iFACE Designer

Codesys

Month 2021

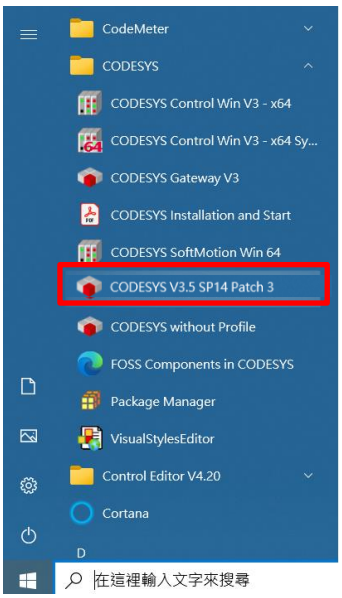
Version 1.02

CODESYS (controller development system) is a design and development environment for industrial automation control programs. It complies with the IEC 61131-3 standard, allowing traditional PLC users to directly use languages such as ladder diagrams and sequential function charts for seamless development.

1. CODESYS Settings

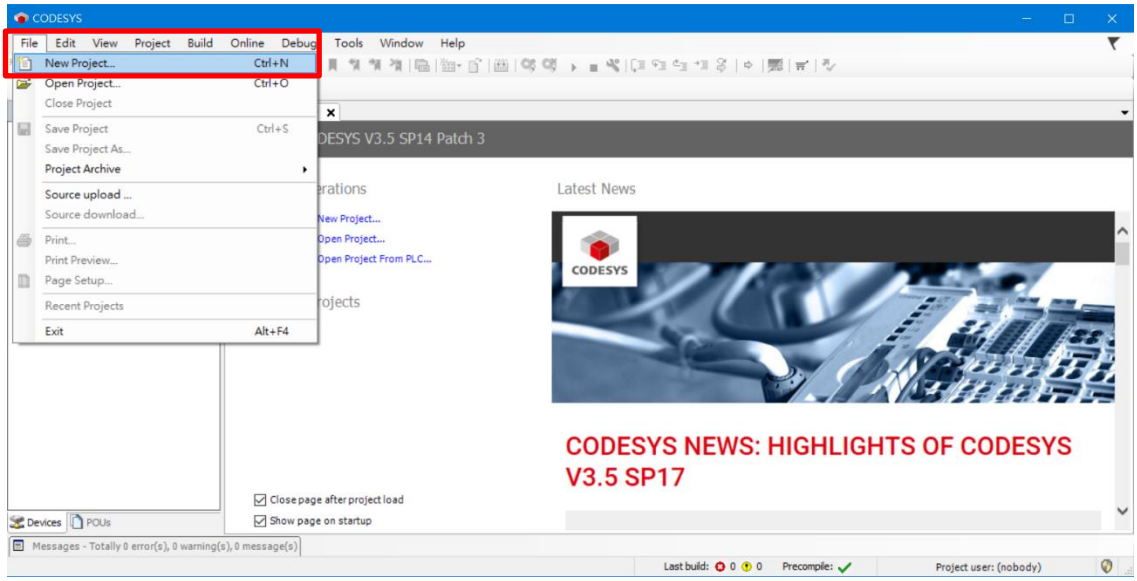
1.1 Launch CODESYS

1. Install and launch the CODESYS program (Version 3.5.14.30 used for this example). Select the Windows desktop icon [] · double-click to launch CODESYS; or click [Start] → [All Programs] → [CODESYS] → [CODESYS V3.5 SP14 Patch3] to launch CODESYS.



2. Start a new project.

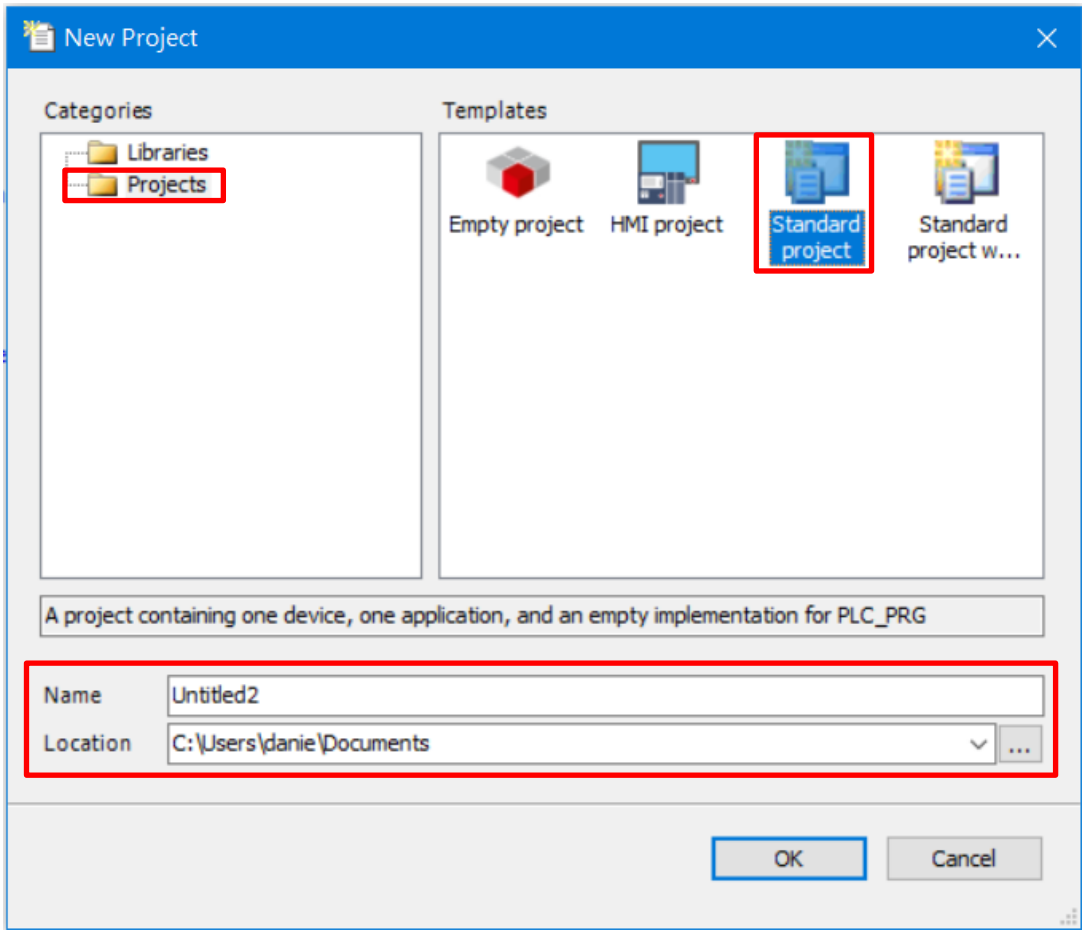
To start a new project, click [File] at the upper-left corner of the window, then select [New Project...].



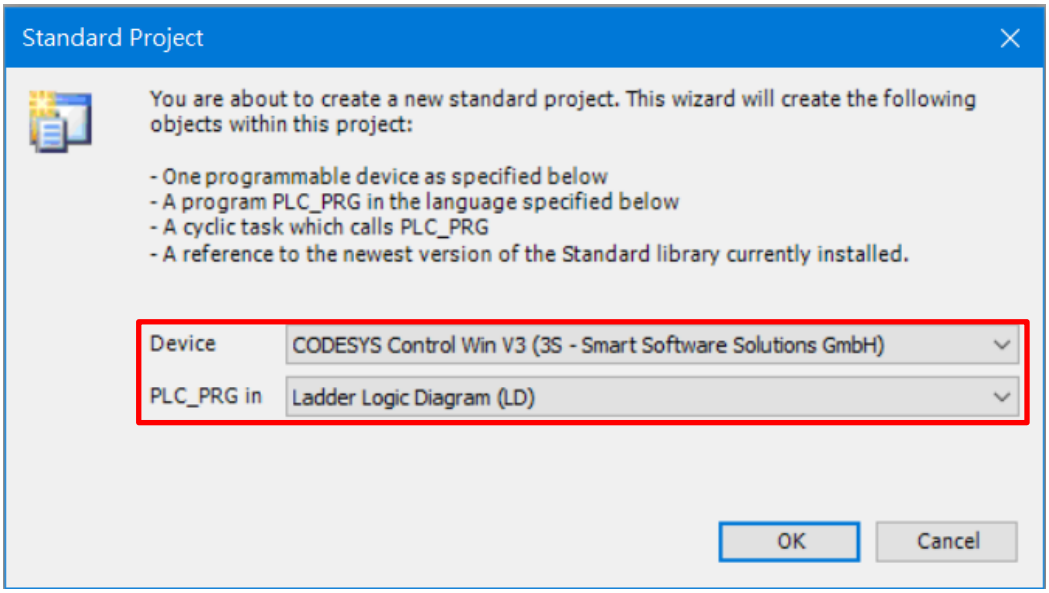
Select [Projects] in [Categories] ;

Select [Standard Project] in [Templates]

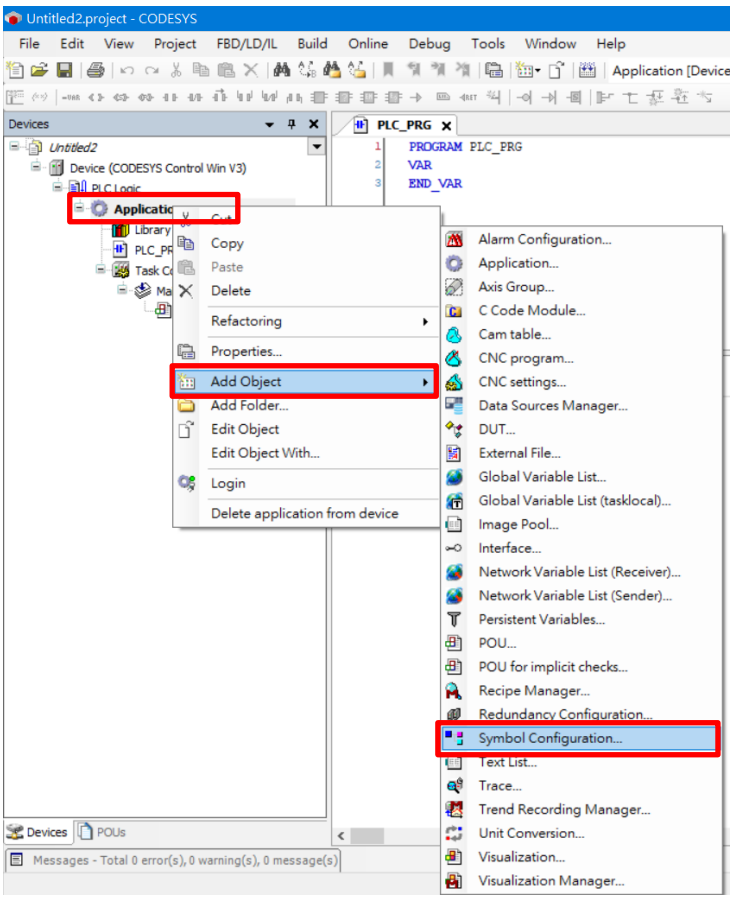
Enter the name and location for the project, then click [OK].



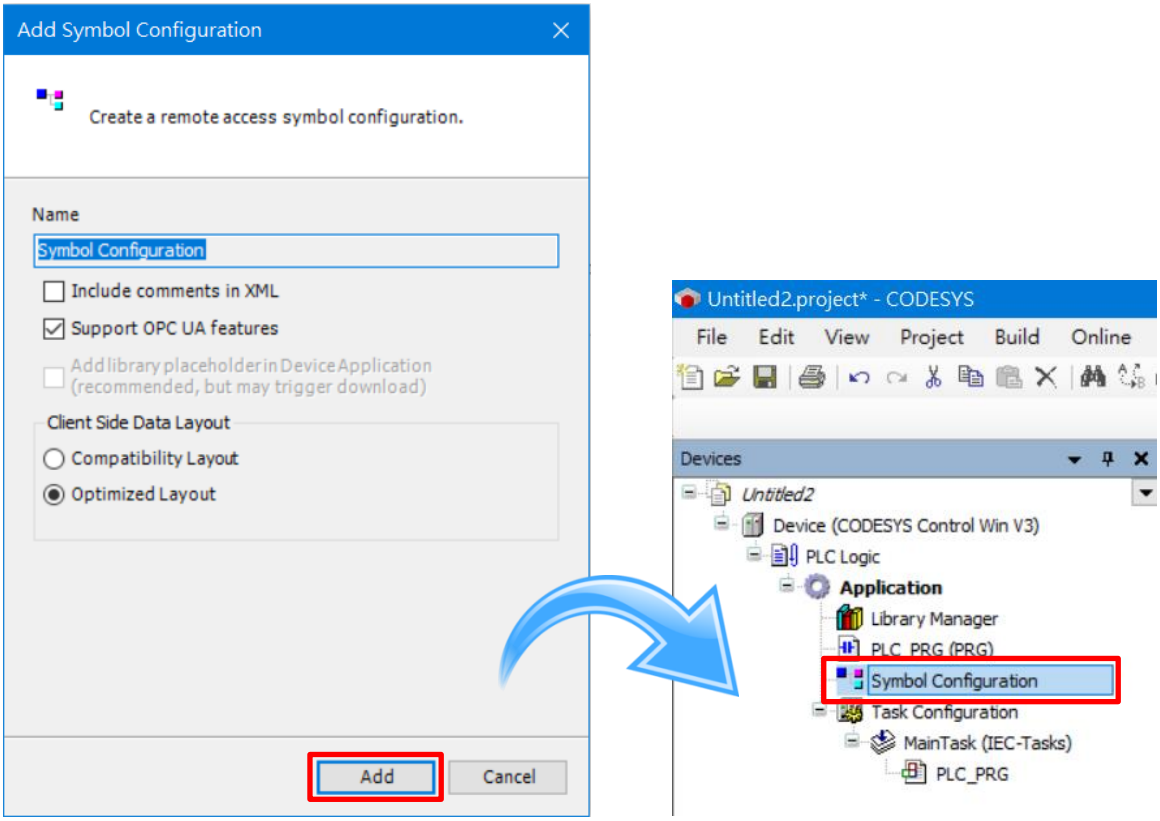
1. Select the languages in [Device] and [PLC_PRG]. CODESYS editing program provides 6 languages, which you can choose under the [PLC_PRG] drop-down menu. Ladder Logic Diagram (LD) is used for this example. Once confirmed, click [OK].



2. After entering the program's editing page, right-click [Application] to open the pop-up menu, select [Add Object] → [Symbol Configuration...] to open the symbol configuration function.

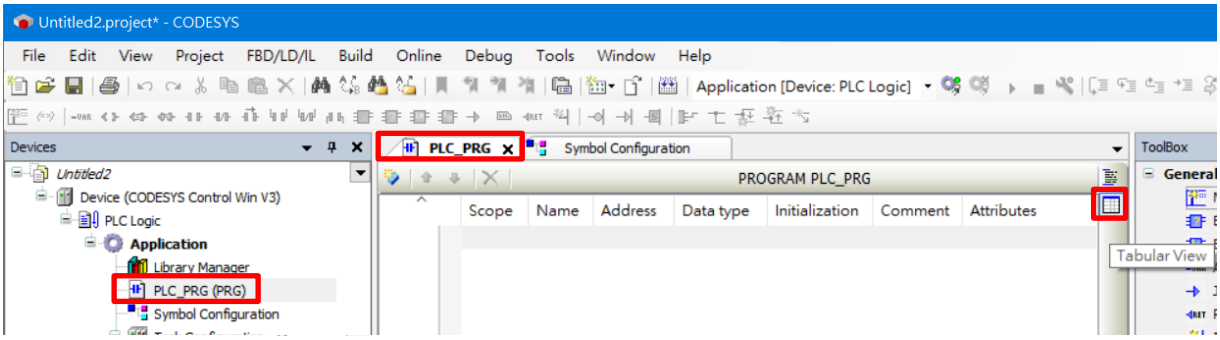


3. Use the default setting. Click [Add] to add [Symbol Configuration] to the [Devices] list.

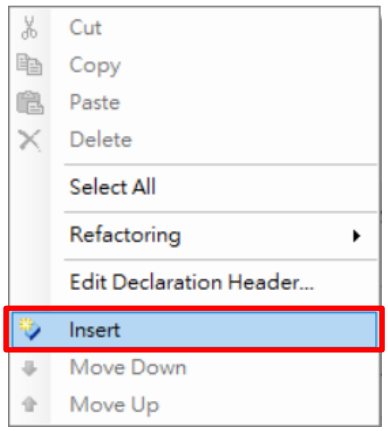


1.2 Create CODESYS Symbol

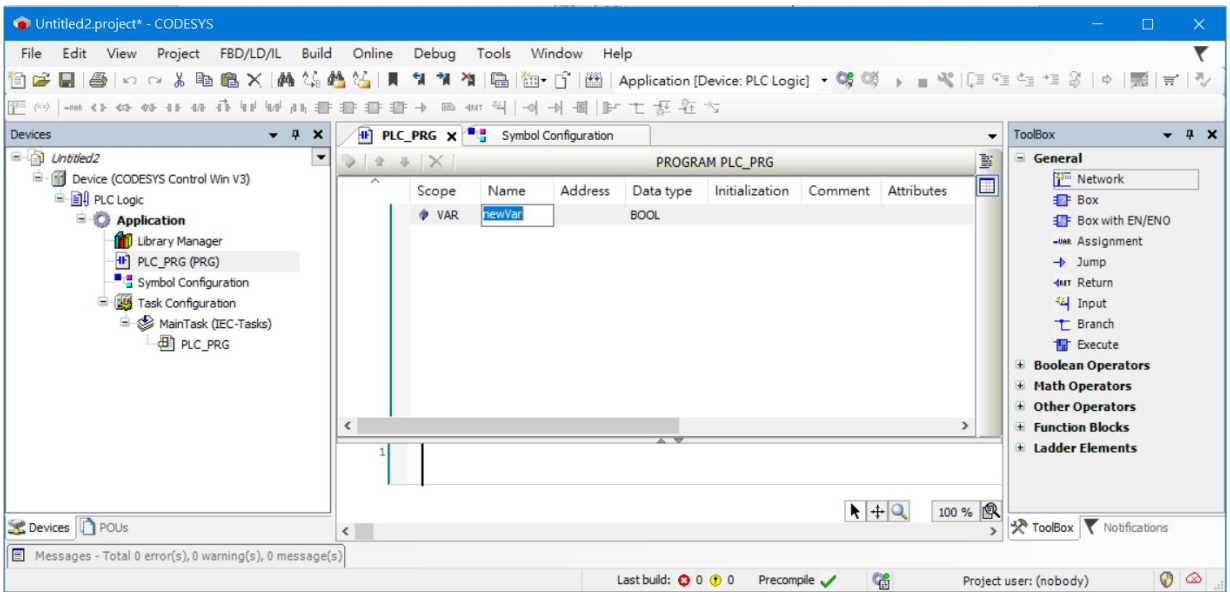
1. Double-click [PLC_PRG(PRG)] under the [Devices] list OR click the [PLC_PRG] tab in the editing area to switch to PROGRAM PLC_PRG, click [Tabular View] on the right to enter the symbol edit Tabular View.



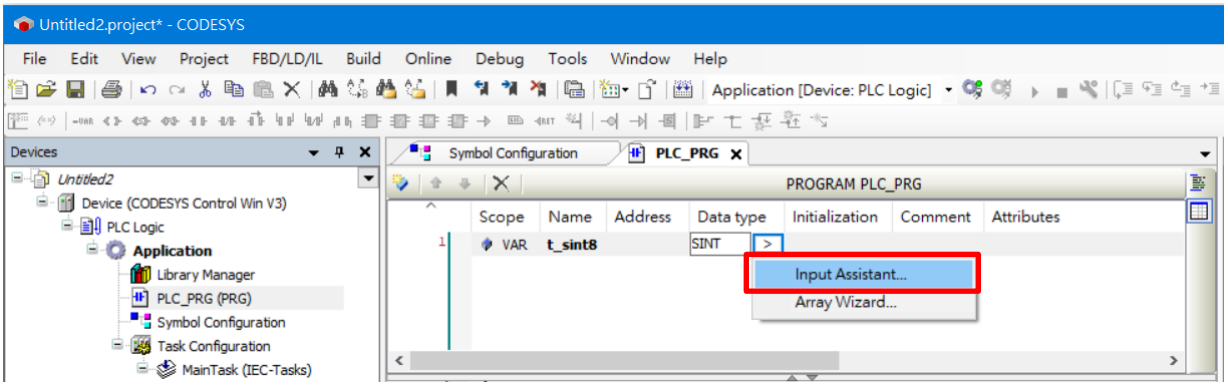
2. In symbol edit Tabular View, right-click to show the following pop-up menu.

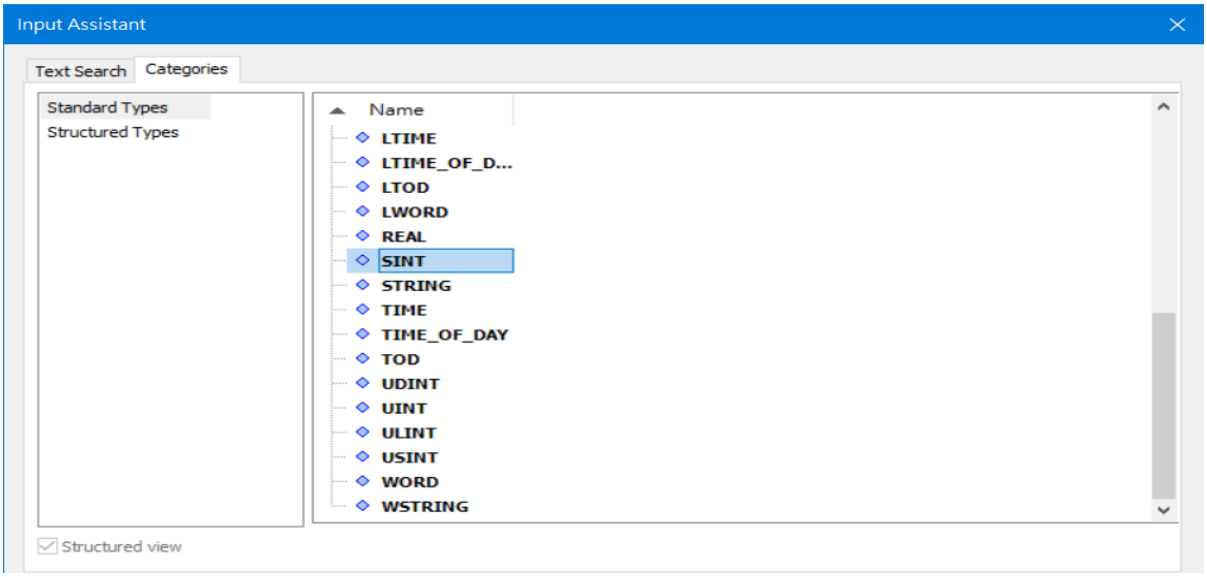


3. Click [Insert] to create a symbol. To create more than one symbol, repeat this action and enter the symbol content one by one.

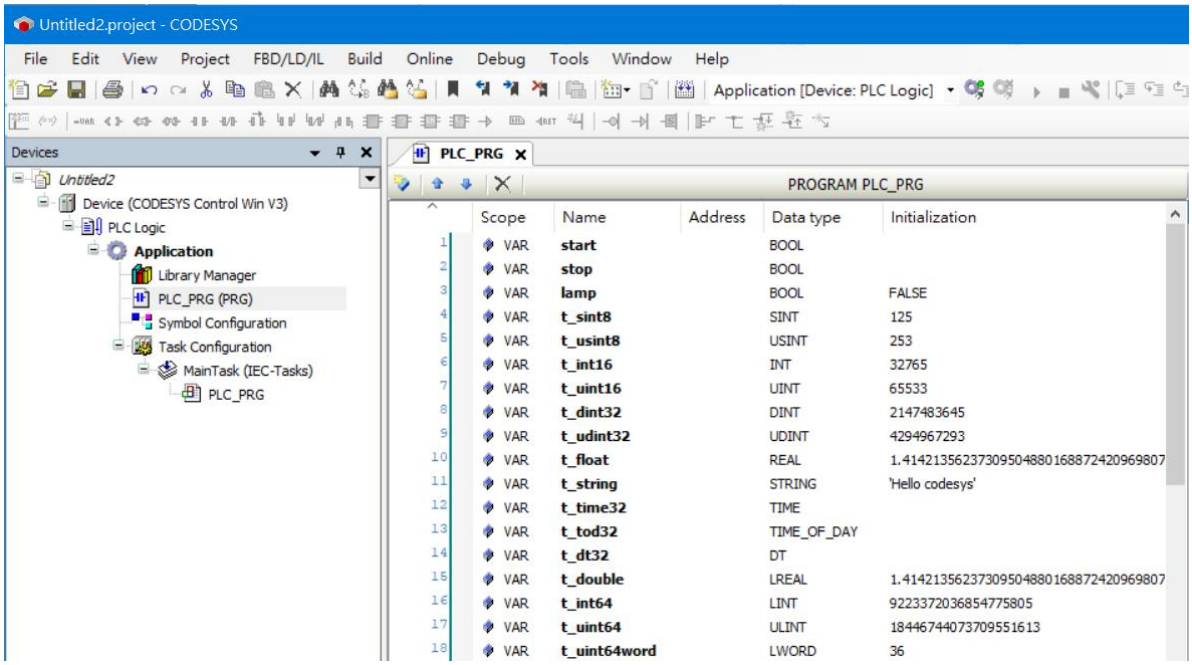


4. Click the [Data type] column, then click [>] on the side of the column → [Input Assistant...] to assign the data type of the symbol.





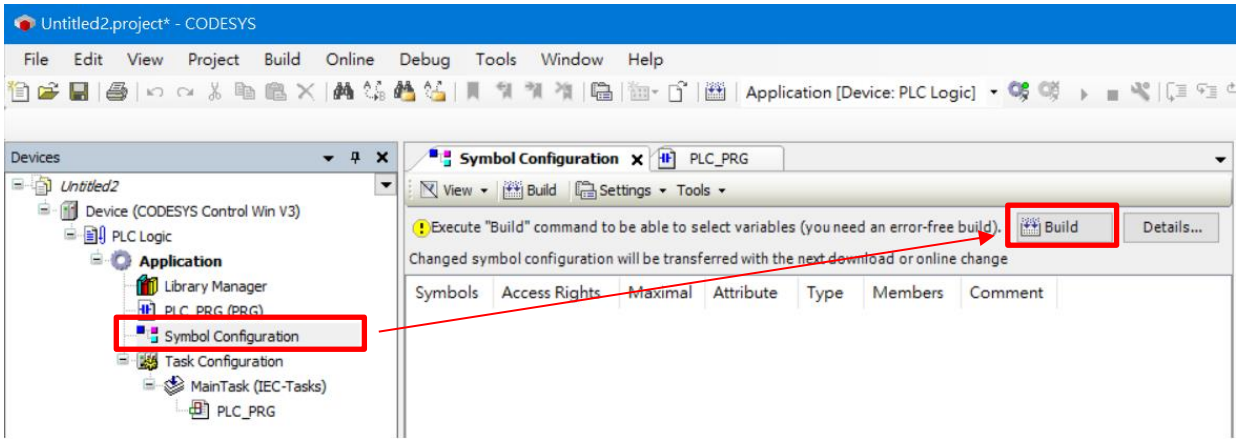
The following picture is a demonstration of creating Codesys symbols.



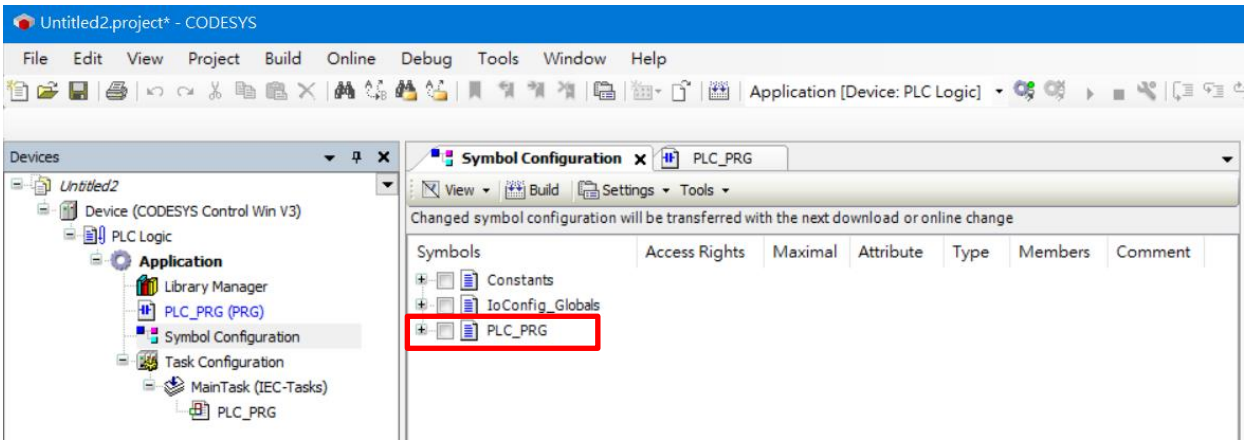
1.3 Exporting Codesys Symbol

1. Newly created or changed Codesys symbols need to regenerate codes.

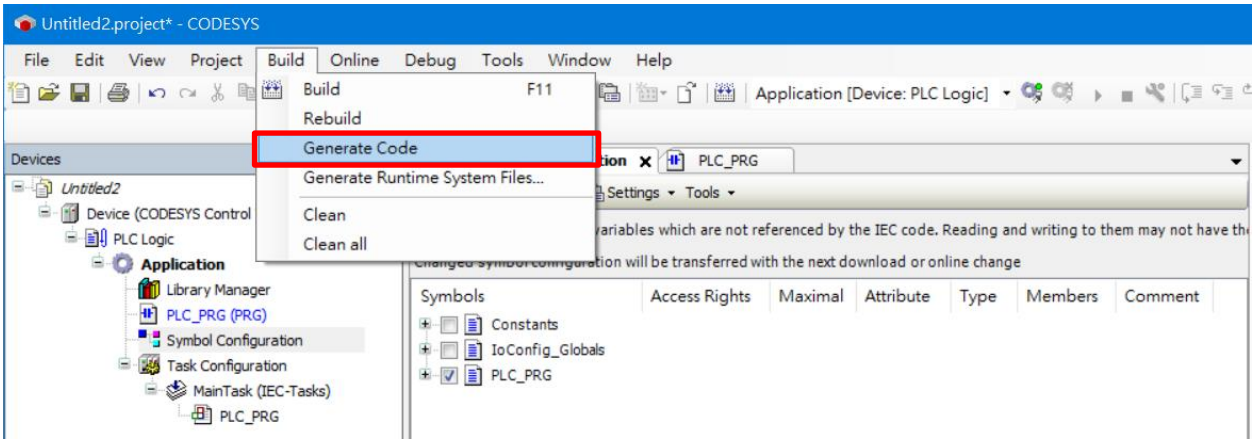
Switch to [Symbol Configuration], and click [Build].



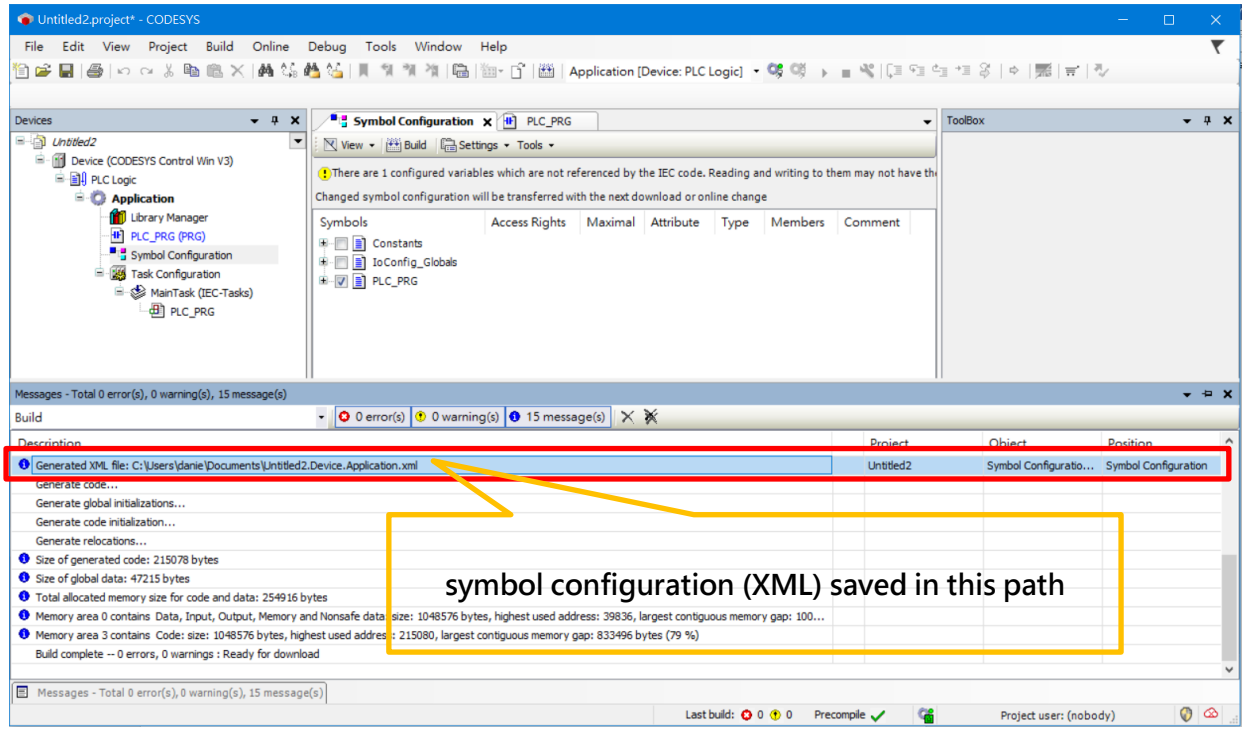
2. We need to export symbols created in PLC_PRG, therefore select [PLC_PRG].



3. Select menu [Build] → [Generate Code] to regenerate symbol configuration.



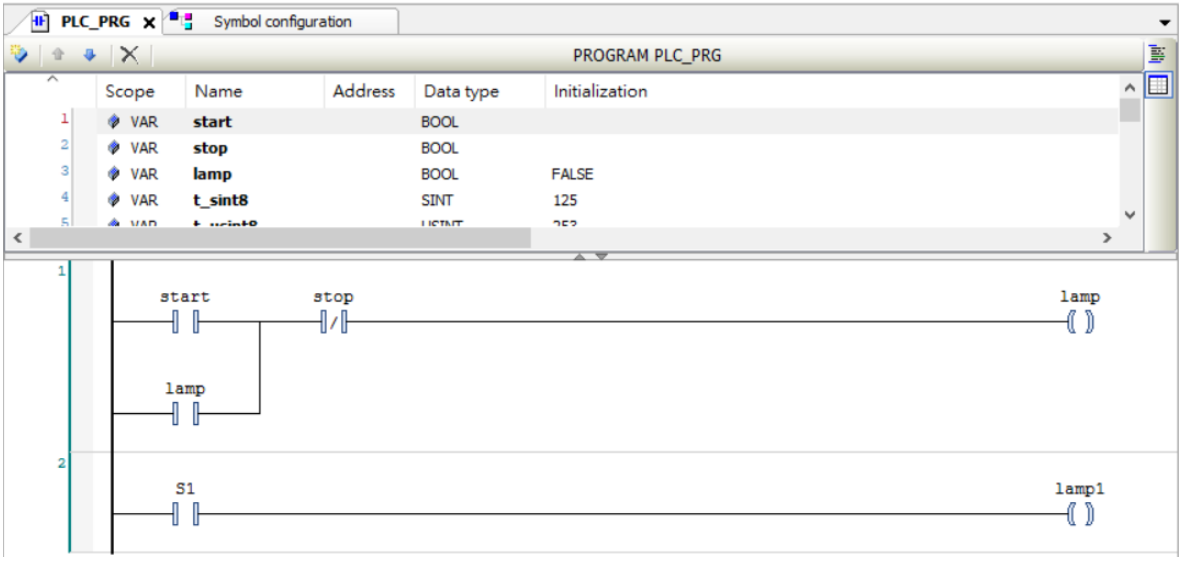
4. Symbol Configuration generation completed. Symbol configuration is saved in the same path as the Codesys project.



5. Content of the Symbol Configuration (.xml file) can be viewed through the text editor software.

```
<?xml version="1.0" encoding="utf-8"?>
<Symbolconfiguration xmlns="http://www.3s-software.com/schemas/Symbolconfiguration.xsd">
  <Header>
    <Version>3.5.14.0</Version>
    <SymbolConfigObject version="3.5.16.30" runtimeid="3.5.16.40" libversion="3.5.16.0" compiler
    <ProjectInfo name="Untitled2" devicename="Device" appname="Application" />
  </Header>
  <TypeList>
    <TypeSimple name="T_BOOL" size="1" swapsize="0" typeclass="Bool" iecname="BOOL" />
    <TypeSimple name="T_INT" size="2" swapsize="2" typeclass="Int" iecname="INT" />
    <TypeSimple name="T_SINT" size="1" swapsize="1" typeclass="SInt" iecname="SINT" />
    <TypeSimple name="T_USINT" size="1" swapsize="1" typeclass="USInt" iecname="USINT" />
  </TypeList>
  <NodeList>
    <Node name="Application">
      <Node name="PLC_PRG">
        <Node name="lamp" type="T_BOOL" access="ReadWrite" />
        <Node name="start" type="T_BOOL" access="ReadWrite" />
        <Node name="stop" type="T_BOOL" access="ReadWrite" />
        <Node name="t_int16" type="T_INT" access="ReadWrite" />
        <Node name="t_sint8" type="T_SINT" access="ReadWrite" />
        <Node name="t_usint8" type="T_USINT" access="ReadWrite" />
      </Node>
    </Node>
  </NodeList>
</Symbolconfiguration>
```

6. You may now start coding CODESYS program or use CODESYS supported PLC to connect HMI.

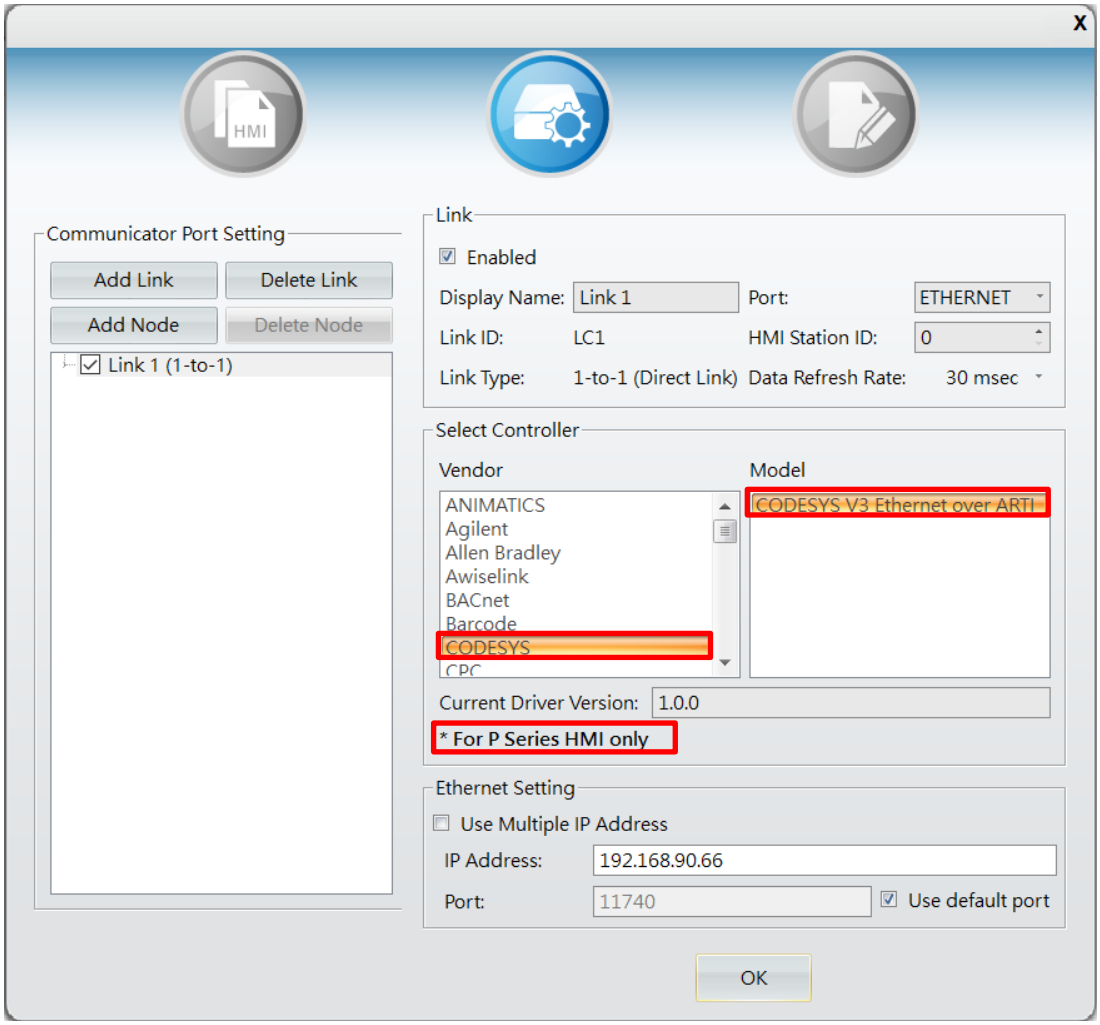


7. Due to CODESYS' extensive functionalities, many advanced functions cannot be described in detail in this manual. Please refer to CODESYS related websites and instructions.

2. iFACE Designer Settings

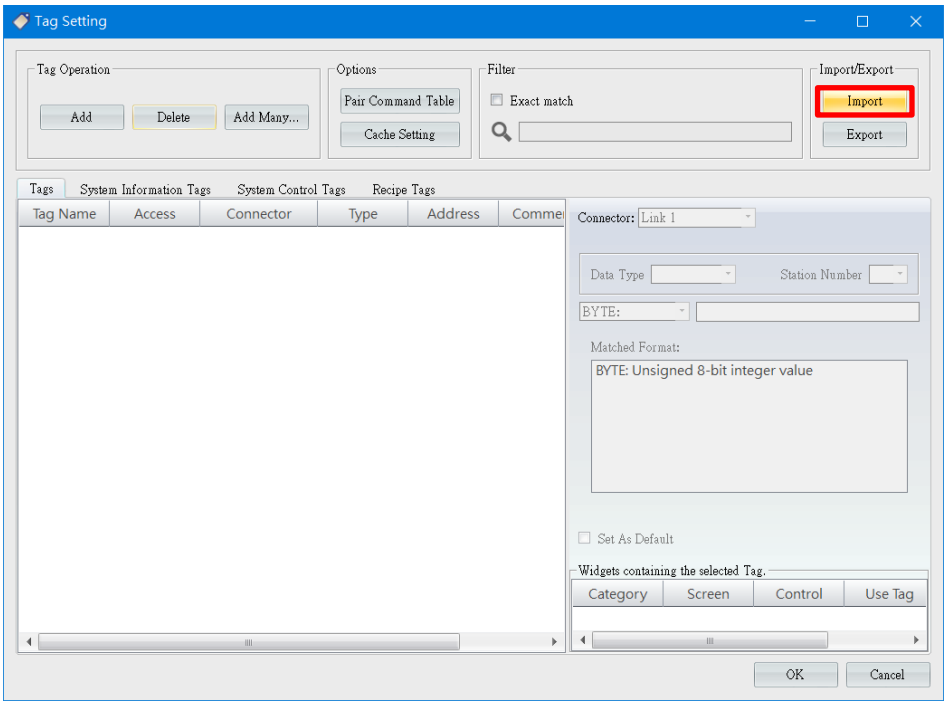
2.1 Launch the iFACE Designer

1. Launch the iFACE Designer, please refer to the iFace user manual to set the HMI parameters. CODESYS driver only supports P series HMI, P07-N is selected in this example.

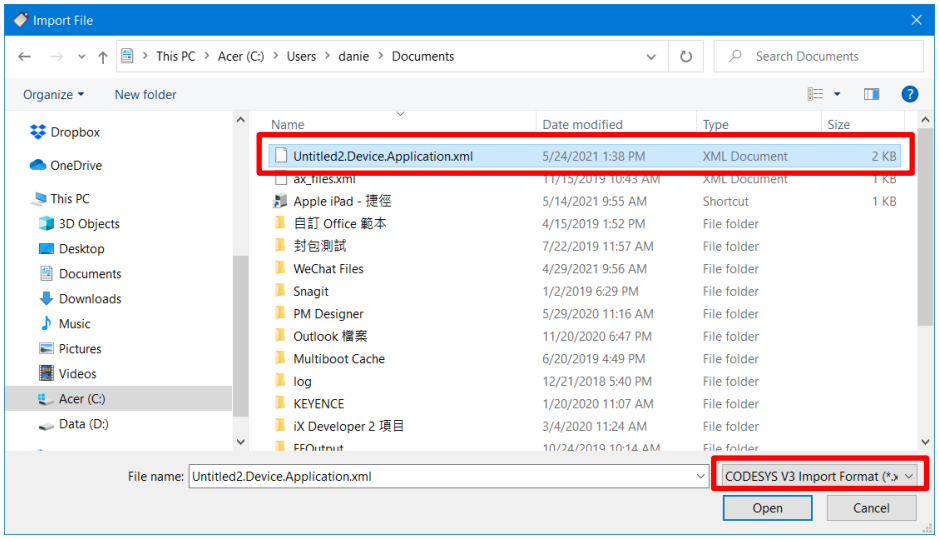


2. Open the Tag Setting window, click [Import], getting ready to import Codesys symbols.

Note: Importing Codesys symbols will not overwrite existing tags in iFACE Designer. However, if Codesys symbols already exist, importing iFACE Designer regular tags will overwrite Codesys symbols. They will need to be imported again if this happens.

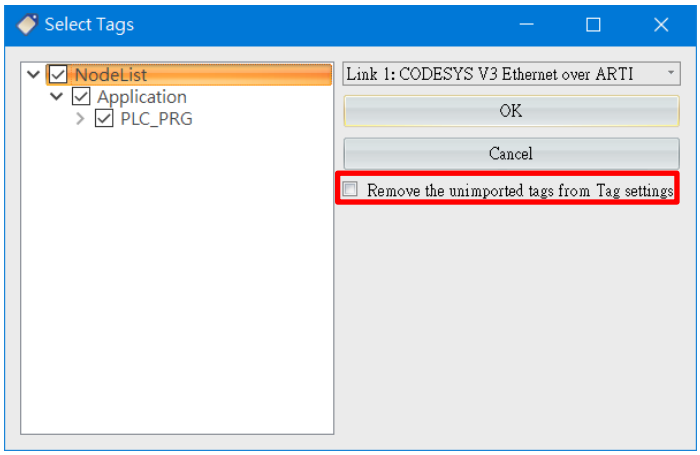


3. Open the path where Codesys symbols are located, choose [Codesys V3 Import Format] as the import format. Click [Open] after selecting the file to begin importing Codesys symbols.

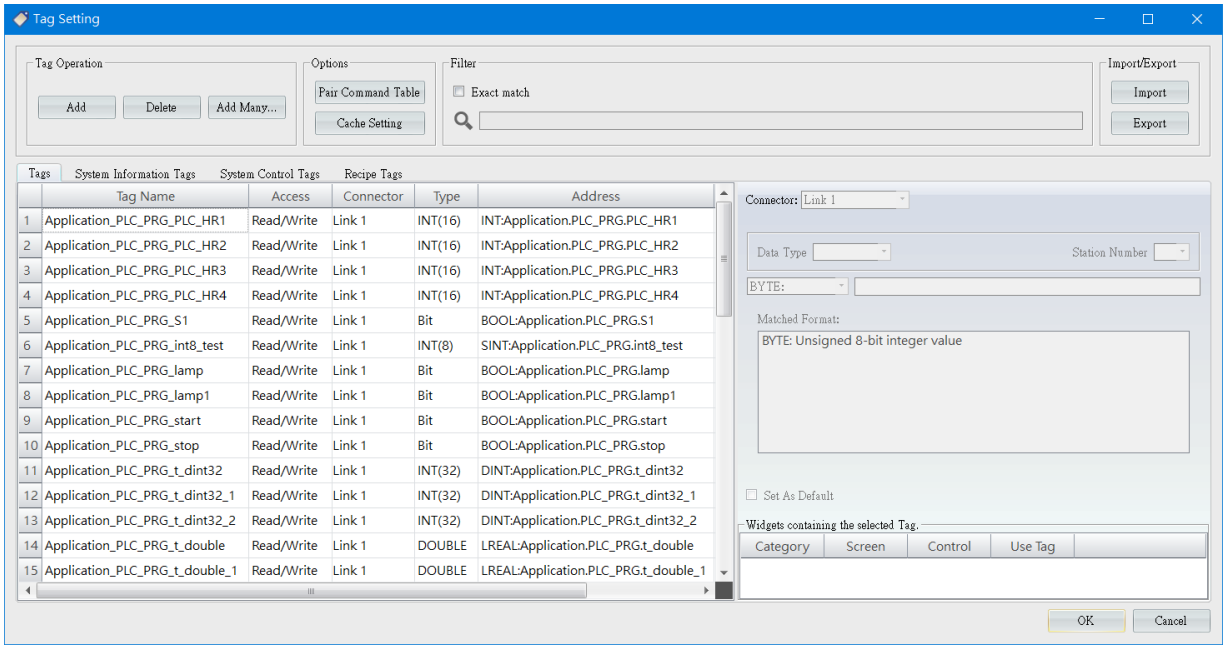


4. You can import all Codesys symbols OR choose individual Codesys symbols to be imported.

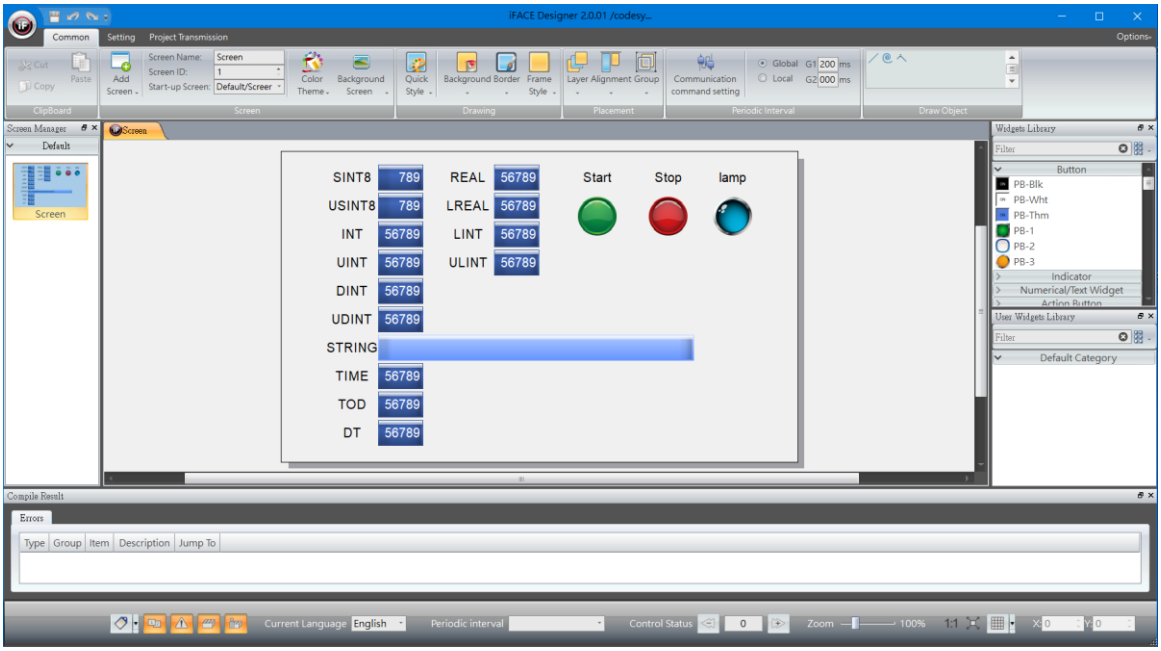
[Remove the unimported tags from Tag settings]: tick this box will import only the selected Codesys symbols, remaining Codesys symbols will be removed in the tag settings window.



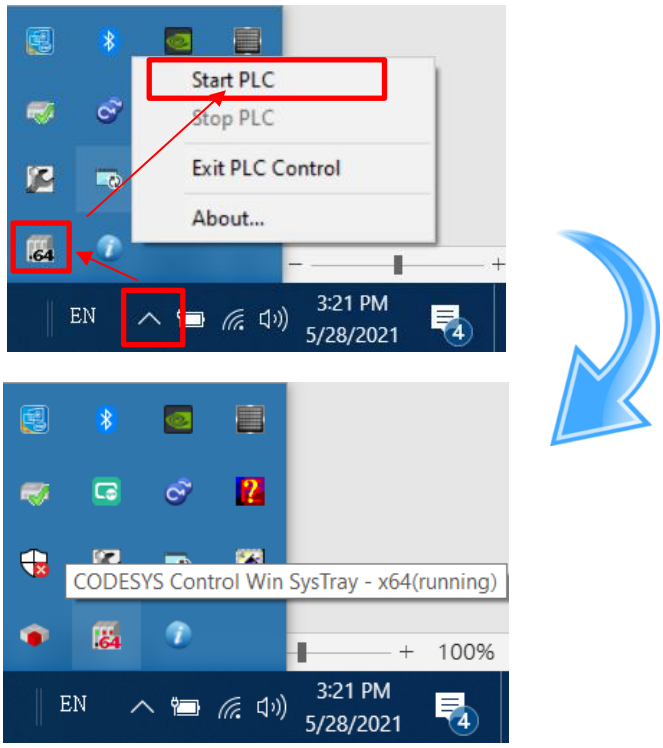
After completing the settings, click [OK], and wait until import is finished.



5. Begin planning iFACE Designer screen and download it to HMI. For operations such as tag import and screen planning, please refer to other chapters of the iFACE Designer user manual.



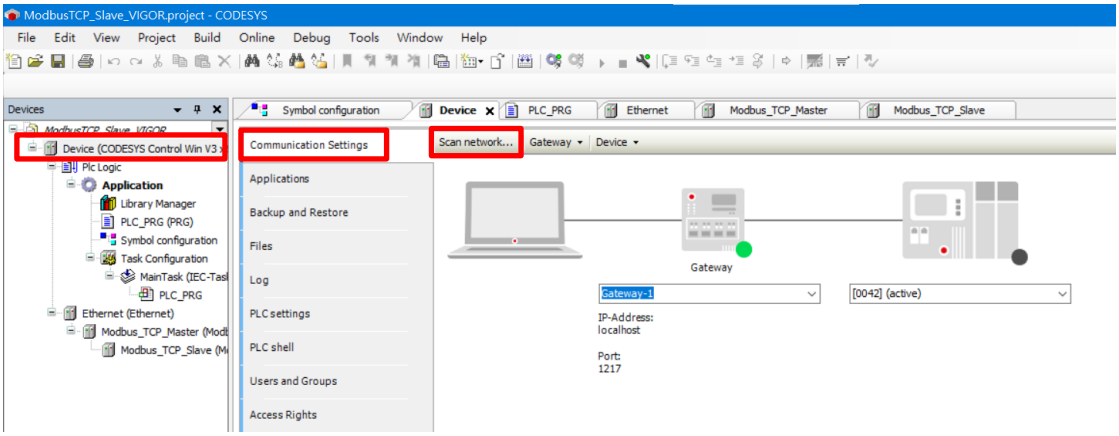
6. Right-click [], the [CODESYS Control Win SysTray] icon, at the bottom right corner on your desktop, then click [Start PLC].



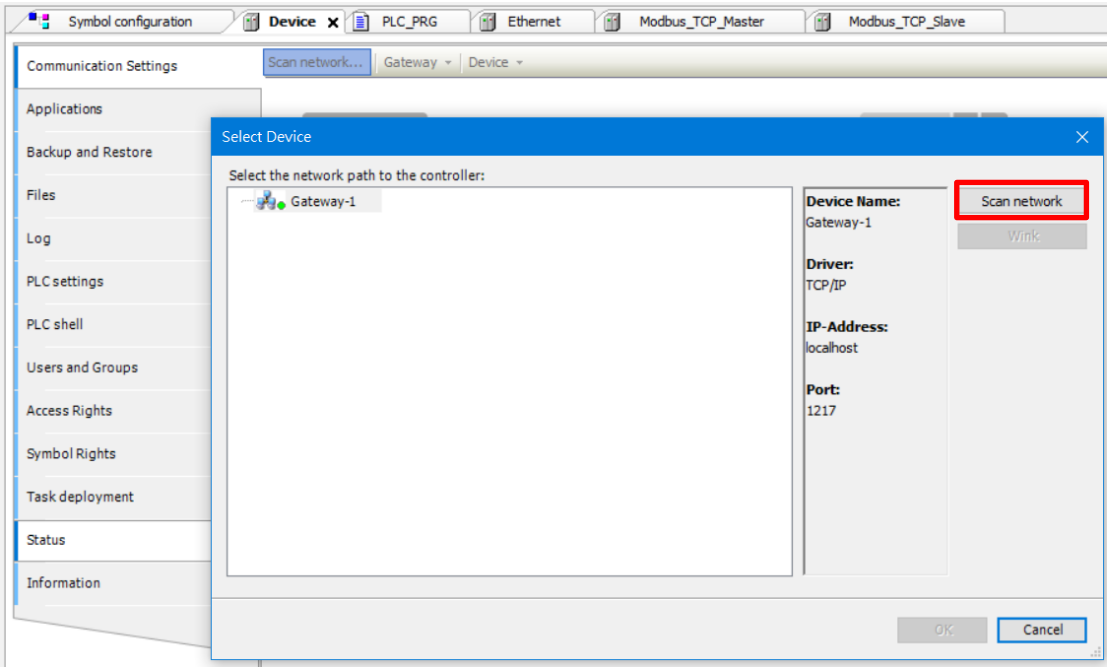
7. Return to the CODESYS program, set the computer as the Codesys device.

   Double-click [Device(CODESYS Control Win V3 x64)] to enter [Communication Settings].

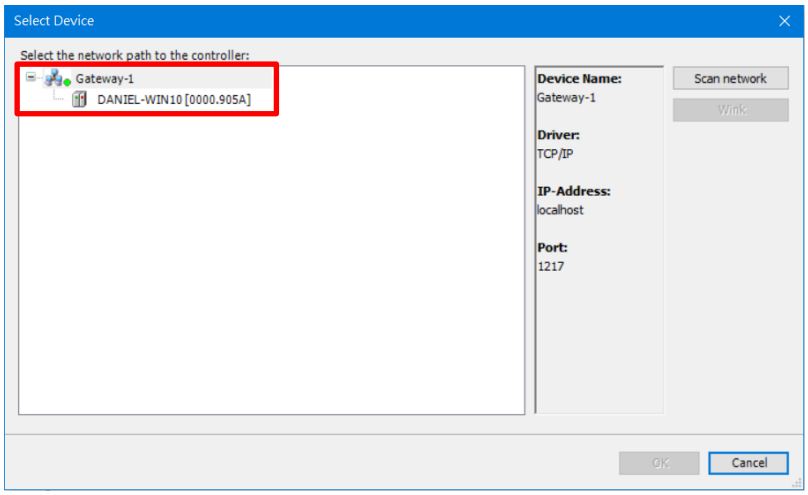
   For now, CODESYS has not found PLC or a computer that can be assigned as a Codesys device, then first to click [Scan network…].



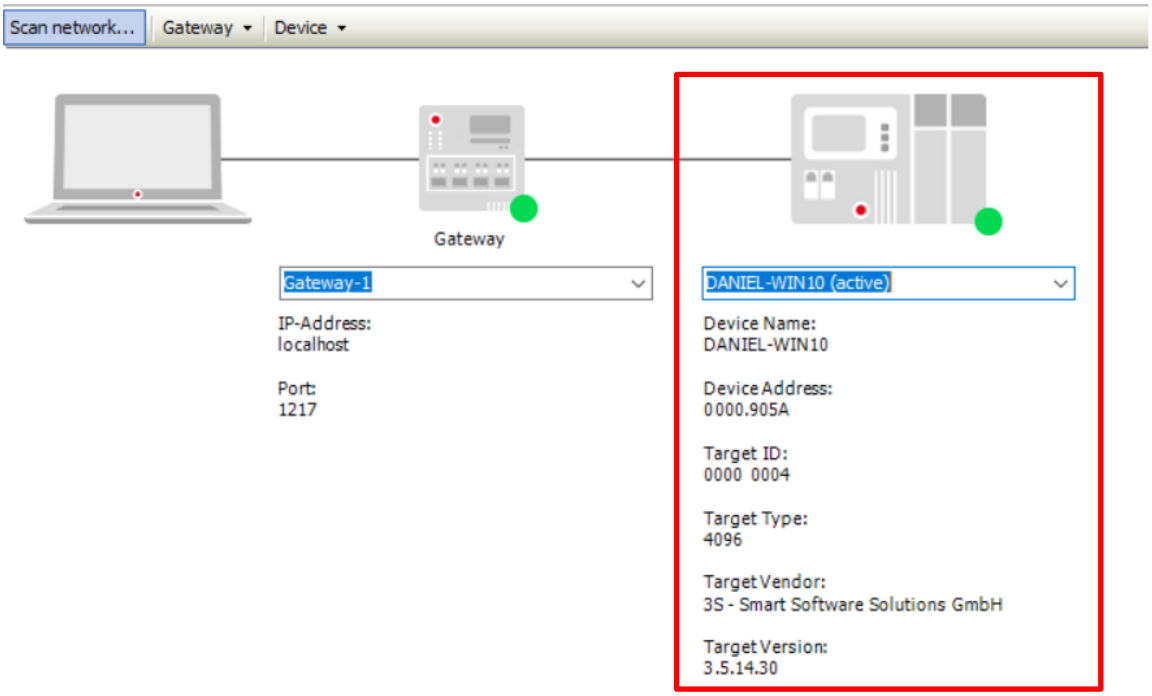
8. After the Select Device window pops up, click [Scan network]. The program will start searching for CODESYS devices in the network.



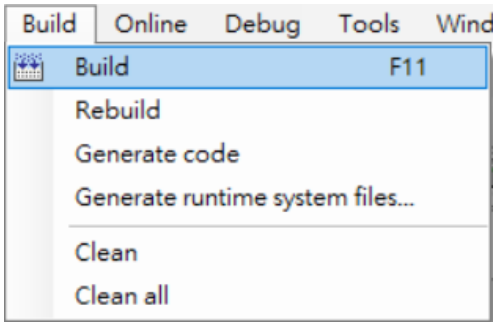
9. The search is successful. Please note that [CODESYS Control Win SysTray] in step 6 needs to be activated or the Codesys device will not be found.



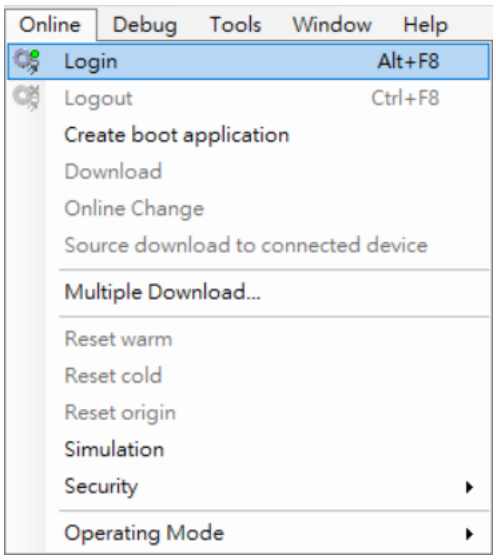
10. Return to [Communication Settings], you can now select the computer found in the search as the Codesys device. The Project will then connect to this device.



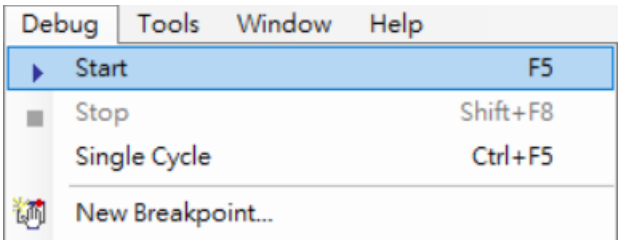
11. Run [Build] to compile CODESYS program.

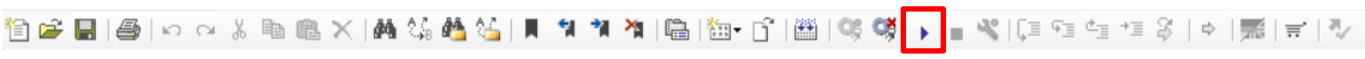


12. Run [Login] to load CODESYS program.



13. Run [Start] or click [ ] in the toolbar to execute CODESYS program.

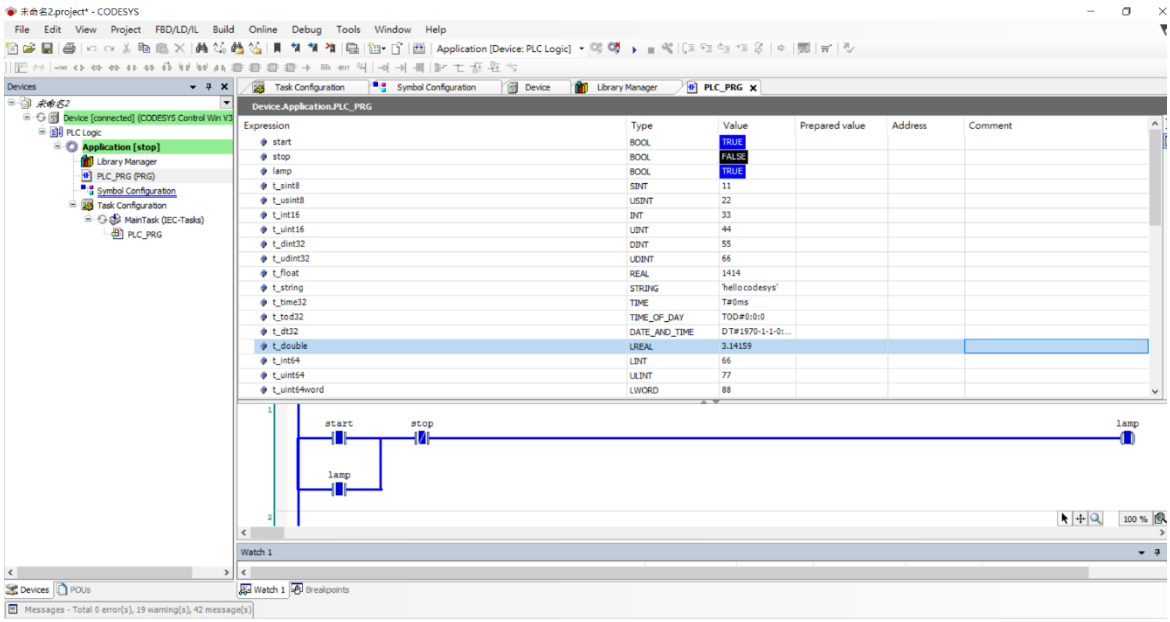


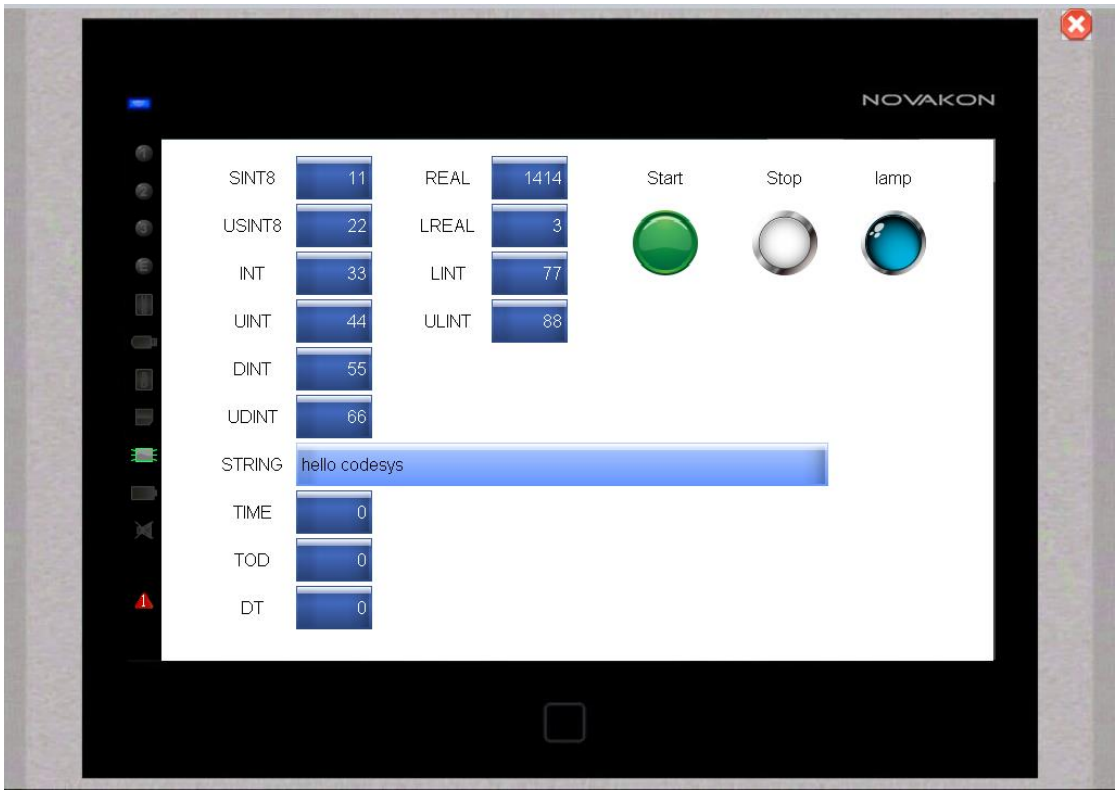


14. Now the mode sign at the bottom is switched to [RUN].

15. All settings are ready. Monitor the HMI, PC, and PLC and you should see the displayed data all correct and consistent.

    The connection test is now verified.




NOVAKON
SINT8
11
USINT8
22
INT
33
UINT
44
DINT
55
UDINT
66
STRING
hello codesys
TIME
0
TOD
0
DT
0
REAL
1414
LREAL
3
LINT
77
ULINT
88
Start
Stop
lamp