

EtherCAT<sup>®</sup>

PROFI<sup>®</sup>  
NET

EtherNet/IP<sup>™</sup>

ETHERNET  
POWERLINK

aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# Application Note

Electromechanical Division Europe  
Application Team Offenburg

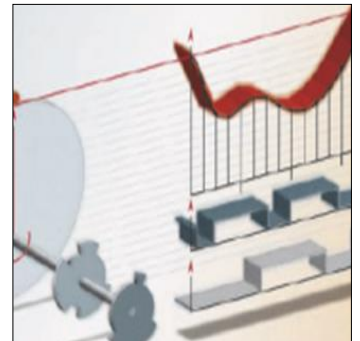


  
**CODESYS**

  
**PLCopen**  
**motion control**

## PSD programmable

Quick Start Guide



Author:  
Version:  
Last change:

KW  
V1.2  
27 March 2025

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Business Development & Applications

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## 1. Downloads and Installation

- Visit [solutions.parker.com/psd\\_support](https://solutions.parker.com/psd_support)
- Download and unzip the PSD ServoManager (version >=01.09.01)
- Use the link to CODESYS Store and download the CODESYS Development System
- Download the PSD1 Programmable Target Package

## PSD: Parker Servo Drive

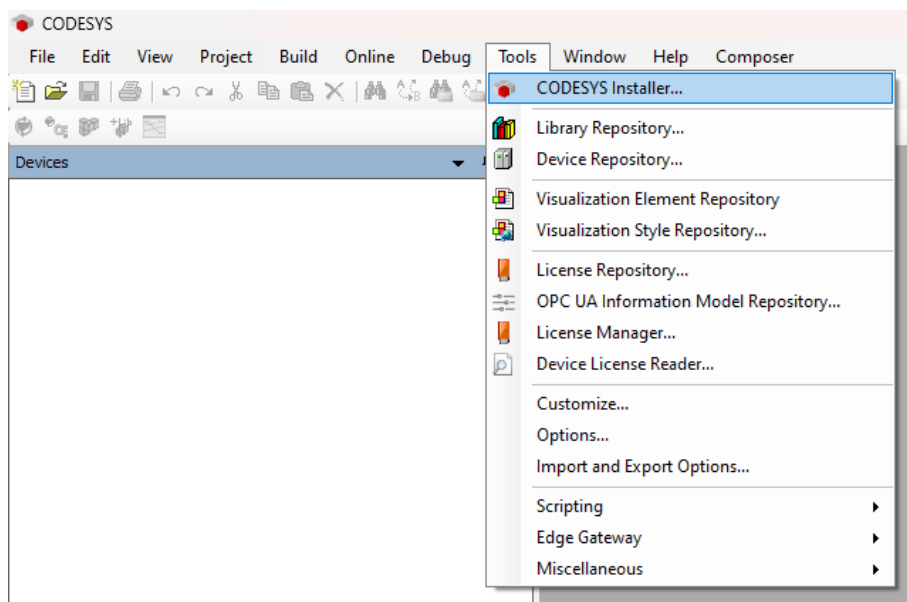
### Support Page

| Downloads   | Date       | Version   |
|---|------------|-----------|
| <b>PSD ServoManager</b> (incl. help files)<br>Please copy the zip - content to a folder (not C:\programs) and start "PSD-ServoManager.exe". No installation required!   | 2020-06-08 | V01.09.01 |
| <b>PSD Firmware Download</b> (Registration required)  | 2020-06-05 | V01.09.01 |
| <b>PSD1 Release History *</b>   | 2020-06-08 |           |
| <b>PSD1 Functional Safety over EtherCAT downloads</b>   | 2019-04-29 |           |
| <b>PSD1 Programmable Target</b> (Package for CODESYS Development System, rename to *.package after download)<br><b>CODESYS Development System</b> (link to CODESYS Store, free)   | 2020-06-05 | V1.0      |
| <b>PSD1 Programmable Application Examples</b><br>- <a href="#">Electronic_gearing</a><br>- <a href="#">Recipe Table via digital I/O</a><br>- <a href="#">Recipe Table via Fieldbus</a><br>- <a href="#">XYZ_Application</a> | 2020-06-05 |           |

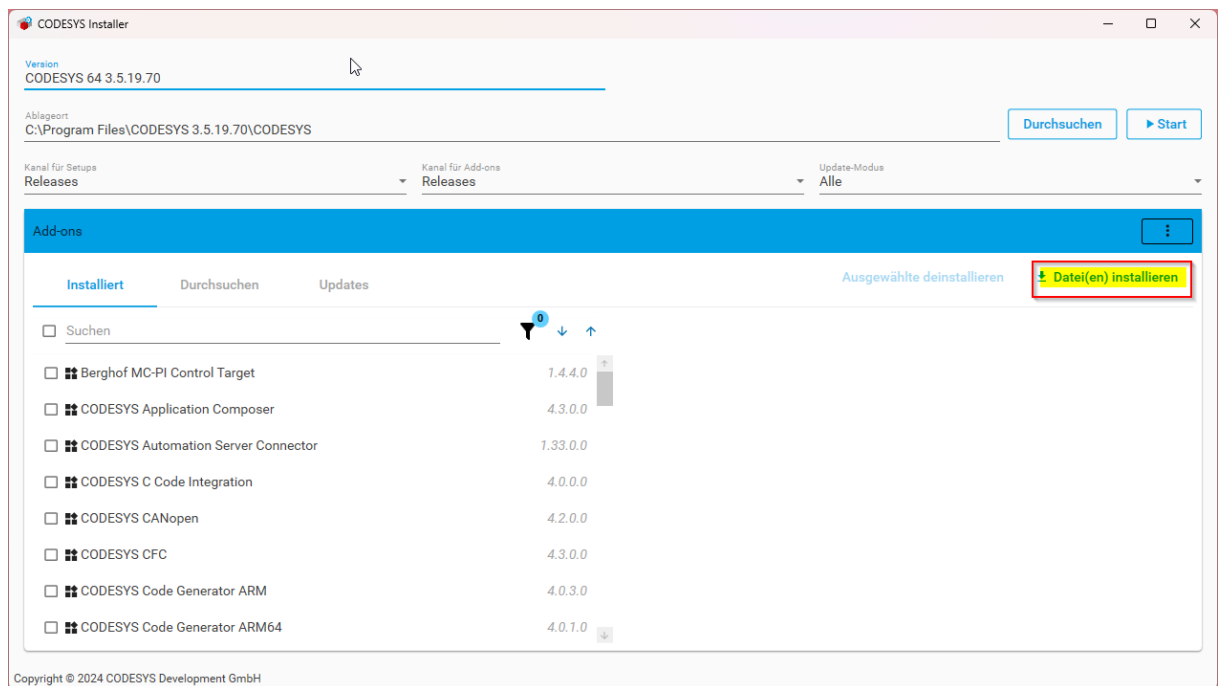
- Install the CoDeSys Development System V3.5 32bit software (version >= 3.5.15)
- Open CODESYS Development System
- Open Tools → CODESYS Installer (Package Manager in the older CODESYS version)



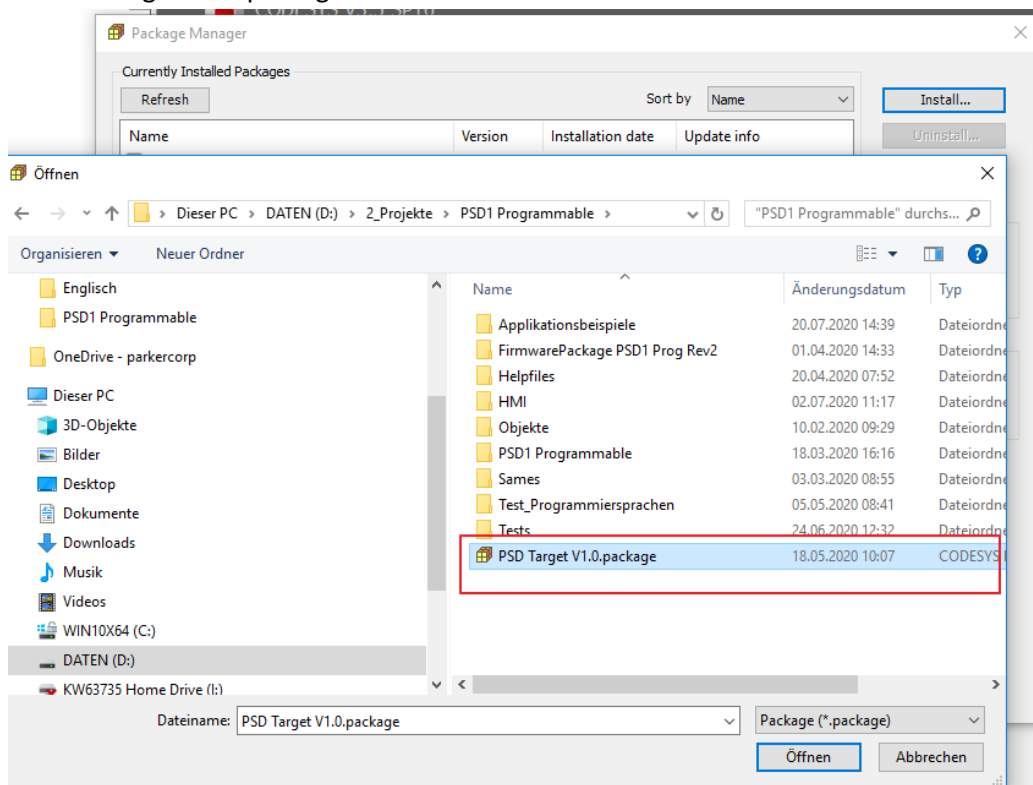
**CODESYS**



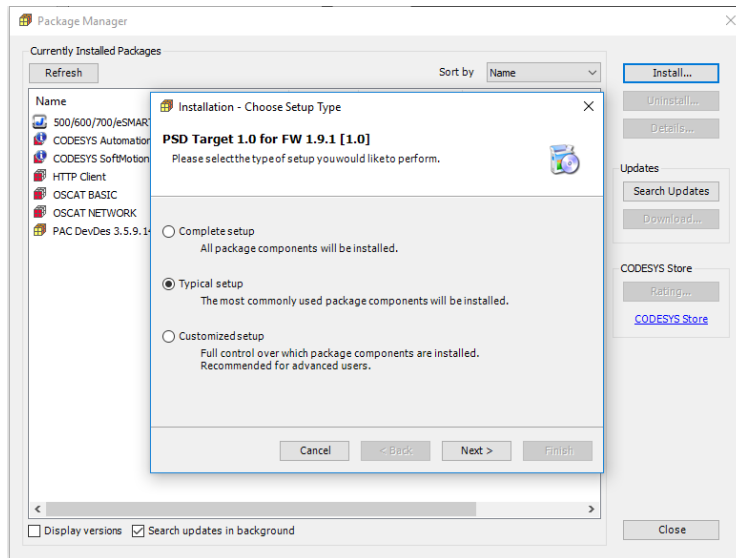
- Click on Install Files



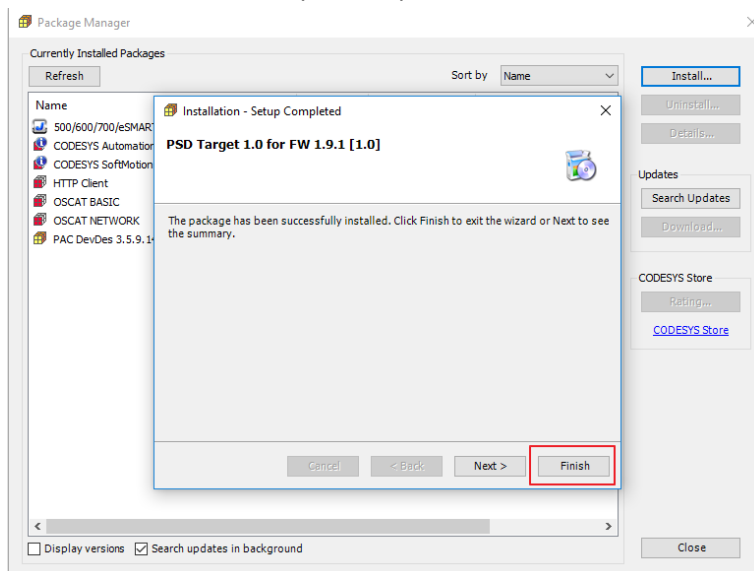
- Select "PSD Target V1.x.package" file



- Choose “Typical setup”

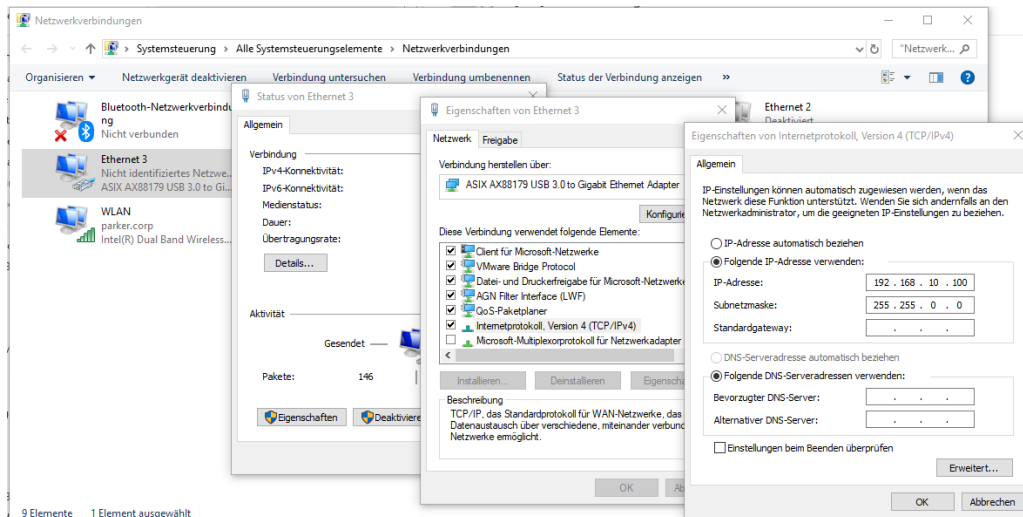


- Press “Finish” when the setup is completed



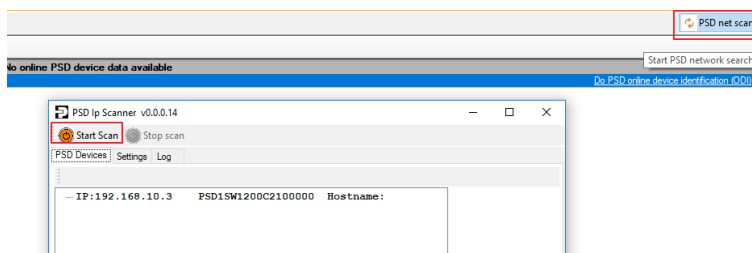
## 2. Adjust net adapter settings

- Open Windows Control Panel -> Network connections
- Adjust settings of network adapter:  
 IP-Address: **192.168.10.xxx**  
 Sub net mask: **255.255.0.0**

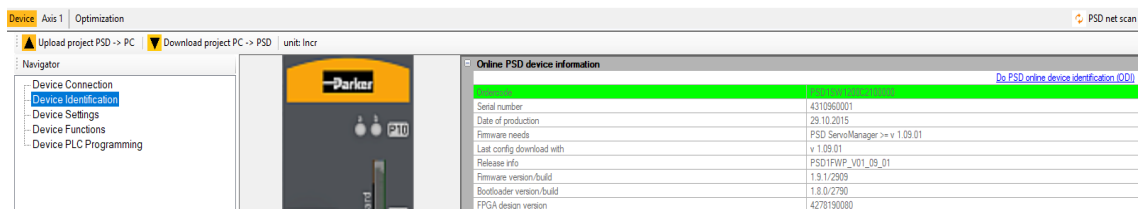


### 3. PSD Configuration

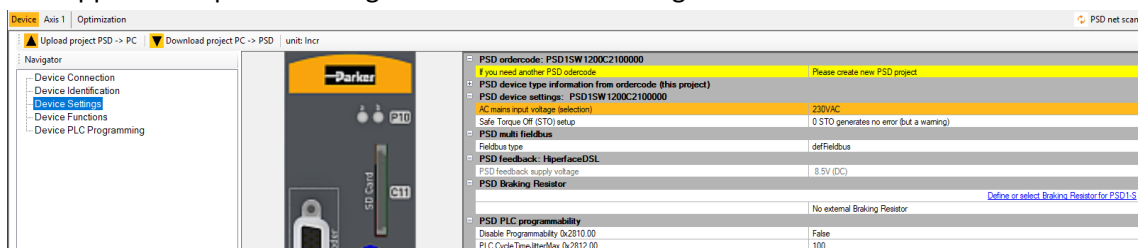
- Create a new PSD project
- Start PSD net scan and select connected device



- Device-> Device Identification -> Do PSD online device identification



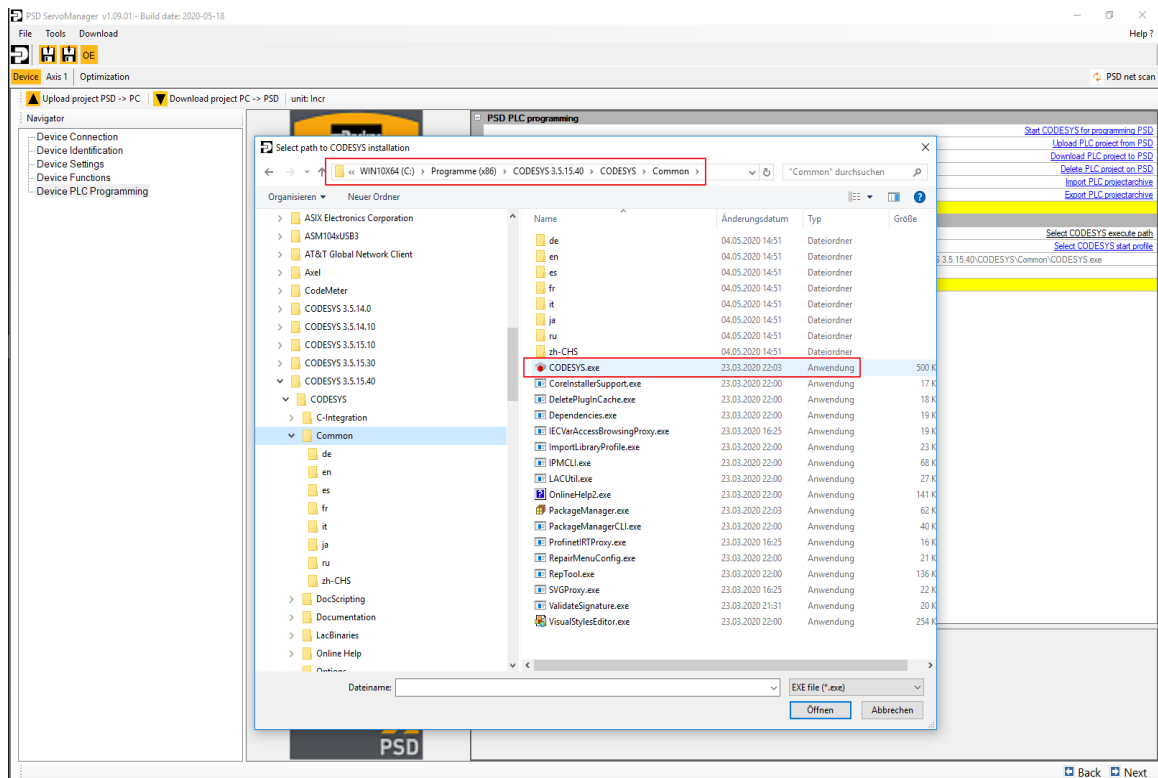
- Perform application specific settings: Device-> Device Settings



- Select CODESYS execute path and start profile

Execute path: C:\Program Files (x86)\CODESYS 3.5.15.40\CODESYS\Common\CODESYS.exe

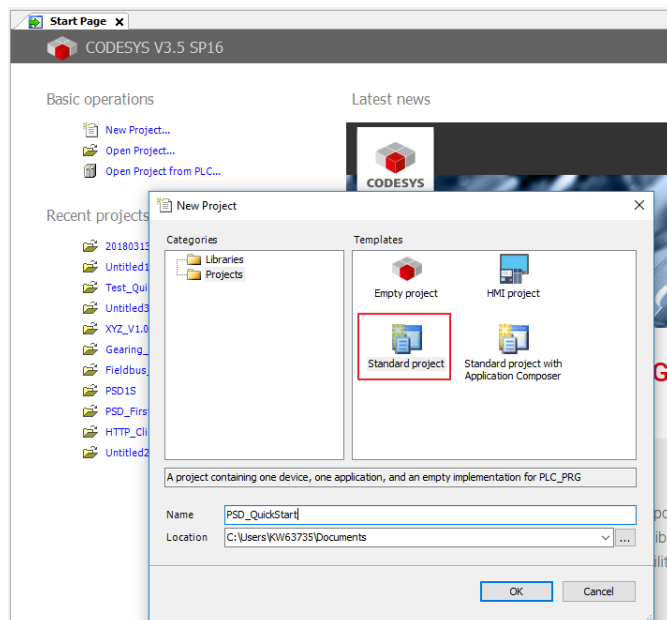
Start profile: C:\Program Files (x86)\CODESYS3.5.15.40\CODESYS\Profiles\CODESYSxx.xml



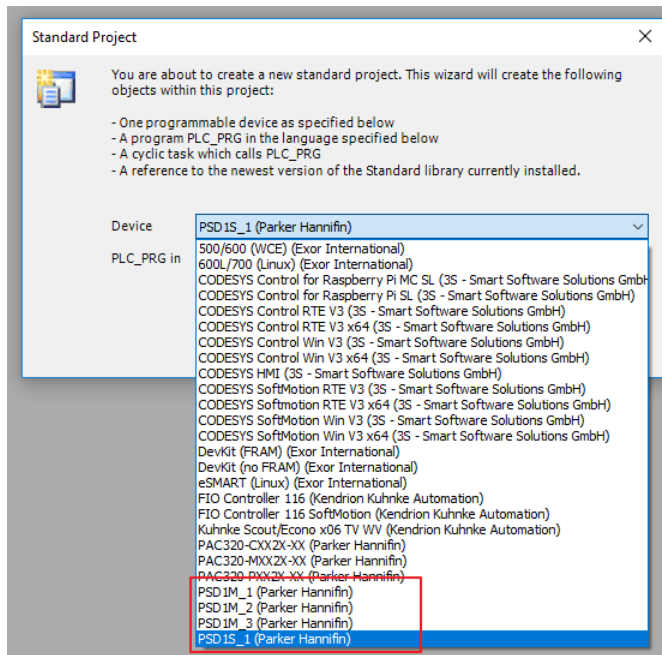
- Perform complete axis configuration
- Download the configuration

#### 4. Codesys

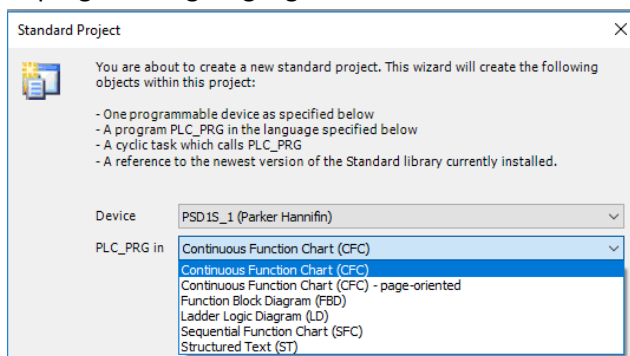
- Open CODESYS
- Create a new standard project



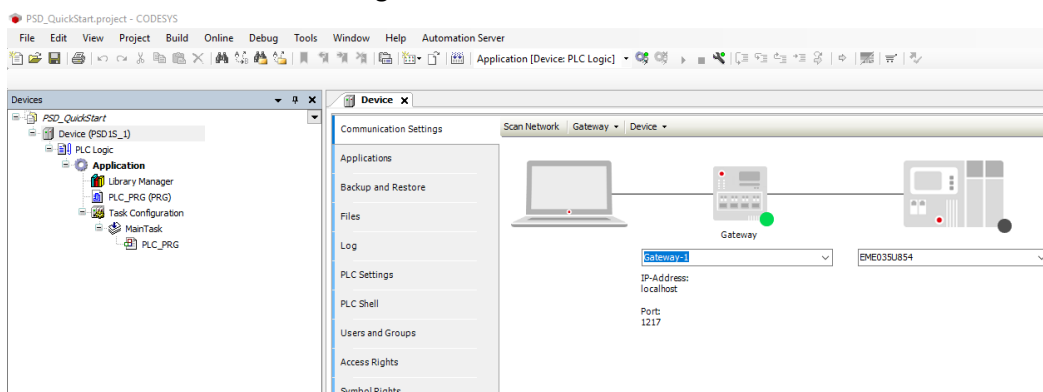
- Select PSD device



- Select programming language

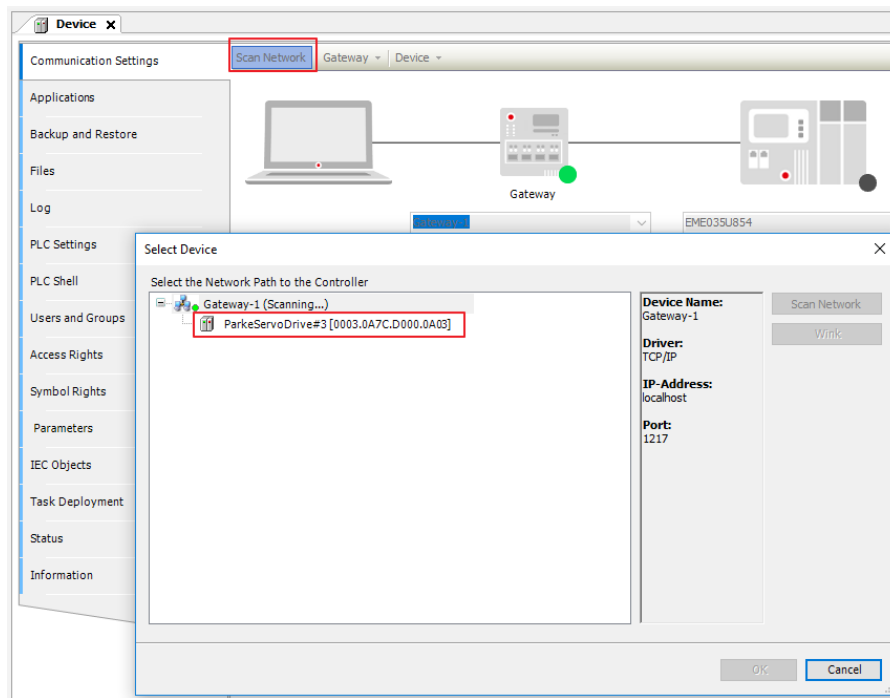


- Open device communication settings

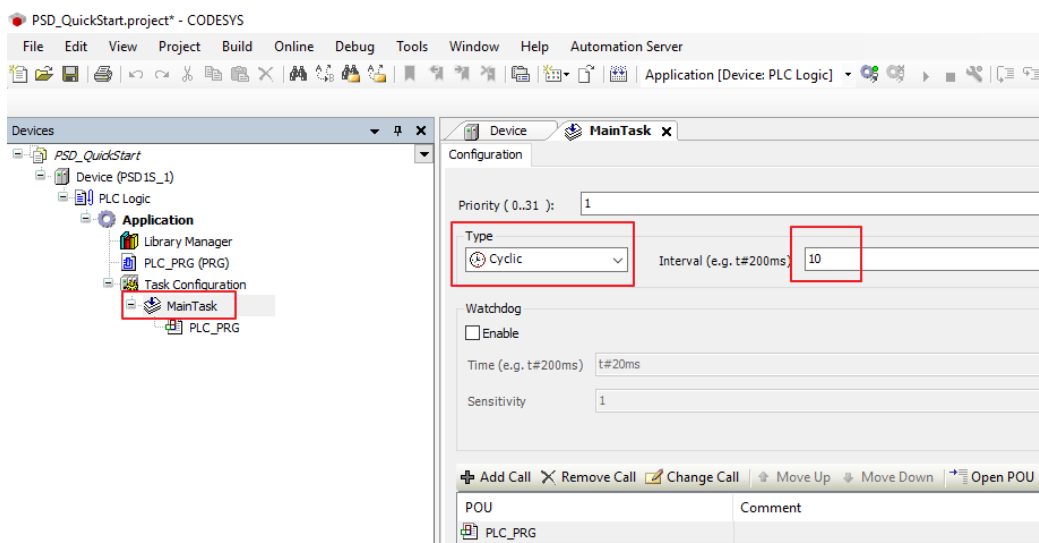


- Scan network and select connected PSD device





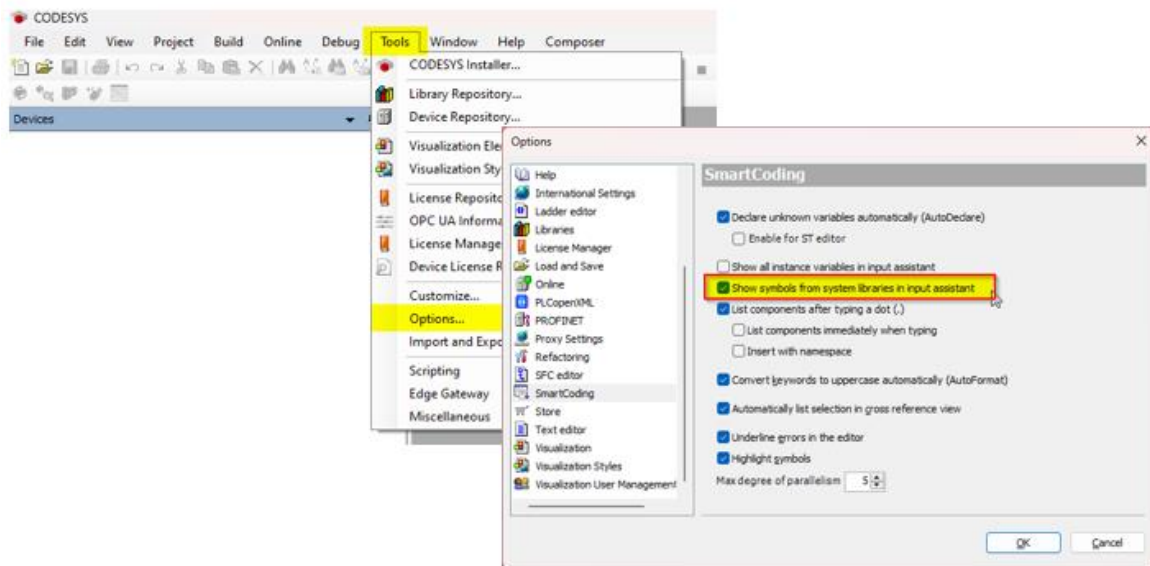
- Check or adjust the “MainTask” settings (Cycle type, cycle time and watchdog)



- Now an empty project has been created and the communication between CODESYS and PSD is established.
- Finally the user has to create an IEC program. In our Quick Start Guide we show two examples of how to control the PSD.

## 5. PSD FBs in CODESYS (Input Assistant)

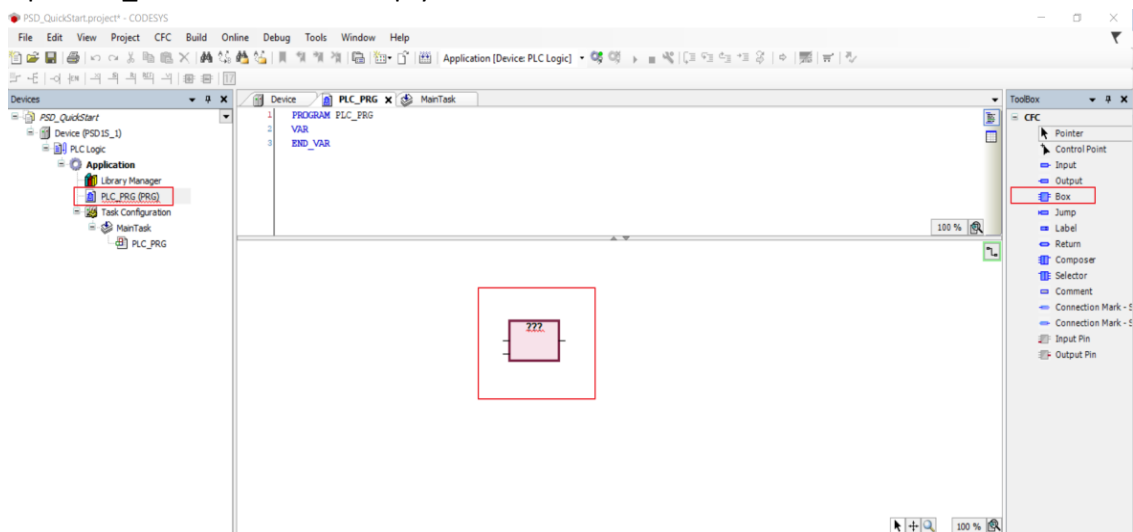
To display function block (FB) blocks using the input assistant (F2), you must first enable this feature in the CODESYS settings.



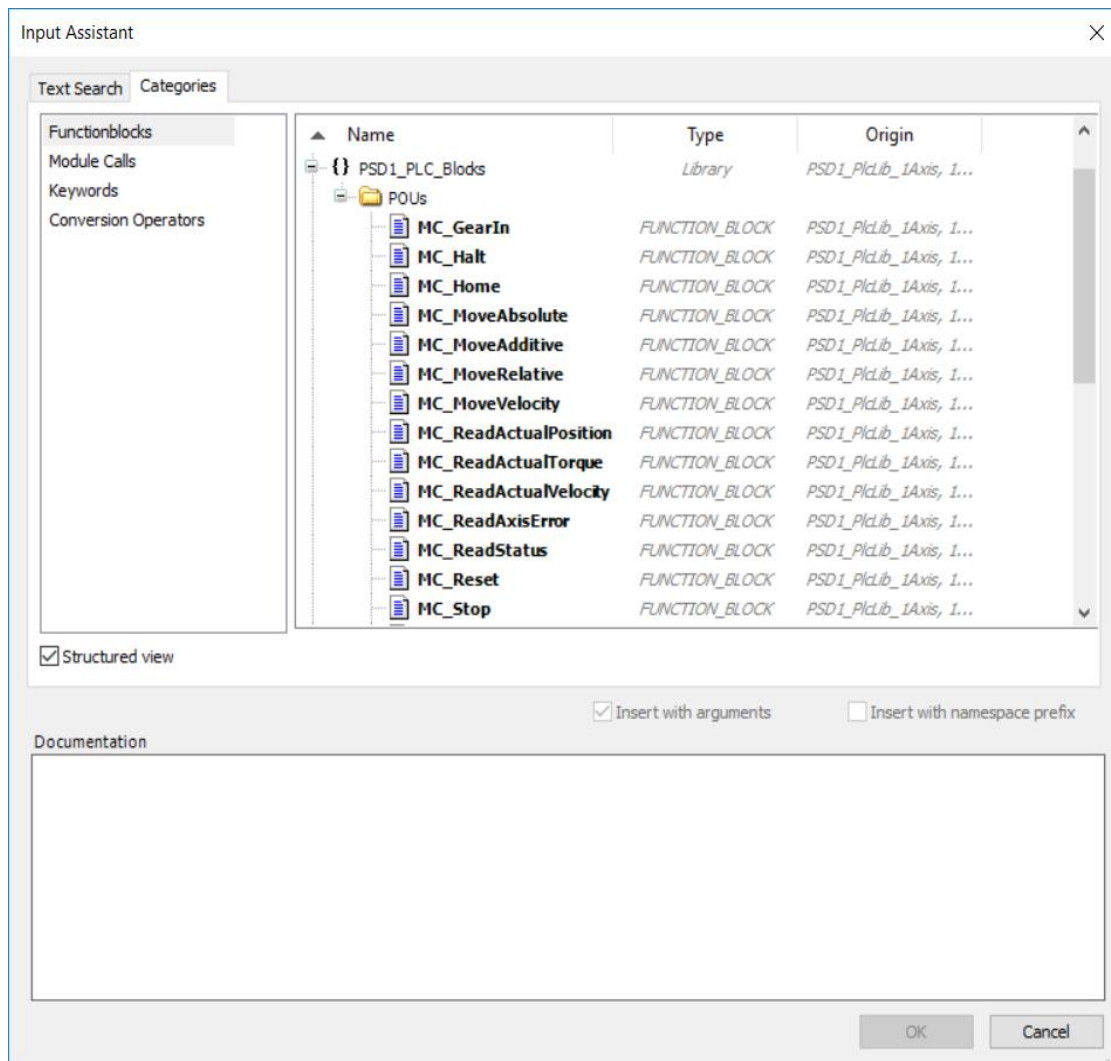
## 6. Example 1: Power on the drive and display the status via digital I/Os

**Example task:** Create IEC program (input0 = enable drive, output0 = status drive is enabled)

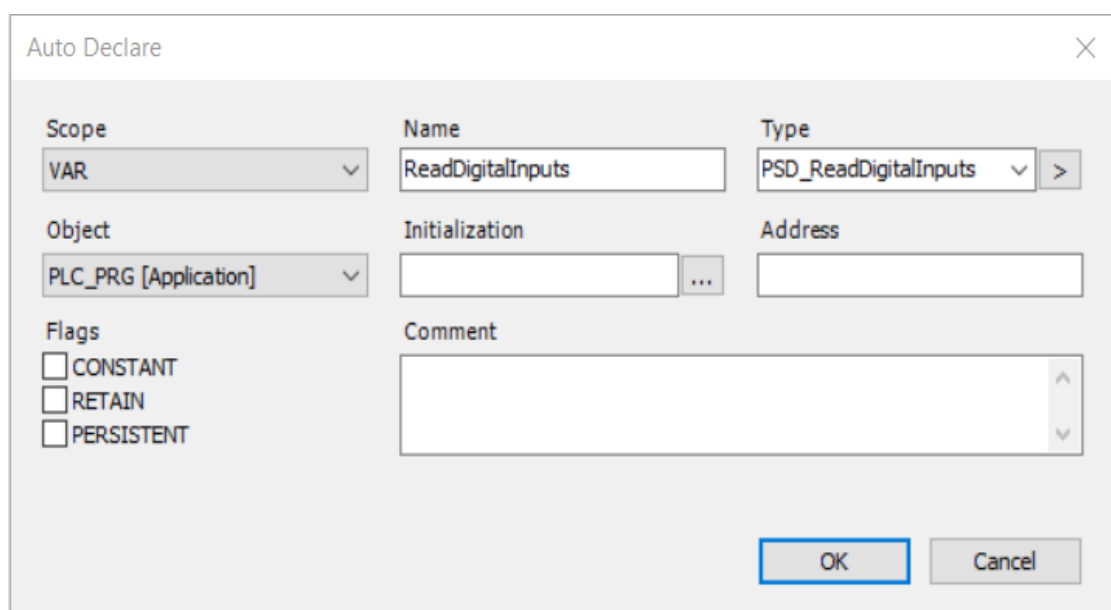
1. Open PLC\_PRG and insert an empty box from the Toolbox



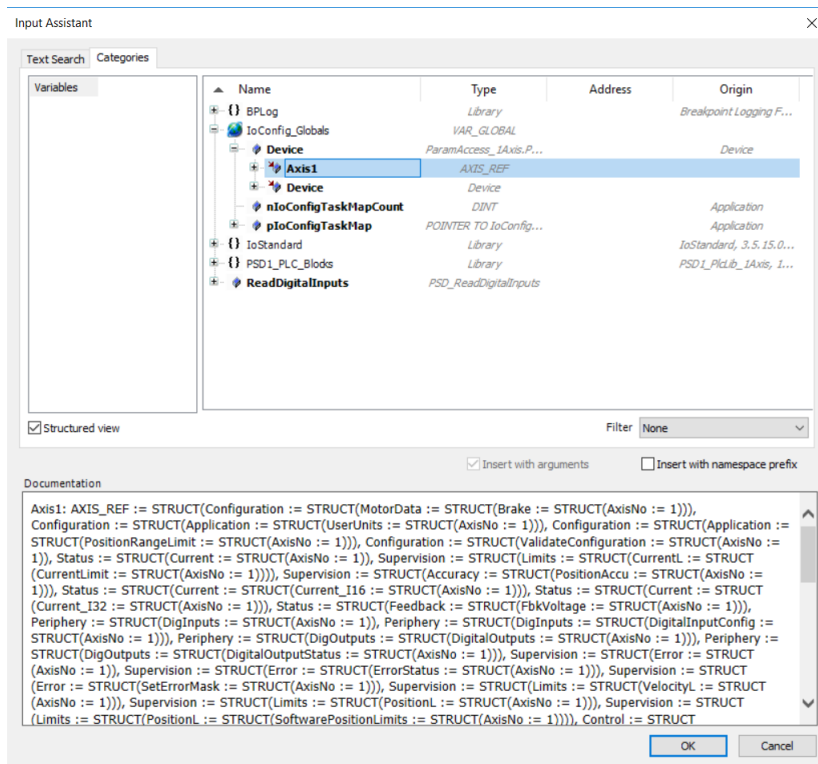
2. Click on ??? and press F2 button to open the Input Assistant
3. Select PSD\_ReadDigitalInputs function block from the PSD1\_PLC\_Blocks library



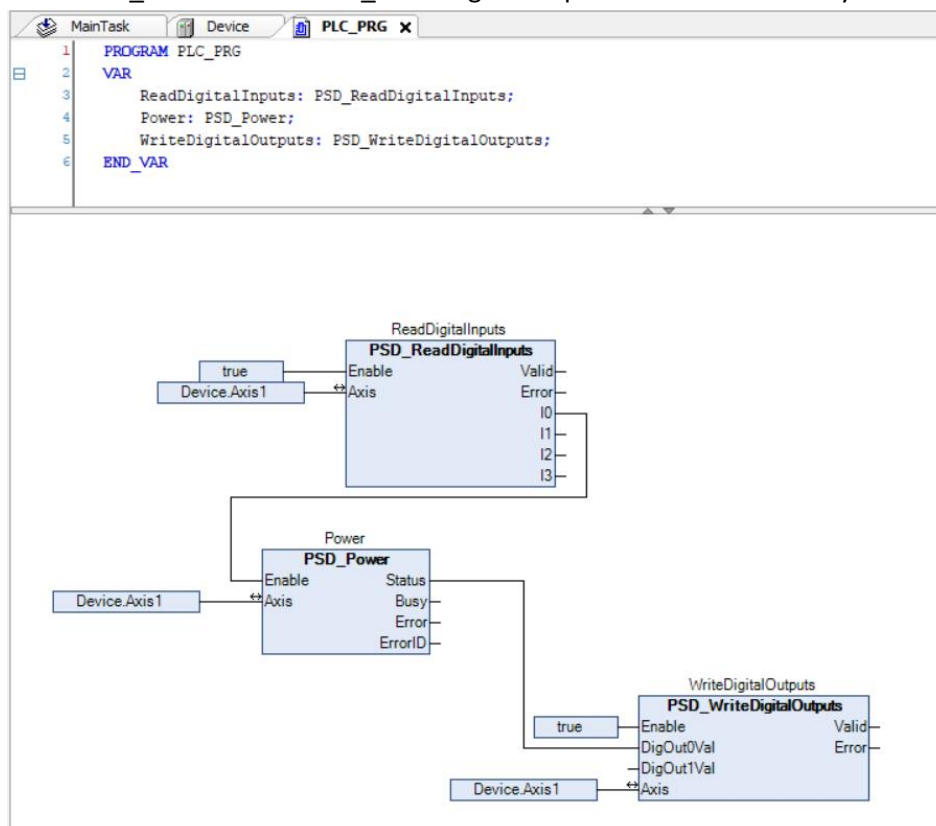
4. Declare the name of the block e.g. "ReadDigitalInputs"



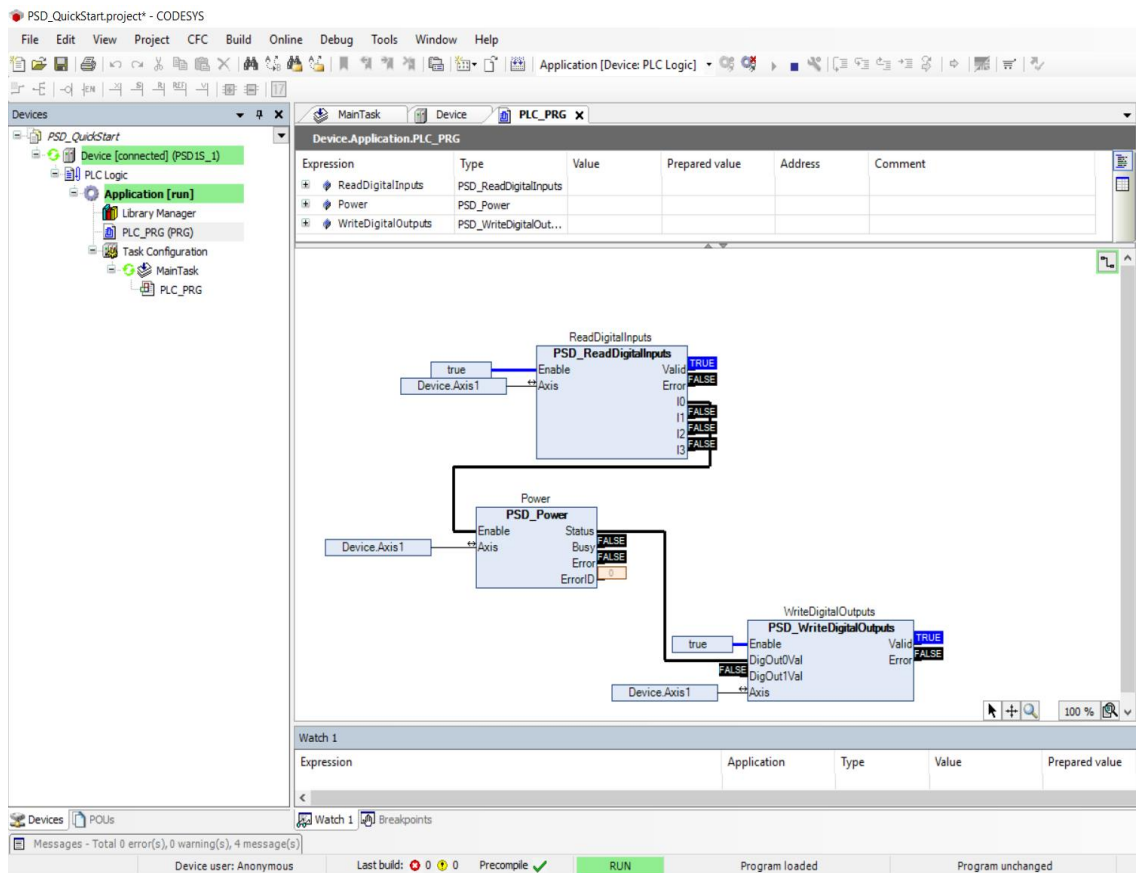
- Assign the inputs and outputs of the block
- To select the Axis\_Ref “F2” Input Assistant can be used



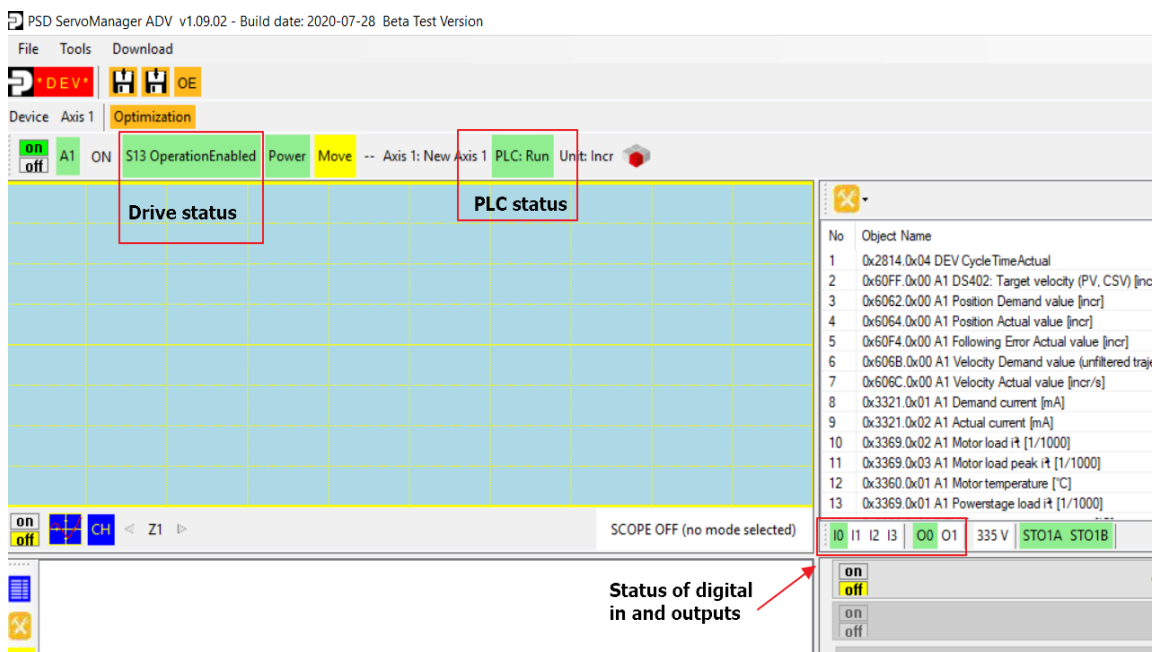
- Insert PSD\_Power FB and PSD\_WriteDigitalOutputs FB in the same way



8. Login and download the program to the drive
9. Start the program, Codesys should show the [run] state and program can be monitored.



10. Finally test the function and check the drive state, inputs and output status in optimization window of PSD\_ServoManager.

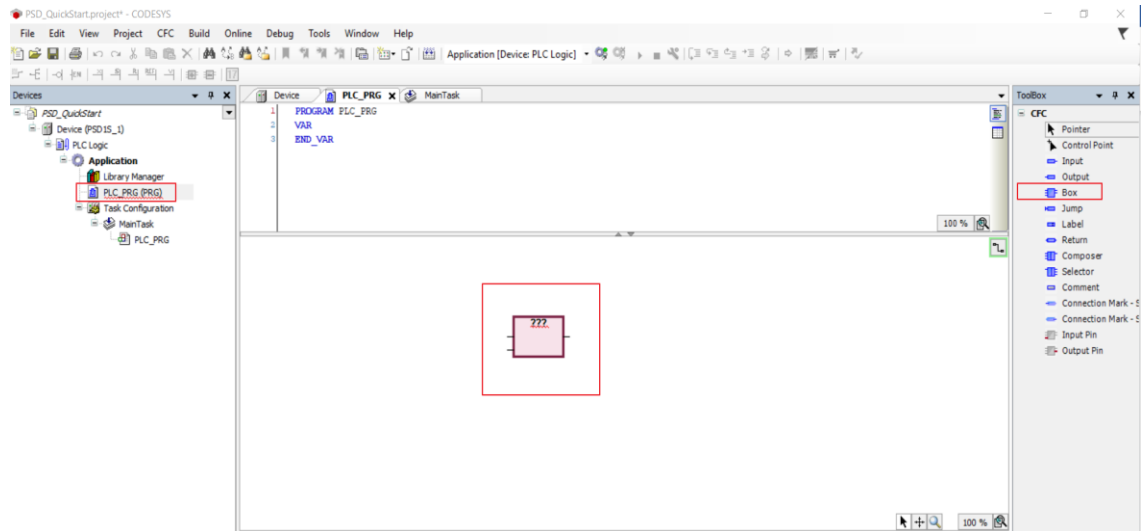


## 7. Example 2: Using of PSD Profidrive StateMachine FB

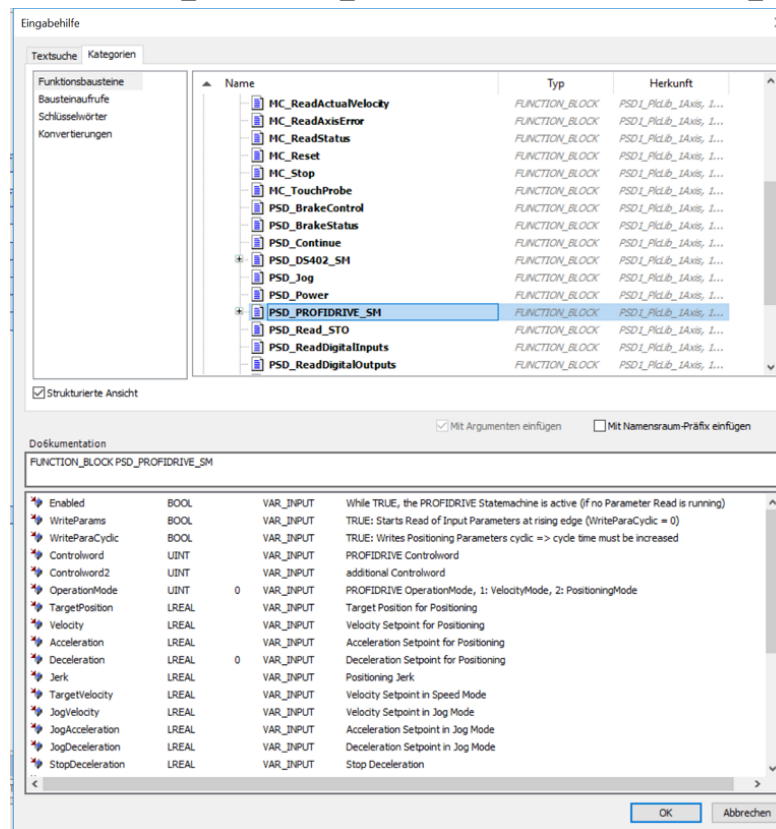
The ProfiDrive statemachine is switched off for the programmable PSD and can be activated via PSD\_Profidrive\_SM function block!

**Example task:** Create IEC program with PSD\_ProfiDrive\_SM function block and test with Siemens PLC and FB51.

1. Open PLC\_PRG and insert an empty box from the Toolbox



2. Click on ??? and press F2 button to open the Input Assistant
3. Select PSD\_PROFIDRIVE\_SM function block from the PSD1\_PLC\_Blocks library



- [illegible]

- Siemens - C:\Users\B01\Documents\Projects\PLC2\PLC2\_BSTv1\_6\_1500\_1200\_V14\Project\_FBSTv1\_6\_1500\_1200\_V14\PLC2\_BSTv1\_6\_1500\_1200\_V14

Project Edit View Insert Online Options Tools Window Help

Save project Go online Go offline Search in projects

RefProject\_FBSTv1\_6\_1500\_1200\_V14 > PLC2 [CPU 1212C ADO/DO] > Watch and force tables > PSD\_Control\_Master

|    | Name  | Address       | Display format | Monitor value                               | Modify value | Comment                             | Tag comment                                   |
|----|---|---------------|----------------|---|--------------|-------------------------------------|---|
| 1  | # Control                                     |               |                |   |              |                                     |   |
| 2  | *PSDControlManager_ADI_D0^LaddAPA             | %B051.D0W8    | DEC            | 278   | 278          | <input checked="" type="checkbox"/> | PSD mailbox is set to IO range...for PKN I... |
| 3  | *PSDControlManager_ADI_D0^LaddPD              | %B051.D0W8    | DEC            | 277   | 277          | <input checked="" type="checkbox"/> | PSD mailbox is set to IO range...for PDI...   |
| 4  | *PSDControlManager_ADI_D0^Enable              | %B051.D0X0.3  | Bool           | <input checked="" type="checkbox"/> TRUE    | TRUE         | <input checked="" type="checkbox"/> | =>1 reset error                               |
| 5  | *PSDControlManager_ADI_D0^MailboxSet          | %B051.D0X0.3  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | =>1 selected mode                             |
| 6  | *PSDControlManager_ADI_D0^ModeWORD            | %B051.D0M4    | DEC            | 1   | 1            | <input checked="" type="checkbox"/> | Function Mode                                 |
| 7  | *PSDControlManager_ADI_D0^biorg               | %B051.D0X0.6  | Bool           | <input checked="" type="checkbox"/> TRUE    | TRUE         | <input checked="" type="checkbox"/> | =>1 jog                                       |
| 8  | *PSDControlManager_ADI_D0^biorg               | %B051.D0X0.5  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | =>1 stop                                      |
| 9  | *PSDControlManager_ADI_D0^biStartHoming       | %B051.D0X0.2  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | startstop homing                              |
| 10 | *PSDControlManager_ADI_D0^biStartMode         | %B051.D0X0.0  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | start selected mode                           |
| 11 | *PSDControlManager_ADI_D0^biStop              | %B051.D0X0.2  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | =>1 stop                                      |
| 12 | *PSDControlManager_ADI_D0^Position            | %B051.D0I0    | DEC<+          | -1000000                                    | -1000000     | <input checked="" type="checkbox"/> |   |
| 13 | *PSDControlManager_ADI_D0^Velocity            | %B051.D0I4    | DEC<+          | 40000                                       | 40000        | <input checked="" type="checkbox"/> |   |
| 14 | *PSDControlManager_ADI_D0^Acceleration        | %B051.D0I8    | DEC<+          | 200000                                      | 200000       | <input checked="" type="checkbox"/> |   |
| 15 | *PSDControlManager_ADI_D0^Deceleration        | %B051.D0I22   | DEC<+          | 150000                                      | 150000       | <input checked="" type="checkbox"/> |   |
| 16 | *PSDControlManager_ADI_D0^Inverter            | %B051.D0I26   | DEC<+          | 1   | 1            | <input checked="" type="checkbox"/> |   |
| 17 | *PSDControlManager_ADI_D0^Inverter            | %B051.D0I30   | DEC<+          | 1   | 1            | <input checked="" type="checkbox"/> |   |
| 18 | *PSDControlManager_ADI_D0^hold                | %B051.D0X0.1  | Bool           | <input checked="" type="checkbox"/> FALSE   | FALSE        | <input checked="" type="checkbox"/> | =>1 halt                                      |
| 19 | # Status                                      |               |                |   |              |                                     |   |
| 20 | *PSDControlManager_ADI_D0^bCommErr            | %B051.D0X35.0 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 communication is out of order             |
| 21 | *PSDControlManager_ADI_D0^bDeviceErr          | %B051.D0X34.1 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 device error                              |
| 22 | *PSDControlManager_ADI_D0^bDriveErr           | %B051.D0X34.0 | Bool           | <input checked="" type="checkbox"/> TRUE    |              | <input type="checkbox"/>            | =>1 drive enabled                             |
| 23 | *PSDControlManager_ADI_D0^bHomingAttained     | %B051.D0X34.6 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 homing attained                           |
| 24 | *PSDControlManager_ADI_D0^bHomingRunning      | %B051.D0X34.5 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 homing is running                         |
| 25 | *PSDControlManager_ADI_D0^bModeRunning        | %B051.D0X32.2 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 selected mode running                     |
| 26 | *PSDControlManager_ADI_D0^bInMode             | %B051.D0X34.3 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 InMode = in pos. in velocity, in gear     |
| 27 | *PSDControlManager_ADI_D0^bPosErr             | %B051.D0X34.4 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 run time error positioning                |
| 28 | *PSDControlManager_ADI_D0^cStatusWORD         | %B051.D0W242  | Hex            | 16A006F                                     |              | <input type="checkbox"/>            |   |
| 29 | *PSDControlManager_ADI_D0^cStatusWORD         | %B051.D0W244  | Hex            | 16A0237                                     |              | <input type="checkbox"/>            |   |
| 30 | *PSDControlManager_ADI_D0^std.PositionValue   | %B051.D0I36   | DEC<+          | -34739                                      |              | <input type="checkbox"/>            |   |
| 31 | *PSDControlManager_ADI_D0^std.VelocityValue   | %B051.D0I40   | DEC<+          | -1026                                       |              | <input type="checkbox"/>            |   |
| 32 | *PSDControlManager_ADI_D0^std.ActualError     | %B051.D0M44   | Hex            | 16A0000                                     |              | <input type="checkbox"/>            |   |
| 33 | *PSDControlManager_ADI_D0^cStatusWORD         | %B051.D0W244  | Bin            | 280000_0010_0011_0111                       |              | <input type="checkbox"/>            | Last added (newest) fault code of actual ...  |
| 34 | # APA   |               |                |   |              |                                     |   |
| 35 | *PSDControlManager_ADI_D0^cCmd                | %B051.D0W54   | Hex            | 16A0000                                     | 16A0002      | <input checked="" type="checkbox"/> | =>0 do nothing, 1 read, 2 write WORD, 3 w...  |
| 36 | *PSDControlManager_ADI_D0^cObjectIndex        | %B051.D0W56   | Hex            | 16A00F2                                     | 16A00F2      | <input checked="" type="checkbox"/> |   |
| 37 | *PSDControlManager_ADI_D0^cObjectSubindex     | %B051.D0W58   | DEC            | 0   | 0            | <input checked="" type="checkbox"/> |   |
| 38 | *PSDControlManager_ADI_D0^cParameterValue     | %B051.D0I60   | DEC<+          | 0   | 0            | <input checked="" type="checkbox"/> |   |
| 39 | *PSDControlManager_ADI_D0^bTimeErr            | %B051.D0X35.1 | Bool           | <input checked="" type="checkbox"/> FALSE   |              | <input type="checkbox"/>            | =>1 error due to parameter transmitting       |
| 40 | *PSDControlManager_ADI_D0^bTimeErr            | %B051.D0I64   | Time           | T#16M_405                                   | T#16M_405    | <input checked="" type="checkbox"/> | timer timeout positioning                     |
| 41 | *PSDControlManager_ADI_D0^bChangeSetImmediate | %B051.D0X48.1 | Bool           | <input checked="" type="checkbox"/> FALSE</ |              |                                     |   |