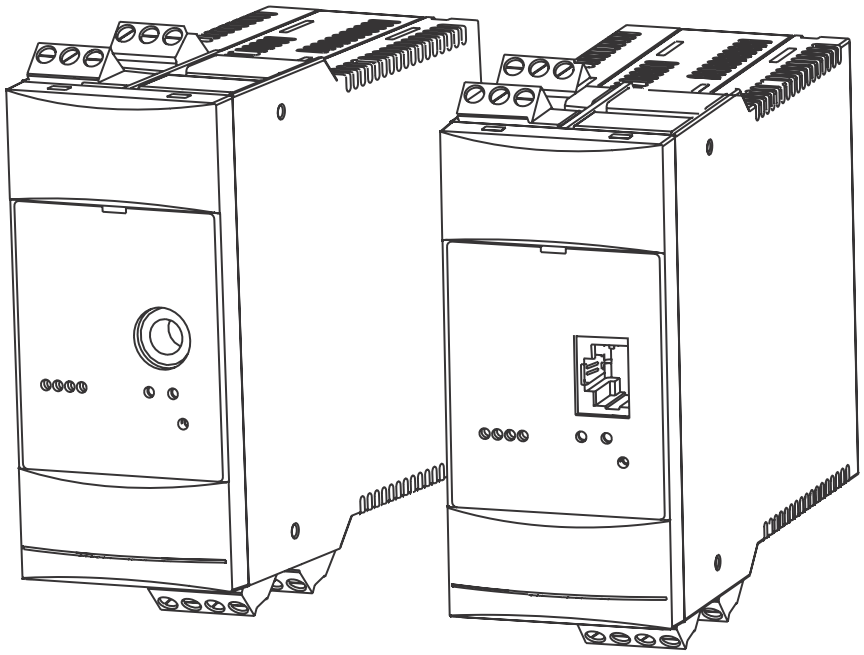
Level Pressure Flow Temperature Liquid Analysis Registration Systems Components Services Solutions

Operating Instructions

Fieldgate FXA520

Ethernet, Modem and GSM gateway for HART and 4 – 20 mA analog devices



BA00051S/00/EN/16.15
Version 1.07.xx
71282716

Endress+Hauser
People for Process Automation

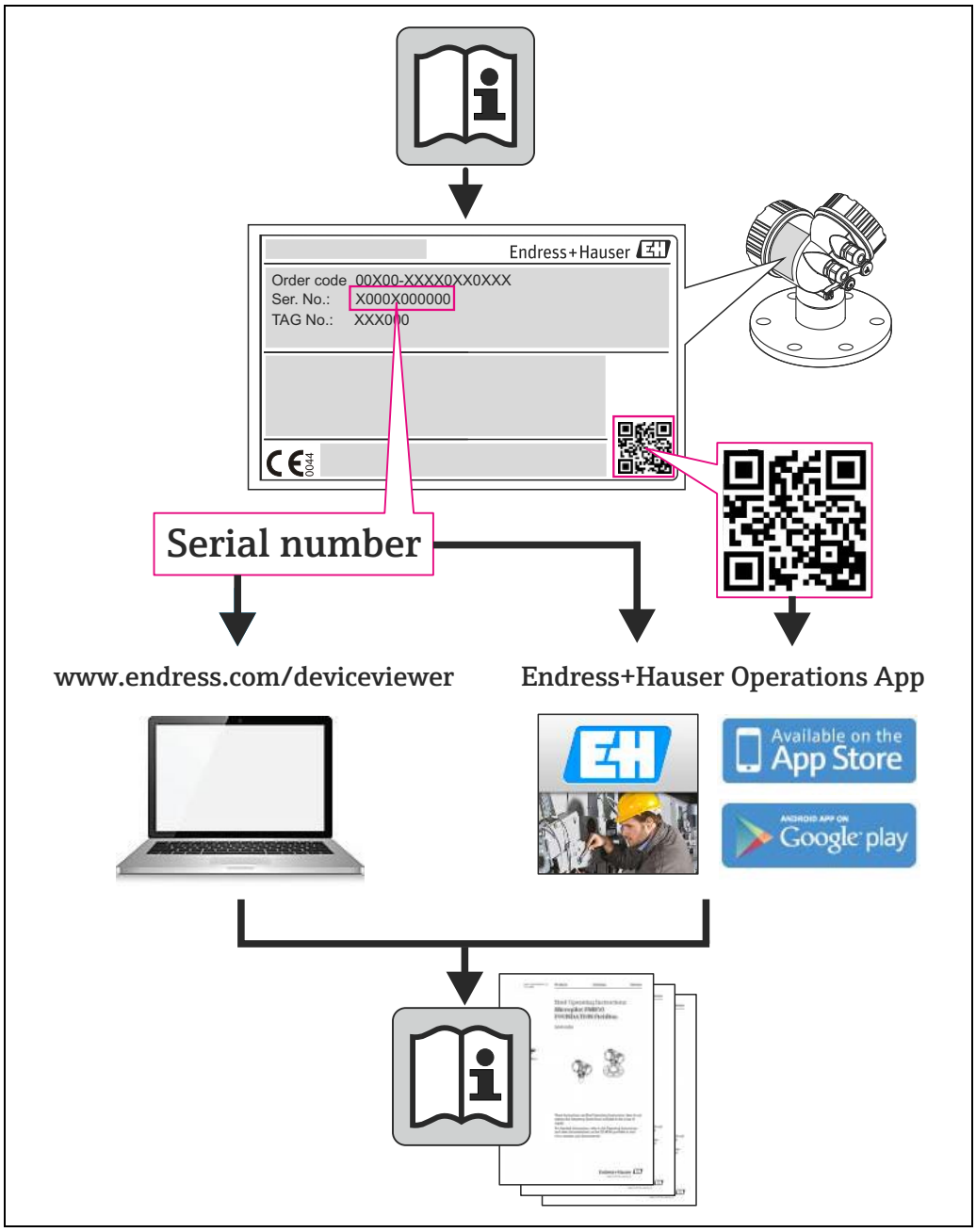

Endress+Hauser
Order code 00X00-XXXX0XX0XXX
Ser. No.: X000X000000
TAG No.: XXX000
Serial number
www.endress.com/deviceviewer
Endress+Hauser Operations App
Available on the App Store
Google play

Table of Contents

Revision Index 3
Registered Trademarks 3

1 Safety 5

1.1 Designated use 5
1.2 IT security 5
1.3 Installation, commissioning and operation 5
1.4 Operational safety 5
1.5 Technical improvement 5
1.6 Declaration of conformity 6
1.7 Writing conventions 7
1.8 Drawing conventions 8

2 Identification 9

2.1 Device designation 9
2.2 Scope of delivery 10
2.3 Licensing agreement 10
2.4 Device documentation 10
2.4.1 W@M Device Viewer 10
2.4.2 Endress+Hauser Operations App 11

3 Function and System Design 12

3.1 Function 12
3.1.1 Inventory Control 12
3.1.2 Remote maintenance 12
3.2 Communication interface 13
3.2.1 Ethernet 10BaseT 13
3.2.2 Telephone network 13
3.2.3 Mobile communications network (GSM) 14
3.2.4 GPRS support 14
3.3 Signal channels 15
3.3.1 HART input channels 15
3.3.2 Analog input channels 15
3.3.3 RS-485 interface 15
3.3.4 Relay output 15
3.4 Operability 16
3.4.1 Display elements 16
3.4.2 Operating elements 16
3.4.3 Service interface 16
3.5 System architecture 17
3.5.1 HART point-to-point 17
3.5.2 Analog input 4...20 mA 17
3.5.3 HART Multiplexer 18
3.5.4 HART Multidrop 19
3.5.5 Fieldgate Input modules (analog/digital) 19
3.6 System requirements 20
3.6.1 Use with web browser 20
3.6.2 Use with FieldCare, SupplyCare 20

4 Hardware Installation 21

4.1 Mounting 21
4.1.1 Location and clearance 21
4.1.2 Mounting 21
4.1.3 Accessing the DAT module/SIM card/ service interface 22
4.1.4 Dismounting a Fieldgate 22
4.2 Wiring 23
4.2.1 Terminals 23
4.2.2 Power supply and relay 23
4.2.3 HART point-to-point 24
4.2.4 HART multidrop with FXN520 25
4.2.5 HART multiplexer 27
4.2.6 4... 20 mA input 28
4.2.7 4...20 mA/binary input via FXZ520 input module 28
4.3 Network connection 29
4.3.1 Fieldgate Analog 29
4.3.2 Fieldgate Ethernet 29
4.3.3 Fieldgate GSM 29

5 Commissioning 30

5.1 Establishing communication via service interface . . 31
5.1.1 Connect the Fieldgate 31
5.1.2 Set up a standard 9600 bps modem 31
5.1.3 Check the modem properties 33
5.1.4 Set up the dial up connection 35
5.1.5 Dialing up 39
5.1.6 Securing changes made via the service interface 41
5.2 Fieldgate with Ethernet interface 42
5.2.1 Communication parameters 42
5.2.2 Set up the Fieldgate via service interface 43
5.2.3 Connect to Fieldgate via Ethernet 43
5.3 Fieldgate with analog modem 44
5.3.1 Communication parameters 44
5.3.2 Set up the Fieldgate via service interface 45
5.3.3 Set up the dial up connection 46
5.3.4 Connect to Fieldgate 47
5.4 Fieldgate with GSM modem 48
5.4.1 Communication parameters 48
5.4.2 Set up the Fieldgate via service interface 49
5.4.3 Set up the dial-up connection in your computer 50
5.4.4 Connect point-to-point to Fieldgate 51
5.4.5 Connect via GPRS to Fieldgate 51
5.5 Miscellaneous server settings 52
5.5.1 Time Server Setup 52
5.5.2 Miscellaneous Server Setup 53
5.6 Message Settings 54
5.6.1 Common Message Settings 54
5.6.2 Mail Setup 55
5.6.3 Field Information Server (FIS) Setup 56
5.6.4 SMS Setup 57

6 Configuring the Fieldgate 58

6.1 Logging on 58
6.1.1 Disconnecting 58
6.2 User interface 59
6.2.1 Menu bar 59
6.2.2 Navigation bar 60
6.2.3 Settings pages 61
6.3 Settings menu 62
6.3.1 Fieldgate location 62
6.3.2 User 63
6.3.3 Network and Messages 64
6.3.4 Scan 65
6.3.5 Input 66
6.3.6 Special 67
6.3.7 Info 68
6.4 Overview 69
6.4.1 Opening the setup dialogs 69
6.4.2 Analog input setup 70
6.4.3 Digital input setup 71
6.4.4 Description/Range/Limit/Alarm 72
6.4.5 Sensor error 74
6.5 Hardware lock 75
6.5.1 Activating the hardware lock 75
6.5.2 Deactivating the hardware lock 75

7 Viewing Information (User Mode) 76

7.1 Logging on 76
7.2 Overview 77
7.2.1 Device overview 77
7.2.2 Setup details 78
7.2.3 Device details 79
7.3 Settings 81
7.3.1 Location 81
7.3.2 Password 81
7.3.3 Input 81
7.3.4 Info 82
7.4 Miscellaneous Functions 88
7.4.1 Autorefresh 88
7.4.2 Refresh 88
7.4.3 Endress+Hauser 88

8 Advanced Functions 89

8.1 XML data 89
8.1.1 Generating the XML Data 89
8.1.2 Evaluating the XML data 89
8.2 Historical data 90
8.2.1 Calling up the historical data 90
8.2.2 Interpreting the historical data 91
8.3 Wireless Application Protocol (WAP) pages 92
8.3.1 Connecting to the WAP homepage 92
8.3.2 WAP pages 92
8.4 HART pass-through mode 93
8.5 SupplyCare 94
8.6 Dynamic DNS server 95

9 Trouble-Shooting 97

9.1 Problems and remedies 97
9.2 Reset 98
9.3 Troubleshooting on no connection 99
9.4 Firmware update 100

10 Accessories 101

10.1 Fieldgate FXA520 101
10.2 Auxiliary units 101

11 Technical Data 102

12 Appendix 103

12.1 Commissioning Fieldgate (Ethernet) via Web browser 103
12.1.1 Change the IP address of your computer 103
12.1.2 Connect to the Fieldgate 104
12.2 XML data elements 105

Index 109

Revision Index

Product version	Manual	Changes	Remarks
1.00.xx	BA258F/00/en/	Original	
1.01.xx	BA258F/00/en/	Unknown	No Revision Index
1.02.xx	BA258F/00/en/08.05	Unknown	No Revision Index
1.03.xx	NA	Bug fixes	Customer-specific software update
1.04.xx	NA	Bug fixes	Customer-specific software update
1.05.xx	BA051S/04/en/09.08	Integration of FXZ520	Manual not released due to pending Version 1.06.xx
		Restructuring of manual	
1.06.xx	BA051S/04/en/01.09	Various menus	Addition of new control parameters
		Overview pages	Redesign of measurement presentation
1.07.xx	BA00051S/04/en/13.11	Mail settings	New settings for Field Information Server
		Information	Update of System Log and Error Log tables
1.07.xx	BA00051S/04/en/14.11	Editorial	Introduction of ANSI warning system Correction to product code (p8) Addition to Troubleshooting Table 9-1 (p95)
1.07.xx	BA00051S/04/en/14.11	Customizations	Module Fieldgate Viewer removed Chapter IT security added Note to SMTP protocol added
1.07.xx	BA00051S/00/EN/16.15	Customizations	Additional information in the chapters Power supply and Technical data; New chapter Device documentation

Registered Trademarks

PROFIBUS®
Registered trademark of the PROFIBUS User Organisation, Karlsruhe Germany.

FOUNDATION™ fieldbus
Trademark of the Fieldbus Foundation, Austin, TX 78759, USA

HART®
Registered trademark of the HART Communication Foundation, Houston, USA

Microsoft®, Windows® Windows 2000®, Windows XP® and the Microsoft logo are registered trademarks of the Microsoft Corporation.

Acrobat Reader® is a registered trade mark of the Adobe Systems Incorporated.

All other brand and product names are trademarks or registered trademarks of the companies and organisations in question

1 Safety

1.1 Designated use

Fieldgate FXA520 is a HART Interface/Gateway with integrated web server that is used for remote acquisition of data from up to 30 measuring points. Two HART devices and two analog devices can be connected directly to it. Additional HART devices can be connected via the HART multidrop adapter FXN520 or via a HART multiplexer. When used in connection with the FXZ520 multiplexer module, it is also possible to access values provided by up to 28 4...20 mA and digital devices. The Fieldgate communicates with the host computer via Ethernet, telephone or GSM modem.

Fieldgate FXA520 may also be used together with FieldCare for the remote diagnosis and parameterization of connected HART devices.

1.2 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

Endress+Hauser can be contacted to provide support in performing this task.

1.3 Installation, commissioning and operation

Fieldgate FXA520 must be installed, connected, operated and maintained according to the instructions in this manual: personnel must be authorised and suitably qualified.

1.4 Operational safety

The unit may only be operated under the permissible ambient conditions given in the technical data.

Explosion hazardous areas

Fieldgate FXA520 itself may not be mounted in explosion hazardous areas.

An Ex-version exists with two intrinsically safe HART channels. These may be used to connect HART devices of Category 1D or 1G operating in a hazardous area. Safety Instructions XA188F-A give details on installation in hazardous areas.

Repair

Do not open the housing of the Fieldgate FXA520. It does not contain any parts that need to be maintained or repaired by the user. In the event of a fault or defect, return the unit to the vendor. Opening the unit will void the warranty!

1.5 Technical improvement

Endress+Hauser reserves the right to make technical improvements to its hardware and software at any time and without prior notification. Where such improvements have no effect on the operation of the equipment, they are not documented. If the improvements effect operation, a new version of the operating instructions is normally issued, see Revision History.

1.6 Declaration of conformity

CE Notice

Fieldgate FXA320 complies to the requirements of the EC Directive 2004/108/EG "Electromagnetic Compatibility" (EMC directive). It has been tested in accordance with the EN 61326 series of standards

- Emission: Class B operating equipment
- Immunity: EN 61326-1: as per Table 1

A Declaration of Conformity in compliance with the above standards has been made and can be inspected at Endress+Hauser Process Solutions AG on request.

Telecommunications

Fieldgate FXA520 conforms with the following telecommunication regulations:

- Analog version:
  - North America: FCC CFR 47, part 15 and part 68
  - Europe: Telecoms Terminal Equipment Directive (98/13/EG) European approval TBR 21
- Fieldgate GSM version
  - North America: FCC CFR 47 Part 15 and Part 24

FCC Notice

This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

To ensure that the unit complies with current FCC regulations and safety requirements limiting both maximum RF output power and human exposure to radio frequency radiation, use an antenna with a maximum gain of 2dBi and a separation distance of at least 20 cm must be maintained between the unit's antenna and the body of the user and any nearby persons at all times and in all applications and uses.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Endress+Hauser may void the user's authority to operate the equipment.

FCC Statement

FCC-ID: LCG-FG-FXA52X-32X
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference, and

2 This device must accept any interference received, including interference that may cause undesired operation.

Wireless Notices

In some situations or environments, the use of wireless devices may be restricted. Such restrictions may apply aboard airplanes, in vehicles, in hospitals, near explosives, in hazardous locations, etc. If you are uncertain of the policy that applies to the use of this device, please ask for authorization to use it prior to turning it on.

1.7 Writing conventions

The following writing conventions and symbols have been used to provide the user with a better overview of the contents of this manual and to highlight important information:

Text emphasis

The following table provides you with a brief overview of the methods used to emphasise text in this manual.

Text emphasis	Function	Example
Bold	Keys, buttons, program icons, tabs, menus, commands	**Start** =>**Programs** =>**Endress+Hauser** or **Enter**
		Select **Print** in the **File** menu.
CAPS	Details on paths and file names in the text	DOKUFMR2XX.PDF or WIN.HLP
Angle brackets	Variables	<CD-ROM drive>

Safety conventions

Safety relevant information is highlighted by an icon in the margin plus the note, caution or warning text.

Icon	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.

1.8 Drawing conventions

The following symbols may be found within technical drawings.

Explosion protection

Icon	Meaning
	**Device certified for use in explosion hazardous area** If the device has this symbol embossed on its name plate it can be installed in an explosion hazardous area in accordance with the specifications in the certificate or in a safe area
	**Explosion hazardous area** Symbol used in drawings to indicate explosion hazardous areas. Devices located in and wiring entering areas with the designation "explosion hazardous areas" must conform with the stated type of protection
	**Safe area (non-explosion hazardous area)** Symbol used in drawings to indicate, if necessary, non-explosion hazardous areas. Devices located in safe areas still require a certificate if their outputs run into explosion hazardous areas

Electrical symbols

Icon	Meaning
	**Direct voltage** A terminal to which or from which a direct current or voltage may be applied or supplied
	**Alternating voltage** A terminal to which or from which an alternating (sine-wave) current or voltage may be applied or supplied
	**Grounded terminal** A grounded terminal, which as far as the operator is concerned, is already grounded by means of an earth grounding system
	**Protective grounding (earth) terminal** A terminal which must be connected to earth ground prior to making any other connection to the equipment
	**Equipotential connection (earth bonding)** A connection made to the plant grounding system which may be of type e.g. neutral star or equipotential line according to national or company practice

2 Identification

2.1 Device designation

The device designation is to be found on the nameplate affixed to the lefthand side of the module.

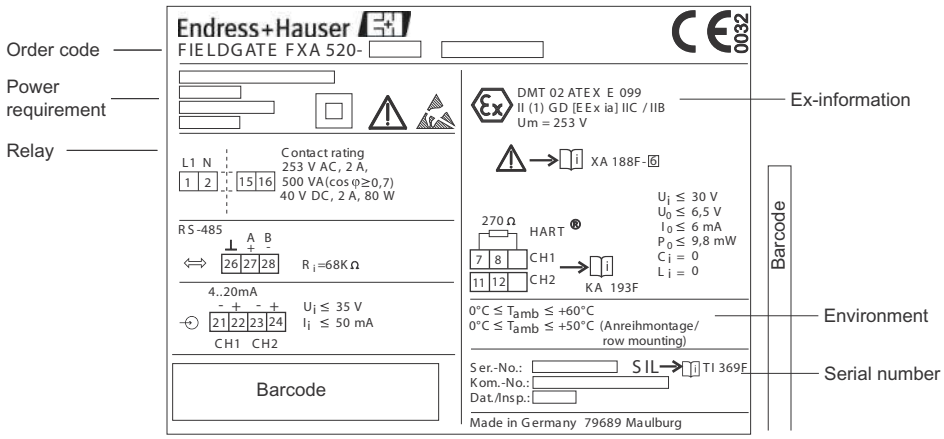


Fig. 2-1: Example nameplate of Fieldgate

The device type can be derived from the product code as follows:

Root	Description				
FXA520-	Certificate				
	A	Version for non-hazardous areas			
	G	ATEX II (1) GD [EEx ia] IIC T6			
	P	FM IS - Class I, II, III, Division 1, Group A-G			
	S	CSA IS - Class I, II, III, Division 1, Group A-G			
	Y	Special version			
		Power Supply			
		A	85...253 VAC, 50/60 Hz		
		E	20...60 VDC, 20...30 VAC		
		Y	Special version		
			Modem Interface		
			1	Ethernet	
			2	Analogue modem	
			4	GSM modem without antenna	
			9	Special version	
				DAT Module	
				A	**without DAT module**
				B	**with DAT module**
				Y	**Special version**

2.2 Scope of delivery

Please check that the delivery is complete and free of defects before starting installation. The scope of delivery comprises the following parts:

- Device
- Installation and mounting instructions
- Accessories (depending on order)
- PC cable (service connector/RS-232)

2.3 Licensing agreement

No license is required for the use of the Web server embedded in the Fieldgate FXA520.

The software required for start-up and commissioning, i.e. the Internet browser, is either freely available or is subject to the licensing conditions of its manufacturer. Installation of this software on your computer implies that you accept the terms of the corresponding licensing agreement.

2.4 Device documentation

NOTICE **NOTE!**

- All devices are shipped with Brief Operating Instructions.These Brief Operating Instructions do not replace the associated Operating Instructions!

Detailed information on the device can be found in the Operating Instructions and in the other documentation:
Available for all device versions via:

- Internet: www.endress.com/deviceviewer
- Smartfone/Tablet: *Endress+Hauser Operations App*

The information required to retrieve the documentation can be found on the nameplate of the device.

NOTICE **NOTE!**

- Technical documentation can also be downloaded from the Download Area of the Endress+Hauser web site: www.endress.com→ Download. However this technical documentation applies to a particular instrument family and is not assigned to a specific device.

2.4.1 W@M Device Viewer

1 Launch the W@M Device Viewer: www.endress.com/deviceviewer

2 Enter the serial number (Ser. no.) of the device: see nameplate.
↳ All the associated documentation is displayed.

2.4.2 Endress+Hauser Operations App

NOTICE **NOTE!**

- The *Endress+Hauser Operations App* is available both for android smart phones (Google Play Store) and for iPhones and iPads (App Store).

Via the serial number:

1 Launch the *Endress+Hauser Operations App*.

2 Enter the serial number (Ser. no.) of the device: see nameplate.
↳ All the associated documentation is displayed.

Via the 2-D matrix code (QR code):

1 Launch the *Endress+Hauser Operations App*.

2 Scan the 2-D matrix code (QR code) on the nameplate.
↳ All the associated documentation is displayed.

3 Function and System Design

3.1 Function

Fieldgate FXA520 is designed for two main applications, inventory control and remote maintenance of HART transmitters

3.1.1 Inventory Control

Fieldgate FXA520 allows owners, vendors and suppliers to remotely acquire the current levels of products in tanks or silos, e.g. in order to account for them in their own production planning. Fieldgate allows level limits to be configured and, if required, automatically activates the next delivery. The options here range from a simple purchasing requisition via e-mail through to fully automatic order administration when XML data is coupled into the planning systems on both sides. For more sophisticated applications, Endress+Hauser's SupplyCare software for Inventory Control can be used.

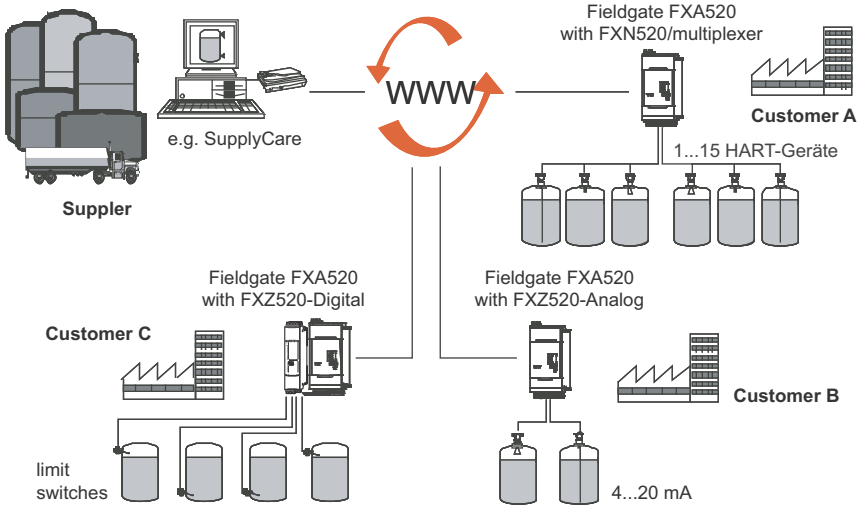


Fig. 3-1: Inventory Control using Fieldgate FXA520

3.1.2 Remote maintenance

Fieldgate FXA520 not only transfers measured values, it also alerts standby personnel via e-mail or SMS about device status. In the event of an alarm or when performing routine checks, service technicians can remotely diagnose and configure connected HART devices using HART operating software. Endress+Hauser's FieldCare supports the user in remote configuration and maintenance, whereby Fieldgate operates as a transparent gateway.

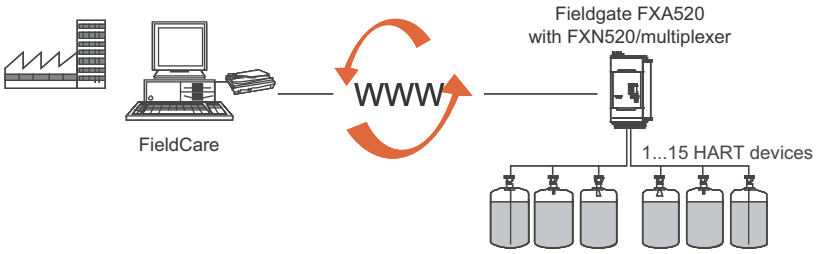


Fig. 3-2: Remote maintenance of HART devices using Fieldgate and an operating tool

3.2 Communication interface

Fieldgate is equipped with an Ethernet 10BaseT interface, an analog modem or a GSM modem.

3.2.1 Ethernet 10BaseT

Fieldgate with 10 Base T Ethernet interface is connected to the local network via a hub or switch using a standard cable with RJ45 plug connector. As Fieldgate is constantly available in the network, access with a standard web browser. Several PCs can access the Fieldgate simultaneously.

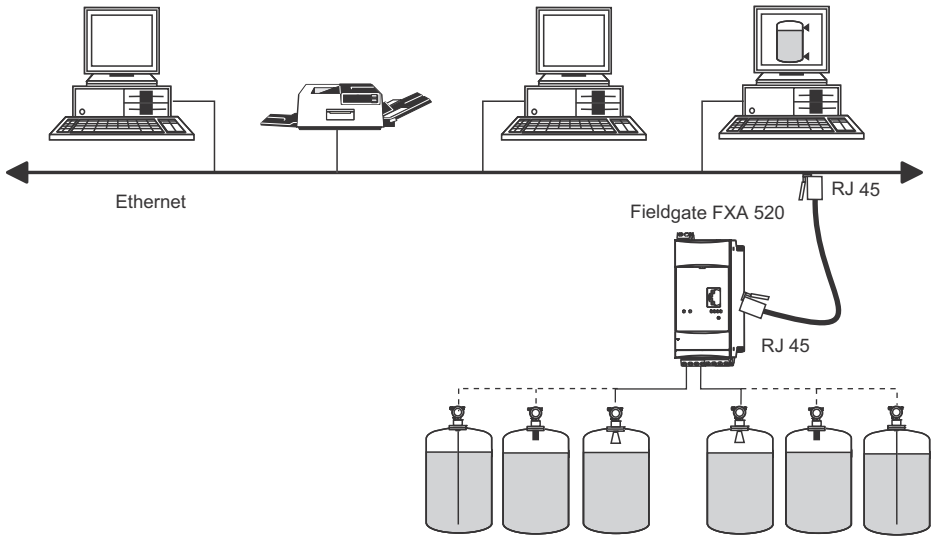


Fig. 3-3: Connecting Fieldgate to Ethernet

3.2.2 Telephone network

Fieldgate is connected to the telephone network via an RJ11 (PSTN) plug connector. This form of communication is always a point-to-point connection and only one PC can communicate with the device at any one time. In this configuration, the Fieldgate has to be selected before each access, so that it is ready for online operation. The Windows internal telecommunications network can be used for dialling. After this, the Fieldgate can be accessed with a standard web browser.

Fieldgate can also dial itself into a central server, e.g. in order to deliver periodic measured values. If Fieldgate dials into the Internet permanently via an Internet Service Provider, it is possible for several users to access the Fieldgate simultaneously. In addition the user does not require a modem as a receiver at the work place.

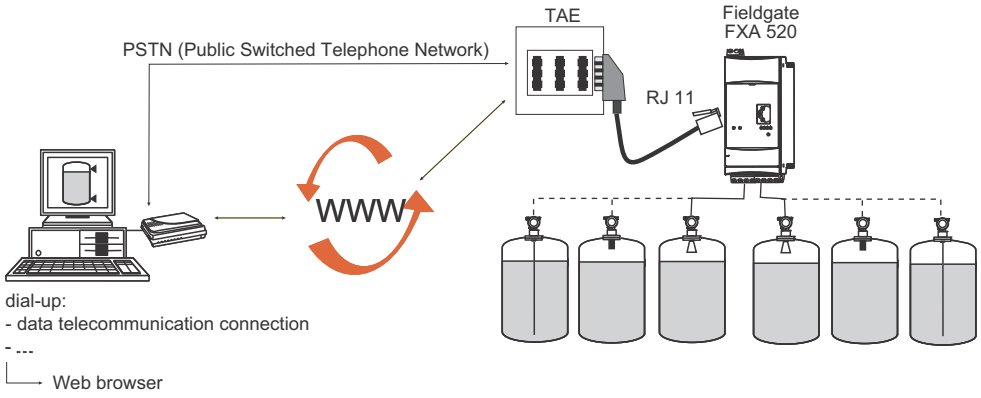


Fig. 3-4: Connecting Fieldgate to a public telephone network

3.2.3 Mobile communications network (GSM)

The GSM modem allows data to be transferred via a mobile communications network. It can be configured as point-to-point connections or as freely accessible via the Internet/Intranet. A SIM card from a mobile communications network operator is required for GSM operation. Communication is established via the data channel of the SIM card, which may require additional activation, depending on the GSM provider.

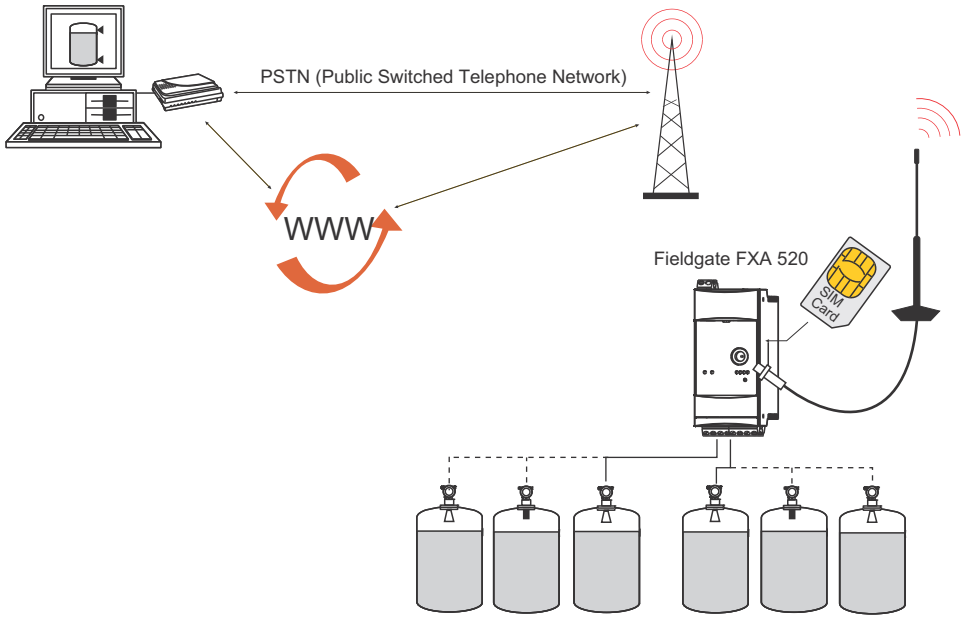


Fig. 3-5: Connecting Fieldgate to a mobile communications network

3.2.4 GPRS support

GPRS (General Packet Radio Services) is a mobile communications technique, which exploits the advantages of packet-oriented data transmission and channel bundling.

In contrast to normal GSM connections, no complete channel is reserved for the duration of the connection between the mobile device and the basis station, rather the data are compiled into packets, which can be sent depending on requirement and capacity. Data transmission in packets enables not only greater transmission rates but also permanent dial-in operation. The Fieldgate is thus permanently in a position to connect to the Internet, an Intranet or a mailbox, whereby data are only transferred as required, e.g. if a new e-mail is sent or a new Internet page is called up. In this case, you are only charged for the amount of data actually transmitted and not for connection time.

The GPRS mode of the Fieldgate GSM thus offers the easiest and most cost-effective option for connecting a measuring point permanently to the Internet or an Intranet. Permanent dial-in allows optimal use of Fieldgate's web page functions, providing Internet access via WAP or HTML and PC.

To use some GPRS functions, e.g. access to the Fieldgate via Internet, the GSM/GPRS provider will need to allocate a public IP address. It will be necessary to determine in each individual case, whether this additional service is offered by the respective operator.

3.3 Signal channels

Fieldgate FXA520 has two HART input channels, two analog input channels, a RS-485 interface and a relay output channel. More details are to be found in Chapter 3.5, System Architecture and Chapter 4, Installation.

3.3.1 HART input channels

The two passive HART input channels use the digital signal provided by the HART devices only (no A/D conversion). They can be used for:

- Point-to-point connection of two HART devices
- Connection of two HART multidrop segments via the FXN520 Multidrop module

3.3.2 Analog input channels

Two passive analog input channels allow the connection of an additional two 4...20 mA devices.

3.3.3 RS-485 interface

The RS-485 interface can be used to connect to and communicate with auxiliary modules, e.g:

- HART multiplexer for connecting additional HART devices
- FXZ520 Input modules for connecting analog devices or switches

3.3.4 Relay output

The relay can be used to signal an alarm or save power:

- Alarm relay
  The relay is configured as an alarm relay by not selecting the function "Power Down Devices between Scan Cycles" on the device set-up page. It closes on power-up and opens on power-down. The alarm circuit must be wired accordingly.
- Power save
  For installations where power saving is at a premium, e.g. solar stations, the device power can be wired via the relay. The function "Power Down Devices between Scan Cycles" is then selected by ticking the checkbox, see Chapter 6.3.4. When the device scan is complete, the relay is opened and the power to the devices is cut. When the next scan is due, the relay closes and after a short delay to allow the device to power-up, the scan proceeds.

3.4 Operability

Fig. 3.6 shows the display elements of the Fieldgate FXA520 together with other operating elements that are located behind the front panel.

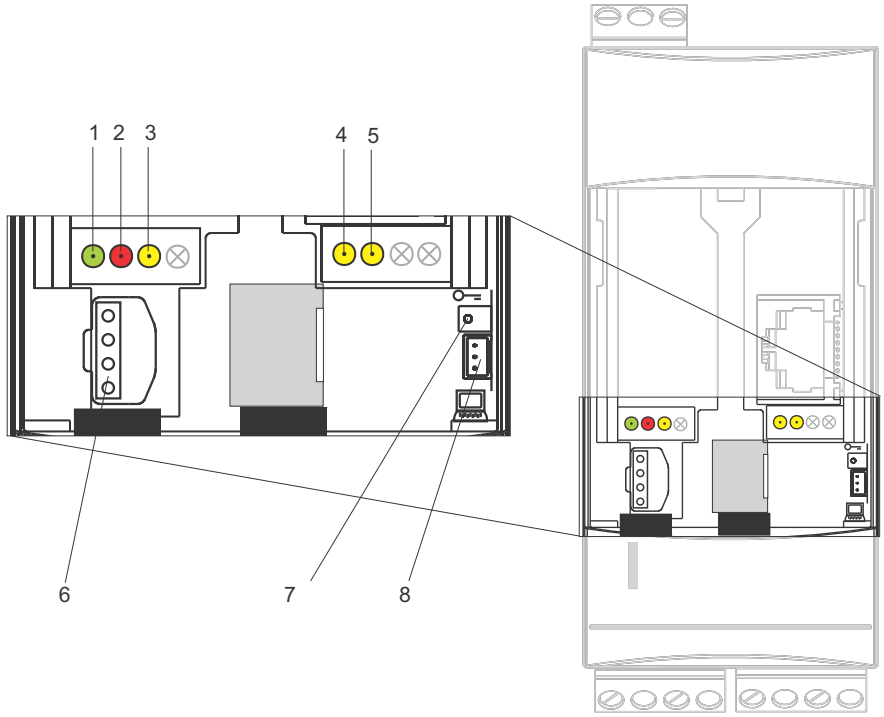


Fig. 3-6: Front panel of the Fieldgate FXA520

3.4.1 Display elements

Item	Light emitting diode (LED)	Meaning
1	Green LED constant	Indicates the power supply is correct
2	Red LED constant	Indicates a fault
	Red LED flashes	Indicates a warning / on-site communication via PC / hardware is unlocked / system start
3	Yellow LED	Switching status of the built-in relay LED off = relay de-energised LED on = relay energised
4	Yellow LED	Indicates: connection active
5	Yellow LED	Indicates: communication / GSM version: field strength display if no connection

3.4.2 Operating elements

Item	Element	Meaning
6	Socket	Connection socket for DAT module
7	Button	Button for hardware locking and configuration reset

3.4.3 Service interface

Item	Element	Meaning
8	Socket	Connection socket for PC cable / service connector

3.5 System architecture

3.5.1 HART point-to-point

Fieldgate FXA520 allows two HART devices to be connected directly to its input channels. When Fieldgate has been ordered in the appropriate version, the devices may be located in hazardous areas. The inputs conform to SIL 2 level for 4...20 mA loops (IEC 61508). The devices can be parameterized both locally or remotely by using FieldCare or a service tool as shown below.

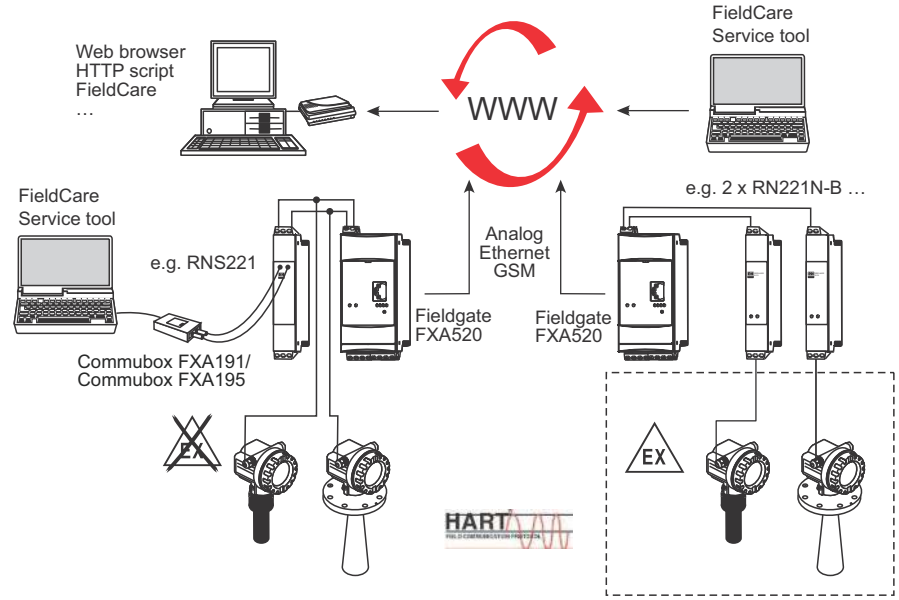


Fig. 3-7: System architecture for HART point-to-point connections

3.5.2 Analog input 4...20 mA

Two 4...20 mA devices can also be connected to Fieldgate FXA520. With the appropriate transmitter supply module, the devices may also be located in hazardous areas. The devices cannot be parameterized, but the outputs can be scaled and linearized in the Fieldgate Web server.

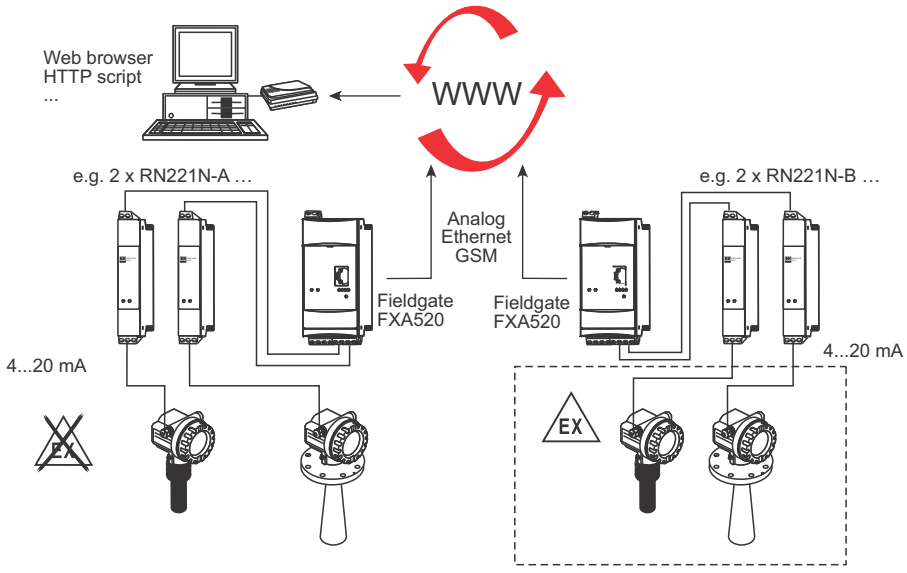


Fig. 3-8: System architecture for 4..20 mA connections

3.5.3 HART Multiplexer

The RS-485 interface of Fieldgate FXA520 can be used to connect up to two HART multiplexers, e.g. the KFD2-HMM-16 from Pepperl+Fuchs. This allows up to 30 HART devices to be connected. The HART devices can be parameterized locally with FieldCare or a service tool.

When the devices are operating in a safe area, the RNS221 transmitter power supply can be used to power two devices.

Ex-devices can also be located in a hazardous area. In this case the signal must be connected to the safe side of a RN221N-B transmitter power supply.

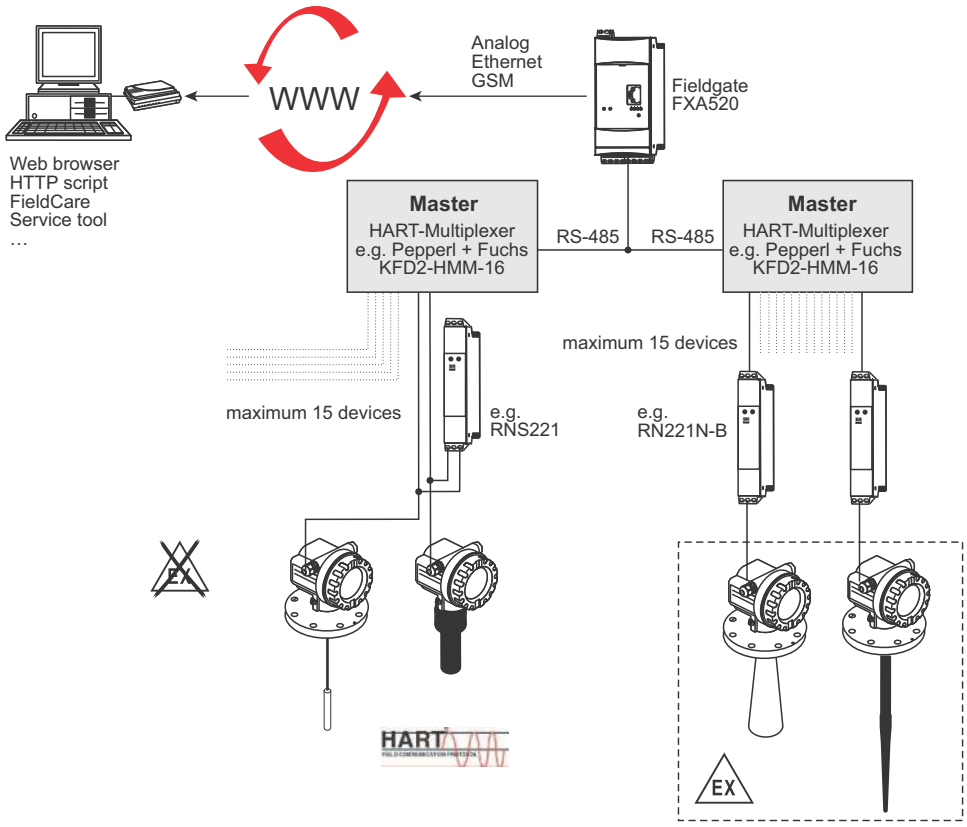


Fig. 3-9: System architecture for HART multiplexer connection

3.5.4 HART Multidrop

The FXN520 multidrop module allows up to 2x eight HART devices operating in a non-hazardous area to be connected to the Fieldgate. The devices can be parameterized locally with FieldCare or a service tool.

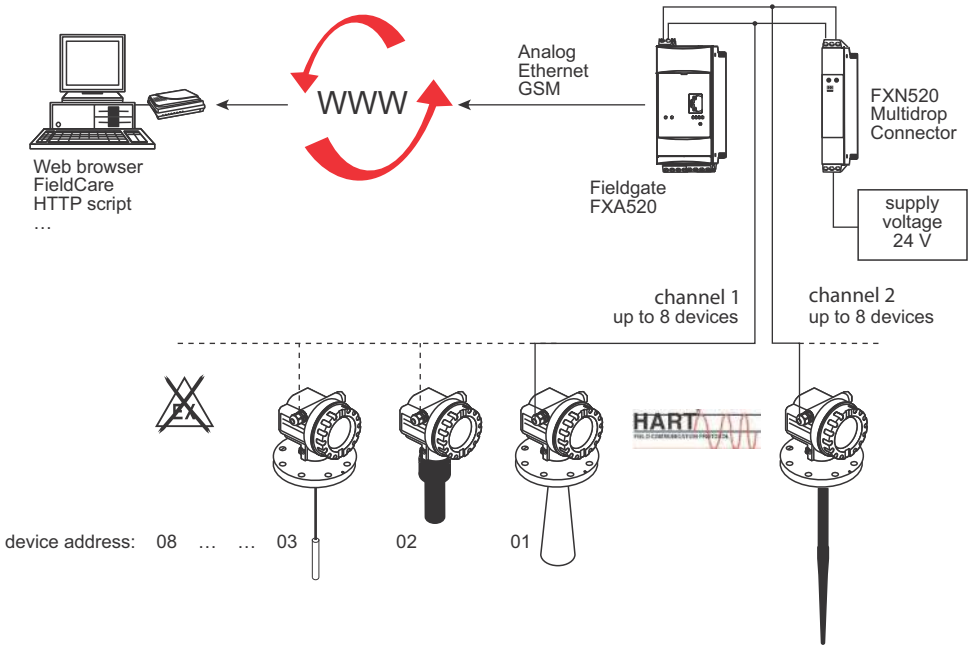


Fig. 3-10: System architecture for FXN520 HART multidrop module

3.5.5 Fieldgate Input modules (analog/digital)

The FXZ520 analog/digital input module can be used to connect up to 7x four 4...20 mA devices and/or limit switches, i.e. a total of 28 measuring points. In addition two 4...20 mA or HART devices can be connected to the fieldgate itself, giving 30 measuring points in total.

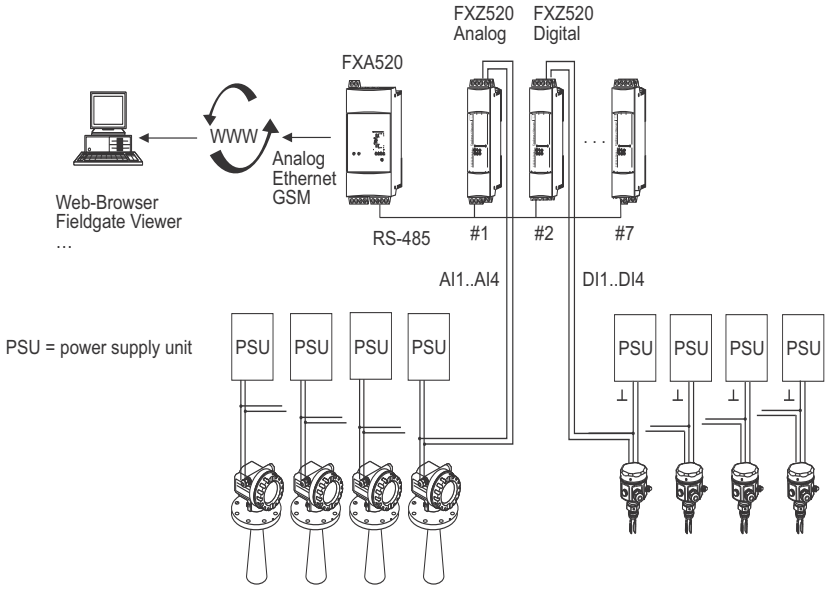


Fig. 3-11: System architecture for FXZ520 analog and digital input modules

3.6 System requirements

3.6.1 Use with web browser

Web browser	Service Pack / extensions
MS Internet Explorer	> 5.0 with current security updates
Netscape Navigator	> 4.7 with current security updates
Opera	> 6.0 with current security updates
Mozilla Firefox	≥ 1.0 with current security updates

3.6.2 Use with FieldCare, SupplyCare

Operating system	Service Pack / extensions
Windows 2000	SP 1 or higher
Windows XP	Home/Professional

Add-on	Version	Function
FieldCare	≥ 1.03.xx	FDT-based Plant Asset Management tool with FXA520 CommDTM ≥ V1.05.05
SupplyCare	≥ 1.00.xx	Inventory Control program

4 Hardware Installation

4.1 Mounting

4.1.1 Location and clearance

Fieldgate is intended for mounting on TS35 DIN carrier rails (EN 60715) installed in a control cabinet or protective (IP55) cabinet.

- The device is convection-cooled. It must be installed in such a way that the ventilating ducts are at the top and bottom of the unit.
- Ensure that there is a ventilation space of at least 50 mm (2") above and below the device.
- There is no need for a lateral clearance between Fieldgate units that are connected to a common power supply.
- Fieldgate units connected to an Ex-power supply and Fieldgate units connected to Non-Ex power supply must have a lateral clearance of 50 mm (2").

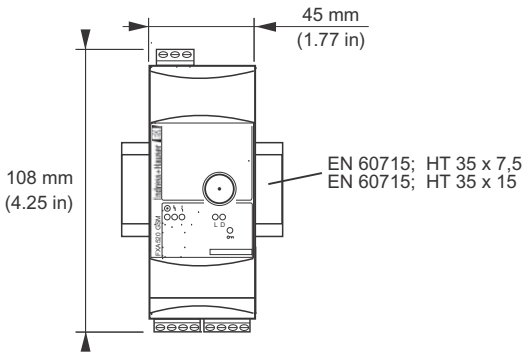


Fig. 4-1: Dimensions of Fieldgate FXA520

GSM version

For the GSM version, it is also important that there is good reception from the mobile communication network at the location at which the unit is mounted. It may be necessary to install a stronger aerial if reception is weak.

4.1.2 Mounting

1 Position the Fieldgate, then latch the lug at the rear of the Fieldgate on the top of the DIN rail.

2 Push down until the snap fastener latches onto the DIN rail.

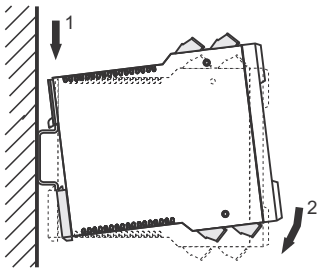


Fig. 4-2: Mounting the Fieldgate

4.1.3 Accessing the DAT module/SIM card/service interface

The DAT module, SIM card receptacle for GSM devices and service interface are located behind the front panel. You require a screwdriver with a normal blade.

NOTICE **NOTE!**
- Switch off the Fieldgate before inserting or removing the DAT module
- **Do not insert the SIM card** until the Fieldgate GSM settings have been made, see Chapter 5.3.

1 Insert the screwdriver blade in the slot provided for it and gently prise the front panel forwards until it is detached from its fastening.

2 Pull the panel downwards to access the connections.

3 Close the panel after use.

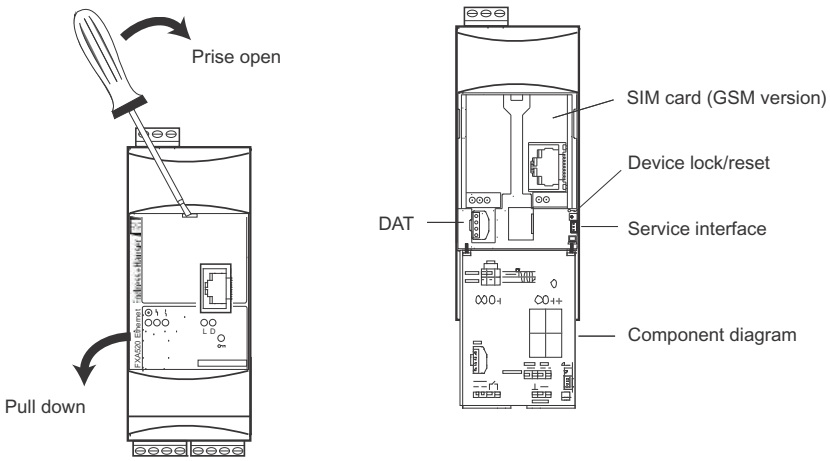


Fig. 4-3: Opening the front panel

4.1.4 Dismounting a Fieldgate

Dismounting

1 Switch off the power to the Fieldgate.

2 Insert a screwdriver blade between the terminal block and the housing and prise the block from its socket.
– Repeat for all terminal blocks.

3 Insert the screwdriver blade in snap fastener and prise downwards until the fastener releases itself from the rail, then pull the Fieldgate free.

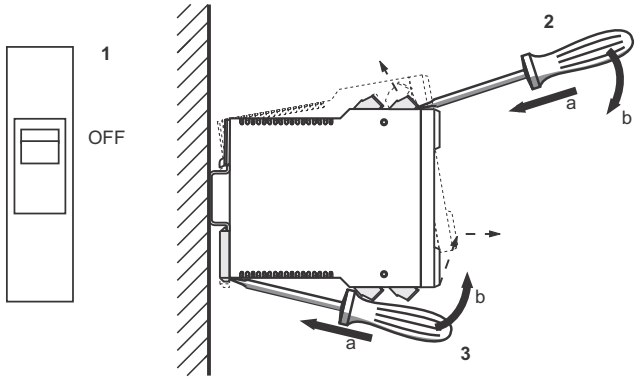


Fig. 4-4: Dismounting Fieldgate

4.2 Wiring

4.2.1 Terminals

Table 4-1 provides an overview of the Fieldgate terminals.

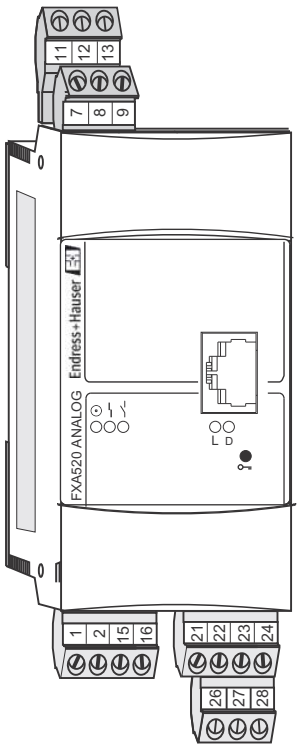
Location	No	Function	Remarks
	1	Power L+/L1	Depending on device type, see nameplate on side: ■ 20...60 VDC, 20...30 VAC ■ 85...253 VAC, 50/60 Hz
	2	Power L–/N	
	7	+ HART	CH 1: Externally powered HART device
	8	– HART	CH 1: Externally powered HART device
	9	– HART	CH 1: Externally powered HART device/terminated
	11	+ HART	CH 2: Externally powered HART device
	12	– HART	CH 2: Externally powered HART device
	13	– HART	CH 2: Externally powered HART device/terminated
	15	NC relay	■ Max. 253 VAC, max. 2 A, max. 500 VA at cosψ = 0.7 ■ Max. 40 VDC, max. 2 A, max. 80 W
	16	NC relay	
	21	– 4...20 mA	CH 1: Externally powered 4...20 mA device
	22	+ 4...20 mA	CH 1: Externally powered 4...20 mA device
	23	– 4...20 mA	CH 2: Externally powered 4...20 mA device
	24	+ 4...20 mA	CH 2: Externally powered 4...20 mA device
	26	GND	RS-485 communication interface
	27	A	RS-485 communication interface
	28	B	RS-485 communication interface

Table 4-1: Fieldgate terminals

4.2.2 Power supply and relay

Wire according to Fig. 4-5.

- Use a circuit breaker to isolate Fieldgate from line voltage when, e.g. wiring up.
- The NC relay has a switching capacity of:
  – Max. 253 VAC, max. 2 A, max. 500 VA at cosψ = 0.7
  – Max. 40 VDC, max. 2 A, max. 80 W
- For mains supplied FXA520 Device, the user must install an external 1 A slow-blow fuse in the power line. The fuse must be designed for min. 250 V and be approved for the application in question.
- A total voltage of relay output and power supply lower than 300 V muist be granted at installation.

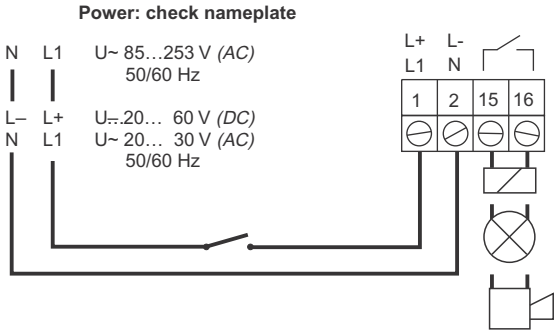


Fig. 4-5: Wiring up of power supply and relay

4.2.3 HART point-to-point

Depending upon device and power supply there are three possibilities for connection:

- For loop-powered devices and power supply with communication resistor, see Fig. 4-6
- For loop-powered devices and power supply without communication resistor, see Fig. 4-7
- For 4-wire HART devices, see Fig. 4.8)

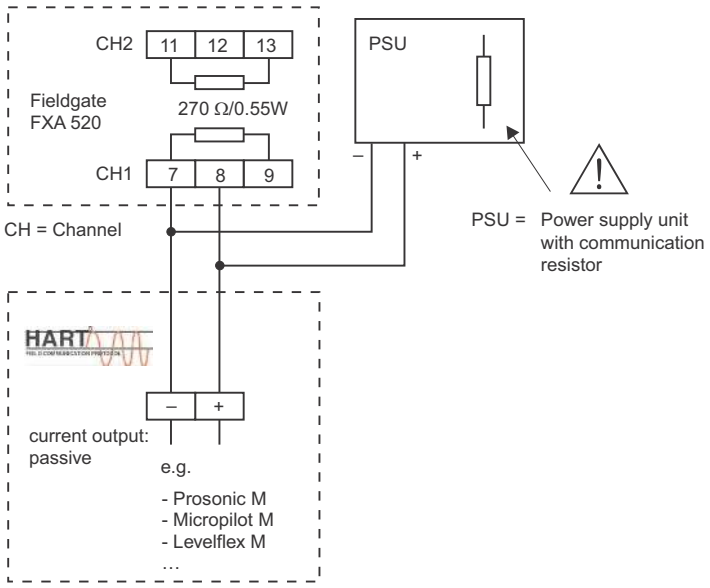


Fig. 4-6: Wiring for loop-powered HART devices, communication resistor in power supply

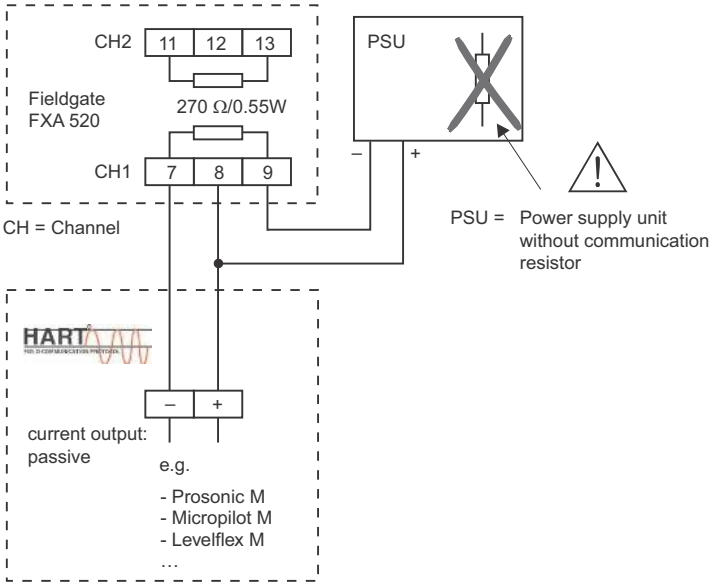


Fig. 4-7: Wiring for loop-powered HART devices, communication resistor in Fieldgate

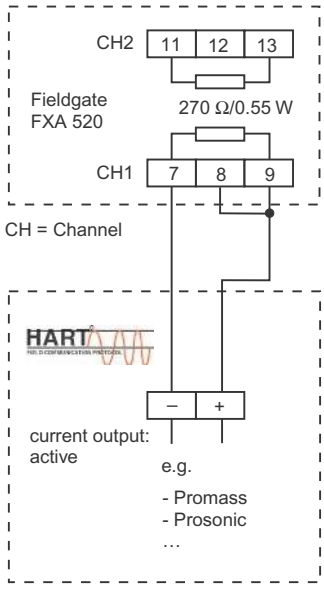


Fig. 4-8: Wiring of 4-wire HART devices

4.2.4 HART multidrop with FXN520

Up to eight HART devices per channel can be connected to the Fieldgate when it is used in conjunction with a FXN520 multidrop connector. The actual number depends upon the power consumption of each device and can be calculated by the FieldNetCalc tool.

The power supply must be chosen such that the input voltage at the terminals L+, L– does not exceed the maximum permissible supply voltage of the connected devices.

HART multidrop requires that each device on the bus has a unique address. Instructions on how to set the addresses of HART devices are to be found in the individual device manuals.

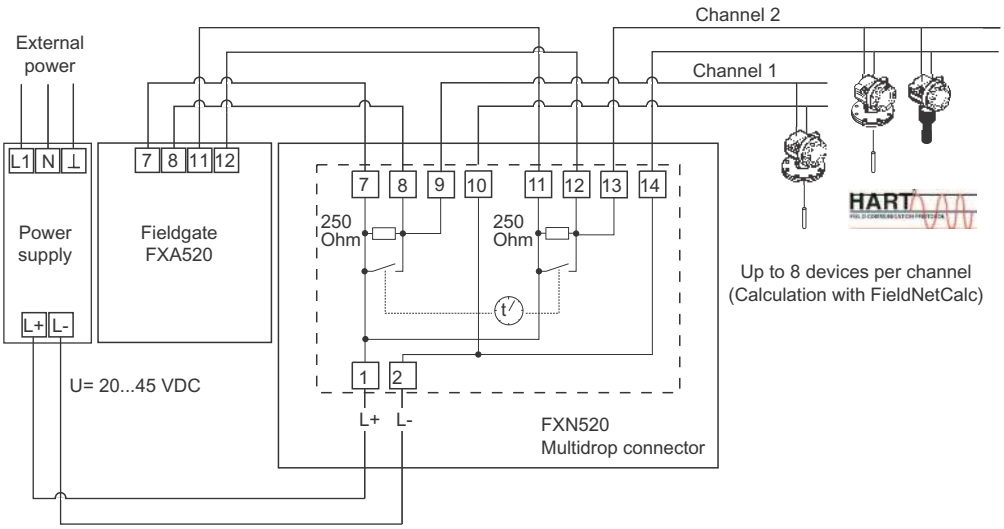


Fig. 4-9: Wiring for HART multidrop with FXN520

4.2.5 HART multiplexer

Fieldgate operates with the following Pepperl+Fuchs multiplexers:

- HART multiplexer master, type KFD2-HMM-16
- HART slave unit, type KFD0-HMS-16

Up to two multiplexers can be connected. They may be operated in master-master or master slave configuration. Figs 4-11 and 4-12 show the respective connections. Full instructions on wiring the multiplexers together are to be found in the Pepperl+Fuchs manuals.

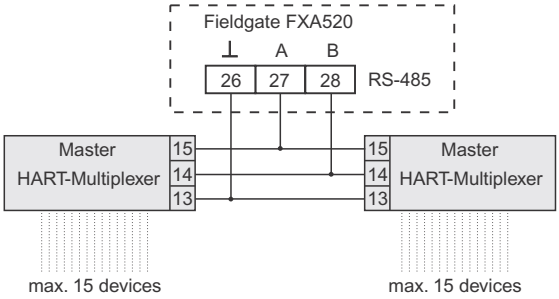


Fig. 4-10: Wiring for HART multiplexer in Master-Master configuration

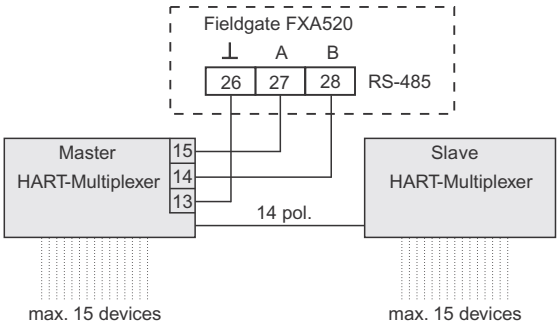


Fig. 4-11: Wiring for HART multiplexer in Master-Slave configuration

4.2.6 4... 20 mA input

Channels 1 and 2 can be used to connect 4...20 mA transmitters.

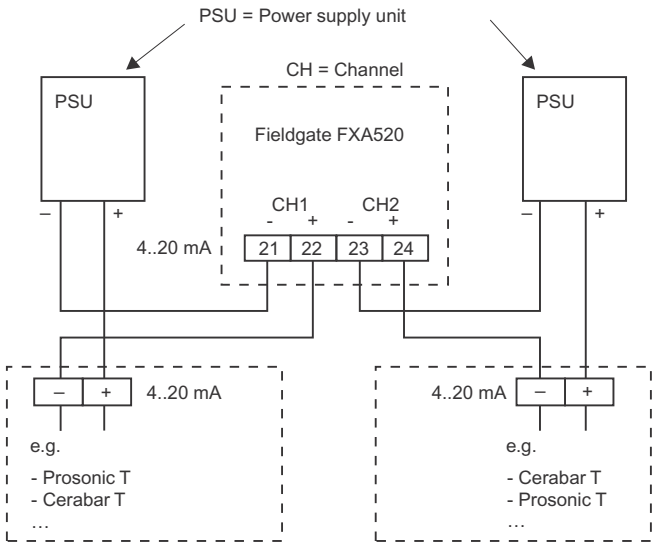


Fig. 4-12: Wiring of 4...20 mA devices

4.2.7 4...20 mA/binary input via FXZ520 input module

Up to 28x 4...20 mA devices and/or binary inputs can be connected to the Fieldgate by using the up to seven FXZ520 analog/digital input module. For connection of devices to FXZ520 see Compact Instructions KA272F/00/a6

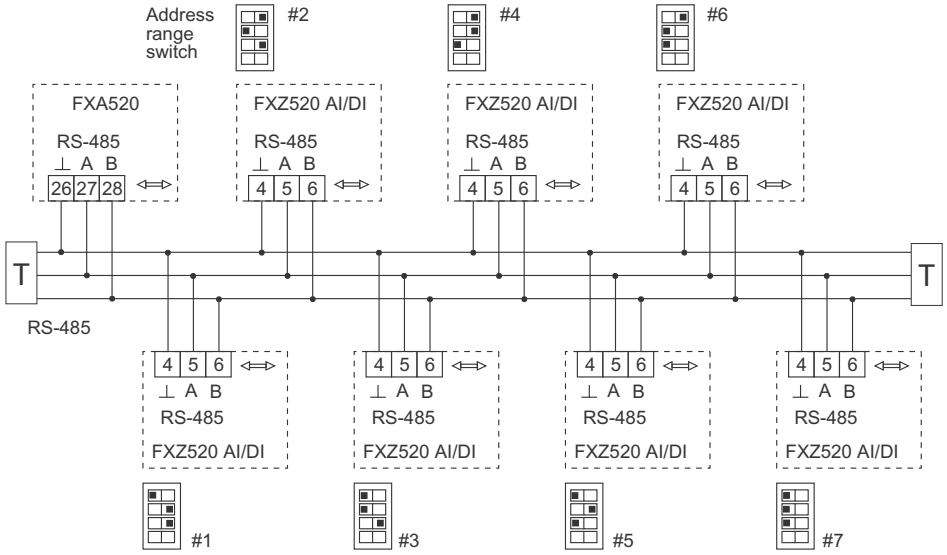


Fig. 4-13: Wiring of RS-485 bus: each FXZ520 must have a different address range setting

4.3 Network connection

4.3.1 Fieldgate Analog

Fieldgate Analog is connected to a public telephone network (PSTN) via the RJ11 socket in its front panel. A standard telephone cable for the country in which the Fieldgate is installed is used to make the connection to the telephone network socket.

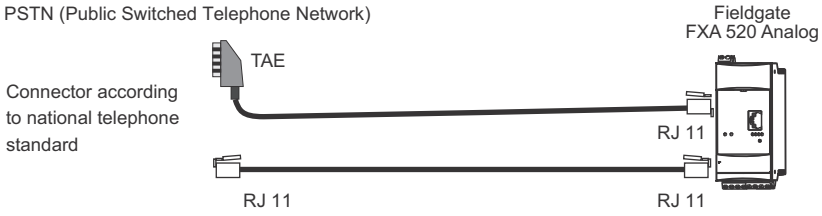


Fig. 4-14: Connection of Fieldgate to public switched telephone network

4.3.2 Fieldgate Ethernet

Fieldgate Ethernet is connected to the network card of a computer via a crossed Ethernet cable with RJ45 connectors or to an Ethernet network via a switch or hub and a standard Ethernet cable with RS45 connectors. Since the transmission rate is 10 MB/s it is recommended that a switch is used in preference to a hub.

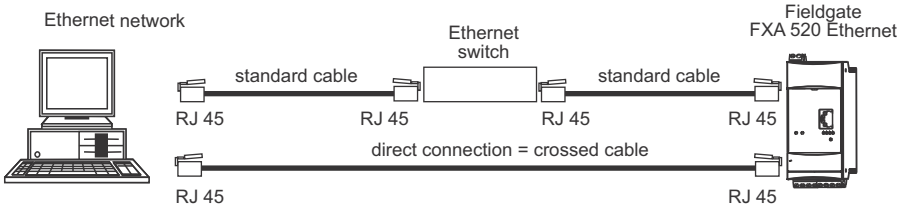


Fig. 4-15: Connection of Fieldgate to an Ethernet network

4.3.3 Fieldgate GSM

Fieldgate requires an GSM external antenna, which can be purchased from Endress+Hauser as an accessory. The antenna cable plugs into the socket on the front of Fieldgate and must be mounted outside of any control cabinet or field housing. In areas of poor GSM reception, it is advisable to first test the communication before permanently fixing the antenna.

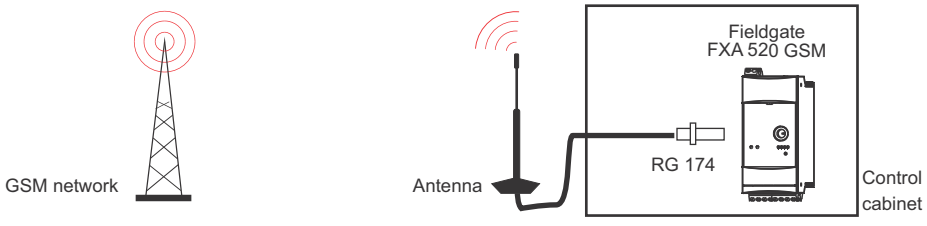


Fig. 4-16: Connection of Fieldgate to a GSM network

5 Commissioning

This chapter describes, using the example of Windows XP, the commissioning of the Fieldgate. The commissioning with other Windows operating systems differs only in detail, but if you are not sure how to proceed, we recommend that you consult your network administrator.

Before you start the commissioning:

- Check that you have administrator rights for your computer
- Check that the Fieldgate is correctly wired and powered up

We recommend that the Fieldgate is always commissioned via the service interface.

The chapter is structured as follows:

- Chapter 5.1 describes the steps necessary to establish connection via the service interface.
- Chapters 5.2 to 5.4 describe the individual steps required to set up communication with the Ethernet, Modem and GSM versions of the Fieldgate respectively.
- Chapter 5.5. describes the setup of other communication facilities such as e-mails etc.



Note!

- It is also possible to configure the Ethernet version of the Fieldgate via Ethernet, but this entails changing the IP address of your computer, since the default IP address of the Fieldgate (IP = 192.168.252.1, Subnet = 255.255.255.0) will normally be in a different domain, see chap. 12.1.

5.1 Establishing communication via service interface

In order to establish communication with the Fieldgate via the service interface, a standard 9600 bit/s modem and a RTU (remote terminal unit) connection must be set up on your computer. The following describes the procedure for Windows XP: for other Windows operating systems consult your network administrator.

Once set up, the RTU connection can always be used for the service interface.

5.1.1 Connect the Fieldgate

Fieldgate is supplied with a PC service cable with a 9-pin sub-D female and 3-pin female connector. To connect the Fieldgate to your computer:

1 Plug the 9-pin connector into the COM port (RS-232C) of your computer

2 Plug the 3-pin connector in the service port of the Fieldgate
- This is located behind the front panel, see chap. 4.1.3

5.1.2 Set up a standard 9600 bps modem

Now set up a standard 9600 bps modem on your computer:

1 Select **Start > Settings > Control Panel> Telephone and Modem Options**:

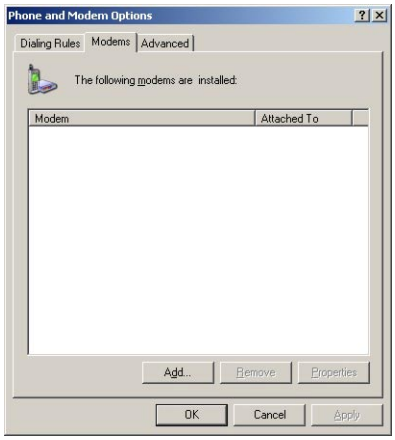


2 If no modem has been set up on the computer the **Location Information** dialog appears:



- Enter your location, city dialing code, carrier code (if required) and any number required to dial out of your facility. Then check the appropriate dialing system.
- Press **OK** to continue, the **Telephone and Modem Options** dialog appears.
- If you are not sure of your data, check with your network administrator.

3 Select the **Modem** tag in the **Telephone and Modem Options** dialog:



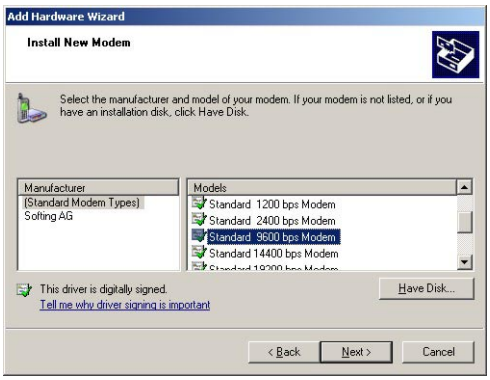
– If the Standard 9600 bps Modem is in the list, go to chap. 5.1.3
– Otherwise press **Add**, see below

4 The **Install New Modem** wizard starts:

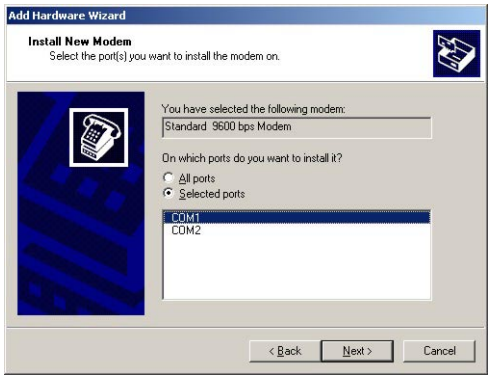


– Tick the **Don't detect modem...** checkbox and press **Next** to continue.

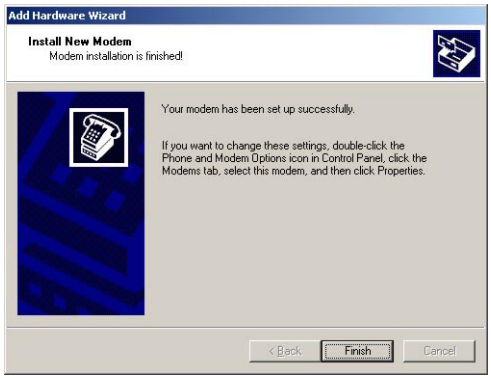
5 Now select the **Standard 9600 bps Modem** from the list and press **Next** to continue:



6 Select the **COM port** where you want to set up the modem and press **Next** to continue:



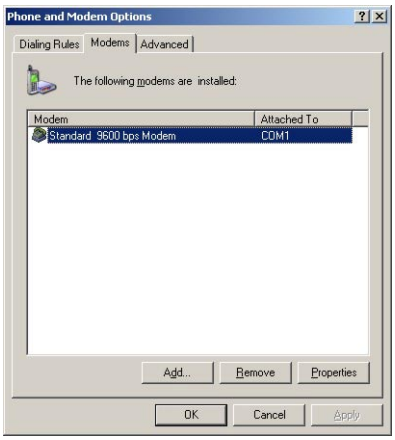
7 When the modem has been successfully installed, press **Finish** to close the wizard:



8 The Standard 9600 bps Modem is now in the modem list.

5.1.3 Check the modem properties

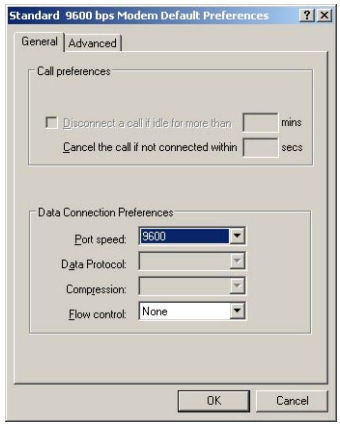
1 In the **Phone and Modem Options/Modems** dialog, select **Standard 9600 bps Modem** and press **Properties**:



2 In the **Properties** dialog, select the **Advanced** tab:

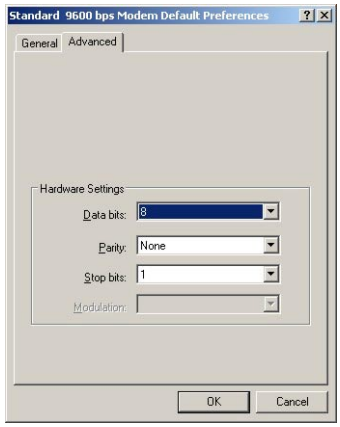


3 Press the **Change Default Preferences** button:



– Set the **Flow Control** parameter to **None**

4 Select the **Advanced** tab:



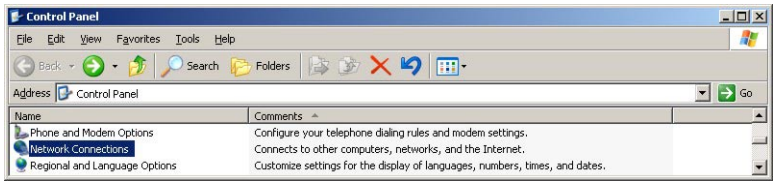
– Check that Data bits = 8, Parity = None and Stops bits = 1
– Press **OK** to confirm any changes made in the settings and to close the dialog.

5 Close the remaining dialog boxes by pressing **OK**.

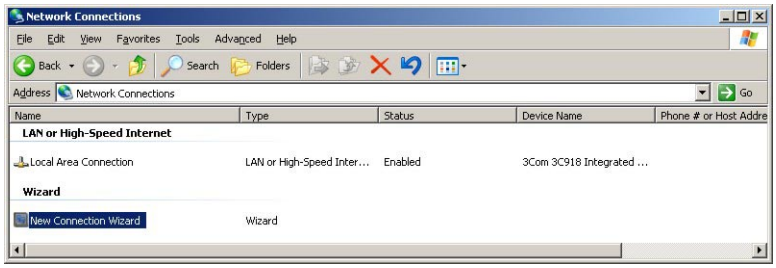
5.1.4 Set up the dial up connection

Now set up the dial up connection

1 Select **Start > Settings > Control Panel> Network Connections**:



2 The **Network Connection** dialog opens:

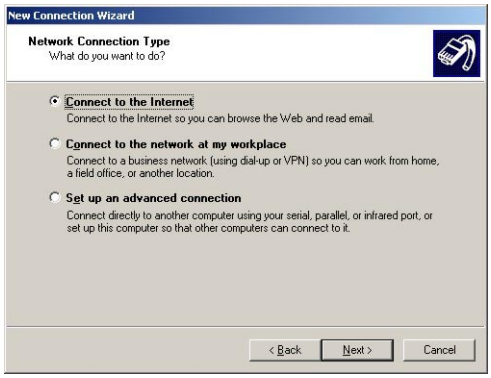


– Double-click on **New Connection Wizard**

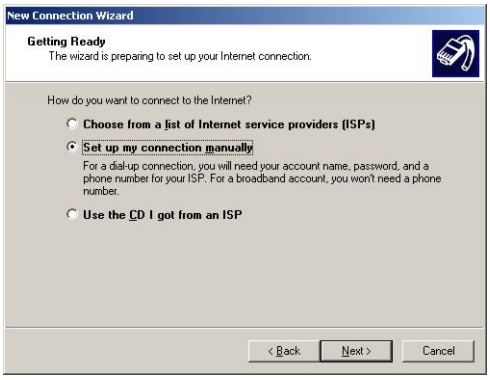
3 The **New Connection Wizard** opens, press **Next** to continue:



4 Select the option **Connect to Internet,** press **Next** to continue



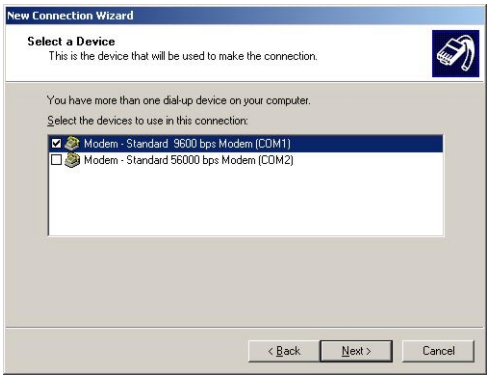
5 Select the option **Set up my connection manually**, press **Next** to continue



6 Select the option **Connect using a dial-up modem**, press **Next** to continue

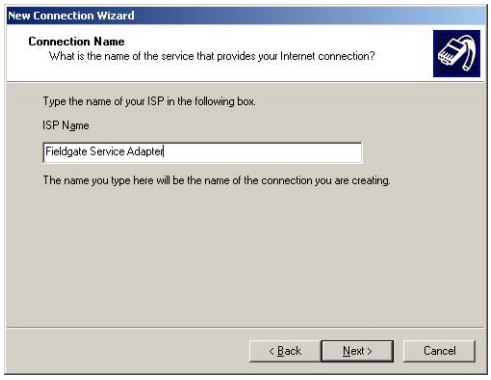


7 If a more than one modem is available on the computer, you will be asked to select the one to be used for the connection from the **Select a Device** dialog:

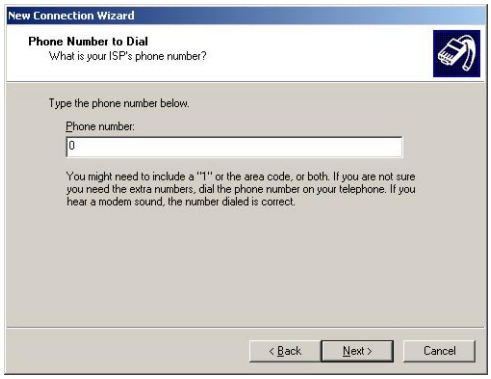


– Make sure the correct one is ticked,
– Press **Next** to continue

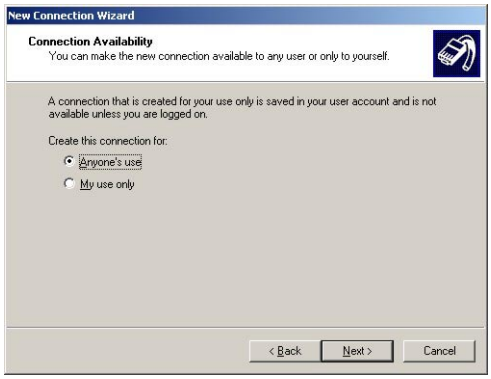
8 Enter the name of the connection, e.g. Fieldgate Service Adapter, press **Next** to continue



9 Enter "0" as phone number to dial, press **Next** to continue



10 Select the connection availability, e.g. Anyone's use, press **Next** to continue



11 Enter your **Internet Account Information**



- Enter **User name = "scm", Password** = "**scm**" and **Confirm** password = "**scm**" (scm is fixed and no other is allowed)
- Select the option **Use this account name....**
- **Do not** select the options Make this the default Internet Connection, Turn on Internet Connection Firewall...
- Press **Next** to continue

12 Select the option **Add a shortcut...** and press **Finish** to create the connection and close the wizard.



- An icon is added to the desktop
- The connection is added to the Network Connections folder

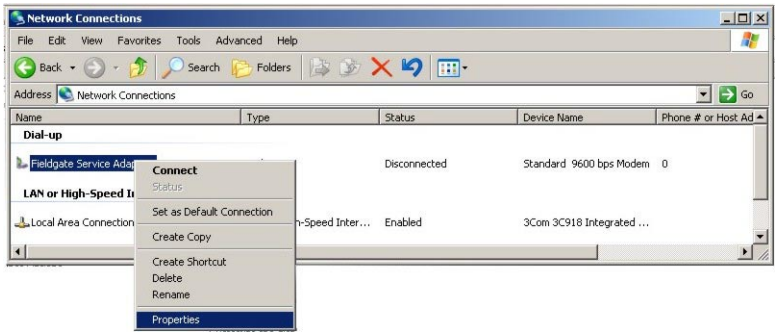
13 The **Connect Fieldgate Service Adapter** dialog appears

- Press **Cancel** to close the dialog.

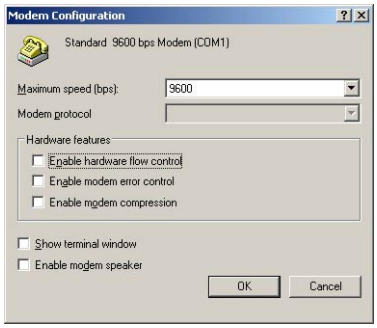
5.1.5 Dialing up

Unfortunately, Windows XP changes the **Flow Control** parameter back to the default value after a new connection has been added. For this reason, before the first ever connection can be made, the properties have to be changed again.

1 In the **Network Connections** dialog, right-click on **Fieldgate Service Adapter** and select the **Properties** menu

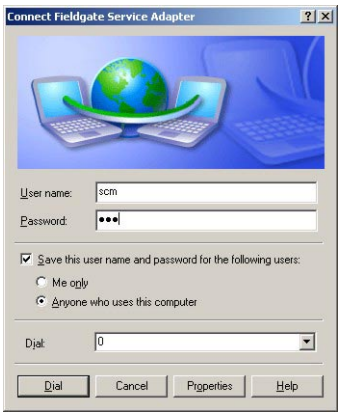


2 In Fieldgate Service Adapter Properties dialog, press the **Configure...** button
– The **Modem Configuration** dialog appears



– Deselect the option **Enable Flow Control,** press **OK** to close the dialog
– Press **OK** to close the Fieldgate Service Adapter Properties dialog

3 Now double-click on the **Fieldgate Service Adapter** icon on the desktop or in the Network Connection list, the **Connect...** dialog appears

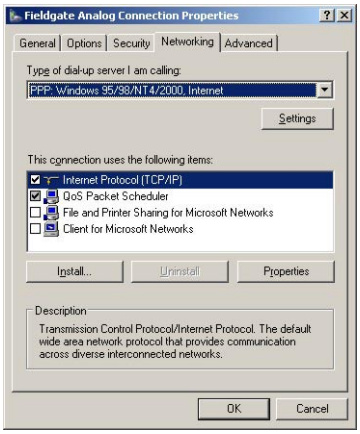


– Press **Properties**

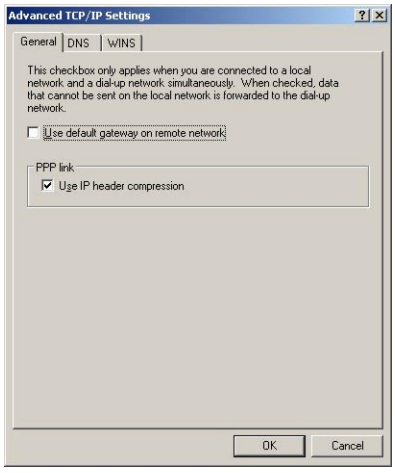
4 The **Properties** dialog opens**:**



5 Select the modem used with the connection, then the **Networking** tab
– Now select **Internet Protocol (TCP/IP)** and press **Properties**



6 In the **Properties** dialog that now appears press the **Advanced...** button, the dialog **Advanced Properties** opens at the **General** tab



– Deactivate the "**Use default gateway on remote network**" option, press **OK**
– Close all dialogs, with the exception of Connect...

7 In the **Connect...** dialog, see Step 3, select **Dial**

8 Open your Internet Browser, enter the default Fieldgate service cable address http:// **192.168.253.1** then press **Enter**.

9 The **Connect to** dialog appears:



– Enter the User Name: **super**
– Enter the Password: **super**
– Press **OK** to register the entries and open the Fieldgate Web Server

10 The Fieldgate entry page appears in the browser.

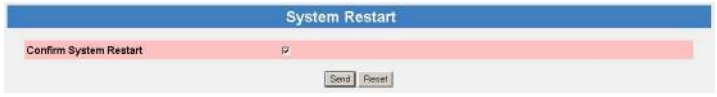
– You are registered with administrator rights and can now set up the Fieldgate communication parameters, see chap. 5.2 to chap. 5.5



5.1.6 Securing changes made via the service interface

1 When Fieldgate has been configured:

– Select **Settings => Special** to restart the system and register the changes



– In the **System Restart** dialog, check the "Confirm System Restart" box and press **Send**
– The Fieldgate restarts with the changes made via the service interface permanently stored.

5.2 Fieldgate with Ethernet interface

The Ethernet connection must be set up in the Fieldgate and in the host computer. Normally, both must operate in the same IP address domain. Exactly which parameters are required depends upon the way the your local area network functions. If you are unsure of what to enter, consult your network administrator.

5.2.1 Communication parameters

The table summarizes the communication parameters for the Fieldgate with Ethernet interface.

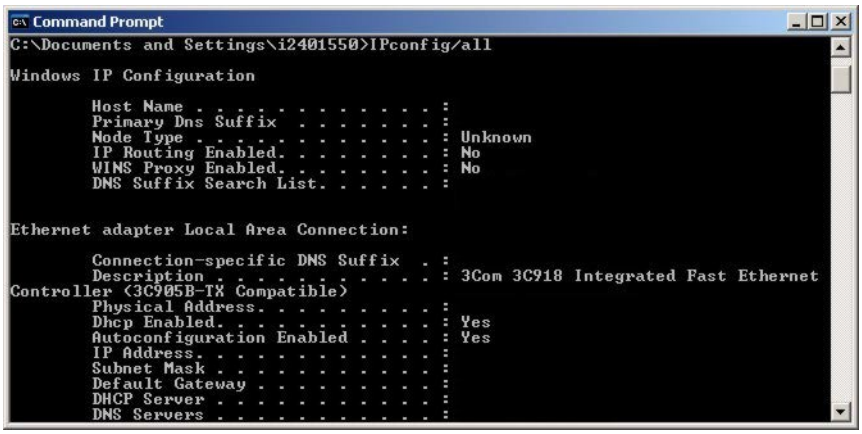
Ethernet setup

Parameter	Example	Your value	Description
Host name	MyFieldgate		Symbolic name (string) of the Fieldgate in the DHCP server – Required for BootP and DHCP server only – This must be allocated by your network administrator and be present on the DHCP server before it can be used
IP Assignment	Manual BootP-Protocol DHCP		Way in which the IP address is assigned to the Fieldgate ■ Manual: the Fieldgate works with a fixed address ■ BootP: the address is assigned automatically by the host (used in older operating systems) ■ DHCP: the address is assigned automatically by the host
IP Address	10.125.33.100		IP address of the fieldgate – Leave blank if BootP or DHCP is selected
Gateway	10.125.32.1		IP address of the gateway connecting the LAN to WWW via firewall/router – Leave blank if BootP or DHCP is selected
Netmask	255.255.252.1		IP address of the netmask – Leave blank if BootP or DHCP is selected
DNS1	10.125.32.10		IP address of Domain Name Server 1 – Leave blank if DNS address can be found automatically
DNS2	10.125.32.11		IP address of Domain Name Server 2 – Leave blank if DNS address can be found automatically

LAN parameters

If the host computer is already integrated into your local area network it is possible to check the network settings by using the IPconfig/all command in the Command Prompt:

1 Select **Start => Programs => Accessories => Command Prompt**
   – The Command Prompt window opens
   – Enter the command **IPconfig/all** and press **Enter**
   – The IP settings for your network are listed
   (the values in the graphic have been deleted for security reasons)



5.2.2 Set up the Fieldgate via service interface

1 Press "**Switch to Administrator Mode**"
Now press "**Settings**" followed by "**Network**"
– The **Network** dialog appears:



– Scroll down to **Ethernet Setup** and enter the parameters as appropriate
(The screenshot above is an example for manual settings)
– Press **"Send"** to download the parameters to the Fieldgate

2 Now configure any other communication parameters, e.g. e-mails, as described in chap. 5.5.

3 You may now wish to configure additional Fieldgate device functions, e.g. limit values, scanning cycle, in the Fieldgate Web server as described in chap. 6.

4 When configuration is complete, select **Settings => Special** to restart the system and register the changes, see chap. 5.1.6

– In the **System Restart** dialog, check the "Confirm System Restart" box and press **Send**
– The Fieldgate restarts with the changes made via the service interface permanently stored

5 When the restart is complete, close the web server, unplug the service connector and switch off the Fieldgate. Close the front panel

6 Plug in the Ethernet connector and switch on the Fieldgate. Connect the Fieldgate via the host computer as described in chap. 5.2.3.

5.2.3 Connect to Fieldgate via Ethernet

If Fieldgate has been allocated a fixed IP address, your computer must have an IP address in the same range in order to communicate with it. If this is not the case, change the IP address of your computer as described in chap. 12.1.1 before connecting. The connection is made as follows:

1 Start the Web browser, e.g. Internet Explorer.

2 Enter the new IP address of the Fieldgate e.g. **10.125.33.100** in the address field of your browser and press the **"Enter"** key of your computer.

3 The **Connect to** dialog appears:

– Enter the User Name: **super** (if not changed during set-up)
– Enter the Password: **super** (if not changed during set-up)
– Press **OK** to register the entries and open the Fieldgate Web Server

4 The Fieldgate entry page appears in the browser.

– You are registered with the rights associated with your user name.

5.3 Fieldgate with analog modem

The telephone connection must be set up in both the Fieldgate and the host computer, whereby the latter must be equipped with an analog modem. There are two basic use cases:

- The user dials into the Fieldgate and views the required information.
  In this case, only the modem needs to be set-up
- The Fieldgate is prompted to call back the user via an Internet Service Provider.
  In this case both the modem and the ISP dial-in parameters must be set up. In addition you will have to set up the mail, and if necessary, time server parameters, see chap. 5.5

For additional information on Internet Service Providers, see chap. 12.2.

5.3.1 Communication parameters

The tables summarize the setup parameters.

Modem setup

Parameter	Your values	Description
Modem Country Selection		Select specifications that apply to the modem/network
IP Addr. Modem Server		IP address of the Fieldgate on dial-up (default: 192.168.254.1) – Leave default address unless router in use
IP Addr. Modem Peer		IP address assigned to dial-up computer (default: 192.168.254.2). – Router address if used, otherwise leave default address
Additional AT commands		For Service only: no entry required

Dial-up setup

Parameter	Example	Description
ISP Phone Number		Dial-in number of Internet Service Provider
ISP Username		User Name provided by Internet Service Provider
ISP Password		Password provided by Internet Service Provider
ISP DNS1		IP address of the Domain Name Server provided by ISP – Leave blank, will normally be assigned
ISP DNS2		IP address of backup Domain Name Server, see above
Max Daily Dial-in Time		Limit of the daily dial-in time to the specified server – Default and max. value 1440 min (1 day)
Use Tone Dialing ...		Tone dialing (box checked) or pulse dialing (box unchecked)
Wait for Dial Tone		Causes Fieldgate to wait for the dialling tone before dialling – Selected: e.g. public network – Not selected: e.g. internal network
Number of Dial Retries		Number of retries if no connection to server can be made
Number of Rings...		Number of rings before Fieldgate takes incoming call – 0: never answers, but calls back (check box Callback ISP...) – 3: default setting, avoids spurious calls
Callback ISP...		Causes Fieldgate to call back when it receives a call with less rings than the value in "No. of rings.."
Dial in Permanently		Causes Fieldgate to dial permanently into the server

5.3.2 Set up the Fieldgate via service interface

1 Press **Switch to Administrator Mode**
Now press **Settings** followed by **Network**



– In the **Modem Setup dialog** enter the parameters as appropriate, see Table 5-2
(The screenshot above is an example for US specifications, with default settings for IP addresses)
– Press **"Send"** to download the parameters to the Fieldgate

2 Now scroll down to the **Dial-up Setup** dialog



– Enter the parameters as appropriate, see Table 5-3
(The screenshot above is an example for callback to arcor, Berlin)
– Press **"Send"** to download the parameters to the Fieldgate

3 Now configure any other communication parameters, e.g. e-mails, as described in chap. 5.5.

4 You may now wish to configure additional Fieldgate device functions, e.g. limit values, scanning cycle, in the Fieldgate Web server as described in chap. 6.

5 When configuration is complete, select **Settings => Special** to restart the system and register the changes.



– In the **System Restart** dialog, check the "Confirm System Restart" box and press **Send**
– The Fieldgate restarts with the changes made via the service interface permanently stored

6 When the restart is complete, close the web server, unplug the service connector and switch off the Fieldgate. Close the front panel.

7 Plug in the telephone connector and switch on the Fieldgate. Connect the Fieldgate via the host computer as described in chap. 5.3.4.

5.3.3 Set up the dial up connection

Now set up the dial up connection for the analog modem installed on your computer:

1 Start the New Connection Wizard and follow the procedure in chap. 5.1.4.

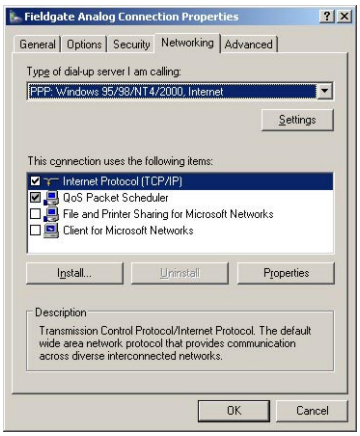
- In the **Select a Device** dialog, select the analog modem
- In the Connection Name dialog, enter e.g. Fieldgate Analog Connection
- In the **Number to Connect** dialog, enter the phone number of the Fieldgate
- All other settings are identical

2 In the **Network Connections** dialog (**Start > Settings > Network Connections**), right-click on the new connection, e.g. Fieldgate Analog Connection and select **Properties.** The **Properties** dialog opens**:**

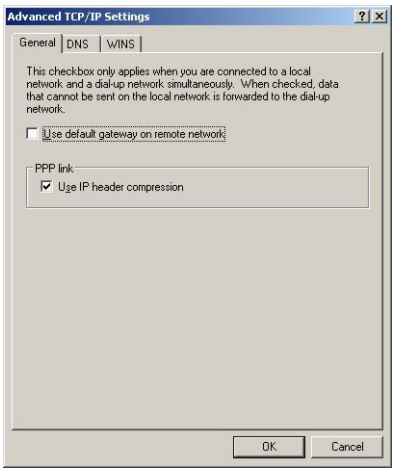


3 Select the modem used with the connection, then the **Networking** tab

- Now select **Internet Protocol (TCP/IP)** and press **Properties**



4 In the **Properties** dialog that now appears press the **Advanced...** button, the dialog **Advanced Properties** opens at the **General** tab



– Deactivate the "**Use default gateway on remote network**" option, press **OK**
– Close all dialogs

5.3.4 Connect to Fieldgate

The connection is made as follows, for more details see chap. 5.1.5, Step 3 onwards:

1 In the **Network Connections** dialog, double-click on e.g. **Fieldgate Analog Connection** or click on the icon on your desktop, the Connect dialog appears.
– Click the **Dial** button to make the connection

2 Open your Internet Browser, enter the default Fieldgate address http://**192.168.254.1** then press **Enter**.

3 The **Connect to** dialog appears:

– Enter the User Name: **super** (if not changed during set-up)
– Enter the Password: **super** (if not changed during set-up)
– Press **OK** to register the entries and open the Fieldgate Web Server

4 The Fieldgate entry page appears in the browser.

– You are registered with the rights associated with your user name.

5.4 Fieldgate with GSM modem

There are two ways of setting up the device:

- Point-to-point connection to the Fieldgate via GSM: the Fieldgate modem and the host dial-in connection must be set-up
- Connection via the GPRS (General Packet Radio Service) of your GSM provider: the Fieldgate modem, the GPRS parameters and optionally the DynDNS parameters must be set up

When DynDNS is used:
- the GSM provider must allocate Fieldgate a Public IP address
- Fieldgate then is permanently available in the Internet and can be reached by a URL.

More information on GPRS and dynamic DNS providers can be found e.g. by a targeted search in Internet for "GPRS Access Points" or "Dynamic DNS". as well as in chap. 8.6.

5.4.1 Communication parameters

The tables summarize the setup parameters. The GSM provider, telephone number and SIM card PIN must be known before the fieldgate is setup.

GSM modem setup:

Parameter	Your values	Description
SIM PIN		PIN supplied with the SIM card
Additional AT commands		For Service only: no entry required
GSM Operator		Selects GSM operating mode of Fieldgate ■ Auto: Fieldgate automatically searches for a provider ■ Manual: Fieldgate uses provider configured in dialog
IP Address Fieldgate on Dial In		IP address of the Fieldgate (default: 192.168.254.1) – Leave default address unless your PC modem does not accept this address range
IP Address assigned to Dial In Peer		IP address of caller (default: 192.168.254.2). – Router address if used, otherwise leave default address

GPRS setup:

Parameter	Your values	Description
GPRS Dial in permanently		When box ticked, causes Fieldgate to dial permanently into the server
Access Point Name APN		GPRS access point of SIM card provider
GPRS User Name		User name for GPRS access point
GPRS User Password		Password for GPRS access point
GPRS QoS		For Service only: no entry required
Max. Daily Traffic Limit [kByte]		Limits the number of kbytes that can be exchanged in a day ■ Range 0 - 99999 kByte; 0 = unlimited ■ If a limit is exceeded Fieldgate breaks off connection ■ If Fieldgate knows the time of day, re-connection is possible at midnight, otherwise on the next day at the time the limit was set ■ The traffic can be viewed in Info, see chap. 6.3.7
Test Connection Server		Server URL to which a test connection is made ■ Fieldgate calls the URL to check that it is in then Internet, but breaks off the connection when it receives the handshake

DynDNS setup:

Parameter	Your values	Description
Get DynDNS URL		URL required to call up DNS provider
Update Cycle DynDNS		Period between connection to dynamic DNS provider

Dial-up setup

See Table 5.3 in chap. 5.3.1

5.4.2 Set up the Fieldgate via service interface

The Fieldgate must be installed and powered up. **Do not** insert the SIM card until you are instructed to do so!

1 Press **Switch to Administrator Mode**
Now press **Settings** followed by **Network**



– In the **GSM Setup** dialog enter the SIM Card PIN, e.g. 6348, see Table 5-4
(**Caution:** The entry is hidden, default 8080 – make sure that Caps Lock is not active!)
– Press **"Send"** to download the parameters to the Fieldgate
– Now set up the dial-up connection in your computer, see chap. 5.4.3

NOTICE

NOTE!
– If the desired provider is set manually, Fieldgate attempts to make contact as normal
– If contact fails, Fieldgate falls back to automatic mode: an entry is made in the modem log "cannot connect to selected GSM operator connected to: <GSM_Provider>"
– If a "foreign" provider is contacted in Auto mode, it is not possible to build up a GPRS connection, only a GSM connection
– Fieldgate continues to search for the manually selected provider at regular intervals

2 If are using GPRS, scroll down to the **GPRS Setup** dialog, otherwise configure Fieldgate to dial up with the **Dial-up Setup** as described in chap. 5.3.2.



– Enter the parameters as appropriate, see Table 5-5
(The screenshot above is an example for Swisscom Mobile)
– Press **"Send"** to download the parameters to the Fieldgate
– Do not activate "GPRS Dial In Permanently" until you have tested the connection!

3 If you want to use a dynamic DNS server, scroll down to the **DynDNS Setup** dialog (for more information on Dynamic DNS servers see chap. 8.6):



– Enter the parameters as appropriate, see Table 5-6
(Example for dyndns.org is: **<username>**:**<password>**@members.dyndns.org/nic/update?system=dyndns&hostname=**<hostname>**&myip=
where **<username>**, **<password>** and **<hostname>** are allocated when you register)
– Press **"Send"** to download the parameters to the Fieldgate

4 Now configure any other communication parameters, e.g. e-mails, as described in chap. 5.5.

5 You may now wish to configure additional Fieldgate device functions, e.g. limit values, scanning cycle, in the Fieldgate Web server as described in chap. 6.

6 When configuration is complete, select **Settings => Special** to restart the system and register the changes



– In the **System Restart** dialog, check the "Confirm System Restart" box and press **Send**
– The Fieldgate restarts with the changes made via the service interface permanently stored

7 When the restart is complete, close the Web browser, unplug the service connector and switch off the Fieldgate.

8 Insert the SIM card in the receptacle provided and close the front panel.

9 Ensure that the antenna is connected and switch on the Fieldgate. Connect the Fieldgate via the host computer as described in chap. 5.4.4 or chap. 5.4.5.

5.4.3 Set up the dial-up connection in your computer

A dial-up connection can only be set up if the PC has a modem and the GSM provider supports CSD. Before you set up the dial-up connection, make sure that the GSM parameters have been configured as described in chap. 5.4.2.

1 Start the **New Connection Wizard** and follow the procedure in chap. 5.1.4.

– In the **Select a Device** dialog, select the analog or GSM modem
– In the Connection Name dialog, enter e.g. Fieldgate GSM Connection
– In the **Number to Connect** dialog, enter the phone number of the Fieldgate
– All other settings are identical

2 In the **Network Connections** dialog (**Start > Settings > Network Connections**), right-click on the new connection, e.g. Fieldgate Analog Connection and select **Properties.**
The **Properties** dialog opens**:**

3 Select the modem used with the connection, then the **Networking** tab
– Now select **Internet Protocol (TCP/IP)** and press **Properties**

4 In the **Properties** dialog that now appears press the **Advanced...** button, the dialog **Advanced Properties** opens at the **General** tab

– Deactivate the "**Use default gateway on remote network**" option, press **OK**
– Close all dialogs with **OK.**

5.4.4 Connect point-to-point to Fieldgate

The connection is made as follows, for more details see chap. 5.1.5, Step 3 onwards:

1 In the **Network Connections** dialog, double-click on e.g. **Fieldgate GSM Connection** or click on the icon on your desktop, the **Connect** dialog appears:

   – Click the **Dial** button to make the connection
   – If "GPRS Dial In Permanently" has been selected, the first dial-in attempt cuts the existing GPRS connection and the Fieldgate idles for 5 minutes. In this period a second attempt to dial in must be made, otherwise the Fieldgate will connect again to the GPRS.

2 Open your Internet Browser, enter the default Fieldgate address http://**192.168.254.1** then press **Enter**.

3 The **Connect to** dialog appears:

   – Enter the User Name: **super** (if not changed during set-up)
   – Enter the Password: **super** (if not changed during set-up)
   – Press **OK** to register the entries and open the Fieldgate Web Server

4 The Fieldgate entry page appears in the browser.

   – You are registered with the rights associated with your user name.

5.4.5 Connect via GPRS to Fieldgate

In order to connect your Internet Browser to the Fieldgate via GPRS, the provider must assign it a public IP address.

1 Open your Internet Browser, enter the Fieldgate domain name: http://**<hostname>** or **<IP address>** then press **Enter**.

2 The **Connect to** dialog appears:

   – Enter the User Name: **super** (if not changed during set-up)
   – Enter the Password: **super** (if not changed during set-up)
   – Press **OK** to register the entries and open the Fieldgate Web Server

3 The Fieldgate entry page appears in the browser.

   – You are registered with the rights associated with your user name.

5.5 Miscellaneous server settings

The **Network** menu contains two additional server setups that can be configured as required.

5.5.1 Time Server Setup

Fieldgate can automatically synchronise its time on every new start with the aid of a time server. An Internet connection or a time server in the local network is required for this. Endress+Hauser has its own time server, IP address= 62.154.220.81, which we recommend that you use. If you have any questions, please contact your network administrator.

Procedure

1 If not already active, press **Switch to Administrator Mode => Settings => Network**
– Scroll down to reveal the **Time Server Setup** page.
– Enter your settings and confirm with "**Send**".



2 A manual time setting can be entered as follows:
– If Fieldgate is scanning, switch it off temporarily as described in chap. 6.3.4
– Set **Protocol** to the option "manual"
– Enter the time stamp in the field provided, see also the table below
– Confirm the setting with "**Send**"

Time server setup

Parameter	Description
Time Server	Enter the IP address of the time server here.
Protocol	Set the protocol used by the time server here: – manual: Manual time setting.... timing is restarted with settings entered in "manual Timestamp" The time server operator can tell you the protocol the server uses.
Periodic Fetch	Enter the time interval after which the internal clock is to be resynchronised with the time server ■ Note: every synchorization causes a data transfer of several kBytes which is debited from your SIM card or GPRS account.
Time Zone Setting ...	If appropriate, enter the time zone for which the http service is valid – Enter the English name of the city the Windows Time Zone list nearest your location – The list is opened by Settings => Control Panel => Time and Date => Time Zone
Time Offset	If appropriate, enter an offset from UTC time here
Date/Time format	Select the date and time format to be used in the Web pages from the drop-down menu
Manual Timestamp	If no time server is available in the LAN (Protocol = manual), set the time manually here. – Format: dd.mm.yyyy hh:mi:ss – If the Fieldgate is switched off, the manually set time is lost.

5.5.2 Miscellaneous Server Setup

This setup is required if Fieldgate accesses Internet via a proxy server.

Procedure

1 If not already active, press **Switch to Administrator Mode => Settings => Network**
– Scroll down to reveal the **Miscellaneous Server Setup** page.
– Enter your settings and confirm with "**Send**".



Miscellaneous server setup

Parameter	Description
Proxy Server	Enter IP address of proxy server
Port Number proxy Server	Enter port number of proxy server (8080 is standard = http:\\)
Proxy Server Username	If the proxy server demands authentification, enter the user name here
Proxy Server Password	If the proxy server demands authentification, enter the password here
Port Number Web Server	Enter port number of Fieldgate's embedded web server (80 is standard)
Port Number Pass-through HART	Enter the port number via which you can configure the connected devices per Telnet. – The default value = 3222 should be kept unless this is blocked by the firewall.

5.6 Message Settings

The **Message** page allows you to configure e-mails, messages for the Field Information Server and SMSs to be sent on an event or alarm.

5.6.1 Common Message Settings

1 If not already active, press **Switch to Administrator Mode => Settings => Message**
– Scroll down to reveal the **Common Message Settings** page.
– Enter your settings and confirm with **Send**.



Common Message Settings

Parameter	Description
Periodic Measurement Messages	Select period for sending measurement messages from dropdown menu.
Remind pre-Boot Limit Alarms	Check this box to stop the Fieldgate sending measurement mails when it is restarted after being powered down.
Message assigned IP Address	Check this box to send the assigned IP address of the DHCP server as a information to the alarm receiver.
Additional Text in Limit Messages	Optional text that is sent with a limit message.
Data Logging Email on (Visible only when DAT module installed in Fieldgate)	Check the box to send an e-mail when: – Periodic measurement mail. – Log buffer full. – Device event.

5.6.2 Mail Setup

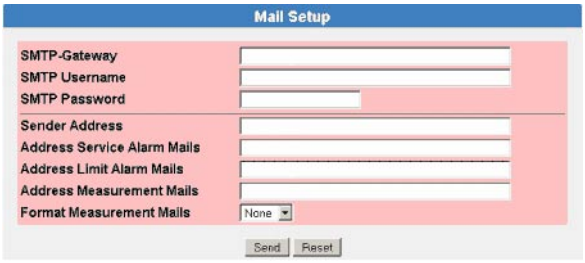
Configure the "Mail Setup" settings in order to send emails.

NOTICE **NOTE!**

- Fieldgate only supports the "Simple Mail Transfer Protocol" (SMTP) to send emails.
- The method SMTPS for secure communication in e-mail transport via SMTP over SSL/TLS is not supported by Fieldgate.
- Please consider when selecting the e-mail provider that the SMTP protocol is supported. Encryption /authentication via SMTPS (SSL/TLS) is not supported by Fieldgate.

Procedure

1 If not already active, press **Switch to Administrator Mode => Settings => Message**
– Scroll down to reveal the **Mail Setup** page.
– Enter your settings and confirm with **Send**.



Mail setup

Parameter	Description
SMTP Gateway	Enter the IP address or URL of your e-mail server here. – Note: if no SMTP server is entered, Fieldgate will try to send the e-mail directly to the server use by the receiver. In this case, the e-mails are mostly classified as spam.
SMTP User Name	If authentication is required for the specified SMTP Gateway, enter the user name here: – Leave blank if no authentication is requested or no SMTP Gateway is used.
SMTP Password	If authentication is required for the specified SMTP Gateway, enter the password here: – Leave blank if no authentication is requested or no SMTP Gateway is used.
Sender Address	Enter the sender address of the Fieldgate here, e.g. fieldgate@company.co.uk. – With some providers, the e-mail address of the account holder must be specified as the sender address. No mails will be accepted from other sender addresses. – Where the sender address is freely selectable, choose a serious address to avoid trouble with spam filters.
Address Service Alarm Mails	Enter the recipient of the service alarm mails here, e.g. name@company.co.uk..
Address Limit Alarm Mails	Enter the recipient of the limit alarm mails here, e.g. name@company.co.uk. – Alarm notifications are sent in accordance with the settings made in the "Message on Limit" column of the device details page, see chap. 6.4.
Address Measurement Mails	Enter the recipient of the measurement mails here, e.g. name@company.co.uk. – Measurement notifications are sent in accordance with the settings of the parameters below.
Periodic Measurement Mails	Select period for sending mails from dropdown menu.
Format Measurement Mails	Select format for sending mails from dropdown menu: – XML is required if the e-mails are to evaluated by the Fieldgate Data Access software and/or SupplyCare.

5.6.3 Field Information Server (FIS) Setup

Use the Field Information Server (FIS) to send messages via hypertext transfer protocol (http).

The following information can be exchanged between the FIS and Fieldgate:

- **Periodic Measured Value Transmission**
  at the transmission intervals set in Periodic Measurement Messages, see chap. 5.6.1.
- **Device Configuration**
  Fieldgate sends its configuration to the FIS. If required, FIS can send back a new configuration.
- **Time of Day**
  is synchronized every time Fieldgate establishes contact with the FIS. The time zone can be set in Time Server Setup, see chap. 5.5.1.
- **Firmware Update**
  If required, the FIS can start a Fieldgate firmware update.

Procedure

1 If not already active, press **Switch to Administrator Mode => Settings => Message**
– Scroll down to reveal the **Mail Setup** page.
– Enter your settings and confirm with **Send**.



Field Information Server (FIS) Setup

Parameter	Description
Enable FIS	Check this box to activate the FIS functionality of the Fieldgate.
FIS URL	Enter the IP address or the URL of the FIS.
FIS Phonenumber	The field appears only for the GSM version of the Fieldgate: – Enter the telephone number of the FIS. – If the Fieldgate is contacted via this number, it immediately generates a measured value message for the FIS. The call is not answered.
Send Alarm Messages to FIS	Check this box to send alarm messages to the FIS: – Note: the FIS can forward alarm messages to other groups of receivers. Contact your FIS administrator to set them up.
Send Limit Messages to FIS	Check this box to send limit messages to the FIS: – Note: the FIS can forward alarm messages to other groups of receivers. Contact your FIS administrator to set them up.

5.6.4 SMS Setup

The Fieldgate with GSM modem is also able to send SMS mails on events or alarms.

Procedure

1 If not already active, press **Switch to Administrator Mode => Settings => Mail**
– Scroll down the menu to reveal the **SMS Setup** page.
– Enter your settings and confirm with "**Send**".



SMS setup

Parameter	Description
Enable SMS send	Check the box to enable the SMS function.
SMS Phonenumber 1	Enter the phone number of a first person to be contacted: – International telephone number are to be entered as e.g. +33 .....
SMS Phonenumber 2	Enter the phone number of a second person to be contacted: – International telephone number are to be entered as e.g. +33 .....

6 Configuring the Fieldgate

This chapter describes the user interface of the Fieldgate Web server as well as the setting up of ranges, alarms etc. within it.

NOTICE **NOTE!**
- You cannot change device parameters with the Fieldgate Web Server. This requires the help of a configuration tool, e.g. FieldCare, that uses Fieldgate as a pass-through interface

6.1 Logging on

Once the IP address or domain name has been entered in your web browser and the connection made, you are prompted to enter a user name and the password.

NOTICE **NOTE!**
- All Fieldgate FXA520 passwords are case sensitive and are limited to 8 characters without spaces



Default user roles and passwords

Table 6-1 lists the user roles with passwords that are currently available in the Fieldgate. Security Setup, chap. 6.3.2, provides more information on setting up passwords etc.

Role	Default user name	Default password	Rights
Administrator	super	super	Can access Fieldgate in both User and Administrator Mode: ■ Can configure network settings ■ Can set all passwords and user IDs ■ Can change visualisation page settings ■ Can set events, alarms, e-mail and time parameters ■ Can configure HART settings ■ Can set special page options ■ Can reset Fieldgate to factory settings
User	eh	eh	Can access Fieldgate in User Mode only: ■ Can change user password ■ Can view settings, information, devices etc.

Table 6-1: Fieldgate user roles and rights

NOTICE **NOTE!**
- To avoid unauthorized access to the Fieldgate, we recommend that the user names and passwords are changed during commissioning.

6.1.1 Disconnecting

To exit the web browser, simply close the internet browser.

6.2 User interface

Once logged on, depending upon the devices connected, a display such the following might appear in the web browser. If you are connecting up for the first time, it is also possible that only the Navigation bar appears, see chap. 6.2.2, because the Fieldgate still needs to be set up to enable communication with the HART devices in the network.

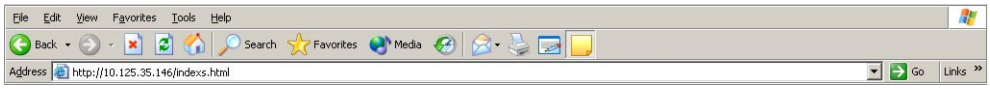


Approx. 1 second update time is required for every measured value in the overview. For a large network, this means that the build up of the overview can be slow.

The user interface consists of the following elements:
- Menu bar (belongs to the web browser installed)
- Navigation bar
- Settings pages

6.2.1 Menu bar

Example of how the menu bar is displayed in MS Internet Explorer



The IP address of the Fieldgate is entered in the address field of the Internet web browser.

NOTICE

NOTE!
- The menu bar contains the standard functions of the installed web browser. More detailed information on the individual menus is provided in the documentation on the web browser.
- It is possible that additional or modified menu bars appear when Fieldgate is operating with plug-ins from other applications.

6.2.2 Navigation bar

The navigation bar offers the following functions in **User** or **Administrator** mode.

In User Mode:



Function	Description
AutoRefresh	Automatically updates the display every 120 sec by default ■ Click on AutoRefresh to activate function – The default value can be changed in the Address line of the Internet explorer: scan&refresh = xxx (s) ■ Click on AutoRefresh OFF to deactivate function
Refresh	Click to manually update the current display
Endress+Hauser	Click to open the Endress+Hauser website
Overview	Displays the values you have selected for monitoring and visualisation
Switch to Administrator Mode	Switches the navigation to Administrator Mode ■ You must enter user name and password if did not log on with administrator rights
Settings	Displays information on Fieldbus location and hardware ■ Location: shows Fieldbus location information ■ User: allows you to change your password ■ Input: allows the device web settings to be viewed ■ Info: displays various Fieldgate logs

Table 6-2: Functions available in User mode

In Administrator Mode:



Function	Description
AutoRefresh	No function in Administrative Mode
Refresh	Click to manually update the current display
Endress+Hauser	Click to open the Endress+Hauser website
Overview	Displays the values you have selected for monitoring and visualisation
Switch to User Mode	Switches the navigation to User Mode:
Settings	Displays information on Fieldgate location and hardware ■ Location: shows Fieldgate location information ■ User: allows user access rights to be configured ■ Network: allows network access to be configured ■ Mail: allows e-mails to be configured ■ Scan: allows scanning of devices to be configured ■ Input: allows the device web settings to be configured ■ Info: displays various Fieldgate logs

Table 6-3: Functions available in Administrator Mode

6.2.3 Settings pages

Depending upon whether User or Administrator Mode is selected, clicking on Settings reveals the Fieldgate information or configuration pages. A change from one view to another is made by clicking on:

Switch to Administrator Mode/Switch to User Mode

as appropriate and when prompted, by entering the corresponding password, see chap. 6.1.

User Mode

In User Mode, **Settings** provides read-only views of the Fieldgate location, input settings and information logs, which are displayed by pressing the appropriate menu. The **Password** menu allows you to change your user password, see chap. 6.3.2.



Administrator Mode

In Administrator Mode, **Settings** allows you to change the configuration of the Fieldgate and to view various information logs. A full description of the various functions are to be found in the following sections.



6.3 Settings menu

Settings contains various menus that can be used to set up the Fieldgate Web server.

6.3.1 Fieldgate location

Fieldgate location provides you with the option of entering additional information on the location and characteristics of the Fieldgate. These data are entered in the Administrator Mode but have no effect on the functionality of the Fieldgate.

1 If not already selected, press **Switch to Administrator Mode** and log in as administrator.

2 Press **Settings (=> Location),** the Fieldgate location screens appear:



3 Enter the parameters required – their significance is described in Table 6-4.

4 Press **"Send"** to download the parameters to the Fieldgate.

Fieldgate location parameters

Parameter	Description
Fieldgate Identification	Enter the name of the Fieldgate (e.g. FXA520-...): This is also displayed on the overview page, in the header of your browser, in the XML file and the header of the e-mail. **Note!** The following characters are permitted for the Fieldgate identification (= name of Fieldgate). – Letters "**a** " ... "**z** " and "**A** " ... "**Z** " (without taking case into account) – Numbers "**0** " ... "**9** " – Special characters e.g "**.** " (= period) and "**–** " (= minus), but not as the first character All other characters are **not** permitted. These include German umlauts, symbols such as "&" etc.
Fieldgate Location	Enter any additional information on the location of the Fieldgate here. These data have no effect on the functionality and solely serve to provide additional information.
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-4: Fieldgate location parameters

6.3.2 User

Access rights to the Fieldgate are managed with the **User** function. As the administrator, you can create and manage up to five user accounts here.

NOTICE **NOTE!**

- To avoid unauthorised access to the Fieldgate setup parameters, the default passwords should always be changed from the default settings!

Procedure

1 If not already selected, press **Switch to Administrator Mode** and log in as administrator.

2 Press **Settings => User**: the **User setup** dialog appears:



3 Enter the parameters you require – their significance is described in the table below:

4 Press **Send** to download the user parameters to the Fieldgate.

User Setup parameters

Parameter	Description
Username	Enter a user name – max. 8 characters, no umlauts, no special characters
Password	Enter a password for user name – max. 8 characters, no umlauts, no special characters
Allow HART operation	Check if the user is allowed access to the connected HART devices – Activate when creating a user account for an external application, e.g. FieldCare
Allow Fieldgate Administration	Check if the user is allowed change the Fieldgate configuration – Deactivate if the user is allowed to view parameters only
Read-only access	Check if the Fieldgate is to be accessed without log-in (applies to all users)
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-5: Significance of User Setup parameters

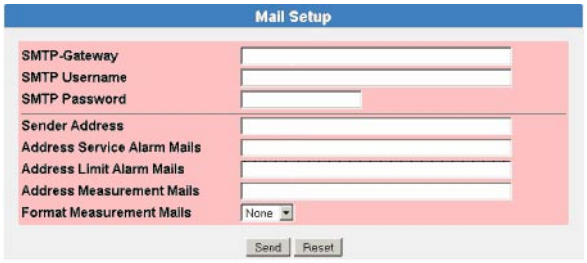
6.3.3 Network and Messages

Network Setup

Network and **Messages** allow you to set up the communication parameters of your Fieldgate as described in the following sections:

- Chapter 5.2: Fieldgate with Ethernet
- Chapter 5.3: Fieldgate with analog modem
- Chapter 5.4: Fieldgate with GSM modem
- Chapter 5.5: Miscellaneous communication settings
- Chapter 5.6: Mail settings





The functions offered are tailored to the Fieldgate version. Table 6-6 gives an overview together with the exact location of the setup description:

Setup Function	Fieldgate/Ethernet	Fieldgate/Analog	Fieldgate/GSM	Chapter
Ethernet	x			5.2, 5.2.1, 5.2.2
Modem		x		5.3, 5.3.1, 5.3.2
Dialup		x	x	5.3, 5.3.1, 5.3.2
GSM			x	5.4, 5.4.1, 5.4.2
GRPS			x	5.4, 5.4.1, 5.4.2
Time Server	x	x	x	5.5, 5.5.1
Dynamic DNS	x	x	x	5.4.2
Miscellaneous Server	x	x	x	5.5.2
Message	x	x	x	5.6.1
SMS			x	5.6.2
Message Text	x	x	x	5.6.3

Table 6-6: Setup pages as a function of Fieldgate communication interface

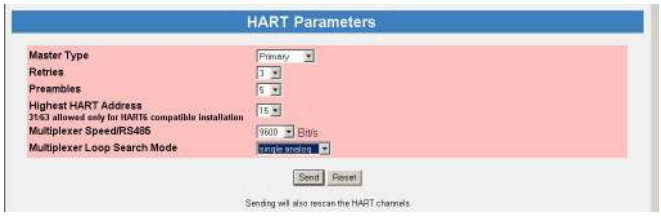
6.3.4 Scan

Scan sets up the HART communication parameters and the conditions for starting a scan of the devices connected to the Fieldgate.

HART Parameters

1 If not already selected, press **Switch to Administrator Mode** and log in as administrator.

2 Press **Settings => Scan**: the Scan Control, HART parameters dialog appears:



3 Enter the parameters you require – their significance is described in the table below:
- The default parameters can usually be used unchanged
- Press **"Send"** to download the user parameters to the Fieldgate.

Parameter	Description
Master Type	Select HART master type, normally Primary ■ Set to Secondary if Fieldgate is operating with a PLC using HART communication
Retries	No. of tries to establish HART communication before a communication error is signalled
Preambles	No. of preambles used to establish HART communication
Highest HART Address	For HART multidrop, device address range scanned – Values above 15 are only applicable to HART Version 6 – Do not set unneccesarily high values – this results in increased scan times
Multiplexer speed/ RS485	Baudrate for RS-485 communication: all devices must operate at the same rate
Multiplexer loop search mode	Address range to be scanned per multiplexer channel, normally "single analog" – Use Single unknown only if a multidrop bus is connected to the multiplexer channel

Device Scan Control

4 Scroll down to the Device Scan Control parameters

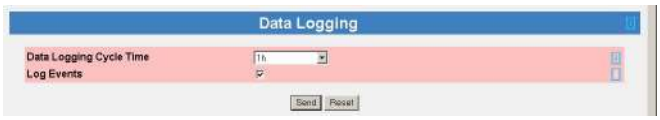


5 Enter the parameters you require – their significance is described in the table below:
- Press **"Send"** to download the user parameters to the Fieldgate.

Parameter	Description
Device Scan Cycle Time	Set a scan time from "continuous" to "1 day" from the drop-down menu – Use e-mail/log cycle if a scan is to be made on e-mail or logging events only
Device Power Up Time	Set a value determined by the slowest device between 2 s and 5 min, default 20 s, from the drop-down menu, after which a stable measured value can be scanned
Power Down ...	Check this box if the relay is used to switch off the power to the devices between scans – If the box is not checked, the relay acts as an alarm relay for the Fieldgate FXA520

Data Logging

6 If your Fieldgate has a DAT module installed and you wish to access the data it contains, see Chapter 8.2, scroll down to the Data Logging dialog



7 Enter the parameters you require – their significance is described in the table below:
– Press **"Send"** to download the user parameters to the Fieldgate.

Parameter	Description
Data Logging Cycle Time	Sets the cycle time for storage of data to the history log (DAT module) – None: no DAT present – Use Scan Cycle: data saved on every scan – 1h to 7 d: data saved after elapse of selected time interval – each hour/00:00 etc: data saved at specified time(s)
Log Events	Check the box to save data on a Fieldgate event - a scan is made prior to saving

NOTICE **NOTE!**
- Fieldgate can log only a limited number of records, see chap. 8.2.

6.3.5 Input

Input allows you to configure the overview page, i.e. to:

- select the measured values to be displayed from HART devices
- set warning and alarm limits on the displayed values
- scale and assign engineering units to connected 4-20 mA devices
- assign explanatory text to connected binary devices
- set up the e-mail response to sensor errors

The various functions are described in chap. 6.4, Overview

6.3.6 Special

Special opens a series of dialogues that relate to service issues.

Get Configuration File

The Get Configuration File dialog allows a configuration file to be downloaded from the Fieldgate.

1 If not already selected, press **Switch to Administrator Mode** and log in as administrator.

2 Press **Settings** and then **Special**: the Get Configuration File dialog appears :



3 Select the desired file by clicking on the box

4 After a click on "**Send**" the corresponding configuration file is downloaded.

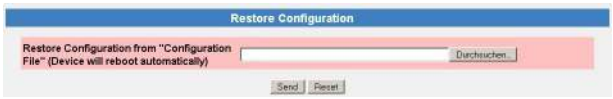
A direct download can be using a browser via the following addresses:
- <IP Address Fieldgate>/config.320 bzw.
- <IP Address Fieldgate>/config.520

A direct download always contains both user and sensor settings.

Parameter	Description
Export User Settings	Click on the check box to download all configuration data that concern the Fieldgate and have been set in the Settings menu
Export Sensor Settings	Click on the check box to download all configuration data that are to be found in the Detail view of a senosr, e.g. alarm limits, tag names, linearization table

Restore Configuration

The Restore Configuration dialog allows a configuration file to be reloaded into the Fieldgate.



1 Press **Browse** and search for the configuration file, .cgi (Name must start with "520")
– If restore.cgi is entered manually in the browser, the default page is uploaded (Overview Page with User Rights)

2 After a click on "**Send**" the corresponding configuration file is uploaded.

Clearing Logs

Scrolling down the reveals the following additional dialogs:

Dialog	Description
Miscellaneous Settings	Actives/Deactivates the hardware lock, see Chapter 6.5
Firmware update	Downloads the latest firmware to the Fieldgate via Internet, see Chapter 9.4
Clear Log Information	Click the box and press **Send** to reset the selected log
System Restart	Click the box and press **Send** to restart the Fieldgate – all pending parameter changes are written to the Fieldgate, which is then restarted

6.3.7 Info

Info allows you to view the Hardware Configuration and various logs provided by the Fieldgate. A full description is to be found in chap. 7.3.4



Hardware Configuration	
General	FXA520-AA4A
Hardware Versions	V1.00
Firmware Version	FXA520-01.06.00-0085-20081202
OS Version	3.19
Software Checksum	System: 0xb51c, DD: 0xdecc
Serial Number	950033010A0
IMEI Number	358760010010095
Total Uptime	6d 01h 47m 28s
Current Uptime	04h 27m 28s
Reboot Counter	26
Available Memory	117410
TCP Bytes Received [kByte]	15
TCP Bytes Sent [kByte]	75
Max. Daily Traffic via GPRS [kByte]	50
WAN-IP Address	
HART Packets Received	24993
HART Checksum Errors	0
HART Gap Errors	0
HART Packets Lost	82
HART Packets Lost Finally	12

- Modem Log: records all transactions with the modem
- System Log: records all Fieldgate events, e.g. e-mails sent, time fetched, sensor data changed
- Error Log: records all device errors
- HART Log: records all events concerning the connection of HART devices
- HART Server Log: records all events concerning the HART server

The logs can be cleared by clicking the appropriate box in the **Clear Log Information** dialog and pressing **Send**, see chap. 6.3.6, Special.

6.4 Overview

The Overview page is displayed after the user logs into the Fieldgate or can be called by clicking on **Overview** in the navigation bar. It contains information about the devices connected to the Fieldgate and can be configured according to user specifications in Administrator mode. The configuration is made in various setup dialogs which are described in this chapter as follows:

- Chapter 6.4.1: Opening the setup dialogues
- Chapter 6.4.2: Analog input
- Chapter 6.4.3: Binary input
- Chapter 6.4.4: Description/Range/Limit/Alarm
- Chapter 6.4.5: Sensor error

NOTICE **NOTE!**

- You cannot change device parameters with the Fieldgate Web Server. This requires the help of a configuration tool, e.g. FieldCare, that uses Fieldgate as a pass-through interface
- Tags can be set for the digital and analog inputs in the appropriate setup and for Fieldgate "board temperature" and "5V supply" in a separate Tag Setup dialog. The tags for HART devices are read directly from the devices.

6.4.1 Opening the setup dialogs

The setup dialogue can be opened by clicking on the device tag in the Overview page when in Administrator mode or through the **Settings** menu as follows:

Procedure

1 If not already selected, press **"Switch to Administrator Mode"** and log in as administrator.

2 Press **Settings,** then **Input**: the Input dialog appears:
- FXA520 Inputs and Internal Sensors concern the direct connections to Fieldgate
- FXN520 Inputs concern HART multidrop devices
- FXZ520 Inputs concern the analog or digital signals connected via the FXA520
- HART Devices concern all HART devices detected by the Fieldgate including those connected by multidrop or multiplexer



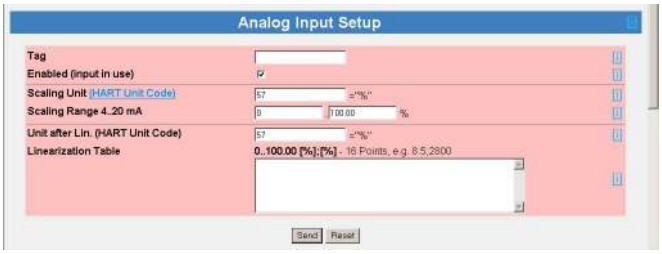
3 Now click on the device tag you wish to configure, the Device Setup dialog appears (these dialogues can also be opened by clicking on the device tag in the Overview page):



4 Now configure the devices as described in chap. 6.4.2 to chap. 6.4.5.
- Depending upon device type several setups dialogs as well as other information dialogs may appear

6.4.2 Analog input setup

Analog inputs (FXA520 or FXZ520 Analog) can be assigned a tag, engineering units and a linearization table. The significance of the parameters is described in Table 6-7.



Analog input setup

Parameter	Description
Tag	Enter the Device Tag that is to appear in the overview page
Enabled	Check this box if this input is to appear on the overview page
Scaling Unit	Enter the HART unit code for the scaling unit – Press HART Unit Code to reveal a list of units and codes
Scaling Range	Enter the range end values in engineering units corresponding to the 4 mA and 20 mA signal
Units After Linearization	Enter the engineering units in plain text to be used after linearization
Linearization Table	Enter a linearization table with maximum 16 value pairs in the form xx.xx;yy.yy – The first and last values should correspond to the lower and upper range value – The X values must increase monotonically: if an X value occurs twice in the list, the second X value in the list is ignored – The value pairs can be entered in any order. They are sorted by the Fieldgate after sending – The linearized output value is shown as a secondary value for the device in the Overview page.
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-7: Analog input parameters

Linearization

Fig. 6-1 shows an example for a linearization of a horizontal cylindrical tank, of diameter 1.6 m to a volume scaled to 0% to 100%. The nine linearization points are entered in the form xx.xx;yy.yy as shown in the table, pressing Enter after every line.

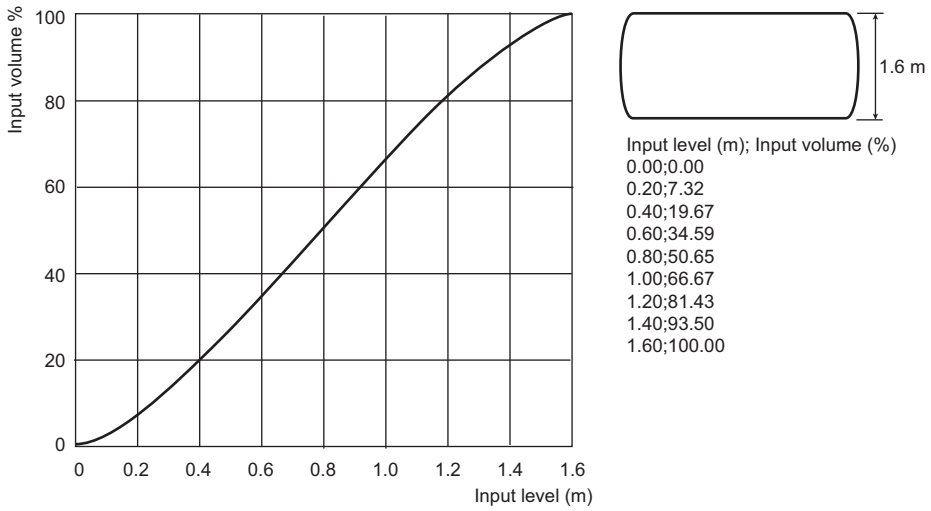
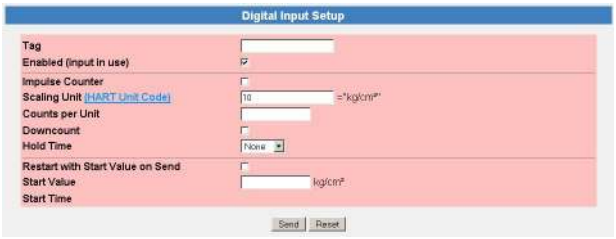


Fig. 6-1: Example of linearization of a horizontal cylindrical tank.

6.4.3 Digital input setup

Digital inputs (FXA520 Digital) can be assigned a tag, be enabled in the overview window and be set up as a pulse counter. The significance of the parameters is described in Table 6-8.



Digital input setup

Parameter	Description
Tag	Enter the Device Tag that is to appear in the overview page
Enabled	Check this box if this input is to appear on the overview page
Impulse Counter	Check this box if the input is to act as a pulse counter
Scaling Unit	Enter the HART unit code for the scaling unit – Press HART Unit Code to reveal a list of units and codes
Counts per Unit	Enter the number of counts that correspond to 1 scaling unit – Maximum resolution is 1/1000
Downcount	Check this box if the counter is to count downwards
Hold Time	Time at the start of the loop scan, in which any pulses are suppressed – Only enter a hold time if switching signals from relays have to be de-bounced
Restart with Start Value on Send	Check this box then press Send to restart the counter – The count starts at 0 or the start value, depending upon configuration – The tick disappears after the counter has been restarted
Start Value	Enter the value in scaling units from which the downcount is started – Maximum value is 4294967296
Start Time	Read-only time stamp for start of count (with Send pressed)
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-8: Digital input parameters

Pulse counter

The pulse counter is 32 bit with a maximum value of 4 294 967 296. The maximum resolution of the counter is 0.001, the maximum counting frequency is 12 kHz.

The counter automatically rolls over to zero for upwards counting when the maximum permissible value, 4 294 967 296 is reached. On down count, it resets to the start value when zero is reached.

When the counter overflows, a sensor error is sent by mail and/or SMS according to the "Alarm Mail on Sensor Error" function and the "Device Status" is set to "ERROR". The counter is then reset and starts again while the displayed value is reset to the specified start value. The "Device Status" shows "ERROR" until the counter is re-initialised by pressing "Send". Multiple overruns are not reported. This factory setting cannot be deactivated.

NOTICE **NOTE!**

- The current count value is periodically saved every 10 minutes in the non-volatile memory. If the system is restarted between two save periods, e.g. due to a power outage etc., totalised count values can be lost in this period.

6.4.4 Description/Range/Limit/Alarm

Depending on device type, up to four measured values can be configured within the Web server. The significance of the parameters is described in Tables 6-9 and 6-10.



Limit values

Four limit values can be configured in the Web server. Fieldgate tracks the status changes "LIMIT" – the measured value moves out of limit and "RESET" – the measured value moves back into limit. Table 6-9 indicates when the status changes "LIMIT" and "RESET" occur. The Fieldgate can be configured to send a limit alarm e-mail on either or both conditions, see chap. 5.6.1

	to LL	**to L**	**to OK**	**to H**	**to HH**
from LL	–	RESET	RESET*	LIMIT	LIMIT
from L	LIMIT	–	RESET	LIMIT	LIMIT
from OK	LIMIT	LIMIT	–	LIMIT	LIMIT
from H	LIMIT	LIMIT	RESET	–	LIMIT
from HH	LIMIT	LIMIT	RESET*	RESET	–
*RESET made only if H/L not used or change to OK occurs within 1 cycle					

Table 6-9: Alarm status table for e-mail messaging

Hysteresis

The hysteresis function allows a band to be placed below the HI or HI HI limit or above the LO or LO LO limit which delays the status change to RESET after a a limit has been violated. This is used to stop the limits from triggering for example, when the surface of the liquid in the tank is turbulent. Fig. 6-2 shows the effect for a hysteresis of 5% on a HI limit of 80% and a low limit of 15%

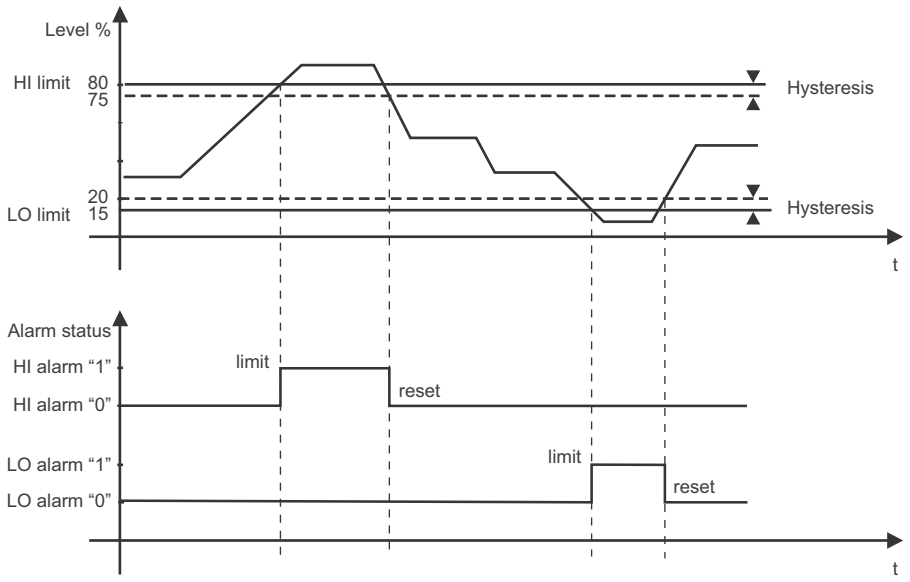


Fig. 6-2: Example of level limits and hysteresis

Overview setup parameters

Parameter	Description
Show in Overview	For HART devices, primary measured value is always in the overview ■ Check the box to show the secondary (SV), tertiary (TV) and quaternary (QV) values ■ Other inputs are enabled in the dialogs Analog Input Setup and Digital Input Setup
Description	2x 20 characters for user description of measured value
Current Value	Read only parameter showing current measured value with date and time
Limit Status	Read only parameter showing the limit status with date and time – OK: device is operating correctly – HH, H, L, LL: value has exceeded or dropped below associated limit value Note: The limit status applies to the limit values set in the web server. It has nothing to do with any limits set within the device itself
min. Value **max. Value**	Sets min. and max. range values in the web server.
Limit settings	Sets four limits in the web server for the parameter concerned: – HH: High high limit, an alarm is set when measured value moves above the high high limit – H: High limit, an alarm is set when the measured value moves above the high limit – L: Low alarm, an alarm is set when the measured value moves below the low limit – LL: Low low alarm, an alarm is set when the measured value moves below the low low limit The status is flagged in the Limit Status column. If no value is entered, the limit is disabled.
Hysteresis limit **Gradient limit**	Sets a hysteresis band in percent of set range and a rate of change limit in absolute units – The hysteresis is set below HH and H limits and above L and LL limits. When a measured value violates a limit, an alarm is immediately set. When it returns to within limits, the alarm is reset only when the value leaves the hysteresis band. – An alarm is sent when the rate of change of the measured value (in engineering units) is greater than or equal to the set value
Mail on ...	Check the box to send an e-mail ■ LIMIT: alarm is sent when the limit is violated ■ RESET: alarm is sent when the value returns within limits, see table 6-9
Show Switch...	For digital inputs, sets value, below /above which the text selected from the drop-down menu is displayed. – Switch level: enter limit level, e.g. 0, 1 – Switch status: select associated text
E-mail all Device Parameters...	Check the box to send an e-mail with all device parameters, see chap. 5.6.1.
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-10: Device detail parameters for overview

6.4.5 Sensor error

A sensor error occurs when the output signal generated by the measuring device lies outside the normal operating range of 4 mA to 20 mA. The Web server responds to this condition by displaying ERROR or WARNING as device status. An e-mail is sent only when the device is in ERROR condition and the Alarm Mail box in the Sensor Error dialog has been checked, see Table 6-11.

Output signal	**≤3.6 mA or ≥21 mA (NAMUR limits)**	**3.6 mA to 3.8 mA/21.5 mA to 21 mA**
Device Status	ERROR	WARNING
Response	Alarm e-mail sent if box checked	No e-mail sent

Table 6-11: Behaviour of device status and limit status for measured values outside range limits

The sensor error setup dialog for a HART device is shown below. The significance of the parameters is described in Table 6-12. For analog and binary devices, only the first line appears.



Sensor error setup

Parameter	**Description**
Alarm mail/SMS on sensor error	Click to activate corresponding e-mail or SMS – For sensor errors, see Table 6-8 for further explanation
Use CMD48 for extended device status	Click the box to read the Extended Device Status (HART Command 48, every 10th update time) – The Extended Device Status is a 0 to 10 byte data field that contains coded information describing the device status. – It is not standardized and varies from device to device, see device manual.
Extended device status	Read-only value showing Extended Device Status – OK - device OK, WARN - device warning, ERROR - device error
Error bitmask CMD48 (hex)	Bit mask that corresponds to the error you wish to detect, see device manual – Used only if CMD48 is enabled
Warning bitmask CMD48 (hex)	Bit mask that corresponds to the warning you wish to detect, see device manual – Used only if CMD48 is enabled
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 6-12: Sensor error parameters

6.5 Hardware lock

After Fieldgate has been commissioned, a local hardware lock can be set that prevents any modifications to Fieldgate settings via Internet, GSM or Modem.

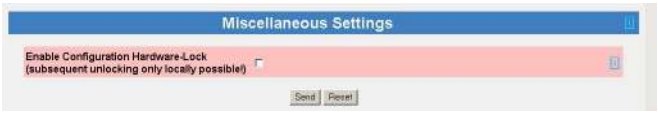
6.5.1 Activating the hardware lock

NOTICE **NOTE!**
- You require local access to the Fieldgate to deactivate the lock!

Procedure

1 If not already selected, press **"Switch to Administrator Mode"** and log in as administrator.

2 Press **Settings => Special,** then scroll down to **Miscellaneous Settings**:



3 Check the box **Enable Configuration Hardware Lock**, then press **Send**
– The hardware lock is now enabled

6.5.2 Deactivating the hardware lock

NOTICE **NOTE!**
- The service interface is not affected by the hardware lock and can always be used to access the Fieldgate!
- The lock cannot be deactivated when the Fieldgate is booting - this causes a device reset.

The lock can be deactivated temporarily during normal operation by pressing the reset button for one second, see chap. 9.2. This allows access for five minutes, after which the lock is enabled again. Pressing the reset button for 5 seconds enables the lock immediately.

The lock can be deactivated permanently by first temporarily unlocking it, then disabling it by unchecking the **Enable Configuration Hardware Lock** box and pressing **Send**. Alternatively this can be done via the Service Interface.

7 Viewing Information (User Mode)

The information provided by the devices and Fieldgate is viewed in User Mode.

7.1 Logging on

Procedure

1 Enter the Fieldgate IP address or domain name in your web browser
– After connection has been made, you will be asked to log on



2 Enter your user name and the password

3 Fieldgate opens in User Mode and displays the Overview page

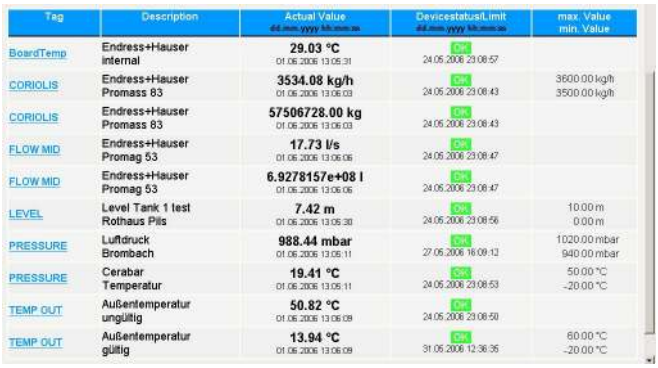


4 You can now view the information you require by pressing the appropriate menu. Details are to be found in the chapters that follow.

7.2 Overview

7.2.1 Device overview

Press **Overview** to view the measured values, device status and limit status of the variables you selected in the setup pages. The parameters are explained in Table 7-1 below.



Tag	Description	Actual Value	Devicestatus/Limit	max. Value min. Value
BoardTemp	Endress+Hauser internal	29.03 °C 01.06.2006 13:05:31	OK 24.05.2006 23:08:57	
CORIOLIS	Endress+Hauser Promass 83	3534.08 kg/h 01.06.2006 13:06:03	OK 24.05.2006 23:08:43	3600.00 kg/h 3500.00 kg/h
CORIOLIS	Endress+Hauser Promass 83	57506728.00 kg 01.06.2006 13:06:03	OK 24.05.2006 23:08:43	
FLOW MID	Endress+Hauser Promag 53	17.73 l/s 01.06.2006 13:06:06	OK 24.05.2006 23:08:47	
FLOW MID	Endress+Hauser Promag 53	6.9278157e+08 l 01.06.2006 13:06:06	OK 24.05.2006 23:08:47	
LEVEL	Level Tank 1 test Rothaus Pils	7.42 m 01.06.2006 13:05:30	OK 24.05.2006 23:08:56	10.00 m 0.00 m
PRESSURE	Luftdruck Brombach	988.44 mbar 01.06.2006 13:05:11	OK 27.05.2006 16:09:12	1020.00 mbar 940.00 mbar
PRESSURE	Cerabar Temperatur	19.41 °C 01.06.2006 13:05:11	OK 24.05.2006 23:08:53	50.00 °C -20.00 °C
TEMP OUT	Außentemperatur ungültig	50.82 °C 01.06.2006 13:06:09	OK 24.05.2006 23:08:50	
TEMP OUT	Außentemperatur gültig	13.94 °C 01.06.2006 13:06:09	OK 31.05.2006 12:36:35	60.00 °C -20.00 °C

Device overview

Parameter	Description
Tag	Tag read from HART device or analog/digital input setup page ■ Press the Tag to view the setup and device details
Description	Description read from setup page
Current Value	Current measured value together with time stamp of scan, if the time is set
Status	Current device or limit status together with time stamp of last status change – OK: device is operating correctly – WARNING: device is operating out of range – ERROR: device is operating out of range limits (Namur) – HH: High High limit violation – H: High limit violation – L: Low limit violation – LL: Low Low limit violation
Min Value/ Max Value	Range values read from setup pages

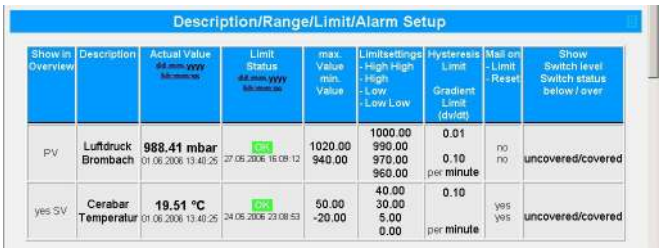
Table 7-1: Parameters in Overview of Selected Devices view page

7.2.2 Setup details

Setup details are accessed by pressing the **Tag** in the device overview. Exactly which details are presented depends upon the device type.

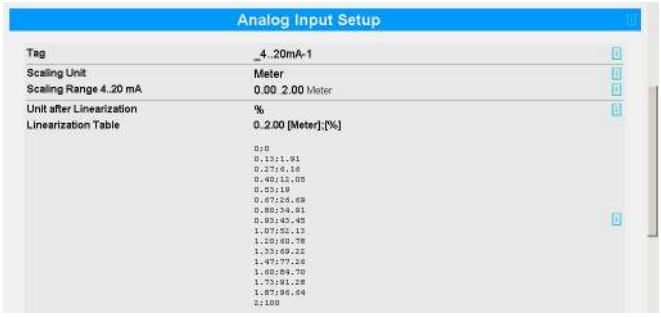
Overview setup

This dialog shows the current setup of the overview page. See table 6-10 , chap. 6.4.4 for details of the parameters.



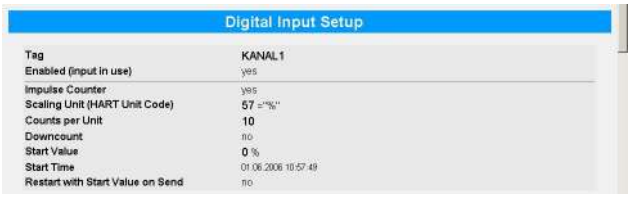
Analog input setup

This dialog shows the settings for the selected device. See table 6-7 , chap. 6.4.2 for details of the parameters.



Digital input setup

This dialog shows the settings for the selected device. See table 6-8 , chap. 6.4.3 for details of the parameters.



Sensor error setup

This dialog shows the settings for error e-mails and in the case of HART devices, the Extended Device Status settings. See table 6-12 , chap. 6.4.5 for details of the parameters.



Tag setup

This dialog shows the tag set for the selected Fieldgate internal sensor.



7.2.3 Device details

Device details are accessed by pressing the **Tag** in the device overview. Exactly which details are presented depends upon the device type.

Static data

This dialog shows the static data read from a HART device. Table 7-2 describes the parameters.

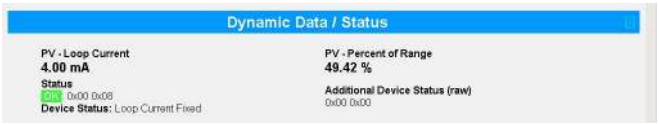


Parameter	Description
Tag	Tag set in device
Descriptor	User description set in device
Message	Additional user text description in device
Manufacturer	Manufacturer of the device
Device Type	Manufacturer's device designation
Device ID	Device serial number
Channel/Short ...	Left: Fieldgate channel number, right: HART address (= 10 for multiplexer)
Final Assembly ...	Manufacturer's device assembly code
Unique Identifier	Device identifier as per HART specifications, e.g. "11070fb7f9" – Positions 1+2 (11 = manufacturer, here Endress+Hauser) – Positions 3+4 (70 = device, Cerabar S) – Positions 5...10 (fb7f9 = serial number of the device, this is manufacturer-specific)
Date Code	Date of manufacture as per HART specifications
Static Data...	Time stamp showing when data was scanned from the device

Table 7-2: Static data parameters

Dynamic data/status

This dialog shows the dynamic data and status read from a HART device. Table 7-3 describes the parameters.



Parameter	Description
PV - Loop Current	4 - 20 mA current value set for device
PV - % of Range	Measured value as a percentage of the measuring range set in device
Status	Simple device status according to HART specification plus 2 bytes (hex) information – Error: "ERROR", Warning: "WARN", Normal function: "OK" 2 bytes hex status code plus plain text, e.g.: 0x00 0x08 – Device Status: Loop Current Fixed
Additional Device Status (raw)	Extended Device Status as hex code as read by Command 48, see chap. 6.4.5.

Table 7-3: Dynamic parameters and status

Revision levels

This dialog shows the revision levels read from a HART device. Table 7-4 describes the parameters.



Parameter	Description
Universal Command	HART protocol revision
Device	Revision of the device specific commands
Hardware	Hardware version of the device
Software	Software version of the device

Table 7-4: Revision levels

XML data

Press **XML Data** in the footer of the line to generate an XML file of all the data on the page, see chap. 8.1.



7.3 Settings

Press **Settings** to open the menus that allow viewing of general Fieldgate parameters

7.3.1 Location

Press **Location** to view the **Fieldgate location** page. The significance of the parameters is described in table 6-3 in chap. 6.3.1.



7.3.2 Password

Press **Password** to change your password. Fig. 7-15 shows the dialog, Table 7-5 explains the significance of the parameters. A maximum of 8 characters are allowed, with no special characters or umlauts.



Change password

Parameter	Description
User Name	Enter your user name, max. 8 characters
Password	Enter your current password, max. 8 characters
New Password	Enter your new password here, max. 8 characters
Retype New Password	Enter your new password again to confirm the change.
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 7-5: Significance of change password parameters

7.3.3 Input

Press **Input** to view the devices connected to the Fieldgate. Press the **Tag** to view the setup and device details. Fig 7-16 shows a typical dialog, more details are to be found in chap. 6.4 and chap. 7.2.



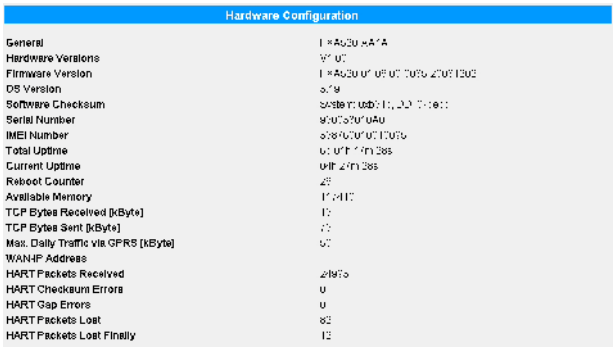
7.3.4 Info

Press **Info** to show the hardware configuration of the Fieldgate as well as the various logs provided by the Web server. Depending upon Fieldgate version, various logs can be viewed.

- Modem Log: records all transactions with the modem
- System Log: records all Fieldgate events, e.g. e-mails sent, time fetched, sensor data changed
- Error Log: records all device errors
- HART Log: records all events concerning the connection of HART devices
- HART Server Log: records all events concerning the HART server

Hardware configuration

Hardware configuration contains static and dynamic information about the Fieldgate. Table 7-6 explains the significance of the most important parameters.

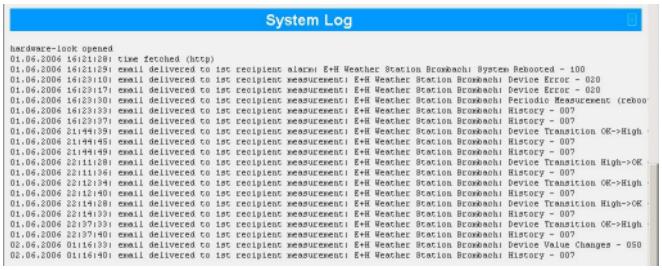


Parameter	Description
General	Fieldgate order code
Hardware Version	Fieldgate hardware version number
Firmware Version	Fieldgate firmware version number
OS Version	Version of the operating system used.
Software Checksum	Software checksum is used during a firmware download to check whether the transmission has been made without error.
Serial No.	Fieldgate serial number
IMEI number (GSM)	International mobile station equipment identity number
MAC address	The unique Ethernet MAC address of the Fieldgate (Ethernet version only)
Total Uptime	System run time since the installation and commissioning
Current Uptime	System run time since the last restart or power up
Reboot Counter	Number of reboots to date due to starting the Fieldgate
Available Memory	Memory in bytes still available in the Fieldgate
TCP Bytes Received	Number of bytes received by Fieldgate
TCP Bytes Sent	Number of bytes sent by the Fieldgate
Max Daily Traffic via GPRS (KByte)	For GPRS operation only: limit in KByte for daily traffic
WAN IP Address	IP address of Fieldgate in WAN
HART Packets Received	Number of HART telegrams received during the system run time
HART Checksum Errors	Number of HART telegrams received with checksum errors during the system run time
HART GAP Errors	Number of HART telegrams received with GAP errors during the system run time
HART Packets Lost	Number of HART telegrams lost during the system run time (but sent on retry)
HART Packets Lost Finally	Number of HART telegrams lost during the system run time (retries failed

Table 7-6: Parameters in hardware configuration page

System Log

The system log displays all the activities since the last start, e.g. e-mail delivery, time fetch, alarms, etc. Up to 25 lines are displayed. The log is deleted when the Fieldgate is switched off. Table 7-7 explains the significance of the parameters.



System log message	Meaning
changing config page '<page-name>' from <ip-addr>	A configuration page has been changed from the IP address indicated. Possible <page-name>s: ■ loc: Fieldgate Location. ■ user: User Setup. ■ if: Network Setup. ■ hart: HART Setup. ■ special: Special. ■ info: Information.
changing sensor data '<device-id>' from <ip-addr>	Field device data have been changed from the IP address indicated.
email delivered to < 1st / 2nd > recipient < service alarm / limit alarm / measurement >: <subject>	An e-mail was sent to the corresponding receiving group.
hardware-lock closed	The hardware lock has been closed (i.e. the configuration of the Fieldgate and the connected field devices can now no longer be remotely altered).
hardware-lock opened	The hardware lock has been opened.
service adapter connected service adapter aborted service adapter disconnected	Service adapter has been connected. Connection via service adapter has been aborted. Service adapter cable has been disconnected.
time fetched (<protocol>) ■ internal time <seconds>s ahead ■ internal time <seconds>s behind	Time has been fetched from the Internet. The internal clock has been adjusted accordingly.
time switching to <time zone>	Automatic adjustment of the time server to a different time zone. The parameter "Time Offset (related to UTC)" under "Settings" -> "Network" -> "Time Server Setup" was automatically adjusted by the time server as a result of a change in "Timezone Setting (valid for http time service)".
User '<user>' changed password from <ip-addr>	A user has changed his/her password from the IP address indicated.
SMS send to xxxxxx	Short SMS message has been sent to telephone number xx.
DynDNS OK	Fieldgate could register with at DynDNS with its IP address and can now be reached by its URL.
< Log> cleared from <ip-addr>	An Administrator has a cleared a log at the IP address under "Settings" -> "Special" -> "Clear Log Information".
DHCP stopped	The DHCP Client was stopped since no DHCP server replied. In this case the IP address set manually under "Settings" -> "Network" -> "IP-Address" is used.
BOOTP failed - using manual entry	The BOOTP Client was stopped, because no server reacted. In this case the IP address set manually under "Settings" -> "Network" -> "IP-Address" is used.
FIS registration successful: <http Response Code>	Fieldgate has succesfully registered with the FIS.
received new configuration from FIS	A new Fieldgate configuration was received from the FIS.
FIS message "<subject>" send successfully: <http Response Code>	Limit or alarm message about <subject> successfully transmitted to the FIS.
time updated from FIS request	Successful time synchronisation between Fieldgate and FIS.

Table 7-7: System log messages with meaning

Error Log

The Error Log records Fieldgate error messages, e.g. failed password change etc. Up to 25 lines are displayed. The log is deleted when the Fieldgate is switched off. Table 7-8 explains the significance of the messages.



Error log message	Meaning
cannot deliver email to < 1st / 2nd > recipient <service alarm / limit alarm / measurement>: SMTP open error <errorcode> cannot deliver email to < 1st / 2nd > recipient <service alarm / limit alarm / measurement>: SMTP send error <errorcode> cannot deliver email to < 1st / 2nd > recipient < service alarm / limit alarm / measurement >: SMTP close error <errorcode>	Alarm e-mail could not be sent. Error codes: ■ 1: Invalid SMTP parameter. ■ 2: SMTP Server domain could not be resolved. ■ 3: Network error - target server unreachable. ■ 211: System status, or system help reply. ■ 214: Help message. ■ 220: <domain> Service ready. ■ 221: <domain> Service closing transmission channel. ■ 250: Requested mail action okay, completed. ■ 251: User not local; will forward to <forward-path>. ■ 354: Start mail input; end with <CRLF>.<CRLF>. ■ 421: <domain> Service not available, closing transmission channel. ■ 450: Requested mail action not taken: mailbox unavailable [E.g., mailbox busy]. ■ 451: Requested action aborted: local error in processing. ■ 452: Requested action not taken: insufficient system storage. ■ 500: Syntax error, command unrecognized. ■ 501: Syntax error in parameters or arguments. ■ 502: Command not implemented. ■ 503: Bad sequence of commands. ■ 504: Command parameter not implemented. ■ 550: Requested action not taken: mailbox unavailable [E.g., mailbox not found, no access]. ■ 551: User not local; please try <forward-path>. ■ 552: Requested mail action aborted: exceeded storage allocation. ■ 553: Requested action not taken: mailbox name not allowed [E.g., mailbox syntax incorrect]. ■ 554: Transaction failed.
email ok for < 1st / 2nd > recipient <service alarm / limit alarm / measurement	This message appears only if one of the two messages above has appeared, but the e-mail was successfully sent. The message cancels its predecessor.
DHCP: cannot get IP address	DHCP Server not answering. In this case the manual address under Settings -> Network -> IP-Address is used.
cannot set IP address	Ethernet: IP address could not be set. Possible cause: invalid IP address structure (only the format a.b.c.d (e.g. 192.168.22.33) is allowed).
cannot set netmask	ditto for the netmask (cannot be set by user!).
cannot add route to gateway	The gateway could not be accepted. Check the IP domain settings, if necessary, restart Fieldgate.
DNS initialization failed	Ethernet: initialization of the DNS has failed. This indicates incorrect DNS specifications.
Modem DNS initialization failed	DNS: initialisation of the DNS has failed. This indicates incorrect DNS specifications.
no response from DNS server, used DNS Cache to resolve IP address (<Domain> / <IP>)	The DNS Server is not answering. The Fieldgate could however resolve the domain via the integrated DNS cache. The message appears when the DNS server has failed. Check the DNS server.
cannot resolve Domain via DNS: <Domain>	The listed domain could not be resolved. Either this domain does not exist or the DNS server has failed.
time service: cannot access http time service	The time cannot be called up from the http server (web server). Check connection settings.
time service: cannot connect to server	The connection to the time server cannot be established. Check server data specified.

Error log message	Meaning
time service: http server returned <errorcode>	The http time server has returned an error.
time service: ill time pattern received from server	The http time server has returned an invalid answer. Select another server.
time service: illegal reply from sntp server	The sntp time server has returned an invalid answer. Select another server.
time service: incompatible protocol version on server	The sntp time server returns an incompatible protocol version. Select another time protocol or another server.
time service: remote server not synchronized	The sntp time server is not synchronized. Select another server.
time service not correctly configured	The sntp/time server has not been specified correctly.
time service: illegal reply from daytime server	A malfunction response when the time synchronization is requested via the DAYTIME protocol.
time service: ok	Message appears when an earlier "time service" error no longer exists.
User '<username>' password change failed from <ipaddr>(<errfield>)	A user has attempted to change his/her password. This attempt failed. This can indicate an attack on the Fieldgate.
SMS queue full	The SMS queue is full. The error message is triggered when SMSs are generated more quickly than they can be sent.
cannot send SMS to xxxx	An SMS could not be sent to telephone number xxxx. This error message can occur when the Fieldgate does not have a connection to the provider.
DynDns failed	The Fieldgate could not transmit its IP address to a dynamic domain name server. This message can occur when there are syntax errors in the Get DynDns URL entry, see chap. 8.6, or when the server malfunctions.
DynDns ok	IP address of Fieldgate successfully transmitted to DynDns. The message appears only after a previous DynDns failure.
Limit of 30 HART devices reached	More than 30 HART field devices (incl. P+F multiplexer) are connected to the Fieldgate. Fieldgate can only handle a maximum of 30 channels.
Limit of 30 HART devices ok	There are again less than 30 HART field devices connected to the Fieldgate. This message appears only after a previous message that more than 30 devices connected.
constant data scan aborted (timeout)	Constant field device data scan has timed out (300s). This can only occur in extremely disturbed environments.
Sensor Environment Overflow. Removing data from Sensor <device-id>	Data from the field device configuration memory (memory for limit values etc.) in the Fieldgate must be removed since overflow has occurred. It is guaranteed that the data for 30 field devices can be stored.
FIS registration failed: <http Response Code>	Registration with the FIS has failed.
connection to FIS failed: no URL	Fieldgate has no IP Adresse or URL for the FIS – Check the FIS Setup.
connection to FIS failed: ■ illegal port number ■ illegal/unknown host ■ cannot create socket ■ no response from server ■ unknown error	Fieldgate cannot establish a http connection with the FIS. This may be due to the following reasons: – Fieldgate is using an incorrrect FIS URL. – The network settings are wrong. – A firewall in the network is blockiing the connection.
FIS configuration import failed	Error on reception of a new Fieldgate configuration.
FIS error during FIS request: <http Response> "<subject>"	Message was rejected by the FIS – Contact your FIS administrator.
message queue full. Deleted last message: "<subject>"	Fieldgate message buffer is full. – The last message concering <subject> is deleted so that a new message can be stored in the buffer.

Table 7-8: Error log messages

HART Log

The HART log records messages relating to HART communication, e.g. device detected/removed etc. Up to 25 lines are displayed. The log is deleted when the Fieldgate is switched off. Table 7-9 explains the significance of the parameters.



HART log message	Meaning
Device '<device-id>': detected	Device with the HART-ID indicated has been detected.
Device '<device-id>': disconnected	Device with the HART-ID indicated has disappeared.

Table 7-9: HART log massages

HART server log

The HART Server log records messages relating to the HART server, e.g Telnet login etc. Up to 25 lines are displayed. The log is deleted when the Fieldgate is switched off. Table 7-10 explains the significance of the parameters.



HART server log message	Meaning
'<username>' logged in from <ip-addr>	Someone has logged onto the HART server from the IP address indicated (plain text authentication).
'<username>' logged in with MD5 authorization from <ipaddr>	ditto with MD5 authentication.
'<username>' logged off from <ip-addr>	Someone has logged off the HART server.
'<username>' selected ill protocol '<protocol>' from <ipaddr>	Protocol selected is invalid.
'<username>' wrong user/password form <ip-addr>	Invalid user/password.

Table 7-10: HART log messages

Modem Log

The modem log can be used to check the correct function of the Fieldgate with GSM modem. Up to 25 lines are displayed. The log is deleted when the Fieldgate is switched off. Table 7-11 explains the significance of the parameters.

Modem log message	Connection	Meaning
dial in (Server) carrier lost (Server) hangup requested by command (Server) hangup (Server)	Modem/GSM	Diagnosis messages for dial-in with Fieldgate.
dial in disabled!	Modem/GSM	Fieldgate was called (with maximum number of rings) but dial-in is not allowed.
assigned IP: <ip-addr> carrier lost hangup requested by command hangup connect failed hangup requested by SMS transmission hangup caused by PPP	Modem/GSM	Diagnosis messages for dial-in with ISP.
assigned IP: <ip-addr> GPRS Network: <gprs network> GPRS-QOS: <QOS> connect failed GPRS hangup requested by ring or carrier loss GPRS hangup requested by command GPRS hangup requested by SMS transmission GPRS hangup caused by PPP GPRS hangup	GSM	Diagnosis messages for dial-in with GPRS.
initiating call back	Modem/GSM	Call-back to ISP started due to ringing.

Modem log message	Connection	Meaning
No Signal!	GSM	The GSM module does not have any reception signal.
Pin Ok	GSM	SIM Pin is OK.
User defined AT: <at-cmd>	Modem/GSM	User-defined AT commando output.
FAILED: timeout	Modem/GSM	Command at modem triggered a timeout.
FAILED: <modem-response>	Modem/GSM	Command at modem returned an unexpected response.
OK: <modem-response>	Modem/GSM	Command at modem returned an expected response.
GSM operator: <operator> signal = <signal strength>	GSM	Output of current GSM operator and signal strength. In order to ensure stable GSM operation the signal strength should be > 15.
FAILED: no data call	GSM	Incoming call to Fieldgate without data connection => vocal call.
selected GSM operator denied, GSM Engine switched to automatic mode	GSM	Manually set GSM Provider is not valid for the SIM card in use.
cannot connect to selected GSM operator connected to: <Provider> or: cannot connect to selected GSM operator, GSM Engine switched to automatic mode	GSM	The GSM Modem cannot connect to the manually entered provider. Possible reasons are a weak signal. The Fieldgate has connected to an alternative provider. In this case the GPRS connections are suppressed.
Pin xxxx ist not correct-> ERROR	GSM	An attempt has been made to enter the PIN as xxxx, which is presumably not the correct code.
Last retry to set a correct PIN	GSM	After the next incorrect attempt to enter the PIN, the SIM card is locked.
no PIN is set -> please set PIN under Modem Configuration	GSM	No pin number entered in GSM setup dialog, see chap. 5.4.2.
no SIM card in device	GSM	SIM card not inserted in device.
SIM card error -> <errorcode>	GSM	Problem in logging in the GSM modem.
SIM PUK required	GSM	The SIM card is locked and can only be unlocked by entering the PUK.
connecting to GPRS permanently / connecting to GPRS	GSM	A GPRS connection is being made.
GPRS Network: <APN>	GSM	Indicates APN with which the modem is connected.
GPRS-QOS: not set/use defaults	GSM	Quality of Service parameter not set, Fieldgate takes standard parameter of SIM card.
incoming ring during connect (GPRS Client) / incoming ring during connect (Client)	GSM	Incoming call detected during current GPRS/ISP connection.
GPRS hangup requested by incoming call	GSM	The current GPRS connection is interrupted for 5 minutes for an incoming call. To build up a data call, a second call must be made, see chap. 5.4.2.
Auto detection of available GSM bands	GSM	Indicates automatically available GSM bands.
<band>MHz ok	GSM	Indicates which GSM Band has been selected.
connection to test server failed or invalid test server	GSM	Connection could not be made to test server. In this case the GPRS connection is made again. Possible reasons: the GPRS connection has failed or the server settings are invalid.
dial in to ISP <phone number> permanently / dial in to ISP <phone number>	GSM/Modem	ISP connection is being made.
daily dial-in time of <xy>min exceeded!	GSM/Modem	The max. daily dialing time of xy min via ISP was exceeded. Next possible connection at midnight or 24 hours after message, depending upon settings.
daily traffic limit of <xy>kByte exceeded!	GSM	The max. daily traffic limit of xy Kbyte via GRS was exceeded. Next possible connection at midnight or 24 hours after message, depending upon settings.
error during modem initialization	GSM/Modem	No modem could be found.
GSM Engine: <manufacturer>, <model>	GSM	Indicates which modem was found.

Table 7-11: Modem log messages

7.4 Miscellaneous Functions

7.4.1 Autorefresh

Autorefresh causes the page display to be updated every 120 seconds, see chap. 6.2.2.

1 Click on **AutoRefresh** to activate updating.



2 Click on **AutoRefresh OFF** to deactivate updating.



7.4.2 Refresh

Pressing **Refresh** causes the page display to be updated and has the same function as the Refresh button in your Internet browser.

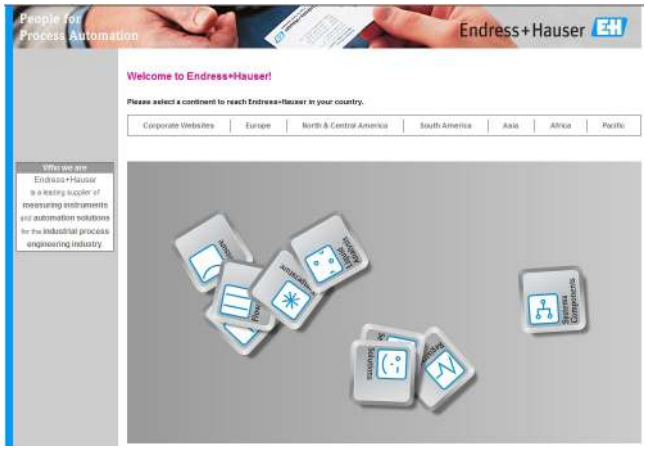
1 Click on "Refresh" to activate updating.



The Refresh function can also be used to automatically update the page display at set time intervals. For example, to refresh the page every 5 minutes (= 300 s) enter the following in your browser:
http://192.168.252.1/?refresh=300

7.4.3 Endress+Hauser

Press the **Endress+Hauser** to open the Endress+Hauser homepage.



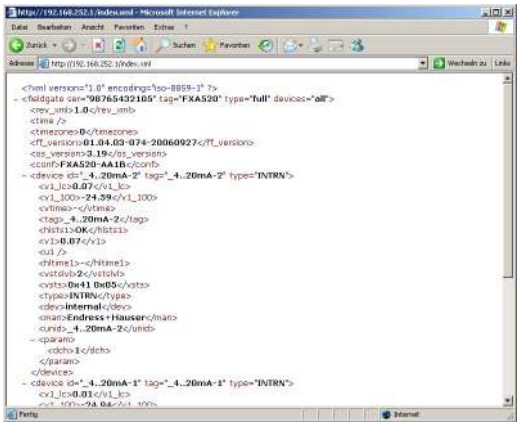
8 Advanced Functions

8.1 XML data

The XML Data function allows the information on the complete Fieldgate configuration plus the parameters and configuration of the connected devices to be downloaded to your computer for use in Office or other applications.

8.1.1 Generating the XML Data

1 Press **XML Data** on the **Overview** page
   – The parameters are downloaded into a separate page, from where they can be copied and pasted.



2 Note the web address: this can then be accessed by your browser as a read only page (no values can be changed) without prior login to the Fieldgate

8.1.2 Evaluating the XML data

The significance of the data elements can be taken from table 12-1 in chap. 12.2.

8.2 Historical data

When a 256KB DAT module is being used, Fieldgate has a data logging function for buffering measured values and events. A prerequisite for its use is that the time and date are available to the Fieldgate, either through the use of a time server or manual entry, see chap. 5.4.

The measured values of the connected sensors or the internal Fieldgate interfaces are saved in the form of data records in XML format. The logged data can be called up with by adding **/history.xml** to the IP address or sent as an e-mail.

User ID

By adding a user ID (ID=1 to ID=9) to the query, e.g. **/history.xml?ID=2,** an individual view of the historical data can be obtained. Fieldgate maintains pointers for each User ID indicating the time when the last query was made. Only data records from this time onwards are presented.

Number of records

The number of historical records held by Fieldgate is dependent upon the number of devices connected to it. Table 8-1 gives an overview:

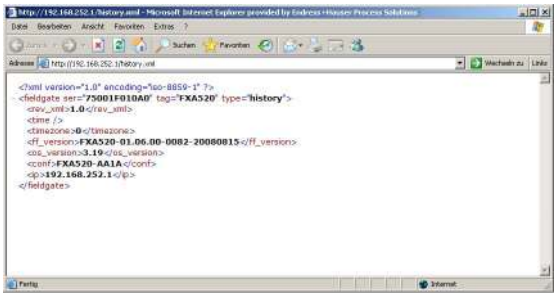
Devices	Records	**Devices**	Records	**Devices**	Records	**Devices**	Records	**Devices**	Records
0	141	7	51	14	33	21	23	28	18
1	112	8	47	15	31	22	22	29	17
2	94	9	43	16	29	23	21	30	17
3	80	10	40	17	28	24	20		
4	70	11	37	18	26	25	20		
5	62	12	35	19	25	26	19		
6	56	13	34	20	24	27	18		

Table 8-1: Maximum number of records per device as a function on number of devices connected
0 = 4-20 mA devices only

8.2.1 Calling up the historical data

1 Open the historical data for the Fieldgate by typing in the following access address (URL):
http://<IP address or Domain Name>/history.xml
Example: http://www.fieldgate.de/history.xml or http://212.227.127.81/history.xml

2 The web page opens



8.2.2 Interpreting the historical data

The data are in XML format – for a full description of the data elements, see table 12-1 in Chapter chap. 12.2. The log comprises a header identifying the Fieldgate, e.g.

- <fieldgate ser="**470009010A0**" tag="**E+H Weather Station Brombach**" type="**history**">
<rev_xml>**1.0**</rev_xml>
<time>**20060606-081946**</time>
<timezone>**120**</timezone>
<ff_version>**FXA520-dev-20060602-124025**</ff_version>
<os_version>**3.19**</os_version>
<conf>**FXA520-XE1A**</conf>

This is followed by the data for each device, comprising device identifier, timestamp and measured value(s):

- <device id="**110f191fc3**">
<vtime>**20060604-030026**</vtime>
<vtz>**120**</vtz>
<vstslvl>**0**</vstslvl>
<v1>**7.42**</v1>
</device>

8.3 Wireless Application Protocol (WAP) pages

All Fieldgate versions can deliver information to WAP-capable mobile phones. This is done in the form of specially adapted WML pages with a restricted functional scope. The WAP function can be used e.g. when:

- Ethernet Fieldgate is connected to the Internet
- Analog Fieldgate is dialled into an ISP and is therefore connected to the Internet
- GSM Fieldgate is dialled into an ISP and is therefore connected to the Internet
- GSM Fieldgate is in "Permanent dial-in" thanks to GPRS and has a public IP address
- The IP address or domain must be known, if necessary by using DynDNS, see chap. 8.6.

8.3.1 Connecting to the WAP homepage

Open the WAP homepage for the Fieldgate, use your mobile phone's WAP browser. The access address (URL) is composed as follows:

http://<IP address or Domain Name>/index.wml

Example: http://www.fieldgate.de/index.wml or http://212.227.127.81/index.wml

8.3.2 WAP pages

The WAP pages comprise:
- Overview
- Device Details

Overview

Overview corresponds to the standard overview page, see chap. 7.1, and contains selected measured values of the connected devices in the form
- TAG information.
- Measured value with unit

Device details

Clicking on the device tag opens the detailed view for the device showing
- TAG information.
- Measured values with unit and time stamp.

8.4 HART pass-through mode

The HART pass-through mode allows external applications, e.g. FieldCare, to access the HART devices connected to the Fieldgate, e.g. for parameterization.

For FieldCare, a project is built-up in the normal way, using the FXA520 CommDTM. This is used to set up communcation and pass-through operation – full instructions are to be found in the DTM on-line help.

Once the DTM has been set up, the HART devices can be scanned or added individually to the project. After assignment of the device DTMs, the devices can be configured on-line.

8.5 SupplyCare

SupplyCare

SupplyCare is a operating program for coordinating the flow of material and information along the supply chain. It gives you complete transparency over inventory levels in tanks and silos, anytime, anywhere and even at remote locations.

Based on the measuring and transmission technology installed on site, the current inventories are recorded and transmitted to SupplyCare. With SupplyCare, you have a constant overview of all the current inventories. Critical levels are clearly indicated and you can also receive active information on these levels if required. Calculated prognosis gives additional security for replenishment planning.

Further information on installing and operating SupplyCare can be found in Operating Instructions BA050S/04/en (SupplyCare Hosting) and BA055S/04/en (SupplyCare Enterprise).

8.6 Dynamic DNS server

When Fieldgate dials into a GSM or Analog network, it is assigned an IP address which changes on every new connection. The dynamic Domain Name System (DNS) assigns a human-readable computer hostname, e.g. www.myfieldgate.ath.cx to Fieldgate, allowing it to report its current IP address to the server.

The following procedure shows an example of how to open a dynamic DNS server account, how to set it up and how to add the information to Fieldgate. The DNS server provider is www.dyndns.org.

Procedure

1 Enter the URL of your dynamic DNS server in your Internet browser, e.g. www.dyndns.org:



2 Press the **Account** button

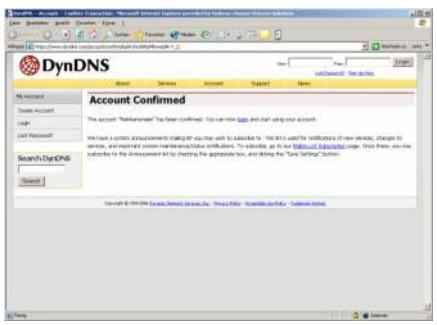


3 Select the **Create Account** menu and fill out the required information:

- Enter a <username>, <e-mail address> and <password>
- Agree to the licence conditions
- When complete, press the **Create Account** button at the bottom of the page

4 Details of your account are sent by autoreply (may be detected as "SPAM"):

- Confirm your account by clicking on the URL supplied in the e-mail
- The site opens with the Account Confirmed message:

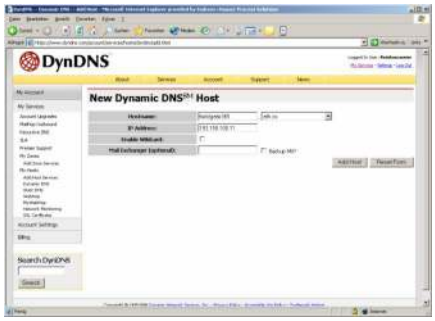


5 Now login with your <username> and <password>

– My Account gives an overview of My Services, Account Settings and Billing

6 Now press **My Services**

– Click **Add Host Services** in the **Host Level Services** section
– Click **Add Dynamic DNS Host** in the **Add Host Services** section



– Enter a hostname (e.g. fieldgatexxx) and select a domain extension (here ath.cx)
– Enter the IP address of the Fieldgate
– Press the **Add Host** button
– The **Hostname Created** dialog appears to confirm the action

7 On completion you have something like the following:

– <username>, e.g. "johnsmith"
– <password>, e.g. "myfieldgate"
– <hostname>, e.g. fieldgate365@ath.cx

8 Now create the DynDNS string for your Fieldgate (one line):

– <username>:<password>@members.dyndns.org/nic/update?system=dyndns&hostname =<hostname>&myip=

for the example above:
– johnsmith:myfieldgate@members.dyndns.org/nic/update?system=dyndns&hostname =fieldgate365.ath.cx&myip=

9 In the **Network** menu of your Fieldgate scroll down to the **DynDNS Setup** page and copy the string into the **Get DynDNS URL** parameter

– Press **Send** to download.

10 The dynamic DNS server is now set up.

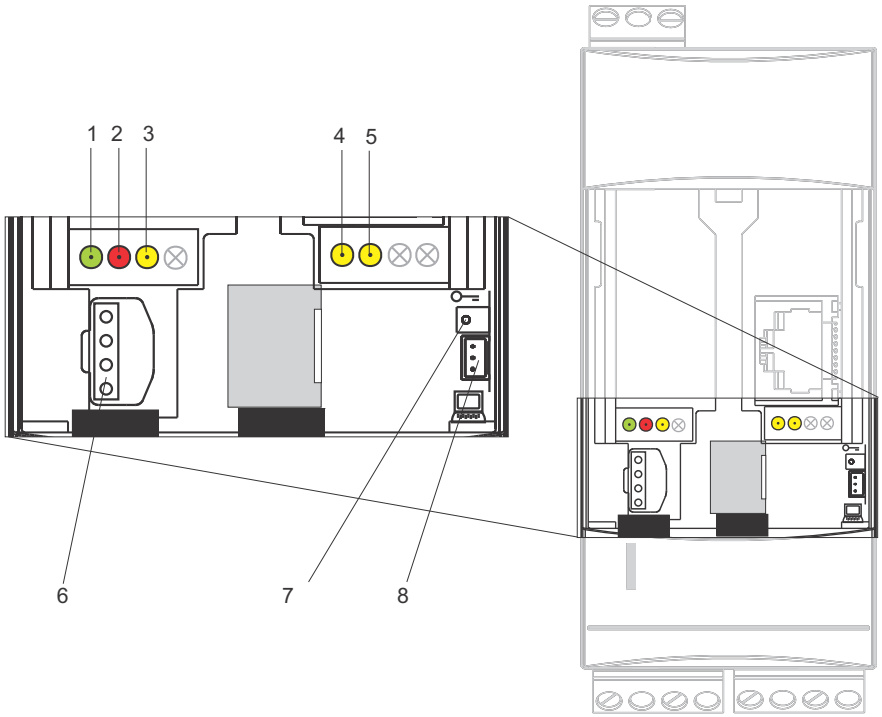
9 Trouble-Shooting

9.1 Problems and remedies

Problem	Cause	Remedy
Fieldgate cannot be reached via GPRS	Only Internal IP addresses 10.x, 172.x, 192.x assigned by the GSM/ GPRS provider (Check Info page)	Ask GSM/GPRS Provider to assign you a public IP Address or select another GSM Provider
Fieldgate no longer on GPRS after it has been dialed on the phone	Fieldgate is currently programmed in this way	Enable "GPRS dial-in permanently" whenever a call via phone is made
GSM Fieldgate: a phone call is answered but the modem does not start to synchronize (silence)	When Fieldgate receives an incoming call, it breaks off the GPRS connection for 5 minutes. In this time a point-to-point connection can be made, see chap. 5.4.4	If the option "GPRS dial-in permanently" has been selected, Fieldgate automatically established connection after 5 minutes.
Measurement e-mails are being sent although the checkbox is not enabled	Fieldgate is programmed this way	Delete all values for Limit Settings where no e-mail should be sent
Fieldgate receives no IP address from a DHCP Server	Fieldgate is set to support the wrong protocol, e.g. BOOTP	Change the protocol setting
Changes made via the Service Interface are not in Fieldgate after the next power up	As long as the Service Cable is connected, configuration data cannot be stored to the EEPROM	Ensure persistent storage by making a System Restart via the Special menu, see e.g. chap. 5.1.6
The password super/super or eh/eh does not operate	Pay attention to upper and lower case	Key-in the password correctly
Time is registered twice in the CSV file (i.e. 1616:54:32 not 16:54:32)	In the country settings of Windows the time format is set to hh:mm:ss	Choose as time format HH:mm:ss in the Windows control panel
HART Multidrop: no stable connection	There are disturbances on the HART signal	Decrease the number of HART devices operating on the line
HART Multidrop: no connection	Devices have identical (Long) HART addresses (for some devices unique device identifier also)	Replace the electronic devices or enter a unique HART serial number
Device shows different values on the display than in HART (Fieldgate)	Device is not configured properly	Configure device with local display or remotely by with FieldCare
SMS cannot be sent by Fieldgate (Analog/Ethernet Version)	It is not possible to send an SMS directly from an analog or Ethernet Fieldgate	Find provider who, e.g. automatically sends an SMS when an e-mail arrives. (e.g. t-email.de, directbox.com, web.de etc.)
Fieldgate information cannot be downloaded via the index.xml (http://<IP address or domain name>/index.xml)	The index.xml can handle a maximum of 13 HART devices only (Max. 30 4...20 mA devices)	Download the Fieldgate information via index.xml?short (http://<IP address or domain name>/index.xml?short)
Emails cannot be sent by Fieldgate	The email provider supports only the SMTPS protocol for email transmission	Ensure that the email provider supports SMTP protocol without encryption (SSL/TLS)

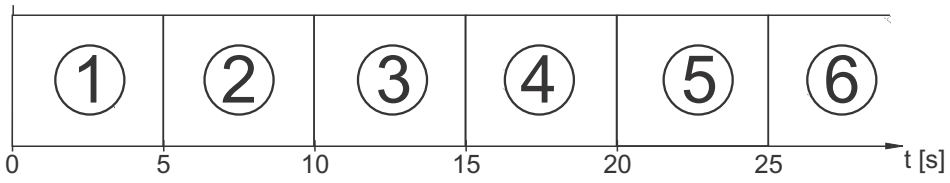
Table 9-1: Trouble-shooting table for Fieldgate FXA520

9.2 Reset



The device is reset with button (7) and LED (2). If the button is pressed and held during when the Fieldgate is started up, the following functions are available in the time frame when the button is released:

Time frame



No.	Time frame	Red LED	Function - release button
1	0 ... 5	Flashes at approx. 5 Hz	The data of the internal EEPROM is first checked, the configuration data is copied from the internal EEPROM to the DAT module
2	5 ... 10	Off	No function when released
3	10 ... 15	Flashes at approx. 2.5 Hz	Configuration is reset to the factory settings
4	15 ... 20	Off	No function when released
5	20 ... 25	Flashes at approx. 1.25 Hz	Firmware and configuration is reset to the factory settings
6	25	Off	No function when released

Table 9-1: Fieldgate reset function

The red LED flashes at approx. 10 Hz during initialization once the button has been released or a restart has taken place without pressing the button. This takes approx. 10 s. It takes approx. 30 s if a firmware update was carried out.

9.3 Troubleshooting on no connection

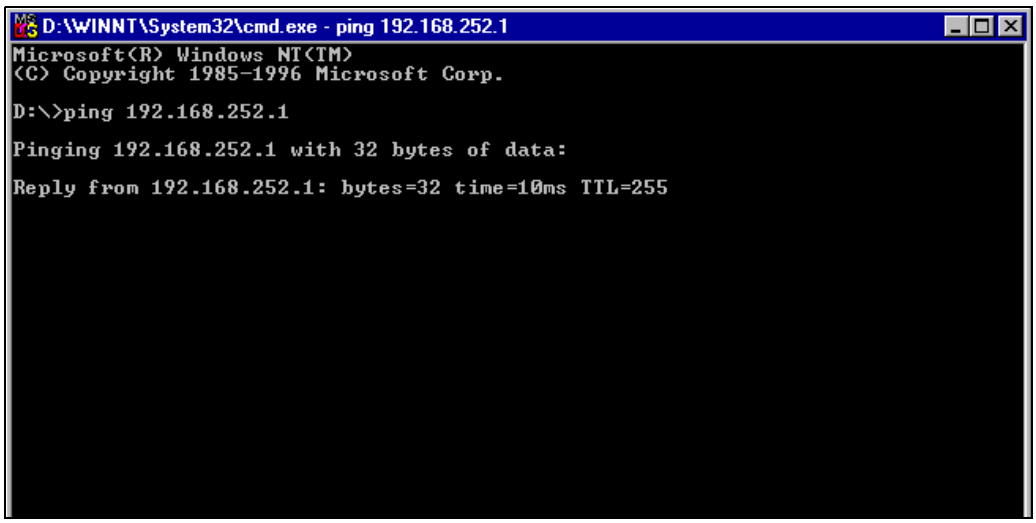
1 Is the Link LED lit on the Fieldgate?
- Yes, proceed with point 2
- No, check the cable or connection to Fieldgate and PC/Network

2 Is the Link LED of the PC network card lit?
- Yes, proceed with point 3
- No, check the cable or connection to Fieldgate and PC/Network

3 Open the DOS prompt "**Start => Run => cmd** "



4 Enter e.g. "**ping 192.168.252.1**". Do you get the answer 192.168.252.1 Bytes=32... (192.168.254.1 for Fieldgate with analog or GSM modem)
- Yes. The connection is OK.
  Check your browser settings (If a proxy server is used try to bypass the IP-address 192.168.252.1).
- No. There is no connection to the Fieldgate.



5 Check if Fieldgate's IP and Subnet mask are in the same network as your PC:
- No: Reconfigure the gateway address.

9.4 Firmware update

NOTICE **NOTE!**

- A firmware update is possible only with the guidance of your Endress+Hauser Service Center

Depending upon the circumstances, your Endress+Hauser Service Center may recommend:

- a firmware update via Internet
- the download of the latest HART Device Identifiers via Internet
- reset to factory default parameters

as part of any remedial action. In Cases 1 and 2, you will be supplied with the appropriate Internet addresses.

Procedure

1 If not already selected, press **"Switch to Administrator Mode"** and log in as administrator.

2 Press **Settings => Special,** then scroll down to Firmware Update
– The Firmware Update dialog appears:



3 Proceed as instructed by your Endress+Hauser Service Center, then press **"Send"** to start the download.

Parameters

Parameter	Description
Download Address Fieldgate Firmware	http address at which the firmware is stored – The address will be supplied to you by your Endress+Hauser service center
Download Fieldgate Firmware now	Check this box to download the firmware when **Send** is pressed
Download HART Device Identifier	Check this box if the latest HART device identifiers are to be downloaded to Fieldgate – The address will be supplied to you by your Endress+Hauser service center
Download HART Device Identifier now	Check this box to download the firmware when **Send** is pressed
Restore to Factory Defaults	Check this box if the Fieldgate default parameters are to be restored
Reset to Reboot Firmware	Check this box only if you want the Fieldgate to be rebooted with the original firmware supplied by the factory
Test connection to Update Server	Click on the link to check the connection
Send	Press to register your changes in the Fieldgate.
Reset	Press to discard any changes made since the previous send.

Table 9-1: Firmware Update parameters

10 Accessories

10.1 Fieldgate FXA520

Product	Description	Order Code
Protective housing	Protection class IP 66, equipped with integrated top-hat rail and closed with a transparent cover that can also be lead sealed ■ Dimensions: 180 mm x 182 mm x 165 mm ■ Color: Light grey RAL 7035	52010132
DAT module	For data logging function, configuration back-up and duplication of a defined configuration in several Fieldgates	52013311
PC cable	Connection cable RS-232 to Service Interface cable	52013984
Telephone cable	RJ11 (analog plug, double sided, length: 5 m)	52014031
Quadband antenna	Quadband rod antenna for GSM communications	71059393
Triband antenna	Triband flat antenna for GSM communications	52018396

10.2 Auxiliary units

Product	Description	Order Code
Hart Multiplexer		
Multiplexer Master	HART Multiplexer Master KFD2-HMM-16	52017691
Master cable	Master connecting cable for the HART Multiplexer system	52017687
Multiplexer Slave	HART Multiplexer Slave KFD0-HMS-16	52020232
Master-slave cable	Master slave connecting cable for the HART Multiplexer system	52020233
Interface module	Interface module without communication resistor	52017689
Interface module	Interface module with communication resistor	52017690
Power supply	Switched power supply for HART multiplexer	52017691
Hart Multidrop		
FXN520	HART Multidrop Connector for 30 devices	52023652
Analog and Digital Input		
FXZ520	Fieldgate Input Module for 4x analog or 4x digital inputs	
Power supply units		
RMA422	Multifunctional 1-2-channel top-hat rail device with intrinsically safe current inputs and transmitter power supply, limit value monitoring, mathematics functions and 1-2 analog outputs.	
RNS221	Power supply unit for 2x two-wire sensors or transmitters in non-hazardous areas.	
RNS221N	Isolator with power supply for safely isolating 4...20 mA signal circuits	
RMA421	Multifunctional 1-channel top-hat rail device with universal input, transmitter power supply, limit value monitoring and analog output.	

11 Technical Data

Table 11-1 provides you with the most important technical data - the full technical data is to be found in Technical Information TI025S/04/en.

Property	Attribute
Supply voltage:	AC version: 85...253 VAC, 50/60 Hz DC version: 20...60 VDC or 20...30 VAC
Typical current consumption:	AC version: 4.9 VA ton 8 VA, depending upon version DC version: 1.5 W to 4 W, depending upon version
Dimensions (W x H x D):	45 mm x 108 mm x 112 mm (1.8" x 4.25" x 4.4")
Mounting:	TS35 DIN carrier rail (EN 60715)
Weight (approx.):	approx. 0.25 kg (approx 9 oz)
Protection class:	II
Degree of protection:	IP 20 Mechanical degree of protection IK06 according to IEC 62262
Ambient temperature during operation:	Individual mounting: -20°C... +60°C (-4°F...+140°F) Row mounting: -20°C... +50°C (-4°F...+122°F) Protective housing: -20°C... +40°C (-4°F...+104°F)
Ambient temperature for storage:	-25°C... +85°C, preferably at +20°C (-13°F...+185°F, preferably at 68°F)
Climatic and mechanical application class:	3K3, in accordance with DIN EN 60721-3-3 3M2, in accordance with DIN EN 60721-3-3

Table 11-1: Overview Technical Data

12 Appendix

12.1 Commissioning Fieldgate (Ethernet) via Web browser

NOTICE **NOTE!**

- The following procedure is for **Windows XP**: for other Windows operating systems, consult your network administrator
- You require administration rights for your computer
- Only one Fieldgate in delivery status may be in the network (address conflicts!)

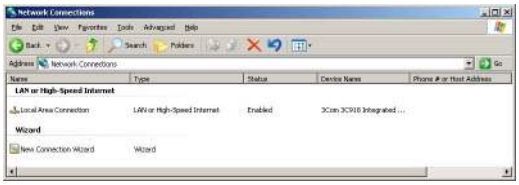
Before starting, the Fieldgate must either:

- be installed in the network connected to a switch/hub with a straight cable or
- be connected directly to the computer with a cross-link cable.

12.1.1 Change the IP address of your computer

Procedure

1 Right-click **"Start => Settings => Control Panel => Network Connections"**.



2 Right-click **"Local Area Connection => Properties"**
Using the left mouse button, double-click **"Internet Protocol (TCP/IP)"** or click once, then click **"Properties".**

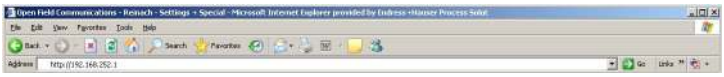


3 Note the current settings, for later use, then:
- Select **Use following IP address**
- Enter e.g. **192.168.252.2** (in this example, an address 192.168.252.2 – 254 is valid)
- Enter a subnet mask, e.g. 255.255.255.0
- Click **OK** to confirm



12.1.2 Connect to the Fieldgate

1 Start the web browser, e.g. Internet Explorer.
Now enter the default address of the Fieldgate **"192.168.252.1"** in the address field of your browser and press the **"Enter"** key of your computer.



2 The **Connect to** dialog appears:



– Enter the User Name: **super**
– Enter the Password: **super**
– Press **OK** to register the entries and open the Fieldgate Web Server

3 The Fieldgate entry page appears in the browser.

– You are registered with administrator rights and can now set up the Fieldgate communication parameters



4 Now change the IP address of the Fieldgate as described in chap. 5.2.

– After the information has been sent to the Fieldgate, contact will be broken off.

5 Change the computer IP address settings back to their original values, see chap. 12.1.1.

6 Reconnect to the Fieldgate by entering the new address in your Internet browser, see Step 1.

12.2 XML data elements

Table 12-1 lists the XML data elements together with the type of information they carry. The XML data is a structured document with a document header and body. The Fieldgate data is sandwiched between two identifiers <xxx> and </xxx> which indicate the start and finish of the data element. Data elements can be nested to form sections containing related information.

Element	Data Type	Description
<?xml version="1.0" encoding="iso-8859-1"?>		Document header
<fieldgate ser="470009010A0" tag="Endress+Hauser Fieldgate" type="full" devices="all">	tag field	Tag for fieldgate data<ser>:serial number fieldgate <tag>: name fieldgate, <type>: "full"/"partial" (short=1), <devices>: "all /"single" (id=, tag=)
<rev_xml>	string	Document Revision
<time>	timestamp	Current fieldgate time (UTC time)
<timezone>	unsigned16	Timezone (timeoffset to utc in minutes)
<ff_version>	string	Hardware and software revision
<gsmp>	string	GSM-Provider
<gsms>	string	Signal quality GSM Signal
<gsmti>	timestamp	Timestamp
<os_version>	string	operating system version
<conf>	string	hardware configuration Fieldgate
<ip>	string	IP address of Fieldgate
<device id="_4..20mA-1 " tag="Levelflex FMPP40" type="INTRN">	tag field	device data: <id>: Unique-ID device, <tag>: Tag des Gerätes <type>: "INTRN"
<hlsts1>, <hlsts2>,<hlsts3>,<hlsts4>	string	Limit value status, channels 1 - 4: PV, SV, TV and QV
<hltime1>, <hltime2>, <hltime3>, <hltime4>	Timestamp	Timestamp change of limit value status, channels 1 - 4: PV, SV, TV and QV
<chn>, <chn2>, <chn3>, <chn4>	integer	Channel: 01 = HART channel 1, 10 = HART channel 2, 11 = RS485
<ctime>, <ctime2>, <ctime3>, <ctime4>	Timestamp	Timestamp of first command 000 (HART) (brings: Expanded Device Type Code, Revision Levels, Device ID)
<v1>, <v2>, <v3>, ´<v4>	float	Process variable, channels 1 - 4: PV, SV, TV and QV
<u1>, <u2>, <u3>, <u4>	float	Unit of process variable, channels 1 - 4: PV, SV, TV and QV
<vstslvl>	integer	Device error 0: OK 1: Warning 2: Error (according to HART6-Spec)
<vsts>	string	Answer code and fault status(hex)
<vtime>	Timestamp	Timestamp of command 000
<v1_100>	float	Primary variable percent of range
<v1_lc>	float	Primary variable loop current
<stsext>	string	Status externer Module (FXZ520)
<fnum>	float	Expanded Device type Code des Gerätes (HART)
<datecode>	float	Herstellungsdatum des Gerätes (HART)
<desc>	string	Beschreibung der Gerätetyp (HART)
<tag>	string	Messstellungbezeichnung des Gerätes
<msg>	string	User text (HART
<serno>	integer	Seriennummer des Gerätes (HART)
<hwrev>	integer	Hardware-Revision des Gerätes (HART)
<swrev>	integer	Software-Revision des Gerätes (HART
<devrev>	integer	Revision des Gerätes (HART
<cmdrev>	integer	Kommando-Revision des Gerätes (HART
<preamble>	integer	Number of preambles(HART
<stime>	timestamp	Timestamp of cmd000(HART) (brings: Expanded Device Type Code, Revision Levels, Device ID)
<pid>	integer	Product idenitfication number (HART
<type>	string	Type of device (INTRN = data internal, HART = data from device)
<dev>	string	Device designation

Element	Data Type	Description
<man>	string	Device manufacturer
<unid>	string	Unique identifier of device
<param>		(only a example)
<dch>, <dch2>, <dch3>, <dch4>	boolean	1: Process value in overview, channels 1 - 4: PV, SV, TV and QV
<p4>	float	Output Value at 4.00mA Input Current (internal sensor only)
<p20>	float	Output Value at 20.00mA Input Current (internal sensor only)
<r>	boolean	1: Alarm mail on sensor error
<i>, <i2>, <i3>, <i4>	boolean	1: Alarm mail on leaving limits, channels 1 - 4: PV, SV, TV and QV
<o>, <o2>, <o3>, <o4>	boolean	1: Alarm mail on returning to limits, channels 1 - 4: PV, SV, TV and QV
<si>, <si2>, <si3>, <si4>	boolean	1: Send SMS on entering limits (PV)
<so>, <so2>, <so3>, <so4>	boolean	1: Send SMS on leaving limits (PV)
<t1ch>, <t1ch2>, <t1ch3>, <t1ch4>	string	Additional text information line 1, channels 1 - 4: PV, SV, TV and QV
<t2ch>, <t2ch2>, <t2ch3>, <t2ch4>	string	Additional text information line 2, channels 1 - 4: PV, SV, TV and QV
<lo>, <lo2>, <lo3>, <lo4>	float	Low limit, channels 1 - 4: PV, SV, TV and QV
<ll>, <ll2>, <ll3>, <ll4>	float	Low Low limit, channels 1 - 4: PV, SV, TV and QV
<hi>, <hi2>, <hi3>, <hi4>	float	High limit, channels 1 - 4: PV, SV, TV and QV
<hh>, <hh2>, <hh3>, <hh4>	float	High High limit, channels 1 - 4: PV, SV, TV and QV
<alt>, <alt2>, <alt3>, <alt4>	float	Wertangabe für Grenzwertänderung Kanal 1 - 4; PV, SV, TV und QV
<lt>, <lt2>, <lt3>, <lt4>	string	Linearization table, channels 1 - 4: PV, SV, TV and QV
<val>, <val2>, <val3>, <val4>	float	Last value stored in memory
<max>, <max2>, <max3>, <max4>	float	Max. value reached by process value during operation, channels 1 - 4: PV, SV, TV and QV
<min>, <min2>, <min3>, <min4>	float	Min. value reached by process value during operation, channels 1 - 4: PV, SV, TV and QV
<hy>, <hy2>, <hy3>, <hy4>	float	Hysteresis for re-entering limits, channels 1 - 4: PV, SV, TV and QV
<swl>, <swl2>, <swl3>, <swl4>	float	Switching level for status display, channels 1 - 4: PV, SV, TV and QV
<swsts>, <swsts2>, <swsts3>, <swsts4>	integer	Text display switching status, channels 1 - 4: PV, SV, TV and QV 1 = " uncovered" / "covered" 2 = "covered" / "uncovered" 3 = "on" / "off" 4 = "off" / "on" 5 = "empty" / "full" 6 = "full" / "empty" 7= "good" / "bad" 8= "bad" / "good"
<_t>	string	Device name/Tag (internal sensors only)
<_h>	boolean	1: Hide device from device overview
<_u>	string	Output unit (internal analog sensor only)

Table 12-1: XML data elements

For your notes

For your notes

Index

Numerics
4... 20 mA input 28
4...20 mA devices 17
4...20 mA/binary input 28

A
Accessories 101
Administration Mode 60, 61
All Sensor Limits 67
Analog Input Setup 70
Analog Input setup 78
Autorefresh 88

C
Change password 81
Clearing Logs 67
Commissioning 5, 30
Configuring the web server 58

D
DAT module 22
Data Logging 66
Declaration of conformity 6
Description/Range/Limit/Alarm Setup 72
Designated use 5
Device designation 9
Device details 79
Device overview 77
Device Scan Control 65
Digital Input setup 78
Digital input setup 71
Dynamic data/status 79

E
Electrical symbols 8
Endress+Hauser 88
Error Log 84
Establishing communication 42, 44, 48
Ethernet 10BaseT 13
Explosion protection 8

F
FieldCare 93
Fieldgate Analog 29
Fieldgate configuration 61
Fieldgate Ethernet 29
Fieldgate GSM 29
Fieldgate identification 62
Fieldgate location 61, 62, 81
Firmware update 100
Function 12
FXA520 69
FXN520 . . . . . 25, 69
FXN520 multidrop 19
FXZ520 . . . . . 28, 69
FXZ520 multiplexer 19

G
Get Configuration File 67
GPRS support 14

H
Hardware configuration 82
Hardware installation 21
Hardware lock 75
Hardware version 82
HART 15, 17
HART communication 65
HART communication parameters 65
HART Log 86
HART multidrop 19, 25, 65
HART multiplexer 18, 27
HART Parameters 65
HART point-to-point 24
HART server log 86
Hysteresis 72

I
Info 68
Input 66, 81
Installation 5
Inventory Control 12

L
Limit values 72
Logging on 58, 76

M
Mail 54, 64
Mail setup 55
Menu bar 59
Miscellaneous Settings 75
Mobile communications network 14
Modem Log 86
Mounting 21

N
Nameplate 9
Navigation bar 60
Network 52, 64
Network Setup 64
New Password 63, 81

O
Operability 16
Operating system 82
Operation 5
Overview 69, 77

P
Password 58
Power supply 23

R
Refresh 88
Relay 15, 23
Remote maintenance 12
Reset 98
Restore Configuration 67
Retype New Password 63, 81
Revision levels 80
RS-485 communication 65

S
Safety conventions 7
Scan setup 65
Security setup 81
Sensor error 74
Sensor error setup 78
Service interface 16, 22
Settings 61, 62
Setup details 78
SIM card 22
SMS setup 57
Special 67
Static data 79
System architecture 17
System Log 83
System requirements 20

T
Tag setup 78
Technical data 102
Telephone network 13
Time server setup 52
Trouble-shooting 97

U
User 63
User interface 59
User Mode 60, 61, 76
User Name 63, 81
User roles 58
User Setup 63

V
Viewing Information 76

W
Web browser 43, 104
Web Server 58
Wiring 23

X
XML data 80
XML export 89

www.endress.com/worldwide

Endress+Hauser

People for Process Automation