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Quick Start Guide PROFINET Switch 4/8-port

Version
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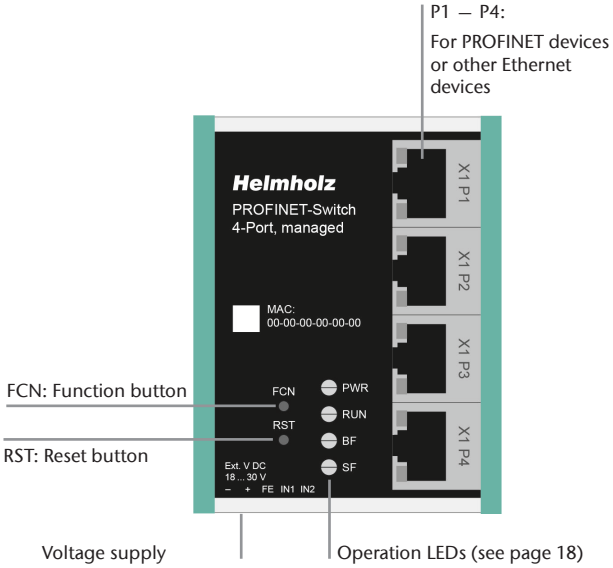
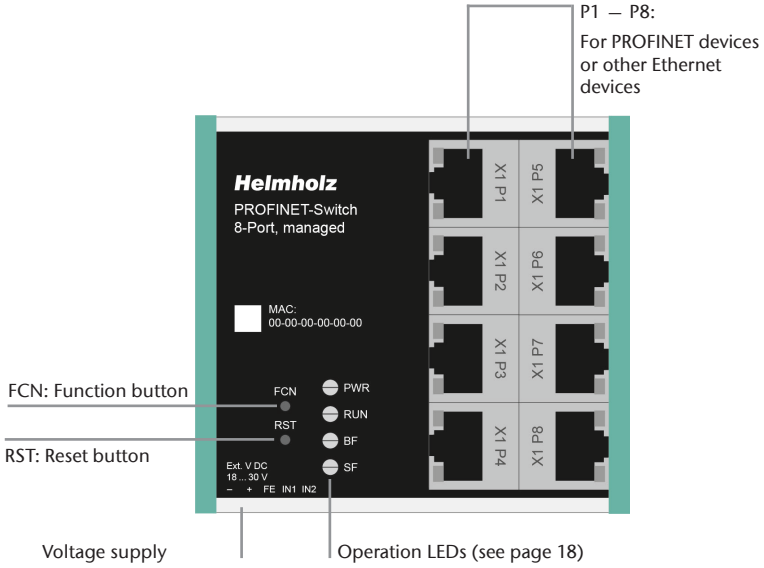
Contents

1. Introduction

Please note: *Please observe the safety instructions for the product, which can be found in the manual. You can find the manual on the accompanying CD or it can be downloaded from the website www.helmholz.de in the download area.*

This document should explain the initial commissioning of the PROFINET switch for use in a PROFINET project.





2. Preparing the PROFINET switch

2.1 Connection

The PROFINET switch must be supplied with 24 V DC at the wide range input 18 – 30 V DC via the provided connector plug. The terminal (FG) is for the functional ground. Connect this correctly with the reference potential.

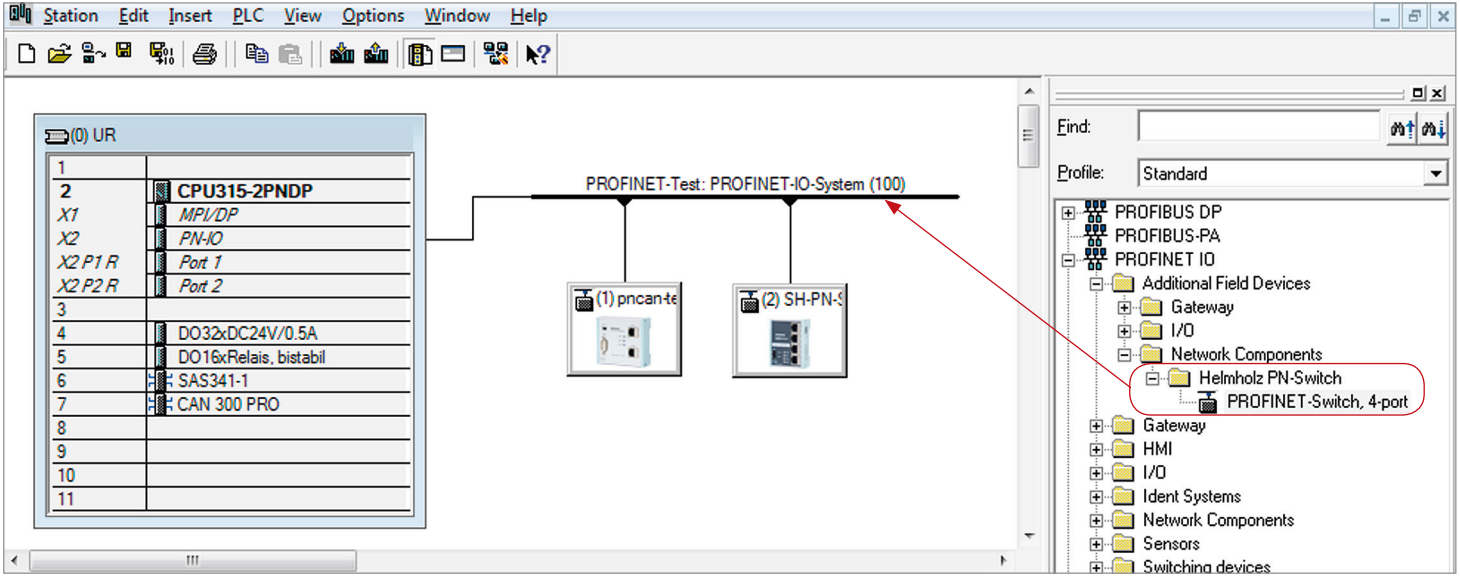
The RJ45 sockets “P1 – P4”(4-port switch) and “P1 – P8” (8-port switch) are for the connection of the network.

2.2 Install GSDML file

The GSDML file can be found on the accompanying CD or in the download area of the PROFINET switch at www.helmholz.de.

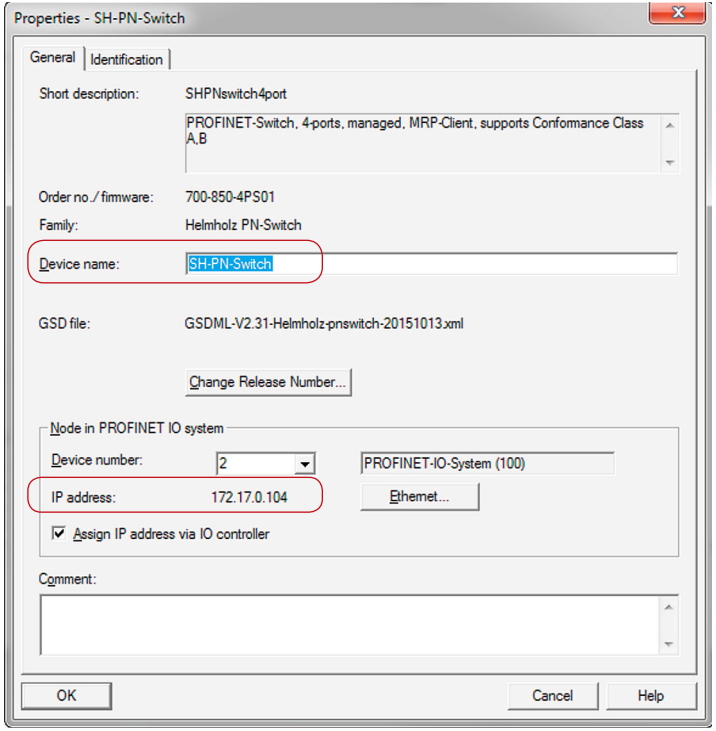
3. Project planning for PROFINET switch

Following installation, the PROFINET switch can be found in the hardware catalog under "PROFINET IO -> Additional Field Devices -> Network Components -> Helmholz PN-Switch". Add the "PROFINET Switch, 4-port" device to the project and connect it with your PROFINET network.



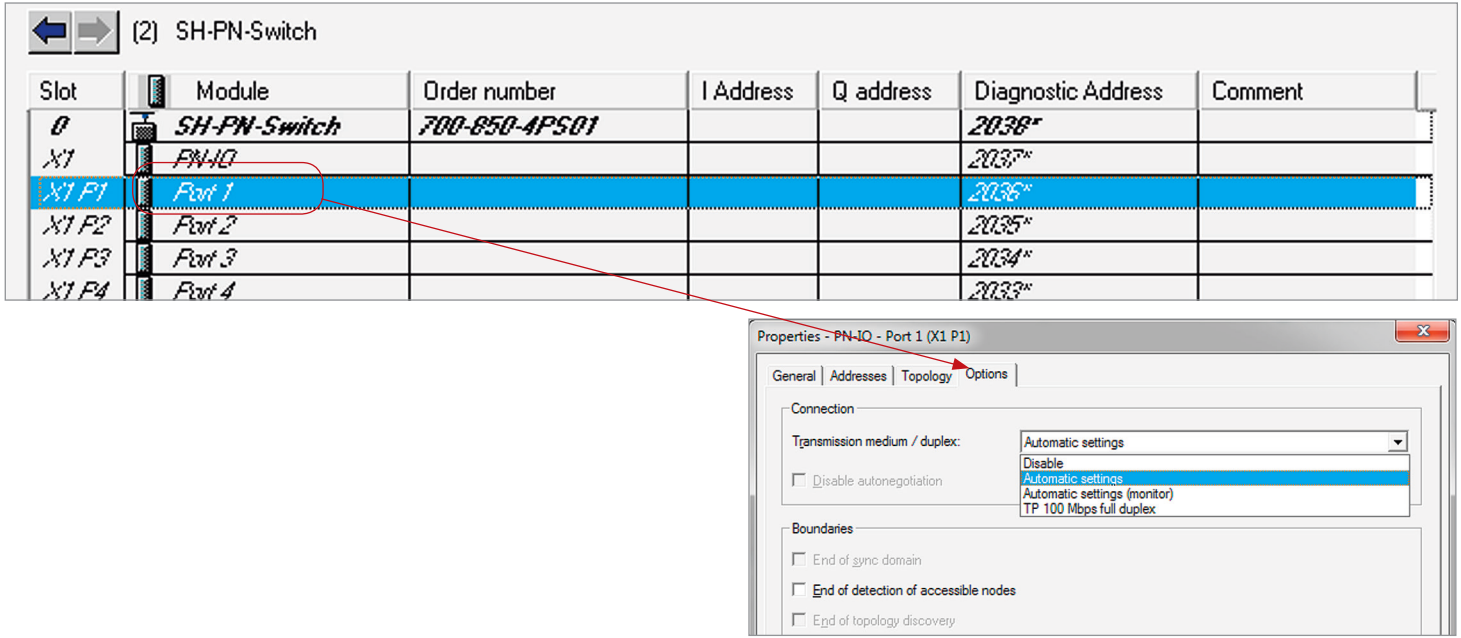
By calling up the object properties, you can assign the PROFINET switch a unique PROFINET name and check the IP address for plausibility in the project.

Important: *The real device must later be assigned the same name as in the project. See also Chapter .6*



4. Setting the port properties

Each port of the PROFINET switch can be individually configured.



Transfer medium/duplex:

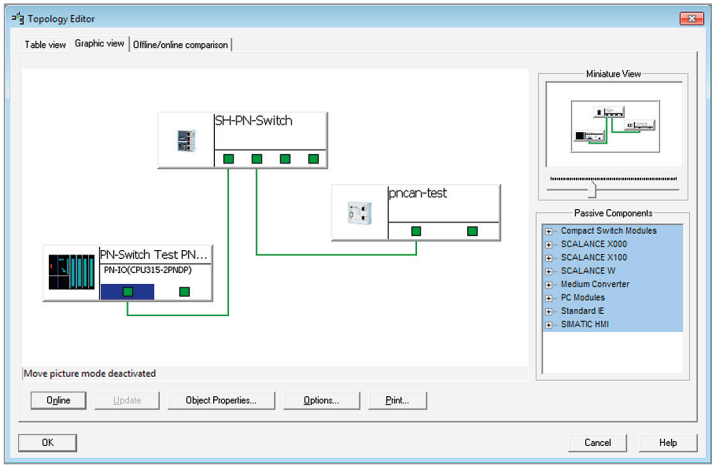
“disable”	The port is permanently switched off. This option is recommended when the port is not to be used. Unauthorized infiltration of the network is prevented.
“Automatic settings”	The port synchronizes itself automatically with the communication partner (auto-negotiation).
“Automatic settings (monitor)”	The port synchronizes itself automatically with the communication partner (auto-negotiation). A diagnosis alarm is triggered in the event of an absent Ethernet cable.
“TP 100 Mbps“	Fixed specification of the transmission rate. This option is recommended when connecting PROFINET IO devices.

5. Topology detection

The PROFINET switch supports the mechanisms for neighborhood detection (LLDP). With this function it is possible to detect the topology of a PROFINET network, or to specify it for purposes of checking for the correct structuring by the configuration.

If the topology was prescribed in the configuration, neighboring devices can also be assigned the PROFINET name in the event of the replacement of a device.

The exchange of a device in operation is thus possible without the use of commissioning tools.



6. Assign the PROFINET switch a name

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

In order that the switch on the PROFINET can be found by the PROFINET controller, the PROFINET name must be set in the device.

To this purpose the function "Process Ethernet participant" is used in the SIMATIC[1] manager.

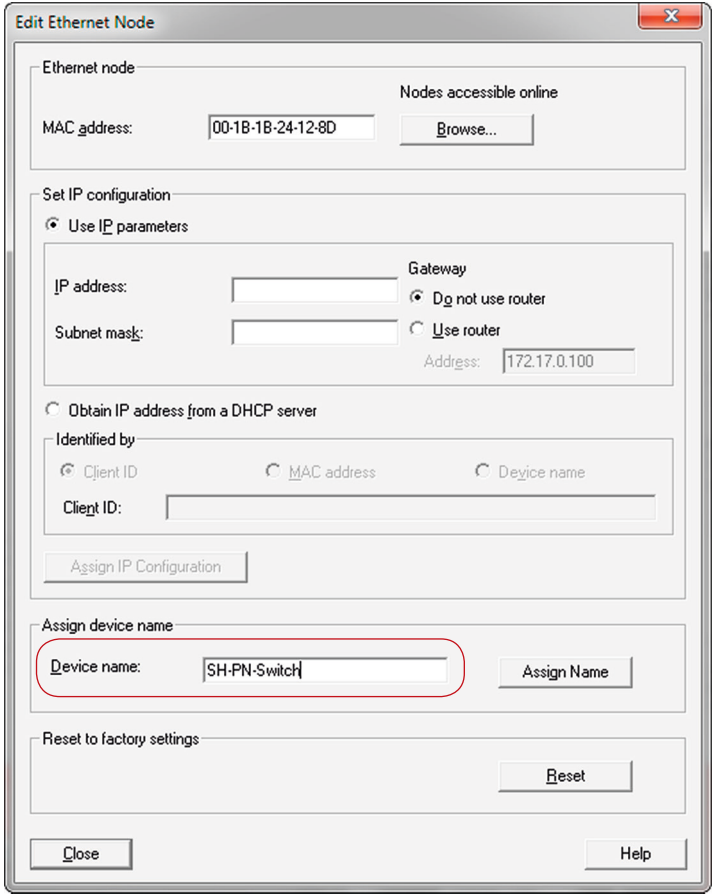
With the "Browse..." button, the network can be browsed for PROFINET participants.

The clear identification of the PROFINET switch is ensured here by the MAC address of the device.

***Important**: The assigned name must agree with the name defined in the hardware configurator. See Chapter 3, pages 4/ 5*

If the PROFINET switch has been assigned the correct name, it is recognized by the PLC and configured.

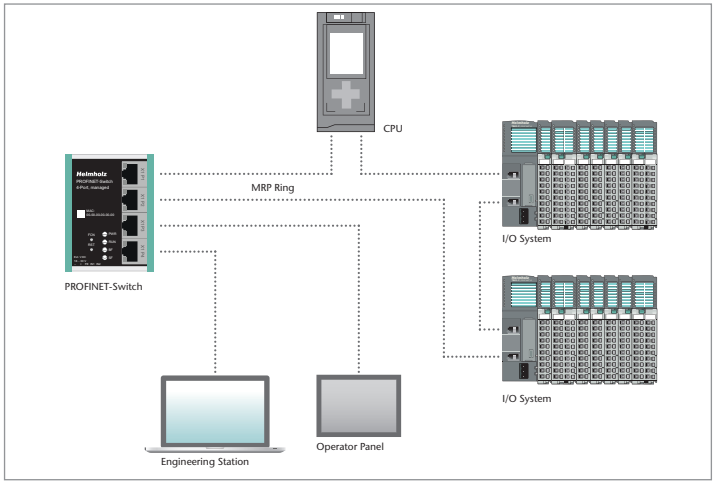
If configuration has taken place correctly, the green "RUN" LED should be on and the "BF" and "SF" LEDs off.



7. Media Redundancy Protocol (MRP)

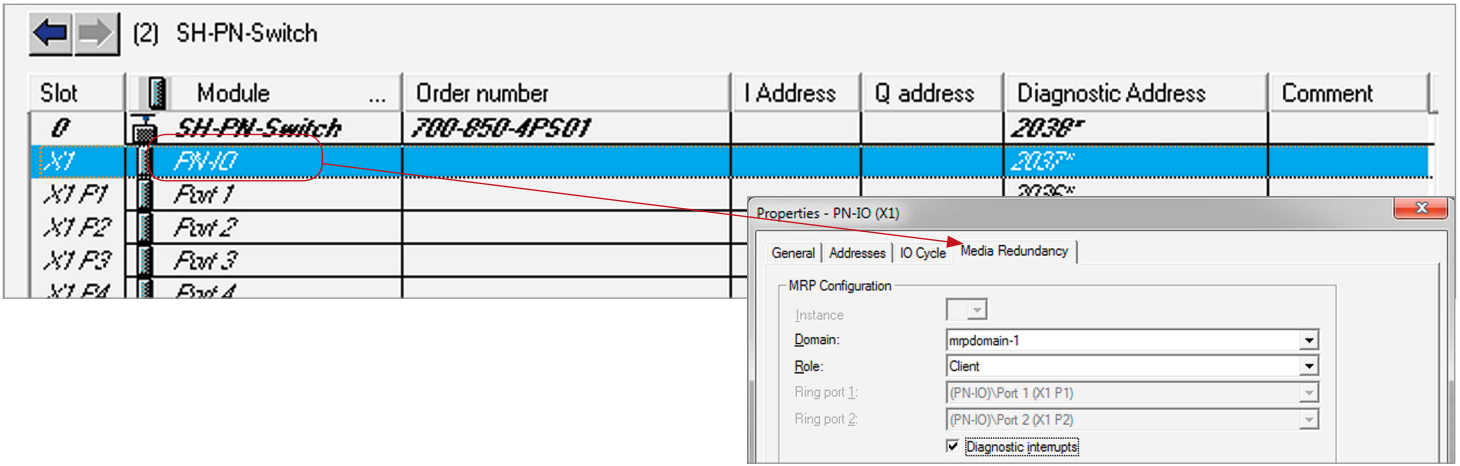
The PROFINET switch supports the optional media redundancy protocol (MRP) as MRP client. MRP stands for "media redundancy protocol". MRP enables ring wiring, which also makes operation of the PROFINET network possible in the event of the failure of a cable or of a participant.

There must be at least one MRP master (e.g. the CPU) in an MRP ring. All other participants of the ring are then MRP clients.



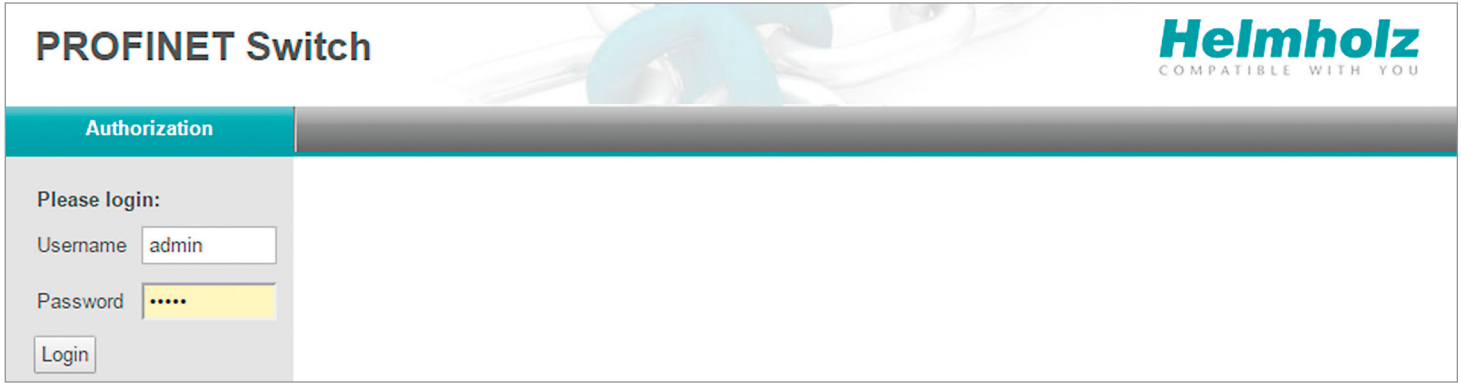
In order to assign the PROFINET switch to an MRP ring, the MRP domain must be set at slot X1 for the option "Media Redundancy".

Important: *If ring wiring is produced without the MRP roles being configured for all devices involved, this can result in functional disruptions of the PROFINET network!*

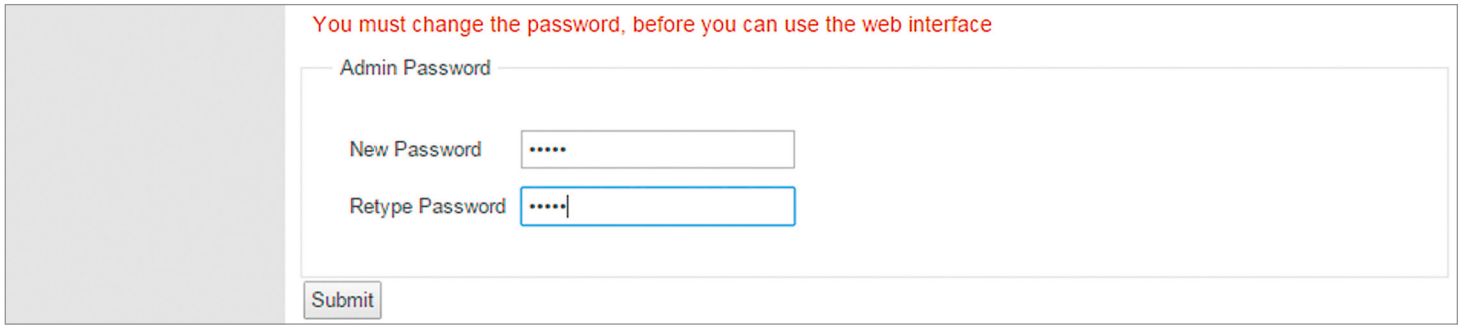


8. Diagnosis and configuration via the web interface

The web interface is also accessible under the IP address assigned to the PROFINET switch in the PROFINET network.



When the web interface is first called up, the password of the "admin" user is "admin" (as of firmware V1.02 the password is the serial number of the device).
It is absolutely necessary to assign a new password following the first login:

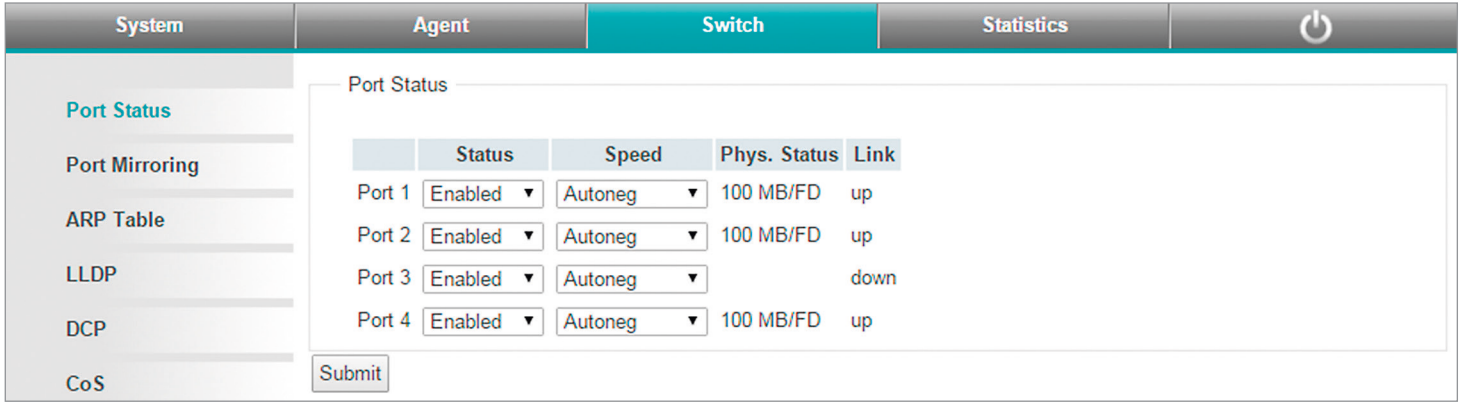


One goes to the system view following entry of the new password:

Note: *If the PROFINET switch is configured and used in a PROFINET network, settings in the web interface are only to be viewed as a diagnosis. Non-configured settings acquired from PROFINET (Port Status, LLDP, DCP, Ring Redundancy) are then not possible in the web interface.*

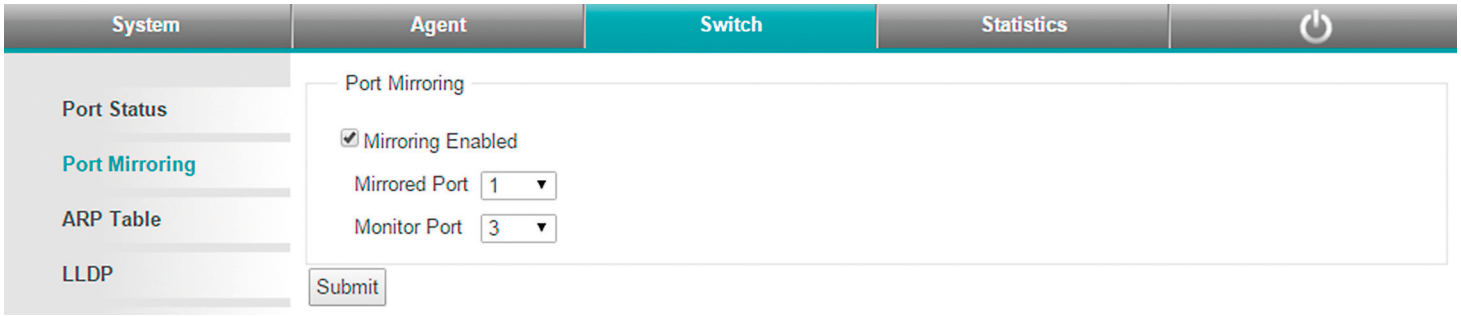
9. Switch diagnosis and settings

Extensive information and settings for the function of the switch are accessible in the Switch menu.



10. Port mirroring

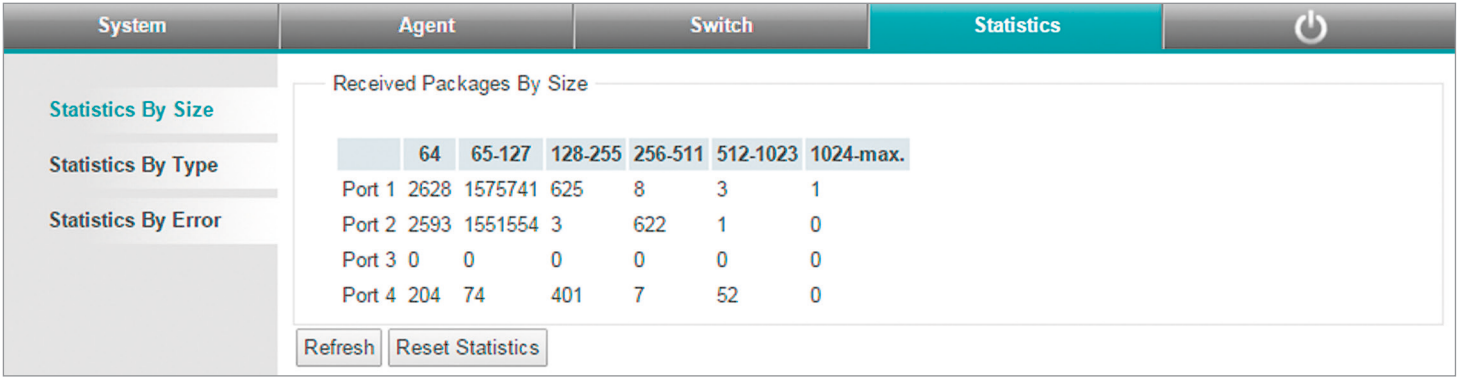
In order to be able to carry out frame analyses or recordings, Port Mirroring can be activated in the PROFINET switch. With Port Mirroring, the frame transfer from one port via another port is completely mirrored, on which an analysis PC can then record everything.



11. Statistics

Detailed statistics on the data transfer can be queried in the "Statistics" menu.

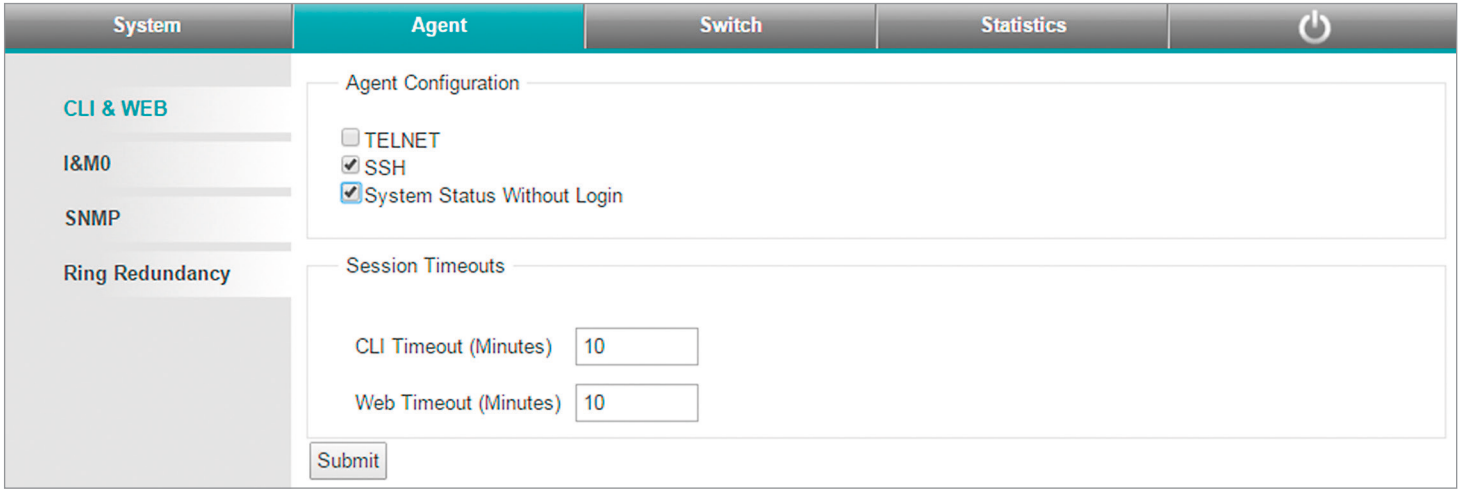
Among other things, the quality of the transmission can be monitored in the sub-menu "Statistics by Error".



12. Agents

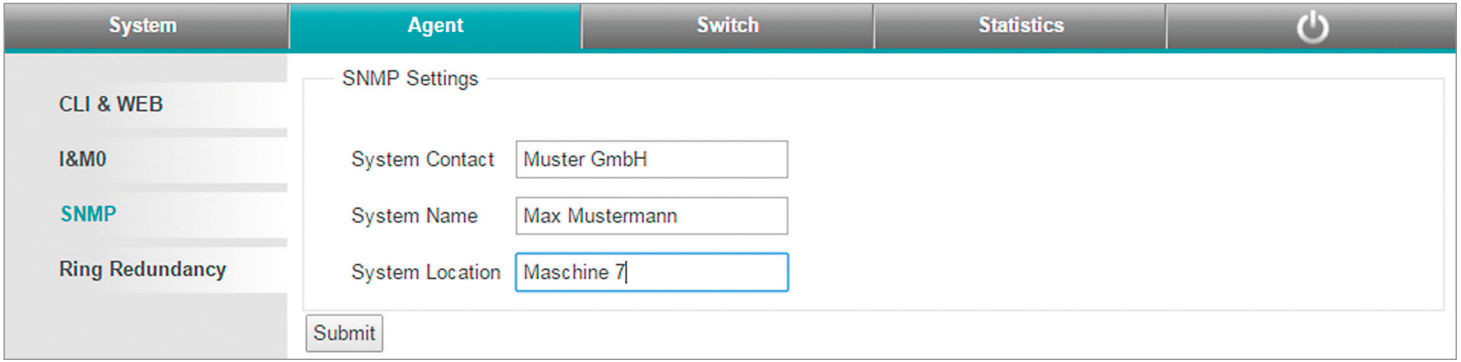
In addition to the configuration of the PROFINET switch via PROFINET, it is also possible to carry out a diagnosis and configuration via TELNET and SSH. These accesses can be explicitly shut off for safety reasons. You can find more information about the use of TELNET and SSH accesses in the manual.

In order to already be able to view basic information about the switch at the start website, before you have logged in, the option "System Status Without Login" can be selected.



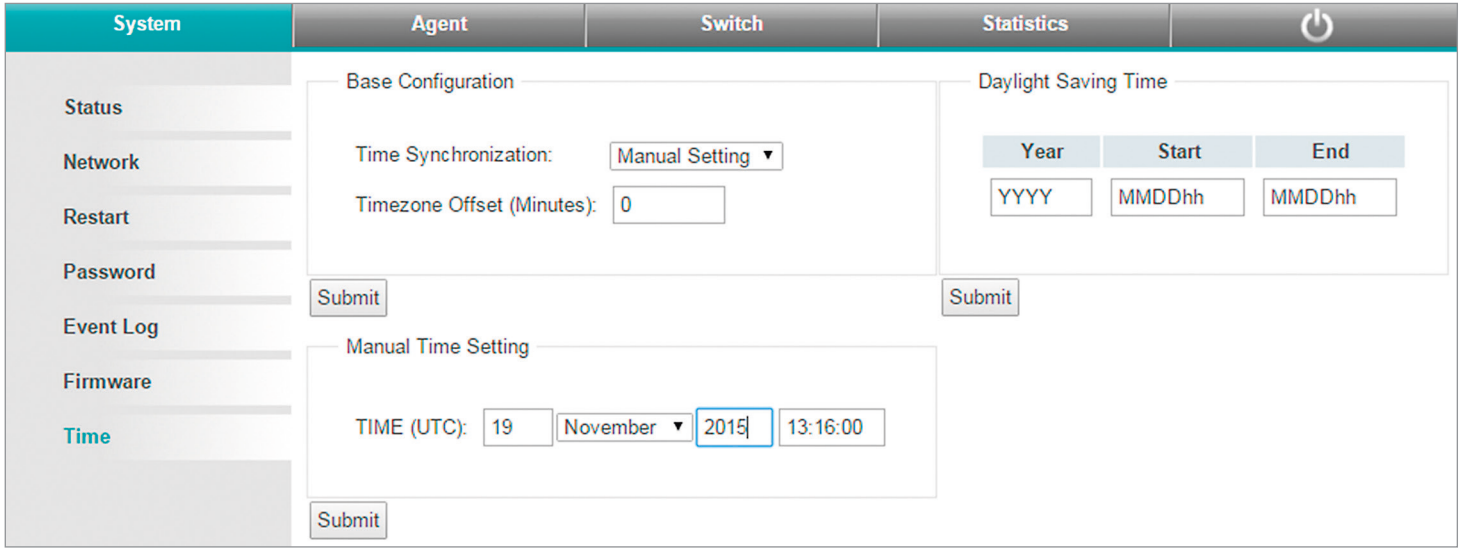
13. SNMP

The PROFINET switch supports SNMP ("Simple Network Management Protocol") in order to also enable the identification and diagnosis of the switch for IT administration tools.



14. Setting the time

The PROFINET switch contains a system clock for the issuing of logs and alarm messages. This can be set either manually or automatically by an SNTP server.



15. Resetting to factory settings

In order to reset the PROFINET switch to the delivery status, the function "Factory Reset" can be used in the web interface under "System->Restart".

Alternatively, the PROFINET switch can be reset by pressing and holding the "FCN" button while the device restarts. A restart can be carried out by switching the power supply off and on or by activating the RST button.

The successful resetting of the parameters and settings is acknowledged during the boot process by the SF LED lighting up.

16. Firmware update

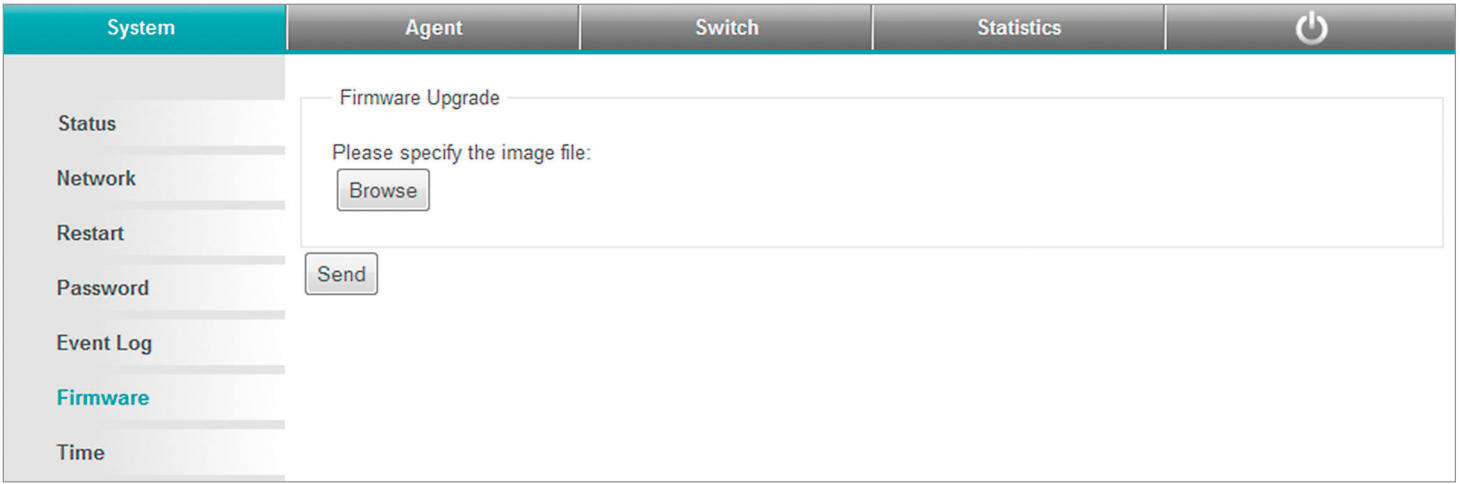
A firmware update can be carried out via the web interface. You are provided with the firmware update file by Helmholz Support or in the download area of the PROFINET switch under www.helmholz.de.

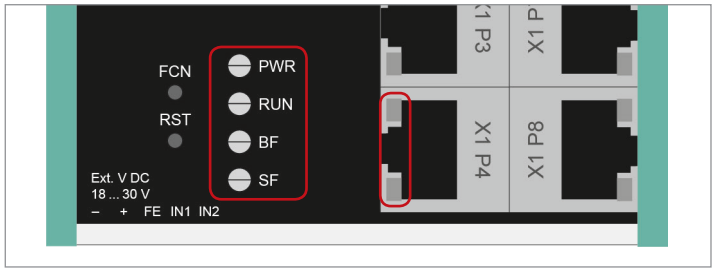
The firmware update file can be selected in the menu "System -> Firmware". The file has the ending "HUF" (Helmholz Update File).

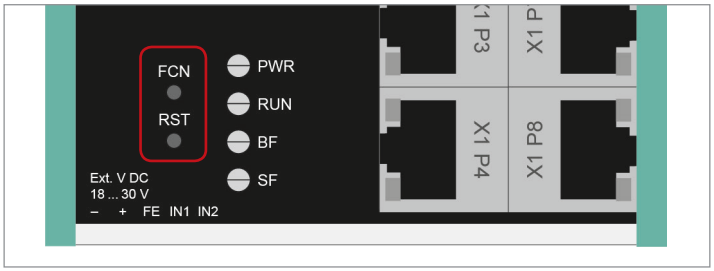
The firmware is transferred to the PROFINET switch and burned with the "Send" button.

The new firmware is active following a restart of the PROFINET switch.

Important: *Switching off the power supply during the update process can make the device unusable.*







17. LED status information

PWR

- Off	No power supply or device defective
- On	Device is correctly supplied with voltage

RUN

- Flashing light	The device starts
- On	The device is ready to operate

BF

- On	The device has no configuration and/or there is no connection with the PROFINET master

SF

- On	A PROFINET diagnosis is available

RJ45 LEDs

- Green (Link)	Connected
- Orange (Act)	Data transfer at the network

Note: *The LEDs "RUN", "BF" and "SF" all flash synchronously when the PROFINET function for device identification has been activated.*

18. Button functions

FCN	The PROFINET switch can be reset to factory settings with the “FCN” button. If the “FCN” button is pressed during the run-up time of the switch, the orange “SF” LED begins to flash. The blinking indicates that the switch will be immediately reset to factory settings and restarted as soon as the switch is released. The run-up phase is indicated by the blinking of the “RUN” LED.
RST	The “RST” button triggers an immediate restart of the PROFINET switch, in the course of which all saved settings are retained.

19. Technical data

	PROFINET Switch, 4-port, managed 700-850-4PS01	**PROFINET Switch, 8-port, managed** 700-850-8PS01
Dimensions (D x W x H)	32 x 59 x 76 mm	32 x 82 x 76 mm
Weight	Approx. 130 g	Approx. 180 g
PROFINET ports		
- Protocol	PROFINET IO as defined in IEC 61158-6-10	PROFINET IO as defined in IEC 61158-6-10
- Physical layer	Ethernet	Ethernet
- Transmission rate	100 Mbps, full duplex	100 Mbps, full duplex
- Connection	4 x RJ45, integrated switch	8 x RJ45, integrated switch
- Features	Media Redundancy Protocol (MRP) Automatic addressing / topology detection (LLDP, DCP)	Media Redundancy Protocol (MRP) Automatic addressing / topology detection (LLDP, DCP)
Status indicator	4 LEDs	4 LEDs
Voltage supply	DC 24 V (18 ... 30 V DC)	DC 24 V (18 ... 30 V DC)
Current draw	Max. 250 mA with DC 24 V	typ. 350 mA
Permissible ambient temperature	-40 °C ... +75 °C	0 °C ... 60 °C (-40 °C ... +75 °C in progress)
Transport and storage temperature	-20 °C ... +80 °C	-20 °C ... +80 °C
Protection rating	IP 20	IP 20
Certifications	CE	CE
UL	UL 61010-1/ UL 61010-2-201	(currently in progress)
- Voltage supply	DC 24 V (18 ... 30 V DC, SELV and limited energy circuit)	–
- Pollution degree	2	–
- Altitude	Up to 2,000 m	–
- Temperature cable rating	87 °C	–

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 at www.helmholz.de.

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1) SIMATIC is a registered trademark of Siemens AG.

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