RedySmart **& Redy**Industrial TwinCAT 3 & EtherCAT
Tutorial Guide

Version: V1_EN1.4

Global Support Locations: We are here to help!

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Important Customer Notice- Oxygen Service
Sierra Instruments, Inc. is not liable for any damage or personal injury, whatsoever, resulting from the use of Sierra Instruments standard mass flow meters for oxygen gas. You are responsible for determining if this mass flow meter is appropriate for your oxygen application. You are responsible for cleaning the mass flow meter to the degree required for your oxygen flow application.

TRADEMARKS
RedySmart®, RedyIndustrial™, and Redy® are trademark of Sierra Instruments. Other product and company names listed in this manual are trademarks or trade names of their respective manufacturers.

Warnings and Cautions

"Warning," "Caution," and "Note" statements are used throughout this manual to draw your attention to important information.

Symbol Key		
Symbol	**Symbol Meaning**	**Description**
	Warning	"Warning" statements appear with information that is important to protect people and equipment from damage. Pay very close attention to all warnings that apply to your application. **Failure to comply with these instructions may damage the meter and cause personal injury.**
	Caution	"Caution" indicates that failure to comply with stated instructions **may result in damage or faulty operation of the meter.**
	Note	"Note" indicates that ignoring the relevant requirements or precautions may result in flow meter damage or malfunction.

Warning! Do not remove the black cover- it prevents damage to the system.

Warning! Removing the cover voids the warranty.

Warning! There are no serviceable parts under the cover.

Warning! Repairs must be performed by qualified Sierra personnel.

Warning! Connect the device to a protective ground conductor (earth).

Warning! The device must be grounded. The supply voltage is 18-30 VDC (typically ±50 mV).

Warning! Due to our policy of ongoing product development, we reserve the right to change the information in this manual without notice.

TwinCAT 3 & EtherCAT Sierra Redy Devices Tutorial

This document is for RedySmart and RedyIndustrial devices.

Receipt of System Components

When receiving a Sierra mass flow meter, carefully check the outside packing carton for damage incurred in shipment. If the carton is damaged, notify the local carrier and submit a report to the factory or distributor. Remove the packing slip and check that all ordered components are present. Make sure any spare parts or accessories are not discarded with the packing material. Do not return any equipment to the factory without first contacting Sierra Customer Service.

Technical Assistance

If you encounter a problem with your flow meter, review the configuration information for each step of the installation, operation, and setup procedures. Verify that your settings and adjustments are consistent with factory recommendations. Installation and troubleshooting information can be found in this manual. See Chapter 1 and 3 for installation and Chapter 7 for troubleshooting.

If the problem persists after following the troubleshooting procedures outlined in the RedySmart product manual, contact Sierra Instruments by fax or by E-mail (see inside front cover). For urgent phone support you may call (800) 866-0200 or (831) 373-0200 between 8:00 a.m. and 5:00 p.m. PST. In Europe, contact Sierra Instruments Europe at +31 20 6145810. In the Asia-Pacific region, contact Sierra Instruments Asia at +86-21-58798521. When contacting Technical Support, make sure to include this information:

- The flow range, serial number, and Sierra order number (all marked on the meter nameplate)
- The software version (visible at start up)
- The problem you are encountering, and any corrective action taken
- Application information (gas, pressure, temperature and piping configuration)

Recycling

Note the existing regulations of your country.
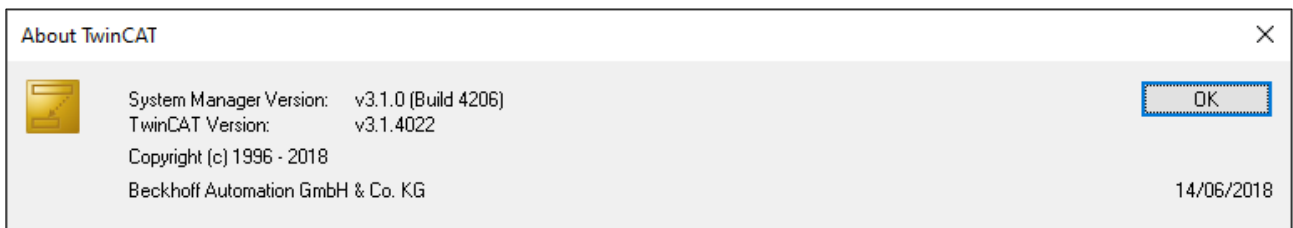
Table of Contents

TwinCAT 3 EtherCAT Tutorial

This tutorial will describe how a Sierra Redy EtherCAT device can be added to a TwinCAT soft PLC. The tutorial will start from scratch, it does not describe how to install TwinCAT.

Remark: The created project in this tutorial can be downloaded from Sierra's Documents and Download page under file name: *Project Files EtherCAT v1.01 to open in TwinCAT - Tutorial v1.4.ZIP*

The following version of TwinCAT is used in this tutorial:

About TwinCAT	✕
System Manager Version: v3.1.0 (Build 4206) TwinCAT Version: v3.1.4022 Copyright (c) 1996 - 2018 Beckhoff Automation GmbH & Co. KG	OK 14/06/2018

Add ESI to TwinCAT

In order to be able to use the Sierra Redy device with TwinCAT, it is essential that the ESI is stored. The ESI file needs to be stored in the following location on the target PC:

..\TwinCAT\3.1\Config\Io\EtherCAT\
The ESI has the following file name: ESI_Voegtlin_Instruments_0B02_Red-y_V1.02.xml

⚠	Check the website for possible updates of the ESI file.
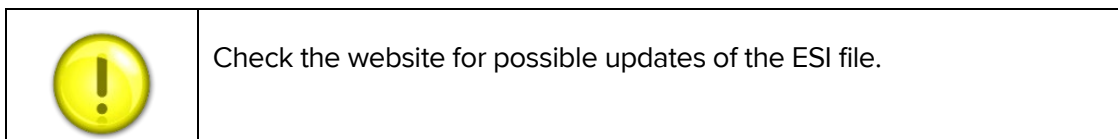
Create Project

To create a new project, start TwinCAT and from the file menu start a new project.

In the dialog box give the project a name then select the location where to store the project and press OK.
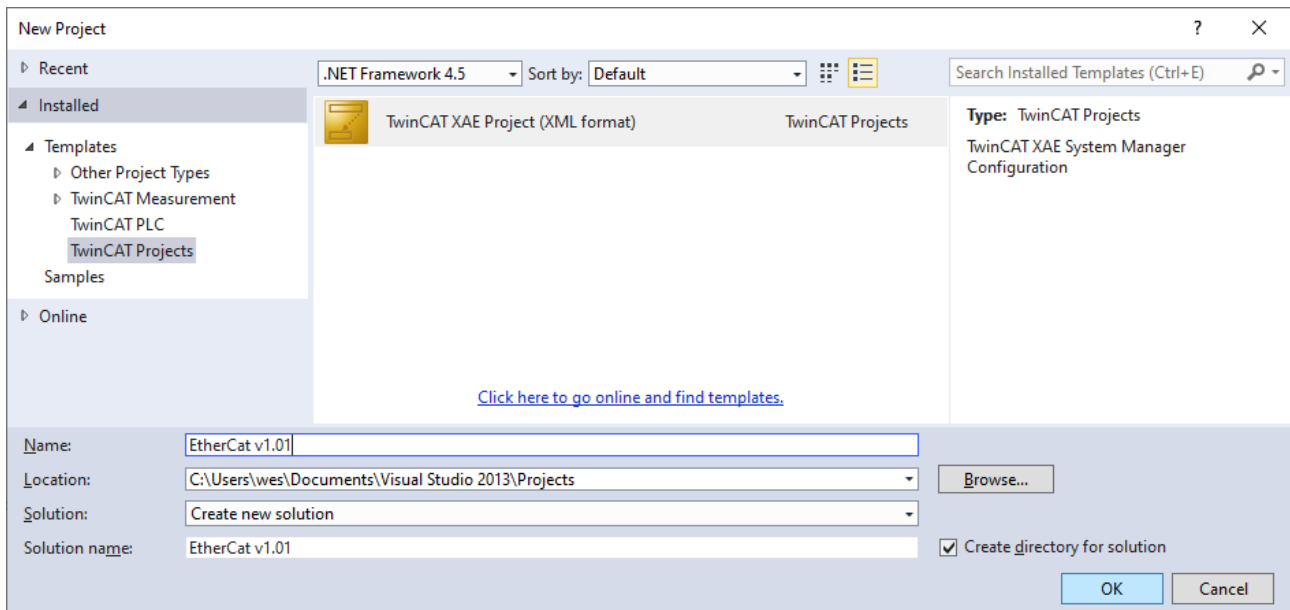
In the solution explorer (left side), only SYSTEM, PLC and I/O will be used. The other items can be switched off through the right mouse button context menu.
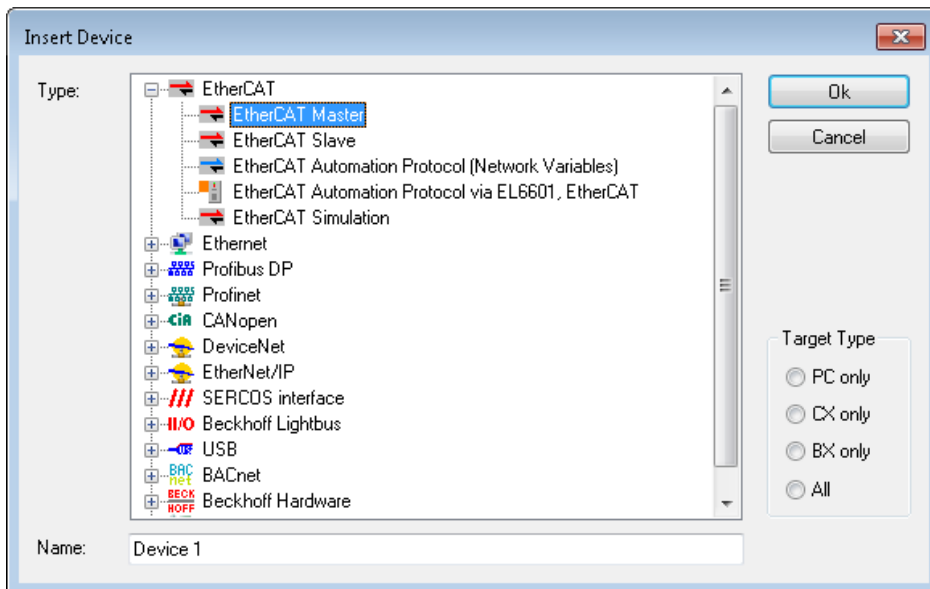

.
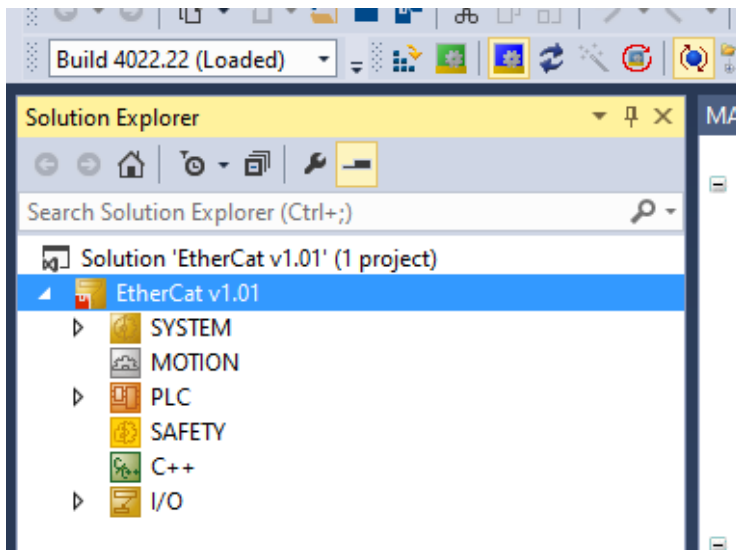
	In this tutorial MOTION, SAFETY, and C++ will be hidden.

Add EtherCAT server

To add a EtherCAT server, expand the I/O item and right click on the devices item to add a new item.
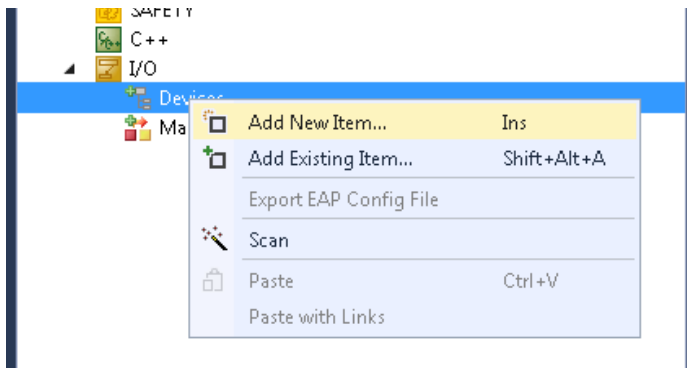
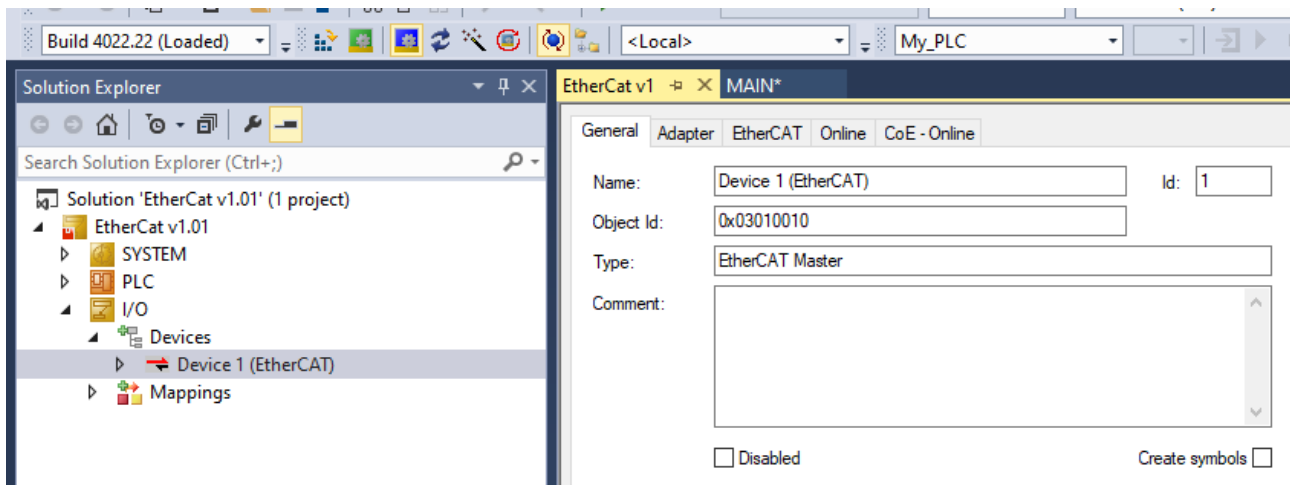From the list which is presented, go to the EtherCAT list and select the EtherCAT Master.
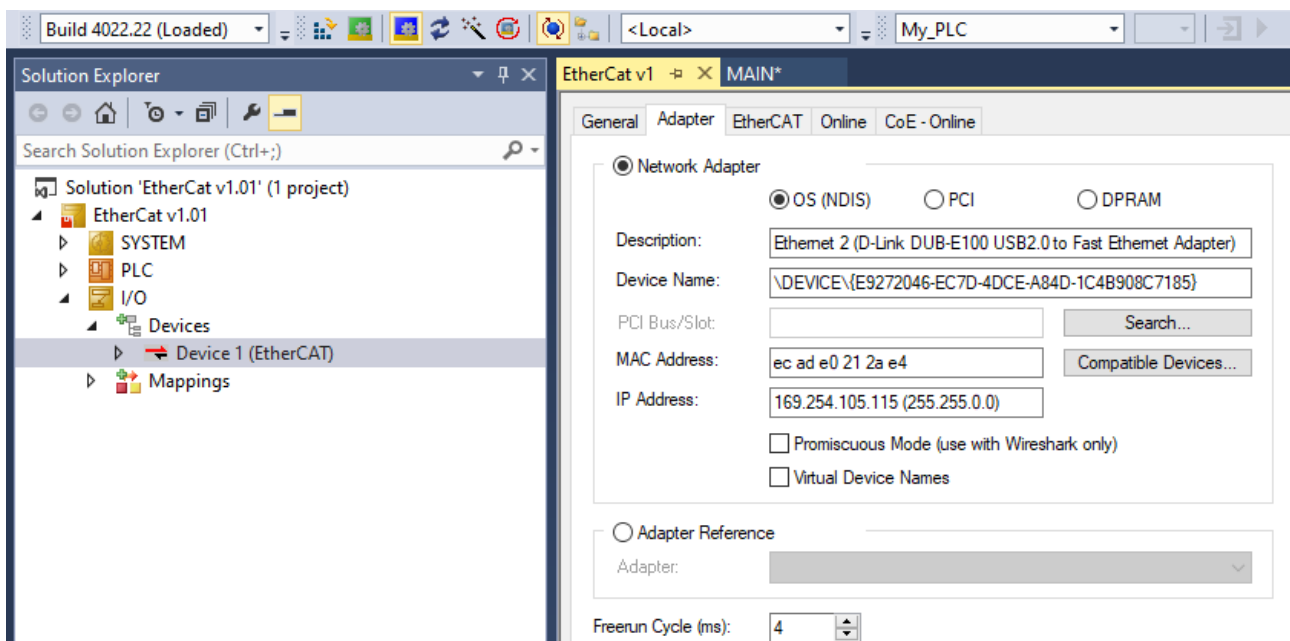

Add Ethernet Port

The EtherCAT controller needs an active Ethernet port in order to work. In this tutorial, the USB Ethernet dongle, DUB-E100 from D-Link, will be used as main adapter for TwinCAT.

1. Double click on the controller to open the properties.

2. Go to the "Adapter" tab. Here a suitable Ethernet adapter can be selected.

3. If no adapter is selected, click on the "Compatible Devices" button to get an overview of all available adapters.
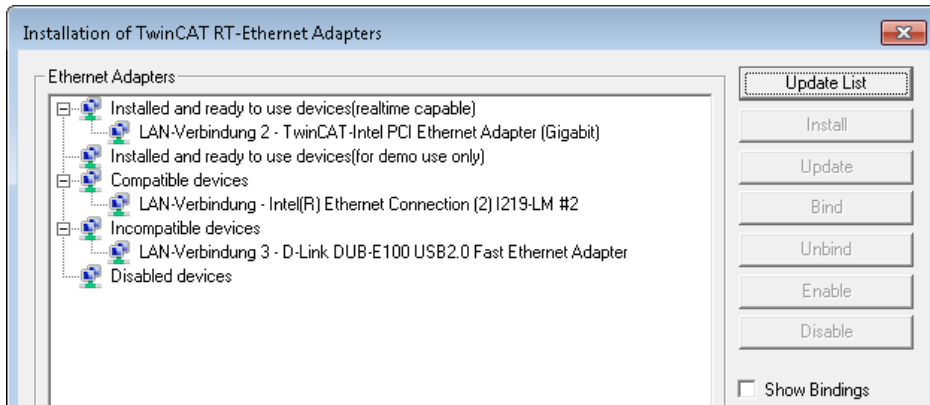
Here an adapter can be selected. Click on the adapter and then click on the "Install" button to prepare the adapter.
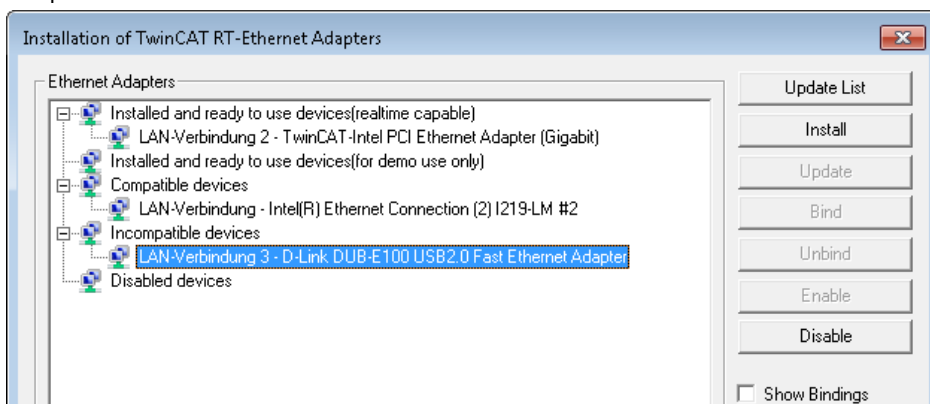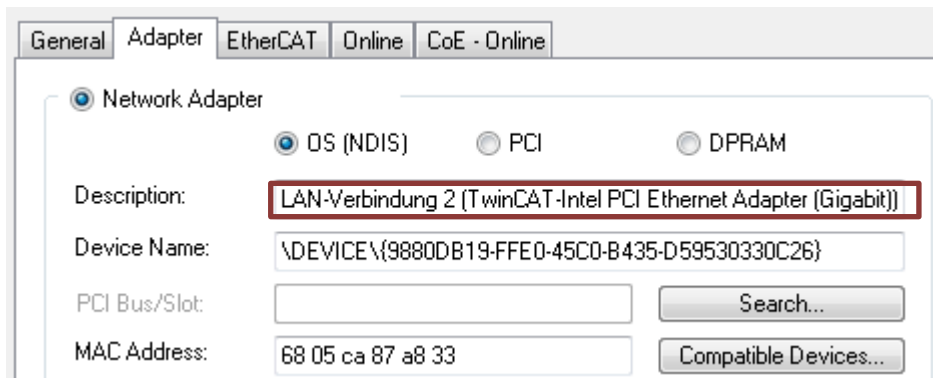

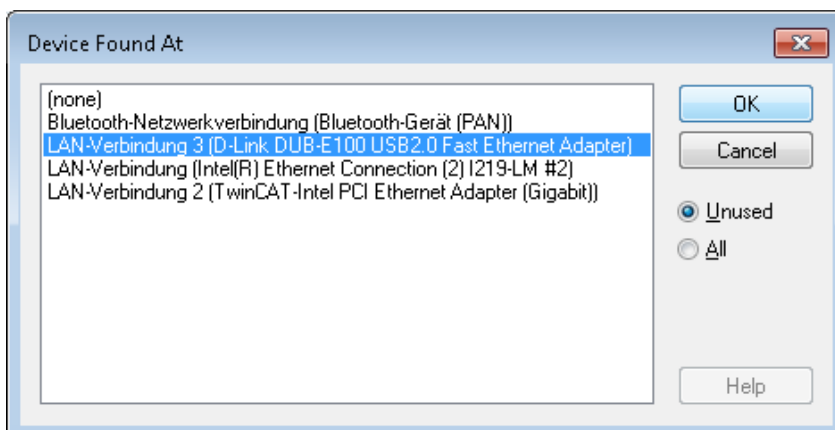4. A pop-up may appear asking to install the Beckhoff driver. Press "Install" when ok.
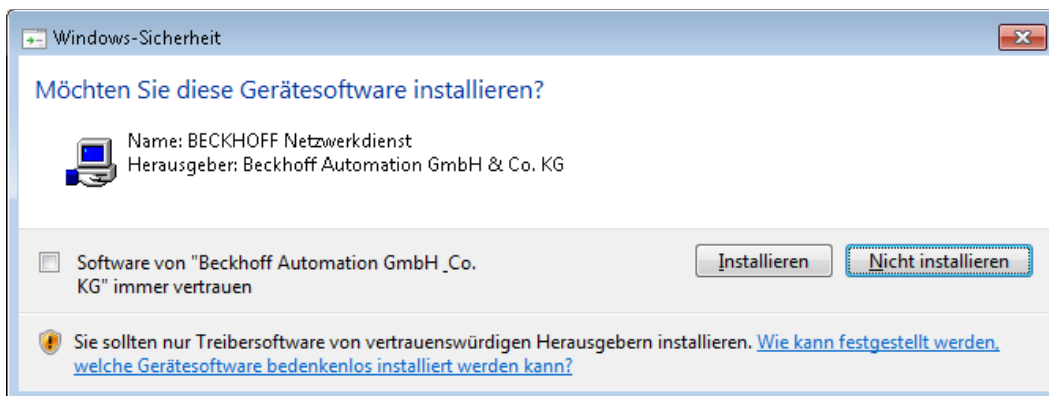
5. After the installation the list should show all the installed adapters.
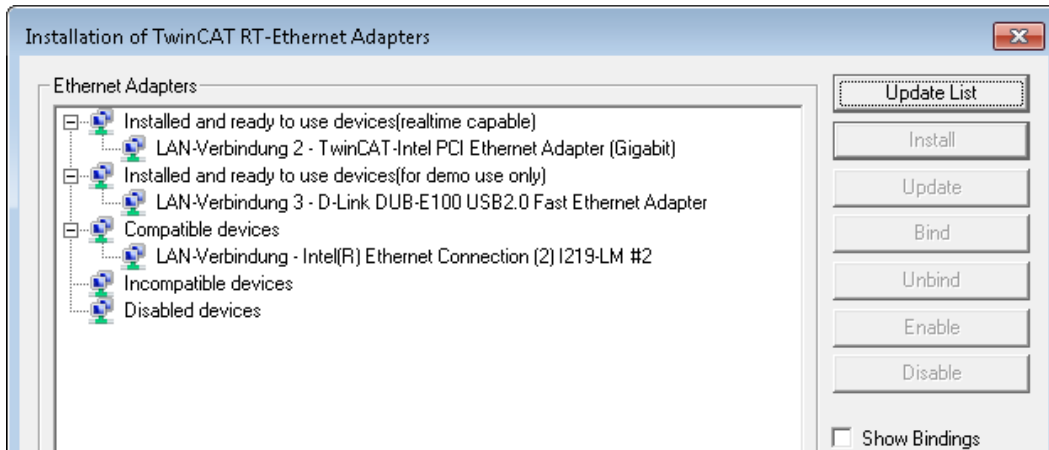
6. Close the window. Check if the desired Ethernet adapter is shown under the description.

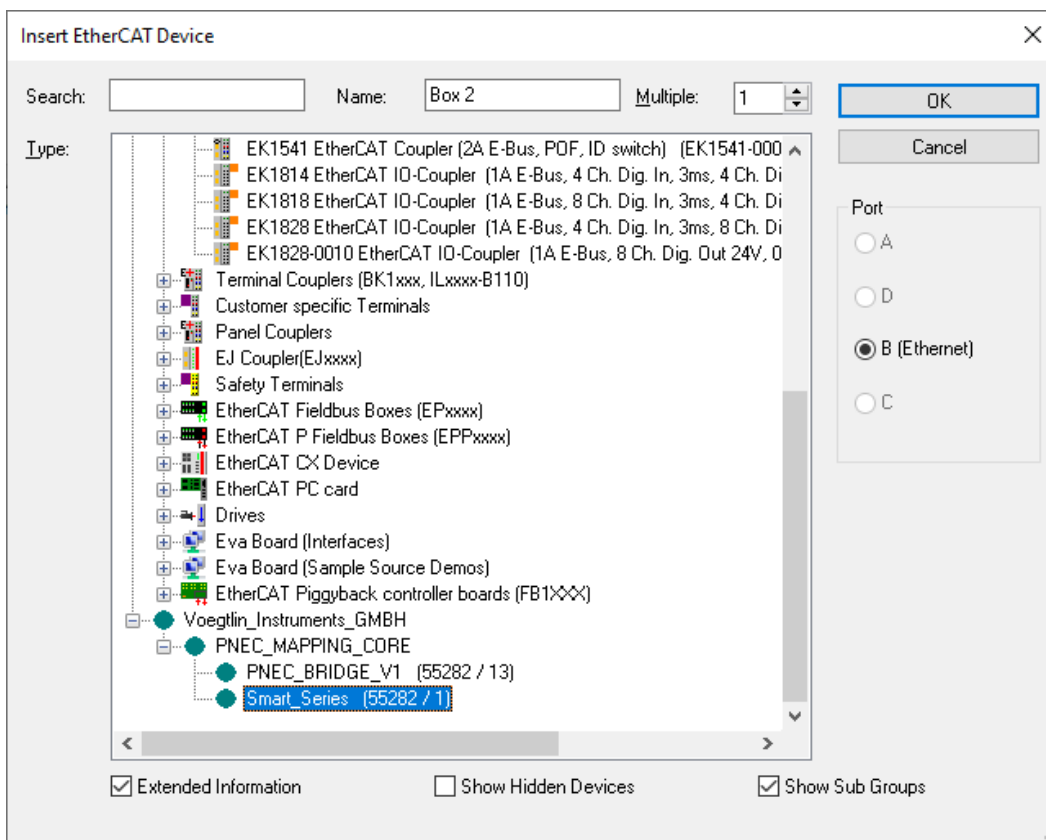7. If the desired Ethernet adapter is not showing, press the "Search" button and select the desired adapter:

Add Sierra Redy Device

1. To add a Sierra Redy device, right click on the EtherCAT Controller and from the context menu and select "New Item".
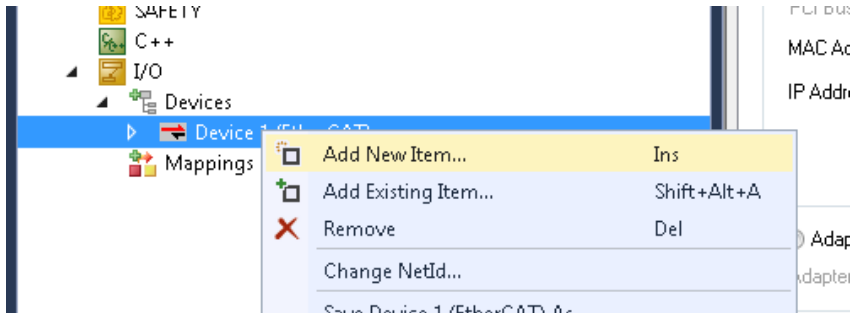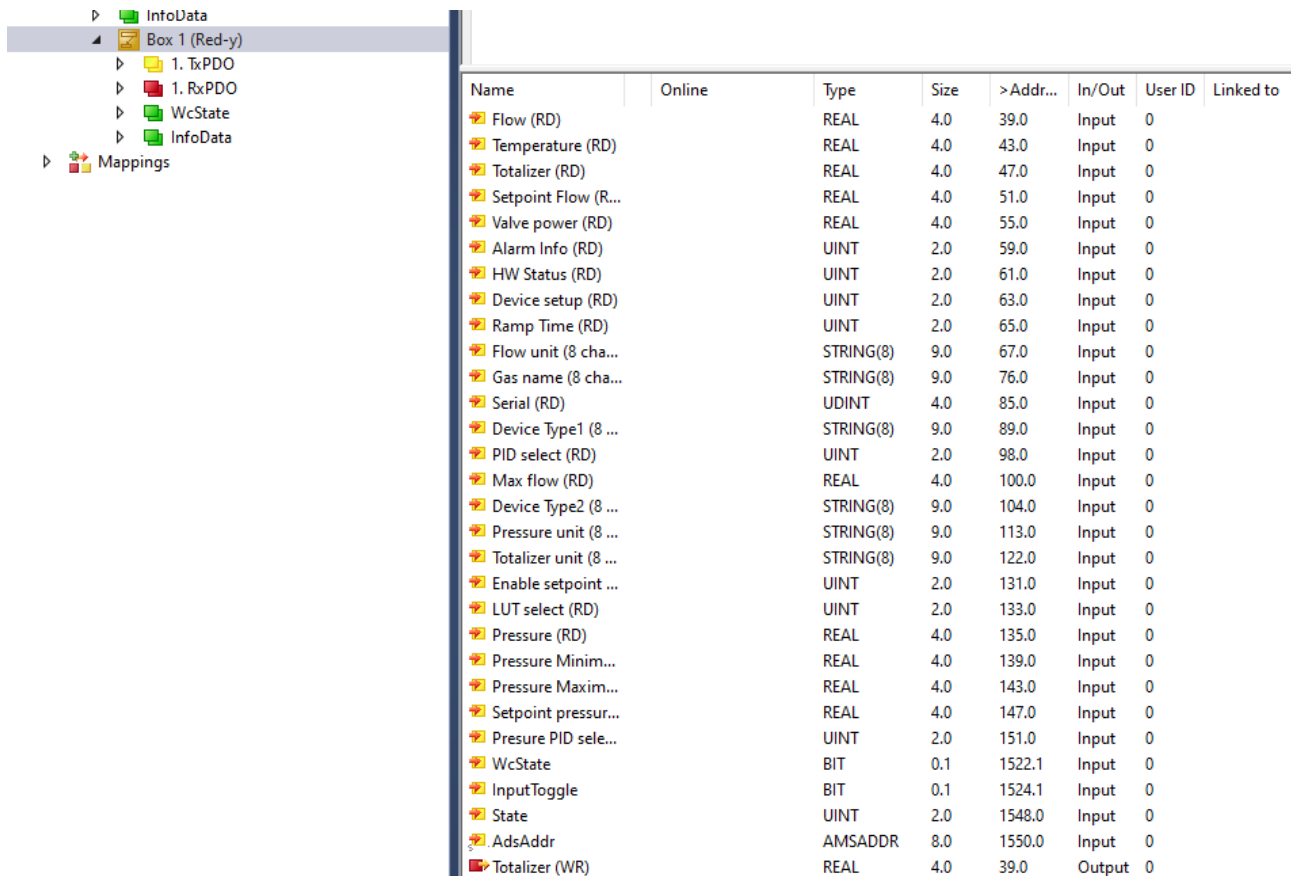

2. Find the Sierra Redy device in the list and select it:

In this example the following ESI file is used:

ESI_Voegtlin_Instruments_0B02_Red-y_V1.01.xml

3. Double click on "Box1 (PNEC_BRIDGE) to get an overview of all the available registers.

| Name	Online	Type	Size	>Addr...	In/Out	User ID	Linked to
Flow (RD)		REAL	4.0	39.0	Input	0	
Temperature (RD)		REAL	4.0	43.0	Input	0	
Totalizer (RD)		REAL	4.0	47.0	Input	0	
Setpoint Flow (R...		REAL	4.0	51.0	Input	0	
Valve power (RD)		REAL	4.0	55.0	Input	0	
Alarm Info (RD)		UINT	2.0	59.0	Input	0	
HW Status (RD)		UINT	2.0	61.0	Input	0	
Device setup (RD)		UINT	2.0	63.0	Input	0	
Ramp Time (RD)		UINT	2.0	65.0	Input	0	
Flow unit (8 cha...		STRING(8)	9.0	67.0	Input	0	
Gas name (8 cha...		STRING(8)	9.0	76.0	Input	0	
Serial (RD)		UDINT	4.0	85.0	Input	0	
Device Type1 (8 ...		STRING(8)	9.0	89.0	Input	0	
PID select (RD)		UINT	2.0	98.0	Input	0	
Max flow (RD)		REAL	4.0	100.0	Input	0	
Device Type2 (8 ...		STRING(8)	9.0	104.0	Input	0	
Pressure unit (8 ...		STRING(8)	9.0	113.0	Input	0	
Totalizer unit (8 ...		STRING(8)	9.0	122.0	Input	0	
Enable setpoint ...		UINT	2.0	131.0	Input	0	
LUT select (RD)		UINT	2.0	133.0	Input	0	
Pressure (RD)		REAL	4.0	135.0	Input	0	
Pressure Minim...		REAL	4.0	139.0	Input	0	
Pressure Maxim...		REAL	4.0	143.0	Input	0	
Setpoint pressur...		REAL	4.0	147.0	Input	0	
Presure PID sele...		UINT	2.0	151.0	Input	0	
WcState		BIT	0.1	1522.1	Input	0	
InputToggle		BIT	0.1	1524.1	Input	0	
State		UINT	2.0	1548.0	Input	0	
AdsAddr		AMSADDR	8.0	1550.0	Input	0	
Totalizer (WR)		REAL	4.0	39.0	Output	0	

4. Save the project.

Starting the PLC

Activate the created configuration by pressing the "Activate Configuration" button:

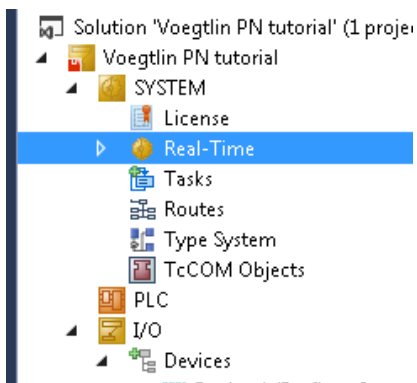A window will pop-up to confirm the action, proceed:
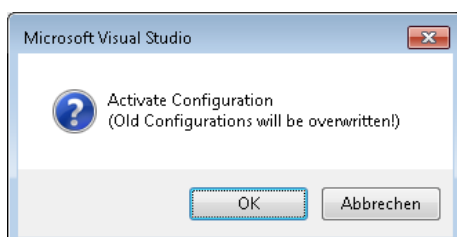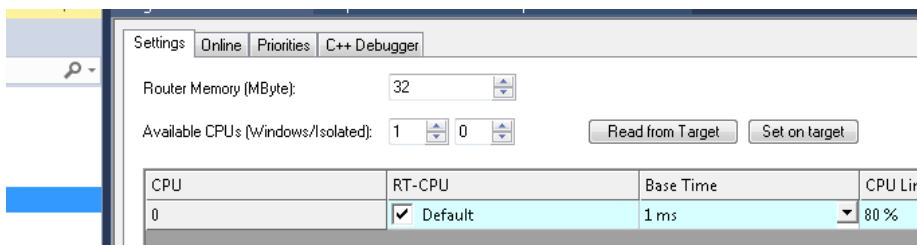
It is possible to receive the following error:
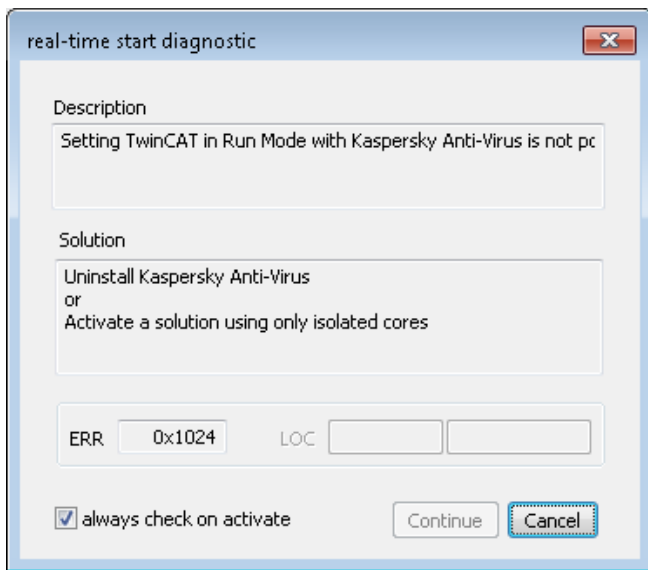
To solve this problem either uninstall the virus checker or assign a core to the PLC.

Assign Core

1. Expand the SYSTEM item and double click on the "Real Time" item.

2. In the new window, press the "Read from Target" button to get the current configuration.

The actual core setup will be shown. On the machine where the tutorial runs, one core is assigned to the PLC.

The numbers of cores can be set by pressing the "Set on Target" button.

3. Assign the PLC to the isolated core by setting the check box (uncheck the default core).

4. Activate the created configuration again. A new pop-up will appear informing that a sync master is needed. This can be ignored (for now).
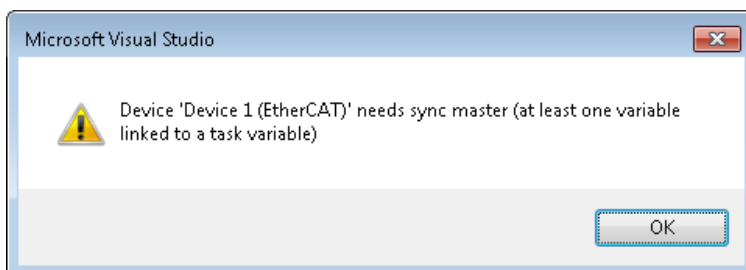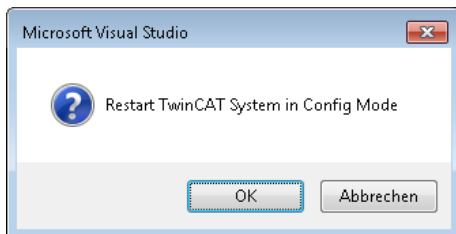
5. Press "OK"
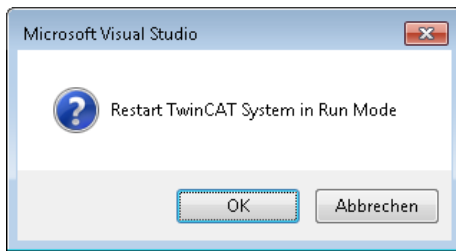
6. Press "OK." The PLC is running now which can be seen by the TwinCAT System indicator turning green:

7. At this stage it might be that the Device isn't online because the TwinCAT I/O system has not been linked to another device that can drive the I/O. See appendix A for a solution.

To view data from the device when it is not online, switched to "Config mode". Press the blue button right next to the TwinCAT System indicator.

A pop-up window appears asking to confirm the action, confirm.

Press "OK"
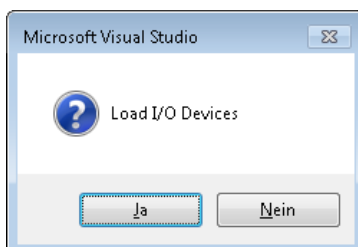
Press "Yes"

To see live data, double click on "Box 1 (Red-y-for-gasflow)":

Name	Online	Type	Size	>Addr...	In/Out	User ID
Flow (RD)	0.0031449015	REAL	4.0	39.0	Input	0
Temperature (RD)	24.414848	REAL	4.0	43.0	Input	0
Totalizer (RD)	95.803459	REAL	4.0	47.0	Input	0
Setpoint Flow (RD)	0.0	REAL	4.0	51.0	Input	0
Valve power (RD)	0.0	REAL	4.0	55.0	Input	0
Alarm Info (RD)	0	UINT	2.0	59.0	Input	0
HW Status (RD)	0	UINT	2.0	61.0	Input	0
Device setup (RD)	5	UINT	2.0	63.0	Input	0
Ramp Time (RD)	0	UINT	2.0	65.0	Input	0
Flow unit (8 characters) (RD)		STRING(8)	9.0	67.0	Input	0
Gas name (8 characters) (RD)		STRING(8)	9.0	76.0	Input	0
Serial (RD)	163194	UDINT	4.0	85.0	Input	0
Device Type1 (8 characters) (RD)		STRING(8)	9.0	89.0	Input	0
PID select (RD)	0	UINT	2.0	98.0	Input	0
Max flow (RD)	60.0	REAL	4.0	100.0	Input	0
Device Type2 (8 characters) (RD)		STRING(8)	9.0	104.0	Input	0
Pressure unit (8 characters) (RD)		STRING(8)	9.0	113.0	Input	0
Totalizer unit (8 characters) (RD)		STRING(8)	9.0	122.0	Input	0
Enable setpoint storage (RD)	0	UINT	2.0	131.0	Input	0
LUT select (RD)	2	UINT	2.0	133.0	Input	0
Pressure (RD)	0.0	REAL	4.0	135.0	Input	0
Pressure Minimum(RD)	0.0	REAL	4.0	139.0	Input	0
Pressure Maximum(RD)	6.0	REAL	4.0	143.0	Input	0
Setpoint pressure (RD)	0.0	REAL	4.0	147.0	Input	0
Presure PID select (RD)	2	UINT	2.0	151.0	Input	0

Writing Data

At power-up the output PDO's are disabled. This means that any changes to the output PDO will not be executed by the Smart. In order to enable writing to the Smart, it is necessary to write PDO register "Write Select (WR)". Each bit in this register corresponds to a specific register.

The table below gives an overview.

Bit	Selected output PDO register
0	Totalizer
1	Set point Flow
2	Valve Power
3	Device Setup
4	Ramp Time
5	PID Select
6	Factory Reset
7	HW Error Reset
8	Enable SP Storage
9	LUT Select
10	Set Point Pressure
11	Pressure PID select
12	Soft Reset

Once a bit is set it will remain set until cleared again. The bits could be set during start-up of the program.
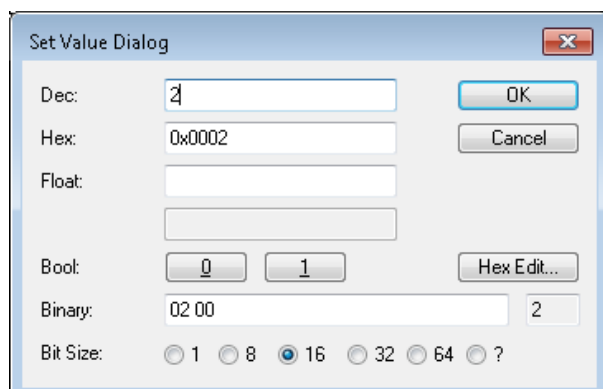
Examples

Writing a Set Point

To write a set point, bit 1 in the "Write Select (WR)" needs to be set. In the middle screen, right click on the red "Write Select (WR)" register and select "Online write."
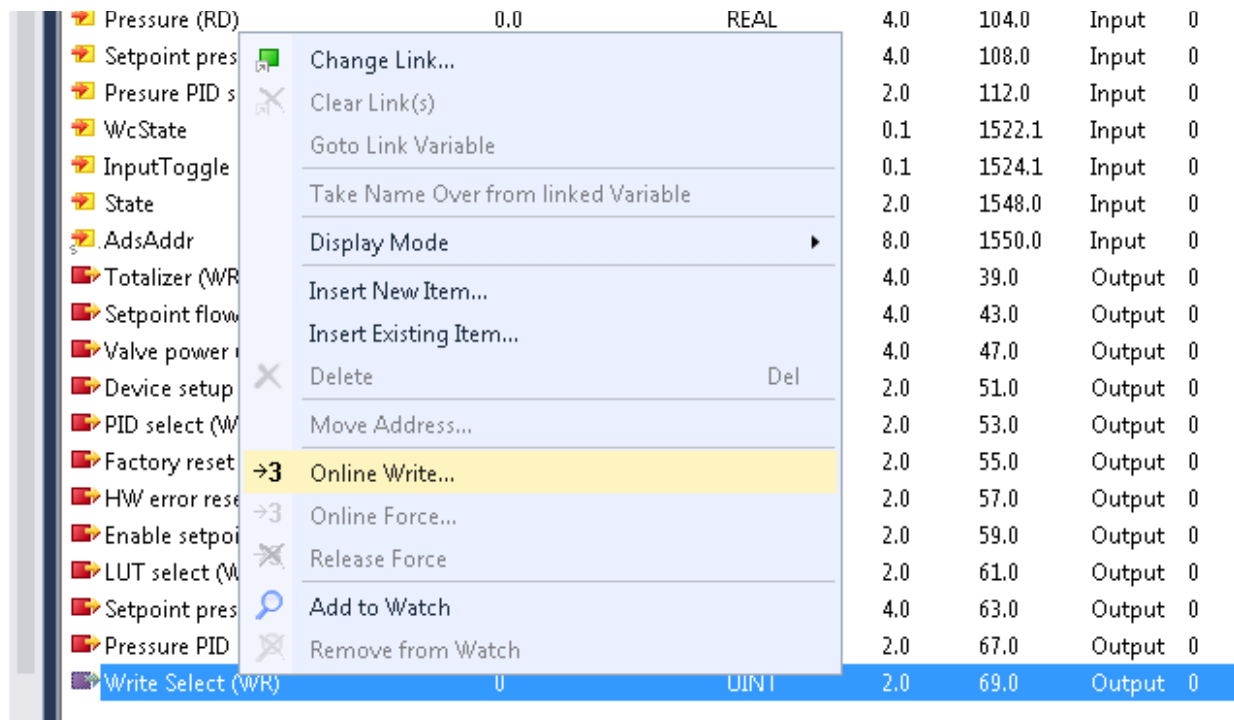
A dialog box will appear where a value can be entered in various formats. Set point is bit1 which means that the value "2" needs to be entered:

Press "OK". The register is updated and now a set point can be written. Right click on the red "Setpoint Flow (WR)" register and in the dialog box enter a value (float). The maximum allowed flow for the connected controller in this tutorial is 60 ln/min:

⚡ Flow unit (8 characters) (RD)	ln/min	STRING(8)
⚡ Gas name (8 characters) (RD)	Air	STRING(8)
⚡ Serial (RD)	163194	UDINT
⚡ PID select (RD)	0	UINT
⚡ Max flow (RD)	60.0	REAL

A value of 22.5 will be entered:

The set point is now set and can be checked:

⚡ Setpoint Flow (RD)	22.5	REAL
⚡ Valve power (RD)	100.0	REAL

The valve power is at 100% and an error has been raised (HW Status). This means there is no flow which is correct since the controller isn't connected to a gas supply.

⚡ HW Status (RD)	8	UINT	2.0	61.0	Input	0
⚡ Device setup (RD)	0	UINT	2.0	63.0	Input	0

Set point can be set to zero again:

Clear HW Error

The clear the error the "HW error reset (WR)" register needs to be written. To do so bit 7 of the "Write Select (WR)" register needs to be set. Bit 6 represents a value of 2^7 = 128. Together with the set point the value 128 + 2 = 130 will be written in the register:

To clear the error the same value as indicated must be written back. In this case 8.

HW Status (RD)	8	UINT	2.0	61.0	Input	0
Device setup (RD)	0	UINT	2.0	63.0	Input	0

Open the dialog box and enter the value 8, press "OK."

The error is cleared. A new set point can be entered again if desired.

Setpoint Flow (RD)	0.0	REAL	4.0	51.0	Input	0
Valve power (RD)	0.0	REAL	4.0	55.0	Input	0
Alarm Info (RD)	0	UINT	2.0	59.0	Input	0
HW Status (RD)	0	UINT	2.0	61.0	Input	0

Appendix A

Getting Device Online

When switching to run mode it is possible that the device will not come online. This is due to the warning which popped-up earlier.
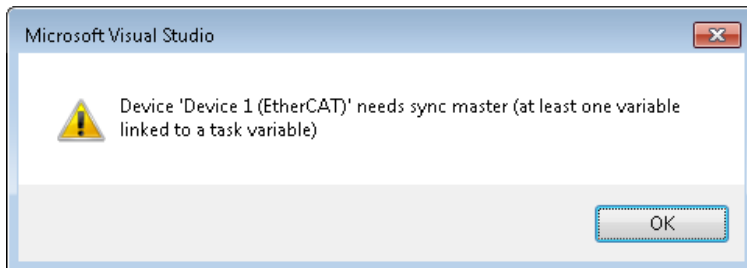
The warning indicates that the TwinCAT I/O system has not been linked to another device that can drive the I/O. This can be solved by using the integrated PLC of TwinCAT.

1. Go to the PLC tab and right click on it. Select "Add new item."
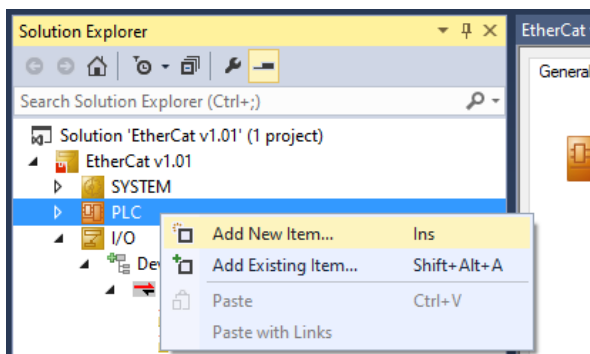
2. Create a new PLC project and give it a new name.
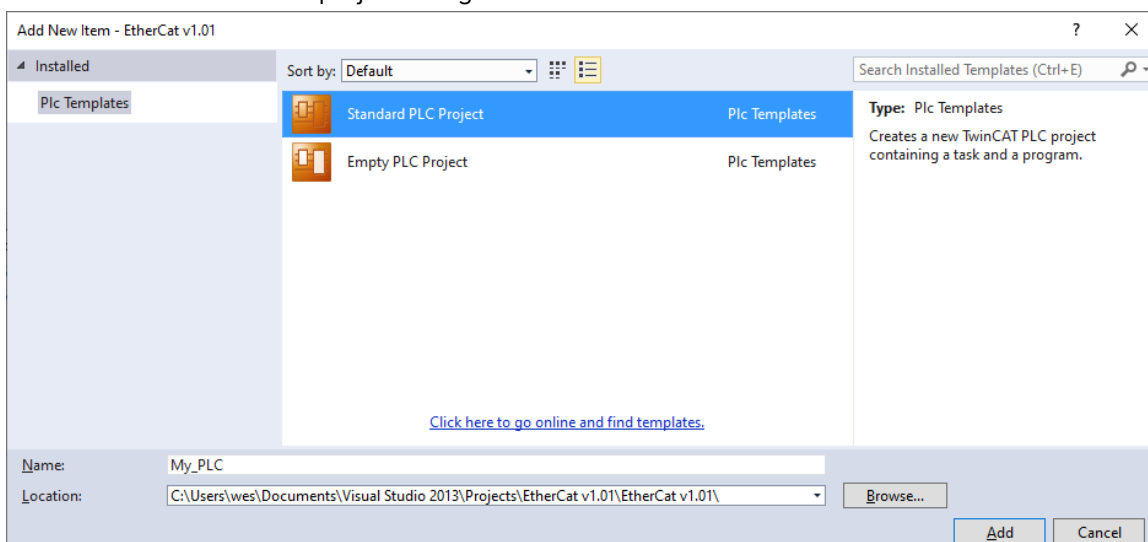
3. When the project has been created the following structure has been created.
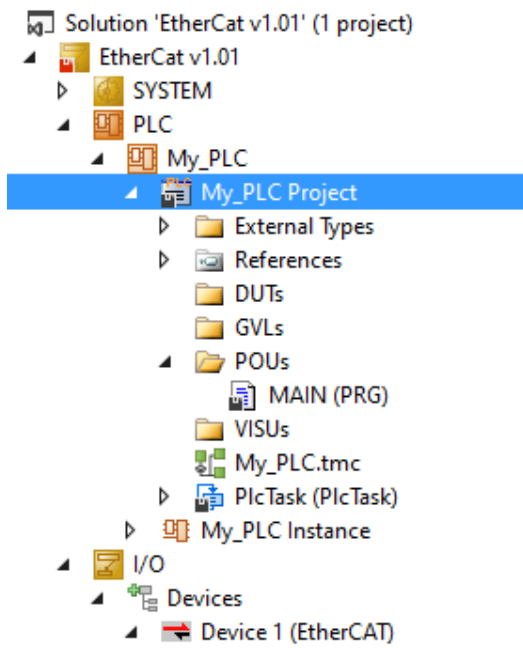
4. Double click on "MAIN". The MAIN window will open.
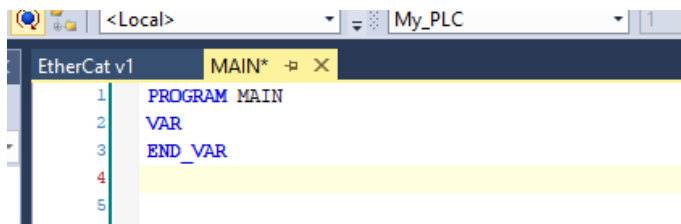
5. Add the following code between VAR and END_VAR (copy/paste from this document):

```
PROGRAM MAIN
VAR
// Inputs
        Flow AT %I* : REAL;
        Tempature AT %I* : REAL;
        Totalizer AT %I* : REAL;
        Set_point_flow AT %I* : REAL;
        Valve_power AT %I* : REAL;
        Alarm_info AT %I* : WORD;
        HW_Status AT %I* : WORD;
        Device_setup AT %I* : WORD;
        Ramp_time AT %I* : WORD;
        Flow_unit : STRING(8);
        Gas_name : STRING(8);
        Serial_number AT %I* : DWORD;
        Device_type1 : STRING(8);
        PID_select AT %I* : WORD;
        Flow_limit AT %I* : REAL;
        Device_type2 : STRING(8);
        Pressure_unit : STRING(8);
        Totalizer_unit : STRING(8);
        Enb_SP_store AT %I* : WORD;
        LUT_Select AT %I* : WORD;
        Pressure AT %I* : REAL;
        Pressure_min AT %I* : REAL;
        Pressure_max AT %I* : REAL;
        Set_point_pressure AT %I* : REAL;
        Pressure_PID AT %I* : WORD;

// Outputs
        Totalizer_wr AT %Q* : REAL;
        Set_point_flow_wr AT %Q* : REAL;
        Valve_pwr_wr AT %Q* : REAL;
        Device_setup_wr AT %Q* : WORD;
        Ramp_time_wr AT %Q* : WORD;
        PID_select_wr AT %Q* : WORD;
        Factory_reset_wr AT %Q* : WORD;
        HW_error_reset_wr AT %Q* : WORD;
        Enb_SP_store_wr AT %Q* : WORD;
        LUT_select_wr AT %Q* : WORD;
        Set_point_pressure_wr AT %Q* : REAL;
        Pressure_PID_wr AT %Q* : WORD;
        Soft_reset_wr AT %Q* : WORD;
        Write_protect_wr AT %Q* : WORD;

END_VAR
```

6. To check the code, build the solution.
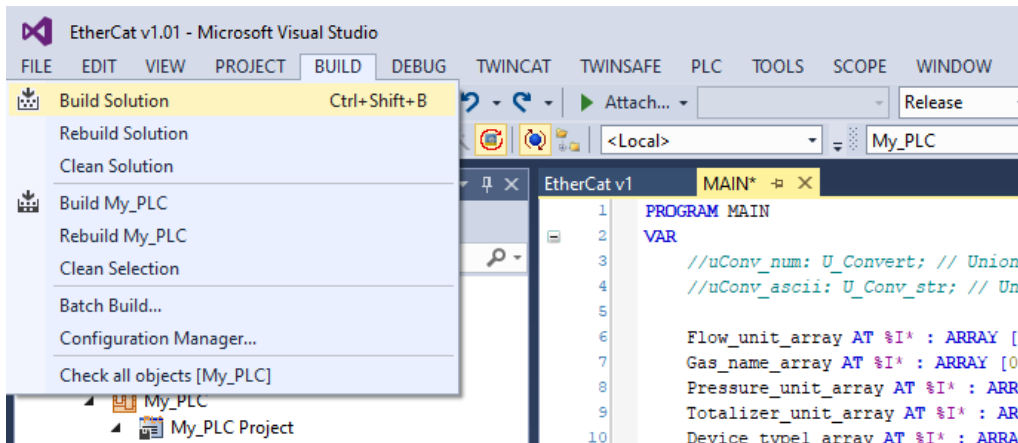
7. Check the output window for errors and fix if any are found.

Link Variable

1. Double-click on the device again to bring up the PDO list.

2. In the right window, double click on "Flow (RD)". A new window pops-up showing the variables from the MAIN window which are applicable.
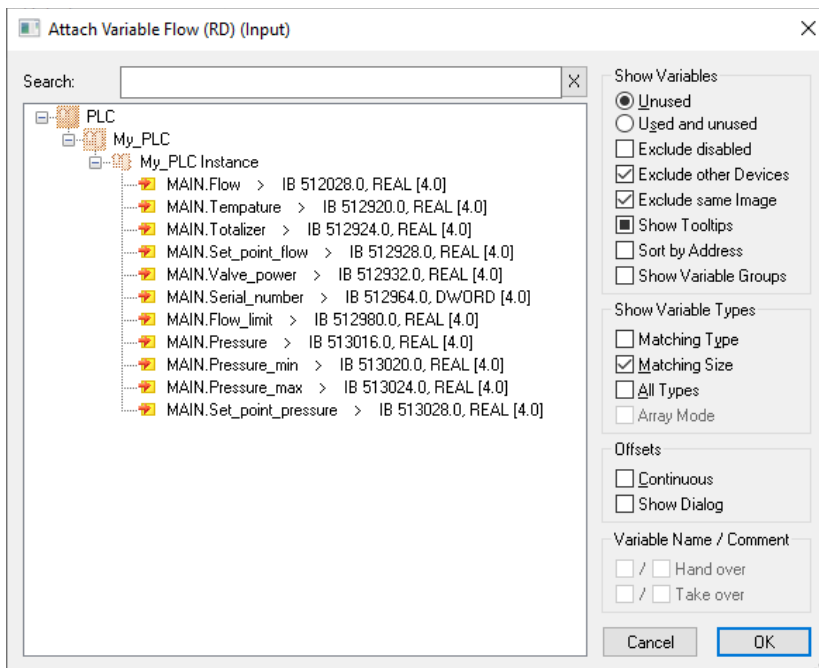
3. Select "MAIN.Flow" and press "OK". When looking at the PDO window an "X" has appeared behind flow indicating that this variable has been linked.

Name		Online	Type	Size	>Addr...	In/Out	User ID	Linked to
Flow (RD)	X	0.0071554626	REAL	4.0	39.0	Input	0	MAIN.Flow . PlcTask Inp...
Temperature (RD)		24.291618	REAL	4.0	43.0	Input	0	
Totalizer (RD)		96.507065	REAL	4.0	47.0	Input	0	
Setpoint Flow (RD)		0.0	REAL	4.0	51.0	Input	0	

4. Activate the configuration by pressing the "Activate Configuration" button.
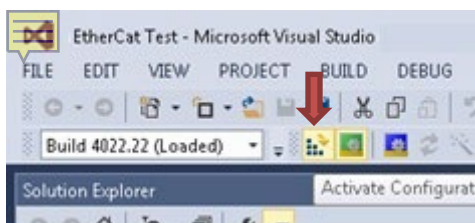
TwinCAT will be restarted in Run mode and the device should be online now. There should be no warning anymore about a sync master.

Show Strings

In the PDO list strings are not shown and if then only in a hexadecimal format. To show strings, a script is needed which converts the data into ASCII.

The easiest way is to use a union data type for the conversion.

1. Right click on the POUs tab (where MAIN is) and add a new DUT.
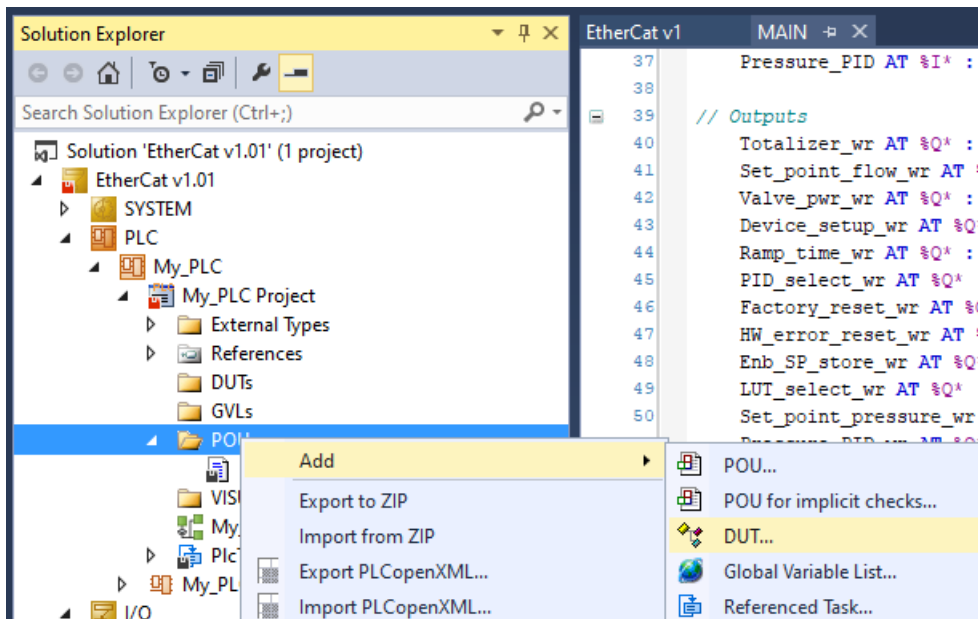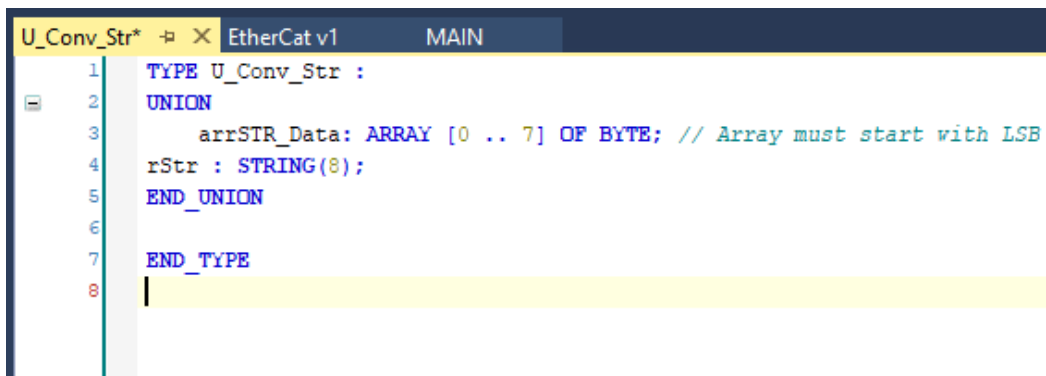
2. In the pop-up window select "Union" and give it a useful name, press "Open."
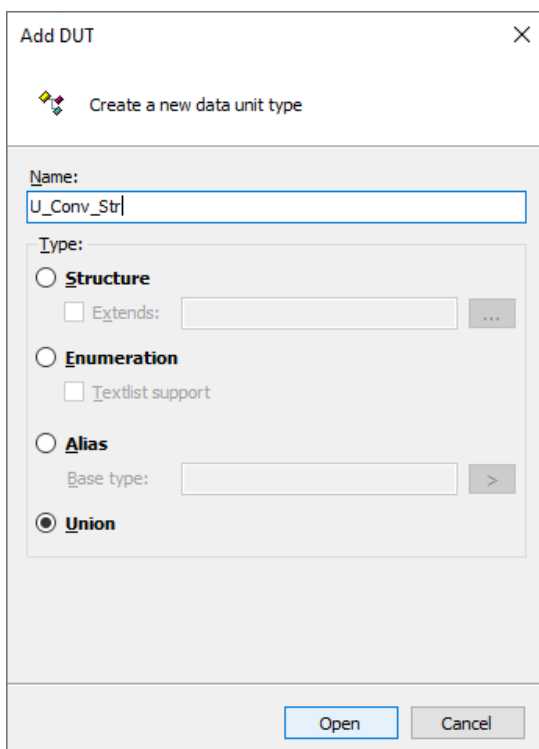
3. A window will open showing the script for the union. Replace the code for the code below (copy/paste).

```
TYPE U_Conv_Str :
UNION
   arrSTR_Data: ARRAY [0 .. 7] OF BYTE; // Array must start with LSB
        rStr : STRING(8);
END_UNION

END_TYPE
```


4. In the main script add the following lines to the variable declaration (copy/paste):

```
uConv_ascii: U_Conv_str; // Union data type

Flow_unit_array AT %I* : ARRAY [0..7] OF BYTE;
Gas_name_array AT %I* : ARRAY [0..7] OF BYTE;
Pressure_unit_array AT %I* : ARRAY [0..7] OF BYTE;
Totalizer_unit_array AT %I* : ARRAY [0..7] OF BYTE;
Device_type1_array AT %I* : ARRAY [0..7] OF BYTE;
Device_type2_array AT %I* : ARRAY [0..7] OF BYTE;
```

5. In oder to use the union some more scripting needs to be done in the MAIN. Add the following code in the program array, below the declaration area (copy/paste):

```
// Flow unit
uConv_ascii.arrSTR_Data[7] := Flow_unit_array[0];
uConv_ascii.arrSTR_Data[6] := Flow_unit_array[1];
uConv_ascii.arrSTR_Data[5] := Flow_unit_array[2];
uConv_ascii.arrSTR_Data[4] := Flow_unit_array[3];
uConv_ascii.arrSTR_Data[3] := Flow_unit_array[4];
uConv_ascii.arrSTR_Data[2] := Flow_unit_array[5];
uConv_ascii.arrSTR_Data[1] := Flow_unit_array[6];
uConv_ascii.arrSTR_Data[0] := Flow_unit_array[7];

Flow_unit := uConv_ascii.rStr;

// Gas name
uConv_ascii.arrSTR_Data[7] := Gas_name_array[0];
uConv_ascii.arrSTR_Data[6] := Gas_name_array[1];
uConv_ascii.arrSTR_Data[5] := Gas_name_array[2];
uConv_ascii.arrSTR_Data[4] := Gas_name_array[3];
uConv_ascii.arrSTR_Data[3] := Gas_name_array[4];
uConv_ascii.arrSTR_Data[2] := Gas_name_array[5];
uConv_ascii.arrSTR_Data[1] := Gas_name_array[6];
uConv_ascii.arrSTR_Data[0] := Gas_name_array[7];

Gas_name := uConv_ascii.rStr;

// Pressure unit
uConv_ascii.arrSTR_Data[7] := Pressure_unit_array[0];
uConv_ascii.arrSTR_Data[6] := Pressure_unit_array[1];
uConv_ascii.arrSTR_Data[5] := Pressure_unit_array[2];
uConv_ascii.arrSTR_Data[4] := Pressure_unit_array[3];
uConv_ascii.arrSTR_Data[3] := Pressure_unit_array[4];
uConv_ascii.arrSTR_Data[2] := Pressure_unit_array[5];
uConv_ascii.arrSTR_Data[1] := Pressure_unit_array[6];
uConv_ascii.arrSTR_Data[0] := Pressure_unit_array[7];

Pressure_unit := uConv_ascii.rStr;

// Totalizer unit
uConv_ascii.arrSTR_Data[7] := Totalizer_unit_array[0];
uConv_ascii.arrSTR_Data[6] := Totalizer_unit_array[1];
uConv_ascii.arrSTR_Data[5] := Totalizer_unit_array[2];
uConv_ascii.arrSTR_Data[4] := Totalizer_unit_array[3];
uConv_ascii.arrSTR_Data[3] := Totalizer_unit_array[4];
uConv_ascii.arrSTR_Data[2] := Totalizer_unit_array[5];
uConv_ascii.arrSTR_Data[1] := Totalizer_unit_array[6];
uConv_ascii.arrSTR_Data[0] := Totalizer_unit_array[7];

Totalizer_unit := uConv_ascii.rStr;
```
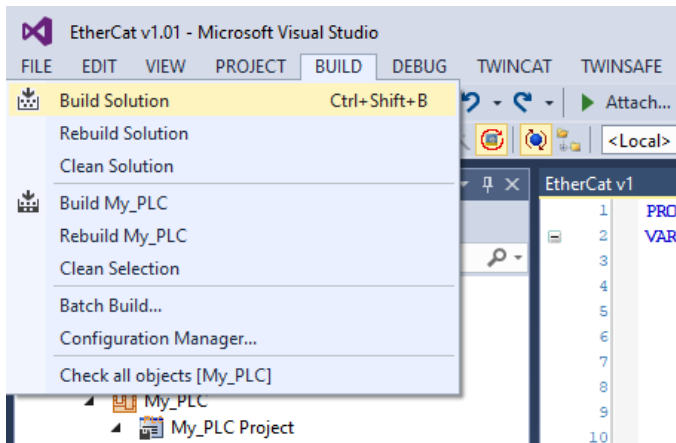
```
// Device_type1
uConv_ascii.arrSTR_Data[7] := Device_type1_array[0];
uConv_ascii.arrSTR_Data[6] := Device_type1_array[1];
uConv_ascii.arrSTR_Data[5] := Device_type1_array[2];
uConv_ascii.arrSTR_Data[4] := Device_type1_array[3];
uConv_ascii.arrSTR_Data[3] := Device_type1_array[4];
uConv_ascii.arrSTR_Data[2] := Device_type1_array[5];
uConv_ascii.arrSTR_Data[1] := Device_type1_array[6];
uConv_ascii.arrSTR_Data[0] := Device_type1_array[7];

Device_type1 := uConv_ascii.rStr;

// Device_type2
uConv_ascii.arrSTR_Data[7] := Device_type2_array[0];
uConv_ascii.arrSTR_Data[6] := Device_type2_array[1];
uConv_ascii.arrSTR_Data[5] := Device_type2_array[2];
uConv_ascii.arrSTR_Data[4] := Device_type2_array[3];
uConv_ascii.arrSTR_Data[3] := Device_type2_array[4];
uConv_ascii.arrSTR_Data[2] := Device_type2_array[5];
uConv_ascii.arrSTR_Data[1] := Device_type2_array[6];
uConv_ascii.arrSTR_Data[0] := Device_type2_array[7];

Device_type2 := uConv_ascii.rStr;
```
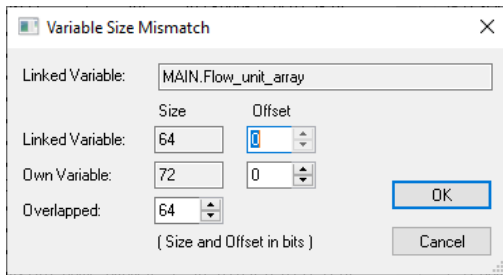
It will look like this:

Declaration area

Code area

6. To check the code, build the solution.

7. Check the output window for errors and fix if any found.

8. Link the strings to the MAIN variables. Go to the PDO view and double click on a string variable (fi Flow Unit). Select from the pop-up window the corresponding string variable.
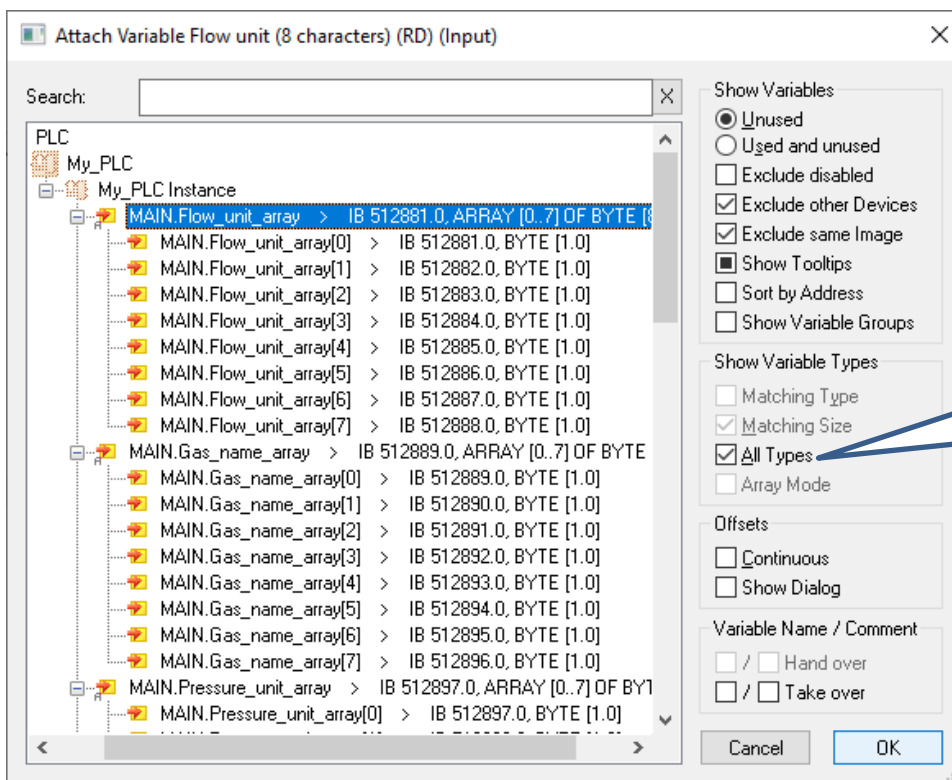
9. A window might pop-up warning about a type mismatch. Leave the settings as they are and press "Ok."

10. Do the same for all the other strings. Activate the created configuration by pressing the "Activate Configuration" button.

The PDO window will look like this:

| Name		Online	Type	Size	>Addr...	In/Out	User ID	Linked to
Flow (RD)	X	0.0072591184	REAL	4.0	39.0	Input	0	MAIN.Flow . PlcTask Inputs . My_PLC Instance . My_PLC
Temperature (RD)		24.254425	REAL	4.0	43.0	Input	0	
Totalizer (RD)		104.83397	REAL	4.0	47.0	Input	0	
Setpoint Flow (RD)		0.0	REAL	4.0	51.0	Input	0	
Valve power (RD)		0.0	REAL	4.0	55.0	Input	0	
Alarm Info (RD)		0	UINT	2.0	59.0	Input	0	
HW Status (RD)		0	UINT	2.0	61.0	Input	0	
Device setup (RD)		5	UINT	2.0	63.0	Input	0	
Ramp Time (RD)		0	UINT	2.0	65.0	Input	0	
Flow unit (8 characters) (RD)	X		STRING(8)	9.0	67.0	Input	0	MAIN.Flow_unit_array . PlcTask Inputs . My_PLC Instance . My_PLC
Gas name (8 characters) (RD)	X		STRING(8)	9.0	76.0	Input	0	MAIN.Gas_name_array . PlcTask Inputs . My_PLC Instance . My_PLC
Serial (RD)		163194	UDINT	4.0	85.0	Input	0	
Device Type1 (8 characters) (RD)	X		STRING(8)	9.0	89.0	Input	0	MAIN.Device_type1_array . PlcTask Inputs . My_PLC Instance . My_PLC
PID select (RD)		0	UINT	2.0	98.0	Input	0	
Max flow (RD)		60.0	REAL	4.0	100.0	Input	0	
Device Type2 (8 characters) (RD)	X		STRING(8)	9.0	104.0	Input	0	MAIN.Device_type2_array . PlcTask Inputs . My_PLC Instance . My_PLC
Pressure unit (8 characters) (RD)	X		STRING(8)	9.0	113.0	Input	0	MAIN.Pressure_unit_array . PlcTask Inputs . My_PLC Instance . My_PLC
Totalizer unit (8 characters) (RD)	X		STRING(8)	9.0	122.0	Input	0	MAIN.Totalizer_unit_array . PlcTask Inputs . My_PLC Instance . My_PLC
Enable setpoint storage (RD)		0	UINT	2.0	131.0	Input	0	

Note that the strings are still not shown. The script isn't running yet. To run the script the PLC needs to be loaded and started.
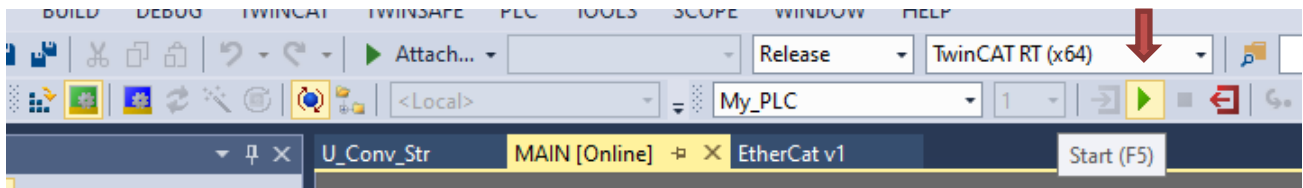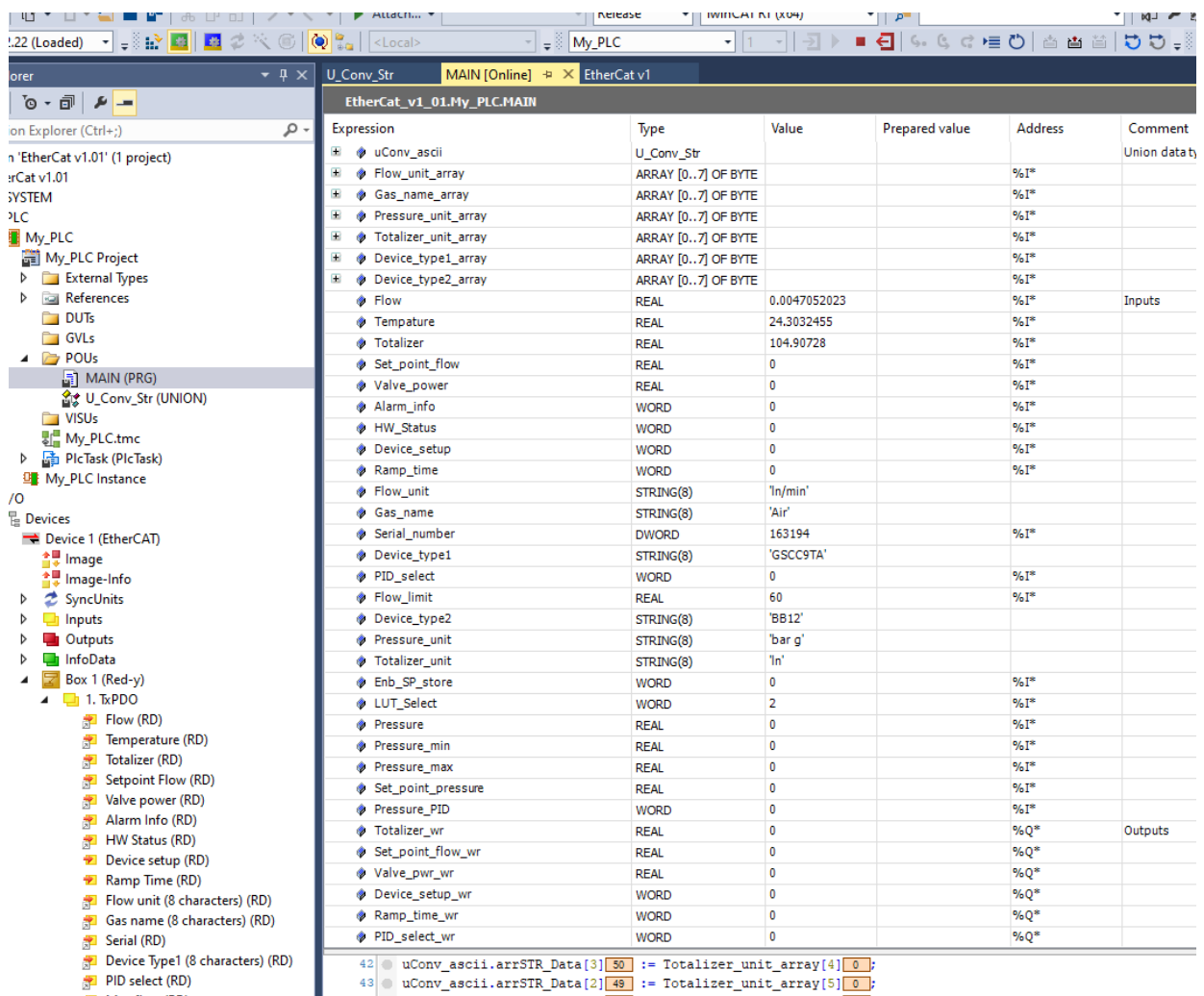
11. Start the PLC (login).
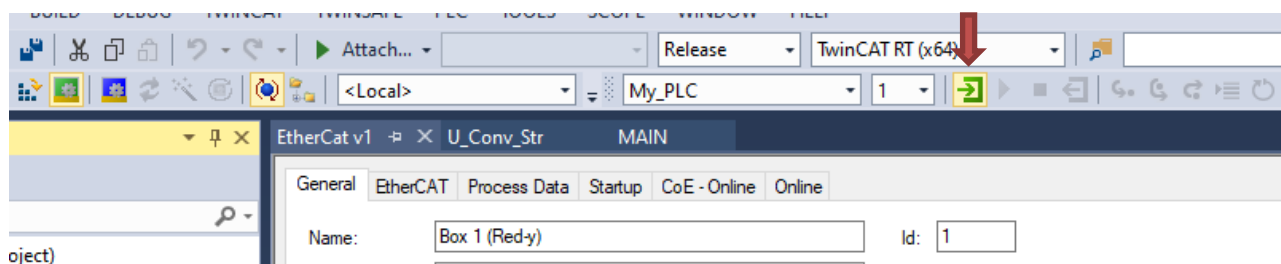
12. Press "Yes" in the following pop-up.
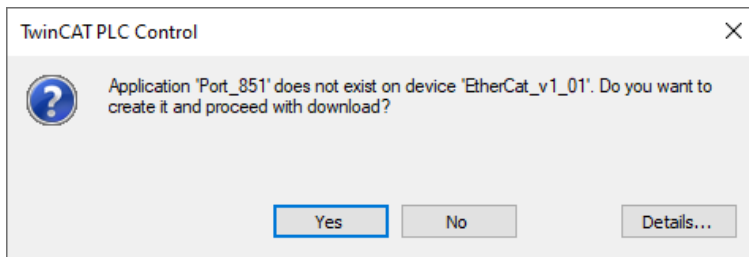
13. The MAIN window is shown but no data is presented yet. Start the PLC.

In the MAIN window the data will be shown.

Note: In the image above more variables have been linked.