

Learn-/Training Document

Siemens Automation Cooperates with Education (SCE) | As of Version V15.1

TIA Portal Module 020-111 SIMIT Process Simulation – Coupling with S7-PLCSIM Advanced / OPC UA

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Matching SCE Trainer Packages for this Learn-/Training Document

SIMIT Simulation Platform

- SIMIT Simulation Platform with Dongle V10.0 (includes SIMIT S & CTE, FLOWNET, CONTEC libraries) – 2500-Simulation-Tags Order no.: 6DL8913-0AK00-0AS5
- Upgrade SIMIT Simulation Platform from V8.x/V9.x to V10.0 ((includes SIMIT S & CTE, FLOWNET, CONTEC libraries) Order no.: 6DL8913-0AK00-0AS6
- Demo-Version SIMIT Simulation Platform V10.0 Download: support.industry.siemens.com/cs/ww/de/ps/17120/dl

SIMATIC STEP 7 Software for Training

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We wish to thank the TU Dresden and the Michael Dziallas Engineering Corporation and all other involved persons for their support during the preparation of this Learn-/Training Document.

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SIMIT PROCESS SIMULATION – Coupling with S7-PLCSIM Advanced via OPC UA

1 Goal

The following pages will show how a coupling with SIMATIC S7-PLCSIM Advanced via OPC UA can be set up in the SIMIT process simulation software.

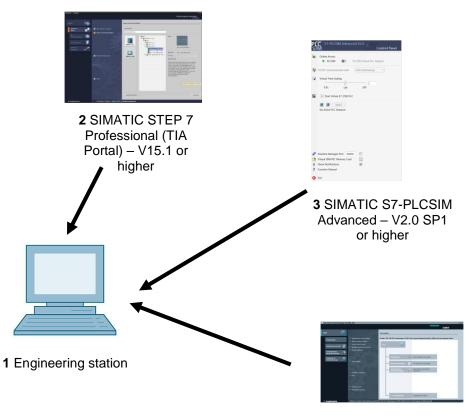
The order in which existing SIMIT projects with this coupling variant can be started together with a TIA Portal project for simulation of a program solution will also be described.

2 Requirement

This chapter builds on the chapter "SCE_EN_092-300 OPC UA with SIMATIC S7-1500 as OPC Server ...". To perform the work in this chapter, you can use the following project, for example: "sce-092-300-opc-ua-s7-1500....".

3 Required hardware and software

- 1 Engineering station: Requirements include hardware and Windows 10 operating system (for additional information, see Readme on the TIA Portal Installation DVDs)
- 2 SIMATIC STEP 7 Professional software in TIA Portal V15.1 or higher
- 3 SIMATIC S7-PLCSIM Advanced software V2.0 SP1 or higher
- 4 SIMIT software V10.0 Update 1 or higher (with dongle or in Demo mode)



4 SIMIT – V10.0 Update 1 or higher

4 Theory

4.1 SIMIT V10

SIMIT is process simulation software that can be used for the following:

- Complete plant simulation
- Simulation of signals, devices and plant responses
- Input and output simulator of test signals for an automation controller
- Testing and commissioning of automation software

SIMIT provides the following components for creating a simulation:

Chart

To build a simulation, components available in the libraries are put together in the chart editor and suitable parameters are entered.

Visualization

Visualizations provide an overview of the signals of your plant. Signals are visualized with controls (input and display objects) and graphical objects.

Coupling

The coupling is the interface to the automation system and is required for signal exchange. In addition to couplings with PLCSIM, PLCSIM Advanced, PRODAVE, etc., there is also a coupling with SIMIT as OPC UA client.

Demo mode

In demo mode you can get an impression of the use and performance capability of SIMIT without having to have a valid license.

However, SIMIT has only a limited range of functions in demo mode.

Existing models can be opened and simulated in demo mode. It is also possible to change these models and create new models. The models created or modified in this way can only be run on the computer on which they were created.

SIMIT Simulation is limited to 45 minutes in demo mode. The simulation must then be restarted.

Note:

 Further details and information can be found in the manuals, which can be downloaded from <u>support.automation.siemens.com</u>.

5 Required settings in Windows 10

Before you can set up a coupling with SIMATIC S7-PLCSIM Advanced via OPC-UA in the SIMIT process simulation software, the following settings in Windows 10 must be checked.

5.1 Read permission for the SIMIT directory

The user who is logged onto the computer must have read permission for the following drive path:

C:\ProgramData\Siemens\Automation\SIMIT\8.0\PKI\own\private

→ Navigate with Windows 10 Explorer to the specified directory C:\ProgramData\Siemens\ Automation\SIMIT\8.0\PKI\own\private (→ Explorer → C → ProgramData → Siemens→ Automation \rightarrow SIMIT \rightarrow 8.0 \rightarrow PKI \rightarrow own \rightarrow private)

ile 📝						_	
• >	*	ns > Automation > SIMIT	> 8.0 > PKI > own > private		ڻ ~	Search private	م
	SCADAProjects	Name	~	Date modified	Туре	Size	
~	Siemens	Simit.OPCUAClient	[F8B365C001D90B1C38D1F7C22384C577835585E1]	3/7/2019 3:57 PM	Personal Information Exchange	3 KB	
~	Automation						
	ASU						
>	Automation License Manager						
>	AWB						
>	ConfigFiles						
>	EDD_Component						
>	Logfiles						
	ModullDs						
>	PackageCache						
>	PLCSIM						
>	PlcSim V14						
>	PlcSim V15						
>	Portal V15_1						
>	Rahmensetup						
>	Simatic OAM						
~	SIMIT						
	✓						
	> 📙 DEMO						
	> 📙 FULL						
	Y 📙 PKI						
	> 🚺 issuers						
	Y 📴 own						
	certs						
	🔁 private						
	> 🛃 rejected						
item	s 🥅 annard N	*					8==

→ If you receive the message shown here, you can get access to this folder by clicking "Continue".
 However, this only works if you have administrator rights on the computer. If not, you must reach out to your administrator. (→ Continue)

Λ	You don't currently have permission to access this folder.
	Click Continue to permanently get access to this folder.

5.2 Set IP address of Siemens PLCSIM Virtual Ethernet Adapter

For SIMATIC S7-PLCSIM Advanced to be accessed from the TIA Portal via TCP/IP, the IP address of the Siemens PLCSIM Virtual Ethernet Adapter must be set to match the IP address of the CPU in the TIA Portal project.

The procedure for setting the IP address of the Siemens PLCSIM Virtual Ethernet Adapter with Windows 10 operating system is shown here.

 \rightarrow Select the network icon in the taskbar at the bottom and click \rightarrow "Network settings".

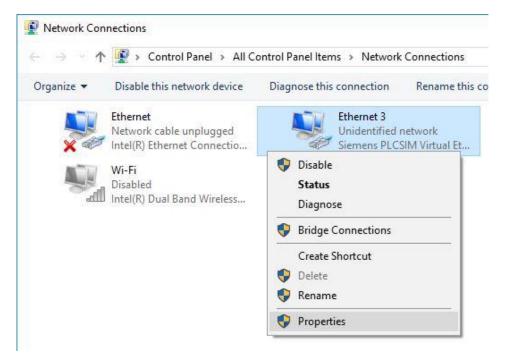


 \rightarrow In the network settings window that opens, click \rightarrow "Ethernet" and then on \rightarrow "Change adapter options".

Settings

ŝ	Home	Ethernet
	nd a setting $ ho$ work & Internet	VMware Network Adapter VMnet8 No Internet VMware Network Adapter VMnet1
₽	Status	No Internet
(i.	Wi-Fi	Unidentified network
臣	Ethernet	Ditte
ß≣	Dial-up	Related settings
%	VPN	Change adapter options
0	VFIN	Change advanced sharing options
\$	Airplane mode	Network and Sharing Center
((j))	Mobile hotspot	HomeGroup
Ċ	Data usage	Windows Firewall
⊕	Proxy	

 \rightarrow Select \rightarrow "Siemens PLCSIM Virtual Ethernet Adapter" and click \rightarrow "Properties".



 \rightarrow Select \rightarrow "Properties" for \rightarrow "Internet Protocol Version 4 (TCP/IPv4)".

Networking	Sharing			
Connect us	sing:			
Siem	ens PLCSIM	Virtual Ethernet Ad	apter	
This conne	ection uses th	ne following items:	Con	figure
	Mware Bridge	r Sharing for Microso	ft Networks	^
✓ ¹ / ₂ si ✓ ¹ / ₂ si ✓ ¹ / ₂ M	emens PLCS ternet Protoc	SIM Virtual Switch SIN Version 4 (TCP/II vork Adapter Multiple		v
i v v v v si v v v v v v v v v v v v v v v v v v v	emens PLCS ternet Protoc	IM Virtual Switch ol Version 4 (TCP/II		×
☑ 🧐 Si ☑ 💵 M	emens PLCS ternet Protoc icrosoft Netw	IM Virtual Switch ol Version 4 (TCP/II	exor Protocol	
Si Si Insta Descriptic Transmis wide are	emens PLCS ternet Protoc icrosoft Netwo all on ssion Control ca network pr	61M Virtual Switch col Version 4 (TCP/II vork Adapter Multiple	exor Protocol Prop otocol. The o	> Derties default

→ You can now use the following IP address, for example → IP address: 192.168.0.99 and enter the following → subnet mask 255.255.255.0. Then apply the settings. (→ "OK")

General	
	d automatically if your network supports need to ask your network administrator
Obtain an IP address auto	matically
• Use the following IP addre	ISS:
IP address:	192 . 168 . 0 . 99
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	
Obtain DNS server addres	s automatically
• Use the following DNS ser	
Preferred DNS server:	
Alternate DNS server:	
Validate settings upon ex	it Advanced

6 Task

A SIMIT simulation with a coupling with SIMATIC S7-PLCSIM Advanced via OPC UA is to be created. In so doing, the symbols of the inputs and outputs in SIMATIC S7-PLCSIM Advanced are to be accessed.

7 Planning

First, an existing TIA Portal project with activated OPC UA server is retrieved.

The following changes will then be made there:

- In the project properties, the "Support simulation during block compilation" option must be selected for "Protection".
- All FBs and DBs are removed from the project because the tags created there will otherwise be imported as signals.
- In the tag tables, the "Writable from HMI/OPC UA" attribute must be deselected for the PLC outputs.
 Otherwise, they will be imported into SIMIT as PLC inputs.
- The IO addresses to be simulated using SIMIT must not exist as hardware modules. Accordingly, we remove all affected IO modules.

Finally, the hardware configuration with the tag tables is also downloaded to SIMATIC S7-PLCSIM Advanced.

Now, a SIMIT project is created and a new "OPC UA Client" coupling with SIMATIC S7-PLCSIM Advanced is created there.

Next, the IO addresses are imported from SIMATIC S7-PLCSIM Advanced via OPC UA.

For simulation of a program solution, an existing TIA Portal project with activated OPC UA server is opened and downloaded to SIMATIC S7-PLCSIM Advanced.

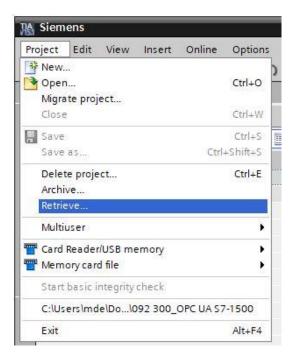
The SIMIT project is then opened and started for testing the program solution.

8 Structured step-by-step instructions

You can find instructions on how to implement planning below. If you have advanced knowledge, the numbered steps are sufficient. Otherwise, it is recommended that you follow the individual steps of the instructions.

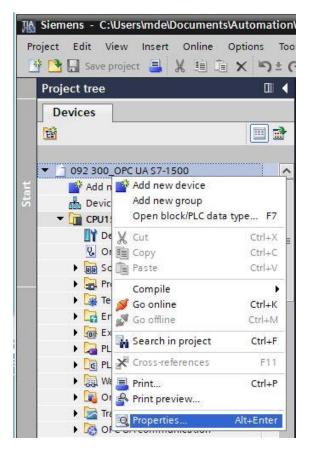
8.1 Retrieve an existing project in the TIA Portal

→ Before you can access the "sce-092-300-opc-ua-s7-1500..." project from chapter "SCE_EN_092-300-OPC UA-S7-1500", you must retrieve it. To retrieve an existing project that has been archived, you must select the relevant archive with → Project → Retrieve in the project view. Confirm your selection with "Open". (→ Project → Retrieve → Select a .zap archive ... → Open)



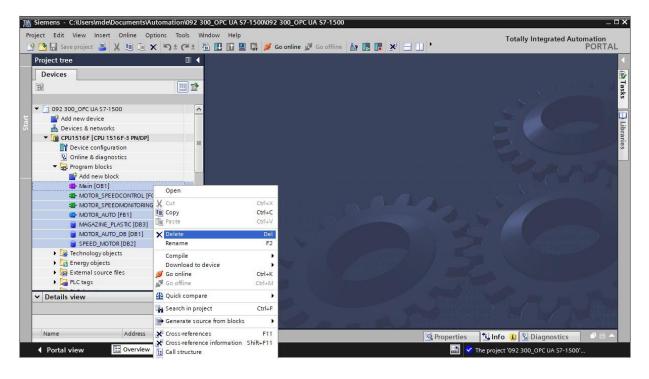
→ The next step is to select the destination folder where the retrieved project will be stored. Confirm your selection with "OK" (→ Destination folder ... → OK).

→ In the project properties, the " Support simulation during block compilation" option still needs to be selected for "Protection". (→ 092-300_OPC UA S7-1500... → Properties → Protection → Support simulation during block compilation → OK)



General	Protection	
Protection		that the know-how protection of blocks can be weakened by a simulatio
	Su Su	pport simulation during block compilation.
	•	
	•	
	< III	
		OK Cance

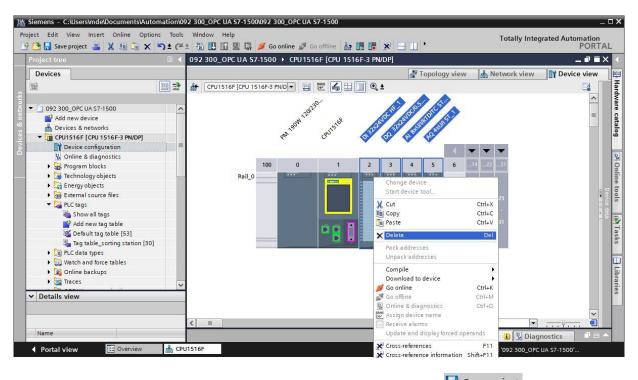
→ All FBs and DBs are to be removed from the project because the tags created there will otherwise be imported as signals. Here, we delete all program blocks of the project by selecting them and right-clicking. We now select "Delete" from the options. (→ CPU_1516F → Program blocks → Delete)



→ In the tag tables, the "Writable from HMI/OPC UA" attribute must be deselected for the PLC outputs. Otherwise, they will be imported into SIMIT as PLC inputs. Open the "Tag table_sorting station" and deselect the "Writable from HMI/OPC UA" attribute for all output signals. (→ CPU_1516F → PLC tags → Tag table_ sorting station → Writable from HMI/OPC UA)

oject tree		092	300_	OPC UA	s7-1500 → 0	CPU1516F [C	PU 1516F-3	PN/DP]	▶ PLC tags ▶ Tag table	_sorting station [3	30] 🗕 🖬 🖬 🕻
Devices										Tags	User constants
8		-	* 5	→ + °	° 🗊						2
1.		1	ag ta	ble sorti	ng station						
092 300_OPC UA \$7-1500	^	1	1	lame	Data type	Address 👻	Retain	Acces	Writable from HMI/OPC UA	Visibl Supervis	Comment
Add new device		1		-U1	Int	0 %QW64					manipulated value s
📥 Devices & networks		2	-	-P7	Bool	%Q1.3					display cylinder -M4
CPU1516F [CPU 1516F-3 PN/DP]		3	-	-P6	Bool	%Q1.2					display cylinder -M4
Device configuration	=	4	-00	-P5	Bool	%Q1.1					display "automatic
🚱 Online & diagnostics		5	-00	-P4	Bool	%Q1.0					display "emergency
Program blocks		6	-	-P3	Bool	%Q0.7					display "automatic
🕨 🙀 Technology objects		7	-	-P2	Bool	%Q0.6					display "manual mo
🕨 📴 Energy objects		8	-	-P1	Bool	%Q0.5					display "main switc…
External source files		9	-	-M3	Bool	%Q0.4					cylinder -M4 extend
🔻 🌄 PLC tags		10	-00	-M2	Bool	%Q0.3					cylinder -M4 retract
🍇 Show all tags		11		-Q3	Bool	%Q0.2					conveyor motor -M
💕 Add new tag table		12	-00	-Q2	Bool	%Q0.1					conveyor motor -M
💥 Default tag table [53]		13	-	-Q1	Bool	%Q0.0					conveyor motor -M
🍓 Tag table_sorting station [30]		14	-	-B8	Int	%IW64					sensor actual value
PLC data types		15	-	-S6	Bool	%11.7					pushbutton manual
Watch and force tables		16		-55	Bool	%11.6					pushbutton manual
Online backups		17	-00	-54	Bool	%11.5					pushbutton manual
🕨 🚰 Traces	V	18	-	-53	Bool	%11.4					pushbutton manual
Details view	1000	19	-	-B7	Bool	%11.3					sensor part at end o
betuils new		20	-	-B6	Bool	%11.2					sensor part in front
	_	21	-	-B5	Bool	%11.1					sensor metal part (no
			<		100						

→ The IO addresses to be simulated using SIMIT must not exist as hardware modules. Accordingly, we also remove all IO modules by selecting them, right-clicking on them and selecting "Delete". (→ CPU_1516F → Device configuration → Delete)



→ Then click on the "CPU_1516F" folder. In the menu, first select the " \square Save project " button and then the " \square " button for compiling. (→ CPU_1516F → \square Save project → \square)

Siemens C:\Users\mde\Documents\Auton Project Edit View Insert Online Options	s Tools Window Hel
Project tree	□
Devices	■ ■ dr CPU1516
O92 300_OPC UA \$7-1500 Add new device Devices & networks OPU1516F [CPU 1516F-3 PN/DP] Device configuration	^
Devices & networks	
Device configuration	
Online & diagnostics	
🕨 🕞 Program blocks	

8.2 Download the TIA Portal project to SIMATIC S7-PLCSIM Advanced

Before you can download the CPU_1516F from the project "092-300_OPC UA S7-1500", SIMATIC S7-PLCSIM Advanced must be opened and a CPU with the appropriate settings must be started there.

→ Open "S7-PLCSIM Advanced" from the desktop of your computer by double-clicking on the logo for the application. (→ S7-PLCSIM Advanced)



→ In the "Control Panel" of S7-PLCSIM Advanced, select the settings shown here for the virtual S7-1500 and start it. (→ Control Panel → PLCSIM Virtual Ethernet Adapter → <Local> → CPU_1516F → 192.168.0.1 → 255.255.255.0 → Unspecified CPU 1500 → Start)

	1	100	Control	Panel	
C	nline Access	PLCSIM Virtual Eth. Adap	ntar 🐞		
т	CP/IP communication		v		
		Cocal 2			
V	irtual Time Scaling][1			
	0.01 (Off 100			
(Start Virtual S7-15	500 PLC			
	Instance name	CPU_1516F			
	IP address [X1]	192.168.0.1			
	Subnet mask	255.255.255.0			
	Default gateway				
	PLC type	Unspecified CPU 1500	~		
		Start			
1.1	MRES]			
1.1		Drop Instances Here			

→ The virtual S7-1500 is now started in S7-PLCSIM Advanced. The virtual controller of the TIA Portal and SIMIT can be accessed via the configured address.

	dvanced V2.0 SP1		
VI	Contr	ol Panel	
Online Access			
PLCSIM	PLCSIM Virtual Eth. Adapter 🧕		
TCP/IP communication	with <local> ~</local>		
Virtual Time Scaling			
0.01 (Off 100		
Start Virtual S7-1	500 PLC		
Instance name	CPU_1516F		
IP address [X1]	192.168.0.1		
Subnet mask	255.255.255.0		
Default gateway			
PLC type	Unspecified CPU 1500 🗸		
PLC type			
MRES	Start		
MRES	Start	(*)	
MRES 1 Active PLC Instance(CPU_1516F	Start	8	

→ To download your entire CPU, select the → "CPU_1516F [CPU1516F-3 PN/DP]" folder in the TIA Portal and click the "Download to device" button \square →.

Project tree		1 1
1092 300_OPC UA 57-1500 Add new device Devices & networks CPU1516F [CPU 1516F-3 PN/DP]		N 1919 CRUSSE
Pevice configuration Q Online & diagnostics Program blocks Program blocks		100 0 1 2 3 4 5 6 Rail_0
ا Show all tags Mark Add new tag table Mark Add new tag table [49] Mark Tag table_sorting station [30]	~	
Details view Module		🔍 Properties 🚺 Info 🚺 🗓 Diagnostics 💷 🗖 🗖

 \rightarrow The manager for configuring connection properties then opens. (Extended download).

	Device	Device type	Slot	Interface type	Address	Subnet
	CPU1516F	CPU 1516F-3 PN/		PROFIBUS	2	
		CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
		CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
		Type of the PG/PC inte		Please select		
		PG/PC inte	rface:			
		Connection to interface/su	bnet:			-
		1st gat	eway:			-
°8 [
Flash LED						
	1			[] Display only error	·
Flash LED	:			(] Display only error	<u>S</u> tart sea messages

- \rightarrow First, the interface must be correctly selected. This happens in three steps.
- $\rightarrow~$ Type of the PG/PC interface \rightarrow PN/IE

Configured acce	ss nodes of "CPU1516F"				
Device	Device type	Slot	Interface type	Address	Subn
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
	Type of the PG/PC inte	erface:	PN/IE		
	PG/PC inte	erface:	Please select		
	Connection to interface/s	ubnet:			

 $\rightarrow~$ PG/PC interface \rightarrow here: Siemens PLCSIM Virtual Ethernet Adapter

Configured acce	ess nodes of "CPU1516F"				
Device	Device type	Slot	Interface type	Address	Subnet
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
	Type of the PG/PC inte	erface:	PN/IE		-
	Type of the PG/PC inte PG/PC inte			M Virtual Ethernet Ad	
		erface:		M Virtual Ethernet Ad	
	PG/PC inte Connection to interface/si	erface:	Please select Please select	M Virtual Ethernet Ad et Connection (4) I21 M Virtual Ethernet Ad	apter 🗸 🔻

 \rightarrow Connection to interface/subnet \rightarrow "PN/IE_1"

Configured acces	s nodes of "CPU1516F"					
Device	Device type	Slot	Interface type	Address	Subnet	
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2		
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1	
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1		
	Type of the PG/PC inte	rface:	PN/IE			
	Type of the PG/PC inte PG/PC inte		-	IM Virtual Ethernet Ac		
		rface:	-	M Virtual Ethernet Ac		
	PG/PC inte	rface: ibnet:	Siemens PLCS	(1'	dapter 💌	

→ The → "Show all compatible devices" check box must then be selected. The search for devices in the network is started by clicking the → $\frac{\text{Start search}}{\text{button.}}$ button.

	Device	Device type	Slot	Interface type	Address	Subnet
	CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
		CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
		CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
		Type of the PG/PC inte	erface:	PN/IE		
		PG/PC inte		Siemens PLCS	IM Virtual Ethernet /	Adapter 🔽 🖲
		Connection to interface/su		PN/IE_1		v C
		1st gat	teway:	177		
	Select target dev	vice:		[Show all compatib	le devices
	Device	Device type	Interf	ace type Add	dress	Target device
	-	-	PN/IE	Acc	ess address	
1000						
Flash LED						
Flash LED						
Flash LED						
Flash LED						<u>S</u> tart sear
Flash LED				ſ	Display only erro	
	:			(Display only erro	<u>S</u> tart sear r messages
	5			(Display only erro	
	:			(Display only erro	

→ If the controller is shown in the list, it must be selected before the download can be started. (\rightarrow CPU1516F-3 PN/DP \rightarrow Load)

	Device	Device type	Slot	Interface type	Address	Subnet	
	CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2		
		CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1	
_		CPU 1516F-3 PN/	1 X2 PN/IE		192.168.1.1		
	Tv	pe of the PG <mark>/</mark> PC inter	face:	PN/IE		-	
		PG/PC inter		10	iM Virtual Ethernet A		
	Come	ction to interface/su		-	sivi virtual Etherner /		
	Conne			PN/IE_1			
		1st gate	eway:			*	
					Chow all compatib	la devices	
	Select target device:	Device type	Interf	ratura	Show all compatib		
	Device	Device type			dress	Target devic	
	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE	19	dress 2.168.0.1		
	Device	CPU 1516F-3 PN/	PN/IE	19 19	dress	Target devic	
	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic	
	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic	
	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic	
,	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic	
	Device CPU_1516F	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic	
	Device CPU_1516F cpu_1516f.profinet-sc 	CPU 1516F-3 PN/	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1 cess address	Target devic CPU_1516F 	
mation:	Device CPU_1516F cpu_1516f.profinet-sc 	CPU 1516F-3 PN/ S7-1500 (PLCSIM) 	PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1	Target devic CPU_1516F 	
o oformation: essible devi	Device CPU_1516F cpu_1516f.profinet-sc ice cpu_1516f.profinet-sc	CPU 1516F-3 PN/ S7-1500 (PLCSIM) 	PN/IE PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1 cess address	Target devic CPU_1516F 	
rmation: sible devi ted. 2 con	Device CPU_1516F cpu_1516f.profinet-sc 	CPU 1516F-3 PN/ S7-1500 (PLCSIM) 	PN/IE PN/IE PN/IE	19 19	dress 2.168.0.1 2.168.1.1 cess address	Target devic CPU_1516F 	

 \rightarrow You first obtain a preview. Confirm the suggested actions and continue with \rightarrow "Load".

Image:	Load 'CPU1516F'
 Different modules Differences between configured and target modules (on 	
	lline)
📀 🕨 Reset Reset module	Delete all
Stop modules The modules are stopped for downloading to device.	Stop all
 Device configurati Delete and replace system data in target 	Download to device
Software Download software to device	Consistent download
Text libraries Download all alarm texts and text list texts to device	Consistent download
u u	

Note:

- The Symbol should be visible in every line of the "Load preview". You can find additional information in the "Message" column
- → The → "Start module" option is now selected before the download operation can be completed with \rightarrow "Finish".

tatus	1	Target	Message	Action	
4	0	▼ CPU1516F	Downloading to device completed without error.	Load 'CPU1516F'	
	0	 Start modules 	Start modules after downloading to device.	Start module	-
	0		The module "CPU1516F" can be started.		

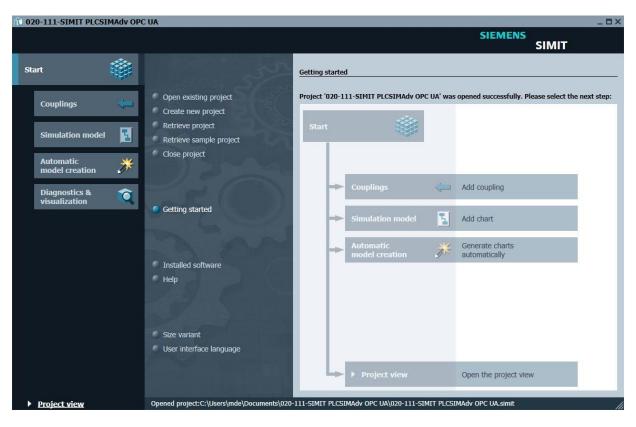
8.3 Create a SIMIT application with "OPC UA Client" coupling

→ Start SIMIT from the desktop of your computer by double-clicking on the logo for the "SIMIT SP" application (→ SIMIT SP)



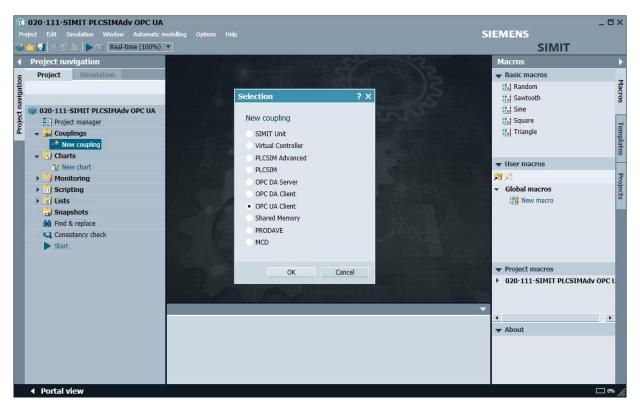
→ Create a new project "020-111_SIMIT PLCSIMAdv OPC UA". (→ Create new project → 020-111_SIMIT PLCSIMAdv OPC UA → Create)

					_ 🗆 ×
				SIEMENS SIM	IIT
Start		572	Create new project		
Couplings		Open existing project Create new project	Projectname Target folder	020-111-SIMIT PLCSIMAdv OPC UA C:\Users\mde\Documents	
Simulation model	3	Retrieve project Retrieve sample project	Author		
Automatic model creation	*	Close project			Create
Diagnostics & visualization	Q	Cetting started			
		Installed software Help			
		Size variant User interface language			
Project view					

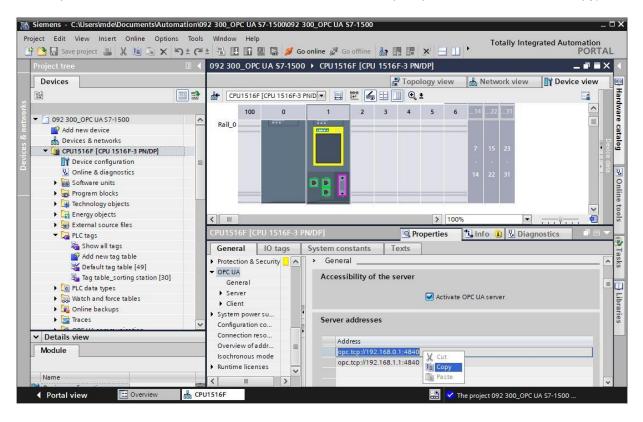


 \rightarrow Change to the "Project view". (\rightarrow Project view)

→ Create a "New coupling" "OPC UA Client" for your project under "Couplings". (→ Couplings → New coupling → OPC UA Client → OK)



→ Switch to the TIA Portal and open the "Device configuration" in the previously retrieved project "092-300_OPC UA S7-1500". Select the CPU. In the properties under OPC UA, copy the address of the activated OPC UA server. (→ 092-300_OPC UA S7-1500 → Device configuration → CPU_1516F → Properties → OPC UA → General → Server addresses → opc-tcp://192.168.0.1:4840 → Copy)



→ Paste the previously copied OPC UA server address of the CPU 1516F into SIMIT as "OPC UA Server URL" under "Couplings", "OPC UA client". (→ SIMIT → Couplings → OPC UA Client → Properties → OPC UA Server URL → Paste)

10 020-111-SIMIT PLCSIMAdv OPC UA Project Edit Simulation Window Automatic m	odellina Ontions He	'n			SIEMENS		_ 🗆 ×
🍪 👝 🗐 🔧 🗿 📩 🕨 🔂 Real-time (100%)						SIMIT	
Project navigation	OPC UA client (0	PCUAClient)*			_ 2 # X	Signals	Þ
Project Simulation	🛃 🕞 🕞 Browse						Name Signals
Project Simulation	✓ Inputs Res Default Nam ¥	et filter e 🛆	Type	Multiplier T	Comment	Origin All Signal type All	•
مهند New coupling						Data type All	▼ eset filter
Monitoring Scripting Ists	✓ Outputs Res Name X	et filter	Type	Multiplier	Comment	✓ Search r Source	esults Name
Snapshots Find & replace Consistency check Start							
	OPC UA dient				Properties V	1	
	Property	Value				1	
	Time slice OPC UA server URL Endpoint Namespace URI	2 opc.tcp://localhost:4840 Not assigned	Cut Ctrl+X Copy Ctrl+C				
	Status display	is_active	Paste Chrl+V			🔻 Info	
						Origin Signal type	
 Portal view OPC UA client 						-	- 0%

→ Under "Properties", select the settings shown below for "Endpoint" and "Namespace URI". (→ Properties \rightarrow Endpoint \rightarrow Name space URI)

	020-111-SIMIT PLCSIMAdv OPC UA		e Heln						SIEME	NS		- - ×
	🔁 🔝 🖄 👘 🕨 🖾 Real-time (100%)									SIN	ШТ	
4	Project navigation	OPC UA clie	ent (OPCL	JAClient)*					. 🗹 🗗 🗙	Signals		Þ
gation	Project Simulation	H G G Br	owse							Source	Name	Signals
Project navigation	O20-111-SIMIT PLCSIMAdv OPC UA Project manager Gouplings	▼ Inputs Default	Reset filt Name	er	Туре	Ŧ	Multiplier	Comment		Origin All Signal typ All	•	
	الله الله الله الله الله الله الله الل									Data type All	▼ Reset filter	
	Monitoring Scripting	Outputs Name T	Reset filt	er	Туре	×	Multiplier	Comment		➡ Search	results Name	
	Consistency check	*								Source	Name	I
	Start	OPC UA clien	t					Proper	ties 🔻			
		Property		Value								
		Time slice OPC UA server	URL	4 opc.tcp://192.1								
		Endpoint Namespace UR Status display	I		00.OPC-UAServer:CPU1 mens.com/simatic-s7-op	-	ne, Nonej Lopc.tcp	://192.168.0.1:4840] •	▼ Info		
	Portal view									Origi		⊐ 0% <i>/</i> /

OPC UA client	Prop	erties	
Property	Value		
Time slice	4	•	
OPC UA server URL	opc.tcp://192.168.0.1:4840		
Endpoint	SIMATIC.S7-1500.OPC-UAServer:CPU1516F [None, None] [opc.tcp://192.168.0.1:4840]	•	
Namespace URI	http://www.siemens.com/simatic-s7-opcua	•	
Status display	is_active		

Note:

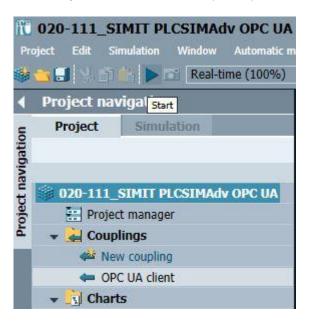
 If the following error message appears, you need to check the requirements of the settings in Windows 10 described in chapter 5.

rver cannot be reached.	
OPC UA server 'opc.tcp://192.16 cannot be reached.	
 ([BadUnexpectedError] An unexp occurred while connecting to the	server.)

→ When you click the "Browse" button, the inputs and outputs from the tag table previously downloaded to the CPU 1516F are imported and are now ready for further use in the simulation. (→ Browse)

🖬 🐘 🖿 📩 🕨 🖬 Real-time (100%)						SIMI	1	
Project navigation	OPC UA cli	ent (OPCUAClient)			_ 🗹 🗗 🗙	Signals		
Project Simulation						Source I	Name	
	🔚 🕀 🕞 B	rowse						
	▼ Inputs	Reset filter				Origin		
020-111_SIMIT PLCSIMAdv OPC UA	Default	Name -	Туре	Multiplier	Comment	All	-	•
🔛 Project manager	Derduit	Ŧ		* ¥	T	Signal type		
👻 🛁 Couplings		"-A1"	binary	1		All	-	
🐝 New coupling		"-B1"	binary	1		Data type		
- OPC UA client		"-B2"	binary	1		All	-	•
👻 🛐 Charts		"-B3"	binary	1				
😭 New chart		"-B4"	binary	1		-	Reset filter	r.
Monitoring		"-B5"	binary	1				
Scripting		"-B6"	binary	1		➡ Search res		
Lists		"-B7"	binary	1		Source	Name	
Snapshots	() "- <mark>B</mark> 8"	integer	1		OPC UA client	"-A1"	
M Find & replace		"-K0"	binary	1	•	OPC UA client	"-B1"	
Consistency check	▼ Outputs	Reset filter				OPC UA client	"-B2"	
▶ Start	Name		Туре	Multiplier	Comment *	OPC UA client	"-B3" "-B4"	
	T		¥	• ¥	7	OPC UA client	-B4 "-B5"	
	"-M3"		binary	1		OPC UA client	-B5 "-B6"	
	"-P1"		binary	1		OPC UA client	-B0	
	"-P2"		binary	1		4	-D/	
	"-P3"		binary	1		▼ Info		-
	"-P4"		binary	1		• 1110		

 \rightarrow Finally, select " Save all". (\rightarrow) Click " Start" to start the simulation. (\rightarrow)



- → After starting the simulation, you can test the access to the inputs and outputs of SIMATIC S7-PLCSIM Advanced in SIMIT.
- → You can see whether this access is functioning in the tag tables in TIA Portal by clicking the " \square " symbol. (→ \square)
- \rightarrow Clicking on " \blacksquare " again ends the simulation in SIMIT. (\rightarrow \blacksquare)

1200	020-111_SIMIT PLCSIMAdv OPC UA oject Edit Simulation Window Automatic m	odelli	ng Options	Help							SI	EMEN	15		- 5	×
	🐨 🛃 🔌 👔 💼 💼 🔂 Real-time (100%)													SIMIT		
	Project naviga	0	PC UA client	(OPCUACI	ient)									_	Ľ∎×	4
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Project navigation		ы	🕞 🕞 Brow	se.												Signals
vig			Inputs	Reset filter												sle
t na	020-111_SIMIT PLCSIMAdv OPC UA	•	Inputs			T			iplier		Comment				-	
jec	Project manager			Name 🛆		Туре		T T	ipiler		Comment					1
Pro	- Couplings		- 🗖	"-A1"		binary	-	1		12	8-					
	OPC UA client		_ H	"-B1"		binary		1								
	Charts		- 6	"-B2"		binary		1								
	Monitoring		- 1	"-B3"		binary		1								
	Scripting	•		"-B4"		binary		1								
	Lists		- 0	"-B5"		binary		1								
	▶ 🚼 Snapshots	JIA	Siemens - (:\Users\mde	Documents	omation\092 300	OPC L	IA S7-1	500\092 3	00 OPC	UA \$7-15	00	_			x
	M Find & replace	1.541	112 STA	2.2	2005 No.	ons Tools Wind	1	305					14.14		-	
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			Project tree				<	PN/DP	PLC ta			_sorting	stat	tion [30] 🛛 🗖	a e x	
		1	Devices									🕣 Ta	gs	🗉 User consta	ants	📦 Tasks
			-				3		→ + [∞]	2 M		- A				Ta
		5							ble_sorti	_	tion					ks
		min.	• 🖬	Program block	s		^	1000	Name 🔺	- Contraction	Address	Re A	V	Vr Monitor va	lue	_
		ami		Technology ob			1		-A1		%10.0				^	
		ogr	• 🖬	Energy objects			_ 2	-	-B1	В	%IO.5					🗎 Libraries
		a l	ها 🔸	External source	e files		3	-	-B2	В	%IO.6			🗹 🗹 🔲 FALSE		ari
		PLO		PLC tags			4	-	-B3		%10.7		_		=	S
	Portal view			PLC data types			5	-	- B 4		. %11.0					
				Natch and forc			6		-B5		. %11.1			FALSE		
				Online backup Traces	15		8	- -	-86 -87		%I1.2 %I1.3		_	FALSE		
				DPC UA comm	unication		9		-88		%IW64		5			
				Device proxy d			10	-	-K0		%10.1		_	FALSE		
				Program info			11	-	-M2	В	%Q0.3			FALSE		
			S.	PLC supervisio	ns & alarms		12	-	-M3	В	%Q0.4			📄 🗹 🔲 FALSE		
			6	PLC alarm text	lists		♥ 13	-	-P1	В	%Q0.5			📄 🗹 🔲 FALSE		
			✓ Details	view			14	-	-P2		%Q0.6			FALSE		
							15	-	-P3		%Q0.7			FALSE		
							16	-	-P4		%Q1.0			FALSE		
			Name				17		-P5	B	. %Q1.1			FALSE	>	
			Show all t	ags			^		O P	perties	ti In	(a) [11	D:-	gnostics		
			Add new t		occesso?		~		Pro Pro		- In		Dia	gnostics		
			Portal v	iew	11 Overview	🛃 Tag table	so				Connecte	d to CPU1	516F.	via address IP		

 \rightarrow Now "Archive" the SIMIT project. (\rightarrow Project \rightarrow Archive)

itt (020-111_SIMIT PLC	SIMAdv OPC UA
Proj	ect Edit Simulation	Window Automatic
	New project Open Close	eal-time (100%)
	Save all Ctrl+Shift+ Save as	
Ĩ	Archive	MAdv OPC UA
	Retrieve	
	Analysis	
	Exit	

8.4 Start an existing SIMIT project with "OPC UA Client" coupling with SIMATIC S7-PLCSIM Advanced as OPC UA server

→ First, start the TIA Portal from the desktop of your computer by double-clicking on the logo for the application. (→ TIA Portal)



→ Open or retrieve the desired TIA Portal project. Here, the project for the sorting station "sce-092-300opc-ua-s7-1500..." is opened. Switch to the Project view. (→ Open existing project → sce-092-300opc-ua-s7-1500... → Open → Project view)

JA Siemens				_ ¤ ×
			Totally Integrated Auto	mation PORTAL
Start		Open existing project		
Devices & for a constraint of the constraint of	 Open existing project Create new project Migrate project Close project 	Recently used Project 092 300_OPC UA 57-1500.ap15_1	Path C:IUsersImdelDocumentsIAutomationI092 300_OPC UA 57-1500	Last change 4/25/2019
	Welcome Tour First steps			
Online & Diagnostics	 Installed software Help User interface language 	Activate basic integrity check Browse Remove		Open
Project view				

Before you can download the CPU_1516F from the "092-300_OPC UA S7-1500" project, SIMATIC S7-PLCSIM Advanced must be opened and a CPU with the appropriate settings must be started.

→ Open "S7-PLCSIM Advanced" from the desktop of your computer by double-clicking on the logo for the application. (→ S7-PLCSIM Advanced)



→ In the "Control Panel" of S7-PLCSIM Advanced, select the settings shown here for the virtual S7-1500 and start it. (→ Control Panel → PLCSIM Virtual Eth. Adapter → <Local> → CPU_1516F → 192.168.0.1 → 255.255.255.0 → Unspecified CPU 1500 → Start)

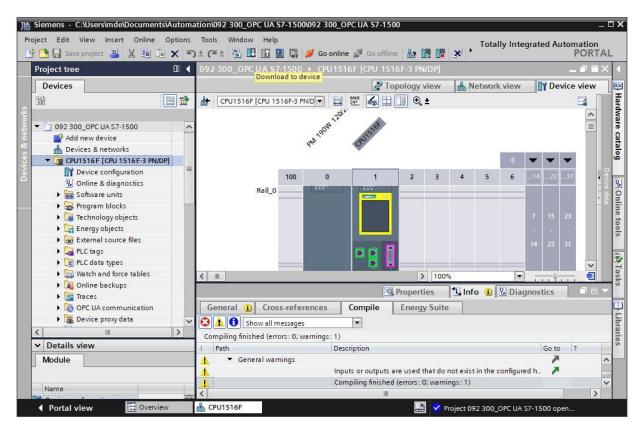
			·	×
Ĺ	S7-PLCSIM A	dvanced V2.0 SP1		. Þ
	M	1000	Control Pane	el.
	Online Access			
	PLCSIM	PLCSIM Virtual Eth. Adapt	er 🔍	
•	TCP/IP communication	with <local></local>	U I	
2	Virtual Time Scaling			
	(] [1		
	0.01 C	Off 100		
	Start Virtual S7-15	500 PLC		
	Instance name	CPU_1516F		
	IP address [X1]	192.168.0.1		
*	Subnet mask	255.255.255.0		
	Default gateway			
	PLC type	Unspecified CPU 1500		
	MRES	Start		
	No Active PLC Instance	2		
		[#]		
		Drop Instances Here		
	Runtime Manager Port			
•	Virtual SIMATIC Memo	Contraction and Contraction and Contraction of Cont		
i ?	Show Notifications			
	Function Manual			
3	Exit			

→ The virtual S7-1500 is immediately started in S7-PLCSIM Advanced and can be accessed from the TIA Portal and SIMIT via the configured address.

VI			Со	ntrol	Panel
Online Access PLCSIM	PLCSI	IM Virtual Eth. Adaj	pter 🤇	X	
TCP/IP communication	n with	<local></local>	v		
Virtual Time Scaling					
0.01 c) Xff	1			
Start Virtual S7-15	500 PLC	3			
Instance name	CPU.	_1516F			
IP address [X1]	192.	168.0.1			
Subnet mask	255.	255.255.0			
Default gateway					
PLC type	Uns	pecified CPU 1500	\sim		
	Star	+			
MRES]				
1 Active PLC Instance(s	t 500	/ 192.168.0.1		9 ×	
1 Active PLC Instance(s	t 500	/ 192.168.0.1		9 ×	

 \rightarrow To download your entire CPU, select the \rightarrow "CPU_1516F [CPU1516F-3 PN/DP]" folder and click the

 $\blacksquare \rightarrow$ "Download to device" button.



Note:

- The IO addresses to be simulated using SIMIT must not exist as hardware modules.

- Extended download to device X Configured access nodes of "CPU1516F" Device type Device Subnet Slot Interface type Address CPU 1516F-3 PN/... 1 X3 CPU1516F PROFIBUS 2 CPU 1516F-3 PN/... 1 X1 PN/IE 192.168.0.1 PN/IE_1 CPU 1516F-3 PN/ ... 1 X2 PN/IE 192.168.1.1 Type of the PG/PC interface: Please select. -- 🖲 🖸 PG/PC interface - 0 Connection to interface/subnet: - 0 1st gateway: Select target device: . Device Device type Interface type Address Target device Flash LED <u>S</u>tart search Display only error messages Online status information: Load Cancel
- \rightarrow The manager for configuring the connection properties (Extended download) then opens.

- \rightarrow First, the interface must be correctly selected. This happens in three steps.
- $\rightarrow~$ Type of the PG/PC interface \rightarrow PN/IE

Configured acce	ss nodes of "CPU1516F"				
Device	Device type	Slot	Interface type	Address	Subn
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
	Type of the PG/PC inte	erface:	PN/IE		
	PG/PC inte	erface:	Please select		
	PG/PC inte Connection to interface/s		Please select		

 \rightarrow PG/PC interface \rightarrow here: Siemens PLCSIM Virtual Ethernet Adapter

Configured acce	ss nodes of "CPU1516F"				
Device	Device type	Slot	Interface type	Address	Subnet
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
	Type of the PG/PC inte	erface:	PN/IE		
	Type of the PG/PC inte PG/PC inte			M Virtual Ethernet Ad	
		erface:		M Virtual Ethernet Ad	
	PG/PC inte Connection to interface/su	erface:	Siemens PLCS	M Virtual Ethernet Ad et Connection (4) I21	apter 🗸 🔻

 $\rightarrow~$ Connection to interface/subnet \rightarrow "PN/IE_1"

Device	Device type	Slot	Interface type	Address	Subnet
CPU1516F	CPU 1516F-3 PN/		PROFIBUS	2	Subilet
	CPU 1516F-3 PN/		PN/IE	192.168.0.1	PN/IE 1
<u> </u>	CPU 1516F-3 PN/		PN/IE	192,168,1,1	
	Type of the PG/PC inte	erface:	PN/IE		
	Type of the PG/PC inte PG/PC inte			IM Virtual Ethernet Ad	1080
		erface:		M Virtual Ethernet Ad	1080
	PG/PC inte	rface: ubnet:	Siemens PLCS		apter 💌

→ The → "Show all compatible devices" check box must then be selected. The search for devices in the network is started by clicking the → button.

	Device	Device type	Slot	Interface type	Address	Subnet
	CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
_		CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
		CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
			6			
		Type of the PG/PC inter		PN/IE		•
		PG/PC inter	face:	Siemens PLCS	SIM Virtual Ethernet A	
		Connection to interface/su	bnet:	PN/IE_1		
				and the second s		
		1st gate	eway:			v
		1st gate	eway:			*
	Select target der		eway:		Show all compatib	
	Select target der				Show all compatib dress	le devices
_		vice:		ce type Ad	19 (A)	le devices
]	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
ED.	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
I I	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
LED	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
ED	Device	vice:	Interfa	ce type Ad	dress	le devices Target device
.ED	Device	vice:	Interfa	ce type Ad	dress	le devices Target device

→ If the controller is shown in the list, it must be selected before the download process can be started. (\rightarrow CPU1516F-3 PN/DP \rightarrow Load)

	Device type Slot		Interface type	Address	Subnet
CPU1516F	CPU 1516F-3 PN/	1 X3	PROFIBUS	2	
	CPU 1516F-3 PN/	1 X1	PN/IE	192.168.0.1	PN/IE_1
	CPU 1516F-3 PN/	1 X2	PN/IE	192.168.1.1	
Ţ	pe of the PG <mark>/</mark> PC inte	rface:	PN/IE		
	PG/PC inte	rface:	Siemens PLCS	IM Virtual Ethernet A	dapter
Conne					Topter (
conne					
	iscyau	cvidy.	1		
Select target device:	T 2			Show all compatibl	1
Device	Device type		21		Target device
	A CONTRACTOR OF STATES	1000			CPU_1516F
cpu_1516f.profinet-sc	S7-1500 (PLCSIM)				
-	-	PN/IE	Acc	ess address	-
					Start sea
				<u></u>	
			l	Display only erro	r messages
	cessible devices fou	ind.			
ormation n retrieval completed.					
	Ty Conne Select target device: Device CPU_1516F CpU_1516f.profinet-sc 	CPU 1516F-3 PN/ CPU 1516F-3 PN/ Type of the PG/PC inte PG/PC inte Connection to interface/su 1st gat Select target device: Device Device type CPU_1516F CPU 1516F-3 PN/ cpu_1516f.profinet-sc \$7-1500 (PLCSIM) 	CPU 1516F-3 PN/ 1 X1 CPU 1516F-3 PN/ 1 X2 Type of the PG/PC interface: PG/PC interface: Connection to interface/subnet: 1st gateway: Select target device: Device Device type Interface CPU_1516F CPU 1516F-3 PN/ PN/IE CPU_1516f.profinet-sc \$7-1500 (PLCSIM) PN/IE 	CPU 1516F-3 PN/ 1 X1 PN/IE CPU 1516F-3 PN/ 1 X2 PN/IE Type of the PG/PC interface: PN/IE PG/PC interface: Siemens PLCS Connection to interface/subnet: PN/IE_1 1st gateway: Select target device: [Device Device type Interface type Add CPU_1516F CPU 1516F-3 PN/ PN/IE 192 cpu_1516f.profinet-sc S7-1500 (PLCSIM) PN/IE 192 PN/IE Acc n: [evice cpu_1516f.profinet-schnittstelle_2 compatible devices of 3 accessible devices found.	CPU 1516F-3 PN/ 1 X1 PN/IE 192.168.0.1 Type of the PG/PC interface: PN/IE 192.168.1.1 Type of the PG/PC interface: Siemens PLCSIM Virtual Ethernet A Connection to interface/subnet: PN/IE_1 Select target device: Show all compatib Device Device type Interface type CPU_1516F CPU 1516F-3 PN/ PN/IE PN/IE 192.168.0.1 PN/IE cpu_1516F,profinet-sc S7-1500 (PLCSIM) PN/IE PN/IE PN/IE Access address m - - PN/IE Display only error Excess address - crup_1516f.profinet-schnittstelle_2 - - compatible devices of 3 accessible devices found. - -

 \rightarrow You first obtain a preview. Confirm the suggested actions and continue with \rightarrow "Load".

atus	! Target		t	Message	Action		
10	✓ CPU1516F		PU1516F	Ready for loading.	Load 'CPU1516F'		
	0		Simulated module	The loading will be performed from a simulated PLC.			
	0	•	Different modules	Differences between configured and target modules (online)			
	0	•	Reset	Reset module	Delete all		
	0	•	Stop modules	The modules are stopped for downloading to device.	Stop all		
	0	•	Device configurati	Delete and replace system data in target	Download to device		
	0	•	Software	Download software to device	Consistent download		
	0		Text libraries	Download all alarm texts and text list texts to device	Consistent download		
				ш			

Note:

- The Symbol should be visible in every line of the "Load preview". You can find additional information in the "Message" column.
- \rightarrow Following this, the \rightarrow "Start module" option is selected before the download operation can be completed with \rightarrow "Finish".

tatus	1	Target	Message	Action	
4	0	▼ CPU1516F	Downloading to device completed without error.	Load 'CPU1516F'	
	0	 Start modules 	Start modules after downloading to device.	Start module	-
	0		The module "CPU1516F" can be started.		
10					

→ Now start SIMIT from the desktop of your computer by double-clicking on the logo for the "SIMIT SP" application (→ SIMIT SP)



→ Open or retrieve the desired project. Here, the project for the sorting station "sce-020-111-scesorting-station-plcsim-advanced-opc-ua-r1904-en.simarc" is retrieved from the archive. (→ Retrieve project → sce-020-111-sce-sorting-station-plcsim-advanced-opc-ua-r1904-en.simarc → Retrieve)

10	20-111_SIMIT PLCS	IMAdv OP	CUA			_ 🗆 ×
					SIEMENS	
SI	art			Retrieve project		
	Couplings		Open existing project Create new project		rojects-en\sce-020-111-sce-sorting-station-plcsim-advanced-opc-ua-r1904-r C:\Users\mde\Documents	en.simarc
	Simulation model	5	 Retrieve project Retrieve sample project 			Retrieve
	Automatic model creation	*	Close project			
	Diagnostics & visualization	Q	Getting started			
			Installed software			
			Help			
			Size variant			
			 User interface language 			
•	Project view		Opened project:C:\Users\mde\Documents\020	-111_SIMIT PLCSIMAdv OP	C UA\020-111_SIMIT PLCSIMAdv OPC UA.simit	11

 \rightarrow Confirm the security prompt with "Yes". (\rightarrow Yes)



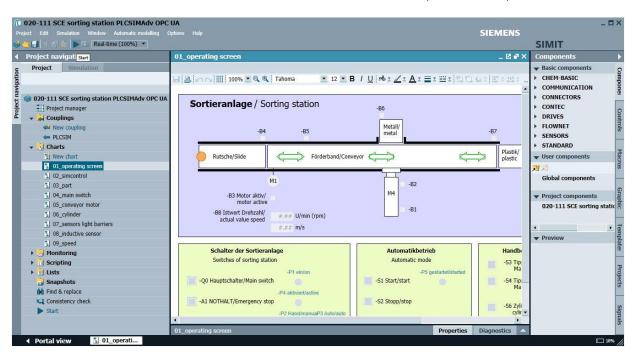
 \rightarrow Change to the "Project view". (\rightarrow Project view)

10 020-111 SCE sorting	station PLC	CSIMAdv OPC UA						_ 🗆 ×
							SIEMENS	
Start			Getting st	tarted	Í			
Couplings	-	Open existing project Create new project	Project '0	20-11	1 SCE sorting station PLO	CSIMAdv	OPC UA' was opened successfully. Plea	se select the n
Simulation mode	ı 🛐	Retrieve sample project	Start					
Automatic model creation	*	Close project						
Diagnostics & visualization	Q	Getting started		->	Couplings	4	Add coupling	
		n na		->	Simulation model	5	Add chart	
		Installed software Help			Automatic model creation	*	Generate charts automatically	
		Size variant User interface language						-
Project view		Opened project:C:\Users\mde\Documents\020	-111 SCE 501	rting s	tation PLCSIMAdy OPC UA	\020-111	SCE sorting station PLCSIMAdv OPC UA.	▼
Lingua Inch						- Martine - Articles		

 \rightarrow Double-click the "01_operating screen" chart to open it. (\rightarrow 01_operating screen)

🔚 👌 👘 🕨 🖬 Real-time (100%) 💌		SIMIT
Project navigation	01_operating screen _ 🛛 🗗 🗶	Components
Project Simulation		
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		COMMUNICATION
020-111 SCE sorting station PLCSIMAdv OPC UA	Sortieranlage / Sorting station	CONNECTORS
E Project manager	-B6	CONTEC
👻 🛁 Couplings		DRIVES
All New coupling	-B4 -B5 Metall/ metal -B7	FLOWNET
PLCSIM		> SENSORS
✓ [s] Charts	Plastik/	► STANDARD
1 New chart	Rutsche/Slide	 User components
01_operating screen		X
5 02_simcontrol 5 03_part	M1 -B2	Global components
Us_part Vs_part Vs_part	-B3 Motor aktiv/ M4	
Soft Switch	motor active	Project components 020-111 SCE sorting sta
1 06_cylinder	-B8 Istwert Drehzahl/ #.## U/min (rpm)	020-111 SCE sorting sta
3 07_sensors light barriers	actual value speed	
3 08_inductive sensor	#.## m/s	 ✓ Preview
5 09 speed		▼ Preview
Monitoring	Schalter der Sortieranlage Automatikbetrieb Handbe	
Scripting	Switches of sorting station Automatic mode -S3 Tip	
) 📄 Lists	-P1 ein/on -P5 gestartet/started Ma	
🔒 Snapshots	-S4 Tip	-
M Find & replace	-P4 aktiviert/active Ma	
Consistency check	-A1 NOTHALT/Emergency stop -S2 Stopp/stop -S6 Zvli	
Start	-P2 Hand/manuaP3 Auto/auto	

→ Select " Save all" and select " Start" to start the simulation. (\rightarrow)



sce-020-111-simit-plcsim advanced-opc-ua-r1904-en.docxn.docx

 \rightarrow The simulation is activated. The application turns orange to indicate this.

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roject navigation	01_operating screen	_ 🗹 🗗
Project Simulation		
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E Project manager	-B6	Additional values
- Gouplings		etall/
PLCSIM		etal -B7
Charts O1 operating screen		
O2 operating screen O2 simcontrol	Rutsche/Slide Förderband/Conveyor	Plastik/
1 03 part		plastic -B9 externer Stellwert
1 04 main switch		external manipulate
5 conveyor motor	M1	■ -B2 5.0 U/min
S 06_cylinder	-DS MOLOI AKUV	14
07_sensors light barriers	motor active	-U1 Stellwert Drehzah manipulated value
08_inductive sensor	-B8 Istwert Drehzahl/ actual value speed 0.0 U/min (rpm)	14.0
S 09_speed	0.0 m/s	U/min
Monitoring		
Scripting	Schalter der Sortieranlage A	Automatikbetrieb / Manual mode
i Lists		
Snapshots		-55 Tippbetrieb -M1 Yorwards
M Find & replace	-P1 ein/on -Q0 Hauptschalter/Main switch	-P5 gestartet/started -S4 Tippbetrieb -M1 rückwärts/
		Manual -M1 backwards
	-P4 aktiviert/active	-P7 ausge
		-S6 Zylinder -M4 austahren/
	-P2 Hand/manuaP3 Auto/auto	Cylinder -M4 extend D6 singe

→ The application can be subsequently be tested in SIMIT. Clicking on " \blacksquare " again ends the simulation in SIMIT. (→ \blacksquare)

IfU 020-111 SCE sorting station PLCSIMAdv OPC UA Project Edit Simulation Window Automatic modeling Options Help SIEMENS			
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4 8	roject navigat <mark>Exit</mark>	01_operating screen	_ 🗹 🖬 🗙 🔺
Project navigation	Project Simulation	님 월 @ ☆ 해 112 ■ B / 빈 ☆ 호 ∠ 호 ▲ 호 프 호 링 급 쇼 호 트 호 프 프	近西
	O20-111 SCE sorting station PLCSIMAdv OPC UA Project manager Couplings COUPlings PLCSIM DCSIM DCArts	Sortieranlage / Sorting station -B6 -B4 -B5 Metall/ metal -B7	Zusatzliche We Additional values
	9. 02_spirating screen 9. 02_sincontrol 9. 3_part 9. 04_main switch 9. 05_conveyor motor 9. 06_cv/inder 9. 07_sensors light barriers 9. 08_inductive sensor 9. 9. speed	Rutsche/Silde Förderband/Conveyor Plastik/ plastic -B3 Motor aktiv/ motor active -B2 -B8 Istwert Drehzahl/ actual value speed 7.8 U/min (rpm) 1.6 m/s	-B9 externer Stellwert external manipulate 5.0 U/min (-U1 Stellwert Drehzah) manipulated value : 14.0 U/min (
	Scripting Scripting Ists Scripting Ists Scripting Find & replace	Switches of sorting station Automatic mode -S3 Tippbet -Q0 Hauptschalter/Main switch -P1 ein/on -P5 gestante/started -S3 Tippbet -Q0 Hauptschalter/Main switch -P4 attivier/lactive -S1 Start/start -S4 Tippbet -A1 NOTHALT/Emergency stop -P2 Hand/manuaP3 Auto/auto -S2 Stopp/stop -S6 Zylinde -S0 Betriebsart/operating mode -S1 Start/start -S5 Zylinde -S5 Zylinde	eb / Manual mode rieb -M1 vorwärts/ -M1 forwards rieb -M1 rückwärts/ -M1 ausfahren/ -M4 ausfahren/ -M4 einfahren/ -M4 retract -P6 einge r -M4 retract
-	Portal view 🛐 01_operati	00:00:000 Unknown variable "-B9".	* /

9 Additional information

More information for further practice and consolidation is available as orientation, for example: Getting Started, videos, tutorials, apps, manuals, programming guidelines and trial software / firmware, under the following link:

siemens.com/sce/s7-1200

Preview "Additional information"

Getting Started, Videos, Tutorials, Apps, Manuals, Trial-SW/Firmware

- > TIA Portal Videos
- > TIA Portal Tutorial Center
- > Getting Started
- > Programming Guideline
- > Easy Entry in SIMATIC S7-1200
- > Download Trial Software/Firmware
- > Technical Documentation SIMATIC Controller
- Industry Online Support App
- > TIA Portal, SIMATIC S7-1200/1500 Overview
- > TIA Portal Website
- SIMATIC S7-1200 Website
- SIMATIC S7-1500 Website

Further Information

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