

Modicon M580

BMED581020(C) Distributed PAC

User Guide

Original instructions

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION
CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE
NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠ WARNING
<p>UNGUARDED EQUIPMENT</p> <ul style="list-style-type: none"> • Do not use this software and related automation equipment on equipment which does not have point-of-operation protection. • Do not reach into machinery during operation. <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check are made and that enough time is allowed to perform complete and satisfactory testing.

⚠ WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Book

Document Scope

This guide provides detailed information about the Modicon M580 distributed programmable automation controller (dPAC), BMED581020(C), and related hardware when configured with EcoStruxure™ Automation Expert software in a standalone M580 system that utilizes the IEC 61499 standard. The BMED581020(C) CPU is not compatible with BMEP58•••• and BMEH58•••• CPUS, which are configured with Control Expert software. The BMED581020 (C) CPU does not support a Hot Standby system.

NOTE: The specific configuration settings contained in this guide are for instructional purposes only. The settings required for your specific configuration may differ from the examples presented in this guide.

This guide is intended for users with knowledge of:

- IEC 61499 standards, content of services, data model, engineering process, etc.
- EcoStruxure™ Automation Expert software, which is an engineering tool for the BMED581020(C) CPU

Validity Note

This document is valid for the BMED581020(C) CPU when used with EcoStruxure™ Automation Expert 1.0 or later.

The technical characteristics of the devices described in the present document also appear online. To access the information online, go to the Schneider Electric home page www.se.com/ww/en/download/.

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Related Documents

You can search and download related technical publications and other technical information from our website at .

You can download these technical publications and other technical information from our website at www.se.com/ww/en/download/ .

Introducing the BMED581020(C) CPU for Modicon M580 with EcoStruxure™ Automation Expert

Introduction

This chapter describes the physical and functional characteristics of the BMED581020(C) CPU, configured with EcoStruxure™ Automation Expert.

BMED581020(C) Physical Characteristics

Introduction

This section describes the physical characteristics on the front panel of the BMED581020 (C) CPU:

- various communication ports
- LED diagnostic information
- memory back-up options
- industrial hardening options

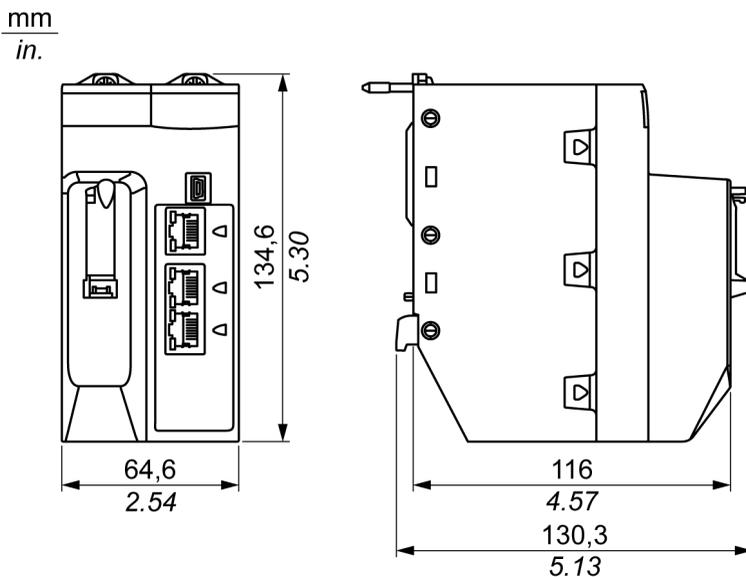
Physical Description

Position on the Local Rack

The BMED581020(C) CPU is installed in the two-module slot position directly to the right of the power supply in the main local rack. The CPU cannot be put in any other slot location or any other rack.

Dimensions

The following graphic shows the front and side dimensions of the CPU:

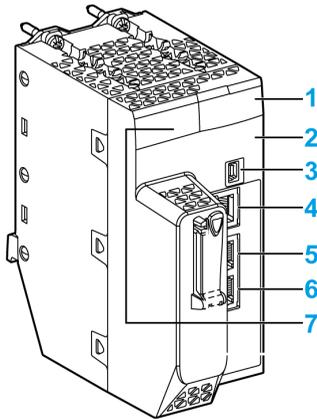


NOTE: Consider the height of the CPU when you are planning the installation of the local rack. The CPU extends below the lower edge of the rack by:

- 29.49 mm (1.161 in.) for an Ethernet rack
- 30.9 mm (1.217 in.) for an X Bus rack

Front Panel

Physical features:



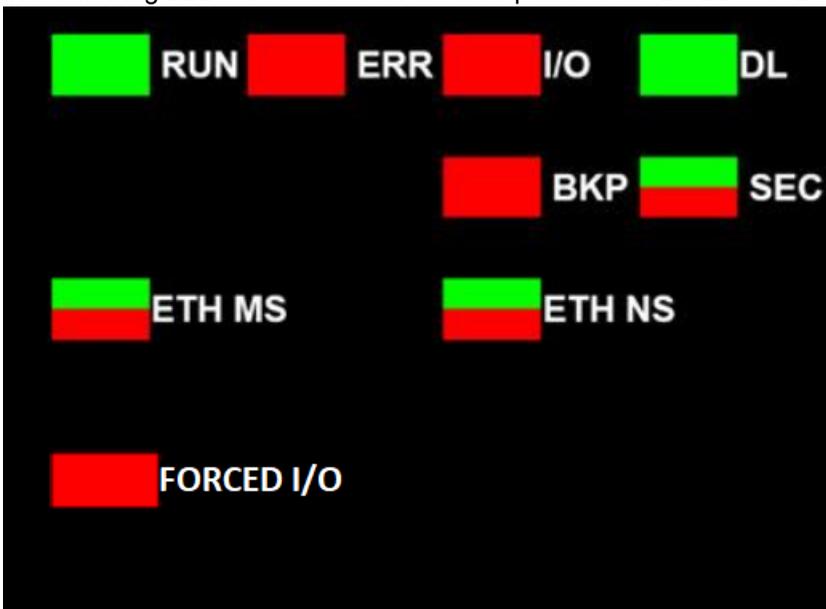
Legend:

Item	Marking	Description
1	—	LED display (see Modicon M580, Hardware, Reference Manual) for CPU status and diagnostics
2	Eth MAC Address xx.xx.xx.xx.xx.xx	media access control (MAC) address assigned to the CPU, which is a string of six 2-digit hexadecimal numbers separated by dots
	IP ADDRESS: ...	blank space for you to write the IP address assigned to the CPU NOTE: The default IP address starts with 10.10 and uses the last 2 bytes of the MAC address.
3		mini-B USB connector (see Modicon M580, Hardware, Reference Manual) to which you can attach a EcoStruxure Automation Expert program or an Automation Device Maintenance terminal
4	Service	RJ45 Ethernet connector (see Modicon M580, Hardware, Reference Manual) for the service port
5	Dual Port/Device Network	dual RJ45 Ethernet connectors (see Modicon M580, Hardware, Reference Manual) that support distributed equipment
6		
7	—	QR code

LED Display

LED Panel

The following LEDs are located on the front panel of the BMED581020(C) CPU:



LED Descriptions

LED Indicator	Description
RUN	ON : The CPU is in RUN state.
ERR	ON : The CPU or system has detected an error.
I/O	ON : The CPU or system has detected an error in one or more I/O modules.
DL (<i>download</i>)	<ul style="list-style-type: none"> Blinking: Firmware update in progress. OFF: No firmware update in progress.
BACKUP	Not used (red).
SEC	<ul style="list-style-type: none"> ON (green): The cyber security features have been configured, and the CPU is running in Secure mode.

LED Indicator	Description
	<ul style="list-style-type: none"> OFF (red): The cyber security features have not been configured, and the CPU is not running in Secure mode. <p>To reset the CPU's IP address to the factory MAC-derived IP, you can perform one of the following:</p> <p>On the hardware, move the rotary position on the CPU to Reset. Push the cybersecurity configuration. Set the IP address and reboot the CPU. Log in to the CPU to confirm the CPU is running in Secure mode. Log out of the CPU. Move the rotary position on the CPU to Advanced, and reboot the CPU.</p> <p>In the software, right-click the CPU in the Physical Topology tab of the application. Select Reset security.</p> <p>NOTE: You cannot change the IP address of the CPU when it is in RUN mode.</p> <p>For details, refer to the Cybersecurity Rotary Switch topic.</p>
ETH MS	<p>MOD STATUS (green/red): Pattern indicates the Ethernet port configuration status.</p> <p>NOTE: With the detection of a recoverable error, the ETH MS LED can be green or red and on or off.</p>
ETH NS	<p>NET STATUS (green/red): Pattern indicates the Ethernet connection status.</p>
Forced I/O	<ul style="list-style-type: none"> ON (red): If I/O is forced. OFF: If I/O are not forced.

This table describes the LED indicator patterns:

Symbol	Description	Symbol	Description
	off		steady red
	steady green		blinking red
	blinking green		blinking red/green

LED descriptions:

	LED Name	Run	ERR	IO	MS	NS	DL	FORCED IO	BACK UP
	Color	Green	Red	Red	Green / Red	Green / Red	Green	Red	Red
Power off		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Power on or reboot	1	OFF	ON	OFF	RED	RED	OFF	OFF	OFF
	2(*)	ON	ON	ON	ON RED / GREEN	ON RED / GREEN	ON	ON	ON
	3(**)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	4	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
	5 (auto-test)	Flashing	Flashing	Flashing	Flashing green	Flashing green	OFF	OFF	OFF
Cleaned		Flashing 50ms ON/1s OFF	OFF or flashing if reboot after non-recoverable error	OFF	Flashing green or GREEN if IP already set by EADM	Flashing green	OFF	OFF	OFF
Configured	STOP state	Flashing 500ms	OFF	OFF	Flashing green or GREEN if IP already set by EADM	Flashing green	OFF	OFF	OFF
	RUN state	ON	OFF	ON if error originating from a module or module is unplugged/ mismatched OFF if no error is present	Flashing green or GREEN if IP already set by EADM	Flashing green	OFF	ON if IO forced OFF if no IO forced	OFF
Recoverable error detected	HALT state	Flashing 500ms	ON	OFF	Flashing green or GREEN if IP already set by EADM	Flashing green	OFF	OFF	OFF
No recoverable error	Second mode configured	OFF	ON	OFF	RED	RED	OFF	OFF	off

	LED Name	Run	ERR	IO	MS	NS	DL	FORCED IO	BACK UP
	Color	Green	Red	Red	Green / Red	Green / Red	Green	Red	Red
detected (SAFE state)									
FW update		OFF	OFF	OFF	OFF	OFF	Flashing	OFF	OFF
(*) All LEDs are ON. (**) All LEDs are OFF.									

USB Port

Introduction

The USB port on the BMED581020(C) CPU is a high-speed, mini-B USB connector, version 2.0 (480 Mbps), that can be used in an EcoStruxure Automation Expert program. The USB port can connect to another USB port, version 1.1 or later.

NOTE: Install M580 USB drivers before connecting the USB cable between the CPU and the PC.

NOTE: The USB port has a fixed IP address of 90.0.0.1/8.

Transparency

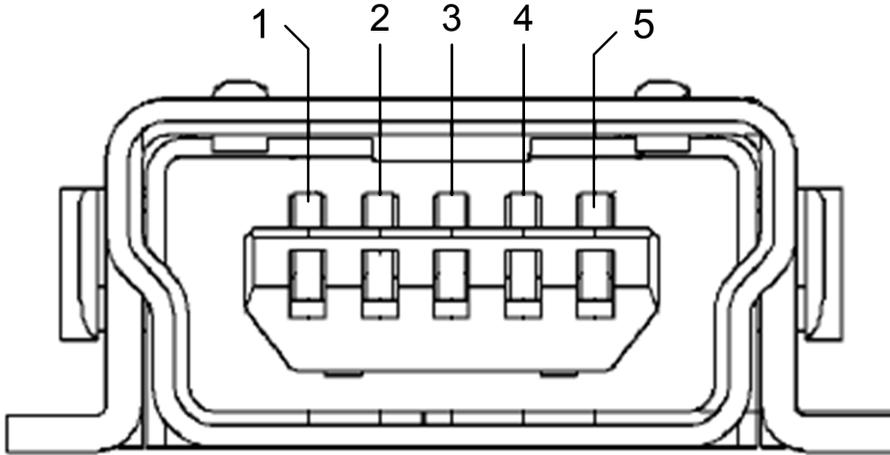
If your system requires transparency between the device connected to the USB port and the M580 device network, add a persistent static route in the device’s routing table.

Example of a command to address a device network with IP address X.X.0.0 (for a Windows PC): `route add X.X.0.0 mask 255.255.0.0 90.0.0.1 -p`

(In this case, X.X.0.0 is the network address used by the M580 device network, and 255.255.0.0 is the corresponding subnet mask.)

Pin Assignments

The USB port has the following pin positions and pinouts:



Legend:

Pin	Description
1	VBus
2	D-
3	D+
4	not connected
5	ground
shell	chassis ground

Cables

Use a BMXXCAUSBH018 (1.8 m/5.91 ft) or BMXXCAUSBH045 (4.5 m/14.764 ft) cable to connect the panel to the CPU. (These cables have a type A connector on one side and a mini-B USB on the other side.)

In a fixed assembly with an XBT-type console connected to the CPU, connect the USB cable to a protection bar. Use the exposed part of the shield or the metal lug on the BMXXCA cable to make the connection.

Ethernet Ports

Introduction

There are three RJ45 Ethernet ports on the front of the BMED581020(C) CPU: one service port, and two device network ports. The ports share the characteristics described below.

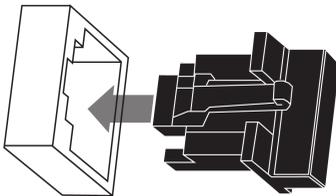
Common Characteristics

All three ports have the same RJ45 connector and all use the same type of Ethernet cables.

NOTE: The three Ethernet ports are connected to chassis ground, and the system requires an equipotential ground.

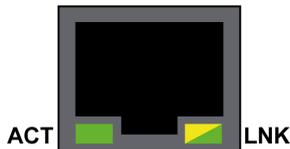
Dust Cover

To keep dust from entering the unused Ethernet ports, cover the unused ports with the stopper:

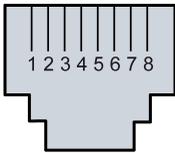


Ethernet Ports

Each RJ45 connector has a pair of LED indicators:



The pin positions, pinouts, and cable connections are the same on all three RJ45 Ethernet ports:

Pin	Description	Pinout: 
1	TD+	
2	TD-	
3	RD+	
4	not connected	
5	not connected	
6	RD-	
7	not connected	
8	not connected	
—	shell/chassis ground	

NOTE: The TD pins (pins 1 and 2) and the RD pins (pins 3 and 6) can be reversed to allow the exclusive use of straight-through cables.

The ports have an auto MDIX capability that automatically detects the direction of the transmission.

Choose from these Ethernet cables to connect to the Ethernet ports:

- TCSECN3M3M••••: Cat 5E Ethernet straight-through shielded cable, rated for industrial use, CE- or UL-compliant
- TCSECE3M3M••••: Cat 5E Ethernet straight-through shielded cable, rated for industrial use, CE-compliant
- TCSECU3M3M••••: Cat 5E Ethernet straight-through shielded cable, rated for industrial use, UL-compliant

The maximum length for a copper cable is 100 m. For distances greater than 100 m, use fiber optic cable. The CPU does not have any fiber ports on it. You may use BMXNRP•••• fiber converter modules to handle the copper-fiber conversion.

Ethernet Ports LED Status

On the BMED581020(C) CPU, the **ACTIVE** LED is green. The **LNK** LED is either green or yellow, depending on the status:

LED	LED Status	Description
ACTIVE	OFF	No activity is indicated on the Ethernet connection.
	ON / blinking	Data is being transmitted and received on the Ethernet connection.
LNK	OFF	No link is established at this connection.
	ON green	A 100 Mbps link* is established at this connection.

LED	LED Status	Description
	ON yellow	A 10 Mbps link* is established at this connection.
* The 10/100 Mbps links support both half-duplex and full-duplex data transfer and autonegotiation.		

Grounding Considerations


DANGER

ELECTRICAL SHOCK HAZARD

You must consider the cable dangerous, and you must wear personal protective equipment (PPE) if you cannot prove that the end of a shielded cable is connected to the local ground.

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

Follow all local and national safety codes and standards.

Cybersecurity Rotary Switch

Introduction

NOTICE

RISK OF UNINTENDED OPERATION

- Use only the small, plastic screwdriver that ships with the module to change the switch position to maintain the integrity of the hardware.
- Do not use a metal screwdriver, which can damage the switch and render it inoperable.

Failure to follow these instructions can result in equipment damage.

A three-position rotary switch is located on the back of the module. Set this switch to configure a cybersecurity operating mode for the module.

Rotary Switch Settings

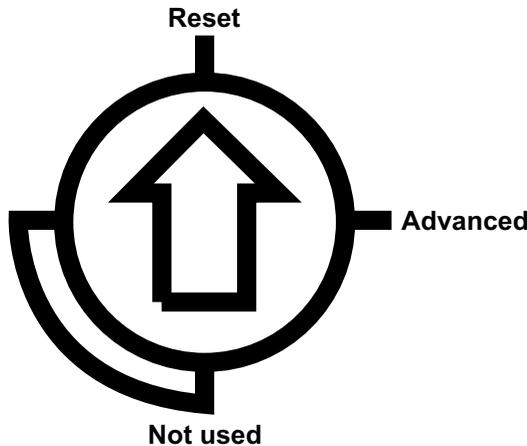
NOTICE

Set the switch only to the exact *clock position* that corresponds to your security configuration:

- 12 o'clock: **Reset**
- 3 o'clock: **Advanced**
- 6 o'clock/9 o'clock: **Not used**

Failure to follow these instructions can result in equipment damage.

A view of the three-position rotary switch on the back of the module:



Use the screwdriver to select a switch position that meets your cybersecurity requirements:

Icon	Setting	Description
Reset	Factory reset / out-of-box configuration is set.	The module resets to factory settings. The factory settings delete the boot project, the device configuration, and the persistent data. Then, the factory reset implements its out-of-box cybersecurity configuration.
Advanced (default)	Advanced mode is on.	The module supports some level(s) of cybersecurity when a cybersecurity configuration is available.
Not used		This rotary position is not used.

Changing the Switch Settings

Configure the cybersecurity mode for the module in the rack:

Step	Action
1	Remove the module from the rack..
2	Change the switch setting to Reset .
3	Re-insert the module in the rack to power it up in Reset mode. Result: The module performs a factory reset and is properly powered when the RUN LED is steady green.
4	Remove the module from the rack again.
5	Change the switch setting to Advanced .
6	Re-insert the module in the rack to power it up in the selected (Advanced mode. Result: The module is properly powered when the LED is steady green for the advanced mode.

NOTE:

- Do not switch settings directly or vice-versa.
 - Always power up the module with the rotary switch in the **Reset** position when you want to transition to the **Advanced** setting to implement normal operations.
 - Set the rotary switch to **Reset** to restore the factory default cybersecurity settings for the module. A module restart is required.
- The changes associated with the switch settings take effect after the module is re-inserted in the rack and powered up.

BMED581020(C) Standards and Certifications

Overview

This section discusses the standards and certifications for the BMED581020(C) CPU as well as X80 I/O modules and fiber converting modules that are configured in an EcoStruxure Automation Expert application. These standards and certifications are also applicable to the Modicon M340 and Modicon X80 platforms.

Standards and Certifications

Download

Click the link that corresponds to your preferred language to download standards and certifications (PDF format) that apply to the modules in this product line:

Title	Languages
Modicon M580, M340, and X80 I/O Platforms, Standards and Certifications	<ul style="list-style-type: none">• English: EIO0000002726• French: EIO0000002727• German: EIO0000002728• Italian: EIO0000002730• Spanish: EIO0000002729• Chinese: EIO0000002731

Installing the BMED581020(C) CPU on an M580 Rack

Overview

This chapter explains how to install a CPU module on an M580 rack.

Selecting Backplanes, Power Supplies, and Cables

Compatible Backplanes

Backplane Reference	Description
BMEXBP0400(H)	4-slot Ethernet backplane, hardened version available
BMEXBP0602(H)	6-slot Ethernet backplane for redundant power supply, hardened version available
BMEXBP0800(H)	8-slot Ethernet backplane, hardened version available
BMEXBP1002(H)	10-slot Ethernet backplane for redundant power supply, hardened version available
BMEXBP1200(H)	12-slot Ethernet backplane, hardened version available
BMXXBP0400(H)	4-slot backplane, hardened version available
BMXXBP0600(H)	6-slot backplane, hardened version available
BMXXBP0800(H)	8-slot backplane, hardened version available
BMXXBP1200(H)	12-slot backplane, hardened version available
BMXXBE1000(H)	Standard backplane extender, hardened version available
BMXXBE2005	Backplane extender kit

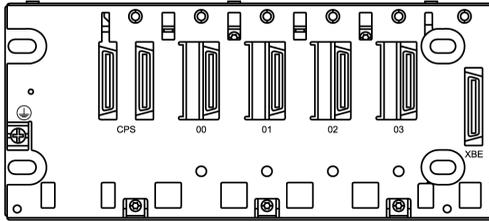
NOTE: When your installation has more than one rack in the local rack, install the BMXXBE1000 rack extender module in the slot marked **XBE** on the X80 racks.

Check that the CPU is installed in the two slots marked **00** and **01** on the local rack before powering up the system. If the CPU is not installed in these two slots, the CPU starts in NOCONF and uses the configured IP address (not the default IP address, which starts with 10.10 and uses the last two bytes of the MAC address).

NOTE: For detailed information about X80 racks, including installation procedures, refer to the *Modicon X80 Rack and Power Supply Installation in EcoStruxure Automation Expert Systems* topic.

Rack Markings

Rack example with slot markings:



Compatible Power Supplies

Power Supply Reference	Description
BMXCPS2000(H)	Standard AC power supply
BMXCPS2010	Standard isolated DC power supply
BMXCPS3020(H)	High power isolated 24-48 VDC power supply
BMXCPS3500(H)	High power AC power supply
BMXCPS3522(H)	High power 125 VDC power supply
BMXCPS3540T	High power 125 VDC power supply
BMXCPS4002(H)	High power 100...240 VAC power supply
BMXCPS4022(H)	Redundant 24-48 VDC power supply

NOTE: For detailed information about X80 power supplies, including installation procedures, refer to the *Modicon X80 Rack and Power Supply Installation in EcoStruxure Automation Expert Systems* topic.

Compatible Extension Cables

Cable Reference	Description
BMXXBC008K	Backplane extension cable 0.8m
BMXXBC015K	Backplane extension cable 1.5m
BMXXBC030K	Backplane extension cable 3m
BMXXBC050K	Backplane extension cable 5m
BMXXBC120K	Backplane extension cable 12m

Installing the CPU

Installation Precautions

Confirm that the rack power supply is turned off before installing the CPU.


DANGER

ELECTRICAL SHOCK HAZARD

- Switch off the power supply at both ends of the PAC connection, and lock out and tag out both power sources before you insert or remove an Ethernet cable.
- In case lock out and tag out are not available, ensure that the power sources cannot be inadvertently switched on.
- Use suitable insulation equipment when you insert or remove an Ethernet cable.

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


WARNING

UNEXPECTED EQUIPMENT OPERATION

- Check that the CPU does not contain an unsupported SD memory card before powering up the CPU.
- Set the rotary switch on the back panel of the CPU to **Reset** if the CPU crashes.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Remove the protective cover from the rack slot connectors before plugging the module in the rack.

Installing the CPU

Install the CPU in the rack slots marked **00** and **01**. If you do not install the CPU in these two slots, it starts in NOCONF state and uses the default IP address, which starts with 10.10 and uses the last two bytes of the MAC address.

Follow these steps to install a CPU in a rack:

Step	Action	Illustration
1	Verify that the power supply is turned off.	–
2	Verify that: <ul style="list-style-type: none"> the connectors' protective covers are removed the CPU is placed on the slots marked 00 and 01 	
3	Position the locating pins situated at the rear of the module (on the bottom part) in the corresponding slots in the rack.	
4	Swivel the module towards the top of the rack so that the module sits flush with the back of the rack. The module is now set in position.	
5	Tighten the two screws on top of the CPU to maintain the module in place on the rack. tightening torque: 0.7...1.5 N•m (0.52...1.10 lbf-ft)	

Configuring the CPU

To learn more about how to configure an M580 dPAC controller, including X80 I/O modules, and faceplates, watch <https://www.youtube.com/watch?v=B5fLULHHxKc&list=PLa7UGrWOTyjkvGehn-WZtJ9Aif36xTemR&index=14>.

Replacing I/O Modules on a Rack

Introduction

You can remove and replace any analog/discrete I/O module on a rack at any time without stopping the program. Confirm that the replacement I/O module has compatible firmware. The system configures the replacement module and resumes operation with minimal interruption.

Replacing a Module

To remove and replace an I/O module:

Step	Action
1	Remove the module from the rack (reverse installation procedure). Result: The module powers down. NOTE: You do not need to power down the rack before removing the module because I/O modules are hot-swappable.
2	Insert the replacement module in the rack. Result: The module powers up and starts functioning automatically.

Upgrading the CPU Firmware

Introduction

NOTICE

UNEXPECTED EQUIPMENT DAMAGE

Do not upgrade new firmware in older hardware.

Failure to follow these instructions can result in equipment damage.

Before upgrading your firmware:

- Confirm that the EcoStruxure Automation Expert (EAE) version supports the firmware version you are installing.
- Deactivate EAE monitoring in the Topological View.
- Use version 2.0 of EcoStruxure Automation Device Maintenance (EADM) to upgrade only if the devices are currently installed with version 21.1 and migrating to version 21.2 or later. Otherwise, use version 3.0.191.
- If you are upgrading from version 21.1, there are additional installation steps to follow: Upgrade version 21.1 to 21.2 or later; then, upgrade to version 21.2 or later again.
 - › Manually disable EADM discovery.

NOTE: Set the Modicon M580 dPAC IP address to the default MAC-derived device address.

- Connect to the M580 dPAC only in IPv4 mode.› This address will be in the form 10.10.MAC5.MAC6.
- Set the default address by setting the rear coding wheel to **Reset** and restarting the dPAC.
- Confirm the dPAC is communicating successfully with your engineering workstation.

If EADM returns a detected *invalid package signature* error, follow these steps:

- Set up an NTP server and configure the device that you want to sync with the NTP server.
- Use the factory reset setting, which, after a reboot, changes the current date to the date of the current firmware build.

Confirm that the dPAC runtime state is **CLEAN, READY**, or **STOPPED** as follows:

M580 dPAC state	Upgrade status
CLEAN	ALLOWED
READY	ALLOWED
STOPPED	ALLOWED
RUNNING	REFUSED
ONLINE CHANGE	REFUSED
ERRORHALT	REFUSED

NOTE: To help avoid potential problems, we strongly suggest you contact your local Schneider Electric support team prior to attempting firmware upgrades for the M580 dPAC (BMED581020 and BMED581020(C)).

Upgrading the BMED581020(C) Firmware

▲ WARNING
<p>WARNING</p> <p>The CPU must be in CLEAN, STOP, or READY state before upgrading the firmware. The CPU may be in NOCONF state if a rotary switch reset or factory reset has been performed.</p> <p>Failure to follow these instructions can result in death, serious injury, or equipment damage.</p>

Use the EADM tool to upgrade the firmware of the CPU. The EADM tool is a web-based tool that enables you to:

- Automatically or manually discover one or more modules in your project based on IP addresses.
- Upgrade the latest firmware version to modules via the web.

More information about the EADM tool can be found in the EAE software main help.

NOTE:

- From firmware V21.1.137, perform the firmware upgrade procedure twice to restore the full OPC UA factory default configuration files.
- User firmware upgrades are supported only for V21.1.137 or later. Return devices with firmware V21.1.123 (or earlier) to Schneider Electric for upgrade.
- To enable NTP, set the M580 dPAC rotary wheel to the **RESET** position after firmware installation. This process resets the dPAC configuration, including loss of network settings, cybersecurity configuration, current runtime configuration, and boot project.
- We strongly recommend that you use only EAE to perform dPAC IPv4/IPv6 address configuration. EADM does not implement device reboots that happen after the configuration is applied.
- We strongly recommend that you keep the dPAC powered on during firmware updates for at least four minutes, regardless of detected error messages from EADM. Do not power down or reboot the dPAC while the **Firmware Upgrade** LED is on. While this LED is on, the CPU is still upgrading in the background. If the device is rebooted, the firmware may be corrupted, and the device may need to be returned to Schneider Electric to restore operations.

Modules Compatible with a BMED581020(C) CPU

Overview

The modules in an M580 distributed network that are compatible with a BMED581020(C) CPU are discussed in detail so that you can construct your distributed equipment efficiently.

Modicon X80 I/O Modules

Introduction

The following I/O modules can be mounted on X80 local racks with a BMED581020(C) CPU in an M580 distributed system.

NOTE: Conformally coated (hardened H) versions of many of these modules are also available. Refer to the specifications for hardened equipment in the *Modicon M580, M340, and X80 I/O Platforms, Standards and Certifications* guide.

Modicon X80 Analog and Discrete I/O Modules

These analog and discrete I/O modules are supported in Modicon X80 local racks containing a BMED581020(C) CPU.

Type of Module	Module
ANALOG	
Input	Output
BMEAHIO812(H)	BMEAHO0412(C)
BMXAMI0410(H)	BMXAMO0210(H)
BMXAMI0800(H)	BMXAMO0410(H)
BMXAMI0810(H)	BMXAMO0802(H)
BMXART0814(H)	
DISCRETE	
Input	Output

Type of Module	Module
BMXDAI1604(H)	BMXDDO1602(H)
BMXDDI1602(H)	BMXDDO3202K
BMXDDI3202K	BMXDDO6402K
BMXDDI6402K	BMXDRA0805(H)
	BMXDRA1605(H)
Input/Output	
Analog	Discrete
BMXAMM0600(H)	BMXDDM16022(H)
	BMXDDM16025(H)

When the following modules are used in the local rack (containing a BMED581020(C)CPU), they require these versions or later.

Module	Product Version	Software Version
BMXAMI0410(H)	PV5	SV1.1

Expert and Communication Modules

The following modules are supported in a distributed system containing a BMED581020(C) CPU.

Module	Type of Module
BMXNRP0200 / BMXNRP0201	fiber optic converter
BMXEAE0300	SSI encoder interface
BMXEHC0800	counting sensor
BMENOS0300	network option switch

For details about these modules, refer to the SE.IoX80 CAT Library in the EcoStruxure Automation Expert online help.

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Schneider Electric
35 rue Joseph Monier
92500 Rueil Malmaison
France

+ 33 (0) 1 41 29 70 00

www.se.com

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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