

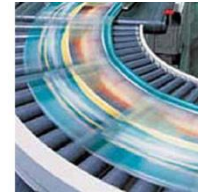
First steps



CoDeSys



We software Automation.



First steps

After this module you will be able to easily create simple projects and to prepare the PLC system.

Introduction

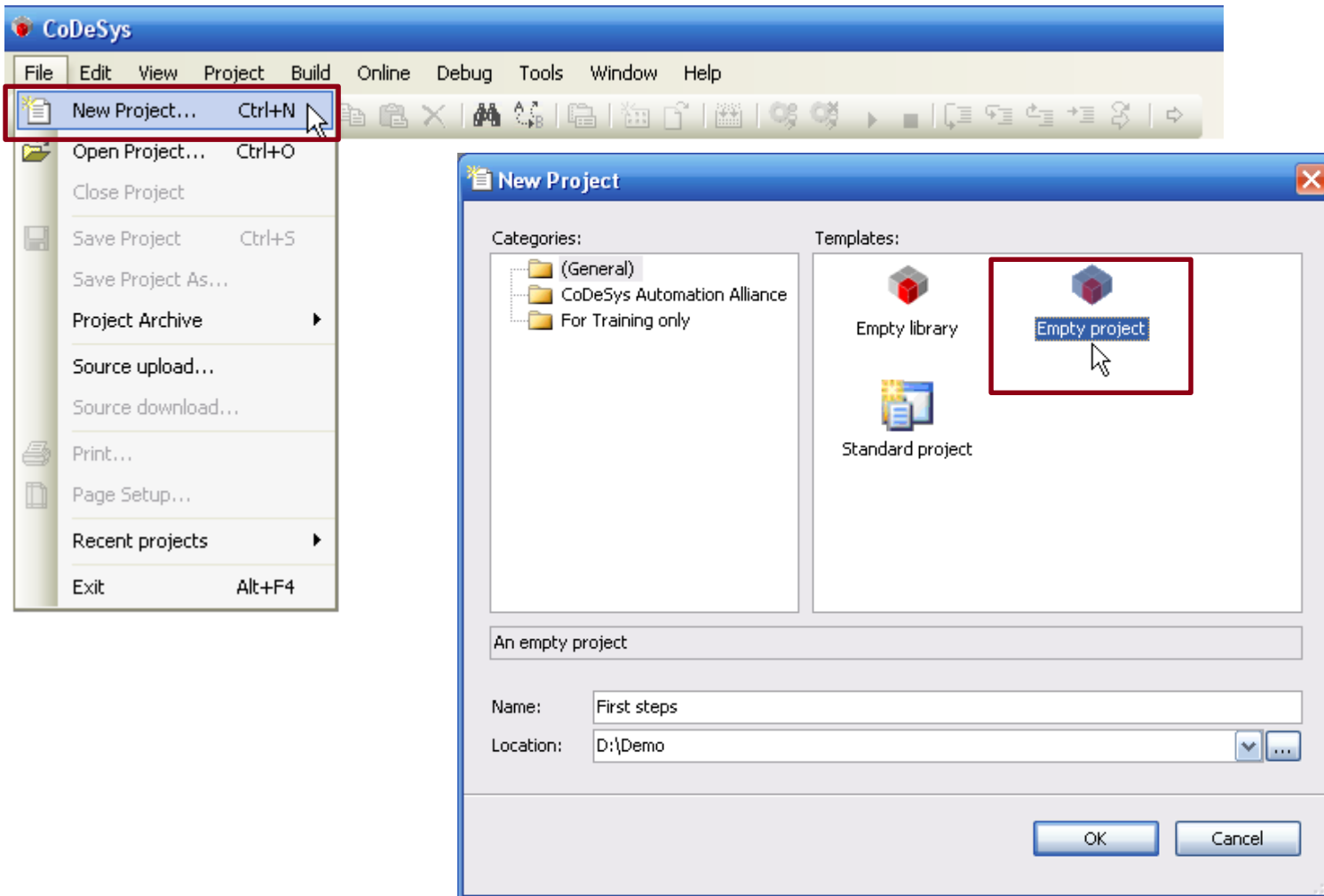
In this module we will talk about general topics.
You will always need the same procedure for the exercises
in this course.



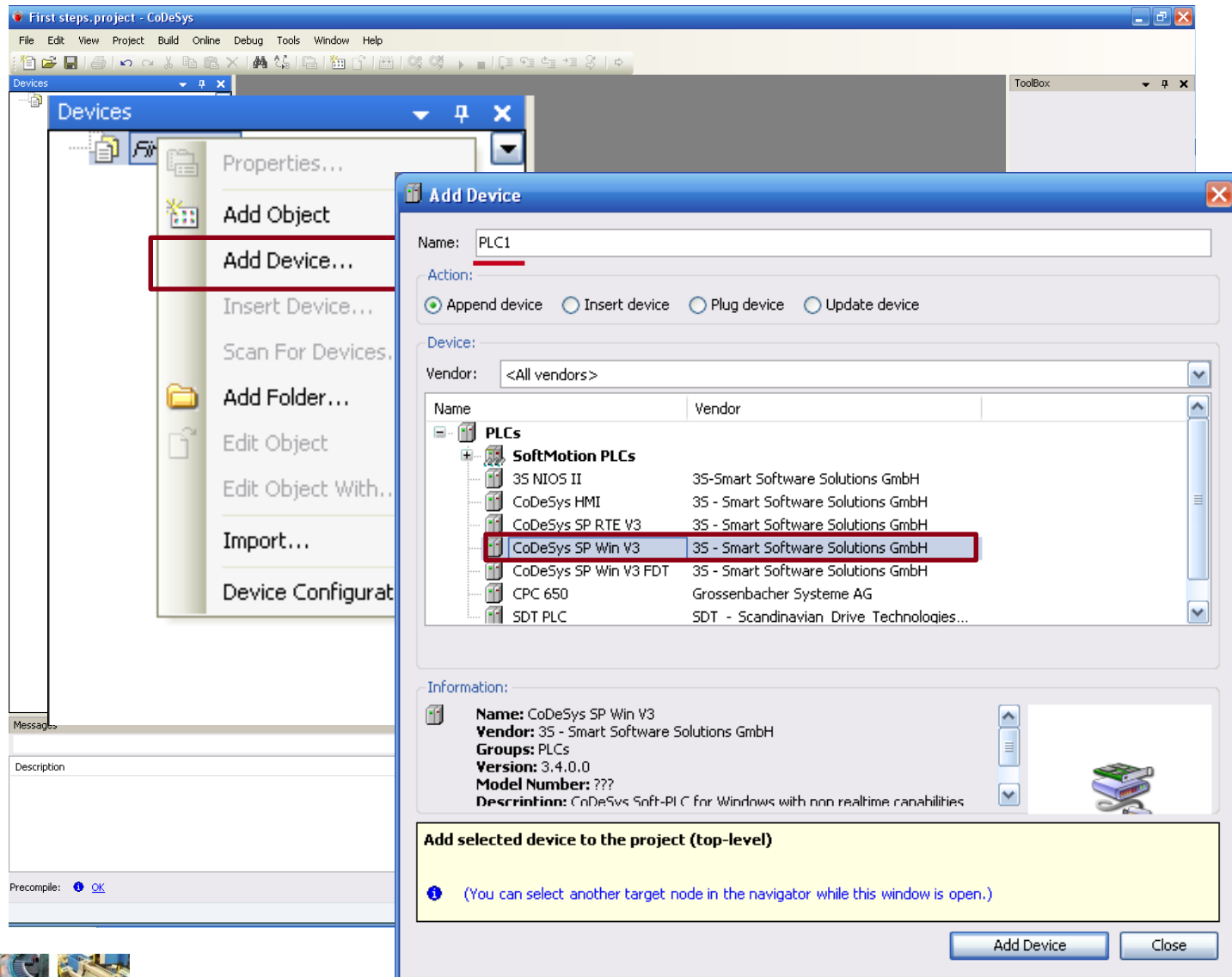
- first start of CoDeSys
- quick start
 - new empty project
 - add device
 - add POU
 - add task configuration
 - append task
 - build application (generate code)
 - set communication parameter
 - go online
 - check program



Create new empty project



Add device



First steps project - CoDeSys

File Edit View Project Build Online Debug Tools Window Help

Devices

Properties...
Add Object
Add Device...
Insert Device...
Scan For Devices...
Add Folder...
Edit Object
Edit Object With...
Import...
Device Configuration

Add Device

Name: PLC1

Action:
☒ Append device
 ☐ Insert device
 ☐ Plug device
 ☐ Update device

Device:
 Vendor: <All vendors>

Name	Vendor
PLCs	
+ SoftMotion PLCs	
3S NIOS II	3S - Smart Software Solutions GmbH
CoDeSys HMI	3S - Smart Software Solutions GmbH
CoDeSys SP RTE V3	3S - Smart Software Solutions GmbH
CoDeSys SP Win V3	3S - Smart Software Solutions GmbH
CoDeSys SP Win V3 FDT	3S - Smart Software Solutions GmbH
CPC 650	Grossenbacher Systeme AG
SDT PLC	SDT - Scandinavian Drive Technologies...

Information:

Name: CoDeSys SP Win V3
Vendor: 3S - Smart Software Solutions GmbH
Groups: PLCs
Version: 3.4.0.0
Model Number: ???
Description: CoDeSys Soft-PLC for Windows with non realtime capabilities

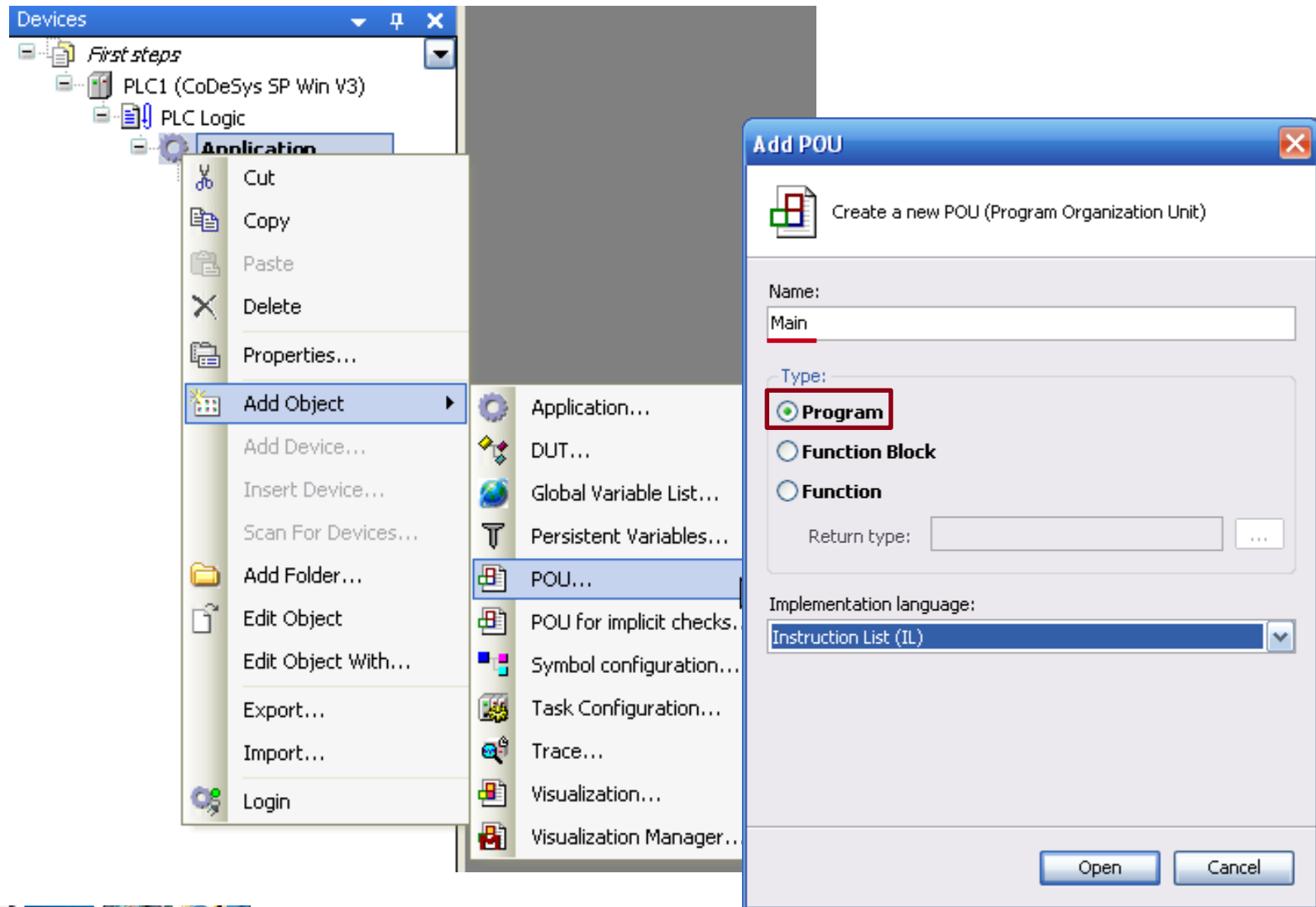
Add selected device to the project (top-level)

(You can select another target node in the navigator while this window is open.)

Add Device Close



Add POU (PRG)



The screenshot shows the CoDeSys software interface. On the left, the 'Devices' tree is visible, showing a project named 'First steps' containing a 'PLC1 (CoDeSys SP Win V3)' device and a 'PLC Logic' folder. The 'Application' folder is selected, and a context menu is open, showing options like 'Cut', 'Copy', 'Paste', 'Delete', 'Properties...', 'Add Object', 'Add Device...', 'Insert Device...', 'Scan For Devices...', 'Add Folder...', 'Edit Object', 'Edit Object With...', 'Export...', 'Import...', and 'Login'. The 'Add Object' option is highlighted, and a sub-menu is open, showing options like 'Application...', 'DUT...', 'Global Variable List...', 'Persistent Variables...', 'POU...', 'POU for implicit checks...', 'Symbol configuration...', 'Task Configuration...', 'Trace...', 'Visualization...', and 'Visualization Manager...'. The 'POU...' option is selected, and the 'Add POU' dialog box is open. The dialog box has a title bar 'Add POU' and a subtitle 'Create a new POU (Program Organization Unit)'. It contains a 'Name' field with the text 'Main', a 'Type' section with three radio buttons: 'Program' (selected), 'Function Block', and 'Function', and a 'Return type' field. The 'Implementation language' is set to 'Instruction List (IL)' in a dropdown menu. At the bottom, there are 'Open' and 'Cancel' buttons.



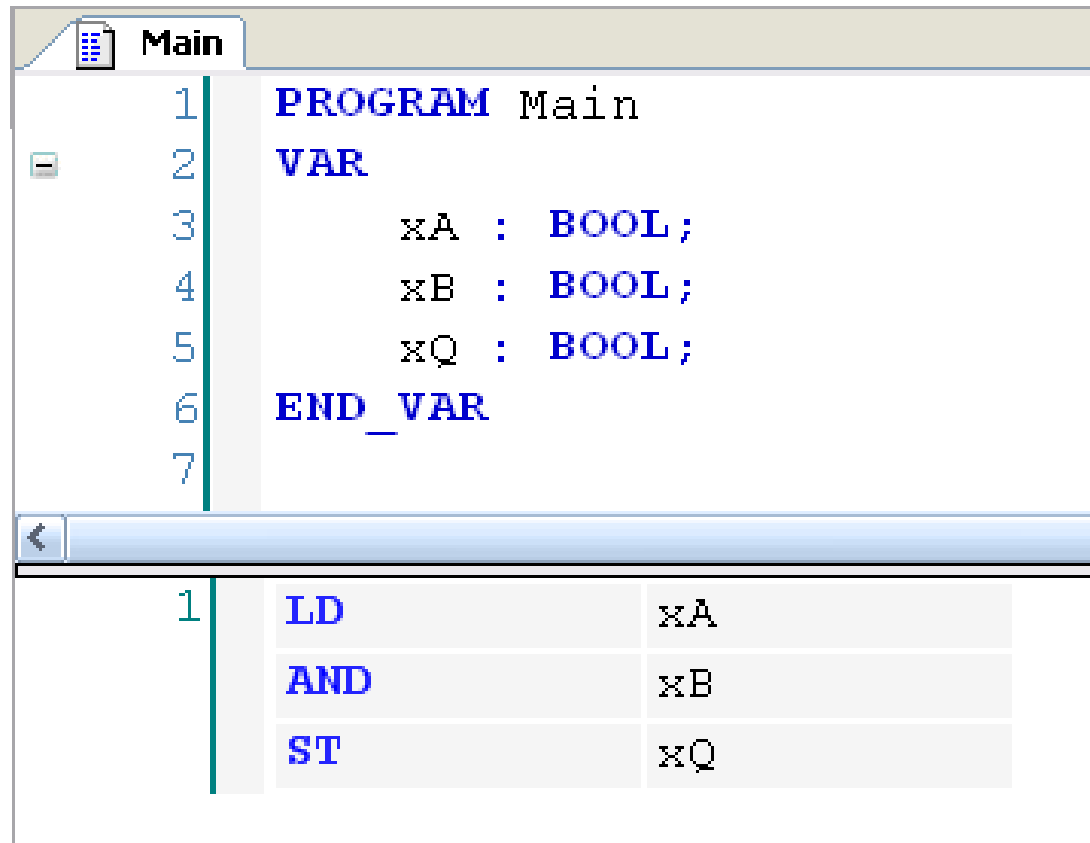
Add POU (PRG)

 Main (PRG)

POU: MAIN (PRG)

declaration

instructions



```

1  PROGRAM Main
2  VAR
3      xA : BOOL;
4      xB : BOOL;
5      xQ : BOOL;
6  END_VAR
7

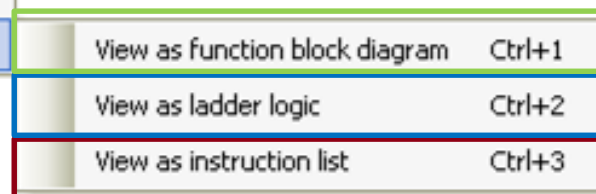
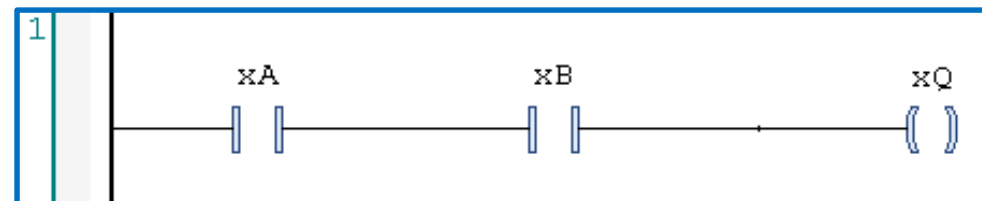
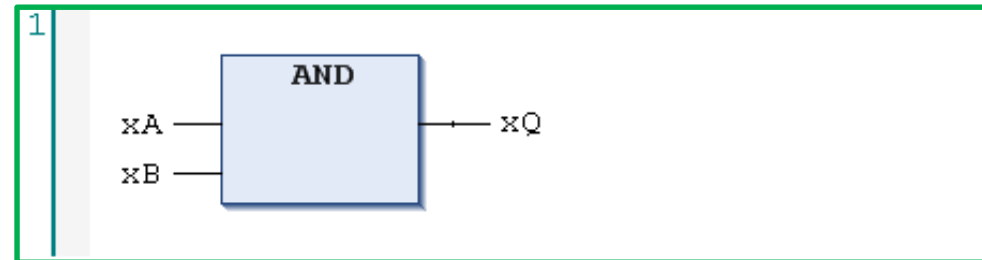
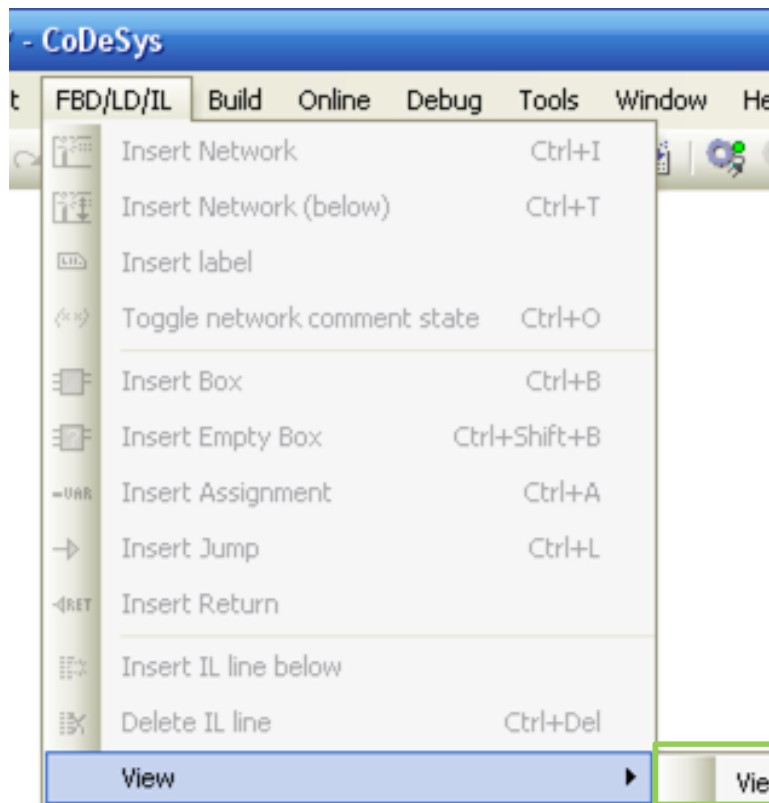
```

1	LD	xA
	AND	xB
	ST	xQ

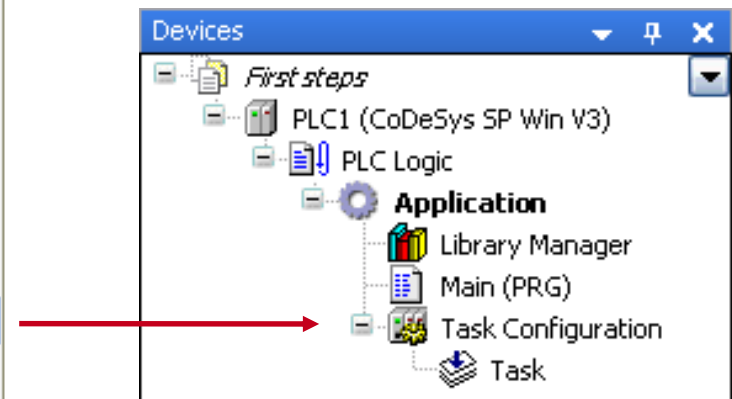
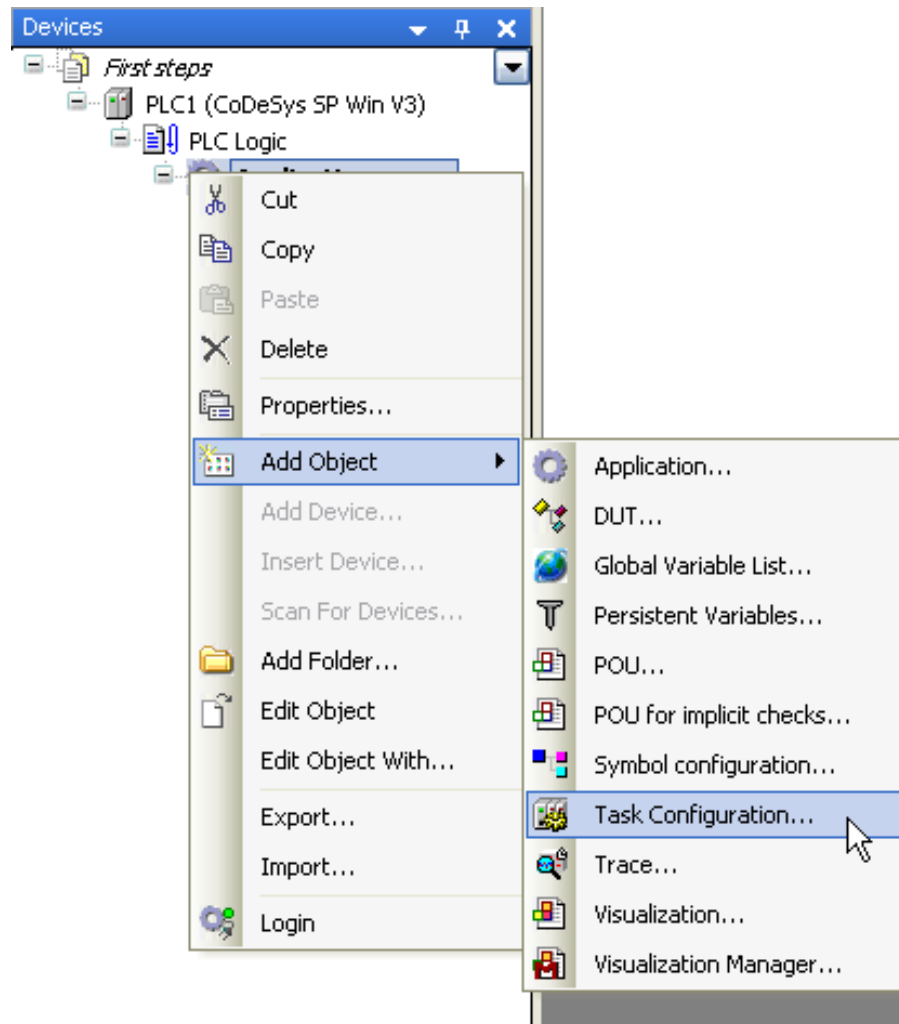


Add POU (PRG)

IL – FBD – LD - Editor

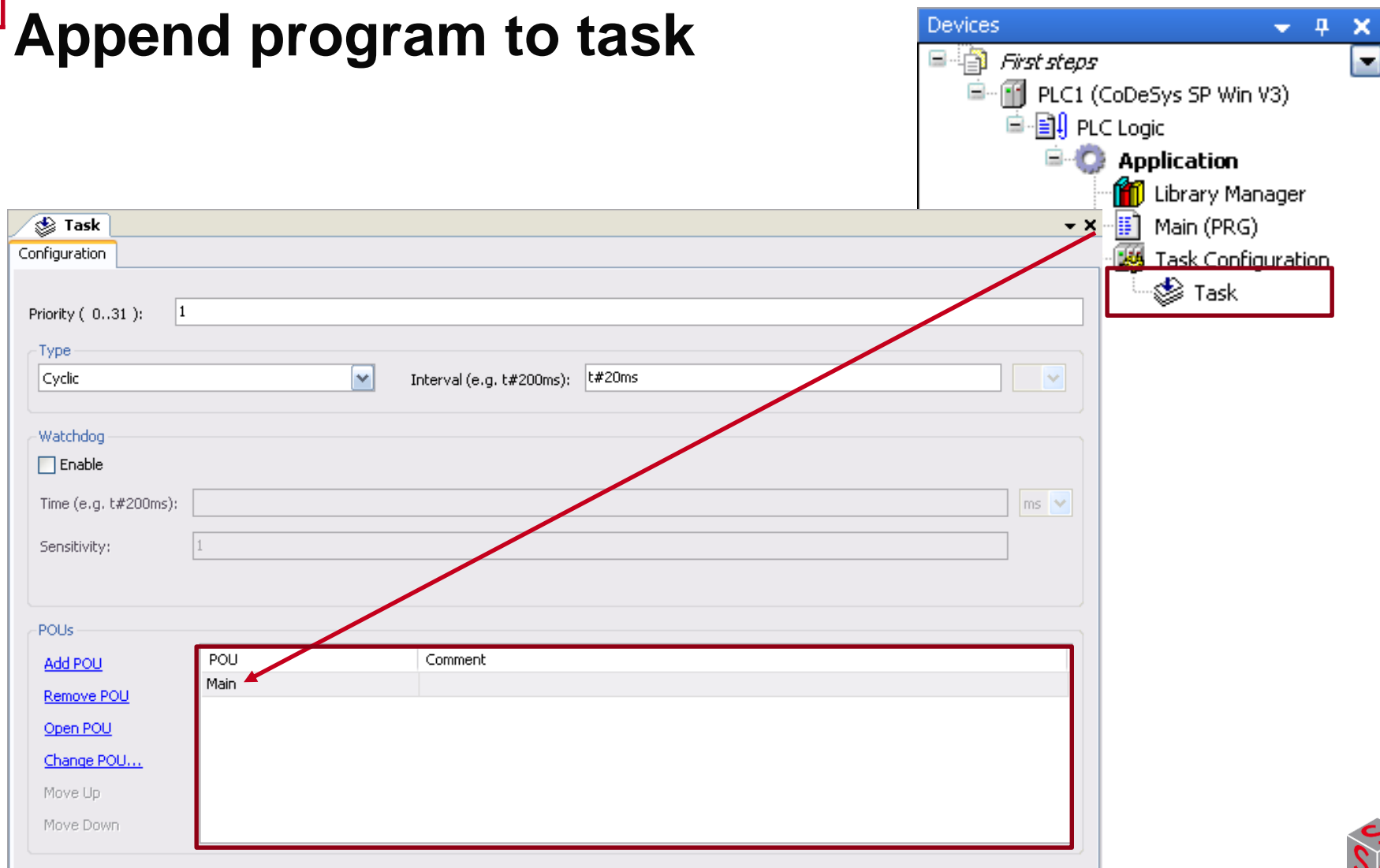


Add task configuration



Add task configuration

Append program to task



The screenshot shows the CoDeSys Task Configuration dialog and the Project Explorer. The Project Explorer on the right shows the hierarchy: **First steps** > **PLC1 (CoDeSys SP Win V3)** > **PLC Logic** > **Application** > **Library Manager** > **Main (PRG)** > **Task Configuration** > **Task**. The **Task Configuration** dialog is open, showing the **Configuration** tab. The **Priority** is set to 1. The **Type** is set to **Cyclic** with an **Interval** of t#20ms. The **Watchdog** section has **Enable** unchecked, **Time** set to t#200ms, and **Sensitivity** set to 1. The **POUs** section shows a table with one entry: **Main**. A red arrow points from the **Task Configuration** entry in the Project Explorer to the **Main** POU in the table.

Task Configuration

Configuration

Priority (0..31): 1

Type: Cyclic Interval (e.g. t#200ms): t#20ms

Watchdog

☐ Enable

Time (e.g. t#200ms): ms

Sensitivity: 1

POUs

[Add POU](#)

[Remove POU](#)

[Open POU](#)

[Change POU...](#)

Move Up

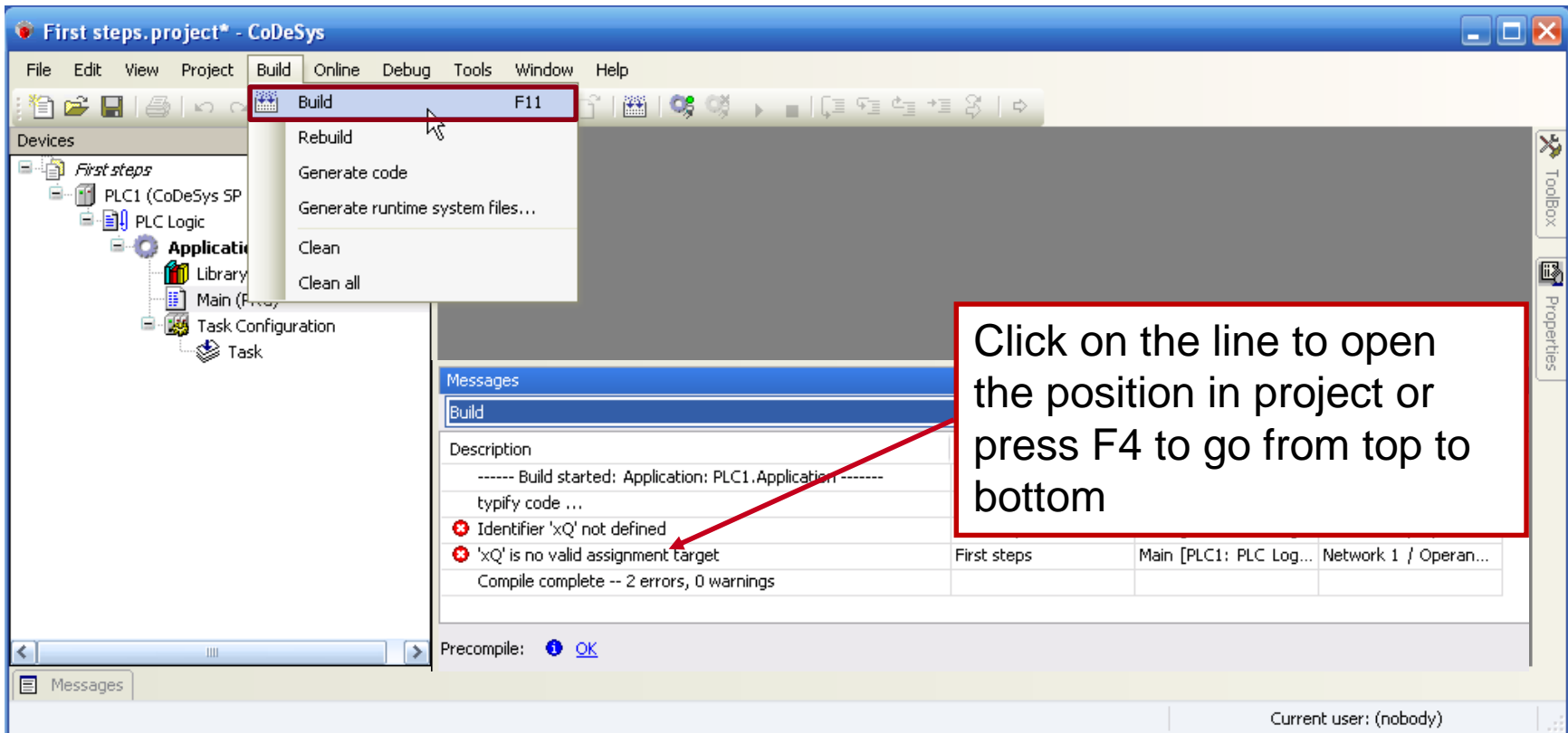
Move Down

POU	Comment
Main	



Build application

Should there be any errors, the message window will give you detailed information.



The screenshot shows the CoDeSys IDE interface. The 'Build' menu is open, displaying options: Build (F11), Rebuild, Generate code, Generate runtime system files..., Clean, and Clean all. The 'Messages' window is visible at the bottom, showing a list of messages. The 'Build' message is selected, displaying the following description:

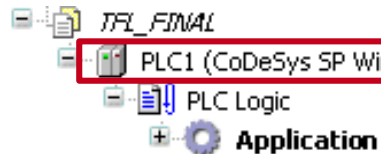
```

----- Build started: Application: PLC1.Application -----
typify code ...
✖ Identifier 'xQ' not defined
✖ 'xQ' is no valid assignment target
Compile complete -- 2 errors, 0 warnings
  
```

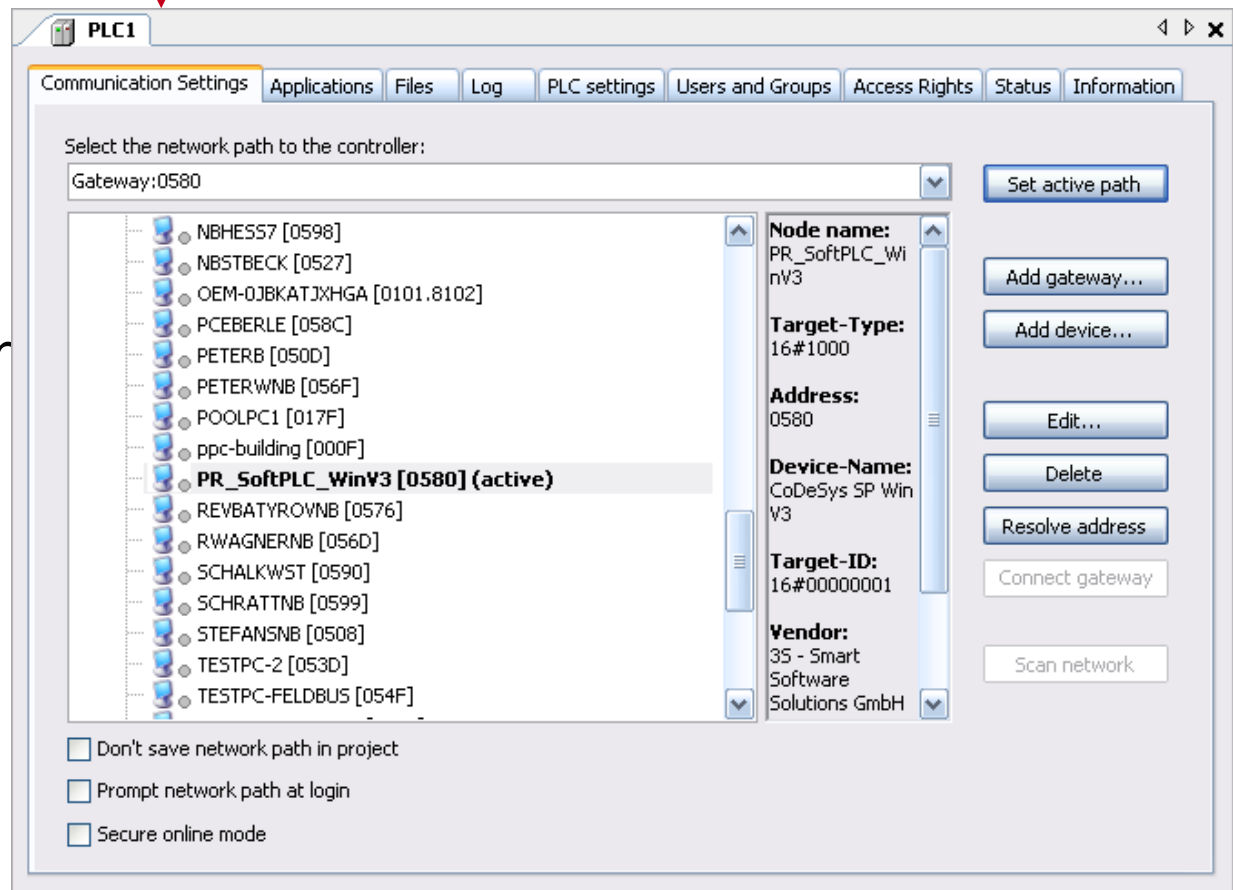
A red arrow points from the text box to the error message line. The text box contains the instruction: "Click on the line to open the position in project or press F4 to go from top to bottom".



Set communication parameter



double-click



- select Gateway
- scan
- select PLC
- device information appears
- set path
- log-in



First steps.project* - CoDeSys

File Edit View Project FBD/LD/IL Build Online Debug Tools Window Help

Devices

- First steps
 - PLC1 [connected] (CoDeSys SP W
 - PLC Logic
 - Application [run]**
 - Library Manager
 - Main (PRG)
 - Task Configuration
 - Task

Main

PLC1.Application.Main

Expression	Comment	Type	Value
xA		BOOL	FALSE
xB		BOOL	FALSE
xQ		BOOL	FALSE

1	LD	xA	FALSE
	AND	xB	FALSE
	ST	xQ	FALSE
RET			



Check program

First steps.project* - CoDeSys

File Edit View Project FBD/LD/IL Build Online Debug Tools Window Help

Devices

- First steps
 - PLC1 [connected] (CoDeSys SP W
 - PLC Logic
 - Application [run]
 - Library Manager
 - Main (PRG)
 - Task Configuration
 - Task

PLC1.1

Expressions

Start F5

Stop Shift+F8

Single Cycle Ctrl+F5

New Breakpoint...

Toggle Breakpoint F9

Step Over F10

Step Into F8

Step Out Shift+F10

Run to Cursor

Set next statement

Show Current Statement

Write values Ctrl+F7

Force values F7

Unforce values Alt+F7

Add All Forces To Watchlist

Display Mode

Type	Value	Prepared value
BOOL	TRUE	
BOOL	TRUE	
BOOL	TRUE	

TRUE

TRUE

TRUE



Summary

- What steps do we have to take?
 - create new empty project
 - add device
 - add POU – PROGRAM
 - add task configuration
 - append program to task and specify task interval time
 - set communication parameter
 - go online, start PLC system and check

