

CODESYS

Getting Started

Contents

Revision history	2
Glossary	2
1. Brief Introduction	3
1.1. CrossControl support site	3
2. Install CODESYS IDE	4
2.1. Select and download IDE	4
2.2. Unpack and install IDE	5
3. Basic setup	7
3.1. Download project archives	7
3.2. Install/extract the project archives in CODESYS IDE	7
4. Setup your first CODESYS project	10

Revision history

Rev	Date	Author	Comments
1.0	2018-03-08	Per Görling	First Version
1.1	2018-04-12	Per Görling	Changed Codesys to upper case. Added info in ch 3.1
1.2	2018-11-27	Per Görling	Updated link to CODESYS document

Glossary

Word/Abrevation	Explanation
CrossTecc	A set of applications and components...
crc	Cyclic redundancy check
SAP	Software Application Platform
Qt	Development framework qt.digia.com
RT, RTE	RunTime Environment
API	Application Programming Interface
IDE	Integrated Development Environment
GUI	Graphical User Interface

1. Brief Introduction

CODESYS is a state-of-the-art soft PLC application module in LinX Software Suite. CODESYS provides a fieldbus network infrastructure out-of-the-box, e.g. for CANopen and J1939. It features a powerful environment for developing control logics where you can choose between 6 different PLC programming languages (IEC 61131-3). And it comes with a module for fast realization of GUIs. Combined, these features give you a powerful framework for fast realization of a complete control and HMI system.

CODESYS is a device-independent PLC-programming system. Matching the IEC 61131-3 standard it supports all standard programming languages but also allows including C-routines and supports object orientated programming. In combination with the CODESYS Control Win V3 runtime system it allows multi-device and multi-application programming. The component-based structure makes possible a customer-specific configuration and extension of the user interface.

Before using the information in this document, regard the following on installation and how to get further information.

1.1. CrossControl support site

The CrossControl support site contains links to develop environments that is needed to develop and maintain a CODESYS project. The support site also provides the needed libraries and device description files for CrossControl products.

To be able to download components from the support site you need to register a user account. This can easily be done by completing the profile on the following link:

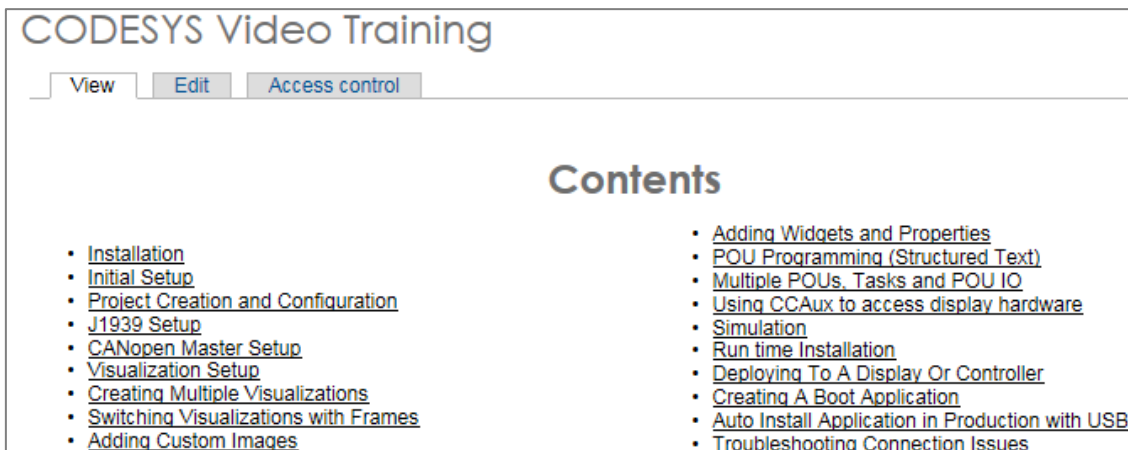
<https://support.crosscontrol.com/user/register>

Once you have registered, you are able to login and get access to all the documentation and SW packages needed to start working with the different CrossControl products. The support site also contains a number of useful and instructive videos, showing how-to use and implement different parts of the CODESYS environment.

CODESYS SW downloads <https://support.crosscontrol.com/downloads/codesys>

CODESYS video training <https://support.crosscontrol.com/downloads>

Select “Video Trainings” and then CODESYS. The following subjects are covered in the video section:



The screenshot shows the 'CODESYS Video Training' page. At the top, there are three buttons: 'View', 'Edit', and 'Access control'. Below these is a large heading 'Contents'. Under 'Contents', there are two columns of bulleted links. The left column lists: Installation, Initial Setup, Project Creation and Configuration, J1939 Setup, CANopen Master Setup, Visualization Setup, Creating Multiple Visualizations, Switching Visualizations with Frames, and Adding Custom Images. The right column lists: Adding Widgets and Properties, POU Programming (Structured Text), Multiple POUs, Tasks and POU IO, Using CCAux to access display hardware, Simulation, Run time Installation, Deploying To A Display Or Controller, Creating A Boot Application, Auto Install Application in Production with USB, and Troubleshooting Connection Issues.

2. Install CODESYS IDE

2.1. Select and download IDE

Start at the CrossControl Support site and log in to get access to all available downloads. First, select the Software item to the left and then sub-section “CODESYS section” to get to the support page containing manuals, guides and SW downloads.



The screenshot shows the CrossControl Support & Service Center website. The header includes the CrossControl logo and the text "Support & Service Center". Below the header is a navigation bar with links for "Product information", "Contact Support", "Account", "User Files", "My Cases", and "Log Out". The main content area is titled "CODESYS" and features a navigation menu on the left with categories like "Display Computers", "Main controllers", "I/O Controllers", "Communication Devices", "Instrumentation clusters", "Gauges and gauge panels", "Sensors and senders", "Software", "Discontinued Products", "Catalogs", "Knowledge Base", "Accessories finder", and "Video Trainings". The "Software" category is expanded to show "LinX", "QuiC", "CODESYS", and "SimTecc". The main content area displays the CODESYS logo, a laptop showing the software interface, and a robotic arm. Below the image is a description of CODESYS as a state-of-the-art soft PLC application module in LinX Software Suite, providing a fieldbus network infrastructure out-of-the-box. It features a powerful environment for developing control logics and supports 6 different PLC programming languages (IEC 61131-3). The page also includes a "Documentation" section with links to "expand all" and "collapse all", and a list of documentation items: "3S Documentation" and "Manuals". At the bottom, there is a section for "Further information about CODESYS" with links to "CrossControl Knowledge-Base", "CODESYS homepage", and "CODESYS Store".

Under the header “Development Environments” you will find a link:

<https://store.codesys.com/codesys.html>

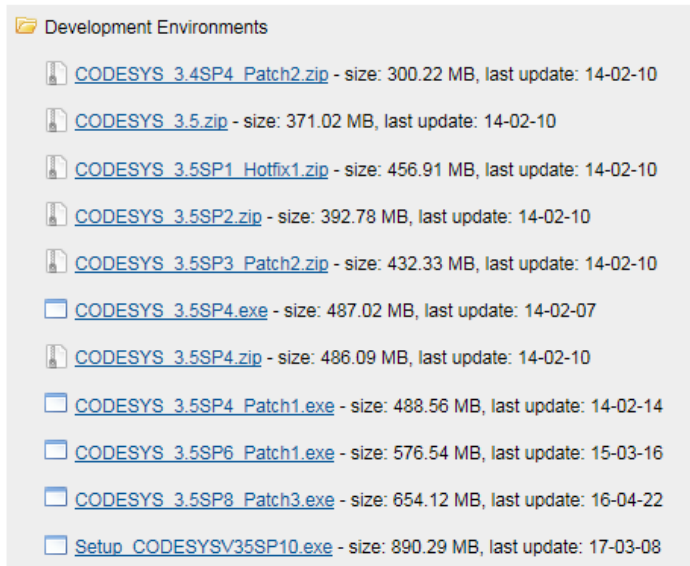
where the latest Development Environments can be found. Under Legacy Development Environments we have also stored latest CODESYS version connected to the runtime for our displays and controller units.

Development Environments

[CODESYS Development Environments Downloads.](#)

Legacy Development Environments

[expand all](#) [collapse all](#)

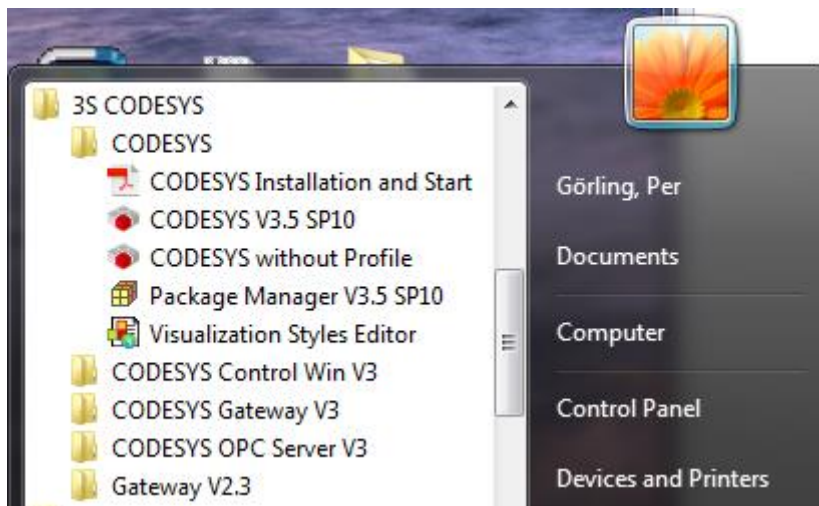


Select the development environment that suits your needs and download.

2.2. Unpack and install IDE

Unpack the ZIP on your PC and install it as any other Windows program, by clicking on the .exe file and follow the instructions.

The installed CODESYS IDE can be found in the Start-menu as shown in the example below:



Note!

1. There is a video showing how to perform the installation (select the video "Installation" after using the link in ch. 1.1).

2. You can also choose to download a CODESYS IDE from the CODESYS homepage (codesys.com), if you need a specific version of the IDE.

For more information on installation and startup, see the following document in our CODESYS section on our support site:

[“CODESYS Installation and Start.pdf”](#)

3. Basic setup

This chapter describes the additional installation and configuration steps needed to be able to develop CODESYS applications and download them to the CrossControl products.

This initial setup shall only be performed once or when you change to another IDE.

3.1. Download project archives

Enter the CrossControl support site and maneuver to first Software and then the CODESYS sub-section. In the “Downloads” menu you find the following content:

Downloads

Device description files and the CCAUX and CCSAP libraries as well as other accompanying libraries you need on your PC for programming CrossControl devices are included in one project archive which can download under the below headline "Device description files".

[expand all](#) [collapse all](#)



Download the following project archives and extract them in your CODESYS IDE:

- Under folder “Device description files”:
CrossControl_Development_Environment_Plugins_YY_MM_DD.projectarchive
(where YY_MM_DD is the date for the release of the project archive)
- Under folder “Examples”:
CAN_and_Visualization_Components_2_6_17.projectarchive
(Note that the version designation on the CAN/Visu component archive can change!)

The CC development archive contains the following CC-specific components/libraries:

- CC Device description files (for all CC display units – VC, VA, XA, XS, VS, XM)
- CCAux – API with access to a number of HW related features
- CCSap – API used to access Data Engine

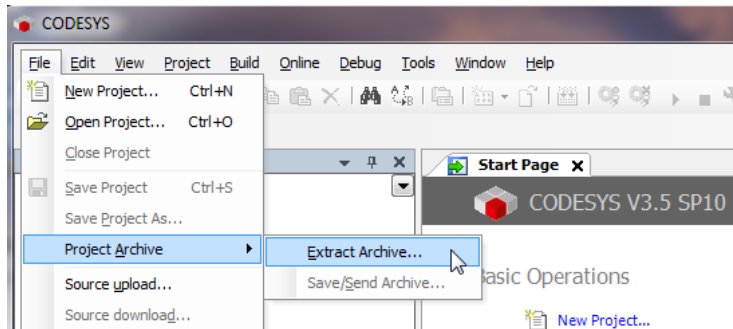
More detailed information about CCAux and CCSap can be once you have extracted the archive in your IDE tool.

3.2. Install/extract the project archives in CODESYS IDE

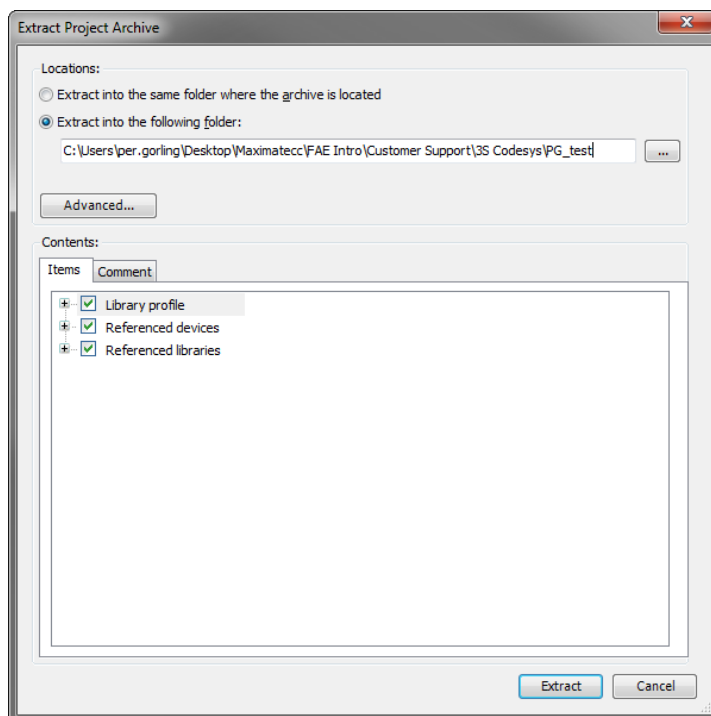
Follow these steps to extract both the downloaded archives and install/extract them.

1. Open the installed CODESYS IDE and select:

File → Project Archive → Extract Archive...



2. Browse to the folder containing the downloaded project archives to start extracting the archive.
3. Browse to the folder containing the downloaded project archives and extract one at the time. Start with the “CrossControl_Development_Environment” archive. Select the folder you want to use as the development folder for your project(s) and check all the items shown in the contents list.



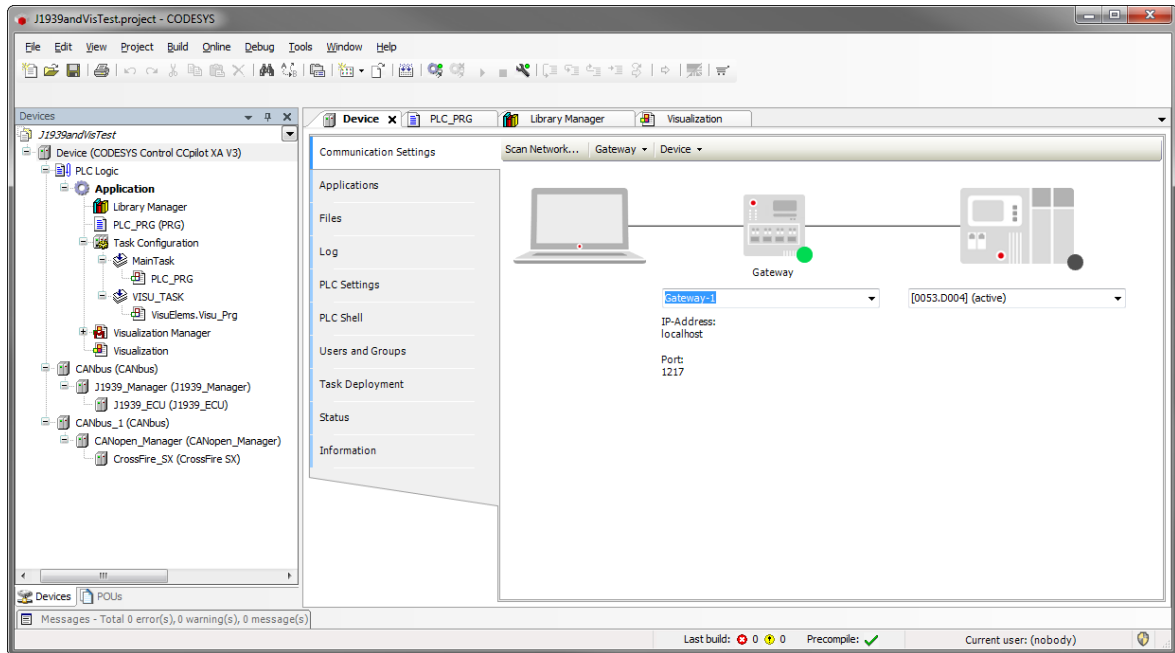
Press “Extract”.

4. When the task is finished, the tool will show a list of components that could be updated to a newer version. **The recommendation is to choose action “Do not update” for all the tabs (Library, Device, Compiler Visu etc)!**

Then press “OK”.

Repeat the steps for the next archive.

The CODESYS tool will now have the following look:



Note!

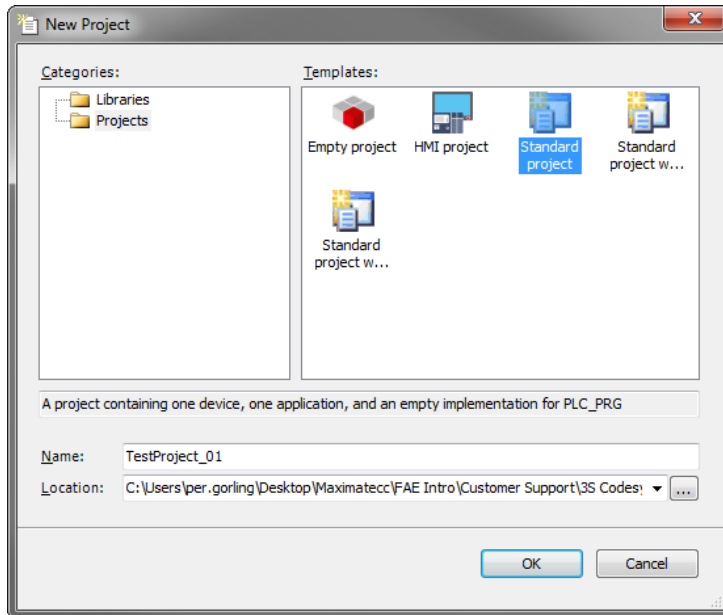
There is a video showing how-to perform the basic setup (select the video “Initial setup” after first using the link in ch 1.1).

4. Setup your first CODESYS project

After the installation and the basic setup of the CODESYS IDE, we are now ready to create a CODESYS project.

1. Select: File → Open project...

The following popup window appears:



2. Set project data.

The project template – use template “Standard project” (recommendation)

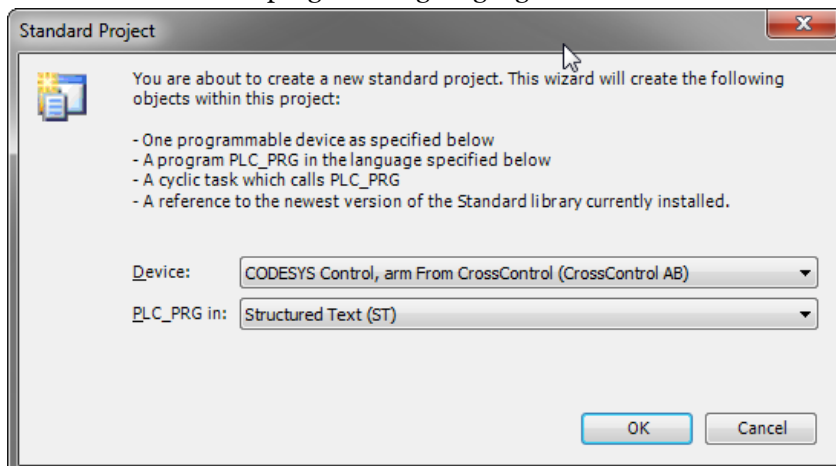
Name – set the project name

Location – select the folder where you want to work with the project

Press OK.

3. Set up the standard project.

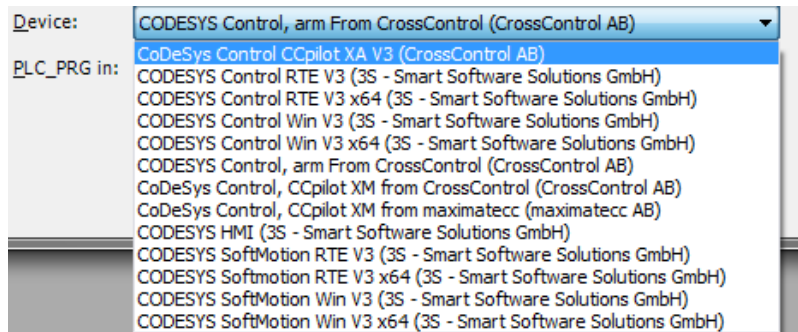
Now the ‘Device’ and ‘programming language’ shall be selected



The following ‘device’ alternatives are available in the project structure that we have created. You can now see the available CrossControl devices.

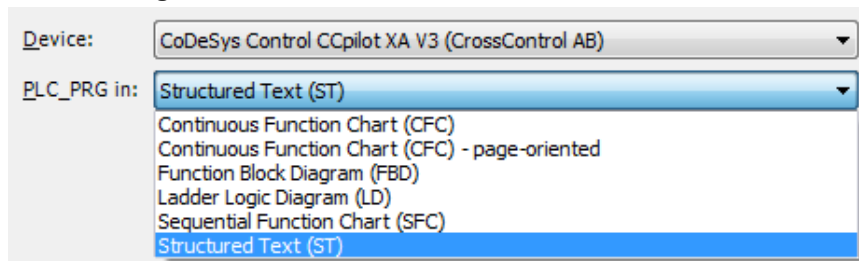
If you are going to develop a CODESYS application for ARM – choose CCpilot XA V3

If you are going to develop a CODESYS application for x86 – choose CCpilot XM



Programming language.

The following alternatives are available:

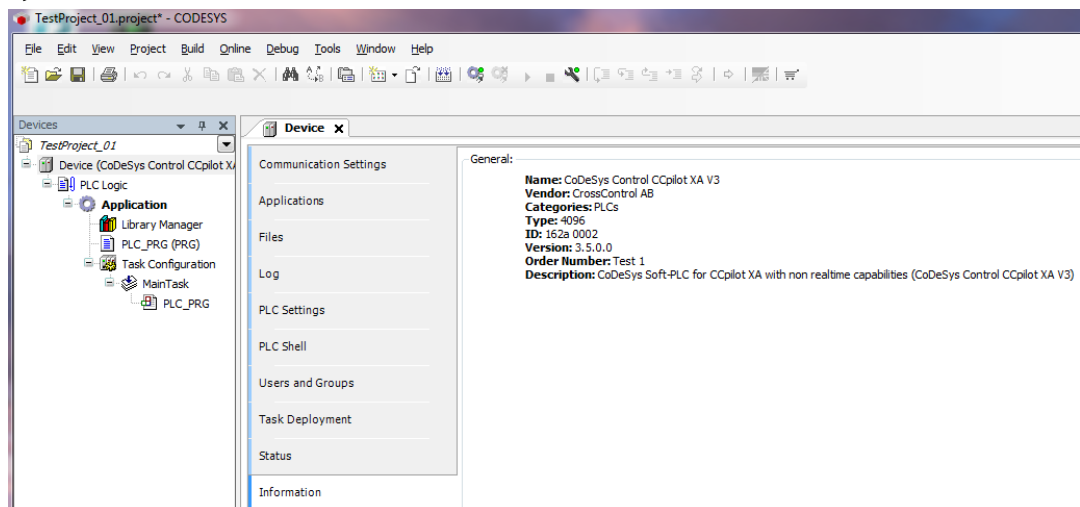


Select the PLC_PRG that you want to use.

Press OK.

4. The basic skeleton has now been created for a standard CODESYS project. Before starting up the development work, it is recommended that you check a few things. Follow the steps below:

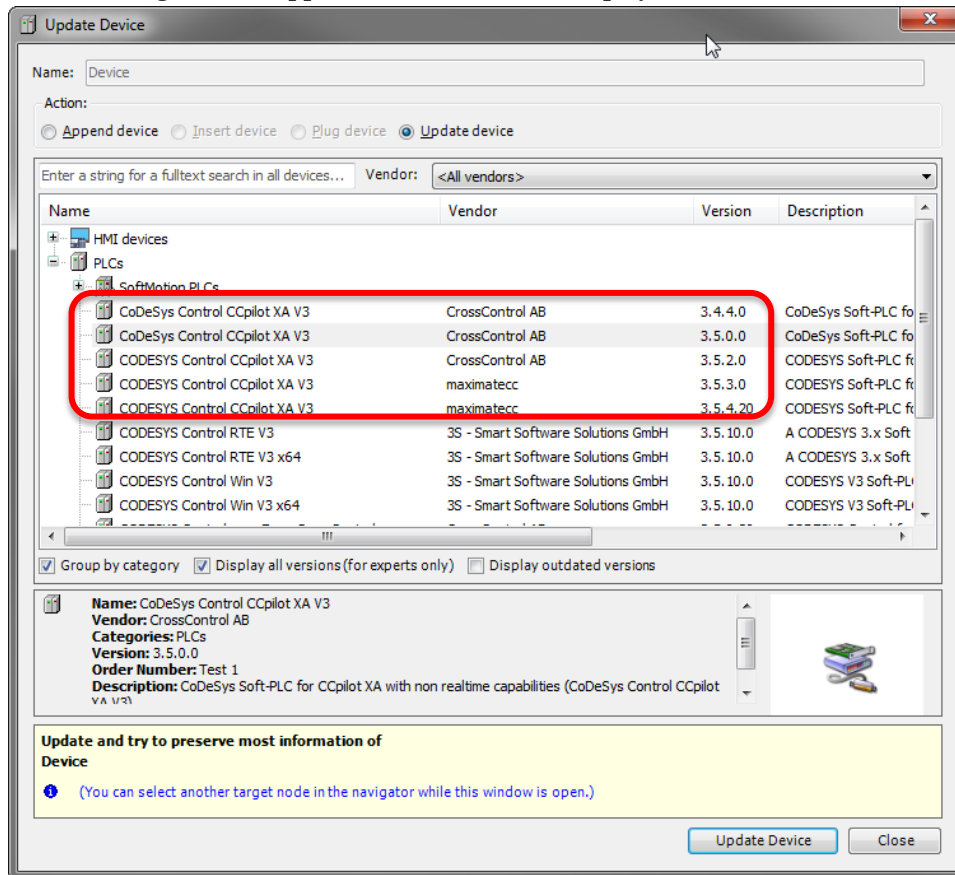
a) Double click on “Device” in the tree view to the left. Select “Information”.



Check that the version displayed (Version: 3.5.0.0.) corresponds to the CODESYS Runtime version installed on the target device. If not, you may have to update the device in the IDE!

b) To update your device, right-click on “Device” in the tree view to the left and select “Update Device...”

The following window appears. Check the box “Display all versions”.



c) Select the version you want to update to and press “Update Device”.

d) Check the Device Information and make sure that the device version has been updated. If the versions differ, it won't be possible to connect later to the target device, when downloading the application!

Note!

There is a video showing how-to perform the creation of the first project (select the video “Project Creation and Configuration” after first using the link in ch 1.1).