Modicon M580 Distributed PAC Firmware

Installation Guide

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Legal Information

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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

UNGUARDED EQUIPMENT

- 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.

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

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.

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:

(In case of divergence or contradiction between any translation and the English original, the original text in the English language will prevail.)

- 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 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 document contains important about the hardware/firmware/software delivery of the product Modicon M580 Distributed PAC. Read the document before you use the product or products that are described in here.

Validity Note

The information in this Installation Guide is applicable for EcoStruxure Automation Expert 22.0, EcoStruxure Automation Expert 22.0 Update 1 and Modicon M580 Distributed PAC compatible products.

For product compliance and environmental information (RoHS, REACH, PEP, EOLI, etc.), go to www.se.com/ww/en/work/support/green-premium/.

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.

Product Information

Product Identification

Firmware Identification

Version	Release Date
22.0.22174	July 2022
22.0.22269	October 2022

Device Identification

Reference	Description	Software Version	Firmware Version	Date
BMED581020	Modicon M580 Distributed PAC (Standard)	22.0	22.0.22174	July 2022
BMED581020C	Modicon M580 Distributed PAC (Conformal Coated)	22.0	22.0.22174	July 2022
BMED581020	Modicon M580 Distributed PAC (Standard)	22.0 Update 1	22.0.22269	October 2022
BMED581020C	Modicon M580 Distributed PAC (Conformal Coated)	22.0 Update 1	22.0.22269	October 2022

Firmware Upgrade Compatibility

Firmware upgrade / downgrade compatibility:

From \ To	20.1	20.2	21.1	21.2	22.0	22.1	23.0
20.1	N/A	Yes	No(1)	No(1)	No(1)	No(1)	No(1)
20.2	Yes	N/A	No(1)	No(1)	No(1)	No(1)	No(1)
21.1	No	No	N/A	Yes**	Yes**(2)	Yes**(2)	Yes**(2)
21.2	No	No	Yes*	N/A	Yes(2)	Yes(2)	Yes(2)
22.0	No	No	No	No	N/A	Yes	Yes
22.1	No	No	No	No	Yes*	N/A	Yes
23.0	No	No	No	No	Yes*	Yes	N/A

*You may not be able to downgrade the firmware version (even for minor revisions) if a later firmware version fixes vulnerabilities / security breaches. The previous firmware to which a downgrade may not be possible is referred to as excluded. The EcoStruxure™ Automation Device Maintenance (EADM) tool does not verify for excluded previous firmware versions and it returns an “403 Invalid package” error during installation if you try to downgrade to such a version.

**The firmware is upgraded in two steps so that the OPC UA factory configuration files are installed properly. That is, there is a need to install twice the same version consecutively. This is due to some Default Configuration files for OPC UA which have been integrated into the installation package and requires first the upgrade of the firmware to v21.2 in order for the second step to be deployed.

(1)You cannot upgrade from v20.2 or earlier to v21.1 because the firmware requires upgraded controller hardware.

(2)To upgrade from v21.2 or earlier to v22.0 or later contact your local Schneider Electric service representative.

Updating the Firmware

Introduction

EcoStruxure Automation Expert V22.0 and EcoStruxure Automation Expert V22.0 Update 1 requires compatible firmware for BMED581020 and BMED581020C modules.

If the firmware of those modules is earlier than V22.0.22174, update the version following the installation guide provided for this update. This installation guide provides the required steps to perform the update.

NOTICE

INOPERABLE EQUIPMENT

Do not attempt to install to the latest firmware without completing all steps of the installation process described in the present document.

Failure to follow these instructions can result in equipment damage.

Step 1	Preparing the Device for Firmware Installation
Step 2	Installing the Temporary Firmware
Step 3	Installing the Latest Firmware

Follow the steps in the following table in the order they are presented for proper operation.

If the firmware version is ...	Then...
Earlier than V22.0.22174	Apply Step1, Step2, and Step3.
V22.0.22174	It is not mandatory to upgrade the firmware, but you can upgrade it to V22.0.22269 version by applying Step1 and Step3.
V22.0.22269	No firmware upgrade is required.

After upgrading, you will be unable to downgrade to any previous firmware version. Any attempt to downgrade or override the updated firmware will result in a detected “403 Invalid Package” error. Restart the controller.

During the installation process, your password is required.

WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED EQUIPMENT OPERATION

- Do not distribute passwords to unauthorized or otherwise unqualified personnel.
- Limit access-rights to personnel essential to your application needs.

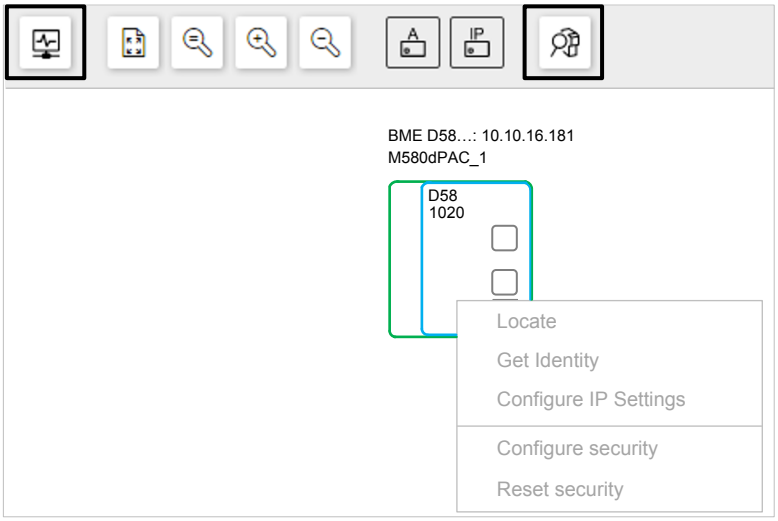
Failure to follow these instructions can result in death, serious injury, or equipment damage.

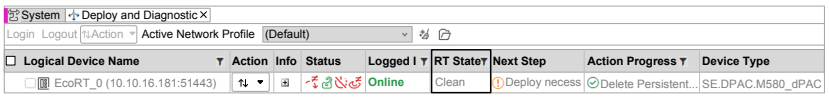
Installation Instructions

Step 1: Preparing the Device for Firmware Installation

Follow these steps to set the device date:

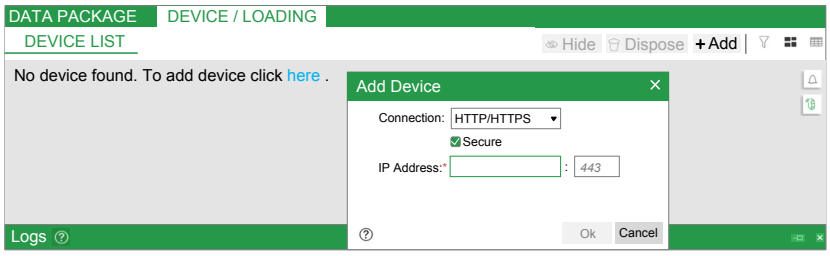
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Use the EcoStruxure™ Automation Device Maintenance (EADM) tool to upgrade the firmware of the controller. The tool enables you to:
Automatically or manually discover one or more modules in your project based on IP addresses.
Upgrade the latest firmware version to various modules in your network.
(More information about the EADM tool can be found in the EcoStruxure™ Automation Expert software main help.)</td></tr>
<tr><td>2</td><td>Set the device date to authenticate the firmware packages. You can use one of the following methods to set the date and time of your module:
Set up an NTP server and configure the device that you want to synchronize with the NTP server.
(More information about the NTP server configuration can be found in the EcoStruxure Automation Expert User Manuel, NTP Server Configuration chapter)
OR
Use the factory reset setting, which, after a device restart, changes the date to the date of the firmware build, following the steps below:
<table><tr><th>Step</th><th>Action</th></tr><tr><td>1</td><td>Remove the module from the rack.
NOTE: If you have not already installed the module in the rack, proceed to the next step.</td></tr><tr><td>2</td><td>Change the switch setting to Reset or Communication Security Reset, depending on the marketed version.</td></tr><tr><td>3</td><td>Re-insert the module in the rack to power it up in Reset or Communication Security Reset mode and wait 1 minute before proceeding to the next step.
Result: The module performs a factory reset and is properly powered when the RUN LED is steady green.</td></tr><tr><td>4</td><td>Remove the module from the rack again.</td></tr><tr><td>5</td><td>Change the switch setting to Advanced or Secured,depending on the marketed version.</td></tr><tr><td>6</td><td>Re-insert the module in the rack to power it up in the selected Advanced or Secured mode.
Result: The Run Led state expected after a reboot will be Flashing 50ms ON/ 1s OFF.</td></tr></table>(More information about the factory reset setting can be found in theModicon M580 Distributed PAC Composite Automation Type Online Help ,)</td></tr>
</table>

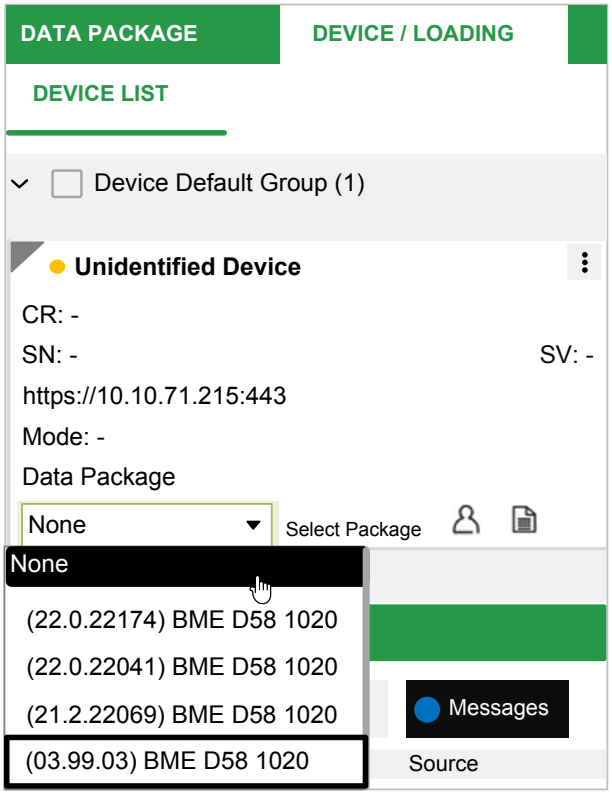
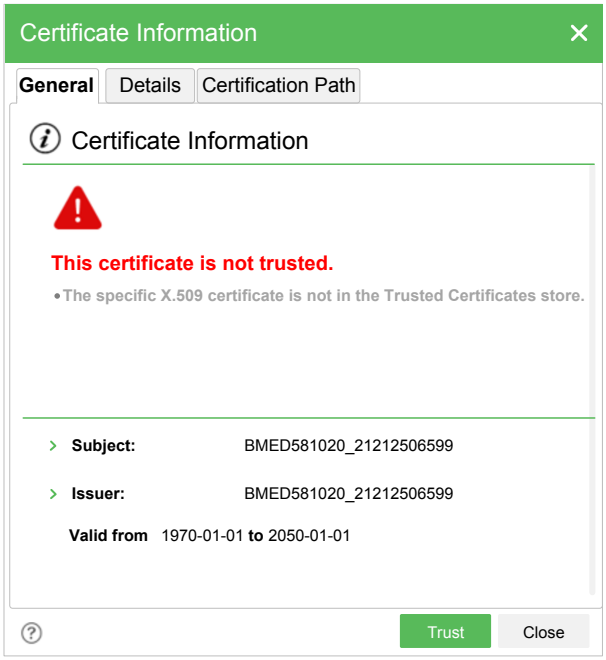
<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>3</td><td>Before upgrading your firmware:
Confirm that the EcoStruxure Automation Expert version supports the firmware version you are installing.
Stop EcoStruxure Automation Expert monitoring in the Topological View.
Close EcoStruxure Automation Expert discovery view in the Topological View.
Start/Stop Monitoring
Open/Close Discovery View
 
</td></tr>
<tr><td>4</td><td>Before upgrading the firmware, confirm that the Modicon M580 Distributed PAC runtime state is CLEAN, READY, or STOPPED as follows:

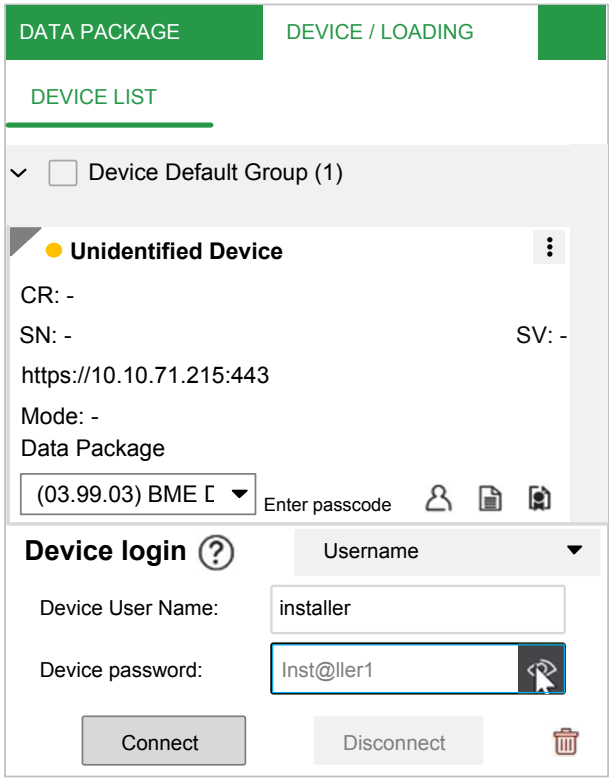
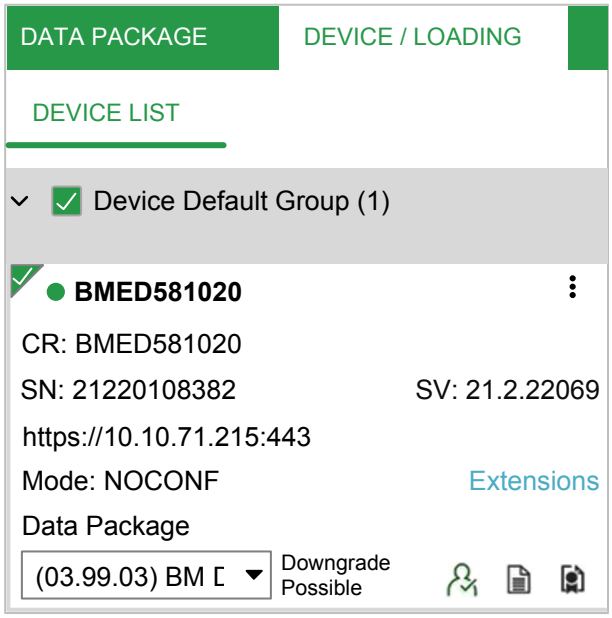
<table><tr><th>Modicon M580 Distributed PAC State</th><th>Upgrade Status</th></tr><tr><td>CLEAN</td><td>ALLOWED</td></tr><tr><td>READY</td><td>ALLOWED</td></tr><tr><td>STOPPED</td><td>ALLOWED</td></tr><tr><td>RUNNING</td><td>REFUSED</td></tr><tr><td>ONLINE CHANGE</td><td>REFUSED</td></tr><tr><td>ERRORHALT</td><td>REFUSED</td></tr></table> 
</td></tr>
</table>

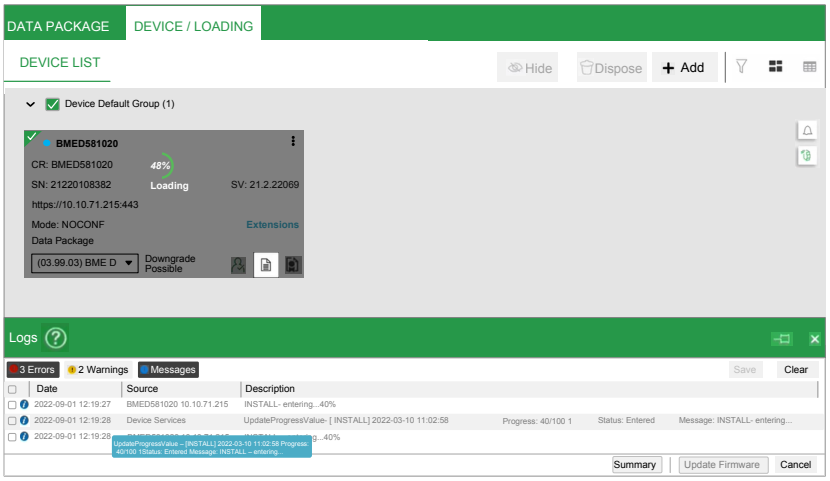
Step 2: Installing the Temporary Firmware

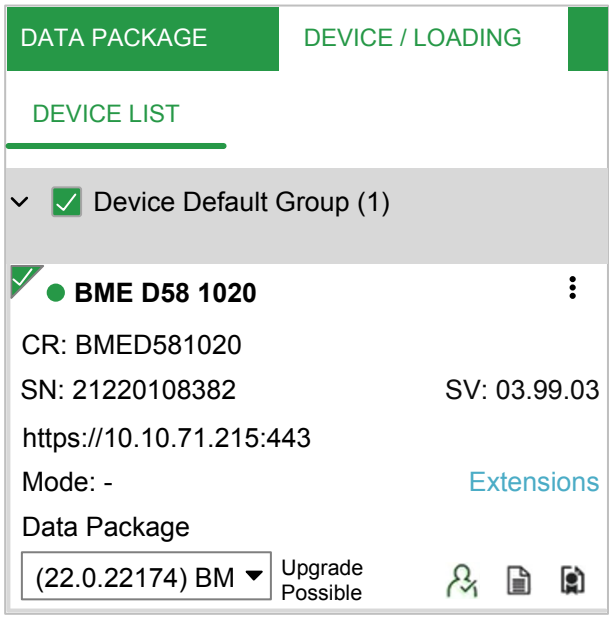
Follow these steps to install the temporary firmware:

Step	Action
1	Use the **Service Port** to connect the device that needs to be configured on the same network as the EcoStruxure™ Automation Device Maintenance (EADM) tool. **NOTE:** Some firewall software may block the discovery. If you are unable to discover the device, disable firewall. Consult your system administrator.
2	Click **Settings**. Confirm that the **Package Settings** are as follows: • **Local Repository**: the local folder from which the package is uploaded • **Remote Repository**: the remote folder from which the package is uploaded **NOTE:** Keep only one SEDP PACKAGE LOCATION. By default it is located in: C:\Users\Public\Documents\Schneider Electric\Data Packages
3	In the **Discovery:** field, select **Manual**. For detailed information on how to use the discovery function, refer to the EcoStruxure™ Automation Device Maintenance (EADM) user manual.
4	If no device is listed, click **To add a device click here**. The **Add Device** window is displayed and you can set the parameters. Confirm that the device settings are as follows: • **Connection** : HTTP/HTTPS • **Secure**: select to indicate it is activated • **IP Address**: type the IP address of your device **NOTE:** Use only IPv4 address for the installation. Then, click **OK**. 

Step	Action
5	In the **Data Package** list for device, select the required file: (03.99.03) BME D58 1020. **NOTE:** In order to have the desired firmware version available in the **Data Package** drop-down list, download it from the Schneider Electric home page www.se.com/ww/en/download/ and deposit it in the **Local Repository**. 
6	Click the **Certificate information** icon and then, if you agree to proceed, click **Trust** 
7	Click the **User** icon in the listed device. **NOTE:** The **User** icon remains grayed out until a package is selected and the certificate is trusted.

Step	Action
8	Click the **Device login** icon in the listed device. In the **Device login** dialog box, enter your credentials. Then click **Connect**. **NOTE:** If your device is not secured, use (Device User Name: installer; Device password: Inst@ller1), otherwise, use the credentials you configured.  The device status is now online (indicated by the small icon ●). The device is now ready for configuration. 
9	Verify that the selected package is (03.99.03) BME D58 1020.

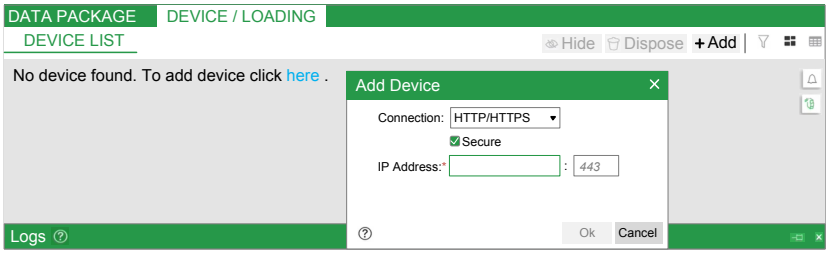
Step	Action
10	Click **Update Firmware** at the bottom of the Main view. The EcoStruxure™ Automation Device Maintenance (EADM) tool will update the target device with the new firmware and notify you once finished.  Interrupting the update procedure before it is completed will cause the connection to be lost and can cause irreparable damage to the device. **NOTICE** **INOPERABLE EQUIPMENT** • Do not power OFF the module or PC during the update of the firmware file. • Do not shut down EcoStruxure™ Automation Device Maintenance (EADM) tool or disconnect the communication cable. **Failure to follow these instructions can result in equipment damage.** Wait while your device reboots. This may take several minutes and you may experience time-outs in the EcoStruxure™ Automation Device Maintenance (EADM) tool. During the reboot, your device will not be reachable.
11	After the temporary firmware is installed, your device will restart. During this restart, the **ETH MS** status LED will remain ON and orange for approximately 60 seconds, then the following status LEDs will flash: • **RUN** • **ERR** • **IO** Do not restart or remove power from the device after this step is finished. **NOTICE** **INOPERABLE EQUIPMENT** Do not restart or remove power from the device after this step is finished. **Failure to follow these instructions can result in equipment damage.**

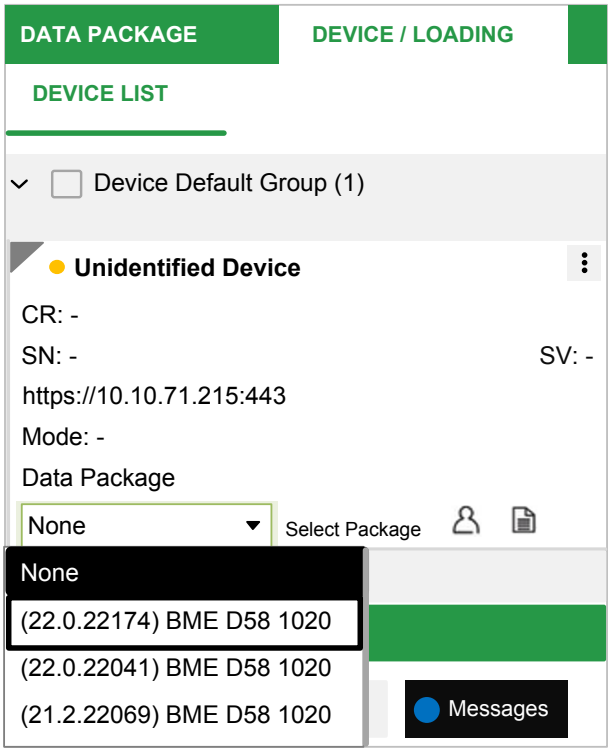
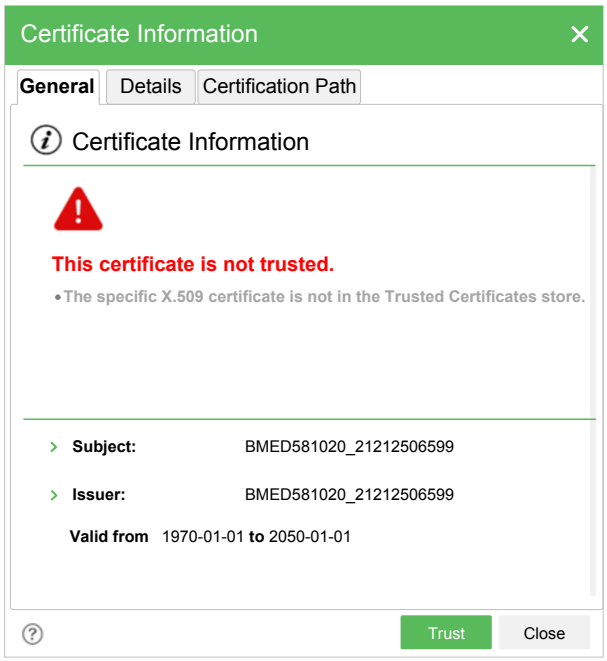
Step	Action
12	After the device restarted, confirm that the temporary firmware update is successfully done: • Click the **Certificate information** icon and then, click **Trust** . • Click the **User** icon in the listed device. **NOTE:** The **User** icon remains grayed out until a package is selected and the certificate is trusted. • Click the **Device login** icon in the listed device. In the **Device login** dialog box, enter the credentials. Then click **Connect**. **NOTE:** If your device is not secured, use (Device User Name: loader; Device password: fwdownload), otherwise, use the credentials you configured.  **NOTE:** The device cannot be operated until **Step 3: Installing the Latest Firmware** is followed. Complete this step immediately.

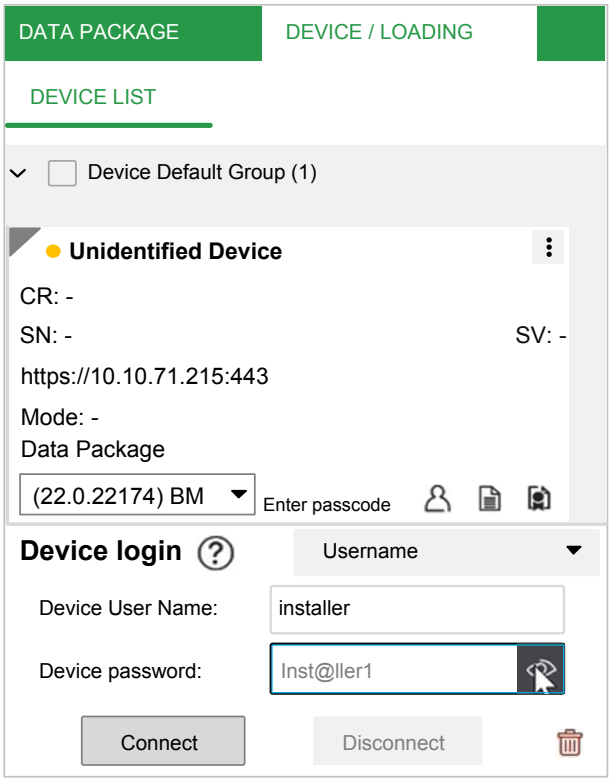
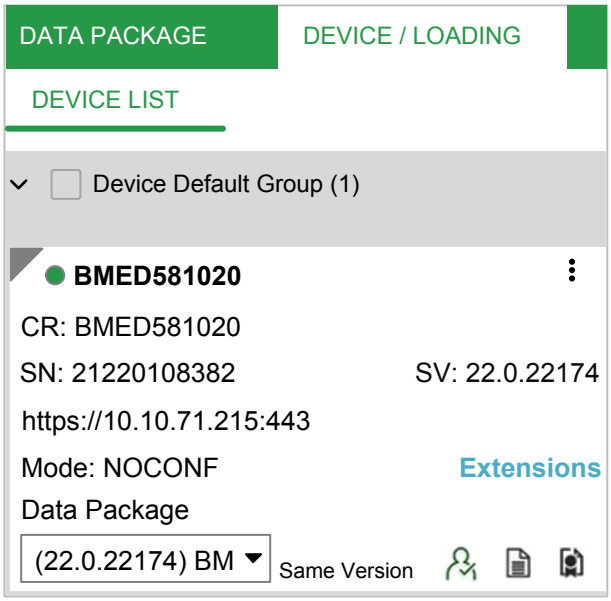
NOTE: Do not login or connect EcoStruxure Automation Expert to the Modicon M580 Distributed PAC until all installation steps are completed.

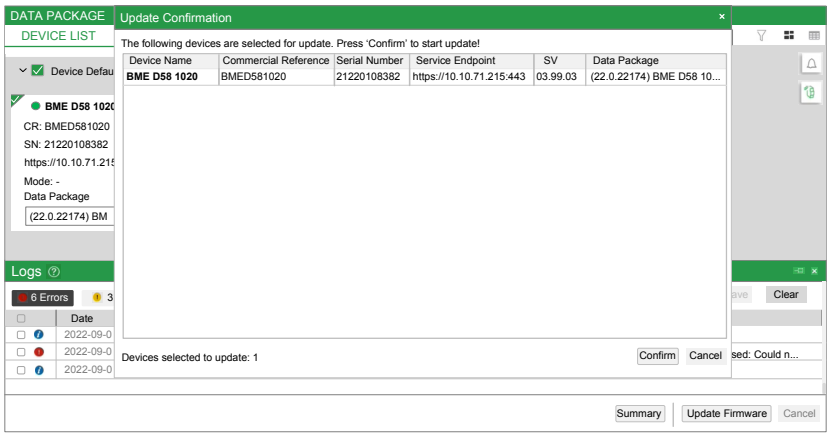
Step 3: Installing the Latest Firmware

Follow these steps to install the latest firmware:

Step	Action
1	Use the **Service Port** to connect the device that needs to be configured on the same network as the EcoStruxure™ Automation Device Maintenance (EADM) tool. **NOTE:** Some firewall software may block the discovery. If you are unable to discover the device, disable firewall. Consult your system administrator.
2	Click **Settings**. Confirm that the package settings are as follows: • **Local Repository**: the local folder from which the package is uploaded • **Remote Repository**: the remote folder from which the package is uploaded **NOTE:** Keep only one SEDP PACKAGE LOCATION. By default it is located in: C:\Users\Public\Documents\Schneider Electric\Data Packages
3	In the **Discovery:** field, select **Manual**. For detailed information on how to use the discovery function, refer to the EcoStruxure™ Automation Device Maintenance (EADM) user manual.
4	If no device is listed, click **To add a device click here**. The **Add Device** window is displayed and you can set the parameters. During this step the device will only be reachable on its default IP address. Confirm that the device settings are as follows: • **Connection** : HTTP/HTTPS • **Secure**: select to indicate it is activated • **IP Address**: type the IP address of your device **NOTE:** Use only IPv4 address for the installation. Then, click **OK**. 

Step	Action
5	In the **Data Package** list for device, select either (22.0.22174) BME D58 1020 or (22.0.22269) BME D58 1020. **NOTE:** In order to have the desired firmware version available in the **Data Package** drop-down list, download it from the Schneider Electric home page www.se.com/ww/en/download/ and deposit it in the **Local Repository**. 
6	Click the **Certificate information**icon and then, if you agree to proceed, click **Trust** 
7	Click the **User** icon in the listed device.

Step	Action
8	Click the **Device login** icon in the listed device. In the **Device login** dialog box, enter the credentials. Then click **Connect**. **NOTE:** If your device is not secured, your credentials are restored to (Device User Name: installer; Device password: Inst@ller1), otherwise, use the credentials you configured.  The device status is now online (indicated by the small icon). The device is now ready for configuration. 

Step	Action
9	Click **Update Firmware** at the bottom of the Main view. The EcoStruxure™ Automation Device Maintenance (EADM) tool will update the target device with the new firmware and notify you once done. **NOTE:** Do not restart or remove power from the device during the update. If the EADM tool is unable to reconnect, restart the EcoStruxure™ Automation Device Maintenance (EADM) tool. 
10	After the firmware is installed, your device will restart. **NOTE:** Do not restart or remove power from the device after installing the temporary firmware. If the EADM tool is unable to reconnect, restart the EcoStruxure™ Automation Device Maintenance (EADM) tool.

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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