

for electromagnetic flowmeters
ProcessMaster/HygienicMaster



Infrared Service Port Adapter

FZA100

Operating Instruction

OI/FZA100-EN

11.2008

Manufacturer:

ABB Automation Products GmbH

Dransfelder Straße 2

D-37079 Göttingen

Germany

Tel.: +49 551 905-534

Fax: +49 551 905-555

CCC-support.deapr@de.abb.com

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1 Introduction and basics

1.1 Symbols and warnings



IMPORTANT (NOTICE)

This symbol indicates operator tips, particularly useful information, or important information about the product or its further uses. It does not indicate a dangerous or damaging situation.

1.2 Intended use

The FZA100 infrared service port adapter is used to transfer data between the ProcessMaster/HygienicMaster transmitter and a laptop or PC.

The FZA100 infrared service port adapter is a repair and maintenance tool and does not, therefore, bear a CE mark.

1.3 Description

The infrared service port adapter can be used to operate and configure the ProcessMaster/HygienicMaster transmitter via a PC.

In order to do this, the "Service Port Splitter" software, drivers, and utility programs must be installed and a service port adapter (**part no. FZA100**) connected.

Current measured values and parameters can be saved to Excel tables, for example, although an additional terminal program, such as HyperTerminal, is required for this.

1.4 PC system requirements

- Platform: Microsoft Windows 2000, XP, Vista
- Microsoft .Net 2.0 Framework (available for download at www.microsoft.com) or installation of the CD-ROM supplied
- USB port available for connecting the service port adapter
- Terminal software, e.g., HyperTerminal or another terminal program

Users of Microsoft Vista can obtain "HyperTerminal Private Edition" from Hilgraeve directly (www.hilgraeve.com).



Important

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1.5 Content of the installation CD

Folder structure on the CD	Description
+ Documentation	Operating instructions
+ Software	
+ HMI Emulation	Remote control software for the transmitter
+ MS .Net 2.0	Microsoft .NET Framework
+ MS Windows Installer 3.1	Microsoft Windows Installer
+ Service Port Splitter	Software for the Service Port Splitter
+ USB Driver	
+ InstallGuides	Documentation relating to the USB drivers
+ Drivers	USB drivers for the infrared service port adapter
+ Windows 98, ME	
+ Windows Vista, XP, 2000, Server2003	

1.6 Name plate

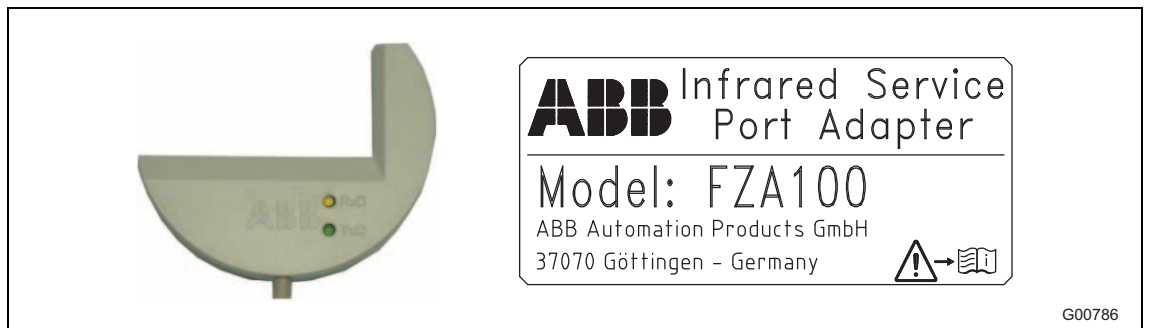


Fig. 1
The name plate is located on the back of the adapter.

2 Installation

2.1 USB drivers for the infrared service port adapter

2.1.1 Microsoft Windows 2000

Install the infrared service port adapter as described below:

1. Connect the adapter to an available USB port on the PC and insert the CD supplied into the appropriate drive. Windows automatically recognizes the new hardware as "USB Composite Device".



Fig. 2

2. Once the hardware has been recognized, the "Found New Hardware Wizard" starts up. Click "Next".

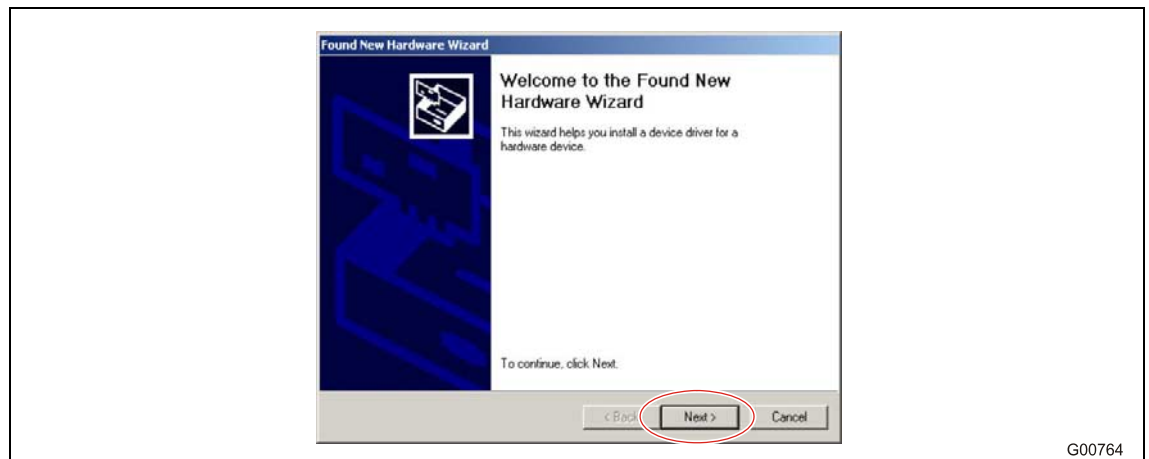


Fig. 3

3. Select the option "Search for a suitable driver for my device (recommended)" and click "Next".

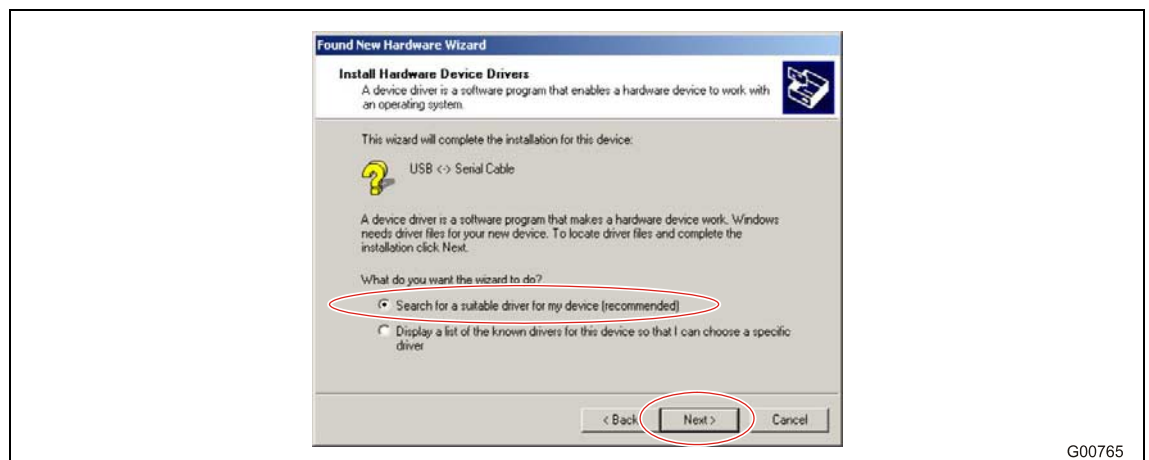


Fig. 4

4. Select the option "Specify a location" and click "Next".

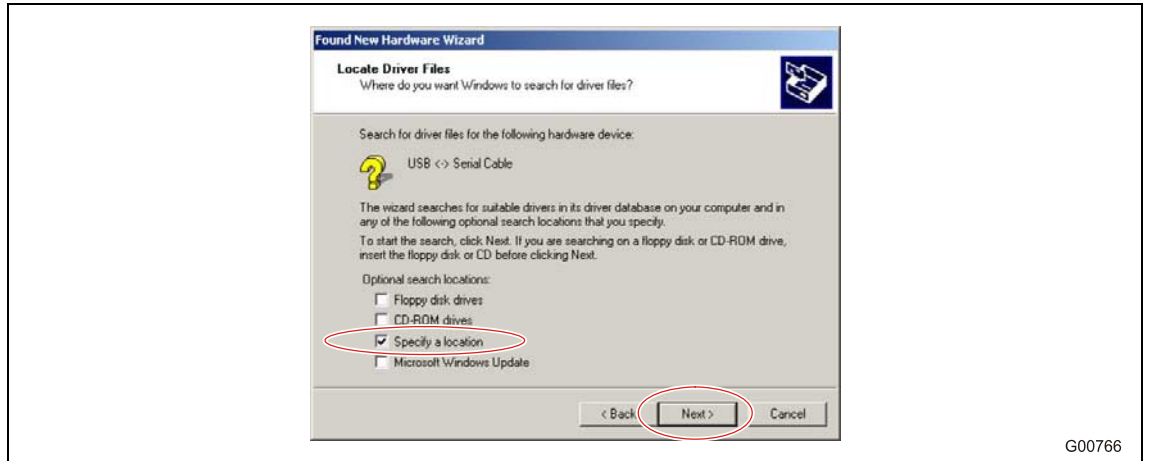


Fig. 5

5. Select the driver's location:

- Click "Browse" and select the directory "[CD Drive]\Software\USB Driver\Drivers" in the dialog which appears.
- Select the **FTDIBUS.INF** driver file and click "Open".

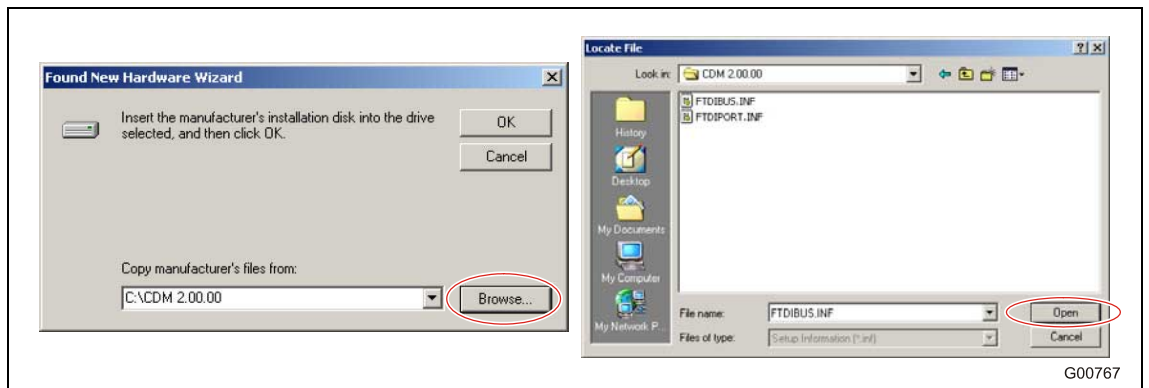


Fig. 6

6. Once you have selected the driver, click "Next". Following successful installation, the message "Completing the Found New Hardware Wizard" will appear. To complete installation of the first driver, click "Finish".

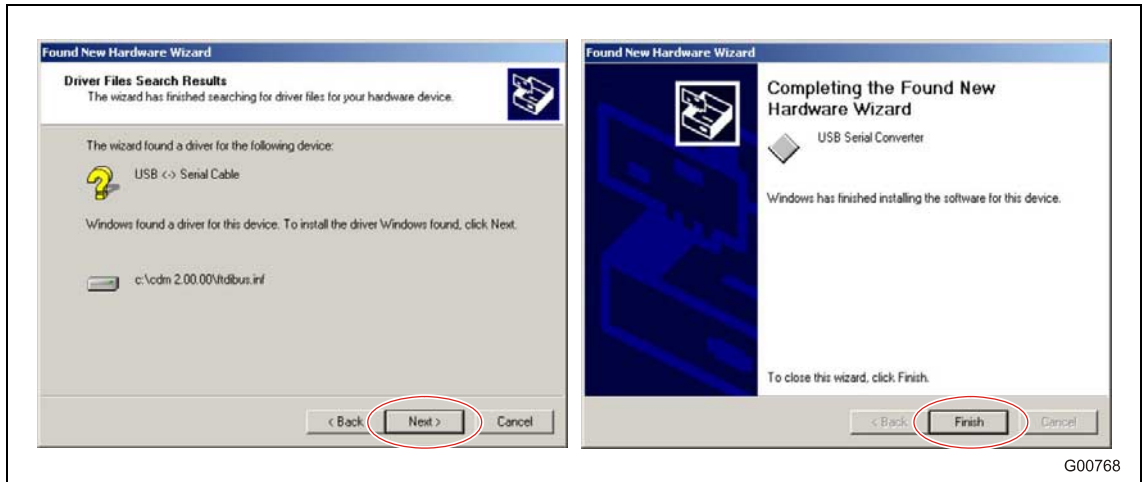


Fig. 7



Important

The second driver for the COM port now has to be installed. The installation procedure continues automatically.

7. Select the option "Search for a suitable driver for my device (recommended)" and click "Next".

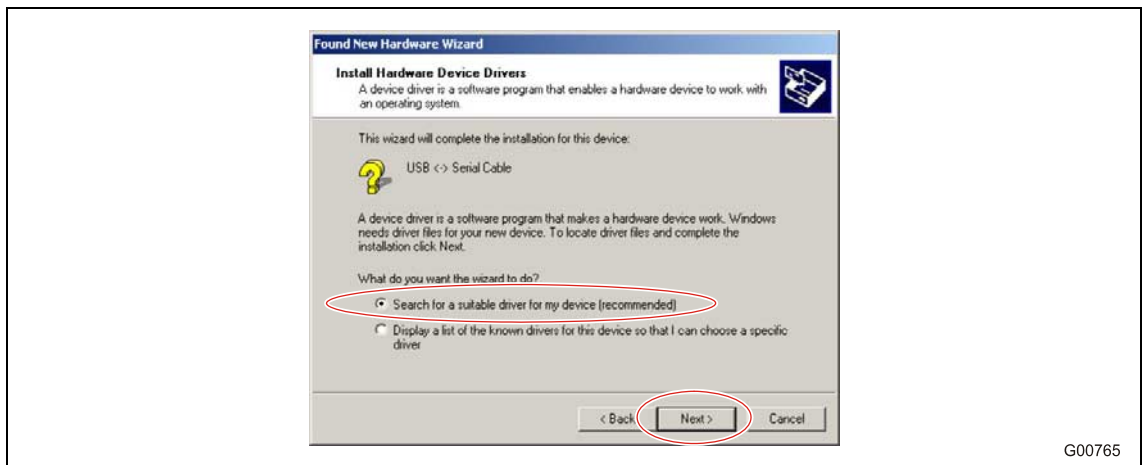


Fig. 8

8. Select the option "Specify a location" and click "Next".

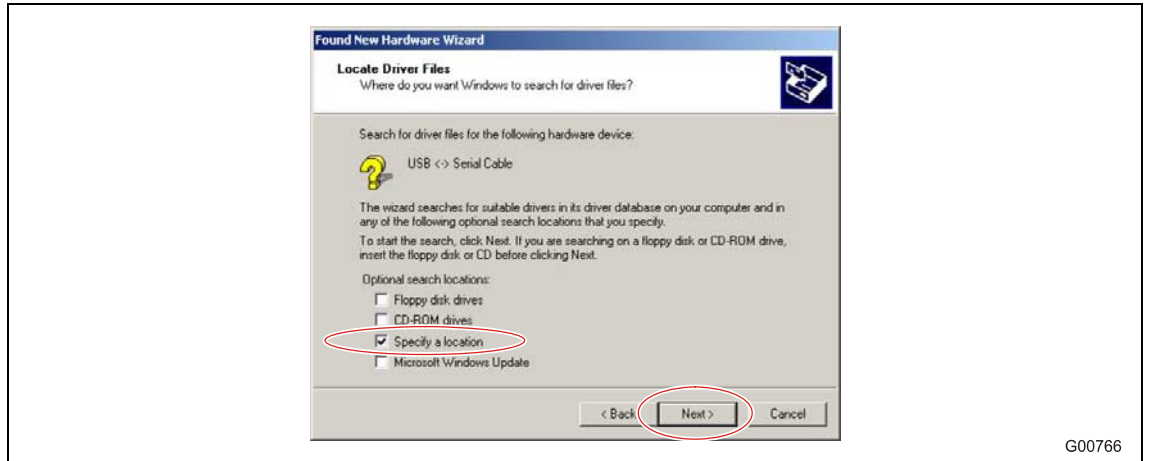


Fig. 9

9. Select the driver's location:

- Click "Browse" and select the directory "[CD Drive]\Software\USB Driver\Drivers" in the dialog which appears.
- Select the **FTDIPOINT.INF** driver file and click "Open".

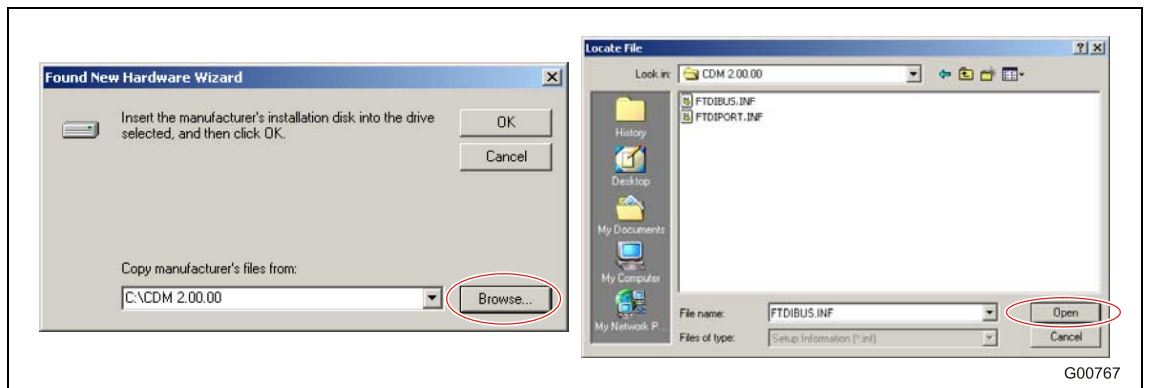


Fig. 10

10. Once you have selected the driver, click "Next". Following successful installation, the message "Completing the Found New Hardware Wizard" will appear. To complete installation of the first driver, click "Finish".

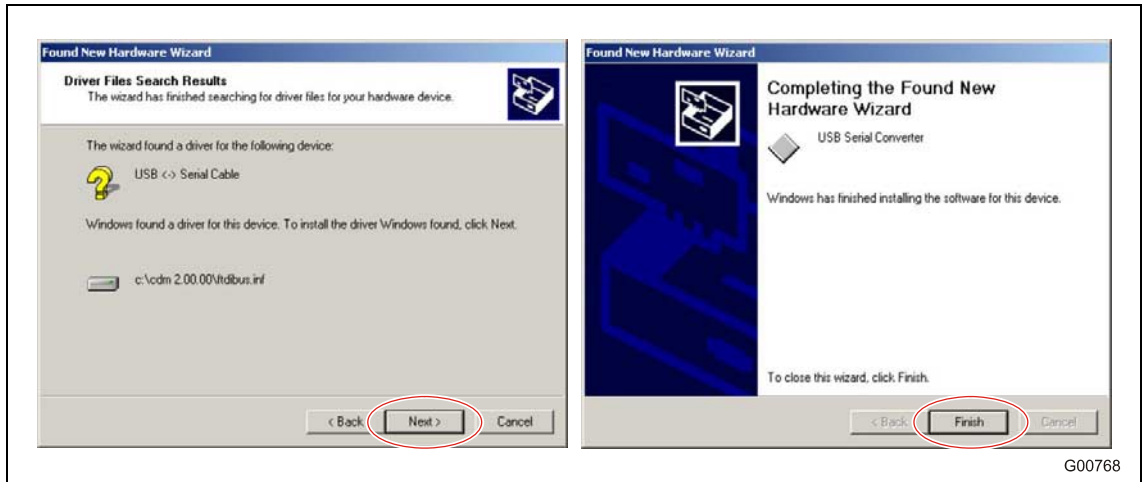


Fig. 11

11. Driver installation is now complete. The adapter's virtual COM port can be checked in the "Device Manager".

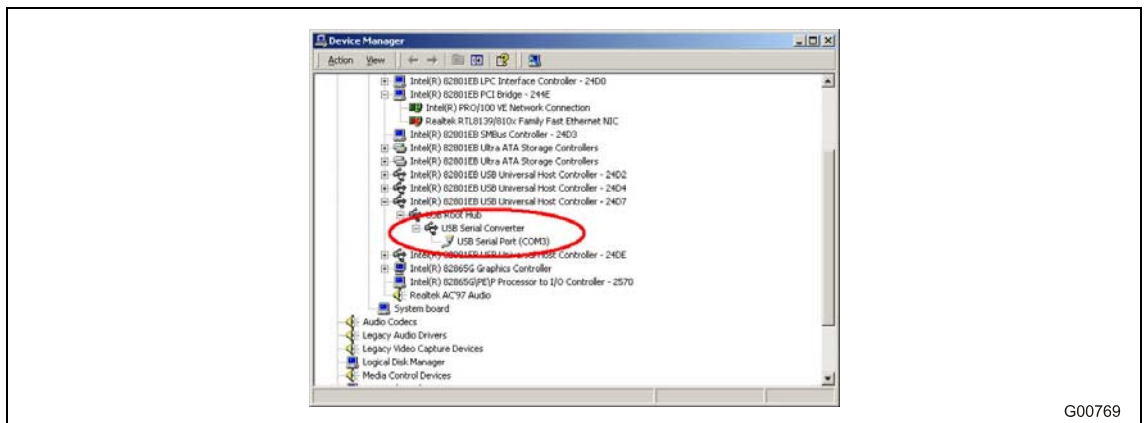


Fig. 12

The COM port number is always assigned on an individual basis and depends on the configuration of the computer being used. In this case, COM port 3 has been assigned to the adapter. In future, each time the adapter is connected to this computer's USB port, it will be assigned to COM port 3.



Important

Always connect the adapter to the particular USB port which was used during installation.

2.1.2 Microsoft Windows XP

Install the infrared service port adapter as described below:

Microsoft Windows XP with Service Pack SP2:

The driver is installed automatically in the background. Once it has been installed, the adapter can be used straightaway.

Microsoft Windows XP without Service Pack SP2:

The driver must be installed as follows:

1. Connect the adapter to an available USB port on the PC and insert the CD supplied into the appropriate drive. Once the hardware has been recognized, the "Found New Hardware Wizard" starts up. Select the option "No, not this time" and click "Next".

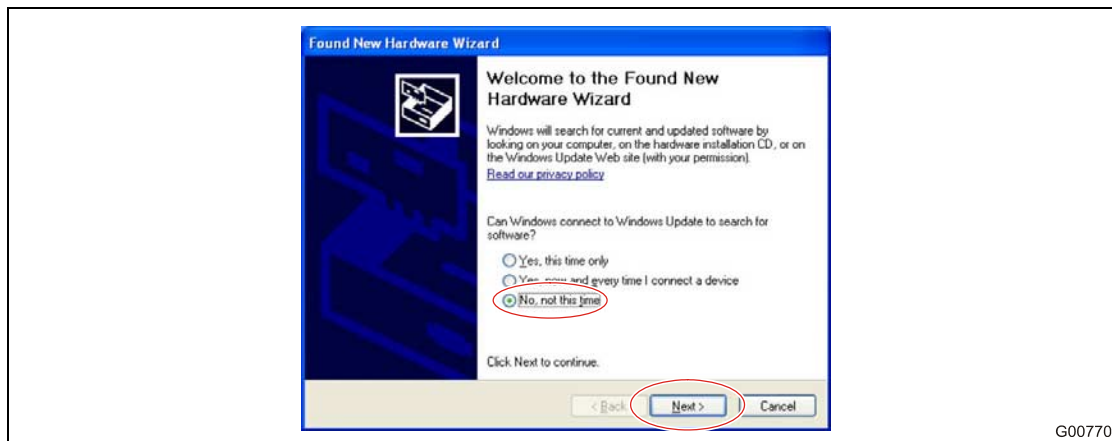


Fig. 13

2. Select the option "Install from a list or specific location (Advanced)" and click "Next".

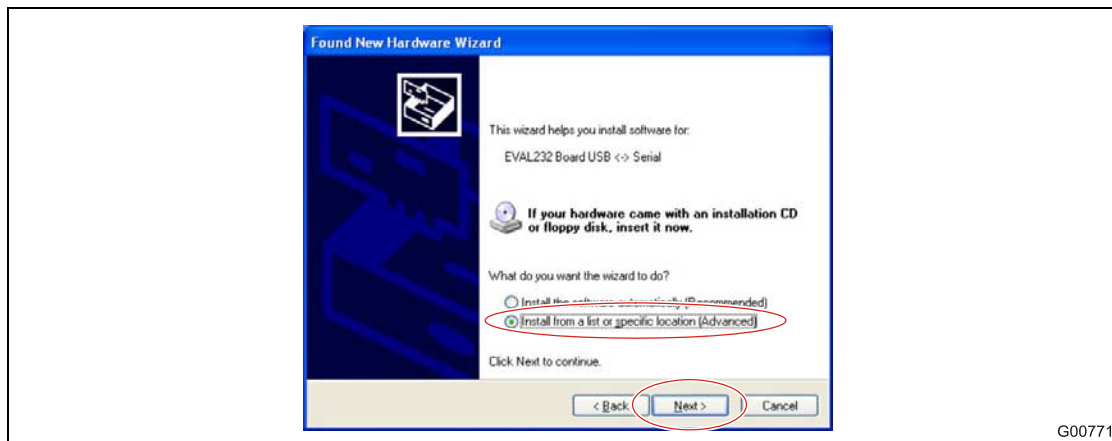


Fig. 14

3. Select the driver's location. Click "Browse" and select the directory "[CD Drive]\Software\USB Driver\Drivers" in the dialog which appears. Following successful installation, the message "Completing the Found New Hardware Wizard" will appear. To complete installation of the first driver, click "Finish".

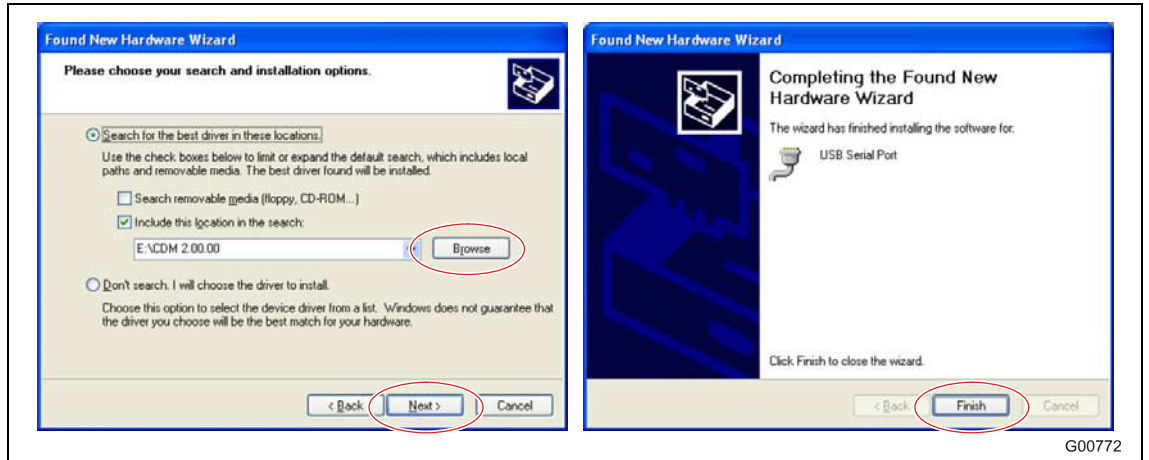


Fig. 15

i

Important

The second driver for the COM port now has to be installed. The installation procedure continues automatically. Repeat steps 1 - 3.

4. Driver installation is now complete. The adapter's virtual COM port can be checked in the "Device Manager".

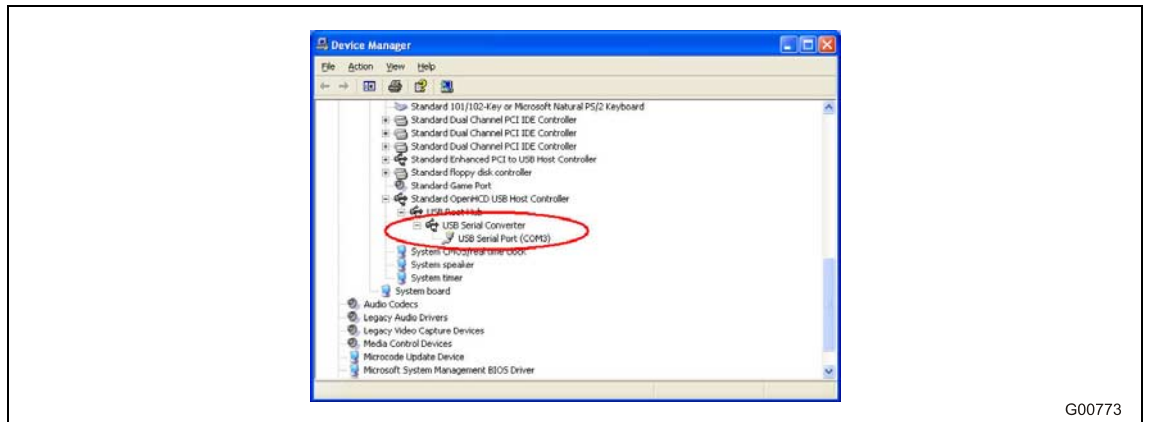


Fig. 16

The COM port number is always assigned on an individual basis and depends on the configuration of the computer being used. In this case, COM port 3 has been assigned to the adapter. In future, each time the adapter is connected to this computer's USB port, it will be assigned to COM port 3.

i

Important

Always connect the adapter to the particular USB port which was used during installation.

2.2 Positioning the infrared service port adapter

Once the driver software has been installed on the PC, the infrared service port adapter must be attached to the transmitter. The photos below show the adapter correctly positioned on a simulator, on a field-mount housing, and on a compact housing.

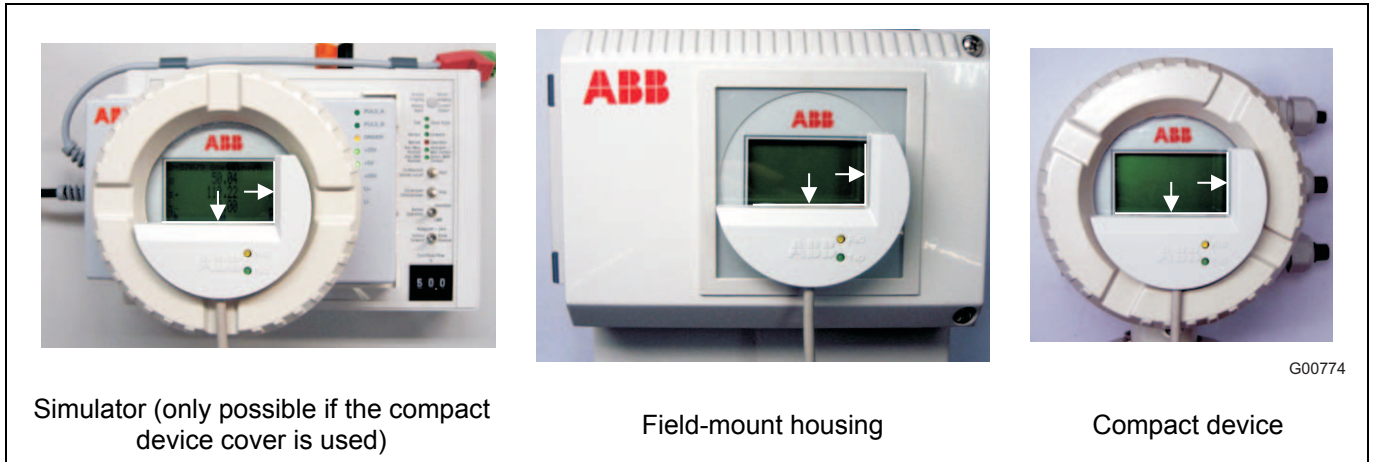


Fig. 17: Mounting examples



Important

The bottom and right-hand edges of the transmitter display can be used to position the adapter correctly.

2.3 Service Port Splitter

Install the Service Port Splitter as described below:

1. Open the directory "[CD Drive]\Software\Service Port Splitter".
2. Run file **Setup.exe**, following the instructions provided by the installation program.



Important

If it is not already available, install the MS .NET fix in directory "[CD Drive]\Software\MS .NET 2.0".

3. The Service Port Splitter is launched by calling "**Start\Programs\ABB\Service Port Splitter**".

2.3.1 Configuring the Service Port Splitter



Important

In order to configure the Service Port Splitter, the infrared service port adapter must be positioned correctly on the device and connected to the PC's USB port, while the transmitter must be supplied with auxiliary power.

The Service Port Splitter can be configured in such a way that up to four virtual COM ports can be assigned to the individual client applications.

Data can then be transferred to and read from several virtual COM ports simultaneously.

A typical virtual port configuration may feature the following settings:

- Client 1 – assigned to the external HMI application
- Client 2 – assigned to a HART-compatible application
- Client 3 – assigned for outputting cyclic data (as a .csv text file)
- Client 4 – assigned for outputting parameter data (as a .csv text file). The parameter data contains the transmitter's configuration settings.

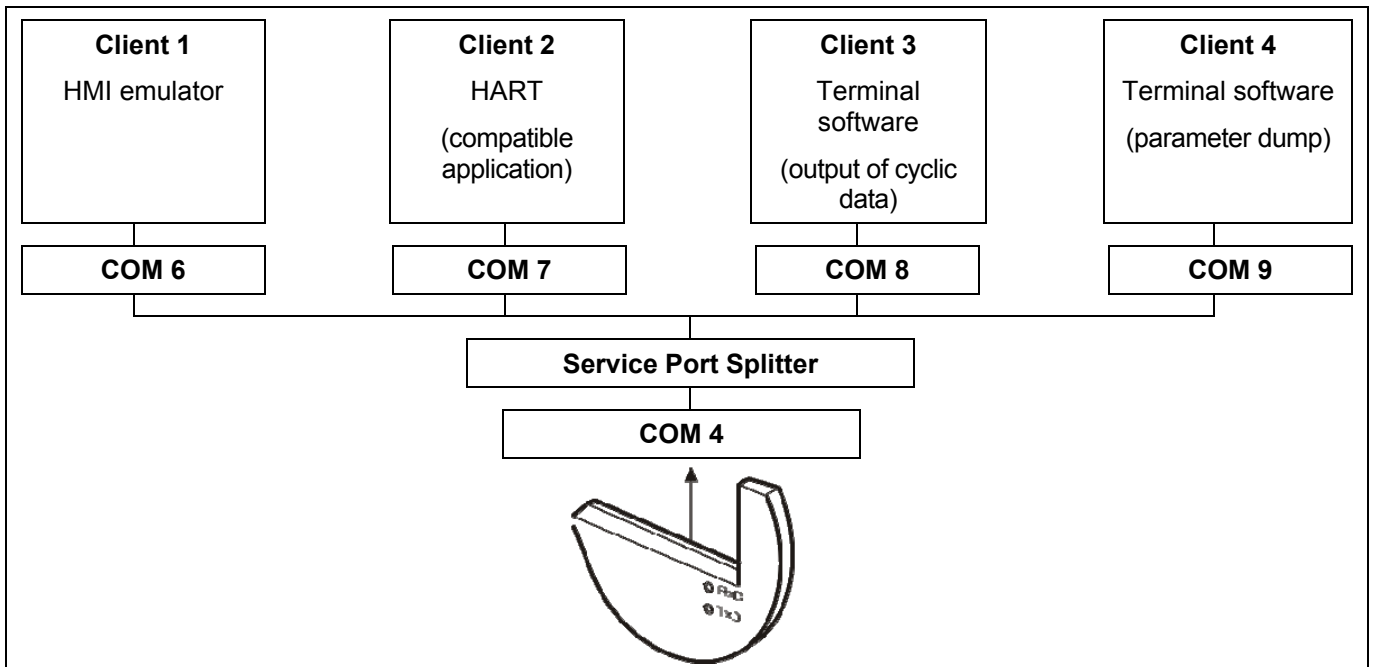


Fig. 18: Typical configuration of the Service Port Splitter

The Service Port Splitter enables several device services to be used simultaneously.



Important

If services run simultaneously, the data transmission rate will be shared between them. Therefore, certain services may run with a delay!

1. Once it has been launched, the Service Port Splitter appears as an icon in the tray bar. Right-clicking on the icon calls up the shortcut menu. The Service Port Splitter is exited by clicking "Stop Service".

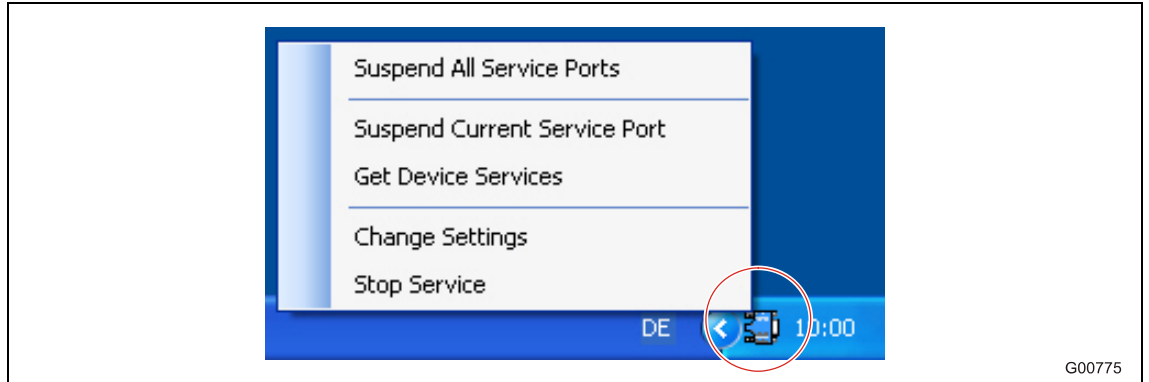


Fig. 19

2. Double-click (left mouse button) on the icon to open the configuration window. In the "Set New Channel Port" window, select the COM port for the infrared service port adapter.

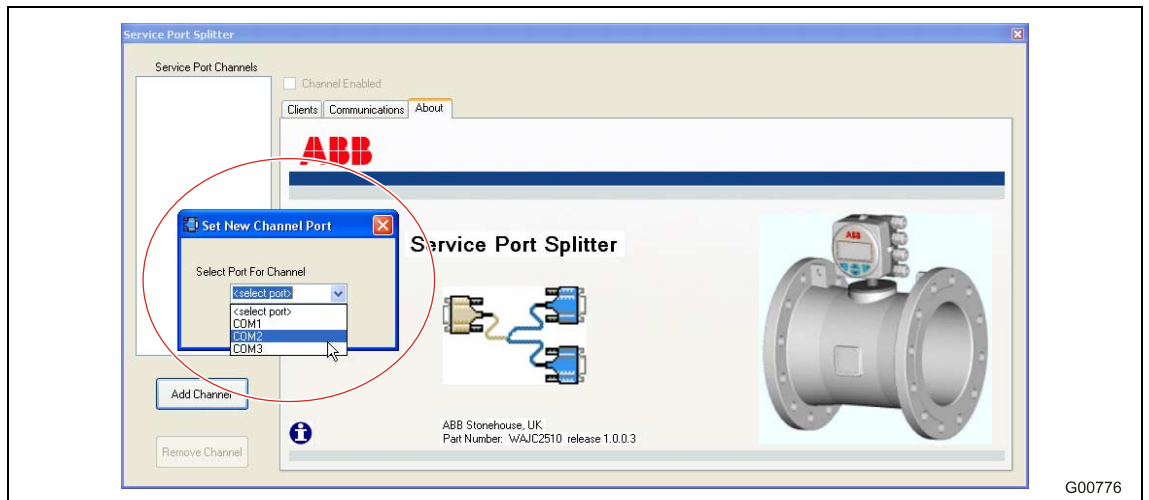


Fig. 20

- To establish the connection, activate the "Channel Enabled" checkbox. The Service Port Splitter now establishes communication with the device.

The connection status can be checked on the "Communications" tab.

The baud rate must be set in the transmitter; see operating instructions OI/FEP300/FEH300.

The connection to the device can be interrupted at any time by deactivating the "Channel Enabled" check box.

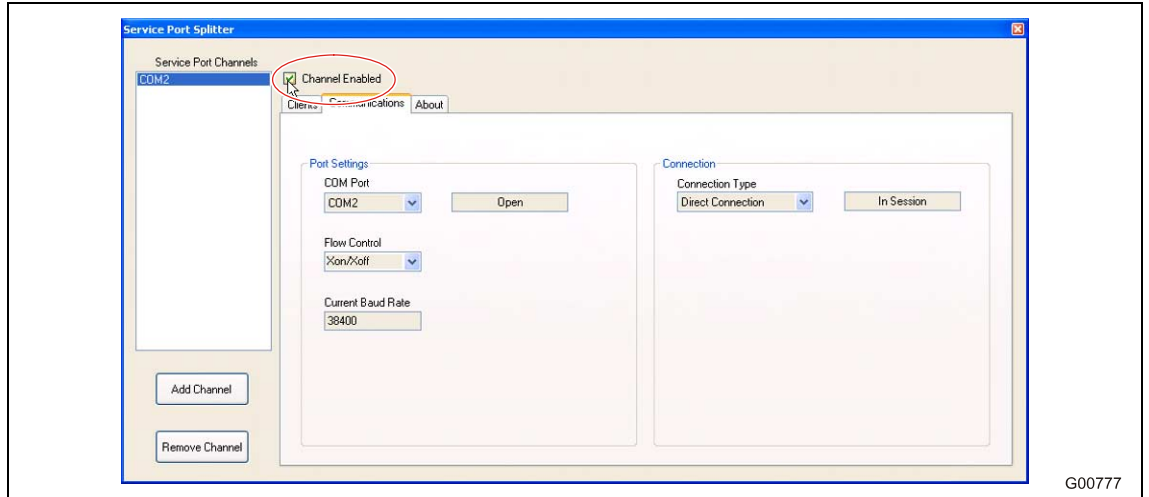


Fig. 21

- Once the connection has been established, the device services can be configured on the Clients tab. Click "Get Device Services" to list the available device services.

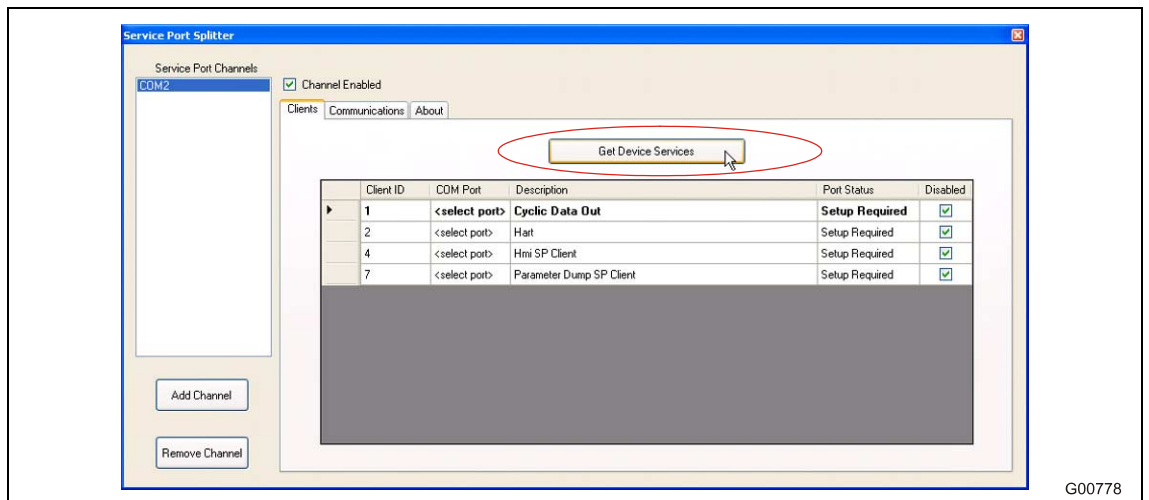


Fig. 22

5. The Port Status column shows the current status of the service.
 - "Setup Required": The service has not yet been configured.
 - "Ready": The service has been configured and is available.
 - "Active": The service is being used by an external application.

To configure a service, select it and right-click to call up the shortcut menu.

In this menu, select "Edit Client", then select the required virtual COM port. Deactivate the "Disabled" checkbox.

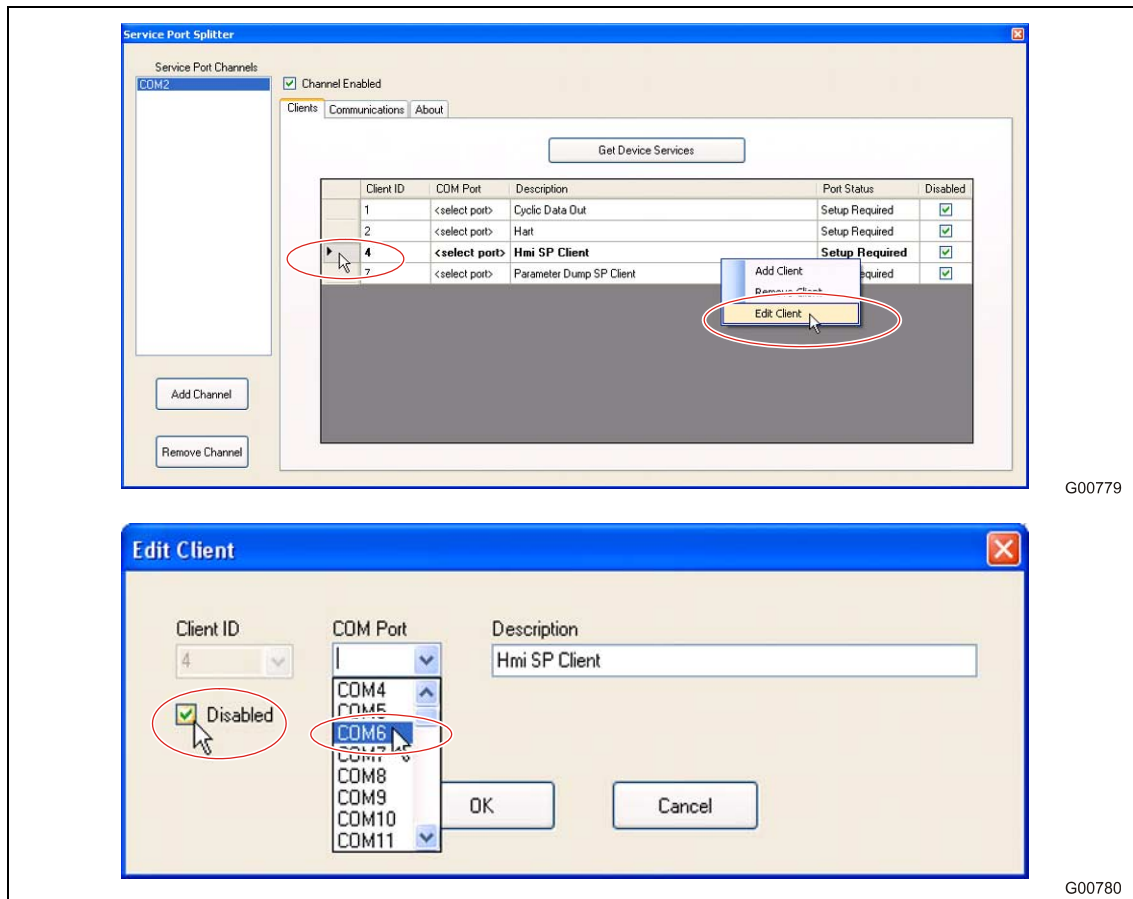


Fig. 23

i

Important

If a service has been deleted using "Remove Client", the list can be updated by clicking on "Get Device Services".

Following configuration, an external application such as a terminal program (e.g., HyperTerminal) or the HMI emulator can establish a connection to the service via the assigned virtual COM port.

3 Communication

3.1 Controlling the transmitter using the HMI emulator

The transmitter can be controlled via a PC using the HMI emulator, which is used to operate the transmitter in exactly the same way as if it were being operated directly on the device.

For detailed information on how to operate the transmitter, refer to operating instructions "OI/FEP300/FEH300".



Important

To be able to use the HMI emulator, the corresponding service must have previously been configured in the Service Port Splitter!

The HMI emulator service has Client ID 4 and the standard name HMI SP Client.

Install the HMI emulator as described below:

1. Open the directory "[CD Drive]\Software\HMI Emulation\Installer".
2. Run file **Setup.exe**, following the instructions provided by the installation program.
3. The HMI emulator is launched by calling "**Start\Programs\ABB\ABB Remote HMI**".

3.1.1 Configuring the HMI emulator

1. Once the emulator has been launched, in the "Options/Comms Port" menu select the virtual COM port configured in the Service Port Splitter.

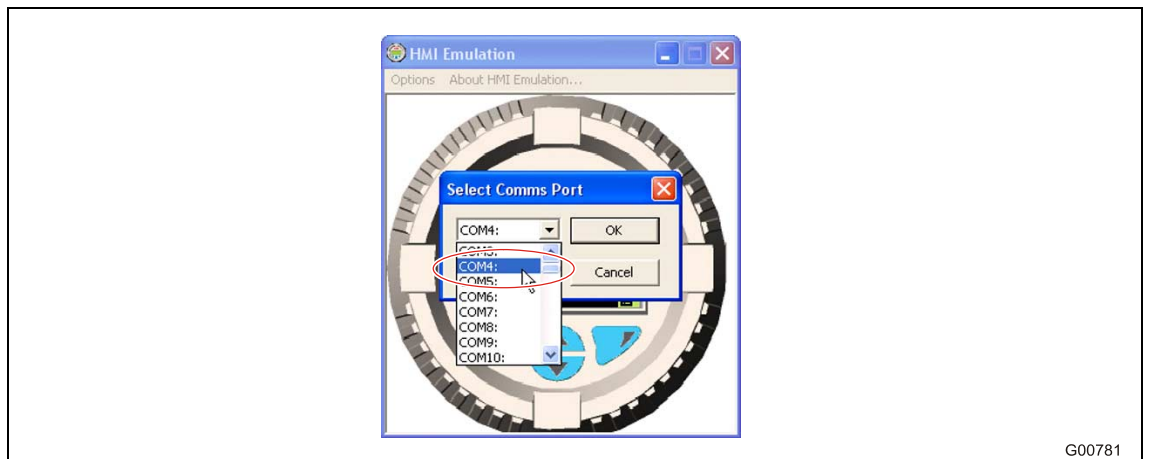


Fig. 24

Once the COM port has been selected, the connection is established and the status in the Service Port Splitter changes from "Ready" to "Active".

The four buttons on the HMI emulator are used to operate the transmitter in exactly the same way as if it were being operated directly on the device.

3.2 Outputting data via a terminal program

The ProcessMaster/HygienicMaster transmitter also provides services for outputting data via terminal programs.

There are two different services:

- Cyclic output of process and device data.
This service has "Client ID 0" and the standard name "Cyclic Data Out".
- Output of the current device configuration and an overview of the device alarms.
This service has "Client ID 7" and the standard name "Parameter Dump SP Client".

3.2.1 Configuring the terminal program

The configuration of the terminal program is described here, using "HyperTerminal®" as an example.

1. Select the COM port corresponding to the service configured in the Service Port Splitter. The COM port does not need to be configured any further; these settings are made using the Service Port Splitter software.
2. On the Settings tab, make the settings shown in Fig. 25.

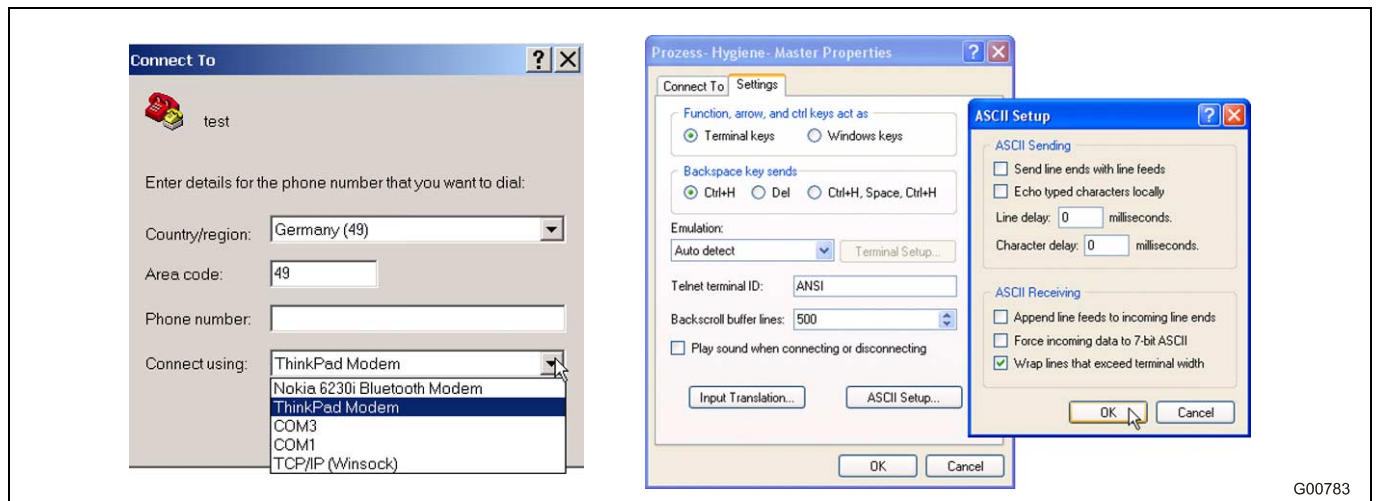


Fig. 25

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3.2.2 Parameter dump



Important

To be able to use the parameter dump service, it must have previously been configured in the Service Port Splitter!
 This service has "Client ID 7" and the standard name "Parameter Dump SP Client".

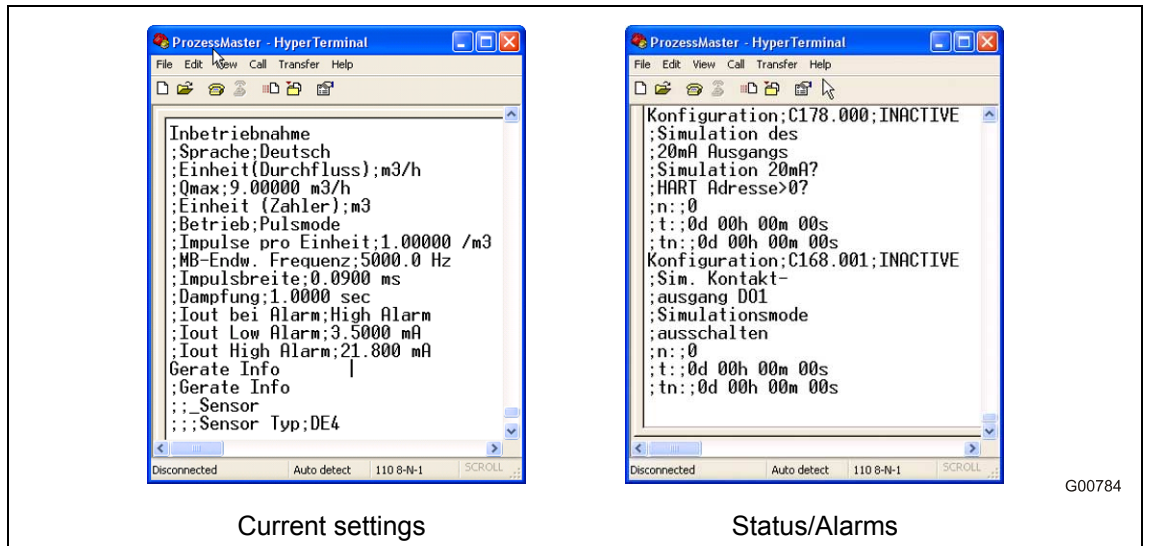
Once the COM port configured for this service has been selected in the terminal program, data output can begin.

In order to record the data in a text file, the procedure of logging to a text file (*.csv) must be started in the HyperTerminal software via the "Transfer\Capture Text" menu before the parameter dump begins.

Once the transmitter has stopped outputting data, the logging procedure must be stopped in the same menu.

Press one of the following keys on the PC keyboard to start data output:

- Key **C** to output the transmitter's menu including the current parameters
- Key **I** to output the process variables and the status of the device alarms



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Fig. 26: Parameter dump (example)

To display the data in table format, open the saved text file in Excel and, in that program's "Text Import Wizard", select file type "Delimited" and the delimiter "Semicolon".



Important

The scope of the device menu data to be output depends on the transmitter access level which is selected. More menus will be output with the "Advanced" access level than with "Standard" or "Read Only".

3.2.3 Cyclic data output



Important

To be able to use the cyclic data output service, it must have previously been configured in the Service Port Splitter!
 This service has Client ID 0 and the standard name Cyclic Data Out.

The data output is divided into different groups. Each group can be switched on or off individually and thereby added to the data record to be output.

The data records to be output are configured in the transmitter, which is also where the interval at which data output will be performed is set.

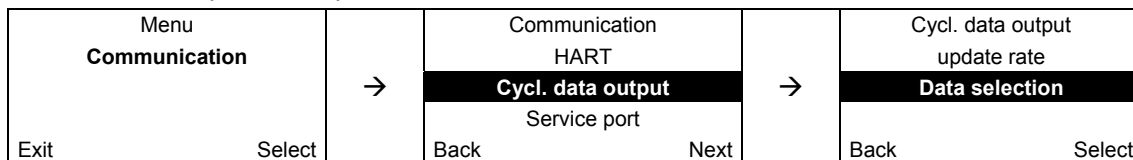


Fig. 27: Configuration of cyclic data output

For detailed information on how to operate the transmitter, refer to operating instructions "OI/FEP300/FEH300".

Once the COM port configured for this service has been selected in the terminal program and the data records to be output have been configured in the transmitter, cyclic data output can begin.

Cyclic data output is started and stopped by pressing keys **P** and **S** on the PC keyboard.

In order to record the data in a text file, the procedure of logging to a text file (*.csv) must be started in the HyperTerminal software via the "Transfer\Capture Text" menu before the parameter dump begins.

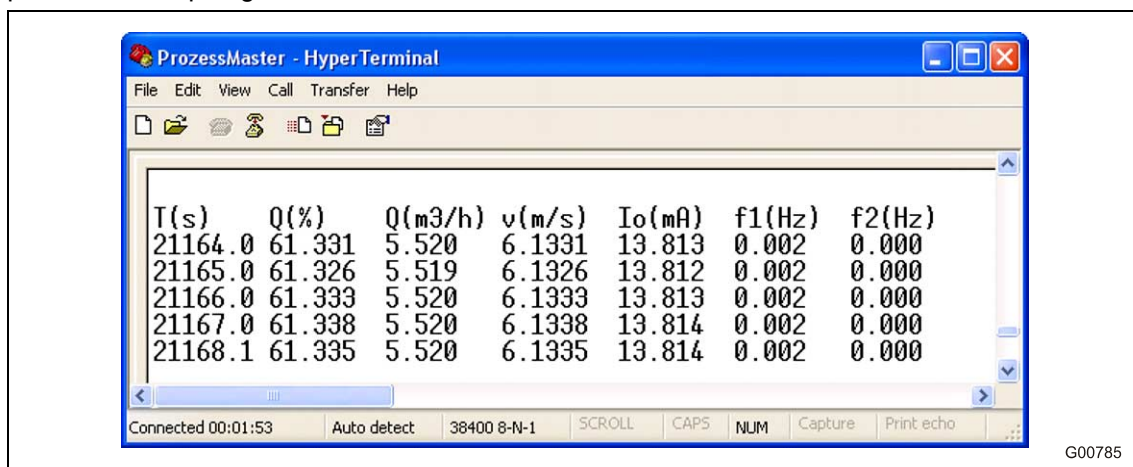


Fig. 28: Output of flowrate and signal output group (example)

3.2.3.1 Parameter names in the .csv file

Group	Parameter description	Name in the .csv file	Comment
Flowrate group	Flowrate as %	Q (%)	
	Flowrate in l/s	Q (l/s)	
	Flow velocity	v (m/s)	
Signal output group	20 mA output	Io (mA)	
	Frequency at digital output DO1	f1 (Hz)	
	Frequency at digital output DO2	f2 (Hz)	
Status group	Alarm	Alarm	Output of the alarm status in hexadecimal format (see page 23, Section 3.2.3.2)
	Empty pipe frequency	EPD1 (Hz)	Frequency of electrode 1
	Empty pipe frequency	EPD2 (Hz)	Frequency of electrode 2
Coil group	Coil current	Ic (mA)	
	Voltage, coil 1	CV1 (V)	With positive excitation
	Voltage, coil 2	CV2 (V)	With negative excitation
	Total coil resistance	CR (Ohm)	
Transmitter group	Reference digits	Ref	Digital value of the coil current
	Differential signal at ADC	SP	
	Signal max.	SM	
	Signal min.	Sm	
	Signal error from NR filter	SE	Number of hidden signal components with noise suppression activated
	Signal DC errors	SDE	Number of hidden signal components due to DC resets
	Internal amplification	Api	
	Voltage level	+5(V)	
	Voltage level	-5(V)	
	Voltage level	+3(V)	
	Voltage level	+24(V)	
Totalizer group	Forward totalizer	Fwd (m3)	
	Reverse totalizer	Rev (m3)	
	Differential totalizer	Net (m3)	
Electrode group	Impedance E1 to ground	R1 (kOhm)	
	Impedance E2 to ground	R2 (kOhm)	
	Electrode impedance	R12 (kOhm)	Between electrodes 1 and 2
	Electrode voltage E1 (uV)	E1 (uV)	
	Electrode voltage E2 (uV)	E2 (uV)	
	Difference of electrode voltages DEV (V)	DEV (V)	

3.2.3.2 Alarm status

The alarm status is output as a 12-digit hexadecimal number. Each digit corresponds to one alarm message, or a maximum of four individual alarm messages. Each of the four alarms is assigned to a group, which has the value 1, 2, 4, or 8.

Table 1 illustrates the relationship between the hexadecimal number and the associated alarm code value.

Table 1

Hexadecimal numbers															Alarms	
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E		F
	X		X		X		X		X		X		X		X	1
		X	X			X	X			X	X			X	X	2
				X	X	X	X					X	X	X	X	4
								X	X	X	X	X	X	X	X	8

In Table 2, the alarm messages are assigned to the alarm status digits.

Example:

The alarm status is **0 0 0 0 C 0 0 0 0 0 2 0**.

- According to Table 1, the 5th digit "C" corresponds to values 4 & 8, which equate to the following alarm messages as per Table 2:
 - 4: Last valid value is retained
 - 8: Int. voltage error in transmitter
- According to Table 1, the 11th digit "2" corresponds to value 2, which equates to the following alarm message as per Table 2:
 - 2: Min. flowrate alarm

Table 2

											Alarm message		
0	0	0	0	C	0	0	0	0	0	2	0	Alarm status (example)	
												1	Simulation of the 20 mA output. Simulation 20 mA? HART address > 0?
												2	Simulation of contact output DO1. Simulation mode active
												4	Simulation of pulse output DO1. Simulation mode active
												8	Simulation of contact output DO2. Simulation mode active
												1	Simulation of pulse output DO1. Simulation mode active
												2	Min. flowrate alarm
												4	Max. flowrate alarm
												8	Flowrate > 103 %. Check flowrate. Change measuring range
												1	Flowrate simulation active. Switch simulation mode off
												2	Transmitter is on the simulator. Switch simulation mode off
												4	External cut-off active. Check contact input 81 / 82
												8	External totalizer stop. Check contact input 81 / 82
												1	Display value < 1600 h for Qmax, change physical unit
												2	External totalizer reset. Check contact input 81 / 82
												4	Faulty communication with the sensor memory. Check wiring and EMC environment
												8	HART addr. <> 0. Multidrop mode. Set HART address to 0
												1	FRAM error in transmitter. Contact ABB Service
												2	Sensor memory not detected. Wiring. SW3 jumper?
												4	Simulation of contact input. Switch simulation mode off
												8	AD converter overloaded. Empty pipe? Galvanic voltage?
												1	Error in coil circuit. Wiring? Short circuit?
												2	Coil resistance outside of limits. Check wiring? Contact ABB Service
												4	Reference voltage Uref = 0. Check wiring? Coil circuit open? Fuse?
												8	Noise signal too high. Switch noise reduction on
												1	DC too high, numerous NV resets. See operating instructions
												2	Empty pipe. Fill pipe
												4	Electrode voltage outside of limits. Adjust limit values
												8	No signal from measuring electrodes. Check cabling E1 / E2 and 1S / 2S
												1	Electrode balance outside of limits. Coating? Flow profile?
												2	Electrode impedance too high. Coating? Conductivity? Empty pipe?
												4	Last valid value is retained. Switch noise reduction off. Contact ABB Service
												8	Int. voltage error in transmitter. Contact ABB Service
												1	Digital potentiometer error. Hardware error in transmitter. Contact ABB Service
												2	Meter pipe partially filled (TFE). Fill pipe or calibrate detector
												4	Current output error, comm. with MSP. Check wiring. 20 mA passive? Jumper BR901
												8	Sensor setup cal status. Set cal status to "calibr."
												1	Calibration mode incompatible. Set cal mode. Contact ABB Service
												2	ROM error in transmitter. Contact ABB Service
												4	RAM error in transmitter. Contact ABB Service
												8	Simulation of HART frequency. Switch simulation mode off
												1	Not assigned
												2	Not assigned
												4	Not assigned
												8	Not assigned
												1	Pulse output overshoot. Check configuration
												2	An alarm is simulated. Switch alarm simulation off
												4	Not assigned
												8	Not assigned

3.3 HART communication

In addition to the services which have already been described, it is also possible to establish HART communication with the device via the Service Port Splitter using PC applications such as ASSET VISION BASIC, SMART VISION, PDM, FrameAnalyst, etc.



Important

- Activation of the HART service port service in the transmitter: HART communication cannot be established via the current output and the infrared service port adapter simultaneously! For detailed information on how to operate the transmitter, refer to operating instructions "OI/FEP300/FEH300".
- To be able to use the HART communication service, it must have previously been configured in the Service Port Splitter! This service has Client ID 2 and the standard name Hart.

Once the COM port configured for this service has been selected in the HART communication software, HART communication can begin.

Refer to the relevant operating instructions for information on how to configure the software used.

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ABB Limited

Oldends Lane, Stonehouse
Gloucestershire, GL10 3TA
UK

Tel: +44 (0)1453 826661
Fax: +44 (0)1453 829671

ABB Inc.

125 E. County Line Road
Warminster, PA 18974
USA

Tel: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH

Dransfelder Str. 2
37079 Goettingen
Germany

Tel: +49 551 905-534
Fax: +49 551 905-555
CCC-support.deapr@de.abb.com