GOCToolKit V3 Installation and Quick Start Guide

GOCToolKit V3 Installation and Quick Start Guide

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Version: V4.0

1 Scope of Document

This is a GOC tool kit installation and quick start guide for programming GOC43 PLC.

References

N18006AAMH01 Graphic Operation Controller User Manual

N18006AAMH02 GOC Main Unit (GC43MH-XXMR-D) Installation Manual

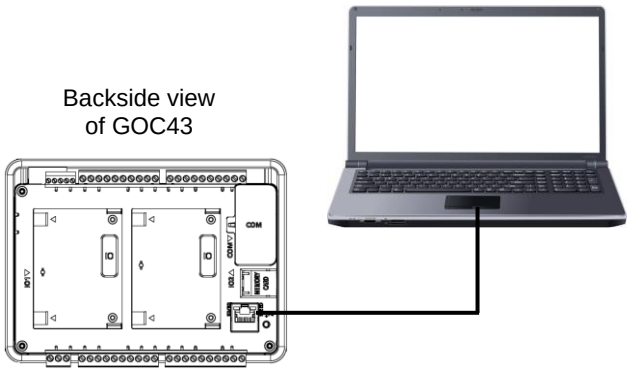
N18006AAMH03 GOC Main Unit (GC43MH-XXMT-DS) Installation Manual

N18006AAMH04 GOC Main Unit (GC43MH-XXMT-DSS) Installation Manual

2 Setup requirements

Hardware setup requirement:

Programming of GOC43 is possible through built-in Ethernet port interface provided on its backside as shown below.



Software setup requirement:

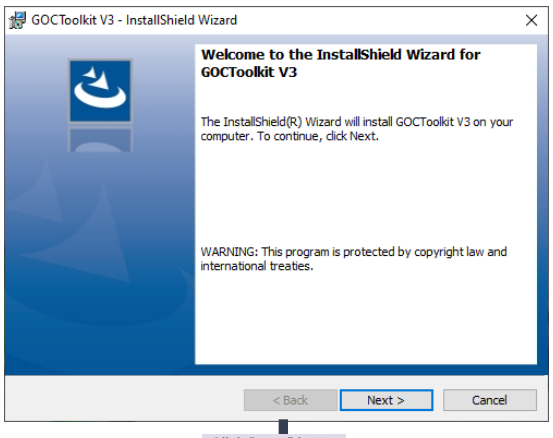
Before installing the toolkit, ensure that the following system requirements are satisfied.

Processor	Dual Core
Disk space	2 GB
RAM memory	4GB
Screen resolution	800 x 600 or Higher
Platform	Windows® 10/ 11 (32/64 bit)
Ethernet interface	RJ 45

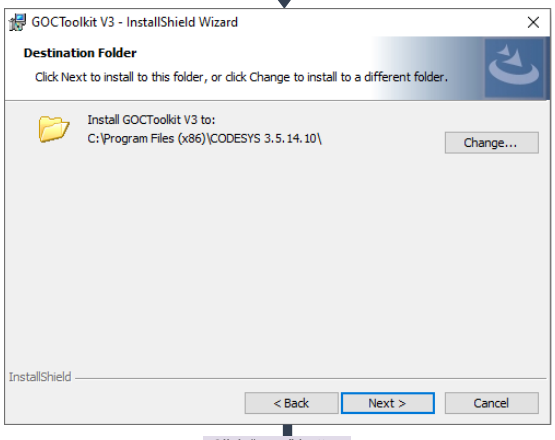
3 GOC Tool Kit V3 Installation

For installation of GOCToolKit V3, follow the steps as provided below.

1. Confirm the requirement covered under 'Software setup requirement' section.
2. Download 'GOCToolkit V3.exe' GOCToolkit V3.exe setup from MEI website.
3. Run 'GOCToolkit V3.exe' on your PC. During execution of .exe file.
4. Follow installation steps as below,



Click "Next" button



Click "Next" button

1

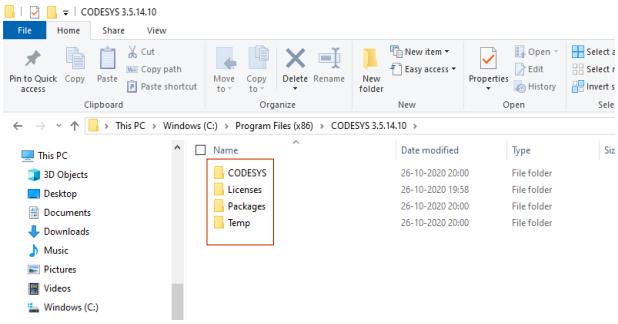
In case if user uninstalls previous ToolKit versions from PC and updates system with latest ToolKit setup, then before running 'GOCToolkit V3.exe'. It is mandatory to uninstall CODESYS 3.5.14.10 from PC and delete all files/ folders from below paths

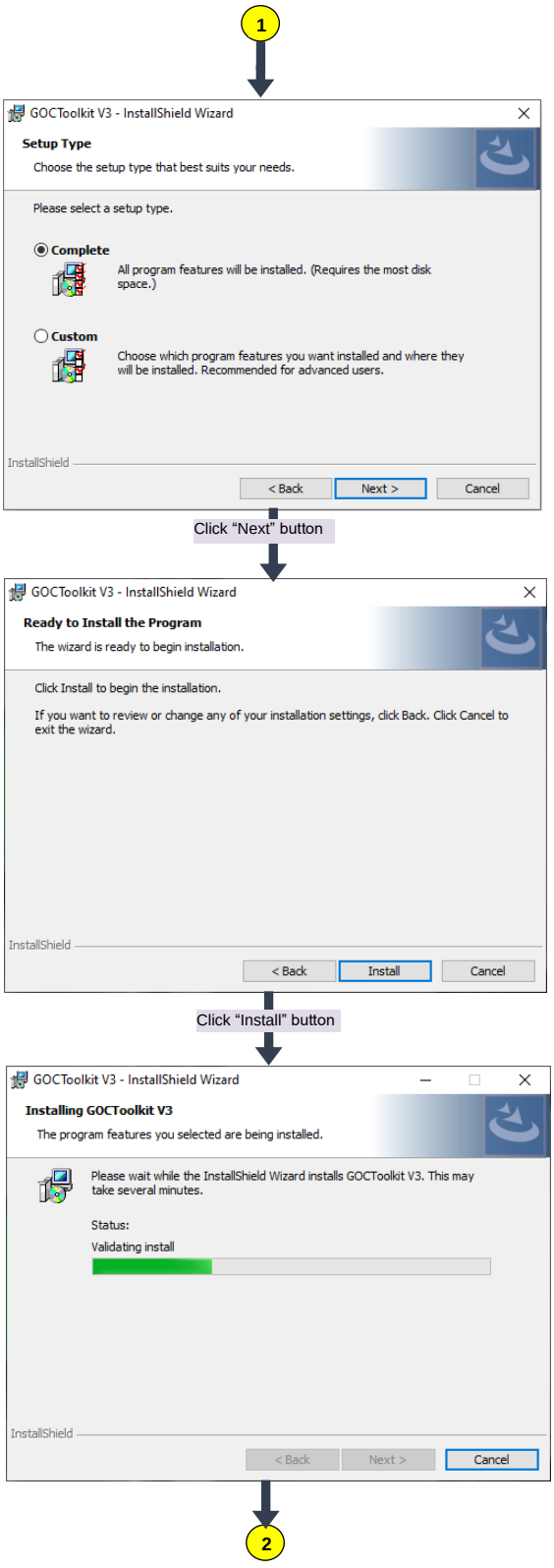
C:\Program Files (x86)\CODESYS 3.5.14.10.

C:\Users\<login.name>\AppData\Roaming\CODESYS

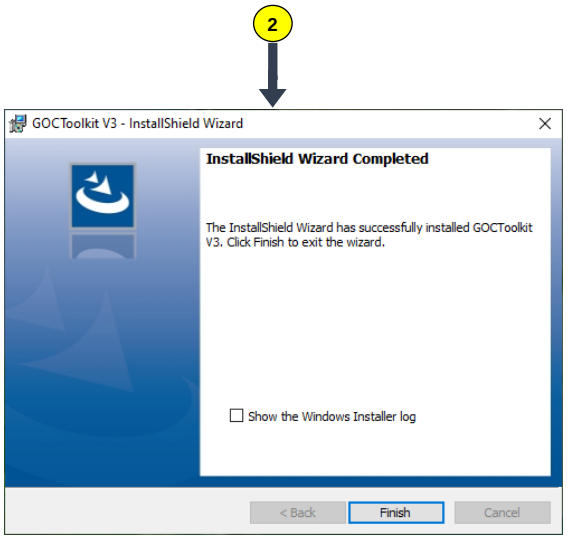
C:\ProgramData\CODESYS

Folder "CODESYS 3.5.14.10" should be empty before latest ToolKit installation.





It is recommended to select setup type as "Complete"



Click on 'Finish' to complete ToolKit V3 installation

This completes GOCToolKit V3 installation on PC/ laptop.

After successful installation, 'GOCToolKit V3' menu gets added under start menu as shown below.

Click on 'CODESYS V3.5 SP14 Patch 1' to create new project.

4 Quick start

This section explains,

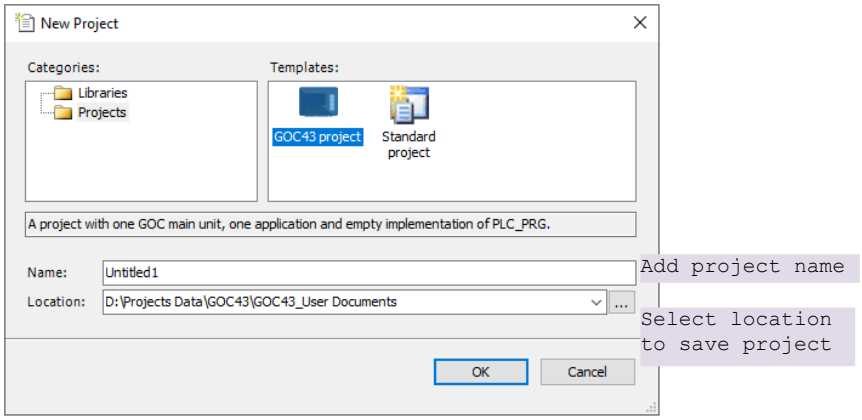
1. Creation of a new project using GOC43 project template
2. Hardware configuration
3. Create a simple ladder program
4. Create a simple HMI program
5. Download and online operations

4.1 Creation of a new project using GOC43 project template

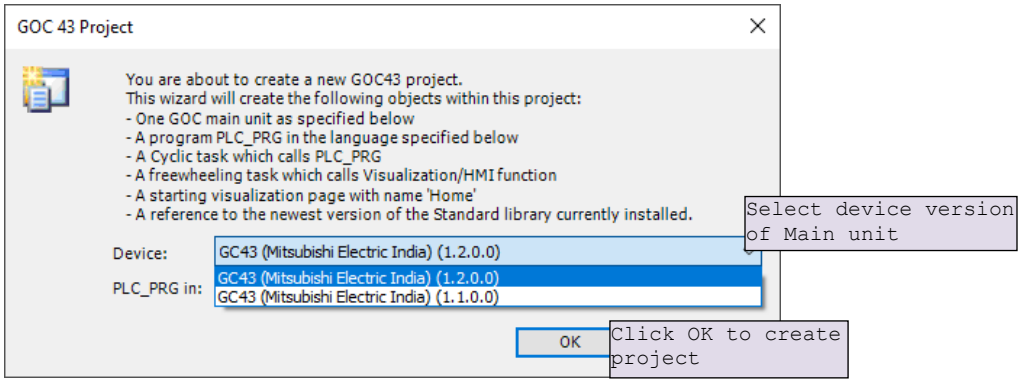
Open CoDeSys 3.5. Click on menu ‘File’ → New Project, following window gets pop up.

Select category ‘Projects’ and click on template ‘GOC43 project’.

Click OK to save project.

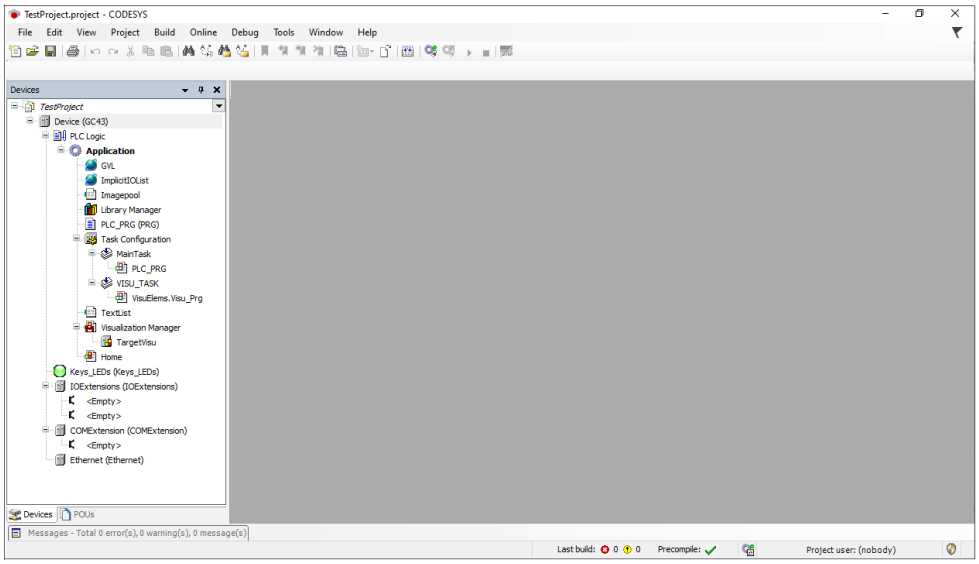


After saving project below ‘GOC 43 Project’ window gets pop up.

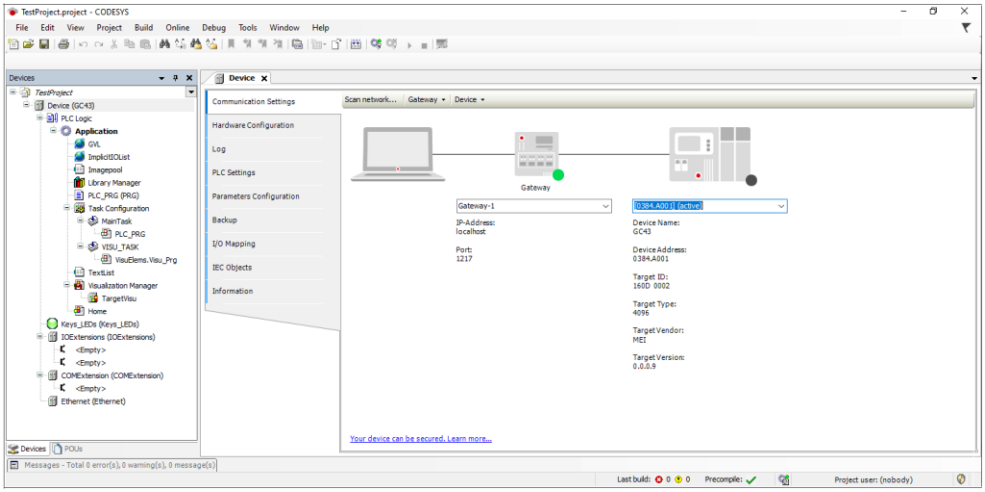


Refer document ‘N18006AAMH07 GOC43 Version Compatibility’ (Version: 2.0) for more details.

After clicking OK, following ‘Devices’ tab gets open as shown below.



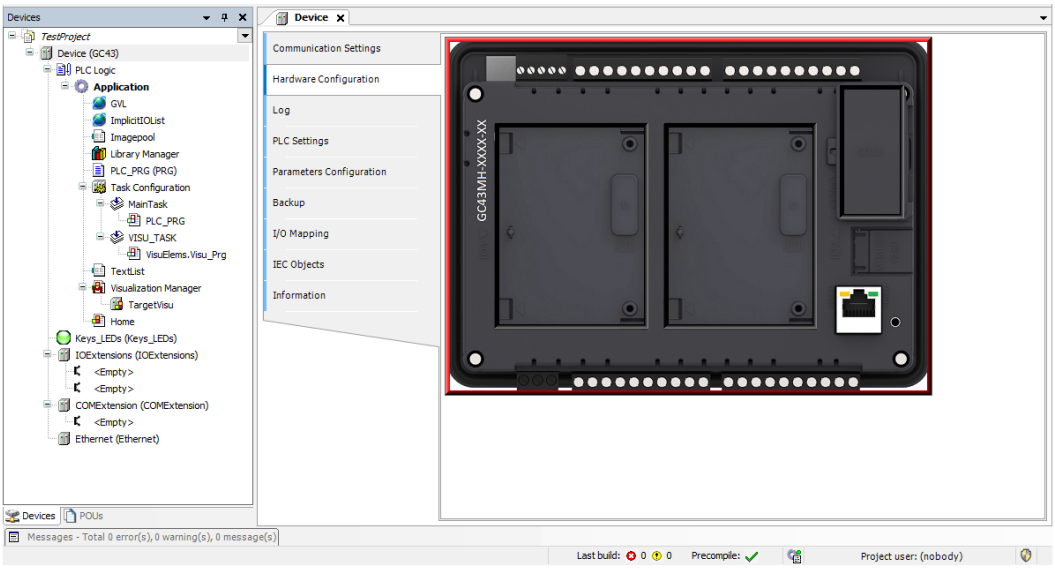
Click on ‘Device(GC43)’ as shown below.



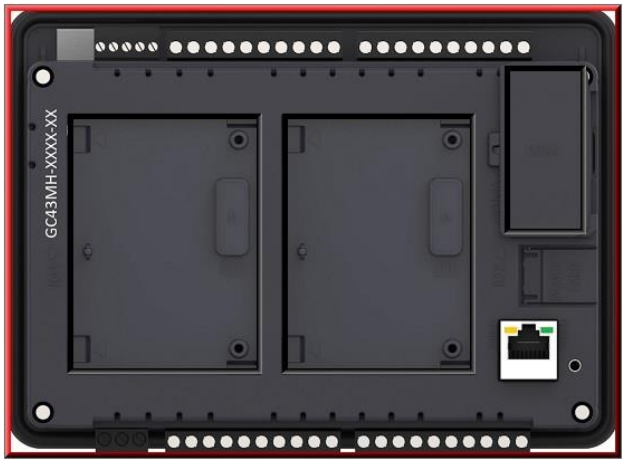
This completes project creation and device (Main unit) selection.

4.2 Hardware configuration

1. For Hardware configuration, click on device *Device(GC43)* as shown below.

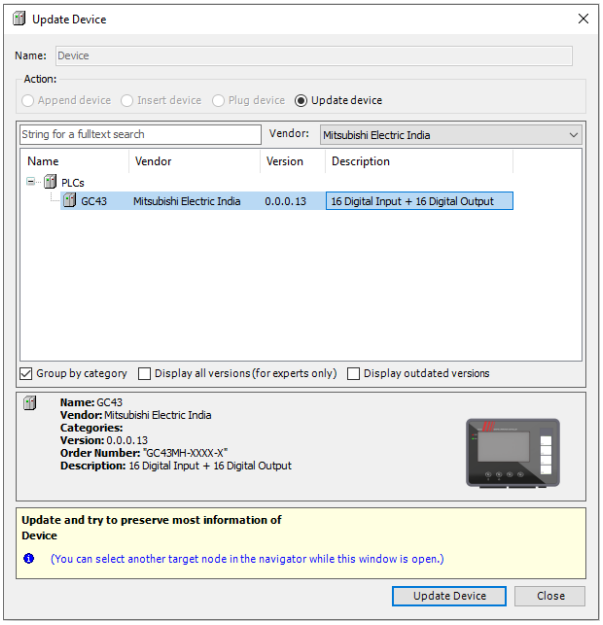


2. On Hardware configuration tab, back side view of Main unit is shown as below.



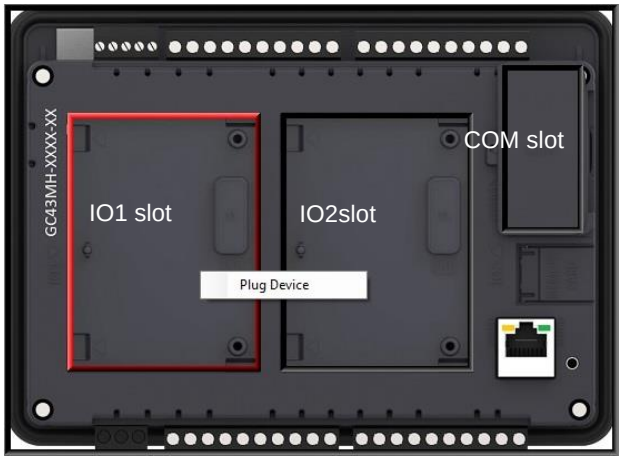
Red highlighter denotes Main unit is selected.

3. To update the device, right click on Main unit area opens, *Update Device* window.

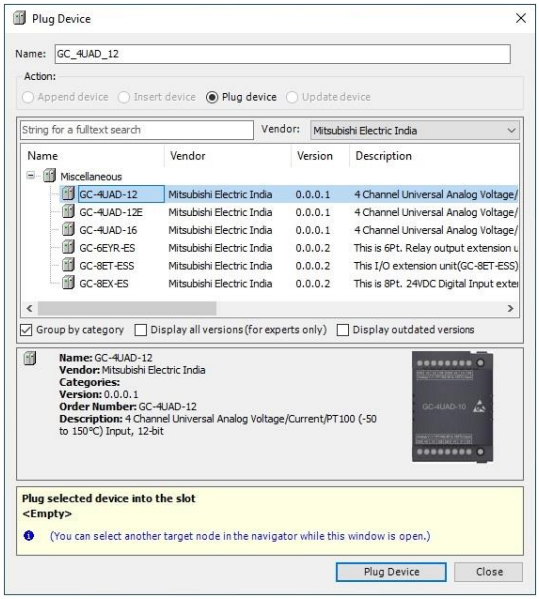


Select device and click on 'Update Device'

4. To plug an IO extension unit, below steps can be followed.
    1. Back side view shows IO1 slot, IO2 slot and COM slot where user can plug extension unit.
    2. Click on slot area to highlight selected slot.
    3. Do right click on selected slot, to plug extension as shown below.



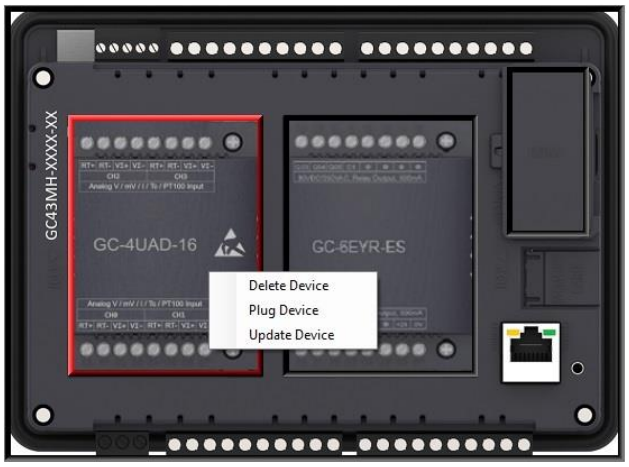
5. Click on context menu ‘Plug Device’ to pop up ‘Plug Device’ window as shown below.



Select IO extension device as per requirement and click on button ‘Plug Device’.

6. After plugging IO extensions, if user requires to plug/update or delete device as per application requirement, right click on extension unit.

For example, IO1 slot extension unit is selected and right clicked as shown below.

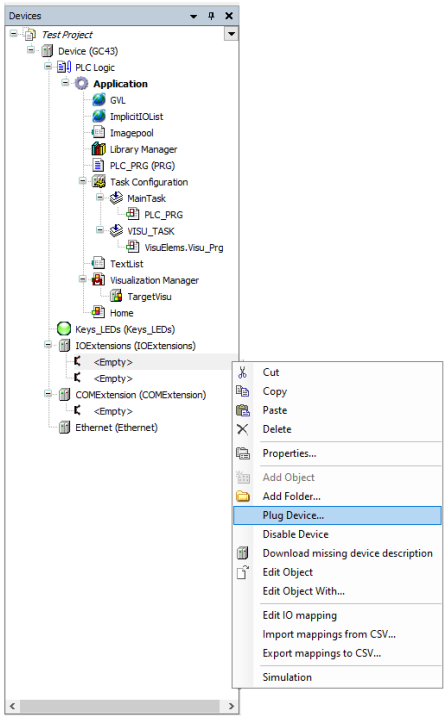


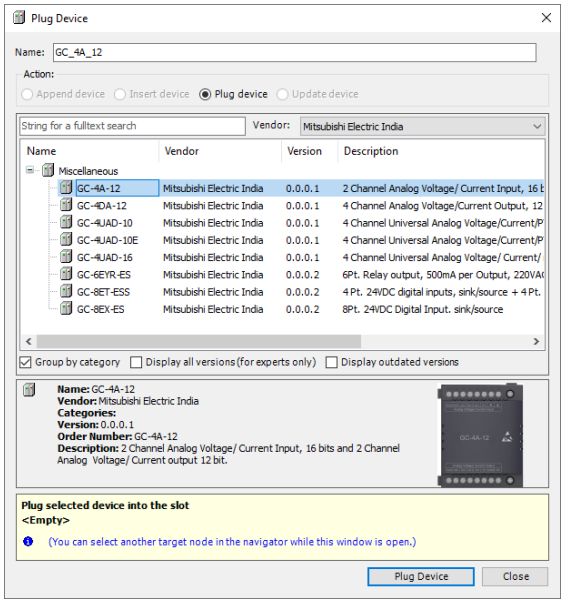
This completes one method for plugging IO extensions and COM extensions.

Alternately, user can plug extension devices in respective slots (*IOExtensions* and *COMExtension*) in Device tree. Follow the steps below.

1. Right click on *<Empty>* slot to pop up context menu.
2. Click on *Plug Device*. *Plug Device* dialog shows list of extension devices supported for the selected slot.
3. Select extension device and double click on it or click on button *Plug Device* to attach it to selected slot.

   After plugging, default name of I/O extension unit as IOE1<UnitOrderingCode> and IOE2<UnitOrderingCode>.





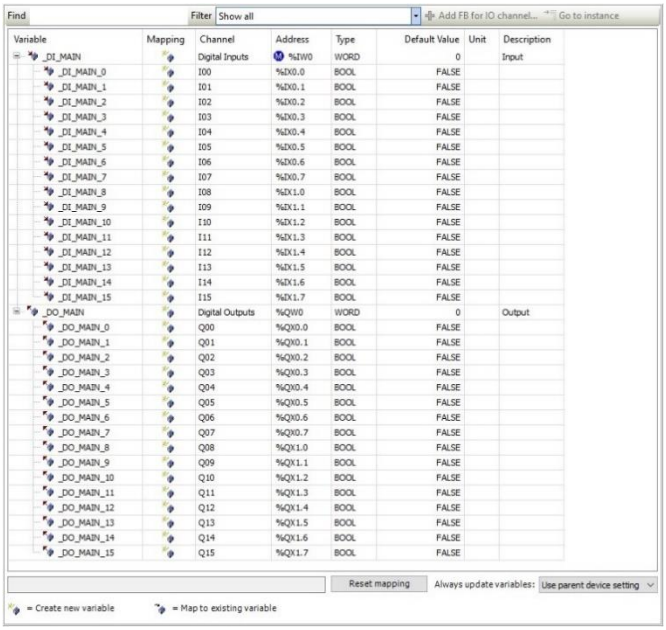
Here, default name of I/O extension unit is IOE1(GC-4A-12) in device tree.

This completes hardware configuration selection

> For parameter configuration, of individual Main unit variants and IO extension units.refer ***N18006AAMH01 Graphic Operation Controller User Manual.***

7. I/O Mapping

For GOC43, I/O memory map is fixed. Main unit consumes input memory %IB0, %IB1 and output memory %QB0, %QB1. *I/O Mapping* tab shows digital Inputs and outputs as shown below.

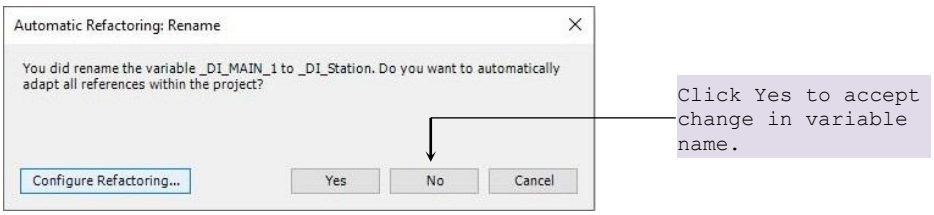


Predefined symbolic names (with prefix as '_') are global variables assigned for each input and output.

For input I00, symbolic name is `_DI_MAIN_0` and address is %IX0.0.

Prefix is `_DI_` and text `MAIN_0` indicates that it is input I00 of Main unit.

Change the symbolic name after double click on name in Variable column. The dialog below pops up to confirm the change in name throughout the Application .

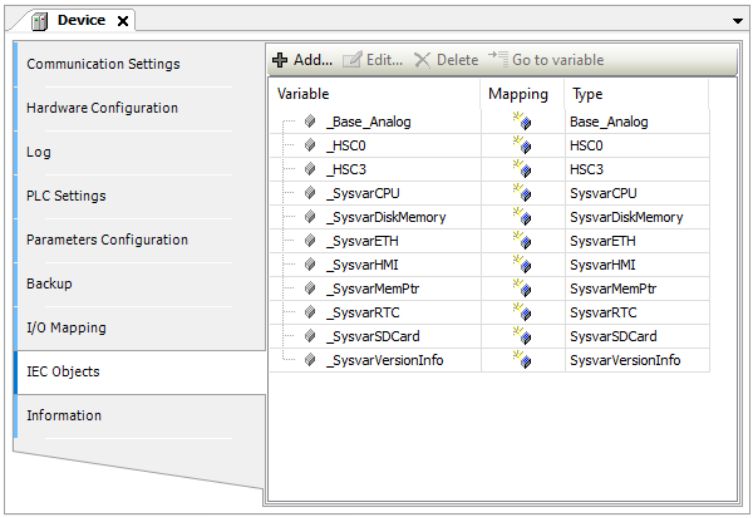


In Online mode,
Column *Default Value* shows IO values.
Debug → Write values (Ctrl + F7) allows user to write values to outputs by modifying values in *Prepared Value* column.

8. IEC Objects

IEC objects are pre-defined global variables ((with prefix as '_') which consists of system variables and variables related to various functions.

The dialog below shows offline view.

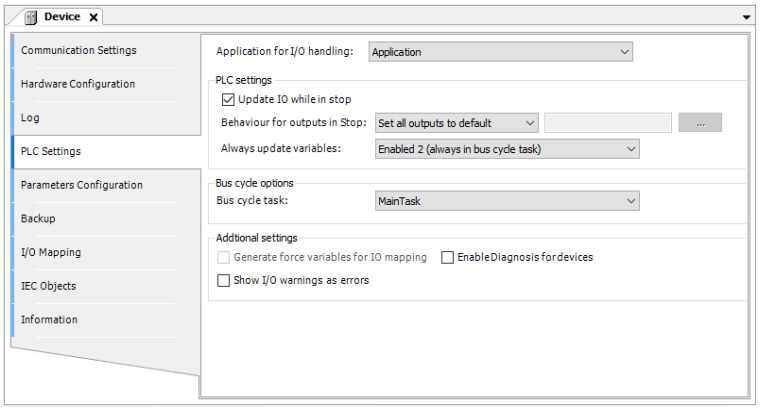


User can monitor and modify values of IEC objects in Online mode.

Using tab "IEC Objects", user can monitor and set system variables in CoDeSys online mode.

9. PLC Settings

User can make the basic settings like handling of inputs and outputs and the bus cycle task.



For safe operation, select option *Set all outputs to default* for setting *Behaviour of outputs in Stop*.

Ensure to choose option *Enabled 2 (always in bus cycle task'* for setting *Always update variables*.

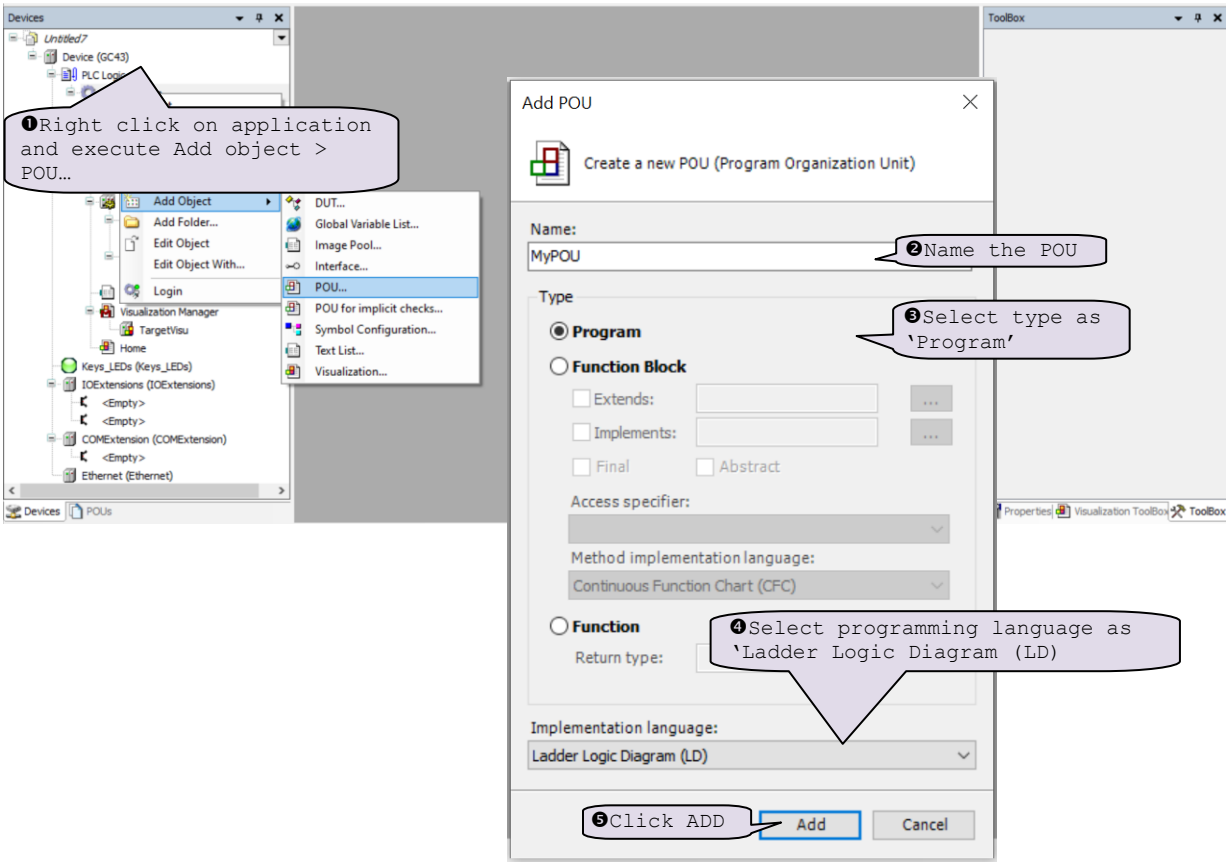
Ensure to choose option *MainTask'* for setting *Bus cycle task*.

4.3 To create simple ladder program

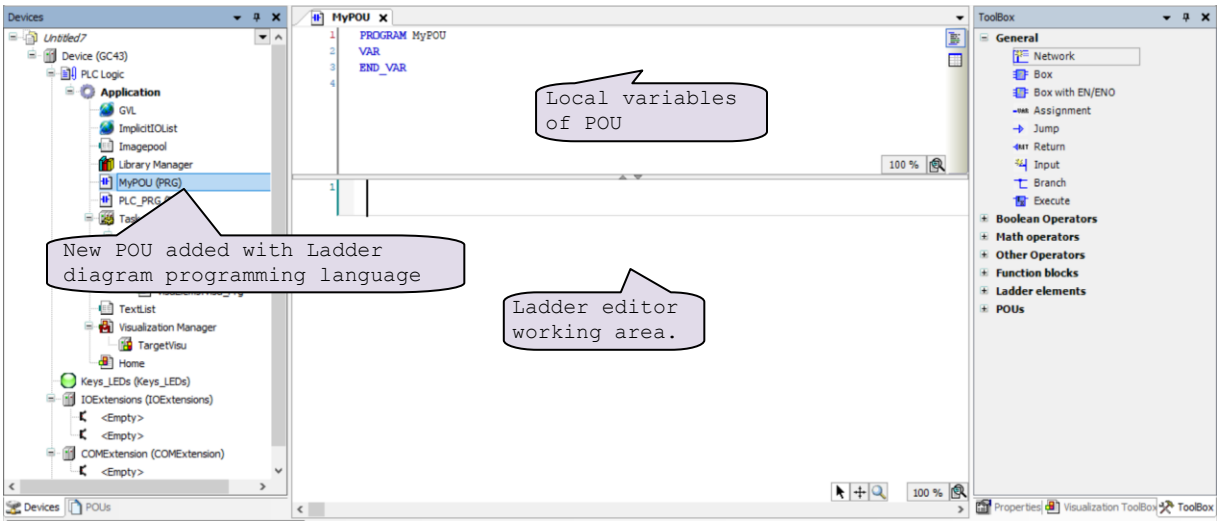
In this section, we can write a PLC code using ladder editor as an exercise.

- Add new POU with ladder language
- Add a variable ‘Start’ and ‘Motor’
- Switch ON ‘Motor’ if ‘Start’ is ON for 1 sec or more.
- Call POU in PLC_PRG

Adding new POU with ladder language

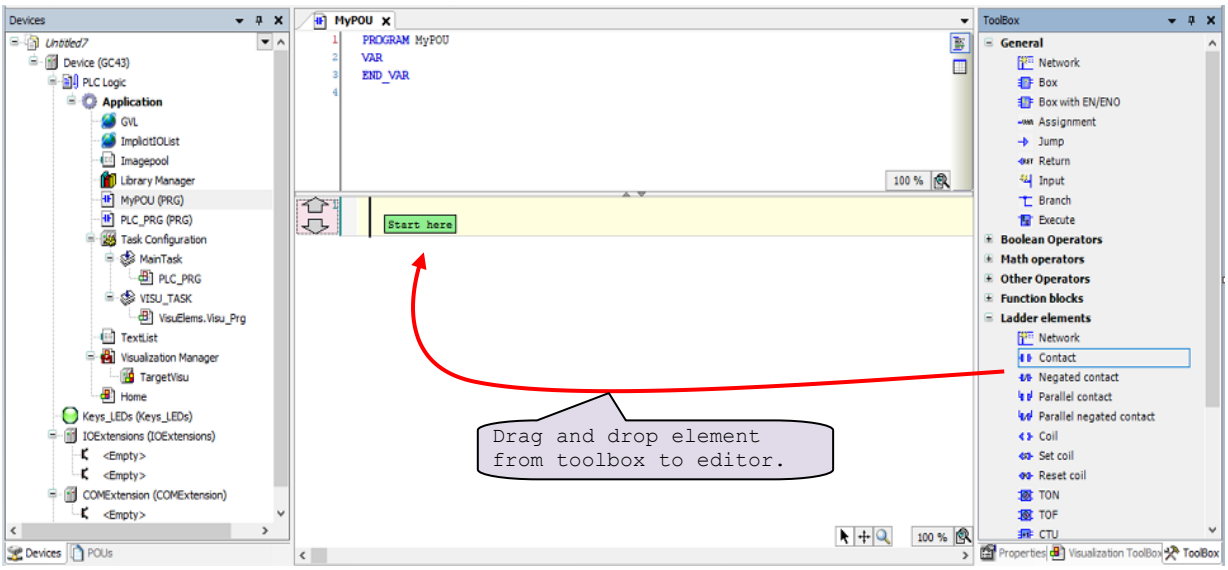


Click on “MyPOU (PRG)” to open as below.



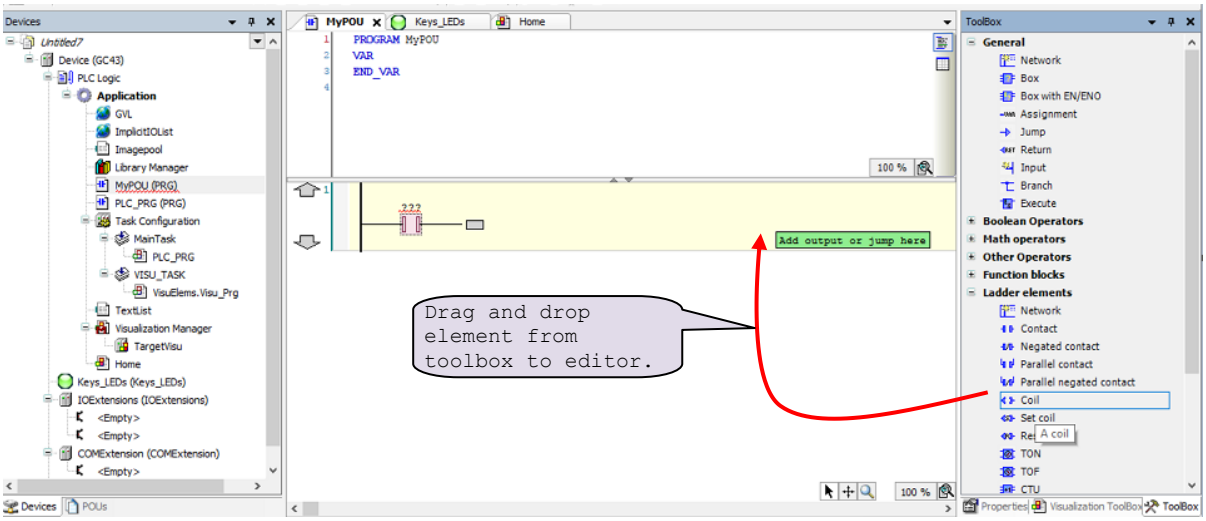
Add variable ‘Start’ and ‘Motor’

For adding new element (here, contact) in ladder network, drag and drop respective element from toolbox to editor as shown below.



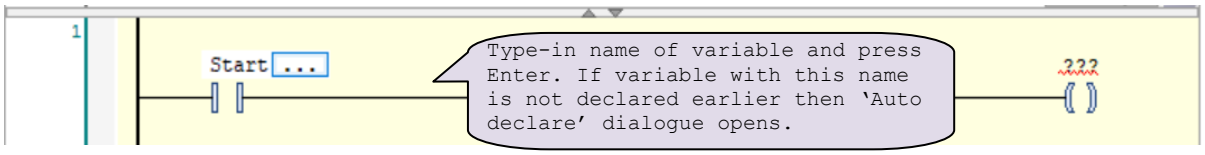
A view after adding new contact element in editor is as below,

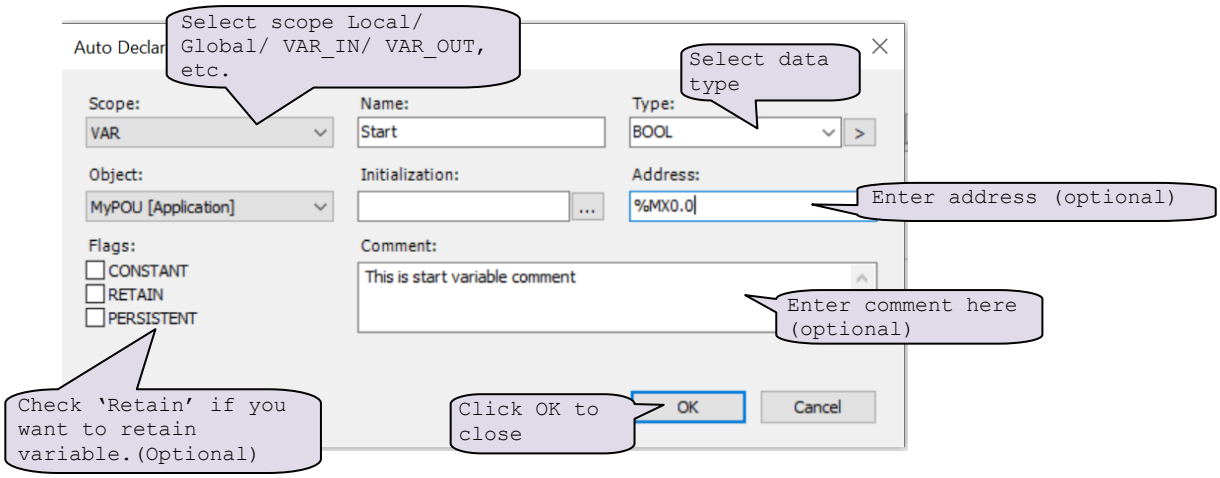
Similarly, user can add coil element to ladder network.



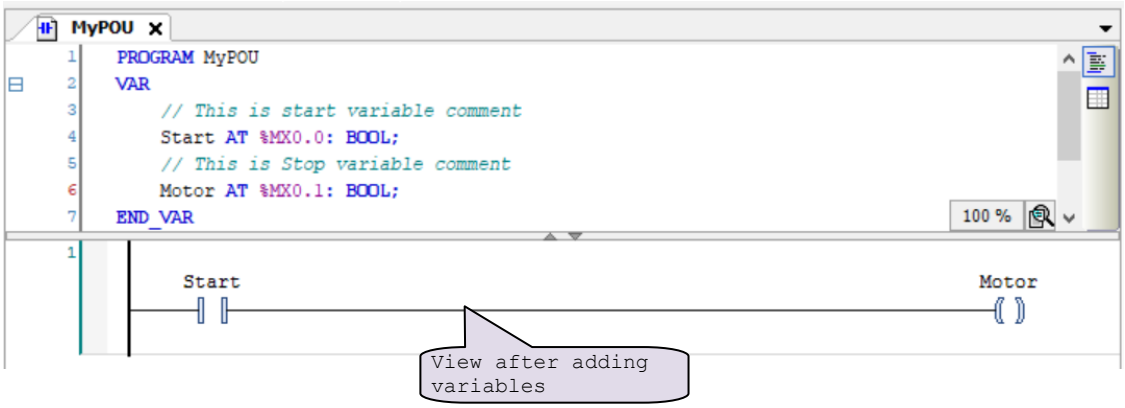
A view after adding new coil element in editor is as below,

After adding elements to ladder network , user can assign variable to element as shown below.



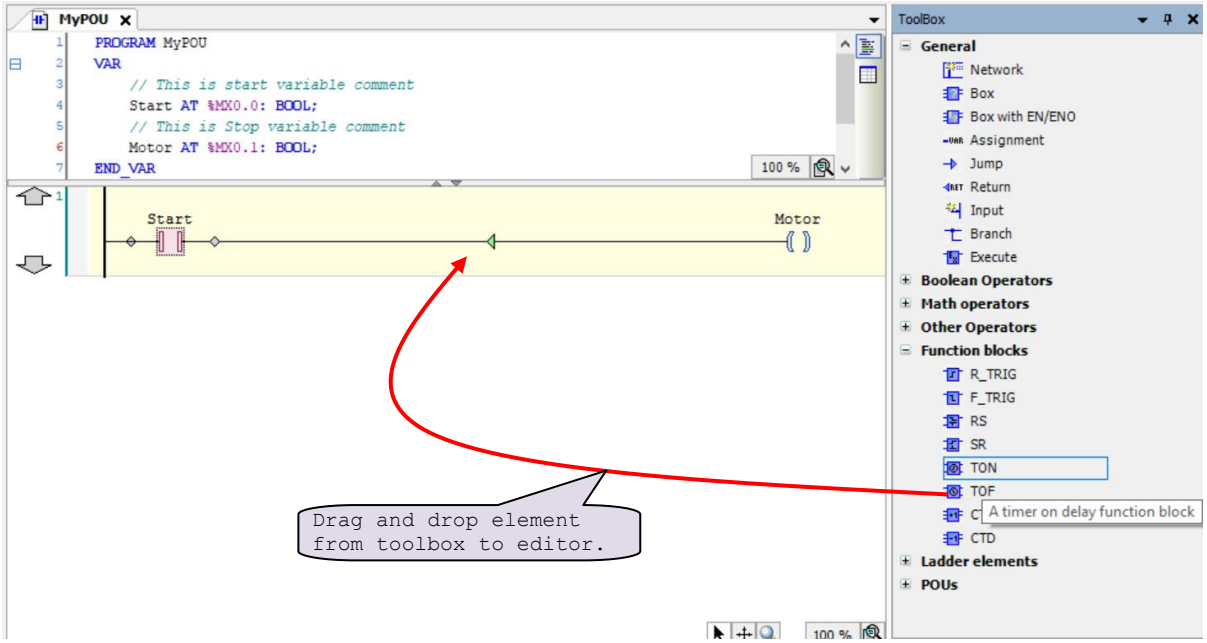


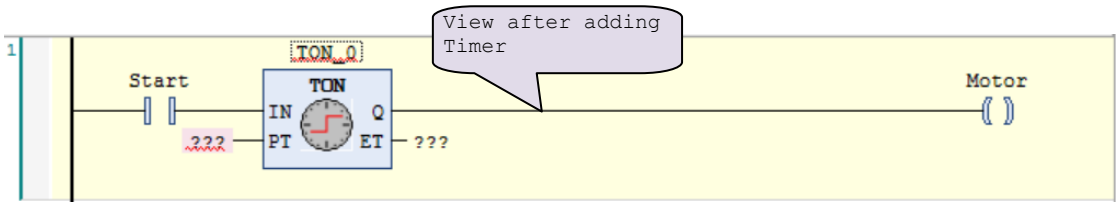
Similarly, assign variable to coil element as 'Motor'.



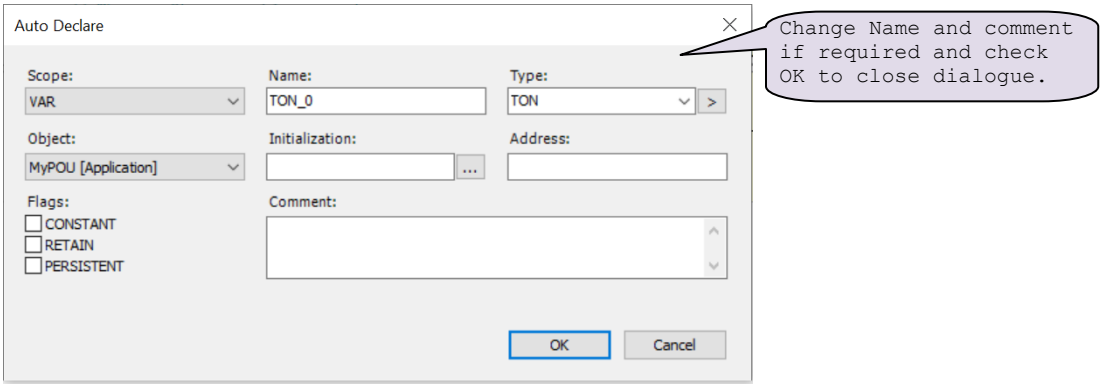
Switch ON 'Motor', if 'Start' is ON for 1 sec.

To turn 'Motor' ON when 'Start' is ON for 1 sec, it is required to add timer function block in ladder network as shown below.



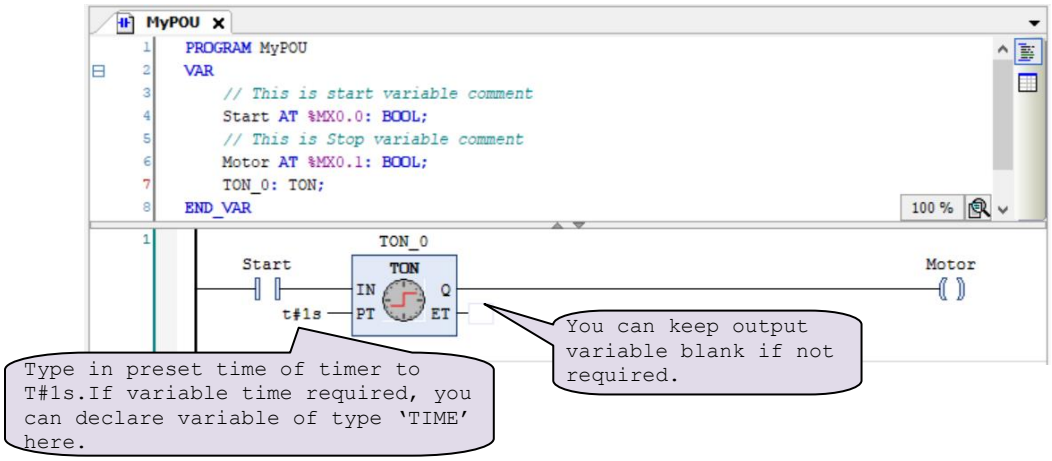


After pressing enter, auto-declare dialogue opens to declare timer FB instance.



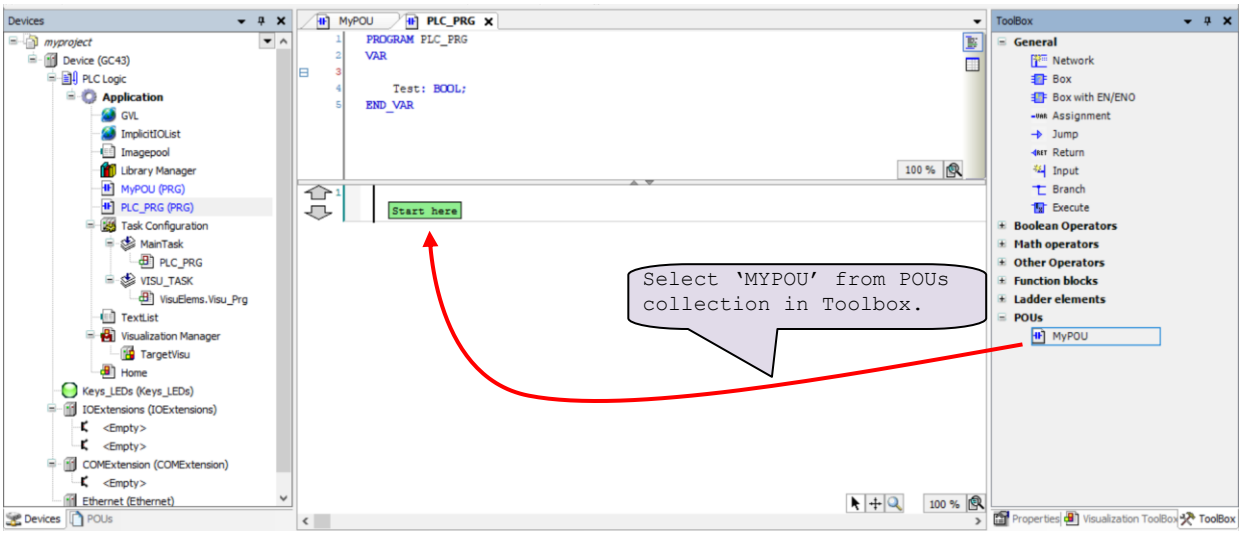
This completes assigning names and variables to added elements.

Assign variables to function block instance ‘TON_0’ as shown below.

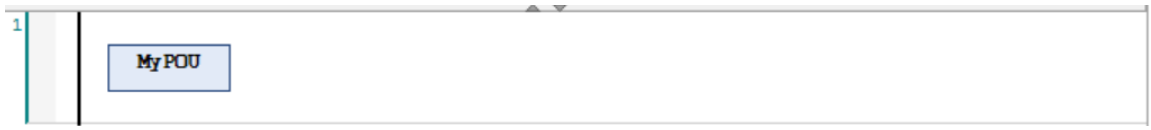


Now call POU named as “MyPOU” in PLC_PRG.

Do double click on PROGRAM type of POU PLC_PRG to open it in editor.



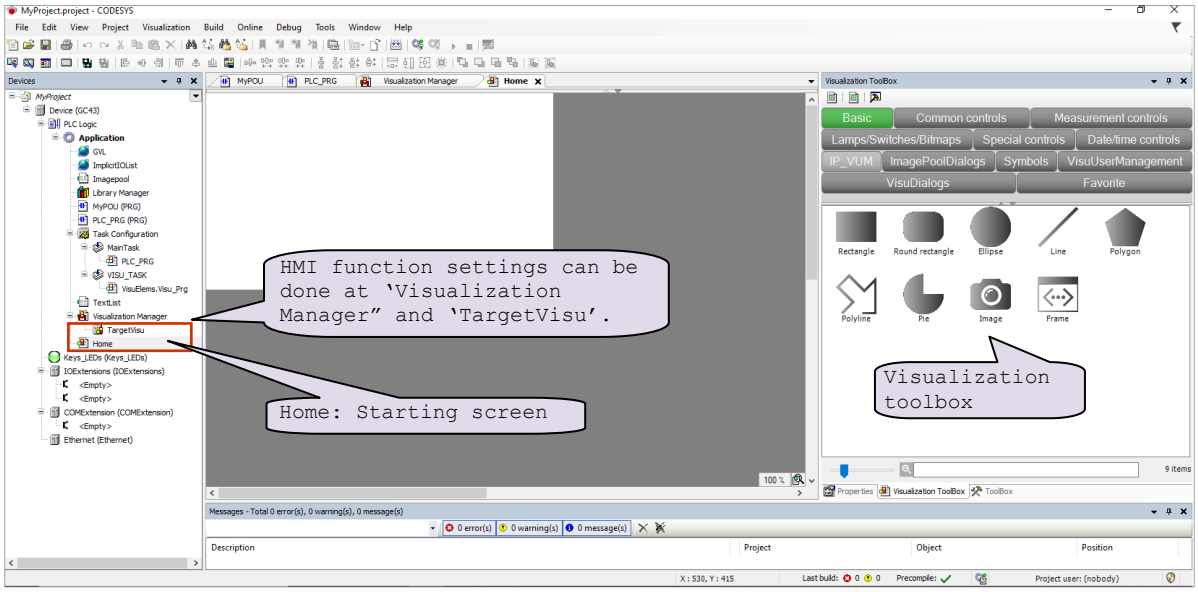
Drag and drop “MyPOU” to PLC code and the view after adding “MyPOU” in PLC_PRG is as below.



4.4 To create simple HMI program

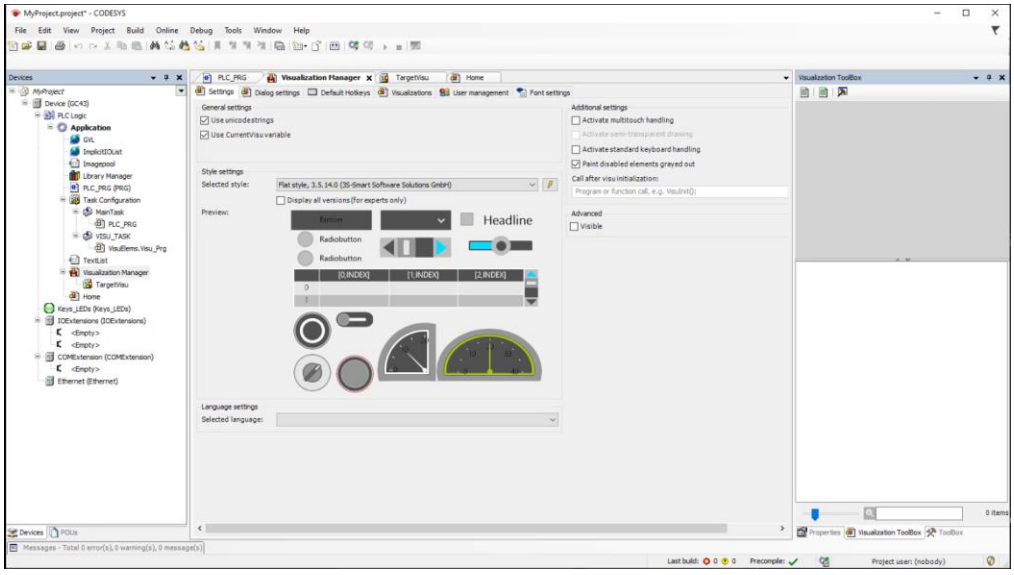
In this section, we can see how to do HMI programming in CoDeSys 3.5.

Execute Device (GC43) >> Application >> Visualization Manager, for HMI function settings and to drag and drop HMI objects from visualization toolbox.



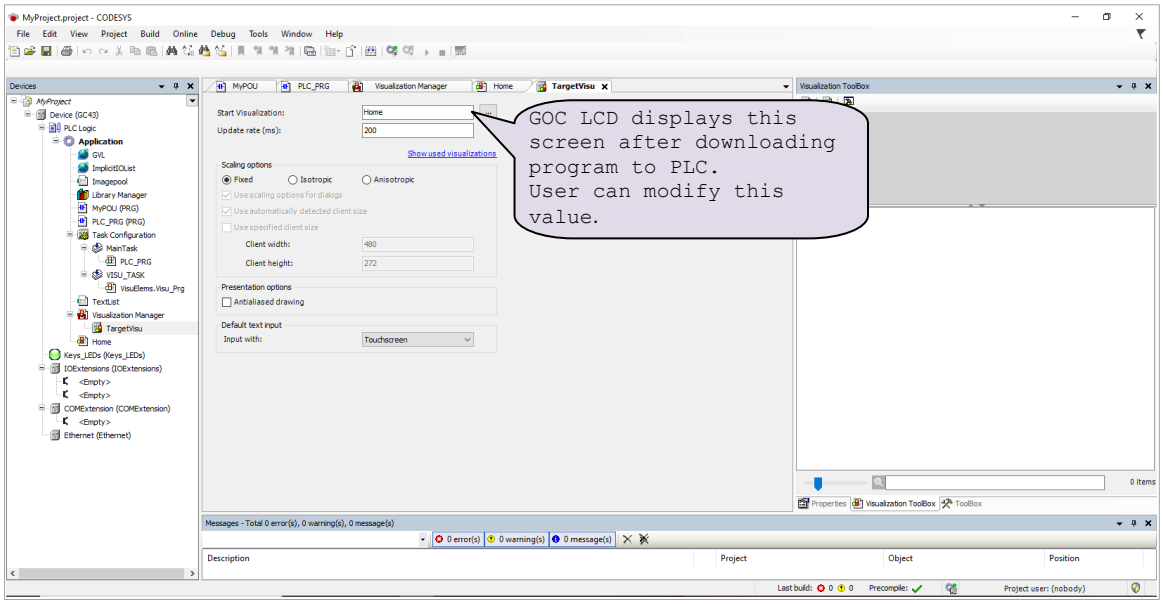
For setting HMI functions, click on "Visualization Manager",

Do not modify default settings available on "Visualization Manager" tab as below. It may cause malfunction of HMI functionality.

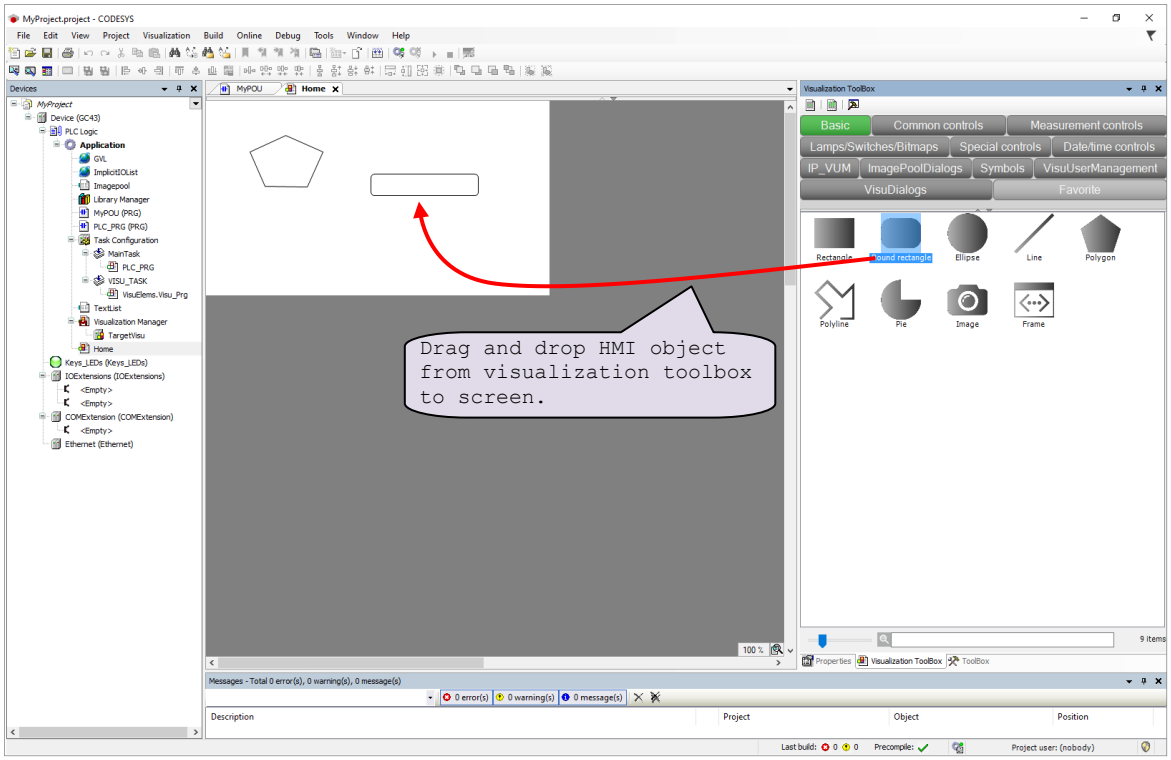


Do not modify default settings provided on "Visualization Manager" tab and "TargetVisu" tab.

Click on “TargetVisu” tab, to view further visualization settings such as start visualization, update rate, scaling options, default text input etc.

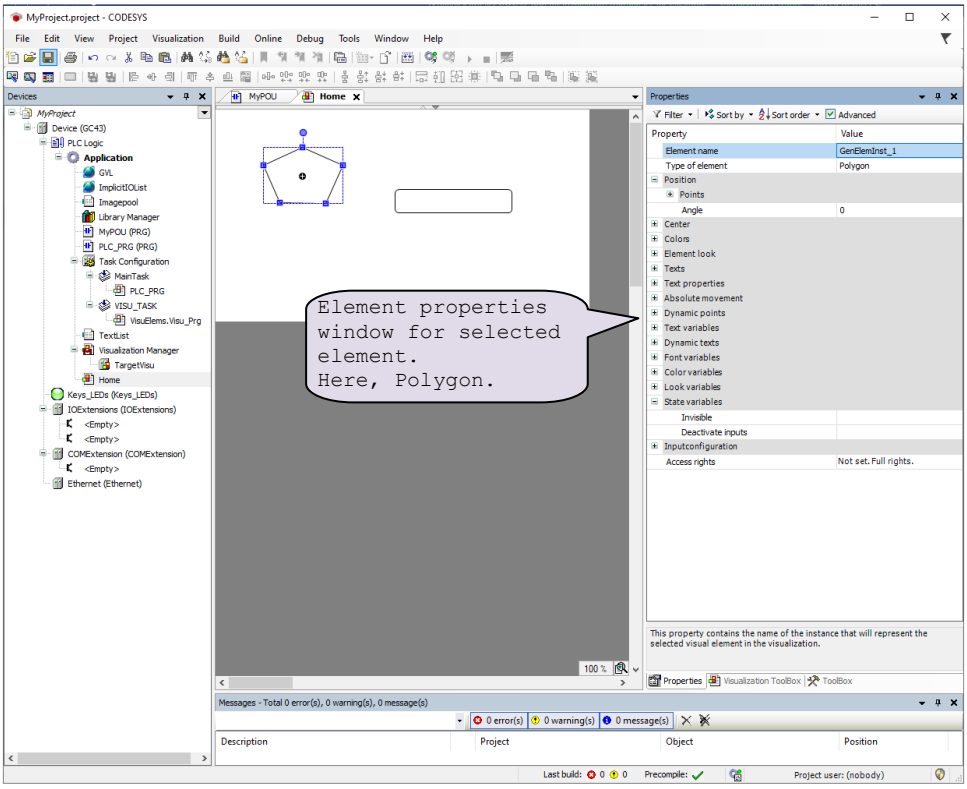


Click on ‘Home’ screen and add HMI elements by drag and drop as shown below.

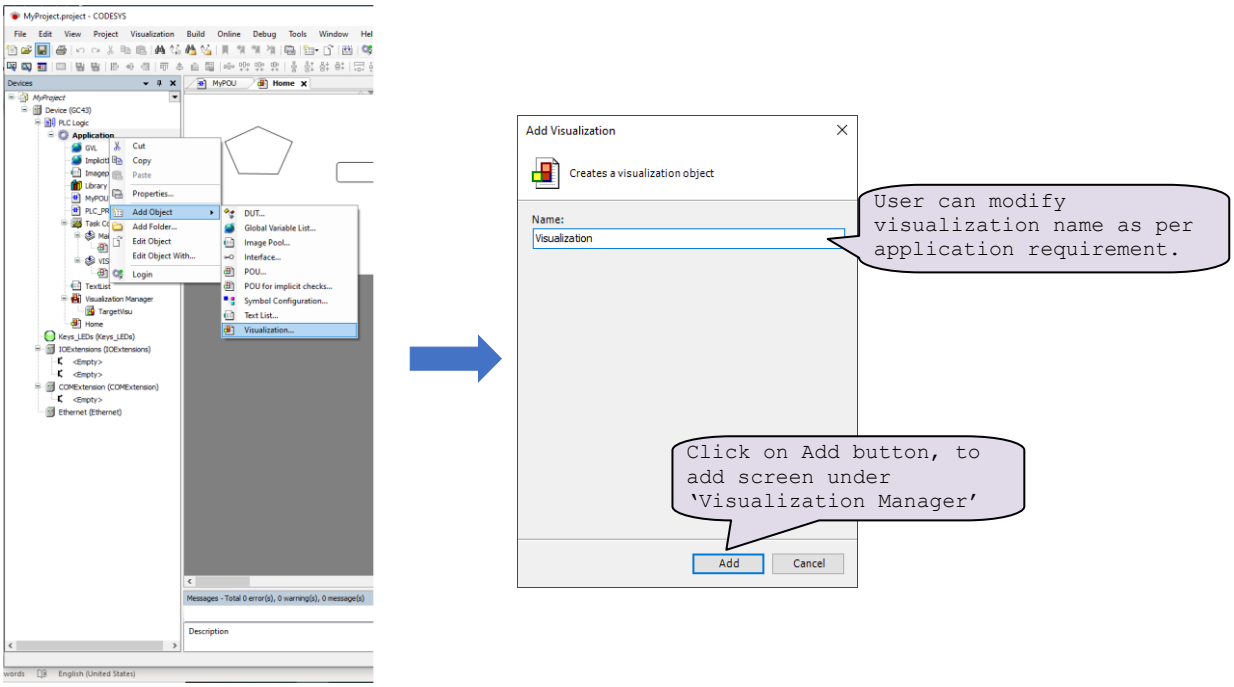


Similarly, user can drag and add elements covered in other groups such as Common controls, Measurement controls, Lamps/Switches/Bitmaps, Special controls, Date/time controls etc.

For setting properties of individual element, select element on screen so that element ‘Properties’ window gets open in toolbox as shown.



Also, user can add multiple screens up to 64 screens by executing Device (GC 43) >> Application [do right click] >> Add Object >> Visualization.



4.5 To download project and Online operations

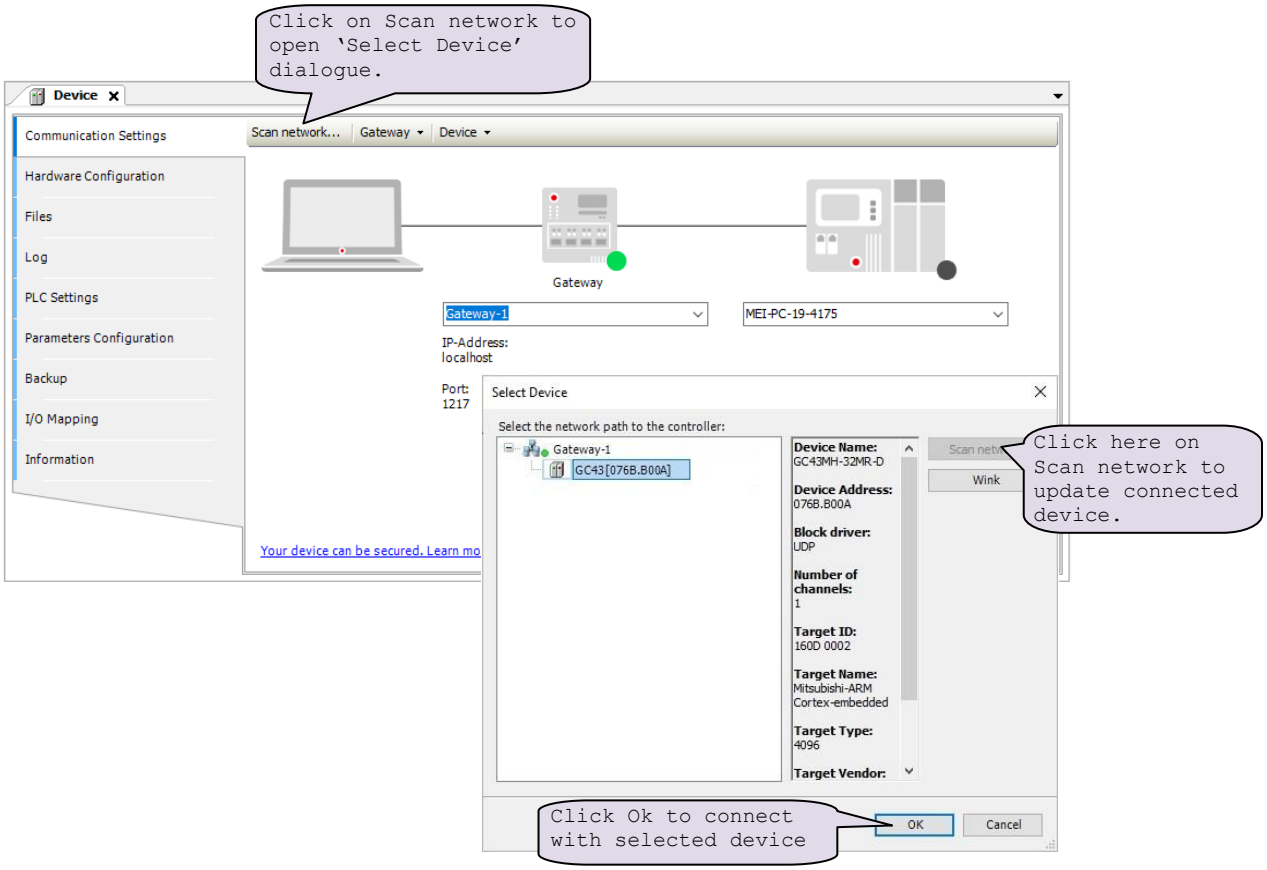
For downloading project to PLC, it should be error free.

Compile project by executing menu Build >> Clean all, Build >> Rebuild. This provides user list of errors (if any), warnings and information messages under “Messages” window.

After successful compilation of project, follow below steps,

1. Power ON and connect GOC43 device to PC via Ethernet.

2. Click on Device (GC 43) >> Communication settings as shown below.



3. Execute menu Online >> Login (Alt + F8), this opens confirmation dialogue to start project downloading

4. After successful downloading, execute menu Debug >> Start (F5) to put device in RUN mode.

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