Selmo

Demo projects with CODESYS

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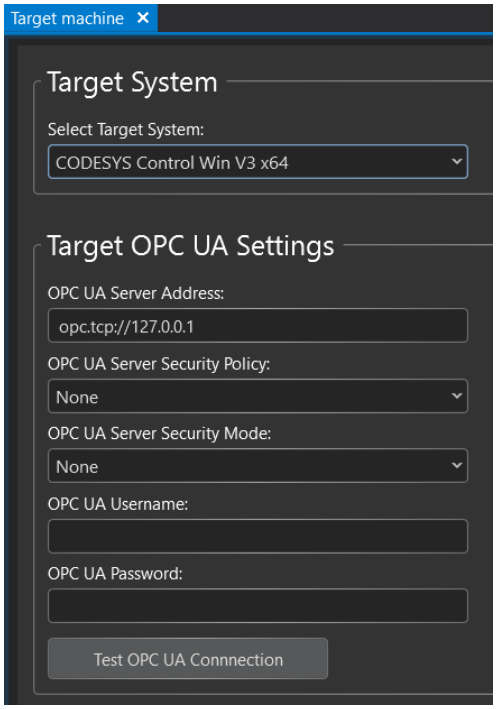
Customizing the Selmo Studio Project (SEO)

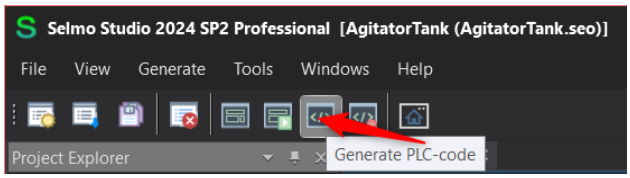
As part of a new Selmo Studio project, the decision has to be made in which control system the PLC program will be used. Although the main part of the program is identical, there are differences, especially in terms of communication and the use of internal libraries.

In Selmo Studio, the selection of the appropriate controller is done in the Target System section. In this case: "CODESYS Control Win V3 x64". The OPC-UA communication protocol is used for this. The settings that were made during the installation and configuration of CODESYS are entered here.

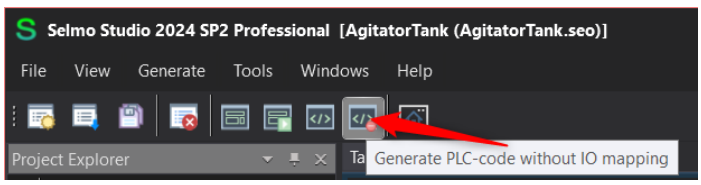


In this case, an anonymous login is used on the local server. Here, communication can then be tested.

After completion of the modeling, the PLC code is generated and exported in an XML file. It should be noted that the entire PLC program must be exported during the first export.

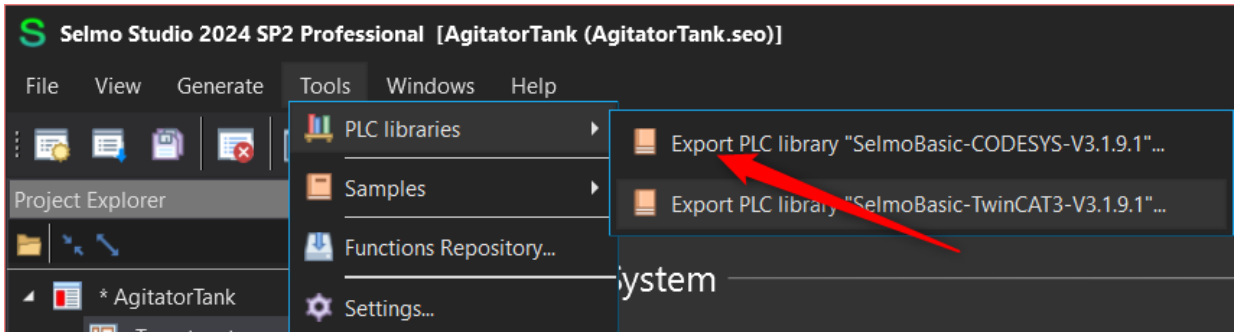


Afterwards, the export should take place without the IO mapping modules. The corresponding modules are edited in CODESYS and could be overwritten in a complete export. It should be noted that any links will be lost.



It is essential that this export and subsequent import in CODESYS is carried out in Selmo Studio after each change. For this reason, it is recommended not to make changes in the exported modules in CODESYS, as they will be overwritten during the next import.

The SelmoBasic library is required to integrate the internal functions. This can be obtained via the export function in the Selmo Studio.



It should always be ensured that the version of the library used in CODESYS matches the version of Selmo Studio. The procedure for import and activation is explained in the corresponding documentation.

Installation and configuration of CODESYS

First, download the CODESYS Development System V3 and then perform the installation. The installation can be done using the default settings, but the following prerequisites should be met:

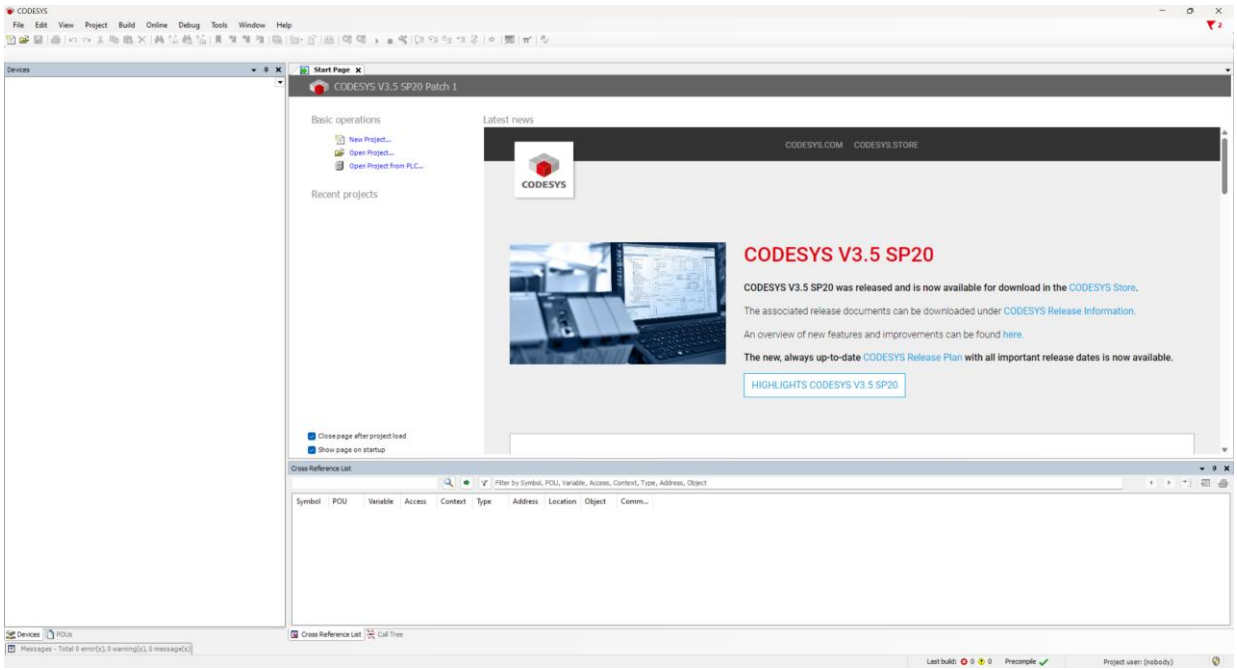
- MS Windows version 10 or 11.
- Selmo Studio in the current version 2024 SP2
- Currently used version of CODESYS V3.5 SP20 Patch1
- An OPC UA server is installed as part of the installation.
- A demo license is used locally

Optionally, UaExpert can be installed to monitor and diagnose UPC-UA communication.

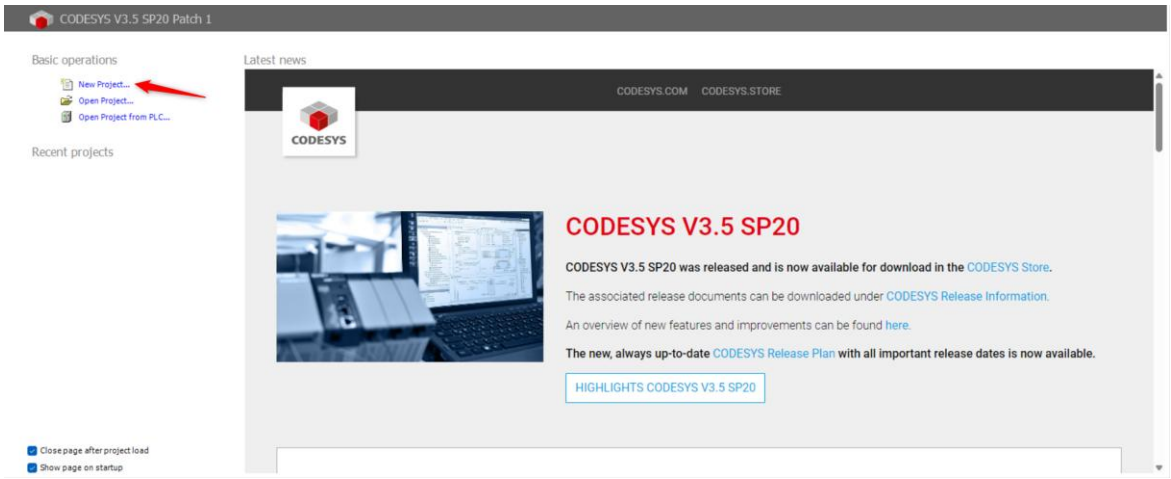
Please also check which versions are current and what dependencies exist on the other components. It should also be ensured that the following ports are not blocked in the operating system:

Service	Ports (Inbound)
CODESYS Control Service:	11740/TCP (inbound)
CODESYS Gateway:	1217/TCP (inbound)
CODESYS Web Visualization:	8080/TCP (inbound)
CODESYS OPC UA Server:	4840/TCP (inbound)
CODESYS Network Variables:	1202/UDP (inbound and outbound)
CODESYS EtherNet/IP:	44818/TCP and 2222/UDP (inbound and outbound)

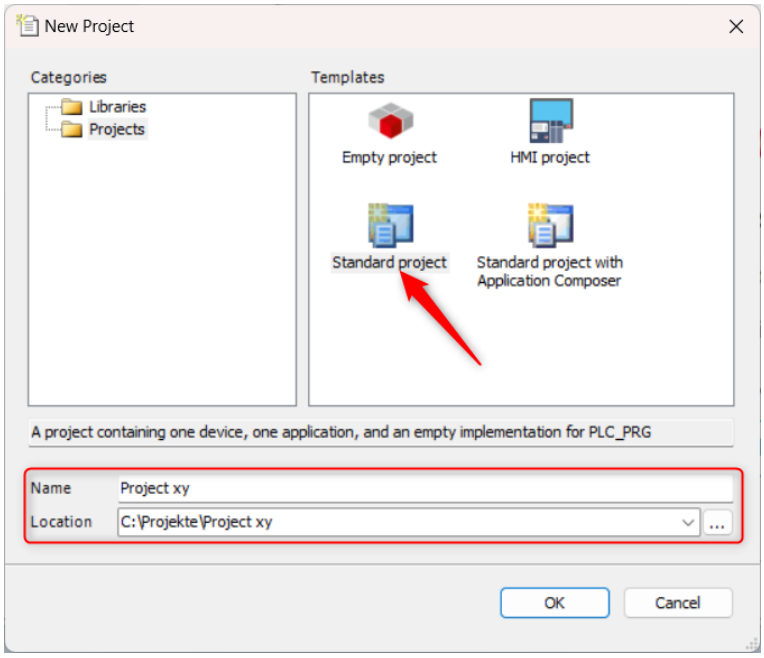
Start CODESYS V3.5:



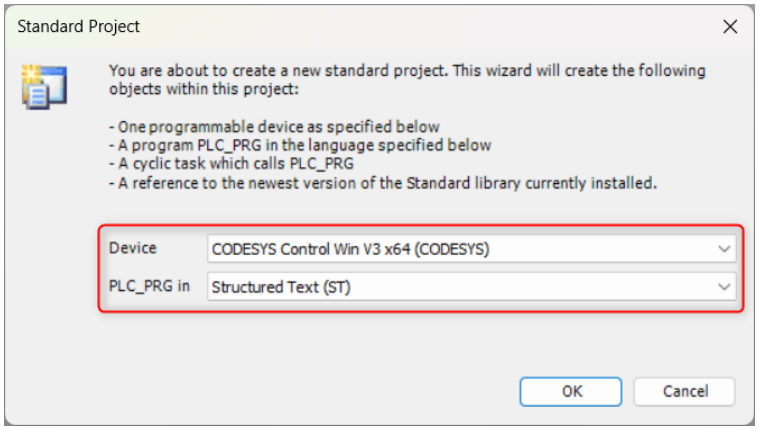
Open a new project:



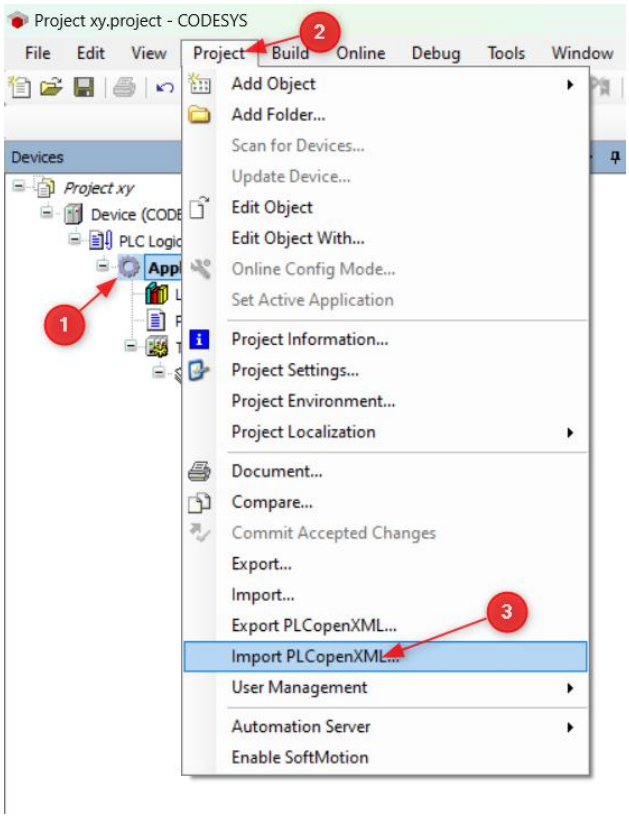
Create a new "Standard Project" and choose a name and path for the project:



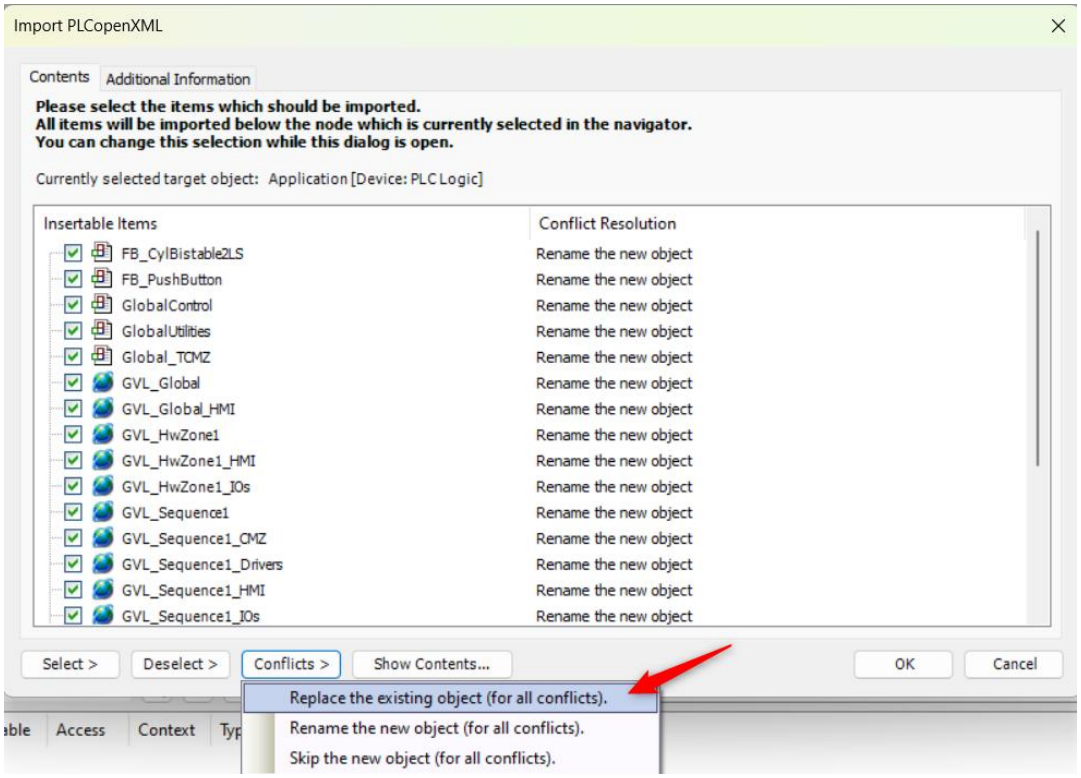
Select "CODESYS Control Win V3 x64 (CODESYS)" as the device and "Structured Text (ST)" as the PLC-PRG.



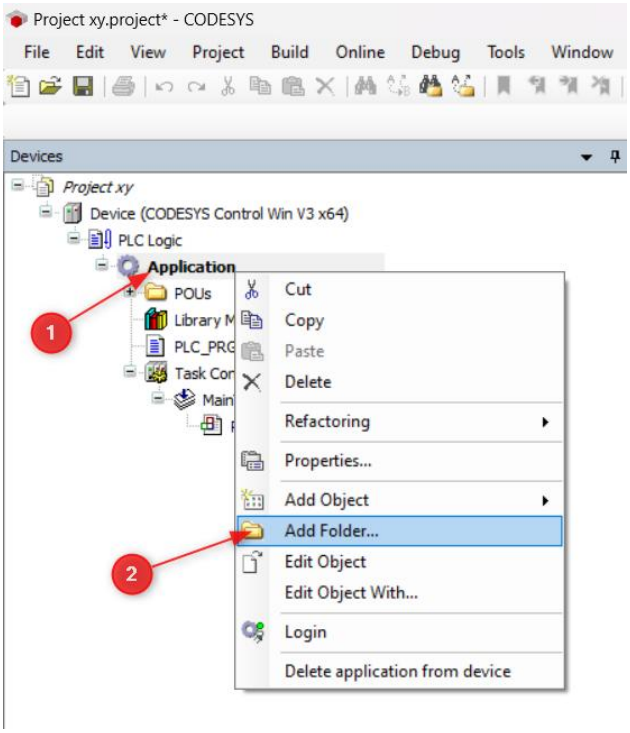
It is then necessary to import the already exported PLCopenXML file from the Selmo Studio. First, select the "Application" menu item and then click on "Project". Now select the menu item "Import PLCopenXML".

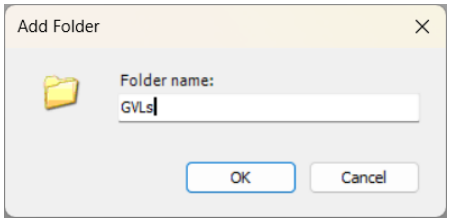


Check all the "Insertable Items" you need and then press "Ok". If you have already created the project and only want to apply changes, select the option "Replace the existing objects (for all conflicts)".

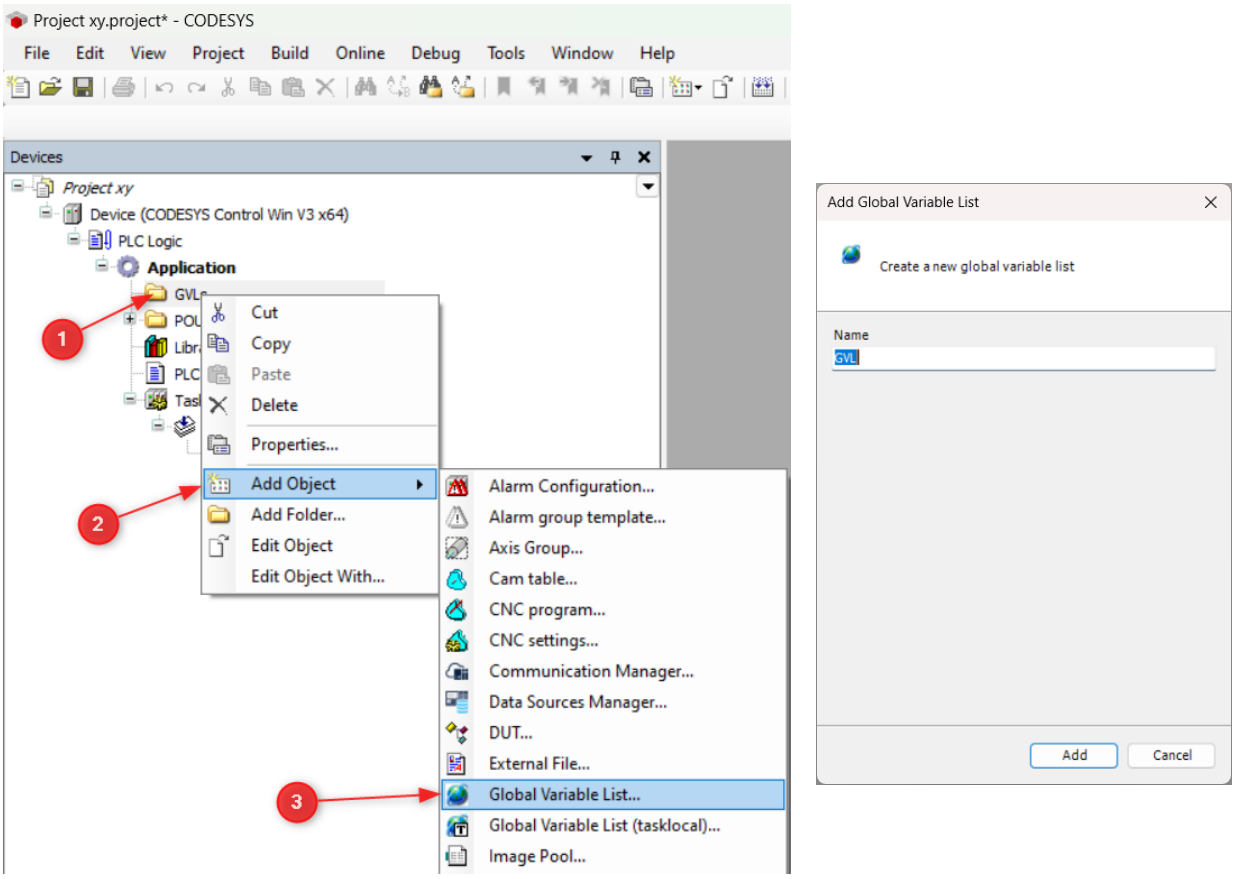


Under "Application", add a new folder named "GVLs".

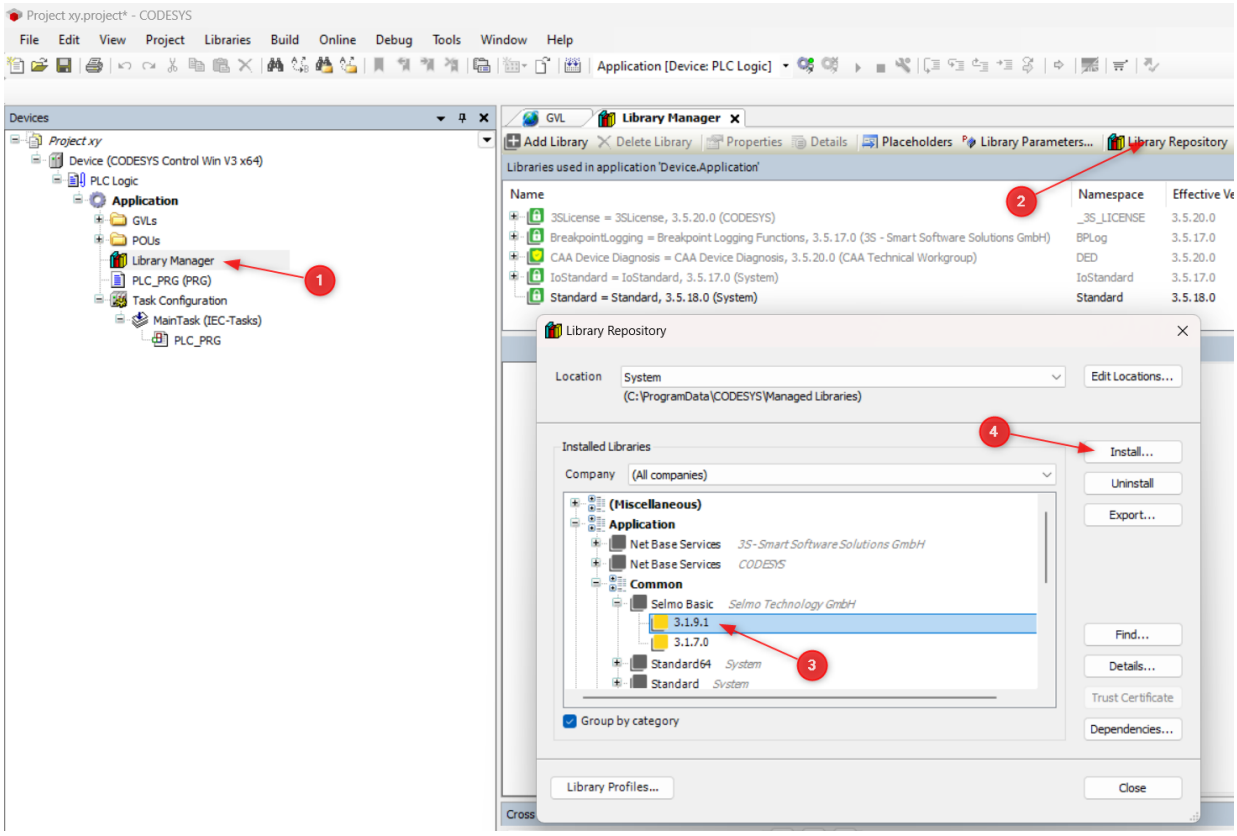




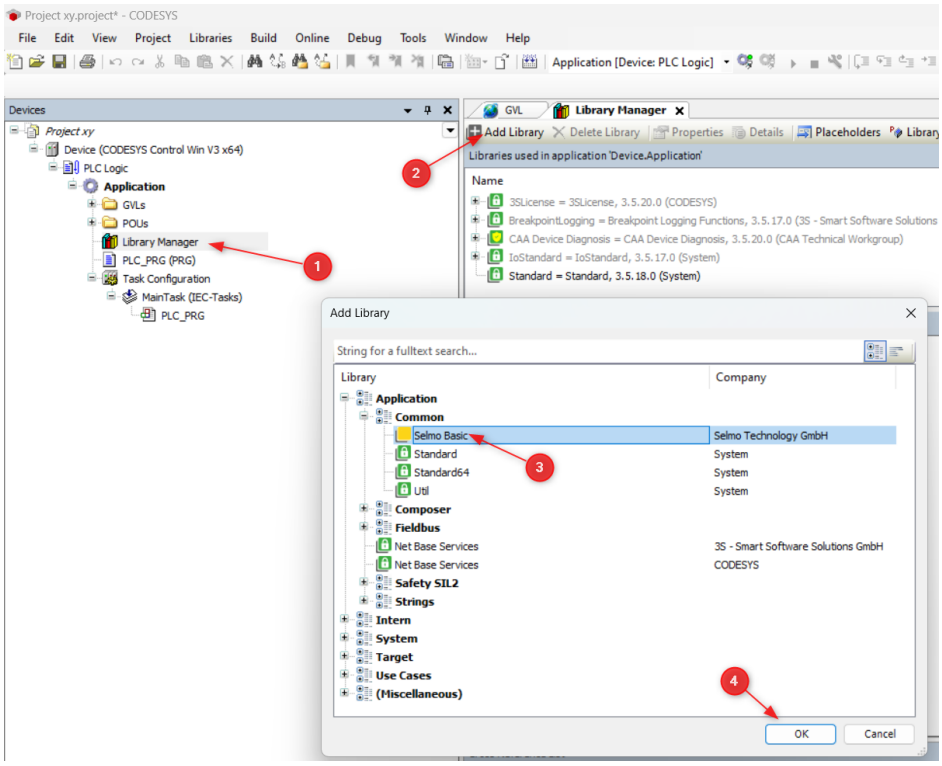
Right-click the new GVLs folder, and then select Add Object. Then select "Global Variable List..." from.



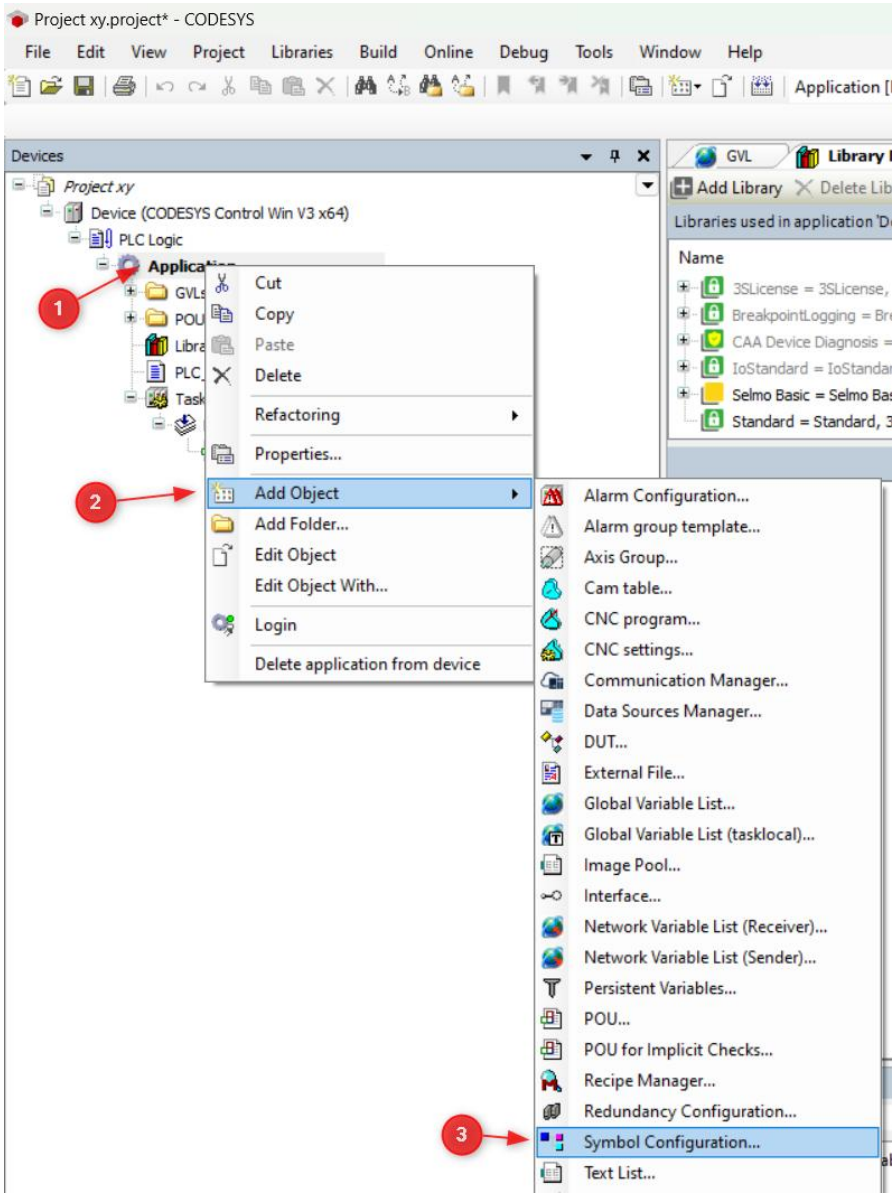
Furthermore, check whether the current "Selmo Basic" library is already installed. To do this, first select the "Library Manager" menu item and then select the "Library Repository" menu item. In the selection there, under "Application → Common", the library "Selmo Basic" should be available in the version that was previously exported from the Selmo Studio. Otherwise, you will need to reinstall the library via the "Install" menu item.



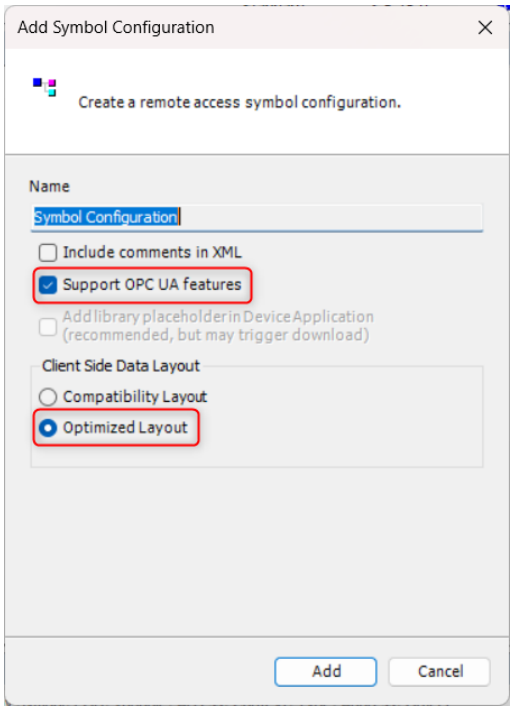
If the library does not yet exist, it must be downloaded via "Add Library..." can be added to the project.



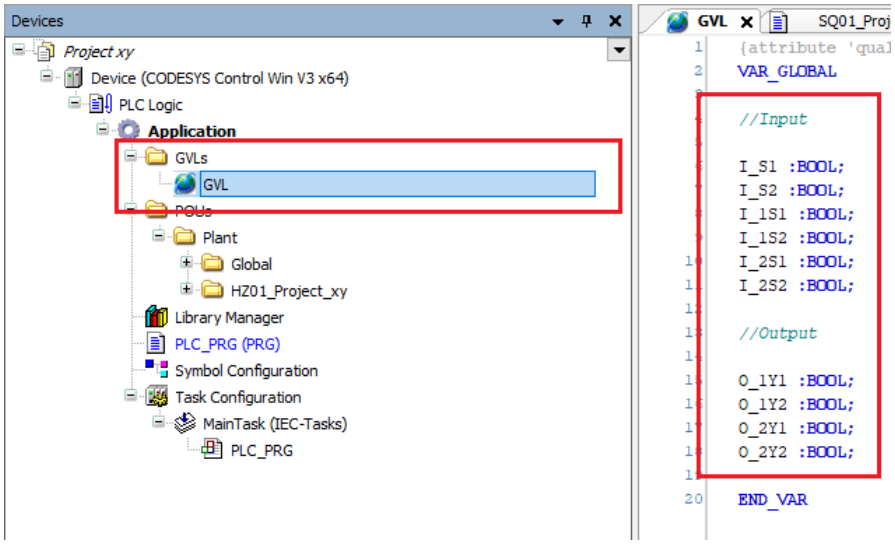
Right-click on the context menu under "Application" and select "Add Object". Then select "Symbol Configuration..." from.



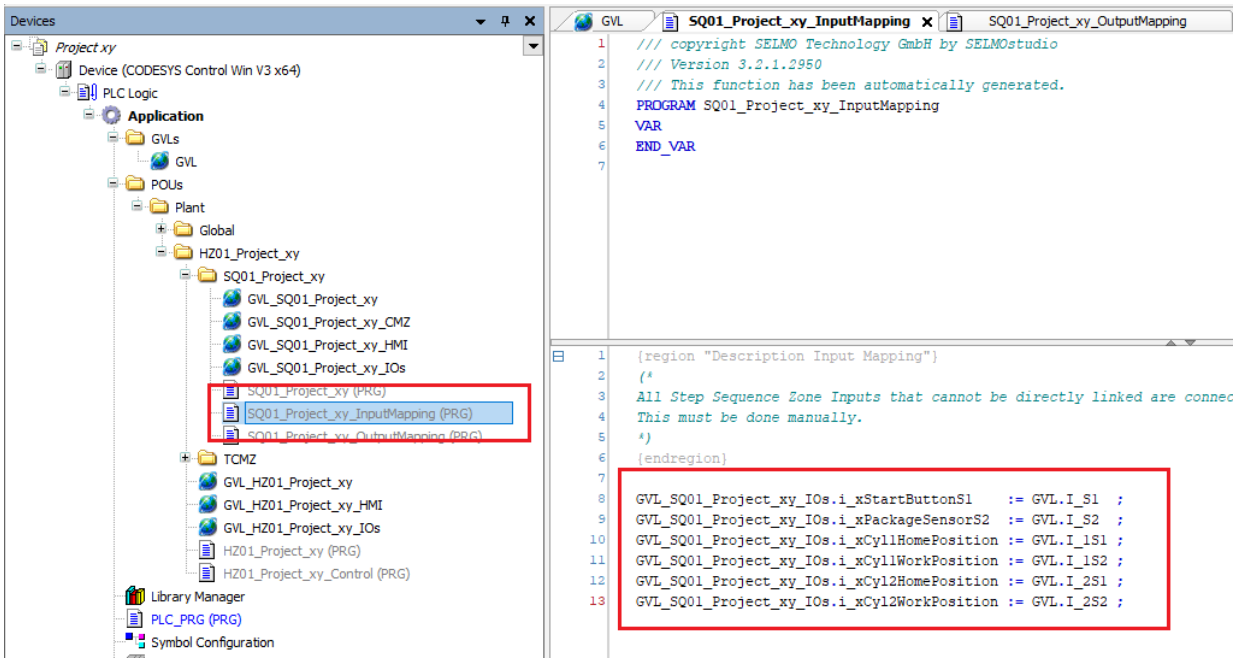
Make sure that "Support OPC UA features" and "Optimized Layout" are selected.

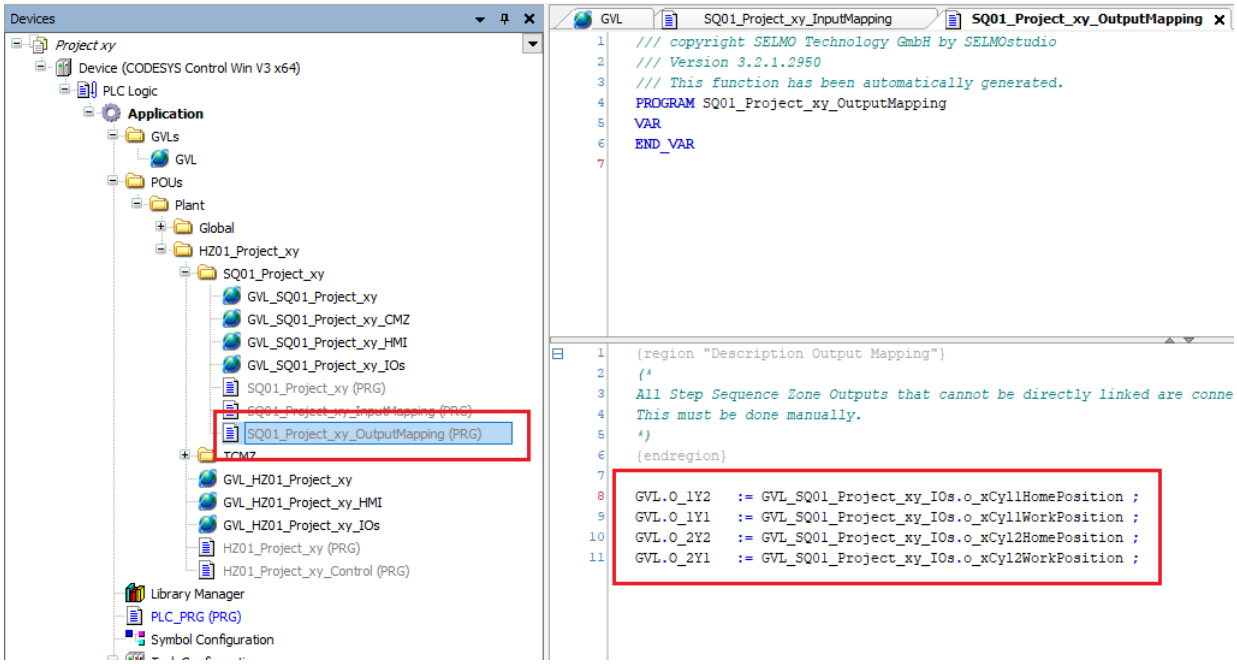


In the following, the inputs and outputs in the GVL are written, which can be found in the documentation of the demo program. The use of these specific labels is crucial to ensure optimal communication with the simulation.

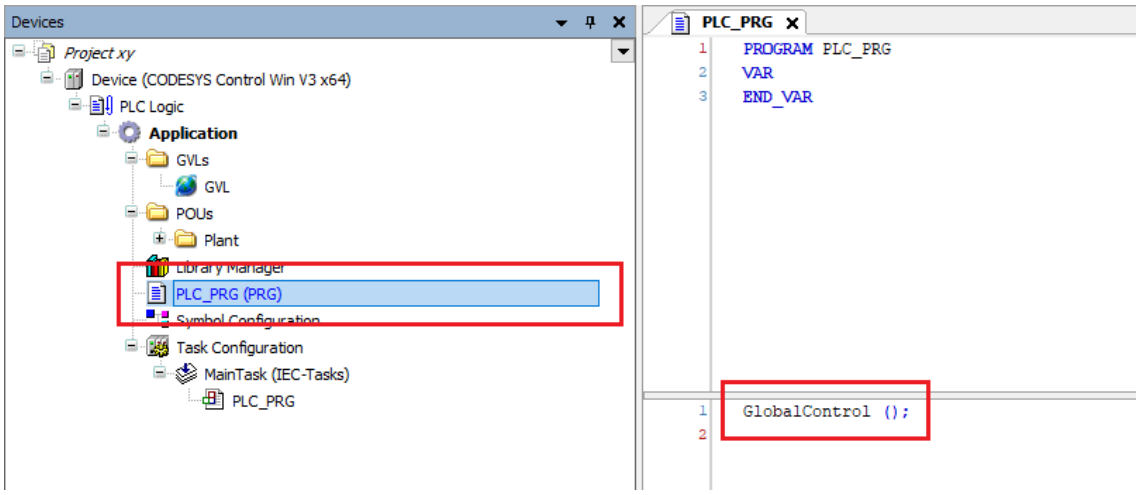


The variables are linked to the prepared I/Os of the respective sequences in the corresponding "xxx_InputMapping" or "xxx_OutputMapping" modules. For this purpose, it is necessary to remove the comment of the lines and to read or write the variables from the GVL.

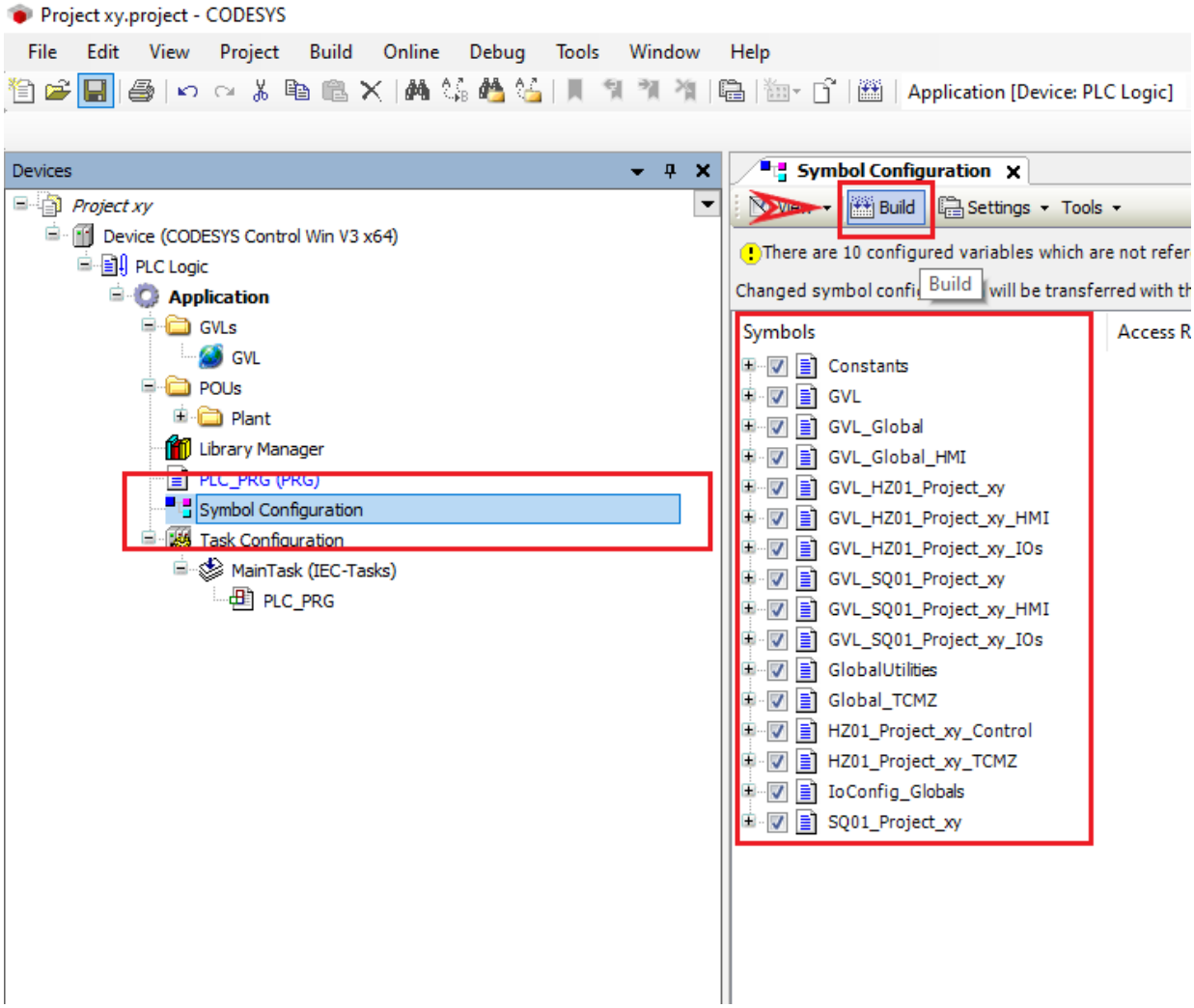




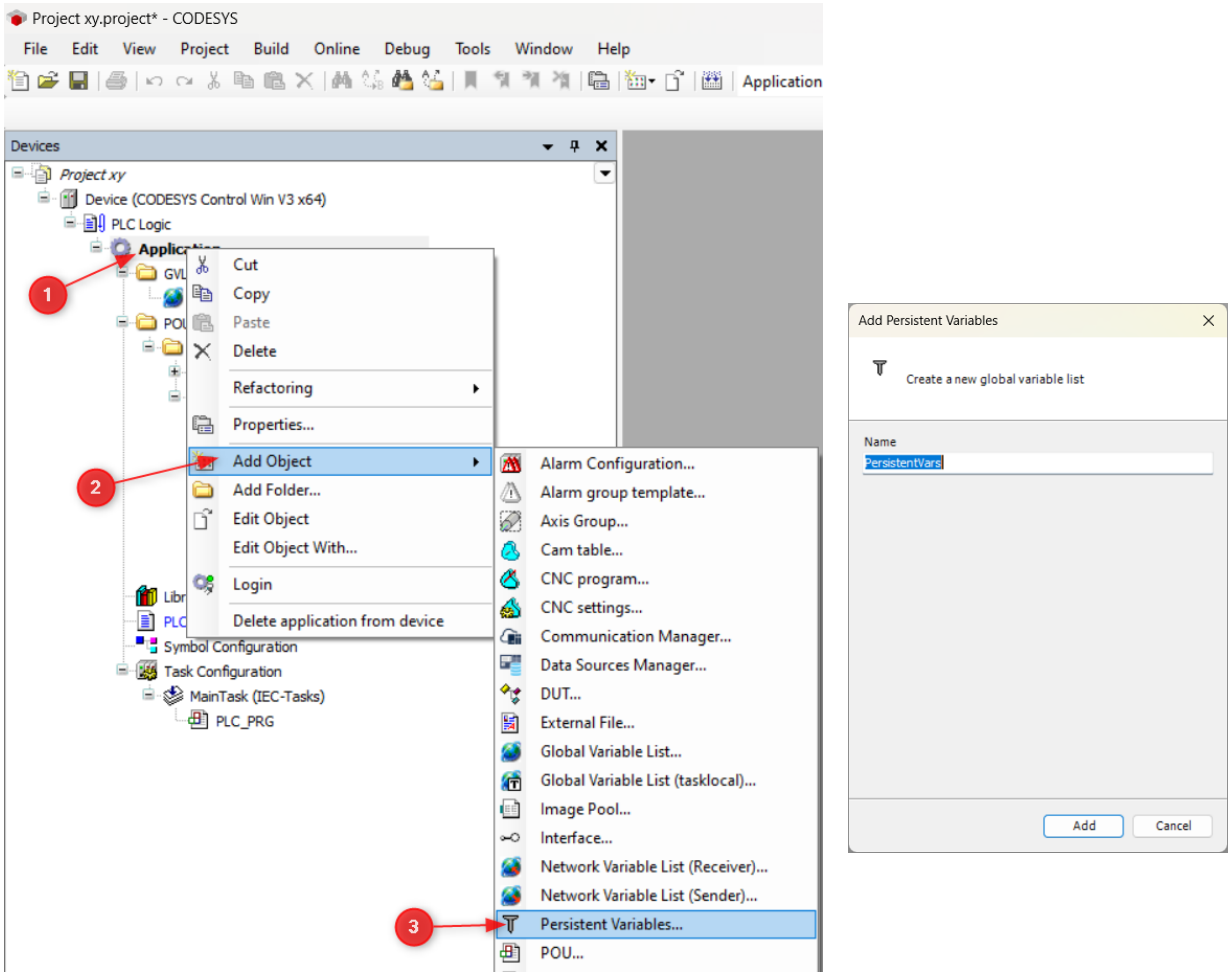
Open PLC_PRG (PRG) and enter "GlobalControl ();".



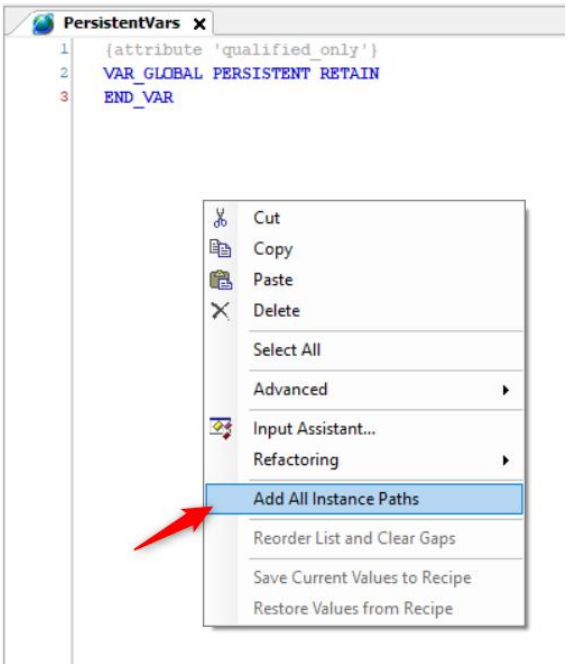
Go to the icon configuration and click on "Build".



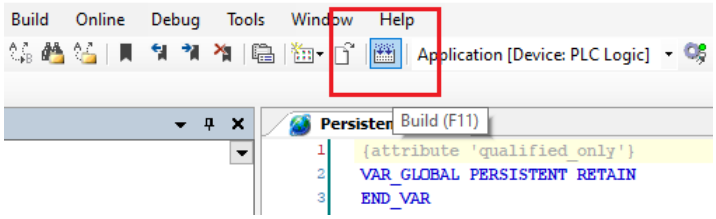
Right-click the context menu and select "Application" and then "Add Object". Then select "Persistent Variables..." from.

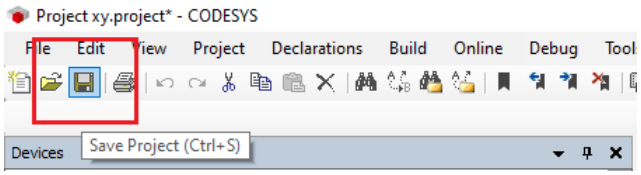


Open "Persistent Variables", right-click and go to "Add All Instance Paths".

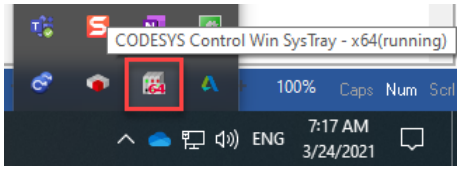


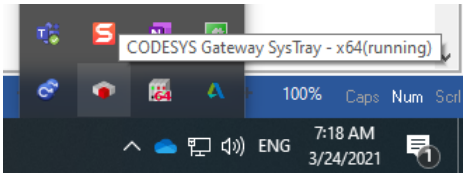
Press F11 or "Build", after which you can save the project.



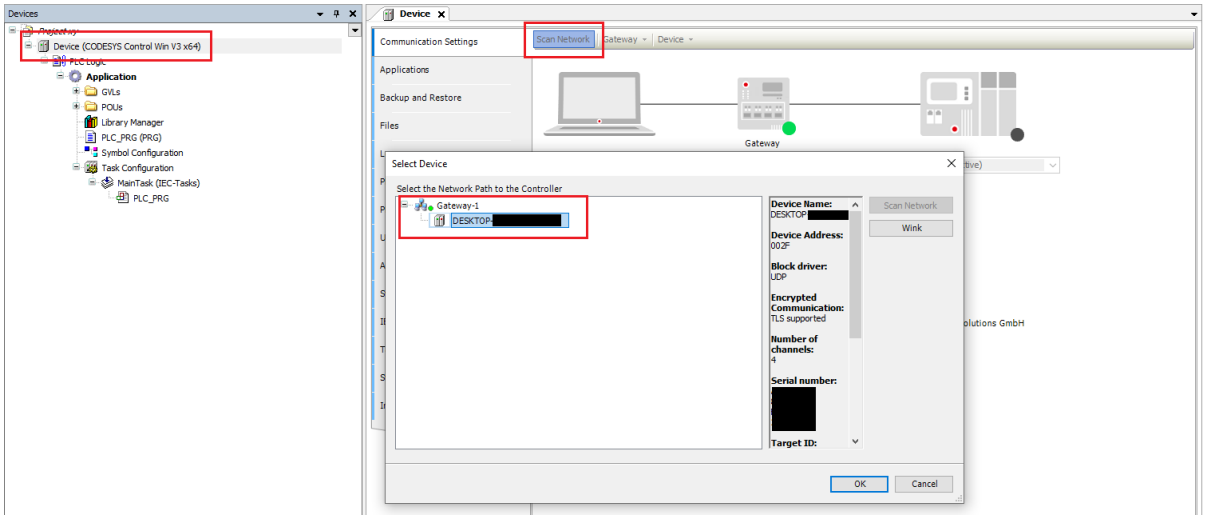


Make sure that "CODESYS Control Win SysTray-x64" and "CODESYS Gateway SysTray-x64" are running.

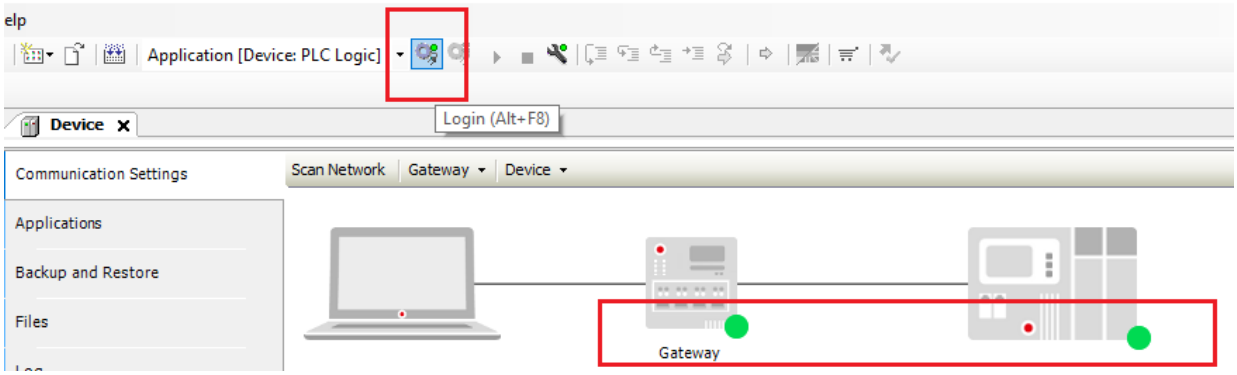




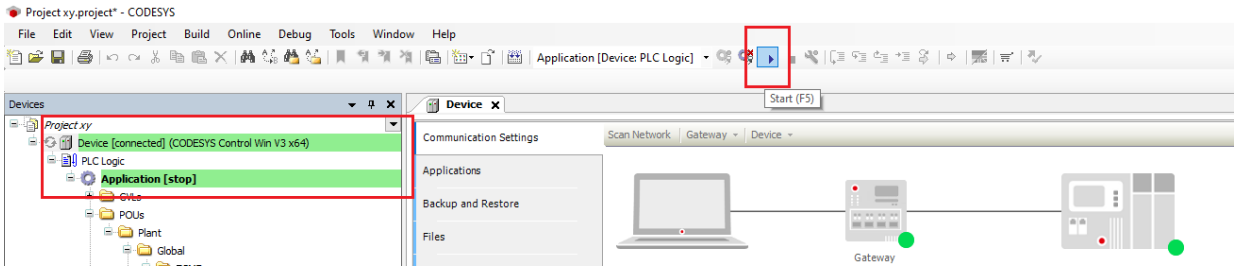
Next, select the network path to the controller. Go to "Device (CODESYS Control Win V3 x64)", Scan Network to find your controller/PC.



Once you have found your device, you can log in.



Press F5 or Start to launch the application.



Here you can start/stop the application or log in/log out.