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Brief Operating Instructions
Fieldgate PAM SFG600

HART via PROFINET

Endress+Hauser
People for Process Automation

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1 About this document

These Brief Operating Instructions describe how to commission the Fieldgate PAM SFG600 in conjunction with the documents listed.

1.1 Symbols used

1.1.1 Safety symbols

Symbol	Meaning
DANGER	**DANGER!** This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
WARNING	**WARNING!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
CAUTION	**CAUTION!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
NOTICE	**NOTE!** This symbol contains information on procedures and other facts which do not result in personal injury.

1.1.2 Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
	Permitted Procedures, processes or actions that are permitted.		**Preferred** Procedures, processes or actions that are preferred.
	Forbidden Procedures, processes or actions that are forbidden.		**Tip** Indicates additional information.
	Reference to documentation.		Reference to page.
	Reference to graphic.	1., 2., 3...	Series of steps.
	Result of a step.		Visual inspection.

1.1.3 Electrical symbols

Symbol	Meaning	Symbol	Meaning
	Direct current		Alternating current
	Direct current and alternating current		**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

Symbol	Meaning
⏚	**Protective Earth (PE)** A terminal which must be connected to ground prior to establishing any other connections. The ground terminals are situated inside and outside the device: ▪ Inner ground terminal: Connects the protectiv earth to the mains supply. ▪ Outer ground terminal: Connects the device to the plant grounding system.

1.2 Documentation

1.2.1 Fieldgate PAM SFG600

Technical Information TI01408SS/04/EN

1.2.2 Field Xpert SMT70

- Technical Information TI01342S/04/EN
- Operating Instructions BA01709S/04/EN

1.2.3 Automation PC 3100

User Manual MAAPC3100-ENG www.br-automation.com

2 Basic safety instructions

Attention must be paid to the User Manual MAAPC3100-ENG, which contains safety instructions of B&R Industrial Automation GmbH www.br-automation.com, the maker of the Fieldgate PAM SFG600.

2.1 Requirements for the personnel

The personnel must fulfill the following requirements for its tasks:

- ▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
- ▶ Are authorized by the plant owner/operator.
- ▶ Are familiar with federal/national regulations.
- ▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- ▶ Follow instructions and comply with basic conditions.

2.2 Designated use

The Fieldgate PAM SFG600 has been designed, developed and produced for normal applications in industry. The Fieldgate is not intended for use that presents fatal risks or dangers which result in death, injury, severe physical impairments or any other type of loss if extremely strict safety measures are not guaranteed.

2.3 Workplace safety

The Fieldgate PAM SFG600 is used for device configuration. Incorrect configurations may lead to unwanted or hazardous situations in a plant. The commissioning procedure and operation options are described in these Brief Operating Instructions.

- Commissioning→ 18
- Operation options→ 17

2.4 Operational safety

Risk of injury!

- Operate the device in proper technical condition and fail-safe condition only.
- The operator is responsible for trouble-free operation of the device.

Modifications to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers:

- If, despite this, modifications are required, consult with Endress+Hauser.

Repair

To ensure continued operational safety and reliability:

- Carry out repairs on the device only if they are expressly permitted.
- Observe federal/national regulations pertaining to repair of an electrical device.
- Use only original spare parts and accessories from the manufacturer.

2.5 Product safety

The Fieldgate PAM SFG600 is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate.

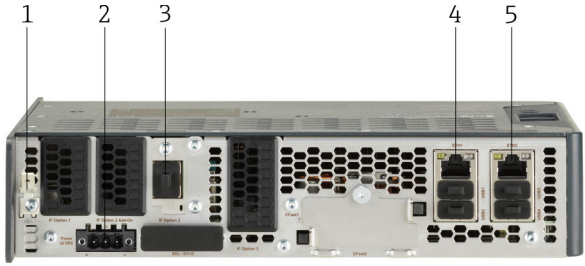
3 Product description

3.1 Product design

The Fieldgate PAM SFG600 is a device configuration management gateway and supports HART devices via PROFINET networks. The HART devices must have a unique device TAG. Also, the devices must be in operation with a PROFINET controller and operated via the Siemens assembly ET200SP IM 155-6PN HF with the 4xl 2-wire HART analog modules with HART capabilities. During production, the Fieldgate PAM SFG600 is configured with the IP address supplied by the customer at the field network interface, and in the plant is connected by the customer to the PROFINET. The second interface for the plant network with the PAM clients is also preconfigured with a fixed IP address or by DHCP assignment, and must be connected accordingly to a free switch port in the plant network. The IP addresses are specified by the customer when ordering. Please refer to the plant project for information in this regard.

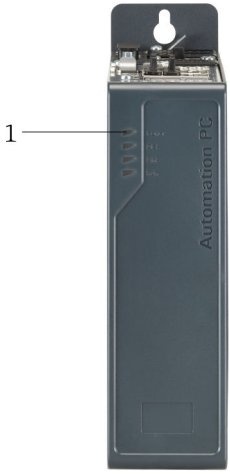
The Fieldgate PAM SFG600 automatically starts scanning at the PROFINET port. All HART devices are then accessible with the Field Xpert SMT70 tablet PC. If TAGs are changed or new devices added, the Fieldgate must be switched on and off or reset in order to initiate a new scan to take account of the changed network topology. Other configuration tools shall not access the plant in parallel. The Fieldgate PAM SFG600 uses sequencing only when accessed by Field Xpert SMT70 tablet PCs connected at the same time. The duration of the scan is influenced by the size of the network as well as the number of devices. Since all devices communicate via the HART protocol, this procedure can take up to several hours in larger networks. For example, the scan takes just under three minutes in the case of two Siemens ET200SP with four or three HART-analog assemblies and 15 of the 28 HART devices that can be connected. A third service interface should be connected to an internet access point (proxy-free) only if requested by Endress+Hauser Service for the purpose of remote service, if required.

For detailed information on "Configuration settings for Field Xpert SMT70", see the Operating Instructions



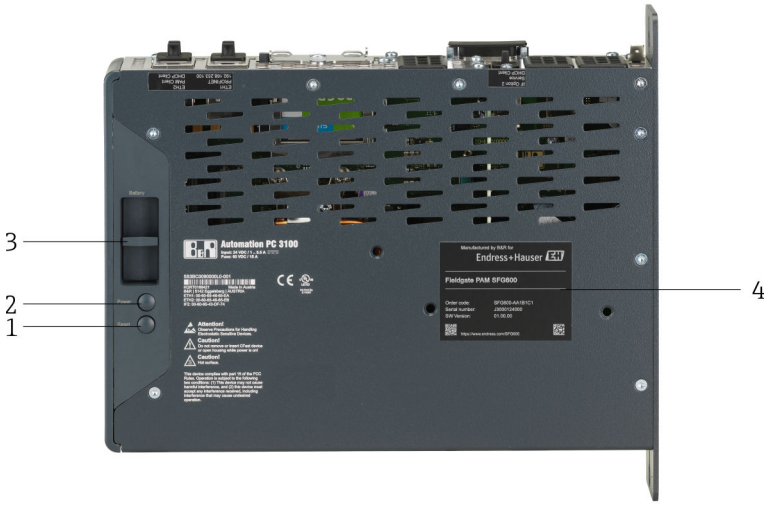
1 Top view of the Fieldgate PAM SFG600

1 Function connection (grounding)
2 SDL and DVI-D port (SDL & DVI-D)
3 IF option 2 service interface
4 Ethernet 1 port (ETH1) PROFINET
5 Ethernet 2 port (ETH2) Fieldgate PAM SFG600



2 Front view of Fieldgate PAM SFG600

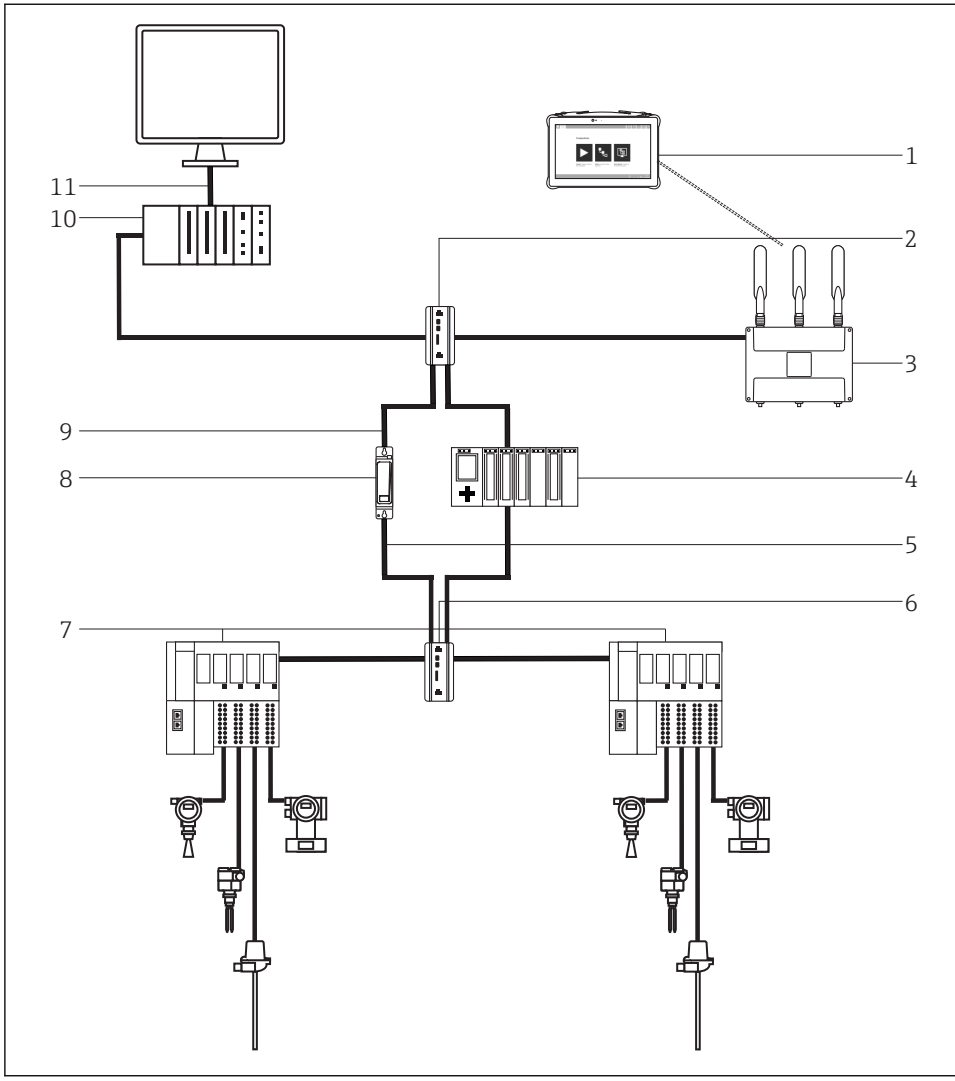
1 Status LED, power



3 Side view of Fieldgate PAM SFG600

1 *Reset button*
2 *Power button*
3 *Battery*
4 *Nameplate*

3.1.1 System design



4 *Network architecture*

1 *Field Xpert SMT70 tablet PC*
2 *Switch*
3 *Wireless router*
4 *PROFINET controller*
5 *PROFINET segment ETH1*
6 *PROFINET switch*
7 *Siemens ET200SP IM 155-6PN HF*

8 Fieldgate PAM SFG600
9 Plant network PAM Client ETH2
10 Firewall
11 Office network

4 Incoming acceptance and product identification

4.1 Incoming acceptance

Visual inspection
- Check the packaging for visible damage arising from transportation
- Open the packaging carefully
- Check the contents for visible damage
- Check that the delivery is complete and nothing is missing
- Retain all the accompanying documents

The device may not be put into operation if the contents are found to be damaged beforehand. In this case, please contact your Endress+Hauser Sales Center: www.addresses.endress.com

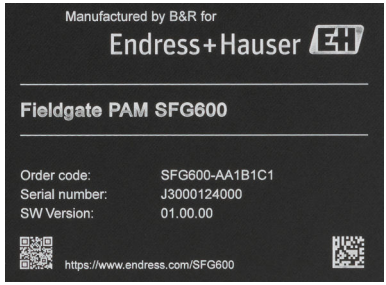
Return the device to Endress+Hauser in the original packaging where possible.

Scope of delivery:
Fieldgate PAM SFG600

For detailed information on "Automation PC3100 and B&R Safety Instructions", see the User Manual → 4

4.2 Product identification

4.2.1 Nameplate



5 *Nameplate of the Fieldgate PAM SFG600*

4.2.2 Manufacturer address

B&R Industrial Automation GmbH, AT-5142 Eggelsberg are the makers of the hardware for the Fieldgate PAM SFG600 and have responsibility for it.

Endress+Hauser Process Solutions AG

Christoph Merian-Ring 12

CH-4153 Reinach

Switzerland

www.endress.com

4.3 Storage and transport

Always use the original packaging when transporting the product.

The devices must be protected against impermissible stress and strain (mechanical force, temperature, humidity, aggressive atmospheres) during transportation and storage.

For detailed information on "storage and transportation", see the Technical Information → 4

5 Installation

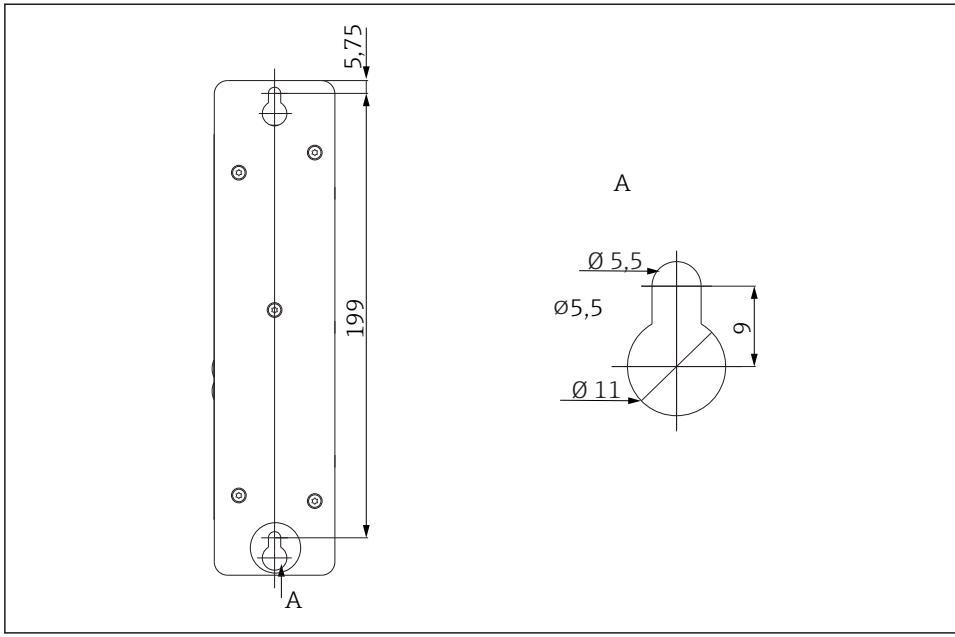
For detailed information on the "Installation", see the Automation PC 3100 → 4 User Manual

5.1 Installation conditions

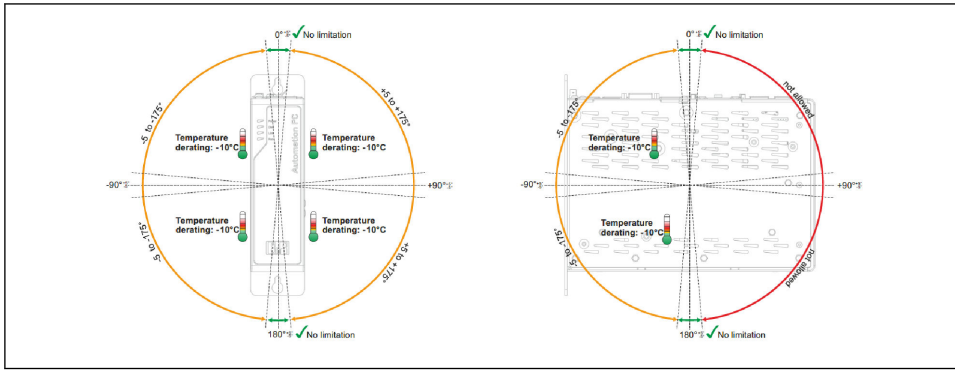
Note the following to prevent personal injury and device, machine or system malfunction:
- The entire power supply must be disconnected before covers or components of the device are taken off and accessories, hardware or cables are installed or removed.
- Disconnect the power cable from the device and the power supply.
- Before the device is connected to the power supply and switched on, all the covers and components, accessories, hardware and cables must be mounted and secured.

5.2 Installing the device

When installing the Fieldgate PAM SFG600, take into account the space required for air circulation as well as additional space for operating and maintaining the device.



6 *Drill template*



7 *Rear of mounting plate*

Refer to the drill template for the exact position of the boreholes for securing the device. The M5 screws that are required are not supplied.

1. Drill the necessary holes in the mounting surface.
2. Mount the Fieldgate PAM SFG600 with M5 screws.

5.3 Post-installation check

Are the mounted components undamaged (visual inspection)?	❑
Do all the components meet the required specifications? For example: ▪ Ambient temperature ▪ Humidity ▪ Explosion protection	❑
Is the correct orientation selected?	❑
Are important information and labeling correct (visual inspection)?	❑
Is the device adequately protected against precipitation and direct sunlight?	❑
Are the securing screws tightened securely?	❑

6 Electrical connection

6.1 Connection conditions

Note the following to prevent personal injury and device, machine or system malfunction:
- ▶ The entire power supply must be disconnected before covers or components of the device are taken off and accessories, hardware or cables are installed or removed.
- ▶ Disconnect the power cable from the device and the power supply.
- ▶ Before the device is connected to the power supply and switched on, all the covers and components, accessories, hardware and cables must be mounted and secured.

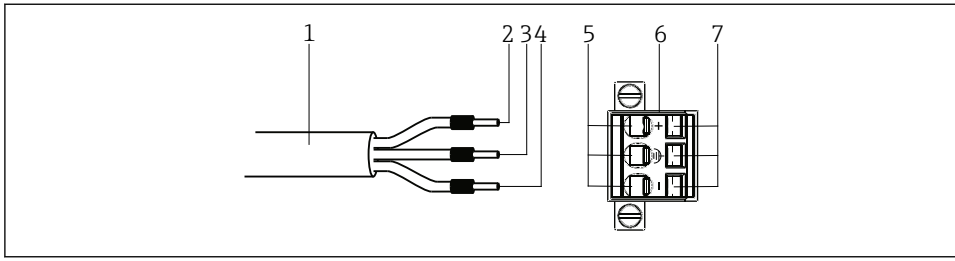
The DC power cable must be mounted on the terminal block (power supply plug). Use wires with a cross-section of 0.75 to 1.5 mm^2 and a wire end ferrule.

6.2 Connecting the Fieldgate

⚠ CAUTION

The entire power supply to the Fieldgate PAM SFG600 must be disconnected
in order to prevent personal injury and device malfunction.
- ▶ Before connecting the device, check whether the power cable is disconnected from the supply point.

6.2.1 Wiring the DC power cable



8 Mounting the spring terminal

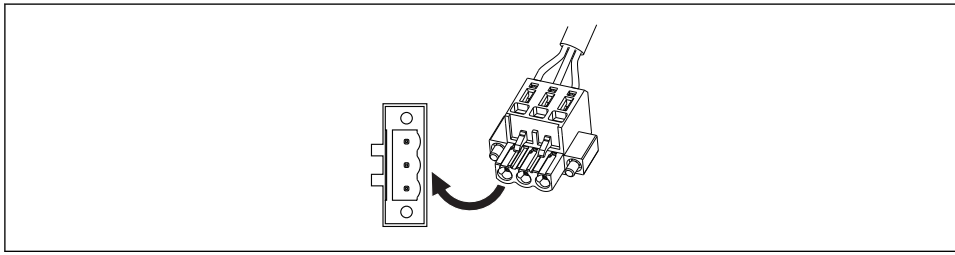
1 *DC power cable*
2 *24 V_{DC}*
3 *Functional ground*
4 *0 V_{DC}*
5 *Terminal contacts*
6 *Terminal block*
7 *Spring terminal*

Mounting the spring terminal

1. Insert a screwdriver into the spring terminal.
2. Secure the wire with the wire end ferrules in the terminal contacts.
3. Remove the screwdriver.

When wiring, pay particular attention to the pin assignment of the power supply terminal on the device.

6.2.2 Connecting the power supply



1. Perform electrostatic discharging at the housing and/or ground terminal.
2. Connect the power supply plug.

3. Tighten the securing screws.

Max. torque 0.5 Nm

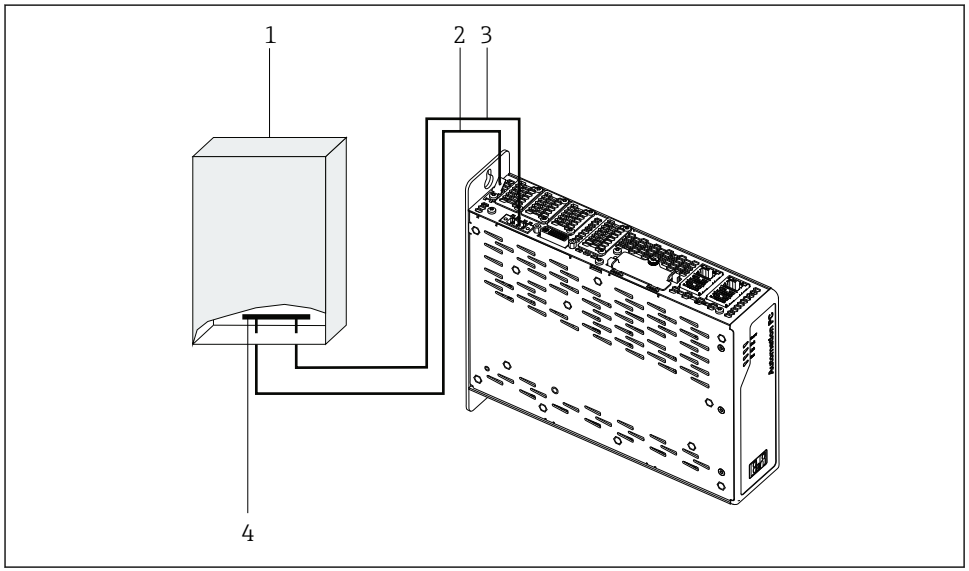
6.3 Special connection instructions

The functional ground is a low-impedance current path between circuits and ground and is not designed as a protective measure. The functional ground is only used to discharge electrical interference and does not serve as electrical shock protection for humans.

The following functional ground terminals are available:
- Power supply
- Ground connection

Note the following to ensure the safe discharge of electrical interference:
- Connect the Fieldgate and the central grounding point over the shortest possible path
- Use cables with at least 0.75 to 1.5 mm^2 per terminal
- For wires, pay attention to the grounding concept
- Shielded cables must be used for the data cables

The functional ground is indicated on the Fieldgate PAM SFG600 by the ⏚ symbol.



1 Control cabinet
2 Ground connection cable, min. 2.5 mm^2
3 Power supply cable, min. 1.5 mm^2
4 Grounding bar

6.4 Ensuring the degree of protection

The Fieldgate PAM SFG600 is only approved for indoor use (IP20).

6.5 Post-connection check

Are the device and cable undamaged (visual check)?	❑
Do the mounted cables have adequate strain relief?	❑
Does the supply voltage match the specifications on the B&R imprint on the device?	❑
Is the terminal assignment correct?	❑
Are all the housing covers installed and tightened?	❑
Are all unused cable entries sealed with a dummy plug?	❑

7 Operation options

The Fieldgate PAM SFG600 can only be used as a client with the Field Xpert SMT70 tablet PC. Information on the control and operation of the Fieldgate PAM SFG600 is provided in Operating Instructions BA01709S/04/EN for the Field Xpert SMT70.

For detailed information on "Operation", see the Operating Instructions → 4

8 System integration

The Siemens ET200SP does not allow parallel access by a second PROFINET supervisor (parallel operation of the Siemens PDM is not possible). At least one Field Xpert SMT70 tablet PC must be configured as the gateway with the IP address of the "ETH2 PAM Client" connection. The HART devices must have unique TAGs, and the PROFINET controller must be in operation. The free PROFINET IP address configured for the "ETH1 PROFINET" connection must be connected to a free port of a PROFINET switch.

PROFINET remote I/Os

PROFINET remote I/O	Firmware Version
Siemens ET200SP IM155-6PN HF Order code: 6ES7 155-6AU00-0CN0	V3.1.0
	V3.3.0

HART module with Siemens ET200SP IM 155-6PN HF

HART module	Firmware Version
Module 4xI 2-wire HART Order code: 6ES7 134-6TD00-0CA1	V1.0.0
	V1.0.1

9 Commissioning

Follow the sequence indicated when commissioning the Fieldgate PAM SFG600 in order to avoid errors when establishing the connection. The Ethernet cables must be connected to the configured PROFINET segment of the plant that is in operation.

1. Insert the ETH1 Ethernet cable (PROFINET).
2. Insert the ETH2 Ethernet cable (Fieldgate PAM SFG600).
3. Connect the power supply.

The Fieldgate PAM SFG600 starts scanning the network automatically.

The plant can be configured via the Field Xpert SMT70 tablet PC.

The scan can take up to several hours.

At least one Field Xpert SMT70 tablet PC must be configured as the gateway with the IP address of the "ETH2 PAM Client" connection. The HART devices must have unique TAGs, and the PROFINET controller must be in operation. The "ETH1 PROFINET" connection, configured with a free PROFINET IP address, must be connected to a free port of a PROFINET switch.

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