

EMGZ491 and EMGZ492

PLC Examples

Quick Start Guide for PROFINET, EtherNet/IP and EtherCAT

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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

The screenshot shows the HW Config interface for a SIMATIC 300-Station. The rack configuration shows a CPU 315-2PN/DP in slot 2 and an EMGZ491 module in slot 0. The detailed view of the EMGZ491 module is shown below, with the following table of parameters:

Steckplatz	Baugruppe	Bestellnummer	E-Adresse	A-Adresse	Diagn...	Ko...
0	emgz491	EMGZ491		2039*		
X1	PROFINET-ID			2042*		
P1 R	Port 1			2041*		
P2 R	Port 2			2040*		
0.1	Identification/Maintena...			2039*		
0.10	Parameter Access Point			2038*		
1	Feedback			2037*		
1.1	Parameter Access Point			2037*		
1.2	Actual Value in Digits		266..267			
1.3	Actual Value in Newton		268..261			
1.4	Actual Value in Pound f		262..265			
1.5	Actual Value in configur...		266..269			
1.6	Status		0			

Callouts in the image point to the following values in the table:

- Module address for slot 0: 2039*
- Module address for slot 1: 2038*
- Addresses of the cyclic data: 266..267, 268..261, 262..265, 266..269

EMGZ492

HW Konfig - [SIMATIC 300-Station (Konfiguration) -- EMGZ492_V2_0]

Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe

UR

1	
2	CPU 315-2PN/DP
X1	MPI/DP
X2	PN-IO
X2 P1	Port 1
X2 P2	Port 2
3	
4	
5	
6	
7	

Ethernet(1): PROFINET-IO-System (100)

(1) emgz492

Steckplatz	Baugruppe	B...	E-Adresse	A...	Diagnos...	Kommentar
0	emgz492	EMG		2028*		
X1	PROFINET-IO			2031*		
P1 R	Port 1			2030*		
P2 R	Port 2			2029*		
0.1	Identification/Maintena**			2028*		
0.10	Parameter Access Point			2027*		
1	Feedback			2026*		
1.1	Parameter Access Point			2026*		
1.2	Actual Value A in Digit**		270..271			
1.3	Actual Value A in Newto**		272..275			
1.4	Actual Value A in Pound**		276..279			
1.5	Actual Value A in confi**		280..283			
1.6	Actual Value B in Digit**		284..285			
1.7	Actual Value B in Newto**		286..289			
1.8	Actual Value B in Pound**		290..293			
1.9	Actual Value B in confi**		294..297			
1.10	Actual Value A+B in con**		298..301			
1.11	Actual Value A+B in c**		302..305			
1.12	Actual Value A+B/2 in **		306..309			
1.13	Status		16			

Drücken Sie F1, um Hilfe zu erhalten.

Screenshot for the EMGZ491

1 Select the window EMGZ491_Read_Data and start the cyclic read process.

2 Click the send button to transfer changed data to the EMGZ491. Make previously sure the correct window is selected.

3 Cyclic force values and parameters will be live updated when they are changing.

4 Change a parameter as needed.

5 To write a parameter to the EMGZ491 the according flag must be set to **true**, and the send button **2** must be clicked. Make sure only one write flag is set at the time.

6 To set the offset the flag must be set to **true**, and the send button **2** must be clicked. Make sure only one write flag is set at the time.

7 To calibrate the EMGZ491 enter the **weight in mN**, set the flag **true**, and click the send button **2**. Make sure only one write flag is set at the time.

Operand	Symbol	Symbolkommentar	Anzeigeformat	Statuswert	Steuwert
1	WRITE_PARAMETERS				
2	Slot 1				
3	DB4.DBB 0	WRITE_PARAMETERS.WRITE_OFFSET	DEZ	0	0
4	DB4.DBX 1.0	WRITE_PARAMETERS.WRITE_GAIN	DEZ	false	false
5	DB4.DBW 2	WRITE_PARAMETERS.WRITE_SYSTEM_FORCE	DEZ	-55	-55
6	DB4.DBX 4.0	WRITE_PARAMETERS.WRITE_AV_FILTER_ON	DEZ	false	false
7	DB4.DBW 6	WRITE_PARAMETERS.WRITE_CUTOFF_FREQU	DEZ	2111	2111
8	DB4.DBX 8.0	WRITE_PARAMETERS.WRITE_FILTER_ON	DEZ	false	false
9	DB4.DBD 10	WRITE_PARAMETERS.WRITE_GAIN	DEZ	false	false
10	DB4.DBD 10	WRITE_PARAMETERS.SYSTEM_FORCE	DEZ	L#123000	L#123000
11	DB4.DBX 14.0	WRITE_PARAMETERS.WRITE_SYSTEM_FORCE	DEZ	false	false
12	DB4.DBB 15	WRITE_PARAMETERS.ACTUAL_VALUE_FILTER_ON	DEZ	0	0
13	DB4.DBX 16.0	WRITE_PARAMETERS.WRITE_AV_FILTER_ON	DEZ	false	true
14	DB4.DBW 18	WRITE_PARAMETERS.CUTOFF_FREQU	DEZ	10	10
15	DB4.DBX 20.0	WRITE_PARAMETERS.WRITE_CUTOFF_FREQU	DEZ	false	false

Operand	Symbol	Symbolkommentar	Anzeigeformat	Statuswert	Steuwert
1	EMGZ491				
2	DB1.DBD 0	FMS_ACYCLIC_DB.ADDRESS_SLOT0	HEX	DW#16#000007F1	DW#16#000007F1
3	DB1.DBD 4	FMS_ACYCLIC_DB.ADDRESS_SLOT1	HEX	DW#16#000007F0	DW#16#000007F0
4	PARAMETERS EMGZ491				
5	Slot 0				
6	DB1.DBD 22	FMS_ACYCLIC_DB.TENSION_MAX_OUTPUT	DEZ	L#1000000	L#1000000
7	DB1.DBB 26	FMS_ACYCLIC_DB.OUTPUT_FILTER_ON	DEZ	1	1
8	DB1.DBW 28	FMS_ACYCLIC_DB.CUTOFF_FREQU_OUTPUT	DEZ	100	100
9	Slot 1				
10	DB1.DBB 8	FMS_ACYCLIC_DB.UNIT	DEZ	0	0
11	DB1.DBW 10	FMS_ACYCLIC_DB.OFFSET	DEZ	-1311	-1311
12	DB1.DBW 12	FMS_ACYCLIC_DB.GAIN	DEZ	902	902
13	DB1.DBD 14	FMS_ACYCLIC_DB.SYSTEM_FORCE	DEZ	L#1000000	L#1000000
14	DB1.DBB 18	FMS_ACYCLIC_DB.ACTUAL_VALUE_FILTER_ON	DEZ	1	1
15	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
16	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
17	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
18	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
19	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
20	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
21	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
22	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
23	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
24	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
25	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
26	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330
27	DB1.DBW 18	FMS_ACYCLIC_DB.CUTOFF_FREQU	DEZ	330	330

Operand	Symbol	Symbolkommentar	Anzeigeformat	Statuswert	Steuwert
1	OUTPUT_PARAMETERS EMGZ491				
2	Slot 0				
3	DB4.DBD 28	WRITE_PARAMETERS.TENSION_MAX_OUTPUT	DEZ	L#1000000	L#1000000
4	DB4.DBX 32.0	WRITE_PARAMETERS.WRITE_TENSION_MAX_OUTPUT	DEZ	false	false
5	DB4.DBB 33	WRITE_PARAMETERS.OUTPUT_FILTER_ON	DEZ	1	1
6	DB4.DBX 34.0	WRITE_PARAMETERS.WRITE_OUTPUT_FILTER_ON	DEZ	false	false
7	DB4.DBW 36	WRITE_PARAMETERS.CUTOFF_FREQU_OUTPUT	DEZ	100	100
8	DB4.DBX 38.0	WRITE_PARAMETERS.WRITE_CUTOFF_FREQU_OUTP	DEZ	false	false

Operand	Symbol	Symbolkommentar	Anzeigeformat	Statuswert	Steuwert
1	LOAD CELLS ADJUSTMENT EMGZ491				
2	Sensor A				
3	DB4.DBX 20.1	WRITE_PARAMETERS.OFFSET_ADJUST	DEZ	false	false
4	DB4.DBD 22	WRITE_PARAMETERS.CALIBRATION_WEIGHT	DEZ	L#1000000	L#1000000
5	DB4.DBX 26.0	WRITE_PARAMETERS.WRITE_CAL_WEIGHT	DEZ	false	false

Screenshot for the EMGZ492

1 Select the window EMGZ492_Read_Data and start the cyclic read process.

2 Click the send button to transfer changed data to the EMGZ492. Make previously sure the correct window is selected.

3 Cyclic force values and parameters will be live updated when they are changing.

4 Change a parameter as needed.

5 To write a parameter to the EMGZ492 the according flag must be set to **true**, and the send button **2** must be clicked. Make sure only one write flag is set at the time.

6 To set the offset the flag must be set to **true**, and the send button **2** must be clicked. Make sure only one write flag is set at the time.

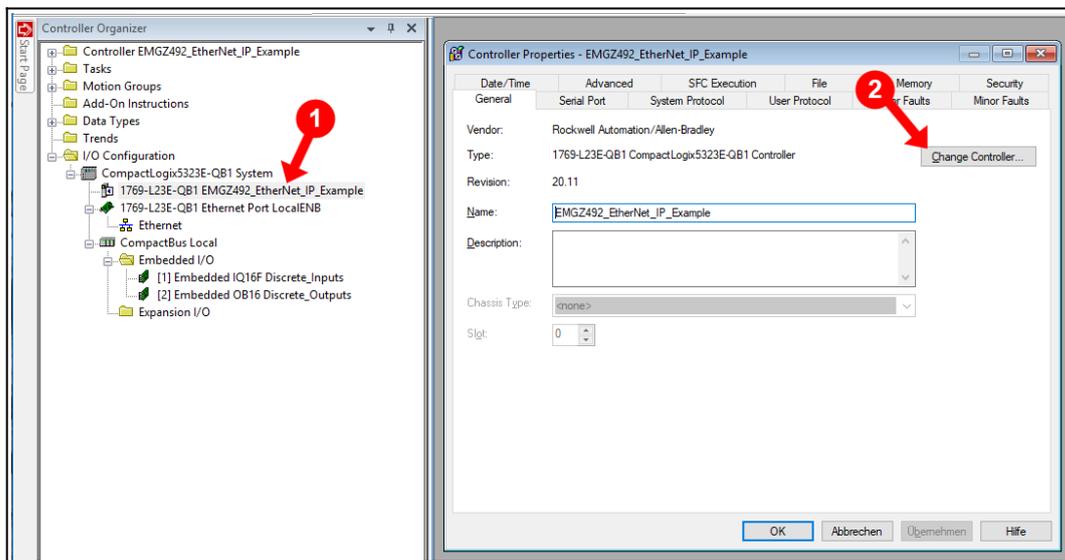
7 To calibrate the EMGZ492 enter the **weight** in mN, set the flag **true**, and click the send button **2**. Make sure only one write flag is set at the time.

Operand	Symbol	Symbolkommentar	Anzeigeformat	Statuswert	Steuwert
1	//INPUT PARAMETERS EMGZ492				
2	// Slot 1 - Channel A				
3	DB4.DBB 0	"WRITE_PARAM"WRITE_OFFSET_A	DEZ		0
4	DB4.DBX 1.0	"WRITE_PARAM"WRITE_OFFSET_B	DEZ		false
5	DB4.DBW 2	"WRITE_PARAM"WRITE_GAIN_A	DEZ		-223
6	DB4.DBX 4.0	"WRITE_PARAM"WRITE_GAIN_B	DEZ		false
7	DB4.DBW 6	"WRITE_PARAM"WRITE_NOMINAL_FORCE_A	DEZ		1000
8	DB4.DBX 8.0	"WRITE_PARAM"WRITE_NOMINAL_FORCE_B	DEZ		false
9	DB4.DBD 10	"WRITE_PARAM"WRITE_AV_FILTER_ON_A	DEZ		L#2000000
10	DB4.DBX 14.0	"WRITE_PARAM"WRITE_AV_FILTER_ON_B	DEZ		false
11	DB4.DBB 15	"WRITE_PARAM"WRITE_CUTOFF_FREQU_A	DEZ		1
12	DB4.DBX 16.0	"WRITE_PARAM"WRITE_CUTOFF_FREQU_B	DEZ		false
13	DB4.DBW 18	"WRITE_PARAM"WRITE_CUTOFF_FREQU_A	DEZ		10
14	DB4.DBX 20.0	"WRITE_PARAM"WRITE_CUTOFF_FREQU_B	DEZ		false

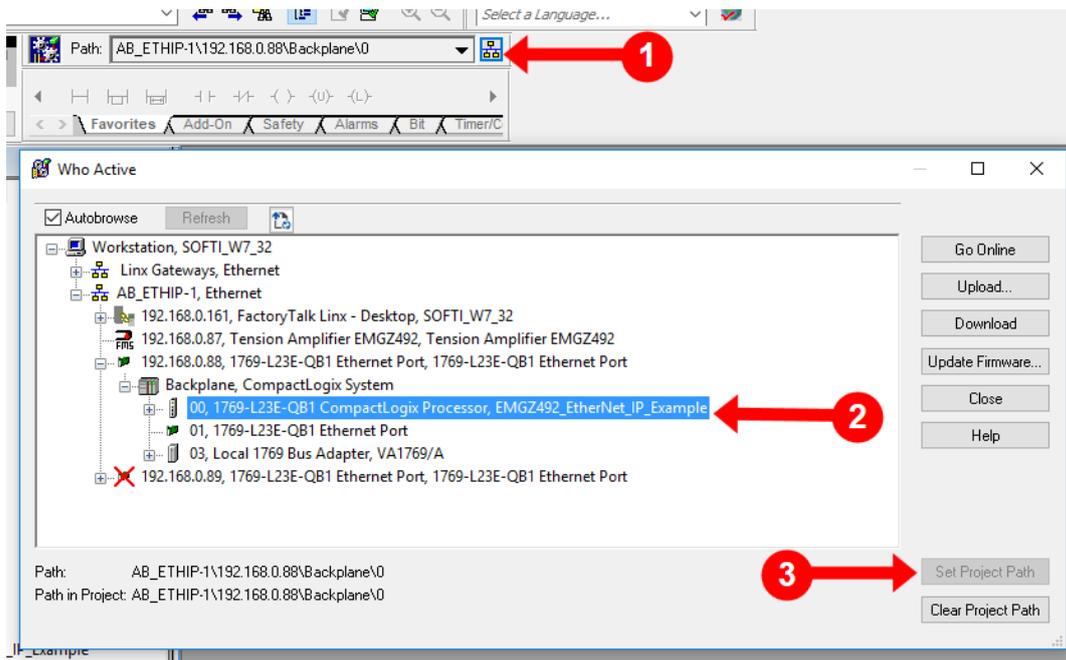
RSLogix 5000 EtherNet/IP

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.



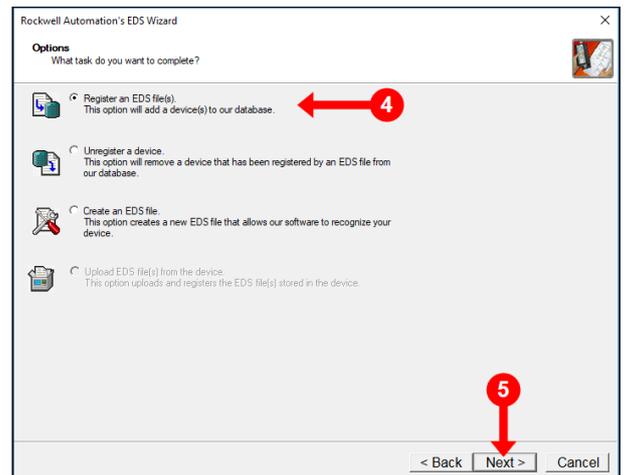
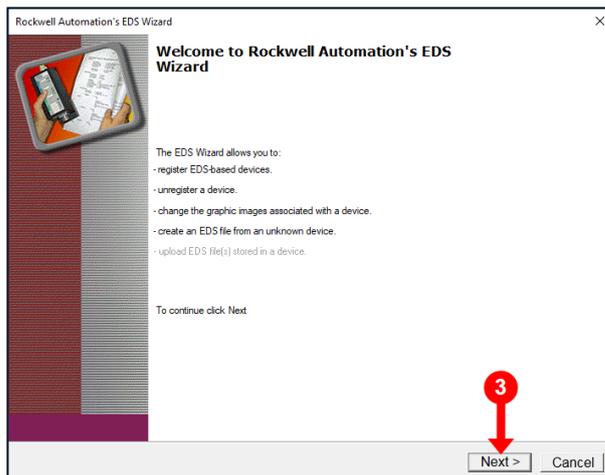
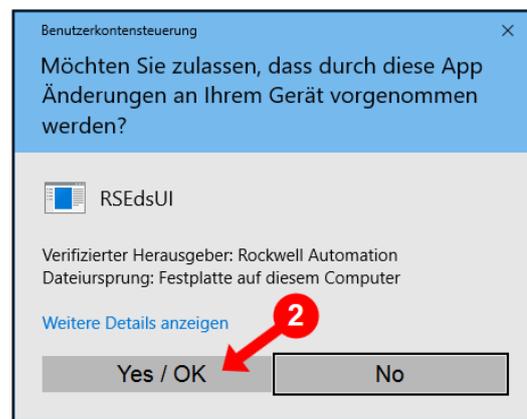
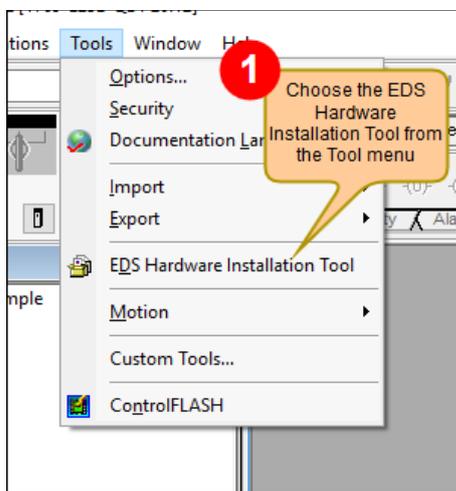
- Change the Path to the controller that you would like to use for the example program. If you have difficulty to change the path, use the Allen Bradley documentation for a further description.

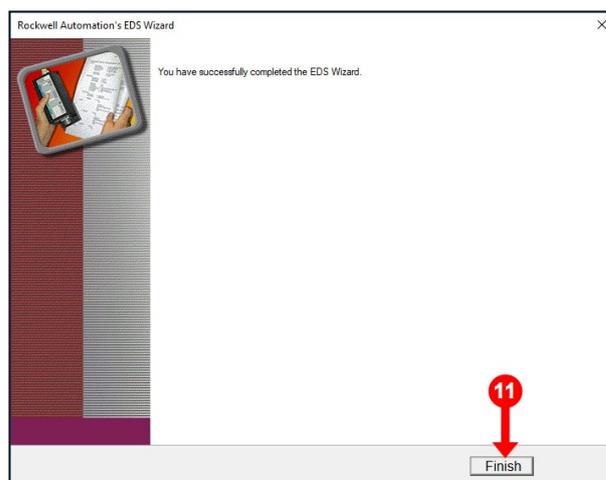
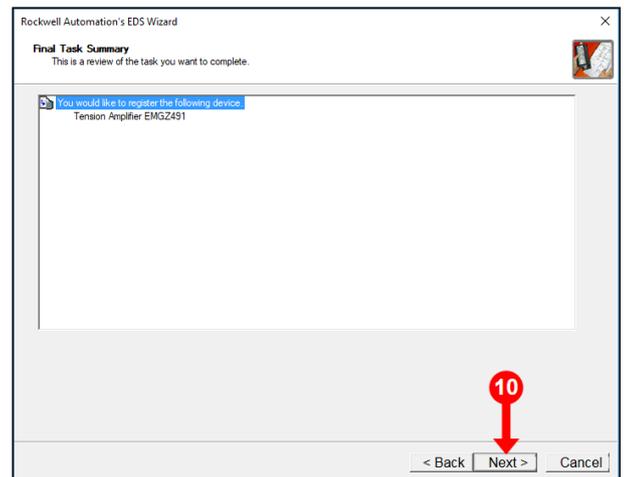
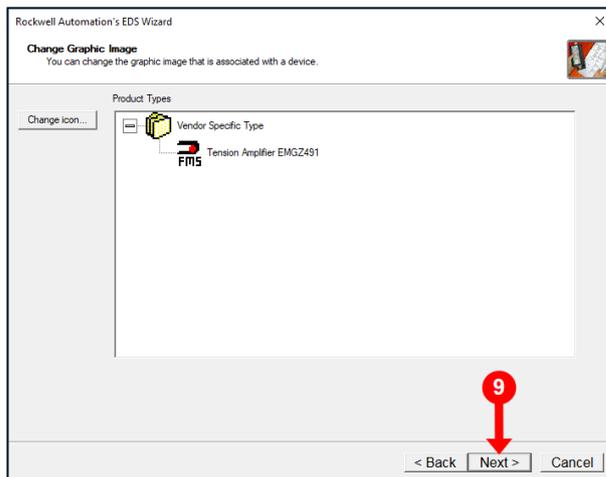
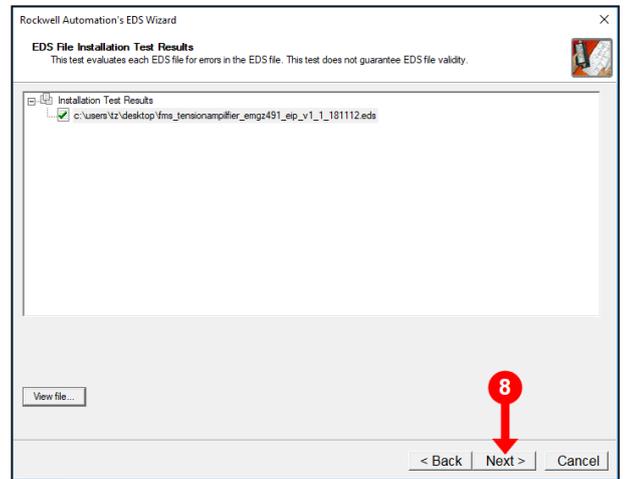
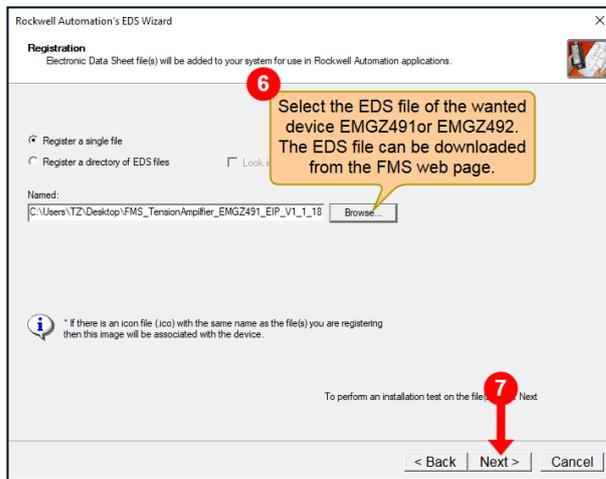


- To add the EMGZ491 or EMGZ492 to the project using the appropriate EDS file. Follow the steps on the below screenshots. After choosing the tool, there might appear a warning dialog to inform you about possible changes in the device configuration. Click on OK to accept changes. **2**

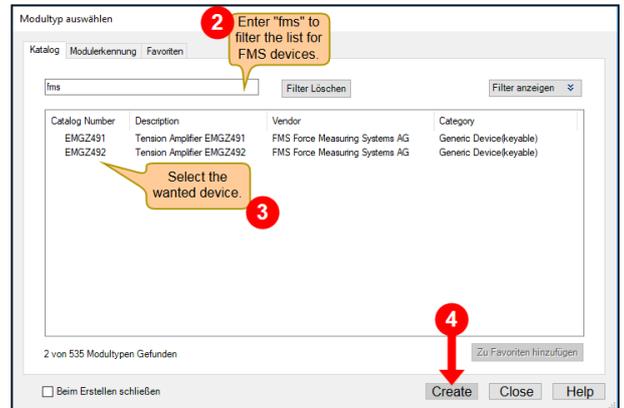
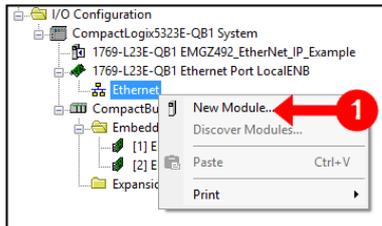


Depending on the software version the EMGZ49x is on, a different EDS version must be taken. EMGZ49x with software version up to 2.0.3, the EDS version 1.1 must be used. EMGZ49x with software version from 2.0.4 or higher, the EDS version 2.1 must be used. If both variants are in operation in your environment, 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.





- 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.

5 Enter a unique project device name, e.g. EMGZ492.

6 Enter a unique IP address.

7 Call the Module Definition dialog to configure the connection.

8 Choose I/O Feedback from the dropdown list.

9 Choose the correct EDS version if multiple EDS files are installed.

10 (Module Definition dialog OK button)

11 Confirm the warning message.

12 (New Module dialog OK button)

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.

1 Click on the dropdown list and choose "Go Online".

2 Every time a change has been made on the project, it must be downloaded to the PLC.

3 Confirm the download.

4

5 After a successful download, the controller goes online. The controller status must look like that.

- Open the Module Properties dialog.

1 Double click on the wanted FMS device.

2 Choose the parameter item.

3 Cyclic data are shown here.

4 To see the acyclic data scroll down. The acyclic data are the configuration parameter of the device.

ID	Name	Value	Units
9217	Actual Value A in Digits (ADC)	11479	
9218	Actual Value A in Newton (N)	1000598	
9219	Actual Value A in Pound (lb)	224943	
9220	Actual Value A in configured Unit	1000598	
9221	Actual Value B in Digits (ADC)	11433	
9222	Actual Value B in Newton (N)	1000598	
9223	Actual Value B in Pound (lb)	224943	
9224	Actual Value B in configured Unit	1000598	
9225	Actual Value A+B in configured unit	2001196	
9226	Actual Value A-B in configured unit	84	
9227	Actual Value (A+B)/2 in configured unit	1000640	
9228	Status	00000000	
10241	Unit	0	
10242	Offset - A	-5	

The values displayed here are read directly from the module. These values are not stored in the controller and are not sent to the module when a connection is established. Click Set to write updated values to the module.

Status: Running

Buttons: OK, Cancel, Apply, Help

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

Module Properties: LocalENB (EMGZ492 1.001)

Parameters

Group: <All Parameters>

ID	Name	Value	Units
10241	Unit		0
10242	Offset - A		-5
10243	Gain - A		1036
10244	System Force - A		1000000
10245	Low Pass Filter Actual Value Active - A		1
10246	Cutoff Frequency Low Pass Filter Actual Value - A		100
10247	Offset Adjust - A		
10248	Calibration - A		
10249	Offset - B		-19
10250	Gain - B		1039
10251	System Force - B		1000000
10252	Low Pass Filter Actual Value Active - B		1
10253	Cutoff Frequency Low Pass Filter Actual Value - B		100

Set

The values displayed here are read directly from the module. These values are not stored in the controller and are not sent to the module when a connection is established. Click Set to write updated values to the module.

Module Properties: LocalENB (EMGZ492 1.001)

Parameters

Group: <All Parameters>

ID	Name	Value	Units
10247	Offset Adjust - A		
10248	Calibration - A		
10249	Offset - B		-19
10250	Gain - B		1039
10251	System Force - B		1000000
10252	Low Pass Filter Actual Value Active - B		1
10253	Cutoff Frequency Low Pass Filter Actual Value - B		100
10254	Offset Adjust - B		
10255	Calibration - B		
10273	Output Value		3
10274	Scale Analog Output		1000000
10275	Low Pass Filter Analog Output Active		1
10276	Cutoff Frequency Low Pass Filter Analog Output		100

Insert Factory Defaults

Set

The values displayed here are read directly from the module. These values are not stored in the controller and are not sent to the module when a connection is established. Click Set to write updated values to the module.

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.

Message Configuration - msg_Adjust_Offset

Configuration | Communication | Tag

Message Type: CIP Generic

Service Type: Set Attribute Single

Service Code: 10 (Hex) Class: 87 (Hex) Attribute: 7 (Hex)

Source Element: write_value_to_Adjust

Source Length: 1 (Bytes)

Destination Element: New Tag...

Must be CIP Generic

Set Attribute Single
-> Service Code 0x10 Hex
Get Attribute Single
-> Service Code 0xE Hex

Attribute for Offset Adjust according to the EXCEL sheet Cyclic_Acyclic_Data_Definitions_FMS_EMGZ491_492_V110i6D (column S). For adjusting the offset of channel A, the attribute is it is 0x7 hex. For channel B, it is 0xE. Those attributes can also be looked up in the EDS.

Extract of the EDS file

```

404 Param10247 =
405 0, $ reserved, shall equal 0
406 6,"20 87 24 01 30 07", $ Link Path Size, Link Path
407 0x0000, $ Descriptor
408 0xC2, $ Data Type
409 1, $ Data Size in bytes
410 "Offset Adjust - A", $ name
411 "", $ units
412 "", $ help string
413 0,0x7F,0, $ min, max, default data values
414 ,,,, $ mult, div, base, offset scaling
415 ,,,, $ mult, div, base, offset links
416 ; $ decimal places
    
```

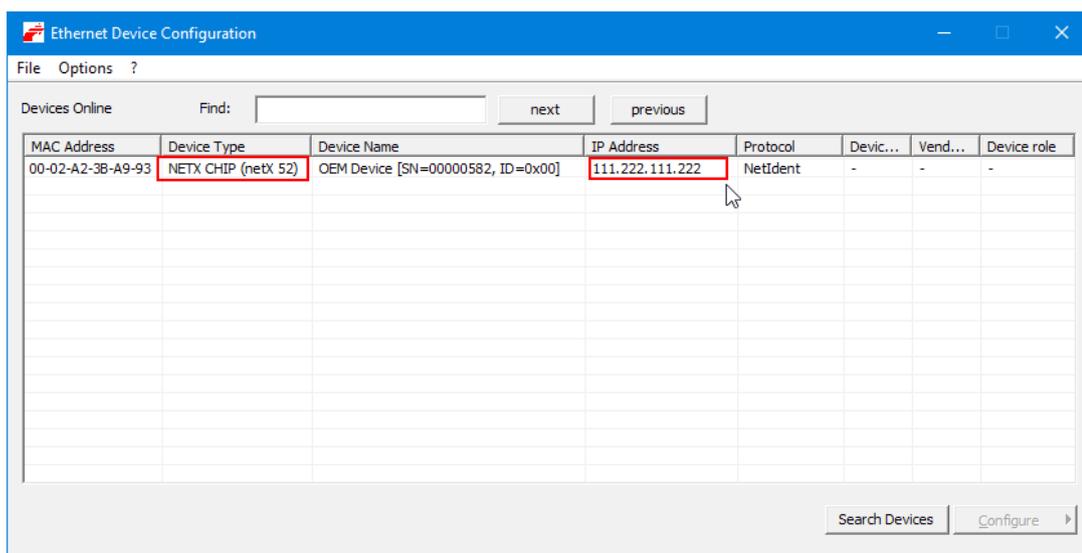
Find Out the Device IP

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.

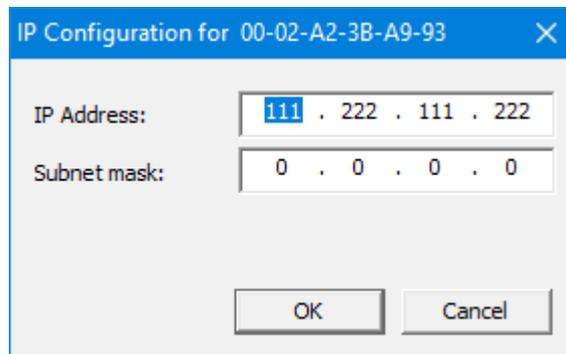
<https://www.fms-technology.com/en/downloadcenter/profinet>

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.

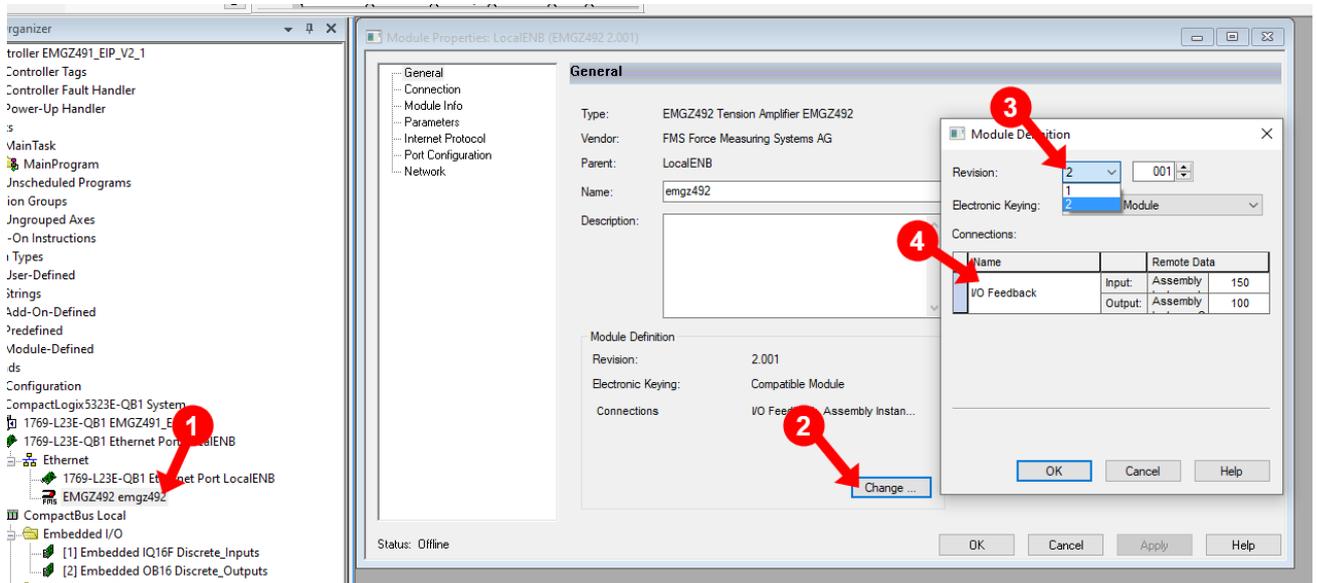
Identify the replacement scenario		
Version of the old device	Version of the new device	
	smaller or equal 2.0.3	equal or greater 2.0.4
smaller or equal 2.0.3	A	B
equal or greater 2.0.4	n/a	A

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.



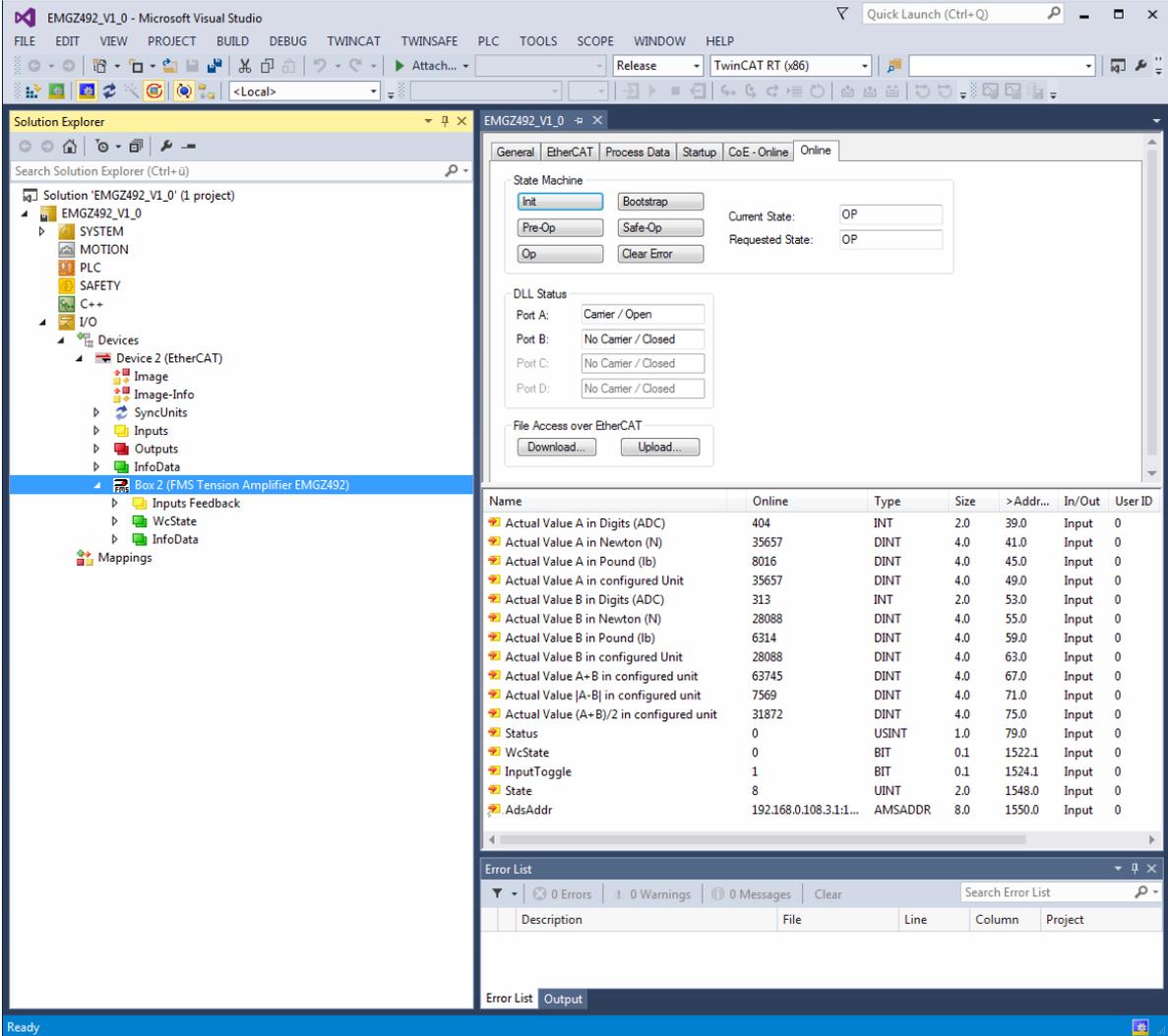
TwinCAT 3 - EtherCAT

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_ECATCH_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.

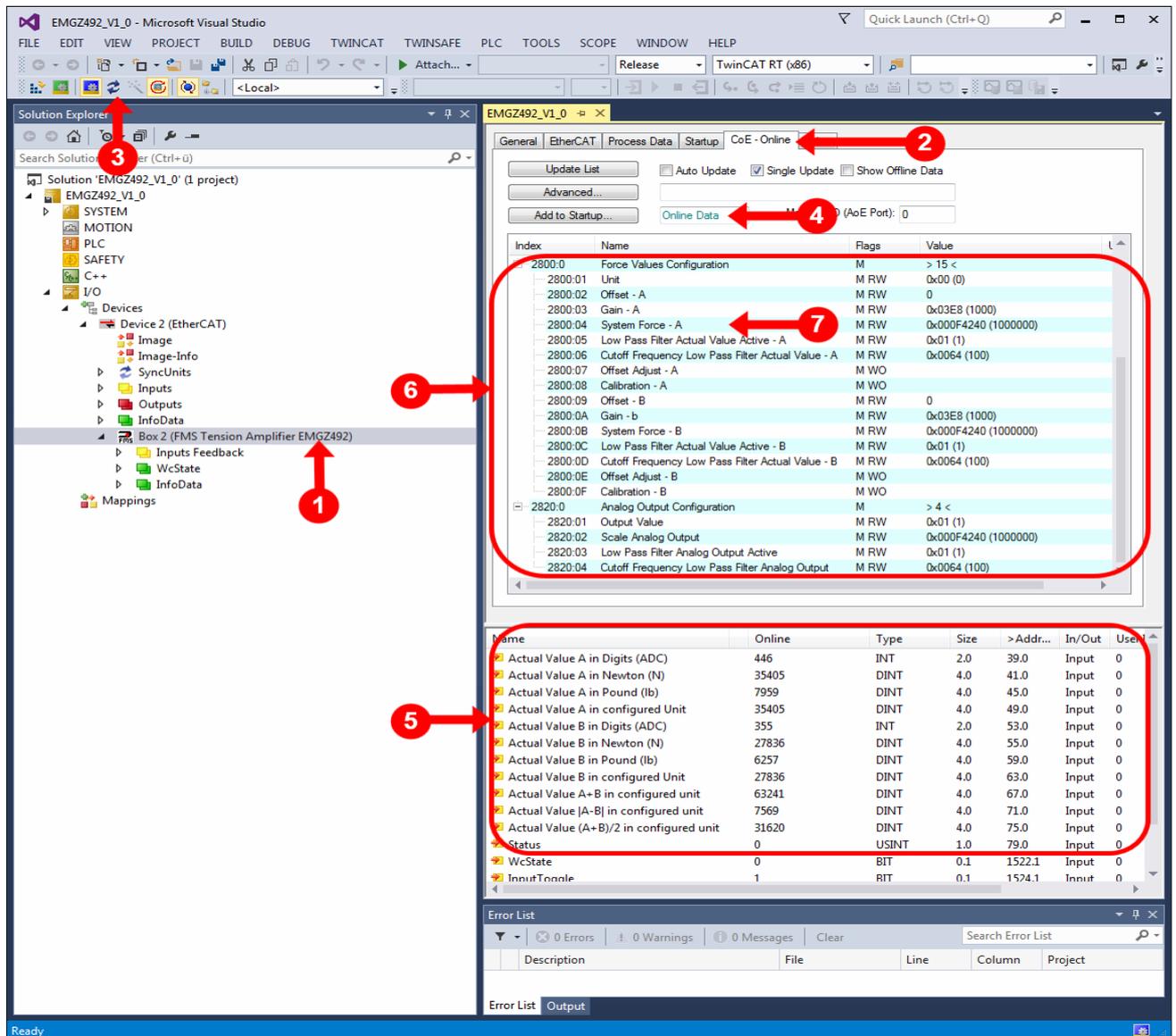


Name	Online	Type	Size	>Addr...	In/Out	User ID
Actual Value A in Digits (ADC)	404	INT	2.0	39.0	Input	0
Actual Value A in Newton (N)	35657	DINT	4.0	41.0	Input	0
Actual Value A in Pound (lb)	8016	DINT	4.0	45.0	Input	0
Actual Value A in configured Unit	35657	DINT	4.0	49.0	Input	0
Actual Value B in Digits (ADC)	313	INT	2.0	53.0	Input	0
Actual Value B in Newton (N)	28088	DINT	4.0	55.0	Input	0
Actual Value B in Pound (lb)	6314	DINT	4.0	59.0	Input	0
Actual Value B in configured Unit	28088	DINT	4.0	63.0	Input	0
Actual Value A+B in configured unit	63745	DINT	4.0	67.0	Input	0
Actual Value A-B in configured unit	7569	DINT	4.0	71.0	Input	0
Actual Value (A+B)/2 in configured unit	31872	DINT	4.0	75.0	Input	0
Status	0	USINT	1.0	79.0	Input	0
WcState	0	BIT	0.1	1522.1	Input	0
InputToggle	1	BIT	0.1	1524.1	Input	0
State	8	UINT	2.0	1548.0	Input	0
AdsAddr	192.168.0.108.3.1.1...	AMSADDR	8.0	1550.0	Input	0

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.



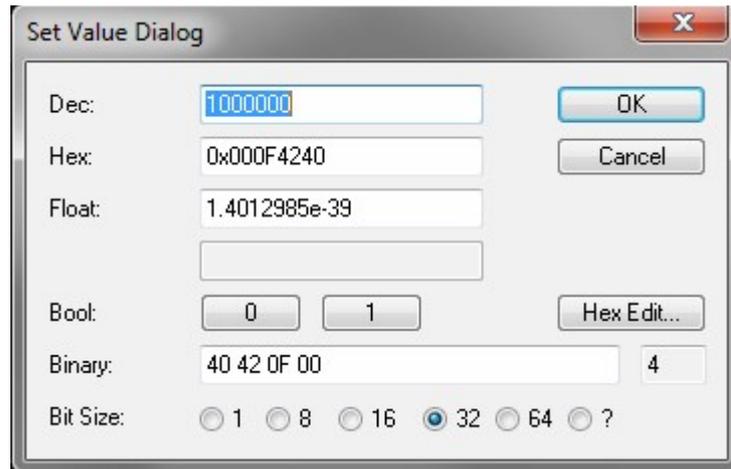
The screenshot shows the TwinCAT 3 interface in Microsoft Visual Studio. The Solution Explorer on the left displays the project structure, with 'Box 2 (FMS Tension Amplifier EMGZ492)' selected. The main window shows the 'CoE - Online' tab, which displays a table of data points. Red arrows and numbers 1-7 highlight key steps in the process of showing cycle data.

Index	Name	Flags	Value
2800:0	Force Values Configuration	M	> 15 <
2800:01	Unit	M RW	0x00 (0)
2800:02	Offset - A	M RW	0
2800:03	Gain - A	M RW	0x03E8 (1000)
2800:04	System Force - A	M RW	0x000F4240 (1000000)
2800:05	Low Pass Filter Actual Value Active - A	M RW	0x01 (1)
2800:06	Cutoff Frequency Low Pass Filter Actual Value - A	M RW	0x0064 (100)
2800:07	Offset Adjust - A	M WO	
2800:08	Calibration - A	M WO	
2800:09	Offset - B	M RW	0
2800:0A	Gain - b	M RW	0x03E8 (1000)
2800:0B	System Force - B	M RW	0x000F4240 (1000000)
2800:0C	Low Pass Filter Actual Value Active - B	M RW	0x01 (1)
2800:0D	Cutoff Frequency Low Pass Filter Actual Value - B	M RW	0x0064 (100)
2800:0E	Offset Adjust - B	M WO	
2800:0F	Calibration - B	M WO	
2820:0	Analog Output Configuration	M	> 4 <
2820:01	Output Value	M RW	0x01 (1)
2820:02	Scale Analog Output	M RW	0x000F4240 (1000000)
2820:03	Low Pass Filter Analog Output Active	M RW	0x01 (1)
2820:04	Cutoff Frequency Low Pass Filter Analog Output	M RW	0x0064 (100)

Name	Online	Type	Size	> Addr...	In/Out	Use
Actual Value A in Digits (ADC)	446	INT	2.0	39.0	Input	0
Actual Value A in Newton (N)	35405	DINT	4.0	41.0	Input	0
Actual Value A in Pound (lb)	7959	DINT	4.0	45.0	Input	0
Actual Value A in configured Unit	35405	DINT	4.0	49.0	Input	0
Actual Value B in Digits (ADC)	355	INT	2.0	53.0	Input	0
Actual Value B in Newton (N)	27836	DINT	4.0	55.0	Input	0
Actual Value B in Pound (lb)	6257	DINT	4.0	59.0	Input	0
Actual Value B in configured Unit	27836	DINT	4.0	63.0	Input	0
Actual Value A+B in configured unit	63241	DINT	4.0	67.0	Input	0
Actual Value [A-B] in configured unit	7569	DINT	4.0	71.0	Input	0
Actual Value (A+B)/2 in configured unit	31620	DINT	4.0	75.0	Input	0
Status	0	USINT	1.0	79.0	Input	0
WcState	0	BIT	0.1	1522.1	Input	0
InputTone	1	RIT	0.1	1574.1	Input	0

Change parameters

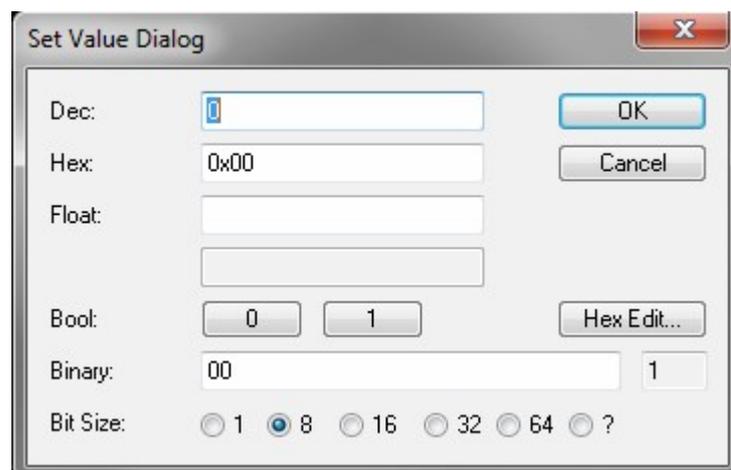
13. The parameters can be changed here. Open the tree index 2800 and 2820. After that, all parameters will be visible.
14. As an example double click on System Force. That opens the window Set Value Dialog. Enter a new value in the entry field Dec, e.g., 2000000 (that is interpreted as 2000.000N) and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

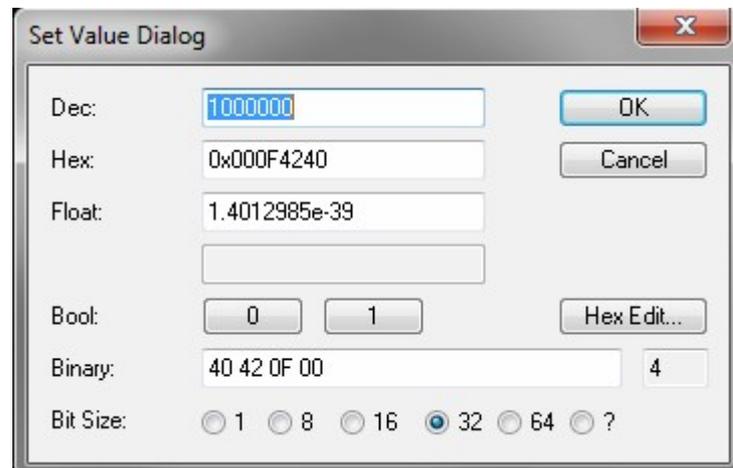
Example to adjust the offset

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.