

Modicon M340 Firmware

Update procedure

04/2009 eng

Edition V2.0



Purpose

Subject of this Document

This document explains how to update Modicon M340 PLC firmware from V1.0 or V2.0 to V2.1 for Unity Pro 4.1. In addition, the procedure to update the firmware of NOE modules is also included.

To take benefit of V2.1 features, a V1.0 or V2.0 application has to be changed into a V2.1 application. This document explains also briefly the operations to perform in this case.

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1. Overview

Updating mode To benefit from the latest enhancements and evolutions, two operations must be performed:

1. update the M340 CPU and NOE modules by downloading the most recent Firmware file (refer to chapter 2)
2. update the application with Unity Pro V4.1 to configure the latest version of CPU and NOE if needed (refer to chapter 4)

The update can be performed either using the Unity Loader tool, or using a SD-Card initialized with Unity Loader (see § 3.1. “Initialize the SD-Card with the firmware”).

Note: Unity Loader can also be used to update an expert module (Analog, counting,). This procedure is not described in detail in this document.

Connecting
mode between
PC and CPU

Modicon M340 CPUs can be connected to a PC via USB cable, or via crossover Ethernet cable (in point to point mode).

Connecting
mode between
PC and NOE
module

NOE modules can be connected to a PC only via crossover Ethernet cable (in point to point mode).

CPU modules
upgrade
possibility

Firmware CPU		V1.0	V2.0	V2.1
	P34 1000	• → → →	• → → →	•
	P34 2000	X	• → → •	•
	P34 2020	• → → →	• → → →	• •
C A N O P E N C P U	P34 2010	• → → •	•	X
	P34 20102	X	X	•
	P34 2030	• → → •	•	X
	P34 20302	X	X	•

 : simple upgrade w/ Unity Loader X : Does not exist
 : double upgrade w/ Unity Loader (need a 1st step to prepare the CPU module)

CAUTION

EQUIPMENT DAMAGE

If using Ethernet connection, only use point to point mode with a crossover cable. Any loss of communication during the update procedure can cause severe damage to the CPU or the module.
Failure to follow these instructions can result in injury or equipment damage.

2. Update a Modicon M340 CP U/NOE module with Unity Loader

Object of this Chapter This chapter describes how to update the Modicon M340 CPU or NOE module using the Unity Loader tool.
The example given shows how to update a BMX P34 2020 processor using USB protocol. However the procedure is the same for all Modicon M340 CPUs using USB or Ethernet point to point protocol, and for all NOE modules using Ethernet point to point protocol.

See chapter 2.4 for specific upgrade procedure for CANopen CPU BMX P34 2010 and 2030 with firmware V1.0 or V2.0 to CANopen2 level BMX P34 20102 and 20302.

2.1. Prepare the Modicon M340 CPU/NOE module to update

Prerequisites In order to proceed with an update, the following elements are required:

- € Unity Pro Version 4.0 or upper software must be installed on the PC.
- € The firmware is no more provided with Unity Pro but is available on www.schneider-electric.com, both as independent files or included in an electronic CD OS image (.iso file) that can be downloaded.
- € The Unity Loader tool (provided with Unity Pro) must be installed on the PC.
- € An SD-Card must be plugged in the targeted CPU/NOE and must fit with this target. The free memory available on the SD-Card must be checked (refer to the Unity Loader documentation for the description of the necessary size).

Note: The SD-Card plugged in the CPU or the NOE during the firmware update must be kept in the module after the update because the updated Web pages are stored on it.

2.2. Specific case for some NOE 0100 modules

NOE 0100 with DOM from 0727 to 0803 Note: BMX NOE 0100 with firmware V1.0 and DOM (Date Of Manufacturing) from 0727 (27th week of 2007) to 0803 (3rd week of 2008) needs to be patched before upgrading.

- € Two files: “patcher.bat” and “patcher.exe” are provided with the last NOE 0100 firmware.
The two files have to be copied in the same directory.

The patching procedure is as follows:

- € Double click on the “patcher.bat” file.
- € In a command prompt window, the following message is displayed: NOE IP address?, enter the IP address of the NOE (e.g. 138.157.9.53) and press Enter
- € The following message is displayed: Connecting to 138.157.9.53... (for a NOE with IP address 138.157.9.53)
- € If connection is possible then the following message is displayed (checking if the NOE needs to be patched): Checking...
 - € If the patch is not needed then the following message is displayed: Patch not needed! and the process finishes.
 - € If the patch is needed then the following message is displayed: Patch is done! and the process finishes by patching the NOE.

Important notes:

- € After the Patch is done and before resetting the NOE, launch the Unity Loader and connect it to the NOE: the NOE can now be upgraded.
- € The Patch is only a temporary one (RAM): if you reset the module before upgrading it, the Patch is lost, and the module gets back to its initial state before patching.
- € Do not cut the power off during the Patch and before upgrading it.

NOE 0100 V1.0 with Web C cartridge Note: The BMX NOE 0100 with firmware V1.0 equipped with a Web C cartridge (BMX RWSC016M) must not be upgraded with NOE 0100 V2.0 firmware, but only with NOE 0110 V2.0 or higher firmware.

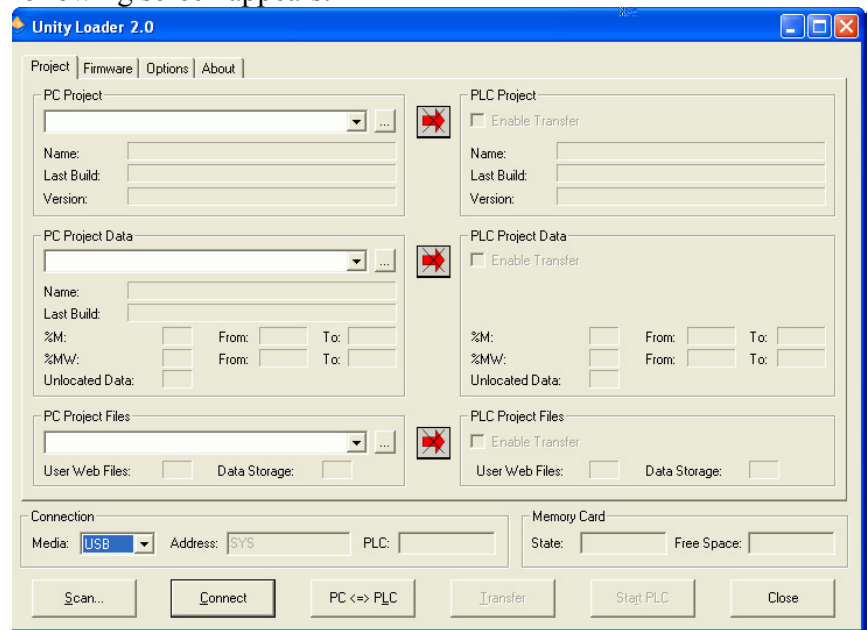
2.3. Update Procedure

Step 1:
Connect the PC
to the CPU or
NOE module

Refer to the "Overview" chapter for details.

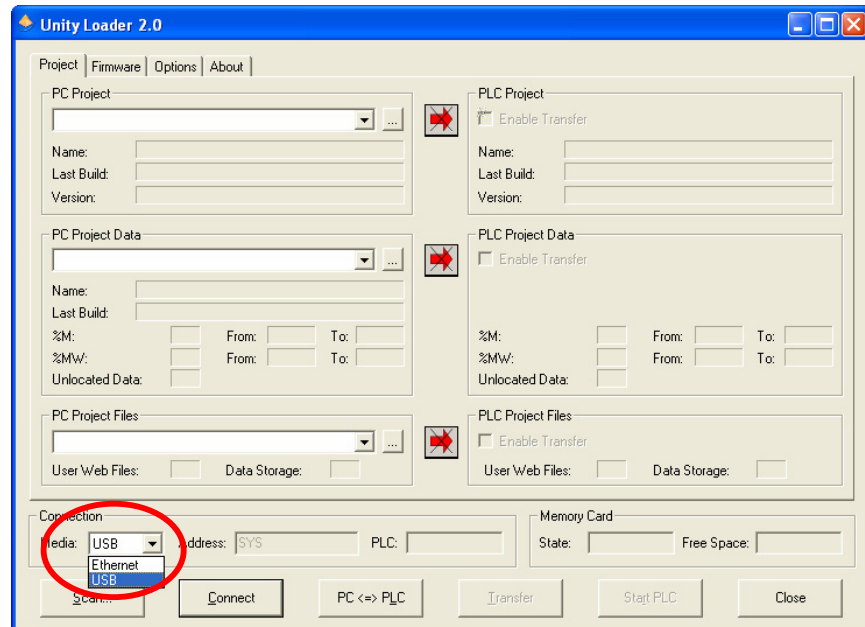
Step 2:
Launch the
Unity Loader

Click on
Start ~~AE~~Program/Schneider-Electric ~~AE~~UnityLoader ~~AE~~UnityLoader
The following screen appears:



Step 3:
Select the
Connection
Media

To download the firmware into the PLC, select the communication media (Ethernet or USB for Modicon M340 CPU) in accordance with the selected physical link. If Ethernet is selected enter the address in the “Address” selection item.



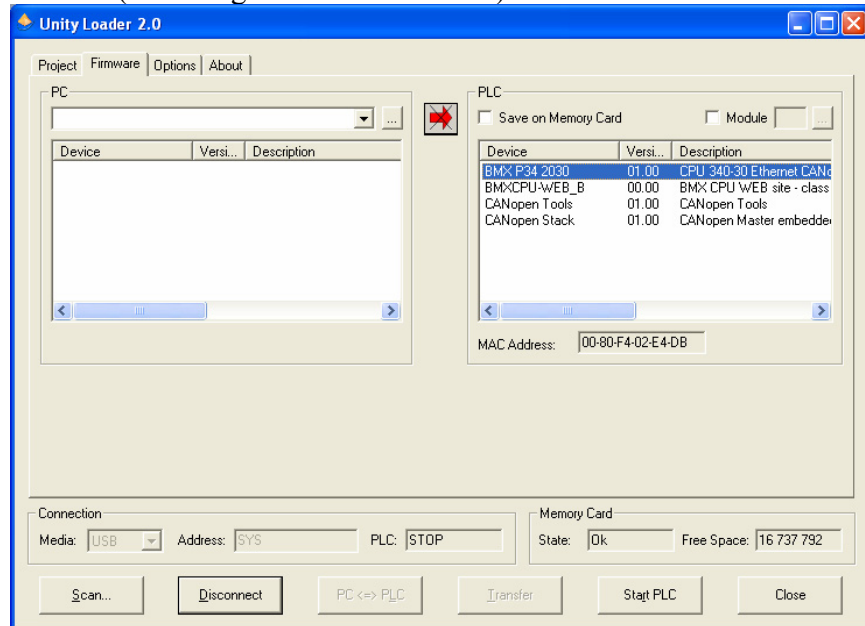
Click on the button to connect the PC to the PLC. The

connection is confirmed when the button changes to

a button. If it does not change, verify that the PLC is turned on and the physical connection between PC and PLC is correctly set.

Step 4:
Verify the CPU
or NOE module
to update

Select the “firmware” tab to get info on the PC (on the left side of the screen)
and the PLC (on the right side of the screen):



Verify the CPU/NOE module to be updated is in the PLC firmware properties
area on the right (in this example a BMX P34 2030).

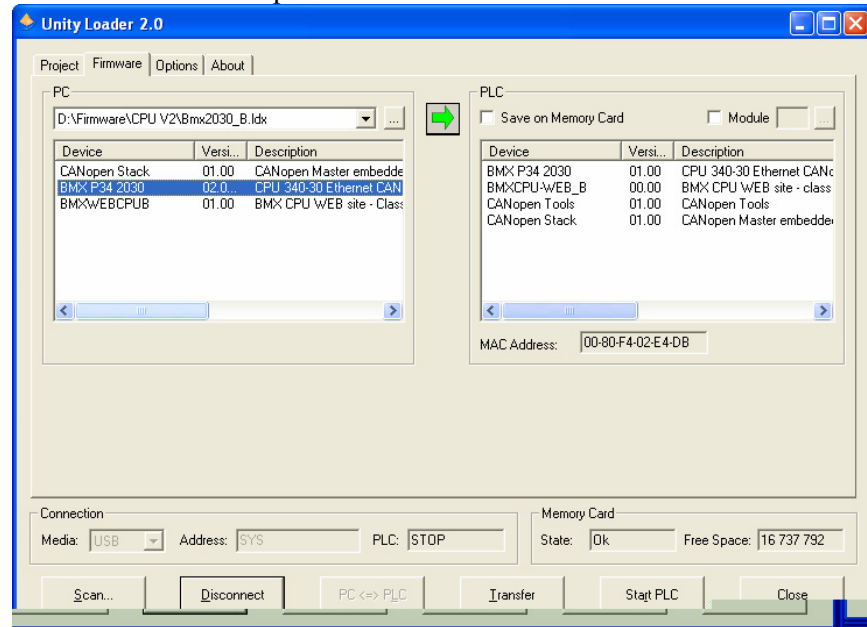
Step 5:
Select the FW
file to download

In the PC firmware properties on the left, select the new FW file with its path.
To do this, click on the button to browse to the new FW file.

Select the *.ldx FW file to download it into the PLC (for example
Bmx2030_B.ldx), and click on the button.

Step 6:
Download the
FW file

1. After selecting the FW file to download , three cases are possible:
 - € The system detects that the firmware of the PC and the PLC are compatible. This is indicated by a green arrow . In this case the download will be possible.



CAUTION

EQUIPMENT DAMAGE

During the download:

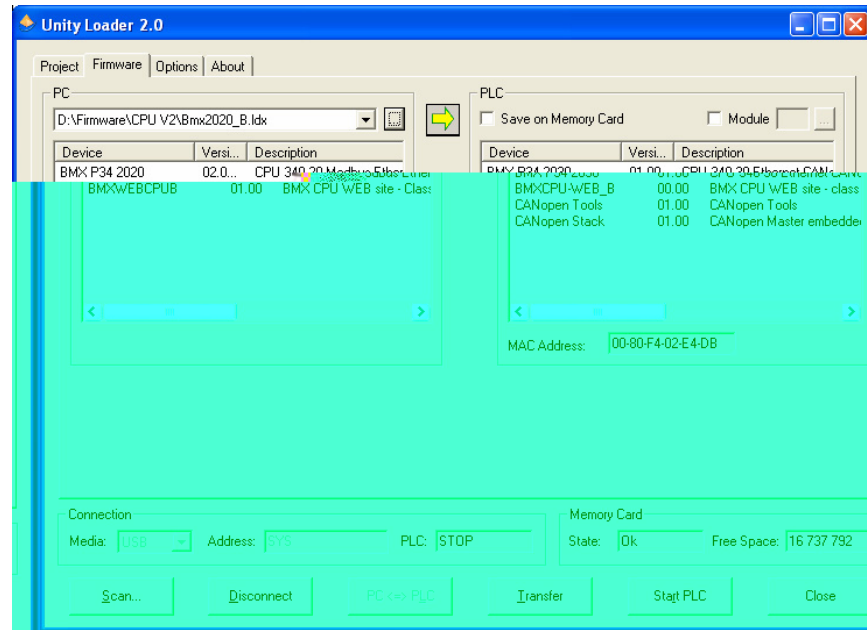
- € Do not power OFF the PLC,
- € Do not power OFF the PC,
- € Do not disconnect the USB or Ethernet cable,
- € Do not remove the SD-Card,
- € Do not shut down Unity Loader.

Any loss of communication during the update procedure can cause severe damage to the CPU or NOE module.

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

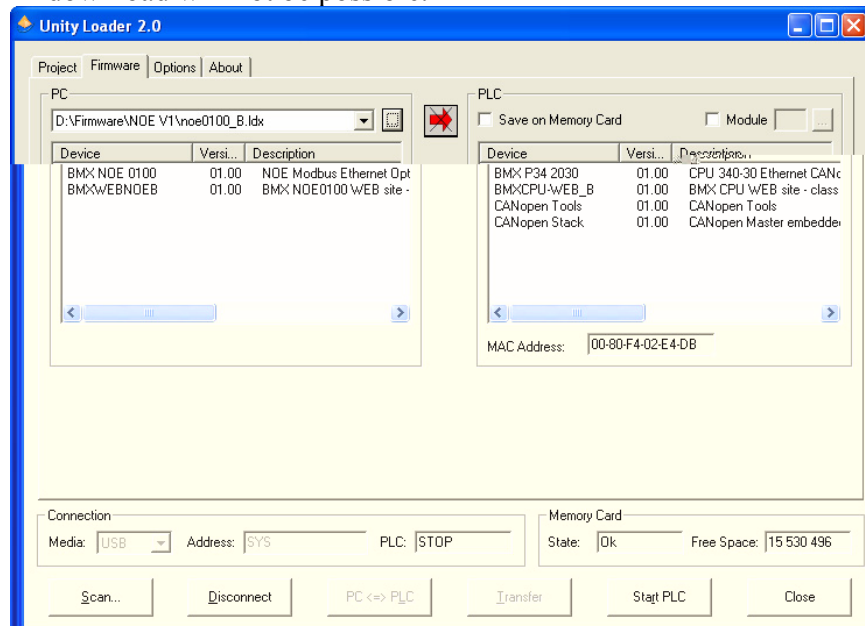
Step 6:
Download the
FW file
(continued)

- € The system detects that the firmware on the PC is an earlier version than the firmware on the PLC. This is indicated by a yellow arrow . In this case the download will be possible but will downgrade the firmware on the PLC to the earlier version.



Step 6:
Download the
FW file
(continued)

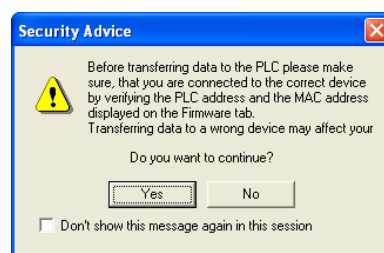
€ The system detects that the firmware of the PC and the PLC are not compatible; this is indicated by a red arrow and the transfer button is additionally grayed out. In this case the download will not be possible.



Solve the issue before continuing.

2. If the download is possible (the transfer arrow is shown in green or yellow), ensure that an SD-Card is plugged in the CPU/NOE module

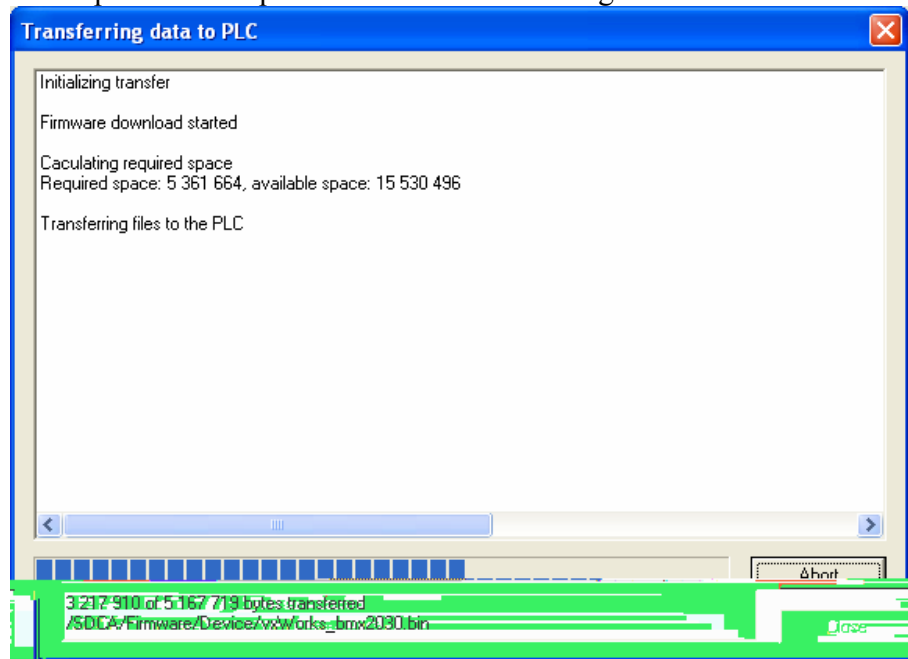
and click on the button.
The security advice message appears:



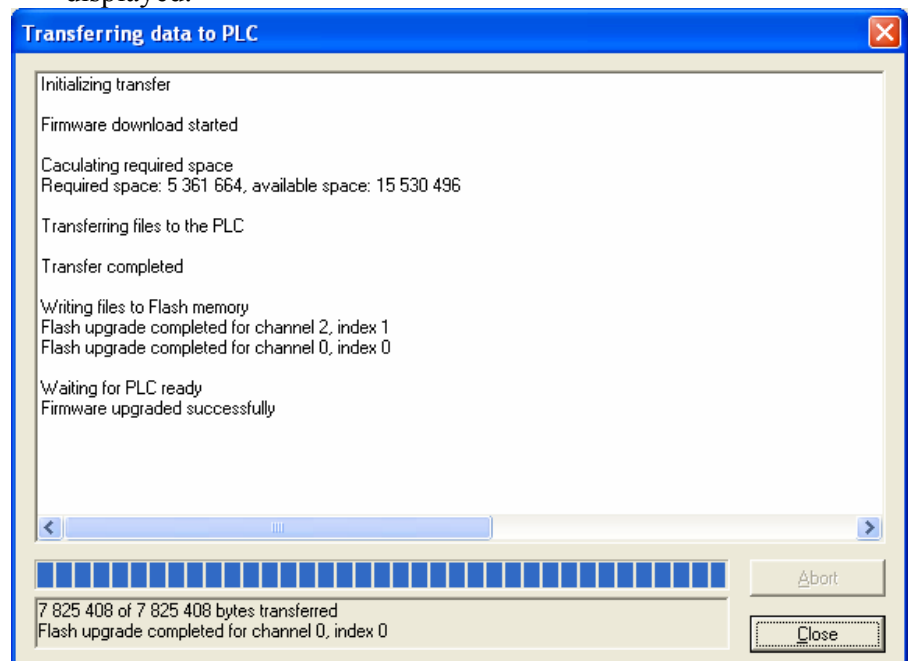
3. After verifying the CPU/NOE module and MAC address click on the button to download of the FW file.

Step 6:
Download the
FW file
(continued)

4. During the download the remaining time is displayed. The duration depends on the protocol used and the configuration of the PC.



5. When the download has successfully completed, the screen below is displayed.



Click on the button to quit the transferring screen.

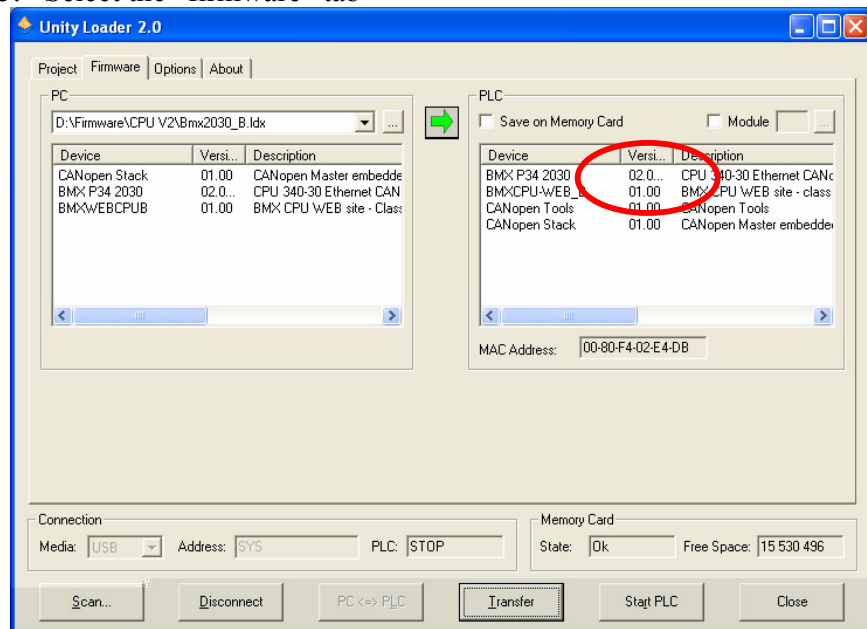
Step 7:
Reset the PLC

€ When the download of the FW file is complete, the PLC is automatically reset.

Step 8:
Verify if the
firmware
update was
successful

Verify the new CPU version as follows:

1. Connect the PC to PLC with a USB or Ethernet cable
2. Open the Unity Loader
3. Select the USB or Ethernet protocol (if Ethernet is selected, enter the address in the “Address” selection item).
4. Click on the  button
5. Select the “firmware” tab



In this example the CPU firmware has been updated to version 02.00.

CAUTION

UNEXPECTED EQUIPMENT BEHAVIOR

After updating the CPU/NOE module do not remove the SD-Card used for the update.

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

2.4. Upgrade a BMX P34 2010 or 2030 CPU to a BMX P34 20102 or 20302

Object of this paragraph This paragraph describes how to update a Modicon M340 CANopen CPU BMX P34 2010 or 2030 (V1.0 or V2.0) to respectively a CANopen2 CPU BMX P34 20102 or 20302.

Two new M340 CANopen CPU are commercialized with the following part numbers: BMX P34 20102 and BMX P34 20302.

We provide the possibility to upgrade CANopen CPU modules BMX P34 2010 and 2030 V1.0 or V2.0 to BMX P34 20102 or 20302.

Note:

- € If a CPU module is upgraded, the marking on the front panel and on the label is no more consistent.

Update procedure The CPU P34 2010 or P34 2030 have to be prepared to accept the firmware of a P3420102 or P3420302.

The same procedure as described in Chapter 2.3 applies with steps 4 to 6 being repeated twice as follows :

- € Apply the procedure described in Chapter 2.3 from steps 1 to 3.
- € Perform steps 4 to 6 in order to download a patch file to upgrade the CPU module:
 4. According to the CPU part number, select the appropriate ldx file: Bmx2010_to_20102_B.ldx or Bmx2030_to_20302_B.ldx”.
 5. Download the selected file.
 6. Now the CPU module is ready to accept the new firmware
- € Start again the procedure from step 4 to download the firmware in the upgraded CPU module and continue the procedure following the different steps for a BMX P34 20102 or 20302 module.

Important note:

- € The complete upgrade has to be performed at once (prepare the CPU then download the firmware).
- € Do not cut the power off during the download and before upgrading completely the CPU.

3. Update a Modicon M340 CPU/NOE module using an SD-Card

Object of this Chapter	This chapter describes how to update a Modicon M340 CPU, NOE using an SD-Card. The SD-Card must first contain the new FW file before it can be used to perform the update. Therefore the procedure is split into two main phases: 1. Initialize the SD-Card using Unity Loader and a PLC that has already been updated 2. Use the SD-Card from phase 1 to update a Modicon M340 CPU/NOE module in another PLC
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Note:

- € If updating a NOE 0100 V1.0 module with DOM (Date Of Manufacturing) from 0727 to 0803, it must be first patched using the procedure detailed previously (see Chapter 2.2 “Specific case for some NOE 0100 modules”).
- € For BMX P34 2010 or 2030 upgrade to BMX P34 20102 or 20302, the upgrade cannot be performed using a single SD-Card. 2 different SD cards are required in this case:
 - € A first SD-Card initialized with Bmx2010_to_20102_B.ldx or Bmx2030_to_20302_B.ldx file (see chapter 3.1).
 - € A second SD-Card containing the up-to-date CPU firmware.

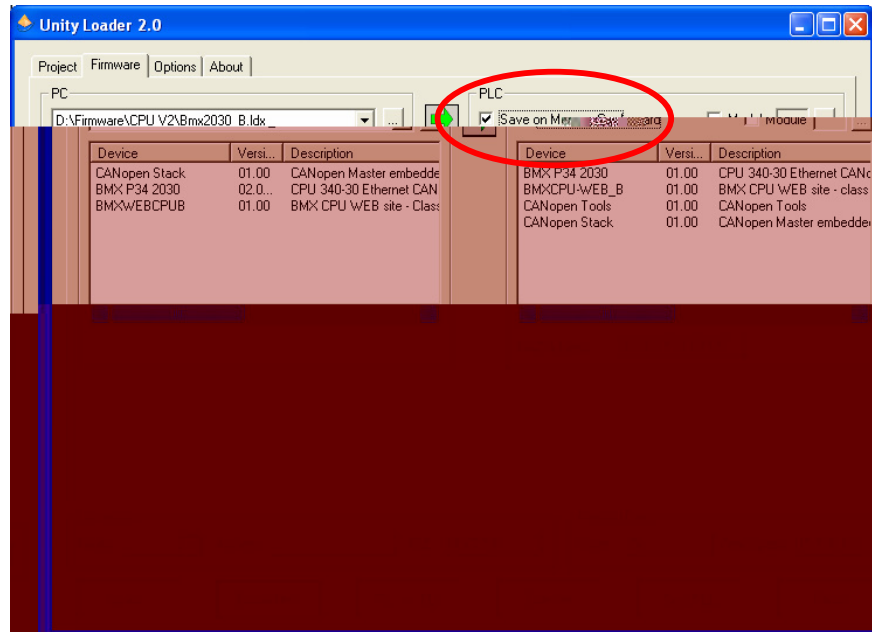
3.1. Initialize the SD-Card with the firmware

Prepare a Modicon M340 CPU/NOE SD-Card	In order to proceed with an update, the following are required: € Modicon M340 CPU/NOE module with firmware version V2.0 or higher already installed. € Unity Pro Version 4.0 or higher software must be installed on the PC. € The firmware is available on www.schneider-electric.com, both as independent files or included in an electronic CD OS image (.iso file) that can be downloaded. € The Unity Loader tool (provided with Unity) must be installed on the PC. This tool allows the user to download the PLC firmware. € The CPU/NOE SD-Card identity must fit with the target and is dedicated to it; the free memory room on the SD-Card must be checked (refer to the Unity Loader documentation for the description of the necessary size).
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Initialize the SD-Card using Unity Loader

To initialize the firmware file into an SD-Card, follow the same procedure as provided in “Chapter 2.3. Update Procedure” with the following exceptions:

1. At Step 6, insert the SD-Card into the Modicon M340 CPU/NOE module, and check the “Save on Memory Card” box before clicking on the “Transfer” button.



2. At the end of the procedure, unplug the SD-Card in order to use it for the next phase.

3.2. Update a Modicon M340 CPU/NOE module procedure

Update a
Modicon M340
CPU/NOE
module

After initializing the SD-Card, the procedure to update the firmware for Modicon M340 CPU/NOE module using this SD-Card is as follows:

1. It is recommended to stop the PLC to be updated,
2. Insert the SD-Card into the PLC,
3. Reset the PLC. The firmware is automatically downloaded when the PLC restarts.

Note:

- € The FW file is automatically removed from the SD-Card.
 - € The SD-Card must remain in the CPU or NOE slot because the updated Web pages are stored on it.
-

Restart the
PLC

After this phase the PLC is on the stop forced mode. You can start the PLC:

- € Either, by clicking on the Start PLC button with Unity Loader 2.0.
- € Or, if the "Automatic start in Run" is selected in the application, a manual reset will automatically start the PLC.

CAUTION

UNEXPECTED EQUIPMENT BEHAVIOR

After updating the CPU/NOE module do not remove the SD-Card used for the update.

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

4. Changing an application into a V2.1 application with Unity Pro V4.1

Object of this Chapter This chapter describes briefly how to change a V1.0 or V2.0 application into a V2.1 application (refer to Unity Pro documentation for the detailed procedure of each step).

4.1. Prerequisites

Update Modicon M340 CPU / NOE Before changing application version from V1.0 or V2.0 to V2.1:

- € Modicon M340 CPU firmware must be updated to V2.1 (for CANopen CPU modules, refer to chapter 2.4 above).
- € NOE module with firmware version V1.0 must be updated to version V2.0 or higher.

4.2. Main steps to follow in Unity Pro V4.1

Changing application version V1.0 or V2.0 to V2.1 To change an application without any NOE from V1.0 or V2.0 to V2.1, please proceed as follows:

- € Replace the CPU from V1.0 or V2.0 to V2.1 (note that for CANopen CPU, the part number is to be changed, e.g. BMX P34 2010 is to be changed with BMX P34 20102)
- € Build and Transfer.

In case a NOE is configured in the application:

- € Delete the NOE 01x0 module
- € Replace the CPU from V1.0 or V2.0 to V2.1
- € Add the NOE 01x0.2 module
- € Change the Family of the Ethernet Network from 'NOE 0100, NOE 0110' to 'NOE 0100.2, NOE 0110.2'
- € Enable the Modules Utilities 'IO Scan' and/or 'Global Data' and/or 'Address Server' as 'YES' if they were previously configured
- € Link this Family to the NOE 01x0.2 module
- € Build and Transfer

Application compatibility

Application on SD - card		V1.0	V2.0	V2.1		
CPU / Firmware						
C A N o p e n C P U	P34 1000 or P34 2020	V1.0 V2.0 V2.1	• • •	∅ • •	∅ ∅ •	{ Upward compatibility }
	P34 2000	V2.0 V2.1	X X	• •	∅ •	
	P34 2010 or P34 2030	V1.0 V2.0	• •	∅ •	X X	{ Compatibility break }
	P34 20102 or P34 20302	V2.1	X	X	•	
						Need of Unity Pro V4.1 to change CPU type and rebuild the application

• : Compatible ∅ : Not compatible X : Does not exist

4.3. Additional capability

Updating both firmware and application with an SD-Card Please refer to Unity Loader documentation to build such an SD-Card