

TF6310

- Before Using the UR example you have to install for all socket communications the tcp/ip library

TF6310 | TwinCAT 3 TCP/IP

TwinCAT TCP/IP dient der Implementierung und Realisierung eines oder mehrerer TCP/IP-Server und/oder TCP/IP-Clients in der TwinCAT 3 SPS. Für den Kommunikationsauf- und -abbau sowie für den reinen Datenaustausch (Send und Receive) existieren entsprechende Bausteine. Hierbei unterstützen die Funktionsbausteine auch die Verwendung von Multicast-Adressen. Darüber hinaus wird eine Absicherung des Transportkanals über Transport Layer Security (TLS) ermöglicht.

Produktstatus: Serienlieferung

Produktinformationen

Technische Daten | **Bestellangaben**

Dokumentation und Downloads | Beckhoff Information System | Media Library | Produktmeldungen

Ähnliche Produkte

Technische Daten	TF6310
Benötigte Lizenz	TC1200
Betriebssystem	Windows 7, Windows 10, Windows CE, TwinCAT/BSD

Get Trial license for if needed

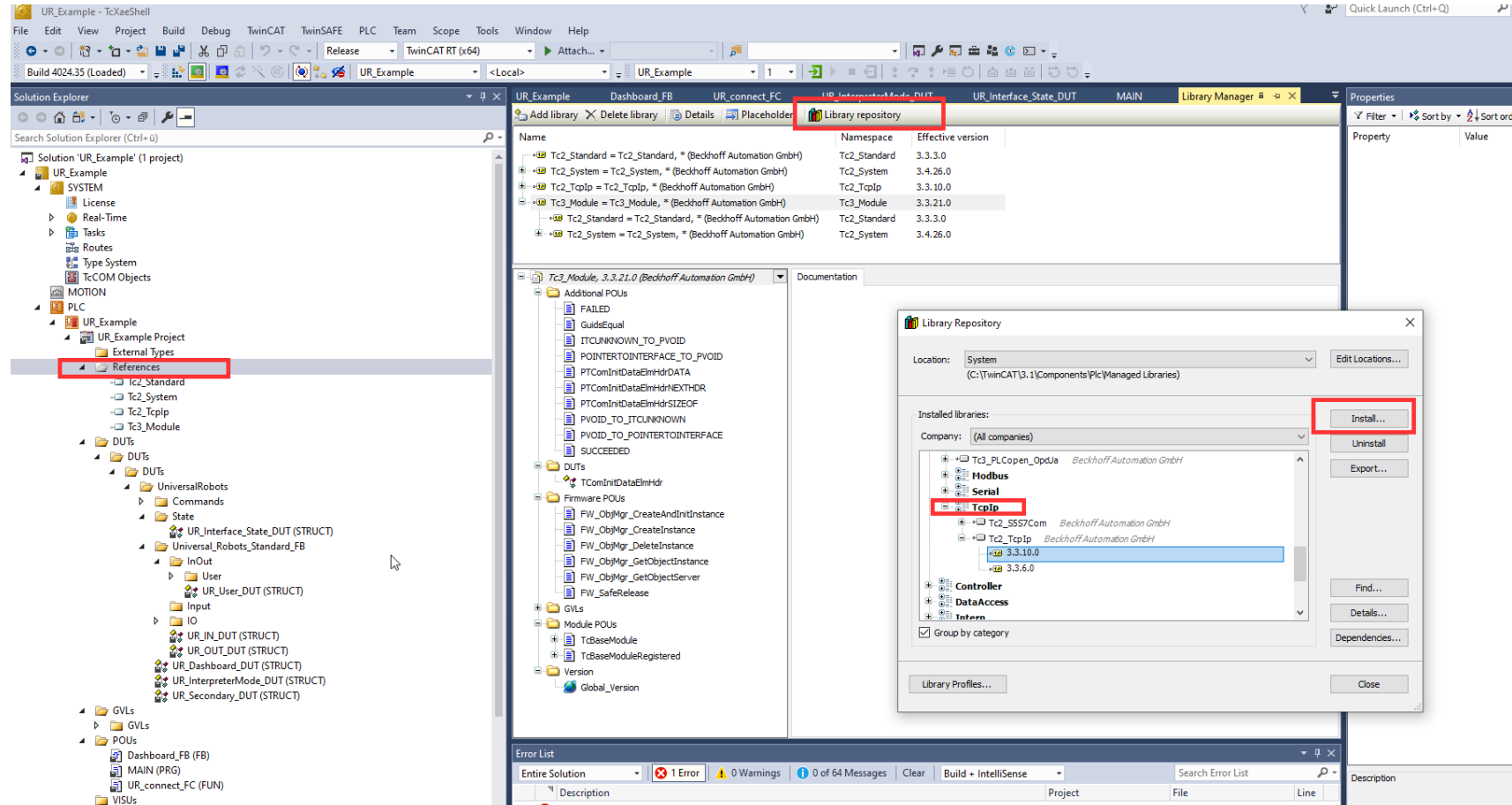
The screenshot displays the UR_Example - TcXaeShell (Administrator) interface. The 'Solution Explorer' on the left shows the project structure, with the 'License' folder highlighted. The 'Manage Licenses' dialog is open, showing a table of licenses. The 'TC3 TCP/IP' license is highlighted in red. The 'Error List' at the bottom shows an error message: '22.06.2023 14:49:37 705 ms | 'Tcp/Ip Server' (10201): No license found!'.

Order No	License	Add License
TF6221	TC3 EtherCAT Redundancy unlimited	<input type="checkbox"/> cpu license
TF6225	TC3 EtherCAT External Sync	<input type="checkbox"/> cpu license
TF6250	TC3 Modbus-TCP	<input type="checkbox"/> cpu license
TF6255	TC3 Modbus-RTU	<input type="checkbox"/> cpu license
TF6270	TC3 Profinet IO-Device	<input type="checkbox"/> cpu license
TF6271	TC3 Profinet Controller	0
TF6280	TC3 EtherNet/IP Adapter (Slave)	0
TF6281	TC3 EtherNet/IP Scanner (Master)	0
TF6300	TC3 FTP	<input type="checkbox"/> cpu license
TF6310	TC3 TCP/IP	<input checked="" type="checkbox"/> cpu license
TF6311	TC3 TCP/UDP RT	<input type="checkbox"/> cpu license
TF6340	TC3 Serial-Communication	<input type="checkbox"/> cpu license
TF6350	TC3 SMS-SMTP	<input type="checkbox"/> cpu license
TF6360	TC3 Virtual-Serial-COM	<input type="checkbox"/> cpu license
TF6420	TC3 Database-Server	<input type="checkbox"/> cpu license
TF6421	TC3 XML-Server	<input type="checkbox"/> cpu license
TF6500	TC3 IEC60870-5-10x Telecontrol	<input type="checkbox"/> cpu license

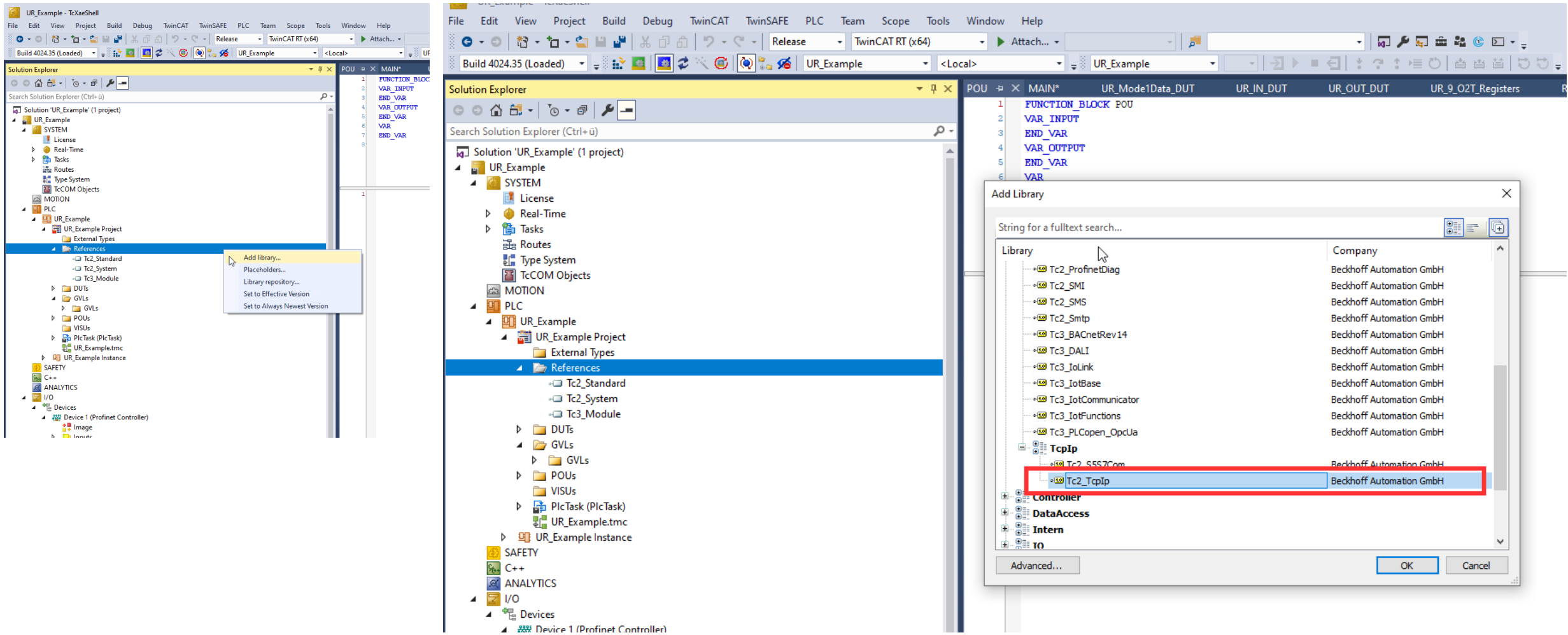
Error List

Description	Project	File	Line
22.06.2023 14:49:37 705 ms 'Tcp/Ip Server' (10201): No license found!			

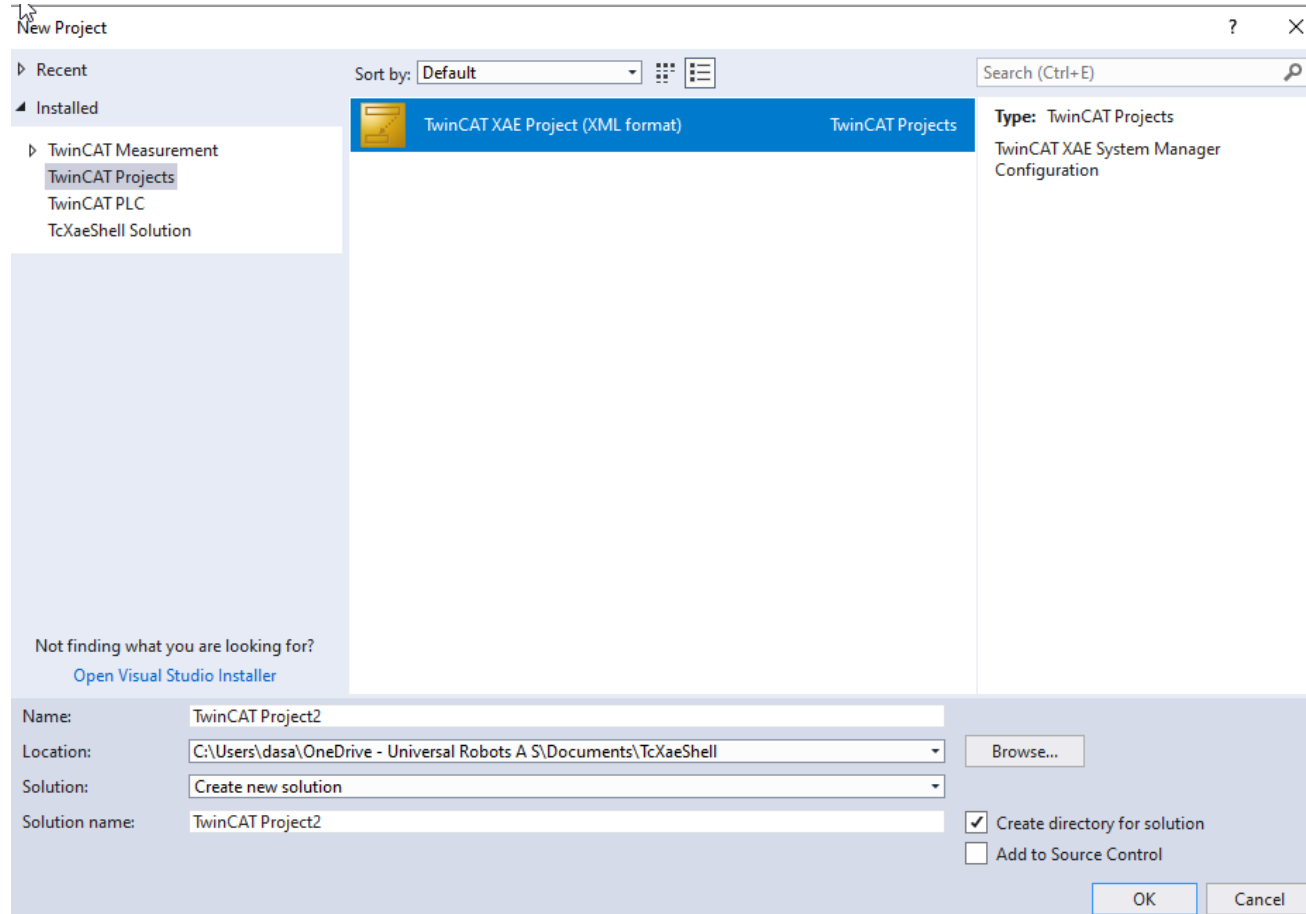
Install library Tc2_Tcplp (Communication)



add Tc2_Tcplp (Communication) library it is necessary for all TCP communications



Create new project



TwinCAT Project2 - TcXaeShell

File Edit View Project Build Debug TwinCAT TwinSAFE PLC Team Scope Tools Window Help

Release TwinCAT RT (x64) Attach...

Build 4024.35 (Loaded) TwinCAT Project2 <Local>

Solution Explorer

Search Solution Explorer (Ctrl+u)

Solution 'TwinCAT Project2' (1 project)

- TwinCAT Project2
 - SYSTEM
 - MOTION
 - PLC
 - SAFETY
 - C++
 - ANALYTICS
 - I/O

Toolbox

Search Toolbox

General

There are no usable controls in this group. Drag an item onto this text to add it to the toolbox.

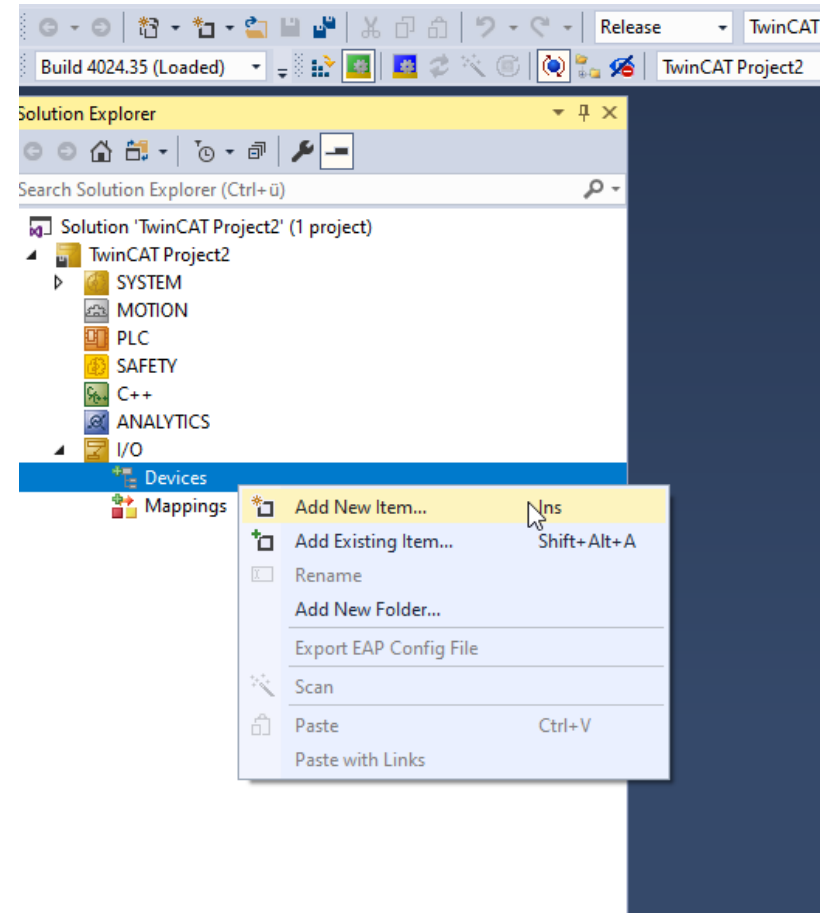
Error List

Entire Solution 0 Errors 0 Warnings 0 Messages Clear Build + IntelliSense Search Error List

Description	Project	File	Line
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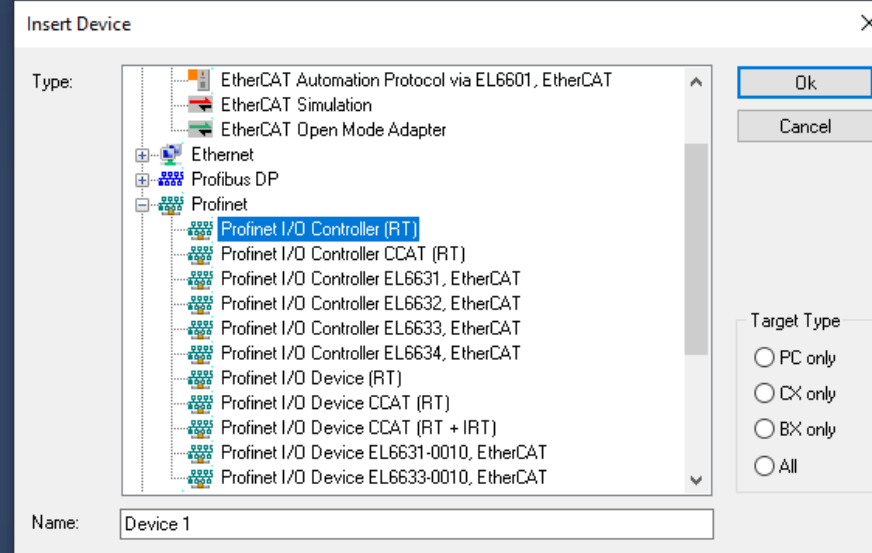
Config for profinet controller (RT)

Add new item to devices

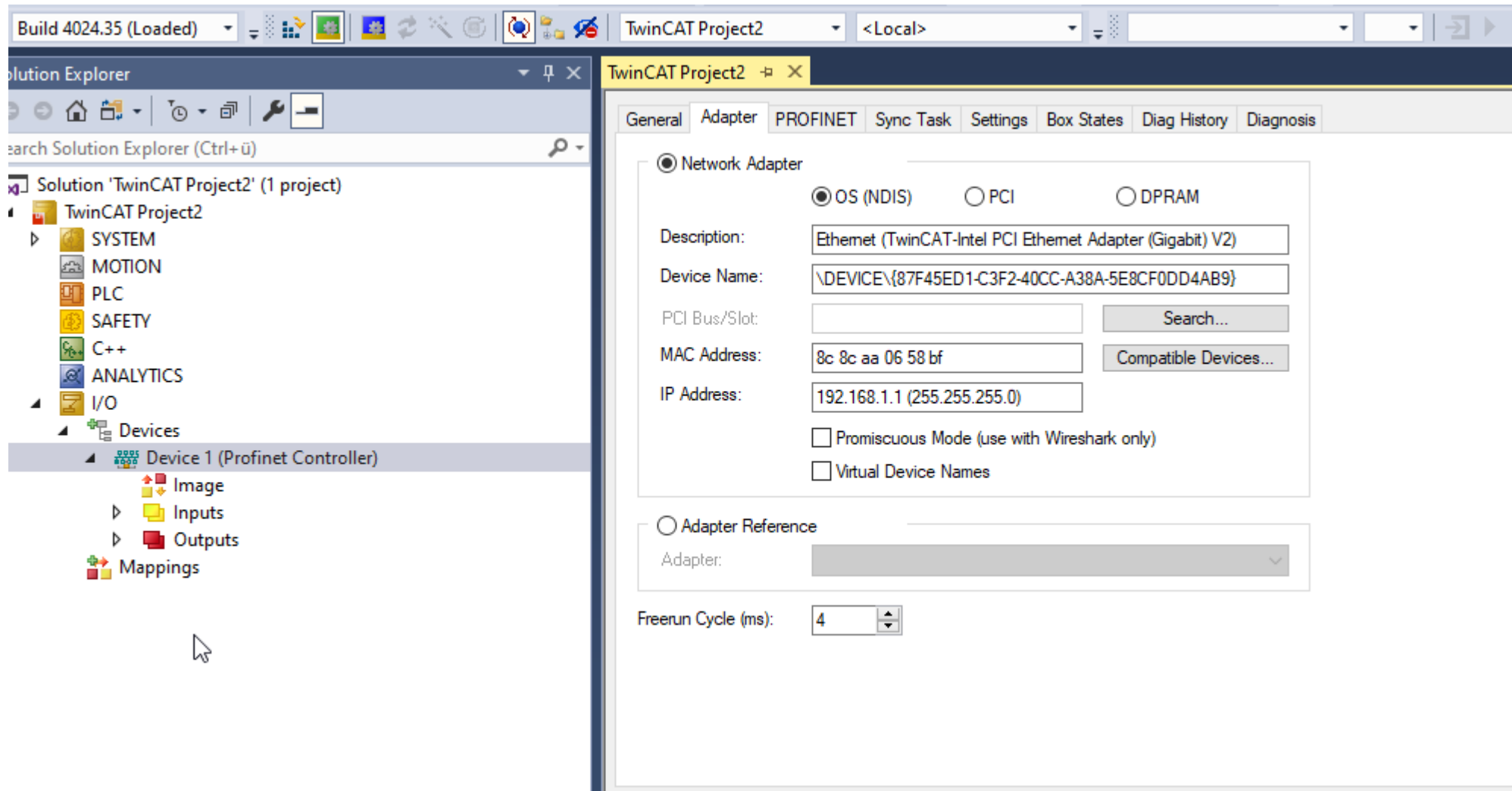


Add profinet IO controller RT

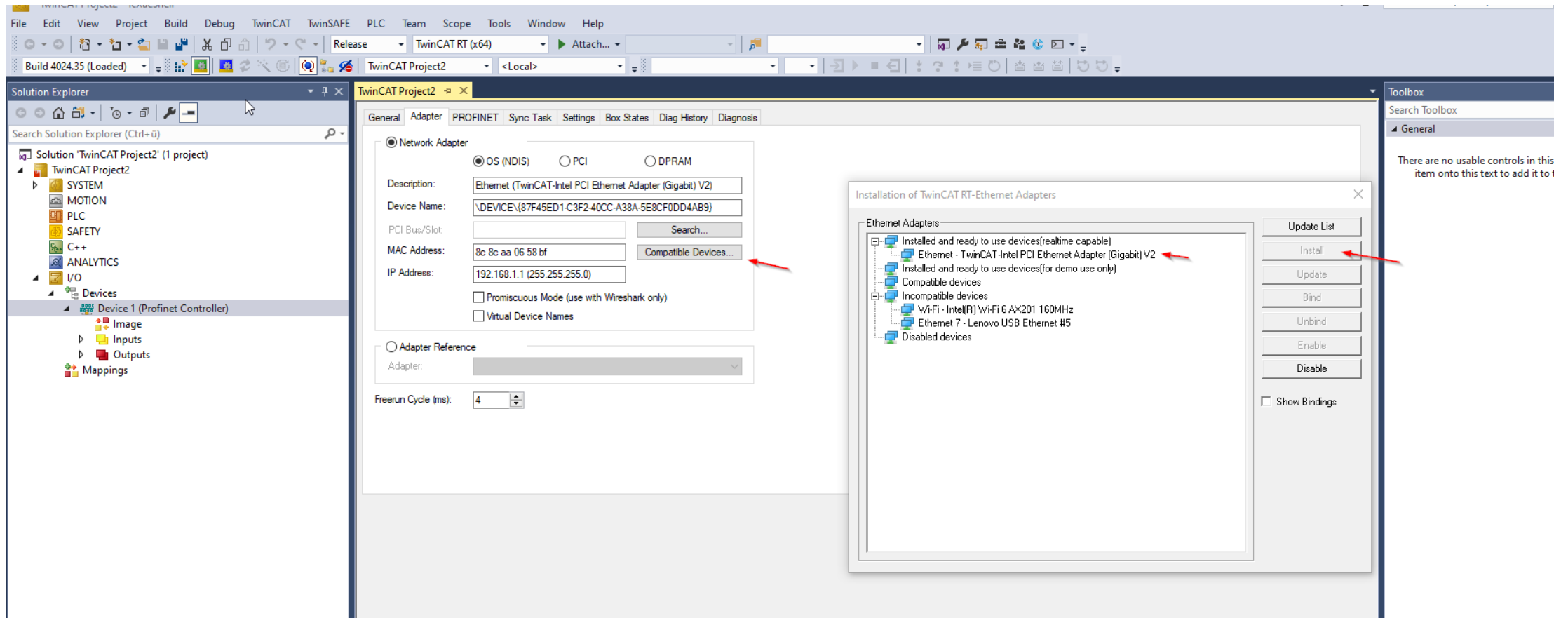
ANALYTICS
I/O
Devices
Mappings



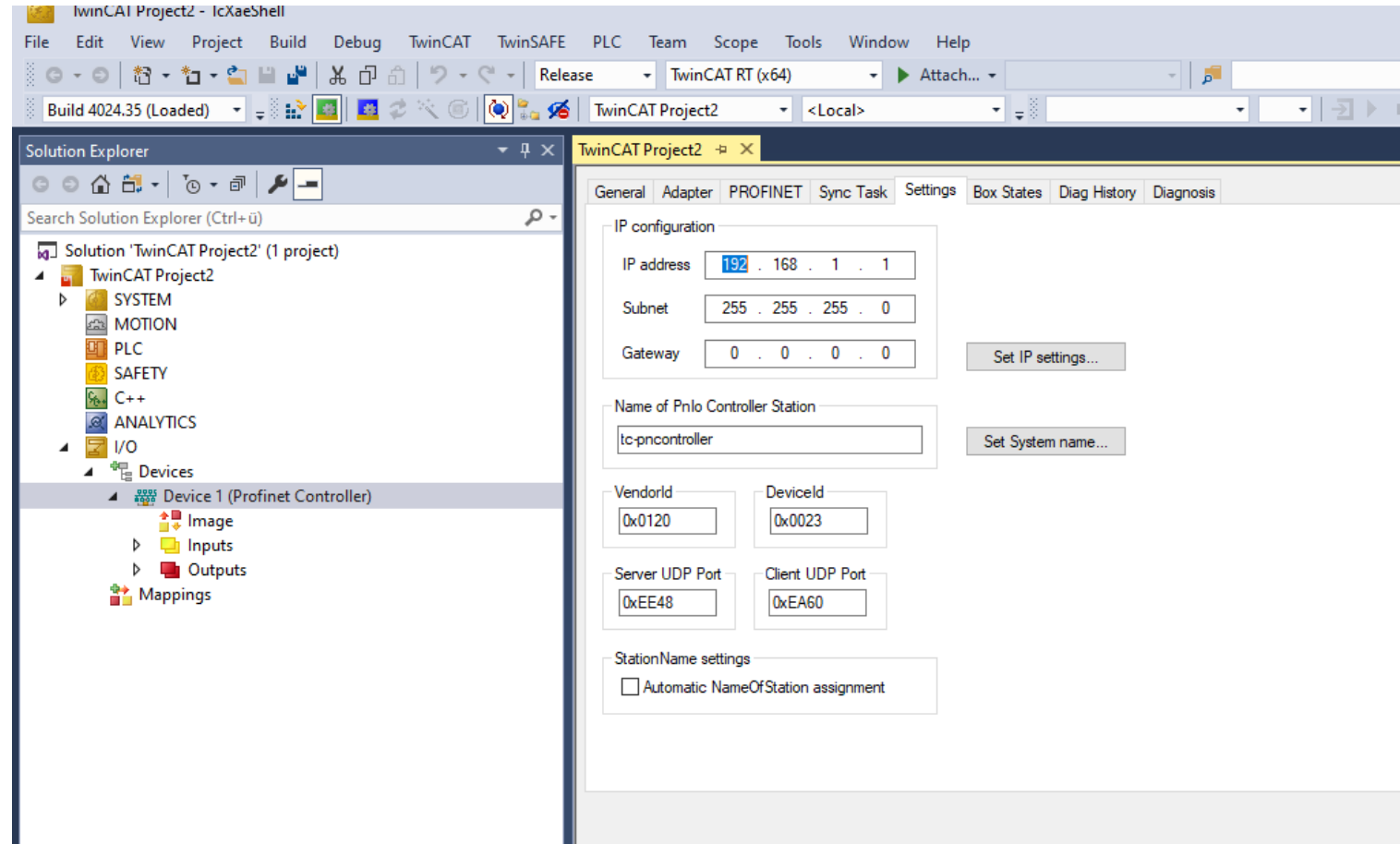
- If ethernet driver already installed choose your preferred ethernet slot (PLC/Laptop) and skip next slide
- In case it is not installed check next slide.



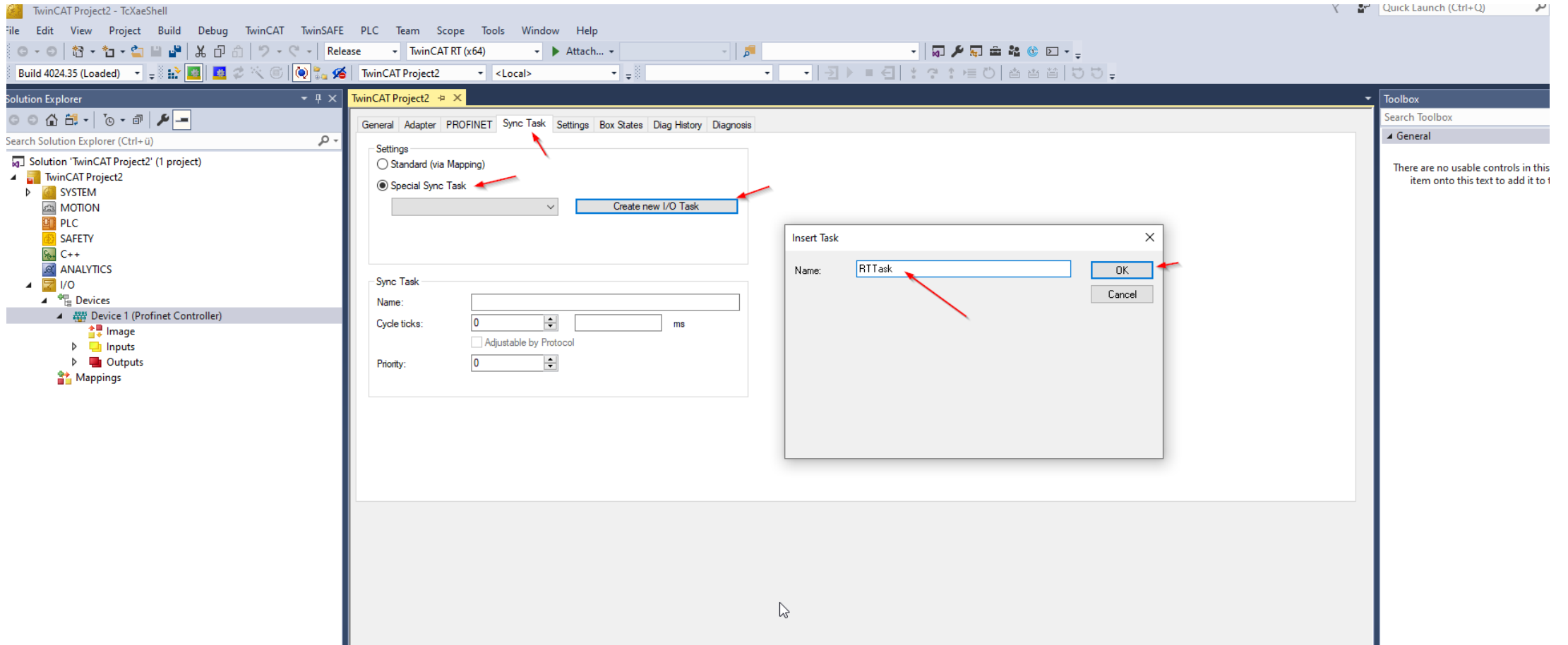
in case driver is not installed



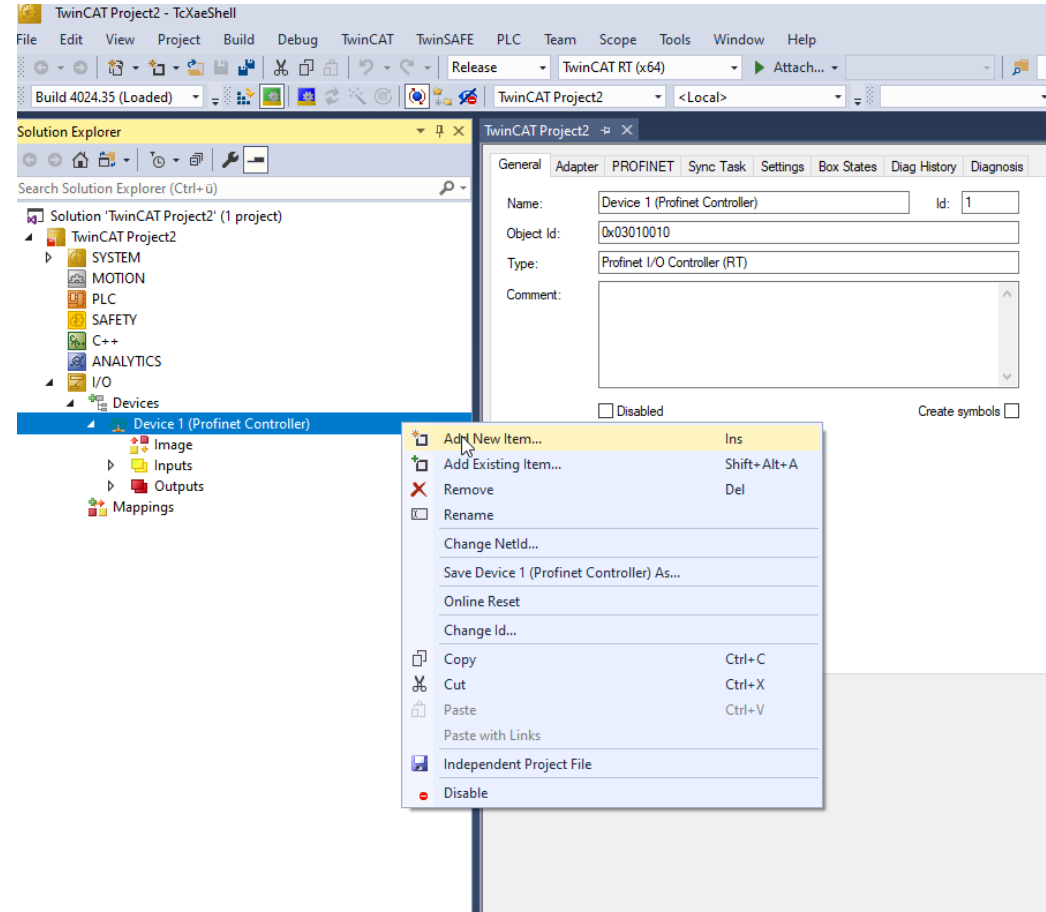
First setup ip configs of PN Controller

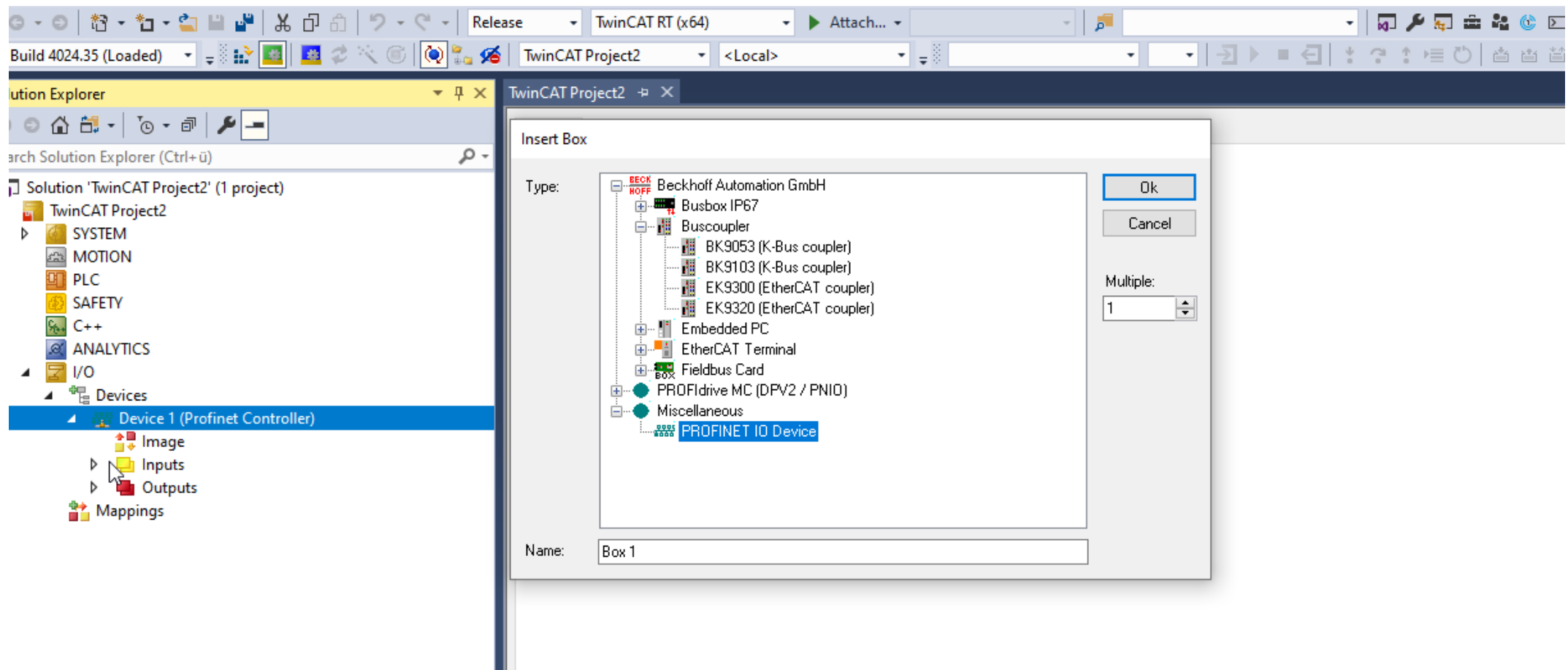


Create new task



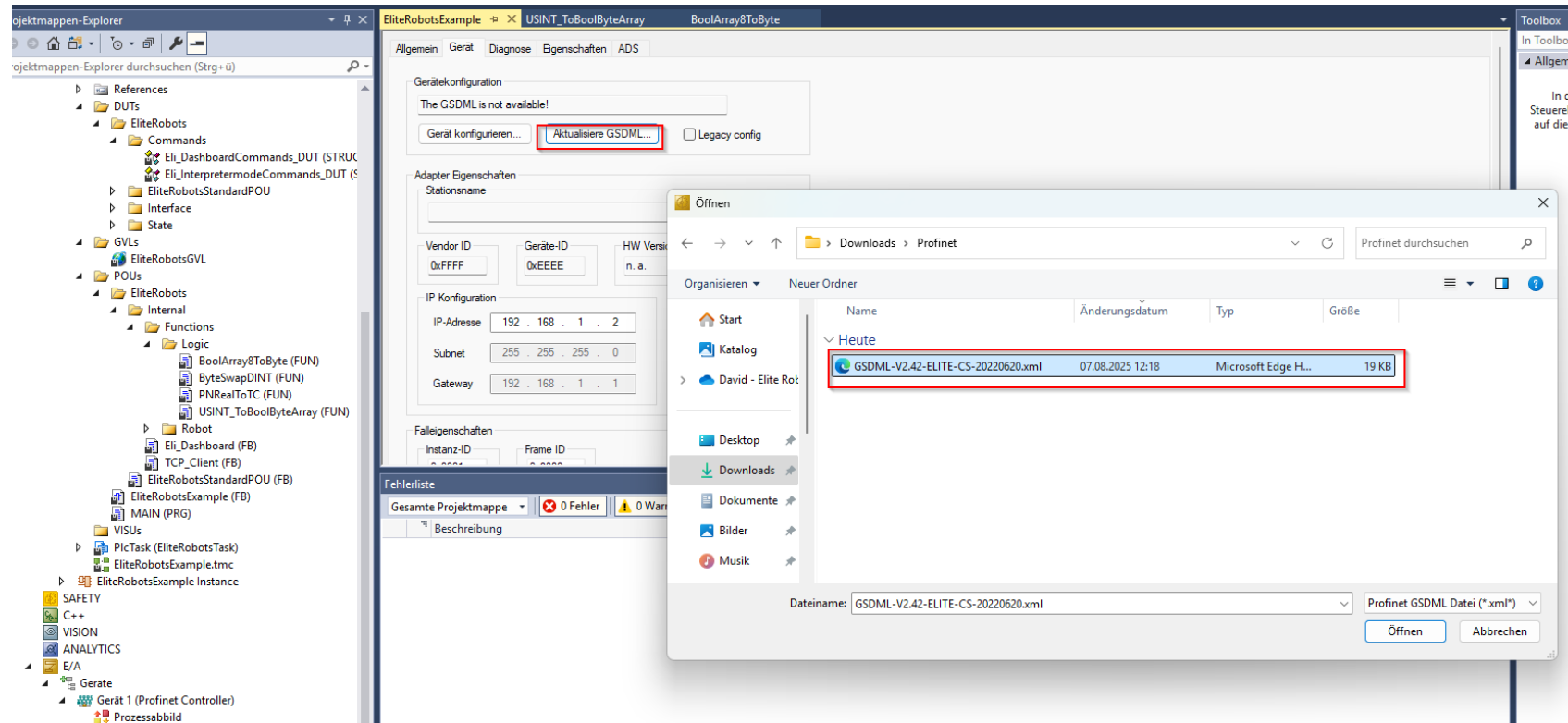
Add new IO Device (Elite Robot)



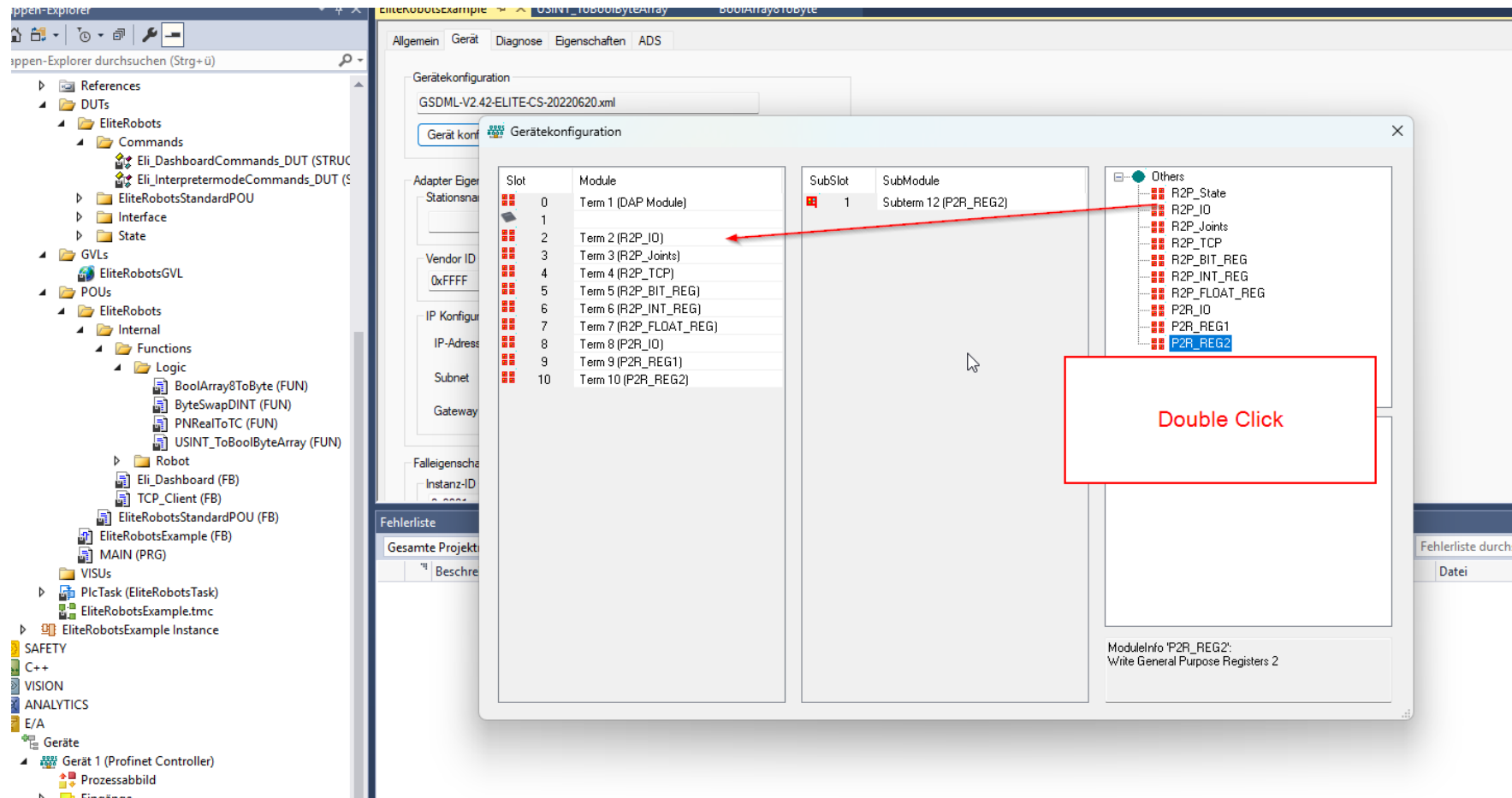


Elite Robots GSDML

https://drive.google.com/drive/folders/19iEYDHPIDb_w2uvXu10W_milTQrTnT_F



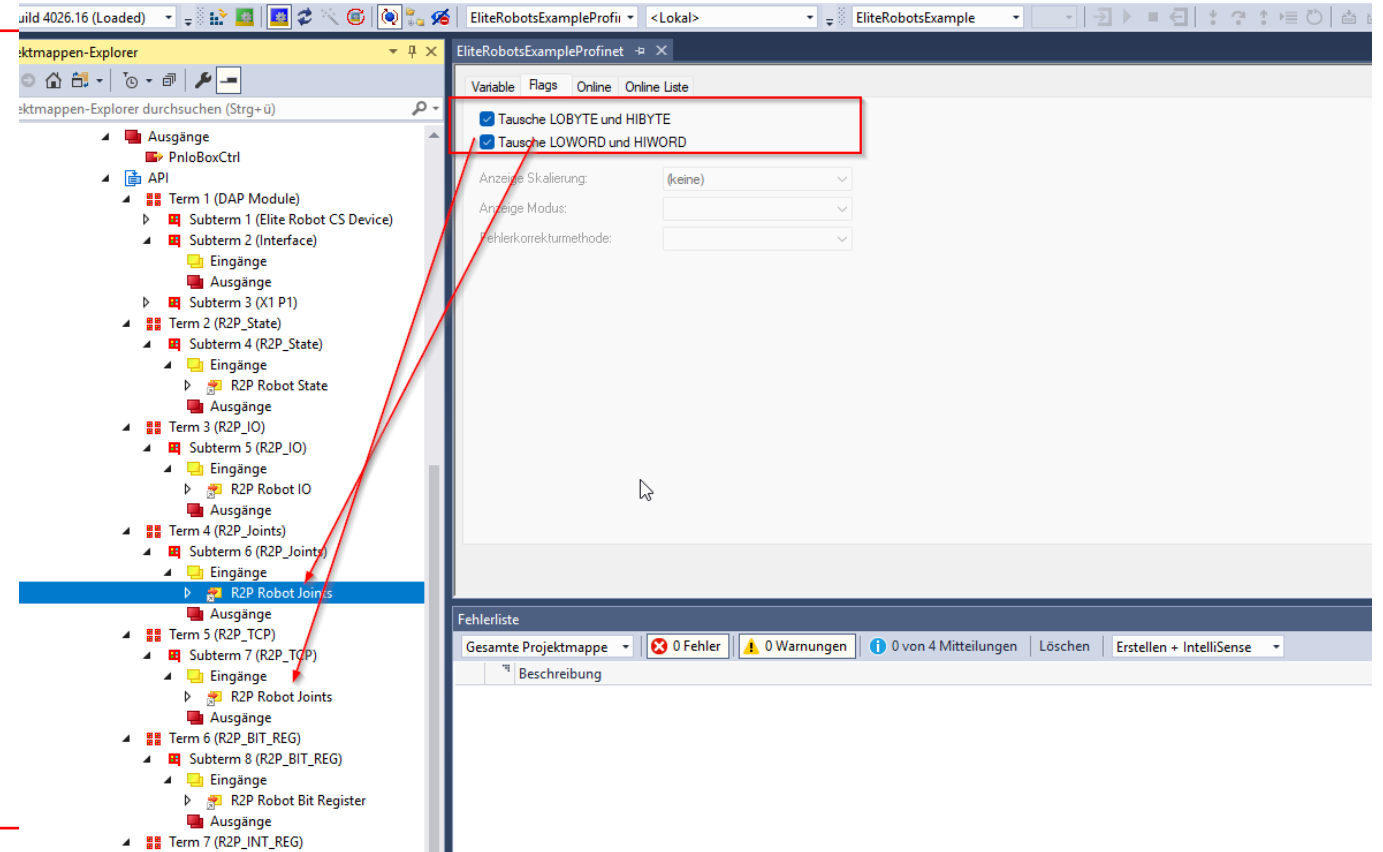
Device config. Choose all of them



Due to the Intel standard some registers have to be swapped to the motorola standard

Please set byte swap and word swap for the following terms. Otherwise this example will not work properly:

- Term 4 – R2P Joints
- Term 5 – R2P TCP



IP config and choose stationname

The screenshot displays the SIMATIC Manager interface for configuring a Profinet controller. The left pane shows the project tree with the following structure:

- SPS
 - EliteRobotsExample
 - EliteRobotsExample Projekt
 - References
 - DUTs
 - GVLs
 - POUs
 - VISUs
 - PlcTask (EliteRobotsTask)
 - EliteRobotsExample.tmc
 - EliteRobotsExample Instance
- SAFETY
- C++
- VISION
- ANALYTICS
- E/A
- Geräte
 - Gerät 1 (Profinet Controller)
 - Prozessabbild
 - Eingänge
 - DevState
 - PnloError
 - PnloDiag
 - Ausgänge
 - elite-dev (selected)

The right pane shows the 'Allgemein' tab for the selected device. The configuration fields are as follows:

- Gerätekongfiguration: The GSDML is not available! (Buttons: Gerät konfigurieren..., Aktualisiere GSDML..., Legacy config)
- Adapter Eigenschaften: Stationsname: elite-dev
- Vendor ID: 0xFFFF, Geräte-ID: 0xEEEE, HW Version: n. a., SW Version: n. a.
- IP Konfiguration: IP-Adresse: 192.168.1.200, Subnet: 255.255.255.0, Gateway: 192.168.1.1
- Falleigenschaften: Instanz-ID: 0x0001, Frame ID: 0x8000, MaxLengthIn: 1440 Byte, MaxLengthOut: 1440 Byte, ActLengthIn: 493 Byte, ActLengthOut: 237 Byte

The bottom pane shows the 'Fehlerliste' (Error List) with the following status:

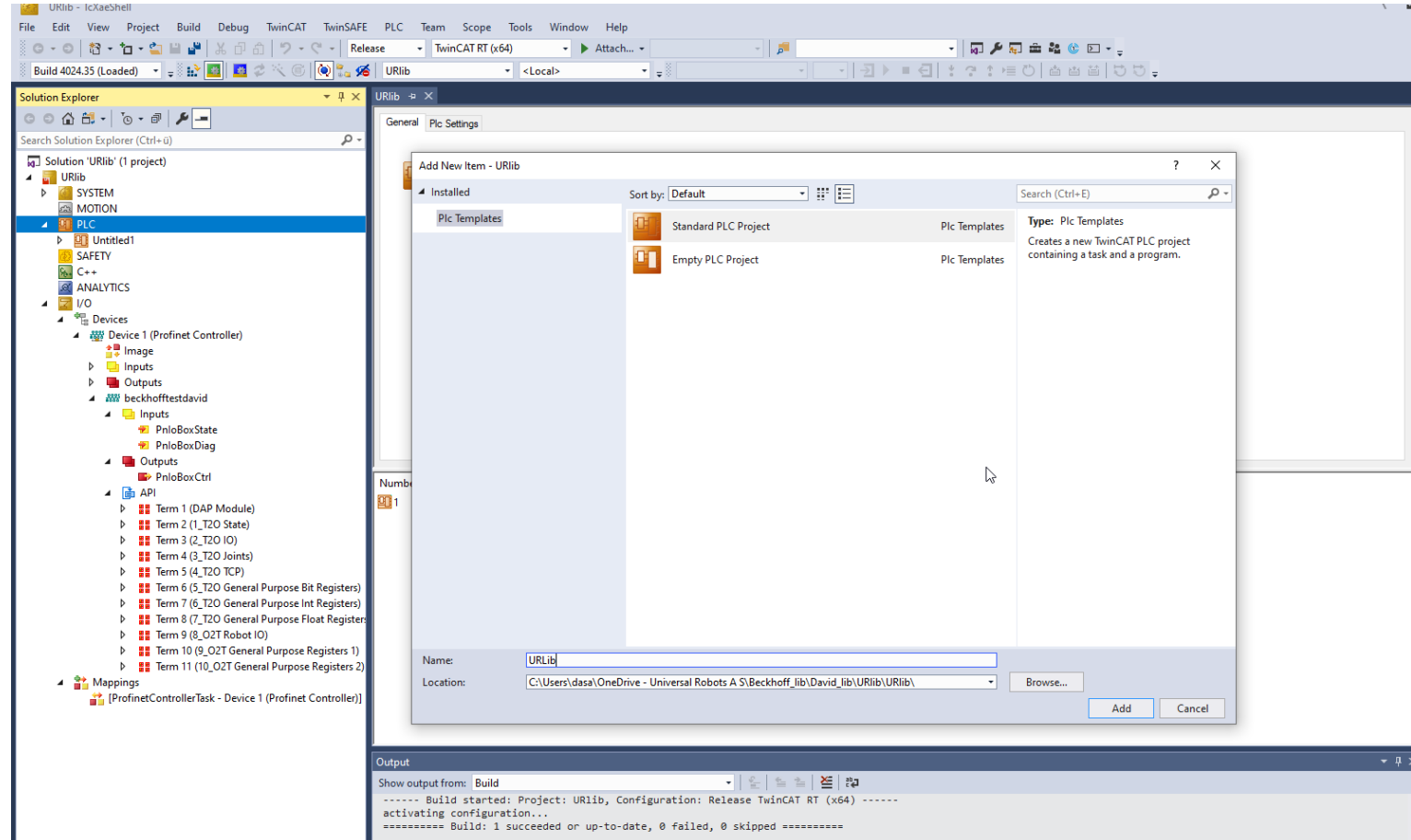
- Gesamte Projektmappe: 0 Fehler, 0 Warnungen, 0 von 4 Mitteilungen
- Buttons: Löschen, Erstellen + IntelliSense

Search for your Robot and set configs

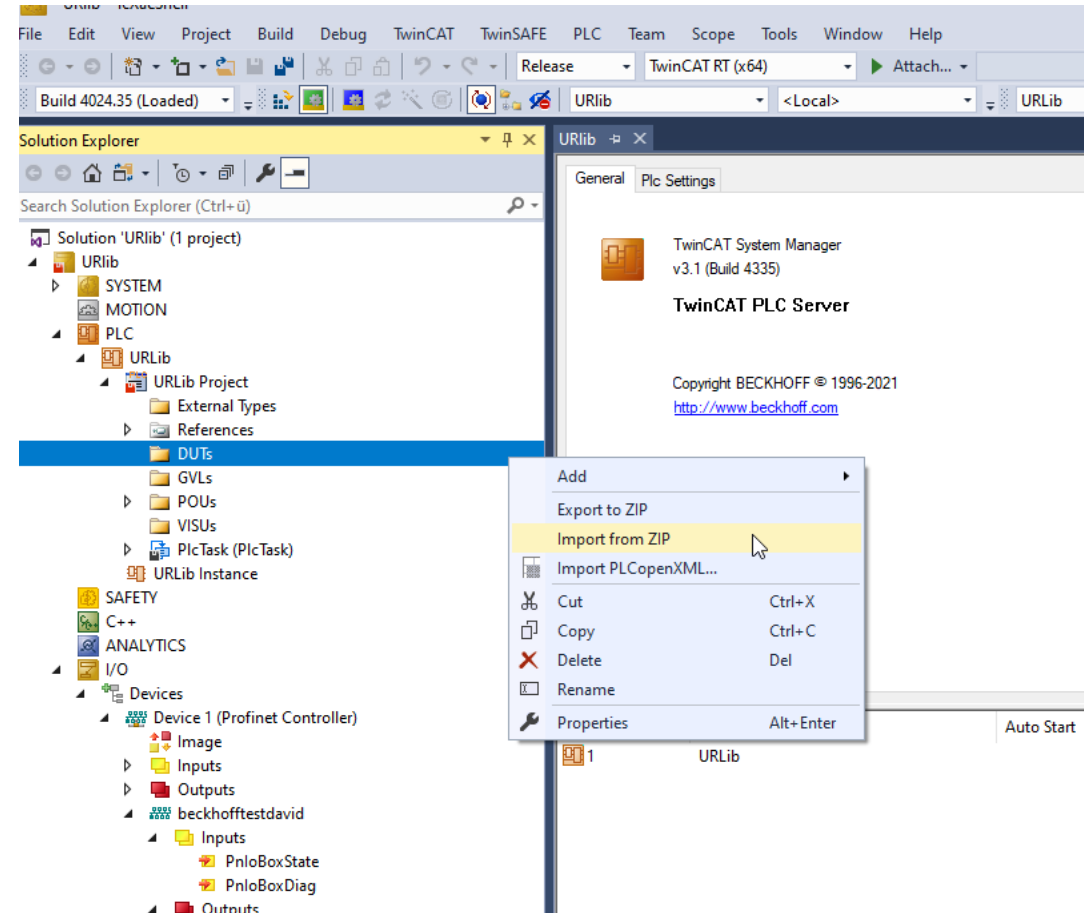
The screenshot shows the TwinCAT Project2 interface. The Solution Explorer on the left shows a project named 'TwinCAT Project2' with a 'Devices' folder containing 'Device 1 (Profinet Controller)'. The main window displays the 'PROFINET' configuration tab. The 'Scan Devices' dialog is open, showing a table of discovered devices. The 'Stationname' field is set to 'beckhofftestdavid'. The 'IP configuration' section shows the IP address '192.168.1.10' and subnet '255.255.255.0'. The 'Device blink' checkbox is checked. Red arrows point to the 'Set Stationname' and 'Set IP configuration' buttons. A blue arrow points from the 'Device 1 (Profinet Controller)' in the Solution Explorer to the 'Stationname' field in the Scan Devices dialog.

Very important!! Name must have the same name as in the project otherwise it is impossible to connect!!!!

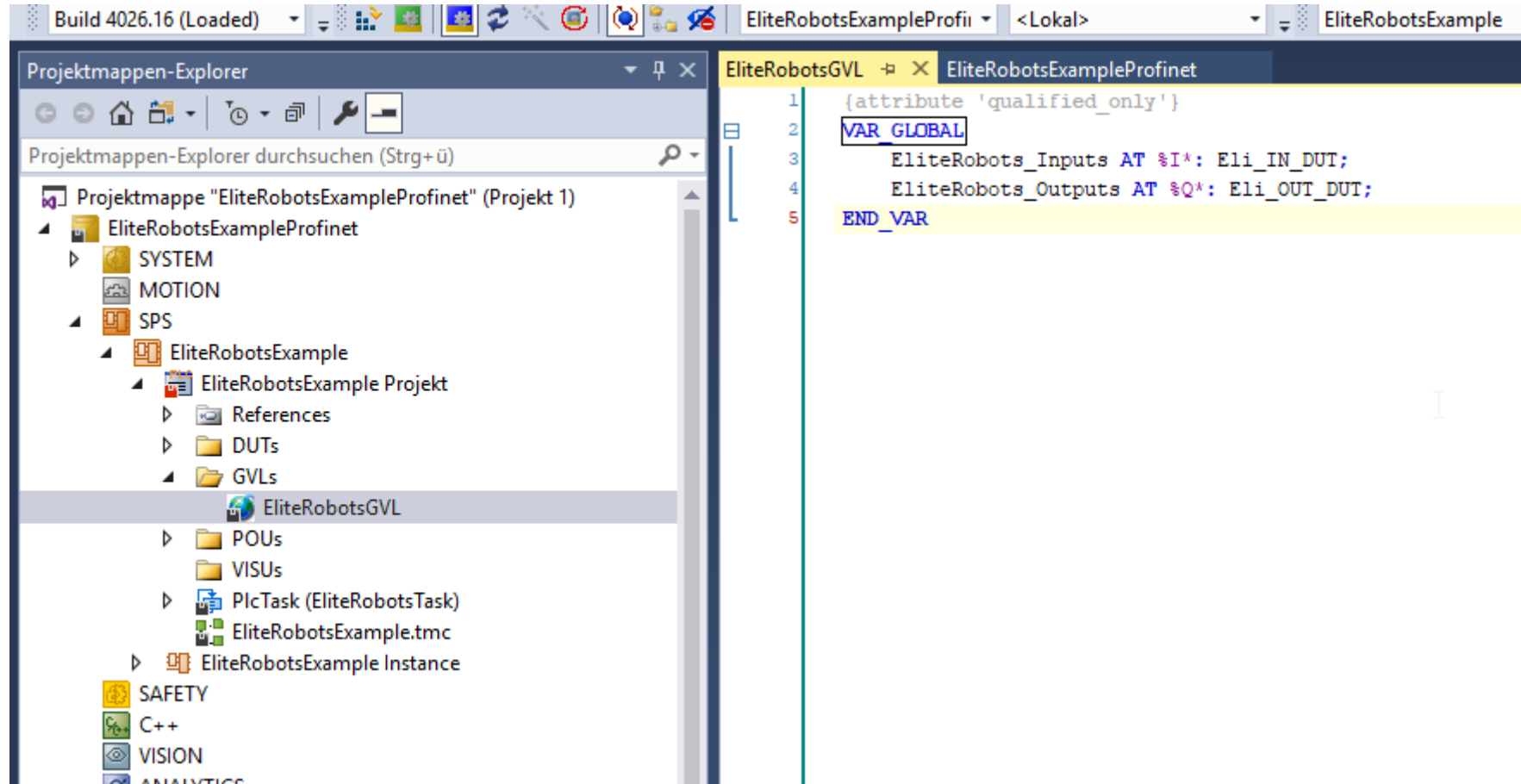
Right click on plc and create new standard project



UDT / DUTS import



Create some variables for example in GVL



Map all robot API Terms

The screenshot displays the Siemens STEP 7 HW Config software interface. The left pane shows the project tree with the following structure:

- EliteRobotsExample
- EliteRobotsExample Instance
- EliteRobotsGVL
- EliteRobots_Inputs
- State
- IB 436568.0, Eli_1_R2P_State [32.0]

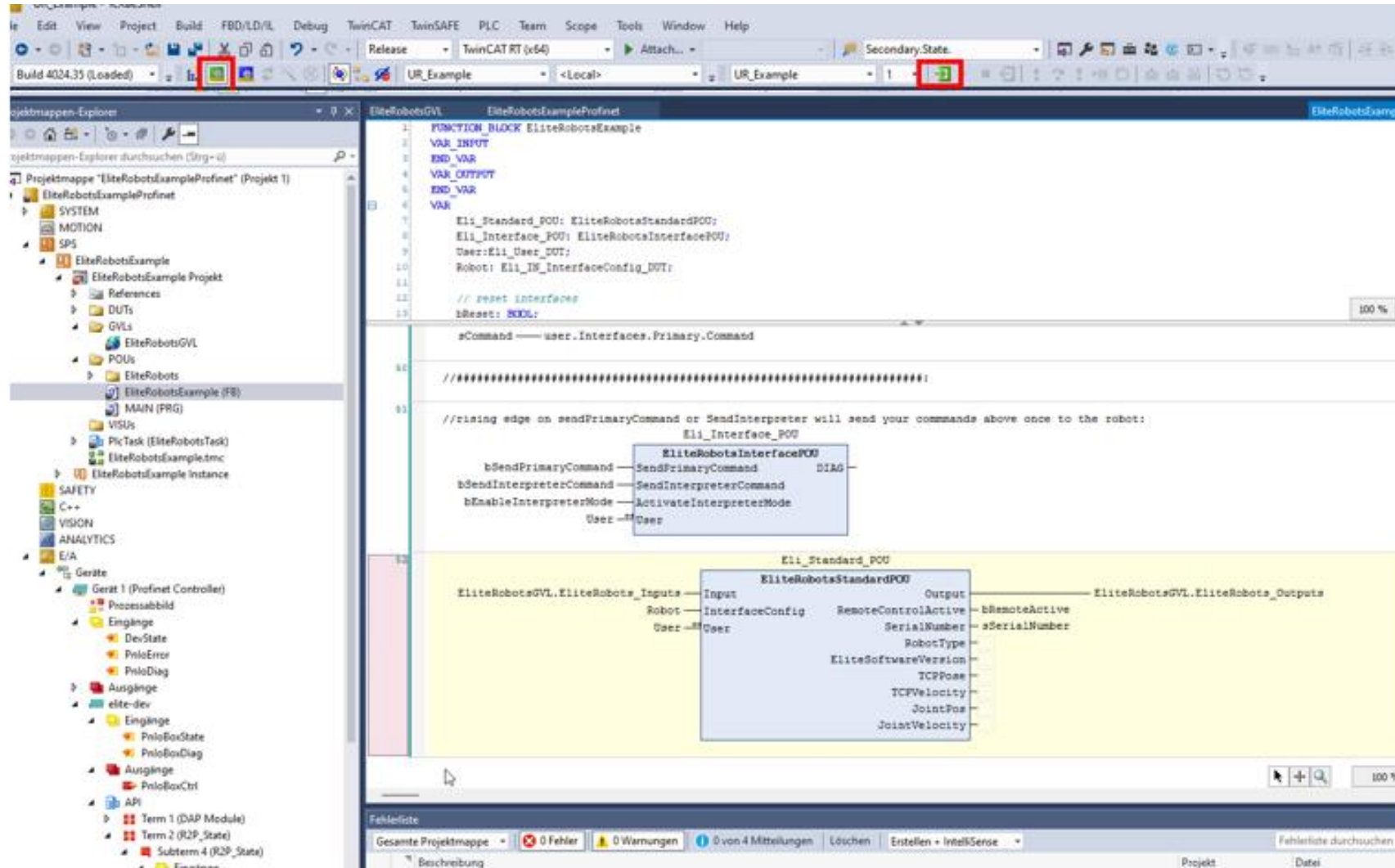
The right pane shows the 'Variablenverknüpfung R2P Robot State (Eingang)' dialog box. The search field is empty. The tree view shows the hierarchy: SPS > EliteRobotsExample > EliteRobotsExample Instance > EliteRobotsGVL > EliteRobots_Inputs > State > IB 436568.0, Eli_1_R2P_State [32.0]. A red arrow points to the 'State' node. The right side of the dialog box has checkboxes for 'Zeige Variablen' and 'Zeige Variablentypen'.

The bottom status bar shows 'Gesamte Projektmappe' and '0 Fehler'.

How to use Elite Robots-Example

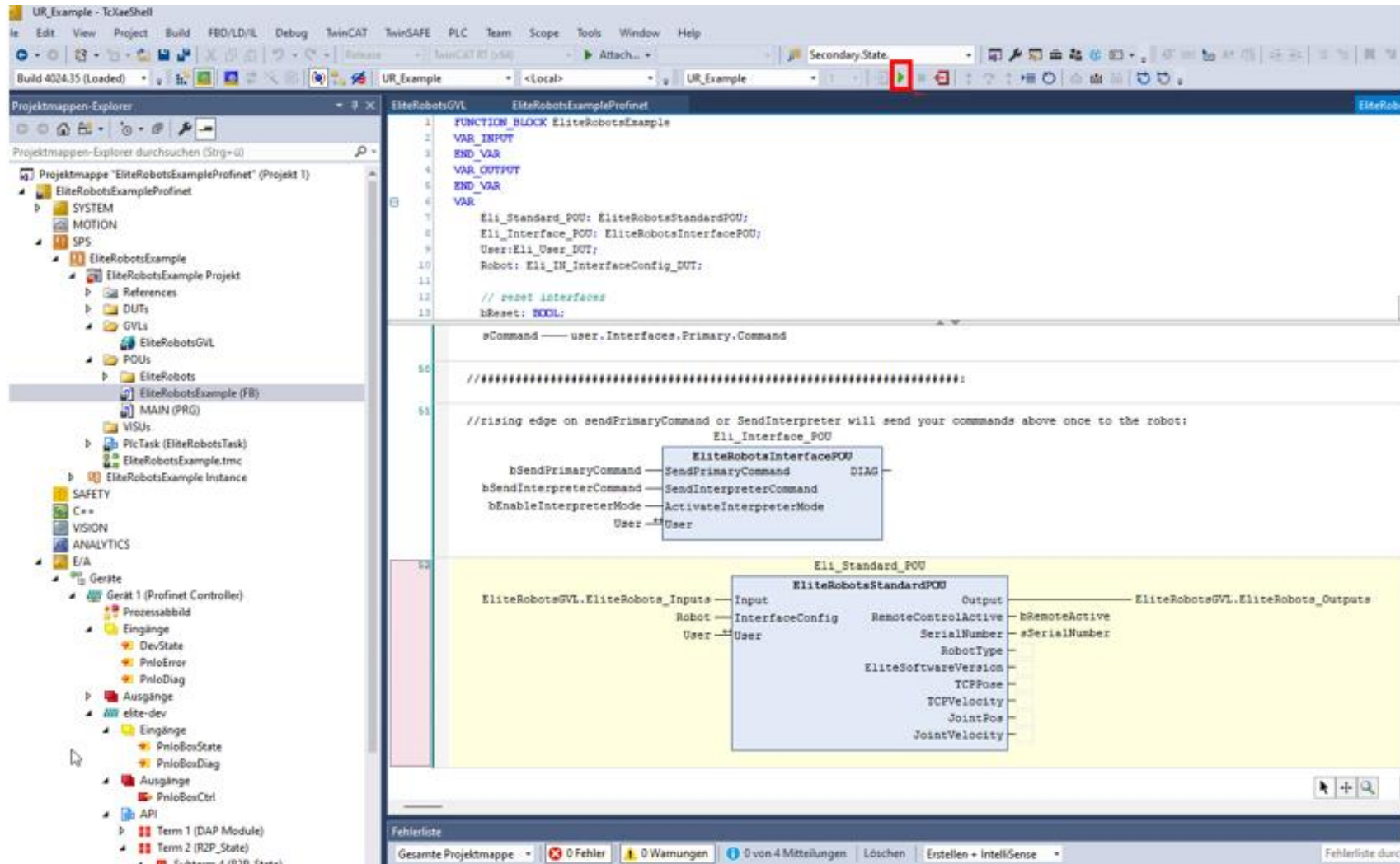
- 1. Install TF6310 as shown in (0. TCP/IP Beckhoff info)
- 2. enable Profinet at your Robot
- 3. set robot to remote control
- 4. open the project
- 5. Set up IP configuration as showed in (2. Profinet Controller settings with EliteRobots)
- 6. start the project

Start project



The screenshot shows the Siemens TIA Portal software interface. The top menu bar includes options like 'Edit', 'View', 'Project', 'Build', 'FBD/LD/IL', 'Debug', 'TwinCAT', 'TwinSAFE', 'PLC', 'Team', 'Scope', 'Tools', 'Window', and 'Help'. The toolbar below the menu bar contains various icons for project management and editing. The left sidebar, titled 'Objektmappen-Explorer', displays a project tree for 'EliteRobotsExampleProfinet'. The tree structure includes 'SYSTEM', 'MOTION', 'SPS', 'EliteRobotsExample', 'References', 'DUTs', 'GVLs', 'POUs', 'EliteRobots', 'EliteRobotsExample (FB)', 'MAIN (FRG)', 'VISUs', 'PkgTask (EliteRobotsTask)', 'EliteRobotsExample.tmc', 'EliteRobotsExample Instance', 'SAFETY', 'C++', 'VISION', 'ANALYTICS', and 'E/A'. The 'EliteRobotsExample (FB)' is selected. The main editor area shows a ladder logic diagram for 'EliteRobotsExample'. The diagram includes a function block 'EliteRobotsInterfacePOU' with inputs 'bSendPrimaryCommand', 'bSendInterpreterCommand', and 'bEnableInterpreterMode', and an output 'User'. Below this, there is a data block 'EliteRobotsStandardPOU' with inputs 'Robot' and 'User', and outputs 'RemoteControlActive', 'SerialNumber', 'RobotType', 'EliteSoftwareVersion', 'TCPPos', 'TCPVelocity', 'JointPos', and 'JointVelocity'. The bottom status bar shows 'Fehlerliste' (Error List) with 'Gesamte Projektmappe' (Total Project Map) and '0 Fehler' (0 Errors). It also displays '0 von 4 Mitteilungen' (0 of 4 Messages) and buttons for 'Löschen' (Delete), 'Erstellen + IntelliSense' (Create + IntelliSense), and 'Fehlerliste durchsuchen' (Search Error List).

Start project



The screenshot displays the Siemens STEP 7 LAD editor interface. The left pane shows the project tree for 'EliteRobotsExampleProfinet'. The main editor shows the LAD code for 'FUNCTION BLOCK EliteRobotsExample'. The code includes variable declarations and a call to the 'EliteRobotsInterfacePOU' block. The bottom status bar shows '0 Fehler' (0 errors) and '0 von 4 Mitteilungen' (0 of 4 messages).

```
1 FUNCTION BLOCK EliteRobotsExample
2   VAR_INPUT
3   END_VAR
4   VAR_OUTPUT
5   END_VAR
6   VAR
7     Eli_Standard_POU: EliteRobotsStandardPOU;
8     Eli_Interface_POU: EliteRobotsInterfacePOU;
9     User: Eli_User_DUT;
10    Robot: Eli_IN_InterfaceConfig_DUT;
11
12    // reset interfaces
13    bReset: BOOL;
14
15    sCommand --- user.Interfaces.Primary.Command
16
17    //rising edge on sendPrimaryCommand or SendInterpreter will send your commands above once to the robot:
18    Eli_Interface_POU
19      bSendPrimaryCommand --- SendPrimaryCommand
20      bSendInterpreterCommand --- SendInterpreterCommand
21      bEnableInterpreterMode --- ActivateInterpreterMode
22      User --- User
23
24    Eli_Standard_POU
25      EliteRobotsGVL.EliteRobots_Inputs --- Input
26      Robot --- InterfaceConfig
27      User --- User
28      RemoteControlActive --- bRemoteActive
29      SerialNumber --- sSerialNumber
30      RobotType --- RobotType
31      EliteSoftwareVersion --- EliteSoftwareVersion
32      TCPPose --- TCPPose
33      TCPVelocity --- TCPVelocity
34      JointPos --- JointPos
35      JointVelocity --- JointVelocity
36
37    EliteRobotsGVL.EliteRobots_Outputs --- Output
```

Reset all connections

