PNOZmulti 2 Profinet communication with S7-1500 PLC in TIA Portal V13

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Product

Type:	PNOZmulti 2
Name:	PNOZ m ES Profinet
Manufacturer:	Pilz GmbH & Co. KG, Safe Automation

Document

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Document Revision History

Release	Date	Changes	Chapter
01	2015-11-27	Creation	all
02	2024-02-21	Editorial revision	all
03	2025-03-03	Editorial revision	Contents
04	2025-09-02	Table header correction	2.4

Validity of Application Note

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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

We have taken great care in compiling our application note. It contains information about our company and our products. All statements are made in accordance with the current status of technology and to the best of our knowledge and belief.
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We are grateful for any feedback on the contents.

September 2025

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.

Abbreviations

Abbreviation / term	Description	Source
AN	**A**pplication **N**ote	www.pilz.com > AN content (1002400)
PNOZ	Pilz E-STOP positive-guided (DE: **P**ilz **NO**T-AUS-**Z**wangsgeführt)	www.pilz.com > PNOZ
PSS	Programmable control system (DE: **P**rogrammierbares **S**teuerungs**s**ystem)	www.pilz.com > PSS
PSS u2	**PSSu**niversal, **2**nd generation	www.pilz.com > PSS u2
POU	**P**rogram **O**rganisation **U**nit	
NC	**N**ormally **C**losed	
NO	**N**ormally **O**pen	
GSD	**G**eneral **S**tation **d**escription file	
SFB	**S**ystem **f**unction **b**lock	
SCL	**S**tructured **c**ontrol **l**anguage	

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

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
2	PNOZmulti 2 Communication Interfaces	www.pilz.com > Download 1002971
3	Operating Manual PNOZ m B0	www.pilz.com > Download 1002660
4	Operating Manual PNOZ m ES Profinet	www.pilz.com > Download 1003386

1.2 Documentation from other sources of information

No.	Description	Item No. / Download
1	SIMATIC portal “Automation Systems” (international) Internet-Link to "www.automation-siemens.com"	
2		
3		
4		

2 Configuration

2.1 Pilz products

No.	Descriptions	Order number	Version	Number
1	PNOZ m B0	772100	1.2	1
2	PNOZ m ES Profinet	772138	1.0	1
3	PNOZmulti Configurator	-	9.4.0 build 6	-
4				

2.2 Third-party products

No.	Descriptions	Order number	Version	Number
1	Siemens SIMATIC S7-1518F-4 PN/DP	-	1.6	1
2	Siemens TIA Portal	-	13 Update 1	-
3				
4				

2.3 Profinet specific parameters

For a basic communication, the default parameters of the engineering tool are used. Only for the addressing purpose we assign specific Profinet names to each device.

2.4 Device properties

No.	Descriptions	Profinet Name	IP-Adress	Subnet mask
1	Siemens SIMATIC S7-1518F-4 PN/DP	6es7	169.254.60.151	255.255.0.0
2	PNOZ m ES Profinet	mes-dp-net	169.254.0.1	255.255.0.0
3				
4				

2.5 Topology

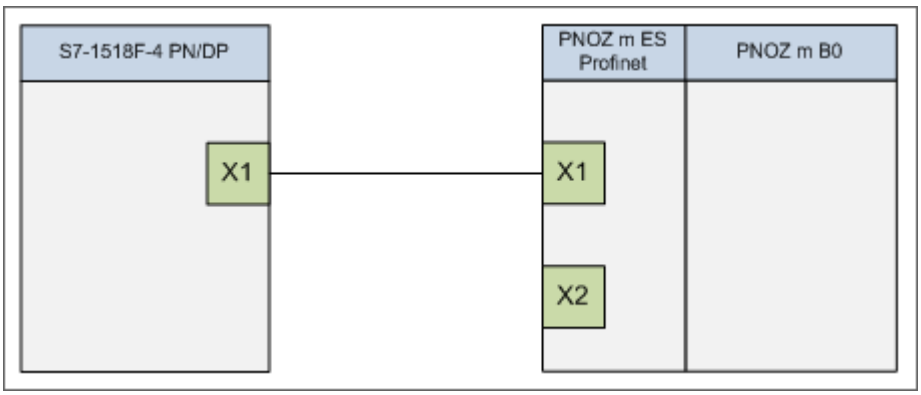

Figure 1: Topology of Profinet

3 Preface

This document provides a Step by Step example how to communicate between Siemens S7-1500 and PNOZ multi 2 with Profinet connection.

- Prepare PNOZ m B0 base module for Profinet communication (see Chapter 4.1)
- Build up a simple Profinet connection in TIA Portal (see Chapter 4.2)

The initial S7-Hardware configuration is not part of this “Application Note”.

In order to reproduce this application, the prerequisites must be met as described in Chapter 2

4 Application Task

4.1 Prepare PNOZ m B0 base module for Profinet communication

- Start PNOZmulti Configurator and create the hardware configuration

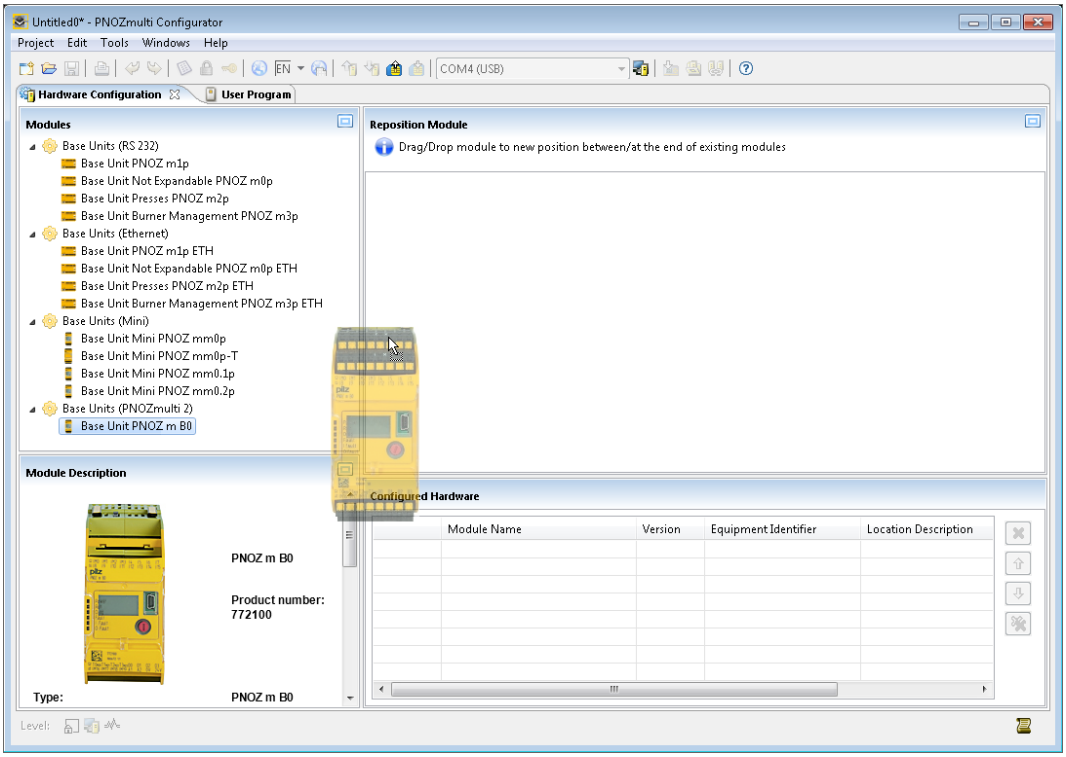

Figure 2: Drag and drop the "Base Unit PNOZ m B0" to the workspace

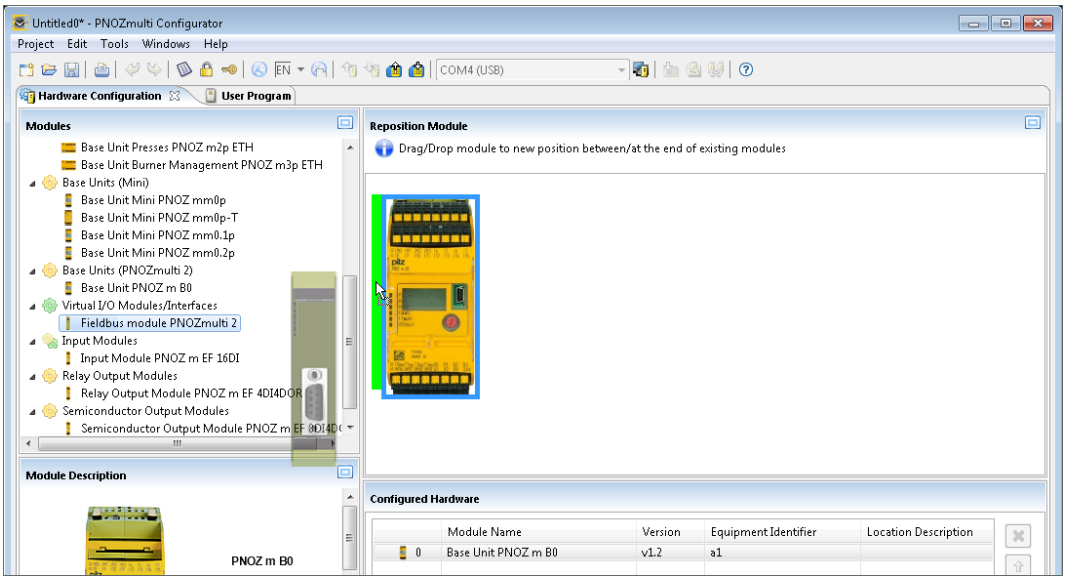

Figure 3: Drag and drop the "Fieldbus module PNOZmulti 2" left beside the base module

- Create a user program for the base module. At least one security function must exist in the user program.

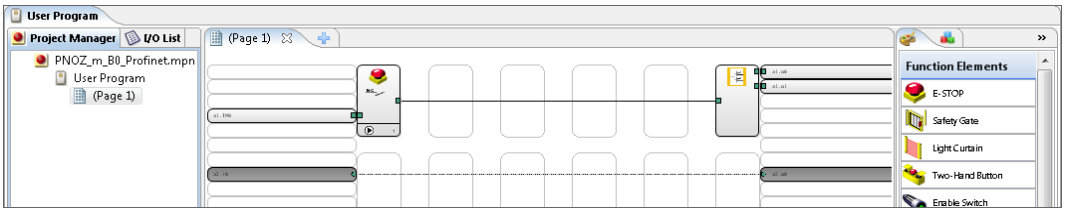

Figure 4: Example for a user program for the base module

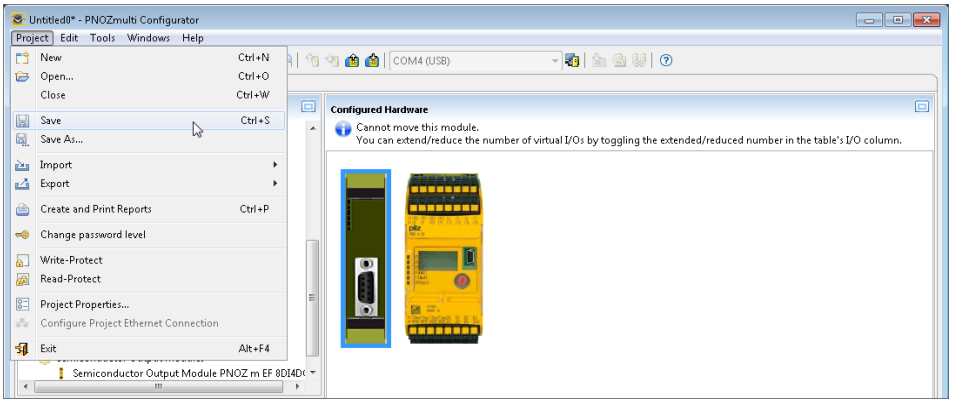

Figure 5: Save the actual configuration

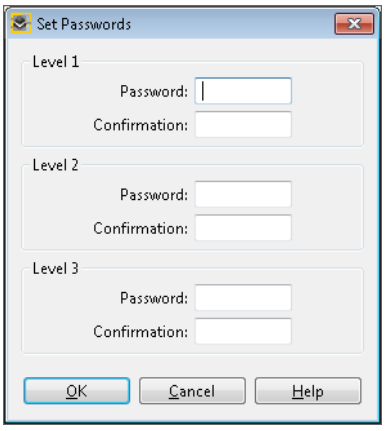

Figure 6: Define password for each security level

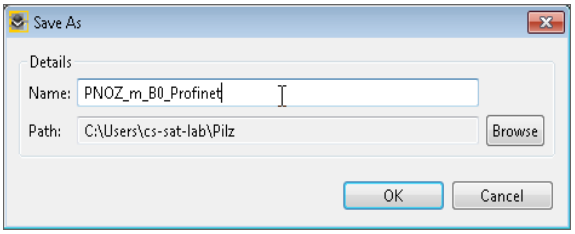

Figure 7: Define the name of the project to save

- Choose the USB connection which applies to the base module and go online.

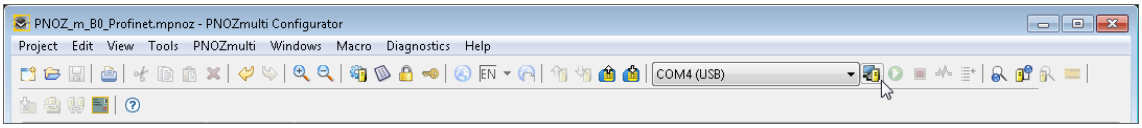

Figure 8: USB connection with base module

- Download hardware configuration and user program to base module

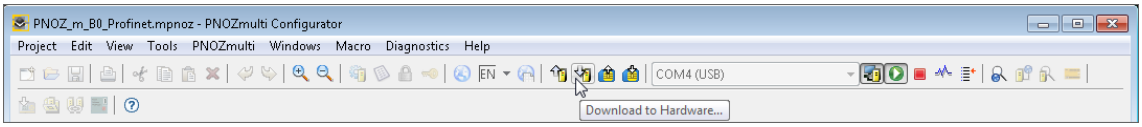

Figure 9: Download to hardware

4.2 Build up a simple Profinet connection in TIA Portal

- Install the GSD-file for the fieldbus module into TIA.

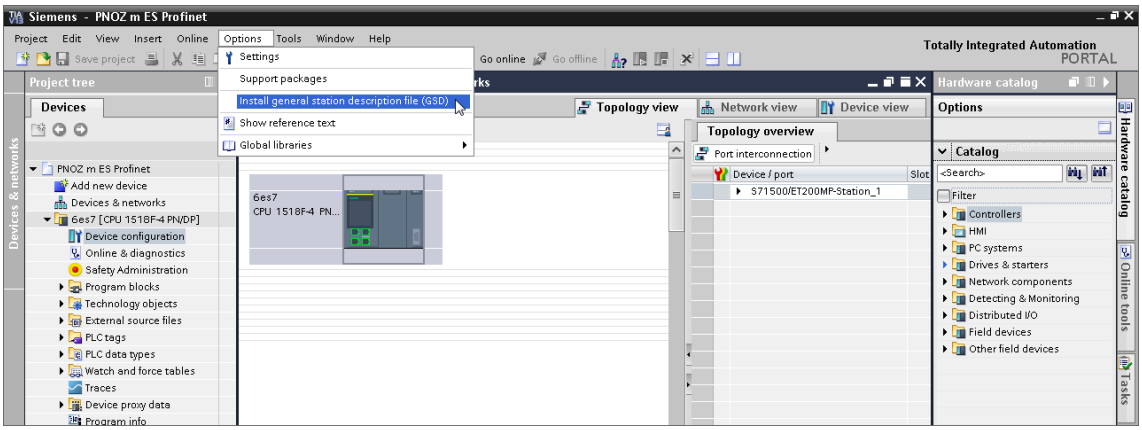

Figure 10: Start installing GSD-file

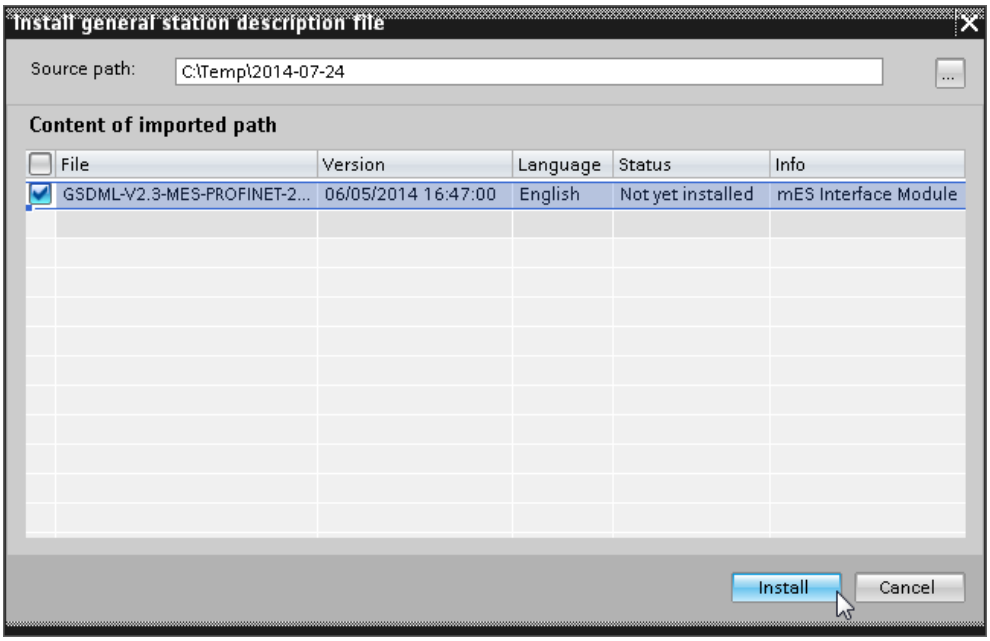

Figure 11: Navigate to the directory where the GSD-file is stored[1] and start installation

- Add the "PNOZ m ES Profinet" device to the project

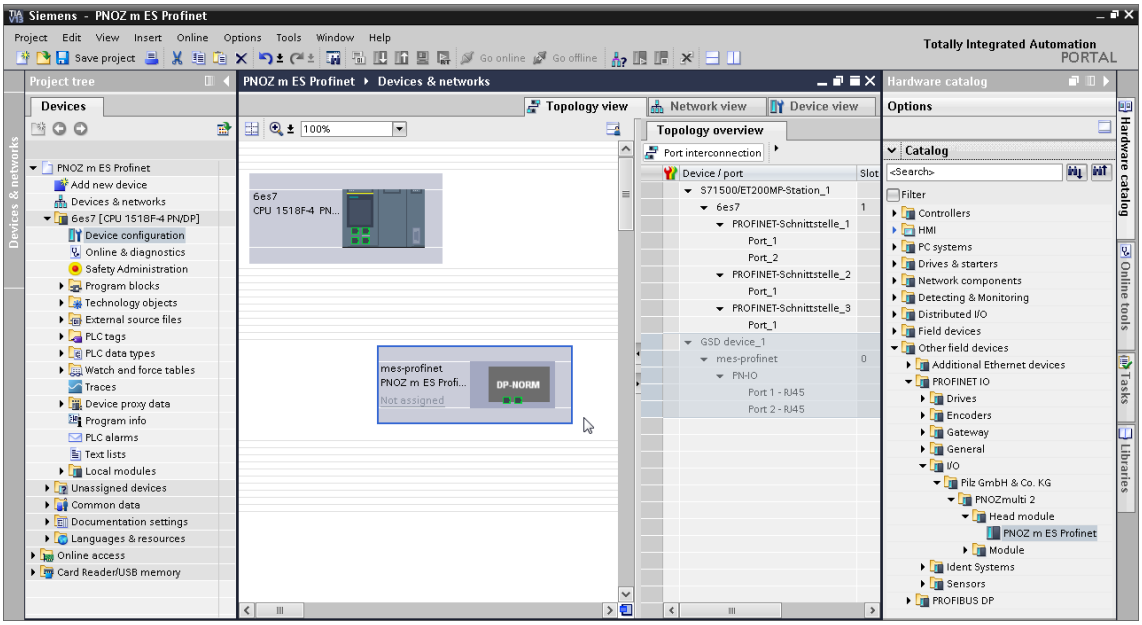

Figure 12: Adding "PNOZ m ES Profinet" device from the hardware catalogue

[1] The GSD-file can be downloaded from the Pilz homepage

- Add available modules to the “PNOZ m ES Profinet” device

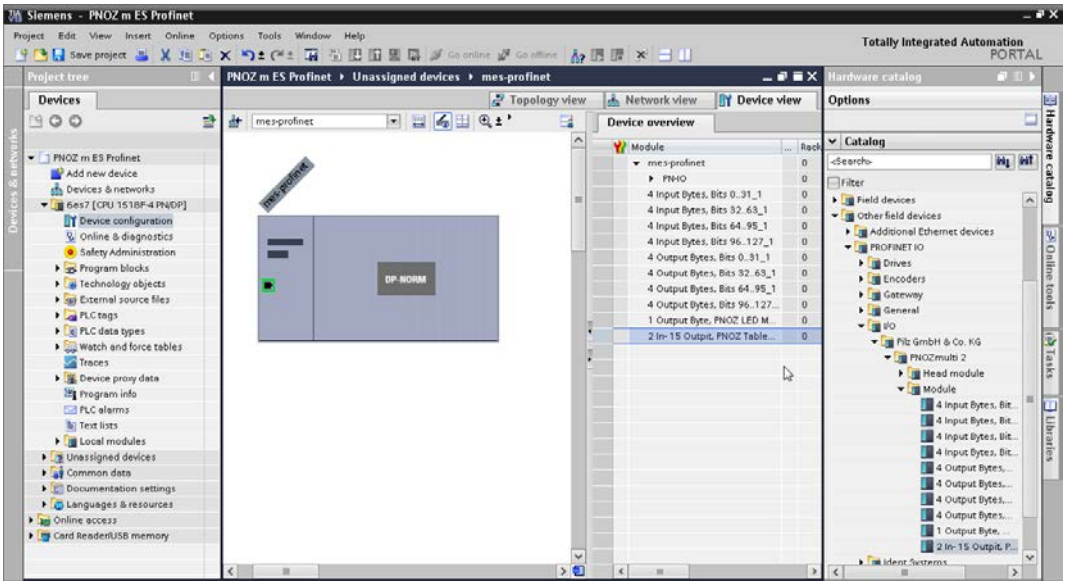

Figure 13: Adding modules to the "PNOZ m ES Profinet" device

- Define PROFINET device name to use for the “PNOZ m ES Profinet” device

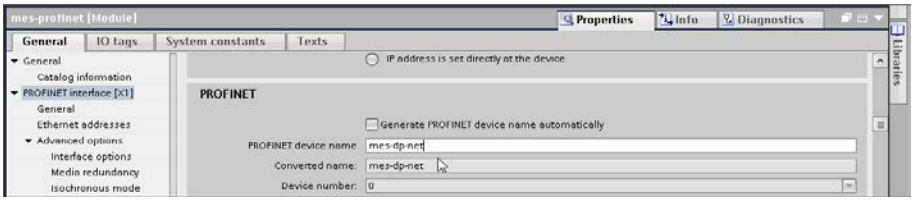

Figure 14: Define PROFINET device name

- Search online for accessible devices and assign name to the PNOZ m ES Profinet device

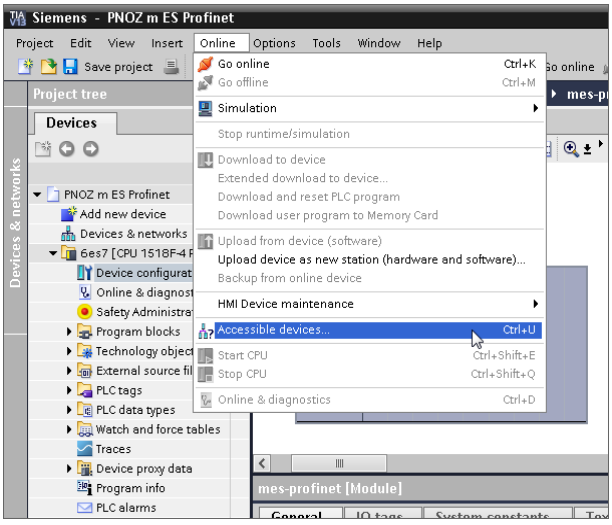

Figure 15: Start searching for accessible devices

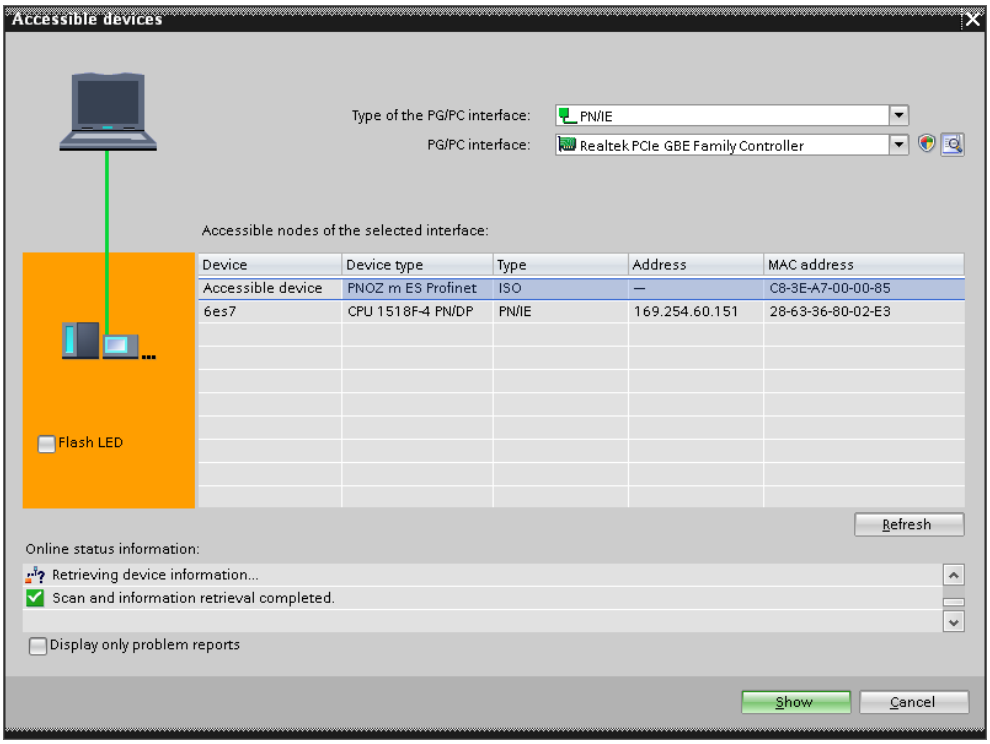

Figure 16: List of found devices

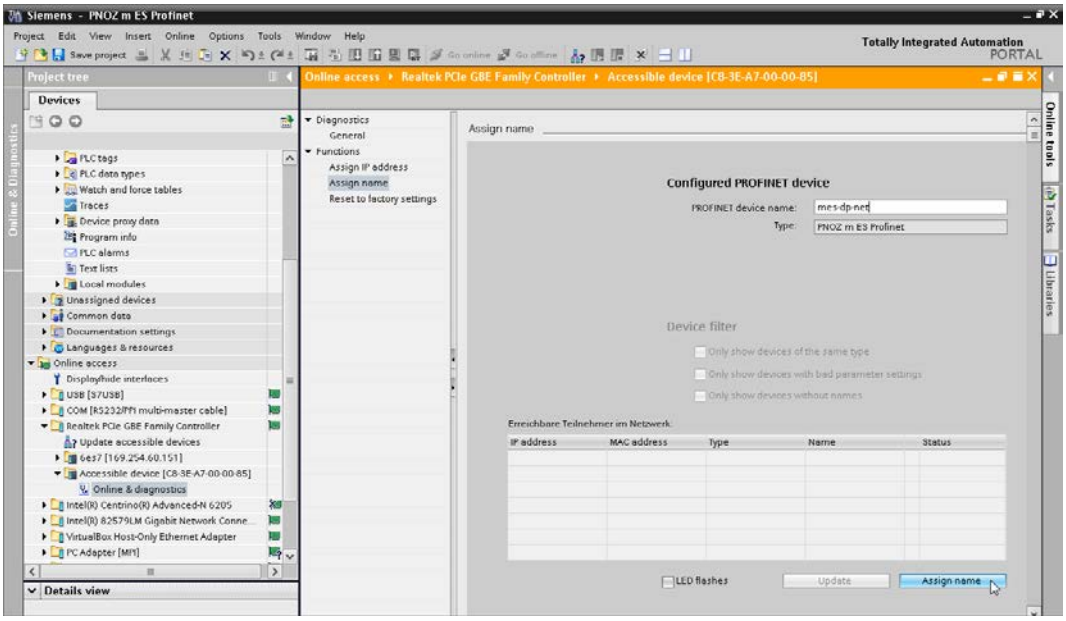

Figure 17: Assign Profinet device name to accessible PNOZ m ES Profinet device

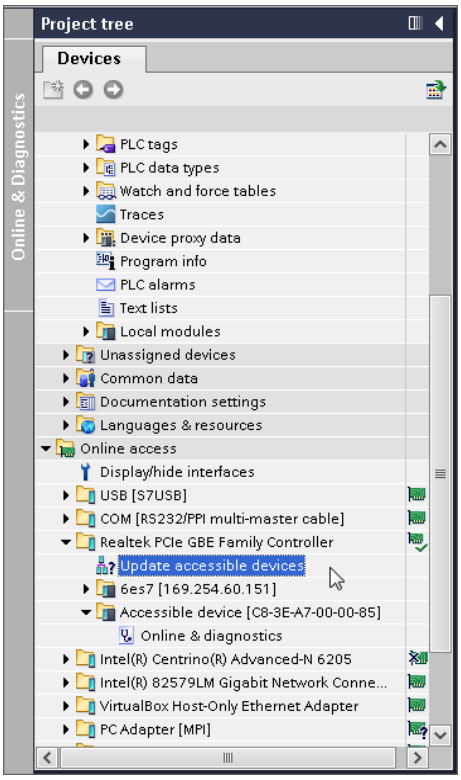

Figure 18: Initiate updating list of accessible devices

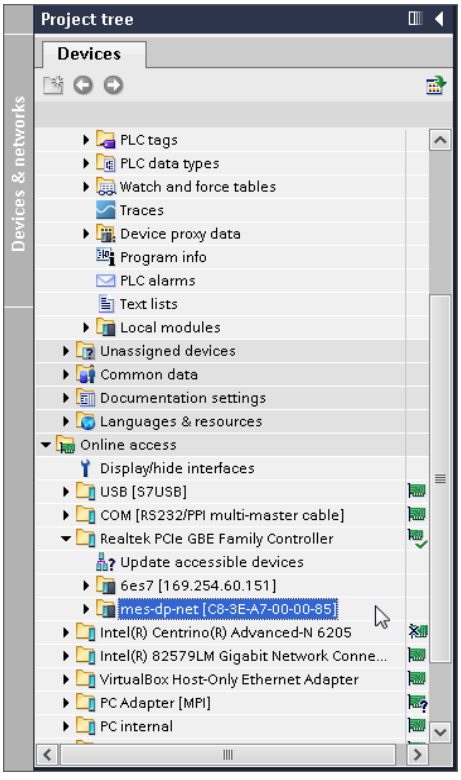

Figure 19: Updated list of accessible devices

- Connect controller with the PNOZ m ES Profinet device in the network view

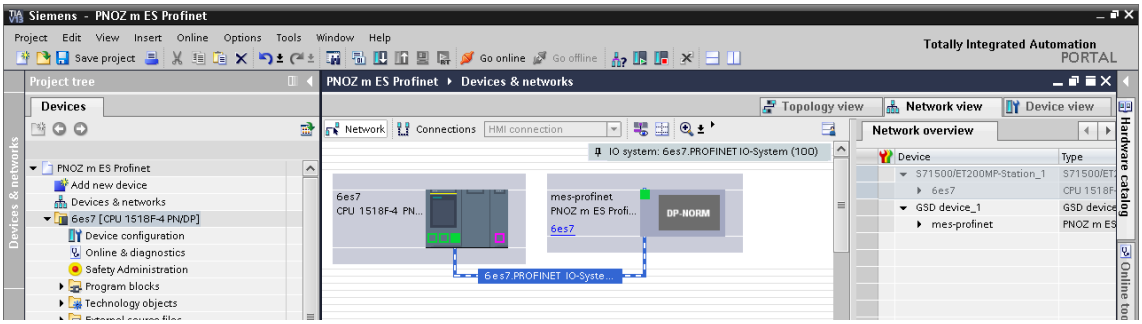

Figure 20: Controller connected with Profinet device

- Compile configuration and initiate download to the controller

5 Table of figures

Support

Technical support is available from Pilz round the clock.

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Germany
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Italy, Malta
+39 0362 1826711
Scandinavia
+45 74436332
Spain
+34 938497433
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We are represented internationally. Please refer to our homepage www.pilz.com for further details or contact our headquarters.

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