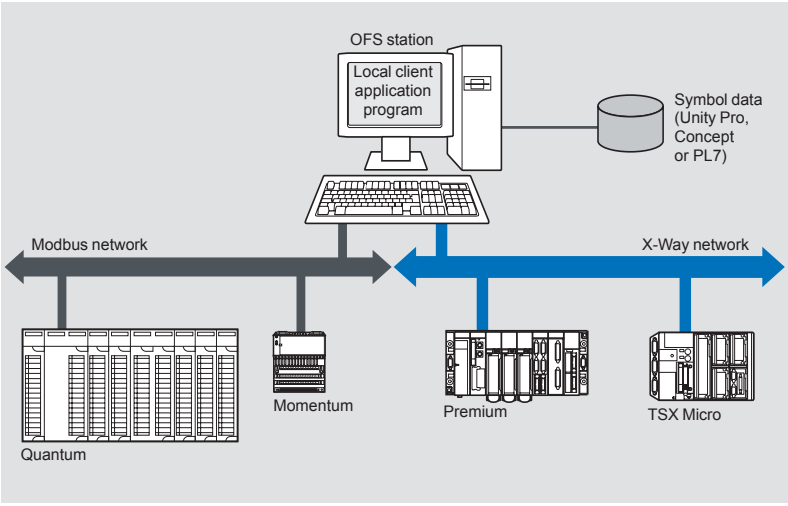
OPC Factory Server: home page

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

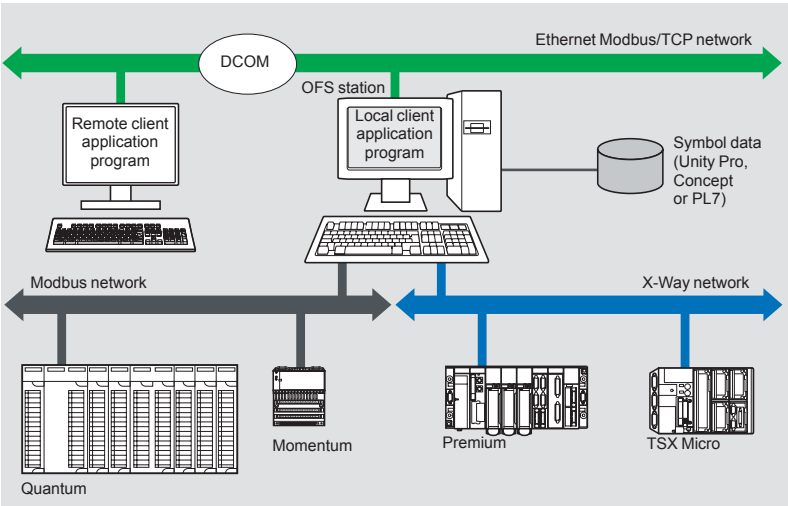
Local access

The client application program and the OFS server are on the same PC.



Remote access from an OPC-DA client

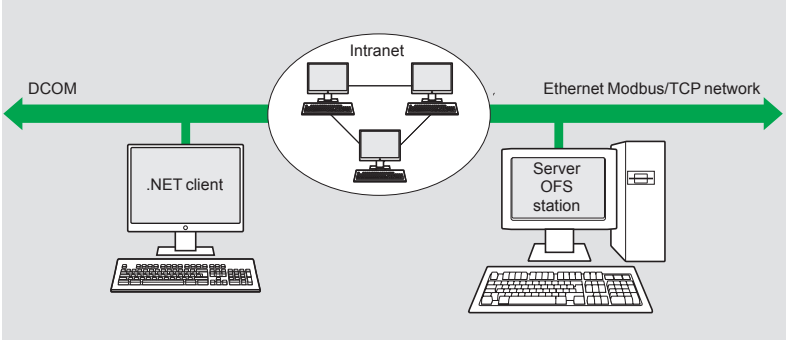
The client application program and the OFS data server are on remote stations. Communication between the client station and the OFS server is conducted through the DCOM layer (Microsoft) via the OPC-DA protocol.



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.

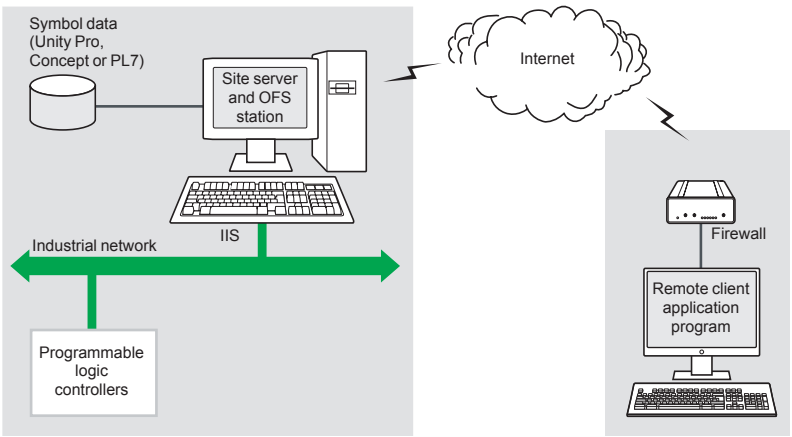


The .NET Microsoft compatibility of the OFS server has been developed to allow an OPC .NET client to access OFS server items on an Intranet network via the OPC .NET API interface.

This interface ensures 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

Software
OPC data server software
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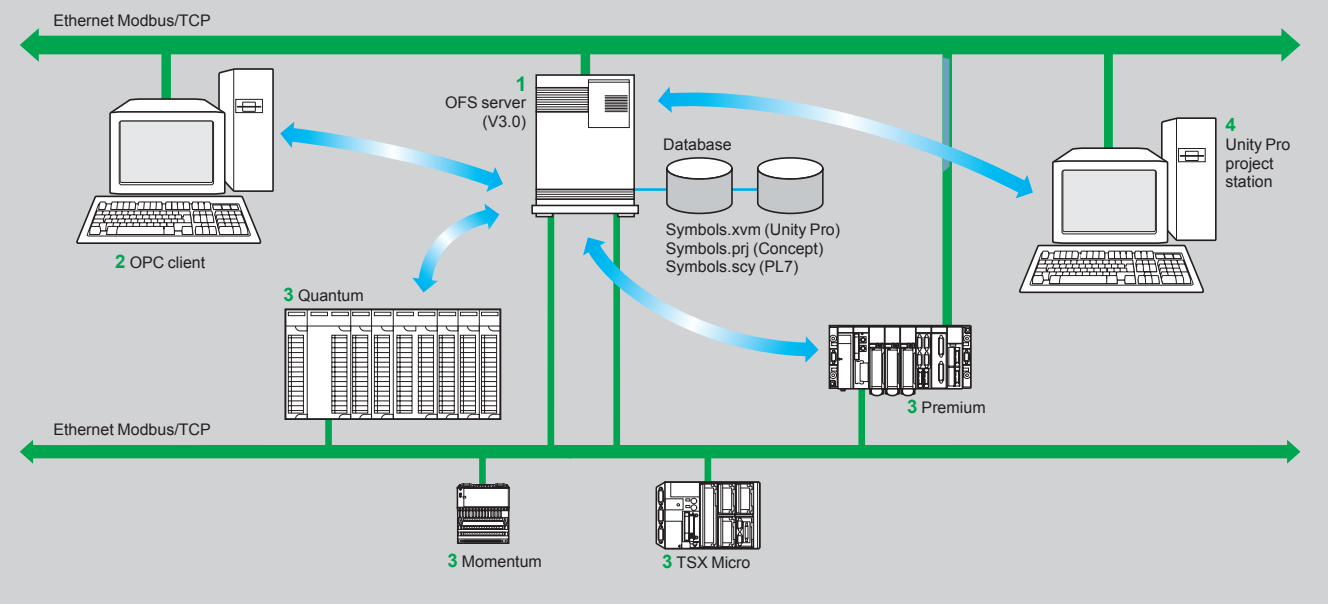
Setup



The OFS server **1** is at the centre of the data exchanges. It ensures that variables exchanged between the OPC client **2** and the PLC **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.

■ Or 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.

■ Or the variables database is the PLC itself. 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, PLCs version V2.7 (Premium or Quantum) or V2.1 (M340). This does not apply to Momentum and TSX Micro PLCs.
If an inconsistency is detected (following online modification of the PLC program for example), OFS resynchronizes itself automatically as soon as the database is available again.

Software
OPC data server software
OPC Factory Server

Functions

Development of client applications

OFS software has 4 types of interface:

■ **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++ in order 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 ensuring 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

Software
OPC data server software
OPC Factory Server

OPC Factory Server

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 comprises:
- OPC server software
- OPC server simulator (for debugging the application when no PLCs are present)
- OFS configuration software
- An example of OPC client for setting up applications
- The 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
  - All protocols supported 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	Licence type	Reference	Weight kg
OPC Factory Server V3.3 Small software	Single station	**TLX CD SUOFS 33**	–
	10-station	**TLX CD STOFS 33**	–

OPC Factory Server V3.3 Large

Description	Licence type	Reference	Weight kg
OPC Factory Server V3.3 Large software Full version	Single station	**TLX CD LUOFS 33**	–
	10-station	**TLX CD LTOFS 33**	–
	200-station	**TLX CD LFOFS 33**	–

(1) Must be 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

5 - Connection interfaces, regulated switch mode power supplies and Human/Machine Interfaces

5

Connection interfaces
Modicon Telefast ABE 7 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	**ABE 7H●●E●00**	**ABE 7H16C●●**	**ABE 7H●●R1● ABE 7H●●R50**	**ABE 7H●●R2●**	**ABE 7H●●S21**
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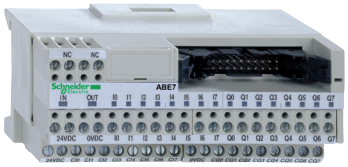
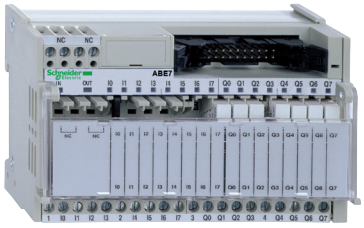
(1) For Modicon TSX Micro and Modicon Premium PLCs.

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... 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 PLC		Miniature sub-base - Common per 4 channels Synergy with Tego Power and Micro PLC	
ABE 7H16CM11	**ABE 7H16CM21**	**ABE 7P16M111**	**ABE 7R16M111**
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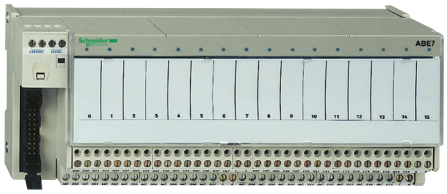
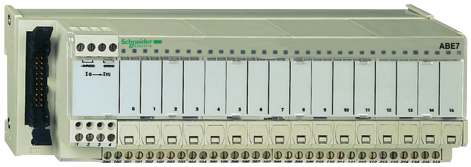
Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Discrete input and output sub-bases

Applications	Discrete outputs					
	Optimum		Universal	Optimum		Universal
						
Compatibility	TSX Micro, Modicon Premium, Modicon Quantum, Modicon M340					
Relay sub-base	Electromechanical, fixed			Electromechanical or solid state		
Equipped with relays	Yes			Yes	No	No
Control voltage	24 V ⎓					
Output voltage	5 V... 30 V ⎓ 230 V ∿		5 V... 150 V ⎓ 230 V ∿	24 V ⎓ (solid state) 5 V... 24 V ⎓, 230 V ∿ (E.M.)		5 V... 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	**ABE 7R08S216●**	**ABE 7R●●S1●●**	**ABE 7R●●S2●●**	**ABE 7R16T111**	**ABE 7P16T111**	**ABE 7P16T2●●●** **ABE 7P08T3●●●**
Page	5/14			5/15	5/16	

(1) For TSX Micro and Modicon Premium PLCs

Discrete outputs				Discrete inputs or outputs			
Universal				Universal			
							
TSX Micro, Modicon Premium, Modicon Quantum, Modicon M340							
Electromechanical, plug-in		Solid state, fixed	–	–		Solid state, fixed	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... 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	Fault signal	Isolator and fuse (indicator)	3-wire proximity sensor	Isolator and fuse (indicator)	–	
ABE 7R16T2●●	**ABE 7R16T3●●**	**ABE 7S●●S2B●**	**ABE 7H16F43**	**ABE 7H16R3●**	**ABE 7H16S43**	**ABE 7S16E2●●E**	**ABE 7P16F31●**
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Connection interfaces

Modicon Telefast ABE 7 pre-wired system

Analog and application-specific sub-bases

Applications	Analog signals and special functions				
					
Compatibility	TSX Micro: TSX 37 22, TSX CTZ●A	Modicon Premium: TSX CTY●A, TSX CAY●1	Modicon Premium: TSX ASY810, TSX AEY1600, TSX A●Y800 Modicon M340: BMX AMI 0800, BMX AMI 0810, BMX AMO 0802	Modicon Premium: TSX ASY410, TSX AEY420 Modicon M340: BMX AMO 0410	Modicon M340: BMX ART 0414, BMX ART **0814** Modicon Premium: TSX AEY1614
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	**ABE 7CPA01**	**ABE 7CPA02**	**ABE 7CPA21**	**ABE 7CPA412** **ABE 7CPA410**	
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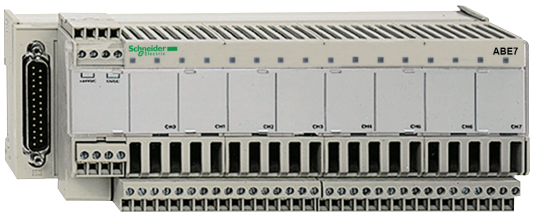
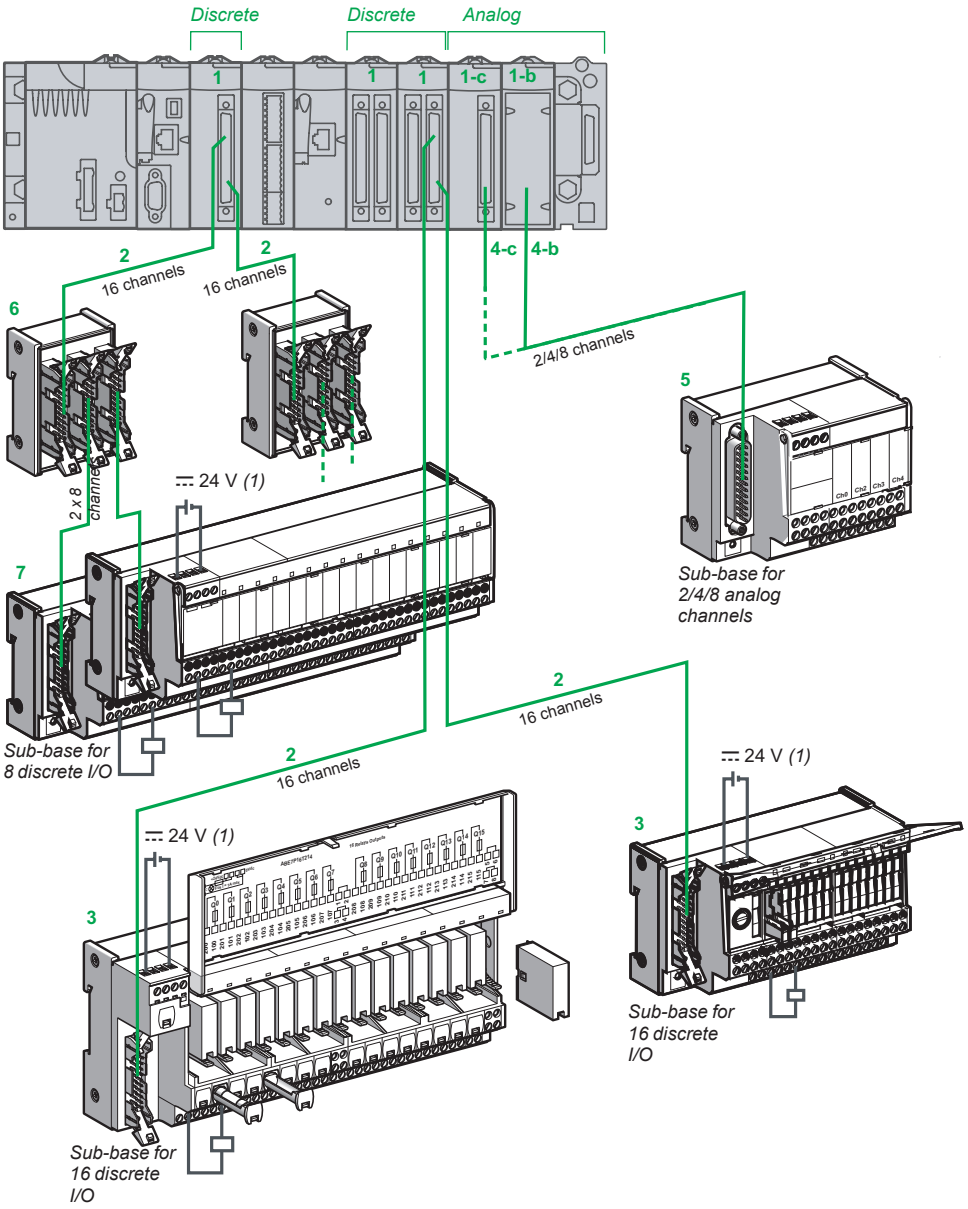


Modicon Premium: TSX AEY800, TSX AEY1600	Modicon Premium: TSX AEY810 Modicon M340: BMX AMI 0800, BMX AMI 0810, BMX AMO 0802	Modicon Premium: TSX CAY●1, TSX CTY●A	Modicon Premium: TSX AEY1614	Modicon Premium: TSX PAY2●2
Analog inputs Current Voltage Pt 100	Isolated analog inputs	Counter inputs	Inputs 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
ABE 7CPA03	**ABE 7CPA31●**	**ABE 7CPA11**	**ABE 7CPA12**	**ABE 7CPA13**
5/18				

Connection interfaces

Modicon Telefast ABE 7 pre-wired system

Interface with Modicon M340 I/O modules



(1) Connection of the 24 V ⎓ power supply is only possible using Modicon Telefast ABE 7 sub-bases. The 0 V ⎓ connections must be equipotential.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Interface with Modicon M340 I/O modules

Presentation

I/O modules on the Modicon M340 platform

1 Discrete input modules (BMX DDI ●●02K), discrete output modules (BMX DDO ●●02K) and discrete mixed I/O modules (BMX DDM 3202K) 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: **BMX AMI 0410** (4 channels), **BMX AMI 0800** (4 channels) and **BMX AMI 0810** (8 channels)
- Analog outputs: **BMX AMO 0210** (2 channels), **BMX AMO 0410** (4 channels) and **BMX AMO 0802** (8 channels)

□ **1-c** Analog input modules **BMX ART 0414** (4 channels) and **BMX ART 0814** (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:
- **BMX FCC ●●●1** cordsets with one 20-wire sheath (AWG 22) equipped with one 40-way FCN connector and one HE 10 moulded connector on the Telefast sub-base end
- **BMX FCC ●●●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 moulded connectors on the Telefast sub-base end

3 16-channel Modicon Telefast ABE 7 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:
- **BMX FCA ●●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.
- **BMX FTA ●●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.
- **BMX FTA ●●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:
- **BMX FCA ●●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 ABE 7CPA analog and application-specific connection sub-bases (for combinations, see pages 5/11):
- **ABE 7CPA410** 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
- **ABE 7CPA412** allows connection on a screw terminal block of 4 thermocouple inputs, with supply of cold-junction compensation for these inputs
- **ABE 7CPA21** allows connection on a screw terminal block of 4 current/voltage outputs
- **ABE 7CPA02** allows connection on a screw terminal block of 8 current/voltage I/O
- **ABE 7CPA03** 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 **BMX AMO 0210** analog module
- **ABE 7CPA31/31E** allows connection on a screw terminal block (ABE 7CPA31) or a spring-type terminal block (ABE 7CPA31E) of 8 inputs, with provision and distribution of the power supply (limited to 25 mA per input)

6 **ABE 7ACC02** sub-base for splitting 16 into 2 x 8 channels, allowing connection of 8-channel sub-bases.

7 8-channel Modicon Telefast ABE 7 Optimum or Universal passive connection sub-bases or adaptor sub-bases.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Modicon M340 I/O modules with ABE 7 sub-bases

Combinations of discrete inputs/outputs on the Modicon M340 platform with ABE 7 sub-bases.

(items 1…7), see Presentation 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
		BMX DDI 3202K	BMX DDI 6402K	BMX DDO 3202K	BMX DDO 6402K	BMX DDM 3202K
Required cordsets						
Preassembled cordsets (at both ends)	**BMX FCC●●1/FCC●●3 (item 2)** *(1)*	Yes	Yes	Yes	Yes	No
	BMX FCC●●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)	**ABE 7H34E●00 "economy"** *(2)*					
	ABE 7H16C●● "miniature"					
Universal 8 channels (item 7)	**ABE 7H08R●●**	*(3)*	*(3)*	*(3)*	*(3)*	*(3)*
	ABE 7H08S21	*(3)*	*(3)*	*(3)*	*(3)*	*(3)*
Universal 16 channels (item 3)	**ABE 7H16R1●●**					
	ABE 7H16R50●					
	ABE 7H16R2●●					
	ABE 7H16S21●					
	ABE 7H16R3●					
	ABE 7H16R23					
	ABE 7H16S43					
	ABE 7H16F43					
Input adaptor sub-bases with solid state relays						
Universal 16 channels (item 3)	**ABE 7S16E2●●●** Fixed solid state relays, removable terminal blocks					
	ABE 7P16F31● Plug-in solid state relays					
Output adaptor sub-bases with fixed relays, removable terminal blocks						
Optimum & Universal 8 channels (item 7)	**ABE 7S08S2B●●** Solid state relays			*(3)*	*(3)*	*(3)*
	ABE 7R08S111●/7R08S21●● Electromechanical relays			*(3)*	*(3)*	*(3)*
Optimum & Universal 16 channels (item 3)	**ABE 7S16S●B●●** Solid state relays					
	ABE 7R16S111●/7R16S21●● Electromechanical relays					
Output adaptor sub-bases with plug-in relays						
Universal 8 channels (item 7)	**ABE 7P08T330●** Solid state relays			*(3)*	*(3)*	*(3)*
Optimum & Universal 16 channels (item 3)	**ABE 7R16T●●●/7R16M111** Electromechanical relays					
	ABE 7P16T●●●/7P16M111 Solid state and/or electromechanical relays					
Sub-bases for analog I/O						
4 channels (item 5)	**ABE 7CPA410**					
	ABE 7CPA412					
2 channels (item 5)	**ABE 7CPA21**					
8 channels (item 5)	**ABE 7CPA02**					
	ABE 7CPA03					
	ABE 7CPA31/31E					

Compatible
Not compatible

(1) References for cordsets: to be completed, see page 2/13.
(2) ABE 7H34E●00 "economy" sub-bases: the cordset is supplied.
(3) Via the splitter sub-base **6** **ABE 7ACC02** *used to separate 16 channels into 2 x 8 channels*

5

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
ABE 7 interfaces with Modicon M340 I/O modules

Combinations of analog inputs/outputs on the Modicon M340 platform with ABE 7 sub-bases

(items 1…7), see Presentation 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
		BMX AMI 0410	BMX ART 0414	BMX ART 0814	BMX AMI 0800	BMX AMI 0810	BMX AMO 0210	BMX AMO 0410	BMX AMO 0802
Required cordsets									
Preassembled cordsets (at both ends)	**BMX FCA●●0 (item 4-b)** *(1)*	Yes	No	No	No	No	Yes	Yes	No
	BMX FCA●●2 (item 4-c) *(1)*	No	Yes	Yes	No	No	No	No	Yes
	BMX FTA●●0 (item 4-c) *(1)*	No	No	No	Yes	Yes	No	Yes	No
	BMX FTA●●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)	**ABE 7H34E●00 "economy"** *(2)*								
	ABE 7H16C●● "miniature"								
Universal 8 channels (item 7)	**ABE 7H08R●●**								
	ABE 7H08S21								
Universal 16 channels (item 3)	**ABE 7H16R1●●**								
	ABE 7H16R50●								
	ABE 7H16R2●●								
	ABE 7H16S21●								
	ABE 7H16R3●								
	ABE 7H16R23								
	ABE 7H16S43								
	ABE 7H16F43								
Input adaptor sub-bases with solid state relays									
Universal 16 channels (item 3)	**ABE 7S16E2●●●** Fixed solid state relays, removable terminal blocks								
	ABE 7P16F31● Plug-in solid state relays								
Output adaptor sub-bases with fixed relays, removable terminal blocks									
Optimum & Universal 8 channels (item 7)	**ABE 7S08S2B●●** Solid state relays								
	ABE 7R08S111●/7R08S21●● Electromechanical relays								
Optimum & Universal 16 channels (item 3)	**ABE 7S16S●B●●** Solid state relays								
	ABE 7R16S111●/7R16S21●● Electromechanical relays								
Output adaptor sub-bases with plug-in relays									
Universal 8 channels (item 7)	**ABE 7P08T330●** Solid state relays								
Optimum & Universal 16 channels (item 3)	**ABE 7R16T●●●/7R16M111** Electromechanical relays								
	ABE 7P16T●●●/7P16M111 Solid state and/or electromechanical relays								
Sub-bases for analog I/O									
4 channels (item 5)	**ABE 7CPA410**	■							
	ABE 7CPA412		■	■					
2 channels (item 5)	**ABE 7CPA21**						■	■	
8 channels (item 5)	**ABE 7CPA02**				■	■			■
	ABE 7CPA03				■				
	ABE 7CPA31/31E				■	■			

■ Compatible
Not compatible

(1) References for cordsets: to be completed, see page 2/23.
(2) ABE 7H34E●00 "economy" sub-bases: the cordset is supplied.

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Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Passive connection sub-bases

ABE 7H20E●●●

ABE 7H16C21

ABE 7H16CM21

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 PLCs	Length of PLC connection cable	Type of connection	Reference	Weight kg
Input or output	16	1	2	Modicon TSX Micro Modicon Premium	1 m	Screw	**ABE 7H20E100**	0.330
					2 m	Screw	**ABE 7H20E200**	0.410
					3 m	Screw	**ABE 7H20E300**	0.480
				Modicon M340	– *(1)*	Screw	**ABE 7H34E000**	0.150
					1 m	Screw	**ABE 7H34E100**	0.330
					2 m	Screw	**ABE 7H34E200**	0.410
					3 m	Screw	**ABE 7H34E300**	0.480
				Siemens S7	1.5 m	Screw	**ABE 7H32E150**	0.360
					3 m	Screw	**ABE 7H32E300**	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	**ABE 7H16C10**	0.160
				Yes	No	Screw	**ABE 7H16C11**	0.160
		2	2	Yes	0 or 24 V	Screw	**ABE 7H16C21**	0.205
		3	3	Yes	0 or 24 V	Screw	**ABE 7H16C31**	0.260
Input and output *(2)*	16	1	1	Yes	No	Screw	**ABE 7H16CM11**	0.160
		2	2	Yes	0 or 24 V	Screw	**ABE 7H16CM21**	0.200

(1) Sub-base supplied without cordset.
(2) 8 I + 8 Q: these products have 2 common connections which enable inputs and outputs to be connected to the same sub-base at the same time.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Passive connection sub-bases

ABE 7H●●R1●

Passive connection sub-bases for discrete signals (continued)

Universal sub-bases

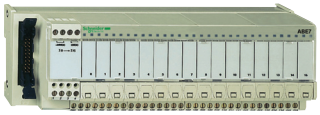
Function	No. of channels	No. of terminals per channel	No. of terminals on row number	LED per channel	Polarity distribution	Isolator (I) Fuse (F) per channel	Type of connection	Reference	Weight kg
Input or output	8	1	1	No	No	–	Screw	**ABE 7H08R10**	0.187
				Yes	No	–	Screw	**ABE 7H08R11**	0.187
		2	2	Yes	0 or 24 V	–	Screw	**ABE 7H08R21**	0.218
						I	Screw	**ABE 7H08S21**	0.245
	12	1	1	No	No	–	Screw	**ABE 7H12R10**	0.274
				Yes	No	–	Screw	**ABE 7H12R11**	0.274
			2	No	No	–	Screw	**ABE 7H12R50**	0.196
		2	2	No	0 or 24 V	–	Screw	**ABE 7H12R20**	0.300
				Yes	0 or 24 V	–	Screw	**ABE 7H12R21**	0.300
						I	Screw	**ABE 7H12S21**	0.375
	16	1	1	No	No	–	Screw	**ABE 7H16R10**	0.274
				Yes	No	–	Screw	**ABE 7H16R11**	0.274
			2	No	No	–	Screw	**ABE 7H16R50**	0.196
		2	2	No	0 or 24 V	–	Screw	**ABE 7H16R20**	0.300
				Yes	0 or 24 V	–	Screw	**ABE 7H16R21**	0.300
						I	Screw	**ABE 7H16S21**	0.375
		3	3	No	0 or 24 V	–	Screw	**ABE 7H16R30**	0.346
				Yes	0 or 24 V	–	Screw	**ABE 7H16R31**	0.346
Input type 2 *(1)*	16	2	2	Yes	0 or 24 V	–	Screw	**ABE 7H16R23**	0.320
Input	16	2	1	Yes	24 V	I, F *(2)*	Screw	**ABE 7H16S43**	0.640
Output	16	2	1	Yes	0 V	I, F *(2)*	Screw	**ABE 7H16F43**	0.640

(1) For TSX Micro, Modicon Premium.
(2) With LED to indicate blown fuse.

Connection interfaces

Modicon Telefast ABE 7 pre-wired system

Adaptor sub-bases with fixed relays and removable terminal blocks



ABE 7H16E2●●

Adaptor sub-bases with fixed solid state relays, removable terminal blocks

Universal input sub-bases with solid state relays

Number of channels	No. of terminals per channel	Isolation of PLC/ Operative part	Voltage	Type of connection	Reference	Weight kg
16	2	Yes	⎓ 24 V	Screw	**ABE 7S16E2B1**	0.370
				Spring	**ABE 7S16E2B1E**	0.370
			⎓ 48 V	Screw	**ABE 7S16E2E1**	0.370
			∿ 48 V	Screw	**ABE 7S16E2E0**	0.386
			∿ 110 V	Screw	**ABE 7S16E2F0**	0.397
			∿ 230 V	Screw	**ABE 7S16E2M0**	0.407
				Spring	**ABE 7S16E2M0E**	0.407

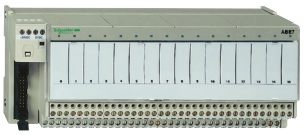
Universal output sub-bases with solid state relays

Number of channels	Isolation of PLC/ 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	**ABE 7S16S2B0**	0.405
					Spring	**ABE 7S16S2B0E**	0.405
				No	Screw	**ABE 7S16S1B2**	0.400
					Spring	**ABE 7S16S1B2E**	0.400

Optimum and Universal output sub-bases with electromechanical relays

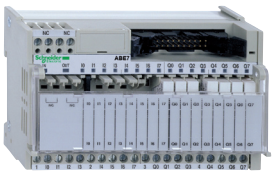
Number of channels	Number of contacts	Output current	Polarity distribution/ operative part	Type of connection	Reference	Weight kg
8	1 N/O	2 A	Contact common per group of 4 channels	Screw	**ABE 7R08S111**	0.252
	Latching	2 A	Volt-free	Screw	**ABE 7R08S216**	0.448
	1 N/O	5 A	Volt-free	Screw	**ABE 7R08S210**	0.448
16	1 N/O	2 A	Contact common per group of 8 channels	Screw	**ABE 7R16S111**	0.405
				Spring	**ABE 7R16S111E**	0.405
	1 N/O	5 A	Volt-free	Screw	**ABE 7R16S210**	0.405
				Spring	**ABE 7R16S210E**	0.405
			Common per group of 8 channels on both poles	Screw	**ABE 7R16S212**	0.400

(1) A fault on a sub-base output Qn will set PLC output Qn to safety mode, which will be detected by the PLC.
(2) Can only be used with modules with protected outputs.



ABE 7R08S216

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Input/output adaptor sub-bases for or with plug-in relays



ABE 7R16M111

ABE 7R16T210

Adaptor sub-bases with plug-in relays

Universal input sub-bases for solid state relays, supplied without relays

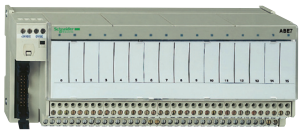
Number of channels	No. of terminals per channel	For relay type	Isolation of PLC/ Operative part	Input connection	Type of connection	Reference	Weight kg
16	2	ABS 7E ABR 7 ABS 7S33E	Yes	Volt-free	Screw	**ABE 7P16F310**	0.850
				Polarity distribution	Screw	**ABE 7P16F312**	0.850

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	ABR 7S11	1 N/O	Contact common per group of 4 channels	**ABE 7R16T111**	0.600
				Contact common per group of 4 output channels + 2 common input terminals	**ABE 7R16M111** *(2)*	0.600
	10 mm	ABR 7S21	1 N/O	Volt-free	**ABE 7R16T210**	0.735
				Common on both poles *(3)*	**ABE 7R16T212**	0.730
		ABR 7S23	1 C/O	Volt-free	**ABE 7R16T230**	0.775
				Contact common *(3)*	**ABE 7R16T231**	0.730
	12 mm	ABR 7S33	1 C/O	Volt-free	**ABE 7R16T330**	1.300
				Common on both poles *(4)*	**ABE 7R16T332**	1.200
		ABR 7S37	2 C/O	Volt-free	**ABE 7R16T370**	1.300

(1) The sub-bases are supplied as standard with electromechanical relays, all or part of which 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.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Output adaptor sub-bases for plug-in relays



ABE 7P16T2●●

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	ABR 7S11 ABS 7SC1B	No	No	Contact common per group of 4 channels	Screw	**ABE 7P16T111**	0.550
	10 mm	ABR 7S2● ABS 7SA2● ABS 7SC2● ABE 7ACC20	No	No	Volt-free	Screw	**ABE 7P16T210** *(2)*	0.615
							ABE 7P16T230 *(2)*	0.655
				Yes	Volt-free	Screw	**ABE 7P16T214**	0.675
				No	Common on both poles *(3)*	Screw	**ABE 7P16T212**	0.615
				Yes	Common on both poles *(3)*	Screw	**ABE 7P16T215**	0.670
8	12 mm	ABR 7S33 ABS 7A3● ABS 7SC3●● ABE 7ACC21	No	No	Volt-free	Screw	**ABE 7P08T330**	0.450
16	12 mm	ABR 7S33 ABS 7A3● ABS 7SC3●● ABE 7ACC21	No	No	Volt-free	Screw	**ABE 7P16T330**	0.900
					Common on both poles *(4)*	Screw	**ABE 7P16T332**	0.900
		ABR 7S33 ABS 7A3M ABS 7SC3E ABE 7ACC21	No	Yes	Volt-free	Screw	**ABE 7P16T334**	0.900
			Yes	Yes	Common on both poles *(4)*	Screw	**ABE 7P16T318**	1.000

(1) Not equipped with relays.
(2) With relay ABR 7S21 for sub-base ABE 7P16T210, with relay ABR 7S23 for sub-base ABE 7P16T230●.
(3) Per group of 8 channels.
(4) Per group of 4 channels.

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Plug-in relays

571152

ABS 7SC1B

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 ⎓	**ABS 7SC1B**	0.010
10 mm	Output	⎓	24 V	0.5 A	5…48 V ⎓	**ABS 7SC2E**	0.016
					24…240 V ∿	**ABS 7SA2M**	0.016
12 mm	Input	⎓	5 V TTL	–	24 V ⎓	**ABS 7EC3AL**	0.014
			24 V Type 2	–	24 V ⎓	**ABS 7EC3B2**	0.014
			48 V Type 2	–	24 V ⎓	**ABS 7EC3E2**	0.014
		50 Hz ∿	48 V	–	24 V ⎓	**ABS 7EA3E5**	0.014
		60 Hz ∿	110…130 V	–	24 V ⎓	**ABS 7EA3F5**	0.014
		50 Hz ∿	230…240 V	–	24 V ⎓	**ABS 7EA3M5**	0.014
	Output	⎓	24 V	2 A Self-protected	24 V ⎓	**ABS 7SC3BA**	0.016
				1.5 A	5…48 V ⎓	**ABS 7SC3E**	0.016
				1.5 A	24…240 V ∿	**ABS 7SA3MA**	0.016


816476

ABR 7S2●


816474

ABR 7S3●

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	**ABR 7S11**	0.005
10 mm	24 V ⎓	5 A (Ith)	1 N/O	4	**ABR 7S21**	0.008
			1 C/O	4	**ABR 7S23**	0.008
12 mm	2 V ⎓	10 A (Ith)	1 C/O	4	**ABR 7S33**	0.017
		8 A (Ith)	2 C/O	4	**ABR 7S37**	0.017
	48 V ⎓	8 A (Ith)	1 C/O	4	**ABR 7S33E**	0.017

Accessory

Description	Reference	Weight kg
Extractor for 5 mm miniature relay	**ABE 7ACC12**	0.010

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Connection sub-bases for analog channels and application-specific channels


ABE 7CPA11

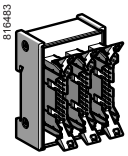

ABE 7CPA 21/410/412


ABE 7CPA01

Connection sub-bases for counter and analog channels

Functions	For PLCs	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 TSX 37 22 TSX CTZ●A	15-way SUB-D	Screw	**ABE 7CPA01**	0.300
Counter, axis control, position control	Modicon Premium	TSX CTY●A TSX CAY●1	15-way SUB-D	Screw	**ABE 7CPA01**	0.300
Connection of absolute encoder with parallel output	Modicon Premium	TSX CTY●A TSX CAY●1	15-way SUB-D	Screw	**ABE 7CPA11**	0.330
Distribution of 4 thermocouples	Modicon M340	BMX ART 0414 BMX ART 0814	25-way SUB-D	Screw	**ABE 7CPA412**	0.180
Distribution of 16 thermocouples	Modicon Premium	TSX AEY1614	25-way SUB-D	Screw	**ABE 7CPA12**	0.300
Passive distribution of 8 analog EIS channels on screw terminals, with shield continuity	Modicon Premium	TSX ASY810 TSX AEY1600 TSX A●Y800	25-way SUB-D	Screw	**ABE 7CPA02**	0.290
	Modicon M340	BMX AMI 0800 BMX AMI **0810** BMX AMO 0802				
Provision and distribution of protected isolated power supplies for 4 analog input channels	Modicon M340	BMX AMI 0410	25-way SUB-D	Screw	**ABE 7CPA410**	0.180
Distribution of 4 analog output channels	Modicon Premium	TSX ASY410 TSX AEY420	25-way SUB-D	Screw	**ABE 7CPA21**	0.210
	Modicon M340	BMX AMO 0410				
Distribution and supply of 8 analog input channels with limitation of each current loop	Modicon Premium	TSX AEY800 TSX AEY1600	25-way SUB-D	Screw	**ABE 7CPA03**	0.330
Distribution and supply of 8 analog input channels isolated from one another with 25 mA/ channel limitation	Modicon Premium	TSX AEY810	25-way SUB-D	Screw	**ABE 7CPA31**	0.410
	Modicon M340	BMX AMI 0800 BMX AMI 0810 BMX AMO 0802		Spring	**ABE 7CPA31E**	0.410
Safety	Modicon Premium	TSX PAY2●2	25-way SUB-D	Screw	**ABE 7CPA13**	0.290

Connection interfaces
Modicon Telefast ABE 7 pre-wired system
Accessories for connection sub-bases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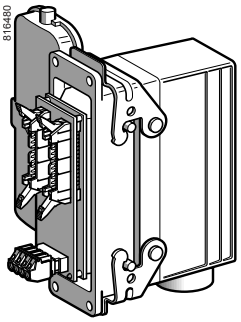
ABE 7ACC02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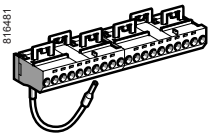
ABE 7ACC80 + ABE 7ACC81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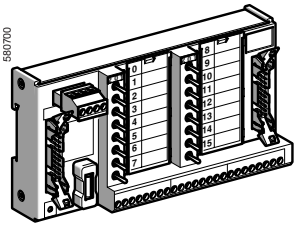
ABE 7BV20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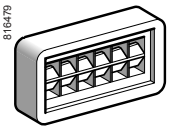
ABE 7TES160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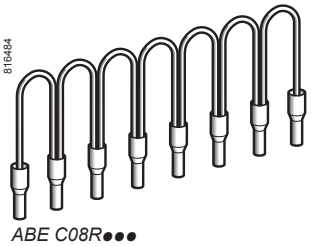
AR1 SB3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ABE C08R●●●

Accessories

Description	No. of channels	Characteristics	Order in multiples of	Unit reference	Weight kg
Kit for fixing on solid plate	–	–	10	**ABE 7ACC01**	0.008
Splitter sub-base	–	16 as 2 x 8 channels	1	**ABE 7ACC02**	0.075
Redundant output sub-base	–	16 as 2 x 16 channels	1	**ABE 7ACC10**	0.075
Redundant input sub-base	–	16 as 2 x 16 channels	1	**ABE 7ACC11**	0.075
Plug-in continuity blocks	–	Width 10 mm	4	**ABE 7ACC20**	0.007
		Width 12 mm	4	**ABE 7ACC21**	0.010
Enclosure feedthrough with CNOMO M23 connector (1 x 20-way HE 10 connector, PLC end)	16	19-way	1	**ABE 7ACC82**	0.150
Impedance adaptor for compatibility Type 2	–	Used with ABE 7ACC82 and ABE 7ACC83	1	**ABE 7ACC85**	0.012
IP 65 cable gland	–	For 3 cables	5	**ABE 7ACC84**	0.300
Additional snap-on terminal blocks (shunted terminals)	8	10 screw terminals	5	**ABE 7BV10**	0.030
	16	20 screw terminals	5	**ABE 7BV20**	0.060
I/O simulator sub-base	16	For display, forcing inhibition, continuity	1	**ABE 7TES160**	0.350
Self-adhesive marker tag holder	–	For 6 characters	50	**AR1 SB3**	0.001
Quick-blow fuses 5 x 20, 250 V, UL	–	0.125 A	10	**ABE 7FU012**	0.010
		0.5 A	10	**ABE 7FU050**	0.010
		1 A	10	**ABE 7FU100**	0.010
		2 A	10	**ABE 7FU200**	0.010
		4 A	10	**ABE 7FU400**	0.010
		6.3 A	10	**ABE 7FU630**	0.010

Commoning link accessories

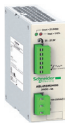
Description	For common	Colour	Distance between cable ends	Reference	Weight kg
Commoning links Modularity 8 x 1 mm²	Coil	White	12 cm	**ABF C08R12W**	0.020
			2 cm	**ABF C08R02W**	0.010
	~	Red	12 cm	**ABF C08R12R**	0.020
			2 cm	**ABF C08R02R**	0.010
	⎓	Blue	12 cm	**ABF C08R12B**	0.020
			2 cm	**ABF C08R02B**	0.010

Power supplies and transformers Phaseo

Regulated switch mode power supplies

ABL 8MEM, ABL 7RM: 7 to 60 W - Rail mounting
ABL 8REM, ABL 7RP: 60 to 144 W - Rail mounting

Power supplies					
Nominal input voltage		~ 100...240 V ⎓ 120...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 fault			
Diagnostics relay		–			
Compatibility with function modules		–			
Power reserve (Boost)		1.25 to 1.4 In for 1 minute, depending on model (for ABL 8MEM)			No
Output voltage		⎓ 5 V	⎓ 12 V	⎓ 24 V	⎓ 48 V
Output current	0.3 A			**ABL 8MEM24003**	
	0.6 A			**ABL 8MEM24006**	
	1.2 A			**ABL 8MEM24012**	
	2 A		**ABL 8MEM12020**		
	2.5 A			**ABL 7RM24025**	**ABL 7RP4803**
	3 A			**ABL 8REM24030**	
	3.5 A				
	4 A	**ABL 8MEM05040**			
	5 A		**ABL 7RP1205**	**ABL 8REM24050**	
	6 A				
	10 A				
	20 A				
	30 A				
	40 A				
Pages		5/25			

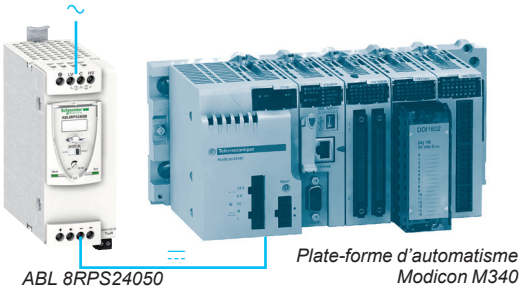
ABL4: 85 to 960 W - Compact - Rail mounting			Function modules ABL 8DCC: converters ⎓/⎓	
				
∼ 100…230 V	∼ 120 V or ∼ 230 V	∼ 400…500 V	⎓ 24 V	
Single-phase (N-L1) connection	Single-phase (N-L1) connection or 2-phase (L1-L2) connection	–	–	
–	Single-phase (N-L1) connection	3-phase (L1-L2-L3) connection	–	
–	–	3-phase (L1-L2-L3) connection	–	
No	No	No	–	
Yes, current limitation Automatic reset on elimination of the 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...12 V
				ABL 8DCC12020 *(1)*
ABL 4RSM24035				
ABL 4RSM24050				
			ABL 8DCC05060 *(1)*	
	ABL 4RSM24100			
	ABL 4RSM24200	**ABL 4WSR24200**		
		ABL 4WSR24300		
		ABL 4WSR24400		
5/28 *(2)*				

(1) Converter module ⎓/⎓, must be used with a Phaseo power supply.
(2) Certain offers can not be marketed in certain countries, please consult your "Customer Care Centre".

Power supplies and transformers Phaseo

Regulated switch mode power supplies ABL 8RP, ABL 8WP

72 to 960 W - Wide input voltage range - Mounting on rail



ABL 8RPS24050

Plate-forme d'automatisme Modicon M340

Switch mode power supplies: ABL 8RP/8WP range

The **ABL 8RPS/RPM/WPS** power supply offer is designed to provide the DC voltage necessary for the control circuits of automation system equipment. Comprising 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 ranges. When used with additional function modules, they ensure continuity of service in the event of network power outages or application malfunctions. Clear guidelines are given on selecting the function modules and upstream protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

The ABL 8RP/8WP range of Phaseo power supplies must be connected in phase-to-neutral or phase-to-phase for **ABL 8RPS/RPM**, and in three-phase for **ABL 8WPS**. 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 **ABL 8RPS**
- 85 to 132 V ∿ and 170 to 264 V ∿ for **ABL 8RPM**
- 340 to 550 V ∿ for **ABL 8WPS**

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 ABL 8RP/8WP use.

ABL 8RPS/RPM and **ABL 8WPS** power supplies are all equipped with a harmonic filter, ensuring compliance with standard IEC/EN 61000-3-2 concerning harmonic pollution.

All the ABL 8RP/8WP range of Phaseo power supplies have protection devices to 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 so as to guarantee the PLC 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 ensure continuity of service until the arrival of the maintenance team.

The ABL 8RP/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 ABL 8RP/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 PLC states are guaranteed).

All products are equipped with an output voltage adjustment potentiometer in order to be able 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 ⊔ rail.

Power supplies and transformers Phaseo

Regulated switch mode power supplies ABL 8RP, ABL 8WP

72 to 960 W - Wide input voltage range - Mounting on rail

ABL 8WPS24200

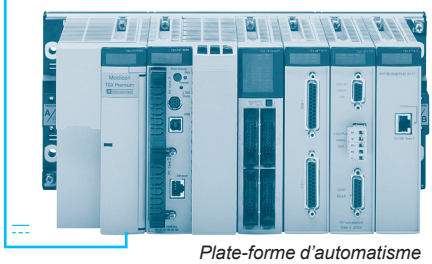


Plate-forme d'automatisme Premium

Switch mode power supplies: ABL 8RP/8WP range (continued)

There are four references available in the ABL 8RP/8WP range of Phaseo power supplies for phase-to-neutral or phase-to-phase connection:

■ **ABL 8RPS24030**	72 W	3 A	24 V ⎓
■ **ABL 8RPS24050**	120 W	5 A	24 V ⎓
■ **ABL 8RPS24100**	240 W	10 A	24 V ⎓
■ **ABL 8RPM24200**	480 W	20 A	24 V ⎓

The ABL 8RP/8WP range of Phaseo power supplies also features two references for three-phase connection:

■ **ABL 8WPS24200**	480 W	20 A	24 V ⎓
■ **ABL 8WPS24400**	960 W	40 A	24 V ⎓

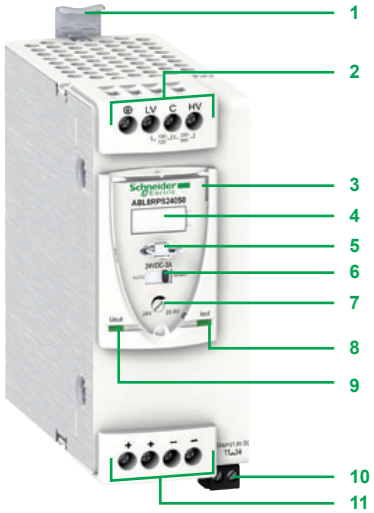
A range of function modules also allows functions to be added to the ABL 8RP/8WP range of Phaseo power supplies so as to ensure continuity of service:

□ A Buffer module or Battery control modules combined with their batteries to ensure continuity of service in the event of a network power outage

□ A Redundancy module to meet the most demanding requirements for continuity of service even if the power supply fails

□ Downstream electronic Protection modules to 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 ABL 8RP/8WP range of Phaseo power supplies



Description

ABL 8RP/8WP range of power supplies

The ABL 8RP/8WP range of Phaseo regulated switch mode power supplies, **ABL 8RPS24●●0/RPM24200/WPS24●00**, comprise:

1 Spring clip for 35 mm ⊔ 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 **ABL 8RPS24030**
11 4 mm² (10 mm² on **ABL 8WPS24●00** and **ABL 8RPM24200**) enclosed screw terminals for connection of the DC output voltage

Power supplies and transformers
Phaseo
Regulated switch mode power supplies
ABL 8RP, ABL 8WP
72 to 960 W - Wide input voltage range - Mounting on rail

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)*	–
ABL 8RPS24030	GB2 CD07	MG24443	2 A (8 x 32)	GB2 CD07	MG24443	2 A (8 x 32)	GV2 RT06 GV2 ME06 *(4)*	2 A (14 x 51)
ABL 8RPS24050	GB2 CD08	MG24444	4 A (8 x 32)	GB2 CD07	MG24443	2 A (8 x 32)	GV2 RT06 GV2 ME06 *(4)*	2 A (14 x 51)
ABL 8RPS24100	GB2 CD12	MG24447	6 A (8 x 32)	GB2 CD08	MG24444	4 A (8 x 32)	GV2 RT07 GV2 ME07 *(4)*	4 A (14 x 51)
ABL 8RPM24200	GB2 CD16	MG24449	10 A (8 x 32)	GB2 CD12	MG24447	6 A (8 x 32)	–	–
ABL 8WPS24200	–	–	–	–	–	–	GV2 ME06 *(5)*	2 A (14 x 51)
ABL 8WPS24400	–	–	–	–	–	–	GV2 ME07 *(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).

Power supplies and transformers Phaseo

Regulated switch mode power supplies
ABL 8RP, ABL 8WP
72 to 960 W - Wide input voltage range - Mounting on rail


ABL 8RPS24050


ABL 8RPM24200


ABL 8WPS24200


ABL 8BUF24400


ABL 8BBU24200


ABL 8RED24400

Regulated switch mode power supplies: Phaseo ABL 8RP/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…120 V - 200...500 V ∿ - 15%,+ 10% 50/60 Hz	24...28.8 V ⎓	72 W	3 A	Auto/man	Yes	**ABL 8RPS24030**	0.300
		120 W	5 A	Auto/man	Yes	**ABL 8RPS24050**	0.700
		240 W	10 A	Auto/man	Yes	**ABL 8RPS24100**	1.000
100…120 V/200...240 V ∿ - 15%,+ 10% 50/60 Hz	24...28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL 8RPM24200**	1.600
Three-phase connection (L1-L2-L3)							
380…500 V ∿ ± 10 % 50/60 Hz	24...28.8 V ⎓	480 W	20 A	Auto/man	Yes	**ABL 8WPS24200**	1.600
		960 W	40 A	Auto/man	Yes	**ABL 8WPS24400**	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	**ABL 8BUF24400**	1.200
	Holding time 9 min at 40 A...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	**ABL 8BBU24200**	0.500
		Battery control module 40 A output current	**ABL 8BBU24200**	0.700
		3.2 Ah battery module *(3)*	**ABL 8BPK24A03**	3.500
		7 Ah battery module *(3)*	**ABL 8BPK24A03**	6.500
		12 Ah battery module *(3)*	**ABL 8BPK24A12**	12.000
Continuity after a malfunction	Paralleling and redundancy of the power supply to ensure uninterrupted operation of the application excluding AC line failures and application overloads	Redundancy module	**ABL 8RED24400**	0.700
Discriminating downstream protection	Electronic protection (1...10 A overload or short-circuit) with 4 output terminals from a ABL 8RP/8WP range Phaseo power supply	Protection module with 2-pole breaking *(4) (5)*	**ABL 8PRP24100**	0.270

⎓ / ⎓ converters *(1)*

Primary *(6)*		Secondary		Reference	Weight kg
Input voltage	ABL 8RP/8WP range power supply module output current	Output voltage	Nominal current		
24 V ⎓ - 9%, + 24%	2.2 A	5...6.5 V ⎓	6 A	**ABL 8DCC05060**	0.300
	1.7 A	7...15 V ⎓	2 A	**ABL 8DCC12020**	0.300

Separate and replacement parts

Designation	Use	Composition	Unit reference	Weight kg
Fuse assemblies	For ABL 8PRP24100 discriminating Protection modules	4 x 5 A, 4 x 7.5 A and 4 x 10 A	**ABL 8FUS01**	–
	For ABL 8BKP24A●● Battery	4 x 20 A and 6 x 30 A	**ABL 8FUS02**	–
Clip-on marker labels	All products except ABL 8PRP24100	Order in multiples of 100	**LAD 90**	0.030
	ABL 8PRP24100 selective Protection Module	Order in multiples of 22	**ASI20 MACC5**	–
DIN rail mounting kit	ABL 8BPK2403 Battery Module	–	**ABL 1A02**	–
EEPROM memory	Backup and duplication of ABL8 BBU24●00 battery control module parameters	–	**SR2 MEM02**	0.010

(1) For use with ABL 8RP/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 pushbutton or automatic reset on elimination of the fault.
(6) Voltage from a 24 V ⎓ ABL 8RP/8WP range Phaseo power supply.

Power supplies and transformers Phaseo

Regulated switch mode power supplies ABL4

85 to 960 W - Compact - Rail mounting

Presentation

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.
Comprising 7 products, this range of power supplies 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 ranges:

- 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 ensure continuity of service in the event of power outages or application malfunctions. In addition, the ABL 4RSM24200 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 must be connected in phase-to-neutral, phase-to-phase *(1)* for the ABL 4R, and in 3-phase for the ABL 4W.

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…264 V for the ABL 4RSM24035 and ABL 4RSM24050,
- ∼ 90…132 V and ∼ 185…264 V for the ABL 4RSM24100 and ABL 4RSM24200,
- ∼ 340…550 V for the ABL 4W.

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 limiting the output voltage to less than 60 V in the event of an 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 (⊔ 35 mm) rail.

(1) Only on certain American line supplies.
(2) With automatic restarting.

Power supplies and transformers Phaseo

Regulated switch mode power supplies ABL4

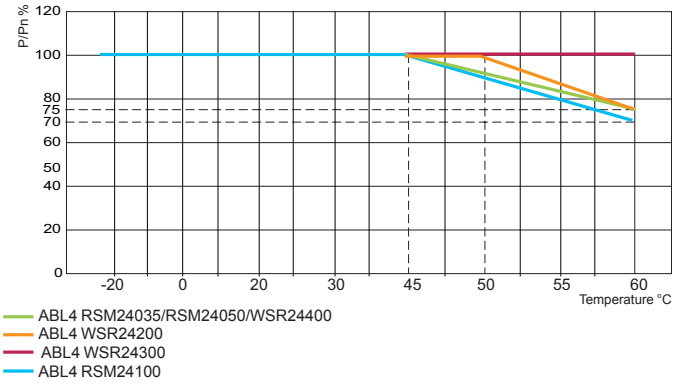
85 to 960 W - Compact - Rail mounting

Characteristics

Derating

The ambient temperature is a determining factor which 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.



In all cases, there must be adequate convection around the products to assist cooling.
There must be sufficient clearance around power supplies ABL4: refer to instruction sheet supplied with each power supply and, also, downloadable from 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, whilst guaranteeing an output voltage higher then 90% of the nominal voltage.

Power supply	Maximum temporary overcurrent	Maximum time of temporary overcurrent
ABL 4RSM24035	170% of nominal current	30 seconds
ABL 4RSM24050	160% of nominal current	30 seconds
ABL 4RSM24100	150% of nominal current	30 seconds
ABL 4RSM24200 **ABL 4WSR24●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.

Behaviour 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 fault disappears. Once the output circuit load conditions return to normal, the power supply automatically resets.

Power supply	Periodic reset frequency type
ABL 4RSM24035 **ABL 4RSM24050** **ABL 4RSM24100**	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.
ABL 4RSM24200 **ABL 4WSR24●00**	Fixed: the current is established for 5 seconds every 15 seconds either in the event of an overcurrent or a short-circuit.

Connecting in parallel

In order to increase the current available, the outputs of two power supplies with identical references can be connected in parallel.
To obtain equitable sharing of the current between the two power supplies, the following precautions must be taken into account:
□ Use two power supplies bearing the same date code and same reference.
□ Adjust the output voltages so as 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 ABL 4RSM24200 can be achieved without adding a specific module, due to the specific diode that is integrated in these products.
For other power supply references, redundancy module ABL 8RED24400 must be used.
Additional technical information on www.schneider-electric.com

Power supplies and transformers Phaseo

Regulated switch mode power supplies ABL4

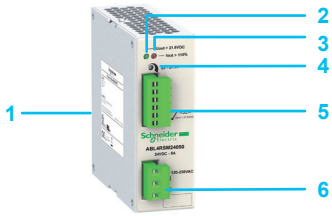
85 to 960 W - Compact - Rail mounting

Characteristics (continued)

Selection of protection on the power supply primaries

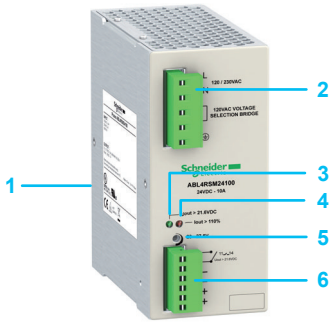
Power supply	Type of protection		
	Miniature circuit-breakers C60N (Icn > 1.5 kA)	**Fuses**	**Class CC fuses with rejection system**
	Zone in which equipment used		
	Rest of the world		USA & Canada
ABL 4RSM24035	4 A curve C	4 A time-lag	6 A
ABL 4RSM24050	4 A curve C	4 A time-lag	6 A
ABL 4RSM24100	6 A curve C	6.3 A time-lag	6 A
ABL 4RSM24200	16 A curve C 10 A curve D	15 A time-lag	10 A
ABL 4WSR24200	3 x 10 A curve C	3 x 3.15 A time-lag	3 x 10 A
ABL 4WSR24300	3 x 10 A curve C	3 x 5 A time-lag	3 x 10 A
ABL 4WSR24400	3 x 10 A curve C	3 x 6.3 A time-lag	3 x 10 A

Description



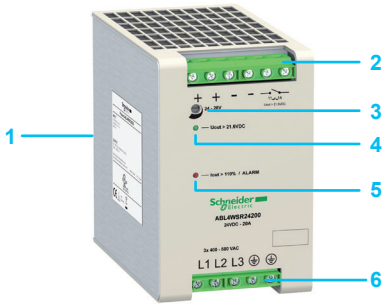
The regulated switch mode power supplies ABL 4RSM24035 and ABL 4RSM24050 comprise:

1 Spring clip for Omega (⊥ 35 mm) 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 ABL 4RSM24100 comprise:

1 Spring clip for Omega (⊥ 35 mm) 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 ABL 4RSM24200, ABL 4WSR24200, ABL 4WSR24300 and ABL 4WSR24400 comprise:

1 Spring clip for Omega (⊥ 35 mm) 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 alarm LED (red).
6 Enclosed screw terminals for connection of the AC input voltage:
- single-phase connection for ABL 4RSM24200 *(1)*,
- 3-phase connection for ABL 4W●●●●.

(1) Connection between 2 phases only on certain American line supplies.

Power supplies and transformers
Phaseo
Regulated switch mode power supplies
ABL4
85 to 960 W - Compact - Rail mounting

ABL 4RSM24050

ABL 4RSM24100

ABL 4WSR24200

ABL 8BUF24400

ABL 8BBU24200

ABL 8RED24400

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…230 V - 10%, + 15%	⎓ 23…27.4 V	85 W	3.5 A	Automatic	**ABL 4RSM24035**	0.500
		120 W	5 A	Automatic	**ABL 4RSM24050**	0.500
~ 120 V - 25%, + 10% and **~ 230 V** - 20%, + 15%	⎓ 23…27.4 V	240 W	10 A	Automatic	**ABL 4RSM24100**	0.800
	⎓ 24…27.8 V	480 W	20 A	Automatic	**ABL 4RSM24200** *(2)*	1.300
3-phase (L1-L2-L3) connection						
~ 400…500 V - 15%, + 10%	⎓ 24…27.8 V	480 W	20 A	Automatic	**ABL 4WSR24200**	1.300
		720 W	30 A	Automatic	**ABL 4WSR24300**	1.300
		960 W	40 A	Automatic	**ABL 4WSR24400**	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	**ABL 8BUF24400**	1.200
	Holding time 9 min at 40 A...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	**ABL 8BBU24200**	0.500
		Battery check module, output current 40 A	**ABL 8BBU24400**	0.700
		Battery module, 3.2 Ah *(6)*	**ABL 8BPK24A03**	3.500
		Battery module, 7 Ah *(6)*	**ABL 8BPK24A07**	6.500
		Battery module, 12 Ah *(6)*	**ABL 8BPK24A12**	12.000
Continuity after a malfunction	Paralleling and redundancy of the power supply to ensure uninterrupted operation of the application excluding AC line failures and application overcurrents	Redundancy module	**ABL 8RED24400**	0.700
Discriminating downstream protection	Electronic protection (1...10 A overcurrent or short-circuit) of 4 output terminals from an ABL4 power supply	Protection module with 2-pole breaking *(7) (8)*	**ABL 8PRP24100**	0.270

Converters ⎓ / ⎓ *(3)*

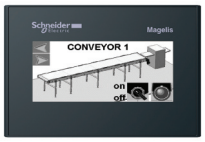
Primary *(9)*		Secondary		Reference	Weight
Input voltage	Power supply module output current	Output voltage	Nominal current		kg
⎓ 24 V - 9%,+ 24%	2.2 A	⎓ 5...6.5 V	6 A	**ABL 8DCC05060**	0.300
	1.7 A	⎓ 7...15 V	2 A	**ABL 8DCC12020**	0.300

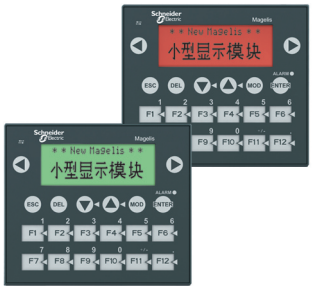
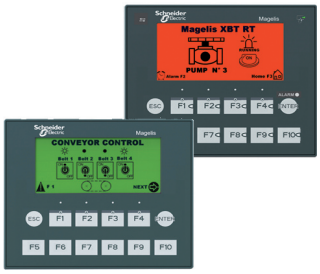
Separate and replacement parts

Description	Use	Composition	Unit reference	Weight kg
Fuse assemblies	Discriminating Protection module ABL 8PRP24100	4 x 5 A, 4 x 7.5 A and 4 x 10 A	**ABL 8FUS01**	–
	Battery ABL 8BKP24A●●	4 x 20 A and 6 x 30 A	**ABL 8FUS02**	–
Clip-on marker labels	All products except ABL 8PRP24100	Sold in lots of 100	**LAD 90**	0.030
	Discriminating Protection module ABL 8PRP24100	Sold in lots of 22	**ASI20 MACC5**	–
Rail mounting kit	Battery module ABL 8BPK2403	–	**ABL 1A02**	–
EEPROM memory	Backup and duplication of ABL8 BBU24●00 battery check module parameters	–	**SR2 MEM02**	0.010

(1) 2-phase connection possible on certain American line supplies.
(2) Power supply reference **ABL 4RSM24200** *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 on www.schneider-electric.com
(5) Please consult Technical appendices on 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 pushbutton or automatic reset on elimination of the fault.
(9) Voltage from power supply ABL4.

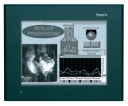
Operator dialogue terminals
Magelis Small Panels

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	Colour QVGA TFT LCD (320 x 240 pixels)	
	Capacity	3.4” (monochrome)	3.5” (colour)	5.7” (colour)
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		
	Representation 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 PLC real-time clock		
	Alarm relay	–		
	Buzzer	Yes		
Communication	Asynchronous serial link	RS 232C/RS 485		
	Downloadable protocols	Uni-TE, Modbus and for PLC 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” catalogue		

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…17.36 mm	Green, orange and red backlit monochrome LCD, height 4.34…17.36 mm	Green, orange and red backlit monochrome matrix LCD (198 x 80 pixels), height 4…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…50		50
Alphanumeric		Alphanumeric, bar chart, buttons, LEDs
–		
Yes		
Yes *(2)*	Yes	
Access to the PLC real-time clock	Access to the PLC real-time clock	
–		
–		Yes *(1)*
RS 232C/RS 485		
Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
RS 232C serial link *(2)*		
–		
–		
Vijeo Designer Lite (on Windows 2000, Windows XP or Windows Vista)		
Magelis		
XBT N	**XBT R**	**XBT RT**
Please consult the “Human/Machine Interfaces” catalogue		

(1) Only XBT RT511.
(2) Depending on model.

Operator dialogue 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 colour STN LCD or backlit colour TFT LCD (320 x 240 pixels or 640 x 480 pixels) *(3)*	Backlit colour STN LCD or TFT LCD (640 x 480 pixels)
	Capacity	3.8” (monochrome or colour)	5.7” (monochrome or colour)	7.5” (colour)
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 XBT GT2110)	
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.)		
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED		
	Recipes	32 groups of 64 recipes comprising 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 PLC 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 Device Net 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		**XBT GT11/13**	**XBT GT21/22/23/24/29**	**XBT GT42/43**
Pages		Please consult the “Human/Machine Interfaces” catalogue		

(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 XBT GT 5430

Display of text messages, graphic objects and synoptic views
Control and configuration of data

Touch screen Advanced Panels

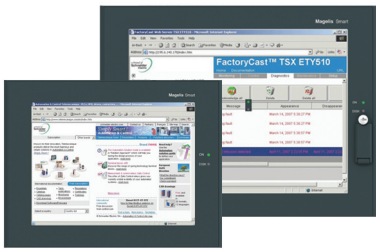
Backlit colour STN LCD or TFT LCD (640 x 480 pixels or 800 x 600 pixels) *(4)*	Backlit colour TFT LCD (800 x 600 pixels)	Backlit colour TFT LCD (1024 x 768 pixels)
10.4” (colour)	12.1” (colour)	15” (colour)
Via touch screen		
–		
–		
–		
–		
32 MB Flash EPROM		
By means of 128, 256, 512 MB, 1, 2 or 4 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 comprising 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 PLC 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)		
XBT GT52/53/54	**XBT GT63**	**XBT GT73**
Please consult the “Human/Machine Interfaces” catalogue		

Operator dialogue 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	Colour TFT LCD (320 x 240 pixels) or monochrome STN	Colour TFT LCD (640 x 480 pixels)
	Capacity	5.7” (monochrome or colour)	10.4” (colour)
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.)	
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED	
	Recipes	32 groups of 64 recipes comprising 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 PLC 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 Device Net 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		**XBT GK 21/23**	**XBT GK 53**
Pages		Please consult the “Human/Machine Interfaces” catalogue	

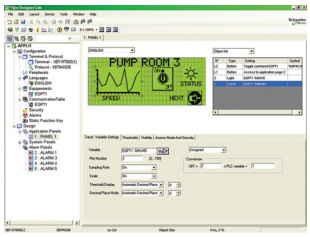
(1) Depending on model.
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.

Display of text messages, graphic objects and synoptic views
Control and configuration of data

Portable Advanced Panels	Open touch screen Advanced Panels		
			
Colour TFT LCD (640 x 480 pixels)	Colour TFT LCD (800 x 600 pixels)	Colour TFT LCD (800 x 600 pixels)	Colour TFT LCD (1024 x 768 pixels)
5.7” (colour)	8.4” (colour)	12” (colour)	15” (colour)
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 comprising 1024 ingredients max.			
Yes, with log			
Yes			
Built-in			
–			
1 audio output			
Uni-TE (2), Modbus, Modbus TCP/IP and for PLC brands: Mitsubishi, Omron, Rockwell Automation and Siemens	Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PLC 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		
XBT GH 2460	**XBT GTW 450**	**XBT GTW 652**	**HMI GTW 7353**
Please consult the “Human/Machine Interfaces” catalogue			

(1) Depending on model.
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.

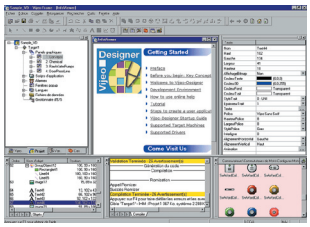
HMI software

Applications			**Traditional architecture, HMI executed on dedicated terminal or PC platform** **Configuration software for operator dialogue applications**
			
Target products	Type		Magelis XBT N *(1)* Magelis XBT R/RT *(1)*
	Operating system on terminals		Proprietary Magelis
Functions	Reading/writing of PLC 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 alarms		Yes *(2)*
	Scripts		–
Online modification of applications			–
Communication between PLCs 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” catalogue

(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 dialogue applications



Magelis STO & Magelis STU Magelis XBT GT *(1)*, Magelis XBT GK *(1)* Magelis XBT GH *(1)*, Magelis GTW *(1)*
Proprietary for Magelis STO/STU, Magelis XBT GT/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 alarms, log data
Linked to user profile
Windows XP, Windows Vista or Windows 7

Vijeo Designer

Please consult the “Human/Machine Interfaces” catalogue

Contents

6 - Ruggedized Modicon M340 modules

Modicon M340 automation platform

Treatment for severe environments

Ruggedized modules

Presentation

Protective treatment of Modicon M340 PLCs

Modicon M340 PLCs comply with "**TC**" treatment requirements (**T**reatment for all **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), PLCs must be 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 PLCs themselves offer **IP 20 degree of protection** *(1)*. They can therefore be installed without an enclosure in reserved access areas that do not exceed **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, vapours or salts, moulds, insects, etc.

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 which have protective coating on all 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 Centre.*

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 **BMX CPS 3540T** (see page 1/9)
- 125 V ⎓ discrete input module, **16 channels, BMX DDI 1604T** (see page 2/12)
- 125 V ⎓ discrete relay output module, **8 channels, BMX DRA 0804T** (see page 2/12)

*(1) Each slot in a **BMX XSP ●●●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 **BMX XEM 010** (sold in lots of 5).*

Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized processor modules

BMX P34 1000H

BMX P34 2020H

BMX P34 20302H

BMX RMS 008/128MPF

BMX XCA USB H0●●

Presentation (continued)

References and characteristics

To order ruggedized modules and racks, see the reference pages 6/3 to 6/9 (the references of the ruggedized products available include the suffix "**H**").
All standard separate parts (cordsets, cables, memory cards, sub-bases, etc.) which 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 characteristics of ruggedized modules are identical to those of their equivalent standard versions. However, some characteristics are subject to either derating or limitation. Please consult our website www.schneider-electric.com.

BMX P34 Modicon M340 ruggedized processors *(1)*

Modicon M340 processor modules are supplied with the **BMX RMS 008MP** 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 which is not backed up
- Activation of the Transparent Ready class B10 standard Web server with **BMX P34 1000H** Standard processors and **BMX P34 2020H/20302H** Performance processors.

This card can be replaced by either of the **BMX RMS 008 or BMX RMS 128MPF** cards which 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	**BMX P34 1000H**	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	**BMX P34 2020H**	0.205
			Ethernet network CANopen bus	**BMX P34 20302H**	0.215

Standard memory cards

Description	Processor compatibility	Capacity	Reference	Weight kg
Flash memory cards *(2)*	BMX P34 2020H BMX P34 20302H	8 MB/8 MB files	**BMX RMS 008MPF**	0.002
		8 MB/128 MB files	**BMX RMS 128MPF**	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 XBT GT/ GK/GTW, GTW HMI, STU/STO HMI graphic terminal	1.8 m	**BMX XCA USB H018**	0.065
			4.5 m	**BMX XCA USB H045**	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	BMX P34 2020H BMX P34 20302H	**BMX RMS 008MP**	0.002

(1) General characteristics 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

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Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized power supply modules

BMX CPS 3020H

BMX CPS 3500H

Ruggedized power supply modules

Each **BMX XBP ●●00H** rack must be 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 in order to determine which is the most appropriate **BMX CPS ●●●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...48 V ⎓ isolated	15 W ***11.3 W***	31.2 W ***23.4 W***	–	31.2 W ***23.4 W***	**BMX CPS 3020H**	0.340
100...240 V ∿	15 W ***11.3 W***	31.2 W ***23.4 W***	21.6 W ***16.2 W***	36 W ***27 W***	**BMX CPS 3500H**	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	**BMX XTS CPS20**	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	**BMX XTS CPS10**	0.020

*(1) Includes a set of 2 cage clamp removable connectors **BMX XTS CPS10**.*
(2) The total power consumed on each voltage (3.3 V ⎓ and 24 V ⎓) must not exceed the total 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 PLC modules.
(4) 24 V ⎓ sensor voltage for powering the input sensors (voltage available via the 2-way removable connector on the front panel).

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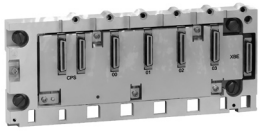
Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized racks and rack expansion module



BMX XBP 0400H

BMX XBE 1000H

BMX XSP 0●00 + BMX XSP 30●0

Angled connector on extension cordsets

TSX TLY EX

Ruggedized racks

Description	Type of module to be inserted	No. of slots *(1)*	Power consumption *(2)*	Reference	Weight kg
Ruggedized racks	BMX CPS power supply, BMX P34 processor, I/O modules and application-specific (counter and communication) modules	4	1 W	**BMX XBP 0400H**	0.630
		6	1.5 W	**BMX XBP 0600H**	0.790
		8	2 W	**BMX XBP 0800H**	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	**BMX XBE 1000H**	0.178

Standard accessories for racks

Description	For use with	Sold in lots of	Reference	Weight kg
Shielding connection kits comprising: - A metal bar - 2 support bases	BMX XBP 0400H rack	–	**BMX XSP 0400**	0.280
	BMX XBP 0600H rack	–	**BMX XSP 0600**	0.310
	BMX XBP 0800H rack	–	**BMX XSP 0800**	0.340
Spring clamping rings	Cables, cross-section 1.5...6 mm²	10	**STB XSP 3010**	0.050
	Cables, cross-section 5...11 mm²	10	**STB XSP 3020**	0.070
Protective covers (replacement parts)	Unoccupied slots on BMX XBP ●●00H rack	5	**BMX XEM 010**	0.005

Standard cordsets and connection accessories

Description	Use	Composition	Type of connector	Length	Reference	Weight kg
Bus X extension cordsets total length 30 m max. *(3)*	Between two BMX XBE 1000H rack expansion modules.	2 x 9-way SUB-D connectors	Angled	0.8 m	**BMX XBC 008K**	0.165
				1.5 m	**BMX XBC 015K**	0.250
				3 m	**BMX XBC 030K**	0.420
				5 m	**BMX XBC 050K**	0.650
				12 m	**BMX XBC 120K**	1.440
			Straight	1 m	**TSX CBY 010K**	0.160
				3 m	**TSX CBY 030K**	0.260
				5 m	**TSX CBY 050K**	0.360
				12 m	**TSX CBY 120K**	1.260
				18 m	**TSX CBY 180K**	1.860
				28 m	**TSX CBY 280K**	2.860
Cable reel *(3)*	Length of cable to be fitted with TSX CBY K9 connectors.	Ends with flying leads, 2 line testers		100 m	**TSX CBY 1000**	12.320

Description	Use	Composition	Sold in lots of	Reference	Weight kg
Line terminator	Required on both BMX XBP ●●●0H modules at each end of the daisy chain	2 x 9-way SUB-D connectors marked A/ and /B	2	**TSX TLY EX**	0.050
Bus X straight connectors	For ends of TSX CBY 1000 cables	2 x 9-way SUB-D straight connectors	2	**TSX CBY K9**	0.080
Connector assembly kit	Fitting TSX CBY K9 connectors	2 crimping pliers, 1 pen *(4)*	–	**TSX CBY ACC 10**	–

(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) Module and cordsets do not operate properly at temperatures **lower than - 25°C**.*
(4) To fit the connectors on the cable, you also need a wire stripper, a pair of scissors and a digital ohmmeter.

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Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized discrete I/O modules

BMX D●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)	**BMX DDI 1602H**	0.115
	24 V (negative logic)	Screw or spring-type 20-way removable terminal block	Non-IEC	16 isolated inputs (1 x 16)	**BMX DAI 1602H**	0.115
	48 V (positive logic)	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMX DDI 1603H**	0.115
∼	24 V	Screw or spring-type 20-way removable terminal block	Type 1	16 isolated inputs (1 x 16)	**BMX DAI 1602H**	0.115
	48 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMX DAI 1603H**	0.115
	100…120 V	Screw or spring-type 20-way removable terminal block	Type 3	16 isolated inputs (1 x 16)	**BMX DAI 1604H**	0.115

BMX DDO 16●2H

BMX DRA 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)	**BMX DDO 1602H**	0.120
	24 V/0.5 A (negative logic)	Screw or spring-type 20-way removable terminal block	–	16 protected outputs (1 x 16)	**BMX DDO 1612H**	0.120
∼ **triac**	100…240	Screw or spring-type 20-way removable terminal block	–	16 outputs (4 x 4)	**BMX DAO 1605H**	0.140
⎓ **or** ∼ **relay**	12…24 V ⎓/2 A 24…240 V ∼/2 A	Screw or spring-type 20-way removable terminal block	Yes	8 non-protected outputs (without common)	**BMX DRA 0805H**	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)	**BMX DRA 1605H**	0.150

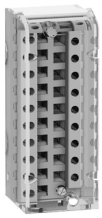
BMX DDM 1602●H

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	**BMX DDM 16022H**	0.115
			8, 24 V ⎓ or 24…240 V ∼ relay (1 x 8)	Inputs, type 3	**BMX DDM 16025H**	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	**BMX FTB 2000**	0.093
		Screw clamp	**BMX FTB 2010**	0.075
		Spring-type	**BMX FTB 2020**	0.060



BMX FTB 2000

Standard preformed cordsets for I/O modules with removable terminal block

Description	Composition	Length	Reference	Weight kg
Preassembled cordsets with one end with flying leads	One 20-way spring-type removable terminal block (BMX FTB 2020) One end with colour-coded flying leads	3 m	**BMX FTW 301**	0.850
		5 m	**BMX FTW 501**	1.400
		10 m	**BMX FTW 1001**	2.780

(1) By connector, module supplied with cover(s)

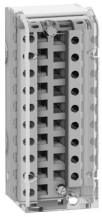
Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized analog I/O modules

BMX AM● 0●●0H

BMX ART 0414H



BMX FTB 20●0

BMX FTW ●01S

ABE 7CPA41●

BMX FCA ●●0

BMX FCA ●●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…10 V, 0…5 V, 1…5 V, ± 5 V 0…20 mA, 4…20 mA, ± 20 mA	16 bits	Via cage clamp, screw clamp or spring-type removable terminal block	4 high-speed channels	**BMX AMI 0410H**	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	**BMX ART 0414H**	0.135
				8 channels	**BMX ART 0814H**	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…20 mA, 4…20 mA	16 bits	Via cage clamp, screw clamp or spring-type removable terminal block	2 channels	**BMX AMO 0210H**	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…10 V, 0…5 V, 1…5 V, 0…20 mA, 4…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	**BMX AMM 0600H**	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	BMX AMI 0410H BMX AMO 0210H BMX AMM 0600H	Cage clamp	–	**BMX FTB 2000**	0.093
		Screw clamp	–	**BMX FTB 2010**	0.075
		Spring-type	–	**BMX FTB 2020**	0.060
Preassembled cordsets	BMX AMI 0410H BMX AMO 0210H BMX AMM 0600H	One 20-way removable terminal block (BMX FTB 2020) One end with colour-coded flying leads	3 m	**BMX FTW 301S**	0.470
			5 m	**BMX FTW 501S**	0.700
	BMX ART 0414H BMX ART 0814H *(2)*	One 40-way connector One end with colour-coded flying leads	3 m	**BMX FCW 301S**	0.480
			5 m	**BMX FCW 501S**	0.710

Modicon Telefast ABE 7 pre-wired system

Modicon Telefast ABE 7 sub-bases	BMX AMI 0410H	Distribution of isolated power supplies Delivers 4 protected isolated power supplies for 4…20 mA inputs Direct connection of 4 inputs	–	**ABE 7CPA410**	0.180
	BMX ART 0414H BMX ART 0814H	Connection and provision of cold-junction compensation for thermocouples Direct connection of 4 inputs	–	**ABE 7CPA412**	0.180
Preformed cordsets for Modicon Telefast ABE 7CPA41●	BMX AMI 0410H BMX AMO 0210H	One 20-way removable terminal block and one 25-way SUB-D connector for ABE 7CPA410/ CPA21 sub-base	1.5 m	**BMX FCA150**	0.320
			3 m	**BMX FCA300**	0.500
			5 m	**BMX FCA500**	0.730
	BMX ART 0414H BMX ART 0814H	One 40-way connector and one 25-way SUB-D connector for ABE 7CPA412 sub-base	1.5 m	**BMX FCA152**	0.330
			3 m	**BMX FCA302**	0.510
			5 m	**BMX FCA502**	0.740

*(1) The shielding on the cordsets carrying the analog signals must always be connected to the **BMX XSP●●00** shielding connection kit mounted under the rack holding the analog modules (see page 1/11).*

*(2) The **BMX ART 0814H** 8-channel module requires two **ABE 7CPA412** sub-bases and two **BMX FCA●●2** cordsets.*

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Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized communication modules and network gateway

BMX NOE 0100H/0110H

BMX NOM 0200H

BMX NOR 0200H

TCS EGPA23F14FK

Communication

BMX NOE 0100H/0110H ruggedized Ethernet communication modules

Description	Data rate	Transparent Ready Class	Reference	Weight kg
Ethernet Modbus/ TCP network modules	10/100 Mbps	B30	**BMX NOE 0100H**	0.200
		C30	**BMX NOE 0110H**	0.200

BMX NOM 0200H 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)	**BMX NOM 0200H**	0.230

RTU BMX NOR 0200H 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	**BMX NOR 0200H**	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	**TCS EGPA23F14FK**	–
	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)	**TCS MCN 3M4M3S2**	0.150
		Full 8-wire (except RI signal)	**TCS XCN 3M4F3S4**	0.165

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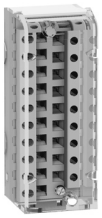
Modicon M340 automation platform

Dedicated parts for severe environments

Ruggedized counter modules

BMX EHC 0200H

BMX EHC 0800H



BMX FTB 20●0

Counter

BMX EHC 0200H/0800H ruggedized counter modules

Description	No. of channels	Characteristics	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	**BMX EHC 0200H**	0.112
	8	10 kHz counting	**BMX EHC 0800H**	0.113

Standard connection accessories *(1)*

Description	Composition	Unit reference	Weight kg
Connector kit for BMX EHC 0200H module	Two 16-way connectors and one 10-way connector	**BMX XTS HSC 20**	0.021
20-way removable terminal blocks for BMX EHC 0800H module	Cage clamp	**BMX FTB 2000**	0.093
	Screw clamp	**BMX FTB 2010**	0.075
	Spring-type	**BMX FTB 2020**	0.060
Shielding connection kits for BMX EHC 0200H/0800H modules	Comprising 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 must always be connected to the **BMX XSP●●00** shielding connection kit mounted under the rack holding the **BMX EHC 0200H** module (see page 1/11).*

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Compatibility with sensors

A dedicated services offer for your installed base

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Modicon M340 automation platform

Standards, certifications and environment conditions

Standards and certifications

Modicon M340 PLCs 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 characteristics, 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.

Characteristics

Service conditions and recommendations relating to environment

Temperature	Operation	**° C**	0...+ 60				
	Storage	**° C**	- 40...+ 85				
Relative humidity	Operation	**%**	93…95 without condensation according to IEC/EN 60068-2-30 Db				
	Storage	**%**	93…95 without condensation according to IEC/EN 60068-2-30 Db				
Altitude		**m**	0…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**				
			BMX CPS 2010	**BMX CPS 3020**	**BMX CPS 3540T**	**BMX CPS 2000**	**BMX CPS 3500**
	Nominal voltage	**V**	⎓ 24	⎓ 24...48	⎓ 24	~ 100...240	~ 100...240
	Limit voltages		⎓ 18...31.2	⎓ 18...62.4	⎓ 23.3…24.7	~ 85...264	~ 85...264
	Nominal frequencies	**Hz**	–	–	–	50/60	50/60
	Limit frequencies	**Hz**	–	–	–	47/63	47/63

Protective treatment of Modicon Premium PLCs

Modicon M340 PLCs meet the requirements of “TC” treatment *(Treatment for all Climates)*.
For installations in industrial production workshops or environments corresponding to “TH” treatment *(treatment for hot and humid environments)*, Modicon M340 PLCs must be embedded in envelopes with a minimum IP 54 protection, in compliance with IEC/EN 60664 and NF C 20 040.

Modicon M340 PLCs themselves offer **protection to IP 20 level** and **protection against pins** (encloset equipement) *(1)*. They can therefore be installed without an envelope in reserved-access areas which do not exceed **pollution level 2** (control room with no dust-producing machine or activity). The pollution level 2 does not take account of more severe environmental conditions: air pollution by dust, smoke, corrosive or radioactive particles, vapours or salts, attack by fungi, insects, ...

(1) In the case where a position is not occupied by a module, a **BMX XEM 010** *protection cover must be installed.*

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...1.2 Un for 30 minutes with 5% ripple (peak values)
Harmonic 3	IEC/EN 61131-2	10 % Un; 0° for 5 min...180° for 5 min
Inter harmonic	IACS E10 / IEC 60092-504	H2...H200 - 10 % (H15), - 10 %...1 % (H15...H100) and 1 % (H100...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 commun mode, 1 kV in differential mode ⎓ auxiliary supply, discrete ∿ I/O (unshielded) and analogue I/O: 1 kV in commun mode, 0.5 kV in differential mode All shielded cable: 0.5 kV in commun 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), analogue I/O and all 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 commun mode, 1 kV in differential mode Discrete ∿ I/O (unshielded) and analogue I/O: 0.5 kV in commun mode, 0.5 kV in differential mode All shielded cable: 1 kV in commun 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...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...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...500 kHz quasi-peak 79 dB (µV); average 66 dB (µV) 500 kHz...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...230 MHz: quasi-peak 40 dB (measurement at 10 m), quasi-peak 50 dB (measurement at 3 m) 230 MHz...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) Devices must be installed and wired in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PLC systems",pdf format on CD-ROM support included in Unity Pro/PL7 software or on DVD **UNY USE 909 CD M** *reference (see page 4/23).*

(2) These tests are performed without a cabinet, with devices ***fixed on a metal grid*** *and wired as per the recommendations in the manual "Grounding and Electromagnetic Compatibility of PLC 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...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...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...60 °C with 93...95 % relative humidity; 2 cycles: 12 hours/12 hours
Heat shocks (power off)	IEC/EN 60068-2-14 Na & Nb	- 40...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...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 profil	5...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…100 Hz, 7 dB/octave from 100…200 Hz, 1 m^2/s^3 de 200…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	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) Devices must be installed, wired and maintained in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PLC 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.

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, certified devices must be labelled 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 at 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 ABE 7										
ConneXium					*(2)*					
Magelis iPC/GTW	*(3)*	*(2)*		*(2)*	UL	*(2) (5)*				
Magelis XBT GT		*(2)*		*(2)*	CSA/UL	Cat. 3 G-D/ 3D *(2) (5)*				
Magelis XBT GK	*(3)*				CSA/UL					
Magelis XBT N/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 Centre.***
(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.

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 ABE 7										
ConneXium		*(2)*		*(2)*		*(2)*				
Magelis iPC/GTW			*(2)*							
Magelis XBT GT										
Magelis XBT GK										
Magelis XBT N/R										
Magelis XBT RT										
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 XBT GT2430/2930/5430/1105/1135/1335.

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 which must be applied within all 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 all measures to 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 which 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. Only a warranty by a well-known manufacturer can provide assurance of a high level of quality.
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, BMX DDI				
Type			Reference	1602	1603	1604T	3202K	6402K
General purpose								
Design Ø 18	Metal	3 wire, PNP 24V	XUB 0/1/2/4/5/9 B●P●●●	■			■	■
		3 wire, NPN 24V	XUB 0/1/2/4/5/9 B●N●●●					
	Plastic	3 wire, PNP 24V	XUB 0/1/2/4/5/9 A●P●●●	■			■	■
		3 wire, NPN 24V	XUB 0/1/2/4/5/9 A●N●●●					
Design	Miniature	3 wire, PNP 24V	XUM 0/2/5/9 AP●●●●	■			■	■
		3 wire, NPN 24V	XUM 0/2/5/9 AN●●●●					
	Compact 50x50	3 wire, PNP 24V	XUK 1/2/5/8/9 AP●●●	■			■	■
		3 wire, NPN 24V	XUK 1/2/5/8/9 AN●●●					
		3 wire, programmable PNP/NPN DC	XUK 0 AK●●●	■	■		■	■
		5 wire, programmable AC/DC	XUK 0/1/2/5/8/9 AR					
	Compact 92x71	3 wire, programmable PNP/NPN DC	XUX 0/1/2/5/8/9 AK	■	■		■	■
		5 wire, programmable AC DC	XUX 0/1/2/5/8/9 AR					
Application								
Material handling	Optical fork	3 wire, PNP 24V	XUV R●●●●P●●	■			■	■
		3 wire, NPN 24V	XUV R●●●●N●●					
		3 wire, PNP 24V	XUV A●●●●P●●	■			■	■
		3 wire, NPN 24V	XUV A●●●●N●●					
		4 wire, PNP or NPN 24V	XUY F●●●●●	■			■	■
		4 wire, PNP or NPN 24V	XUV U06●●●	■			■	■
		4 wire, PNP or NPN 24V	XUV K ●●●	■			■	■
		3 wire, PNP 24V	XUV H●●●	■			■	■
		3 wire, NPN 24V	XUV J●●●					
		4 wire, PNP or NPN 24V	XUV F●●●	■			■	■
Packaging	Fiber	4 wire, PNP or NPN 24V	XUY DCF●●●	■			■	■
	Compact	4 wire, PNP or NPN 24V	XUR K	■			■	■
	M 18, threaded	3 wire, PNP 24V	XU5M18U1D	■			■	■
	Fiber	4 wire, PNP or NPN 24V	XUY AFL●●●	■			■	■
	M 18, threaded	3 wire, PNP 24V	XUB T●P●●●	■			■	■
		3 wire, NPN 24V	XUB T●N●●●					
	Compact	4 wire, PNP or NPN 24V	XUK T●●●	■			■	■
		3 wire, PNP 24V	XUK C1N●●●	■			■	■
		3 wire, NPN 24V	XUK C1P●●●					
		3 wire, PNP 24V	XUR C3P●●●	■			■	■
		3 wire, NPN 24V	XUR C3N●●●					
		4 wire, PNP or NPN 24V	XUM W●●●	■			■	■
	M 18, threaded	3 wire, PNP 24V	XUB 0SP●●●	■			■	■
		3 wire, NPN 24V	XUB 0SN●●●					
		3 wire, PNP 24V	XU●N18P●●●	■			■	■
		3 wire, NPN 24V	XU●N18N●●●					
	M 8, threaded	3 wire, PNP 24V	XUA H●●●	■			■	■
		3 wire, NPN 24V	XUA J●●●					
	Miniature	3 wire, PNP 24V	XUY P●●●●P●●	■			■	■
		3 wire, NPN 24V	XUY P●●●●N●●					
		3 wire, PNP 24V	XUM 2/5/9 BP●●●	■			■	■
		3 wire, NPN 24V	XUM 2/5/9 BN●●●					
		3 wire, PNP 24V	XUY ●●●929●●	■			■	■
Hoisting	M 18, threaded	3 wire, PNP 24V	XUB LBP●●●	■			■	■
		3 wire, NPN 24V	XUB LBN●●●					
	Compact	2 wire 4…20 mA ; 3 wire 0…10V	XUJ K803538					
	M 18, threaded	2 wire 4…20 mA	XU5 M18AB20D					
		PNP, 2 wire 4…20 mA	XU2 M18AB20D					
	Compact	PNP, 2 wire 4…20 mA	XUY P●●●925					
		4 wire, PNP or NPN 24V	XUY PS●●●	■			■	■
	Fiber	3 wire, PNP 24V	XUD A●P●●●	■			■	■
		3 wire, NPN 24V	XUD A●N●●●					
		4 wire, PNP or NPN 24V	XUY AF●●●	■			■	■
	Other formats	3 wire, programmable PNP/NPN DC	XUC 2/8/9 AK●●●	■	■		■	■
		5 wire, programmable AC/DC	XUC 2/8/9 ARC●●●					
		3 wire, PNP 24V	XUL H●●●	■			■	■
		3 wire, NPN 24V	XUL J●●●					
		2 wire, AC	XUL A●●●					
		5 wire, programmable AC/DC	XUL M●●●					
		3 wire, programmable PNP/NPN DC	XUY B●●●S	■	■		■	■
		5 wire, programmable AC/DC	XUY B●●●R					
	M 18, threaded	2 wire, AC/DC	XU 5/8/9 M18MA●●●					

■ Compatible
Non compatible

	⎓ Inputs, BMX DDM			⎓ Inputs, BMX AMI		∿ Inputs, BMX DAI			
	16022	16025	3202K	0810	0800	1602	1603	1604	0805
	■	■	■						
						■			
	■	■	■						
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7

Modicon M340 automation platform

Inputs and OsiSense XS inductive proximity sensors

Proximity sensors				⎓ Inputs, BMX DDI			
Type			Reference	1602	1603	1604T	3202K
General purpose							
Cylindrical, flush, sensing distance standard, barel short	Ø 6,5 plain short	3 wire, PNP 24V	XS5 06B1P●●●	■			■
		3 wire, NPN 24V	XS5 06B1N●●●				
		2 wire, DC 24V	XS5 06BSC●●●	■			■
	M8, threaded short	3 wire, PNP 24V	XS5 08B1P●●●	■			■
		3 wire, NPN 24V	XS5 08B1N●●●				
		2 wire, DC 24V	XS5 08BSC●●●	■			■
	M12, threaded short	3 wire, PNP 24V	XS5 12B1P●●●	■			■
		3 wire, NPN 24V	XS5 12B1N●●●				
		2 wire, DC 24V	XS5 12BSD/C●●●	■			■
	M18, threaded short	3 wire, PNP 24V	XS5 18B1P●●●	■			■
		3 wire, NPN 24V	XS5 18B1N●●●				
		2 wire, DC 24V	XS5 18BSD/C●●●	■			■
	M30, threaded short	3 wire, PNP 24V	XS5 30B1P●●●	■			■
		3 wire, NPN 24V	XS5 30B1N●●●				
		2 wire, DC 24V	XS5 30BSD/C●●●	■			■
Cylindrical, flush, sensing distance standard, barel long	M8, threaded long	3 wire, PNP 24V-48V	XS5 08BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS5 08BLN●●●				
		2 wire, DC 24V-48V	XS5 08B1D/C●●●	■	■		■
	M12, threaded long	3 wire, PNP 24V-48V	XS5 12BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS5 12BLN●●●				
		2 wire, DC 24V-48V	XS5 12B1D/C●●●	■	■		■
	M18, threaded long	3 wire, PNP 24V-48V	XS5 18BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS5 18BLN●●●				
		2 wire, DC 24V-48V	XS5 18B1D/C●●●	■	■		■
	M30, threaded long	3 wire, PNP 24V-48V	XS5 30BLP●●●	■	■		■
		3 wire, NPN 24V-48V	XS5 30BLN●●●				
		2 wire, DC 24V-48V	XS5 30B1D/C●●●	■	■		■
	M12, threaded long	2 wire, AC/DC	XS5 12B1M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS5 18B1M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS5 30B1M●●●			■	
Cylindrical, flush, sensing distance extending, barel short	Ø 6,5 plain short	3 wire, PNP 24V	XS1 06B3P●●●	■			■
		3 wire, NPN 24V	XS1 06B3N●●●				
		2 wire, DC 24V	XS6 06B3C●●●	■			■
	M8, threaded short	3 wire, PNP 24V	XS1 08B3P●●●	■			■
		3 wire, NPN 24V	XS1 08B3N●●●				
		2 wire, DC 24V	XS6 08B3C●●●	■			■
	M12, threaded short	3 wire, PNP 24V	XS1 12B3P●●●	■			■
		3 wire, NPN 24V	XS1 12B3N●●●				
		2 wire, DC 24V	XS6 12B3D●●●	■			■
	M18, threaded short	3 wire, PNP 24V	XS1 18B3P●●●	■			■
		3 wire, NPN 24V	XS1 18B3N●●●				
		2 wire, DC 24V	XS6 18B3D●●●	■			■
	M30, threaded short	3 wire, PNP 24V	XS1 30B3P●●●	■			■
		3 wire, NPN 24V	XS1 30B3N●●●				
		2 wire, DC 24V	XS6 30B3D●●●	■			■
Cylindrical, flush, sensing distance extending, barel long	M8, threaded long	3 wire, PNP 24V-48V	XS6 08B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 08B1N●●●				
		2 wire, DC 24V-48V	XS6 08B1D●●●	■	■		■
	M12, threaded long	3 wire, PNP 24V-48V	XS6 12B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 12B1N●●●				
		2 wire, DC 24V-48V	XS6 12B1D●●●	■	■		■
	M18, threaded long	3 wire, PNP 24V-48V	XS6 18B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 18B1N●●●				
		2 wire, DC 24V-48V	XS6 18B1D●●●	■	■		■
	M30, threaded long	3 wire, PNP 24V-48V	XS6 30B1P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 30B1N●●●				
		2 wire, DC 24V-48V	XS6 30B1D●●●	■	■		■
	M12, threaded long	2 wire, AC/DC	XS6 12B1M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS6 18B1M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS6 30B1M●●●			■	
Cylindrical, non flush, sensing distance extending, barel long	M12, threaded long	3 wire, PNP 24V-48V	XS6 12B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 12B4N●●●				
	M18, threaded long	3 wire, PNP 24V-48V	XS6 18B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 18B4N●●●				
	M30, threaded long	3 wire, PNP 24V-48V	XS6 30B4P●●●	■	■		■
		3 wire, NPN 24V-48V	XS6 30B4N●●●				
	M12, threaded long	2 wire, AC/DC	XS6 12B4M●●●			■	
	M18, threaded long	2 wire, AC/DC	XS6 18B4M●●●			■	
	M30, threaded long	2 wire, AC/DC	XS6 30B4M●●●			■	

■ Compatible
Non compatible

		⎓ Inputs, BMX DDM			⎓ Inputs, BMX AMI		∿ Inputs, BMX DAI			
	6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805

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Modicon M340 automation platform

Inputs and OsiSense XS inductive proximity sensors *(continued)*

Proximity sensors				⎓ Inputs, BMX DDI			
Type			Reference	1602	1603	1604T	3202K
General purpose							
Flat, flush montable, sensing distance standard	Format J 8x22x8	3 wire, PNP 24V	XS7 J1A1P●●●	■			■
		3 wire, NPN 24V	XS7 J1A1N●●●				
		2 wire, DC 24V	XS7 J1A1D●●●	■			■
	Format F 15x22x8	3 wire, PNP 24V	XS7 F1A1P●●●	■			■
		3 wire, NPN 24V	XS7 F1A1N●●●				
		2 wire, DC 24V	XS7 F1A1D●●●	■			■
	Format E 26x26x13	3 wire, PNP 24V	XS7 E1A1P●●●	■			■
		3 wire, NPN 24V	XS7 E1A1N●●●				
		2 wire, DC 24V	XS7 E1A1D/C●●●	■			■
	Format C 40x40x15	3 wire, PNP 24V	XS7 C1A1P●●●	■			■
		3 wire, NPN 24V	XS7 C1A1N●●●				
		2 wire, DC 24V	XS7 C1A1D/C●●●	■			■
	Format D 80x80x26	3 wire, PNP 24V	XS7 D1A1P●●●	■			■
		3 wire, NPN 24V	XS7 D1A1N●●●				
		2 wire, DC 24V	XS7 D1A1D/C●●●	■			■
Format 40X40X117 Plastic, with turret head: 5 positions	NO + NC	4 wire, PNP 24V-48V	XS7/XS8 C40PC44●	■	■		■
		4 wire, NPN 24V-48V	XS7/XS8 C40NC44●				
	NO/NC programable	2 wire, DC 24V-48V	XS7/XS8 C40D●●●●●	■	■		■
		2 wire, AC	XS7/XS8 C40F●●●●●				
		2 wire, AC/DC	XS7/XS8 C40M●●●●●			■	
Flat, flush montable, sensing distance extending	Format E 26x26x13	3 wire, PNP 24V	XS8 E1A1P●●●	■			■
		3 wire, NPN 24V	XS8 E1A1N●●●				
		2 wire, AC/DC	XS8 E1A1M●●●			■	
	Format C 40x40x15	3 wire, PNP 24V	XS8 C1A1P●●●	■			■
		3 wire, NPN 24V	XS8 C1A1N●●●				
		2 wire, AC/DC	XS8 C1A1M●●●			■	
	Format D 80x80x26	3 wire, PNP 24V	XS8 D1A1P●●●	■			■
		3 wire, NPN 24V	XS8 D1A1N●●●				
		2 wire, AC/DC	XS8 D1A1M●●●			■	
Cylindrical multi tension	M12, threaded	2 wire, AC/DC	XS1/2 M12M●250			■	
	M18, threaded	2 wire, AC/DC	XS1/2 M18M●250			■	
	M30, threaded	2 wire, AC/DC	XS1/2 M30M●250			■	
Cylindrical Metal, 4 wire	Ø 6,5, plain	4 wire, PNP 24V	XS1 L06PC410	■			■
		4 wire, NPN 24V	XS1 L06NC410				
	M8, threaded	4 wire, PNP 24V	XS1/2 M08PC410●	■			■
		4 wire, NPN 24V	XS1/2 M08NC410●				
	M12, threaded	4 wire, PNP 24V	XS1/2 N12PC410●	■			■
		4 wire, NPN 24V	XS1/2 N12NC410●				
	M18, threaded	4 wire, PNP 24V	XS1/2 N18PC410●	■			■
		4 wire, NPN 24V	XS1/2 N18NC410●				
	M30, threaded	4 wire, PNP 24V	XS1/2 N30PC410●	■			■
		4 wire, NPN 24V	XS1/2 N30NC410●				
Cylindrical Metal, 4 wire PNP + NPN	M12, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4 M12KP340●	■			■
	M18, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4 M18KP340●	■			■
	M30, threaded	4 wire, PNP+NPN, prog. 24V	XS1/2/4 M30KP340●	■			■
Cylindrical Plastic, non flush, sensing distance standard	M8, threaded	3 wire, PNP 24V	XS4 P08P●340●	■			■
		3 wire, PNP 24V-48V	XS4 P08P●370●	■	■		■
		3 wire, NPN 24V	XS4 P08N●340●				
		3 wire, NPN 24V-48V	XS4 P08N●370●				
		2 wire, AC/DC	XS4 P08M●230●●●			■	
	M12, threaded	3 wire, PNP 24V	XS4 P12P●340●	■			■
		3 wire, PNP 24V-48V	XS4 P12P●370●	■	■		■
		3 wire, NPN 24V	XS4 P12N●340●				
		3 wire, NPN 24V-48V	XS4 P12N●370●				
		2 wire, AC/DC	XS4 P12M●230●●●			■	
	M18, threaded	3 wire, PNP 24V	XS4 P18P●340●	■			■
		3 wire, PNP 24V-48V	XS4 P18P●370●	■	■		■
		3 wire, NPN 24V	XS4 P18N●340●				
		3 wire, NPN 24V-48V	XS4 P18N●370●				
		2 wire, AC/DC	XS4 P18M●230●●●			■	
	M30, threaded	3 wire, PNP 24V	XS4 P30P●340●	■			■
		3 wire, PNP 24V-48V	XS4 P30P●370●	■	■		■
		3 wire, NPN 24V	XS4 P30N●340●				
		3 wire, NPN 24V-48V	XS4 P30N●370●				
		2 wire, AC/DC	XS4 P30M●230●●●			■	

Compatible
Non compatible

	Inputs, BMX DDM			Inputs, BMX AMI		Inputs, BMX DAI			
6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805

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Modicon M340 automation platform

Inputs and OsiSense XS inductive proximity sensors *(continued)*

Proximity sensors				⎓ Inputs, BMX DDI			
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…20mA; 3 wire 0…10V	XS●12AB●●●●				
	M18, threaded	2 wire 4…20mA; 3 wire 0…10V	XS●18AB●●●●				
	M30, threaded	2 wire 4…20mA; 3 wire 0…10V	XS●30AB●●●●				
	Block format	2 wire 4…20mA; 3 wire 0…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, BMX DDM				⎓ Inputs, BMX AMI		∼ Inputs, BMX DAI			
	6402K	16022	16025	3202K	0810	0800	1602	1603	1604	0805
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Modicon M340 automation platform
Power consumption table

Presentation

The power required to supply each **BMX XBP●●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 in order to determine the **BMX CPS ●●●●●** power supply module most suitable for 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 **BMX CPS ●●●●●** 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 total power of the power supply module.
■ Values to be entered depending on the Modicon M340 PLC configuration.

Choice of BMX CPS ●●●●● power supplies

Photocopy this document or use the **M340 Design** *software, available on our website:* www.schneider-electric.com

Modicon M340 automation platform

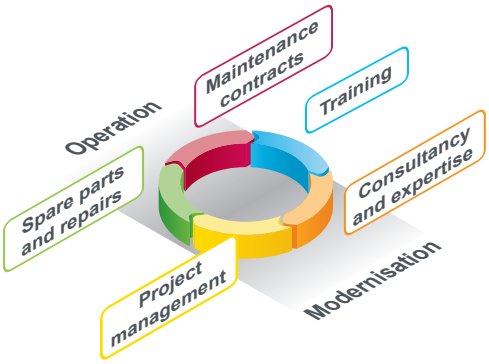
Power consumption table

Calculation sheet

	Module reference	Format S: Standard D: Double	Number	Consumption in mA *(1)* 3.3 V ⎓ voltage Module	Total	24 V ⎓ rack voltage Module	Total	24 V ⎓ sensor voltage Module	Total
Rack no. **0 - 1 - 2 - 3**									
Processor (rack **0**)	**BMX P34 1000 (H)**	S				72			
	BMX P34 2000	S				72			
	BMX P34 2010/20102	S				90			
	BMX P34 2020 (H)	S				95			
	BMX P34 2030/20302 (H)	S				135			
Rack expansion (rack 0, 1, 2 or 3)	**BMX XBE 1000**	–		22		160			
Discrete I/O	**BMX DAI 0805**	S		76		13			
	BMX DAI 1602 (H)	S		90		60			
	BMX DAI 1603 (H)	S		90		60			
	BMX DAI 1604 (H)	S		90		60			
	BMX DAO 1605 (H)	S		100		95			
	BMX DDI 1602 (H)	S		90					
	BMX DDI 1603 (H)	S		90					
	BMX DDI 1604T	S		76					
	BMX DDI 3202K	S		140				110	
	BMX DDI 6402K	S		200				110	
	BMX DDM 16022 (H)	S		100				30	
	BMX DDM 16025 (H)	S		100		50		30	
	BMX DDM 3202K	S		150				55	
	BMX DDO 1602 (H)	S		100					
	BMX DDO 1612 (H)	S		100					
	BMX DDO 3202K	S		150					
	BMX DDO 6402K	S		240					
	BMX DRA 0804T	S		61		104			
	BMX DRA 0805 (H)	S		100		55			
	BMX DRA 1605 (H)	S		100		95			
Analog I/O	**BMX AMI 0410 (H)**	S		150		45			
	BMX AMI 0800	S		150		30			
	BMX AMI 0810	S		150		45			
	BMX AMM 0600 (H)	S		150		130			
	BMX AMO 0210 (H)	S		150		110			
	BMX AMO 0410	S		150		84			
	BMX AMO 0802	S		150		74			
	BMX ART 0414 (H)	S		150		40			
	BMX ART 0814 (H)	S		150		100			
Counting	**BMX EHC 0200 (H)**	S		200		40		80	
	BMX EHC 0800 (H)	S		200				80	
Motion control	**BMX MSP 0200**	S		200		150			
Communication	**BMX EIA 0100**	S		160					
	BMX NOE 0100 (H)	S				90			
	BMX NOE 0110 (H)	S				90			
	BMX NOM 0200 (H)	S				80			
	BMX NOC 0401	S		555					
	BMX NOR 0200 (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	**BMX CPS 2010**	D	24 V ⎓ isolated	**8250**		**16,800**			**17,000**
	BMX CPS 3020 (H)	D	24...48 V ⎓ isolated	**14,850**		**31,200**			**32,000**
	BMX CPS 2000	D	100...240 V ∿	**8250**		**16,800**		**10,800**	**20,000**
	BMX CPS 3500 (H)	D		**14,850**		**31,200**		**21,600**	**36,000**
	BMX CPS 3540T	D	125 V ⎓	**14,850**		**31,200**		**21,600**	**36,000**

(1) Typical value given for 100% of inputs or outputs at state 1.

A dedicated services offer for your installed base
Operation services



You can rely on the competency and efficiency of our experts for effective maintenance, upgrading and modernisation of your facilities.

Our services offer is structured around two phases of your installation life cycle:
- Operation:
  - Spare parts and repairs
  - Maintenance contracts
  - Training
- Modernisation:
  - 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 all requests for spare parts, exchanges and repairs to your installed automation equipment (automation platforms, Human Machine Interfaces, drives, distributed I/O):
- Supply of tested, certified and compatible spare parts
- Assurance that 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 and guaranteeing 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 most recent 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 guaranteed servicing time *(1)*
- Extended warranty offering up to 5 years manufacturer warranty on all installed equipment ranges on your site *(1)*
- Maintenance & Modernisation Consultancy providing analysis of existing systems and proposal of a detailed improvement plan *(1)*
- Modernisation - 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 Centre.

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 Centre.*

A dedicated services offer for your installed base

Modernisation services
Customization services

Modernisation services

Consultancy and expertise

With our M2C (Maintenance & Modernisation 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 plan

Customer benefits:
- Reduction in the impact of failures
- Limited number of failures
- Improved performance

The M2C (Maintenance & Modernisation Consultancy) offer

Proven expertise, tools and methods to give you a clear vision of the improvement opportunities and guide you toward a successful modernisation project

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 failures or 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 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 modernisation of your equipment
- Provide long-term support by ensuring:
  - 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 modernisation
  - 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 Centre.*

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Schneider Electric Industries SAS

www.schneider-electric.com

Head Office
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F-92500 Rueil-Malmaison
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