Demo projects with CODESYS

See also Selmo Help Center

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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.

S Selmo Studio 2024 SP2 Professional [AgitatorTank (AgitatorTank.seo)]						
File View Generate	Tools Windows Help					
i 📷 💷 🕋 🛛	PLC libraries Export PLC library "SelmoBasic-CODESYS-V3.1.9.1"					
Project Explorer	Samples Export PLC library "SelmoBasic-TwinCAT3-V3.1.9.1"					
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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:

Devices	• # X is Start Page X		
	CODESYS V3.5 SP20 Pate	± 1	
	Basic operations	Latest news	CODESYS.COM CODESYS.STORE
	Cosepage Alterargisticad		CODESYS V3.5 SP20 was released and is now available for download in the CODESYS Store. The associated release documents can be downloaded under CODESYS Release Information. An overview of new features and improvements can be found here. The new, always up-to-date CODESYS Release Plan with all important release dates is now available. INIGHLIGHTS CODESYE V3.5 SP20
	Show page on startup		
	Cross Reference List	Q . Filter by Symbol. POU, Variable, Access, Context, Type, Address, Object	4 × 4 4 × 4 21 4
	Symbol POU Variable Access C	Context Type Address Location Object Comm	

Open a new project:



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

管 New Pro	ject			×
Categories		Templates		
Lib	raries piects	`		
		Empty project	HMI project	
		Standard project	Standard project with Application Composer	
A project co	ontaining one device, one ap	plication, and an empty i	implementation for PLC_PRG	
				_
Name	Project xy			
Location	C:\Projekte\Project xy			×
			OK Can	cel

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

Standard F	Project		×					
61	You are about to create a new standard project. This wizard will create the following objects within this project:							
	- One program - A program F - A cyclic tas - A reference	nmable device as specified below PLC_PRG in the language specified below c which calls PLC_PRG to the newest version of the Standard library currently installed.						
	Device	CODESYS Control Win V3 x64 (CODESYS)	\sim					
	PLC_PRG in	Structured Text (ST)	\sim					
		OK Cancel						

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)".

port PLCopenXML		
Contents Additional Information		
Please select the items which should be imported All items will be imported below the node which is You can change this selection while this dialog is Currently selected target object: Application [Device: A	l. s currently selected in the navigator. open. PLCLogic]	
Insertable Items	Conflict Resolution	
FB CylBistable2LS	Rename the new object	
FB_PushButton	Rename the new object	
GlobalControl	Rename the new object	
GlobalUtilities	Rename the new object	
Global_TCMZ	Rename the new object	
- 🗹 🏉 GVL_Global	Rename the new object	
- 🗹 🎒 GVL_Global_HMI	Rename the new object	
	Rename the new object	
- 🗹 🎒 GVL_HwZone1_HMI	Rename the new object	
- 🗹 🎒 GVL_HwZone1_IOs	Rename the new object	
GVL_Sequence1	Rename the new object	
- 🗹 🎒 GVL_Sequence1_CMZ	Rename the new object	
GVL_Sequence1_Drivers	Rename the new object	
GVL_Sequence1_HMI	Rename the new object	
	Rename the new object	
Select > Deselect > Conflicts > Show	Contents	OK Cance
Replace the existi	ing object (for all conflicts).	
Access Context Typ Rename the new	object (for all conflicts).	
Skip the new obje	ect (for all conflicts).	

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

Project xy.project* - CODESYS

File Edit	View	Project	Build	Online	Debug	Tools	Win	dow					
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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 \rightarrow 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.

Project xy.project* - CODESYS File Edit View Project Libraries Build Online Debug Tools Window Help 👻 🕂 🗙 🕼 🖓 🖓 🗸 🖓 🖌 🗸 🖌 Devices Project xy 🕒 Add Library 🔀 Delete Library 📑 Properties 💿 Details 📑 Placeholders 🍫 Library Parameters... 💼 🔐 Properties Bevice (CODESYS Control Win V3 x64) Libraries used in application 'Device.Application' E PLC Logic Name Namespace 🖹 🔘 Application 2 🖫 💼 3SLicense = 3SLicense, 3.5.20.0 (CODESYS) _3S_LICENSE 🗄 🚞 GVLs For the set of th 🖲 🚞 POUs BPLog DED 💼 Library Manager 🔫 IoStandard = IoStandard, 3.5.17.0 (System) IoStandard PLC PRG (PRG) Task Configuration Standard = Standard, 3.5.18.0 (System) Standard 🖻 🍪 MainTask (IEC-Tasks) 👔 Library Repository B PLC PRG Location System Edit Locations... (C:\ProgramData\CODESYS\Managed Libraries) Installed Libraries Install..

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

Group by category

Library Profiles...

Cros

Company (All companies)

(Miscellaneous)

Common Selmo Basic

Net Base Services 35-Smart Software Solutions Gmbh

Selmo Technoloav GmbH

3

Net Base Services CODESIS

3.1.9.1

E-I Standard64 System

Standard System

Application



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3.5.20.0

3.5.17.0

3.5.20.0

3.5.18.0

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Uninstall

Export.

Find...

Details.

Trust Certificate

Dependencies..

Close

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.

Add Symbol Configuration X
Create a remote access symbol configuration.
Name
Symbol Configuration
Include comments in XML
Support OPC UA features
Add library placeholder in Device Application (recommended, but may trigger download)
Client Side Data Layout
Compatibility Layout Optimized Layout
Add Cancel

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".

1	{attribute	qu	alified only'}
2	VAR GLOBAL	PER	SISTENT RETAIN
3	ENDVAR		
		Ж	Cut
	8	1	Сору
	C	2	Paste
	2	×	Delete
			Select All
			Advanced
	3	<u>.</u>	Input Assistant
			Refactoring
			Add All Instance Paths
			Reorder List and Clear Gaps
			Save Current Values to Recipe
			Bestern Maler for Bestern

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.

Devices	- ₽ ×	Device X			-
Profesting: Device (CODESYS Control Win V3 x64)	•	Communication Settings	Scan Network		
Bit Fact coge Coge		Applications Backup and Restore Files Lage Select Device	Gite	way X	i bre)
= @r Mani Aak (Ec-1484) ④ R.C.PAG		Select the Network Path to the (Device Name: DESITOP Block driver: UCP Encrypted Communication: TLS suported Channels: * Target ID: OK Cancel	plutions GmbH

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

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Device X	Login (Alt+F8)
Communication Settings	Scan Network Gateway - Device -
Application	
Applications	
Backup and Restore	
Files	
100	Gateway

Press F5 or Start to launch the application.

Project xy.project * - CODESYS			
File Edit View Project Build Online Debug Tools Window Help			
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Devices 👻 🕂 🗙	Device X	Start (F5)	
Project xy Project xy Section (CODESYS Control Win V3 x64)	Communication Settings	Scan Network Gateway * Device *	
리 에 PLC Logic 리 · ② Application [stop]	Applications		
POUs	Backup and Restore		
🖻 🗁 Plant 🛱 🦳 Global	Files	Gateway	

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

