

Rack Extender Module Introduction

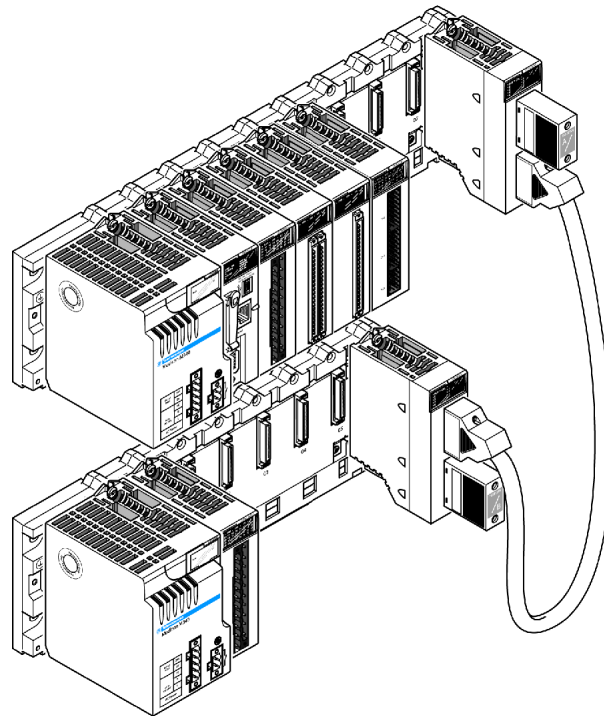
General

The Modicon PLC rack extender module makes it possible to connect a maximum of 4 racks, depending on the CPU, distributed along a maximum length of 30 meters. The racks are daisy chained together via the extension modules.

Example of topology

A typical system consists of:

- A rack extender module (BMX XBE 1000) in each rack,
- A power supply module in each rack,
- One CPU for the complete system,
- 2 line terminators, TSX on the first rack and TLY on the last.



Module consumption

Consumption on 3.3 VDC power supply: 22 mA.

Dissipated power on the 3.3 VDC rack power supply : 73 mW.

Consumption on 24 VDC rack power supply : 160 mA

Dissipated power on the 24 VDC rack power supply : 3.84 W

Rack Extender Module Physical Description

Illustration

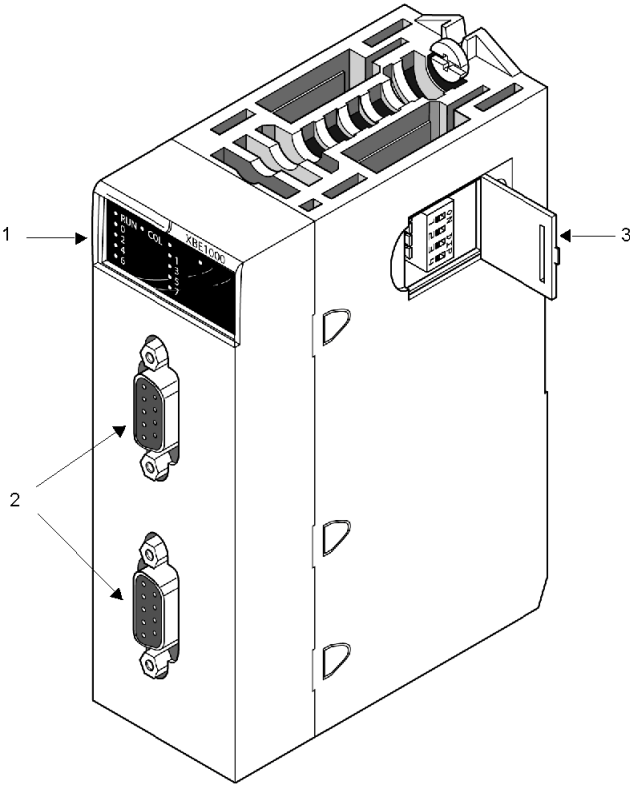


Table of labels

The BMX XBE 1000 module is composed of the following elements:

Label	Description
1	Module status LEDs on the front: ● RUN LED: indicates the operating status of the module, ● COL LED: indicates a collision error of the module, ● 0 to 3 LEDs: indicates the rack address of the module.
2	Two female SUB.D 9 pin connectors for bus cables or terminators.
3	Coding switches.

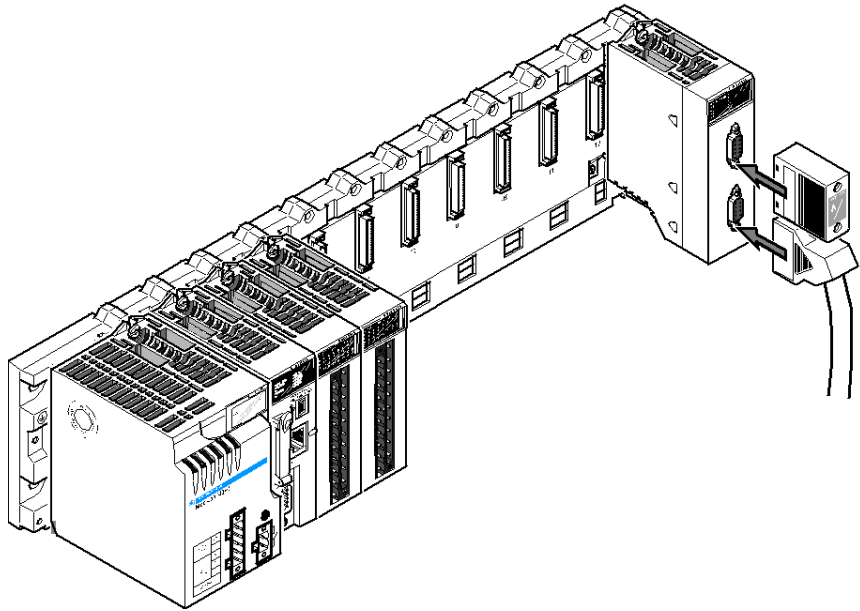
Rack Extender Module Installation

Installation

The following modules must be placed in these slots:

- The BMX XBE 1000 module is installed on each BMX XBP rack in the slot marked XBE.
- Each rack must include a power supply module, in position CPS.
- The processor must be installed in the main rack (rack 0) in position 00.

The following illustration shows the installed the BMX XBE 1000 extender module with power supply, processor and two I/O modules in the main rack (rack 0):



DANGER

HAZARD OF ELECTRIC SHOCK

Disconnect all power sources before installing the module.

Failure to follow these instructions will result in death or serious injury.

Assembly

The assembly of the BMX XBE 1000 module is similar to the assembly of the BMX P34 1000 processors (*see page 78*), and generally speaking, similar to the assembly of the other modules.

Leave 12 mm of free space on the right side of the rack to insure a free flow of air for cooling. Leave 35 mm in front of the module for the local bus connector and terminator.

Grounding of the Rack Extender Module

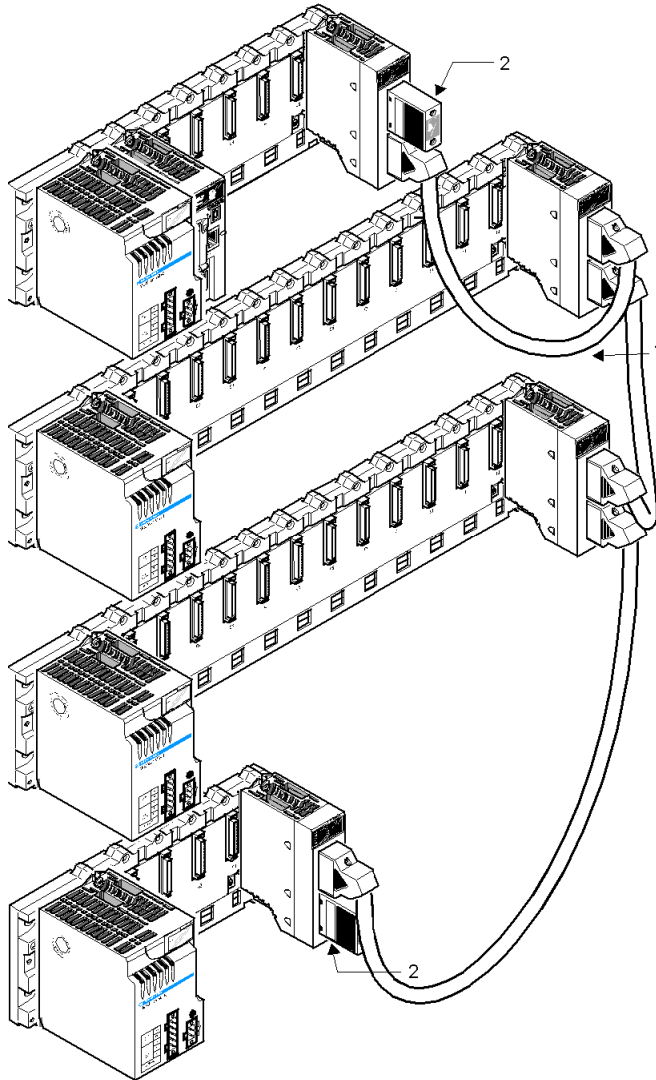
The BMX XBE 1000 module is equipped with ground connection contacts (*see page 25*).

Building a Modicon M340 Station Using BMX XBP 1000 Racks

The BMX XBP 1000 racks can be used to build a PLC station that contains a maximum of:

Station		Maximum number of racks
Processor	OS Version	
For a BMX P34 1000/2010/20102/2020/2030/20302 station	01.00	1 BMX XBP 1000 racks
For a BMX P34 1000 station	>= 02.00	2 BMX XBP 1000 racks
For a BMX P34 2000/2010/20102/2020/2030/20302 station	>= 02.00	4 BMX XBP 1000 racks

Diagram:



Legend:

- (1) The same station can contain 4, 6, 8 and 12 position racks that are interconnected by Extension cables (*see page 197*).
- (2) The local bus must have a Line terminator (*see page 197*) fitted at each end.

NOTE: The cumulative length of all the BMX XBC ...K or TSX CBY ...K cables used in a PLC station must not exceed 30 meters.

Extension Cable

Racks are connected by means of BMX XBC •••K or TSX CBY •••K extension cables which are connected to the 9-pin SUB-D connectors situated on the BMX XBE 1000 module of each main and extension rack.

Line Terminators

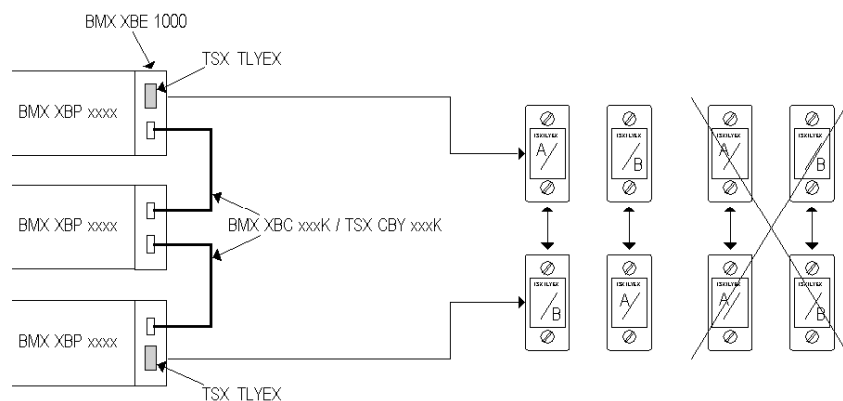
The BMX XBE 1000 modules of the two racks situated at the start and at the end of the chain **must always** be fitted with TSX TLY EX line terminators on the unused 9-pin SUB-D connectors.

Line terminators are labeled **A/** or **/B**. A PLC station that uses extension modules must use one line terminator labeled **A/** and one labeled **/B**.

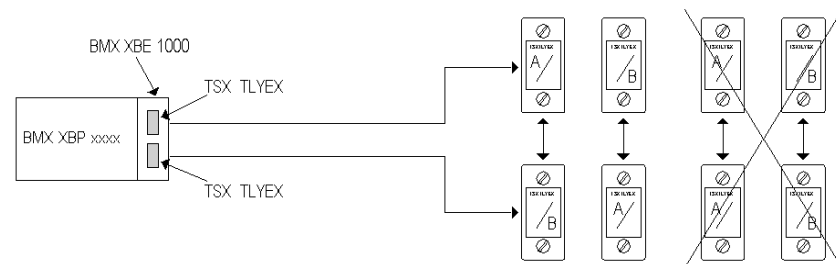
For example, if the extension module in the first rack of the chain contains a terminator labeled **A/**, then the extension module in the last rack must contain a terminator labeled **/B**

Positioning of Line Terminators on a Modicon M340 Station

Positioning on a PLC station containing several BMX XBP •••• extension racks:



Positioning on a PLC station containing a single BMX XBE 1000 extension module:



Rack extender Module Configuration

At a Glance

The rack extender modules are configured using microswitches on the side of the modules. The configuration of the module must be done before mounting the module on the rack.

PLC station rack addressing depends on the number of racks used:

- PLC station built with a single rack,
- PLC station built with extension racks.

Station built with a single rack

If the PLC station is built with a single rack, the rack address is implicit and has a value of 0.

If a rack extender module is installed in this rack, line terminators must be connected to the local bus connectors, and the microswitches on the side of the module must be configured for rack 0 (refer to the table of rack addresses in the next paragraph).

Station built with extension racks

For a PLC station built with extension racks, an address must be assigned for each station rack. This address is coded using 3 microswitches on the side of the module.

Microswitches 1 to 3 are used to code the rack address on the local bus (address 0 to 3).

Diagram showing the microswitches:

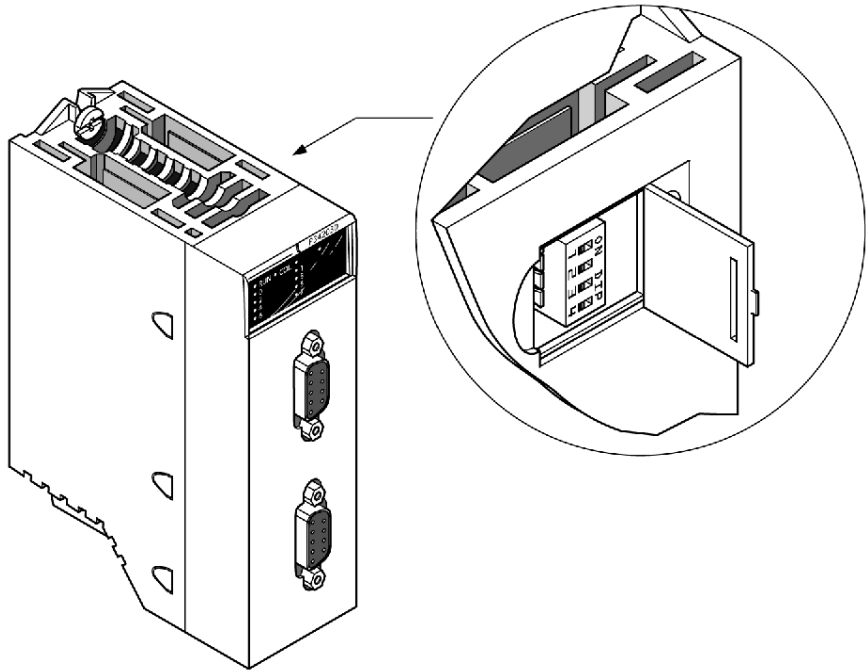


Table of rack addresses:

Switch	Rack Address			
	0	1	2	3
1	OFF	OFF	OFF	OFF
2	OFF	OFF	ON	ON
3	OFF	ON	OFF	ON
4	Not applicable			

NOTE: On delivery, all the microswitches are delivered in the OFF position (address 0).

Assigning addresses to different racks

Address 0: this address is always assigned to the rack which supports the BMX P34 xxxxx processor.

This rack can be located in any position in the chain.

If two or more racks are configured with address 0, only the rack supporting the processor will function correctly.

Addresses 1 to 3: can be assigned in any order to all the other extension racks in the station.

If two or more racks are configured with the same rack address (other than 0), the behavior depends on the position of the modules in those racks:

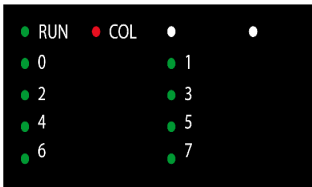
- If each module position is only used once, the modules will function correctly.
- If modules are mounted in the same position on two or more racks, those racks will not function, the access to them will be blocked.

Rack Extender Module Diagnostics

BMX XBE 1000 Module LEDs

The BMX XBE 1000 module display panel, located on the front of the module, is used for diagnostics.

Illustration:display panel (see page 188)



Description

The following table describes the different LEDs and their meanings:

LED	Pattern	Indication
RUN (green): operational state	on	Module functioning normally
	off	• The power supply is no longer present, or • Internal module detected error
COL (red): collision error detected	on	Two or more racks are coded with the same rack address, and either: • Rack address is 0: this rack does not contain the processor; modules are mounted in the same rack position on each rack. There will be no communication on the local bus for this rack or • Rack address is not 0: modules are mounted in the same rack position on each rack. There will be no communication on the local bus for this rack.
	off	The rack addresses are correct.
0 to 3 (green):	on	Rack address

To resolve a collision error detected, carry out the following actions:

Step	Action
1	Power off the principal supply of the racks in collision.
2	Correct the rack address.
3	Power on the principal supply.