

PSS u2 I/O PROFINET with PROFIsafe Profile on a SIMATIC S7-1500 with TIA Portal [328062]



Product

Type: PSS u2 I/O
Name: PSS u2 P0 F/S PN2, **328062**
Manufacturer: Pilz GmbH & Co. KG, Safe Automation

Document

Release Number: 01
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Important Note

There are two different Application Notes on this topic. The third page contains an overview for verification.
This document only describes the PSS u2 head module with PROFINET/PROFIsafe with order number 328062!

Document Revision History

Release	Date	Changes	Chapter
01	22/07/2021	Creation	all

Validity of Application Note

This present Application Note is valid until a new version of the document is published. This and other Application Notes can be downloaded in the latest version and for free from www.pilz.com. For a simple search, use our [content document \(1002400\)](#) or the [direct search function](#) in the download area.

The [Pilz newsletter](#) is free of charge and keeps you up-to-date on all the latest issues and trends in safe automation.

Exclusion of Liability

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While every effort has been made to ensure the information provided is accurate, we cannot accept liability for the accuracy and entirety of the information provided, except in the case of gross negligence. In particular, all information on applicable standards, safety-related classifications and time characteristics should be viewed as provisional. In particular it should be noted that statements do not have the legal quality of assurances or assured properties.

We are grateful for any feedback on the contents.

July 2021

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Industrial Security

To secure plants, systems, machines and networks against cyberthreats it is necessary to implement (and continuously maintain) an overall [Industrial Security concept](#) that is state of the art.

Perform a risk assessment in accordance with VDI/VDE 2182 or IEC 62443-3-2 and plan the security measures with care. If necessary, seek advice from [Pilz Customer Support](#).

Documentation Guide

- Overview of the two Pilz solutions at system "PSS u2 I/O PROFINET with PROFIsafe profile".
 - The internet links to download the two AN documents listed in the graphic are available at: [Chapter 1.1 Documentation from Pilz GmbH & Co. KG \[6\]](#), No. 11 and 12

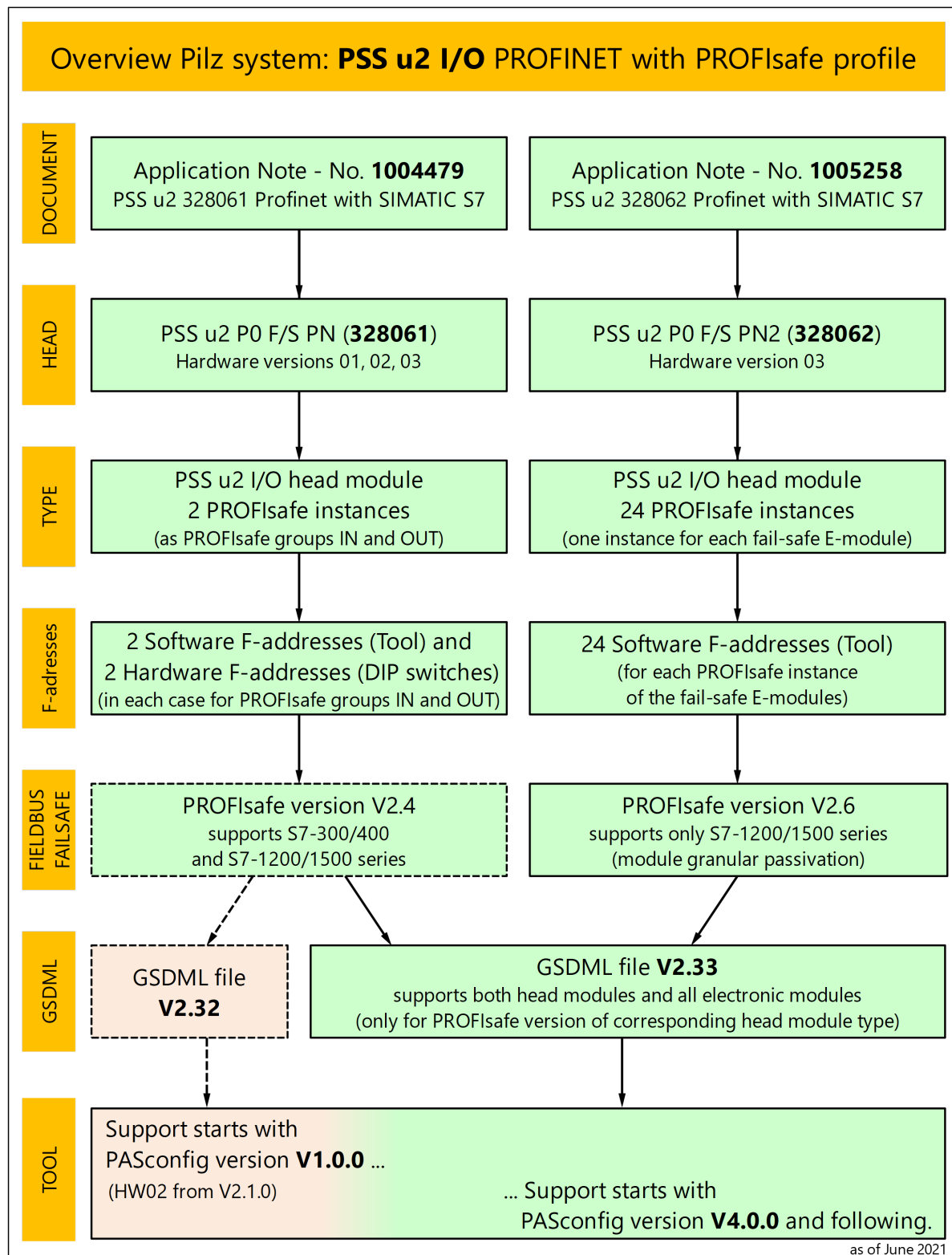


Figure 1: Application Notes – Documentation Guide for 'PSS u2 I/O PROFINET/PROFIsafe'

Abbreviations

Abbreviation / term	Description	Source
AN	A pplication N ote	 AN.content (1002400)">www.pilz.com > AN.content (1002400)
PNOZ	Pilz E-STOP positive-guided (DE: P ilz N OT-AUS-Zwangsgeführt)	 PNOZ">www.pilz.com > PNOZ
PSS	Programmable control system (DE: P rogrammierbares S teuerungssystem)	 PSS">www.pilz.com > PSS
PSS u2	PSS universal, 2 nd generation	 PSS u2">www.pilz.com > PSS u2
POU	P rogram O rganisation U nit	
TIA	T otally I ntegrated A utomation (SIMATIC)	
TCI	T ool C alling I nterface (SIMATIC)	
PN	P ROFINET / P rocess F ield N etwork	 PROFINET">en.wikipedia.org > PROFINET
PROFenergy	Technology from PROFINET	 PROFenergy">en.wikipedia.org > PROFenergy
PROFIsafe	Technology from PROFINET	 PROFIsafe">www.profibus.com > PROFIsafe
PROFINET IRT	Technology from PROFINET: Isochronous R eal T ime	
NC	N ormally C losed	
NO	N ormally O pen	

Definition of symbols

- Information that is particularly important is identified as follows:



CAUTION!

This refers to a hazard that can lead to a less serious or minor injury plus material damage, and also provides information on preventive measures that can be taken.



NOTICE

This describes a situation in which the product or devices could be damaged and also provides information on preventive measures that can be taken. It also highlights areas within the text that are of particular importance.



INFORMATION

This gives advice on applications and provides information on special features.

Contents

1	Useful documentation	6
1.1	Documentation from Pilz GmbH & Co. KG.....	6
1.2	Documentation from other sources of information	7
2	Used hardware and software	8
2.1	Pilz products.....	8
2.2	Third-party products	8
2.3	Structure of the application (schematic)	9
3	Preface.....	10
4	Technical notes for the PSS u2 system	11
5	Application description	12
6	Hardware configuration.....	13
6.1	Used hardware.....	13
6.1.1	Pilz devices	13
6.1.2	Siemens devices.....	13
6.2	Basic properties of the PSS u2 system.....	14
6.2.1	Maximum size of the PSS u2 failsafe and standard I/O process image	14
6.2.2	I/O address assignment (byte alignment)	14
6.2.3	Failsafe I/O assignment.....	15
6.2.4	Diagnostic information	15
7	Configuration of Siemens S7 F-CPU.....	16
7.1	Creation of new TIA project	16
7.2	Select and configure the S7 F-CPU	17
7.3	Setting up the Ethernet adapter.....	19
8	Configuration of the PSS u2 failsafe system.....	22
8.1	GSDML file of PSS u2 head module.....	22
8.1.1	Download of the GSDML file and the 'PASconfig' tool.....	22
8.1.2	Manage general station description files GSD(ML) in TIA	23
8.2	TIA – Device configuration of PSS u2 system	24
8.2.1	Create and configure the PSS u2 head module.....	24
8.2.2	Adding the head module submodules of the PSS u2 system	27
8.2.3	Adding the electronic modules of the PSS u2 system.....	29
8.2.4	Setting up the PROFIsafe addresses of the head module submodules	30
8.2.5	Assign the device name to the PSS u2 system	31
8.3	PASconfig – Device configuration of PSS u2 system	33
8.3.1	Configure of PSS u2 system	33
8.3.2	Start of PASconfig via TIA device configuration	33
8.3.3	Setting up the PROFIsafe address of the PSS u2 head module.....	35
8.3.4	Download the configuration to PSS u2 system.....	38
8.4	TIA – Download the configuration to S7 F-CPU.....	40
9	Helpful functions for commissioning and maintenance.....	42
9.1	Compare CRC for failsafe configuration data	42
9.2	Display of the failsafe I/O mapping	44
9.3	Notes on the diagnostic display in TIA and PASconfig	45
9.4	Notes on using the MircoSD card and Reset button.....	46
9.4.1	Carrying out of a restart (warm reset) by means of the Reset button	46
9.4.2	Device exchange using MicroSD card and Reset button	46
10	Table of figures	47

1 Useful documentation

Reading the documentation listed below is necessary for understanding this Application Note. The availability of the software used, and its safe handling are also presupposed for the user.

1.1 Documentation from Pilz GmbH & Co. KG

No.	Description	Item No. /Download
1	Pilz international homepage, download section	www.pilz.com > Support > Downloads
2	Software 'PASconfig', Online help Pilz international Webportal > Products and Industries > Controllers > I/O systems > I/O modules PSSuniversal 2 or the Head module under section "Software" Software version 5.0.0 available.	www.pilz.com > Products and Industries > Controllers > Overview I/O systems 328062 (Order number head module) www.pilz.com > Download 328062
3	System Description PSSuniversal 2	Not yet available.
4	Installation manual PSSuniversal 2	1004152-EN-xx www.pilz.com > Download 1004152
5	Operation manual PSS u2 P0 F/S PN2 Product modification PSS u2 P0 F/S PN2 Hardware version 03 GSD file under section "Device description file" Use GSD version 2.33.	1005394-EN-xx www.pilz.com > Download 1005394 Not yet available. 328062 (Order number head module) www.pilz.com > Download 328062
6	Operation manual PSS u2 EF 8DI	1003619-EN-xx www.pilz.com > Download 1003619
7	Operation manual PSS u2 EF 8DO 0.5	1003621-EN-xx www.pilz.com > Download 1003621
8	Operation manual PSS u2 ES 8DID	1003612-EN-xx www.pilz.com > Download 1003612
9	Operation manual PSS u2 ES 8DOD 0.5	1003614-EN-xx www.pilz.com > Download 1003614
10	Application Note "PSSu 312043 Profinet with Simatic S7" Document for PSSu system (Generation 1) with SIMATIC STEP 7 Classic	1001907-EN-xx www.pilz.com > Download 1001907
11	Application Note "PSS u2 328061 Profinet with Simatic S7" Document for PSS u2 system with head module PSS u2 P0 F/S PN	1004479-EN-xx www.pilz.com > Download 1004479
12	Application Note "PSS u2 328062 Profinet with Simatic S7" Document for PSS u2 system with head module PSS u2 P0 F/S PN2	1005258-EN-xx www.pilz.com > Download 1005258

► Note

Please refer to

- the file *Readme* belonging to the software version under number '2' and
- the updated document *Product modification* under number '5'.

1.2 Documentation from other sources of information

No.	Description	Item No. / Download
1	PI Portal (PROFIBUS and PROFINET International)	www.profinet.com
2	Siemens Homepage, Safety integrated	www.industry.siemens.com > Safety Integrated
3	Siemens Homepage, SCE Training Curriculums (TIA)	w3.siemens.com > MCMS/SCE
4	SIMATIC Industrial Software SIMATIC Safety - Configuring and Programming Programming and Operating Manual	A5E02714439-AL; 05/2021 support.industry.siemens.com > 54110126
5	Application example Emergency stop up to SIL 3 / PL e with a failsafe S7-1500 controller	21064024, 05/2017 support.industry.siemens.com > 21064024
6	Application example Monitoring the feedback circuit in the safety program	21331098, 08/2019 support.industry.siemens.com > 21331098

2 Used hardware and software

2.1 Pilz products

No.	Descriptions	Order number	Version	Number
1	Hardware head module PSS u2 P0 F/S PN2	328062	03	1
2	Hardware terminal block 9-pin, 1 piece PSS u2 T 9 SD (1 pc.) Note: 1 piece is included on the head module	328830	--	0
3	Hardware memory card µSD Memory Card 512MB, industrial version	328835	--	1
4	Hardware backplane 4 Slots PSS u2 B 4	328810	01	2
5	Hardware backplane 1 Slot PSS u2 B 1 Note: Alternative backplane (8 pieces)	328811	--	0
6	Hardware electronic Module PSS u2 EF 8DI	328101	01	2
7	Hardware electronic Module PSS u2 EF 8DO 0.5	328131	01	2
8	Hardware electronic Module PSS u2 ES 8DID	328311	01	2
9	Hardware electronic Module PSS u2 ES 8DOD 0.5	328401	01	2
10	Hardware terminal block 8-pin, 1 piece PSS u2 T 8 (1 pc.) Note: Also available in packs of 10 and 50 pieces.	328840	--	0
11	Hardware terminal block 16-pin, 1 piece PSS u2 T 16 (1 pc.) Note: Also available in packs of 10 and 50 pieces.	328850	--	8
12	Hardware Ethernet-Plug 8-pin RJ45 male connector, straight, in accordance with the standard IEC 60603-7-1, Cat.6a RJ45 Connector	380401	--	2
13	Hardware Ethernet-cable SafetyNET p cable, Standard, 4-wire SafetyNET p Cable	380000	--	2 (x1 meter)
14	Software PASconfig	--	5.0.0	--

2.2 Third-party products

No.	Descriptions	Order number	Version	Number
1	Hardware Power Supply PS 60W 120/230VAC/DC	6ES7 507-0RA00-0AB0	V1.0	1
2	Hardware PLC CPU 1518F-4 PN/DP	6ES7518-4FP00-0AB0	V2.6	1
3	Hardware Digital input module SM 521 DI 32xDC 24V HF	6ES7521-1BL00-0AB0	V1.0	1
4	Hardware Digital output module SM 522 DQ32xDC 24V/0,5A ST	6ES7522-1BL00-0AB0	V2.0	1
5	Hardware Front connector 40polig, Screw-type	6ES7592-1AM00-0XB0	--	2
6	Software SIMATIC STEP 7 Professional	--	V15.1	--
7	Software SIMATIC STEP 7 Safety	--	V15.1	--

2.3 Structure of the application (schematic)

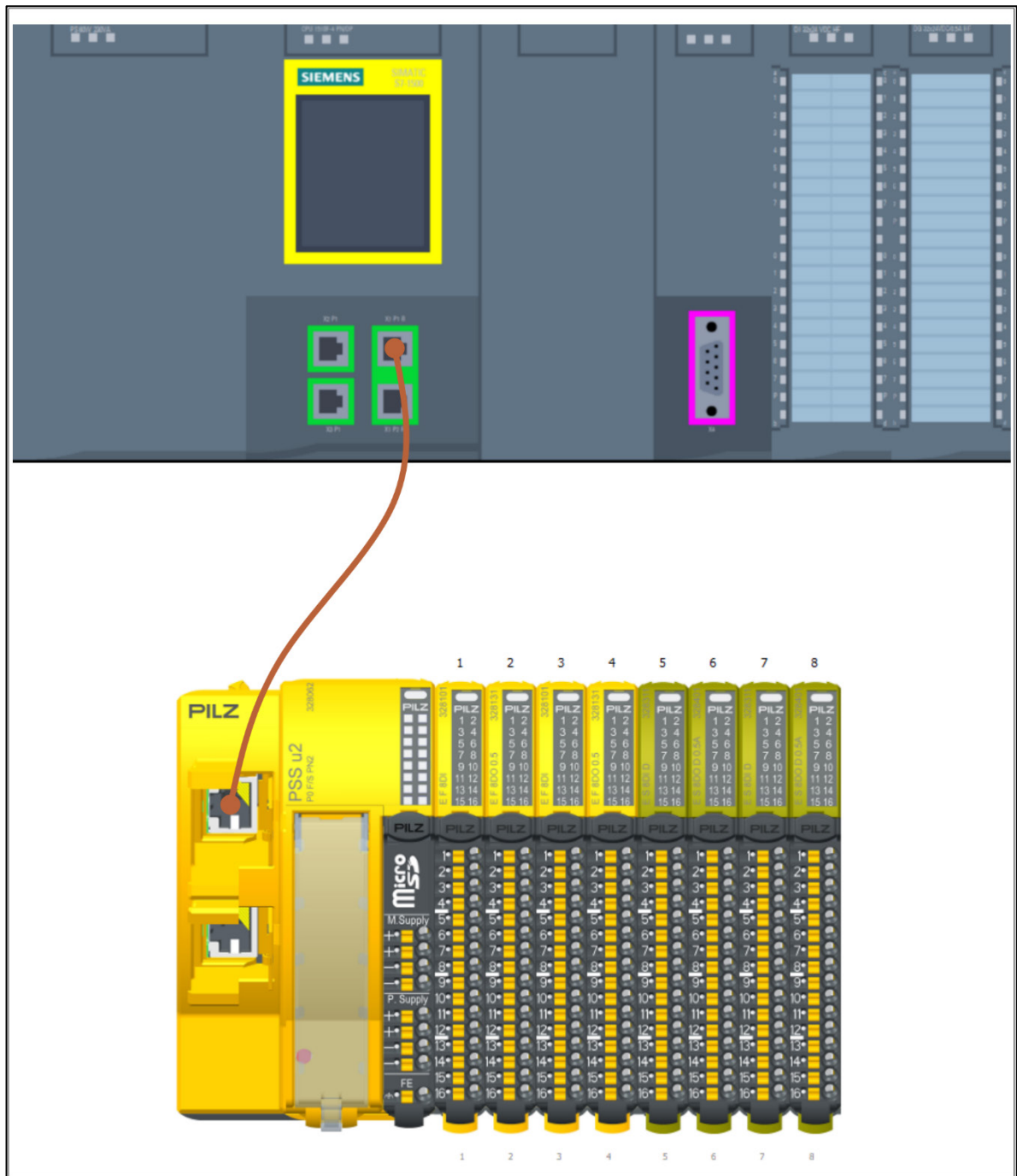


Figure 2: Application – Structure of the hardware (schematic)

3 Preface

This Application Note basically describes the commissioning of a PSSuniversal 2 Remote I/O system on a current SIMATIC F-CPU. They communicate via PROFINET/PROFIsafe, using the automation software TIA Portal.

In this case, its user program controls the failsafe input and output modules of the PSS u2 electronic modules for the safety functions.

The essential procedure for a successful basic configuration is shown step-by-step, usually with screenshots.

**NOTICE**

- ▶ A detailed explanation of safety functions used in the failsafe application and its evaluation regarding functional safety are not a part of this document.
- ▶ This document only describes the procedure for use of the Remote I/O-System PSS u2 with the order number **328062** and is not intended as a technical documentation for general use of the SIMATIC STEP 7 Professional for Siemens TIA Portal.

4 Technical notes for the PSS u2 system

A PSS u2 system is a modular system with PROFINET interface (PROFINET with PROFIsafe).

The 'PASconfig' system software is available for PSS u2 systems. The system software provides support as you select, configure and commission components.

- ▶ A PSS u2 system consists of:
 - One head module
 - Backplanes
 - Input/output modules for standard and failsafe applications
 - Terminal blocks

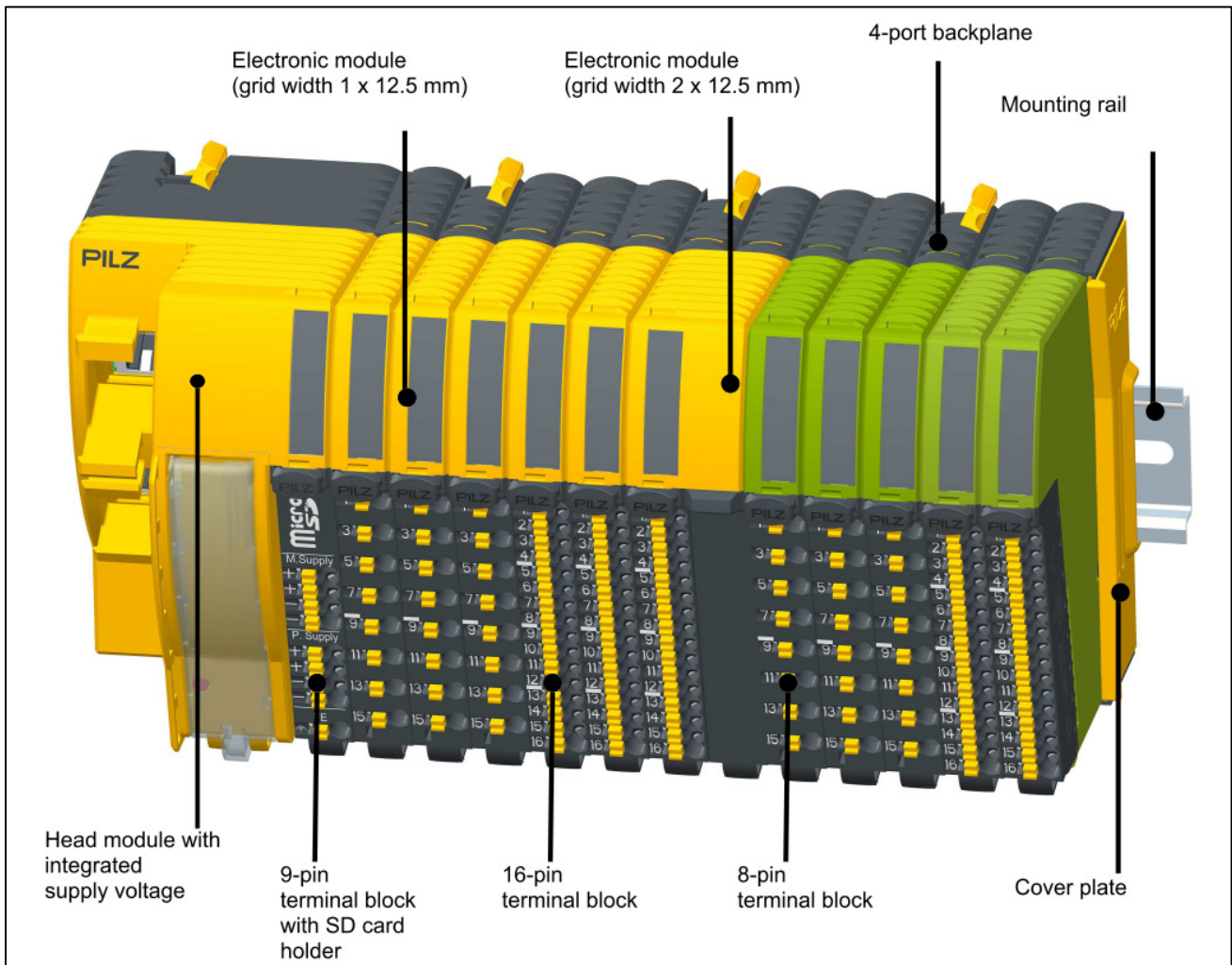


Figure 3: PSS u2 – Modular structure of the PSS u2 system



CAUTION!

Risk of material damage:

Backplanes and head module may only be inserted or removed when the supply voltage is switched off.

- ▶ Switch off the supply voltage before inserting or removing the backplane or head module.

5 Application description

The aim is to show how a basic PROFINET/PROFIsafe communication and Siemens S7-1500 PLC can be built up to form a remote I/O system PSS u2.

For basic fieldbus communication, the standard default parameters from the TIA portal are used. Only parameters for the addressing of the devices are adjusted.

The detailed hardware configuration for the S7-CPU is not part of this Application Note. Detailed information on this subject can be found in the manual or online help for the TIA Portal.

- see [Chapter 1.2 Documentation from other sources of information](#) [ 7]

6 Hardware configuration

6.1 Used hardware

6.1.1 Pilz devices

- ▶ The used Pilz modules are listed in the table of the following link:
 - [Chapter 2.1 Pilz products \[8\]](#)
- ▶ The relevant important documents are named and linked here:
 - [Chapter 1.1 Documentation from Pilz GmbH & Co. KG \[6\]](#)

	PSS u2 P0 F/S PN2
	1 - PSS u2 EF 8DI
	2 - PSS u2 EF 8DO 0.5A
	3 - PSS u2 EF 8DI
	4 - PSS u2 EF 8DO 0.5A
	5 - PSS u2 ES 8DID
	6 - PSS u2 ES 8DOD 0.5A
	7 - PSS u2 ES 8DID
	8 - PSS u2 ES 8DOD 0.5A

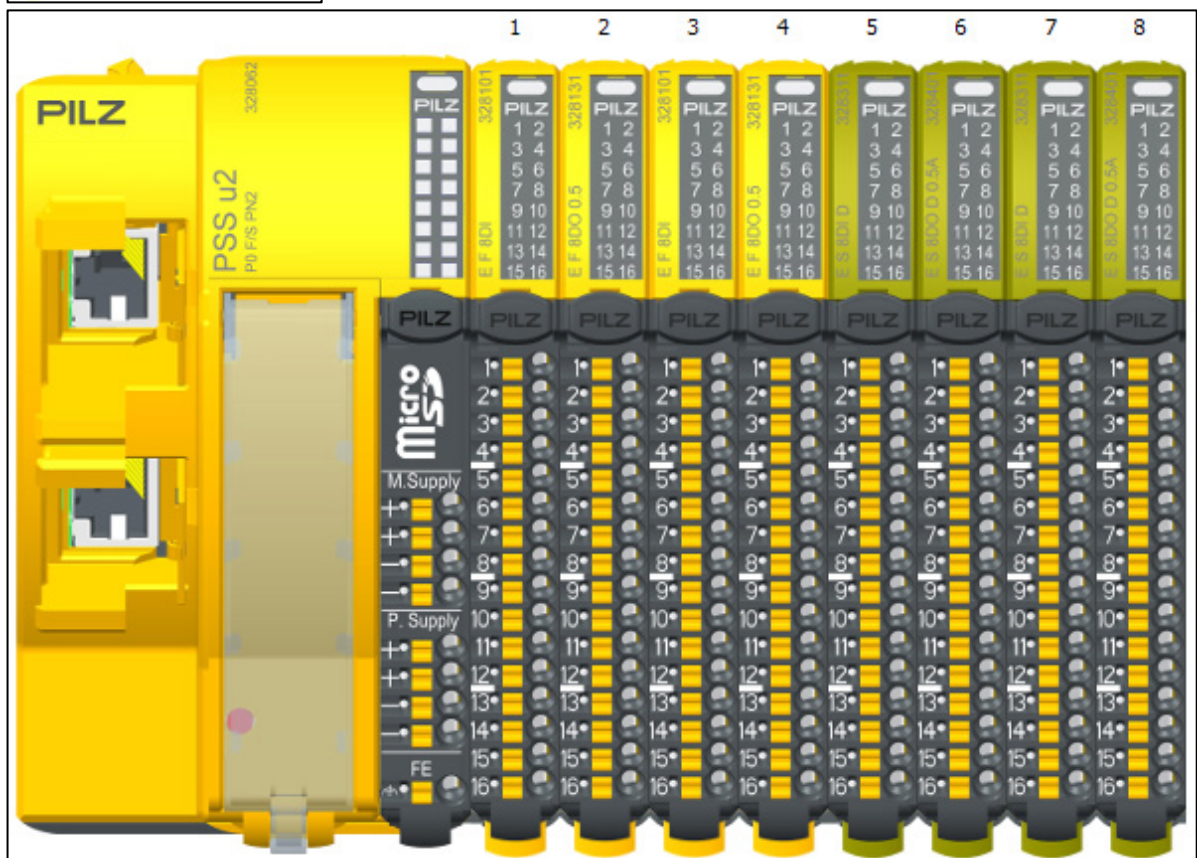


Figure 4: PSS u2 – Hardware » Overview of used modules

6.1.2 Siemens devices

- ▶ The used SIMATIC devices are listed in the table of the following link:
 - [Chapter 2.1 Pilz products \[8\]](#)
- ▶ The relevant important documents are named and linked here:
 - [Chapter 1.2 Documentation from other sources of information \[7\]](#)

6.2 Basic properties of the PSS u2 system

6.2.1 Maximum size of the PSS u2 failsafe and standard I/O process image

- ▶ PROFINET interface:
 - Input 1,440 bytes
 - Output 1,440 bytes
- ▶ PROFIsafe interface:
 - 24 failsafe input and output electronic modules.

The PROFIsafe instances have a variable process data length, depends on the type of the configured electronic modules.

The description of the process image can be found in the manuals of the electronic modules.

6.2.2 I/O address assignment (byte alignment)

The following two examples show the addresses of the PSS u2 modules, always a full byte per module and function is used.

- ▶ PSS u2 ES 4DID
 - The module occupies 2 Bytes in the process image of the standard inputs.

PII		Meaning	State
Byte 0	Bit 0	Input data I0	0: "0"-signal (0 V) at the input 1: "1"-signal (+ 24 V) at the input
	Bit 1	Input data I1	
	Bit 2	Input data I2	
	Bit 3	Input data I3	
	Bit 4 - 7	None	Constant "0"
Byte 1	Bit 0	Valid bit of voltage output S0	0: Error at the voltage output
	Bit 1	Valid bit of voltage output S1	1: No error at the voltage output
	Bit 2 - 7	None	Constant "0"

- ▶ PSS u2 EF 2DO TP 2A
 - The module occupies 1 Byte in the process image of the failsafe outputs.

PIO	Meaning	State
Bit 0	Output data O0	0: "0" signal (0 V) at the output
Bit 1	Output data O1	1: "1" signal (+ 24 V) at the output
Bit 2-7	None	Constant "0"

- The same module also occupies 1 Byte in the process image of failsafe inputs:

PII	Meaning	State
Bit 0	Valid bit of output O0	0: Output error
Bit 1	Valid bit of output O1	1: The signal in the PIO corresponds to the output signal
Bit 2	Open circuit at output O0	0: Open circuit at output
Bit 3	Open circuit at output O1	1: No open circuit at output
Bit 4-7	None	Constant "0"

6.2.3 Failsafe I/O assignment

The following two examples are based on the following address assignment:

- 1st PROFIsafe instance for 1st PSS u2 EF 8DI (slot 1)
- 2nd PROFIsafe instance for 1st PSS u2 EF 8DO 0.5A (slot 2)
- 3rd PROFIsafe instance for 2nd PSS u2 EF 8DI (slot 3)
- 4th PROFIsafe instance for 2nd PSS u2 EF 8DO 0.5A (slot 4)

The used I/O system in the application project has the following addresses:

- ▶ [Figure 38: TIA – Overview of the PROFIsafe groups in the "Device view" \(Part 3, Finalization\)](#)
[28]
- ▶ [Figure 41: TIA – Overview of the electronic modules in the "Device view" \(Part 3, Finalization\)](#)
[29]

- ▶ Configuration with the four failsafe input and output electronic modules in this used AN setup:

Slot 1		Slot 2		Slot 3		Slot 4	
PSS u2 EF 8DI		PSS u2 EF 8DO 0.5A		PSS u2 EF 8DI		PSS u2 EF 8DO 0.5A	
Address	Identification	Address	Identification	Address	Identification	Address	Identification
%I4.0	FS input I0	%Q11.0	FS output O0	%I17.0	FS input I0	%Q24.0	FS output O0
%I4.1	FS input I1	%Q11.1	FS output O1	%I17.1	FS input I1	%Q24.1	FS output O1
%I4.2	FS input I2	%Q11.2	FS output O2	%I17.2	FS input I2	%Q24.2	FS output O2
%I4.3	FS input I3	%Q11.3	FS output O3	%I17.3	FS input I3	%Q24.3	FS output O3
%I4.4	FS input I4	%Q11.4	FS output O4	%I17.4	FS input I4	%Q24.4	FS output O4
%I4.5	FS input I5	%Q11.5	FS output O5	%I17.5	FS input I5	%Q24.5	FS output O5
%I4.6	FS input I6	%Q11.6	FS output O6	%I17.6	FS input I6	%Q24.6	FS output O6
%I4.7	FS input I7	%Q11.7	FS output O7	%I17.7	FS input I7	%Q24.7	FS output O7
%I5.0	Valid bit of I0	%I11.0	Valid bit of O0	%I18.0	Valid bit of I0	%I24.0	Valid bit of O0
%I5.1	Valid bit of I1	%I11.1	Valid bit of O1	%I18.1	Valid bit of I1	%I24.1	Valid bit of O1
%I5.2	Valid bit of I2	%I11.2	Valid bit of O2	%I18.2	Valid bit of I2	%I24.2	Valid bit of O2
%I5.3	Valid bit of I3	%I11.3	Valid bit of O3	%I18.3	Valid bit of I3	%I24.3	Valid bit of O3
%I5.4	Valid bit of I4	%I11.4	Valid bit of O4	%I18.4	Valid bit of I4	%I24.4	Valid bit of O4
%I5.5	Valid bit of I5	%I11.5	Valid bit of O5	%I18.5	Valid bit of I5	%I24.5	Valid bit of O5
%I5.6	Valid bit of I6	%I11.6	Valid bit of O6	%I18.6	Valid bit of I6	%I24.6	Valid bit of O6
%I5.7	Valid bit of I7	%I11.7	Valid bit of O7	%I18.7	Valid bit of I7	%I24.7	Valid bit of O7

Figure 5: PSS u2 – Hardware failsafe I/O assignment (AN configuration FS modules)

- ▶ Please see also function **access point "FS I/O Mapping"**.
– [Chapter 9.2 Display of the failsafe I/O mapping](#) [44]

6.2.4 Diagnostic information

- ▶ The status of the I/O modules is:
 - displayed via the "Module status display" and "Terminal status display",
 - this is signalled to the head module and
 - any error is entered in the head module's diagnostic log.

The head module contains a number of status LEDs, which provide information on the status of various system sections.

7 Configuration of Siemens S7 F-CPU

7.1 Creation of new TIA project

- ▶ First you start the software TIA Portal and create a new project:

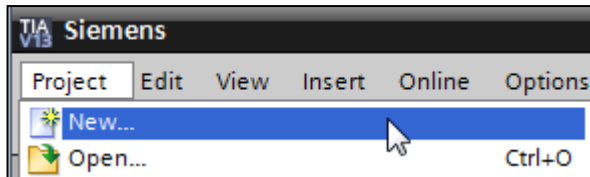


Figure 6: TIA – Create a new project (Part 1, Start)

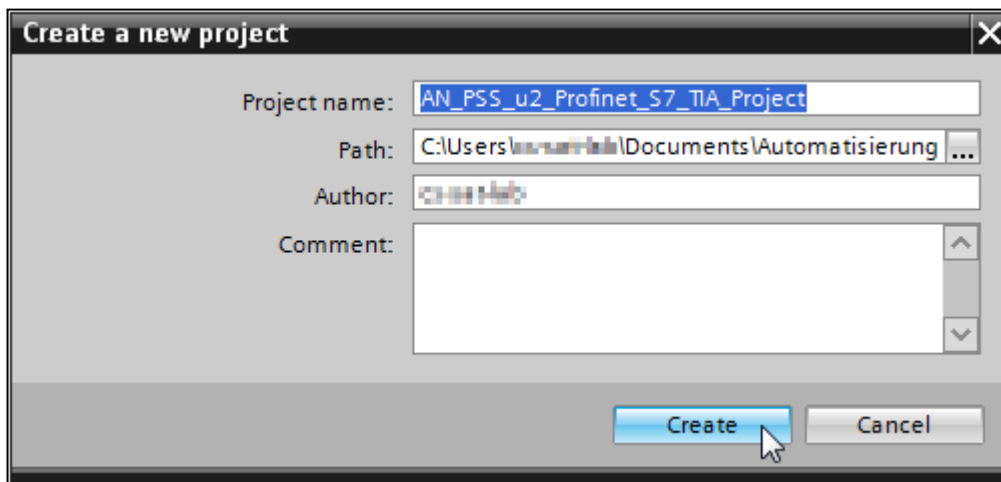


Figure 7: TIA – Create a new project (Part 2, Creation)

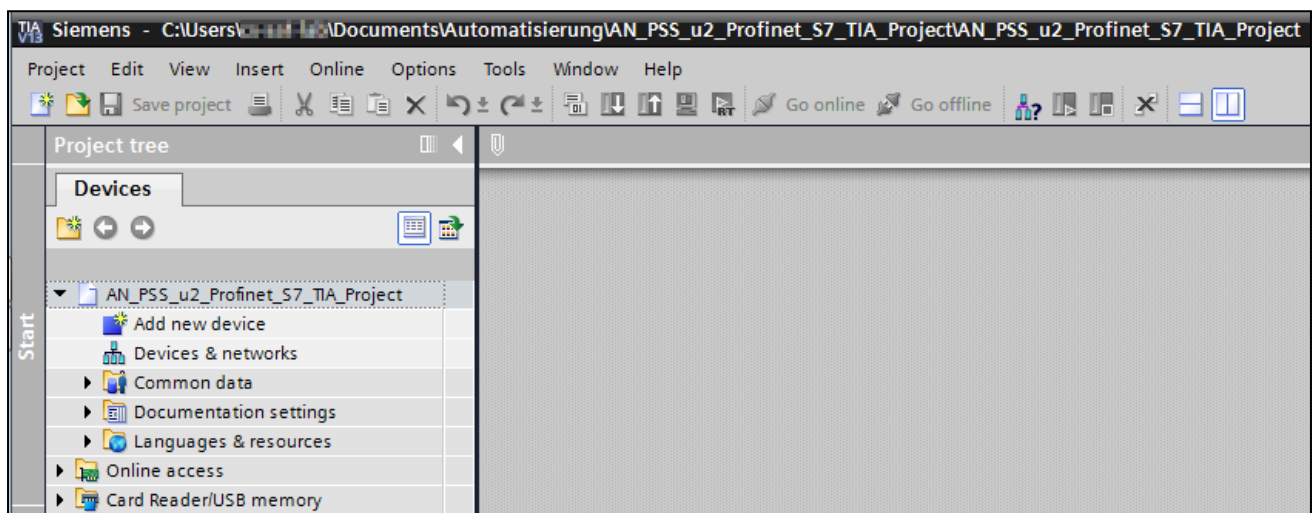


Figure 8: TIA – Create a new project (Part 3, Finalization)

- ▶ Now the F-CPU must be selected and configured. This is done in the next chapter.

7.2 Select and configure the S7 F-CPU

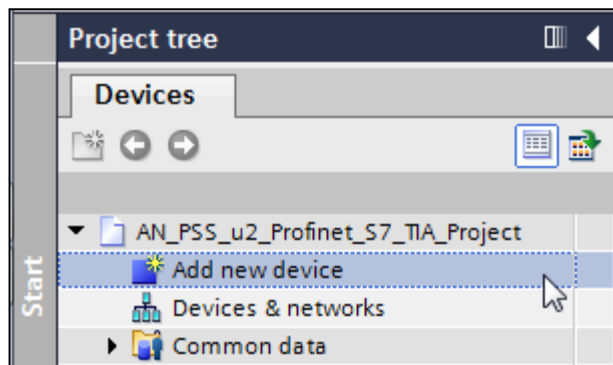


Figure 9: TIA – Add new device (Part 1, Start)

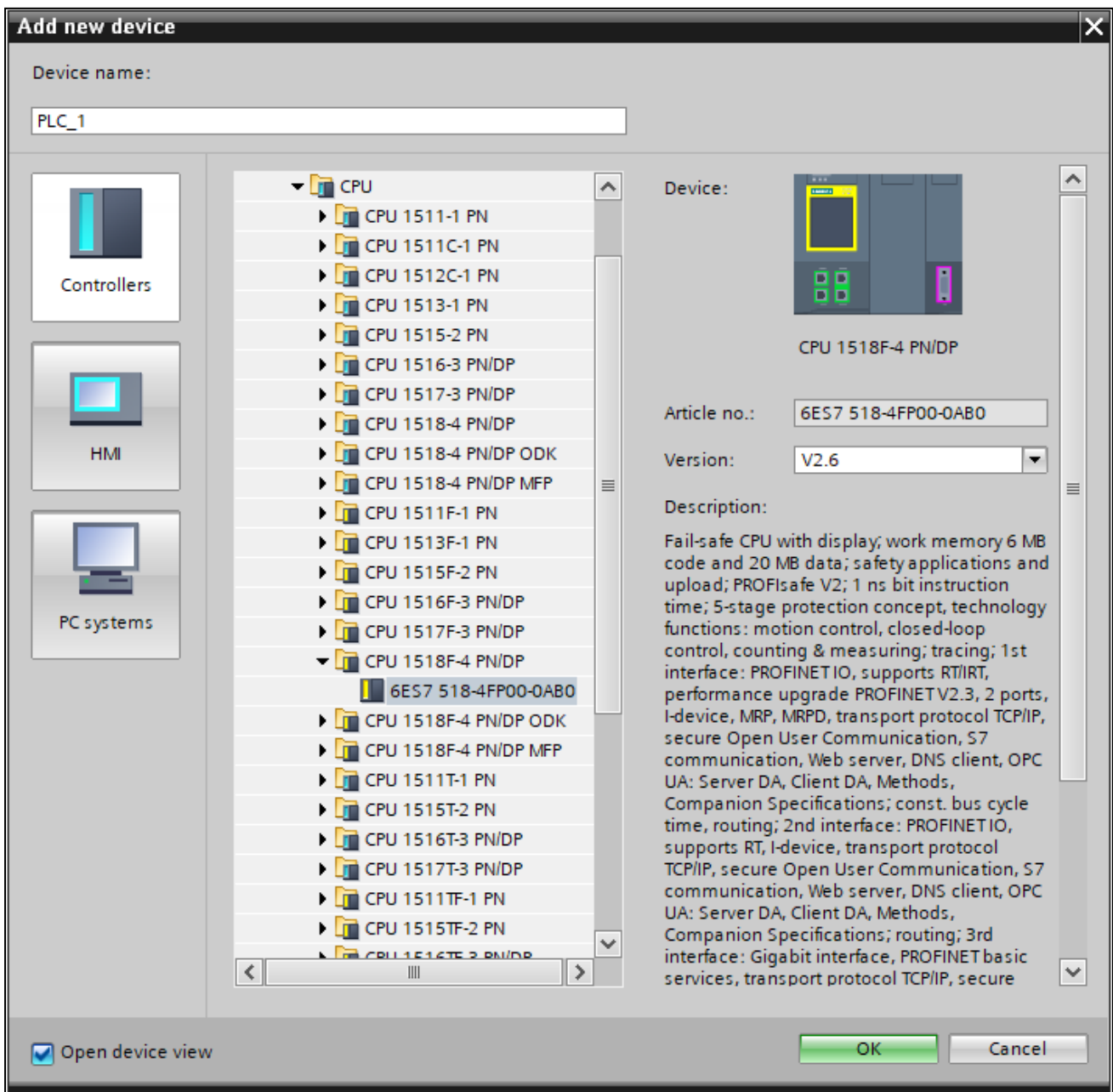


Figure 10: TIA – Add new device (Part 2, PLC 'CPU 1518F-4 PN/DP')

- ▶ Switch to "Device view" (if not previously selected) and select the device 'PLC_1':

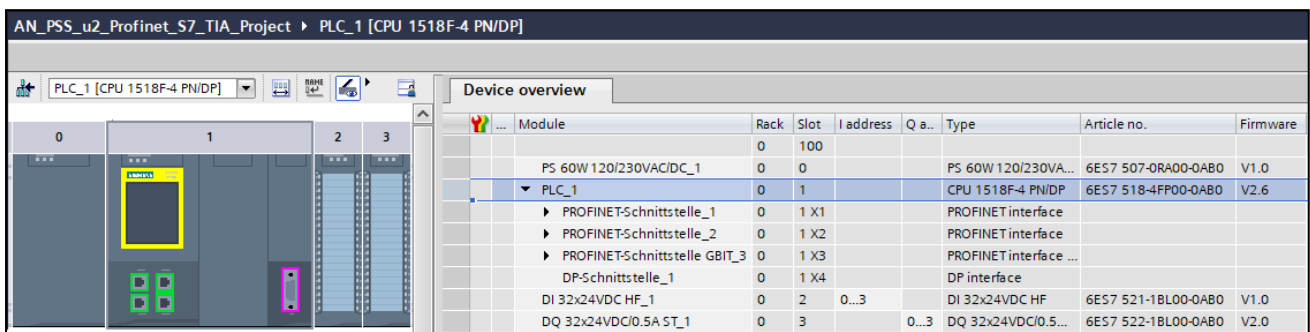
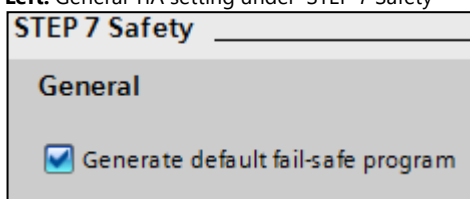


Figure 11: TIA – Add new device (Part 3, Finalization)

- ▶ Switch to "Fail-Safe" in the "General" tab.
- ▶ Enable the 'F-capability of the F-CPU' including selection of the 'Access level for the PLC':

Left: General TIA setting under 'STEP 7 Safety'



Right: Enable the 'F capability of the F-CPU'

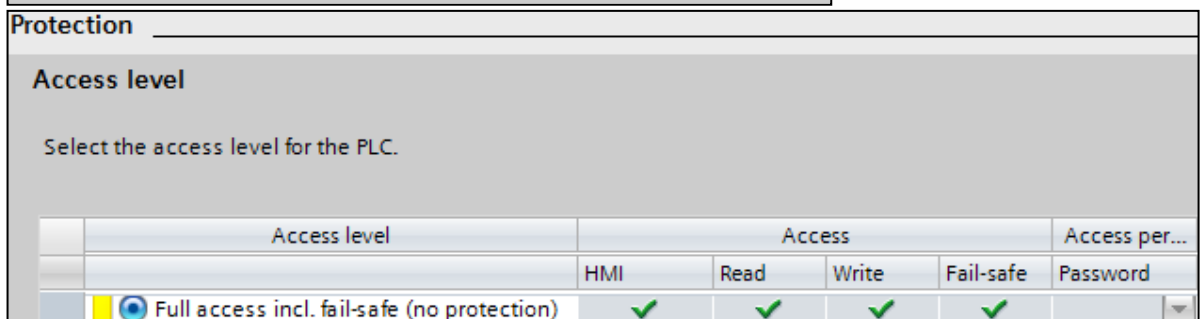
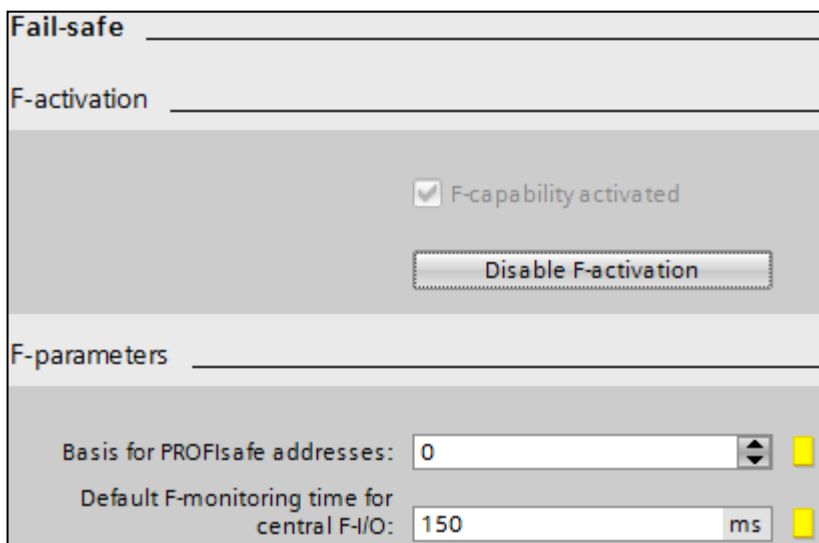
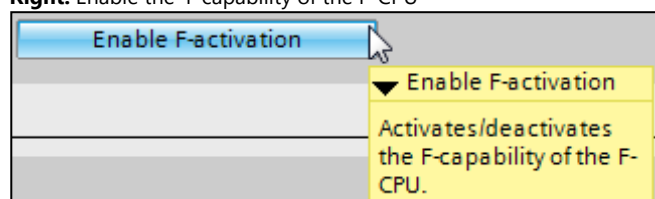


Figure 12: TIA – F-CPU » Enabling F-capability and select access level

7.3 Setting up the Ethernet adapter

- ▶ Top » 'S7 X1 P1' & 'X1 P2': **192.168.020.010** / 255.255.255.0 (MAC ADD1)
 - SIMATIC S7-PLC with PROFINET interface (X1) with 2 ports (F-CPU 1518F-4 PN/DP)
 - Connection to programming device with PG/PC interface (TIA Portal)
 - Connection to remote I/O System PSS u2 with PROFINET interface 'X3'

Note:

- ▶ Observe the (partly different) technical properties of the individual PROFINET interfaces for the SIMATIC CPUs (see SIMATIC CPU manual).

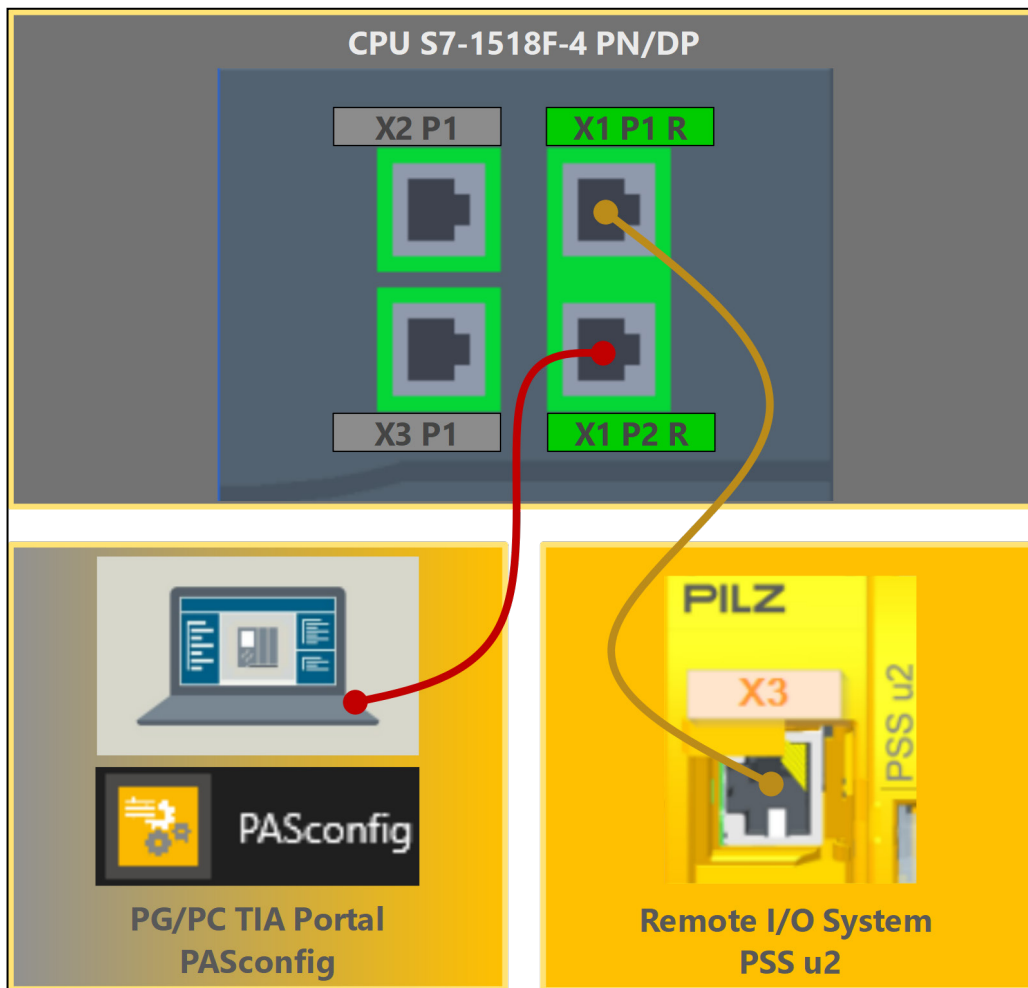


Figure 13: Application – Wiring of Ethernet connections (schematic)

- ▶ Bottom / Left » 'PC-ETH-Adapter': **192.168.020.013** / 255.255.0.0
 - Programming device with PG/PC interface (TIA Portal)
 - Connection to SIMATIC S7-PLC with PROFINET interface (X1 P2R)
- ▶ Bottom / Right » 'PSS u2 X3': **192.168.020.011** / 255.255.255.0
 - Remote I/O system PSS u2 with PROFINET interface 'X3'
 - Connection to SIMATIC S7-PLC with PROFINET interface (X1 P1R)

Notes:

- ▶ In TIA, you can first search and display the "Accessible devices ..." in the network in order to change the configuration for the used F-CPU.
In this example, the default network address is used for the F-CPU.
- ▶ The default IP address of the PSS u2 head modules when delivered: **0.0.0.0** (:18080 / 0.0.0.0).
(applies only to the PROFINET version)

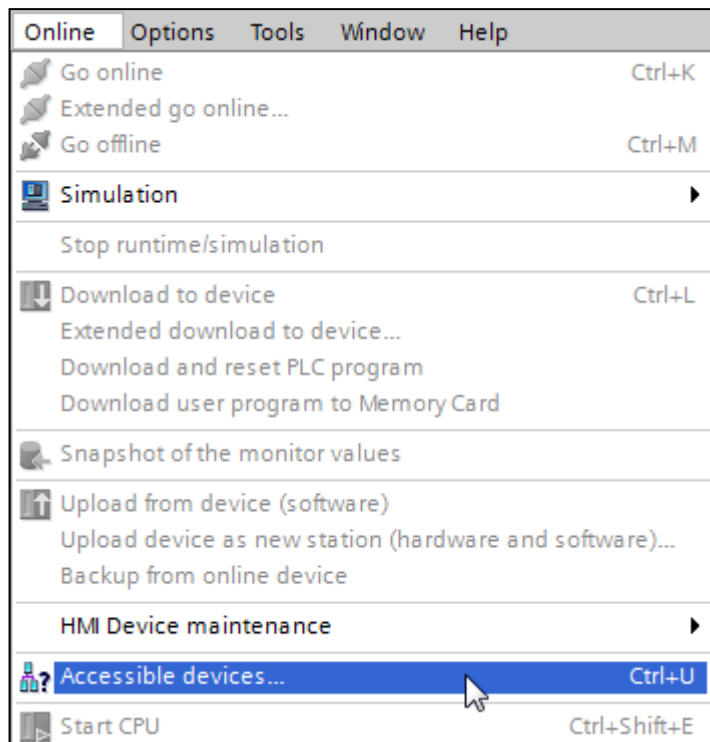


Figure 14: TIA – Search for 'Accessible devices ...' (Part 1, Start)

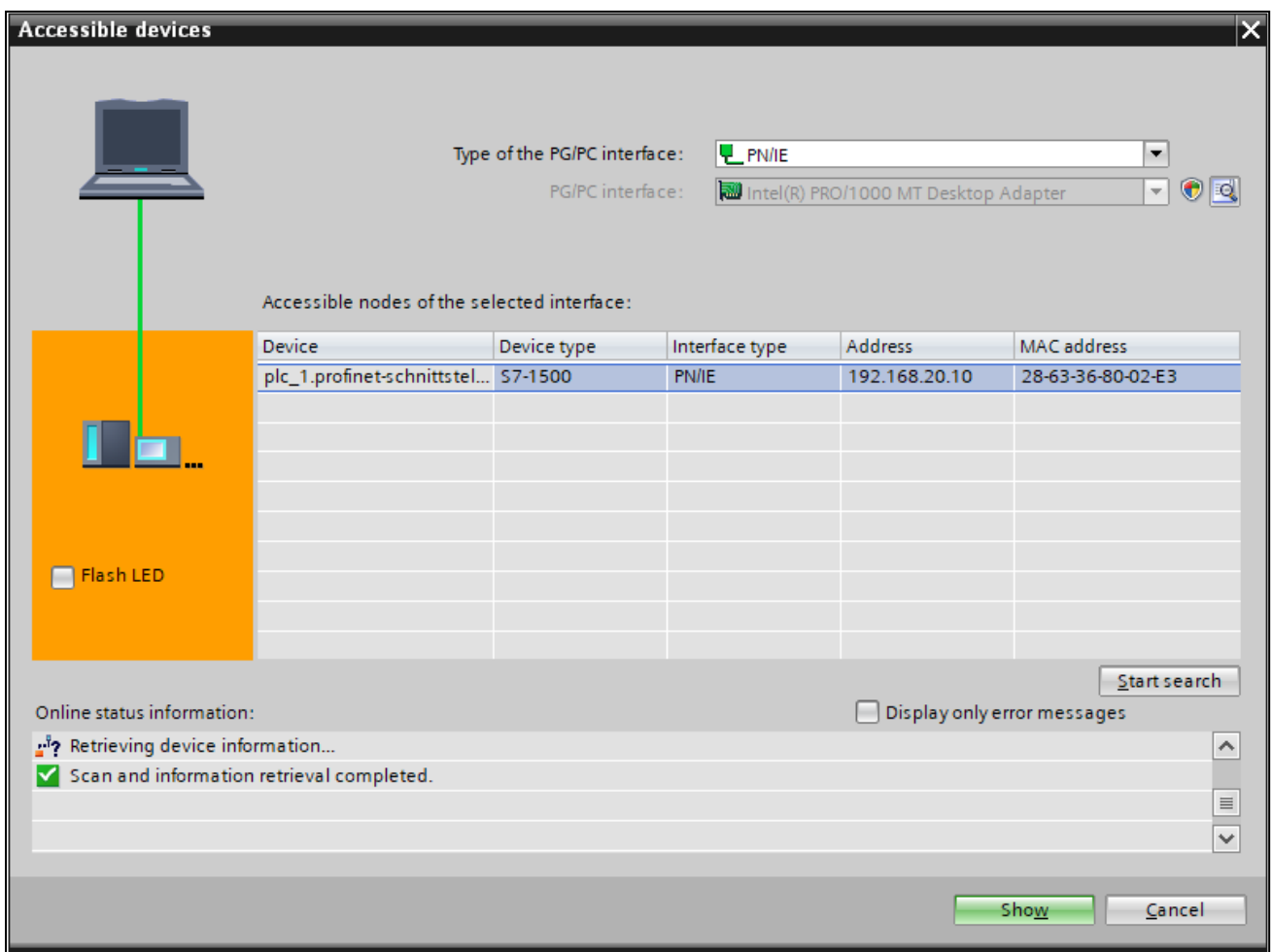
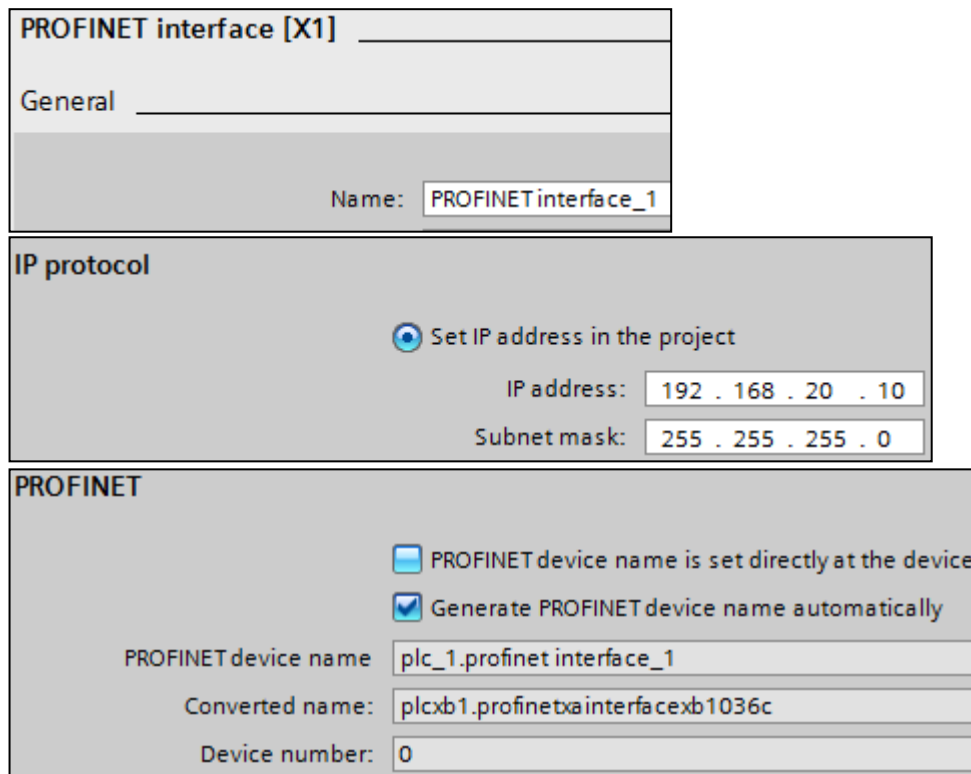


Figure 15: TIA – List of 'Accessible devices ...' (Part 2, Overview)

- ▶ Switch to "Device view" (if not previously selected) and select the device 'PLC_1':
- ▶ Open "Properties" window.
- ▶ Switch to the section "PROFINET Interface [X1]" in the 'General' tab and check its settings:



PROFINET interface [X1]

General

Name:

IP protocol

☒ Set IP address in the project

IP address:

Subnet mask:

PROFINET

☐ PROFINET device name is set directly at the device

☒ Generate PROFINET device name automatically

PROFINET device name:

Converted name:

Device number:

Figure 16: TIA – Properties of PLC-PROFINET interface [X1] » General



INFORMATION

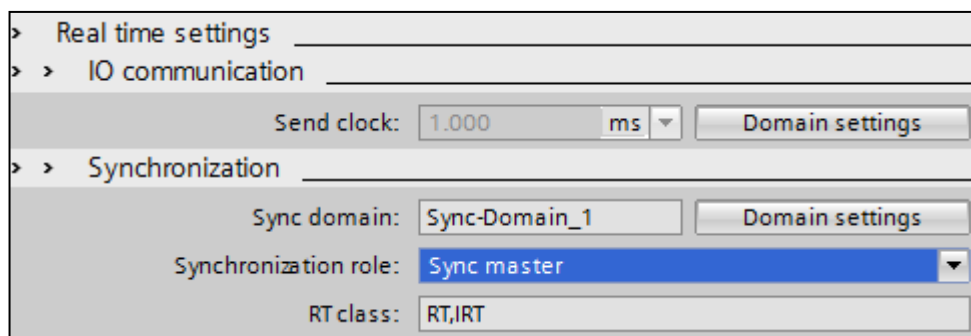
The PSS u2 system must be directly connected to the PC. Normally, there is a switch on a PLC that automatically connects the network segments to each other. The used F-CPU 1518F-4 PN/DP has two separate controllers.

Hence the Note:

- ▶ In your application, observe the requirements for commissioning (security), in particular the removal of the separation of networks with different IP address ranges.

Function: Activate IRT function "Sync master" (see also "Sync slave", [Figure 33](#)  26)

- ▶ Only use the IRT function when it is really needed; the default setting is "Unsynchronized".
- ▶ To activate the IRT function, select the synchronization role "Sync master" in the same section "PROFINET Interface[X1]" under "Real time Settings":



> Real time settings

> > IO communication

Send clock: ms

> > Synchronization

Sync domain:

Synchronization role:

RT class:

Figure 17: TIA – Properties of PLC-PROFINET interface [X1] » Real time (IRT)

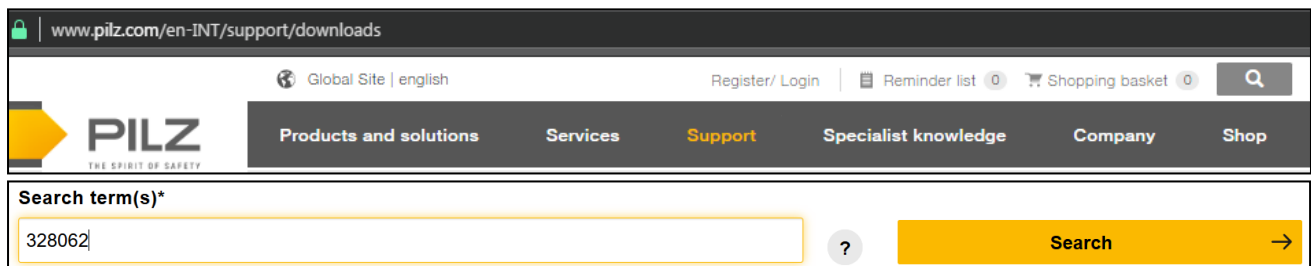
8 Configuration of the PSS u2 failsafe system

8.1 GSDML file of PSS u2 head module

8.1.1 Download of the GSDML file and the 'PASconfig' tool

For the integration of the Pilz PROFINET input/output modules in the TIA tool, the installation of a device description file (GSDML file) and the 'PASconfig' tool for the configuration of PSS u2-System are necessary.

- ▶ Download the current GSDML file (in XML format) and the 'PASconfig' tool from the Pilz homepage. You can find it in the download area ('Support' » 'Downloads') at:
<https://www.pilz.com/en-INT/support/downloads>
- ▶ Use the order number of the PSS u2-PN head module for the search: '328062'



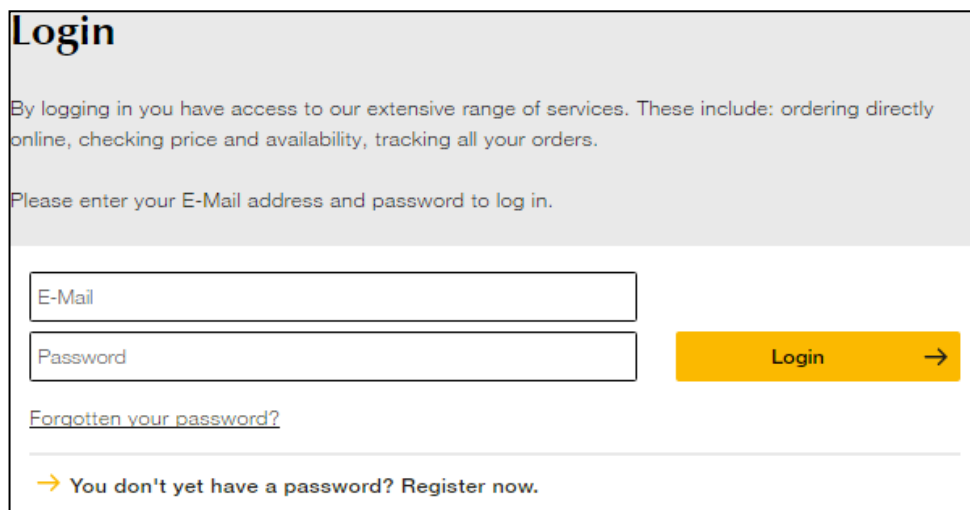
The screenshot shows the Pilz website's search interface. At the top, there's a navigation bar with the Pilz logo and links for 'Products and solutions', 'Services', 'Support', 'Specialist knowledge', 'Company', and 'Shop'. Below this is a search bar with the text 'Search term(s)*' and a yellow 'Search' button with a right arrow. The search bar contains the text '328062'.

Figure 18: Pilz Homepage (www.pilz.com) – Search for "GSD(ML)" and "PASconfig"

- ▶ The GSDML file can be found in the section "Device description file" and the two files for the tool with its "Readme file" in the "Software" section.

There is currently no registration required to download the GSDML file, but for the download the 'PASconfig' software, for whose version up to V5.0.0 no license is required yet.

- ▶ Log in with your access data at 'Login':



The screenshot shows the Pilz website's login page. It has a title 'Login' and a message: 'By logging in you have access to our extensive range of services. These include: ordering directly online, checking price and availability, tracking all your orders.' Below this is a prompt: 'Please enter your E-Mail address and password to log in.' There are two input fields: 'E-Mail' and 'Password'. To the right of the 'Password' field is a yellow 'Login' button with a right arrow. Below the input fields is a link 'Forgotten your password?' and a message '→ You don't yet have a password? Register now.'

Figure 19: Pilz Homepage (www.pilz.com) – E-Shop Login

- ▶ The three ZIP files are downloaded to the computer and have to be unpacked.
- ▶ The software 'PASconfig' must be installed according to the Siemens software 'TIA Portal'.

8.1.2 Manage general station description files GSD(ML) in TIA

- ▶ Open the function “Manage general station description files (GSD)” in the menu “Options”:

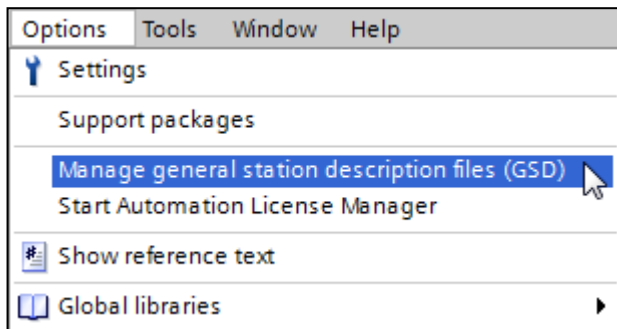


Figure 20: TIA – Manage general station description files GSD(ML) (Part 1, Start)

- ▶ Install the downloaded GSD(ML) file:

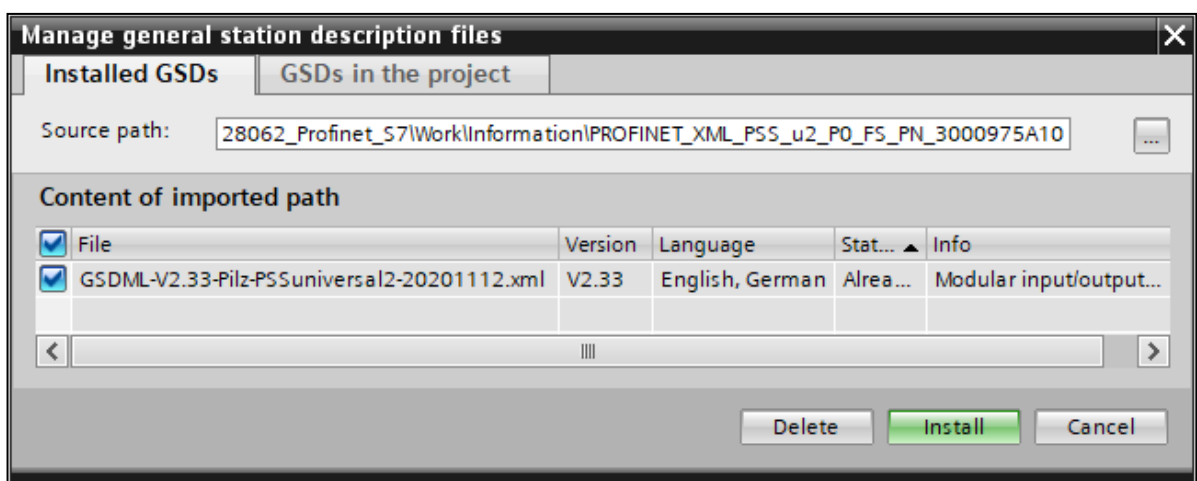


Figure 21: TIA – Manage general station description files GSD(ML) (Part 2, Installation)

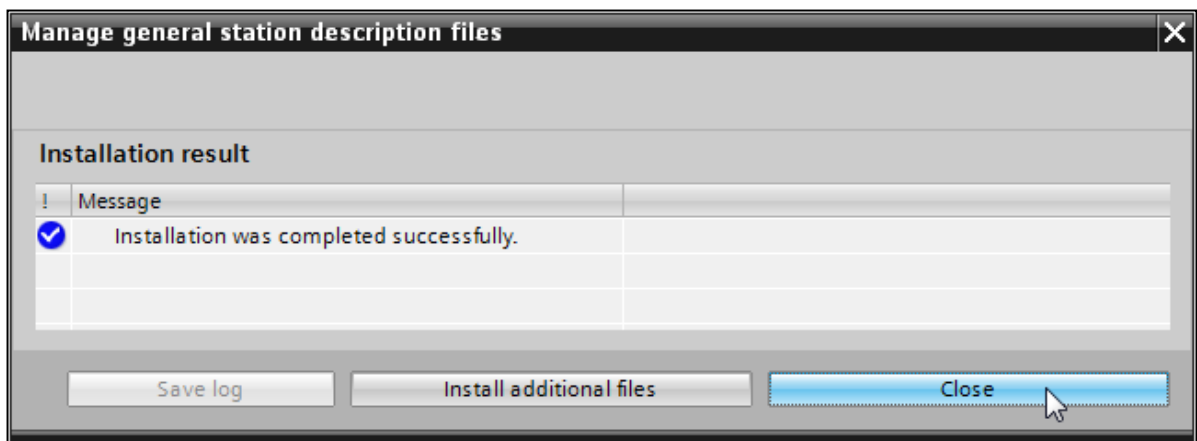


Figure 22: TIA – Manage general station description files GSD(ML) (Part 3, Finalization)

8.2 TIA – Device configuration of PSS u2 system

8.2.1 Create and configure the PSS u2 head module

- ▶ Open the function “Devices & networks” in “Project tree”:

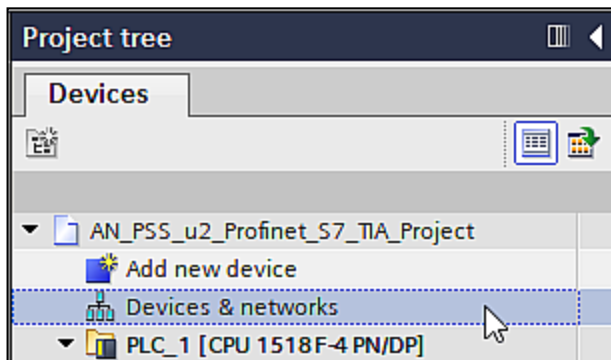


Figure 23: TIA – Open the function “Devices & networks” (Part 1, Start)

- ▶ Switch to the “Topology view”.
- ▶ Inserting the PSS u2 head module ‘PSS u2 P0 F/S PN2 V1.0x’:
Path: Catalog » Other field devices » PROFINET IO » I/O » Pilz GmbH u. Co. KG » PSSUniversal

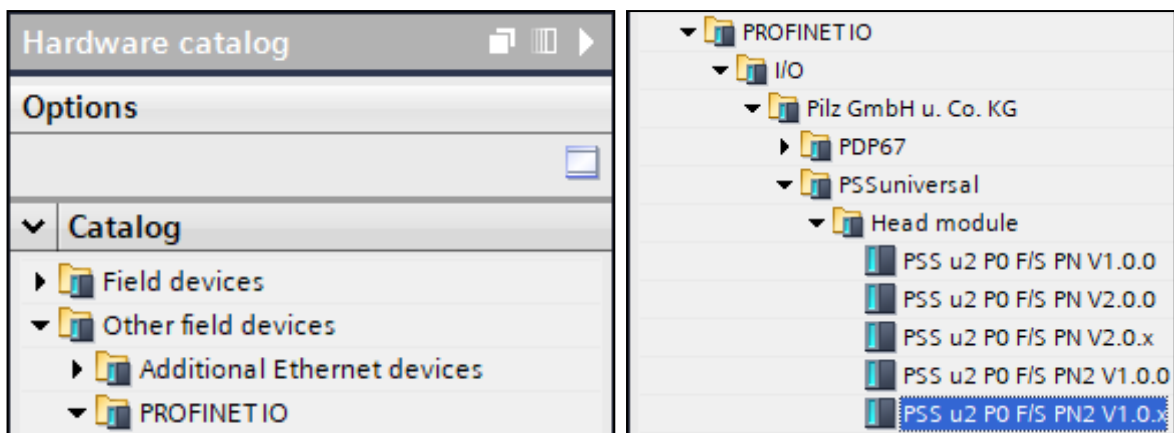


Figure 24: TIA – Inserting the PSS u2 head module (Part 2a, Selection)

Note:

- ▶ If several GSDs are installed, please select the desired one in the “Information” window.

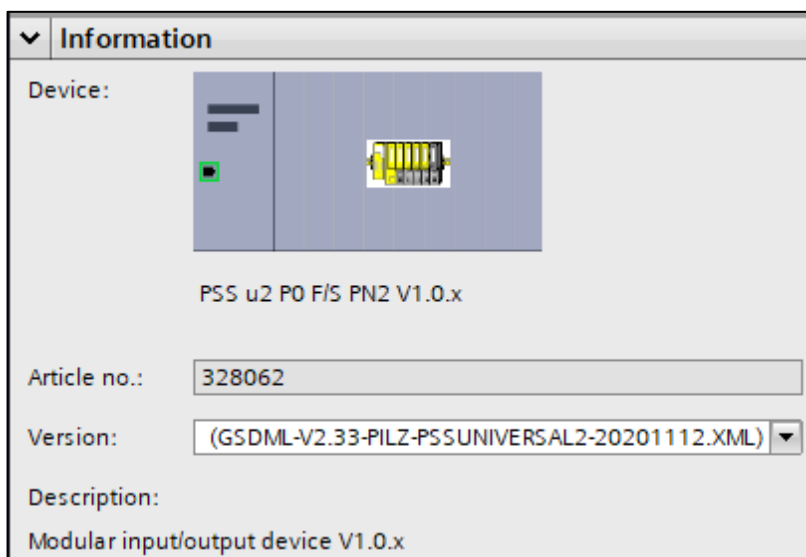


Figure 25: TIA – Inserting the PSS u2 head module (Part 2b, Information)

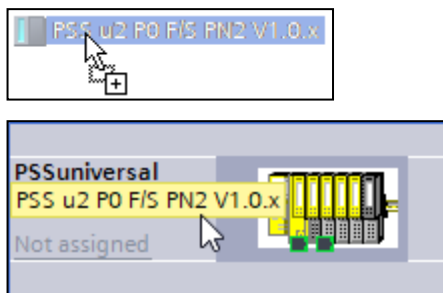


Figure 26: TIA – Inserting the PSS u2 head module (Part 2c, Finalization)

- ▶ The preset device name 'PSSUniversal' is still used, but it can also be changed in the properties of the system, e.g. in the Equipment identifying symbol (EIS):

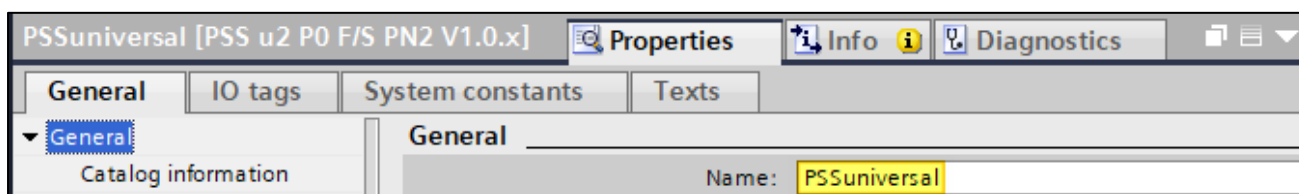


Figure 27: TIA – Assigning the device name 'PSSUniversal' of the PSS u2 head module

- ▶ Connect the S7-CPU and the I/O system in accordance with [Figure 13 Application – Wiring of Ethernet connections \(schematic\) \[19\]](#):

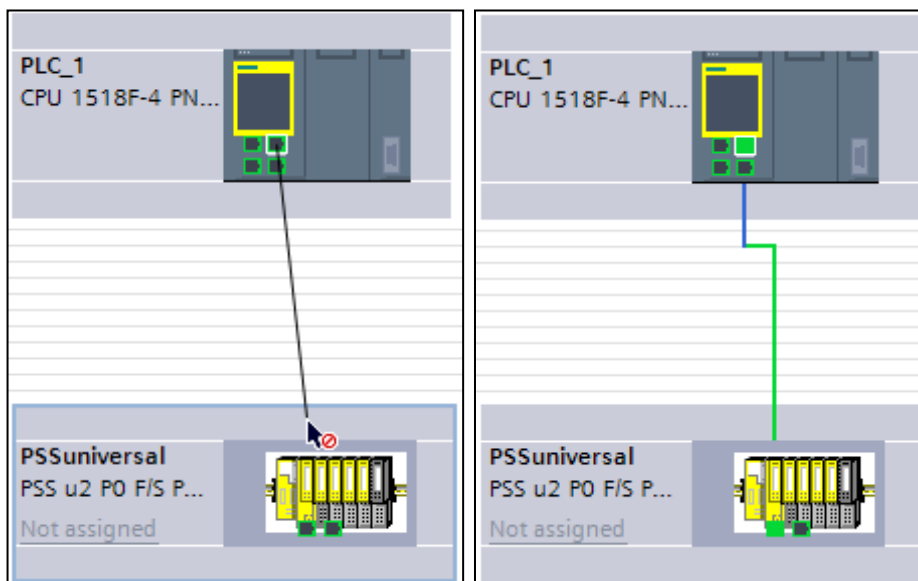


Figure 28: TIA – Connect the S7-CPU and the I/O system

- ▶ Switch to the "Network view":
The two devices are networked in the subnet "PN/IE_1".

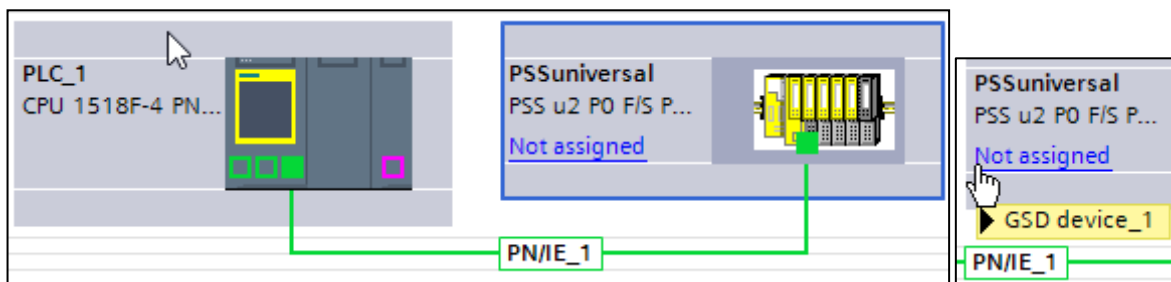


Figure 29: TIA – Assigning the I/O system to the S7 CPU (Part 1, Start)

- ▶ Assign the I/O system with the preset device name 'PSSUniversal' to the 'PLC_1':

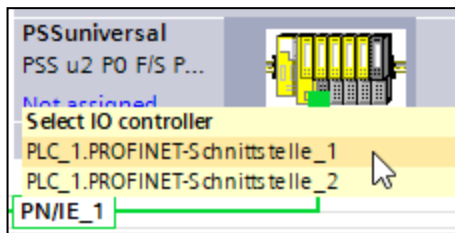


Figure 30: TIA – Assigning the I/O system to the S7 CPU (Part 3, Link-up)

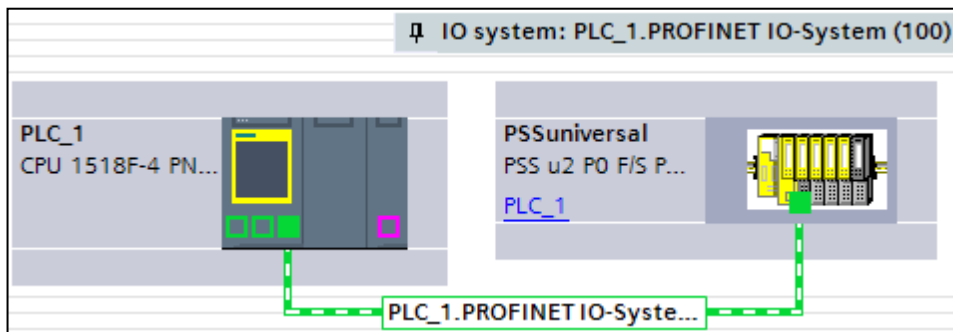


Figure 31: TIA – Assigning the I/O system to the S7 CPU (Part 3, Finalization)

- ▶ Switch to "Device view" (if not previously selected) and select the device 'PSSUniversal' (see Figure 35 [27]).
- ▶ Switch to the section in the tab "General"
 - "PROFINET Interface [X1]" (corresponds to ETH port 'X3' on the PSS u2 head module):

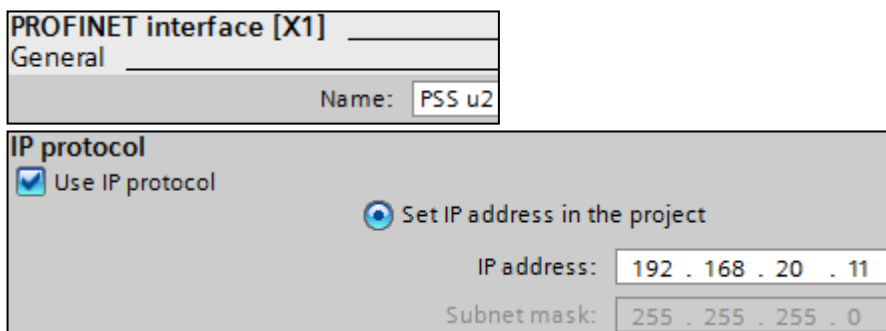


Figure 32: TIA – Properties of PSS u2-PROFINET interface [X1] to PLC

Note:

- ▶ The default IP address of the PSS u2 head modules when delivered: **0.0.0.0** (:18080/0.0.0.0). (applies only to the PROFINET version)

Function: Activate IRT function "Sync slave" (see also "Sync master", Figure 17 [21])

- ▶ Only use the IRT function when it is really needed; the default setting is "RT"/"Unsynchronized".
- ▶ To activate the IRT function, the RT class "IRT" is selected under "Real-time settings"; the new synchronization role "Sync slave" is then automatically defined:

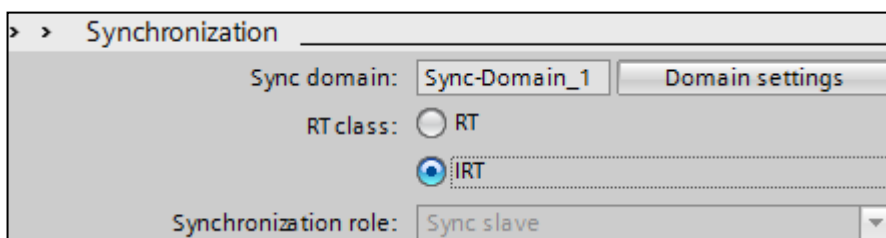


Figure 33: TIA – Properties of PSS u2-PROFINET interface [X1] » Real time (IRT)

8.2.2 Adding the head module submodules of the PSS u2 system

- The PSS u2 system 'GSD-Geraet_1' is now created in the project:

Device	Type	Address in subnet	Subnet
▼ S71500/ET200MP-Station_1	S71500/ET200MP-Station		
▼ PLC_1	CPU 1518F-4 PN/DP		
► PROFINET-Schnittstelle_1	PROFINET interface	192.168.20.10	PN/IE_1
► PROFINET-Schnittstelle_2	PROFINET interface	192.168.30.10	Not connected
► PROFINET-Schnittstelle GBIT_3	PROFINET interface GBIT	192.168.40.10	Not connected
DP-Schnittstelle_1	DP interface	2	Not connected
▼ GSD device_1	GSD-Geraet		
▼ PSSuniversal	PSS u2 P0 F/S PN2 V1.0.x		
Modular input/output device	Modular input/output device		
▼ PSS u2	PSSuniversal	192.168.20.11	PN/IE_1 ▼
Port1	Port1		
Port2	Port2		

Figure 34: TIA – Device overview of the assigned I/O system in the “network view”



INFORMATION

The failsafe modules (**PSS u2 EF ...**) must be created **twice** in the device configuration of the TIA tool:

- first singly as submodules for the PROFIsafe instances of the head module (description in this chapter) and
- then as electronic modules according to the slots of the hardware configuration (description in the next [Chapter 8.2.3 \[29\]](#)).

The standard modules (**PSS u2 ES ...**) **only** must be created **once** here:

- as electronic modules according to the slots of the hardware configuration (description in the next [Chapter 8.2.3 \[29\]](#)).

The head module (Rack 0) is located in the device view in slot 0 (in the subslot 1 as “Modular input/output device”) in the TIA portal.

Below this, **starting with subslot 2**, the FS modules that are necessary for FS operation must now be configured as its submodules (= PROFIsafe container for the respective FS electronics module).

- Switch to “Device view” and select the device ‘PSSuniversal’:

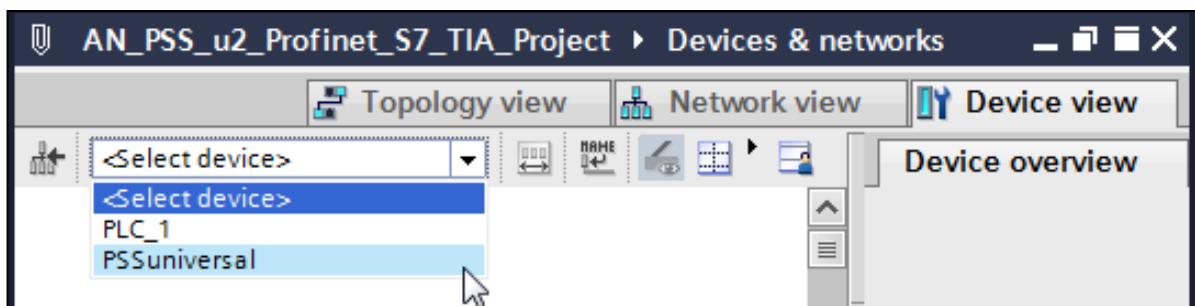


Figure 35: TIA – Switch to the Device overview of the I/O system in the “Device view”

- ▶ Open the section "Head module submodules" in the catalogue tree.

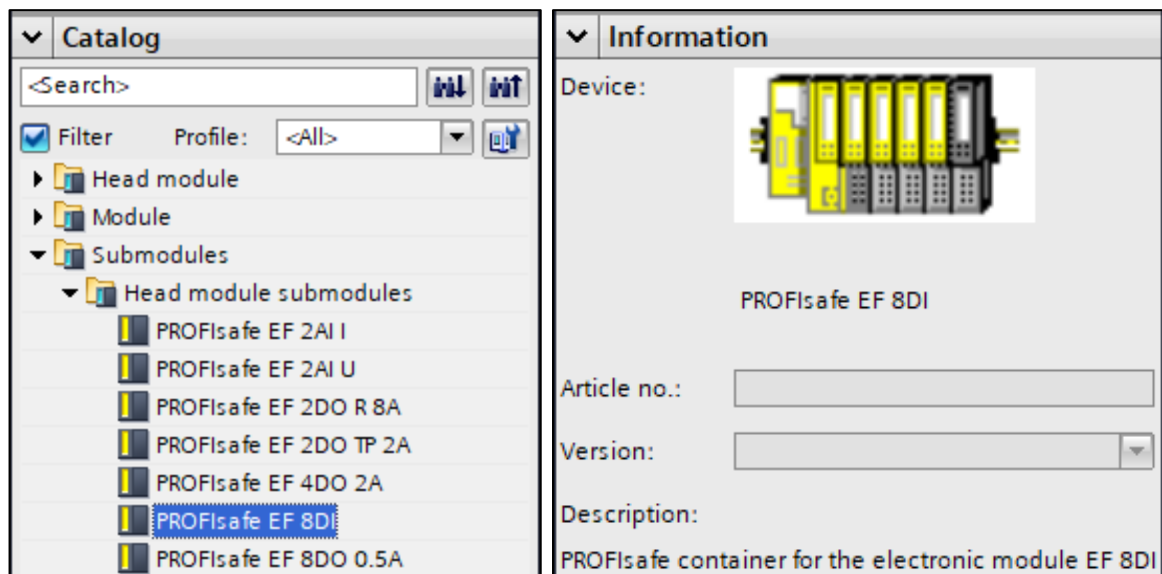


Figure 36: TIA – Adding the PROFIsafe groups to the head module (Part 1, Start)

- ▶ Add the PROFIsafe groups that are necessary for failsafe operation:
 - see [Chapter 6.2.3 Failsafe I/O assignment](#) [15]

Device overview								
Module	Rack	Slot	I address	Q address	Type	Article number	Firmware	
▼ PSSuniversal	0	0			PSS u2 P0 F/S PN2 V...	328062	V1.0.0	
Modular input/output de...	0	0			Modular input/outp...			
PROFIsafe EF 8DI	0	0 PRO...						
	0	0 PRO...						
	0	0 PRO...						
	0	0 PRO...						

Figure 37: TIA – Adding the PROFIsafe groups to the head module (Part 2, Linking)

Module	Rack	Slot	I address	Q address	Type	
▼ PSSuniversal	0	0			PSS u2 P0 F/S PN2 V1.0.x	
Modular input/output device	0	0			Modular input/output device	
PROFIsafe EF 8DI	0	0 PROFIsafe	4...10	4...8	PROFIsafe EF 8DI	2
PROFIsafe EF 8DO 0.5A	0	0 PROFIsafe	11...16	11...16	PROFIsafe EF 8DO 0.5A	3
PROFIsafe EF 8DI_1	0	0 PROFIsafe	17...23	17...21	PROFIsafe EF 8DI	4
PROFIsafe EF 8DO 0.5A_1	0	0 PROFIsafe	24...29	24...29	PROFIsafe EF 8DO 0.5A	5

Figure 38: TIA – Overview of the PROFIsafe groups in the "Device view" (Part 3, Finalization)

Notes:

- ▶ The head module 'PSS u2 P0 F/S PN2' supports up to 24 FS input and FS output modules:
 - The submodules must be configured in the TIA Portal in **subslots 2 to 25** in the order in which they are plugged into the PSSu 2 system.
 - There must be no empty subslots between the submodules.

8.2.3 Adding the electronic modules of the PSS u2 system

All input and output modules ('hardware modules'), i.e. all FS and ST electronic modules, must now be added after the head module on the slots, **starting with slot 1**, according to the hardware configuration.

- ▶ Open the section "Module" in the catalog tree.
- ▶ Add the input and output modules:
 - see [Figure 4: PSS u2 – Hardware » Overview of used modules \[13\]](#)

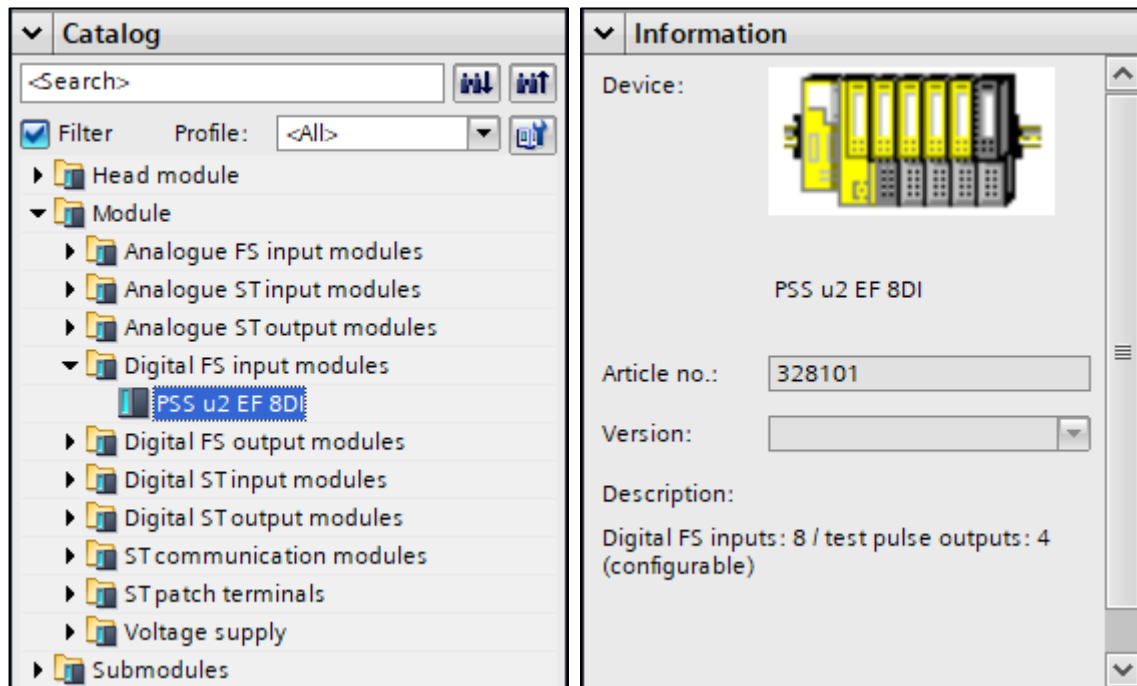


Figure 39: TIA – Adding electronic modules to the I/O system (Part 1, Start)

- ▶ Add the electronics modules used in the PSS u2 system:

	0	0 PROFIsafe		
▶ PSS u2	0	0 X1		PSSUniversal
	0	1		
	0	2		
	0	3		
	0	4		

Figure 40: TIA – Adding electronic modules to the I/O system (Part 2, Linking)

Module	...	Rack	Slot	I address	Q address	Type	Article number
		0	0 PROFIsafe				
▶ PSS u2		0	0 X1			PSSUniversal	
PSS u2 EF 8DI_1		0	1			PSS u2 EF 8DI	328101
PSS u2 EF 8DO 0.5A_1		0	2			PSS u2 EF 8DO 0.5A	328131
PSS u2 EF 8DI_2		0	3			PSS u2 EF 8DI	328101
PSS u2 EF 8DO 0.5A_2		0	4			PSS u2 EF 8DO 0.5A	328131
PSS u2 ES 8DID_1		0	5	30...31		PSS u2 ES 8DID	328311
PSS u2 ES 8DOD 0.5A_1		0	6	32	9	PSS u2 ES 8DOD 0.5A	328401
PSS u2 ES 8DID_2		0	7	33...34		PSS u2 ES 8DID	328311
PSS u2 ES 8DOD 0.5A_2		0	8	35	10	PSS u2 ES 8DOD 0.5A	328401

Figure 41: TIA – Overview of the electronic modules in the "Device view" (Part 3, Finalization)

Note:

- ▶ The length of the process data depends on the number and type of configured modules.
The description of the process image can be found in the manuals of the electronic modules.

8.2.4 Setting up the PROFIsafe addresses of the head module submodules

- ▶ Basic information of PROFIsafe addresses
 - Each F-Address may only be used once on a PROFINET system with PROFIsafe. The values of the F-Addresses of a submodules do not have to be consecutive.
 - Permitted Software F-Addresses are in the range: **1 ... 65,534**. These values are positive integers.
 - The settings for the PROFIsafe addresses must be set in the following two places, otherwise fault-free operation is not possible:
 - a. in the TIA tool under the properties of the 'PROFIsafe' submodule(s) of the PSS u2 head module (Figure 42 [30]) and
 - b. in the 'PASconfig' tool, which are transferred from the TIA via the TCI interface (Figure 50: PASconfig – Function "Download Project F-Address" (Part 1, Start) [35]).
 - The default F-addresses of the PSS u2 head modules when delivered:
 - Submodul 0: **1**
 - Should changed values of the F-Addresses are to be accepted; a reset must always be executed. This is done automatically in the tool 'PASconfig' when the software addresses are changed. The reset button can be pressed (restart by warm reset).

The PROFIsafe addresses ('F_Dest_Add') for the submodules of the head module must always be set in TIA.

- ▶ The following PROFIsafe addresses are specified for this application:
 - **Submodule 0** (subslot 2) 'Profisafe EF 8DI': **5** (= F-Address of the I/O system)
 - Submodule 1 (subslot 3) 'Profisafe EF 8DO 0.5A': 6
 - Submodule 2 (subslot 4) 'Profisafe EF 8DI_1': 7
 - Submodule 3 (subslot 5) 'Profisafe EF 8DO 0.5A_1': 8

Note:

- ▶ The first F-Address (here: **5**) for **Submodule 0** is also required for establishing the connection between the PASconfig PC and the PSS u2 I/O system.

The two PROFIsafe addresses ('F_Dest_Add') for the head module in the TIA tool must be set always.

- ▶ To do this, select the properties of the PROFIsafe submodules in the 'Device view' of 'PSSuniversal' one after the other (see Figure 38 [28]) and
- ▶ set the value for 'F-destination address' under the section 'PROFIsafe':

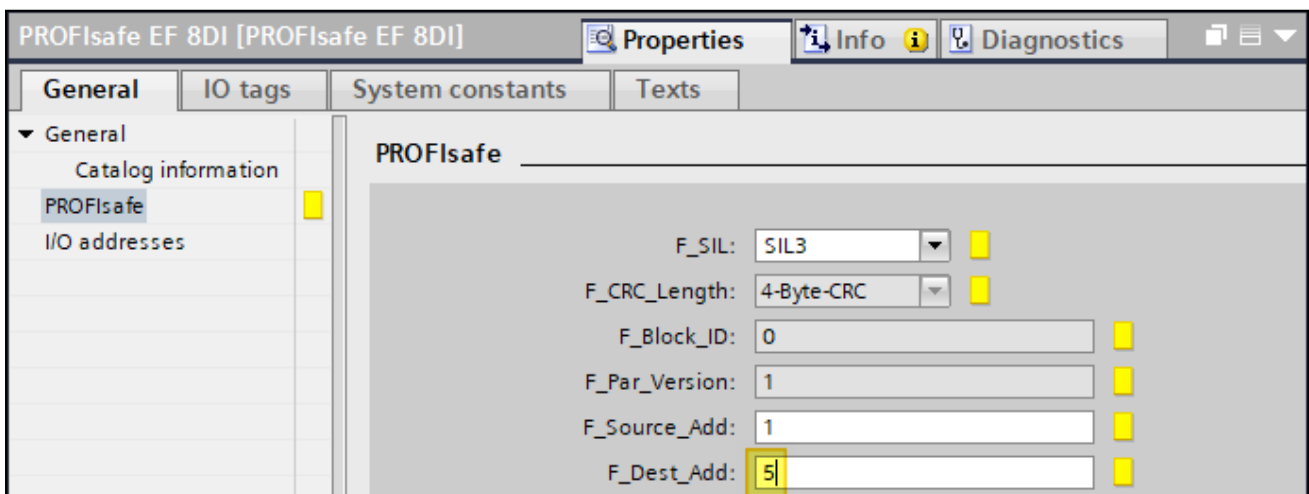


Figure 42: TIA – PROFIsafe-Groups » Setting up of PROFIsafe addresses 'F_Dest_Add'

The F addresses must also be transferred to the 'PASconfig' tool (using TCI from the TIA project).

- ▶ see online help of 'PASconfig' under the section:
 - » 'Working with systems' » 'Profinet' » 'Change the F-Address'
 - see Chapter 8.3.1 Configure of PSS u2 system [33ff]

8.2.5 Assign the device name to the PSS u2 system

For the used PROFINET system, a device name must be assigned to the PSSUniversal 2 Remote I/O system (IO device) so that the IO controller of the F-CPU can communicate with it.

- ▶ For further details, see the TIA online help, chapter "Addressing PROFINET devices".

Now you can begin assigning the device name.

- ▶ Select the device 'PSSUniversal' under "Devices and networks" (see [Figure 31](#) [[book](#) 26]).
- ▶ Right-click on the device icon and select the function 'Assign device name ...':

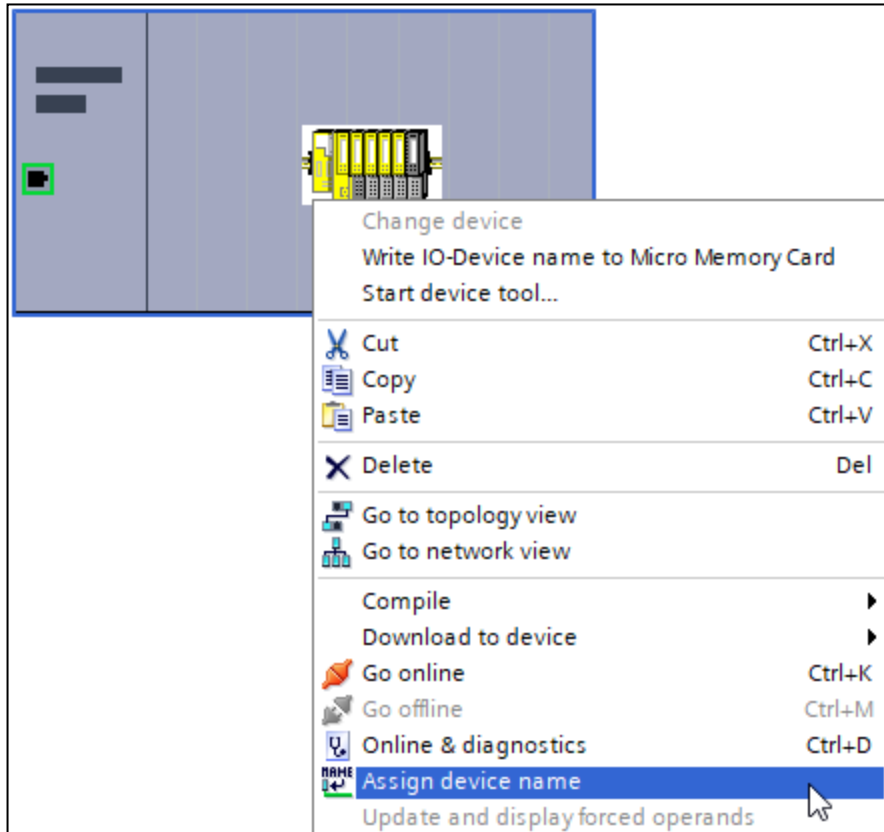


Figure 43: TIA – Assign device name » Select function (Part 1, Start)

- ▶ The PSS u2 system, that is to be named, can be uniquely identified by MAC address and IP address. The "Devices MAC address" is lasered on the front of the head module above the DIP switches to the right of the serial number (see left picture in [Figure 44](#)).
- ▶ For the unique device identification, the displayed device can be selected and the 'LED flashing' function can be activated.
 - Activated: LEDs 'RUN' and 'DIAG' flash green in the same mode
 - Deactivated: LEDs 'RUN' and 'DIAG' displayed the current system status

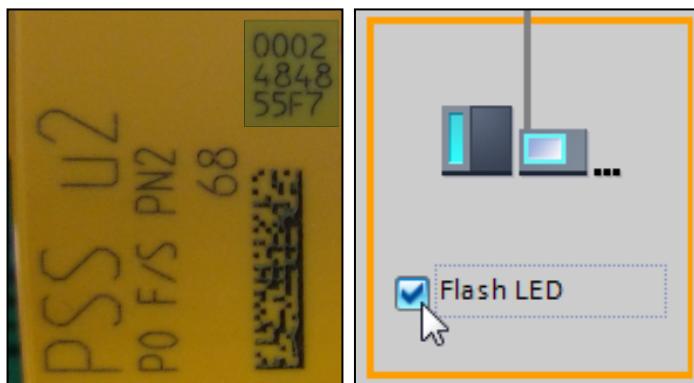


Figure 44: TIA – Assign device name » MAC / Function "Flash LED" (Part 2, Identification)

- The selected PSS u2 system must be marked in the table and you click on the button 'Assign name':

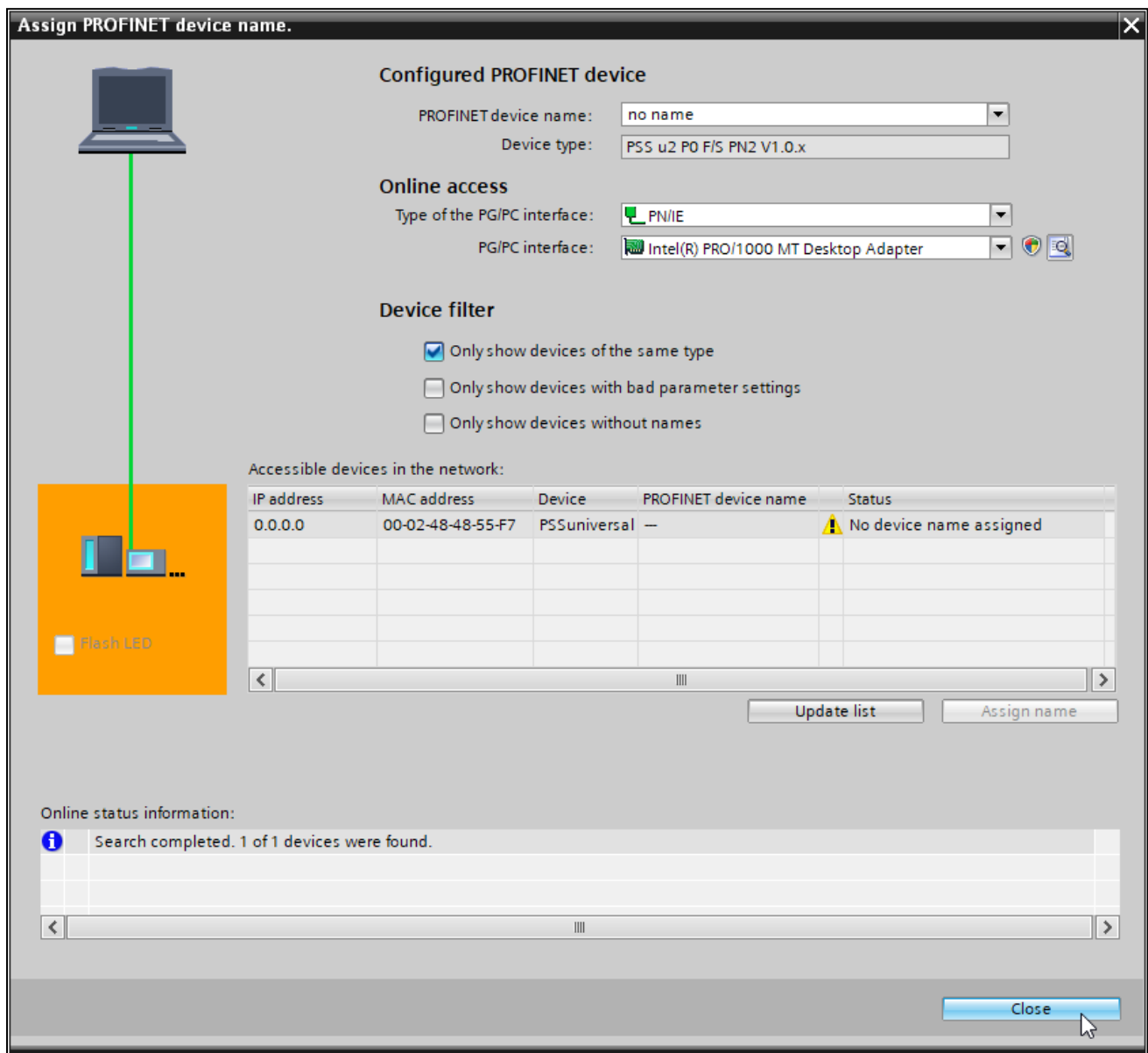


Figure 45: TIA – Assign device name » Select function (Part 3, Assignment)

- At the end, the 'Online status information' is used to indicate whether the operation was successful:

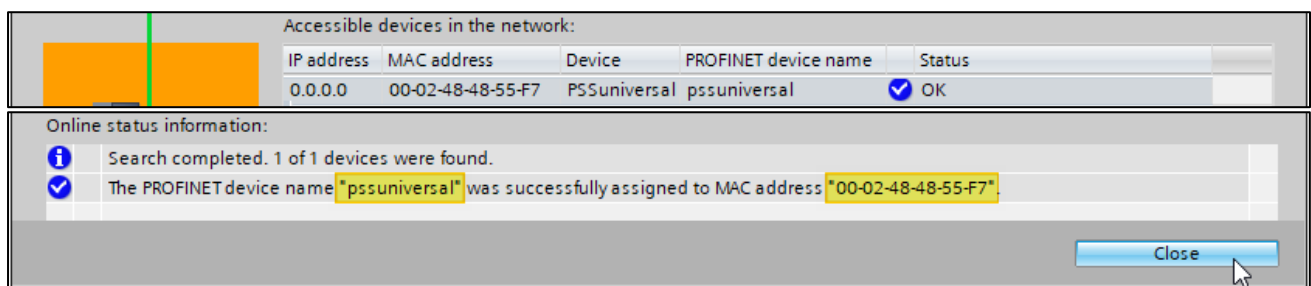


Figure 46: TIA – Assign device name » Select function (Part 4, Finalization)

- You can close the window now.

8.3 PASconfig – Device configuration of PSS u2 system

8.3.1 Configure of PSS u2 system

The basic configuration is already available; the data is generated automatically by means of the previously made settings in the TIA.

- see [Chapter 8.2 TIA – Device configuration of PSS u2 system](#) [📖 24ff]

The advanced setting of the functions of the electronic modules takes place in PASconfig. This requires an online connection between the PASconfig PC and the PSS u2 system.

- see [Figure 13: Application – Wiring of Ethernet connections \(schematic\)](#) [📖 19]

This can be used to perform various online actions, for example:

- Firmware update,
- download of FS/ST configuration data,
- upload system data and
- display of error stack

8.3.2 Start of PASconfig via TIA device configuration

- ▶ Open the function “Devices & networks” in “Project tree”.
- ▶ Switch to “Device view” and select the device ‘PSSuniversal’.
- ▶ Right-click on the device icon and select the function ‘Start device tool ...’ using the access point ‘Configuration’:

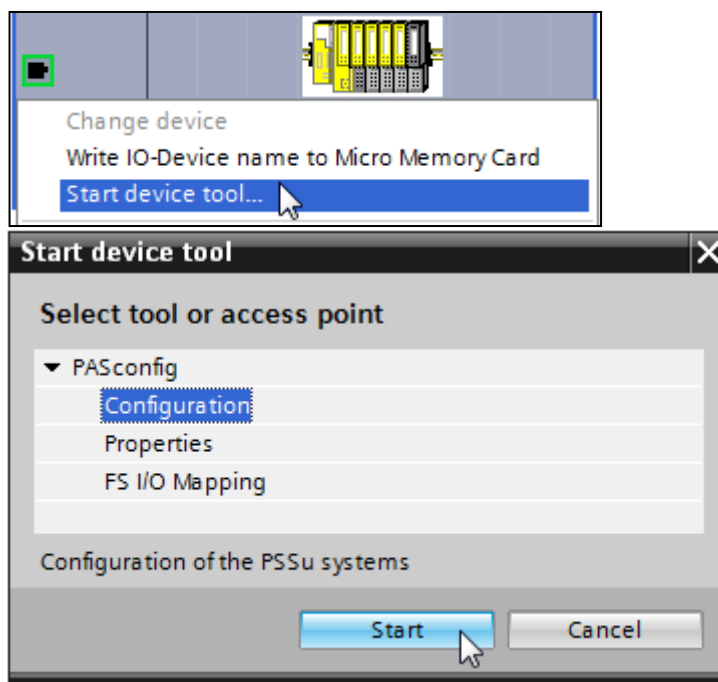


Figure 47: PASconfig – Start device tool from TIA (Access point “Configuration”)

Note:

- ▶ The ‘PASconfig’ tool opens with the “User interface language” set in the TIA. In version 5.0.0, only the two languages ‘German’ and ‘English’ are supported.

- ▶ Now, for the first time, an attempt is made via the 'PASconfig' tool to establish an online connection to the configured PSS u2 head module:

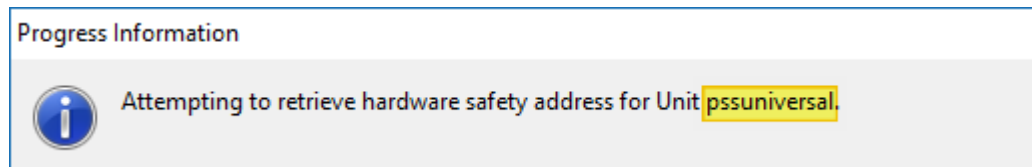


Figure 48: PASconfig – Status message 'Read F-Address for Ethernet connection'

- ▶ Then, because of the IP address 0.0.0.0 still present on the head module, the following reaction occurs, as no online connection can be established between the PASconfig PC and the PSS u2 system:

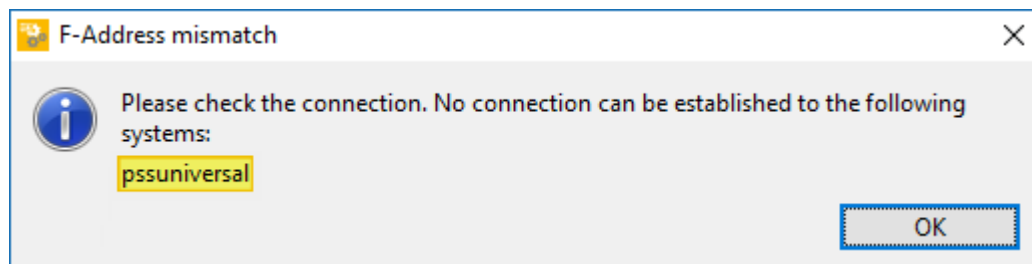


Figure 49: PASconfig – Error message 'No connection established'

Therefore, the PSS u2 head module must be assigned an IP address first, so that 'PASconfig' can establish an online connection to this system.

- ▶ One possibility is to save, compile and download the TIA project to the F-CPU.
 - see [Chapter 8.4 TIA – Download the configuration to S7 F-CPU](#) [40].
- ▶ After it restarts, the configured IP addresses are set in the PROFINET network:
 - see [Figure 32 TIA – Properties of PSS u2-PROFINET interface \[X1\] to PLC](#) [26].

Notes:

- ▶ Make sure that the IP address of the PASconfig-PC is in the same subnetwork as the IP address of the PSS u2 system.
- ▶ For PROFINET networks, the free Siemens tool PRONETA Basic can be used to perform many analysis and configuration tasks.

8.3.3 Setting up the PROFI-safe address of the PSS u2 head module

After assigning the IP address to the PSS u2 head module, when the TCI function "Configuration" (Figure 47 [33]) is called up again, the F-Address of the first PROFI-safe submodule configured in the I/O system is checked first. If this is different from the F-Address configured in the TIA project, an automatic process is carried out at the PASconfig tool.

- Start with Function "Download Project F-Address":

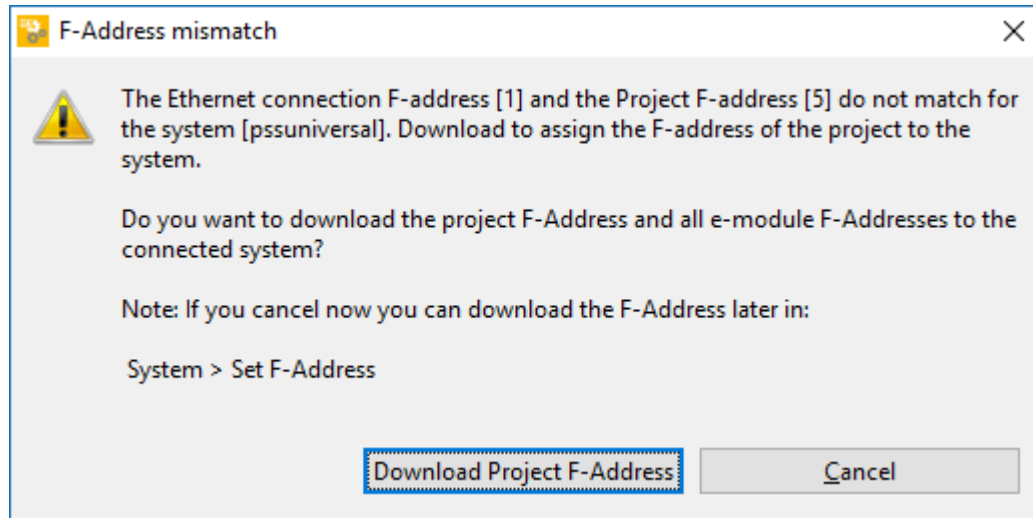


Figure 50: PASconfig – Function "Download Project F-Address" (Part 1, Start)

- After this, the PSS u2 system must be restarted to accept the values:

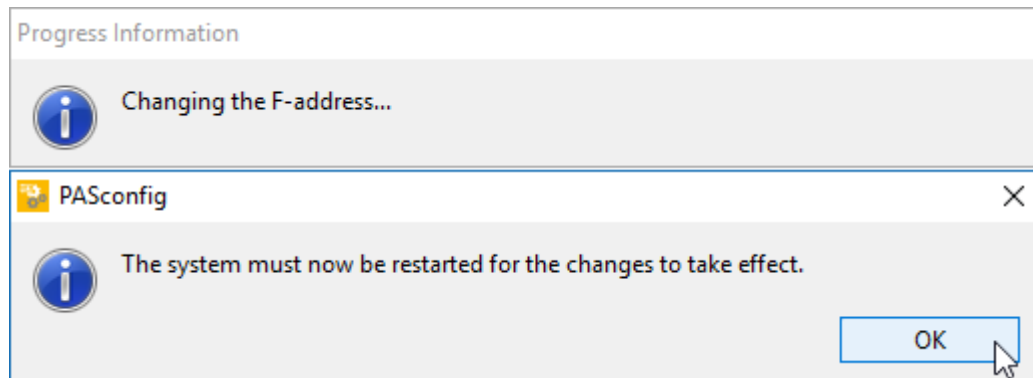


Figure 51: PASconfig – Function "Set F-Addresses" (Part 2, Restart)

- After restart, the changes will be displayed:

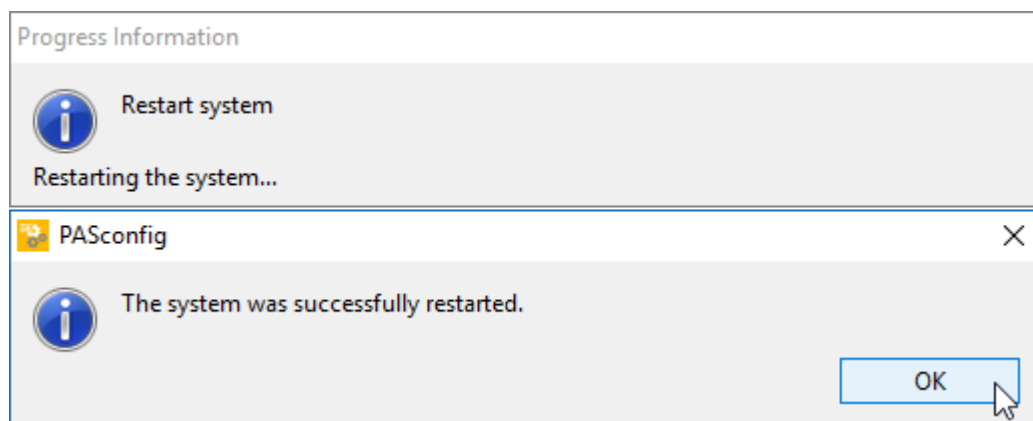


Figure 52: PASconfig – Function "Set F-Addresses" (Part 3, Finalization)

The I/O system "PLC_1:pssuniversal" can now be modified in the 'PASconfig' software:

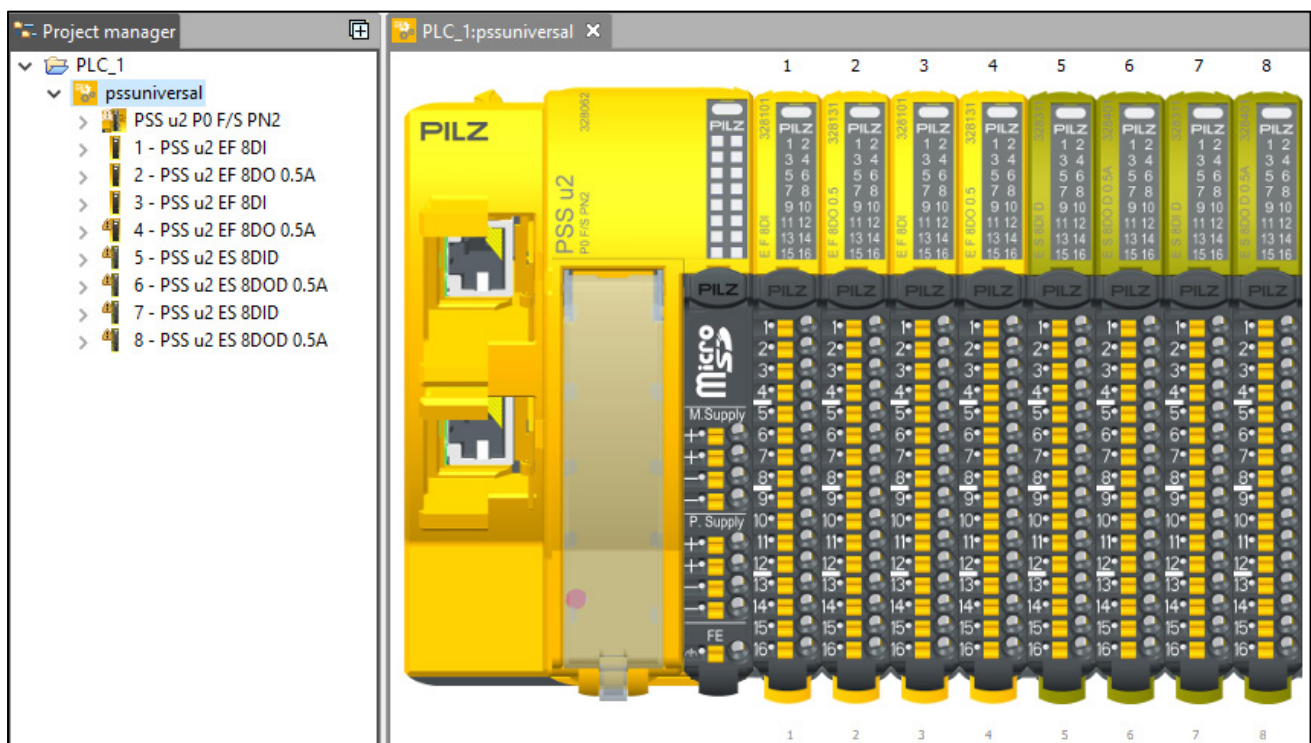


Figure 53: PASconfig – I/O system "PLC_1:pssuniversal"

- ▶ The "Change head module" function in the 'PASconfig' tool can be used to check the settings transferred from the TIA:

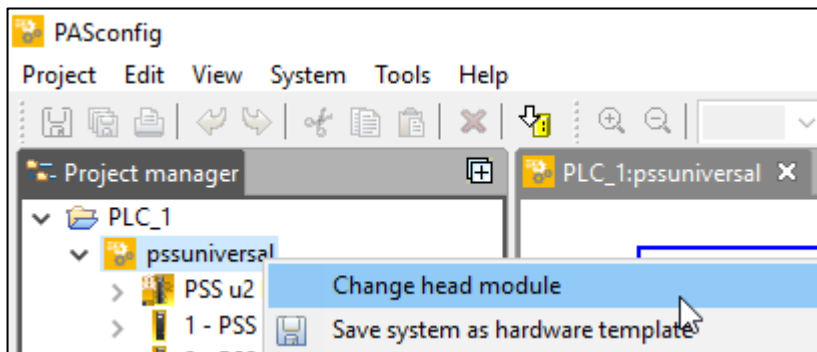


Figure 54: PASconfig – Head module » Function "Change head module" (Part 1, Start)

- ▶ The first window displays general data of the head module:

Figure 55: PASconfig – Head module » Function "Change head module" (Part 2, Version)

- ▶ Press 'Next' to enter the second window, where the data for the "connection" is displayed:

Figure 56: PASconfig – Head module » Function "Change head module" (Part 3, F-Address)

- ▶ The changed configuration can still be transferred to the head module. Normally, this is done at the end of the complete system configuration:
 - [Chapter 8.3.4 Download the configuration to PSS u2 system \[38 f\]](#)

8.3.4 Download the configuration to PSS u2 system

- ▶ The configuration you just created must be saved.

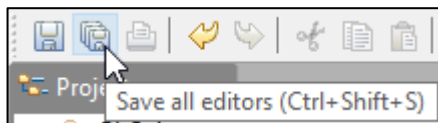


Figure 57: PASconfig – Save configuration » Save all editors

- ▶ Then the function "Download configuration data" will be started:

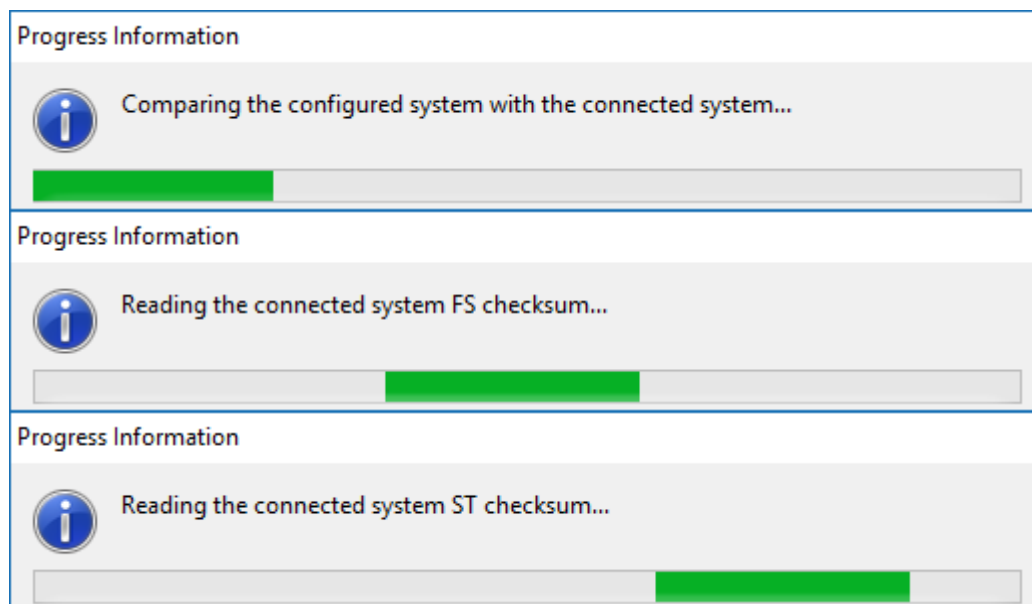
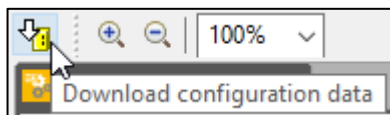


Figure 58: PASconfig – Download configuration » Reading the connected PSS u2 system (Part 1)

A password is required to transfer the FS configuration.

The default password is "**pssu**".

- ▶ It can be changed via the menu item 'PSS u2 System' » 'Change FS password ...'.

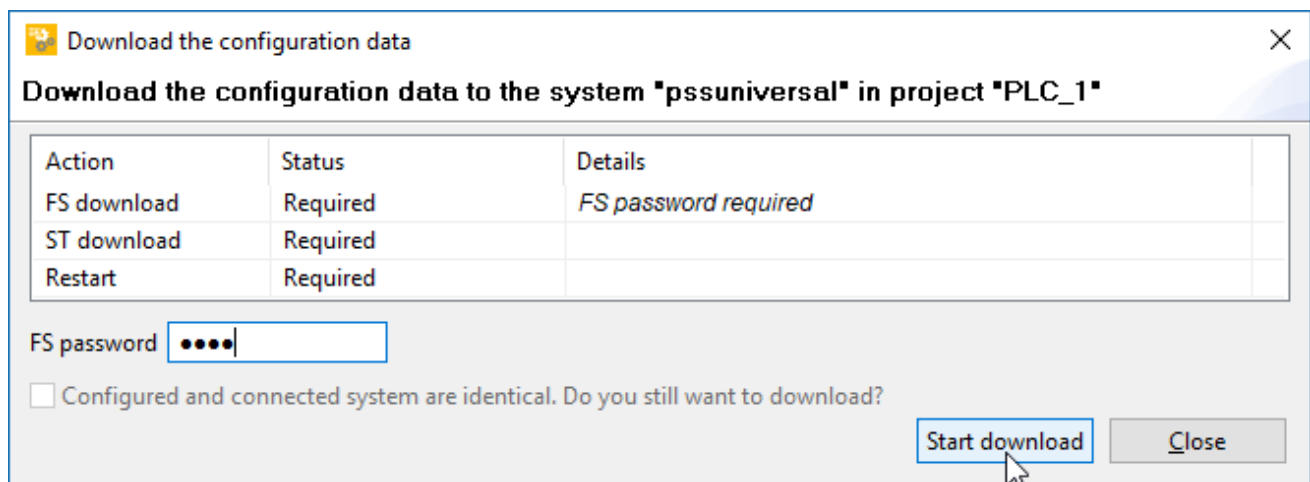


Figure 59: PASconfig – Download configuration » Entering the password (Part 2)

- Now the download of the configuration data and the automatic restart is executed:

Action	Status	Details
FS download	Success	Finished
ST download	Success	Finished
Restart		Restarting...

Figure 60: PASconfig – Download configuration » Download data and restart system (Part 3)

- The download window can now be closed:

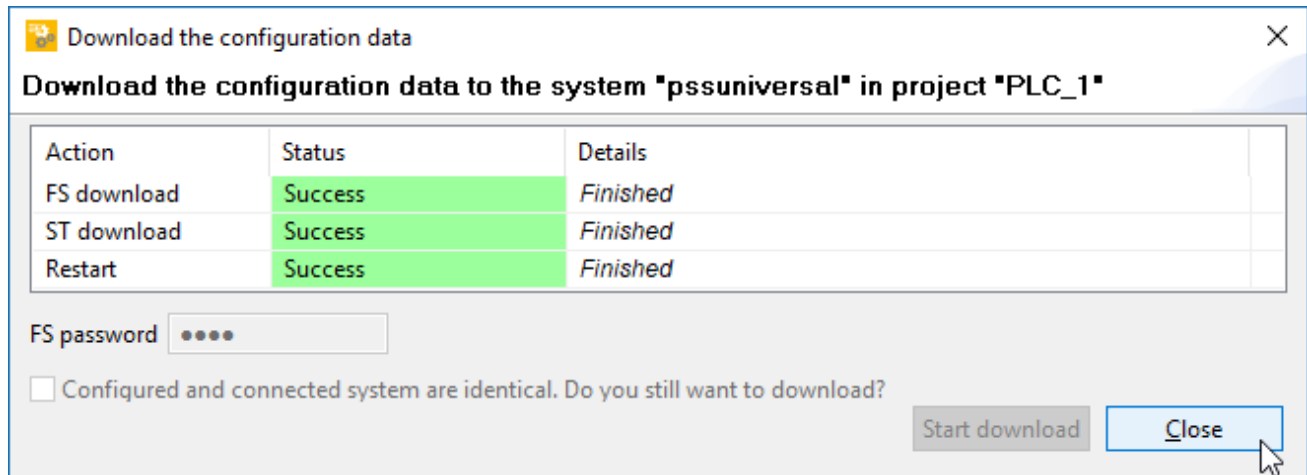


Figure 61: PASconfig – Download configuration » Close download window (Part 4)

- The 'PASconfig' tool can now be closed:

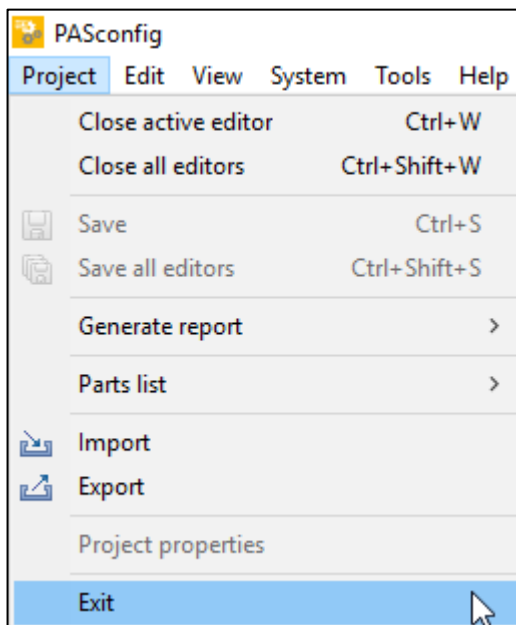


Figure 62: PASconfig – Close tool

8.4 TIA – Download the configuration to S7 F-CPU

- ▶ After closing the 'PASconfig' tool, the TIA project is saved first:

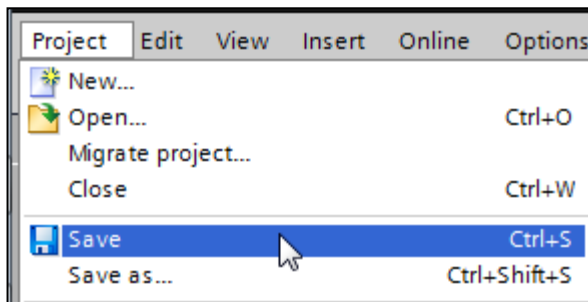


Figure 63: TIA – Download configuration » Save project (Part 1, Start)

- ▶ Now the F-CPU is selected in the project tree and the TIA project is compiled:

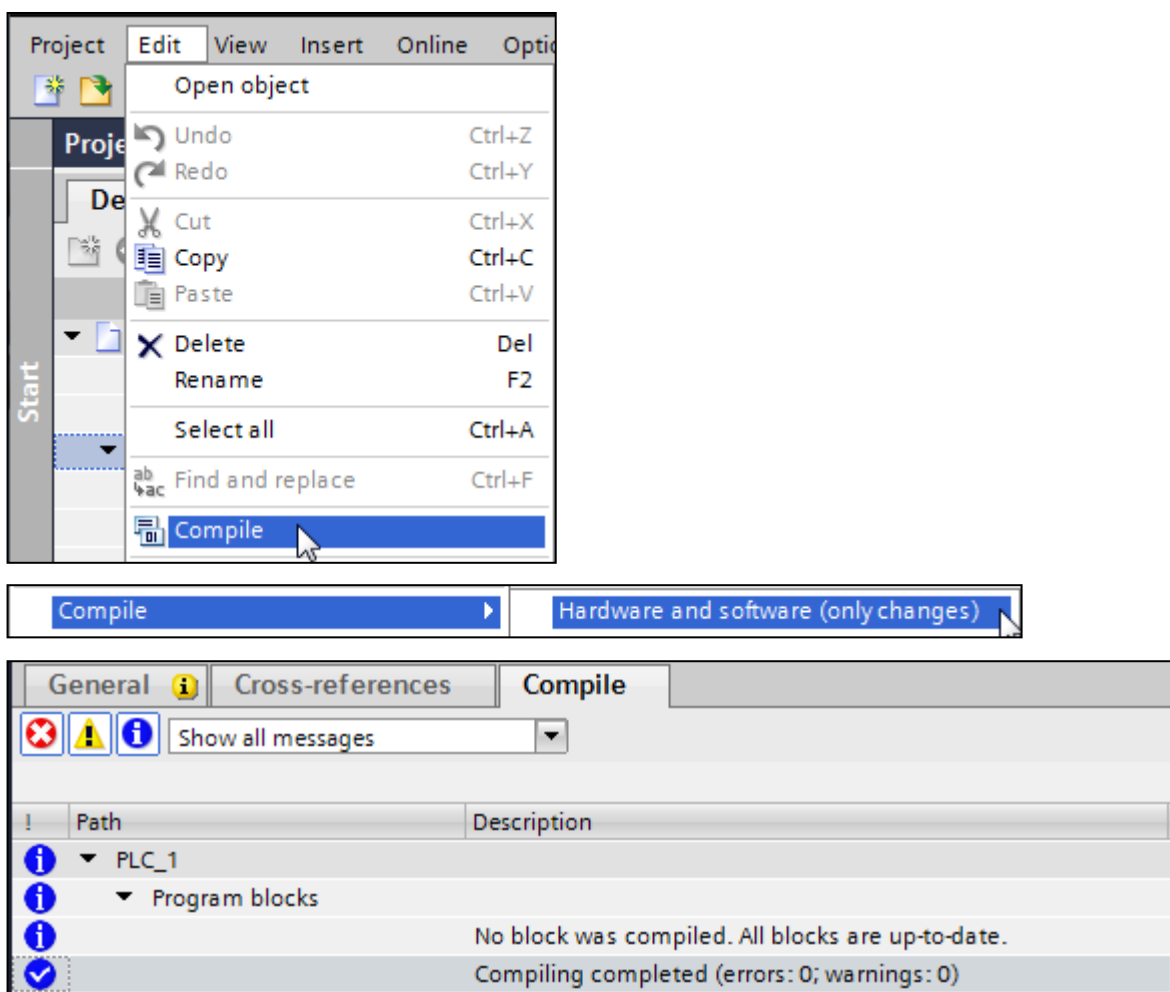


Figure 64: TIA – Download configuration » Compile project (Part 2)

- ▶ The TIA project is then loaded into the F-CPU:

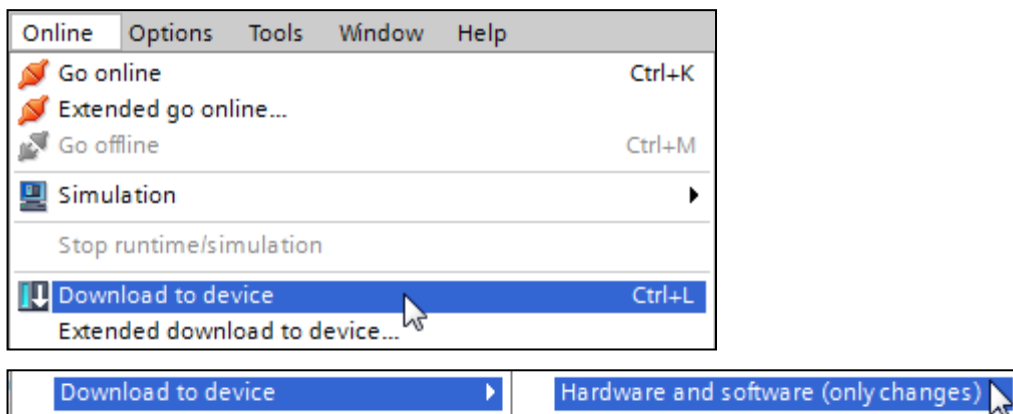


Figure 65: TIA – Download configuration » Download project to device (Part 3)

- ▶ The F-CPU can now be set to the operating mode "RUN".
Now there should be no error messages in the PSS u2 system diagnostics:

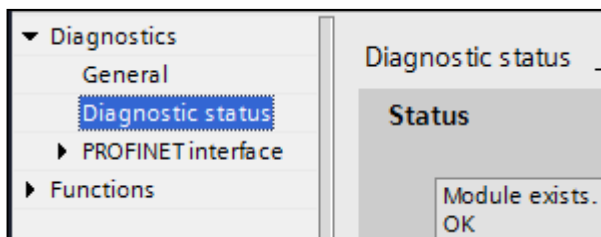


Figure 66: TIA – Download configuration » Check Diagnostic status (Part 4, Finalization)

- ▶ The error-free status of the two devices can be also recognized by their LEDs:
 - The 'SO' LED only lights up green when **all** configured FS submodules are plugged and active.



Figure 67: PSS u2 – Diagnostic status with error-free configuration

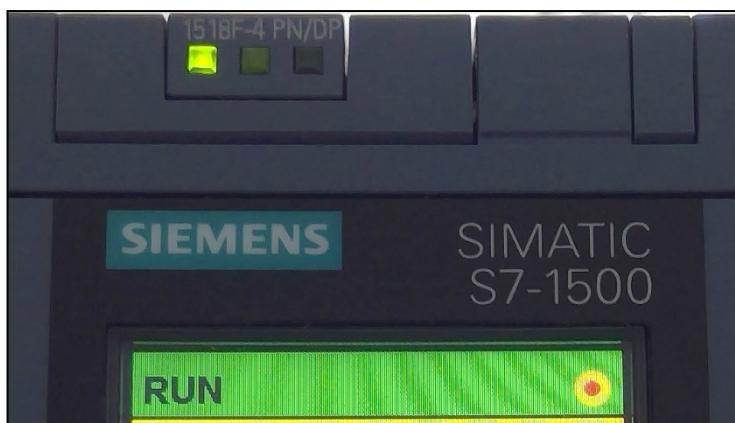


Figure 68: F-CPU – Diagnostic status with error-free configuration

9 Helpful functions for commissioning and maintenance

9.1 Compare CRC for failsafe configuration data

The FS checksum for the PSS u2 system can be checked. If a project has been changed since the last download, this can be determined with this comparison. For this purpose, the device project in the offline project is compared with the one on the head module.

Note:

- ▶ The values of the checksums in the figures in this chapter are only examples.
- ▶ The CRC can be checked in two places:
 1. Still directly in the tool 'PASconfig' in the menu "PSS u2 system":

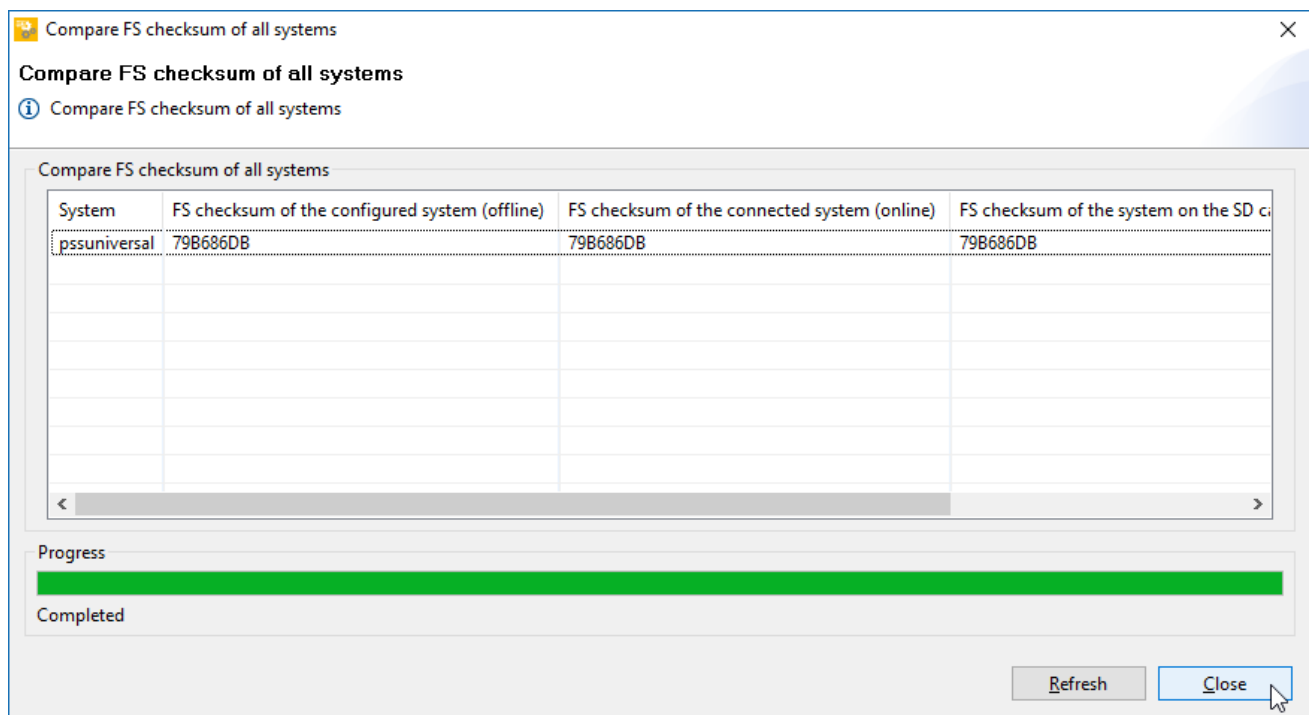
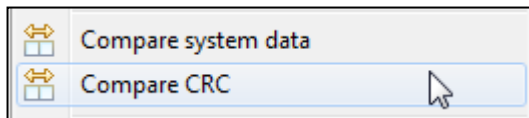


Figure 69: PASconfig – Compare CRC (Example)

2. or in TIA via function "Start device tool ..." using now the access point 'Properties':

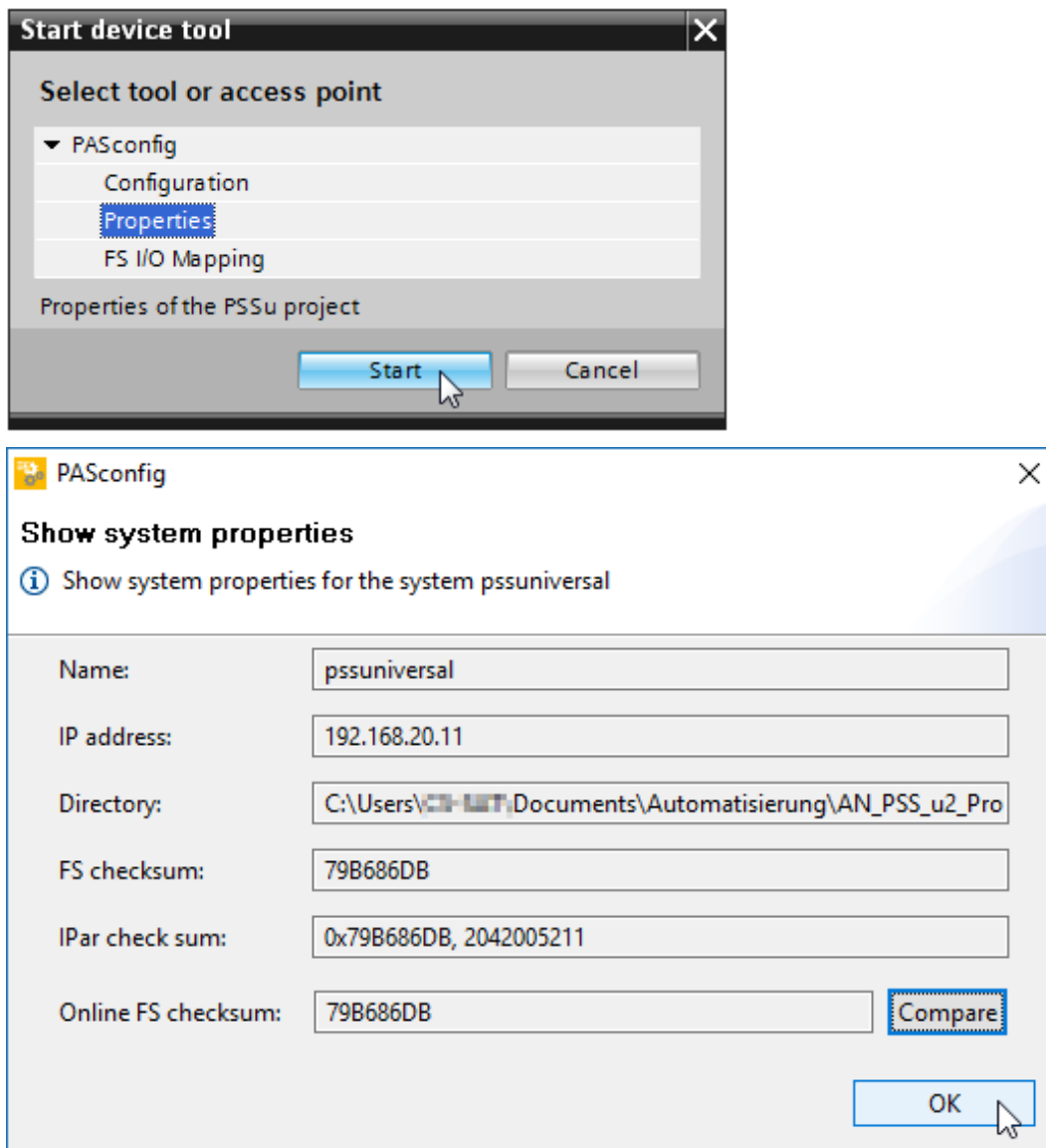


Figure 70: TIA – Compare CRC » Call access point 'Properties' (Example)

9.2 Display of the failsafe I/O mapping

- ▶ For orientation of the defined I/O addresses for the PSS u2 system, please see:
 - [Figure 38 TIA – Overview of the PROFIsafe groups in the “Device view” \(Part 3, Finalization\)](#) [28]
 - [Figure 41 TIA – Overview of the electronic modules in the “Device view” \(Part 3, Finalization\)](#) [29]

The I/O addresses of the configured failsafe and standard modules can be read directly there.

The bit-by-bit representation of the process image of all electronic modules (FS and ST) for a system with the head module PSS u2 P0 F/S PN2 (328062) has now been integrated into the PASconfig tool:

- ▶ Right-click on the device icon of a singly electronics module and select the function “View process image for this module”:

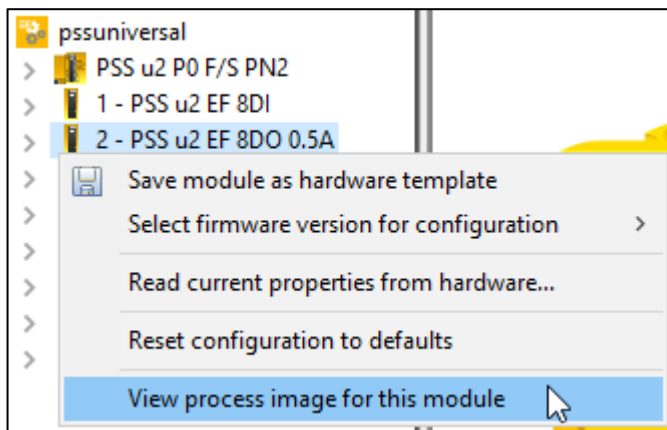


Figure 71: PASconfig – Function “View process image for this module”

- ▶ Here, the process image is generally displayed separately according to inputs and outputs:

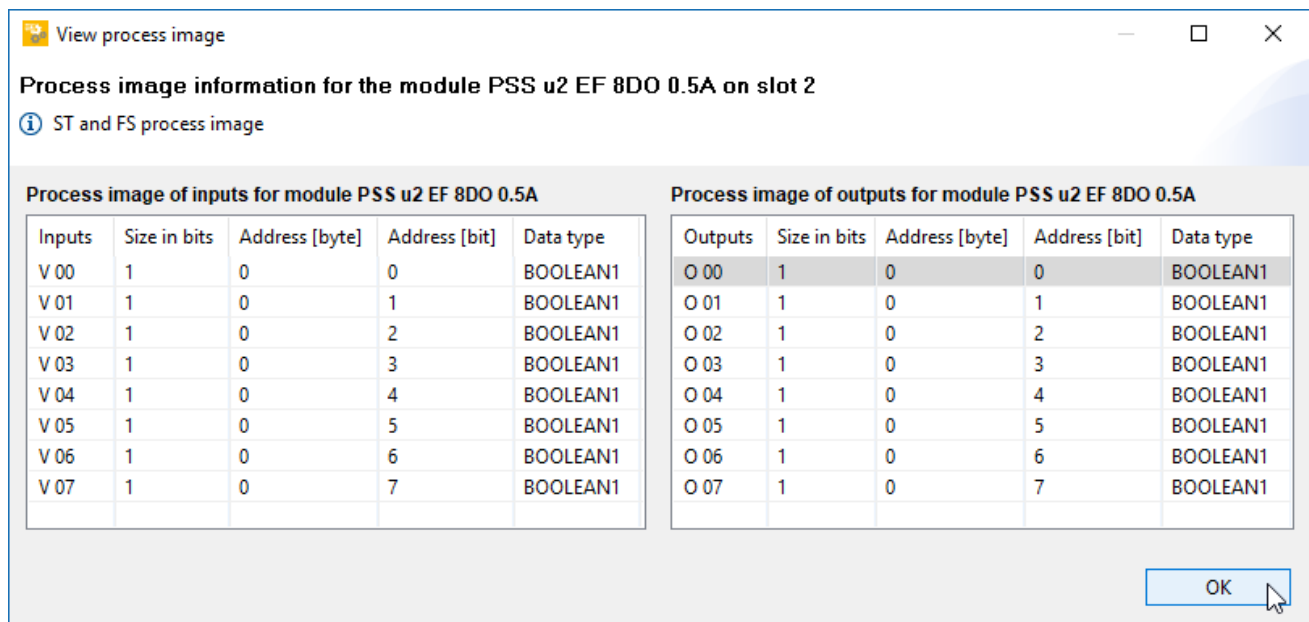


Figure 72: PASconfig – Function “View process image” (example ‘PSS u2 EF 8DO 0.5A’)

9.3 Notes on the diagnostic display in TIA and PASconfig

- ▶ The basic diagnostics for the PSS u2 system are displayed in the TIA tool. These two online functions for diagnostic view can be accessed via the context menu of the F-CPU:

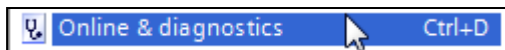
- ‘Go online’:

This will include the activation of the function in the project navigation, which shows the operating status or diagnostic status of the online-connected devices with icons.



- ‘Online & diagnostics’:

This opens a system related window with information on the diagnostics and other online functions. In the ‘Diagnostics’ folder, you can select the group ‘Diagnostic buffer’, in which the ‘Events’ are tabulated as a log file for the F-CPU and the modules assigned to it.



The following figure (example) shows the online display of the TIA project with the diagnostic symbols and the ‘Diagnostic buffer’ of the F-CPU:

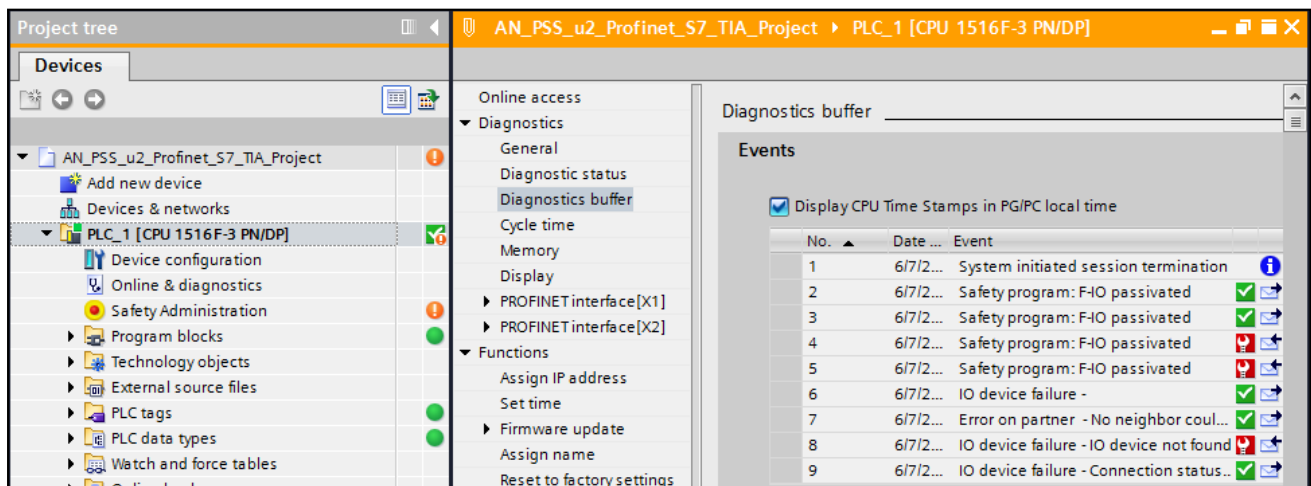


Figure 73: TIA – F-program » Online diagnostic display and ‘Diagnostic buffer’ of the F-CPU

- ▶ The more detailed error stack of the PSS u2 system can be accessed in the PASconfig tool:

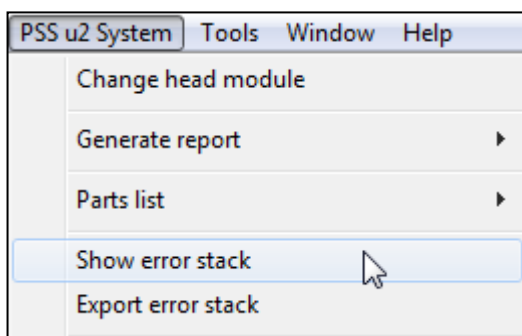


Figure 74: PASconfig – PSS u2 » Display of Error stack

9.4 Notes on using the MircoSD card and Reset button

9.4.1 Carrying out of a restart (warm reset) by means of the Reset button

- ▶ Procedure:
 - Press the Reset button for **less than 5 seconds**.

After execution of a restart/reboot command, the current processing is aborted, and the device is re-initialized. After a restart, the inputs will keep their current input values and substitute values are used for the outputs until the connection to the controller has been re-established.

9.4.2 Device exchange using MicroSD card and Reset button

- ▶ A MircoSD card is available as an optional accessory for the PSS u2 head module.
 - see table in [Chapter 2.1 Pilz products \[8\]](#)

In the event of a device failure during operation, all relevant configuration data can be transferred very quickly to a second device using the removable data medium, without the need for software or an online connection (**Device exchange scenario**).

- ▶ Prerequisites:
 - On the first PSS u2 head, a MicroSD card must have been plugged in before commissioning.
 - The removable data medium must not be empty or defective.
 - After commissioning, you can use *PASconfig* to check the FS checksum of the system on the microSD card; this must match the FS checksum of the configured system.
 - » see [Chapter 9.1 Compare CRC for failsafe configuration data \[42\]](#)
 - Important: To ensure that final data is stored on the disk, do not remove the microSD card until the check is complete.
 - The device project on the removable data medium must match the product type.
- ▶ Procedure:
 - Press the Reset button for **more than 5 seconds**. The SD LED flashes yellow.
 - Release the Reset button and press and release it again within 10 seconds.
 - The device project is transferred from the removable storage card to the device.

If the required files are not available on the removable storage card, the device exchange scenario is not performed, and an entry is written to the error stack.



NOTICE

If the previously described procedure is executed with the Reset button and no removable storage card is plugged in, an **Original Reset** is performed.

- ▶ Effects of the Original Reset:
 - ST and FS configuration data is deleted.
 - Profinet Factory Reset is executed
 - Error stack is not deleted
 - The fieldbus device is automatically restarted.

10 Table of figures

Figure 1: Application Notes – Documentation Guide for 'PSS u2 I/O PROFINET/PROFIsafe'	3
Figure 2: Application – Structure of the hardware (schematic)	9
Figure 3: PSS u2 – Modular structure of the PSS u2 system	11
Figure 4: PSS u2 – Hardware » Overview of used modules	13
Figure 5: PSS u2 – Hardware failsafe I/O assignment (AN configuration FS modules)	15
Figure 6: TIA – Create a new project (Part 1, Start)	16
Figure 7: TIA – Create a new project (Part 2, Creation)	16
Figure 8: TIA – Create a new project (Part 3, Finalization)	16
Figure 9: TIA – Add new device (Part 1, Start)	17
Figure 10: TIA – Add new device (Part 2, PLC 'CPU 1518F-4 PN/DP')	17
Figure 11: TIA – Add new device (Part 3, Finalization)	18
Figure 12: TIA – F-CPU » Enabling F-capability and select access level	18
Figure 13: Application – Wiring of Ethernet connections (schematic)	19
Figure 14: TIA – Search for 'Accessible devices ...' (Part 1, Start)	20
Figure 15: TIA – List of 'Accessible devices ...' (Part 2, Overview)	20
Figure 16: TIA – Properties of PLC-PROFINET interface [X1] » General	21
Figure 17: TIA – Properties of PLC-PROFINET interface [X1] » Real time (IRT)	21
Figure 18: Pilz Homepage (www.pilz.com) – Search for "GSD(ML)" and "PASconfig"	22
Figure 19: Pilz Homepage (www.pilz.com) – E-Shop Login	22
Figure 20: TIA – Manage general station description files GSD(ML) (Part 1, Start)	23
Figure 21: TIA – Manage general station description files GSD(ML) (Part 2, Installation)	23
Figure 22: TIA – Manage general station description files GSD(ML) (Part 3, Finalization)	23
Figure 23: TIA – Open the function "Devices & networks" (Part 1, Start)	24
Figure 24: TIA – Inserting the PSS u2 head module (Part 2a, Selection)	24
Figure 25: TIA – Inserting the PSS u2 head module (Part 2b, Information)	24
Figure 26: TIA – Inserting the PSS u2 head module (Part 2c, Finalization)	25
Figure 27: TIA – Assigning the device name 'PSSuniversal' of the PSS u2 head module	25
Figure 28: TIA – Connect the S7-CPU and the I/O system	25
Figure 29: TIA – Assigning the I/O system to the S7 CPU (Part 1, Start)	25
Figure 30: TIA – Assigning the I/O system to the S7 CPU (Part 3, Link-up)	26
Figure 31: TIA – Assigning the I/O system to the S7 CPU (Part 3, Finalization)	26
Figure 32: TIA – Properties of PSS u2-PROFINET interface [X1] to PLC	26
Figure 33: TIA – Properties of PSS u2-PROFINET interface [X1] » Real time (IRT)	26
Figure 34: TIA – Device overview of the assigned I/O system in the "network view"	27
Figure 35: TIA – Switch to the Device overview of the I/O system in the "Device view"	27
Figure 36: TIA – Adding the PROFIsafe groups to the head module (Part 1, Start)	28
Figure 37: TIA – Adding the PROFIsafe groups to the head module (Part 2, Linking)	28
Figure 38: TIA – Overview of the PROFIsafe groups in the "Device view" (Part 3, Finalization)	28
Figure 39: TIA – Adding electronic modules to the I/O system (Part 1, Start)	29
Figure 40: TIA – Adding electronic modules to the I/O system (Part 2, Linking)	29
Figure 41: TIA – Overview of the electronic modules in the "Device view" (Part 3, Finalization)	29
Figure 42: TIA – PROFIsafe-Groups » Setting up of PROFIsafe addresses 'F_Dest_Add'	30
Figure 43: TIA – Assign device name » Select function (Part 1, Start)	31
Figure 44: TIA – Assign device name » MAC / Function "Flash LED" (Part 2, Identification)	31
Figure 45: TIA – Assign device name » Select function (Part 3, Assignment)	32
Figure 46: TIA – Assign device name » Select function (Part 4, Finalization)	32
Figure 47: PASconfig – Start device tool from TIA (Access point "Configuration")	33
Figure 48: PASconfig – Status message 'Read F-Address for Ethernet connection'	34
Figure 49: PASconfig – Error message 'No connection established'	34
Figure 50: PASconfig – Function "Download Project F-Address" (Part 1, Start)	35
Figure 51: PASconfig – Function "Set F-Addresses" (Part 2, Restart)	35
Figure 52: PASconfig – Function "Set F-Addresses" (Part 3, Finalization)	35
Figure 53: PASconfig – I/O system "PLC_1:pssuniversal"	36
Figure 54: PASconfig – Head module » Function "Change head module" (Part 1, Start)	36
Figure 55: PASconfig – Head module » Function "Change head module" (Part 2, Version)	37
Figure 56: PASconfig – Head module » Function "Change head module" (Part 3, F-Address)	37
Figure 57: PASconfig – Save configuration » Save all editors	38

Figure 58: PASconfig – Download configuration » Reading the connected PSS u2 system (Part 1).....	38
Figure 59: PASconfig – Download configuration » Entering the password (Part 2)	38
Figure 60: PASconfig – Download configuration » Download data and restart system (Part 3).....	39
Figure 61: PASconfig – Download configuration » Close download window (Part 4)	39
Figure 62: PASconfig – Close tool.....	39
Figure 63: TIA – Download configuration » Save project (Part 1, Start)	40
Figure 64: TIA – Download configuration » Compile project (Part 2).....	40
Figure 65: TIA – Download configuration » Download project to device (Part 3).....	41
Figure 66: TIA – Download configuration » Check Diagnostic status (Part 4, Finalization)	41
Figure 67: PSS u2 – Diagnostic status with error-free configuration.....	41
Figure 68: F-CPU – Diagnostic status with error-free configuration.....	41
Figure 69: PASconfig – Compare CRC (Example).....	42
Figure 70: TIA – Compare CRC » Call access point 'Properties' (Example)	43
Figure 71: PASconfig – Function "View process image for this module"	44
Figure 72: PASconfig – Function "View process image" (example 'PSS u2 EF 8DO 0.5A')	44
Figure 73: TIA – F-program » Online diagnostic display and 'Diagnostic buffer' of the F-CPU.....	45
Figure 74: PASconfig – PSS u2 » Display of Error stack.....	45

