crosscontrol

Making Machine Smart, Safe & Productive

CODESYS

Getting Started
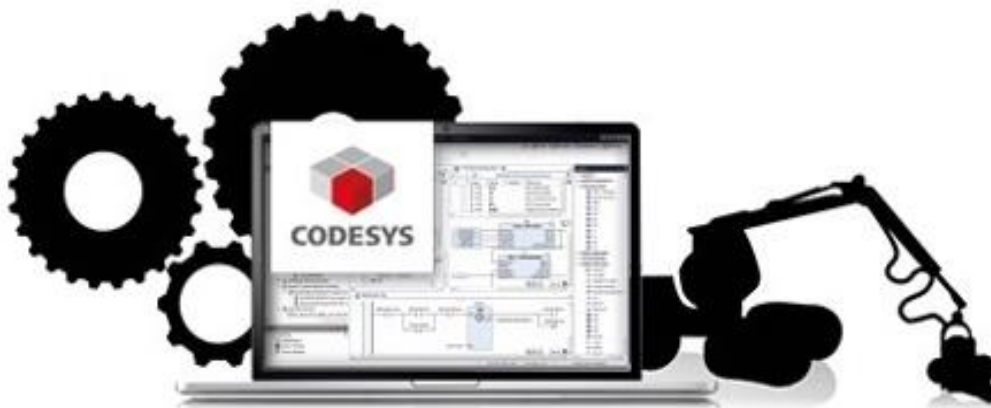
Contents

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
2.0	2022-11-18	Foad Ghafourian	Total Fresh Update

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:

[CrossControl making machines smart, safe and productive | CrossControl](#)

Head to CorssControl website, on the top right of the website click on "LOGIN" and sing up!

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 several useful and instructive videos, showing how-to use and implement different parts of the CODESYS environment.

1.2. CODESYS device runtime for CCpilot display computers:

Packages for respective CCpilot device, you will find on each device website:

CCpilot Display Computers | CrossControl

Click on the link above choose the wanted device you want to start developing CODESYS application on, then scroll down to DOWNLOAD and navigate to:

DEVICE DOWNLOADS → CODESYS → DEVICE RUNTIME

1.3. CODESYS Video Training

In the "Video Trainings" section of the website you will find helpful videos that can help/guide you through different stages of CODESYS. From general stuff on how to setup CODESYS to more advanced tasks like PLC programming. Video Training | CrossControl

⚠ Note!

These video trainings are older than the versions presented in this documentation, observe that there may be some differences in some steps, packaging, version numbers etc.
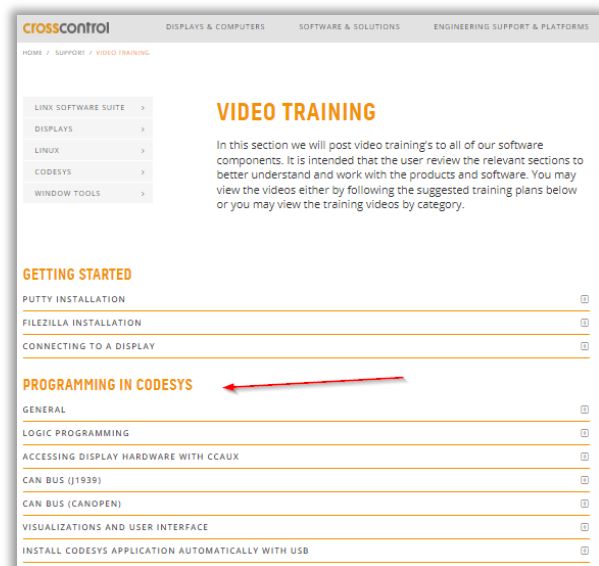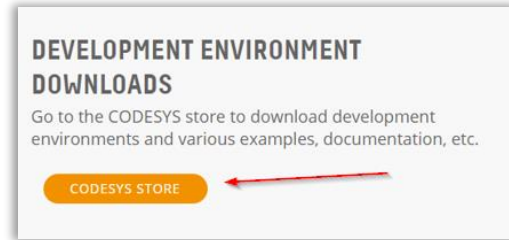
2. Install CODESYS IDE

2.1. Download CODESYS IDE

Download the CODESYS IDE from CODESYS store website directly from their page:

[CODESYS Store | CODESYS](#)

Or head to our website and proceed from there:

[CODESYS | CrossControl](#)

In this link [CODESYS Development System V3 | CODESYS](#) you will find the latest CODESYS IDE version that is connected to the runtime of our displays and controller units.

⚠ Observe!

Read about the System Requirements before you proceed to download the specific version. Make sure to register a user account on CODESYS website to be able to download the IDE!

2.2. Install IDE

After downloading the IDE .exe file on your PC, click on it and run the installation by following the instructions.

The installed CODESYS IDE can be found on the desktop or in the Windows Start-menu as shown in the image on the right:
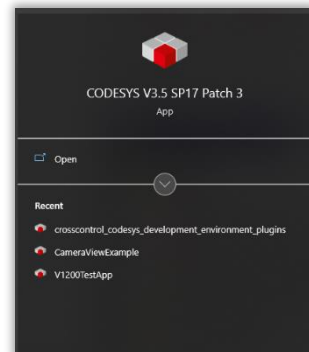
⚠ Note!

There is a video showing how to perform the installation (select the video "Installation" after using the link in CODESYS video trainings section).

A For more information on installation and startup, see the following document from
CODESYS: [CODESYS V3: Installation and Getting Started](#)

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

CODESYS development environment

Device descriptions files, library files like:

CCAUX- API with access to several HW related features
CCSAP – API used to access Data Engine
as well as other accompanying libraries you need, components and plugins are all made in a project archive that you can download and extract to your CODESYS IDE in order to be able to run and deploy application on CCpilot display computers.
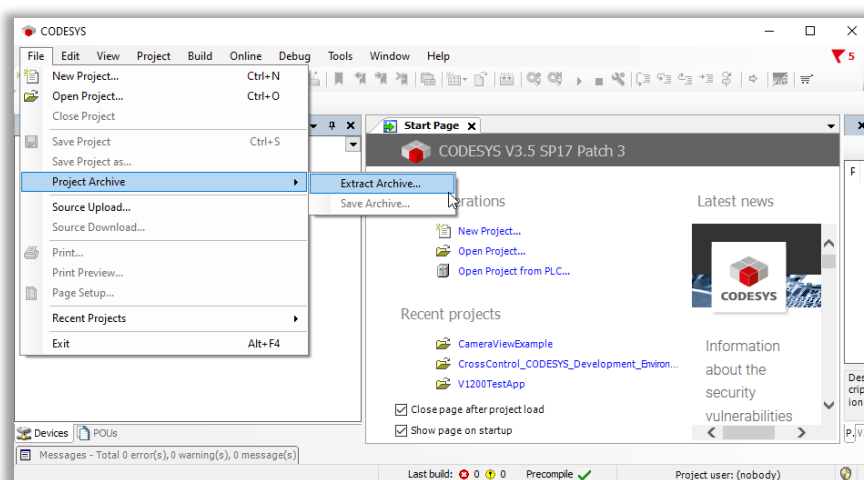

Download:

"crosscontrol_development_environment_plugins.projectarchive" in the image above.

More detailed information about CCAux and CCSAP can be found on CODESYS IDE 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 the downloaded project archive and install/extract it.

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 archive and extract it. 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.
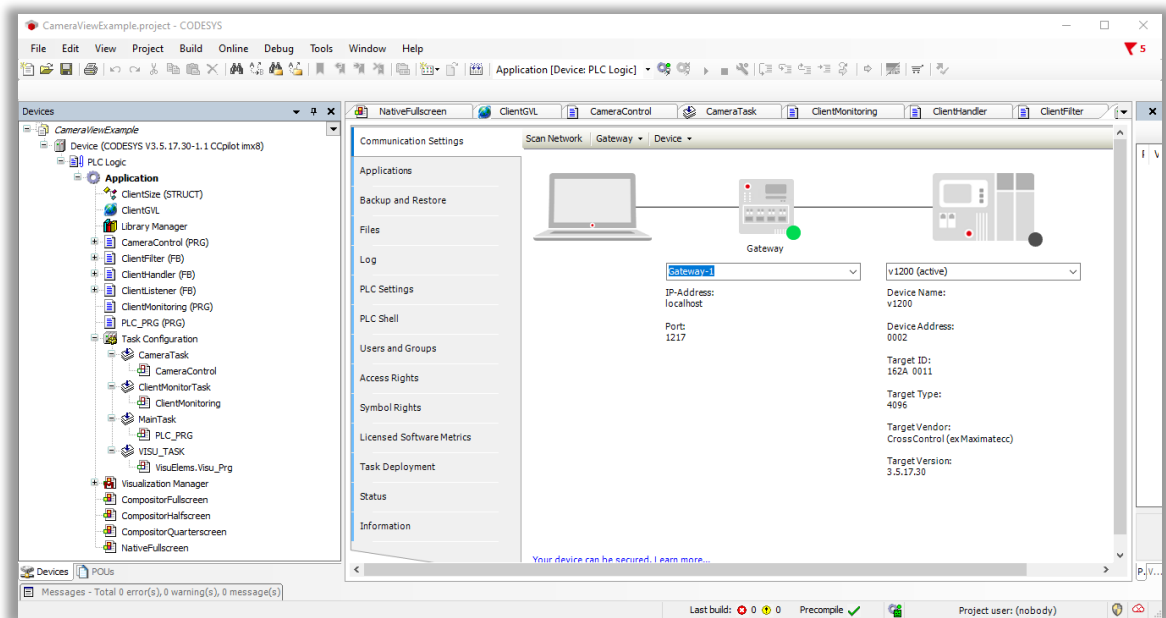
    Press "Extract".
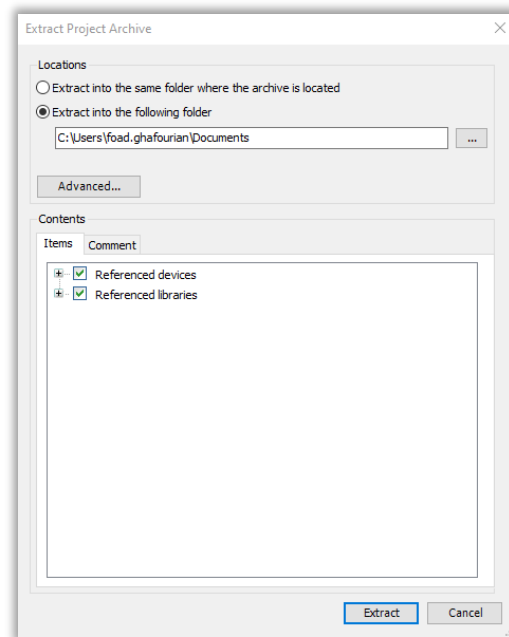
4. When the task is finished, the tool will show a list of components that could be updated to a newer version. **The recommendation is to choose action "<u>Do not update</u>" for all the tabs (Library, Device, Compiler Visu etc)!**

    Then press "OK".

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 CODESYS video training section).

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 → New 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 then Press OK.
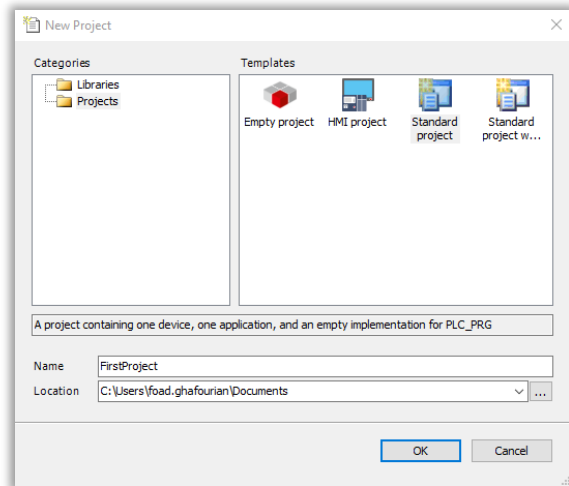
3. Set up the standard project.
   Now the 'Device' and 'programming language' shall be selected
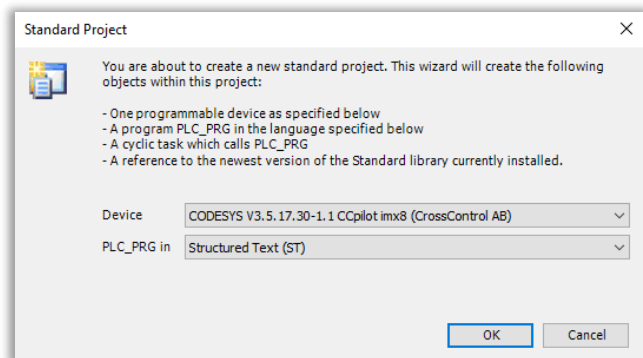
The following 'device' alternatives are available in the project structure that we have created. You can now see the available CrossControl devices.

If you are going to develop a CODESYS application for ARM based displays:
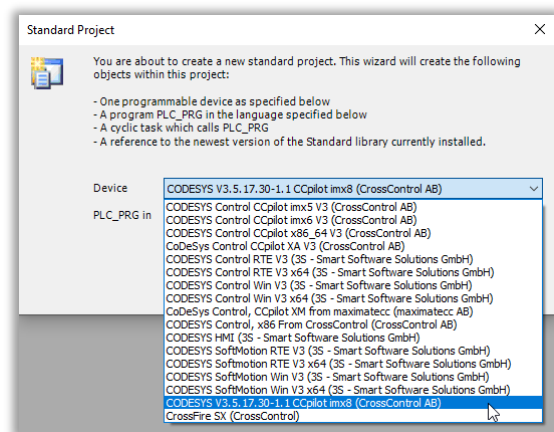ARM based devices are:
CCpilot iMX5 – VC & VA
CCpilot iMX6 – VI2 & VS
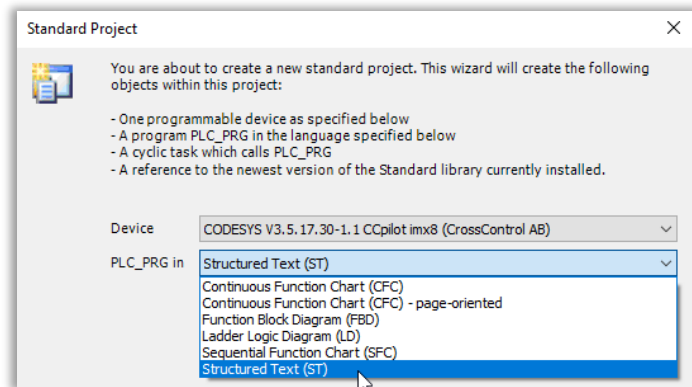CCpilot iMX8 – V700, V1000 & V1200

Dependeng on the device you have you choose the correct one.

If you are going to develop a CODESYS application for x86 – choose CCpilot x86_64 version

For the PLC_PRG these
programming language
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".
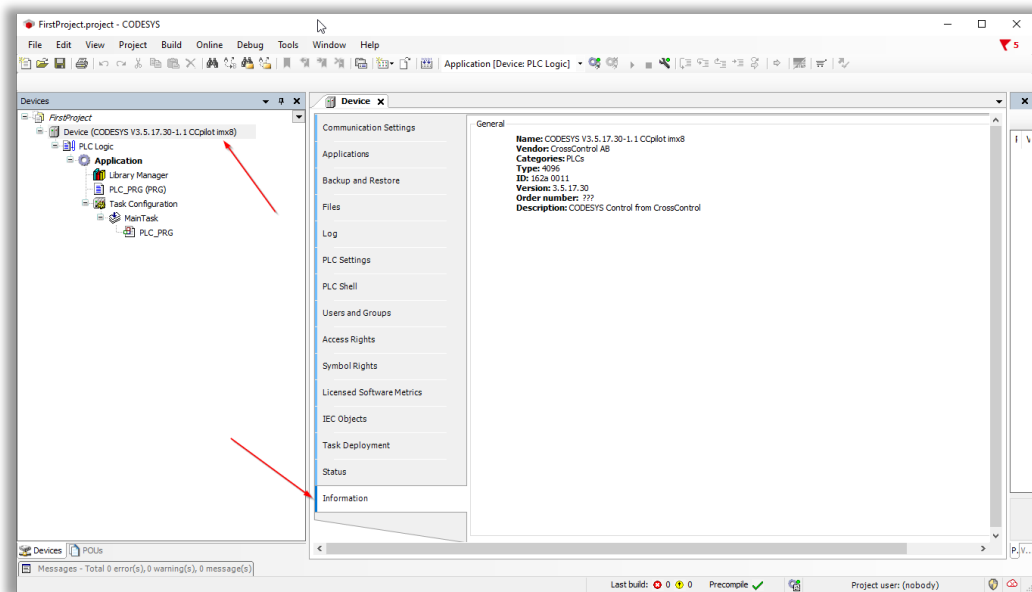
Check that the version displayed (Version: 3.5.17.30.) corresponds to the CODESYS
Runtime version installed on the target device. If not, you may have to update the device in
the IDE!

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" to see also the older device versions as well.

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!
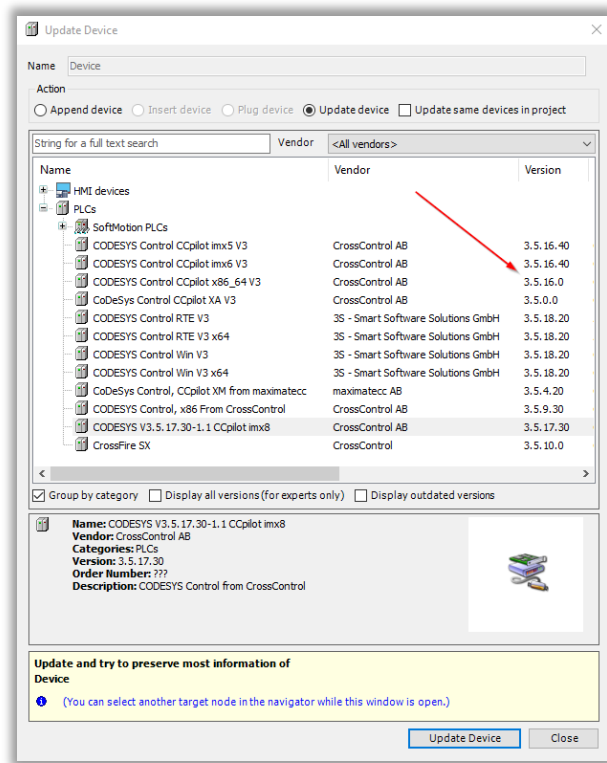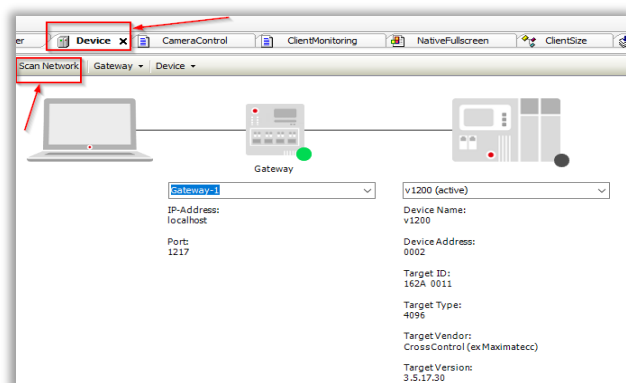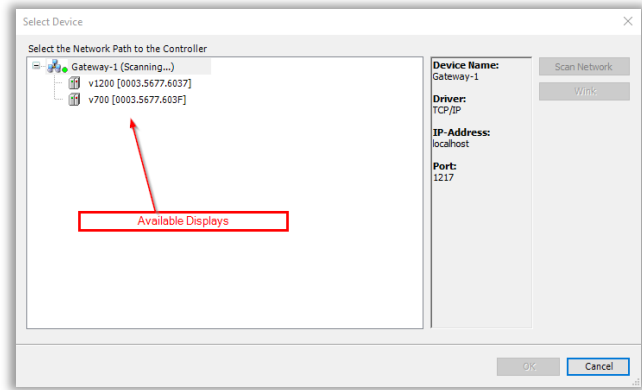

⚠ Note!

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 CODESYS video training section.

4.1. Connect to the display

1. After making sure that you have the right "Device" installed, go on "Device" window and click on "Scan Network" to search for CCpilot displays that are available.

2. You will see the available CCpilot displays showing up in the "Select Device" window where you can select the wanted display.

Note!

On the new iMX8 CCpilot display computers (V700/V1000/V1200) with the latest CODESYS runtime (V3.5.17 and up) you need to create a "Device User" in order to connect to the device. The other CCpilot displays will be connected directly after step 2 above!
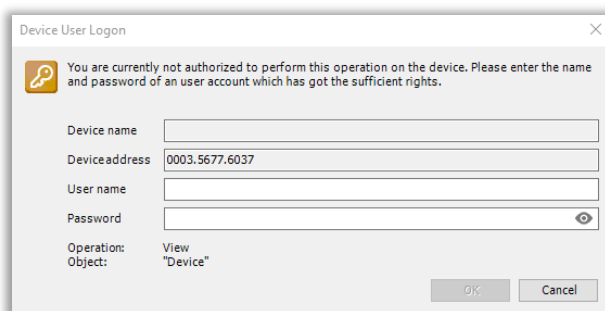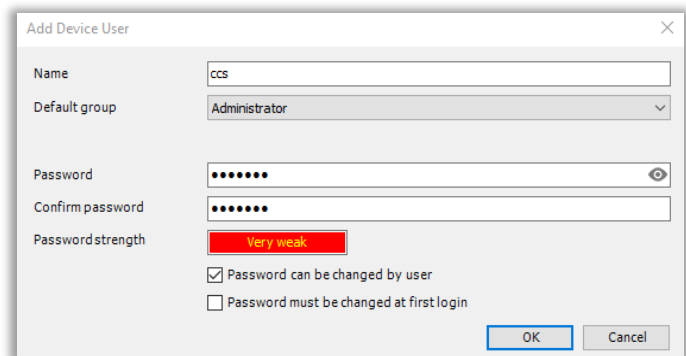
4.2. Create Device User

1. For the newer CODESYS version runtime, when you try to connect to the display, a window will be open, asking you to add a "Device User" where you create a device name with a **name** and a **password** of your choice.

   For example:　　**ccs**

   　　　　　　　　default

2. Now every time you will connect/login to the display via CODESYS IDE after bootup, you will need to enter the created **name** and the **password**.

5. Knowledge Base & Online Documentations

There is an online documentation about our latest CrossControl component that can be used to create a CODESYS application for streaming IP (Ethernet) camera feeds on CCpilot display computer: [CODESYS CC Component — CODESYS V3.5.17.30](#)
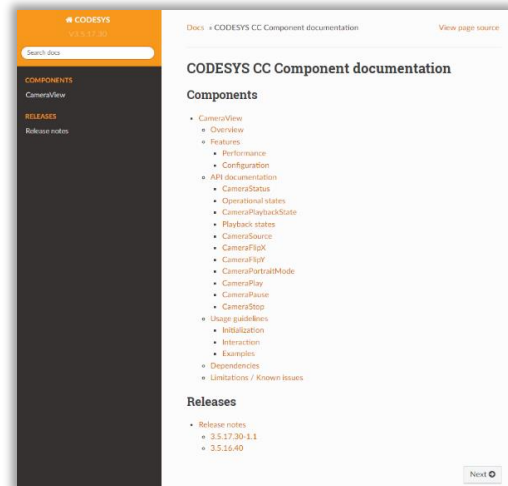
For further information about CODESYS, please see

CODESYS homepage: [CODESYS International | CODESYS](#)

Our homepage about: [CODESYS | CrossControl](#)
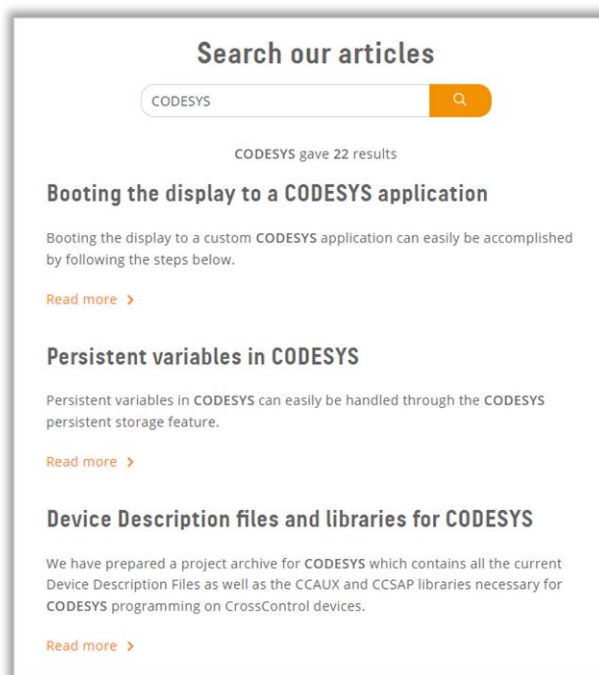
Check also out our Knowledge Base support site: [Knowledge Base | CrossControl](#)

It is a great source of information that expands upon the information outlined in our product manuals. There you can find project demos, code examples, FAQs, and general product information for developers.

You can find useful articles/guides regarding CODESYS!