SSW7-TS PRO analog
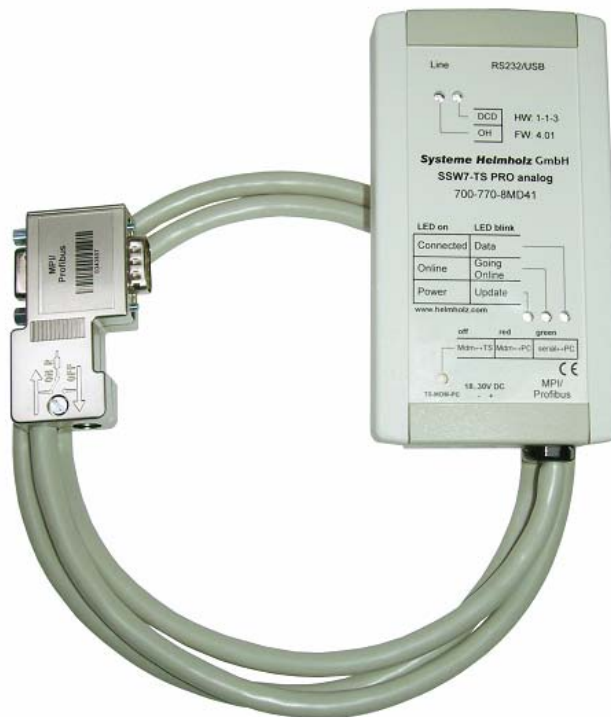
700-770-8MD41

User Manual

Edition 1 / 10.11.2008

HW 1-1-3 and FW 4.01 and higher

Order number of manual: 900-770-8MD41/en

Note:

We have checked the content of this manual for conformity with the hardware and software described. Nevertheless, because deviations cannot be ruled out, we cannot accept any liability for complete conformity. The data in this manual have been checked regularly and any necessary corrections will be included in subsequent editions. We always welcome suggestions for improvement.

Revision history of this document:

Edition	Date	Revision
1	10.11.2008	First edition

Contents

1　Safety Information

For your own safety and for the safety of others, always heed the safety information given here. The safety information indicates possible hazards and provides information about how you can avoid hazardous situations.

The following symbols are used in this manual.

Caution, indicates hazards and sources of error

Gives information

Hazard, general or specific

*Danger of **electric shock***

1.1　General

The SSW7-TS PRO analog is only used as part of a complete system.

The operator of a machine system is responsible for observing all safety and accident prevention regulations applicable to the application in question.

During configuration, safety and accident prevention rules specific to the application must be observed.

Emergency OFF facilities according to EN 60204 / IEC 204 must remain active in all modes of the machine system. The system must not enter an undefined restart.

Faults occurring in the machine system that can cause damage to property or injury to persons must be prevented by additional external equipment. Such equipment must also ensure entry into a safe state in the event of a fault. Such equipment includes electromechanical safety buttons, mechanical interlocks, etc. (see EN 954-1, risk estimation).

Never execute or initiate safety-related functions using an operator terminal.

1.2   Restriction of access

The modules are open equipment and must only be installed in electrical equipment rooms, cabinets, or housings. Access to the electrical equipment rooms, barriers, or housings must only be possible using a tool or key and only permitted to personnel having received instruction or authorization.

1.3   Information for the user

This manual is addressed to anyone wishing to configure, use, or install the SSW7-TS PRO analog.

The manual tells and explains to the user how to operate the SSW7-TS PRO analog. It provides the installing technician with all the necessary data.

The SSW7-TS PRO analog is exclusively for use with a S7-300/S7-400 programmable controller from Siemens.

The SSW7-TS PRO analog is for use within a complete system only. For that reason, the configuring engineer, user, and installing technician must observe the standards, safety and accident prevention rules applicable in the particular application. The operator of the automation system is responsible for observing these rules.

1.4   Use as intended

The SSW7-TS PRO analog must only be used as a communication system as described in the manual.

1.5   Avoiding use not as intended!

Safety-related functions must not be controlled via the SSW7-TS PRO analog alone. Make sure in the software that uncontrolled restarts cannot occur.

2 Installation and Mounting

Installation and mounting must be effected in compliance with VDE 0100 / IEC 364. Because it is an IP 20 module, you must install it in a cabinet.

A maximum ambient temperature of 60 ºC must be ensured for reliable operation.

2.1 Mounting orientation

The SSW7-TS PRO analog can be installed in any orientation.

2.2 Minimum clearance

Minimum clearances must be observed because

- then it is possible to insert and remove the SSW7-TS PRO analog without having to remove other system components.

- there is enough space to connect existing interfaces and other contacts using standard commercial type accessories.

- there is room for any necessary cable routing.
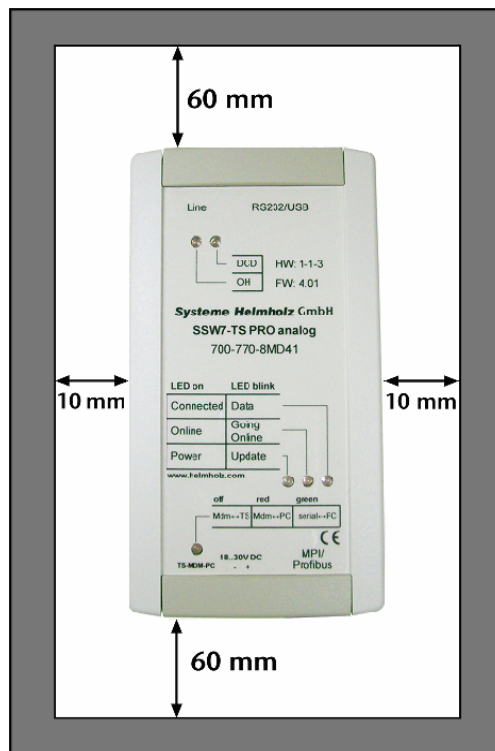
For the SSW7-TS PRO analog, a minimum clearance of 60 mm must be left above and below and 10 mm at the sides.

2.3 Installing the module

For mounting on level surfaces or on DIN mounting rails, the wall and rail holders supplied can be used.

This is clicked onto the rear of the housing without the use of tools.

3 System Overview

3.1 Application and function description

The SSW7-TS PRO analog is a gateway between the USB , RS232, or modem and a MPI or Profibus bus. It is mainly designed for teleservice of S7-300 and S7-400 CPUs and supports transmission rates of up to 12 Mbps.

The internal modem can also be used independently of the MPI/PROFIBUS functions to communicate with other systems.

The RS232 or USB interface can be used for parameter setting directly on site or for SCADA and visualization systems.

Only the RS232 interface can be directly connected with an external modem to implement remote links independently of the internal modem modules.

The additional Mini-A USB interface has priority, that is, the RS232 interface is inactive when the USB link is active.

The integrated 56k modem of the SSW7-TS PRO analog is industry standard and supports all common transmission standards.

The user can make settings for teleservice via the telephone network (for more than 97 countries). Use almost anywhere in the world is possible by assigning a country code using the Hayes AT command set.

Up to eight MPI/PROFIBUS links can be used simultaneously with the USB, RS2323, or modem link.

At the MPI/PROFIBUS end, the baudrate to be used is automatically detected. On the USB and RS232 interface, the baudrate of the connected workstation is also automatically detected.

The SSW7-TS PRO analog draws the power it required either from the MPI/PROFIBUS interface of the programmable controller or via an extenral power supply (see Section 3.6).

The MPI/Profibus connecting cable has a 9-way SubD connector and is 1.2 meters long and active. A repeater is installed in it so that the connected SSW7-TS PRO analog is not a spur line that could cause interference on the bus.

Using the null modem cable supplied, the SSW7-TS PRO analog can be used for parameterization on site via a serial interface on the programmable controller.

With the appropriate software, it is possible to use the SSW7-TS PRO analog as

- A programming adapter (TS or PC adapter),
- Teleservice unit, or
- Operator control and monitoring unit

!

An active USB link automatically deactivates the RS232 interface!

!

FM modules cannot be parameterized with the SSW7-TS PRO analog.

!

The functions "PG-Dial" and "AS-Dial" for starting a call from an S7-CPU are not implemented.

All further information can be found in the manual for each programming software product.

An update of the firmware can be transmitted to the SSW7-TS PRO analog both locally and via a remote link.

3.2   Connections

The SSW7-TS PRO analog has the following connections:

- Power supply socket for input of 24 V DC.
  This power supply option can be deployed if the automation system used provides no or only an inadequate power supply at the bus connector.

- RJ11 socket for connecting the corresponding TAE telecommunication cable.

- RS232 connector for connecting the null modem cable supplied for direct operation as a programming adapter or use of the internal modem. Not active while the USB is being used.

- USB Mini A socket as an alternative connection

- Bus connector with programming unit socket, switchable terminating resistor, and 1.2 m connecting cable. The programming unit socket of the bus connector allows further bus nodes to be plugged in.
  The terminating resistor must be set to ON if the SSW7-TS PRO analog is at the beginning or end of a bus segment. If this is not the case, the switch position must be OFF.

!

The power cannot be drawn from the USB interface!

3.3   LED displays

For display of the operating status, the SSW7-TS PRO analog has six LEDs. One LED is implemented in two colors.

3.3.1   Status LEDs for standard functions

The three LEDs "Power," "Active," and "Connect" provide information about whether and how the SSW7-TS PRO analog and MPI/PROFIBUS bus are functioning.

They also indicate an update process.

State of the LEDS	Power LED (green)	Online LED (green)	Connected LED (green)
Ready for operation	ON		
Actively logged on to the MPI/PROFIBUS bus	ON	ON	
Active connection with a programmable controller	ON	ON	ON
Data exchange with a programmable controller	ON	ON	BLINK
Transferring firmware update	BLINK	OFF	OFF

3.3.2 Status LEDs for modem functionality

The two LEDs "DCD" and "OH" indicate the status of the integrated modem.

LED status for operating status	DCD LED (orange)	OH LED (orange)
Call/telecommunication link is switched through		ON
Analog connection established. Modem ready for transmission of useful data	ON	ON

3.3.3 Status LED for operating mode display

The LED "TS/MDM/PC" indicates which of the three possible modes, the SSW7-TS PRO analog is currently in.

LED status for operating status	LED (green)	LED (red)
The internal TS adapter is connected to the internal modem (microswitch setting "TS"). The USB and RS232 interface is inactive	OFF	OFF
The internal TS adapter is connected to the USB/RS232 interface (microswitch setting "PC"). The internal modem is inactive.	ON	OFF
The internal modem is connected to the USB/RS232 interface (microswitch setting "MDM"). The internal TS adapter is inactive.	OFF	ON
The internal modem was not correctly initialized by the SSW7-TS PRO (e.g. incorrect AT command).	OFF	BLINK
The externally connected modem was not correctly initialized by the SSW7-TS PRO (e.g. incorrect AT command).	ON	BLINK

3.4 Function switch

3.4.1 Microswitch TS adapter

The "TS/MDM/PC," which is located on the underside of the housing next to the external voltage socket, is used to switch between the three possible operating modes.

- In switch position "TS", the SSW7-TS PRO analog functions directly with the integrated modem.
  This enables the SSW7-TS PRO analog to be used for teleservice using the Teleservice software (see Section 5.2).
  The USB/RS232 interface does not have a function in this switch position.

- In switch position "PC", the SSW7-TS PRO analog functions directly with the USB or RS232 interface.
  The SSW7-TS PRO analog can be operated on the local

!

The USB interface has priority, that is, the RS232 interface is inactive when the USB link is active.

SSW7-TS PRO analog

computer as the TS adapter or as a PC adapter (Auto/MPI/PROFIBUS) (see Section 5.1).
The modem is inactive in this switch position.

- In switch position "MDM", the internal modem functions directly with the USB or RS 232 interface.
In this way, the modem can be directly addressed via the USB/RS232 interface, for example, to parameterize it or to use it for teleservice purposes unconnected with MPI/PROFIBUS (see Section 5.3).
The SSW7-TS PRO analog cannot perform MPI/PROFIBUS functions in this switch position.

3.5   Items supplied

The scope of supply of the SSW7-TS PRO analog includes:

- SSW7-TS PRO analog ready to use

- DIN rail adapter

- 2-meter 5-way USB 2.0 A/Mini-B cable

- 3-meter null modem cable

- 3-meter RJ11 connecting cable

- 3-meter TAE connecting cable

- 24V plug-in element, 2-way, max. 1.5 mm² flexible with front connection

- Manual (German/English)

- CD with driver, parameterization tools, additional information

3.6   Accessories

3.6.1   Manuals

Manual, German	900-770-8MD41/de
Manual, English	900-770-8MD41/en

3.6.2   Software

S7/S5 OPC server with software license	800-880-OPC10
S7/S5 OPC server with USB dongle	800-880-OPC20

3.6.3   Miscellaneous

DIN mounting rail adapter as an accessory	700-751-HSH10
Power supply adapter with plug Input: 100-240 V AC / 47-63 Hz / 400 mA Output: 24 V DC / 625 mA	700-751-SNT01

4 Installation of the driver software and service tools

The CD supplied contains various drivers and service tools that have to be used for their respective purposes.

4.1 System requirements

To operate the driver and service tools of the SSW7-TS PRO analog, a PC or laptop is required with a 32-bit Windows operating system and a CDROM drive. The Windows 2000, Windows XP, and Windows Vista operating systems can be used.

In the programming devices or PCs used, there should be one USB interface with the USB 1.1 or USB 2.0 specification. As an alternative, the RS232 interface can be used in conjunction with a standard COM port. Commercially available RS232 interface cards installed in the PC can also be used for this.

4.2 Installation of the USB driver

If this is the first time a SSW7-TS PRO analog is being connected to the PC via USB, the operating system will try to install a suitable driver. The driver is a sort of interface between the USB interface and the operating system (Windows) and has nothing to do with the actual application.

The USB driver is required for subsequent parameterization of use of the SSW7-TS PRO analog on the local computer (not necessary for operation on a serial COM port).

This initialization can take a little time and goes through the following steps:

- The operating system starts an installation wizard that performs the installation, which is largely automatic.
  In the first step, you must enter whether the driver is to be searched for online or locally.
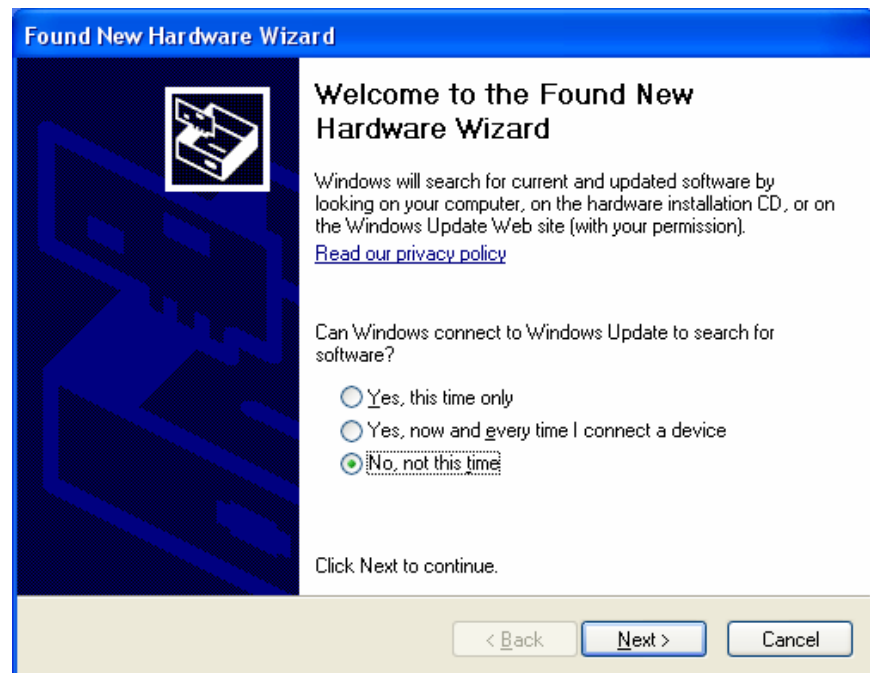
- To be able to specify the search path for the driver (generally the CD supplied), it is necessary to make the following setting and confirm it with "*Next.*"

- The next step is a prompt to specify the location of the driver. It is generally enough to set a checkmark next to "*Search removable media…*" and then to click the "*Next*" button.

Found New Hardware Wizard

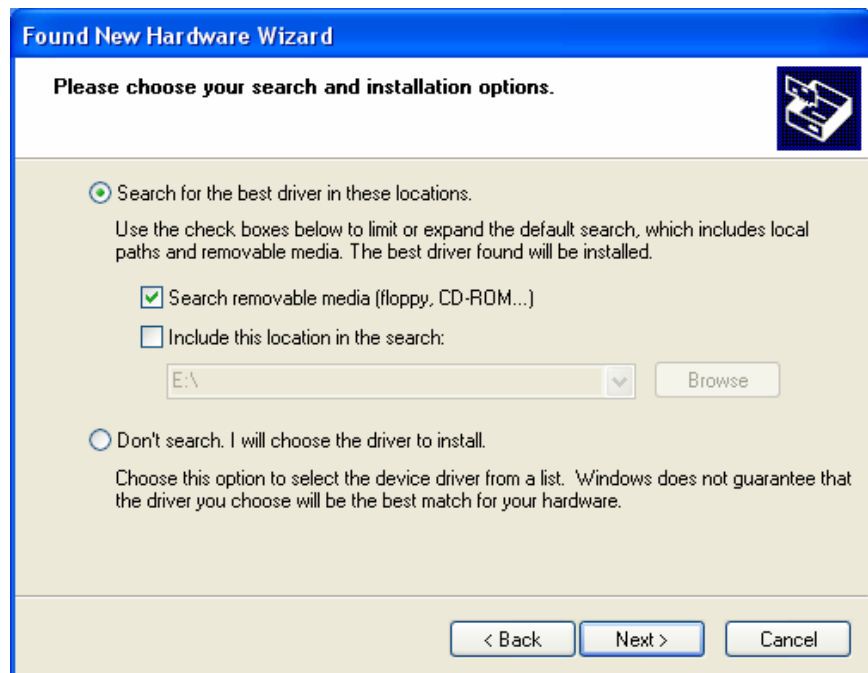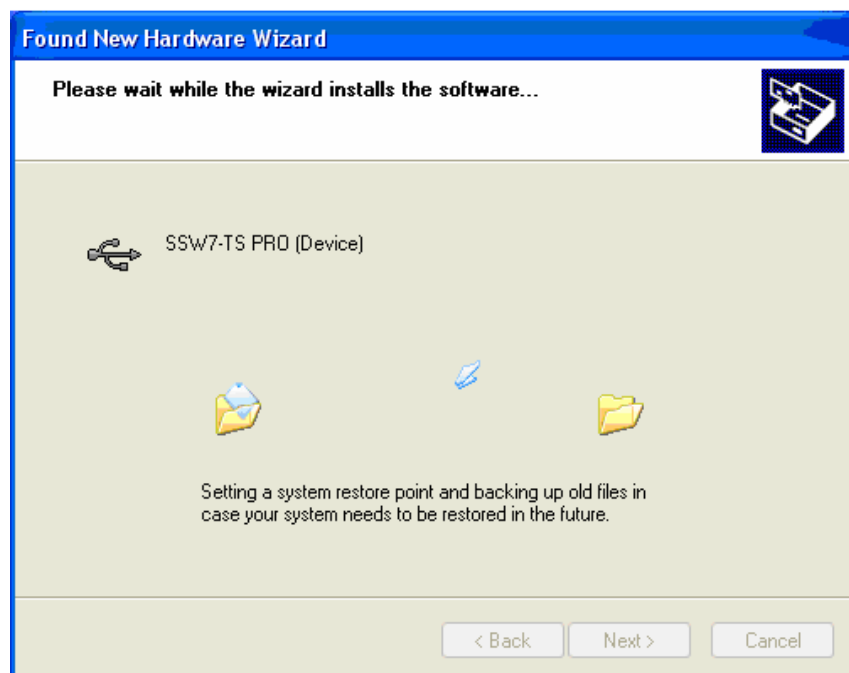**Please choose your search and installation options.**

○ Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☑ Search removable media (floppy, CD-ROM...)

☐ Include this location in the search:

E:\   ▾   Browse

○ Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

< Back   Next >   Cancel

- If the SSW7-Teleservice-Modem CD is in a local drive, the search for the driver now begins.

Found New Hardware Wizard

Please wait while the wizard installs the software...

SSW7-TS PRO (Device)

Setting a system restore point and backing up old files in case your system needs to be restored in the future.

< Back   Next >   Cancel

- If the driver is found, a Windows XP logo compatibility query appears.

- Confirm with the button "*Continue installation.*" The driver is then installed.
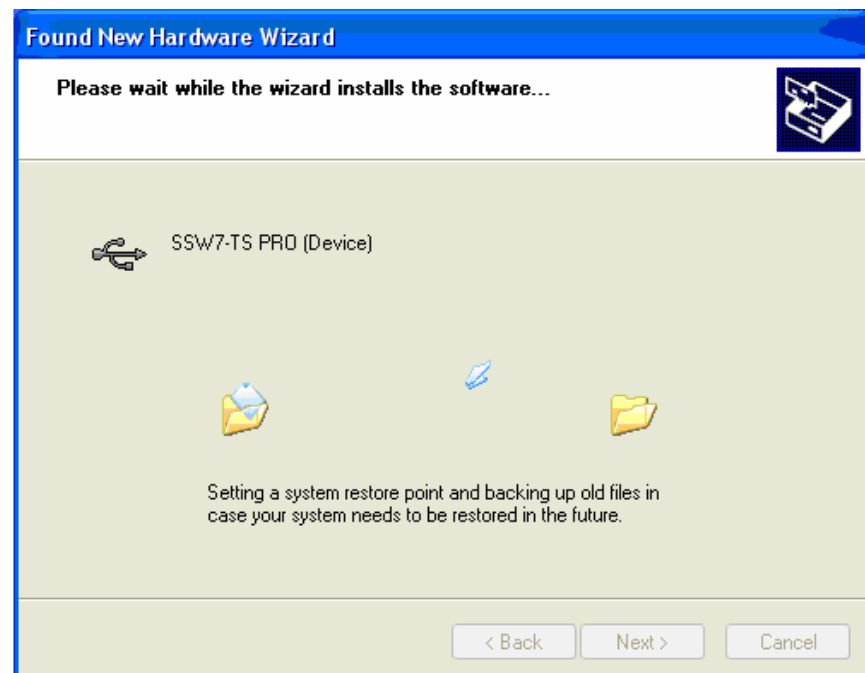
- After successful installation, the operation is completed by clicking the "*Finish*" button.

- The operating system starts the installation wizard a second time to install the virtual COM port driver, too. The installation routine is identical to that described above.

- A new COM port is now added in the device manager. This must be selected as the type of access for all further applications.
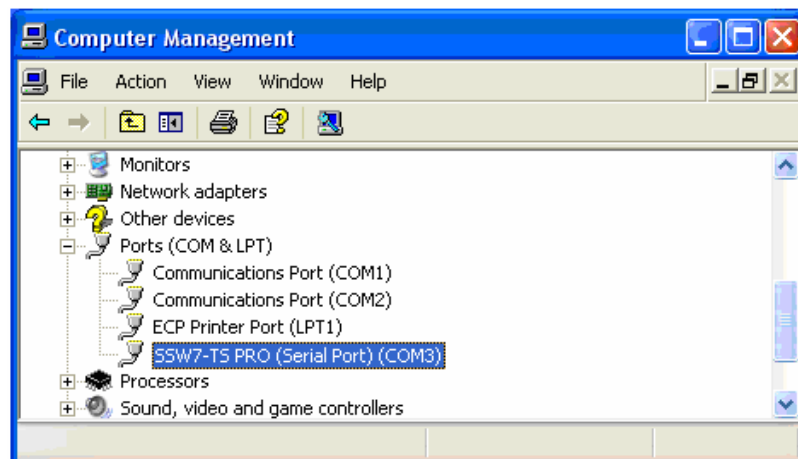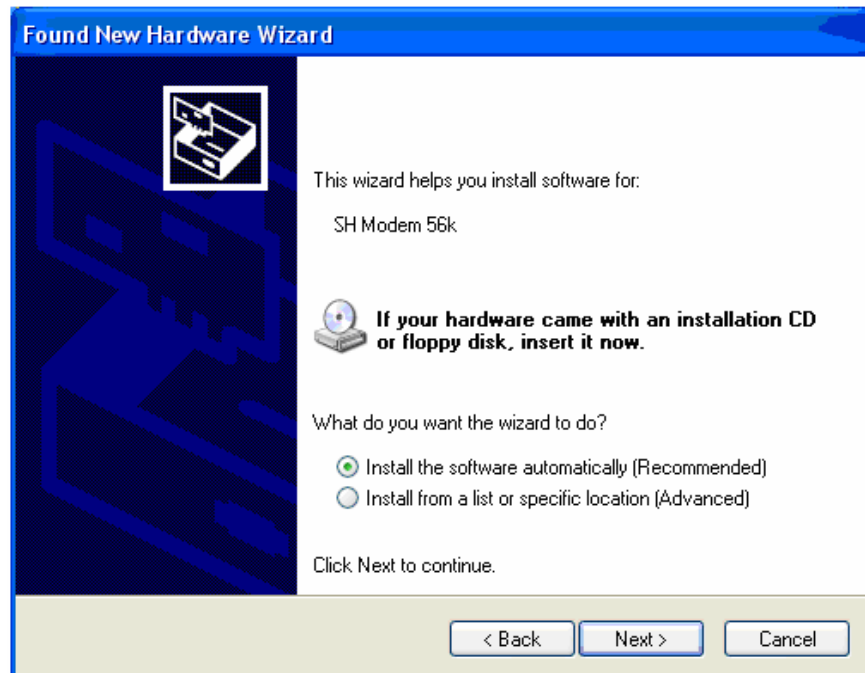

If several USB interfaces are available, but the SSW7-Teleservice-Modem CD is not at hand, we recommend copying the driver files onto the local hard disk because it is possible that a separate instance of the driver for the SSW7-TS PRO analog has to be installed on the PC for each USB interface.

4.3   Installation of the modem driver

If the modem of the SSW7-TS PRO analog is to be operated directly on a programming device or PC via USB or RS232, the corresponding modem driver must be installed. For this purpose,

the microswitch must be put in the center position "MDM" and the corresponding communication cable (USB or null modem cable) plugged into the SSW7-TS PRO analog.
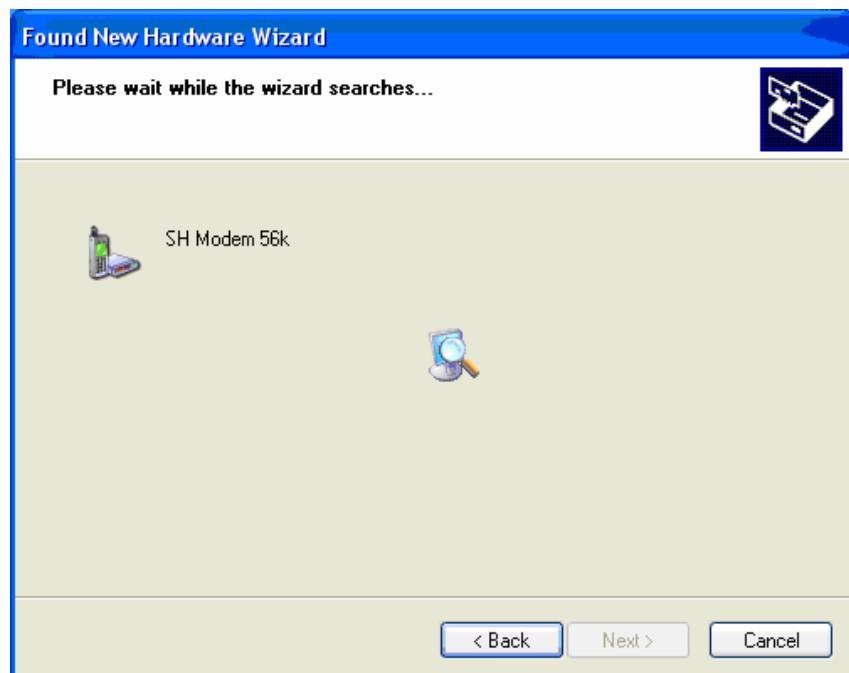
- Normally, the operating system starts a wizard that performs the installation, which is largely automatic.

- The next step is a prompt to specify the location of the driver. It is generally enough to set a checkmark next to "*Search removable media…*" and then to click the "*Next*" button.

Found New Hardware Wizard

Please choose your search and installation options.

- ◉ Search for the best driver in these locations.

  Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

  - ☑ Search removable media (floppy, CD-ROM...)
  - ☐ Include this location in the search:

    E:\   Browse

- ○ Don't search. I will choose the driver to install.

  Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

< Back   Next >   Cancel

- If the SSW7-Teleservice-Modem CD is in a local drive, the search for the driver now begins.

Found New Hardware Wizard

Please wait while the wizard searches...

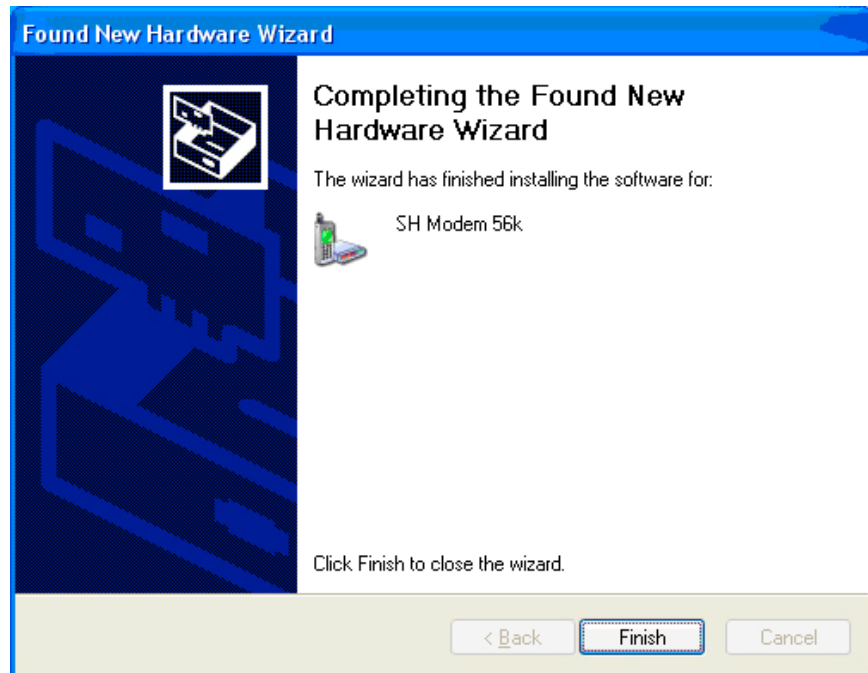SH Modem 56k

< Back   Next >   Cancel

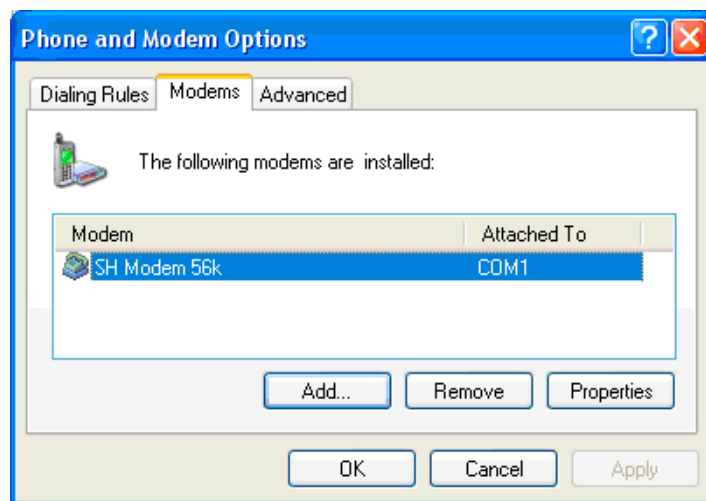- During installation, a WindowsXP logo compatibility query appears.

- Confirm with the button "*Continue installation.*"
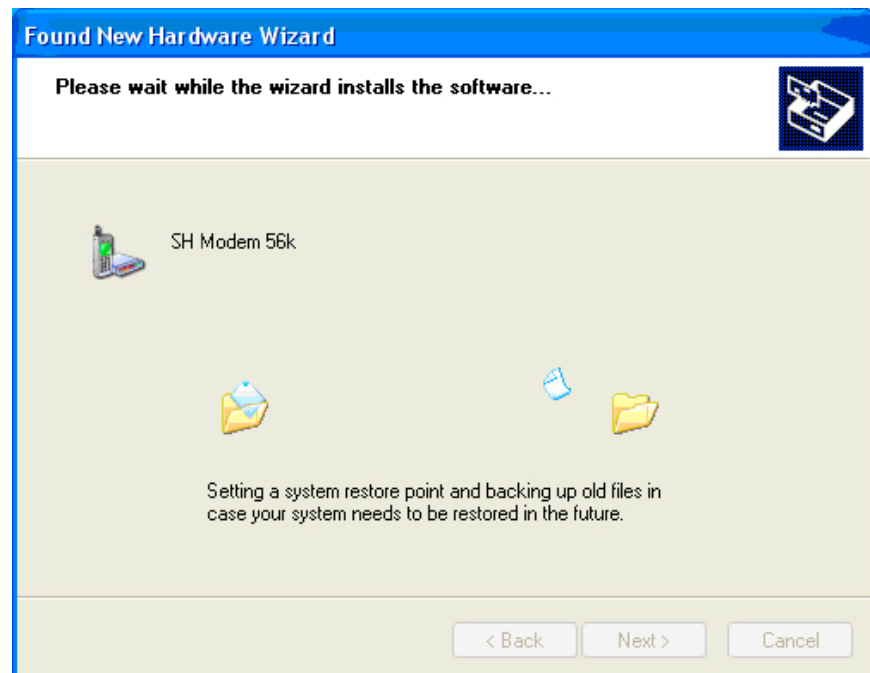
- After successful installation, the operation is completed by clicking the "*Finish*" button.

- A new modem with the corresponding COM port is now added in the telephone and modem options.

The SSW7-TS PRO analog can now be used as the local modem for a telecommunication link. Moreover, update and parameterization functions to the modem can be used.

4.4   Service tools

4.4.1   Parameterizing and updating with SHTools

With the SHTools software, it is possible to perform a system update of the SSW7-TS PRO analog, if required. The SSW7-TS PRO analog can also be pre-parameterized with SHTools without the Teleservice software having to be installed on the computer. SHTools also provides tools for using the additional functions in the SSW7-TS PRO analog.

The tool is freeware and has been tested under Windows 2000, Windows XP, and Windows Vista. It is included on the CD that is contained in the scope of supply.

The most up-to-date version can also be downloaded in the Internet under http://www.helmholz.de.

After installation, SHTools is available in the start menu under *"Start/Programs/Systeme Helmholz."*

The most important program functions are described below.

4.4.2 Firmware update

If required, it is possible to update the operating system of the SSW7-TS PRO analog locally or via modem link.

For the local update, a link must be established between the SSW7-TS PRO analog and a USB or RS232 interface on the PC on which SHTools is installed. The micro-switch on the SSW7-TS PRO analog must be put into the "PC" position. The "PC" operating mode is indicated by the lit green "TS/MDM/PC" LED.

For the remote update of a ready-to-run SSW7-TS PRO analog, an analog modem is also required on the local computer, which is addressed via a COM port.

The SHTools contain update functions for many adapters of Systeme Helmholz GmbH.

How to perform an update is explained below.
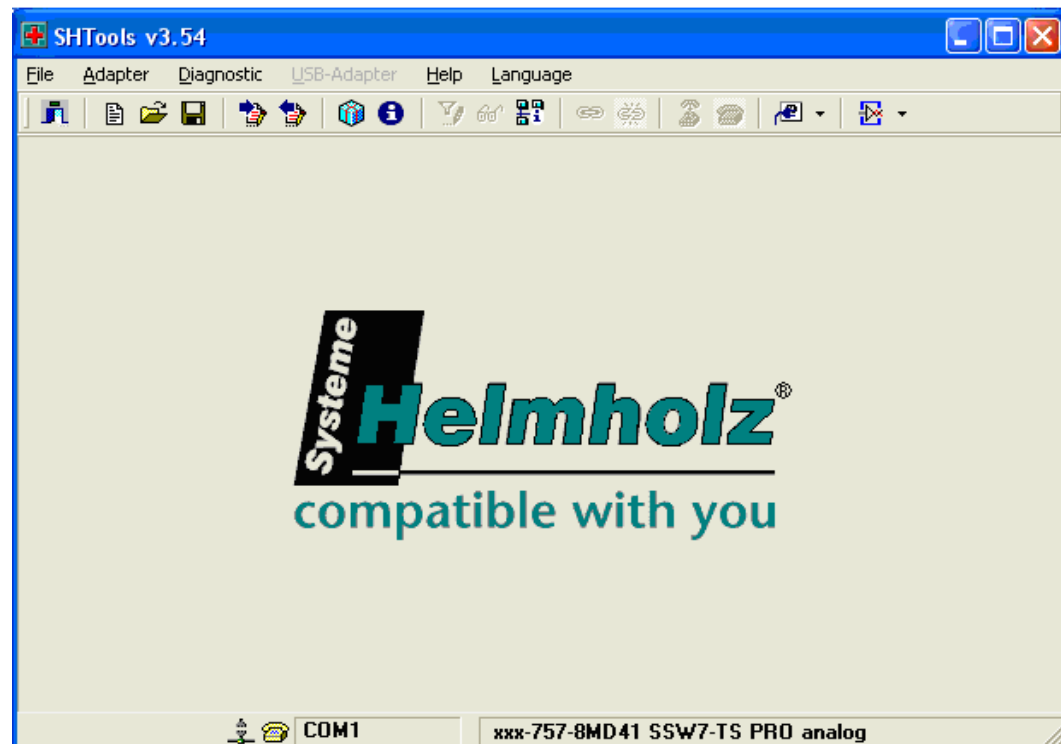
- Via menu item *"Adapter / … select,"* the required device is selected by its order number (in this case, the SSW7-TS PRO analog).

- Via menu item "*Adapter / Select COM port/serial number,*" the required interface is selected.

The selection is shown on the status bar on the lower edge of the application window.

- After selection of the "*Adapter / Update adapter*" menu item, it is possible to define the access path in step 1 (local or remote).
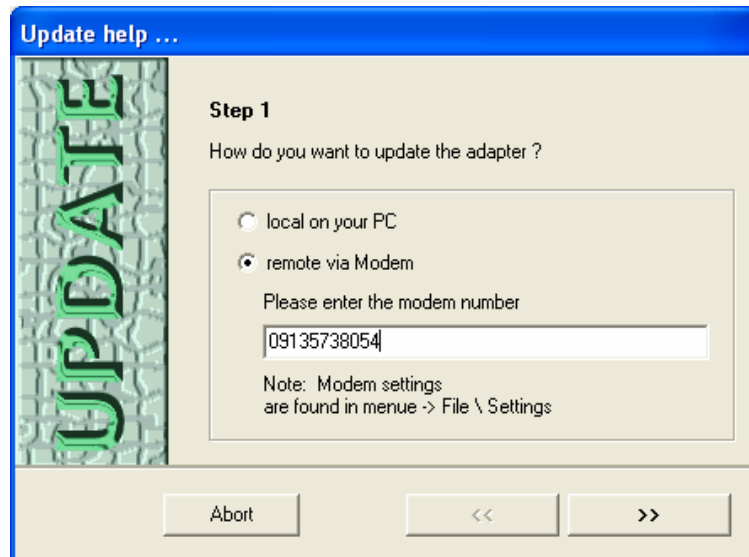
- After step 1 is confirmed, an attempt to establish a link to the SSW7-TS PRO analog follows. If this is successful, updating of the firmware sections, of which later versions are available, begins automatically.

- If, under "*File / Settings*" the "*Automatic update*" option is deselected, the user can select the components that will be updated. The update process is started by pressing the "*Update*" button.
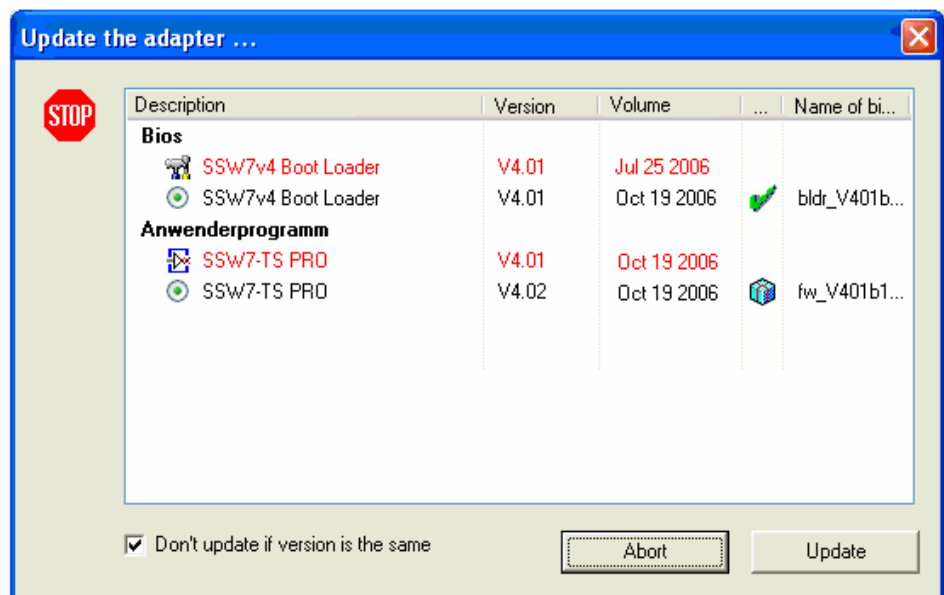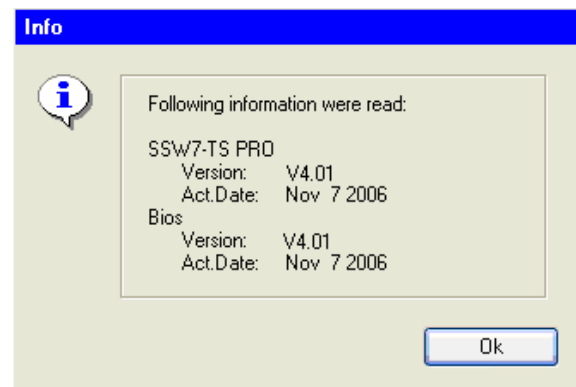
Transmission of the new firmware can take several minutes depending on the transmission rate of the link and should not be interrupted!

- *Finished* shows that the update has been successful.

- If the update is performed locally, the current version of the imported firmware can be read with menu item *"Adapter / Read out information from the adapter."*

4.4.3 Parameterization with SHTools

SHTools is an alternative to the Teleservice software for parameterizing the SSW7-TS PRO analog.

For parameterization, a link must be established between the SSW7-TS PRO analog and an RS232 interface on the PC on which SHTools is installed. The micro-switch on the SSW7-TS PRO analog must be put into the "PC" position. The "PC" operating mode is indicated by the lit green "TS/MDM/PC" LED.

With the "*Adapter / Read parameters from the adapter*" menu item, it is possible to read the current parameterization out of the SSW7-TS PRO analog.
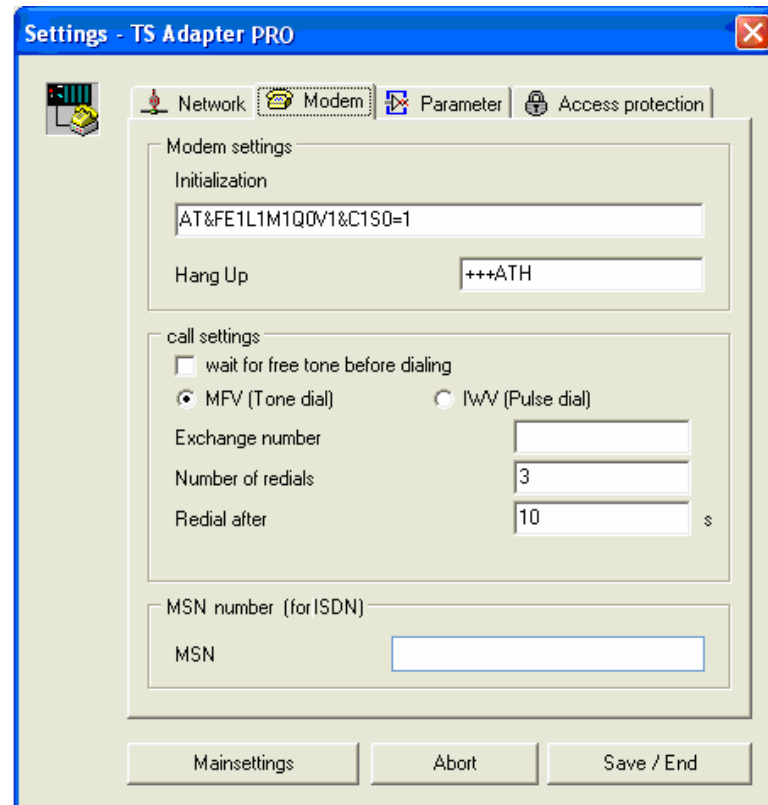
The read parameters are displayed in the *"Settings – TS adapter"* window.

The window contains four tabs providing access to functionally independent parameterization options:
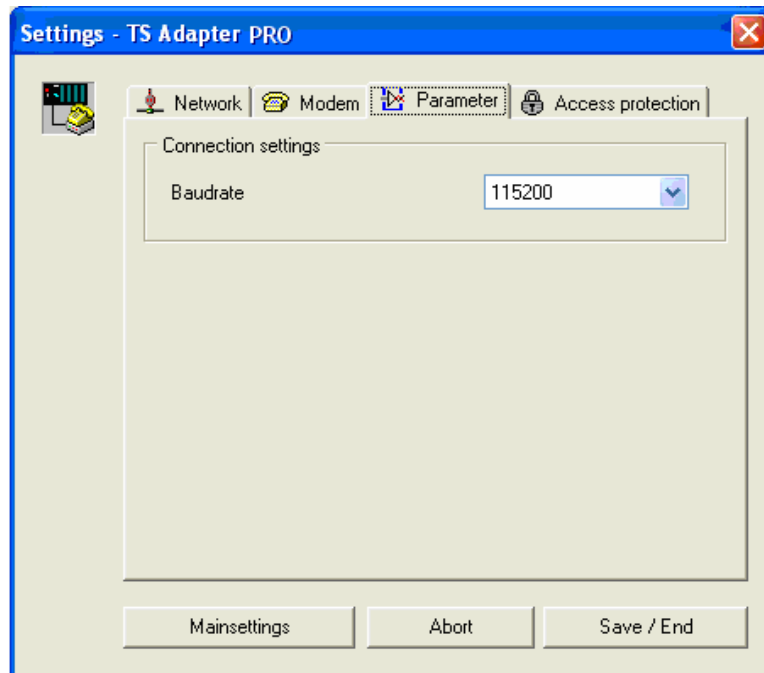
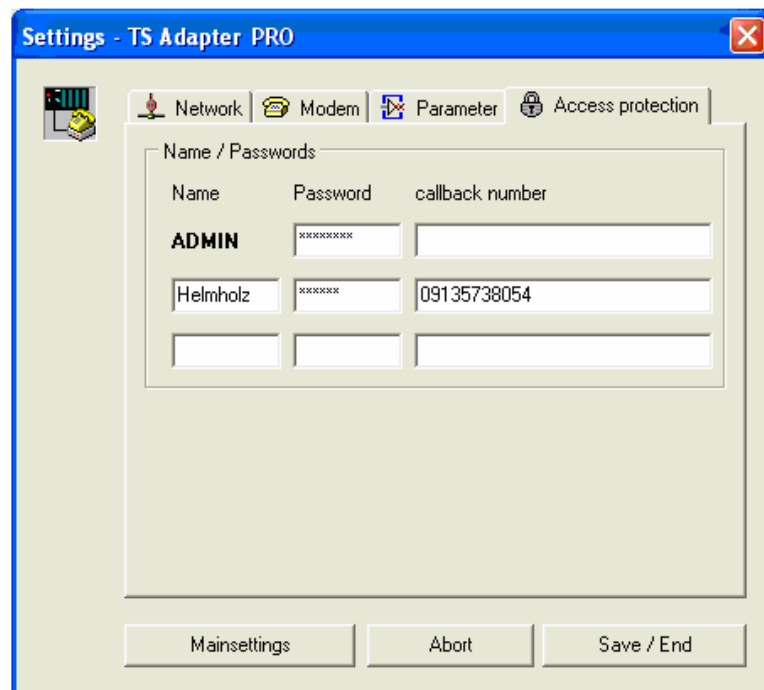- Setting the MPI/PROFIBUS-specific parameters
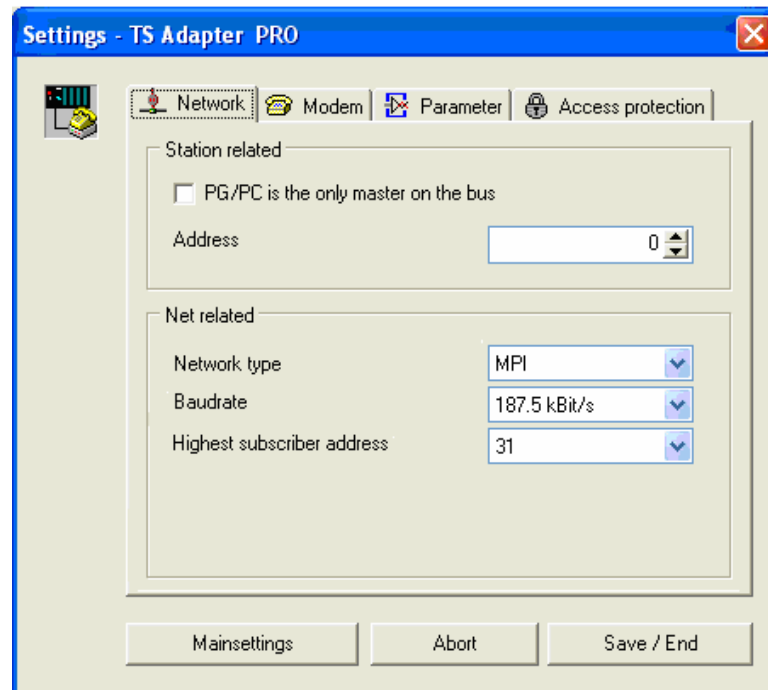
- Setting the modem-specific parameters

- Setting the transmission rate between the modem and the SSW7-TS PRO analog

- Setting the access protection for remote access

With the "*Save / End*" button, the edited contents of the four tab cards are transferred to the SSW7-TS PRO analog.

Pressing the "*Cancel*" button closes the setting window without making the changes.

You can display the basic settings (as-delivered state) by pressing the "*Basic settings*" button.

Once set, Teleservice parameters can be stored on the computer in a file and transmitted to further SSW7-TS PRO analogs.

To save the changes made as a file on the PC in the last step, select menu item *"File / Save profile."*

In the "*Saving a user-defined profile*" window, it is possible to specify a meaningful file name with a short description.
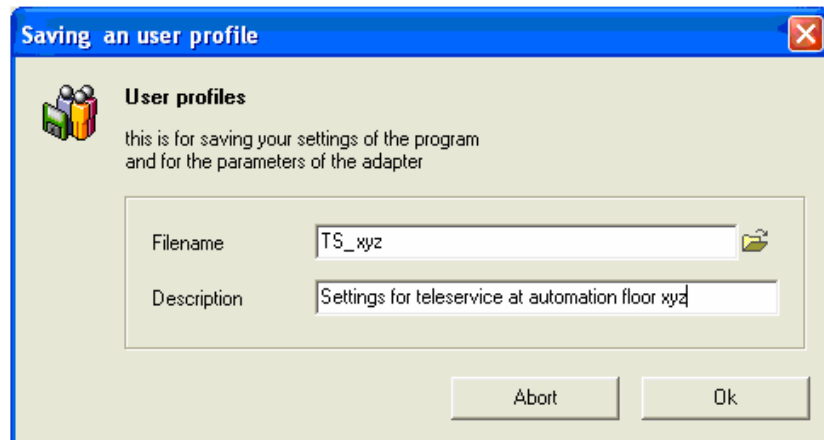
To open a user-defined profile, choose the menu item *"File / Open stored profile."* In the "*Loading a user-defined profile*" window, which then opens, you can select the required profile.
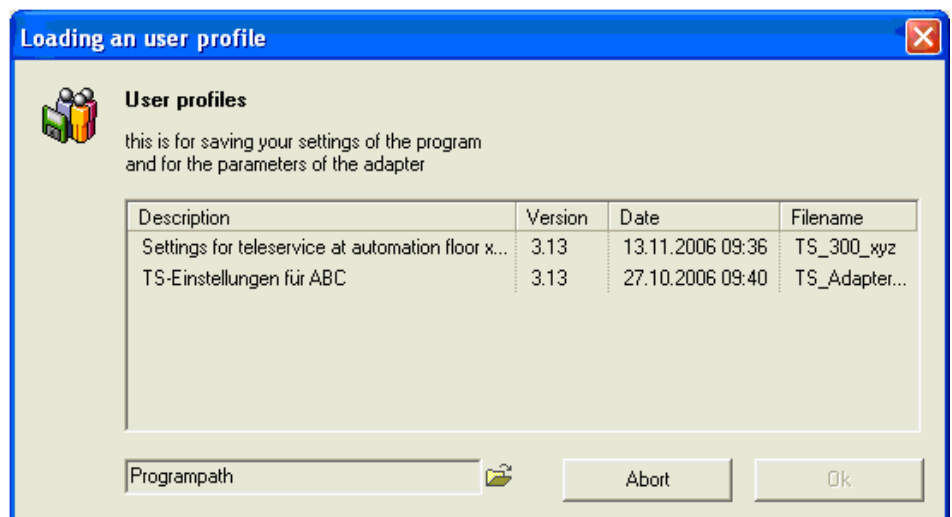
With the "*Adapter / … Settings*" menu item, it is possible to view and change the current profile.

5 Operation on a programmable controller

There are different ways of connecting the SSW7-TS PRO analog to the programmable controller on one side and the telephone network or programming device or PC on the other side.

As a special function, the SSW7-TS PRO analog offers the option of communicating with the modem via the USB or RS232 interface. The MPI/PROFIBUS functionalities are deactivated in this case.

5.1 USB or RS2323 direct operation on a PG/PC

To be able to use the SSW7-TS PRO analog like a local TS adapter, in addition to the existing USB or RS232 link to the local computer, the micro-switch for the operating modes must be in the "PC" position. The LED with the name "TS/MDM/PC" is lights up green in this switch position.

Locally, we recommend using the SSW7-TS PRO analog as a PC adapter (Auto/MPI/PROFIBUS). So it is not necessary to have the Telesevice software for local access installed in every PC.

5.2 Modem operation in a telephone network

To use the SSW7-TS PRO analog for teleservice of a S7-300 or S7-400 controller, it must be correctly parameterized and wired in the system.

In addition to connection to an enabled telephone line, the position of the micro-switch for the operating modes is especially important. The switch must be put in the "TS" position, which is indicated by the "TS/MDM/PC" LED going out.

On the local computer, which is to communicate with the SSW7-TS PRO analog via a remote link, a functioning modem link to the outside world and dial-in software are required.

When using the Teleservice software by Siemens, we recommend Version 6.1 (or higher) for hassle-free operation.

5.3 USB or RS232-to-modem operation

To use the modem of the SSW7-TS PRO analog as a simple analog modem that does not provide TS adapter functionality, the microswitch can be put in the "MDM" Position. This switch position is indicated by the red "TS/MDM/PC" LED.

In this mode, it is possible to access the modem directly via the USB or RS232, for example, to parameterize the modem.

In this mode, a link to another modem via the telephone network is also possible, for example, to connect to SCADA systems etc.

6 Configuration of the Simatic tools

6.1 Direct operation as a PC adapter (Auto/MPI/PROFIBUS)

For direct operation, the SSW7-TS PRO analog is connected to a programming device or PC via the USB or null modem cable supplied.

If the micro-switch is in the "PC" position, which is indicated by a green "TS/MDM/PC" LED, the SSW7-TS PRO analog is used as a TS adapter in direct operation or as a PC adapter (Auto/MPI/PROFIBUS).

On computers on which Teleservice is not installed, the TS adapter in the programming device or PC interface cannot be selected. However, the PC adapter (Auto/MPI/PROFIBUS) can always be used for direct operation.
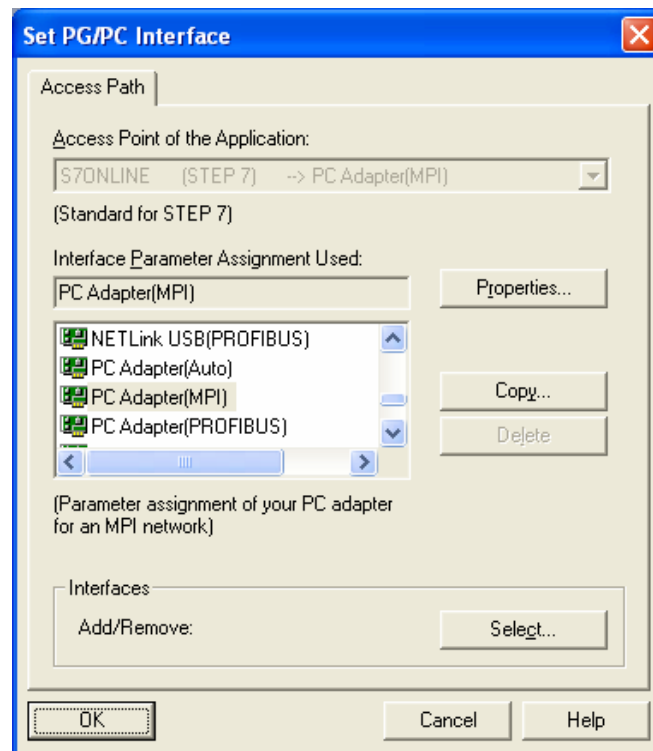
Under the "*Properties*" of the MPI or Profibus settings, the appropriate COM port must be selected before first use. On connection via USB, the previously installed virtual COM Port must be set (see Section 4.2).

Example of Profibus interface selection on connecting the USB cable to the virtual COM port:
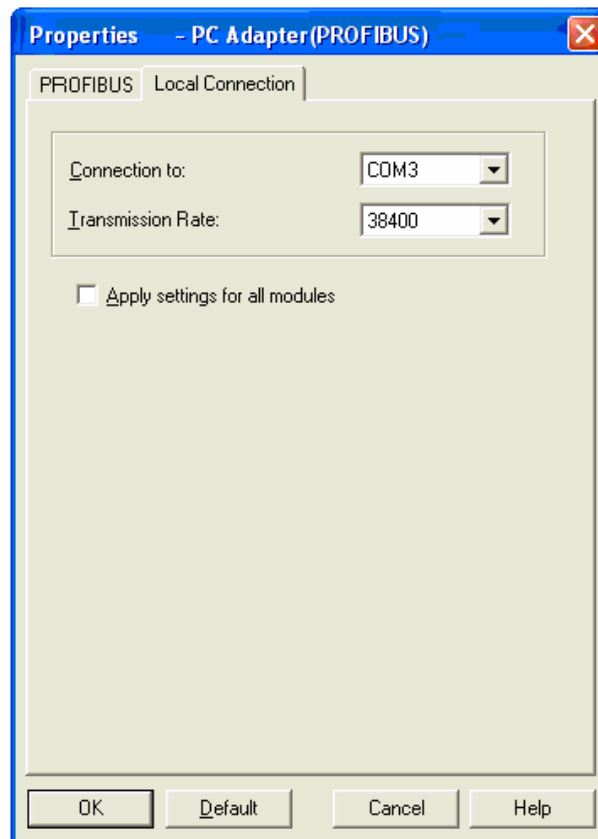
Example of MPI interface selection on connecting the null modem cable via RS232:
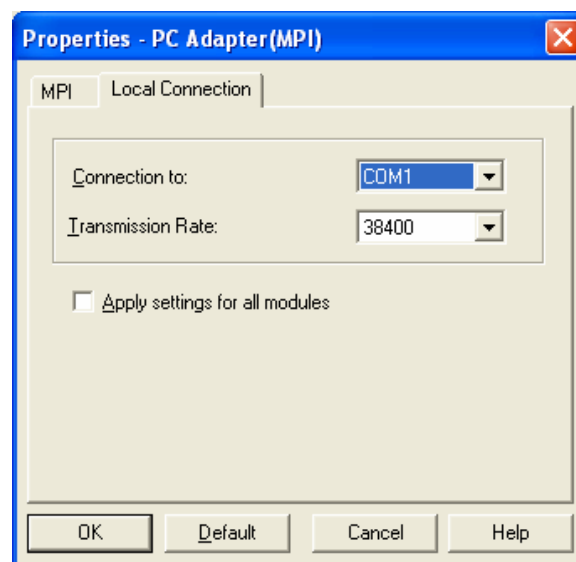
After the MPI or Profibus-specific bus parameters have been adapted, it is possible to access the connected application in the usual way.

## 6.2   SSW7-TS PRO analog for teleservice (modem operation)

To select a SSW7-TS PRO analog, an analog modem is required on the programming device or PC. If a modem is already installed under Windows, this can also be used for teleservice.

Plug-and-play modems are automatically recognized by the programming device or PC and integrated in the system as soon as they are connected. The driver supplied with the modem is required for this. You can manually install modems without plug-and-play capability via the control panel under *"Telephone and modem options"* in the *"Modems"* dialog box.
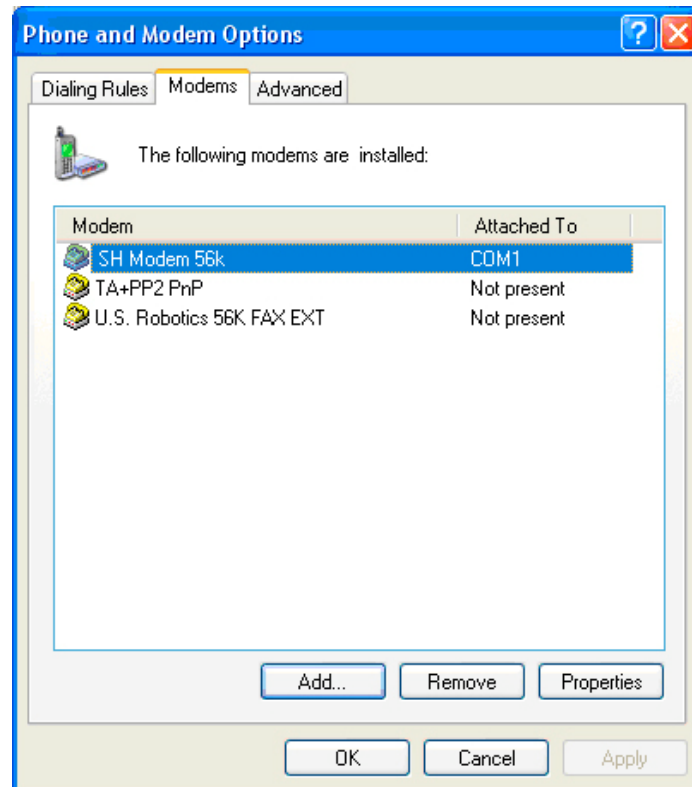
It should be possible to address the modem as soon as you have installed it on one of the COM interfaces of the programming device or PC. It can then be selected in the parameterization of the programming software.

To test the Teleservice and modem settings on the programming device or PC, you can select the Teleservice test system of Systeme Helmholz GmbH. The relevant telephone numbers can be obtained from the technical support of Systeme Helmholz GmbH.

6.2.1   Setttings on the SSW7-TS PRO analog

On the SSW7-TS PRO analog, the micro-switch position "TS" is set, which is indicated by the "TS/MDM/PC" LED going out.

When the device is supplied with power only the "Power" LED and, after some time, also the "Online" LED should be active. The SSW7-TS PRO analog has then parameterized the internal modem and is logged on to the MPI/PROFIBUS.

The internal modem has to be initialized before it is ready to accept calls. An initialization string is stored in the SSW7-TS PRO analog for this.

If no further user-specific settings have to be made, the SSW7-TS PRO analog is then ready for teleservice.

6.2.2   Settings in the programming device or PC interface

In the programming unit or PC interface, the *"TS adapter"* must be selected as the access point to be able to communicate with the remote programmable controller after selecting the SSW7-TS PRO analog through Teleservice.
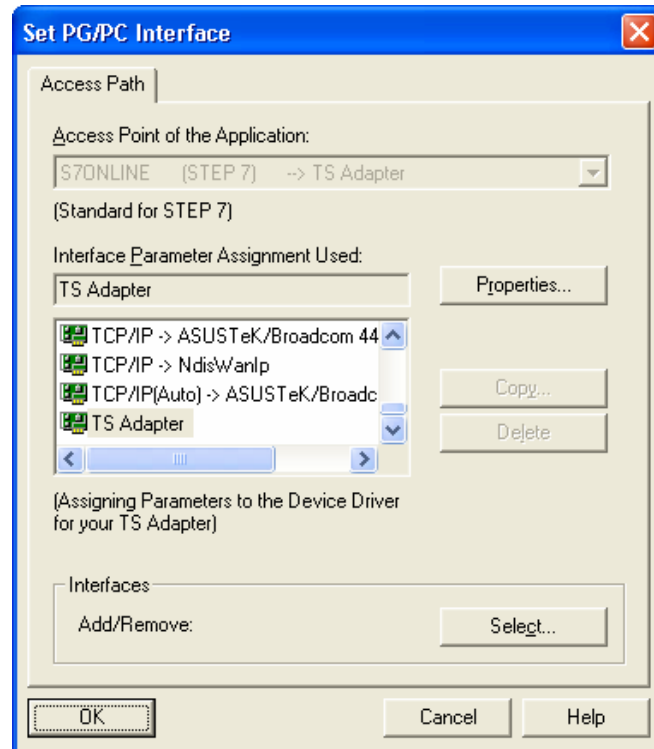
For teleservice, the "*Modem connection*" mode must be selected on the "*Local connection*" tab card in the properties of the TS adapter.
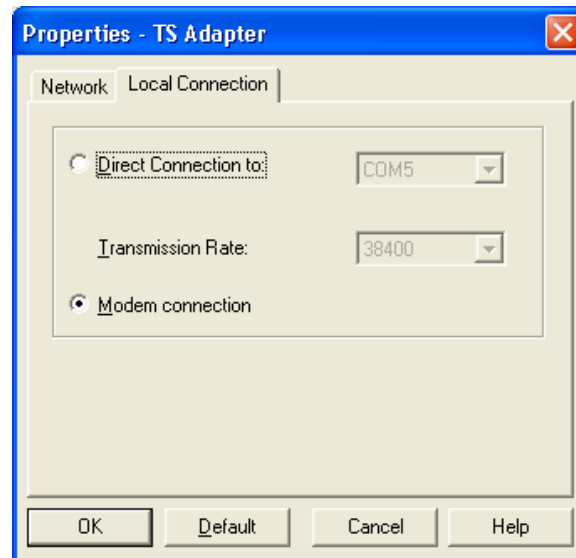
6.2.3   Settings through Teleservice

For teleservice, you will also need an additional software module for your programming software, e.g. Teleservice from Siemens (version 5.2 and later), to establish a link and manage further links (telephone book of stored systems).

!

Parameterization using Teleservice 5.x or older is currently not possible!
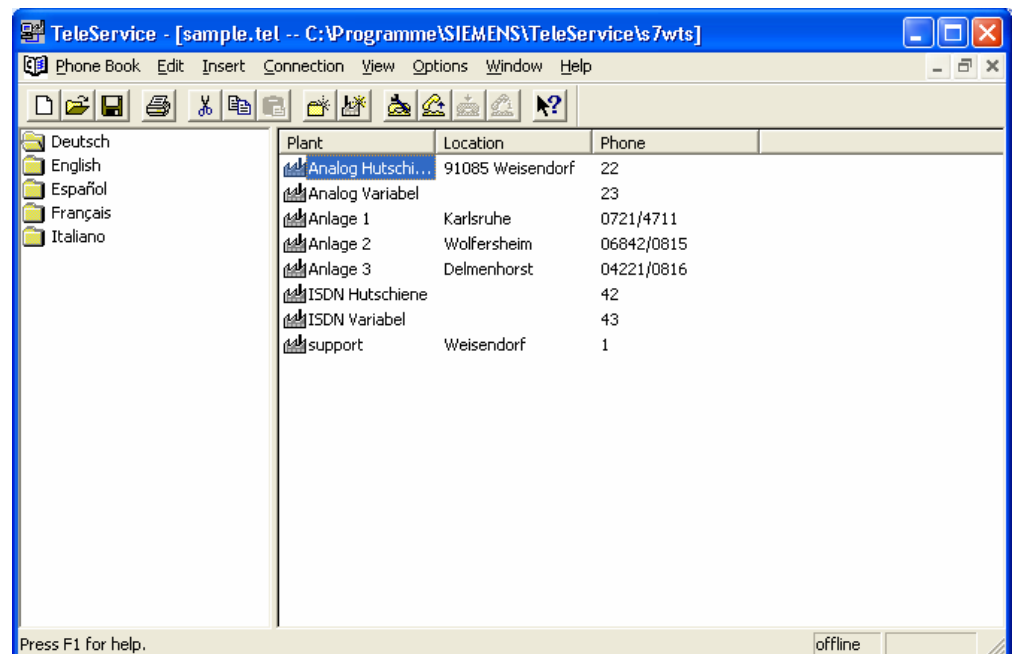
After you have created a telephone book entry for a system, a telecommunication link can be established via the telephone network.

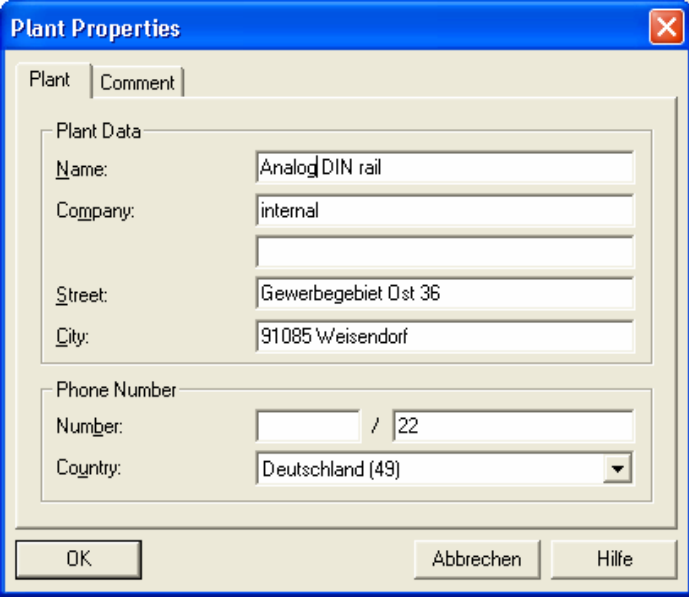System or network-specific settings of the SSW7-TS PRO analog can be made with the Teleservice software or SHTools (see Section 4.4.3).

The specific settings can be changed locally by Teleservice or via the telecommunication link.
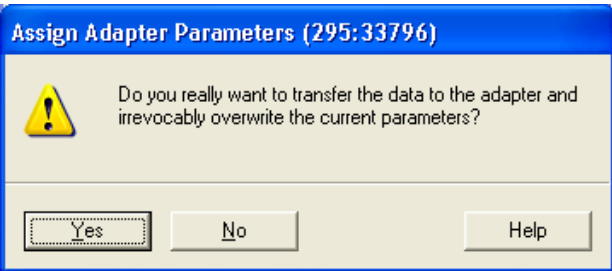
Via the SHTools, parameterization can only be performed locally.

Local parameterization using the null modem cable supplied on the programming device or PC interface and the Teleservice software is described below.

The micro-switch on the SSW7-TS PRO analog must be in the "PC" position, which is indicated by the lit green "TS/MDM/PC" LED.

In the Teleservice software, the settings for the SSW7-TS PRO analog can be made via the "*Tools / Parameterize adapter*" menu item.

!

It may be necessary to redial the controller via a telecommunication link after making a change.

After parameterization in the "*Parameterize adapter*" window, the data are transferred to the TS 300 with the "*OK*" button. But first, you must confirm that you want to overwrite the existing parameterization.

6.2.3.1 Bus parameters

The "*Network*" tab of the "*Parameterize adapter*" window contains all bus-specific parameters that can be influenced.

The SSW7-TS PRO analog supports the network types *MPI, PROFI-BUS,* and *AUTO* with a transmission rate of up to 12 Mbps.

If the network type setting "AUTO" has been deselected, the

- Network type
- Transmission rate
- Highest station address

must match the hardware configuration of the connected CPU. Moreover, it is important that an MPI/PROFIBUS address is assigned to the SSW7-TS PRO analog that has not yet been used in the connected network.

!
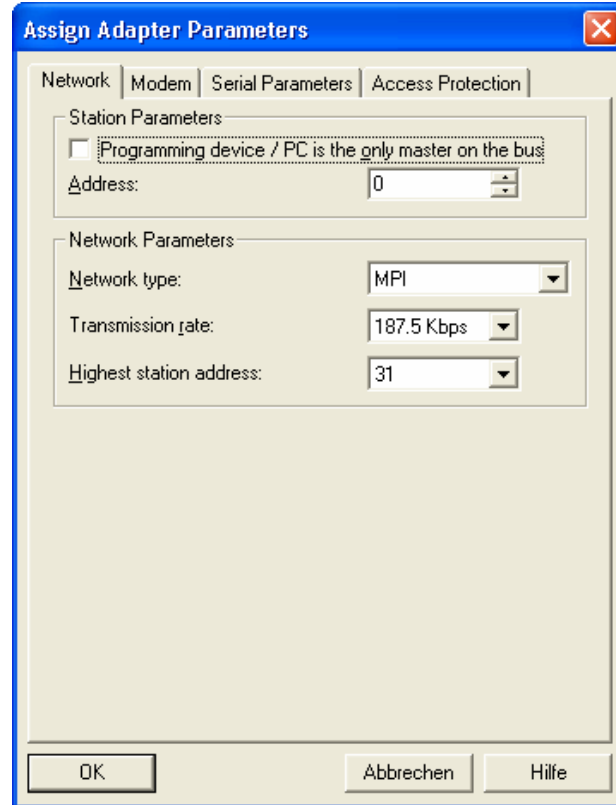
If the network settings are different, access to the CPU via a telecommunication link is not possible!

6.2.3.2 Modem parameters

The "*Modem*" tab of the "*Parameterize adapter*" window contains all modem-specific parameters that can be influenced.
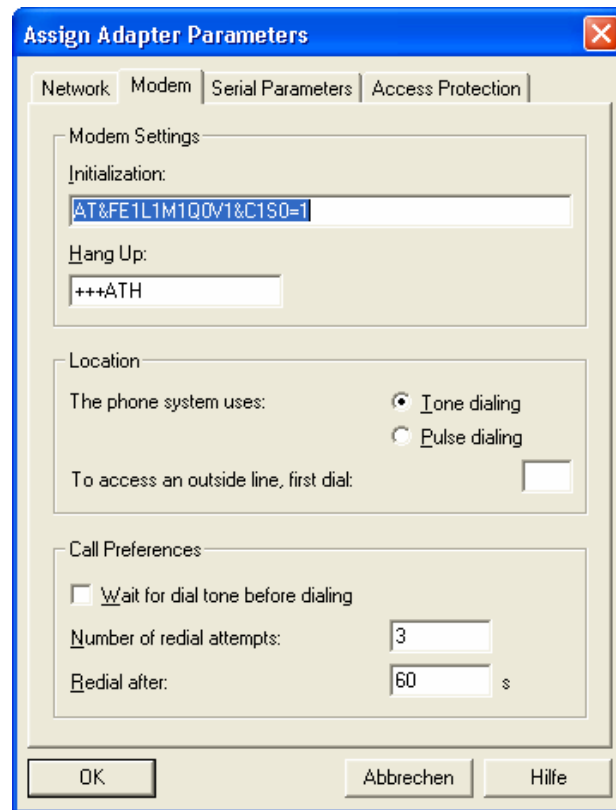
The internal modem of the SSW7-TS PRO analog is initialized automatically after switch-on. For this purpose, the initialization string is sent to the modem so that it can make settings.

The following sequence of commands is the default setting and affects the modem as follows:

AT   Initiate modem commands

&F   Load factory settings of the modem

E1   Echo of the ON command

L1   Volume level 1

M1   Loudspeaker ON

Q0   Feedback from the modem ON

V1   Feedback in plain text

&C1   DCD signal shows carrier connected

S0=1   Accept after a bell signal

If the SSW7-TS PRO analog is prepared for use abroad, it is advisable to adapt it using the relevant country code. In this way, specific settings are made for the public telephone network in question (e.g. voltage adaptation, waiting times during the handshake procedure, signal levels, etc.).

The following command characters are appended to the initialization string:

+GCI=xx

"*xx*" stands for the relevant country code (see Section 8.3.1).

The entire initialization string could look something like this:

AT+GCI=FD;E1L1M1Q0V1&C1S0=1

The semicolon is used as the command separator for the preceding command. The semicolon ensures clear separation of the AT commands so that the command sequence is interpreted unambiguously.

The semicolon can also be used as a separator for other commands.

For further information on AT commands see the appendix (see Section 8.3.2).

6.2.3.3 Serial parameters

The "*Serial parameters*" tab of the "*Parameterize adapter*" window contains all parameters for serial communication with the modem that can be influenced.

!
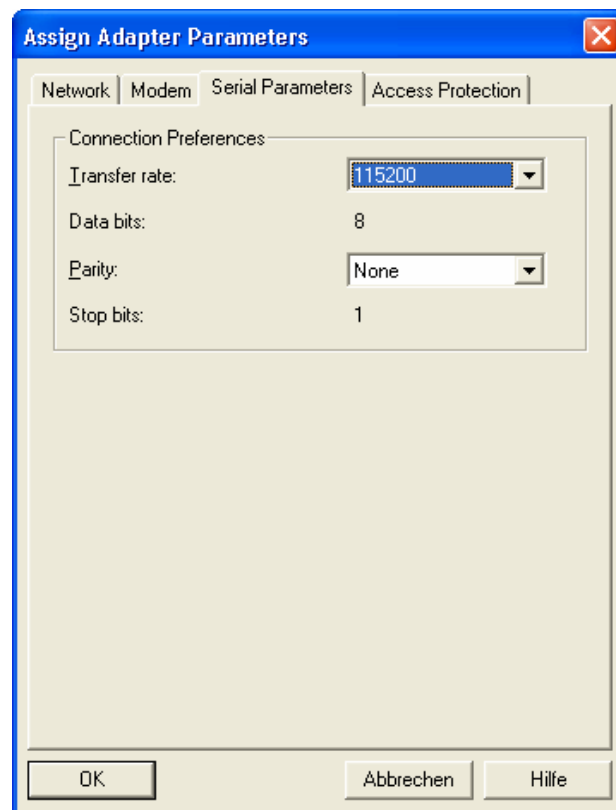
FD is only an example in this case. The correct two-character country code for the destination country must be entered!

SSW7-TS PRO analog

6.2.3.4 Access protection and the call-back function

The "*Access protection*" tab of the "*Parameterize adapter*" window contains all user-specific parameters that can be influenced.

Via this tab card, the SSW7-TS PRO analog can be configured to permit teleservice via the Teleservice software only with the relevant authorization.

Please note that "*Users*" created via a telecommunication line can only reparameterize their own access account. The administrator, on the other hand, can change all three user accounts via a telecommunication link.

!

A call-back number should not be stored for the user "ADMIN"!

If an incorrect call-back number is saved under the user "ADMIN", it will be very difficult to reparameterize the SSW7-TS PRO analog via a telecommunication link. Any "*Users*" you have created can change the user-specific but not the user-dependent settings.

Local reparameterization is possible at any time.

7 Troubleshooting

The points described here show some typical errors that can occur in day-to-day work with the SSW7-TS PRO analog.

If any condition during operation is not described here and this manual does not provide any information on how to remedy it, the support of Systeme Helmholz GmbH is available to help you.

Q: The link sporadically breaks off on my computer with the operating system Windows 2000.

A: For reliability reasons, "Forced EC" error detection must always be activated on your local modem. In a link without error checking, sporadic broken connections can occur!

The following settings must be made in the modem properties of the Teleservice software.
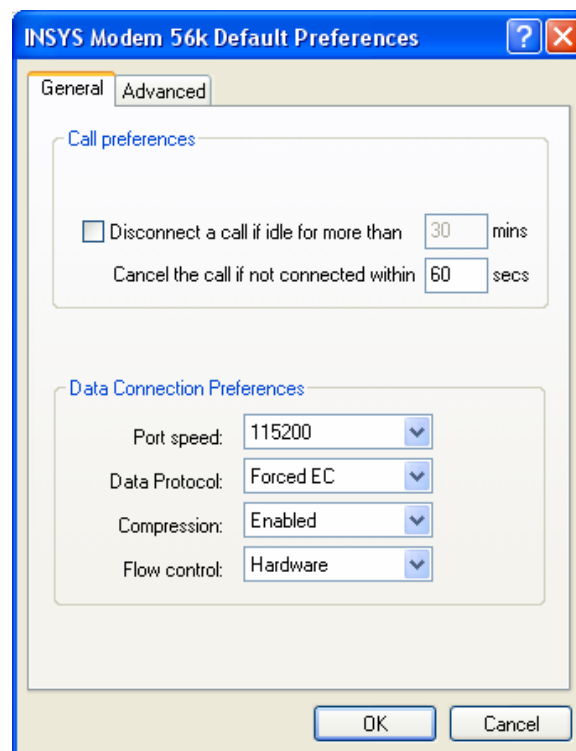
Q: I use a laptop with an internal modem as my programming device. Broken connections occur again and again during teleservice with the Teleservice software.

A: The standards (e.g. V.34 for links up to 33,600 baud) require a constant carrier frequency. Some laptop soft modems do not comply with the standards in this respect.

Laptop modems are primarily designed for dialing into the Internet via various providers. The Internet providers provide a precise reference frequency with a master clock so that a variable modem link hardly causes problems.

Broken connections with soft modems depend on the design of the laptop and occur sporadically. In this case, you can use, for example, the pocket modem from Systeme Helmholz GmbH on your laptop to remedy the problem.

Q: I have problems operating my standard modem with a USB-to-serial converter on my PC when I want to perform teleservice.

A: Many converters available on the market cannot emulate all status signals of a real RS232 interface. We do not recommend using such devices for the functions described in this manual.

Q: I have installed the USB driver for the SSW7-TS PRO analog to use directly on my PC. COM port "9" that I selected is displayed on the programming device/PC interface. Unfortunately Step7 does not work with the SSW7-TS PRO analog.

A: The programming device/PC interface displays all available COM ports but only works reliably with the first eight.
Please set the COM port you are using manually to a COM port less than or equal to "8" in the device manager to ensure the function works.

Q: I cannot establish a connection to the exchange modem. However, a connection with a telephone on the same line works.

A: It is possible that the number you chose is not enabled for data/fax services in the local telephone exchange. Please check these settings.

Q: I dial up an ISDN modem on the controller with my analog PC modem but the remote station does not respond.

A: Before configuration, please note the type of connection with which teleservice is to be implemented and whether this type of connection is technically possible. Not all combinations of modems can communicate with one another.

Data connections can be established between:

	analog	ISDN	GSM
analog	yes	no	yes
ISDN	no	yes	yes
GSM	yes	yes	yes

Q: What must I observe when calling your technical support?

A: Please have all relevant data of your system constellation with the connected stations and program modules at hand when you contact technical support at Systeme Helmholz GmbH.

8   Appendix

8.1   Technical Data

Device type	700-770-8MD41 (analog)
Degree of protection	IP 20
Dimensions	135 x 67 x 30 mm (LxWxH)
Weight	Approx. 240 g
Operating voltage	+24 V DC ± 25%, external or from the programmable controller
Current consumption	approx.140 mA
Temperature during operation	0 °C to +60 °C
Temperature during storage/transportation	-20 °C to +60 °C
Relative humidity during operation	5 % to 85 % at 30 °C (no condensation)
Relative humidity during storage	5 % to 93 % at 40 °C (no condensation)
Quality assurance	according to ISO 9001:2000
Maintenance	Maintenance-free (no battery)
MPI/PROFIBUS	
- Interface	9-way Sub D socket / RS485 repeater, isolated
- Connecting cable	1.2 flexible control cable with copper braided shield
- Transmission rates	19.2 kbps to 12 Mbps
USB	
- Interface	USB-Mini-A socket / USB 1.1 compliant
- Transmission rate	9.6 kbps to 115.2 kbps through virtual COM port
RS232	
- Interface	RS232, serial asynchronous
- Transmission rate	9.6 kbps to 115.2 kbps
Modem	
- Interface (internal)	RS232, V.24/V.28
- Transmission rate	9.6 kbps to 115.2 kbps
- Modem connection	RJ-11 socket
- Modem type	Analog interface up to 56 kbps (V.92)
- Transmission standards / protocols	V.90, V.34+, V.34, V.32bis, V.32, V.22, V.22bis, V.21, V.23, BELL standard 103, 212 Fax Class 1, Fax Class 2
- Data compression	MNP2-4, V.42 LAPM, MNP 10, 10EC
- Error correction	MNP5 and V.42

8.2   Pin assignments

8.2.1   MPI/PROFIBUS interface pin assignments

Connector	Signal	Meaning
1	-	unused
2	-	unused
3	RxD- / TxD-P	receive / transmit data-P
4	RTS_AS	CPU transmit ID
5	DGND	Ground for bus termination (looped through)
6	DVCC	5 V DC for bus termination (looped through)
7	-	unused
8	RxD / TxD-N	receive / transmit data-N
9	RTS_PG	Programming device transmit ID

8.2.2   Analog modem connection

RJ11 pins	Designation	Meaning
1	-	unused
2	-	unused
3	LA	telephone line
4	LB	telephone line
5	-	unused
6	-	unused

8.2.3   Assignment of the USB interface

USB A	Signal	Meaning	Mini USB -5P
1	VCC	DC +5 V	1
2	D-	Data signal -	2
3	D+	Data signal +	3
4	GND	Ground	5
Shield		Shield	Shield

The SSW7-TS PRO analog comes with a shielded USB 2.0 cable with a length of two meters. The cable has a standard Mini-A and a standard B connector.

Where distances of more than three meters have to be covered, we recommend using USB hubs with an external power supply.

8.2.4 Connecting cable

Programming device or PC to SSW7-TS PRO analog for direct operation or use of the modem (700-751-7VK81):
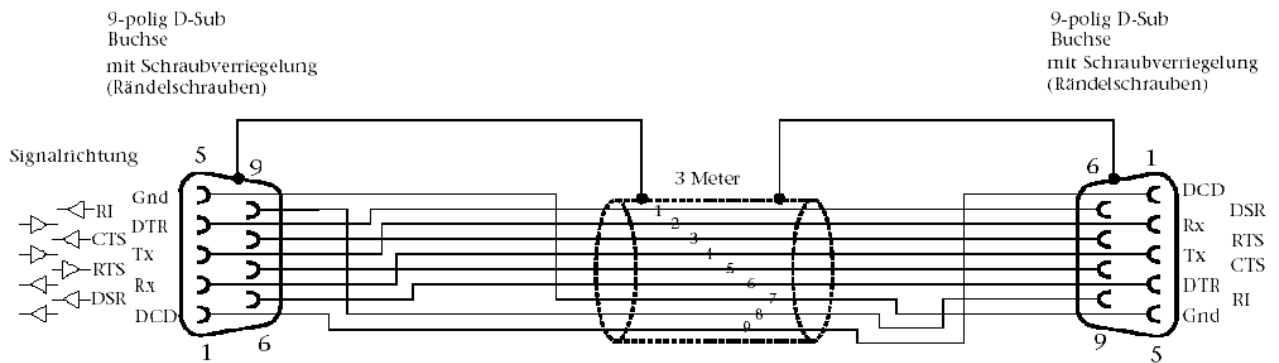
8.2.5 Power supply socket

If an external power supply is used, please make sure the polarity is correct and all technical data are complied with.

8.3 Modem data

8.3.1 List of countries for the internal modem

	Country code		Country code
Europe TBR21	FD (Default)	Jordan	FE
Egypt	36	Korea, Republic of (South K.)	61
Albania	B8	Kuwait	62
Algeria	FE	Laos	FE
Andorra	FD	Latvia	FD
Argentina	07	Lebanon	64
Australia	09	Liechtenstein*	FD
Austria*	0A	Lithuania	FE
Bangladesh	FE	Luxembourg*	69
Belarus	FE	Malaysia	6C
Belgium*	0F	Morocco	FE
Bolivia	FE	Macedonia (FYROM)	FE
Bosnia and Herzegovina	FE	Mexico	73
Brazil	16	Monaco	FD
Brunei	FE	Montenegro	FE
Bulgaria	1B	Myanmar (Burma)	FE
Cambodia	FE	New Zealand	7E
Canada	20	Nicaragua	FE
Chile	25	Netherlands*	7B
China	26	Nigeria	81
Colombia	27	Norway*	82
Costa Rica	FE	Oman	FE
Croatia	FA	Pakistan	84
Cyprus	2D	Panama	85
Czech Republic	2E	Paraguay	87
Denmark*	31	Peru	FE
Dominican republic	33	Philippines	89

Continued	Country code		Country code
Ecuador	FE	Saudi Arabia	98
El Salvador	FE	Sweden*	A5
Estonia	F9	Switzerland*	A6
Finland*	3C	Senegal	99
France*	3D	Serbia	FE
Germany*	42	Singapore	9C
Greece*	46	Slovakia	FB
Guatemala	FE	Slovenia	FC
Honduras	FE	Spain*	A0
Hong Kong	50	Sri Lanka	A1
Hungary	51	South Africa	9F
India	53	Taiwan	FE
Indonesia	54	Thailand	A9
Ireland*	57	Tunisia	FE
Iceland*	52	Turkey	AE
Israel	58	Ukraine	FE
Italy*	59	United Arab Emirates	B3
ITU/Taiwan	FE	United Kingdom*	B4
Japan	00	Uruguay	B7
Poland	8A	U.S.A.	B5
Portugal*	8B	Venezuela	BB
Romania	8E	Vietnam	FE
Russia	B8	Yemen	FE
San Marino *	FD		

* The standard setting TBR21 (FD) applies to all public telephone networks of these countries. Explicit setting of the listed country code is only required for old Tk exchanges.

8.3.2   AT command set for the internal modem

Factory settings for the basic functions are permanently stored in each modem. The user can make further settings or check settings using a terminal program.

The modem initialization string consists of one or more defined commands. Dieser Quasi-Standard wird als Hayes-Befehlssatz bezeichnet. They are also widely known as "AT commands". They set up the modem for communication with the telephone network and the connected application. They define, for example, the dialing mode, waiting times, detection of the busy tone etc.

The internal analog modem in the SSW7-TS PRO analog works with the basic command set.

For special functions there are also manufacturer-specific and extended AT commands.

Systeme Helmholz GmbH will be happy to provide the complete list on request.

If the internal modem receives an AT command after switch-on, it automatically performs adjustment to the baudrate, number of data bits and stop bits and the parity.

Each AT command starts with the letters "AT" and ends with "CR" (carriage return). Both upper case and lower case letters are accepted, but the leading characters must be either "AT" or "at". The command line is evaluated as soon as the modem has received a return.

The standard end character is "Return" ($0D_{hex}$) also known as "<CR>." After you have entered "****" or "+++," you must not enter "Return."

The commands are acknowledged with "OK" or "ERROR". A command being processed is interrupted by each further character that is received. For this reason, it is necessary to wait for acknowledgment before sending the next command. Otherwise the current command will be deleted.

8.3.3 S-register contents for the internal modem

Certain value ranges are defined in the internal modem memory using the "S-register." Each register stores a certain "value" that is used by the modem and the communication program.

S-registers can be read and written with the ATS command. Certain S-registers can only be read; in others it is only possible to set a certain value range.

On value range overflow, the modem signals OK although the value was not accepted. It is therefore advisable to check changes immediately by reading them out again.

Overview of the S-registers:

Register	Function	Units	Range	Default
S0*	Number of dialing tones before automatic offhooking	Dial tones	0-5	5
S1	Ring counter	Dial tones	0-255	0
S2*	Escape	ASCII	0-255	43
S3	Return	ASCII	0-127	13
S4	Line feed character	ASCII	0-127	10
S5	Backspace character	ASCII	0-255	8
S6*	Waiting time for dial tone	s	4-7	4
S7*	Waiting time for carrier signal	s	0-100	60
S8*	Dial pause	s	1-7	2
S9*	Response time for carrier signal	0.1 s	1-255	6
S10*	Time between lost carrier signal and hanging up	0.1 s	20-254	20
S11*	Data Transmit Controller DTC (144/336)	1s	0-255	0**
S12*	Transmission cycles of the ESC character	0.02 s	0-255	50
S13*	Number of dial attempts for transmitting the message		1-12	3
S14*	General settings			138
S15*	Data Transmit Controller DTC (56k 4.1)	1s	0-255	0**
S17*	Remote initiation character		0-127	42
S21*	Settings for V24 (RS232)			116
S22*	Settings			75h (117)
S24*	Time before switchover to sleep mode	s	0-255	0
S25	Time for DTR signal	0.01 s	0-255	5
S26	Time between RTS/CTS	0.01 s	0-255	1
S27*	General settings	-		137

Register	Function	Units	Range	Default
S29	Time for "flash" modifier	10 ms	17	17
S30	Time until hanging up on silence	10 s	0-255	0
S31*	General settings	-		C2h (194)
S36*	Switch back to the error logs	-		135
S38	Time before forced hanging up	s	0-255	20
S39*	Flow control	-		3
S40*	General settings	-		104
S41*	General settings	-		195
S46*	Data compression	-		138
S48*	Setting for V24 (RS232) declaration phase	-		7
S86	Error event code	-		read only
S91*	Transmit level	-	0-15	9
S95*	Result code	-		0

* These registers are stored with "AT&W0" or "AT&W1" in the user pre-settings.

Systeme Helmholz GmbH will be happy to provide a detailed description of the register commands described here on request.

8.4   Further Documentation

Internet:

http://www.helmholz.de

http://www.siemens.com

Notes

SSW7-TS PRO analog