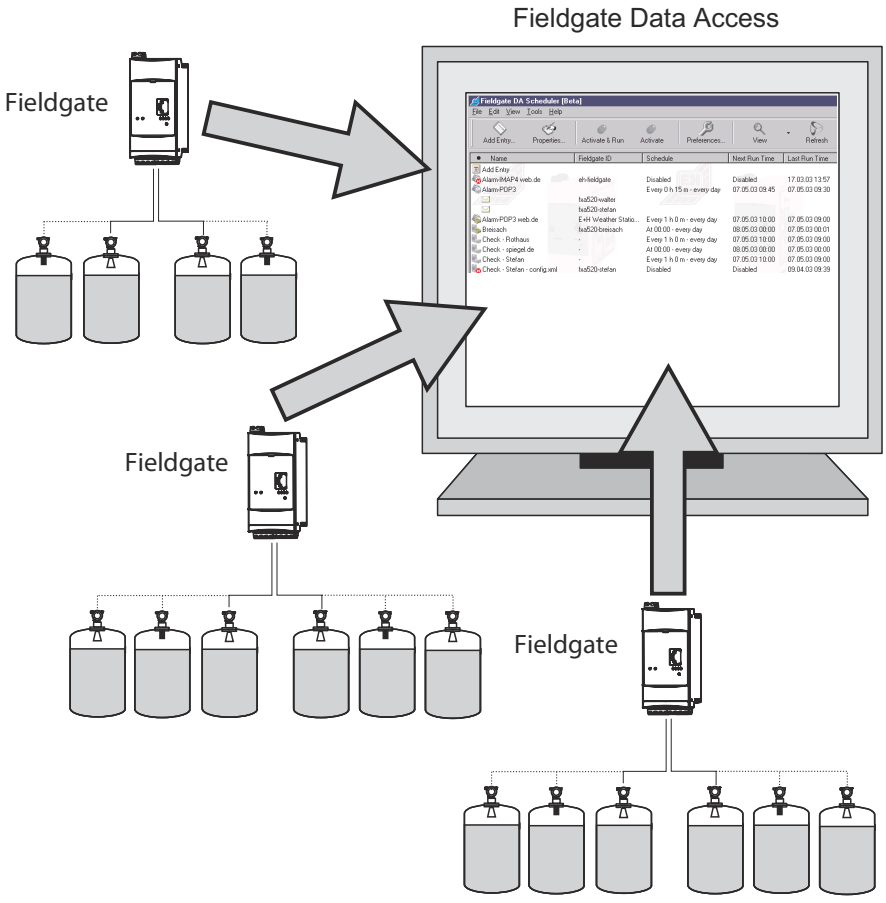
Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Operating Instructions

Fieldgate Data Access

Software for acquiring Fieldgate data



BA049S/04/en/12.09
V 2.06.xx
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Endress+Hauser

People for Process Automation

Table of contents

Revision History

A detailed revision history is to be found under "History" in the on-line help.

ProductVersion	Canual	Changes	Remarks
1.00.xx	BA273F/04/en/05.03	Original document	
2.00.xx	BA273/04/en/10.03	■ History database ■ OPC server ■ SMTP server for receiving measured value ■ Firmware update server ■ Storing the configuration in the INI file ■ IP/address with "Dial in to Fieldgate (RAS)" connection type can be edited	Manual updated corespondingly
2.01.xx 2.04.xx	BA273/04/en/10.03	See "History" in on-line help	
2.05.xx	BA049S/04/de/03.05	New manual number	
2.06.xx	BA049S/04/de/12.09	■ Windows 98, Windows NT and Windows 2000 no longer supported ■ VPI balancing removed	

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1 Safety

1.1 Designated use

The application Fieldgate Data Access, allows data to be retrieved from Fieldgates with periodic time control. In addition, data (e-mails) sent by the Fieldgate can be retrieved by POP3 or IMAP4 servers. Fieldgates can also send measurement mails directly to Fieldgate Data Access.

1.2 Installation, commissioning and operation

Fieldgate Data Access is installed together with Fieldgate Viewer from the Fieldgate Viewer Setup Program. It must be operated and maintained according to the instructions in this manual: personnel must be authorised and suitably qualified.

The computer on which Fieldgate Data Access is running must be secured. Access, at least, to the computer should only be permitted to trustworthy people.

In addition, a computer directly accessing the Internet – this is the case if Fieldgate Data Access retrieves measurement mails from a POP3 server on the Internet – should be kept up to date as per "http://windowsupdate.microsoft.com/" and, optimally, provided with additional security with a firewall.

Technical improvement

Endress+Hauser reserves the right to make technical improvements to Fieldgate Data Access at any time and without prior notification. If the improvements effect operation, the product version is incremented at the first or second position. In both cases, a new version of the operating instructions issued. The product version is to be found on the front cover of the manual and the changes are recorded in the Revision Index.

1.3 Conventions and icons

In order to highlight safety relevant or alternative operating procedures in the manual, the following conventions have been used, each indicated by a corresponding icon in the margin.

Text emphasis

Text emphasis	Function	Example
Bold	Keys, buttons, program icons, tabs, menus, commands	**Start** =>**Programs** =>**Endress+Hauser** 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

Icon	Meaning
	A note highlights actions or procedures which, if not performed correctly, may indirectly affect operation or may lead to an instrument response which is not planned
	**Caution!** Caution highlights actions or procedures which, if not performed correctly, may lead to personal injury or incorrect functioning of the instrument
	**Warning!** A warning highlights actions or procedures which, if not performed correctly, will lead to personal injury, a safety hazard or destruction of the instrument

2 Introduction

2.1 Licensing agreement

The software components needed for the installation are either freely available or subject to the licensing conditions of their manufacturer. By installing the software on your computer, you declare that you accept the conditions of the licensing agreement in question. The licensing agreement can be viewed in the on-line help.

2.2 System requirements

The following prerequisites are minimum requirements:

- Operating System
  - Windows XP (Professional 32) SP 2
  - Windows Server 2003 (Enterprise 32) R2 SP 2
  - Windows Vista (Enterprise 32) SP 2
  - Windows 7 (Professional 32)
- Hardware (typical)
  - 2GHz CPU,
  - 1024MByte RAM
  - 80GByte harddisk (fast)
- Limitations
  - Windows Vista / Windows 7: UAC has to be turned off

Required updates can be downloaded from "**http://www.microsoft.com**".

If Fieldgate Data Access has to establish a direct Internet connection, we recommend you update the computer via "**http://windowsupdate.microsoft.com/**" (only works with Internet Explorer)!

2.3 Fieldgate Data Access

The application Fieldgate Data Access, allows data to be retrieved from Fieldgates with periodic time control. In addition, data (e-mails) sent by the Fieldgate can be retrieved by POP3 or IMAP4 servers. Fieldgates can also send measurement mails directly to Fieldgate Data Access.

The data are acquired using scheduler entries, whereby the time can be controlled periodically or at user-defined times. Fieldgate Data Access can also be run as a **System Service**, which works in the background

2.3.1 Data sources

The following can be used as data sources:
- Access via http. In principle, this is access using a web browser. Access via a proxy server and via modem dial-in (RAS) are available as options.
- Access to e-mails (measured value e-mails) sent by Fieldgate via POP3 and IMAP4 mailbox (but not via proxy). As an option, the server can also be accessed via modem dial-in (RAS).
- Sending measurement mails directly to Fieldgate Data Access via SMTP.

2.3.2 Data presentation

The collected data can be accessed in several ways.

- **http access:** Fieldgate Data Access contains an integrated web server which presents the data similar to the FXA320/520 XML data structure. History data can also be accessed in a CSV structure which can be received from e.g. Microsoft Excel. Filters to select data can be supplied in the URL.
- **CSV files**: national settings for column separation and floating point display are taken into consideration
- **history database**: standard SQL mechanism can be used to access the data from the history database. Nevertheless the above described http access is the preferred way for collected data access
- **OPC**: Fieldgate Data Access contains an OPC server which provides data to OPC clients. SCADA packages such as P View use OPC to access process data.
- **SAP RFC**: Fieldgate Data Access is capable of pushingdata into an SAP system through Remote Function Calls. The used data structure is predefined. Please contact your associated Endress+Hauser Sales Center if you need more information.
- **User defined data post processing**: After reception of a new data set a user defined program can be triggered to perform further data processing. This is an expert option!

2.3.3 Alarm signalling

Fieldgate Data Access generates alarm e-mails, if scheduler entries cannot be processed. Alarm e-mails from Fieldgates can also be forwarded.

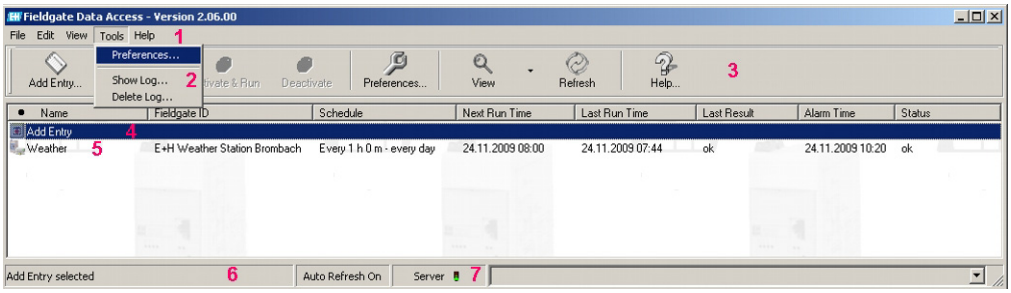
2.3.4 Miscellaneous

- Virtually any number of scheduler entries can be generated
- Access to the Fieldgates is carried out in parallel (multi-threading), whereby there are restrictions with RAS.
- One modem connection is used for the telephone dial-in.

3 Operation

3.1 User interface

When the program is first started the overview is empty except for "**Add Entry**". When entries are added they appear as a list as shown in the figure below.



The user interface has the usual Windows operating elements as shown in the table below:

User interface

#	Object	Description
1	Menu bar	Chapter 3.2
2	Drop-down	Chapter 3.2
3	Toolbar	Chapter 3.3
4	Add Entry	Chapter 4.2
5	Fieldgate list	Chapter 4.2
6	Status line	Chapter 3.6
7	Server status	Chapter 3.6
–	Context menus	Chapter 3.5

3.2 Symbols in Overview

Symbol	Description
	**Add Entry** Add entry by double-clicking.
	Direct Fieldgate connection in the network; the connection can also be made via a proxy server.
	Direct Fieldgate connection via RAS; the connection can also be made via an ISP and a proxy server.
	Deactivated Fieldgate connection.
	POP3/IMAP4 connection in the network.
	POP3/IMAP4 connection via RAS.
	Deactivated POP3/IMAP4 connection.
	Connection document of the SMTP server

3.3 Menu bar

The table below summarizes the menus and submenus available in Fieldgate data Access

Menu bar

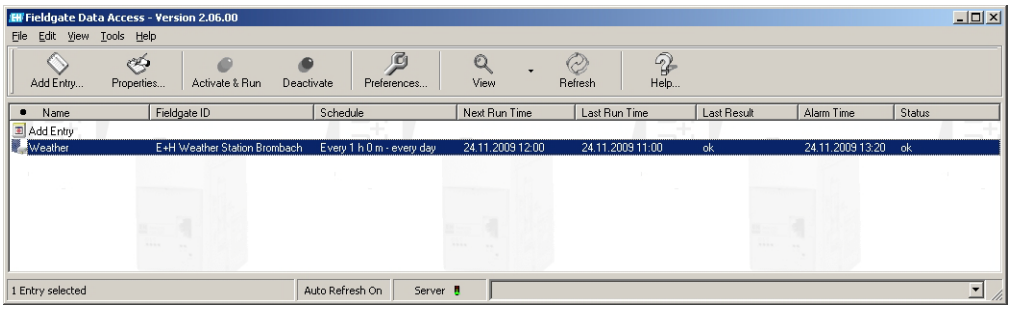
Menu	Submenu	Description
File	Activate & Run	Activate selected entry and set next run time to current clock time → Entry is executed.
	Activate	Activate selected entry.
	XML Data	Display XML data of the selected entry
	CSV Folder	Open the folder with the CSV data of the entry in Explorer.
	Delete Entry/Entries	Delete selected entries
	Rename	Change entry nam
	Open/Properties	Open: no selection – add new entry Properties: display/edit properties of the selected entry
	Close	End application
Edit	Select All	Select all entries (without "**Add Entry**")
	Create Copy	Create copy of the selected entry. The copy created is selected and deactivated
View	Entry Name	Sort fieldgate list according to "**Entry Name**"
	Fieldgate ID	Sort fieldgate list according to "Fieldgate ID"
	Next Run Time	Sort fieldgate list according to "Next Run Time"
	Last Run Time	Sort fieldgate list according to "Last Run Time"
	Last Result	Sort fieldgate list according to "Last Resul"
	Alarm Time	Sort fieldgate list according to "Alarm Time"
	Refresh	Update overview
	Auto Refresh	Update overview automatically.
Tools	Preferences	Displays the "**Program settings**"
	Show Log	Display log file in standard editor
	Delete Log	Delete log file
Help	Contents...	Display table of contents of the online hel
	Search...	Display index of the online help
	About...	Display information about **Fieldgate Data Access**

3.4 Toolbar

Toolbar

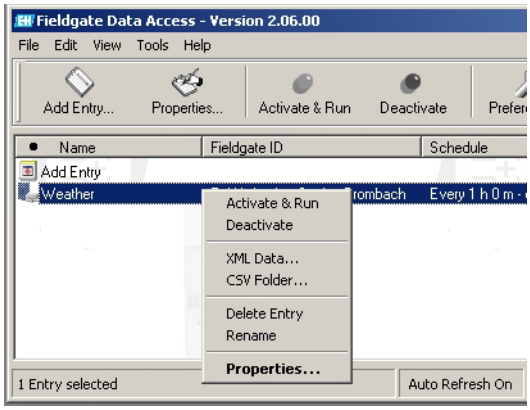
Submenu	Description
Add Entry	Add a new entry
Properties	Display/edit properties of the selected entry
Activate & Run	Activate selected entry and set next run time to current clock time → Entry is executed.
Activate/Deactivate	Activate selected entry.
Preferences	Displays the "**Program settings**"
View	Sort fieldgate list according to different criteria
Refresh	Update overview
Help	Open online help

3.5 List view



The following functions are implemented in the fieldgate list:
- The sorting can be changed by clicking on the title columns.
- Double-clicking on the entries opens a dialogue box containing the entry details.
- Double-clicking on "**Add Entry**" creates a new entry and opens the setting dialogue.
- Right-clicking on an activated entry opens a context menu.
- Numerous entries can be selected using shift-left mouse button and ctrl-left mouse button.

3.6 Context menus



The context menu is to a large extent the same as the normal "**File**" menu. Dependent on the selected entries, options are activated/deactivated.

3.7 Status line

- Double-clicking on "**Auto Refresh On/Off**" switches between these two statuses
- A right click on the **Server** button opens a context menu that can be used to stop and start the server.

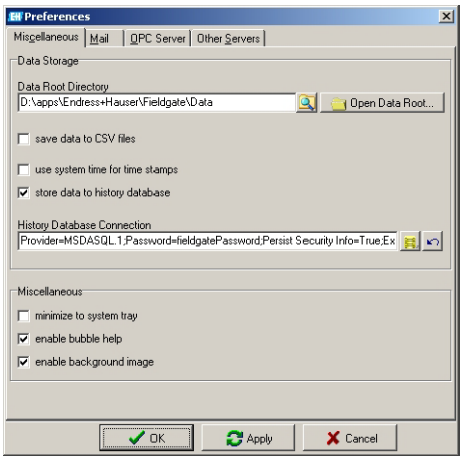
4 Program settings

4.1 Preferences

The basic program settings are made in the **Preferences** dialog, which comprises several register cards which may change according to the state of operation.

4.1.1 Miscellaneous

This tab is used to make the basic database and other settings:

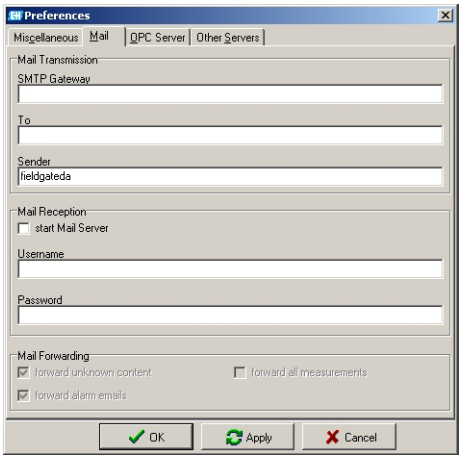


Field/Button	Field/Checkbox/Button	Description
Data Storage	**Data Root Directory**  	Root directory for CSV data, see also "**Directory Structure**" – Opens dialogue box for directory selection – Opens Explorer in the data directory selection
	save data to CSV file	■ Checked: Save received data in CSV files
	use system time for time stamps	■ Unchecked: Time stamp is the Fieldgate time in the XML data ■ Checked: Time stamp in the CSV data is the PC's clock time – Using PC time is problematic if data is fetched from e-mail mailboxes as the collected data does not contain the measuring date, rather the time at which the mailbox was scanned
	store data to history database	■ Checked: Data records received are marked as history data. ■ Unchecked: Data records received are marked as records which can be deleted. Such data records are automatically deleted once a younger data record is received.
	History Database Connection   ..	This is an option for experts! With the connection string, any external database can be used as a history database. In this way, an Access-compatible history database is created – Supports the configuration of the connection string – Return to the standard connection string (also for MySQL)
Miscellaneous	**mimimize to system tray** 	■ Checked: If the **Fieldgate Data Access** window is minimized, a symbol is shown in the system tray. This symbol can be used to restore or close the application.
	enable bubble help	■ Checked: Activates "Bubble help" of Fieldgate Data Access
	enable background image	■ Checked: Activates a background image in the Overview dialog
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

4.1.2 Mail

This tab is used to make settings relating to sending or receiving mails:

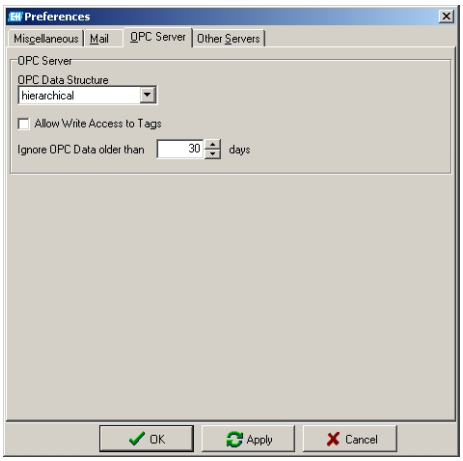
- Fieldgate Data Access generates e-mails in the event of an alarm (e.g. cannot access Fieldgate, etc). **Mail Transmission** sets up this function
- Fieldgate Data Access is also able to receive mails from Fieldgates and process them further as per the contents. For example, alarm e-mails are forwarded to the destination address in "Mail Transmission" and measurement mails in XML format are interpreted correctly. **Mail Reception** sets up this function.
- If a destination address is entered, the fields for **Mail Forwarding** are activated



Field/Button	Field/Checkbox	Description
Mail Transmission	**SMTP Gateway**	SMTP gateway specification (server for forwarding e-mails) for e-mail transmission. – If authentication is required, it can be performed in the input field with the **<User>:<Password>@<Server>** format. – The gateway must be available in the local network.
	To	Destination address – An e-mail address with domain specification is also valid!
	Sender	Sender's address – An e-mail address with domain specification is also valid!
Mail Reception	**start Mail Server**	Cheched: Starts the mail server. – The standard setting is "**do not start**" – The standard port for SMTP (Port 25) is always used
	Usename*	Authentication of the user name and password used by the mail server – The SMTP user name and SMTP password are configured in the associated fieldgate
	Password*	
Mail Forwarding	**forward unknown content**	Forward unknown data as an alarm e-mail – Recommended, for example, when scanning the data via mailboxes.
	forward alarm email	Forward alarm e-mails from Fieldgate
	forward all measurements	Forward all measurement e-mails from Fieldgate
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes
*Username/Password can also be left empty, but is not recommended. In this case, no authentication is necessary at the Fieldgate Data Access Mail Server. However, only measurement mails in XML format are then accepted. Alarm mails and mails in an unknown format are not forwarded.		

4.1.3 OPC Server

This tab is used to make settings for the OPC server. The tab itself is only visible if the OPC server has been installed. Please note that the OPC server can only start if data can be stored in the history database.



Field/Button	Field/Checkbox	Description
OPC Server	**OPC Data Structure**	Determines how the OPC tags of the measuring data are created See also Chapter 5.3.1
	Allow Write Access to Tags	Checked: the OPC tags are created with write access. – This setting is not recommended but is required by some OPC clients for correct OPC tag scanning (i.e. browsing).
	Ignore OPC Data older than [x] days	Measuring data which have not been updated for more than [x] days are not reported to the OPC clients. – Scanning only takes place when the OPC server is started; during operation, the "**OPC-Quality**" of the tags is set to "**BAD**" if errors occur. This prevents old data making the OPC data unclear.
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

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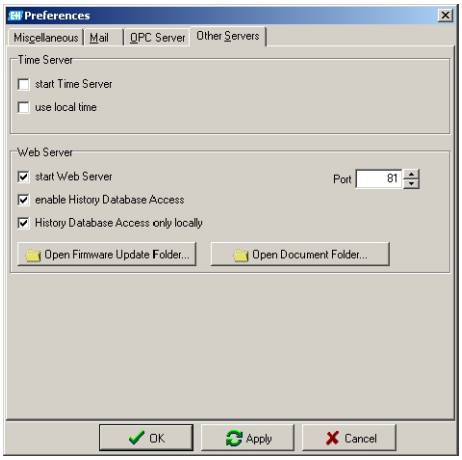
4.1.4 Other Servers

Use this tab to configure other server services of Fieldgate Data Access:

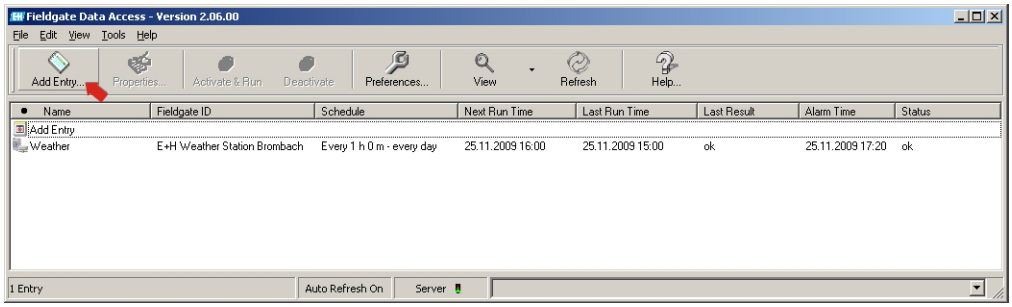


Field/Button	Field/Checkbox/Button	Description
Time Server	**start Time Server**	■ Checked: Starts the time server – It is recommended that the time server is switched on so that the time can be distributed to the Fieldgates ■ Unchecked: Time server is switched off
	use local Time	■ Unchecked: Time server distributes universal time (UTC) – This is the recommended setting. – In this case, the time offset with regard to UTC must be configured at the Fieldgate as well as the changeover from summer-time to winter-time ■ Checked: Time server distributes local times – If the local time is sent, "**0h**" must be selected at the Fieldgates as the time offset. However, this has the disadvantage that time stamping is no longer clear due to jumps at summer-time/winter-time transition
Web Server	**start Web server**	The web server is used to download firmware and documentation updates - it is normally switched off. ■ Checked: Starts the Web-Server ■ Unchecked: Web-Server is switched off.
	Port	Selects port, under which the Web server is active – Port 81 is used as default to avoid conflicts with any http server that may be in use, e.g. Apache
	enable History Database Access	■ Checked: ■ Unchecked:
	History Database Access only locally	■ Checked: ■ Unchecked:
	Open Firmware Updatte Folder...	Opens the folder in which firmware updates have to be stored
	Open Documens Folder	Opens the folder in which document updates have to be stored
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

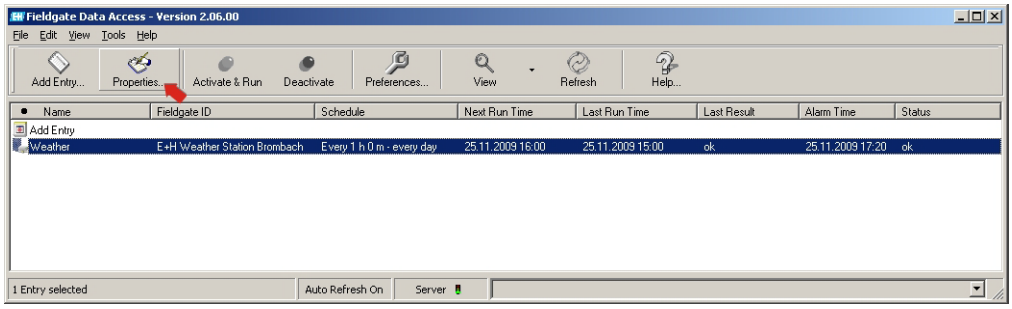
4.2 Fieldgate Overview

The Fieldgate Overview contains information on the operational status of the fieldgates connected to Fieldgate Data Access.

In order to create a new entry in the list, click on **Add Entry** in the toolbar or double click on the line **Add Entry** in the overview.



In order to edit one or more entries, select the corresponfding lines, then click on **Properties** in the toolbar. You can also right-click on the selected line and open the **Properties** from the associated context menu.



Depending upon the procedure used, the **Add Entry** or **Details of <Name>** dialog opens. the dialog contains tabs which allow various aspects of the entry to be edited.

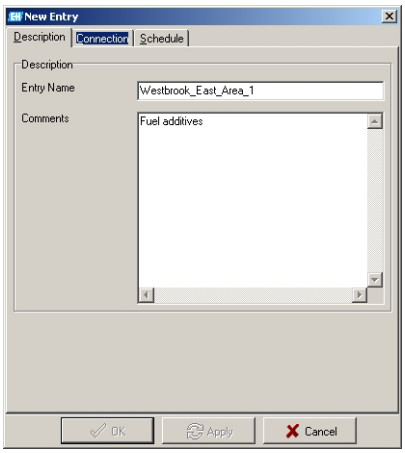
A number of other entry aids are provided:

- If the entry is invalid, the "**OK**" and "**Apply**" buttons are deactivated, it is possible to abort the entry using "**Cancel**".
- A tab, which contains an incomplete/invalid entry, is marked
- An input field, which contains an incomplete/invalid entry, is highlighted; how this background looks is dependent on the system settings.
- Settings that are not possible (e.g. when using a direct network connection, specifying a proxy server is not allowed) are displayed by deactivated input fields.

A description of the individual tabs in the dialogue box is to be found in Chapters 4.2.1 to 4.2.6.

4.2.1 Description

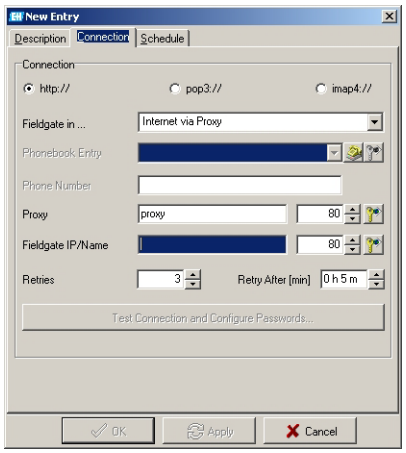
This tab is used to describe the scheduler entry:



Field/Button	Field/Checkbox/Button	Description
Description	**Entry name**	Manatory entry: The specified name appears in the overview under the 'Name' column (1st column)
	Comments	In this input field you can enter comments about the connection document; these are not shown in the overview
OK*	–	Accepts changes and closes the dialog
Apply*	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes
*OK and Apply become active anly after all mandatory fields have been filled in		

4.2.2 Connection

The connection mode is specified in this tab:

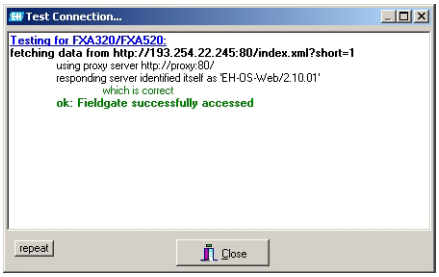


Field/Button	Field/Checkbox/Button	Description
Connection	**http://**	The Fieldgate is scanned directly.
	pop3://	The Fieldgate sends data to a pop3 mailbox
	imap4://	The Fieldgate sends data to an imap4 mailbox
	Fieldgate in ...	▪ **LAN / direct Internet** The Fieldgate is located in the local network or the Internet can be accessed directly (e.g. via a router) ▪ **Internet via Proxy –** for http:// only The Internet can be accessed via a proxy; this specification can only be made for the http connection ▪ **Internet via ISP (RAS)** The Fieldgate or the mail server is accessed via a dial-in to an ISP ▪ **Internet via ISP with Proxy (RAS) –** for http:// only The Fieldgate is accessed via a dial-in to an ISP with a downstream proxy; this specification can only be made for an http connection ▪ **Dial in to Fieldgate (RAS) –** for http:// only Direct dial-in to a modem or GSM Fieldgate; this corresponds to "**Internet via ISP (RAS)**" with IP/Name
	Phonebook Entry	Telephone book entry for dial-in for options "Internet via ISP (RAS)", "Internet via ISP with Proxy (RAS)", "Dial in to Fieldgate (RAS)" – Buttons to edit the telephone book and password respectively
	Phone Number	Optional specification of a phone number for the phone book entry. – This allows reduction of total entries in the RAS phone book
	Proxy	Proxy server for option "http://" with "Internet via Proxy" and "Internet via ISP with Proxy (RAS)" – Button to edit the user name and password
	Fieldgate IP/Name	Server or Fieldgate name – Button to edit the user name and password
	Retries	Number of attempts to establish connection before the connection is considered to have failed and an alarm e-mail is triggered.
	Retries After [min]	Time in minutes after which a retry is started
	Test Connection and Configure Passwords ..	Tests connection to Fieldgate or e-mail server
OK*	–	Accepts changes and closes the dialog
Apply*	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes
*OK and Apply become active anly after all mandatory fields have been filled in		

Test Connection and Configure Passwords ...

It is recommended that you test the connection to the Fieldgate or to the e-mail server after entering the parameters listed in the previous table. This is done by presssing the button **Test Connection and Configure Passwords**. User names and passwords that have not yet been specified can also be configured here.

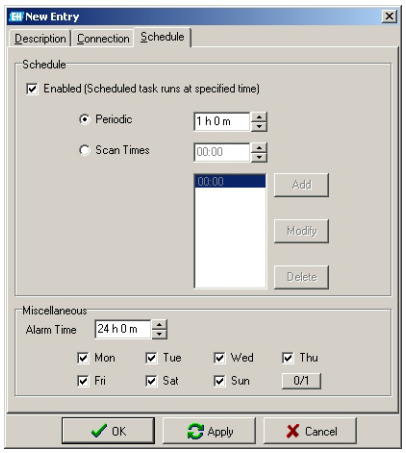
During the test, a message is displayed in another dialog, which provides information about the progress of the test:



- Use "**repeat**" to repeat a test as many times as you like.
- Use "**Close**" to close the testbox.

4.2.3 Schedule

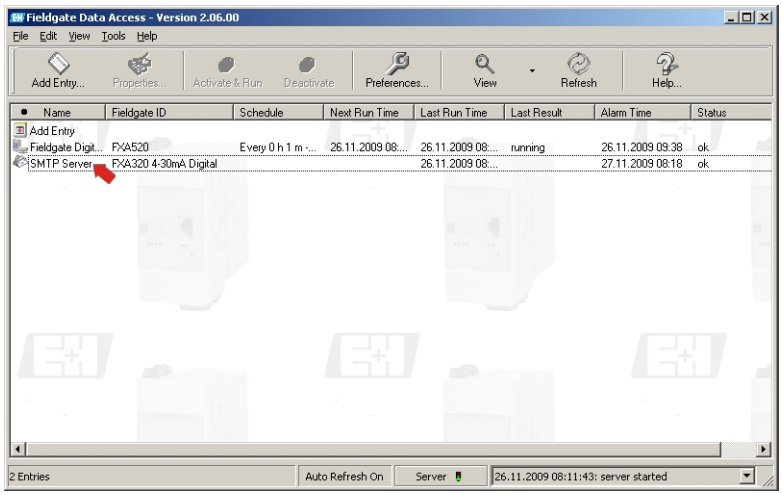
This tab is used to define the temporal sequence of the scheduler entry.



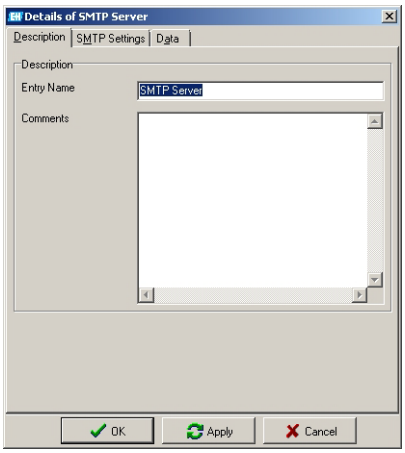
Field/Button	Field/Checkbox/Button	Description
Schedule	**Enabled (Scheduled task runs at specified time)**	Checked: Activates the scheduler entry
	Periodic	Time that elapsed between two scans. – Valid entries are, for example: "**20**" (= 20 minutes), "**20 m**" (dito), "**2 h**" (= two hours), "**1 h 30**" (= one hour 30 minutes), "**1 h 30 m**" (dito). – The arrows allow the time to be changed in 5 minute increments – Where possible, the first scan is made on the full hour (for "20 m" at hh:00, hh:20 und hh:40 etc.).
	Scan Times	Scan at defined times. – The times are defined in the input box next to the arrows and entered into the input list via "**Add**" or "**Modify**". "**Delete**" can be used to remove entries from the list. – The number of times is not subject to any practical restrictions
Miscellaneous	**Alarm Time**	Time interval after which an alarm e-mail is triggered if no data is received from a Fieldgate – Note: alarm e-mails are also triggered when a connection cannot be established after **n retries**. Alarm Time is used when scanning mailboxes as the mailbox scan can be successful (connection could be established) although the Fieldgate has not been able to send e-mails for 24 hours.
	Mon, Tue, Wed, Thu, Fri, Sat, Sun	Deactivates the scheduler entry can also be on particular days – If the scheduler has no weekday activated, this is considered to be an input error
	0/1	Set or reset the all daily activations together
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

4.2.4 SMTP Settings

This tab only appears if the entry selected has been (automatically) generated by SMTP receipt of data:



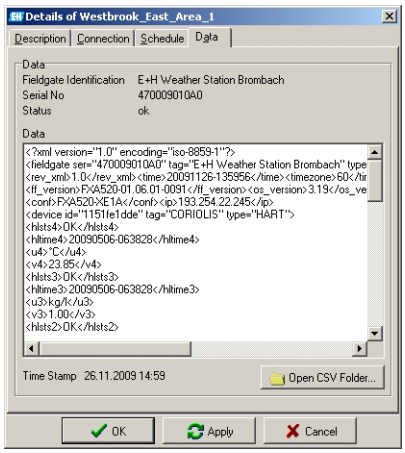
The register card is as follows:



Field/Button	Field/Checkbox/Button	Description
Schedule	**Alarm Time**	Time interval after which an alarm e-mail is triggered if no data is received from a Fieldgate – If a measurement mail is received from a Fieldgate, a data document with a related alarm time is created under the "**SMTP-Server**" connection document (this is a dummy). The alarm time is reset on each new receipt of data; an alarm mail is generated when the alarm time is exceeded
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

4.2.5 Data

This tab displays the last received XML data of the scheduler entry, i.e. provides information.



Field/Button	Field/Checkbox/Button	Description
Data	**Fieldgate Identification**	Name of the Fieldgates
	Serial Number	Serial number of the Fieldgate
	Status	Status of the Fieldgates
	Data	Coontent of hte last XML e-mail
	Open CSV Folder...	Opens the CSV folder (Option "**save data to CSV files**" is selected in **Preferences**
OK	–	Accepts changes and closes the dialog
Apply	–	Accepts changes and leaves the dialog open
Cancel	–	Closes the dialog and discards all changes

5 Working with databases

5.1 CSV-Daten

The data received can be stored in CSV files, whereby each file contains the data of one field device. Only the most important data are contained in the CSV files. In particular, these are the measured values, the related unit and the measurement time stamp.

Notes on the CSV files:
- CSV data storage switch-on and switch-off in Preferences
- For location of data storage, see Directory structure
- New measured values are always appended to the CSV file
- The CSV files are **not** automatically shortened, i.e. the CSV files are generated without size restrictions
- The second line of the CSV file is for problem analysis
- The date and number format are per the German configuration
- The CSV files are write-protected. This prevents unintentional changes and the file being "blocked" by Excel, for example.

Tips:
- To find a CSV file quickly: click the corresponding entry in Fieldgate Data Access and then "CSV Folder..." oder über "File"/"CSV Folder..."
- If the CSV data are to be evaluated in Excel, double-clicking the file does not display the data properly in Excel. The data are correctly displayed by dragging and dropping into Excel.

5.1.1 Original CSV file

An example of a CSV file is given below. Two measurements of a Nivotester FTC625 are displayed

"FTC625 / Nivotester - FTC-2";
"Countrycode used:";"Deutsch (Deutschland)";"LongTimeFormat: hh:mm:ss";"ShortDateFormat: dd.MM.yy";
"Device";"Tag";"Date & Time";"Measured Value 1";"Unit 1";"Measured Value 2";"Unit 2";"Measured Value 3";"Unit 3";"Measured Value 4";"Unit 4";"high";"low";"device status";"level status";"Used Time";
"FTC625 / Nivotester";"FTC-2";28.10.03 12:00:20;0,00;"";171,55;"Hz";0,00;"Hz";;"";0,90;0,10;"0x00 0x00";0;"UTC+2h""FTC625 / Nivotester";"FTC-2";29.10.03 12:00:14;0,00;"";171,55;"Hz";0,00;"Hz";;"";0,90;0,10;"0x00 0x00";0;"UTC+2h"

5.1.2 CSV file viewed in Excel

The corresponding data is as shown in Excel:

FTC625 / Nivotester - FTC-2															
Countrycode used:	Deutsch (Deutschland)	LongTimeFormat: hh:mm:ss	ShortDateFormat: dd.MM.yy												
Device	Tag	Date & Time	Measured Value 1	Unit 1	Measured Value 2	Unit 2	Measured Value 3	Unit 3	Measured Value 4	Unit 4	high	low	device status	level status	Used Time
FTC625 / Nivotester	FTC-2	28.10.03 12:00	0		171,53	Hz	0	Hz			0,9	0,1	0x00 0x00	0	UTC+2h
FTC625 / Nivotester	FTC-2	29.10.03 12:00	0		171,55	Hz	0	Hz			0,9	0,1	0x00 0x00	0	UTC+2h

5.2 History database

The data records received are recorded in the history database. In contrast to CSV data, when accessing the database you have the advantage that the desired data records can be directly queried by SQL. The data can be integrated in a worksheet in Excel (97), for example, via "Data/Get External Data/Create New Query..." and then processed further.

The basic settings for the history database are made in "Preferences...". To record the data, "store data to history database" must be activated. Otherwise, only the Fieldgate data record last received is stored (this is necessary for the operation of the OPC serverI

Caution!
- The OPC server only works if it is possible to write to the history database.
- There may only be one application that writes to the database!

5.2.1 Types of database

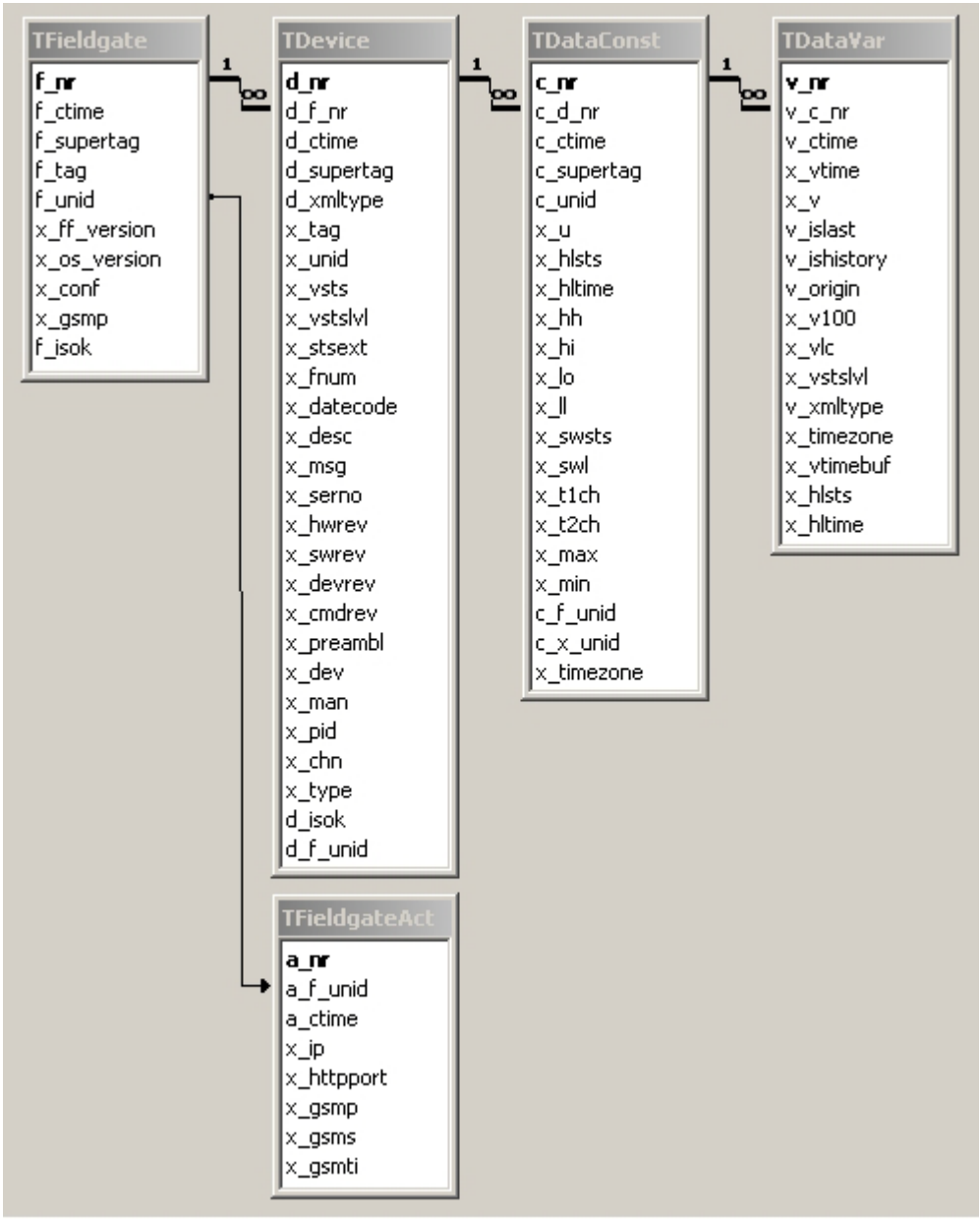
The history data are saved to an Access database as standard.

Working with Access databases is, on the whole, transparent which is why it should also be used by people with little experience in databases. However, PostgreSQL, MySQL or SAP DB/MaxDB databases may also be used.

The database is automatically generated for Access. For all other types, the database must be created manually (by the system administrator, for example) with the relevant access rights. The tables contained are generated by "Fieldgate Data Access".

5.2.2 Table structure

The data are stored in the history database in a hierarchical table structure. The variability of the data increases from left to right (see graphic). This has the advantage of compressing information or database compactness.



Data fields beginning with "x_" are generated directly from the XML data. Fields with another prefix are used for database administration or have been partially used to avoid ambiguity (e.g. "f_unid").

A brief explanation of the tables and their particular data types follows. Reference is made to the Fieldgate Operating Instructions for an explanation of the XML data fields.

5.2.3 TFieldgate

Contains Fieldgate configuration data and indicates the data root of a Fieldgate.

- "f_isok" indicates whether a Fieldgate is supplying data
- "f_unid" is the Fieldgate serial number
- "f_tag" is the "Fieldgate Identification"

f_nr	Number
f_ctime	Date/Time
f_supertag	Text
f_tag	Text
f_unid	Text
x_ff_version	Text
x_os_version	Text
x_conf	Text
x_gsmp	Text
f_isok	Text

5.2.4 TFieldgateAct

Contains (variable) Fieldgate configuration data for which no history is stored. Instead only the last received data is stored in this table.

- 'x_ip' is the current IP address
- 'x_httpport' is the current port of the web server
- 'x_gsmp' is the current GSM operator
- 'x_gsms' is the current GSM signal strength

a_nr	Number
a_f_unid	Text
a_ctime	Date/Time
x_ip	Text
x_httpport	Text
x_gsmp	Text
x_gsms	Text
x_gsmti	Text

5.2.5 TDevice

Contains, among other things, the HART configuration data of a field device.

- 'd_isok' indicates whether a field device is supplying data
- 'd_xmltype'='f' the data were taken from a full XML data record
- 'd_xmltype'='p' the data were taken from a partial XML data record
- 'd_xmltype'='h' the data were taken from a history XML data record
- 'd_f_unid' is the 'Fieldgate Identification'

d_nr	Number
d_f_nr	Number
d_ctime	Date/Time
d_supertag	Text
d_xmltype	Text
x_tag	Text
x_unid	Text
x_vsts	Text
x_vstslvl	Number
x_stsext	Text
x_fnum	Number
x_datecode	Number
x_desc	Text
x_msg	Text
x_serno	Text
x_hwrev	Text
x_swrev	Text
x_devrev	Number
x_cmdrev	Number
x_preambl	Number
x_dev	Text
x_man	Text
x_pid	Number
x_chn	Number
x_type	Text
d_isok	Text
d_f_unid	Text

5.2.6 TDataConst

Contains the data of a process value (a HART field device can supply up to four values).

- 'c_unid' is the 'Value Number' ('1'..'9', 'a'..'z')
- 'c_f_unid' is the 'Fieldgate Identification'
- 'c_x_unid' is the 'Device Identification'

c_nr	Number
c_d_nr	Number
c_ctime	Date/Time
c_supertag	Text
c_unid	Text
x_u	Text
x_hlsts	Text
x_hltime	Date/Time
x_hh	Number
x_hi	Number
x_lo	Number
x_ll	Number
x_swsts	Text
x_swl	Number
x_t1ch	Text
x_t2ch	Text
x_max	Number
x_min	Number
c_f_unid	Text
c_x_unid	Text
x_timezone	Number

5.2.7 TDataVar

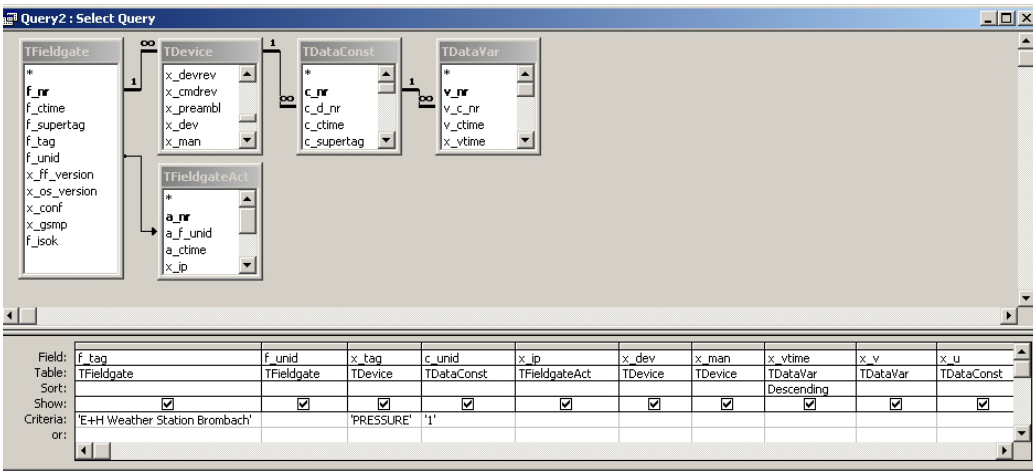
Contains the variable data of a process value.

- 'v_islast' indicates whether this is the latest measured value
- 'v_ishistory' indicates whether this value is recorded in the history
- 'v_origin' indicates the kind of data source the data record comes from ('999' http, otherwise the codes of the XML mails)
- 'x_v100' and 'x_vlc' are only created for the first process value

v_nr	Number
v_c_nr	Number
v_ctime	Date/Time
x_vtime	Date/Time
x_v	Number
v_islast	Text
v_ishistory	Text
v_origin	Text
x_v100	Number
x_vlc	Number
x_vstslvl	Number
v_xmltype	Text
x_timezone	Number
x_vtimebuf	Text
x_hlsts	Text
x_hltime	Date/Time

5.2.8 Access to the database

The history database is generally accessed via SQL. Microsoft applications offer "Microsoft Query" as a tool which can be used to create queries graphically:



The related (simplified) SQL query would look like this:

```
SELECT
  TFieldgate.f_tag, TFieldgate.f_unid, TDevice.x_tag, TDataConst.c_unid, TFieldgateAct.x_ip,
  TDevice.x_dev, TDevice.x_man, TDataVar.x_vtime, TDataVar.x_v, TDataConst.x_u
FROM
  (TFieldgate INNER JOIN
    (TDevice INNER JOIN
      (TDataConst INNER JOIN TDataVar ON TDataConst.c_nr=TDataVar.v_c_nr)
    ON TDevice.d_nr=TDataConst.c_d_nr)
   ON TFieldgate.f_nr=TDevice.d_f_nr)
  LEFT JOIN TFieldgateAct ON TFieldgate.f_unid=TFieldgateAct.a_f_unid
WHERE
  (TFieldgate.f_tag='E+H Weather Station Brombach' AND TDevice.x_tag='PRESSURE' AND TDataConst.c_unid='1')
ORDER BY
  TDataVar.x_vtime DESC;
```

This query can be easily adapted to your own queries.

5.2.9 Using a data source

Please note that these instructions do not apply to the Access database used as standard!

The following conditions must be met:

- Database installation (MySQL, PostgreSQL, Max DB) with corresponding access rights.
- (Empty) database in this database system, name e.g. "FieldgateData".
- ODBC installation on the Fieldgate Data Access side.
- Creation of a **System** DSN. Under Windows XP under "Control Panel/Administrative Tools/ Data Sources (ODBC)/System-DSN". Database names, connection options and the DSN name are assigned here.
- In "Preferences..." the system DSN created can only be selected via  and then by specifying the provider (ODBC).
- Fieldgate Data Access then has to be restarted.

Now the data received are written to the database specified by the system DSN.

5.3 OPC-Server

The OPC server delivered with Fieldgate Data Access is compatible with the OPC Data Access 1.1, 2.0 and 3.0 specification. The OPC server is an installation option, i.e. it cannot be activated at a later date after installation. It is possible to deactivate it via "**fxada/uninstall-opc**" in the installation folder (see Command line parameters). Basic settings of the OPC server can be made via "**Preferences...**".

Caution!
- The OPC server requires the **history database** for operation
- For OPC DCOM security setup, please check the OPC-FAQ, Chapter 6.4

Note!
- The name of the OPC server DCOM object is "**Endress+Hauser.Fieldgate.OPC**", the GUID "**5C1BCBBF-8A17-418F-AAA9-CAD25F14F235**".
- The complete data structure of the OPC server cannot be changed via OPC clients (read-only)!

5.3.1 Tag structure

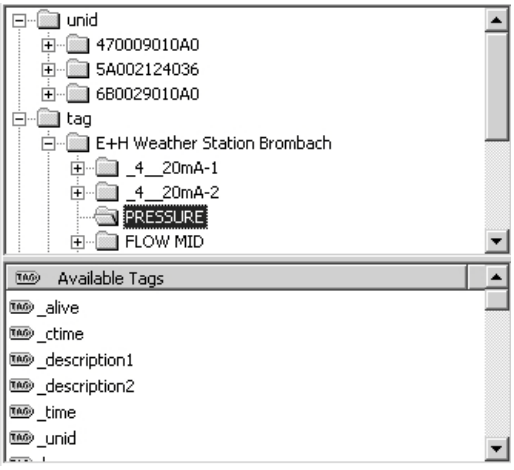
A certain OPC tag structure is created from the measuring data received. Three data trees are generally available: "**unid**", "**tag**" and "**description**":

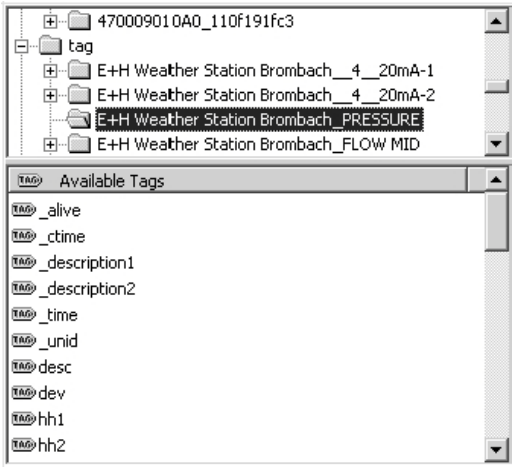
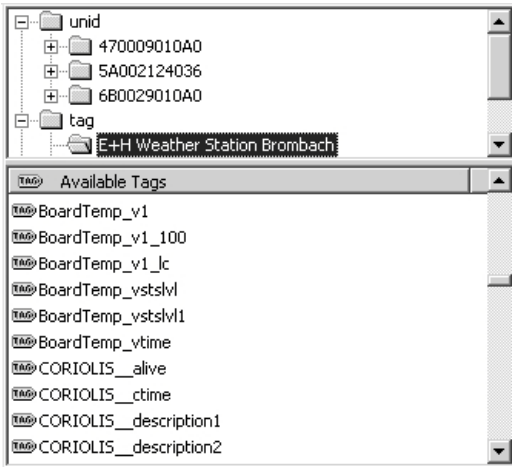
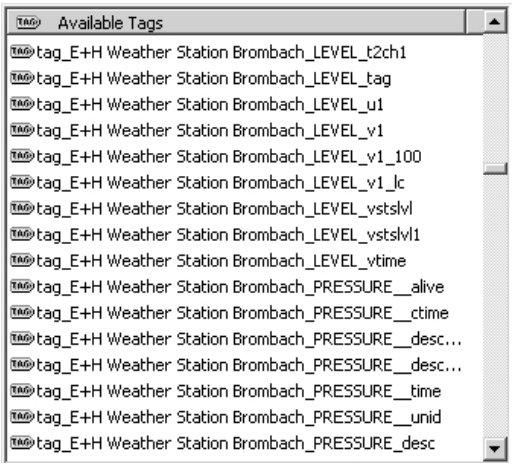
unid	The entire tag is created from the "unid" text, the Fieldgate and field device serial numbers. The name of the parameter is appended. i.e.: "unid" <del1> <fieldgate serno> <del2> <fielddev serno> <del3> <parameter>
tag	The entire tag is created from the "tag" text, the "Fieldgate Identification" (Fieldgate configuration: Information & Configuration / Fieldgate Location), the field device tag and the name of the parameter i.e.: "tag" <del1> <fieldgate id> <del2> <fielddev tag> <del3> <parameter>
description	The entire tag is created from the "description" text, the description text 1, the description text 2 and the name of the parameter. The description texts are set on the Fieldgate in the field device display. i.e.: "description" <del1> <description1> <del2> <description2> <del3> <parameter>

If a section is hierarchically separated, a "." is used. Otherwise a "_" is used. Periods in the text are converted to "_".

In the "unid" and "tag" tree, the data of a complete field device are at the bottom and the data of a single measured value are in the "description" tree.

"Preferences..." is used to select how the individual sections are separated. Section separation is then carried out as follows:

Setting	Segment separation	Example
hierarchical	<del1>=".", <del2>=".", <del3>="."	

Setting	Segment separation	Example
flat devices	<del1>=".", <del2>="_", <del3>="."	
flat fieldgates	<del1>=".", <del2>=".", <del3>="_"	
flat	<del1>="_", <del2>="_", <del3>="_"	

This structure is specified by the program, i.e. all existing tags are generated when the OPC server is started. This procedure has the advantage that the existing tags can be easily queried by the user.

5.3.2 Parameters

Internal parameters start with a "_"; remaining data are taken directly from the XML data. For this reason, please refer to the Fieldgate Operating Instructions for further information.

Name	d	t	u	Type	Explanation
_alive	x	x	x	String	Indicates whether the measured value is valid ('0'/'1')
_ctime	x	x	x	Date	This is the time when the entry was generated in the history database
_description		x	x	String	Reference to the "description" tree
_postfix	x			String	Reference to the corresponding measured value <1234> in the "tag" and "unid" tree
_tag	x		x	String	Reference to the "tag" tree
_time	x	x	x	Date	This is the time when the entry was imported into the OPC server
_unid	x	x		String	Reference to the "unid" tree
desc		x	x	String	Description of HART field devices
dev		x	x	String	Name of HART field devices
hh<1234>	x	x	x	Double	Set HighHigh-Limit of measured value
hi<1234>	x	x	x	Double	Set High-Limit of measured value
hlsts<1234>	x	x	x	String	Status of the measured value
ll<1234>	x	x	x	Double	Set LowLow-Limit of the measured value
lo<1234>	x	x	x	Double	Set Low-Limit of the measured value
man		x	x	String	Manufacturer of HART field devices
msg		x	x	String	Message of HART field devices
tag		x	x	String	Tag of HART field devices
u<1234>	x	x	x	String	Unit of the measured value
v<1234>	x	x	x	Double	Measured value
v1_100		x	x	Double	Percentage primary measured value
v1_lc		x	x	Double	Value of the current output of the field device
vstslvl	x	x	x	Integer	Status of the measured value
vtime	x	x	x	Date	Measuring date in the Fieldgate

- The "d", "t", "u" columns indicate whether a parameter is in the tree in question.
- <1234>: oes not appear in the "description" tree; in the "tag" and "unid" tree as per the number of the measured values appearing in the XML data.
- For adapting the data type, see also OPC-FAQ, Chapter 6.2.
- The time stamp of the measured values corresponds to "vtime".
- The quality of the measured values is GOOD (192) for "_alive"="1", otherwise OUT_OF_SERVICE (28).
- If the limit values are exceeded, LIMIT_LOW (+1) or LIMIT_HIGH (+2) is also set in the quality. No distinction is made between Low and LowLow or High and HighHigh..

5.3.3 Access control to the OPC server

For information about OPC DCOM setup, check the OPC-FAQ.

6 Trouble-Shooting

6.1 General

Problem	Solution
How do I start the "'Fieldgate Data Access" service (or stop or restart)?	Goto the 'Services Panel' of Windows, look for the E+H Fieldgate Data Access entry and perform the appropriate action
	"Start menu/Programs/Endress+Hauser/Fieldgate/Tool Directory and then 'Fieldgate Data Access (Server Start)" and "Fieldgate Data Access (Server Stop)".
I have encountered an error in Fieldgate Data Access. Who can I contact?	Please send error messages, with an exact description of the error (type of error, how the error condition is generated, etc.) and with information on the system configuration to "info@solutions.endress.com".

6.2 RAS

Problem	Solution
If the existing RAS connection is interrupted (telephone line disconnected), Windows XP opens a dialog box and asks whether it should dial in again. And this even though Fieldgate Data Access is running as a system service (i.e. in the background).	In the settings of the dial-up connection entry, deactivate "Redial if line is dropped".
A specific RAS entry does not appear in the 'Phonebook Entry' list during Connection Setup.	The RAS entry must be global. Take care to select 'Anyone's use' during the 'New Connection Wizard'.
A Fieldgate Data Access service cannot dial a specific RAS connection, instead it outputs an Error=623 in the log file	The RAS entry must be global

6.3 History Database

Problem	Solution
How do I backup the history database?	Depends on which DBMS is being used, see on-line help for examples.
How do I repair a crashed history database?	Depends on which DBMS is being used, see on-line help for examples.

6.4 OPC FAQ

Problem	Solution
General	
I am looking for a simple OPC client for test purposes	An overview of free OPC tools can be found under "http://www.opcconnect.com/freestuf.php".
	For example, Matrikon OPC Explorer, found under "http://www.matrikonopc.com/downloads/176/index.aspx"
I cannot browse through the tags of the "Fieldgate Data Access" OPC server with my OPC client	In certain situation, you can configure the client as to which tags should be browsed, e.g. tags with read/write access or read-only access. In this case, configure the client in such a way that it does not insist on write-access for the tags as the "Fieldgate Data Access" OPC tags normally do not allow any write access.
	Some OPC clients do not display the tags despite the setting mentioned above. If this occurs, you can try the "Allow Write Access to Tags" setting in "Preferences..." (restart server!). Precedence should be given to the "don't allow" setting, however!
My OPC client cannot handle floating point numbers correctly	**This solution is a work-around and should only be applied by experienced users!** In the fieldgateda.ini, create an entry with the name "OpcFloatType" under Configuration and give the value 2 (16bit Integer), 3 (32bit Integer), 4 (Float) or 8 (String). Do not forget to restart the server!
My OPC client cannot handle integers correctly	**This solution is a work-around and should only be applied by experienced users!** In the fieldgateda.ini, create an entry with the name 'OpcIntType' under Configuration and give the value 2 (16bit Integer), 4 (Float), 5 (Double) or 8 (String). Do not forget to restart the server!
My OPC client cannot handle time stamps correctly	**This solution is a work-around and should only be applied by experienced users!** In the fieldgateda.ini, create an entry with the name "OpcDateFmt" under Configuration and specify the time stamp format (e.g. yyyymmdd-hhnnss). Do not forget to restart the server!
Security **Security settings should be changed only by experienced users or after consulting the local system administrator**	
How do I control access to the Fieldgate Data Access OPC server?	Set up access and launch permissions, see on-line help
I still cannot connect to the OPC server	Not all required configurations are set, see on-line help
How do I configure DCOM to access the Fieldgate Data Access OPC server over the network?	The OPC Foundation has tutorials, see on-line help

7 Further Information

7.1 Command Line Parameters

Normally, **Fieldgate Data Access** is invoked by the user without command line parameters. In this case, the GUI component is started and also, if not already running, the server component. Nevertheless, **Fieldgate Data Access** has some parameters used to complete the separation between GUI and service.

Parameter	Description
/gui	Start only GUI component (or bring it to the foreground).
/tray	Start GUI in the system tray (or send it to the system tray).
/server	Only start server/service component.
/stopserver	Stop the server/service component.
/install	Install as system service (server component).
/uninstall	Deinstall system service.
/install-opc	Install OPC server. This option is normally run by the installation routine. If Fieldgate Data Access has been installed without OPC, this command line option does not appear..
/uninstall-opc	Uninstall OPC server. If Fieldgate Data Access has been installed without OPC, this command line option does not appear.
/silent	Above options without issuing a dialogue box.

7.2 System Service

Installation as System Service

Fieldgate Data Access can also be installed as a system service. This means that **Fieldgate Data Access** also works when no user is logged on.

The following points must be observed:
- Administrator rights must be available during installation,
- When installing Fieldgate Data Access, "**Installation as system service**" must be activated,
- The system service must be configured via an administrator account (scheduler settings, etc.),

If the system service is to be installed subsequently, "**fxada.exe /install**" must be run via a command line.

Deinstallation can be carried out in the same way via "**fxada.exe /uninstall**".

Using "**fxada.exe /?**" , a complete list of the permitted "**Command Line Parameters**" can be output.

7.3 Directory Structure

Fieldgate Data Access creates the following files:

ExeRoot	Installation directory
Fxada.exe	Executable file
Fxada.hlp	Help file
Fxada.cnt	Table of contents of help file
Fieldgateda.mdb	Configuration database (Access97 compatible)
Fieldgateda.mdb.bak	Back-up of the configuration database – is created from the configuration database every time the server component program is started
Fieldgateda.txt	Log file
Data	Data directory, can be configured via "Preferences"
Csv	Directory, which contains the CSV data sorted according to serial number (Fieldgate/sensor)
Ser_470009010A0	Fieldgate with serial number 470009010A0 with prefix "Ser_"
11c81b80f6.csv	CSV data of sensor with the HART unique ID "11c81b80f6"
1151fe1dde.csv	...
:	
Index.xml	Last XML data received from the Fieldgate
Eh_fieldgate	Link to directory with symbolic names
Ser_...	
Csvtag	Directory, which contains links to the actual CSV data. These are sorted according to symbolic names (Fieldgate ID / sensor tag)
Eh_fieldgate	Fieldgate ID
TEMPOUT	Link to CSV data of the field device with the "TEMPOUT" tag
PRESSURE	
:	
Index.xml	Link to last XML data received from the Fieldgate
Ser_470009010A0	Link to directory with serial number sorting
Fieldgatename...	...
:	
Mail	Mail directory (internal use)
...	

File names marked **Bold** are not files, but Explorer links.

7.4 Known Restrictions

- IMAP4 support is experimental, mailbox access via POP3 should be given precedence
- SMTP gateway for alarm mail/mail forwarding:
  - User/password specification is awkward
  - Must be in the network, i.e. no dial-in connection possible
- Only one RAS connection is used for modem dial-in
- History DB: limited to Latin-1 character sets
- OPC over DCOM is error-prone

7.5 Glossary

Abbreviation	Description
CSV	Comma Separated Values. Standard text format for data exchange.
DUN	See "**RAS**".
HTTP	Hypertext Transfer Protocol. Access protocol, as usually used by web browsers. The Fieldgate provides its information mostly via http.
IMAP4	Internet Message Access Protocol, Version 4. Access protocol, as usually used by e-mail programs. The Fieldgate sends e-mails, which are under certain circumstances (provider-dependent) saved on an imap4 server. imap4 is used to fetch the e-mails. Note: the imap4 support in **Fieldgate Data Access** is experimental!
ISP	Internet Service Provider (in Germany e.g. T-Online, Arcor, MSN, freenet,...), good overview at "**http://www.heise.de/itarif/view.shtml?function=ohneanmeldung**"!)
OPC	OLE for Process Control: "Standard" Windows protocol to exchange data for process automation.
POP3	Post Office Protocol, Version3. See "**IMAP4**".
RAS	Protocol under Windows, in order to establish a TCP/IP connection via modem. A modem Fieldgate can be selected directly via RAS or the dial-in to an ISP can be performed.
SMTP	Simple Mail Transfer Protocol. Protocol for e-mail transmission. Is used by Fieldgate for sending e-mails. Optionally, authentication can be performed at the smtp gateway (user name/password).
SQL	Standard Query Language. Query language for database access.

For your notes

Index

Symbols

A

C

D

E

F

H

I

L

M

N

P

R

S

T

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