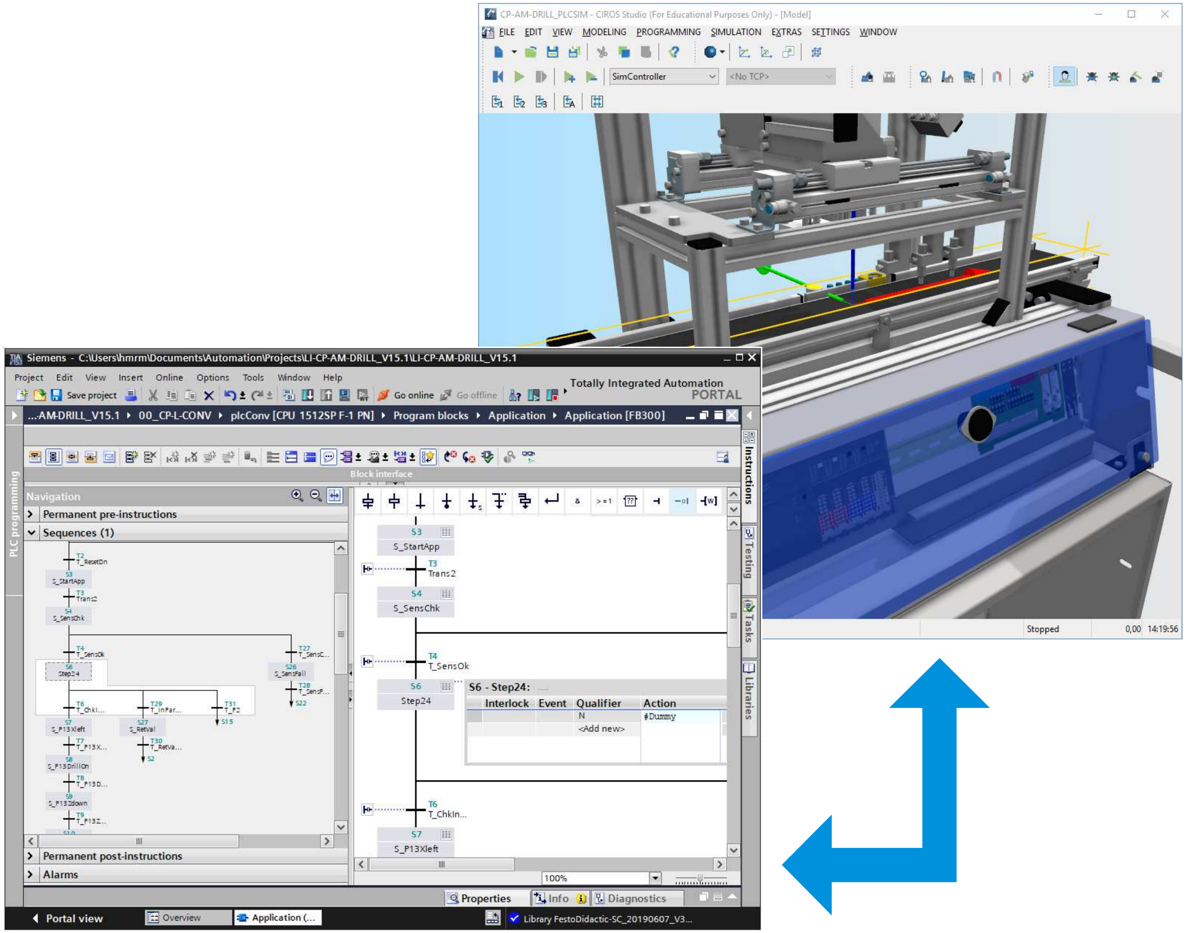
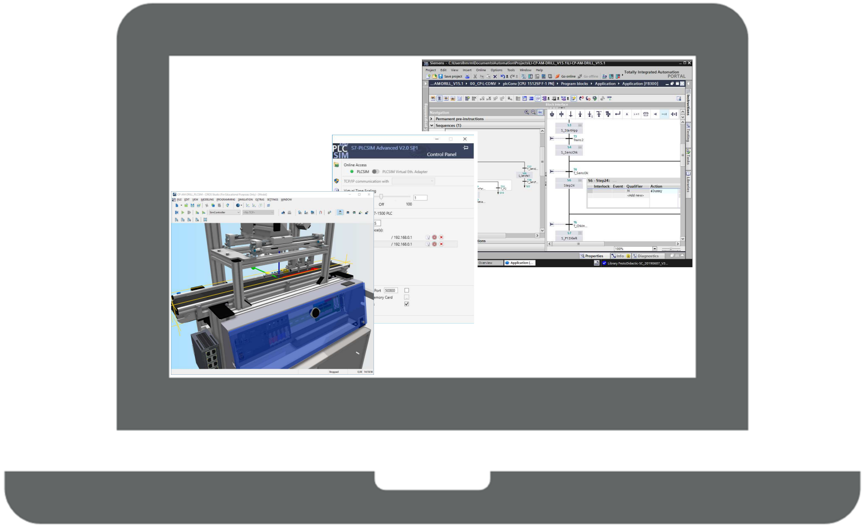
Virtual commissioning with CIROS and PLCSIM Advanced

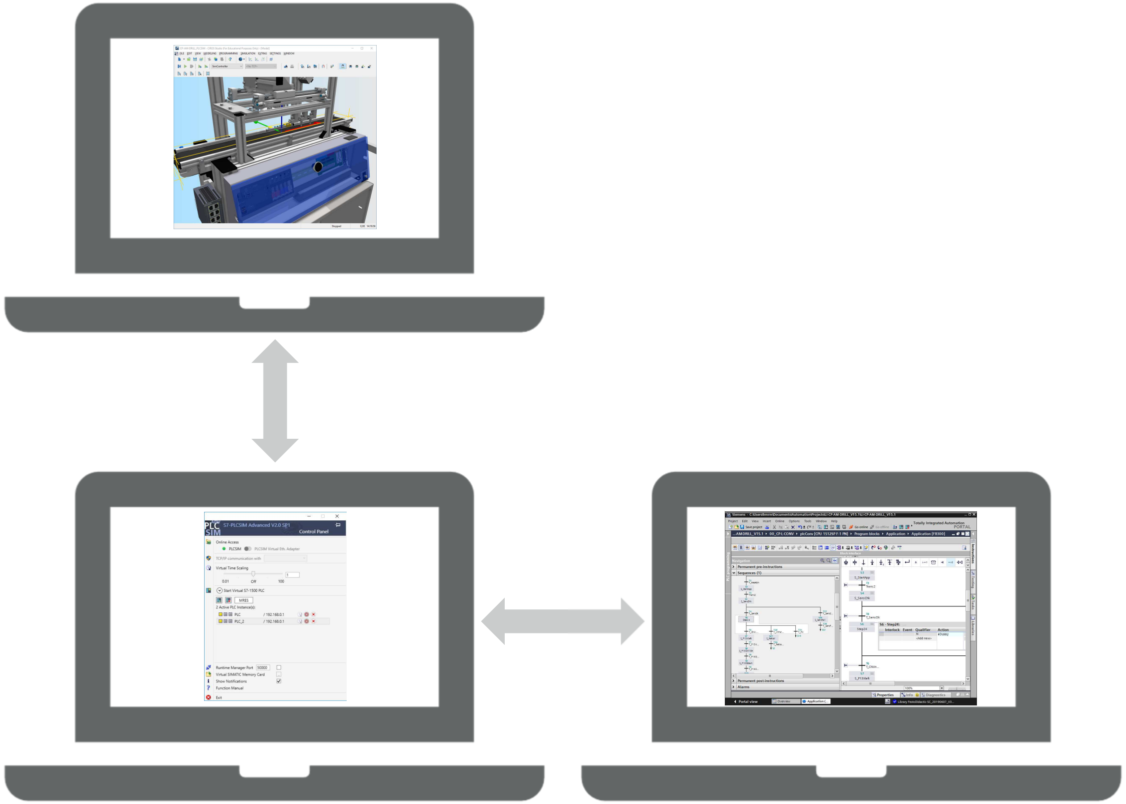
Scenario overview

- Program your PLC against a virtual mechatronic model
- No risk to your hardware if students make mistakes in program code
- Program modules that you don‘t physically own or let dozens of students program the same module even if you only own it once


CP-AM-DRILL_PLCSIM - CIROS Studio (For Educational Purposes Only) - [Model]
FILE EDIT VIEW MODELING PROGRAMMING SIMULATION EXTRAS SETTINGS WINDOW
SimController
Stopped
Siemens - C:\Users\hmrm\Documents\Automation\Projects\LI-CP-AM-DRILL_V15.1\LI-CP-AM-DRILL_V15.1
Project Edit View Insert Online Options Tools Window Help
Save project
Go online
Go offline
Totally Integrated Automation PORTAL
...AM-DRILL_V15.1 ▸ 00_CP-L-CONV ▸ plcConv [CPU 1512SP F-1 PN] ▸ Program blocks ▸ Application ▸ Application [FB300]
Block interface
Navigation
Permanent pre-instructions
Sequences (1)
Permanent post-instructions
Alarms
S3 S_StartApp
T3 Trans2
S4 S_SensChk
T4 T_SensOk
S6 Step24
S6 - Step24:
Interlock Event Qualifier Action
N
#Dummy
<Add new>
T6 T_ChkIn...
S7 S_P13Xleft
100%
Properties
Info
Diagnostics
Portal view
Overview
Application (...
Library FestoDidactic-SC_20190607_V3...
PLC programming
Instructions
Testing
Tasks
Libraries

Scenario overview





Process summary

1. Prepare a CIROS model with the hardware you want to program
2. Create your hardware configuration and I/O tags in TIA Portal
3. Create a PLCSIM Advanced instance and download the hardware configuration
4. Configure the interface between CIROS and your instance
5. Start programming!

Preparing a CIROS model

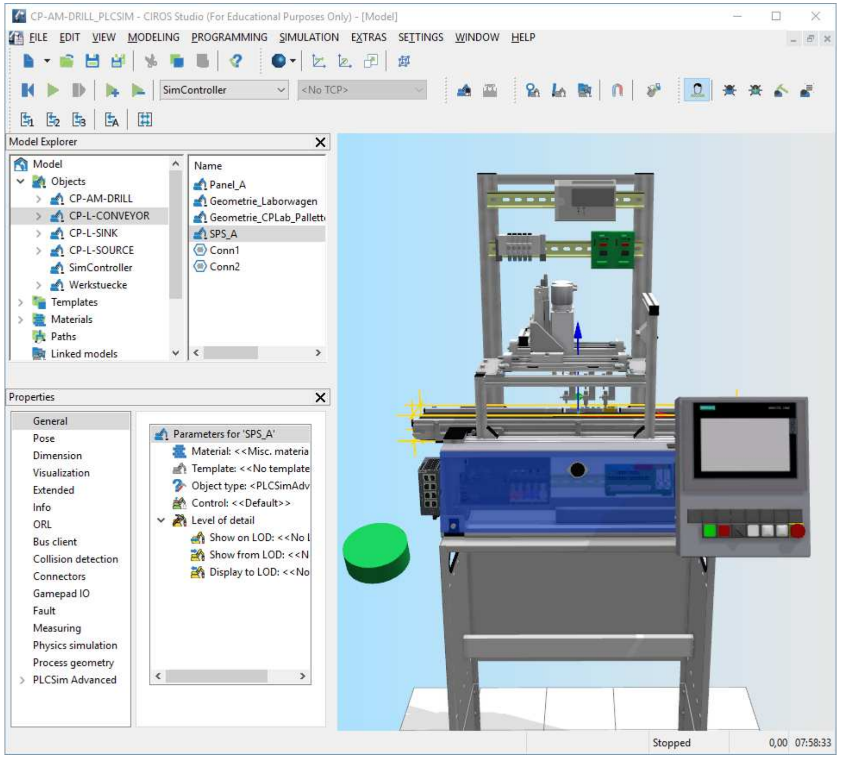
Two approaches are possible:

Create a model from scratch

- Maximum flexibility
- Program any CP station you like

Load a premade model from the model library

- Get started quickly with minimum effort
- Limited selection of CP systems available

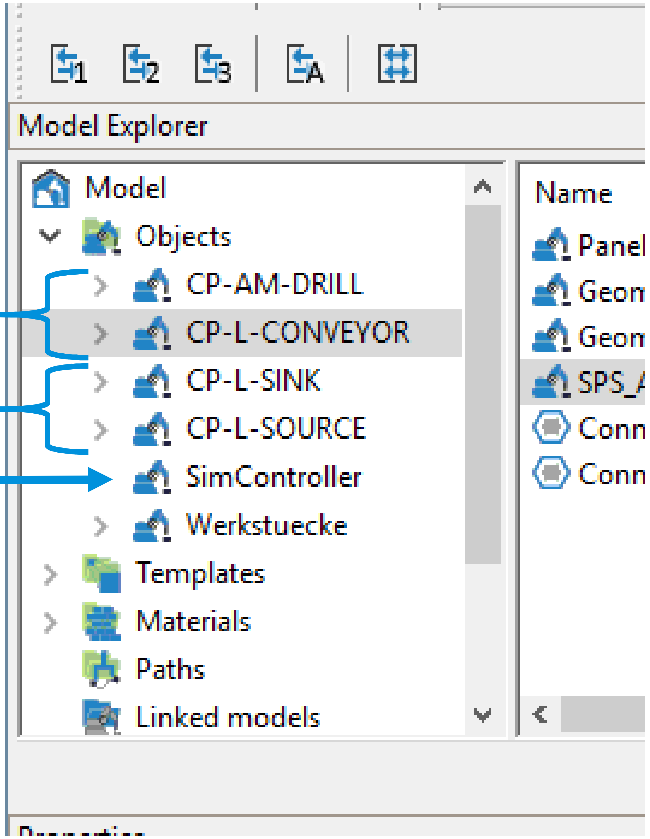


Parameters for 'SPS_A'
Material: <<Misc. materia
Template: <<No template
Object type: <PLCSimAdv
Control: <<Default>>
Level of detail
Show on LOD: <<No l
Show from LOD: <<N
Display to LOD: <<No

Preparing a CIROS model

Your model usually needs three basic elements to serve for virtual commissioning with PLCSIM Advanced:

- The mechatronic system you want to program
- A source and sink to generate and remove carriers with parts
- A SimController so CIROS is able to simulate your model



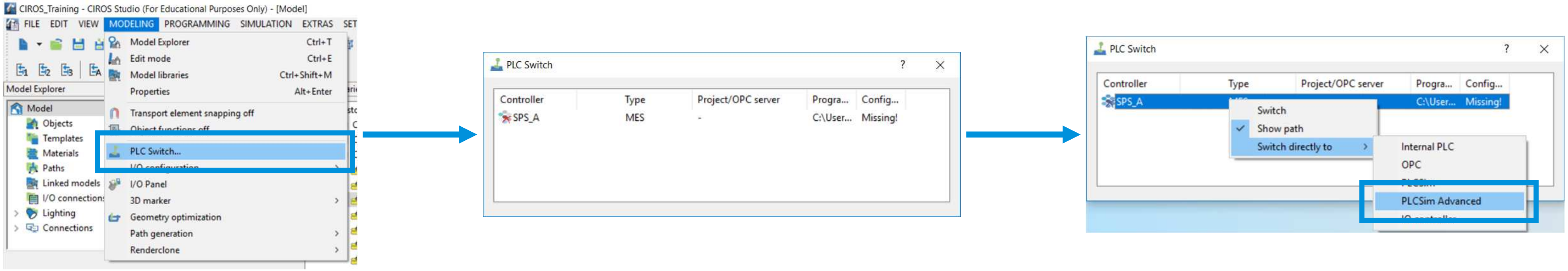
Model Explorer

- Model
  - Objects
    - CP-AM-DRILL
    - CP-L-CONVEYOR
    - CP-L-SINK
    - CP-L-SOURCE
    - SimController
    - Werkstuecke
  - Templates
  - Materials
  - Paths
  - Linked models

Exercise

Preparing a CIROS model from scratch

1. Create a new empty model
2. Add your mechatronic system from the model library
   For this exercise, add a CP-L-CONV
3. Add a source and sink from the model library that matches your system
   For this exercise, add a CP Lab source and sink
4. Connect the source and sink to your CP Lab module
5. Switch the PLC in your CP Lab module (it’s named ‘SPS_A’) to PLCSIM Advanced mode



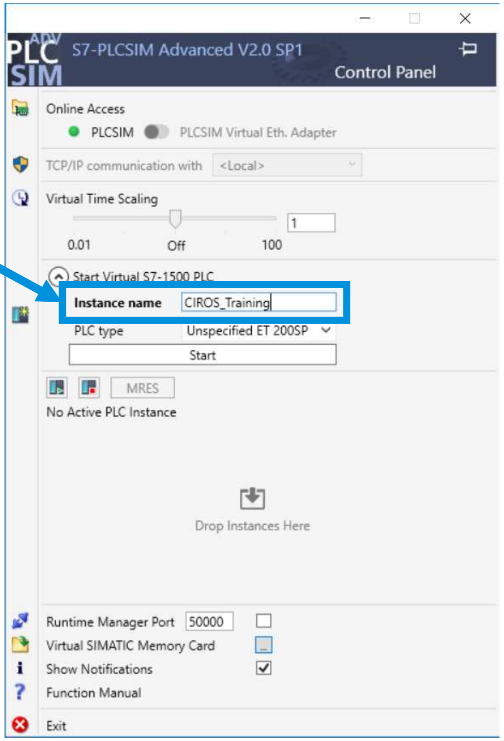
Controller	Type	Project/OPC server	Progra...	Config...
SPS_A	MES	-	C:\User...	Missing!

Starting a PLCSIM instance

Feel free to choose any PLCSIM Advanced settings that work for you. The only setting relevant to CIROS is the instance name. Choose one you like and remember it. You'll need it later.

Some recommendations:

- For Online Access, choose PLCSIM unless your simulated PLC needs to communicate over the network. This mode makes the connection to TIA Portal effortless
- Leave Time Scaling off. CIROS has its own time scale and will make sure the PLC keeps track if you speed up the simulation beyond real-time
- Choose ET 200SP for PLC type as that matches the physical PLC in most CP hardware systems



Online Access
● PLCSIM PLCSIM Virtual Eth. Adapter

TCP/IP communication with <Local>

Virtual Time Scaling 1

Start Virtual S7-1500 PLC

Instance name CIROS_Training

PLC type Unspecified ET 200SP

No Active PLC Instance

Runtime Manager Port 50000 □

Virtual SIMATIC Memory Card □

Show Notifications ☑

Creating the hardware configuration and IO tags in TIA Portal

Hardware configuration

You can configure your PLC in any way you like.

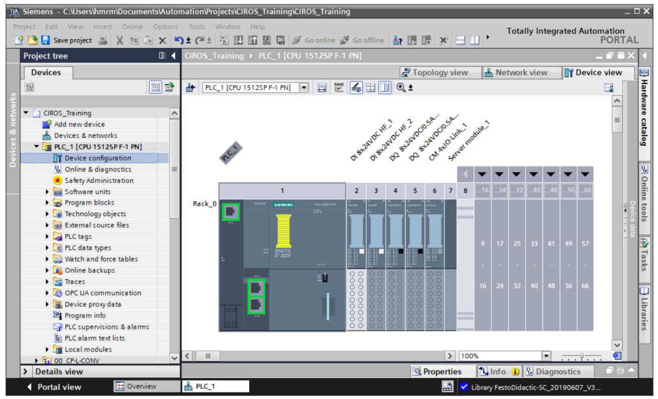
Ideally, it should have at least the number of digital and analog I/Os that the physical PLC inside your chosen CP system has.

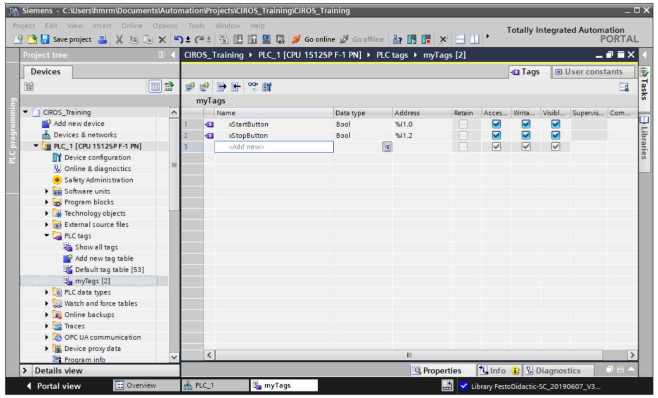
IO tags

You can freely name your inputs and outputs, as long as the address and the type of an input/output is correct.

If you like you can skip the inputs and outputs that are not connected to anything in your CP system.

Refer to the Festo Didactic Infoportal (https://ip.festo-didactic.com) for an I/O listing of your CP system. Alternatively, find the relevant information in your manual or circuit diagram.





Siemens - C:\Users\hmrm\Documents\Automation\Projects\CIROS_Training\CIROS_Training
Totally Integrated Automation PORTAL
CIROS_Training ▸ PLC_1 [CPU 1512SP F-1 PN] ▸ PLC tags ▸ myTags [2]
Tags
User constants
Portal view
Overview
PLC_1
myTags

myTags

	Name	Data type	Address	Retain	Acces...	Writa...	Visibl...	Supervis...	Com...
1	xStartButton	Bool	%I1.0	□	☑	☑	☑		
2	xStopButton	Bool	%I1.2	□	☑	☑	☑		
3	<Add new>			□	☑	☑	☑		

Exercise

Creating the hardware configuration

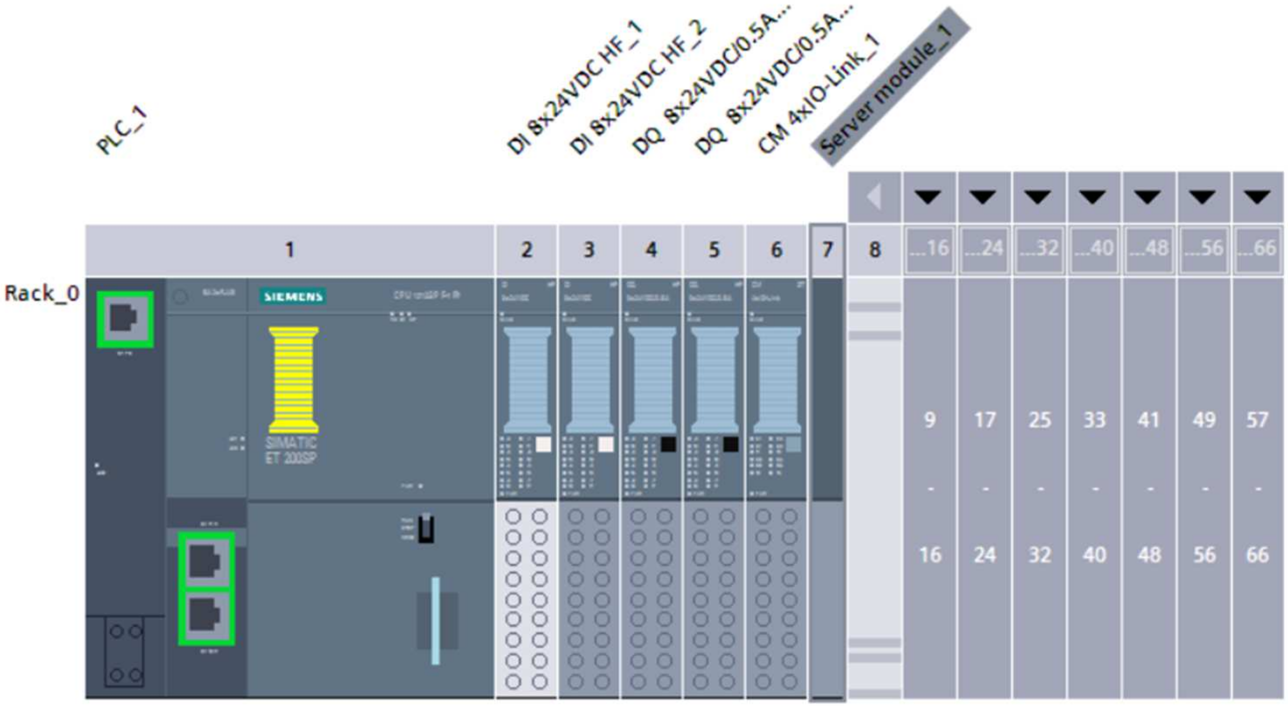
Detailed instructions how to do the hardware configuration in TIA Portal are beyond the scope of this document. Refer to the courseware ‘Device configuration’ if you’re having trouble.

For this exercise, we’re configuring the PLC as we would a real CP-L-CONV module with a Siemens IO-Link 1.1 conformant RFID device.

1. Create a new TIA project
2. Add a S7-1512SP F-1 PN PLC to your project (6ES7 512-1SK01-0AB0)
3. Add two DI 8x24VDC HF (6ES7 131-6BF00-0CA0)
4. Add two DQ 8x24VDC/0.5A HF (6ES7 132-6BF00-0CA0)
5. Add a CM 4xIO-Link (6ES7 137-6BD00-0BA0)
6. Add a server module (6ES7 193-6PA00-0AA0)
7. Set the IO-Link master’s input/output type to 64/64 and shift the starting I/O addresses to address 10

Exercise

Creating the hardware configuration



Exercise

Setting up the I/O tags

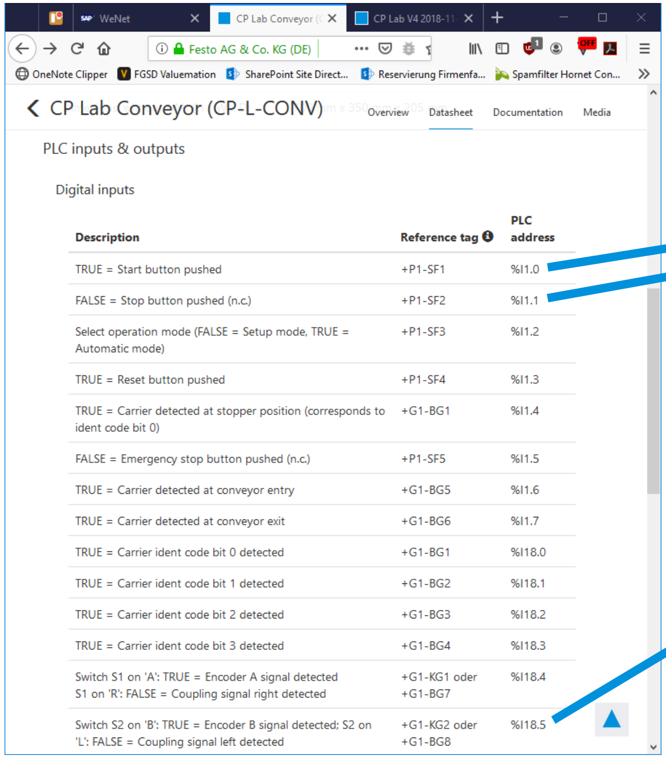
1. Find the list of I/O addresses for the CP-L-CONV at https://ip.festo-didactic.com/InfoPortal/CPFactoryLab/hardware/base/datasheet.php?model=CP-L-CONV&lang=en
2. Create a new tag table
3. Enter all tags listed on the Infoportal into your tag table

Note

Depending on the revision of a physical CP-L-CONV, any address listed on the Infoportal in byte 18 might require to be shifted to byte 42. This is only relevant if you plan to download this TIA project to a real CP-L-CONV. In CIROS the absolute I/O addresses don’t matter.

Exercise

Setting up the I/O tags

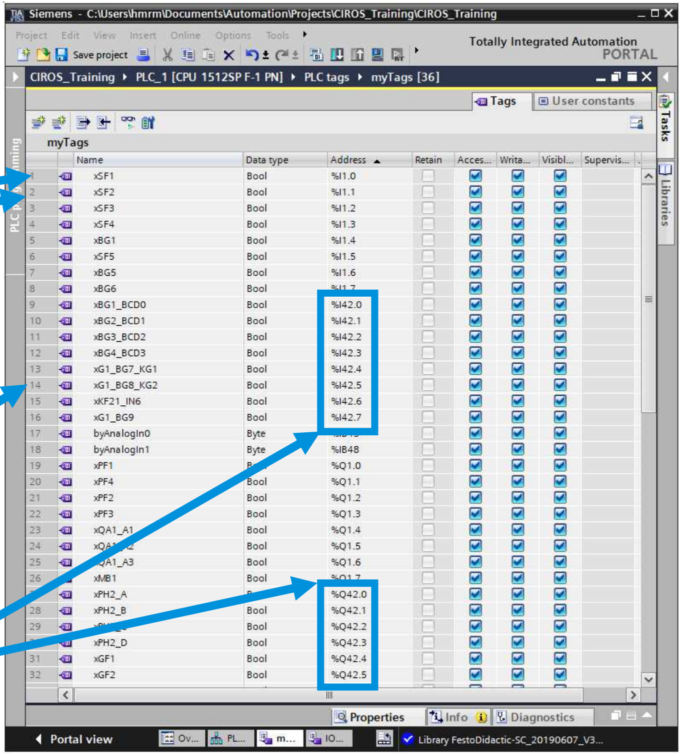


CP Lab Conveyor (CP-L-CONV)

PLC inputs & outputs

Digital inputs

Description	Reference tag	PLC address
TRUE = Start button pushed	+P1-SF1	%I1.0
FALSE = Stop button pushed (n.c.)	+P1-SF2	%I1.1
Select operation mode (FALSE = Setup mode, TRUE = Automatic mode)	+P1-SF3	%I1.2
TRUE = Reset button pushed	+P1-SF4	%I1.3
TRUE = Carrier detected at stopper position (corresponds to ident code bit 0)	+G1-BG1	%I1.4
FALSE = Emergency stop button pushed (n.c)	+P1-SF5	%I1.5
TRUE = Carrier detected at conveyor entry	+G1-BG5	%I1.6
TRUE = Carrier detected at conveyor exit	+G1-BG6	%I1.7
TRUE = Carrier ident code bit 0 detected	+G1-BG1	%I18.0
TRUE = Carrier ident code bit 1 detected	+G1-BG2	%I18.1
TRUE = Carrier ident code bit 2 detected	+G1-BG3	%I18.2
TRUE = Carrier ident code bit 3 detected	+G1-BG4	%I18.3
Switch S1 on 'A': TRUE = Encoder A signal detected S1 on 'R': FALSE = Coupling signal right detected	+G1-KG1 oder +G1-BG7	%I18.4
Switch S2 on 'B': TRUE = Encoder B signal detected; S2 on 'L': FALSE = Coupling signal left detected	+G1-KG2 oder +G1-BG8	%I18.5


Siemens - C:\Users\hmrm\Documents\Automation\Projects\CIROS_Training\CIROS_Training
Project
Edit
View
Insert
Online
Options
Tools
Save project
Totally Integrated Automation
PORTAL
CIROS_Training ▸ PLC_1 [CPU 1512SP F-1 PN] ▸ PLC tags ▸ myTags [36]
Tags
User constants
Tasks
Libraries
PLC programming
Properties
Info
Diagnostics
Portal view
Ov...
PL...
m...
IO...
Library FestoDidactic-SC_20190607_V3...

myTags

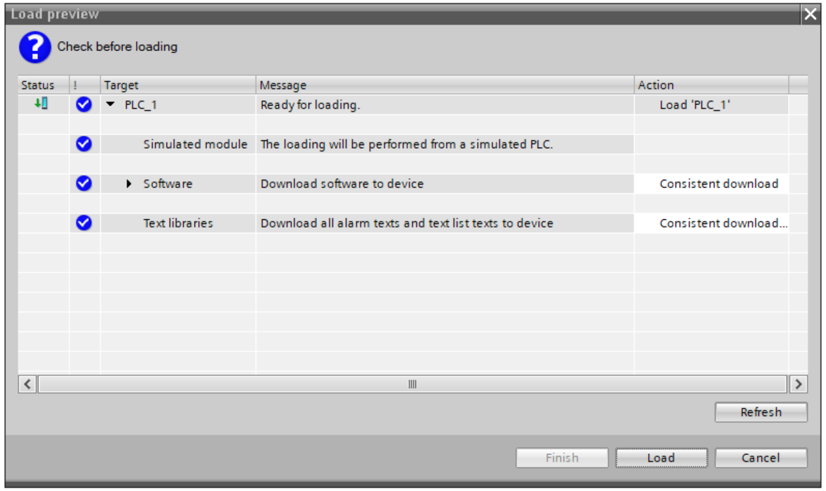
	Name	Data type	Address ▲	Retain	Acces...	Writa...	Visibl...	Supervis...
1	xSF1	Bool	%I1.0	□	☑	☑	☑	
2	xSF2	Bool	%I1.1	□	☑	☑	☑	
3	xSF3	Bool	%I1.2	□	☑	☑	☑	
4	xSF4	Bool	%I1.3	□	☑	☑	☑	
5	xBG1	Bool	%I1.4	□	☑	☑	☑	
6	xSF5	Bool	%I1.5	□	☑	☑	☑	
7	xBG5	Bool	%I1.6	□	☑	☑	☑	
8	xBG6	Bool	%I1.7	□	☑	☑	☑	
9	xBG1_BCD0	Bool	%I42.0	□	☑	☑	☑	
10	xBG2_BCD1	Bool	%I42.1	□	☑	☑	☑	
11	xBG3_BCD2	Bool	%I42.2	□	☑	☑	☑	
12	xBG4_BCD3	Bool	%I42.3	□	☑	☑	☑	
13	xG1_BG7_KG1	Bool	%I42.4	□	☑	☑	☑	
14	xG1_BG8_KG2	Bool	%I42.5	□	☑	☑	☑	
15	xKF21_IN6	Bool	%I42.6	□	☑	☑	☑	
16	xG1_BG9	Bool	%I42.7	□	☑	☑	☑	
17	byAnalogIn0	Byte	[illegible]	□	☑	☑	☑	
18	byAnalogIn1	Byte	%IB48	□	☑	☑	☑	
19	xPF1	Bool	%Q1.0	□	☑	☑	☑	
20	xPF4	Bool	%Q1.1	□	☑	☑	☑	
21	xPF2	Bool	%Q1.2	□	☑	☑	☑	
22	xPF3	Bool	%Q1.3	□	☑	☑	☑	
23	xQA1_A1	Bool	%Q1.4	□	☑	☑	☑	
24	xQA1_A2	Bool	%Q1.5	□	☑	☑	☑	
25	xQA1_A3	Bool	%Q1.6	□	☑	☑	☑	
26	xMB1	Bool	%Q1.7	□	☑	☑	☑	
[illegible]	xPH2_A	Bool	%Q42.0	□	☑	☑	☑	
28	xPH2_B	Bool	%Q42.1	□	☑	☑	☑	
29	[illegible]	Bool	%Q42.2	□	☑	☑	☑	
[illegible]	xPH2_D	Bool	%Q42.3	□	☑	☑	☑	
31	xGF1	Bool	%Q42.4	□	☑	☑	☑	
32	xGF2	Bool	%Q42.5	□	☑	☑	☑	

Note the addresses are shifted from 18.x to 42.x.

Exercise

Downloading project to PLC instance

1. Compile the project
2. Download it to your simulated PLC
   If Online Access in PLCSIM Advanced is set to PLCSIM mode, this is almost fully automatic

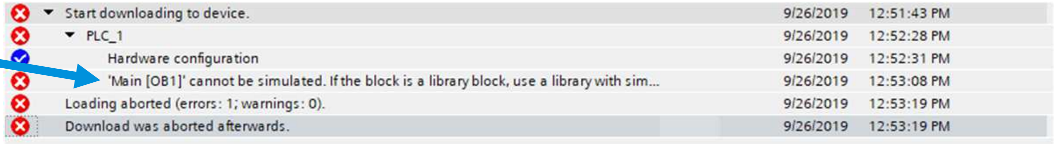


Load preview

Check before loading

Status	!	Target	Message	Action
↓	✓	▾ PLC_1	Ready for loading.	Load 'PLC_1'
	✓	Simulated module	The loading will be performed from a simulated PLC.	
	✓	▸ Software	Download software to device	Consistent download
	✓	Text libraries	Download all alarm texts and text list texts to device	Consistent download...

3. Got an error? Good, you're supposed to
   For a project to run in PLCSIM Advanced you have to explicitly enable simulation.

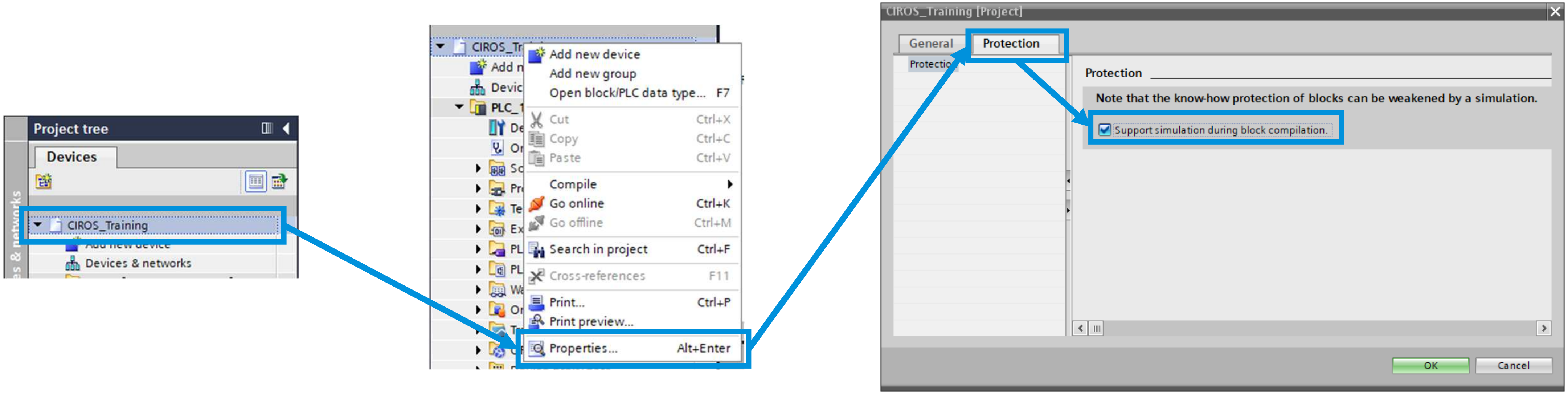


```
✗ ▾ Start downloading to device.                                                       9/26/2019  12:51:43 PM
✗   ▾ PLC_1                                                                            9/26/2019  12:52:28 PM
✓       Hardware configuration                                                         9/26/2019  12:52:31 PM
✗       'Main [OB1]' cannot be simulated. If the block is a library block, use a library with sim...   9/26/2019  12:53:08 PM
✗ Loading aborted (errors: 1; warnings: 0).                                            9/26/2019  12:53:19 PM
✗ Download was aborted afterwards.                                                     9/26/2019  12:53:19 PM
```

Exercise

Enabling simulation support

1. Open the project properties
2. On the Protection tab, check Support simulation during block compilation
3. Compile and download it again. It should work without a problem now



Protection

Note that the know-how protection of blocks can be weakened by a simulation.

☑ Support simulation during block compilation.

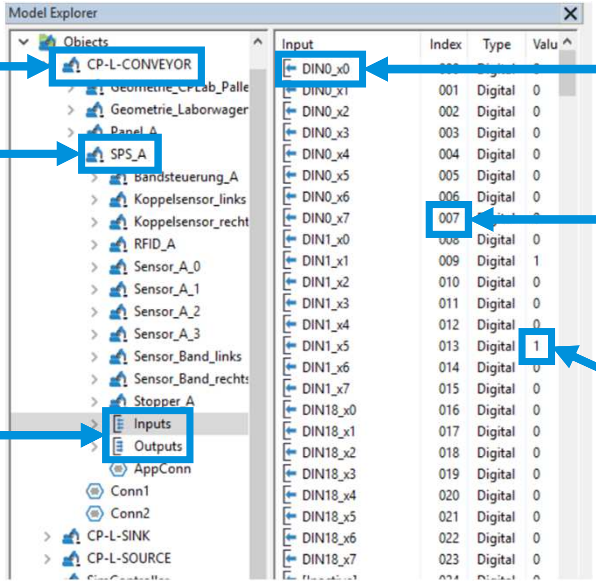
Configuring the interface

The virtual PLC in CIROS has a large number of inputs and outputs, most of which are unused or used for internal processes inside CIROS. A few virtual I/Os correspond to the I/Os of the PLC inside a real CP system, though. These are named DIN0_x0 to DIN18_x7 and DOUT0_x0 to DOUT18_x7, after the absolute addresses of the real PLC's I/Os.

CP system you want to program

Virtual PLC inside module

Virtual inputs and outputs



Input	Index	Type	Valu
DIN0_x0	000	Digital	0
DIN0_x1	001	Digital	0
DIN0_x2	002	Digital	0
DIN0_x3	003	Digital	0
DIN0_x4	004	Digital	0
DIN0_x5	005	Digital	0
DIN0_x6	006	Digital	0
DIN0_x7	007	Digital	0
DIN1_x0	008	Digital	0
DIN1_x1	009	Digital	1
DIN1_x2	010	Digital	0
DIN1_x3	011	Digital	0
DIN1_x4	012	Digital	0
DIN1_x5	013	Digital	1
DIN1_x6	014	Digital	0
DIN1_x7	015	Digital	0
DIN18_x0	016	Digital	0
DIN18_x1	017	Digital	0
DIN18_x2	018	Digital	0
DIN18_x3	019	Digital	0
DIN18_x4	020	Digital	0
DIN18_x5	021	Digital	0
DIN18_x6	022	Digital	0
DIN18_x7	023	Digital	0
[Inactive]	024	Digital	0

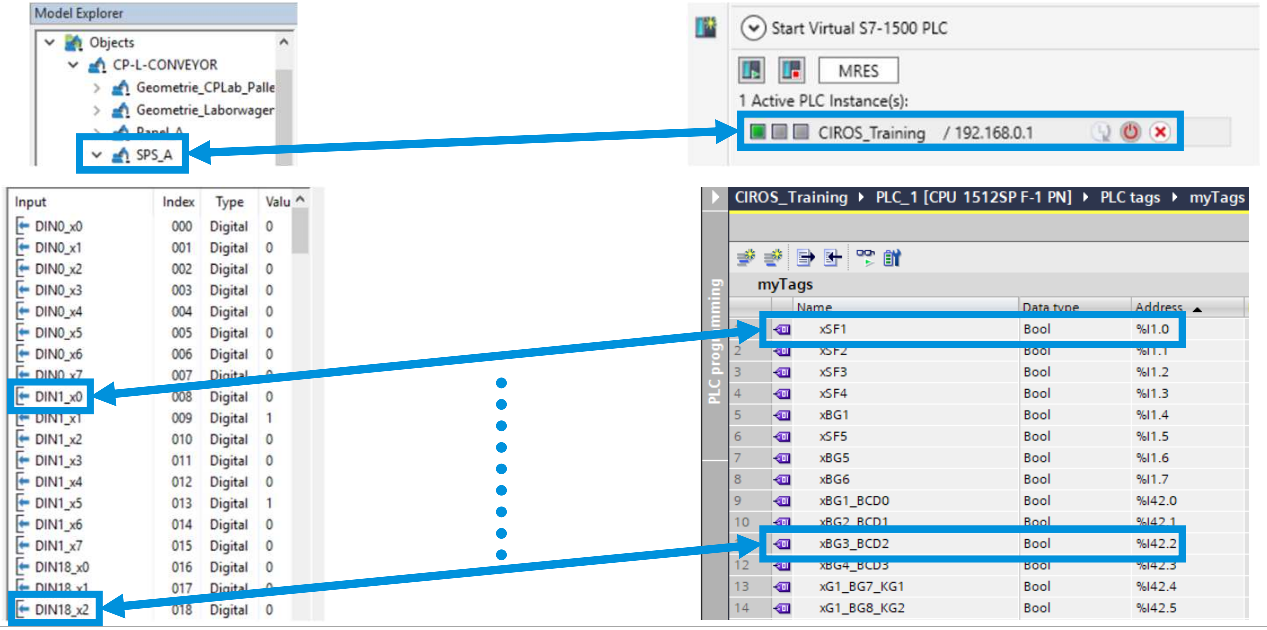
Name of a virtual I/O, corresponding to %I0.0 in the real CP module.

I/O address inside CIROS. Completely irrelevant to your TIA project.

Current value of a virtual I/O. For inputs these come from simulated sensors. For outputs, they control a simulated actuator.

Configuring the interface

You can connect each virtual PLC in your CIROS model to exactly one PLCSIM Advanced instance.
You have to configure our CIROS PLC to connect to the right instance and to hook up the virtual CIROS I/Os to the correct TIA I/Os.


Model Explorer
Objects
CP-L-CONVEYOR
Geometrie_CPLab_Palle
Geometrie_Laborwager
Panel_A
SPS_A
Start Virtual S7-1500 PLC
MRES
1 Active PLC Instance(s):
CIROS_Training / 192.168.0.1
CIROS_Training ▸ PLC_1 [CPU 1512SP F-1 PN] ▸ PLC tags ▸ myTags
PLC programming
myTags

Input	Index	Type	Valu
DIN0_x0	000	Digital	0
DIN0_x1	001	Digital	0
DIN0_x2	002	Digital	0
DIN0_x3	003	Digital	0
DIN0_x4	004	Digital	0
DIN0_x5	005	Digital	0
DIN0_x6	006	Digital	0
DIN0_x7	007	Digital	0
DIN1_x0	008	Digital	0
DIN1_x1	009	Digital	1
DIN1_x2	010	Digital	0
DIN1_x3	011	Digital	0
DIN1_x4	012	Digital	0
DIN1_x5	013	Digital	1
DIN1_x6	014	Digital	0
DIN1_x7	015	Digital	0
DIN18_x0	016	Digital	0
DIN18_x1	017	Digital	0
DIN18_x2	018	Digital	0

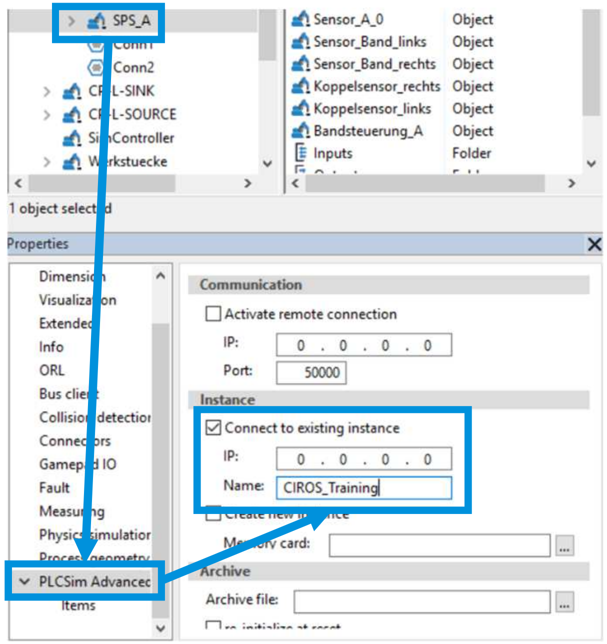
	Name	Data type	Address ▲
1	xSF1	Bool	%I1.0
2	xSF2	Bool	%I1.1
3	xSF3	Bool	%I1.2
4	xSF4	Bool	%I1.3
5	xBG1	Bool	%I1.4
6	xSF5	Bool	%I1.5
7	xBG5	Bool	%I1.6
8	xBG6	Bool	%I1.7
9	xBG1_BCD0	Bool	%I42.0
10	xBG2_BCD1	Bool	%I42.1
11	xBG3_BCD2	Bool	%I42.2
12	xBG4_BCD3	Bool	%I42.3
13	xG1_BG7_KG1	Bool	%I42.4
14	xG1_BG8_KG2	Bool	%I42.5

Exercise

Configuring the interface

Configure your CP-L-CONV model to connect to your instance.
All of this is done in CIROS. TIA doesn’t know anything about the CIROS interface.

1. Open the properties of your virtual PLC (SPS_A)
2. On the PLCSIM Advanced page, select Find instance by name
3. Enter the name of your PLCSIM Advanced instance



Communication

☐ Activate remote connection

IP: 0 . 0 . 0 . 0

Port: 50000

Instance

☑ Connect to existing instance

IP: 0 . 0 . 0 . 0

Name: CIROS_Training

☐ Create new instance

Memory card:

Archive

Archive file:

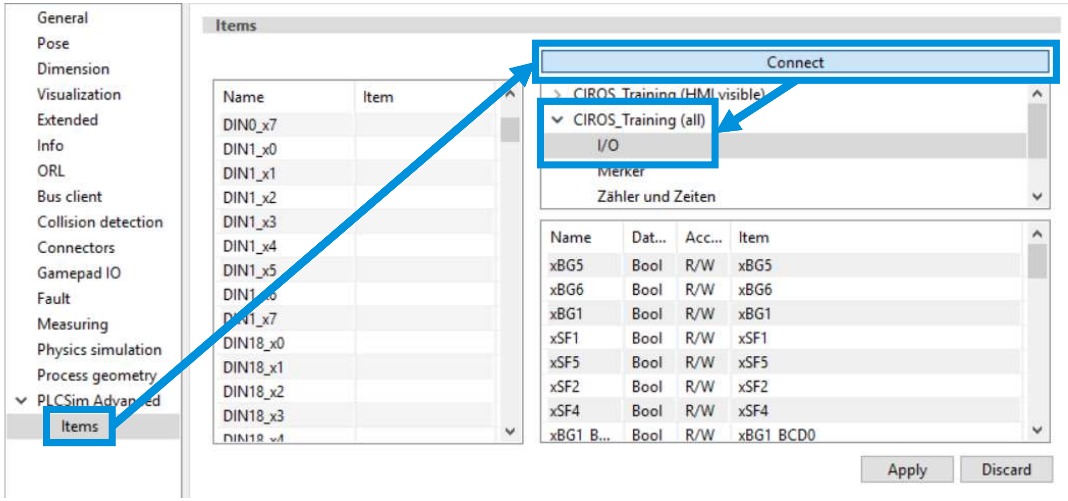
☐ re-initialize at reset

Exercise

Configuring the interface

1. Go to the subpage Items
2. Click on Connect
3. Open either the entry that says *all* or *HMI visible*, depending on your preference. The latter only offers you I/O tags that have been declared as *Visible in HMI engineering* inside TIA
4. Under this entry, open I/O

Note that you're also offered *Memory*, *Counters and Timers* and *Data blocks*. You can hook up CIROS I/Os to any of these but in this exercise, we'll only use I/Os.



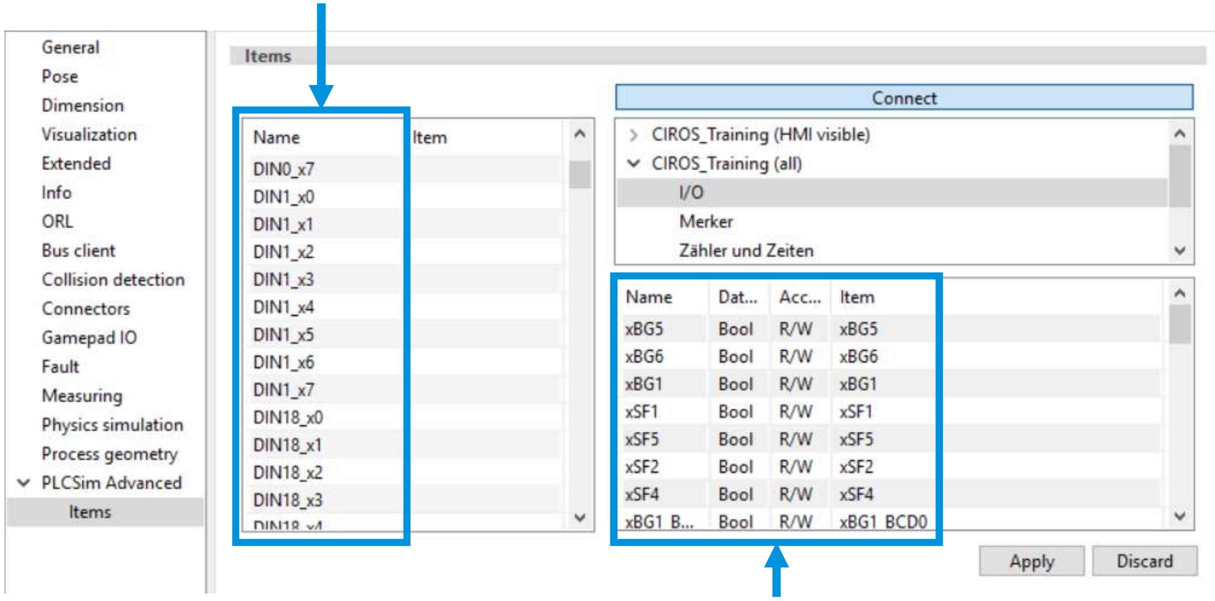
Name	Item
DIN0_x7	
DIN1_x0	
DIN1_x1	
DIN1_x2	
DIN1_x3	
DIN1_x4	
DIN1_x5	
DIN1_x6	
DIN1_x7	
DIN18_x0	
DIN18_x1	
DIN18_x2	
DIN18_x3	
DIN18_x4	

Name	Dat...	Acc...	Item
xBG5	Bool	R/W	xBG5
xBG6	Bool	R/W	xBG6
xBG1	Bool	R/W	xBG1
xSF1	Bool	R/W	xSF1
xSF5	Bool	R/W	xSF5
xSF2	Bool	R/W	xSF2
xSF4	Bool	R/W	xSF4
xBG1_B...	Bool	R/W	xBG1_BCD0

Exercise

Configuring the interface

Virtual I/Os of the CIROS PLC



- General
- Pose
- Dimension
- Visualization
- Extended
- Info
- ORL
- Bus client
- Collision detection
- Connectors
- Gamepad IO
- Fault
- Measuring
- Physics simulation
- Process geometry
- PLCSim Advanced
  - Items

Items

Name	Item
DIN0_x7	
DIN1_x0	
DIN1_x1	
DIN1_x2	
DIN1_x3	
DIN1_x4	
DIN1_x5	
DIN1_x6	
DIN1_x7	
DIN18_x0	
DIN18_x1	
DIN18_x2	
DIN18_x3	
DIN18_x4	

- CIROS_Training (HMI visible)
- CIROS_Training (all)
  - I/O
  - Merker
  - Zähler und Zeiten

Name	Dat...	Acc...	Item
xBG5	Bool	R/W	xBG5
xBG6	Bool	R/W	xBG6
xBG1	Bool	R/W	xBG1
xSF1	Bool	R/W	xSF1
xSF5	Bool	R/W	xSF5
xSF2	Bool	R/W	xSF2
xSF4	Bool	R/W	xSF4
xBG1_B...	Bool	R/W	xBG1_BCD0

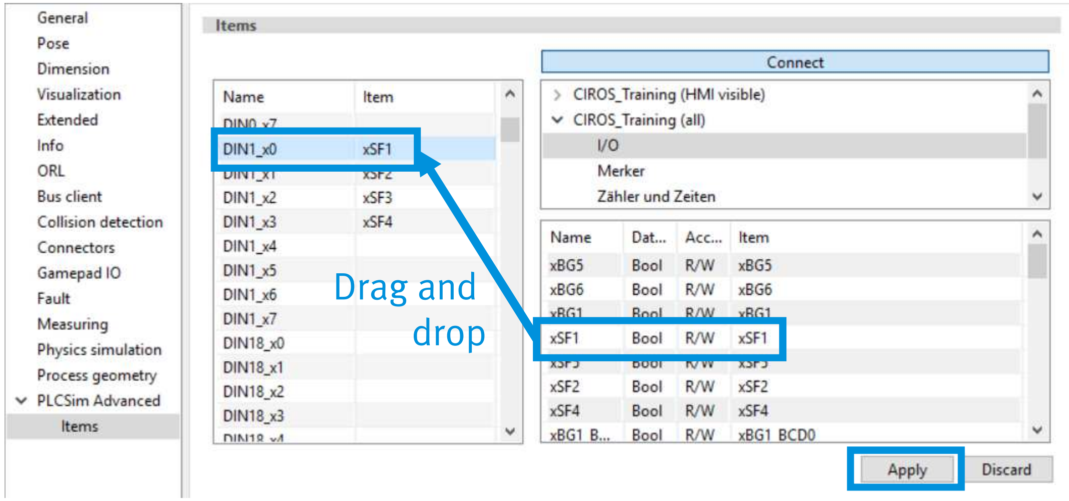
I/O tags configured in TIA

Exercise

Configuring the interface

1. From the list of I/O tags on the right, drag and drop each I/O to the matching entry on the left
2. When done, click Apply
3. Optionally, click Connect again to disconnect

Hint: You can select multiple I/Os from the right as long as they are in the right order and drag them to the left at once.



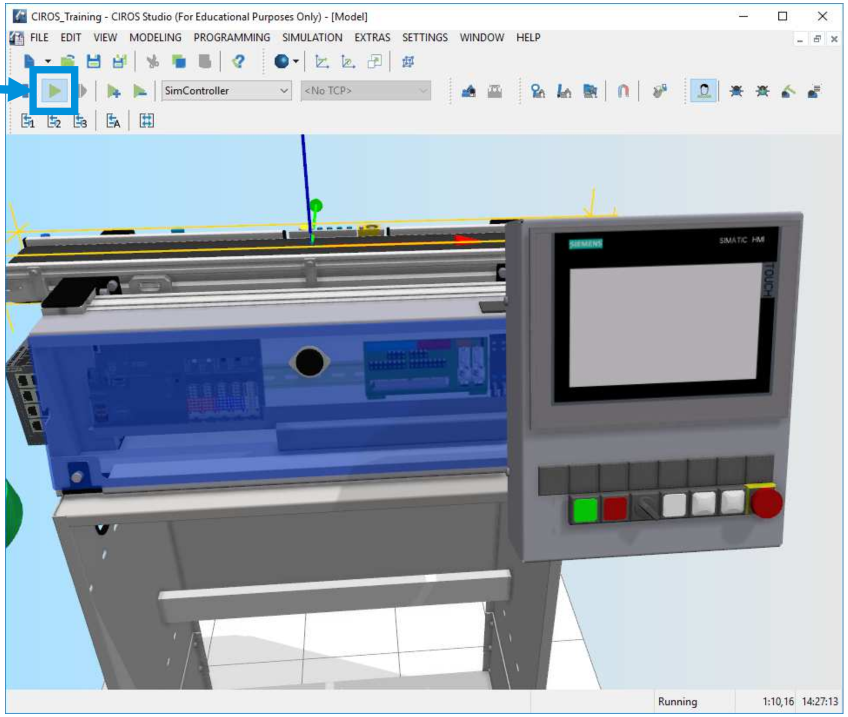
Name	Item
DIN0_x7	
DIN1_x0	xSF1
DIN1_x1	xSF2
DIN1_x2	xSF3
DIN1_x3	xSF4
DIN1_x4	
DIN1_x5	
DIN1_x6	
DIN1_x7	
DIN18_x0	
DIN18_x1	
DIN18_x2	
DIN18_x3	
DIN18_x4	

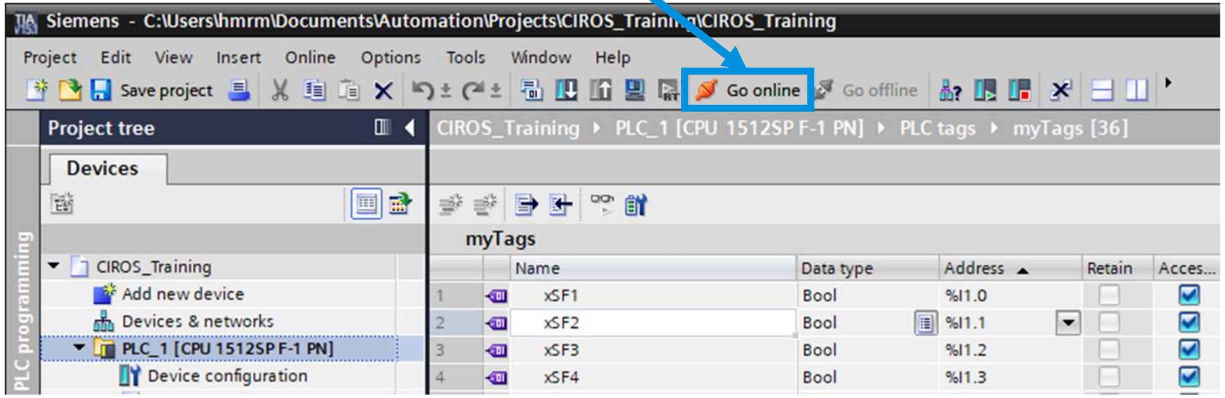
Name	Dat...	Acc...	Item
xBG5	Bool	R/W	xBG5
xBG6	Bool	R/W	xBG6
xBG1	Bool	R/W	xBG1
xSF1	Bool	R/W	xSF1
xSF3	Bool	R/W	xSF3
xSF2	Bool	R/W	xSF2
xSF4	Bool	R/W	xSF4
xBG1_B...	Bool	R/W	xBG1_BCD0

Exercise

Run the simulation

1. Click the play button to start the simulation
2. Use TIA to go online / connect to your PLC instance





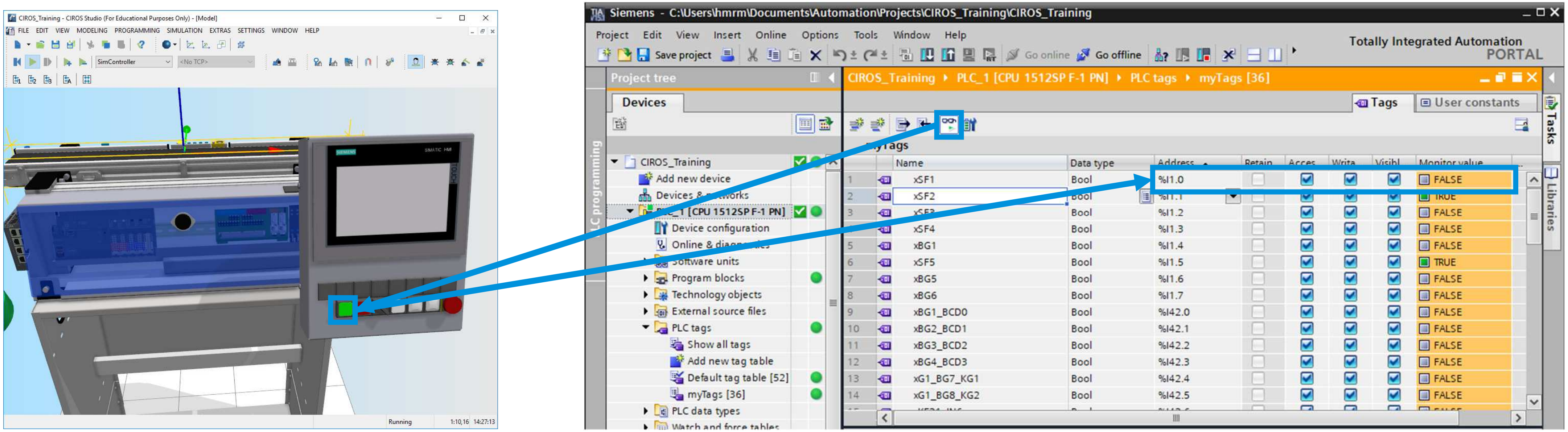
myTags

	Name	Data type	Address	Retain	Acces...
1	xSF1	Bool	%I1.0	□	☑
2	xSF2	Bool	%I1.1	□	☑
3	xSF3	Bool	%I1.2	□	☑
4	xSF4	Bool	%I1.3	□	☑

Exercise

Run the simulation

1. In TIA, open your tag list and monitor it
2. Test the connection by clicking on the virtual green start button inside CIROS. You should see the value of %I1.0 change in TIA


CIROS_Training - CIROS Studio (For Educational Purposes Only) - [Model]
FILE EDIT VIEW MODELING PROGRAMMING SIMULATION EXTRAS SETTINGS WINDOW HELP
SimController
<No TCP>
Running
1:10,16 14:27:13
Siemens - C:\Users\hmrm\Documents\Automation\Projects\CIROS_Training\CIROS_Training
Project Edit View Insert Online Options Tools Window Help
Save project
Go online
Go offline
Totally Integrated Automation PORTAL
Project tree
Devices
PLC programming
CIROS_Training
Add new device
Devices & networks
PLC_1 [CPU 1512SP F-1 PN]
Device configuration
Online & diagnostics
Software units
Program blocks
Technology objects
External source files
PLC tags
Show all tags
Add new tag table
Default tag table [52]
myTags [36]
PLC data types
Watch and force tables
CIROS_Training ▸ PLC_1 [CPU 1512SP F-1 PN] ▸ PLC tags ▸ myTags [36]
Tags
User constants
Tasks
Libraries
myTags

	Name	Data type	Address	Retain	Acces	Write	Visibl	Monitor value
1	xSF1	Bool	%I1.0	☐	☑	☑	☑	FALSE
2	xSF2	Bool	%I1.1	☐	☑	☑	☑	TRUE
3	xSF3	Bool	%I1.2	☐	☑	☑	☑	FALSE
4	xSF4	Bool	%I1.3	☐	☑	☑	☑	FALSE
5	xBG1	Bool	%I1.4	☐	☑	☑	☑	FALSE
6	xSF5	Bool	%I1.5	☐	☑	☑	☑	TRUE
7	xBG5	Bool	%I1.6	☐	☑	☑	☑	FALSE
8	xBG6	Bool	%I1.7	☐	☑	☑	☑	FALSE
9	xBG1_BCD0	Bool	%I42.0	☐	☑	☑	☑	FALSE
10	xBG2_BCD1	Bool	%I42.1	☐	☑	☑	☑	FALSE
11	xBG3_BCD2	Bool	%I42.2	☐	☑	☑	☑	FALSE
12	xBG4_BCD3	Bool	%I42.3	☐	☑	☑	☑	FALSE
13	xG1_BG7_KG1	Bool	%I42.4	☐	☑	☑	☑	FALSE
14	xG1_BG8_KG2	Bool	%I42.5	☐	☑	☑	☑	FALSE

Common issues

Can’t download project to PLC instance anymore

Once CIROS has established a link to a PLCSIM instance, that instance is bound to the simulation. Only when the CIROS simulation is running, will the instance run as well.

Should TIA appear to be stuck when downloading to the instance that is likely because your CIROS simulation is paused. As soon as you start the simulation, the download will continue.