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Quick Start Guide
FLEXtra PROFINET-Switch 16 Port, 10/100/1000 MBps

Version 2 en

Order number: 700-855-16P01

As of firmware V1.04

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Content

1 Safety instructions

Target audience

This description is only intended for trained personnel qualified in control and automation engineering who are familiar with the applicable national standards.

For installation, commissioning, and operation of the components, compliance with the instructions and explanations in this operating manual is essential. The specialist personnel is to ensure that the application or the use of the products described fulfills all safety requirements, including all applicable laws, regulations, provisions, and standards.

Intended use

The device has a protection rating of IP 20 (open type) and must be installed in an electrical operating room or a control box/cabinet in order to protect it against environmental influences. To prevent unauthorized operation, the doors of control boxes/cabinets must be closed and possibly locked during operation.

The consequences of improper use may include personal injury to the user or third parties, as well as property damage to the control system, the product, or the environment. Use the device only as intended!.

Operation

ATTENTION

Successful and safe operation of the device requires proper transport, storage, setup, assembly, installation, commissioning, operation, and maintenance. Operate the device only in flawless condition. The permissible operating conditions and performance limits (technical data) must be adhered to. Retrofits, changes, or modifications to the device are strictly forbidden.

Security

ATTENTION

The device is a network infrastructure component and therefore an important element in the security consideration of a plant. When using the device, therefore, observe the relevant recommendations to prevent unauthorized access to installations and systems. Further information on this can be found in the device manual.

2 Introduction

The managed FLEXtra PROFINET-Switch can be used to connect PROFINET components at 100 Mbps as well as Ethernet devices at up to 1000 Mbps. The supported PROFINET protocols, such as LLDP, DCP or diagnostic alarms, can be easily parameterized and managed via the integration of a GSDML file.

In addition to the PROFINET functions, further network management functions are available in the FLEXtra PROFINET-Switch, which can be configured via the web interface. These include VLAN, SNMP, port mirroring, QoS/CoS mapping.

The functional design with the smart arrangement of the Ethernet ports saves space in the control cabinet. The status LEDs on the top of the FLEXtra PROFINET switch, which are always clearly visible, enable easy diagnostics even with full cabling.

In addition, the FLEXtra PROFINET switch supports the control of ports via inputs and the display of port states via outputs. As inputs and outputs bits in the PROFINET-IO image of the switch can be used as well as 4 digital inputs and 2 digital outputs with 24V. The assignment of the can be configured via the GSDML file.

The website can also be used to query extensive information about the status of the FLEXtra PROFINET-Switch, such as port status and statistics, stored MAC addresses and the ARP table.

The configuration set via the web interface can be downloaded or saved to an SD card as a backup or for series commissioning.

Further information about the network management functions, the status displays and the configuration management can be found in the detailed manual of the FLEXtra PROFINET-Switch.

NOTE

This document explains the initial commissioning of the FLEXtra PROFINET-Switch with a standard use case. The latest version of the document and the detailed manual can be found at www.helmholz.de or scan the QR code directly.

3 Preparing the PROFINET-Switch

3.1 Connecting

The FLEXtra PROFINET-Switch has a redundant power supply. The FLEXtra PROFINET-Switch must be supplied with 24 VDC via the supplied connector plug at at least one of the two "-/+" wide-range inputs (18 - 30 VDC).

The RJ45 sockets "X1 P1 - X1 P16" are used to connect the network devices (PROFINET or Ethernet).

NOTE

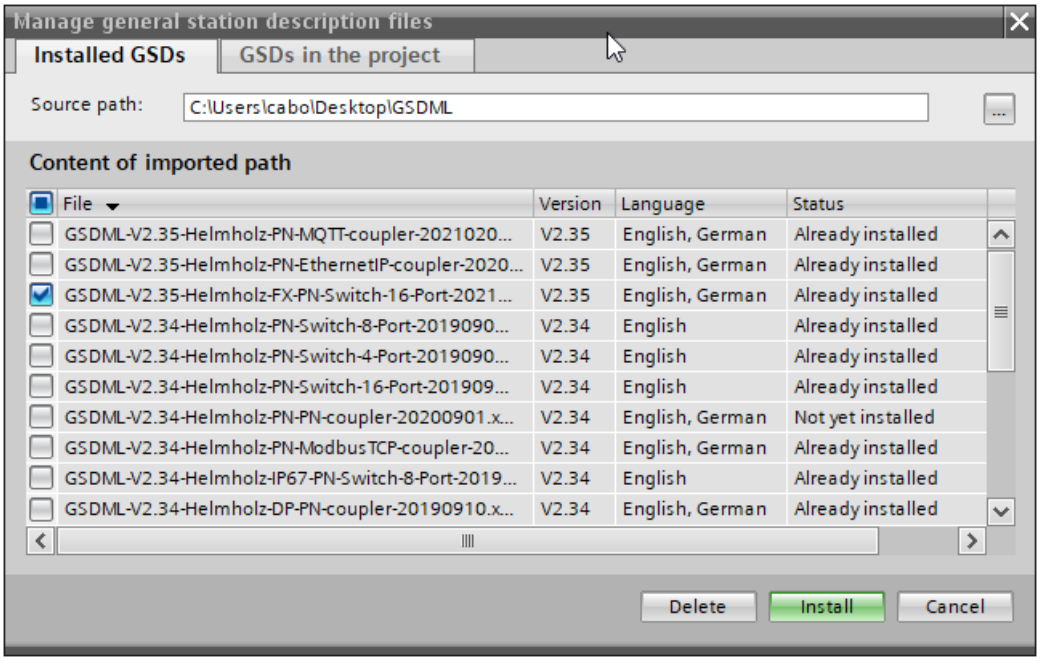
The housing of the PROFINET-Switch is not grounded. Please connect the functional grounding connection (FG named FE on front) of the PROFINET-Switch correctly with the reference potential.

4 Setup and use

4.1 Install GSDML file

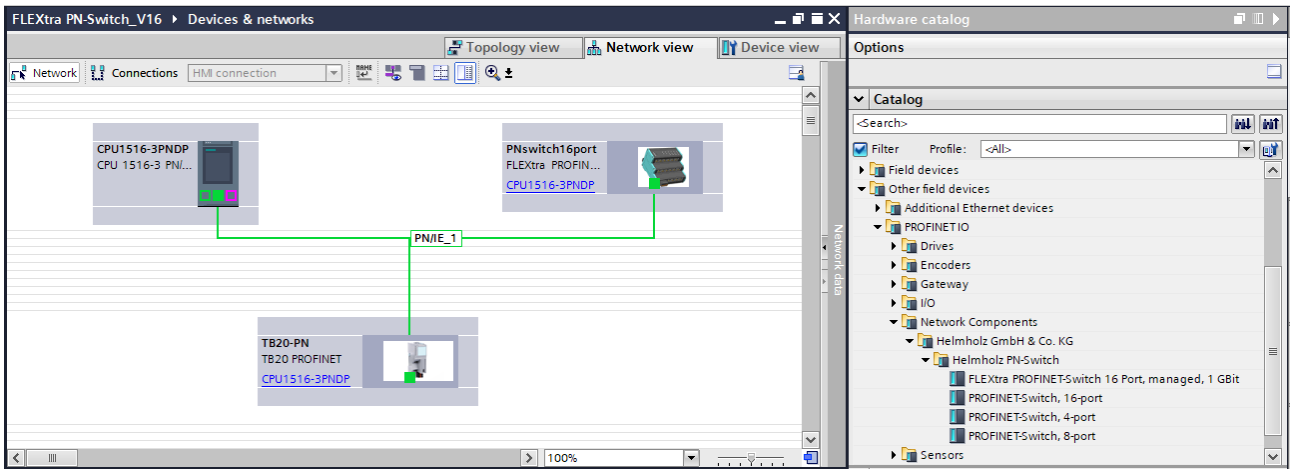
You can download the GSDML file for the FLEXtra PROFINET-Switch from the website www.helmholz.de in the download area of the product or use the QR code shown.

You can find the “Manage general station description files” dialog in TIA Portal in the menu “Options”.



4.2 Setup in the hardware-configuration

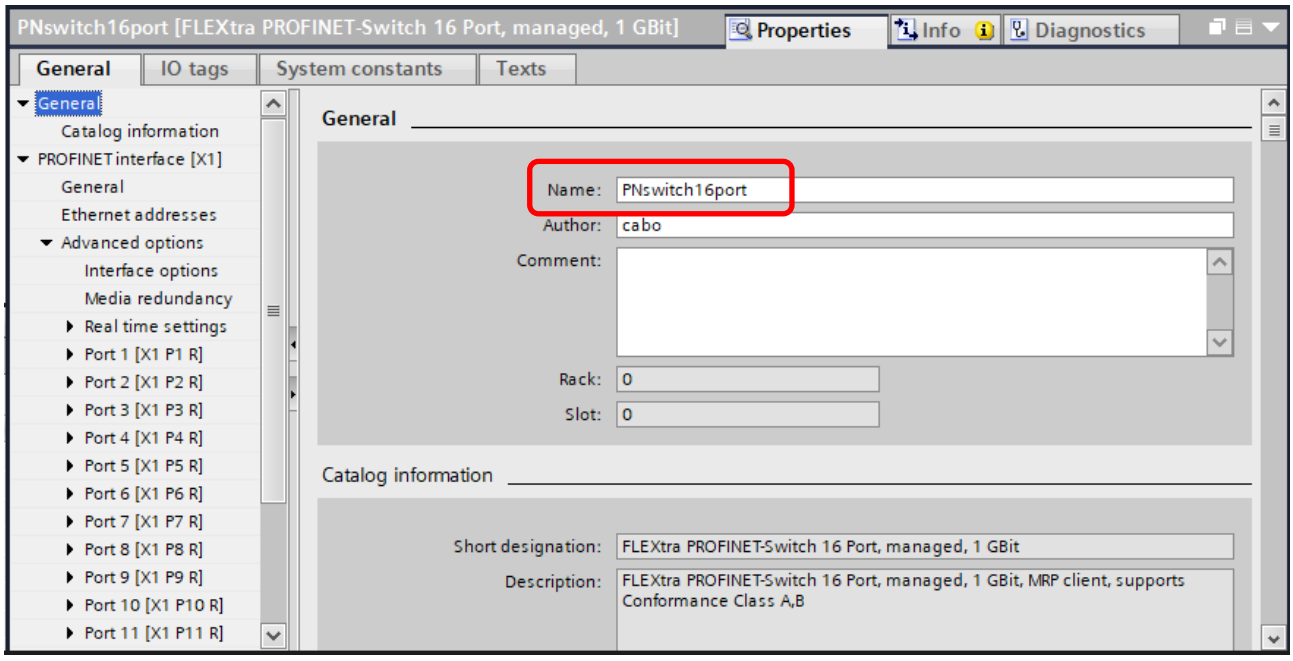
After installation, the FLEXtra PROFINET-Switch is listed in the hardware catalog under "Other field devices → PROFINET IO → Network Components → Helmholz GmbH & Co. KG → Helmholz PN-Switch" in the hardware catalog. Insert the "FLEXtra PROFINET Switch 16 port" device into the project and connect it to your PROFINET network.



By calling up the object properties, you must give the FLEXtra PROFINET switch a unique PROFINET name in the project and check the IP address for plausibility.

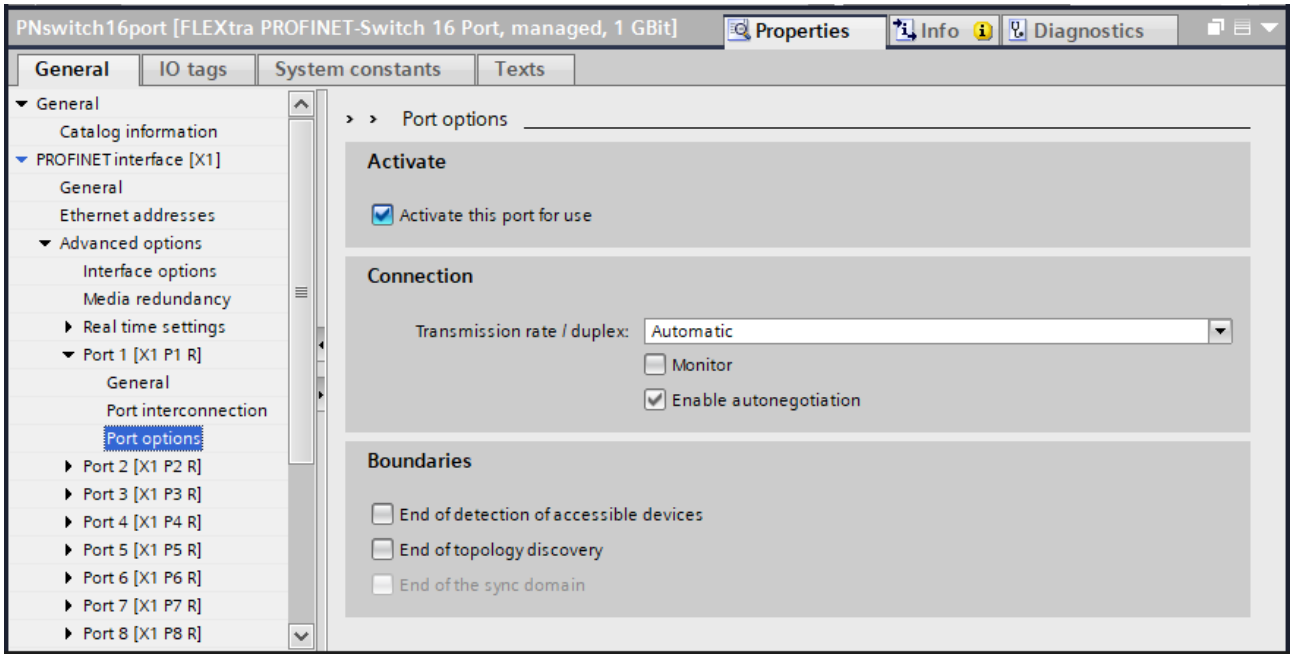
NOTE

The real device must later be assigned the same name as in the project.



4.3 Setting the port properties

Each port of the PROFINET switch can be individually configured.



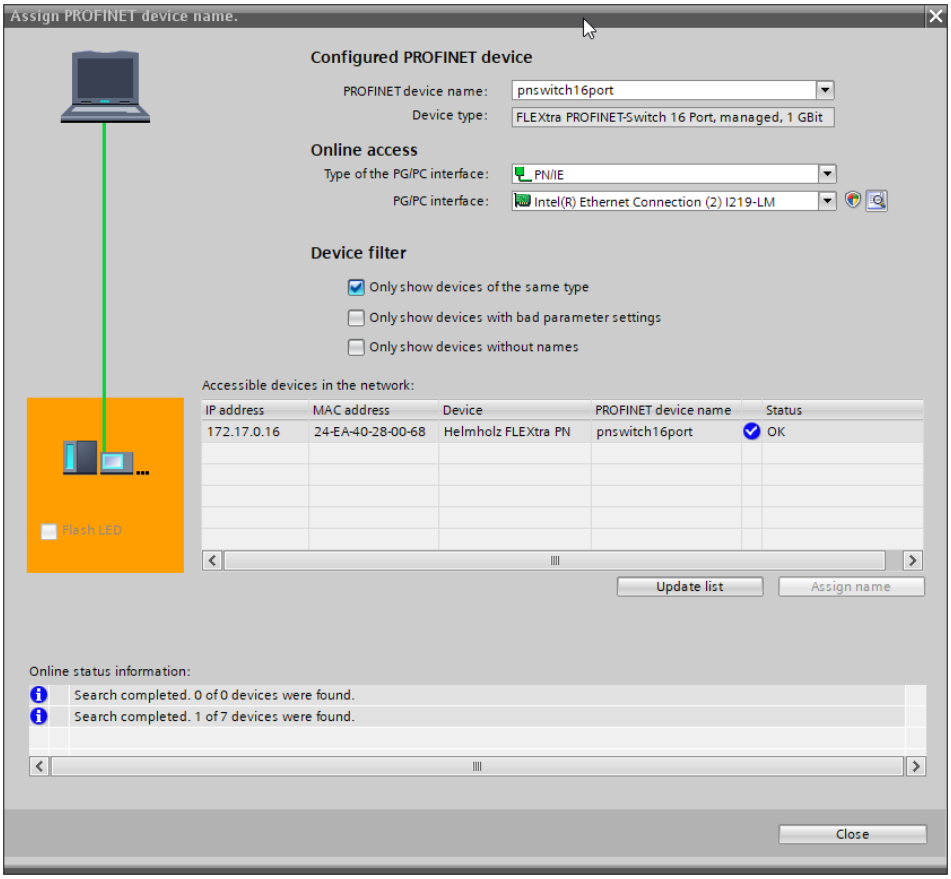
“Activate this port”	The port can be switched off here. This option is recommended when the port should not be used. Unauthorized trespass into the network is prevented.
Transmission rate / duplex “Automatic”	The port synchronizes itself automatically with the communication partner (auto-negotiation).
Transmission rate / duplex “TP 100 Mbps full duplex”	Fixed specification of the transmission rate. This option is recommended when connecting PROFINET IO devices.
Monitor	Send a diagnosis by Link Down
Enable autonegotiation	Automatic recognition of the transmission speed and the cable type (cross or patch cable)
End of detection of accessible devices	The DCP telegrams for recording accessible devices are not forwarded from this port. Subscribers behind this port are no longer displayed under "Accessible subscribers" in the topology. Users behind this port can no longer be reached by the CPU.
End of topology discovery	LLDP frames for topology discovery are not forwarded on this port.

4.4 Assign the PROFINET switch a name

When the configuration of the FLEXtra PROFINET switch has been completed in the hardware configurator of the engineering tool, it can be loaded into the PLC.

In order that the FLEXtra PROFINET switch can be found by the PROFINET controller, the PROFINET device name must be assigned to the PROFINET switch. To this purpose, use the function “Assign device name”, which you can access in the Online menu with the right mouse button when the PROFINET switch is activated.

With the “Update list” button, the network can be browsed for PROFINET participants. The PROFINET device name can be assigned to the device with “Assign name”.



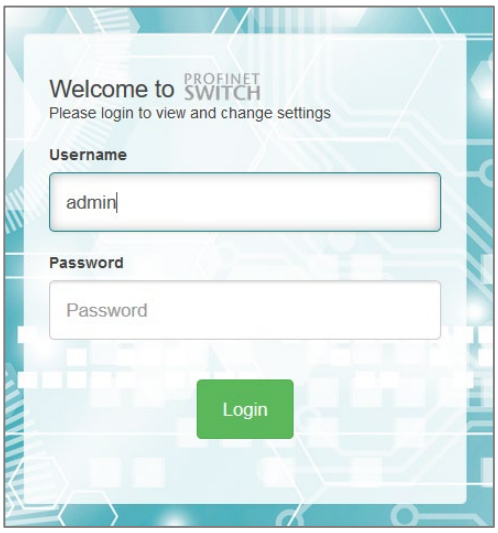
The clear identification of the FLEXtra PROFINET switch is ensured here by the MAC address of the device. The MAC address of the device can be found on the device front of the FLEXtra PROFINET switch.

If the PROFINET switch has been assigned the correct PROFINET name, it is recognized by the PLC and configured. If configuration has taken place correctly, the PROFINET “BF” LED is off.

The Helmholz IPSet tool, which can be downloaded at no charge from the Helmholz website, can also be used to set the PROFINET name. Scan the following QR code to download the IPSet tool:

4.5 Further configuration and diagnosis via the web interface

Via the web interface, the status of the PROFINET switch can be queried and further functions can be configured. Furthermore, a firmware update can be performed via the web interface.



The web interface can be operated as soon as the device has a network configuration. The IP address of the device must be entered as URL.

In the following login dialog the username is "admin" and the password is the serial number of the PROFINET switch which can be read at the device side. For the first login the default password must be changed.

Further information about the web interface can be taken from the manual.

5 Diagnosis via LEDs

5.1 System LEDs

PWR	Off	No power supply or device defective
	On	Device is correctly supplied with voltage
RUN	On	Device is ready to operate
	Flashing	Device is starting up
	Flashing synchronous with BF and SF LED	PROFINET function device identification
BF	On	Bus error, no configuration
	Flashing synchronous with RUN and SF LED	PROFINET function device identification
SF	On	System error, network status in error
	Flashing synchronous with RUN and BF LED	PROFINET function device identification

5.2 Ethernet LEDs P1 – P16 (RJ45)

Off		No network cable connected or network cable defective or partner device off
Green	On	Ethernet connection with 10/100 MBps
	Flashing	Ethernet communication with 10/100 Mbps
Orange	On	Ethernet connection with 1000 Mbps
	Flashing	Ethernet communication with 1000 Mbps

6 Function of buttons

The "**RST**" button triggers an immediate restart of the PROFINET switch in which all stored settings are retained. A restart is indicated by the permanent illumination of all 4 status LEDs.

With the "**FCN**" button the PROFINET switch can be reset to factory settings. If the "FCN" button is pressed during the switch start-up phase or after a reset, the green "PWR" and the orange "SF" LEDs light up continuously. This indicates that the switch has loaded the factory setting. After releasing the button, the switch is restarted.

7 Technical data

Order number	**700-855-16P01**
Name	FLEXtra PROFINET-Switch 16-Port, managed, 10/100/1000Mbit
Scope of delivery	FLEXtra PROFINET-Switch 16-Port with power supply plug
Dimensions (D x W x H)	78 x 125 x 111 mm
Weight	Ca. 550 g
PROFINET/Ethernet interface (X1)	
Connection	16 x RJ45, integrated Switch
Protocol	PROFINET IO Device as defined in IEC 61158-6-10
Transmission rate	PROFINET: 100 Mbps Ethernet: 10/100/1000 Mbps
Features	PROFINET Conformance Class B, Media Redundancy (MRP), automatic addressing (DCP), topology detection (LLDP), diagnostic alarms, VLAN, SNMP, Port-Mirroring, Port statistics
Digital IO	
Inputs	4, type 3 acc. DIN EN 61131-2
Outputs	2, 500mA 24V DC, electronic fused
Status indicator	4 LEDs function status, 16 LEDs Ethernet-Status (two-colored)
Voltage supply	2x DC 24 V, 18 – 30 V DC, redundant
Power consumption	max. 400 mA with DC 24 V
Current draw	Max. 9,6 W
Ambient conditions	
Installation position	Any
Ambient temperature	-40 °C ... +75°C
Transport and storage temperature	-40 °C ... +85°C
Relative air humidity	95 % r H without condensation
Protection rating	IP20
REACH & RoHS	Yes

NOTE

The contents of this Quick Start Guide have been checked by us so as to ensure that they match the hardware and software described.

However, we assume no liability for any existing differences, as these cannot be fully ruled out. The information in this Quick Start Guide is, however, updated on a regular basis. When using your purchased products, please make sure to use the latest version of this Quick Start Guide, which can be viewed and downloaded on the Internet from www.helmholz.de.

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