EMGZ491 and EMGZ492

PLC Examples

Quick Start Guide for PROFINET, EtherNet/IP and EtherCAT

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Contents

Simatic PROFINET

Setting up the project

- Copy the project to the PC on which the Simatic development software is installed.
- Open the example project EMGZ49x_PN_Vy_y (x stands for the utilized device, y stands for the example program version).
- Give the EMGZ491 or EMGZ492 the device name **emgz491** or **emgz492** and an IP-address that suits your network.
- Check if the EMGZ491 or EMGZ492 has got the assigned IP-address by open the web interface with the web browser.

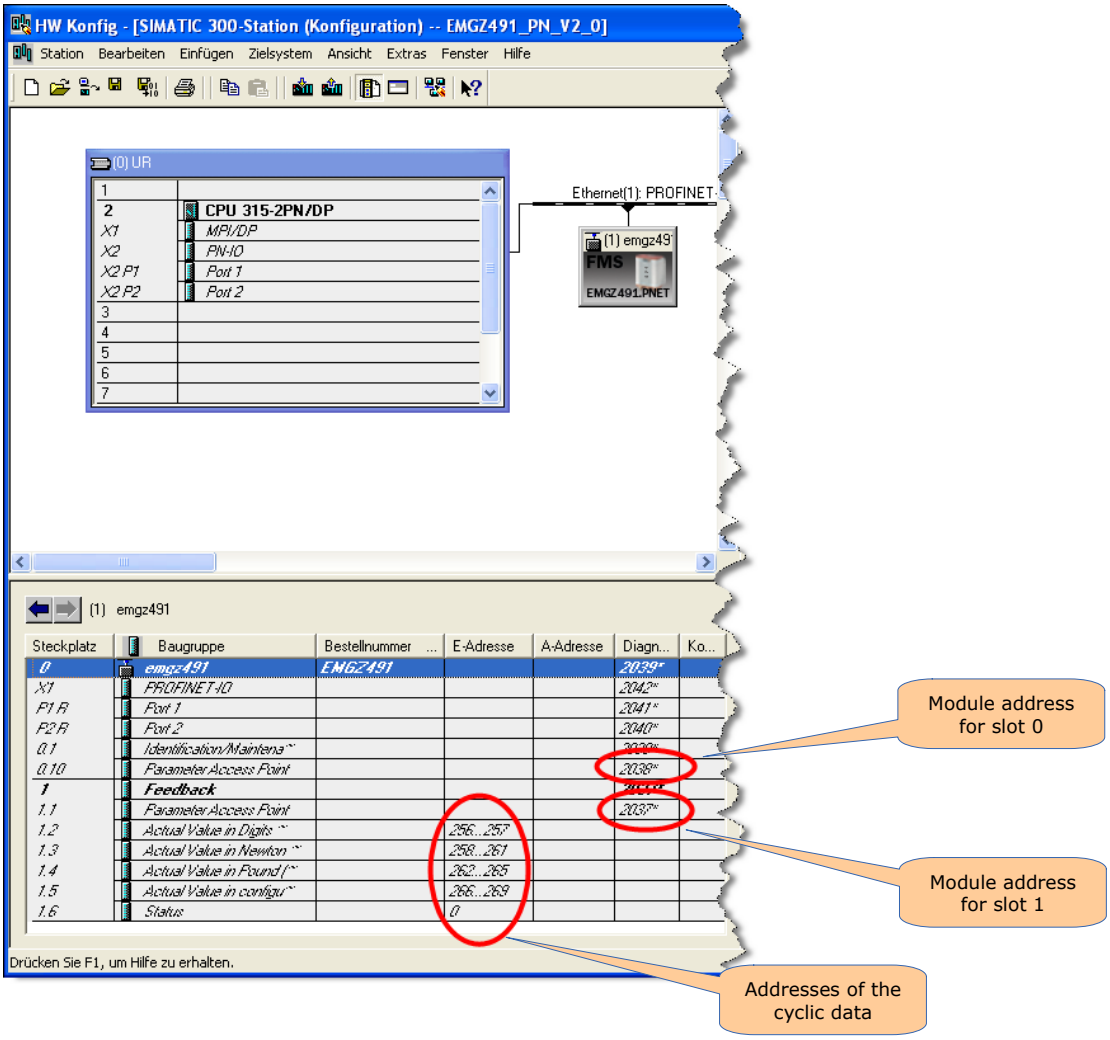
Using of the example program

- Check the module hardware configuration and change it if it doesn't match.
- Open the following variable tables:
  - EMGZ491_Read_Data or EMGZ492_Read_Data
  - EMGZ491_Write_Input_Par or EMGZ492_Write_Input_CH_A and EMGZ492_Write_Input_CH_B
  - EMGZ491_Write_Output_Par or EMGZ492_Write_Output_Par
  - EMGZ491_Calibrate or EMGZ492_Calibrate
- Arrange the windows similar to the shown screenshot for the particular device.
- Follow the numbers ascending on the screenshot.

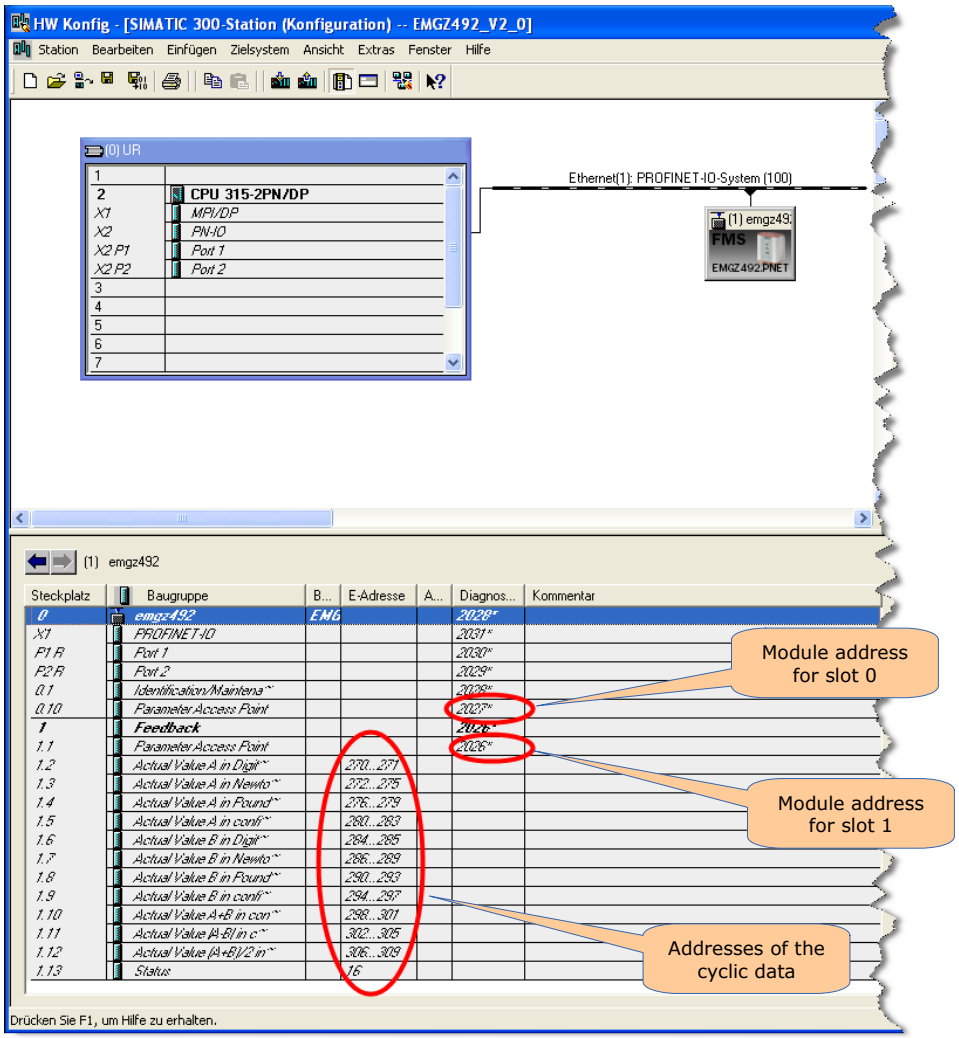
Adaptation of the module address

By default, the example programs use the addresses shown in the below dialogs. Make sure that they are set accordingly.
The address for slot 0 gives access to the EMGZ49x output parameters.
The address for slot 1 gives access to the EMGZ49x configuration parameters as well as to the cycle data.
Make sure that the input addresses for the cyclic data are also set correctly.

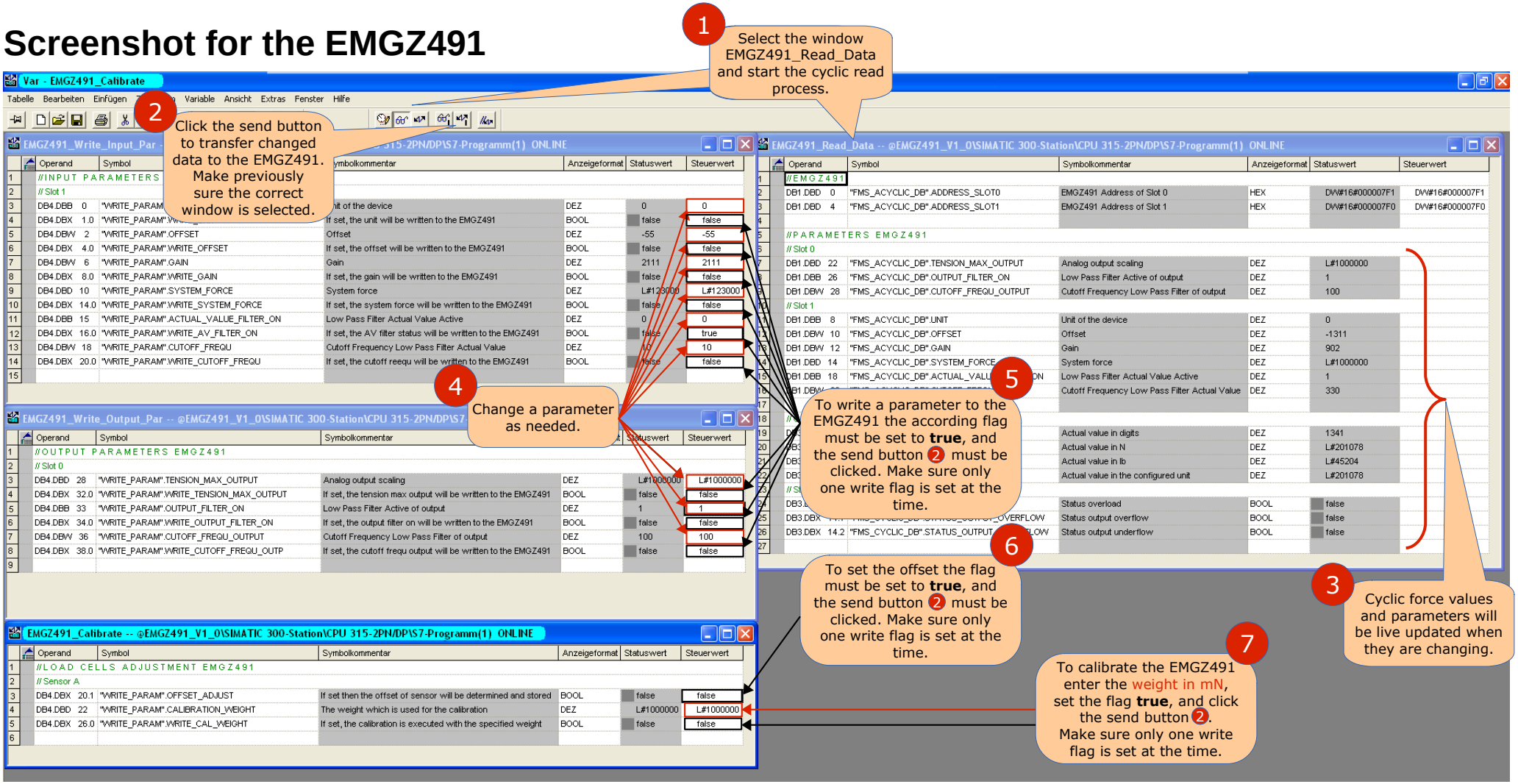
EMGZ491



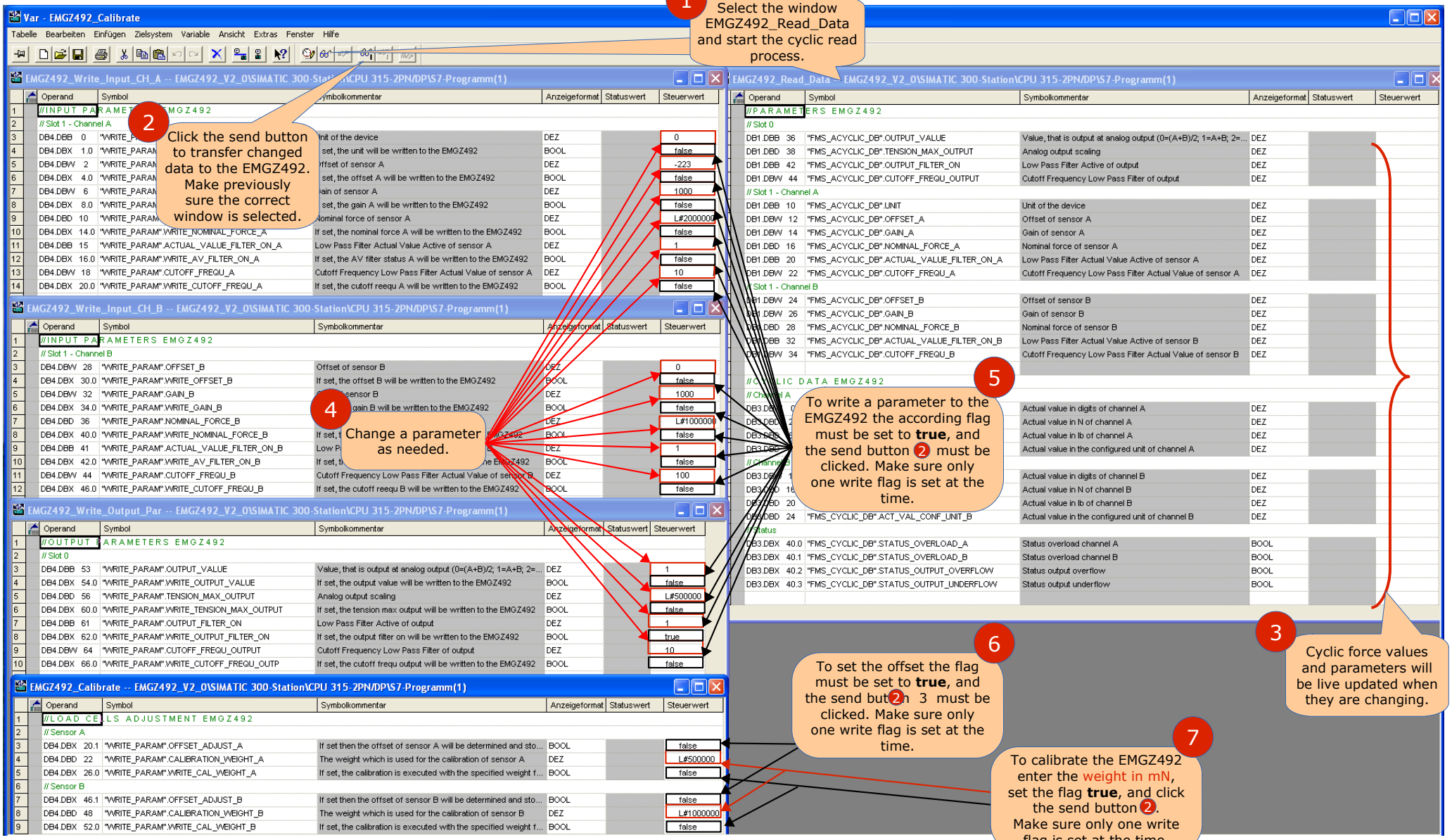
EMGZ492


HW Konfig - [SIMATIC 300-Station (Konfiguration) -- EMGZ492_V2_0]
Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe
(0) UR
CPU 315-2PN/DP
MPI/DP
PN-IO
Port 1
Port 2
Ethernet(1): PROFINET-IO-System (100)
(1) emgz492
EMGZ492.PNET
(1) emgz492
Steckplatz
Baugruppe
E-Adresse
Diagnos...
Kommentar
Module address for slot 0
Module address for slot 1
Addresses of the cyclic data
Drücken Sie F1, um Hilfe zu erhalten.

Screenshot for the EMGZ491



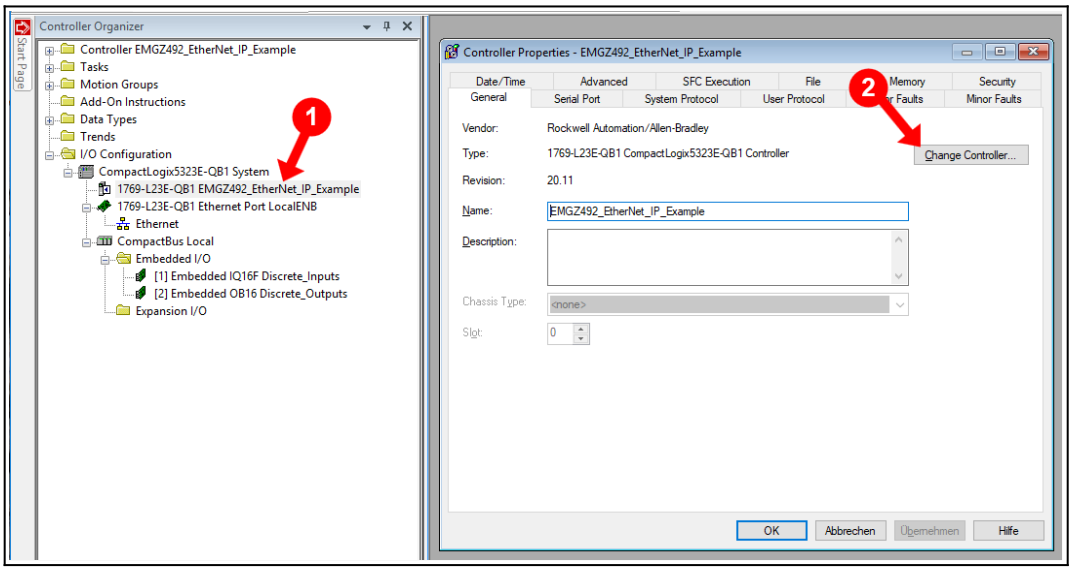
Screenshot for the EMGZ492



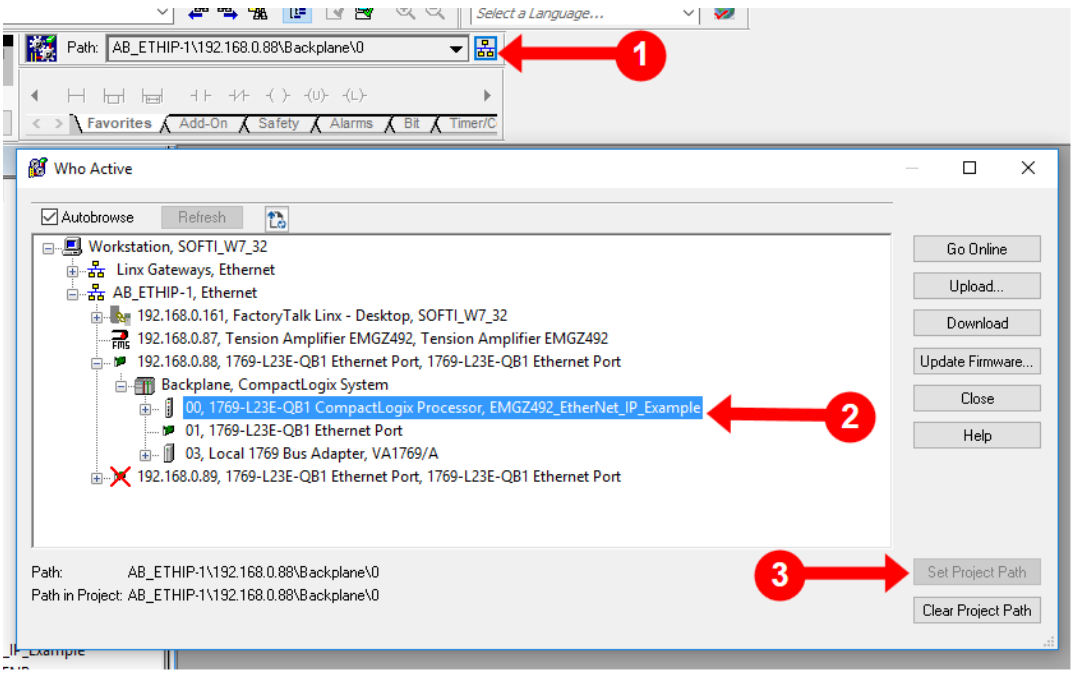
RSLogix 5000 EtherNet/IP

Setting up the project

- Copy the project to the PC on which the RSLogix 5000 development software is installed.
- Open the example project EMGZ49x_EIP_Vy_y (x stands for the utilized device, y stands for the example program version).
- Change the controller that it matches your utilized controller.

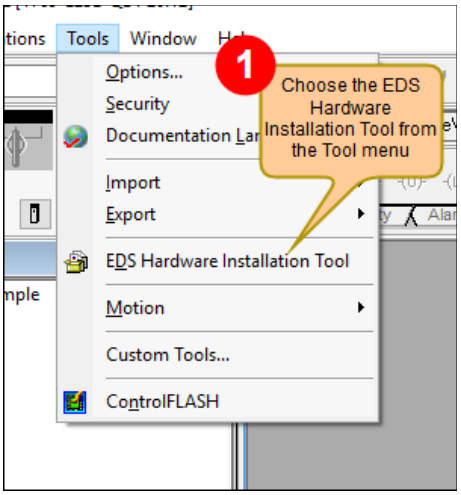


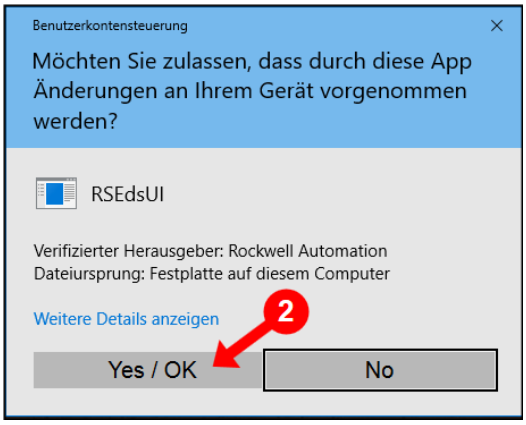
- Change the Path to the controller that you would like to use for the example program. If you have difficulty to change the path, use the Allen Bradley documentation for a further description.

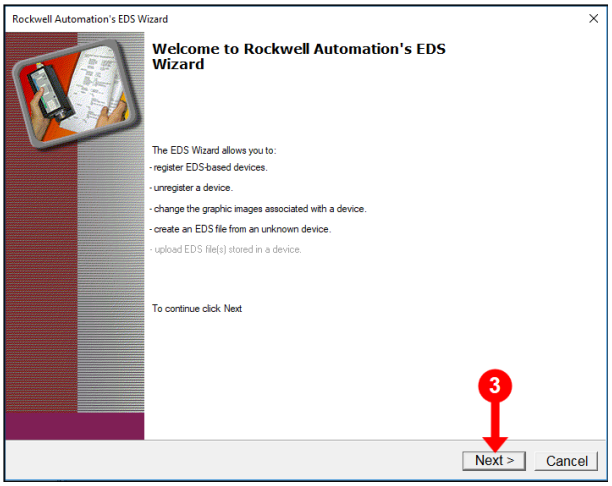


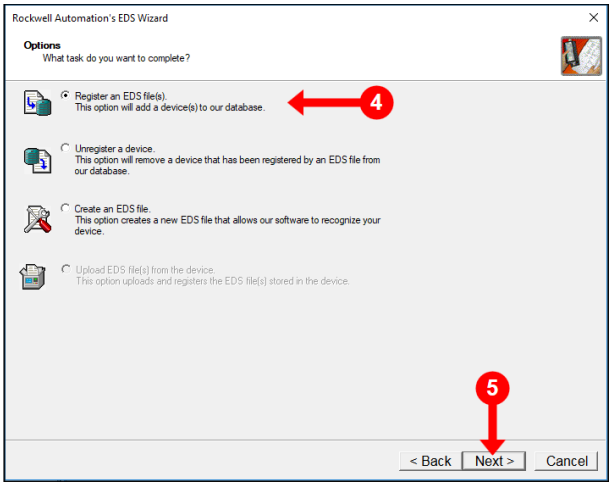
- To add the EMGZ491 or EMGZ492 to the project using the appropriate EDS file. Follow the steps on the below screenshots. After choosing the tool, there might appear a warning dialog to inform you about possible changes in the device configuration. Click on OK to accept changes. 2

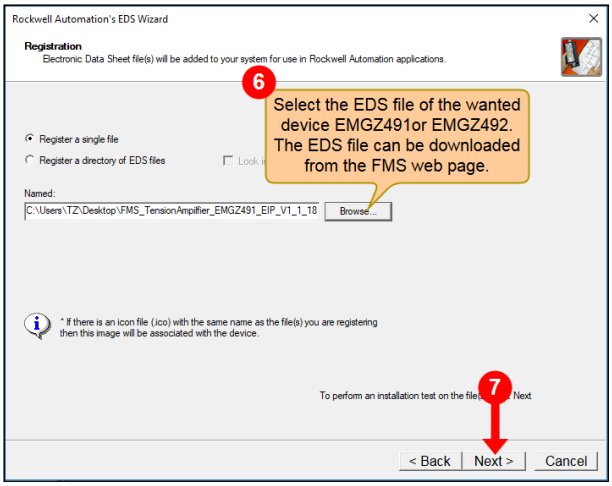
Depending on the software version the EMGZ49x is on, a different EDS version must be taken.
EMGZ49x with software version up to 2.0.3, the EDS version 1.1 must be used.
EMGZ49x with software version from 2.0.4 or higher, the EDS version 2.1 must be used.
If both variants are in operation in your environment, you can install both EDS versions and choose the correct versions for the particular device. In that case repeat steps 1 to 11 for each EDS file.

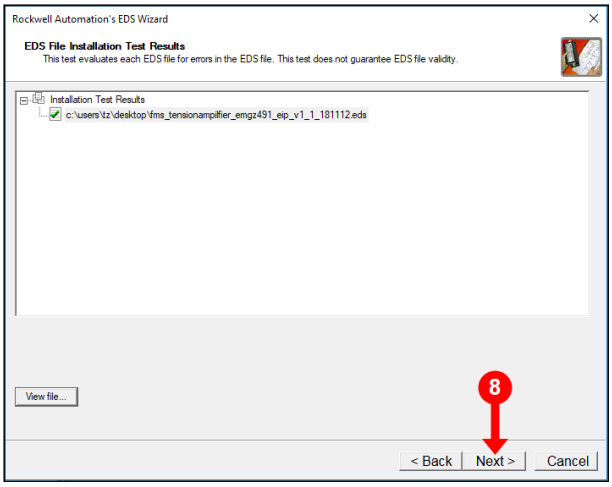


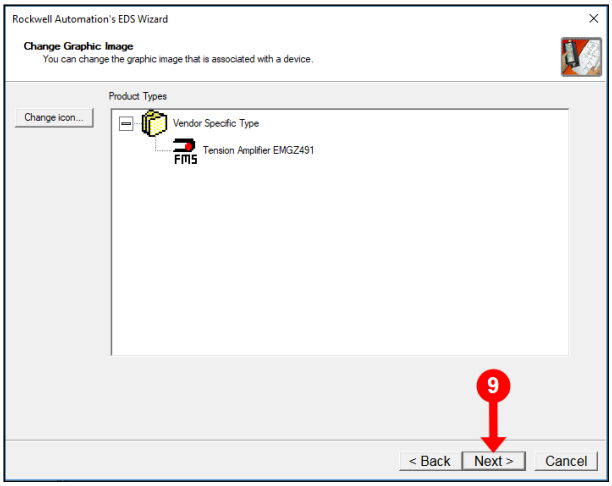


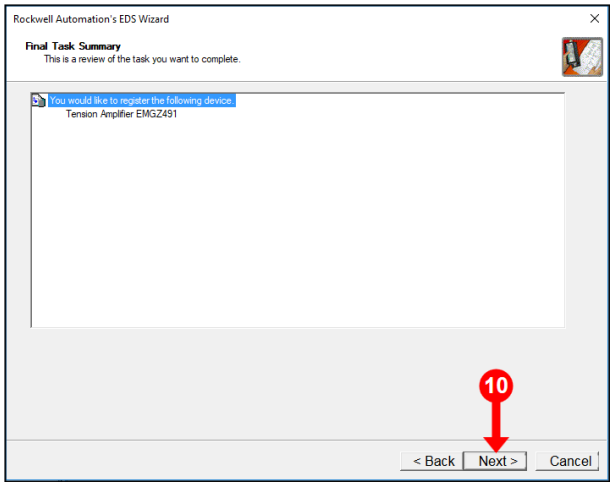


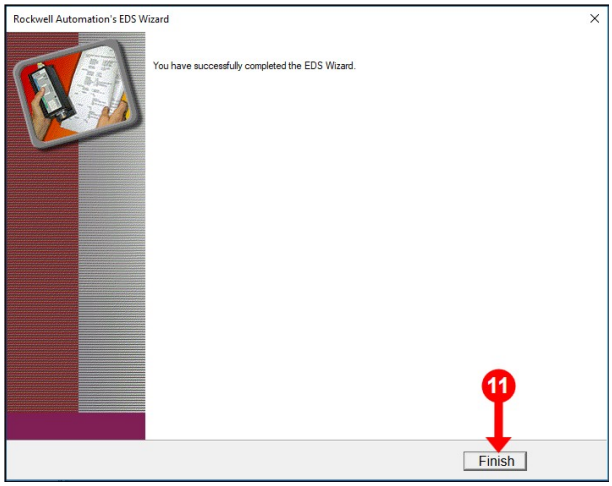



Rockwell Automation's EDS Wizard
Registration
Electronic Data Sheet file(s) will be added to your system for use in Rockwell Automation applications.
6
Select the EDS file of the wanted device EMGZ491or EMGZ492. The EDS file can be downloaded from the FMS web page.
Register a single file
Register a directory of EDS files
Named:
C:\Users\TZ\Desktop\FMS_TensionAmplifier_EMGZ491_EIP_V1_1_18
Browse...
* If there is an icon file (.ico) with the same name as the file(s) you are registering then this image will be associated with the device.
7
< Back
Next >
Cancel

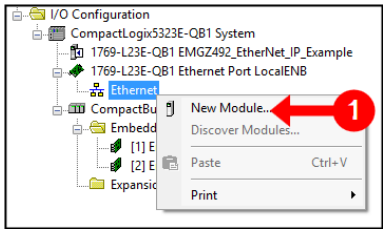

Rockwell Automation's EDS Wizard
EDS File Installation Test Results
This test evaluates each EDS file for errors in the EDS file. This test does not guarantee EDS file validity.
Installation Test Results
c:\users\tz\desktop\fms_tensionamplifier_emgz491_eip_v1_1_181112.eds
View file...
8
< Back
Next >
Cancel

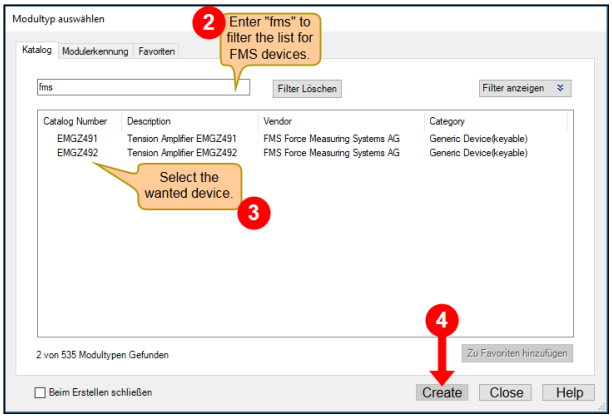

Rockwell Automation's EDS Wizard
Change Graphic Image
You can change the graphic image that is associated with a device.
Product Types
Change icon...
Vendor Specific Type
Tension Amplifier EMGZ491
9
< Back
Next >
Cancel


Rockwell Automation's EDS Wizard
Final Task Summary
This is a review of the task you want to complete.
You would like to register the following device:
Tension Amplifier EMGZ491
10
< Back
Next >
Cancel


Rockwell Automation's EDS Wizard
You have successfully completed the EDS Wizard.
11
Finish

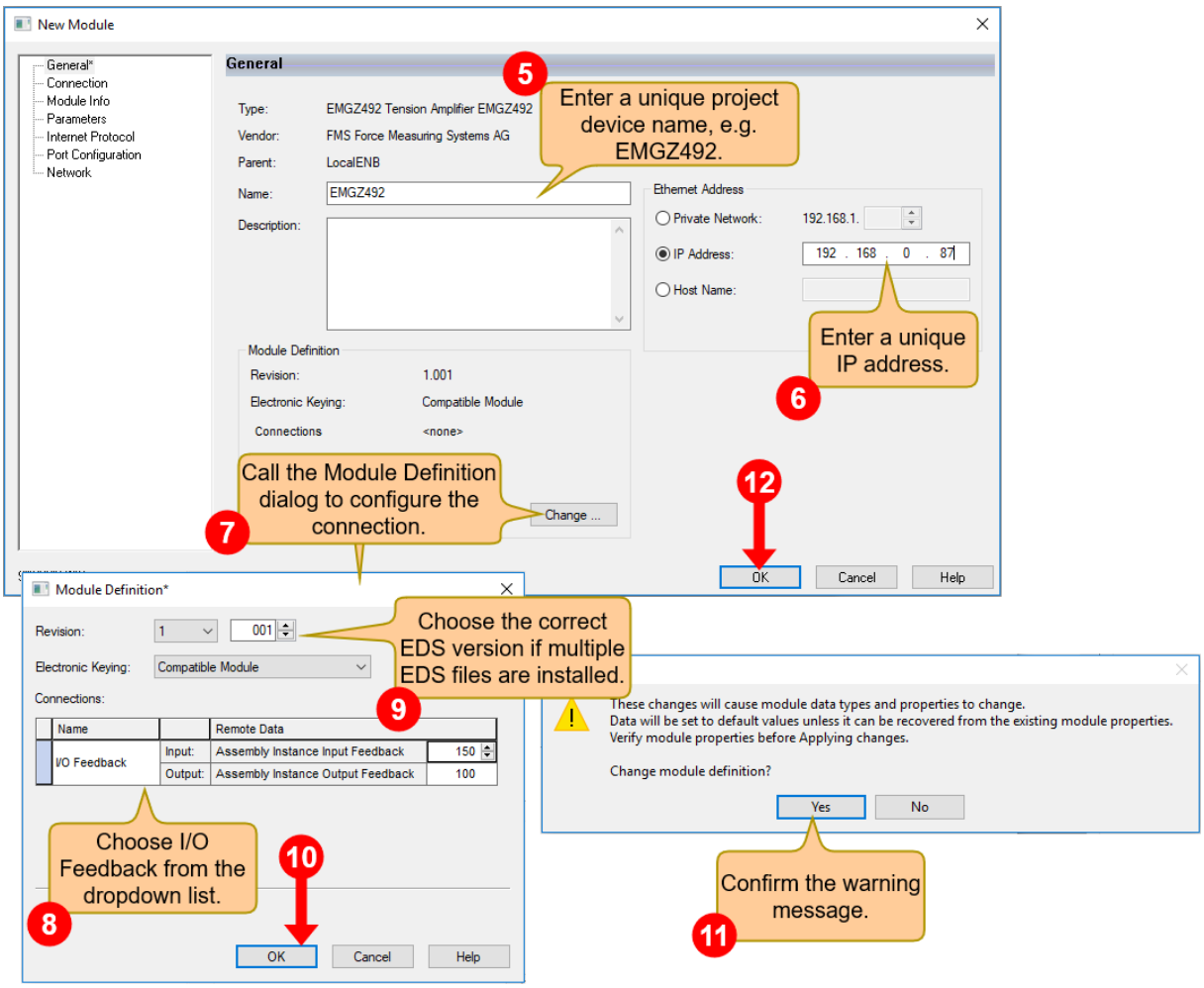
- Add the wanted device EMGZ491 or EMGZ492 to the project. Follow the steps on the below screenshots.





Be careful when entering the IP. If you enter a wrong IP by accident, then the device can not be recognized by the RSLinx tool anymore. Therefore, before acknowledging the change by clicking on the button OK, double-check the entered IP and write it down on a piece of paper.

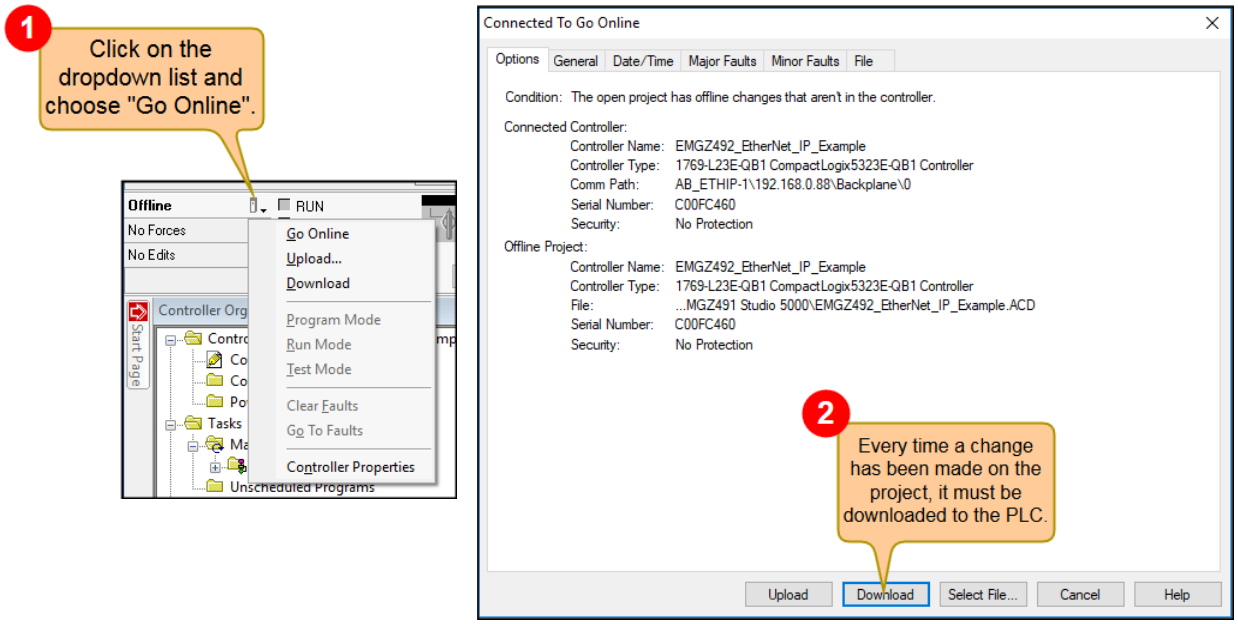
The device has got the default IP of 192.168.0.90. If you don't know the assigned IP to the device and the RSLinx tool doesn't list it then use the Hilscher tool **Ethernet Device Configuration**. Refer to chapter **Find Out the Device IP** the get further information.

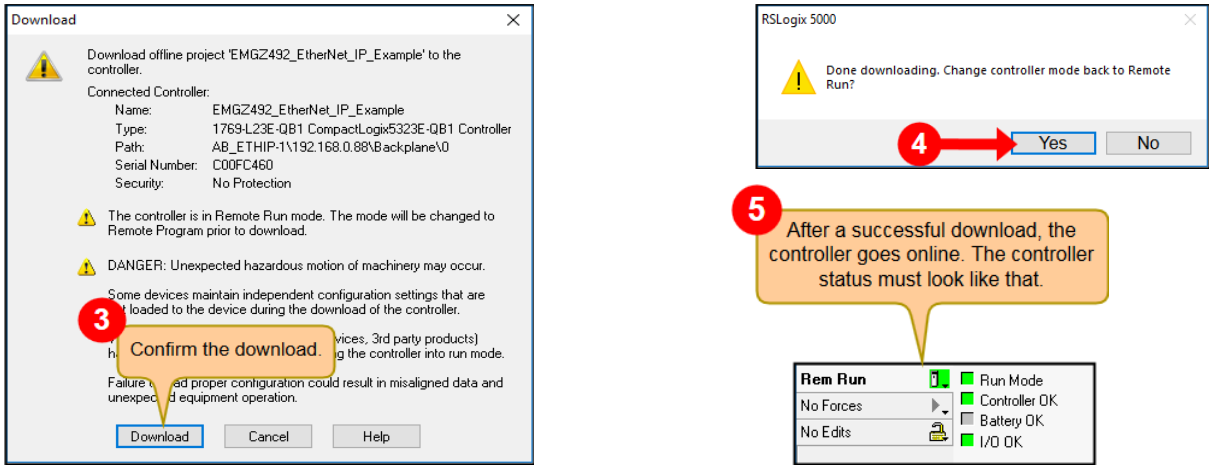


After point 12 the origin dialog "Select Module Type" shows up again. It can be closed by now. The device is now displaying in the Controller Organizer tree under the item Ethernet.

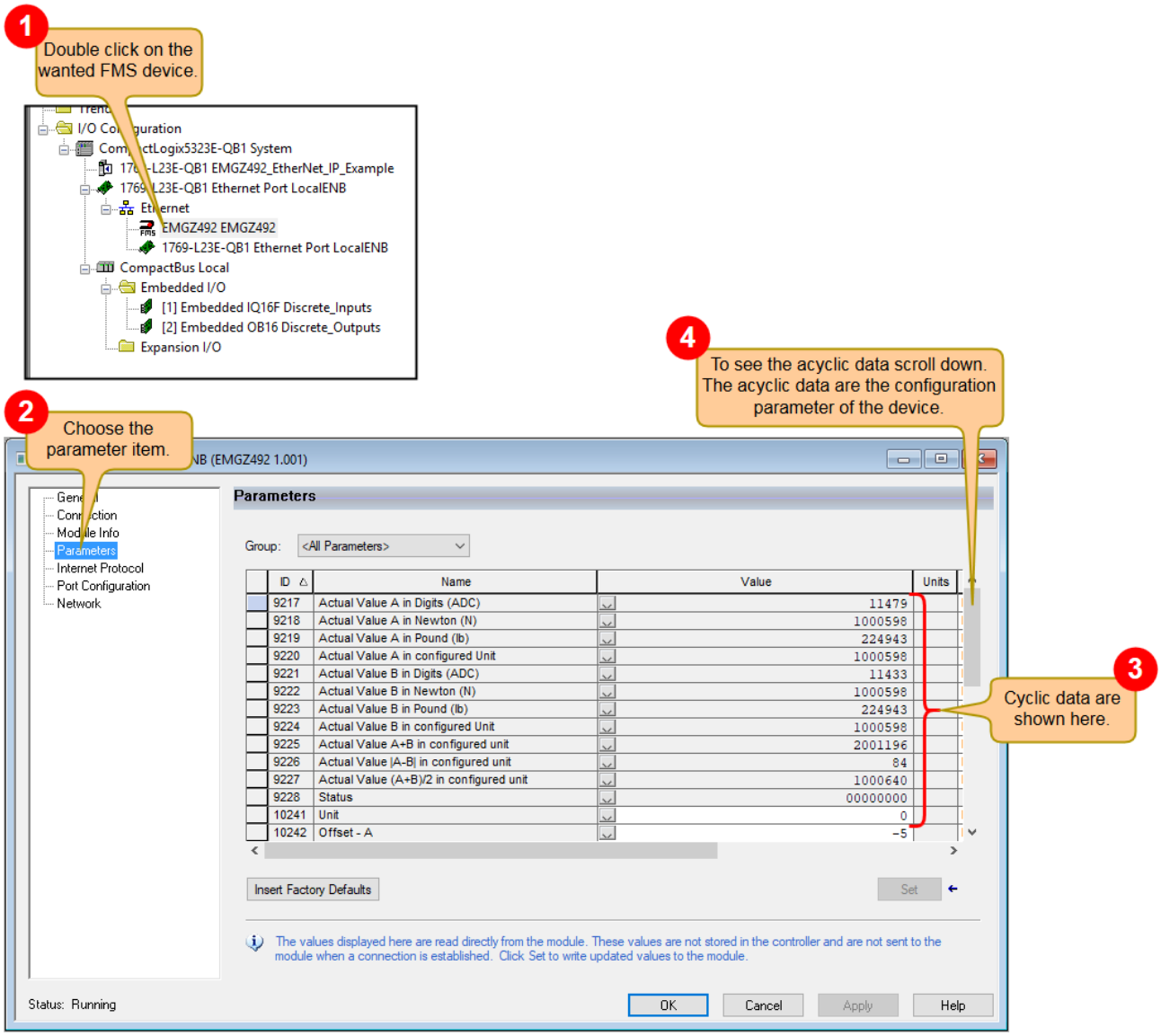
Using of the example program

- Establish a connection with the PLC.

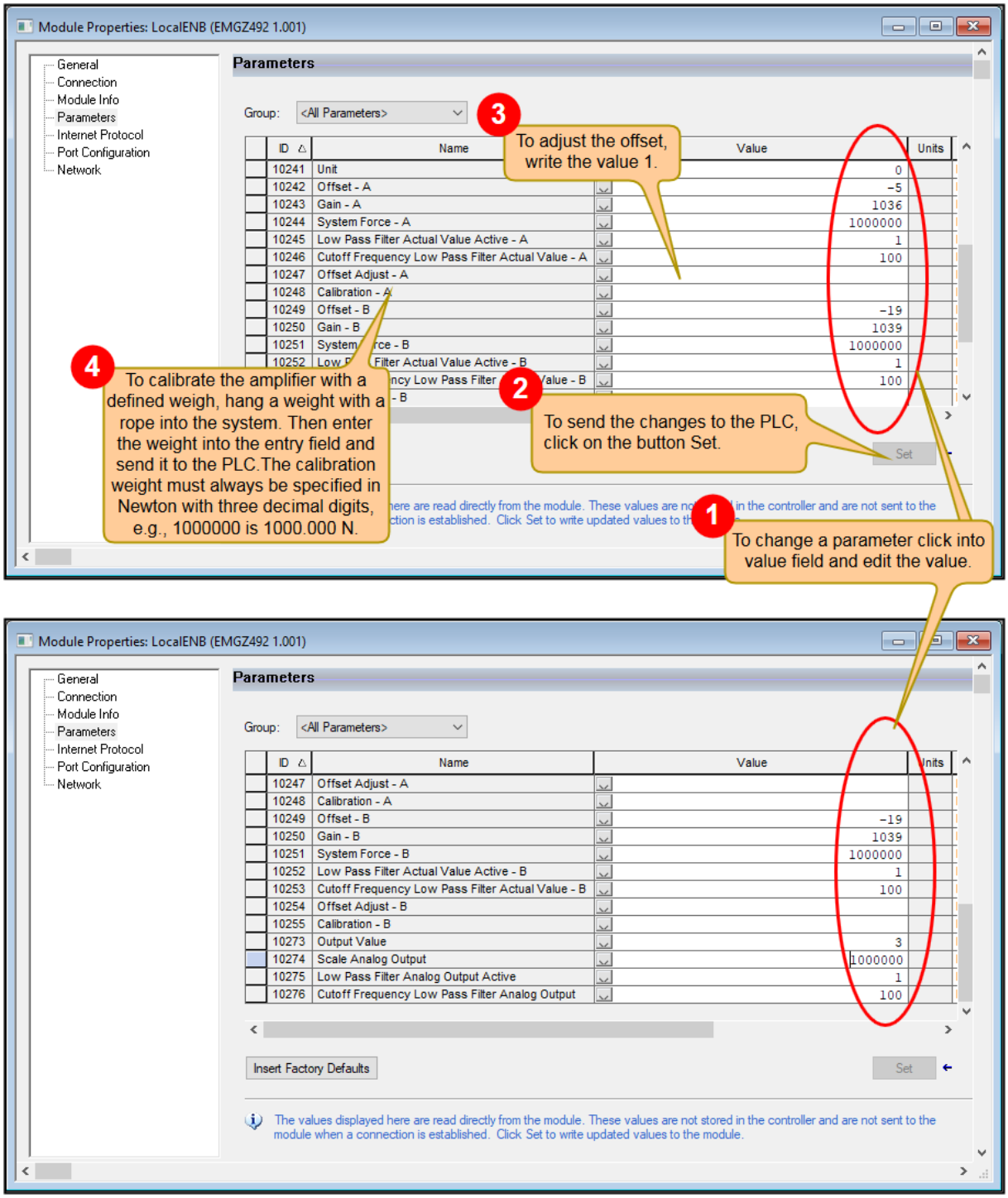




- Open the Module Properties dialog.

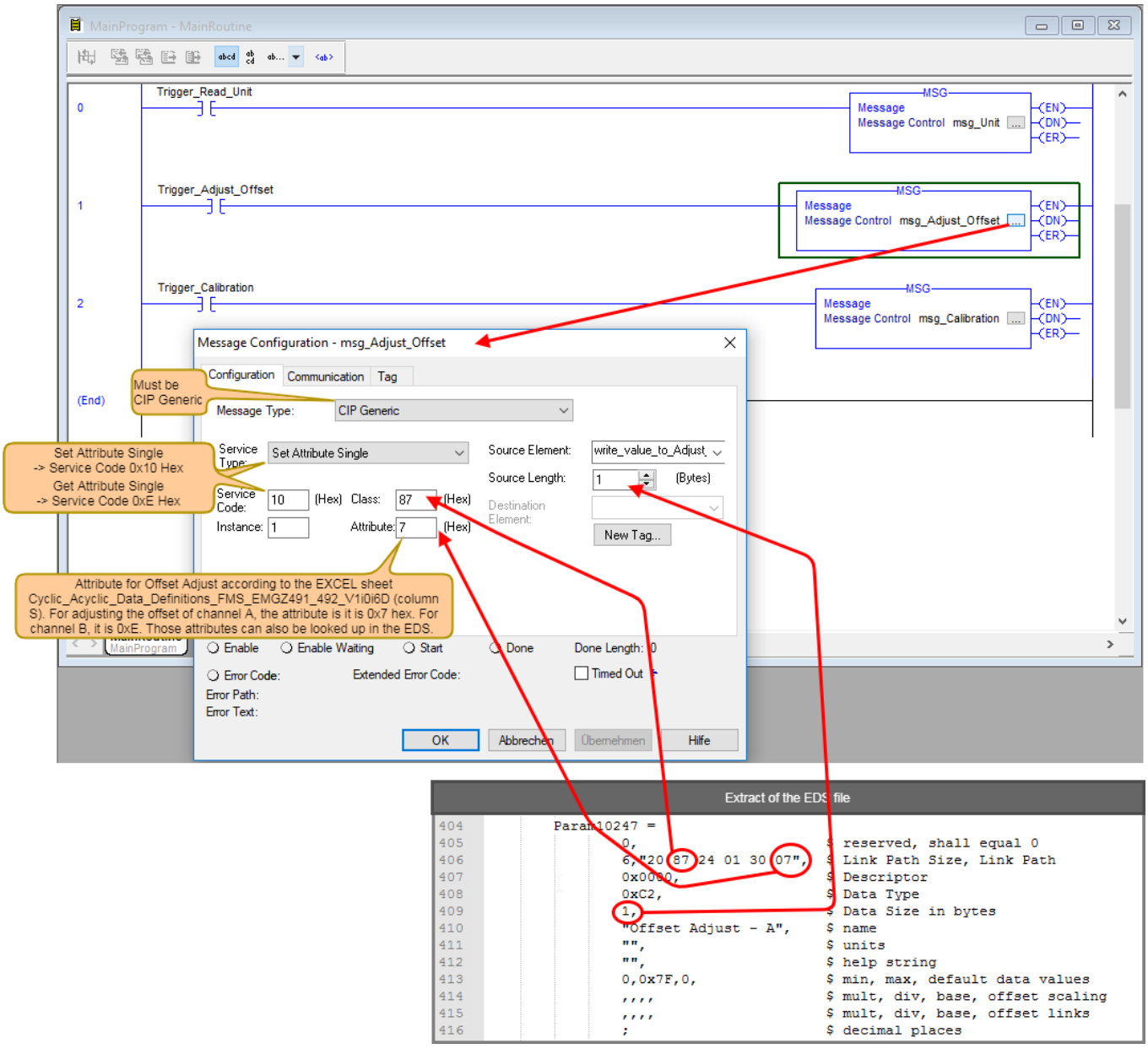


- To change device configuration parameters scroll down the parameter list box until the desired parameter is visible.



Writing Parameters from a PLC Program

This chapter shows how to write parameters from a PLC program. It is an example of adjusting the offset of channel A. All other parameters are handled in the same manner.
In general, for reading and writing parameters, messages must be used.



Find Out the Device IP

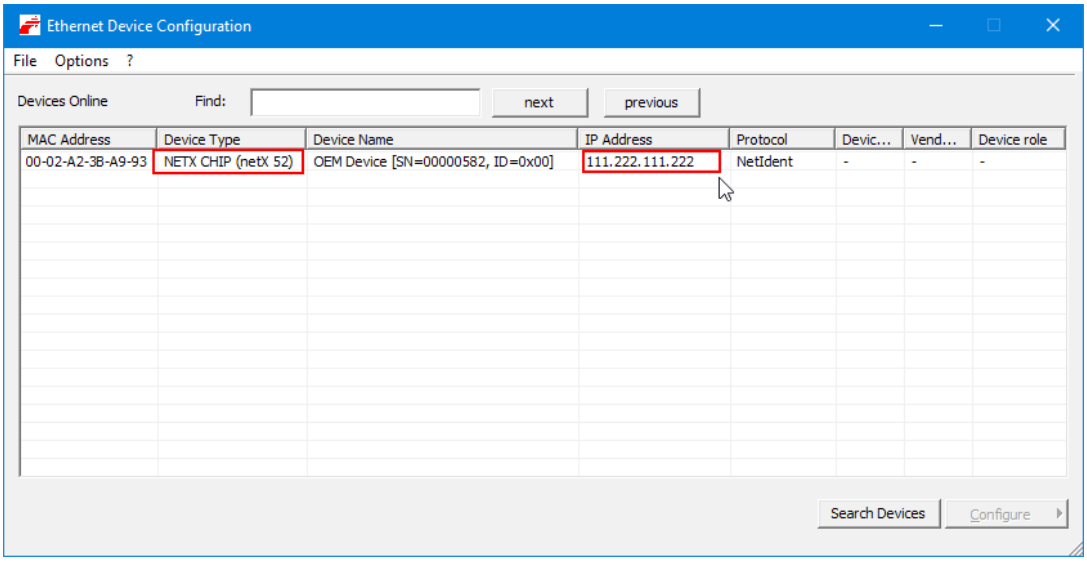
In case you don't know the IP of a device because of entering a wrong IP by accident, and the RSLinx tool cannot find it either, then you can use the Hilscher tool **Ethernet Device Configuration**. Follow the steps below to use the tool.

1. Download the Ethernet Device Configuration tool from the FMS website.
   On the page, scroll down until you see the title Ethernet Device Configuration and click on EthernetDeviceConfiguration.zip.

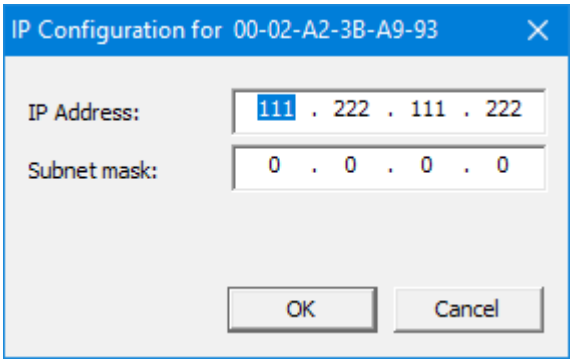
   https://www.fms-technology.com/en/downloadcenter/profinet

2. Unzip the contains of the EthernetDeviceConfiguration.zip archive to a temporary directory.
3. Installing the tool by double-clicking on the file **EthernetDeviceConfiguration Vx.x.x.x Setup.msi** and follow the instructions.
4. Start the tool and changing the language to your preferences.
5. Make sure that the PC and the device are connected to the Ethernet and powered up.
   Click on button Search Devices. The tool finds all devices on the network that uses a Fieldbus protocol. In our case EtherNet/IP.
   Usually, you should only see a few devices. The device that we are looking for has got the Device Type NETX CHIP (netX 52). If you are not sure which device should be selected, unplug all other devices, and repeat the search.

6. Select the line that shows the wanted device. In our example, the device has got the wrong IP 111.222.111.222.



7. Click on button **Config** and choose **Set IP Address...**
   In the called dialog, enter the correct IP Address and Subnet mask. Afterward, the tool RSLinx must list the device correctly.



Device Replacement in an Existing System

Depending on the firmware version are two different replacement scenarios necessary when a faulty device must be replaced in an existing system.

The following table shows which replacement scenario must be applied.

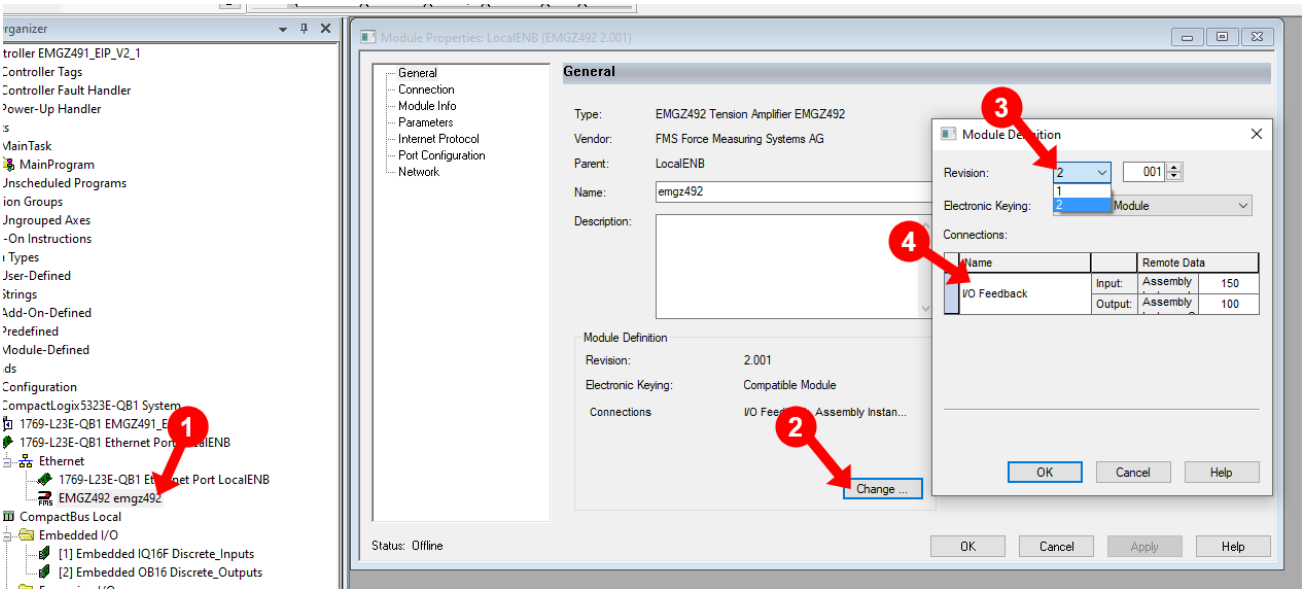
Identify the replacement scenario		
Version of the old device	**Version of the new device**	
	smaller or equal 2.0.3	equal or greater 2.0.4
smaller or equal 2.0.3	A	B
equal or greater 2.0.4	n/a	A

Scenario A:

- Configure the device parameter the same as of the predecessor.
- No further action is needed.

Scenario B:

- Configure the device parameter the same as of the predecessor.
- Download the EDS files for the EMGZ491 and EMGZ492 version 2.001 from the FMS home page menu *Download Center → EtherNet/IP*.
- Install the needed EDS in your RSLogix 5000 project as described above in chapter Setting up the project using the EDS Hardware Installation Tool.
- Open the module properties by double-clicking the device. ❶
- Click on button Change. ❷
- Select revision 2. ❸
- Select another connection than I/O Feedback, e.g., Listen Only Feedback and click on button OK. ❹
  Acknowledge the changes in the next dialog.
  That action is necessary because of a bug in the RSLogix software. The connection must be set back to I/O Feedback later on.
- Download the project to the PLC.
- Open the module properties again and click the button change. ❶ and ❷
- Select the connection I/O Feedback and click on button OK. ❹
  Acknowledge the changes in the next dialog.
- Download the project to the PLC.


1
2
3
4
Module Properties: LocalENB (EMGZ492 2.001)
General
Connection
Module Info
Parameters
Internet Protocol
Port Configuration
Network
Type: EMGZ492 Tension Amplifier EMGZ492
Vendor: FMS Force Measuring Systems AG
Parent: LocalENB
Name: emgz492
Description:
Module Definition
Revision: 2.001
Electronic Keying: Compatible Module
Connections
Change ...
Status: Offline
OK
Cancel
Apply
Help
Revision: 2 001
Electronic Keying: Module
Connections:
Name
Remote Data
I/O Feedback
Input: Assembly 150
Output: Assembly 100
Ethernet
EMGZ492 emgz492
CompactBus Local
Embedded I/O
[1] Embedded IQ16F Discrete_Inputs
[2] Embedded OB16 Discrete_Outputs

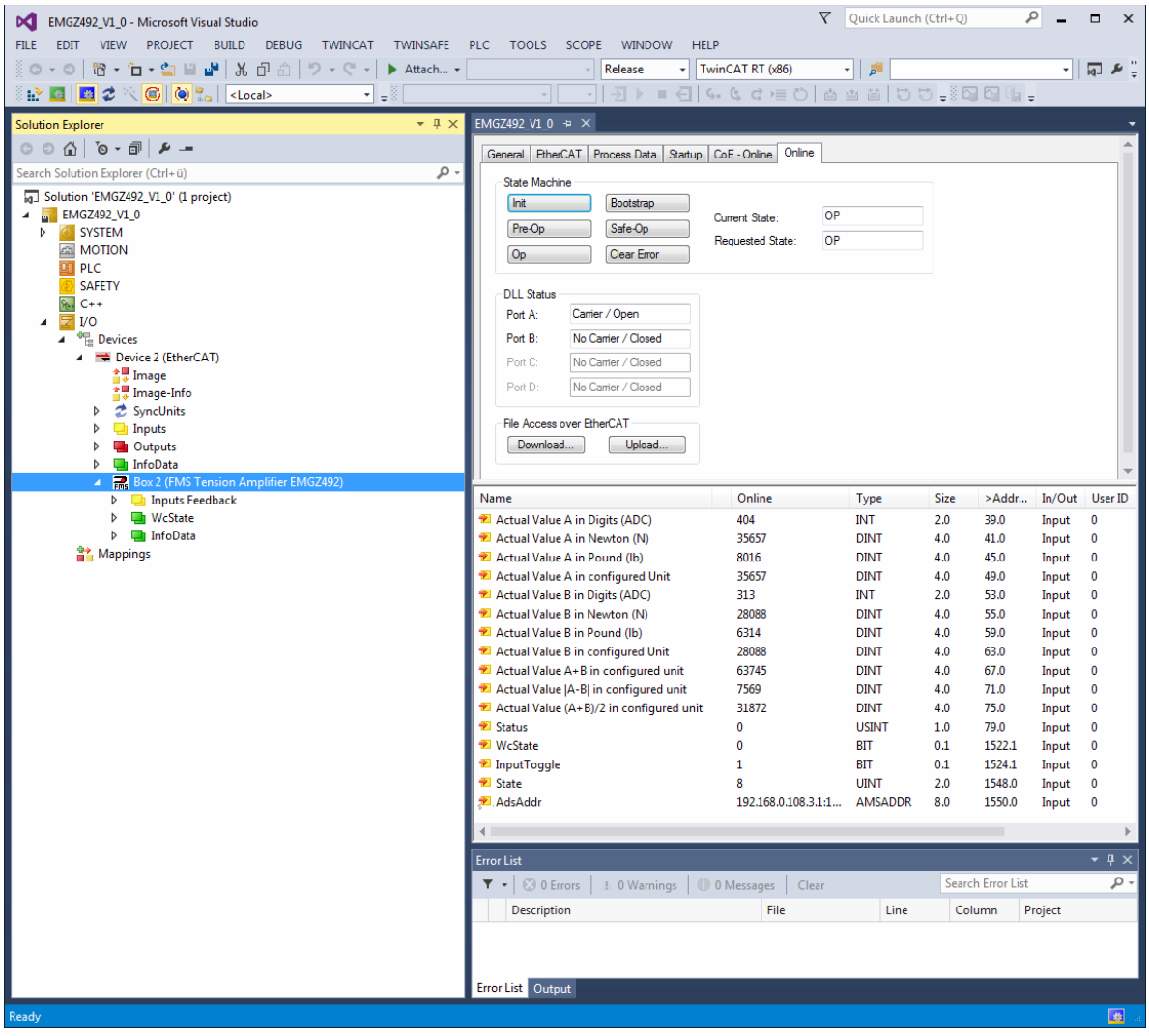
TwinCAT 3 - EtherCAT

The example projects for the EMGZ491 or EMGZ492 contains the appropriate device integrated into the project. It shows the live data from the cyclic data and explains how parameters can be changed. It does not show and use any programming code as that is part of the EtherCAT developer, and we can not give support in that area too.

Setting up the project

- Copy the project to the PC on which the TwinCAT 3 development software is installed.
- Open the example project EMGZ49x_ECAT_Vy_y (x stands for the utilized device, y stands for the example program version).

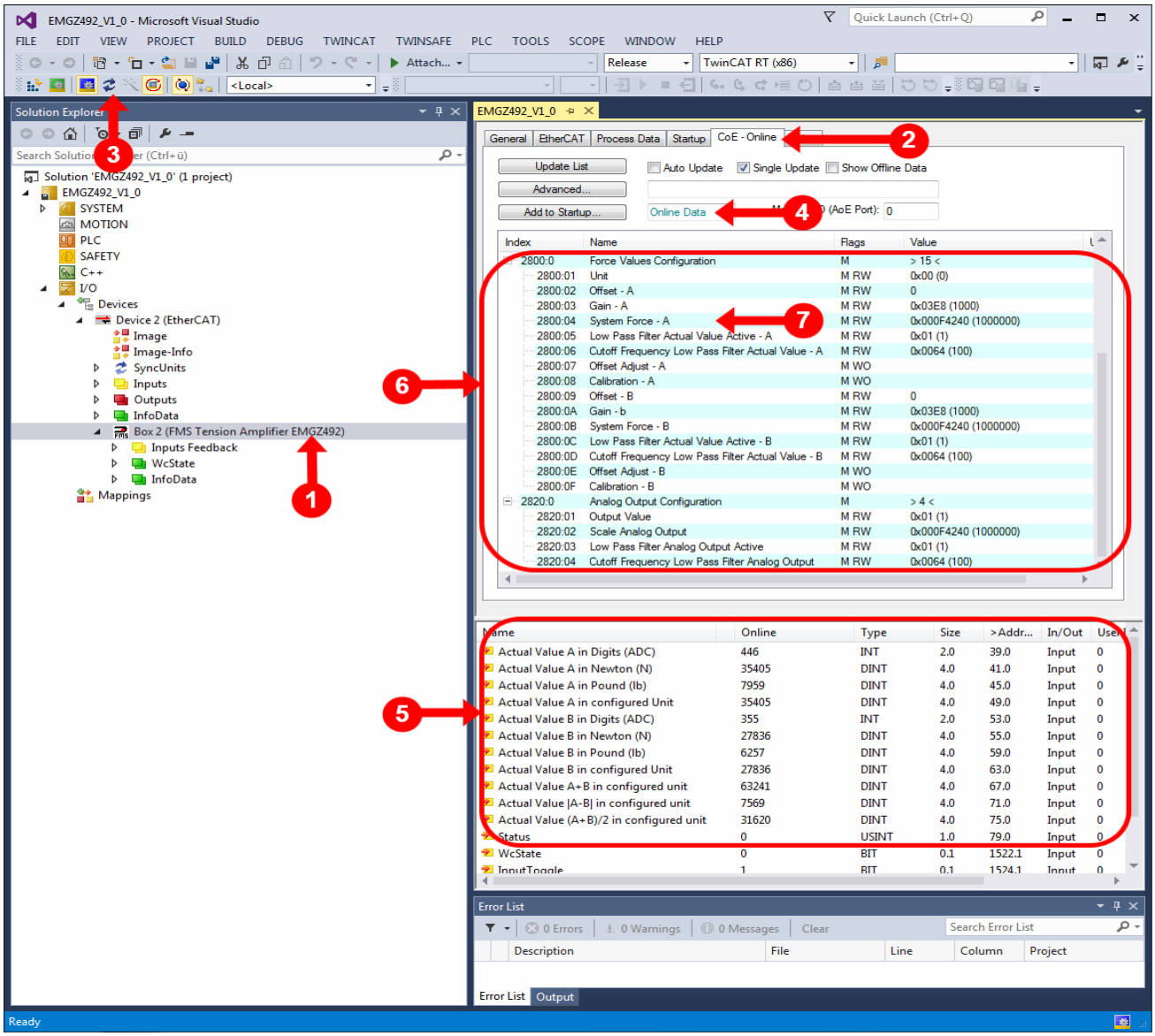
The screen should now show the project similar to the following picture.



Using of the example program

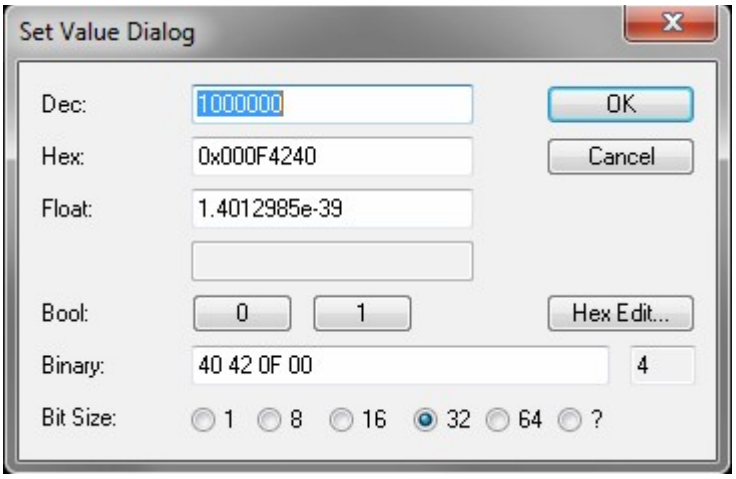
Show cycle data

8. Double click on the appropriate device EMGZ491 or EMGZ492 from the Solution Explorer tree.
9. Select the CoE- Online tab.
10. Click on the Reload Devices button.
11. The status must now show Online Data. If that is not the case, then check if the loaded project corresponds with the device EMGZ491 or EMGZ492. Is the device connected to the PC properly or powered up at all. If all seems correct, consult the TwinCAT documentation what the problem might be.
12. The cycle data will be shown here.



Change parameters

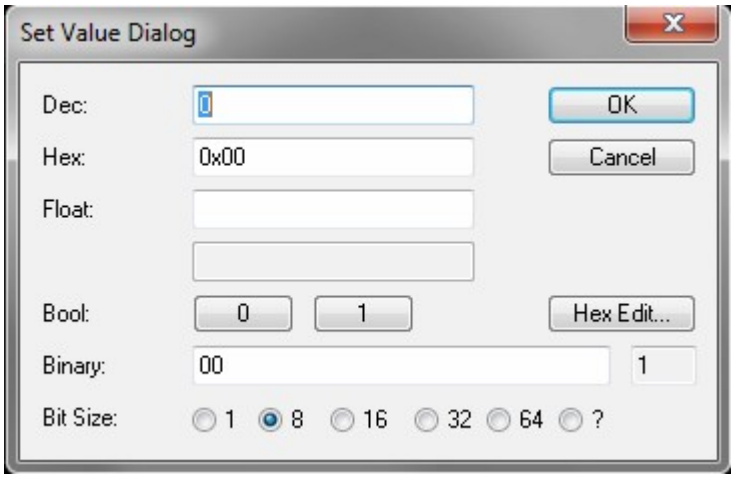
13. The parameters can be changed here. Open the tree index 2800 and 2820. After that, all parameters will be visible.
14. As an example double click on System Force. That opens the window Set Value Dialog. Enter a new value in the entry field Dec, e.g., 2000000 (that is interpreted as 2000.000N) and click on OK. A new system force has been set.



What the value ranges of the individual parameters are and how they will be interpreted can be seen in the manuals.

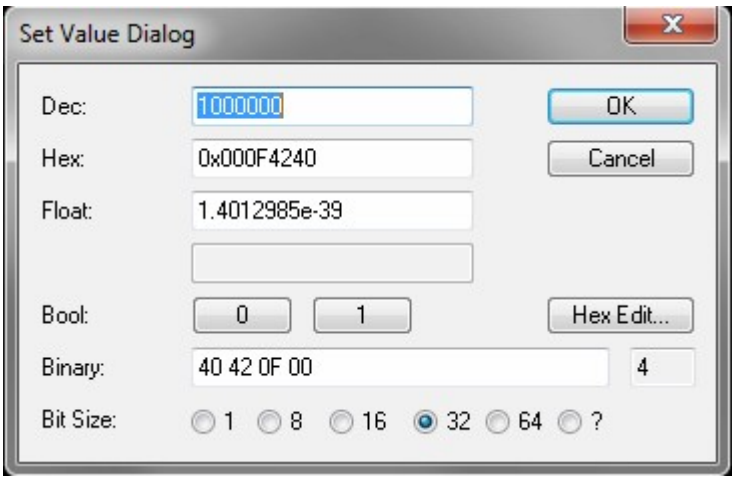
Example to adjust the offset

Double click on the parameter Offset Adjust. In the Set Value Dialog click on button 0 and OK. Be sure that the load call sensor is not loaded.



Example to calibrate with a defined weight

Double click on the parameter Calibration. In the Set Value Dialog enter the value of the loaded weight into the entry field Dec, e.g., 250000 (that is interpreted as 250.000N) and click on OK. That calculates the gain and saves it.



Caution: All weight values must independent from the configured unite be entered in Newton (N).

Firmware Update

Firmware updates for EtherCAT devices are not supported.

The EMGZ49x devices provide a firmware update over the web interface. The procedure is identical for all variants. Follow the instruction below to carry out an update.

1. Call the web interface by entering the IP address of the device into the web browser. Usually, the IP for a device is defined by the PLC. But when the device is not part of an industrial environment, hence no PLC is giving the device an IP, then you first must assign a not in the network used IP to the device. For that purpose, utilize the tool Ethernet Device Configuration from Hilscher. If you don't have and know how to use that tool, look at chapter Find Out the Device IP.
2. Choose from the menu of the web interface the entry System Settings. On this page, select the firmware file that you have got from FMS. The filename looks roughly like that EMGZ491_APP_Web_Update_V2.0.4.bin depending on the device variant and software version. Make sure that you have the right file for your device. The first part starting from the left, describes the variant (EMGZ491 or EMGZ492). The last part denotes the firmware version (Vx.x.x).
3. Enter the password *3231* and click on the button Upload Firmware. The upload starts as soon as you have clicked on the button.
4. Follow the instructions on the web page and don't power off the device while the process hasn't been finished. The update is over when either the device home page shows up or the browser reports that this page could not be found.
5. Check if the device has got the new firmware. Call the device home page, as described in point 1. Refresh the page by hitting the keys ctrl+F5 simultaneously. It is important to refresh the page exactly that way. This ensures that no cached values will be displayed and maybe shows a wrong version number.

   When the showed version corresponds with the new firmware, the update was successful and the device can be used. Otherwise, repeat the whole update procedure.