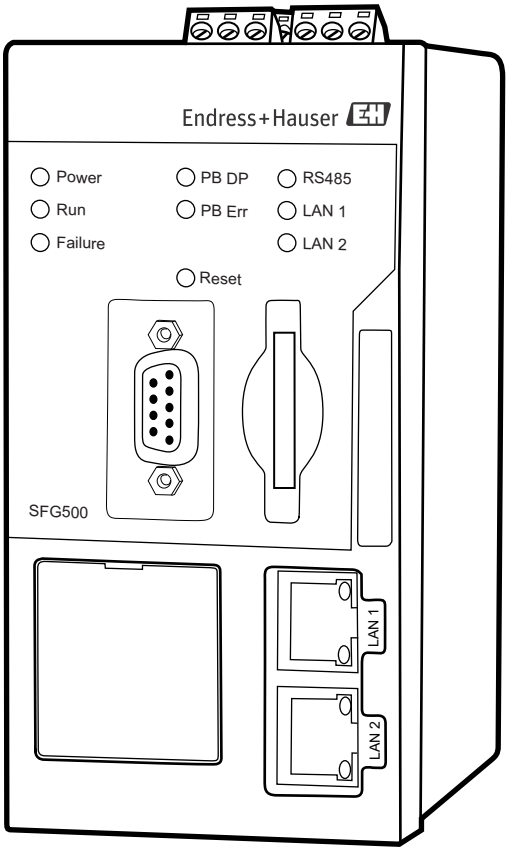
BA00071S/04/EN/09.15
Product Version 1.07.xx
71293273



# Operating Instructions
# Fieldgate SFG500
## Operation as Access Point




Endress+Hauser
People for Process Automation

# Table of Contents

# Revision History

| Product version | Manual | Changes | Remarks |
|---|---|---|---|
| 1.00.xx | BA00071S/04/en/01.11 | Original manual | |
| 1.00.xx | BA00071S/04/en/02.12 | Editorial Chapter 3 | IP LAN1: 10.126.84.100 |
| | | Chapter 5.1.1<br>Chapter 5.3.4<br>Chapter 5.3.5 | New DTM function: PROFIBUS Scan Range<br>New DTM function: Set Device Address<br>Addition text concerning new function |
| | | General | Renumbering, TOC, Index |
| 1.01.xx | BA00071S/04/en/03.13 | Chapter 5<br>Chapter 5.2<br>Chapter 5.3 | Screenshots and texts updated<br>Embedded Web Server added<br>Additional functions restructured |
| | | Update New CD | |
| 1.02.xx | BA00071S/04/en/04.14 | Chapter 1<br>General | New, IT security<br>Screenshots and texts updated |
| 1.03.xx | BA00071S/04/en/05.14 | No change | |
| 1.04.xx | BA00071S/04/en/06.14 | No change | |
| 1.05.xx | BA00071S/04/en/07.14 | No change | |
| 1.06.xx | BA00071S/04/en/08.15 | No change | |
| 1.07.xx | BA00071S/04/en/09.15 | Chapter 3.2.1<br>Chapter 5.2.5<br>Chapter 5.3.4 | Screenshots and texts updated<br>Screenshots and texts updated<br>Screenshots deleted and texts updated |

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# 1 Safety

## 1.1 Designated use

Fieldgate SFG500 is a system component that provides an independent access route to a PROFIBUS network. It may be used in a variety of applications that are supported by specific operating modes. The operating modes are determined by an optional memory card (Fieldgate Module SFM500).

Without memory card, Fieldgate SFG500 has the basic operating mode Access Point. In this case, it acts as an Ethernet gateway with adaptive PROFIBUS Master Class 2 capabilities to support FDT-based plant asset management host applications, e.g. FieldCare. The various operating modes are described in their respective manuals, see Chapter 1.4.

## 1.2 Installation, commissioning and operation

Fieldgate SFG500 has been designed to operate safely in accordance with current technical safety and EU directives. Field devices, links, junction boxes, cables and other hardware used in conjunction with the Fieldgate SFG500 module must also be designed to operate safely in accordance with current technical safety and EU directives.

If devices are installed incorrectly or used for applications for which they are not intended, or if the Fieldgate SFG500 module is not configured correctly, it is possible that dangers may arise. For this reason, the system must be installed, connected, configured, operated and maintained according to the instructions in this and the associated manuals: personnel must be authorised and suitably qualified.

## 1.3 Operational safety

When using Fieldgate SFG500 as an Access Point, the instructions in Chapter 1.3 of BA0070S/04/en, Fieldgate SFG500: Installation and Commisioning, shall be observed.

## 1.4 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.

## 1.5 Supplementary documentation

Table 1-1 indicates the documents, planned and realized, containing safety relevant information, installation, commissioning and operating instructions for Fieldgate SFG500. This manual decribes the use of Fieldgate SFC500 as a access point, i.e. without memory card. The configuration of Fieldgate SFG500 for each of its various operating modes is described in a separate manual.

The manual PROFIBUS guidelines contains information on how to design and install a PROFIBUS network, in particular on how to ground the network in order to avoid electromagnetic interference on the bus.

All documentation available at the time of release is included on the Fieldgate SFG500 CD-ROM and can be installed by default in **Start=>Programs=>Endress+Hauser=Fieldgate SFG500=>Manuals** from it.

*Tab. 1-1: Fieldgate SFG500 Documentation*

| Description | Document type | Designation | Order No. |
|---|---|---|---|
| Fieldgate SFG500; Installation and Commissioning | Operating manual | BA00070S/04/EN | 71293271 |
| Fieldgate SFG500; Operation as Access Point | Operating manual | BA00071S/04/EN | 71293273 |
| Fieldgate SFG500; Operation as Asset Monitor | Operating manual | BA00072S/04/EN | 71293275 |
| Fieldgate SFG500; Operation as Process Monitor | Operating manual | BA00074S/04/EN | – |
| Fieldgate SFG500; Getting Started | Operating manual | BA00073S/04/A2 | 71293265 |
| PROFIBUS Guidelines | Operating manual | BA00034S/04/EN | 56004242 |

## 1.6 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.

### Safety conventions

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

### Explosion protection

| Icon | Meaning |
|---|---|
|  | **Device certified for use in explosion hazardous area**<br>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**<br>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)**<br>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**<br>A terminal to which or from which a direct current or voltage may be applied or supplied |
|  | **Alternating voltage**<br>A terminal to which or from which an alternating (sine-wave) current or voltage may be applied or supplied |
|  | **Grounded terminal (FE)**<br>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**<br>A terminal which must be connected to earth ground prior to making any other connection to the equipment |
|  | **Signal ground (GND)**<br>A terminal on to which the shield of a signal cable can be connected |
|  | **Equipotential connection (earth bonding)**<br>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 |
|  | **Electrostatic discharge**<br>A terminal or location at which an electrostatic discharge might cause damage to the module circuitry |

# 2 Function and System Design

## 2.1 Function

When no Fieldgate Module SFM500 is inserted in the Fieldgate SFG500's memory card slot, it acts as an Access Point. In this mode, it provides a parallel path to a PROFIBUS DP network and is used together with FieldCare, Endress+Hauser's plant asset management system. The SFGNetwork DTM is provided for use with FieldCare and offers the following functions:

- Scanning for all Fieldgate SFG500s in the same Ethernet IP address domain
- Scanning for all PROFIBUS DP/PA devices in the connected segment
- Access to the functions embedded in the web server, e.g. live list, settings etc.

The DTM is supplied as standard with FieldCare from version 2.09.xx or can be installed from the Set-up CD ROM provided with Fieldgate SFG500.

## 2.2 System design

Fig. 2.1 shows Fieldgate SFG500 operating as an Access Point in a PROFIBUS network.

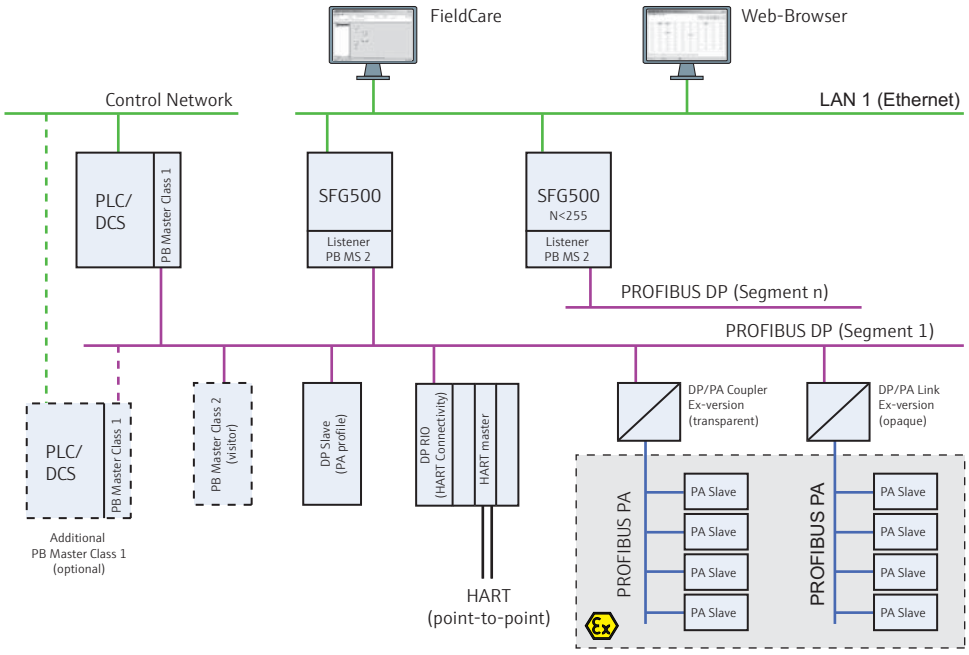



*Fig. 2-1: System architecture for Fieldgate SFG500 operating as an access point*

The control network comprises one or more PLCs or DCSs and one or more PROFIBUS DP segments. Connected to the PROFIBUS DP segment are PROFIBUS DP slaves, Remote I/Os and segment couplers or links. Through its Ethernet port (LAN1), Fieldgate SFG500 allows FieldCare access to access a PROFIBUS DP segment. If there is more than one segment in the PROFIBUS DP network, a separate Fieldgate SFG500 is required for each.

Fieldgate SFG500 can be configured by a web browser, e.g. Internet Explorer, from any computer in the local area network or via its second Ethernet port (LAN2). In the latter case, Fieldgate SFG500's DHCP server will supply an IP address to the connected computer.

# 3 Commissioning

**NOTE!**

NOTICE

- This section describes the steps to physically commission Fieldgate SFG500 for use as a access point only.
- General commissioning for use is described in BA00070S/04/en, Fieldgate SFG500: Installation and Commissioning, commisioning for other modes in the associated manual, see Chapter 1.4.
- The manual assumes that the Fieldgate battery has been inserted and the network is up and running.

## 3.1 Preliminaries

### 3.1.1 Computer IP properties

The LAN1 and LAN2 interfaces of Fieldgate SFG500 allow communication with a computer via the integral Web Server. Before starting, check the following:

- Internet Protocol TCP/IP is installed on your computer and is active
- You have administration rights for your computer and network
- You have an set of IP addresses that have been authorized by your IT department
- Any proxy server for your Internet Browser is disabled

Fieldgate SFG500 is supplied with the following default IP addresses:

- LAN1: 10.126.84.100
- LAN2: 192.168.253.1

Fieldgate SFG500 acts as a DHCP server on the LAN2 service interface and will automatically assign any computer connected an IP address, provided the latter has been configured to receive it. For later use in a PROFIBUS network, Fieldgate SFG500 will normally require a fixed address on the LAN1operations interface which must be set in the Web Server.

**NOTE!**

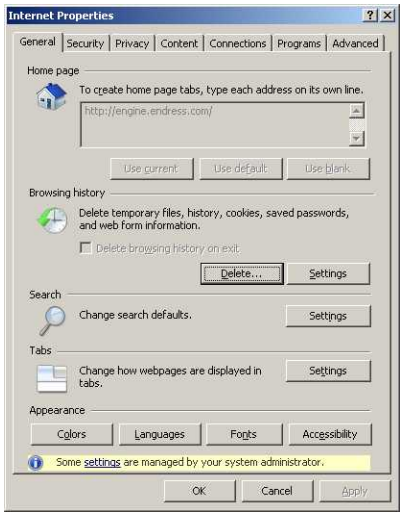
NOTICE

- Most computers which are used in a company network will already be set up to accept an IP address from a DHCP server. If you computer is used in a control system, however, it is possible that it has a fixed address. In this case, change the computer's IP properties as described in Appendix A.

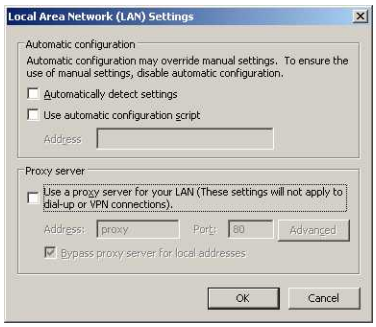
### 3.1.2 Web browser

Most Web browsers used in company networks operate via a proxy server. This must be disabled if the computer is to communicate with the Fieldgate SFG500 Web Server. The procedure below applies to Windows XP and Internet Explorer.

1. Right click on the Internet Browser icon on your desktop and select **Properties**
   – The **Properties** dialog opens




2. Now click on the tab **Connections** followed by the button **LAN Settings**
   – The **Local Area Network (LAN) Settings** dialog appears




3. Disable the proxy server by clicking on the check box
   – The "x" disappears and the proxy fields go grey
4. Press **OK** to confirm you settings
   Press **OK** to close the **Properties** dialog
5. Your are now ready to connect with the Fieldgate SFG500 Web Server

## 3.2 IP address of LAN1 port

### 3.2.1 Fieldgate SFG500 IP address

1. Make sure that your computer is connected to Ethernet port LAN2 with a crossover connection.
2. In your Internet browser enter the address of Fieldgate SFG500 LAN2 port: 192.168.253.1 and press **Enter**:


3. The Web Server introduction page opens: Click on **Login** (above right) to enable changes
   – Enter the **User Name** (admin) and **Password** (admin)
4. Open the **Settings** menu by clicking on the **Settings** tab of the Web Server
   – Select **Network Configuration**


5. Enter the desired **IP Address**, **Network Mask** and **Default Gateway**
   – Press **Apply** to apply the changes to Fieldgate SFG500
6. Click on **Logout** (above right) to secure the web page again

### 3.2.2 IP address of the FieldCare computer

Before FieldCare can use Fieldgate SFG500 to connect to the PROFIBUS network, the computer on which it is running must be given an address in the same domain.

1. Proceed as described in Appendix A and give your computer a fixed address in the same address domain as that of Fieldgate SFG500
2. Connect the computer to Ethernet port LAN1 with a crossover connection
   – If you are using a switch or router a patch connection is required
3. Test the connection by using the DOS command "ping xxx.xxx.xxx.xxx", where X is Fieldgate SFG500's address
   – If the test is OK, you are ready to create a FieldCare project.
   – If there is no connection, trouble-shoot according to the instructions in BA00070S/04/en, Fieldgate SFG500: Installation and Commissioning

## 3.3 Fieldgate SFGNetwork DTM

When Fieldgate SFG500 is used with FieldCare, it operates exclusively as a pure Access Point. To this end, a CD is included in the scope of supply which contains the latest documentation and DTMs. These DTMs must first be installed in FieldCare before FieldCare SFG500 can be used.

NOTICE

**NOTE!**

- The procedure described below is **not required for FieldCare Version 2.09.xx or greater**, as in this case the SFGNetwork DTM is installed as part of the DTM library.

### 3.3.1 Installing the SFGNetwork DTM

1. Insert the CD ROM supplied with Fieldgate SFG500 into the CD ROM drive
2. In the Setup menu which appears, select the option for the **CommDTM**
3. Install the DTM by following the instructions

### 3.3.2 Update the FieldCare DTM catalog

Before it can be used, the SFGNetwork DTM must be integrated in the FieldCare DTM Catalog.

NOTICE

**NOTE!**

- For FieldCare Standard and Professional, administrator rights are required to update the DTM catalog if these are activated

1. Start FieldCare and, if necessary, log on as administrator
2. In the **Start-Up Screen** dialog, press **Continue** and in the **FieldCare** dialog press **Open**
   – An empty Project workspace appears
3. Right-click on the **DTM Catalog** menu and select **Update...**
   – The **Update DTM Catalog** dialog appears
   – Press **Update** to start the search for new DTMs (make take several minutes)
4. When the search is complete, any new DTM will be shown in the left-hand pane:
   – Select the SFGNetwork DTM and press **Move >>**
   – Press **OK** to close the dialog and register the changes
   – You are now ready to start

NOTICE

**NOTE!**

- If a SFGNetwork DTM was already in the catalog, it is automatically updated and does not appear as "New" in the left-hand panel

# 4 FieldCare

## 4.1 Single segment with Pepperl+Fuchs coupler

### 4.1.1 Architecture

When operating with a single segment with Pepperl+Fuchs coupler, the component architecture is for example as shown in Fig. 4.1. Fieldgate SFG500 is connected to the Ethernet backbone via the LAN 1 Ethernet socket and to the PROFIBUS DP segment. The segment itself is connected to a PLC or DCS, which acts as Class 1 master. PROFIBUS PA devices are connected to the network via the coupler.

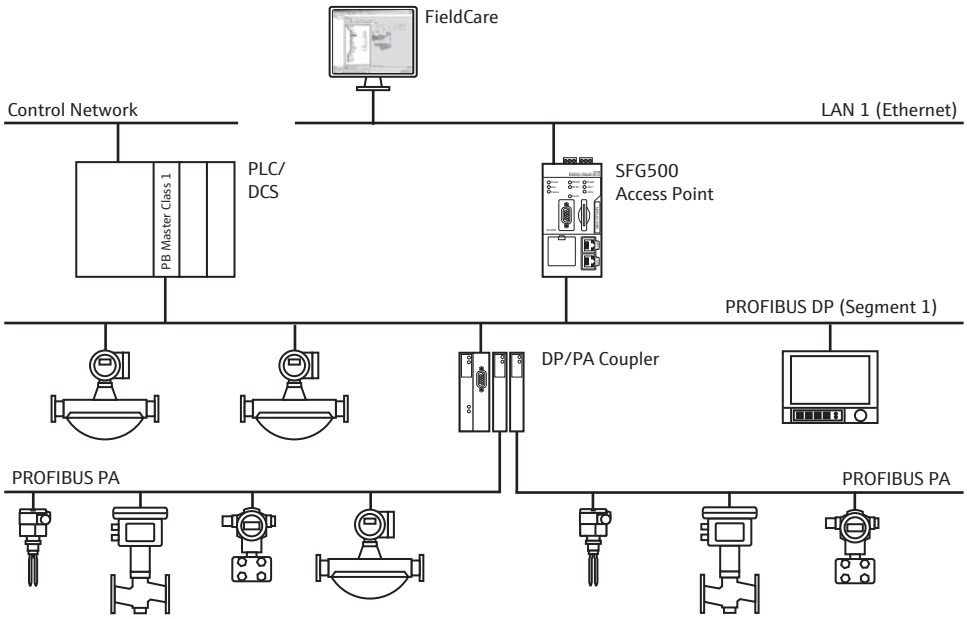


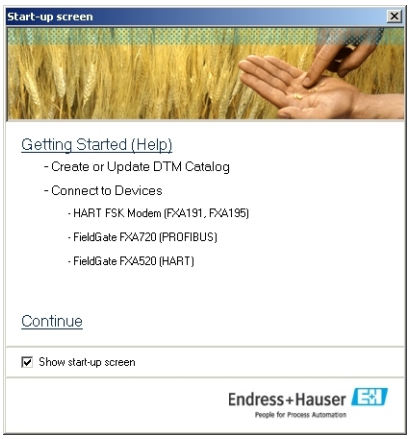

*Fig. 4-1: Architecture for single segment*

To see all the devices on the PROFIBUS DP/PA segment, FieldCare requires:

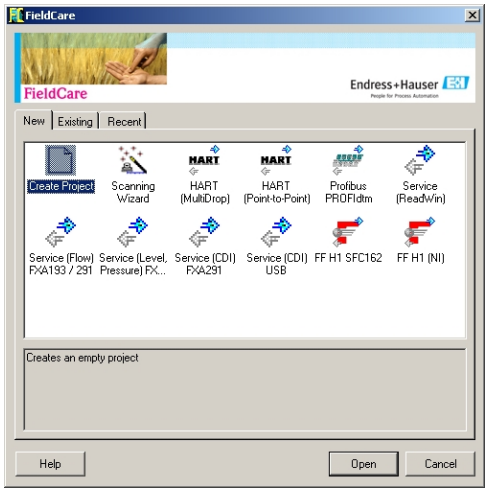
- SFGNetwork DTM
- All Device DTMs

### 4.1.2 Create a FieldCare project

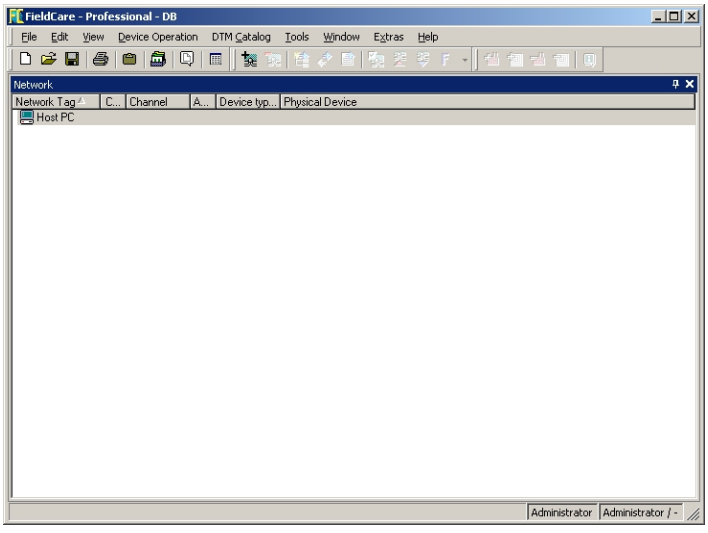
1. Open FieldCare by a double click on its desktop icon
   – If necessary enter the user name and password
2. Press **Continue** to close the introductory page:




3. Press **Open** to create a project

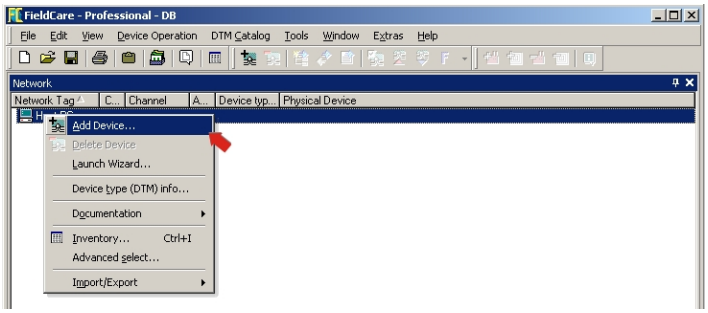



4. A project is created

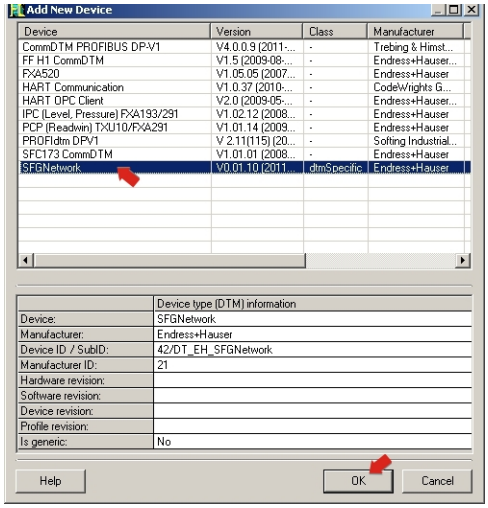


### 4.1.3 Add the SFGNetwork CommDTM

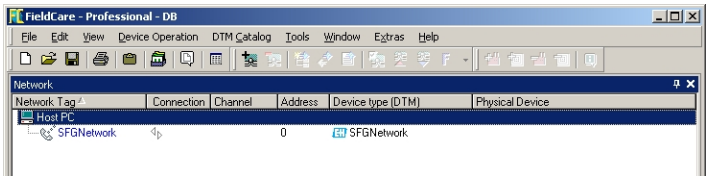
1. In the network view, right click on **Host** and select **Add Device**:




2. The CommDTM catalog opens
   - Select **SFGNetwork**
   - Press **OK** to add the CommDTM to the Host

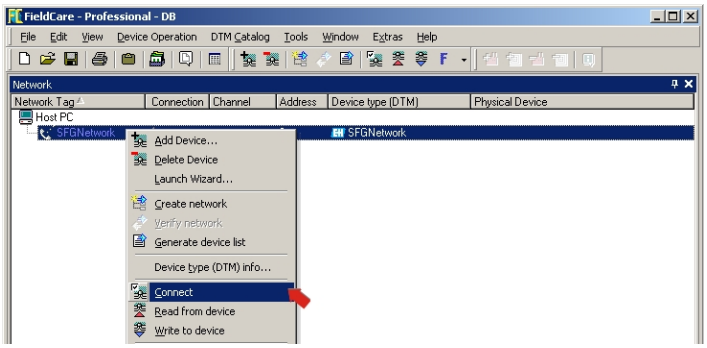



3. The **SFGNetwork** CommDTM is added to the Network view

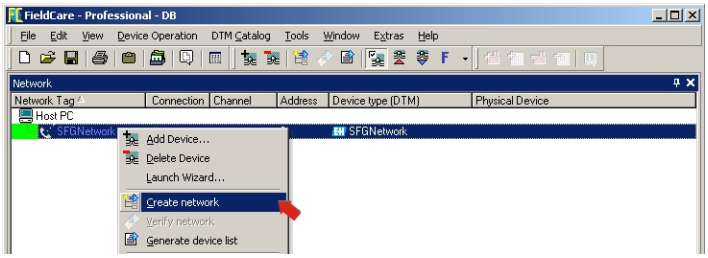


### 4.1.4 Scan for Fieldgate SFG500

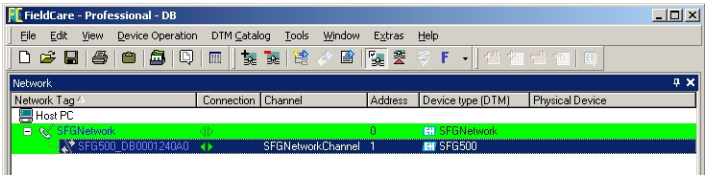
1. Right-click on the **SFGNetwork** node and select **Connect** to put the CommDTM online
   – The Connection arrows turn green



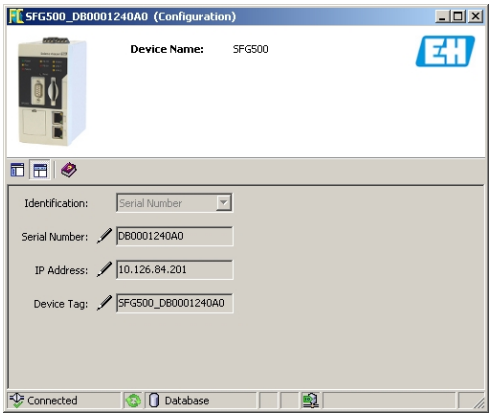

2. Right-click on the **SFC500 Network** node and select **Create Network**




3. FieldCare searches for any SFG500s in the Ethernet network and adds them to the network view



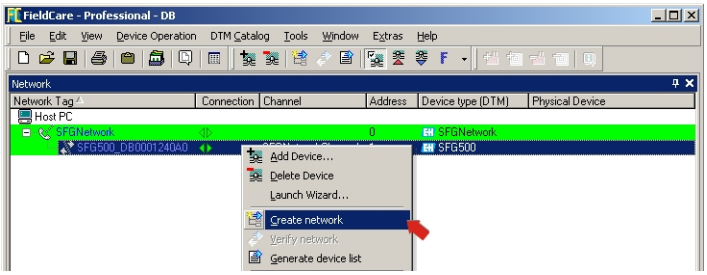

4. If only one is found, it connects and opens the SFG500 CommDTM



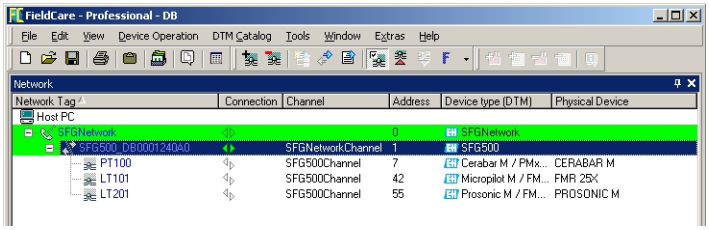

5. If no DTM is found, it is possible that the UDP ports are blocked
   – Either unblock as described in Appendix B (you will need administrator rights)
   – Or add the CommDTM manually (right-click on SFG500 Network node, **Add Device**) and configure it by hand, see Chapter 5.1

### 4.1.5 Scan for devices

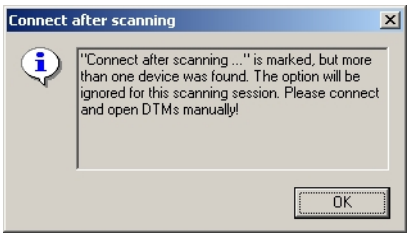
1. Right-click on the SFG500 node and select **Create Network**




2. FieldCare scans the PROFIBUS segment to which Fieldgate SFG500 is connected for devices
   - All devices found are added to the network

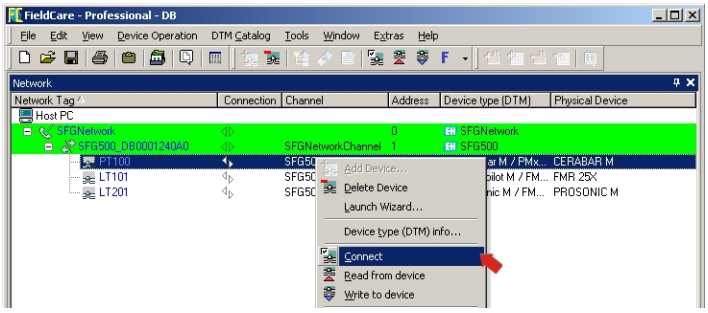



   - If any of the devices has a DTM of quality less than "1", the Scanning Result dialog opens and **OK** must be pressed before the devices are added to the network
3. If only one device is found, its DTM will be opened automatically
   - If more than one device is found, and the "Connect after scanning" option is selected in Extras... , the message below must be acknowledged with **OK**, and the device DTMs must be opened manually

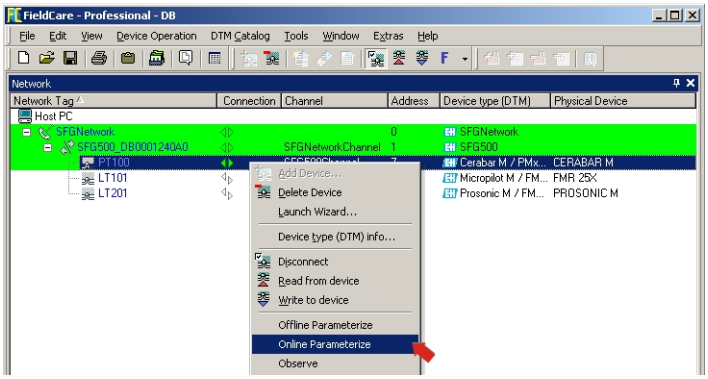


### 4.1.6 Open a device DTM

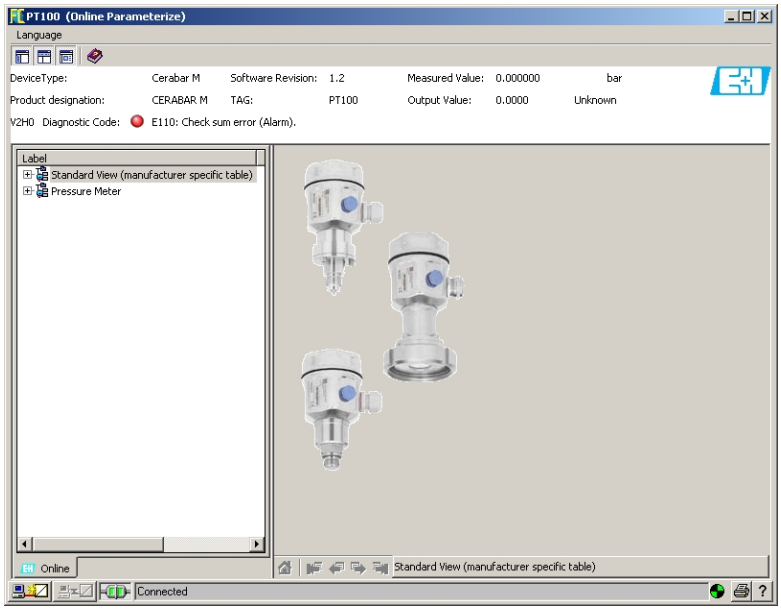
1. Right-click on the node of the device you want to open and select **Connect**
   – The communication arrows turn green to indicate that it is online




2. Right-click on the node of the device again and select **Online Parametrize**

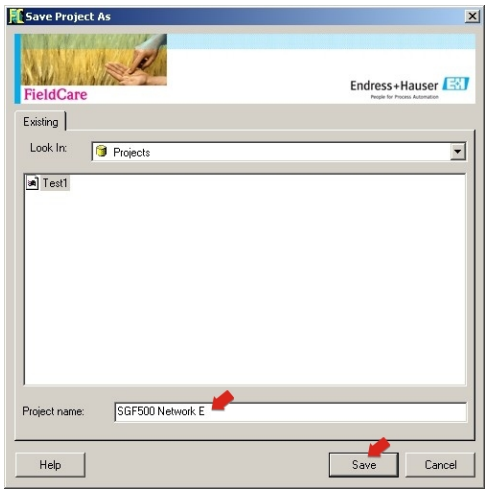



3. The DTM of the selected device is opened
   – The device can now be configured according to the instructions in its operating manual



### 4.1.7 Store the project

1. Right-click on the **File** menu and select **Save**
   – The **Save Project As** window appears




   – Enter a name for the project and press **Save**
2. The project can now be opened from the **Existing** tab in the project window that opens when FieldCare is started

## 4.2 Multiple segments with transparent couplers

### 4.2.1 Architecture

When operating with multiple segments and Pepperl+Fuchs couplers the component architecture might be as for example as shown in Fig. 4.2. For simplicity the devices connected to Segments
2 – 5 are not shown. All Fieldgate SFG500s are connected to the Ethernet backbone via the LAN 1 Ethernet socket and share a common Ethernet IP address domain. One Fieldgate SFC500 is connected to each PROFIBUS DP segment. The PROFIBUS DP segments do not necessarily have to be connected to a single PLC. PROFIBUS PA devices are connected to the PROFIBUS DP segments via couplers.

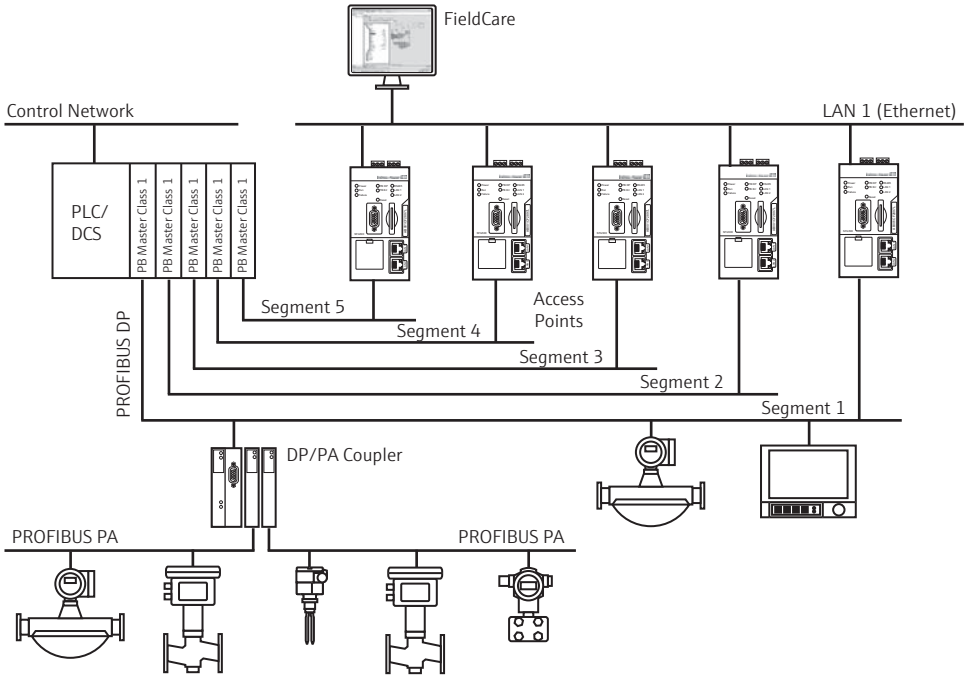



*Fig. 4-1: Architecture for multiple segments*

To see all the devices on the PROFIBUS DP/PA segment, FieldCare requires:

- SFGNetwork DTM
- All Device DTMs

### 4.2.2 Create a FieldCare project

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.2

1. Open FieldCare by a double click on its desktop icon
   - If necessary enter the user name and password
2. Press **Continue** to close the introductory page:
3. Press **Open** to create a project
4. A project is created

### 4.2.3 Add the SFGNetwork CommDTM

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.3

1. In the network view, right click on **Host** and select **Add Device**:
2. The CommDTM catalog opens
   - Select **SFGNetwork**
   - Press **OK** to add the CommDTM to the Host
3. The **SFGNetwork** CommDTM is added to the Network view

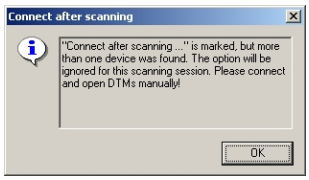
### 4.2.4 Scan for Fieldgate SFG500

**NOTE!**

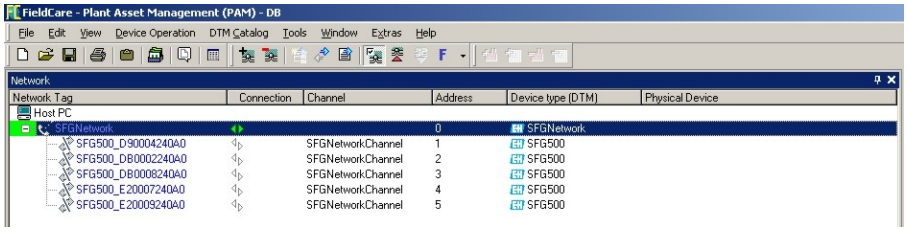
NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.4

1. Right-click on the **SFGNetwork** node and select **Connect** to put the CommDTM online
   - The Connection arrows turn green
2. Right-click on the **SFC500 Network** node and select **Create Network**
3. FieldCare searches for any SFG500s in the Ethernet network
   - If the "Connect after scanning" option is selected in Extras... , the message below must be acknowledged with **OK**, as more than one Fieldgate SFG500 has been found



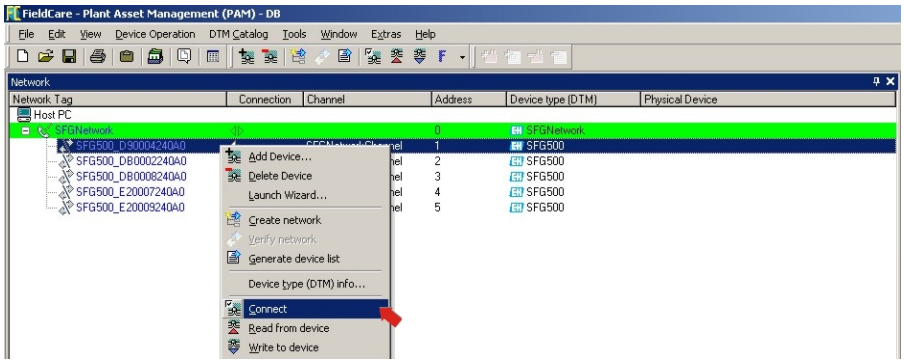

4. FieldCare adds the Fieldgate SFG500s found to the network view



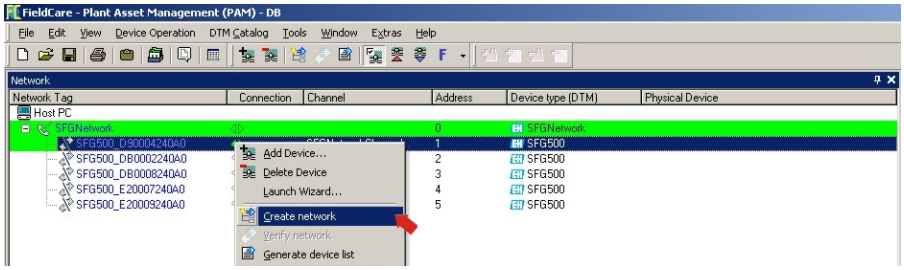

5. If no DTM is found, it is possible that the UDP ports are blocked
   - Either unblock as described in Appendix B (you will need administrator rights)
   - Or add the CommDTM manually (right-click on SFG500 Network node, **Add Device**) and configure it by hand, see Chapter 5.1

### 4.2.5 Scan for devices

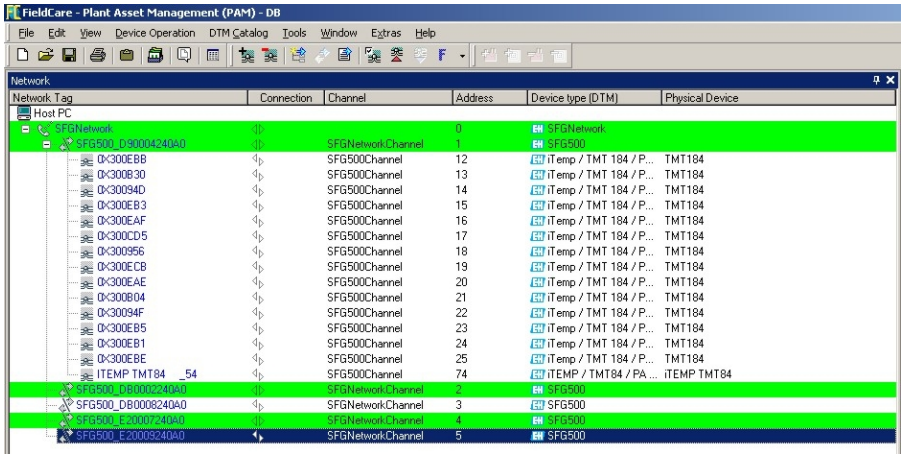
1. Select a SFG500 node, right-click on it and select **Connect**




2. Right-click on the connected SFG500 node and select **Create Network**




3. FieldCare scans the PROFIBUS segment to which Fieldgate SFG500 is connected for devices
   - If any of the devices has a DTM of quality less than "1", the Scanning Result dialog opens and **OK** must be pressed before the devices are added to the network
   - If more than one device is found, and the "Connect after scanning" option is selected in Extras... , the Connect after scanning message below must be acknowledged with **OK.** All devices found are then added to the network view




   - If only one device is found, and the "Connect after scanning" option is selected in Extras... (default setting), FieldCare adds it to the network view, connects and opens the DeviceDTM

4. Repeat Steps 1 to 3 for all other Fieldgates that were found
5. The Device DTMs can be opened and the project stored as described in Chapters 4.1.6 and 4.1.7 respectively

## 4.3 Segment with Siemens link

### 4.3.1 Architecture

When operating with a Siemens DP/PA Coupler or Link, the component architecture might be as for example as shown in Fig. 4.3. The Fieldgate SFG500 is connected to the Ethernet backbone via the LAN 1 Ethernet socket. PROFIBUS PA devices are connected to the network via the Siemens Coupler/Link.

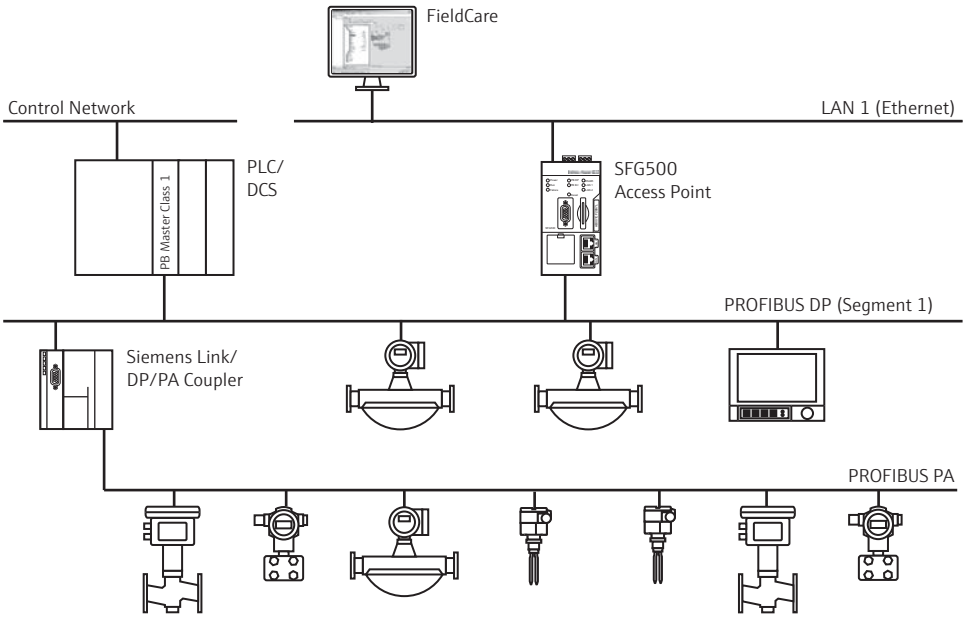



*Fig. 4-1: Architecture for Siemens coupler/link*

To see all the devices on the PROFIBUS DP/PA segment, FieldCare requires:

- SFGNetwork DTM
- Licensed Trebling and Himstedt CommDTM DP/PA link
- All Device DTMs

### 4.3.2 Create a FieldCare project

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.2

1. Open FieldCare by a double click on its desktop icon
   - If necessary enter the user name and password
2. Press **Continue** to close the introductory page:
3. Press **Open** to create a project
4. A project is created

### 4.3.3 Add the SFGNetwork CommDTM

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.3

1. In the network view, right click on **Host** and select **Add Device**:
2. The CommDTM catalog opens
   - Select **SFGNetwork**
   - Press **OK** to add the CommDTM to the Host
3. The **SFGNetwork** CommDTM is added to the Network view

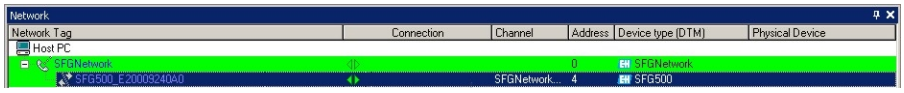
### 4.3.4 Scan for Fieldgate SFG500

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.4

1. Right-click on the **SFGNetwork** node and select **Connect** to put the CommDTM online
   - The Connection arrows turn green
2. Right-click on the **SFC500 Network** node and select **Create Network**
3. FieldCare searches for any SFG500s in the Ethernet network and adds them to the network view

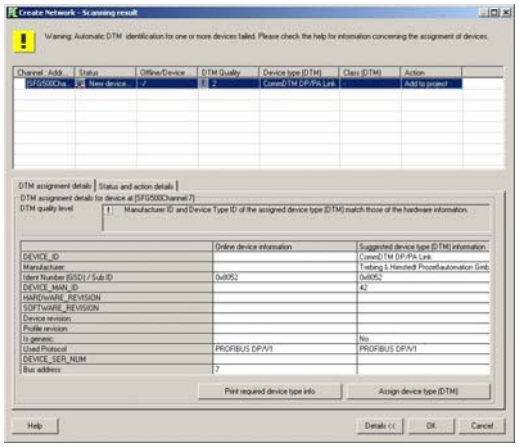



4. If only one Fieldgate is found, its DTM is opened automatically
5. If no DTM is found, it is possible that the UDP ports are blocked
   - Either unblock as described in Appendix B (you will need administrator rights)
   - Or add the CommDTM manually (right-click on SFG500 Network node, **Add Device**) and configure it by hand, see Chapter 5.1

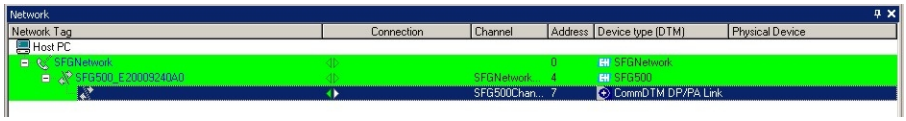
### 4.3.5 Scan for the Coupler/Link

1. If necessary, select the SFG500 node, right-click on it and select **Connect**
2. Right-click on the connected SFG500 node and select **Create Network**


3. FieldCare scans the PROFIBUS segment to which Fieldgate SFG500 is connected for the Siemens Link
   - The Create Network – Scanning result dialog opens
   - Press **OK** to add the DP/PA Link CommDTM to the network




4. The **DP/PA Link** CommDTM is added to the Network view

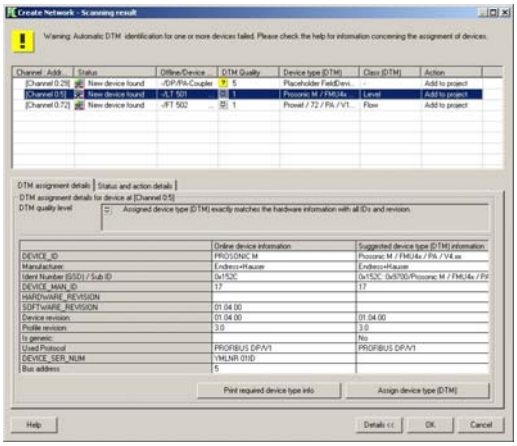



   - If only one device is found, and the "Connect after scanning" option is selected in Extras... (default setting), FieldCare adds it to the network view, connects and opens the DTM
   - If more than one device is found, and the "Connect after scanning" option is selected in Extras..., the Connect after scanning message below must be acknowledged with **OK**. All devices found are then added to the network view

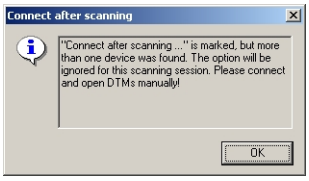
### 4.3.6 Scan for devices

1. If necessary, select the DP/PA Link node, right-click on it and select **Connect**
2. Right-click on the connected DP/PA Link node and select **Create Network**

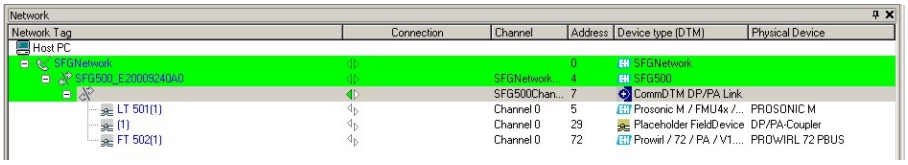

3. FieldCare scans the segment to which the DP/PA Link is connected for devices
   - The Create Network – Scanning result dialog opens
   - Press **OK** to add the devices to the network



4. If the "Connect after scanning" option is selected in Extras... , the message below must be acknowledged with **OK**, as more than one device has been found




5. The devices are added to the Network view




6. The Device DTMs can be opened and the project stored as described in Chapters 4.1.6 and 4.1.7 respectively

## 4.4 Segment with Stahl Remote I/O

### 4.4.1 Architecture

When operating with a Stahl CPM 9440 Remote I/O, the component architecture might be as for example as shown in Fig. 4.4. The Fieldgate SFG500 is connected to the Ethernet backbone via the LAN 1 Ethernet socket. PROFIBUS PA devices are connected to the network via e.g. a transparent coupler. The 4–20 mA/HART devices are connected point-to-point to the Stahl Remote I/O, which in turn is connected to the PROFIBUS DP segment.

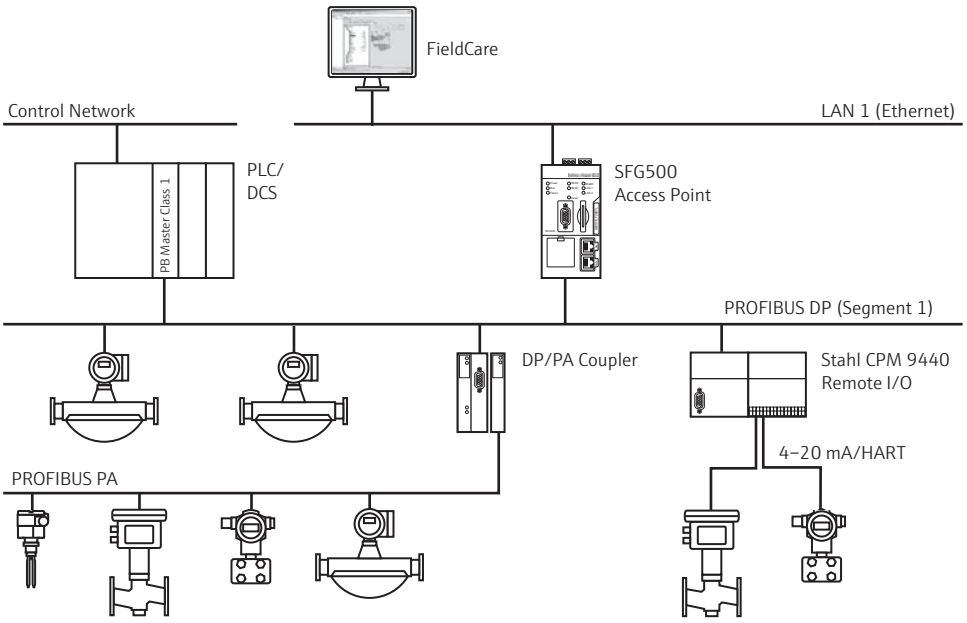



*Fig. 4-1: Architecture for Stahl remote I/O*

To see all the devices on the PROFIBUS DP/PA segment, FieldCare requires:

- SFGNetwork DTM
- Licensed Stahl CommDTM CPM 9440
- All PROFIBUS Device DTMs
- All HART Device DTMs

### 4.4.2 Create a FieldCare project

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.2

1. Open FieldCare by a double click on its desktop icon
   - If necessary enter the user name and password
2. Press **Continue** to close the introductory page:
3. Press **Open** to create a project
4. A project is created

### 4.4.3 Add the SFGNetwork CommDTM

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.3

1. In the network view, right click on **Host** and select **Add Device**:
2. The CommDTM catalog opens
   - Select **SFGNetwork**
   - Press **OK** to add the CommDTM to the Host
3. The **SFGNetwork** CommDTM is added to the Network view

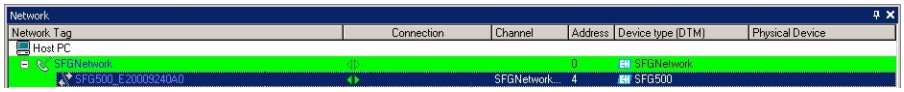
### 4.4.4 Scan for Fieldgate SFG500

**NOTE!**

NOTICE

- The dialogs for this procedure are identical to those in Chapter 4.1.4

1. Right-click on the **SFGNetwork** node and select **Connect** to put the CommDTM online
   - The Connection arrows turn green
2. Right-click on the **SFC500 Network** node and select **Create Network**
3. FieldCare searches for any SFG500s in the network and adds them to the network view

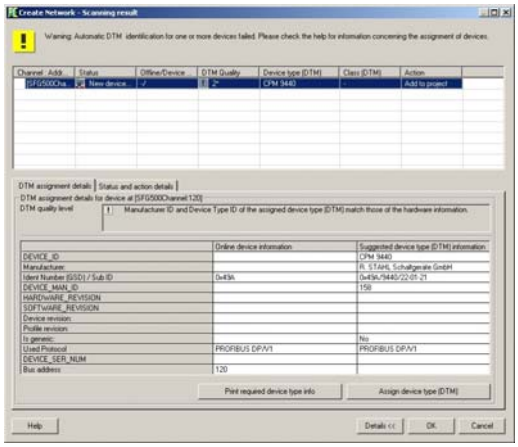



4. If only one Fieldgate is found, its DTM is opened automatically
5. If no DTM is found, it is possible that the UDP ports are blocked
   - Either unblock as described in Appendix B (you will need administrator rights)
   - Or add the CommDTM manually (right-click on SFG500 Network node, **Add Device**) and configure it by hand, see Chapter 5.1

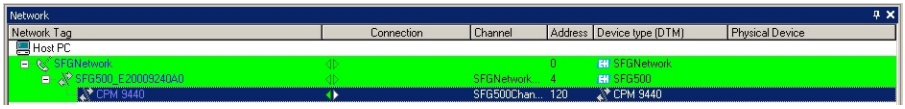
### 4.4.5 Scan for the Stahl Remote I/O

1. If necessary, select the SFG500 node, right-click on it and select **Connect**
2. Right-click on the connected SFG500 node and select **Create Network**


3. FieldCare scans the PROFIBUS segment to which Fieldgate SFG500 is connected for the Remote I/O
   - The Create Network – Scanning result dialog opens
   - Press **OK** to add the Stahl CPM 9440 CommDTM to the network



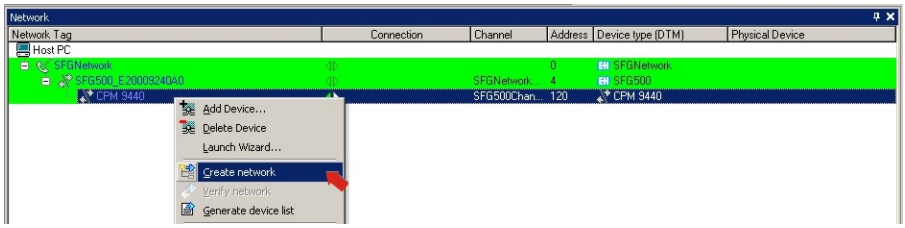
4. The **CPM 9440** CommDTM is added to the Network view



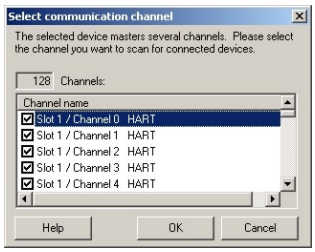

   - If only one device is found, and the "Connect after scanning" option is selected in Extras... (default setting), FieldCare adds it to the network view, connects and opens the DTM
   - If more than one device is found, and the "Connect after scanning" option is selected in Extras... , the Connect after scanning message below must be acknowledged with **OK**. All devices found are then added to the network view

### 4.4.6 Scan for devices

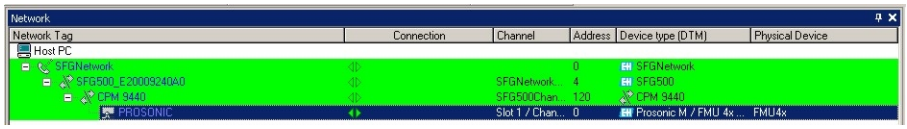
1. If necessary, select the CPM 9440 node, right-click on it and select **Connect**
2. Right-click on the connected CPM 9440 node and select **Create Network**



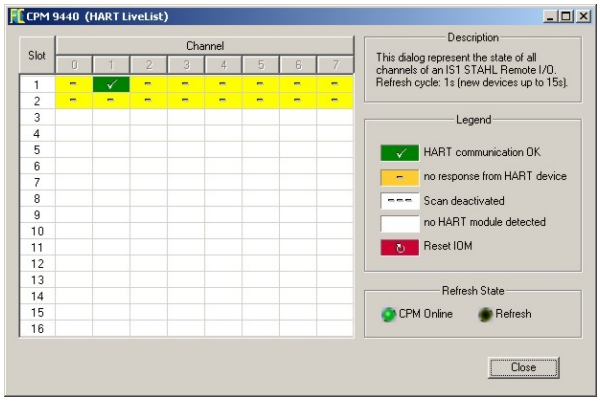

3. The Select Communication Channel dialog appears
   – Press **OK** to scan all channels of the Remote I/O




4. The devices found are added to the Network view




   – If only one device is found, and the "Connect after scanning" option is selected i n Extras... (default setting), FieldCare adds it to the network view, connects and opens the DTM
   – If more than one device is found, and the "Connect after scanning" option is selected in Extras... , the Connect after scanning message below must be acknowledged with **OK**. All devices found are then added to the network view
5. The Device DTMs can be opened and the project stored as described in Chapters 4.1.6 and 4.1.7 respectively
6. The CPM 9440 DTM also provides an overview of the connected HART devices
   – Right-click on the CPM node and select **Additional Functions=>HART Live List**



# 5 DTM for Fieldgate SFG500

This chapter contains a short description of the functions obtainable via the Fieldgate SFG500 Device DTM. All functions are called by right-clicking on a connected DTM and selecting the appropriate context menu. This procedure is not illustrated by screenshots.

## 5.1 Configuration

### 5.1.1 Fieldgate SFG500 CommDTM

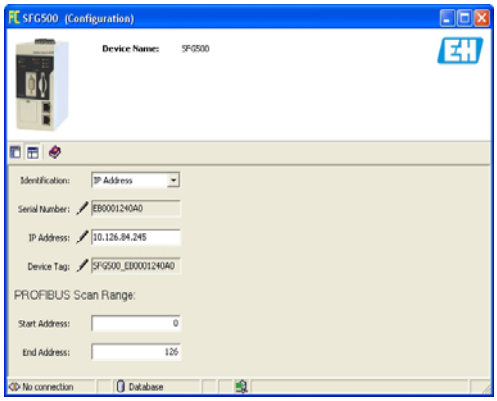
**NOTE!**

NOTICE

- The identification parameters can be changed only when Fieldgate SFG500 is offline

The configuration menu opens the Fieldgate SFG500 CommDTM.

1. Right-click on the SFG500 node and select **Configuration**
   - The SFG500 Device DTM opens:




2. The parameters have the following significance:

| Parameter | Meaning |
|---|---|
| Identification | If the SFG500 Device DTM is added manually to a network, the drop down menu allows three ways of identifying the device to which the DTM is to be connected.<br>▪ Serial Number: The Serial Number entry box is enabled.<br>– Enter the serial number of the associated device and press **Enter**<br>– The connection is made and the IP address and Device Tag are displayed<br>▪ IP Address: The IP Address entry box is enabled<br>– Enter the IP address of the associated device and press **Enter**<br>– The connection is made and the serial number and Device Tag are displayed<br>▪ Device Tag: The Device Tag entry box is enabled<br>– Enter the device tag of the associated device and press **Enter**<br>– The connection is made and the serial number and IP address are displayed |
| Serial Number | Displays the serial number of the connected device<br>▪ When offline, the box can also be used to reconnect to a different device, see above |
| IP Address | Displays the IP address of the connected device<br>▪ When offline, the box can also be used to reconnect to a different device, see above |
| Device Tag | Displays the Device Tag of the connected device.<br>▪ When offline, the box can also be used to reconnect to a different device, see above<br>▪ When online, the box can be used to change the tag of the connected device |
| Start Address | PROFIBUS address from which Fieldgate SFG500 starts scanning for devices on the bus<br>– Default value = 0 |
| End Address | PROFIBUS address at which Fieldgate SFG500 stops scanning for devices on the bus<br>– Default value = 126 |

### 5.1.2 Proxy Server Configuration

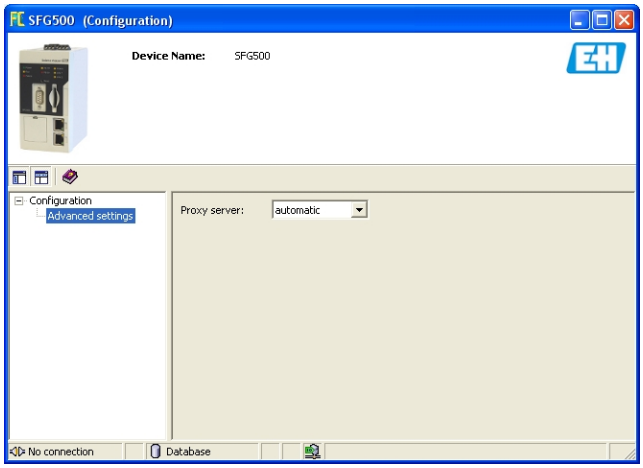
**NOTE!**

NOTICE

- The proxy can be changed only when Fieldgate SFG500 is offline

Some dialogs of the SFG500 CommDTM are Web pages provided by the connected Fieldgate SFG500. In order to connect to the Web server, it may be necessary to configure the proxy server.

1. The proxy server is configured in the advanced settings of the configuration dialog. These are selected by enabling the tree view of the dialogue with the leftmost button in the toolbar.



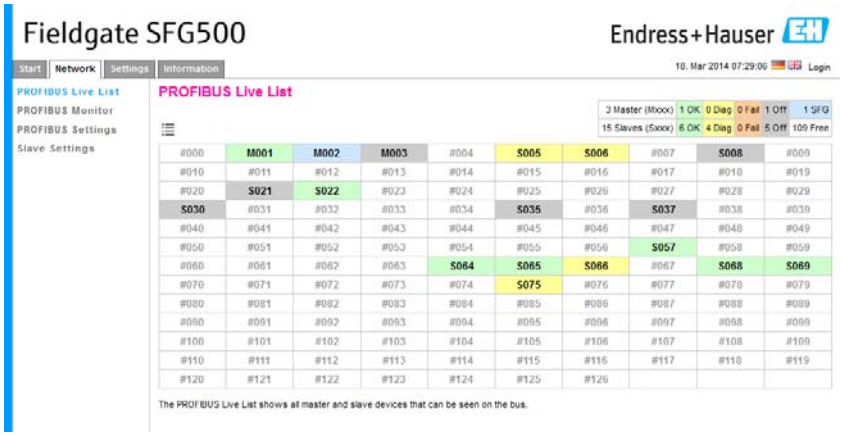

2. The options in the drop-down menu are as follows:

| Parameter | Meaning |
|---|---|
| automatic (default) | First the system settings are used. If this does not work, option no Proxy Server is used |
| system settings | The settings defined in the Web browser are used |
| no proxy | The proxy server is disabled |

## 5.2 Embedded Web Server

The Embedded Web Server menu presents all functions provided by the Fieldgate Web Server in a DTM environment.

1. If not already done, right-click on the SFG500 node and select **Connect** to put the Fieldgate DTM online
2. Right-click on the SFG500 node and select **Additional Functions =>Embedded Web Server**
   – The PROFIBUS Live List window opens



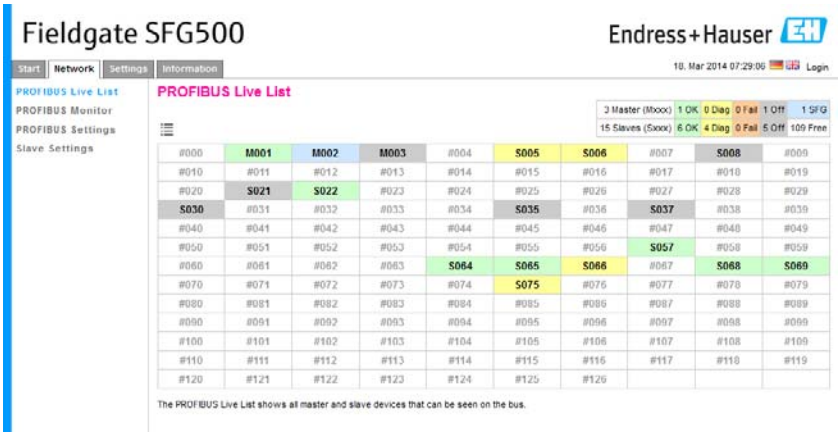

3. Navigate through the menus by clicking on the **Tabs** or the **sub-menu** items
   – The number of tabs that appear depends upon whether Fieldgate Module SFM500 is in use and the functions that it supports

### 5.2.1 PROFIBUS live list

The PROFIBUS live list shows all devices that can be seen by the selected Fieldgate SFG500 when it is listening to the bus. If the listener was active during the initialization of the slaves, the slave ID is shown.

**Grid View**

1. Right-click on the SFG500 node and select **Additional Functions =>Embedded Web Server** then click on the **Network** tab.
2. Click on **PROFIBUS live list**
   – The SFG500 PROFIBUS Live List window opens:

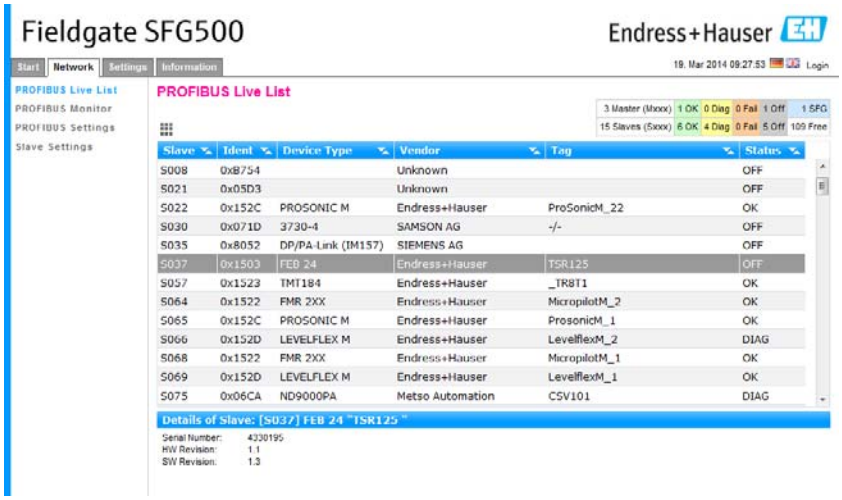



3. The various elements have the following significance:

| Element | Meaning |
|---|---|
| Overview table | Indicates the number of devices on the bus, together with their type and status<br>▪ Green: Device in cyclic data exchange, status OK<br>▪ Yellow: Device in cyclic data exchange, has diagnostic message<br>▪ Orange: Device failed to enter into cyclic data exchange<br>▪ Grey: Device is present, but not in cyclic data exchange<br>▪ Blue: Fieldgate SFG500 |
| Show List View/<br>Show Grid View | Toggles between a grid and list view of the connected devices |
| Live list matrix | Indicates the type and PROFIBUS address of the slave<br>▪ Mxxx: master with PROFIBUS address xxx<br>▪ Syyy: slave with PROFIBUS address yyy<br>▪ Colour code: as in overview |

**List View**

4. Click on **Show List View** to display a list of connected devices
   - Click on a device to show its details
   - Click on **Show Grid View** to return to the view above

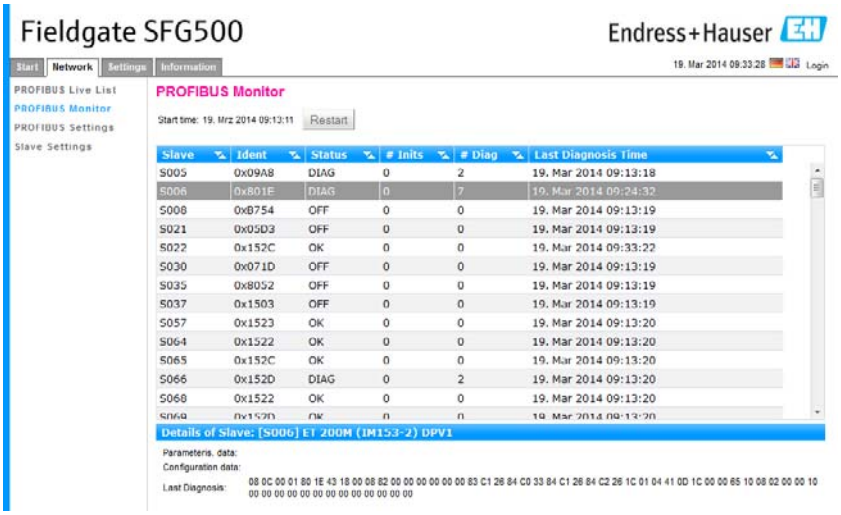



5. The various elements have the following significance:

| Element | Meaning |
|---|---|
| Overview table | Indicates the number of devices on the bus, together with their type and status<br>▪ Green: Device in cyclic data exchange, status OK<br>▪ Yellow: Device in cyclic data exchange, has diagnostic message<br>▪ Orange: Device failed to enter into cyclic data exchange<br>▪ Grey: Device is present, but not in cyclic data exchange<br>▪ Blue: Fieldgate SFG500 |
| Show Grid View/<br>Show List View | Toggles between a grid and list view of the connected devices |
| Live list | |
| Slave | Slave ID in PROFIBUS live list (Saaa, aaa = PROFIBUS address) |
| Ident | Slave device type |
| Device Type | Manufacturer's device type identification |
| Serial No. | Manufacturer's serial number of the slave |
| Tag | Tag No. of the slave |
| Status | Status<br>▪ OK: No events since last restart of live list<br>▪ DIAG: Device has issued a diagnostic message since last restart of live list<br>▪ FAIL: Device has failed since last restart of live list |
| Details of Slave | |
| Vendor | Manufacturer or vendor of the selected slave |
| HW Revision | Hardware revision of the selected slave |
| SW Revision | Software revision of the selected slave |

### 5.2.2 PROFIBUS Monitor

1. Right-click on the SFG500 node and select **Additional Functions =>Embedded Web Server** then click on the **Network** tab.
2. Click on **PROFIBUS Monitor**
   – The PROFIBUS Monitor window opens:




3. The parameters have the following significance:

| Parameter | Meaning |
|---|---|
| Restart | Restarts the PROFIBUS Monitor |
| **Diagnostic table** | |
| Slave | |
| Ident | Slave device type |
| Status | Status:<br>▪ OK: No events since last restart of monitor<br>▪ DIAG: Device has issued a diagnostic message since last restart of monitor<br>▪ FAIL: Device has failed since last restart of monitor |
| Init | Indicates the number of device initializations since the last restart of monitor |
| Diag | Indicates the number of diagnostic messages since the last restart of monitor |
| Last Diagnosis Time | Indicates the time of the last diagnostic message issued by the device<br>– If there has been no message, the time of the last monitor restart is shown |
| **Details of Slave** | |
| Parameter String | Parameter string of selected slave (shown only after an initialization) |
| Config String | Configuration string of selected slave (shown only after an initialization) |
| Last Diagnosis | Diagnosis string of selected slave (shown only after an diagnostic message) |

### 5.2.3 PROFIBUS Settings

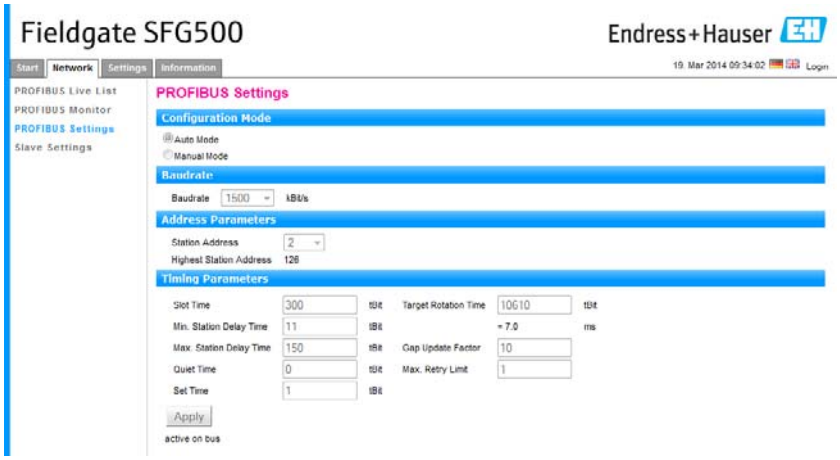
**NOTE!**

NOTICE

- The set up of Fieldgate SFG500 is described in Chapter 7.2.7 of Operating Instructions BA00070S/04/en, Fieldgate SFG500 Installation and Commissioning

The PROFIBUS settings list shows the detected baudrate, the PROFIBUS address of the selected Fieldgate and detected bus parameters used by the Class 1 master. The window can be used to change the bus parameters, however, it is important to note that all the PROFIBUS DP devices, including couplers and links, connected to a particular network must have the same communication settings

1. Right-click on the SFG500 node and select **Additional Functions =>Embedded Web Server** then click on the **Network** tab
2. Click on **PROFIBUS Settings**
   – The SFG500 PROFIBUS Settings window opens:




3. The parameters have the following significance:

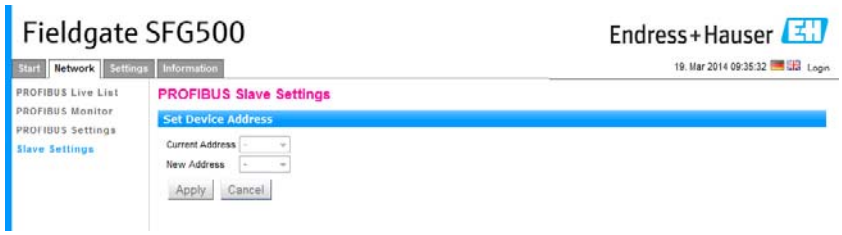
| Parameter | Description |
|---|---|
| **Configuration Mode** | |
| Auto Mode | Fieldgate SFG500 detects the PROFIBUS parameters and sets its own address<br>– The detected PROFIBUS parameters are displayed<br>– Overwriting is disabled |
| Passive Mode | Fieldgate SFG500 listens to the bus but does not enter traffic as Master Class 2<br>– FieldCare cannot be used with this mode |
| Manual Mode | Writing is enabled and the user can set the PROFIBUS parameters<br>– Fieldgate must use the same parameters as all other PROFIBUS equipment otherwise communication will fail<br>– A return to manual mode will cause all changes to be lost and Fieldgate will detect the PROFIBUS parameter and set its own address |
| **Baudrate** | |
| Baudrate | Indicates the baudrate detected by Fieldgate SFG500<br>▪ To change the baudrate:<br>– Select **Manual mode**<br>– Select a new baudrate from the pull-down menu and press **Apply**<br>– If the baudrate is in conflict with the one used by the master, a message appears<br>– Selecting **Auto mode** will cause all changes to be lost |

| Parameter | Description |
|---|---|
| **Address Parameters** | |
| Station Address | Fieldgate SFG500 PROFIBUS DP address (Master Class 2) that it has assigned automatically to itself after listening to the bus<br>▪ To force a new address (0 – 126):<br>– Select **Manual mode**<br>– Enter a new unoccupied address press **Apply**<br>– Selecting **Auto mode** will cause all changes to be lost |
| Highest Station Address | Indicates the address range that is scanned for token passing. |
| Timing Parameters | |
| Slot Time | Monitoring time – 'Wait for receipt' – of the senders (Requestor) of telegram for the acknowledgement of the recipient (Responder). After expiration, a retry occurs in accordance with the value of 'Max. telegram retries'. |
| Min. Station Delay Time | Shortest time period that must elapse before a remote recipient (Responder) may send an acknowledgement of a received query telegram.<br>The shortest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram. |
| Max. Station Delay Time | Longest time period that must elapse before a Sender (Requestor) may send a further query telegram.<br>Greatest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.<br>The Sender (Requestor, Master) must wait at least for this time period after the sending of an unacknowledged telegram (e.g. Broadcast only) before a new telegram is sent. |
| Quiet Time | Time delay that occurs for modulators (Modulator-trip time) and Repeaters (Repeater-switch time) for the change over from sending to receiving. |
| Setup Time | Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor). |
| Token Rotation Time | Pre-set nominal Token cycling time within which the Sender authorization (Token) will cycle around the ring. How much time the Master still has available for sending data telegrams to the Slaves is dependent on the difference between the nominal and the actual token cycling time. |
| Gap Update Factor | Factor for determining after how many Token cycles an added participant is accepted into the Token ring. After expiry of the time period G*TTR, the Station searches to see whether a further participant wishes to be accepted into the logical ring. |
| Max Retries Limit | Number of times the Fieldgate will try to establish communication with a device before it flags it as faulty |
| **Button** | |
| Apply | Applies any changes to Fieldgate SFG500 |

### 5.2.4 Slave Settings

**Slave Settings** allows the user to change the address of the selected PROFIBUS device, e.g. during commissioning of the network. It has exactly the same function as **Set Device Address**, see Chapter 5.3.2.

1. Right-click on the SFG500 node and select **Additional Functions =>Embedded Web Server** then click on the **Network** tab
2. Click on **Slave Settings**
   - The PROFIBUS slave settings window opens:

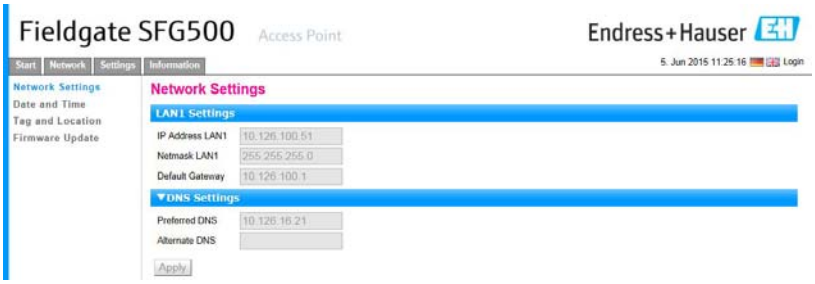


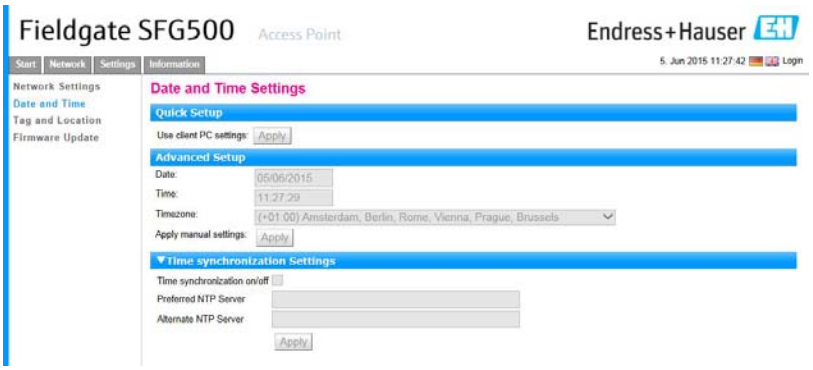

3. Select the address of the device whose address must be changed from the **Current Address** drop-down menu
4. Select the address the device should be given in the **New Address** drop-down menu
5. Press **Apply** to write the change of address to the device
   - Pressing **Cancel** will discard all changes and leave the device with its old address
   - A possible reason for a failure to change an address is that the device is locked
6. After an address change the device concerned will no longer be connected to its DTM:
   - Either change the DTM address to the new device address, see Chapter 5.3.3 or
   - Delete all the devices below the SFG500 and create the network again

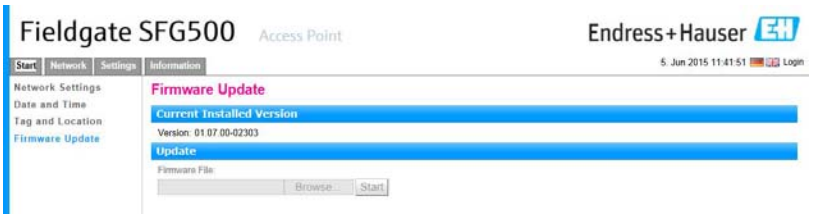
### 5.2.5 Settings and Information tabs

**Settings tab**

The settings tab allows the IP address and time and date of Fieldgate SFG500 to be changed. Normally these parameters will be adjusted during the commissioning of Fieldgate SFG500 as described in Chapter 7.2.6 of Operating Instructions BA00070S/04/en, Fieldgate SFG500 Installation and Commissioning. The firmware update is described in Chapter 8.2.3 of the same manual.

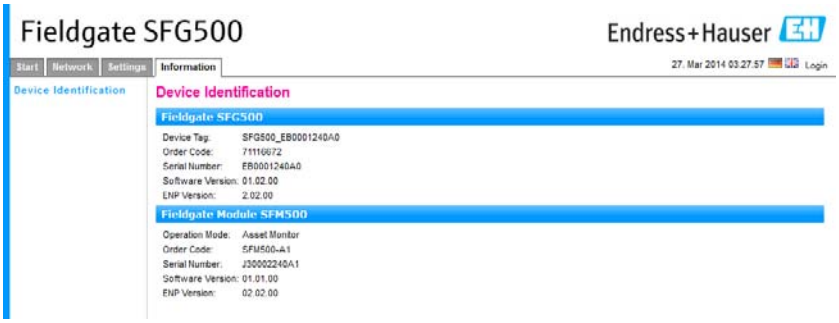



**Information tab**

The Information tab displays the information stored on the Electronic nameplate of Fieldgate SFG500 and where of Fieldgate Module SFM500.

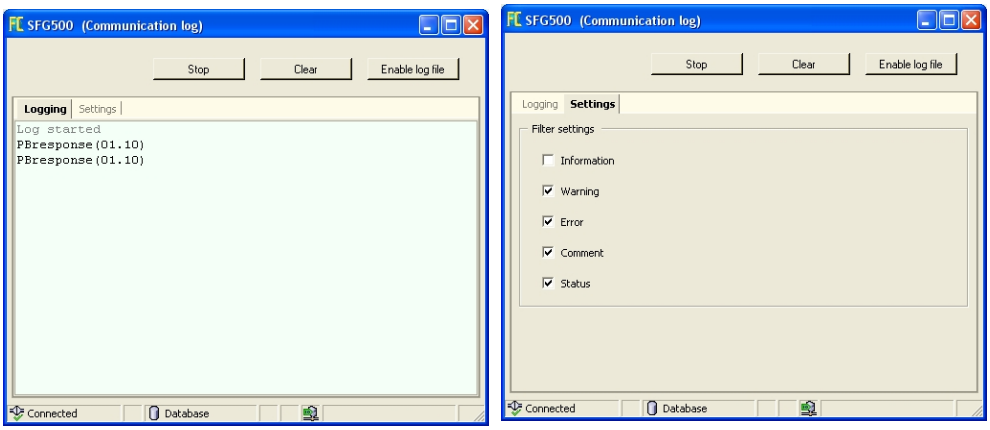


# 5.3 Additional Functions

## 5.3.1 Communication log

The communication log provides a record of the transactions on the PROFIBUS network and can be used in diagnosing communication faults. It starts automatically on call up.

1. Right-click on the SFG500 node and select **Additional Functions => Communication log**
   - The SFG500 Communication log window opens:
   - Click the **Settings** tab to set what is to be logged



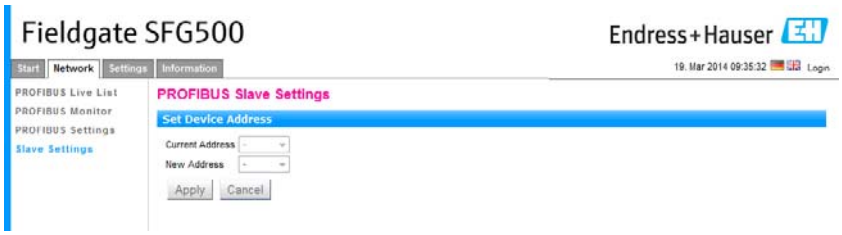

2. The various buttons and parameters have the following significance:

| Parameter group | Meaning |
|---|---|
| Logging tab | Shows the communication log.<br>– Starts automatically on call up<br>– After a log has been cleared, press the **Start** button to restart the logging |
| Settings tab | Sets the filters for the events to be logged<br>▪ Information: logs all information messages<br>▪ Warning: logs all warning messages<br>▪ Error: logs all error messages<br>▪ Comment: Logs all comments<br>▪ Status: logs all status messages |
| Start | Starts the log again after it has been cleared |
| Clear | Deletes the current log and stops logging |
| Save | Saves the current log<br>– In the **Save as** page which opens, navigate to the desired folder<br>– Enter a **file name** then press **Save** |

### 5.3.2 Set Device Address (PB Address)

**Set Device Address** allows the user to change the address of the selected PROFIBUS device, e.g. during commissioning of the network.

1. Right-click on the SFG500 node and select **Additional Functions => Set Device Address**
   – The PROFIBUS slave settings window opens:

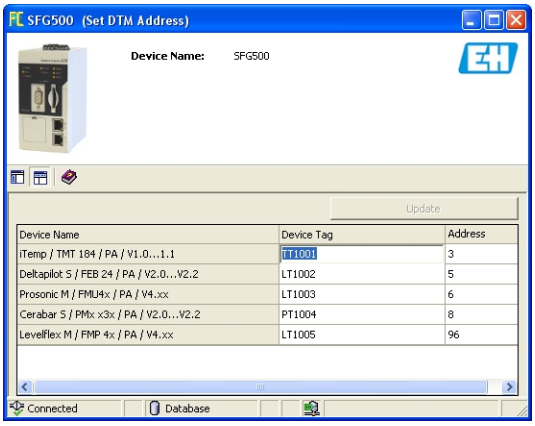



2. Select the address of the device whose address must be changed from the **Current Address** drop-down menu
3. Select the address the device should be given in the **New Address** drop-down menu
4. Press **Apply** to write the change of address to the device
   – Pressing **Cancel** will discard all changes and leave the device with its old address
   – A possible reason for a failure to change an address is that the device is locked
5. After an address change the device concerned will no longer be connected to its DTM:
   – Either change the DTM address to the new device address, see Chapter 5.3.3 or
   – Delete all the devices below the SFG500 and create the network again

### 5.3.3 Set DTM Address (DTM)

**Set DTM Addresses** allows the user to match the addressing in the DTM, i.e. the Tag in PROFIBUS networks, to the physical devices. The function is not relevant to FieldCare as this is done during a network scan but might be required for other FDT frames.

1. Right-click on the SFG500 node and select **Additional Functions => Set DTM Address**
   – The SFG500 Set DTM address window opens:




2. The various buttons and parameters have the following significance:

| Parameter group | Meaning |
|---|---|
| Device Name | Shows the device and firmware version associated with the DTM |
| Device Tag | Shows the device tag of each device connected to the selected Fieldgate SFG500<br>– To change a device tag, enter the new designation then press **Update** |
| Address | Shows the PROFIBUS address of each device connected to the selected Fieldgate SFG500<br>– To change an address, enter the new designation then press **Update**<br>– The same change must now be made in the Set Device Address dialog otherwise the connection to the device will be broken, see on-line help |
| Update | Downloads the any changes in device tag or address to the DTM |

### 5.3.4 Help

Help provides instructions on the functions and use of the SFG500 DTM

1. Right-click on the SFG500 node and select **Additional Functions => Help**
   – The manual (BA00071S/04/EN) opens as a PDF

### 5.3.5 About

**About** gives information about Fieldgate SFG500 and its Device DTM.

1. Right-click on the SFG500 node and select **Additional Functions => About**
   – The SFG500 About window opens:

# 6 Trouble-Shooting

## 6.1 FieldCare

| | Problem | Cause/Remedy |
|---|---|---|
| 1 | SFGNetwork DTM not available in DTM library | ▪ FieldCare version does not support SFG500<br>– Install Fieldgate DTMs from CD-ROM supplied<br>– Update DTM catalogue |
| 3 | SFGNetwork DTM cannot find Fieldgate SFG500 | ▪ No connection (general)<br>– Check all Ethernet connections<br>– Check that Fieldgate SFG500 is switched on<br>– Check that the IP address domain of the computer is the same as that for Fieldgate SFG500 (a simple test is to call the web server or ping)<br>– Check that there is no firewall blocking communication<br>– Check that the Microsoft SQL Server is running<br>▪ No connection after network scan (additional remedies)<br>– Check that PC and SFG500 are in the same logical network (ping)<br>– If not, check that the following ports are enabled on the router (see also Appendix B)<br>UDP 60020: from SFG500 network to PC<br>TCP 60010: in both directions<br>▪ No connection after manual connect (additional remedies)<br>– Check any error messages in FieldCare<br>– Check the configuration of the CommDTM is entered IP address, Tag, Serial number correct? |
| 4 | SFG500 DTM cannot find PROFIBUS device(s) | ▪ No connection<br>– Check all PROFIBUS connections<br>– Check that device is switched on<br>– Check that the device has a unique PROFIBUS address<br>– Check that the bus is properly terminated |
| 5 | Device(s) connected to link cannot be seen | ▪ No connection<br>– Check that the link CommDTM is in place and property configured<br>– Check all PROFIBUS connections<br>– Check that device is switched on<br>– Check that the device has a unique PROFIBUS address<br>– Check that the bus is properly terminated |
| 6 | Device(s) connected to a Remote I/O cannot be seen | ▪ No connection<br>– Check that the Remote I/O CommDTM is in place and properly configured with licence<br>– Check all HART connections<br>– Check that device is switched on |

# Appendix A Changing a computer's IP properties

**NOTE!**

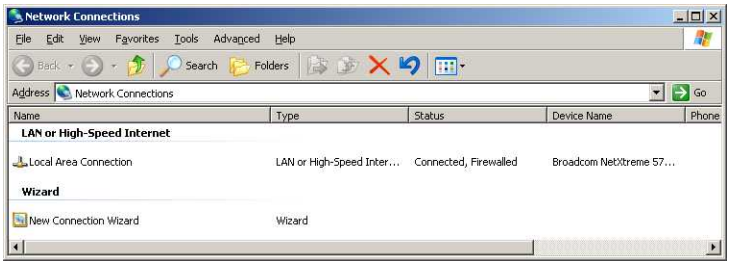
NOTICE

- You may need administration rights to change the IP settings of your computer. If this is the case, contact your system administrator
- The procedures described in this chapter are for Windows XP. For other Windows systems consult your system administrator.

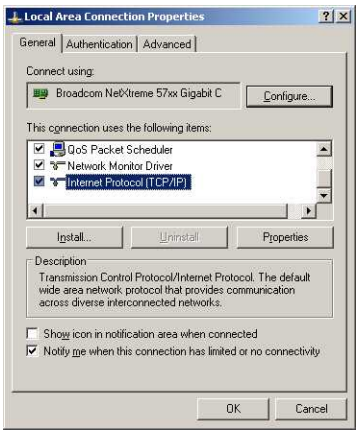
Most computers which are used in a company network will already be set up to accept an IP address from a DHCP server. If you computer is used in a control system, however, it is possible that it has a fixed address. In this case, in order to connect to Fieldgate SFG500's LAN2 port, proceed as follows:

**Procedure for Windows XP**

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

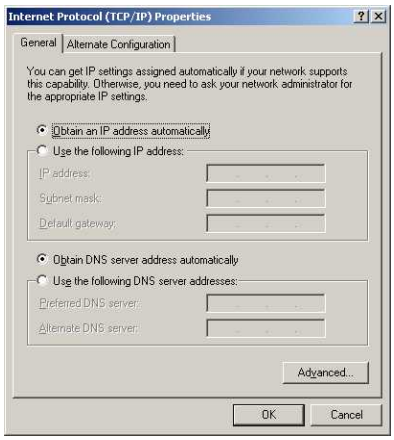



2. Right-click **Local Area Connection => Properties**




3. Using the left mouse button, double-click **Internet Protocol (TCP/IP)** or click once, then click **Properties**.
4. Note the addresses that have been assigned to your computer - you will need them later when you reset your computer after commissioning the Fieldgate SFG500, see below

5. Select the option **Obtain and IP address automatically**




6. Now click **OK** to confirm your selection and close the dialog
   – Press **OK** to close the Local Area Connection window

**Resetting the fixed IP address**

After the Fieldgate SFG500 has been set up, you can reset your computer to its old address as follows

7. Repeat Steps 1 to 3 of the above procedure
8. In the **Internet Protocol (TCP/IP) Properties** dialog select the option **Use the following IP address**
   – Re-enter the settings that you noted at Step 4
9. Now click **OK** to confirm your selection and close the dialog
   – Press **OK** to close the Local Area Connection window

# Appendix B Windows Firewall

If firewalls are in use on the computers on which the servers and clients reside, they must be programmed to allow mutual access. As firewall configuration is often a matter of company IT security policy, your system administrator should be consulted before proceeding. In addition, administration rights are required to perform this task.

1. Press **Start => Control Panel => Windows Firewall**
2. Press the **Exceptions** tab to add the exceptions on two main levels:
   - **Add program..**: specify which applications are able to respond to unsolicited requests
   - **Add Port..**: specify that the firewall should allow TCP traffic at ports used by the servers, see Table 4-1 below
3. In the **General** tab, select the **On (recommended)** radio button to switch on the firewall

**Communication ports**

The ports available for Fieldgate SFG500 are listed in the table below:

| Port number | ID | Meaning |
|---|---|---|
| TCP 60010 | TCP_PCPS2_SFG500_PORT | |
| UDP 60015 | UDP_IDENTIFY_PORT | |
| UDP 60020 | UDP_ANNUNC_PORT | |

For your notes

# Index

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