KREO HMI TUTORIAL
Integration with Codesys softPLC

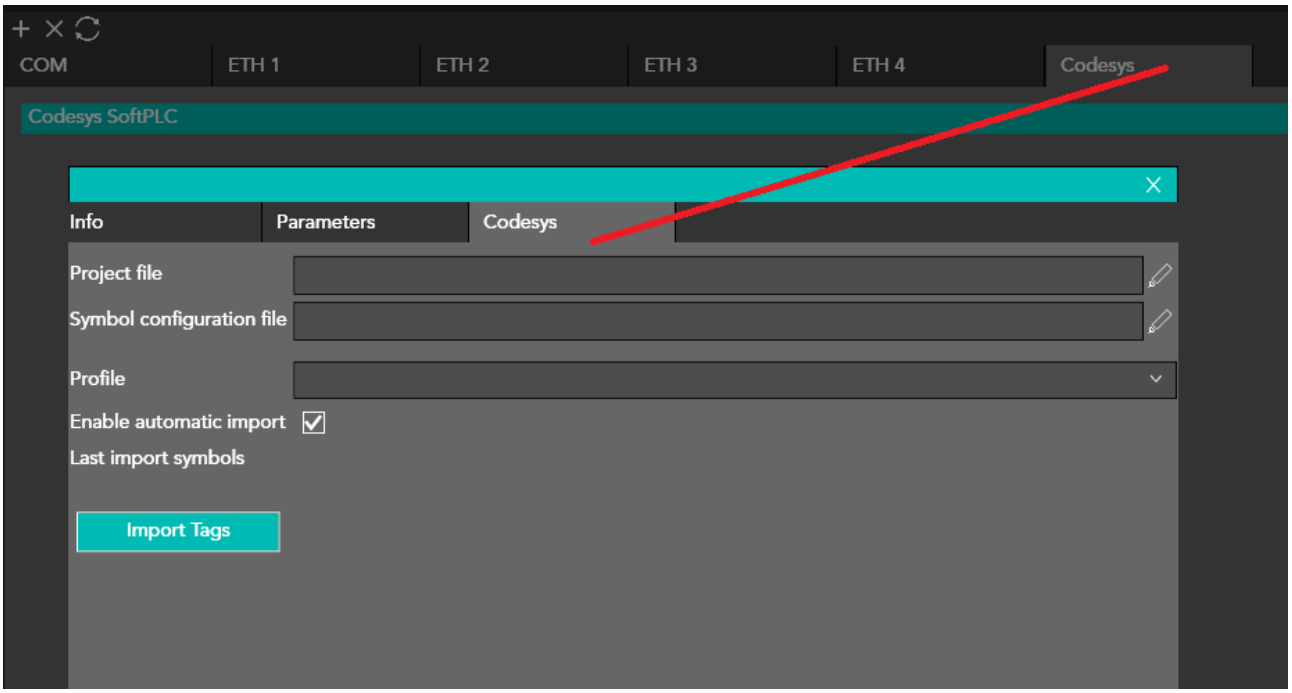
Tutorial dedicated to the tag database sharing between KREO runtime and the Codesys 3.5 runtime

Connect
Ideas.
Shape
solutions.

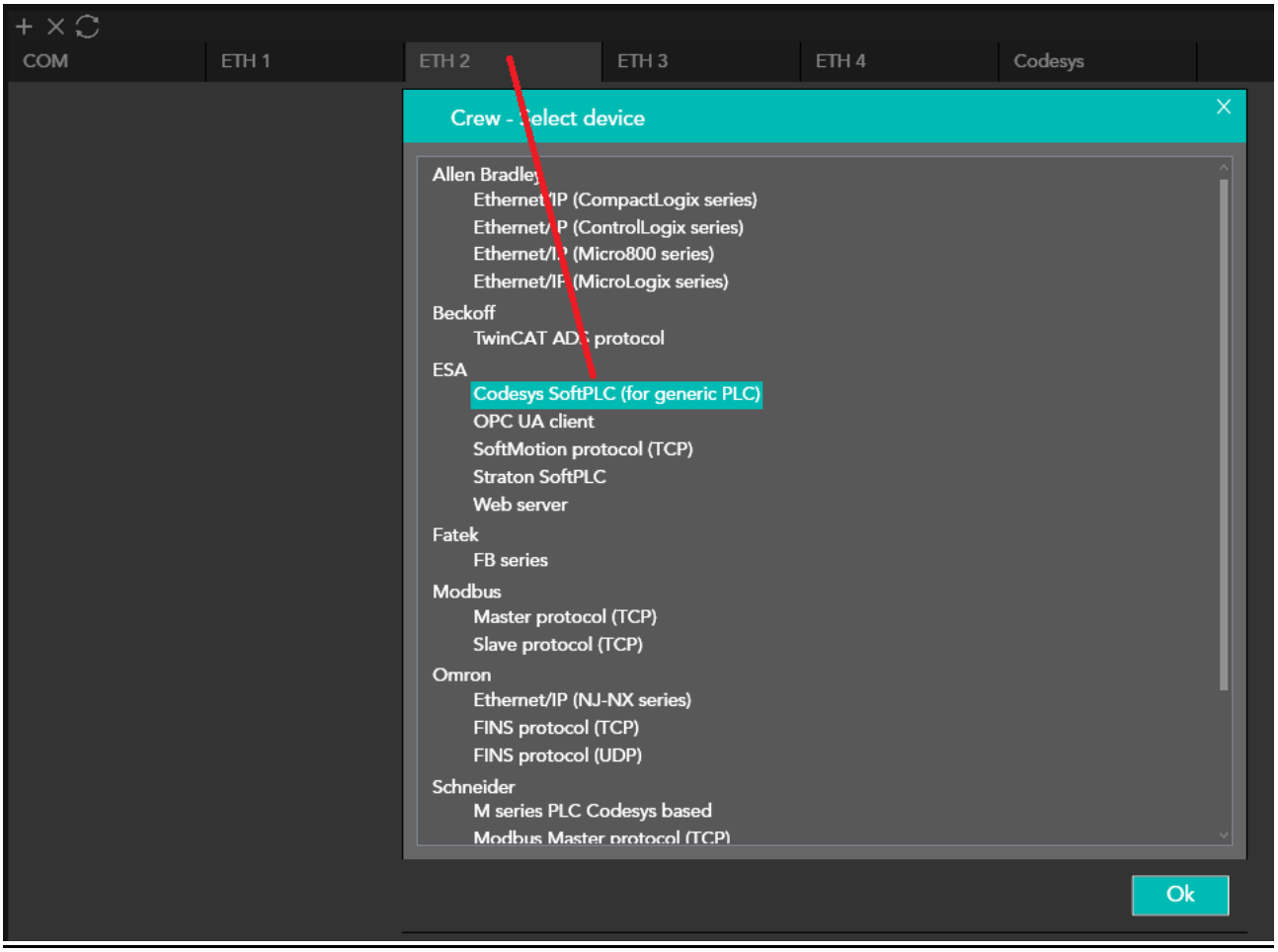
Introduction

KREO supports the CODESYS driver. Communication is managed in two different modes and two different drivers based on the application configuration:

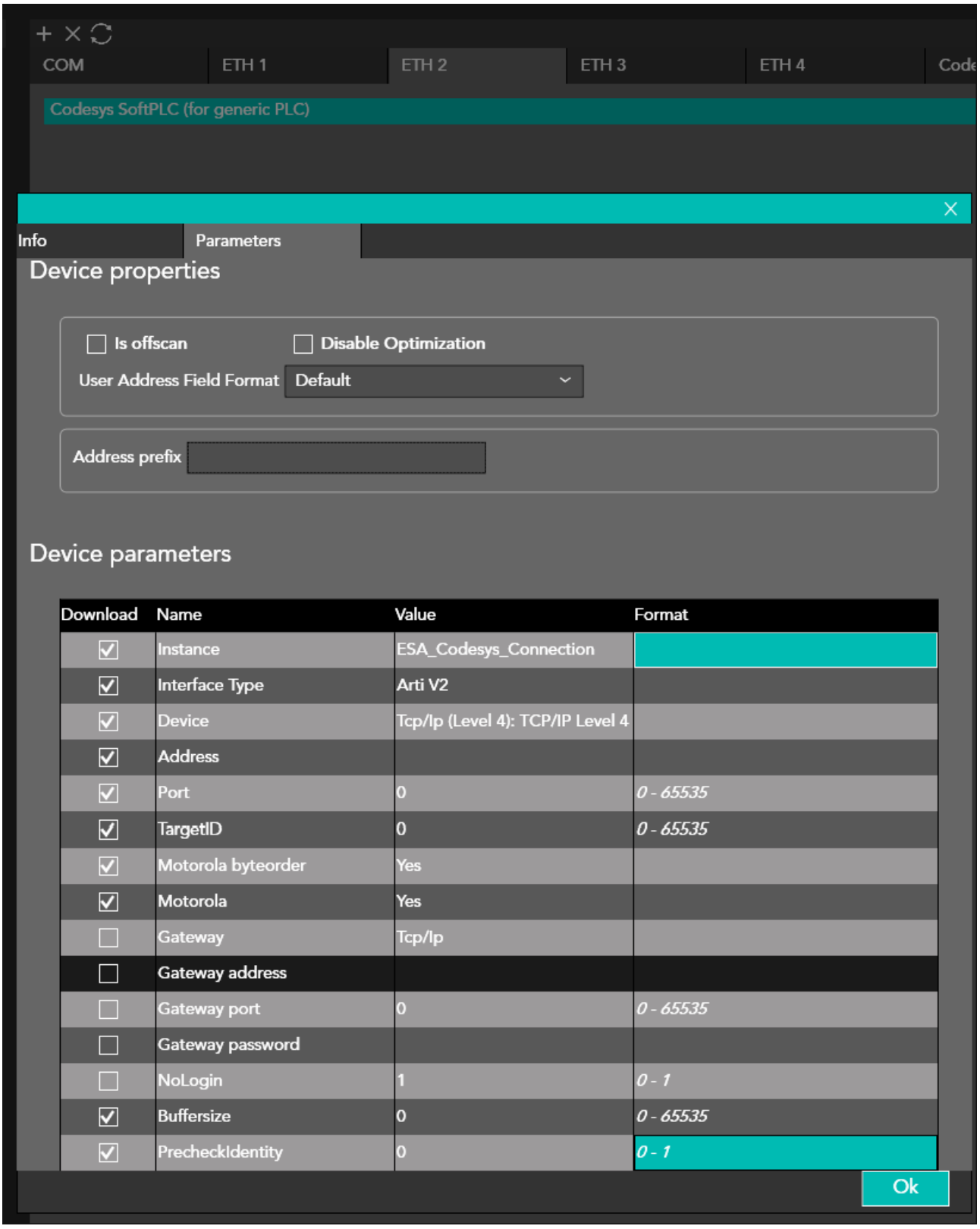
1. CODESYS INTEGRATED SOFT PLC (the driver to communicate with the CODESYS soft-plc, both for embedded HMI or PC based device running PC Control Win V3).



2. CODESYS SOFT PLC DRIVER FOR GENERIC PLC BASED ON CODESYS RUNTIME (the driver dedicated to PLC based on codesys run time or a PC with CODESYS RTE on board).

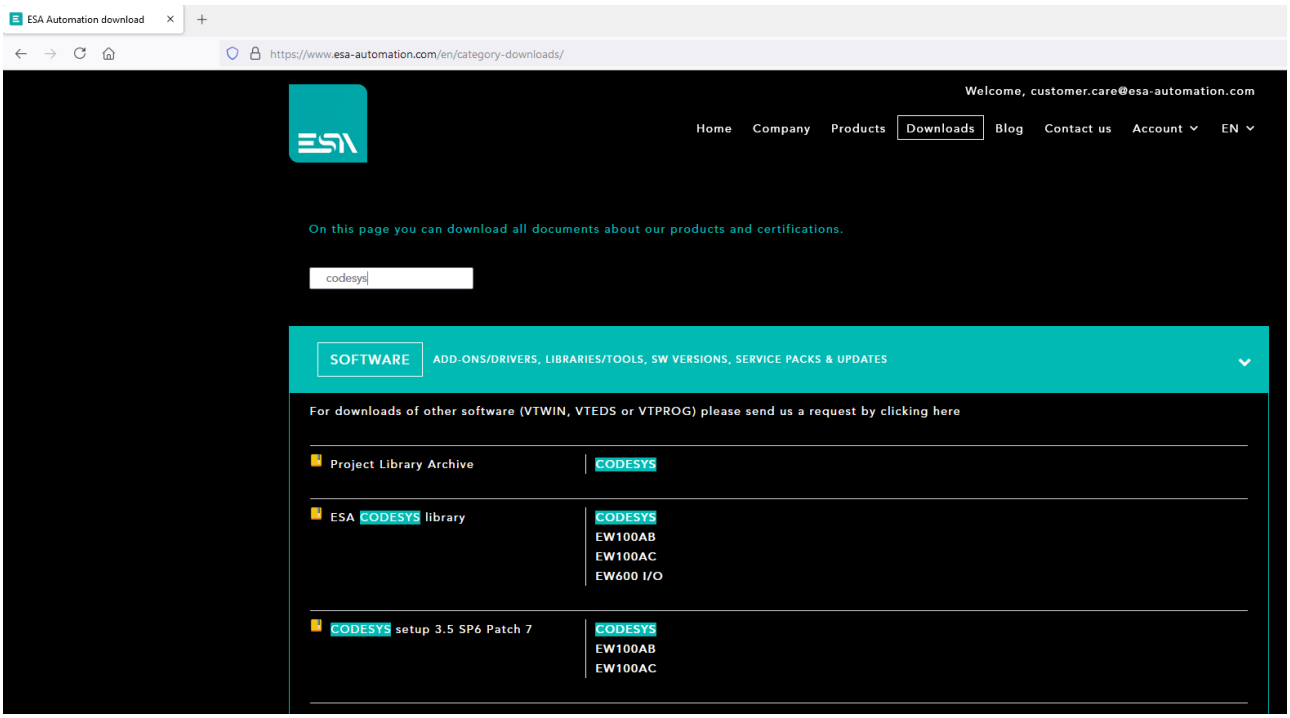


The only difference between the 2 drivers is in the definition of the communication parameters:
The first one requires you to define the PROJECT- File, XML-SymbolicFile and the PROFILE TYPE of the CODESYS project.
The second one has generic parameter settings that depends on the different types of CODESYS 2.x, 3.x plc/RTE.


COM
ETH 1
ETH 2
ETH 3
ETH 4
Codesys SoftPLC (for generic PLC)
Info
Parameters
Device properties
Is offscan
Disable Optimization
User Address Field Format
Default
Address prefix
Device parameters
Download
Name
Value
Format
Instance
ESA_Codesys_Connection
Interface Type
Arti V2
Device
Tcp/Ip (Level 4): TCP/IP Level 4
Address
Port
0
0 - 65535
TargetID
0
0 - 65535
Motorola byteorder
Yes
Motorola
Yes
Gateway
Tcp/Ip
Gateway address
Gateway port
0
0 - 65535
Gateway password
NoLogin
1
0 - 1
Buffersize
0
0 - 65535
PrecheckIdentity
0
0 - 1
Ok

Note1:
The codesys runtime preinstalled in the ESA embedded devices is based on CODESYS 3.5SP6P7 profile.

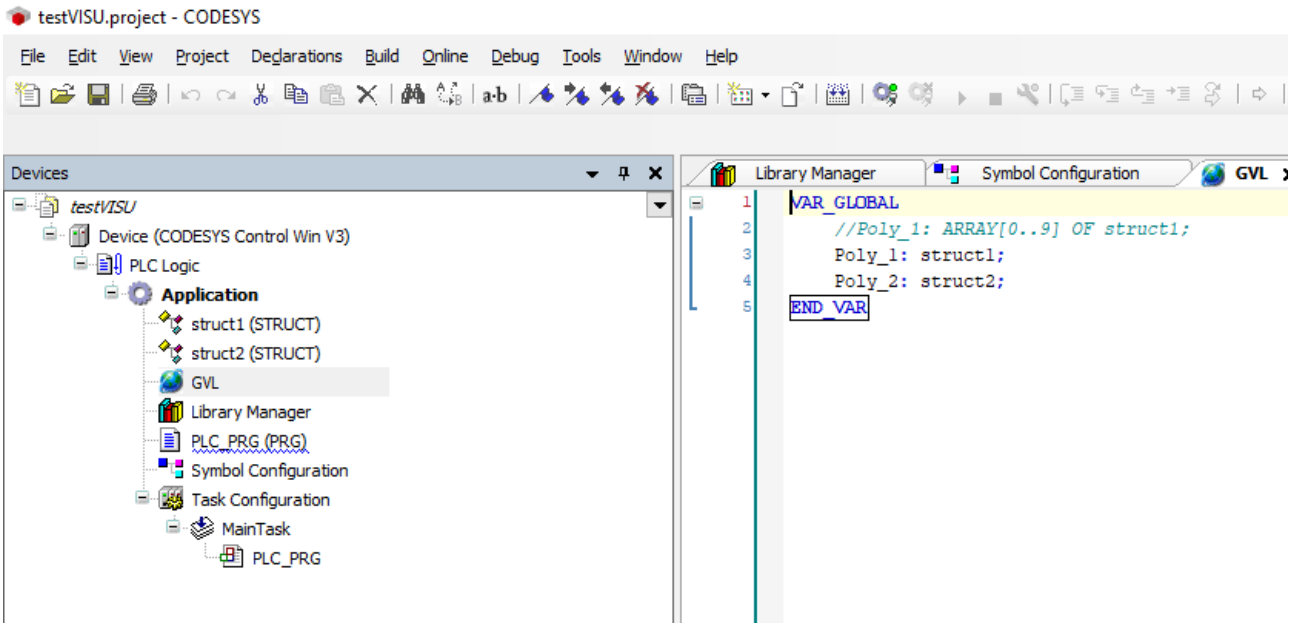
CODESYS editor customization
Before starting the project you need to configure the CODESYS editor with some ESA files that will allow you to use libraries and configure typical ESA devices.
From the ESA website you can download the below files:

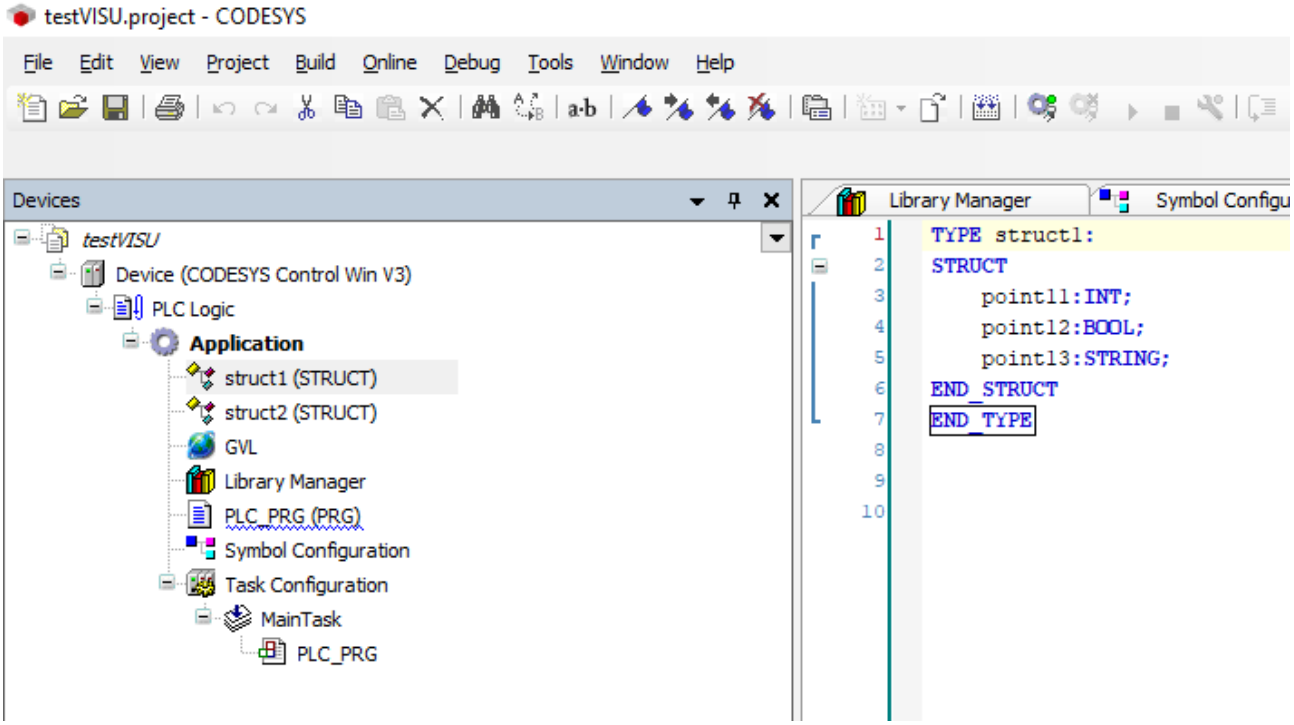


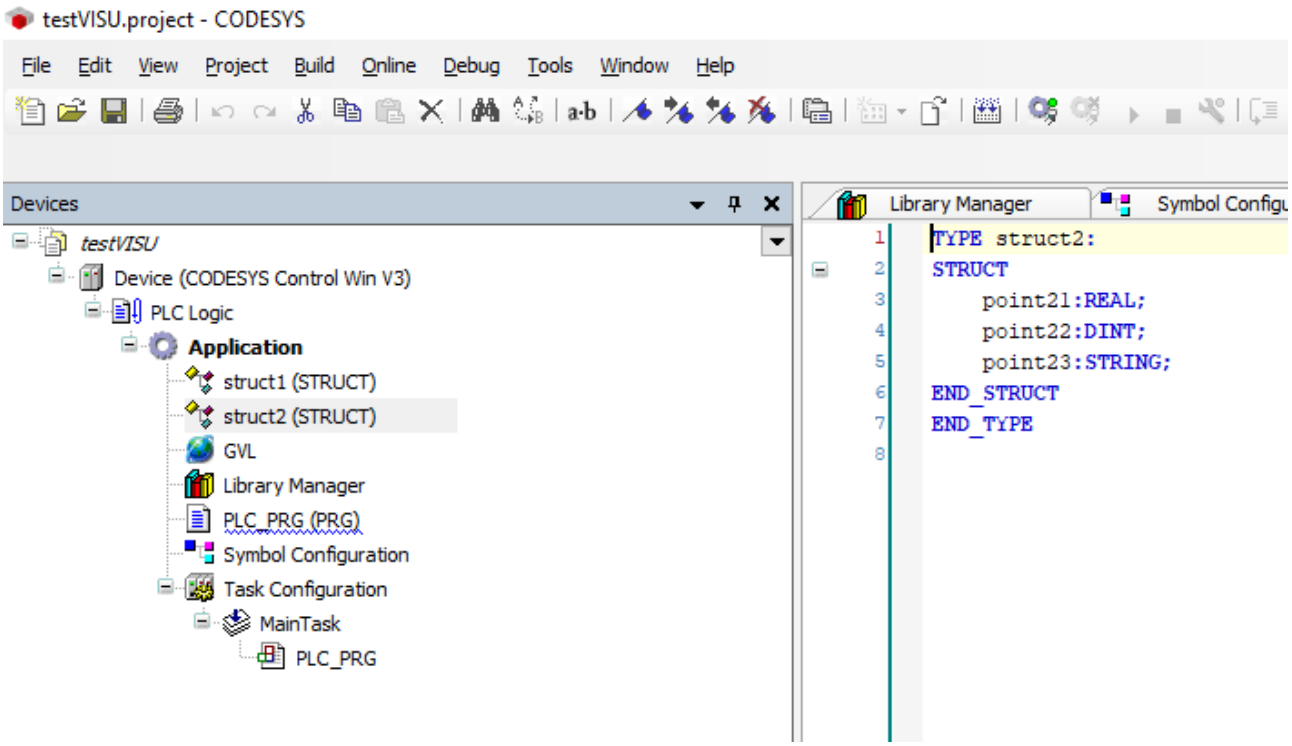
- Project Library Archive: archive project to be opened on your PC. This will install the ESA system libraries.
- Codesys setup 3.5sp6 Patch7: CODESYS editor setup.

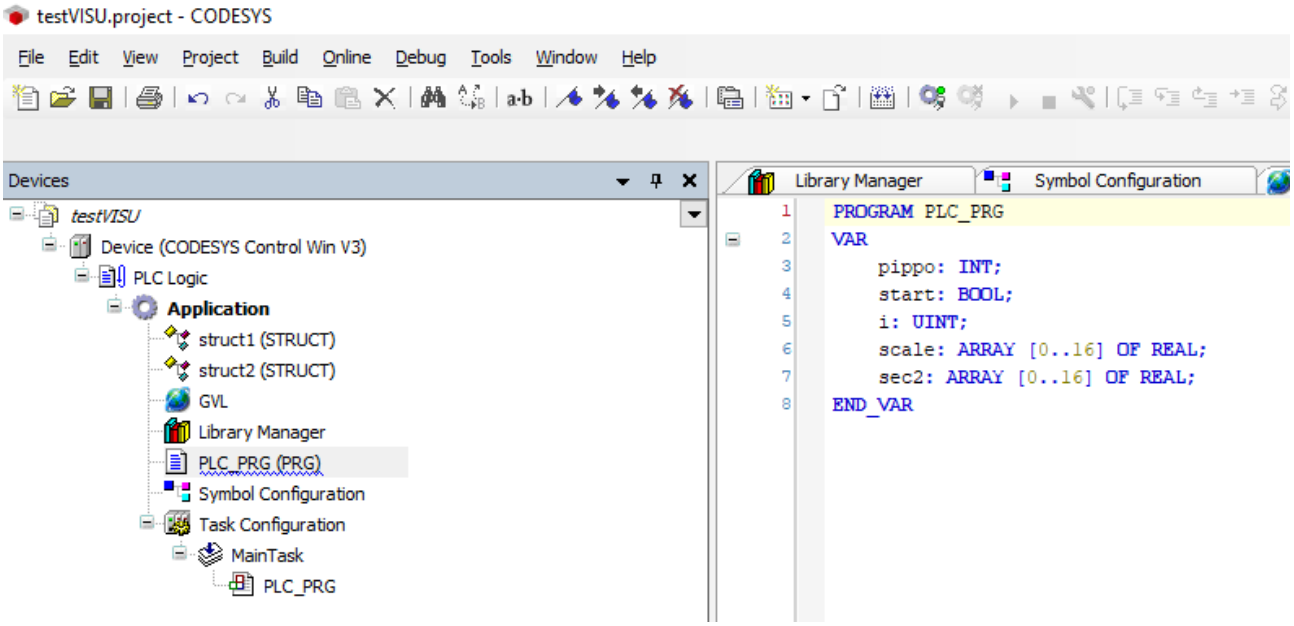
How to do:

1) Let's suppose you have a CODESYS project with different types of tags (single and structure) in the different sections of the project:



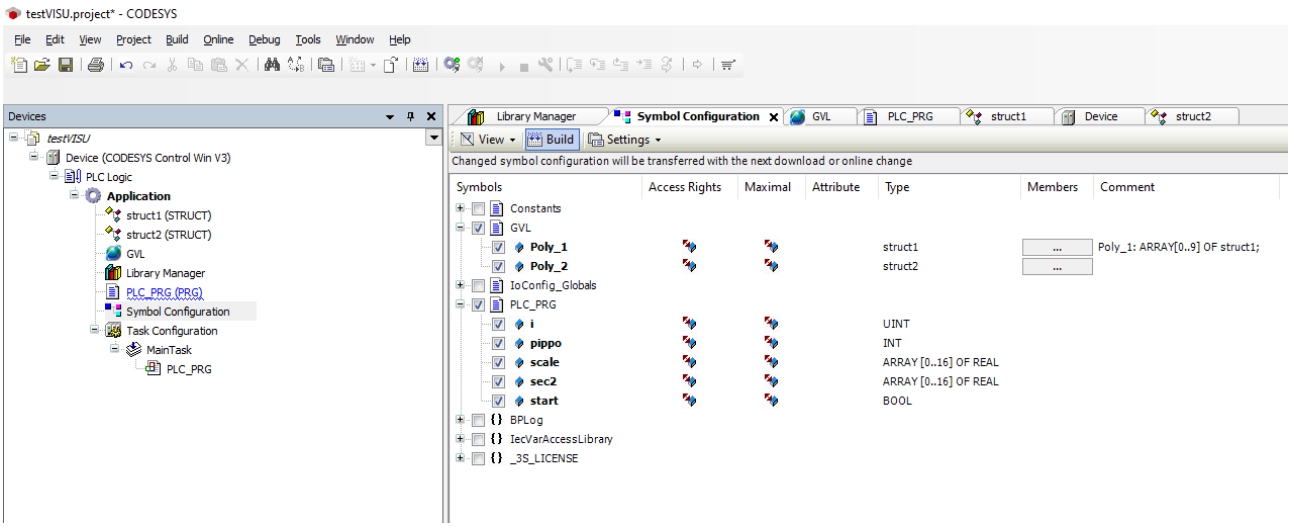




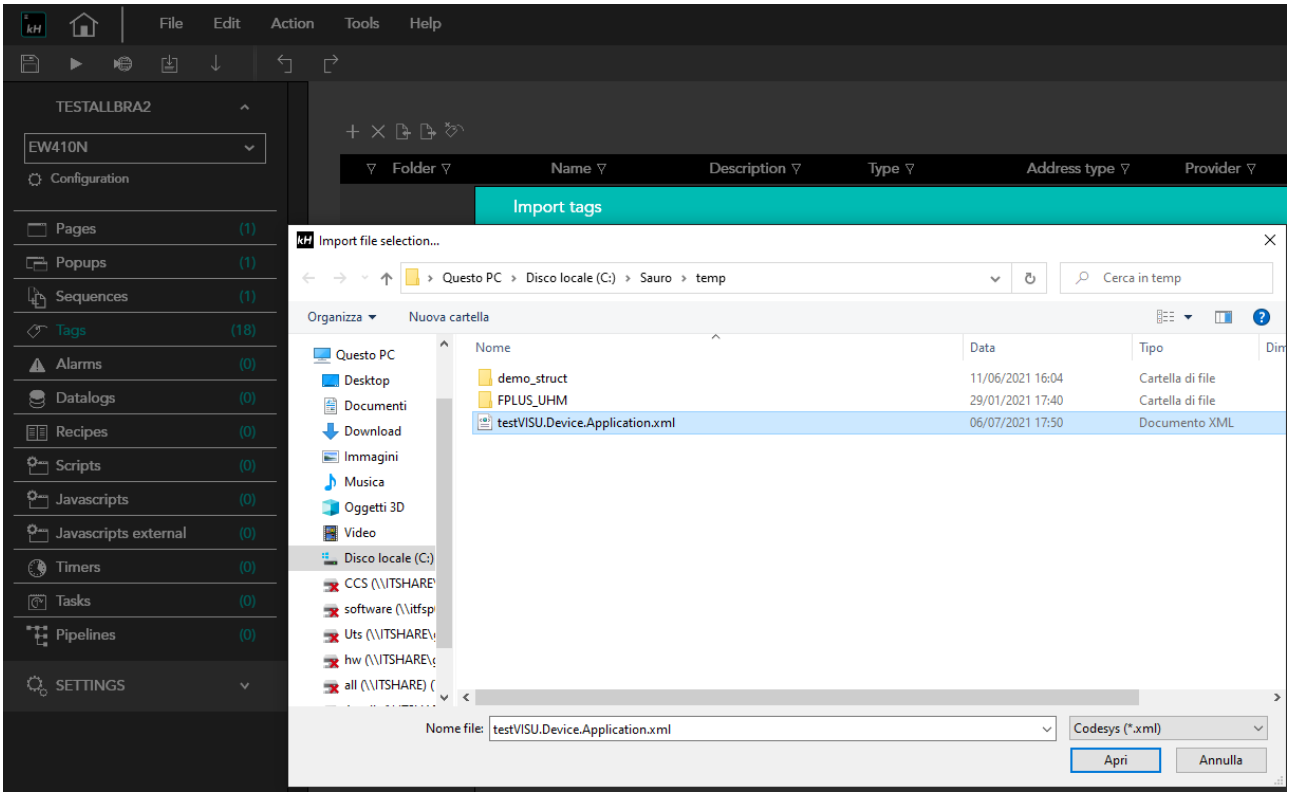


2) In the SYMBOL CONFIGURATION components select the tags that need to be imported into the KREO project.

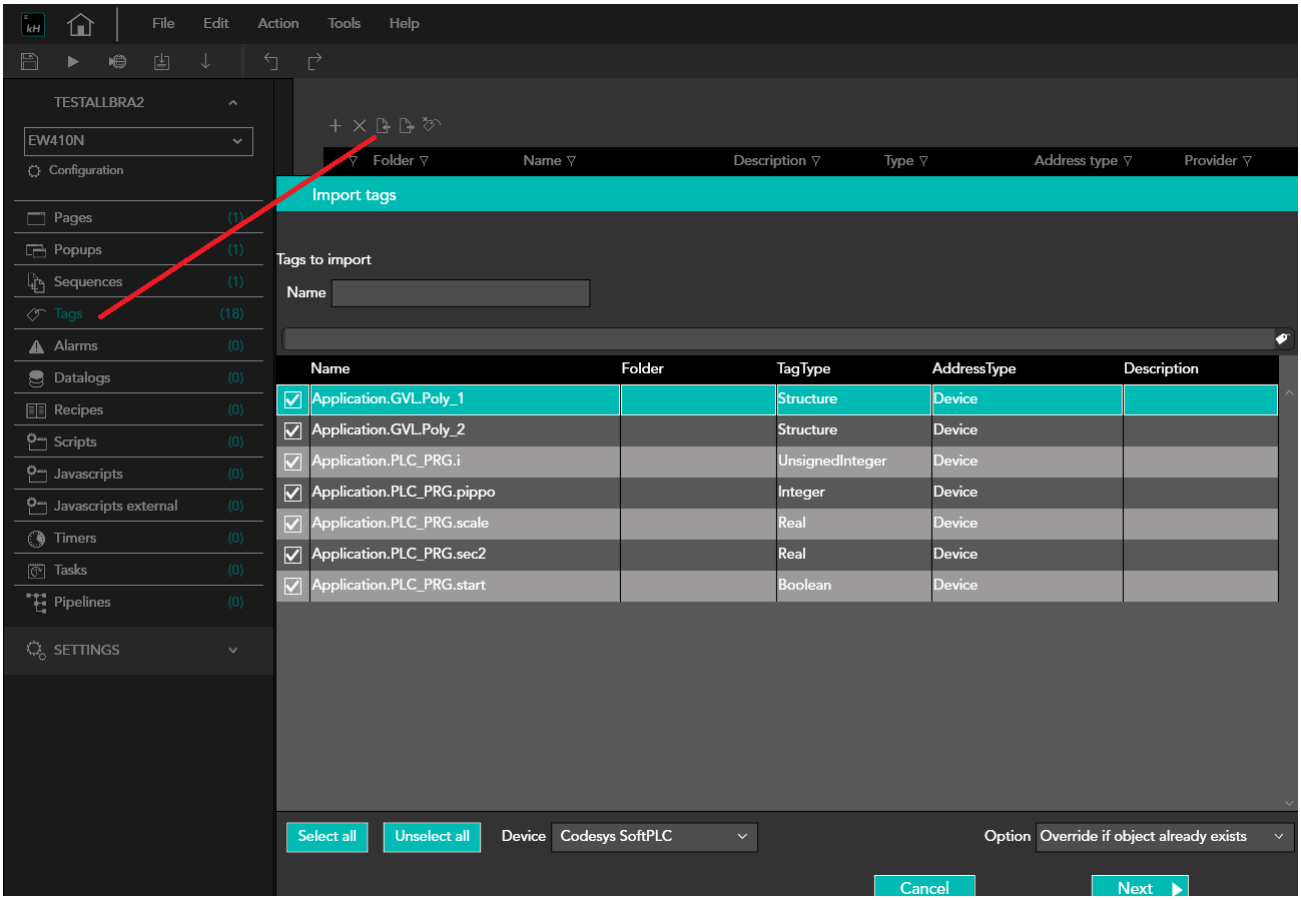
CODESYS creates an .XML file in the project folder (via the build command>>GENERATE CODE or after a simple project download).



3) From the tags section of KREO import the XML file created by CODESYS.

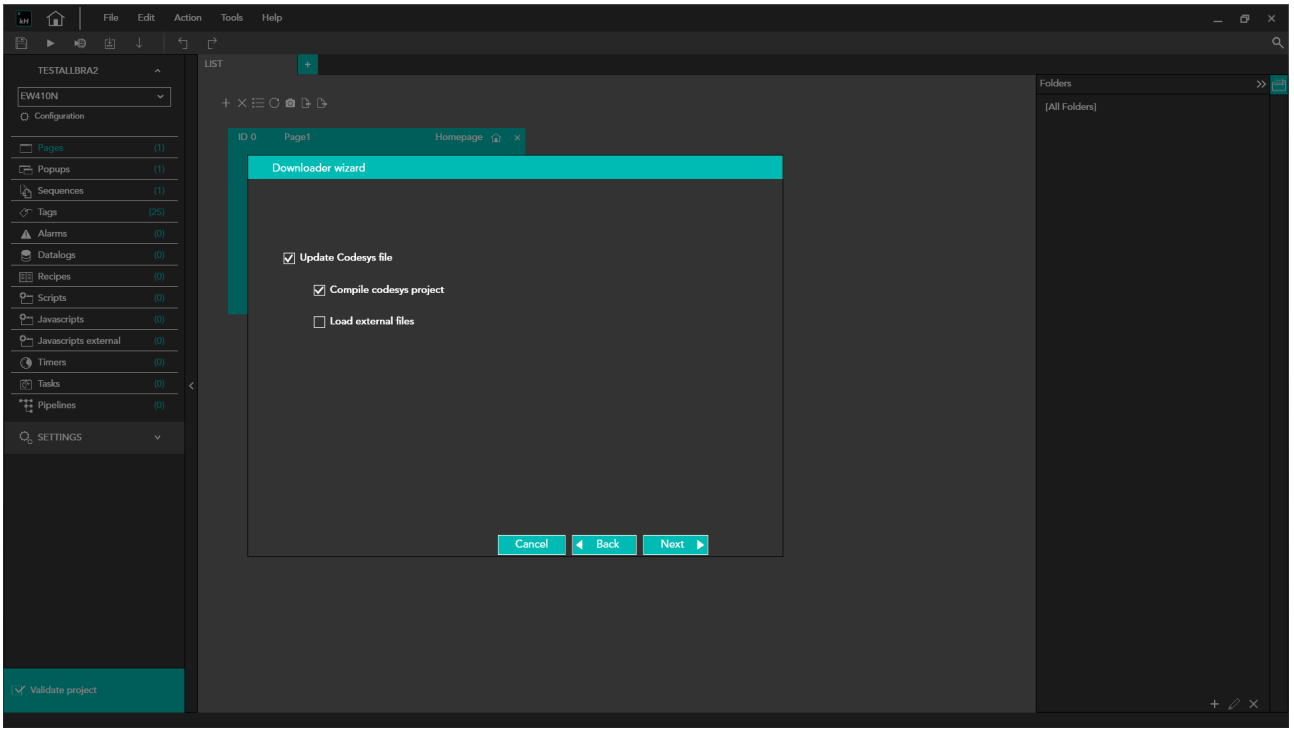


4) The tags are imported to KREO and can be used in the project.

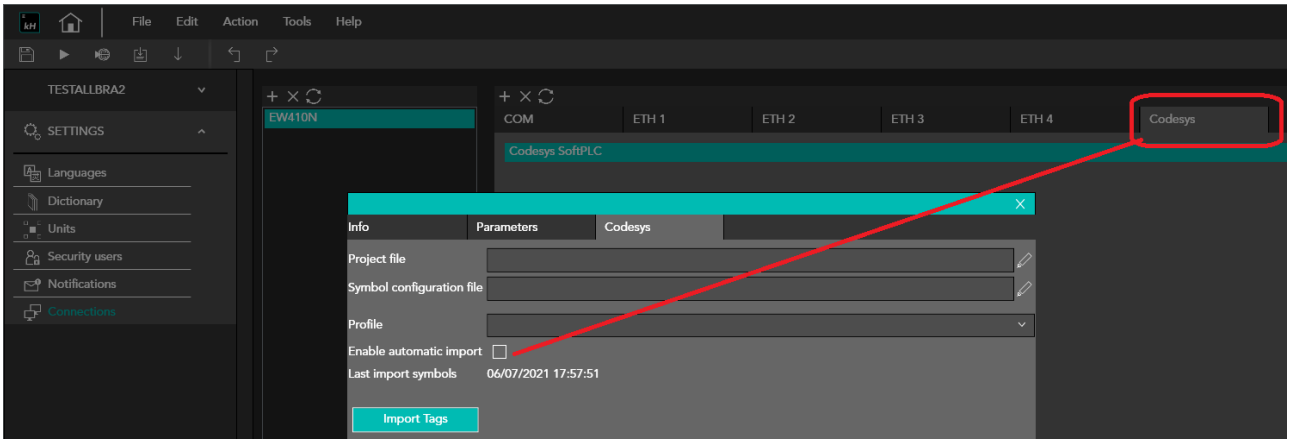


5) In the download procedure of the KREO+CODESYS SOFT-PLC projects (embedded in the HMI-ESA) you can choose whether to transfer the 2 projects separately, each with their respective editors, in 2 distinct operations or in a single KREO operation.

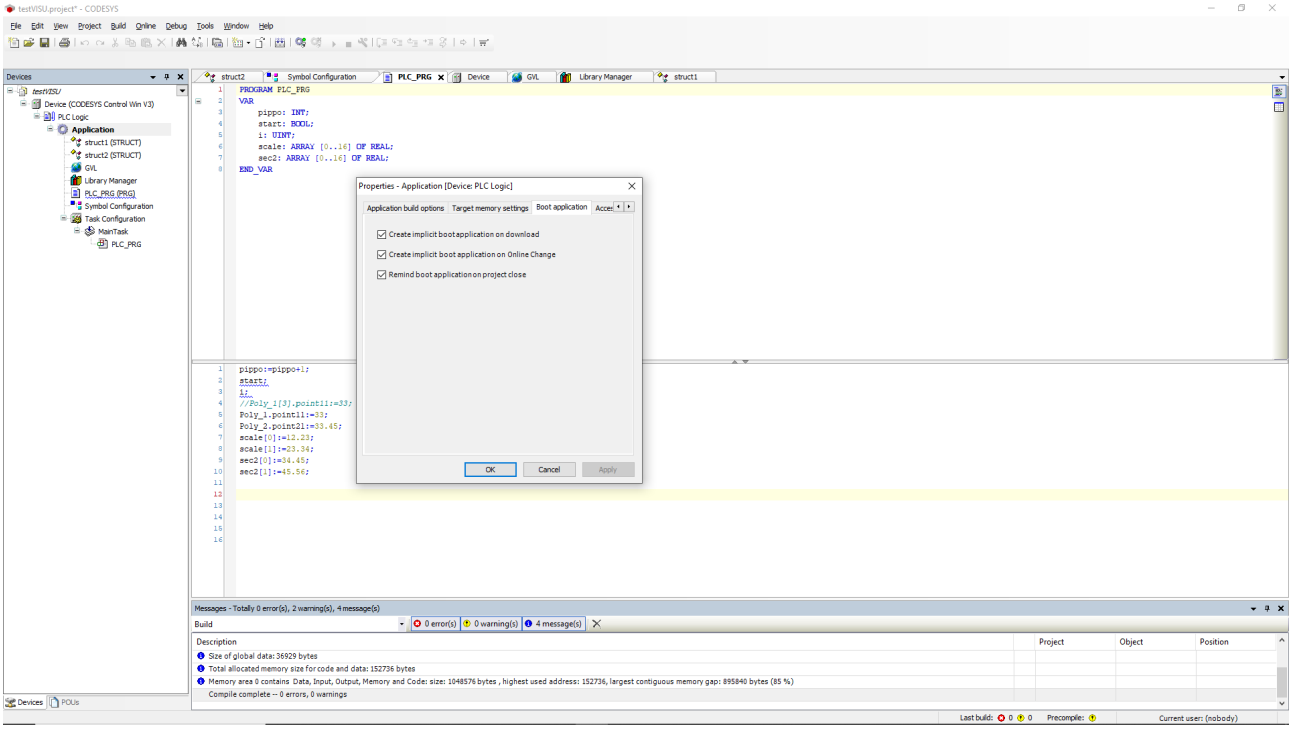
In the download procedure it is necessary to select UPDATE CODESYS FILES:



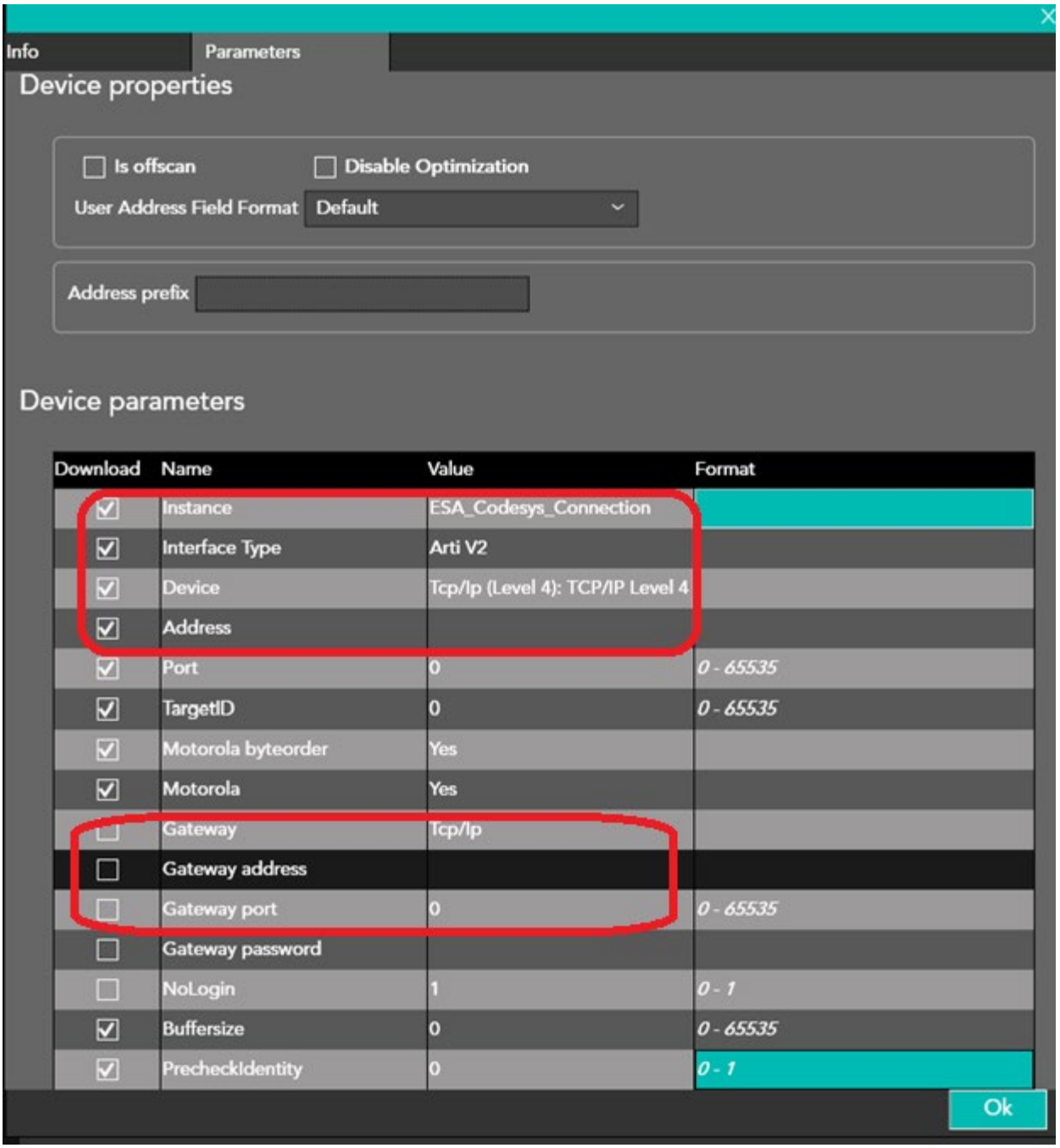
<u>Note2</u>: In developing the KREO project you can use the automatic import of tags but be careful that this does not lead to unwanted imports of codesys-tags in the KREO project.
It is therefore recommended to disable it in the case of a more controlled import operation.



Note3: In CODESYS it is recommended to enable the 3 options desplayed below (right click on Application >> Properties) to keep the project and boot-app syncronized.



Note4: In KREO project with CODESYS SOFT PLC FOR GENERIC PLC drivers we have defined that the generic communication parameters are as follows:



In case of projects based on CODESYS 3.x, the communication parameters involved are those highlighted in red (and not all necessarily).

Note5: The ADDRESS PREFIX filtering option allows you to import the Codesys tags and hide the initial part of the name.
So for example, a tag with *name Application.GVL.Poly_2* and with ADDRESS PREFIX = *Application.* will be imported into KREO with name: *GVL. Poly_2.*

Note6: The DISABLE OPTIMIZATION parameter may help the user in identifying wich Tag is causing the communication error.
If we have a situation of one single tag not defined in the plc we could have ??? displayed RT on the complete page even if the others tags are correctly defined.

This is because the communication protocol optimize the requests by packing in the frame sent to the plc the max. number of tags.

However, this can affect the communication on all tags in the package in the event of an error and this does not help the user to identify which tag is causing the problem.

The DISABLE OPTIMIZATION parameter instead forces a single request for each tag of the page, slowing down communication with the plc but highlighting exactly the ??? on the only tags that have a communication error.

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