

SSW7-TS with analog modem

700-751-8MD21

User Manual

Edition 9 / 14.07.2008

from HW 7-3 and FW 3.25 and higher



Order number of manual: 900-751-8MD21/en

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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 information in this manual is regularly updated. When using purchased products, please heed the latest version of the manual, which can be viewed in the Internet at www.helmholz.de, from where it can also be downloaded.

Our customers are important to us. We are always glad to receive suggestions for improvement and ideas.

Revision history of this document:

Edition	Date	Revision
8	04.02.2008	Adaptation for modem driver
9	14.07.2008	Flashloader section deleted, list of country code combined

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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 with analog modem 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.



Only authorized persons must have access to the modules!

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.



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

1.3 Information for the user

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

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

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

The SSW7-TS with analog modem 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 with analog modem must only be used as a communication and signaling system as described in the manual.

1.5 Avoiding use not as intended!

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



Make sure in the software that uncontrolled restarts cannot occur.

2 Installation and Mounting



Before you start installation work, all system components must be disconnected from their power source.

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.

An ambient temperature of 0 to 60 °C must be ensured for reliable operation.

2.1 Mounting position

The module can be mounted in any orientation.

2.2 Minimum clearance

Minimum clearances must be observed because

- then it is possible to insert and remove the SSW7-TS with analog modem 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.



Non-observance of the minimum distances can destroy the module at high ambient temperatures!

For the SSW7-TS with analog modem, a minimum clearance from other modules of 60 mm must be left above and below, and 10 mm at the sides.

2.3 Mounting the module

A wall or DIN rail bracket is enclosed for mounting the SSW7-TS with analog modem on flat surfaces or on DIN rails.

3 System Overview

3.1 Application and function description

The SSW7-TS with analog modem is a gateway between the RS232 or modem and an MPI bus.

The RS232 interface can also be directly connected to the modem to implement communication away from the MPI bus.

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

The user can make functional adaptations for teleservice via the telephone network in over 90 countries. Adaptation allowing almost worldwide use is possible by assigning a certain country code using the Hayes AT command set.

With a RS232 or modem link, up to eight MPI links (19.2 kbps or 187.5 kbps) can be used simultaneously.

At the MPI end, the baud rate to be used is automatically detected.

The SSW7-TS with analog modem can draw the necessary power supply from the MPI bus interface or from an external power source (see chapter 3.6).

The MPI link of the SSW7-TS with analog modem to a programmable controller is effected via the nine-way Sub D connector.

With the enclosed null modem cable the SSW7-TS with analog modem can be connected on a serial Com port for parameterization or for in situ use as a PC adapter (MPI).

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

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

Please consult the programming software manuals for further information.

A firmware update for the SSW7-TS with analog modem can be transferred to the SSW7-TS with analog modem adapter both locally and via a remote link.



FMx modules cannot be parameterized with the SSW7-TS with analog modem.



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

3.2 Connections

The SSW7-TS with analog modem has the following connection options:

- Power supply socket for input of 24 V DC.
This power supply option can be used if the used programmable controller does not provide sufficient power supply on the bus connector.
- RJ11 socket for connecting the corresponding TAE telecommunication cable.
- RS232 socket for connecting the supplied null modem cable for direct operation as a programming adapter or for using the internal modem, e.g. for SCADA or visualization systems.
- 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 connected (ON) if the SSW7-TS with analog modem is at the beginning or end of a bus segment. If this is not the case, the switch position must be OFF.

3.3 LED displays

The SSW7-TS with analog modem has six LEDs, including one two-color LED, to indicate its operating status.

3.3.1 Status LEDs for standard functions

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

They also indicate an update process.

LED status for operating status	Power LED (green)	Active LED (green)	Connect LED (green)
Ready for operation	ON		
Actively logged on to the MPI 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	ON	OFF
Storing 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” indicate which of the three possible operating modes the SSW7-TS with analog modem is currently in.

LED status for operating status	PC LED (green)	MDM LED (red)
The internal TS adapter is connected to the internal modem (micro-switch setting “TS”). The RS232 interface is inactive	OFF	OFF
The internal TS adapter is connected to the RS232 interface (micro-switch setting “PC”). The internal modem is inactive.	ON	OFF
The internal modem is connected to the RS232 interface (micro-switch setting “MDM”). The internal TS adapter is inactive.	OFF	ON

3.4 Function switch

3.4.1 Micro-switch TS adapter

The "TS/MDM/PC" switch switches between the three possible operating modes. This switch is located at the bottom side of the housing next to the ext. power supply plug.



PLEASE NOTICE!!

At many older adapter the labelling of the microswitch is „Int/Mdm/Ext“

The functions are the same as with the new marking.

- In switch position “TS”, the SSW7-TS with analog modem functions directly with the modem. That way, the SSW7-TS with analog modem can be used for teleservice using the TeleService software (see chapter 5.2). The RS232 interface does not have a function in this switch position.
- In switch position “PC”, the SSW7-TS with analog modem functions directly with the RS232 interface. The SSW7-TS with analog modem can be operated on the local computer as the TS adapter (MPI) or as a PC adapter (MPI) (see chapter 01). The modem is inactive in this switch position.

- In switch position “MDM”, the internal modem functions directly with the RS232 interface.
In this way, the modem can be directly addressed via the RS232 interface, for example, to parameterize it or to use it for teleservice purposes unconnected with MPI (see chapter 5.3).
The SSW7-TS with analog modem cannot perform MPI functions in this switch position.

3.5 Items supplied

The scope of supply of the SSW7-TS with analog modem includes:

- SSW7-TS with analog modem ready to operate
- DIN mounting rail bracket
- 3-meter null modem cable
- RJ11 connecting cable (3 m)
- TAE connecting cable (3 m)
- 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	900-751-8MD21/de
Manual, English	900-751-8MD21/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

Mounting adapter for DIN rail	700-390-6BA00
Power supply adapter with plug	700-751-SNT01
Input: 100-240 V AC / 47-63 Hz / 400 mA	
Output: 24 V DC / 625 mA	
MPI bus extension cable, 5m	700-751-6VK11
MPI bus extension cable, 10m	700-751-6VK21
MPI bus extension cable, special lengths	700-751-6SO11



When extending the MPI bus, please follow the relevant configuring guidelines as defined in the documentation of your PLC.

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

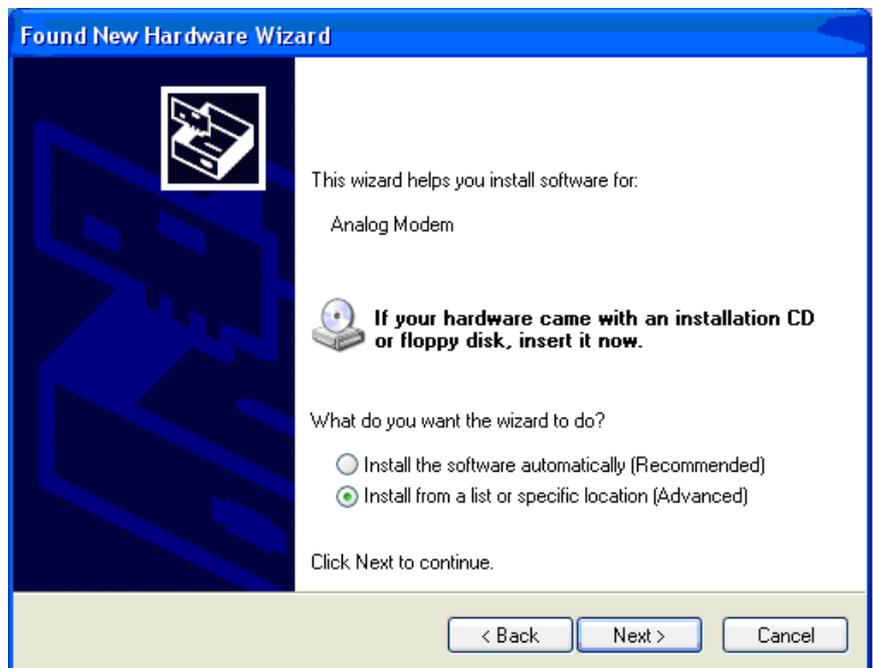
To operate the driver and service tools of the SSW7-TS with analog modem, a PC or laptop is required with a 32-bit Windows operating system and a CDROM drive. The Windows 2000 and Windows XP operating systems can be used.

In the programming devices or PCs used, there must be one RS232 interface. You can also use normal commercial RS232 interface cards.

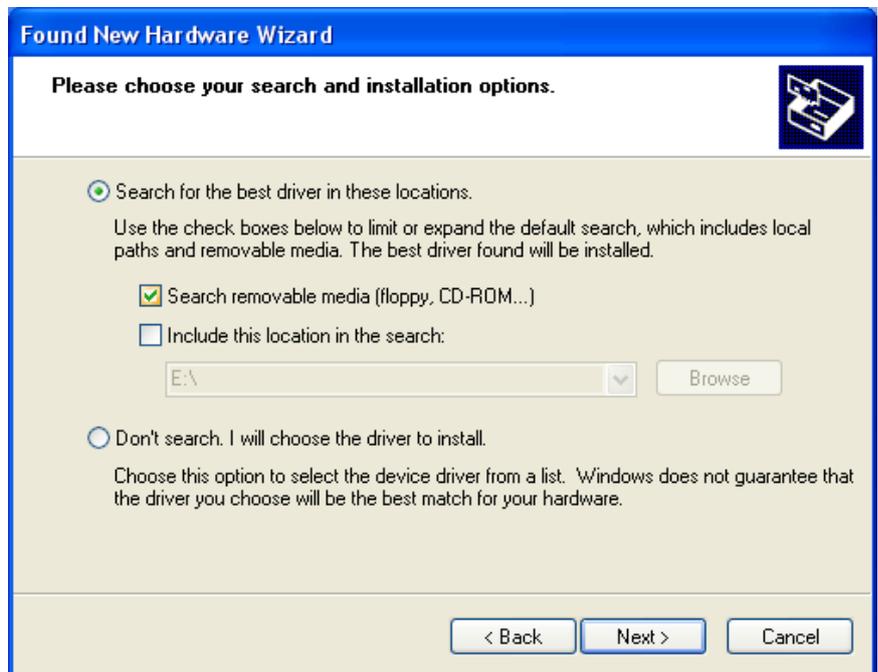
4.2 Installation of the modem driver

If the modem of the SSW7-TS with analog modem is to be operated directly on a programming device or PC via RS232, the corresponding modem driver must be installed. For this purpose, the micro-switch must be put in the central position “MDM” and the null modem cable plugged into the SSW7-TS with analog modem.

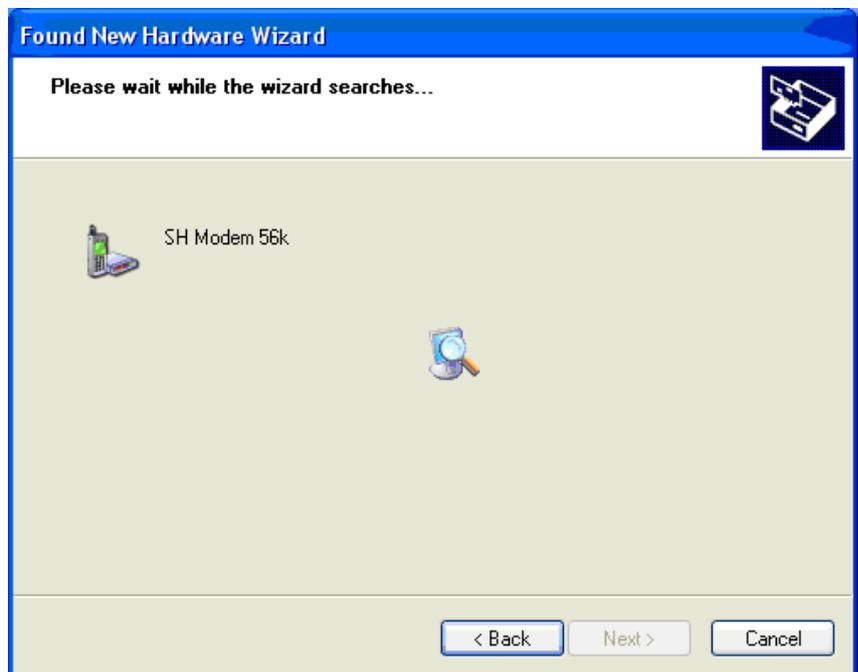
- The operating system starts an installation wizard that performs the installation, which is largely automatic.



- 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.



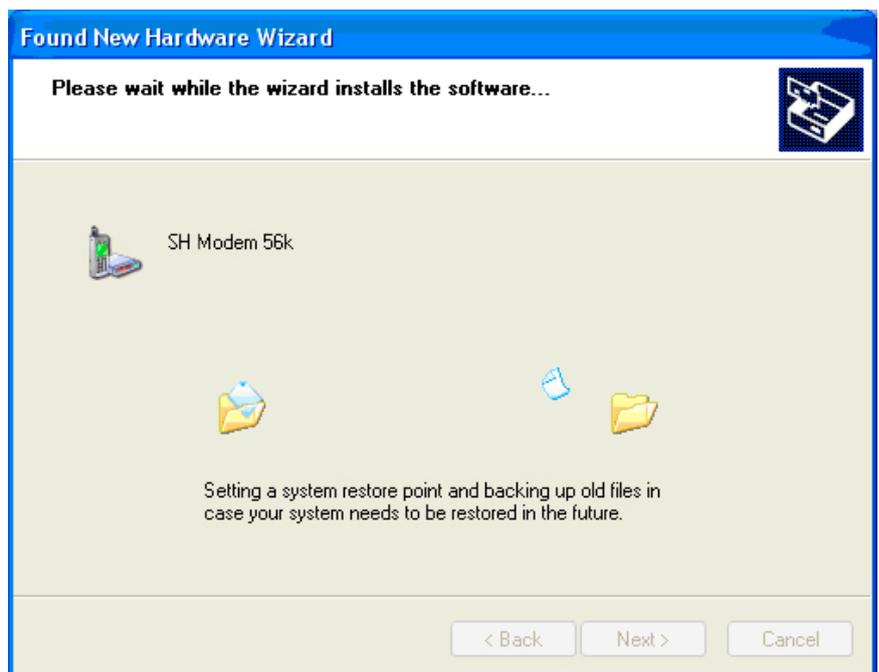
- If the SSW7-Teleservice-Modem CD is in a local drive, the search for the driver now begins.



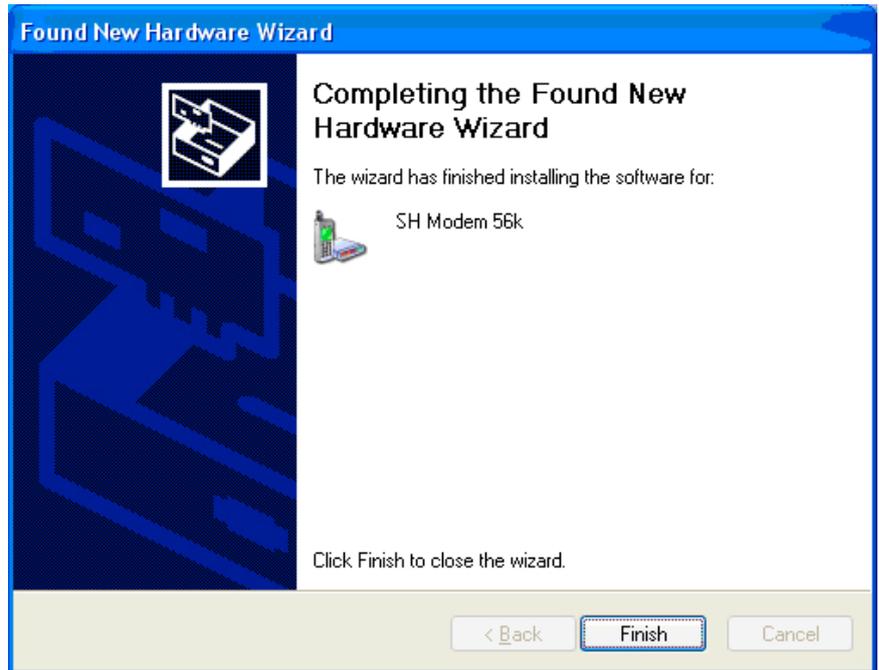
- During installation, a WindowsXP logo compatibility query appears.



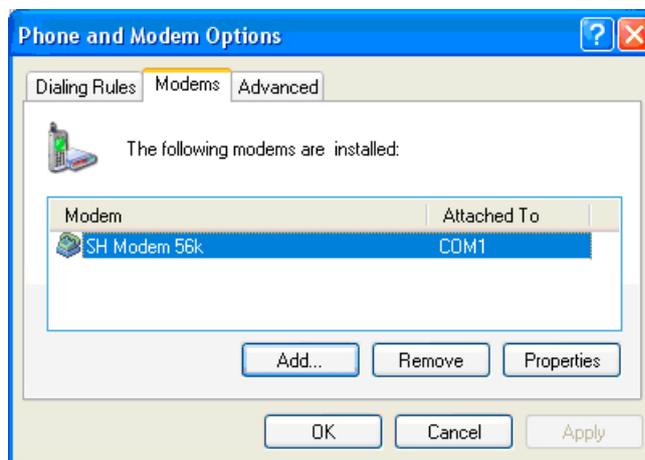
- Confirm with the "Continue installation" button



- 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 Phone and Modem Options.



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

4.3 Service tools

4.3.1 Parameterizing and updating with SHTools

With the SHTools software, it is possible to perform a system update of the SSW7-TS with analog modem, if required. The SSW7-TS with analog modem can also be pre-parameterized with SHTools without the TeleService software having to be installed on the computer.

The tool is freeware and has been tested under Windows XP and 2000. 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 Helmholtz"*.

The most important program functions are described below.

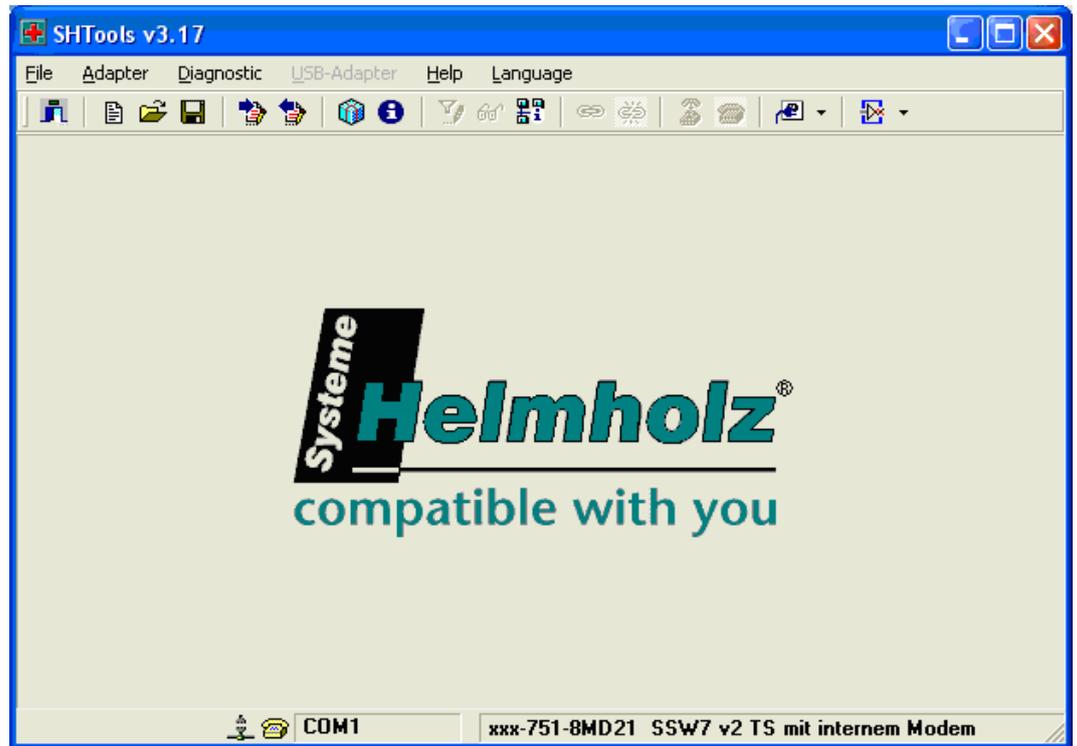
4.3.2 Firmware update

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

For the local update, a link must be established between the SSW7-TS with analog modem and a RS232 interface on the PC on which SHTools is installed. The micro-switch on the SSW7-TS with analog modem 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 with analog modem, an analog modem is also required on the local computer, which is addressed via a COM port.

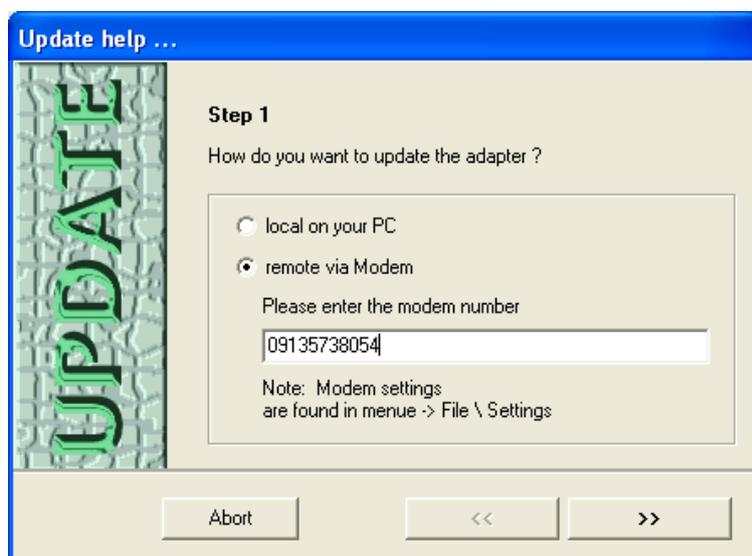
The SHTools contain update functions for many adapters of Systeme Helmholtz GmbH. How to perform an update is explained below.



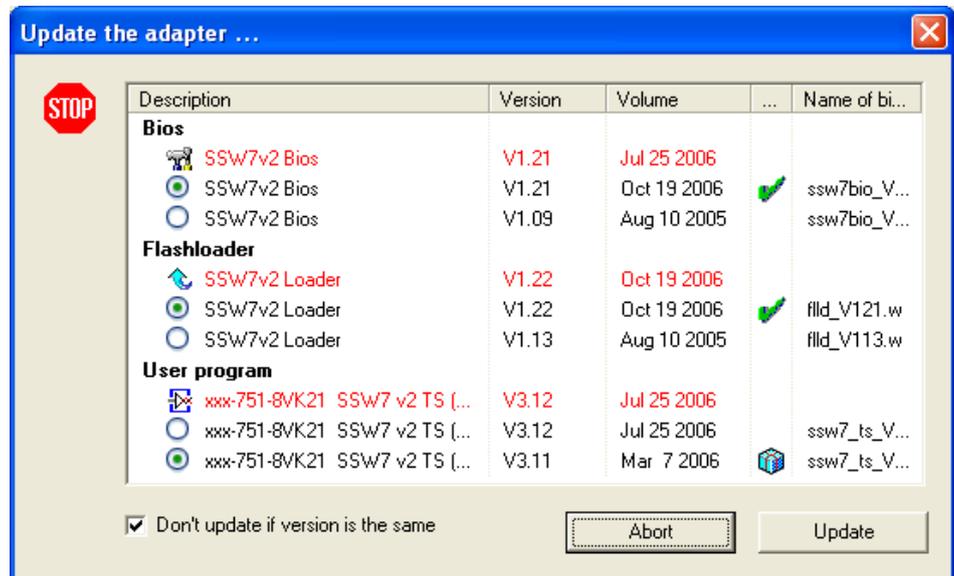
- Via menu item “*Adapter / ... select*”, the required device is selected by its order number (in this case, the SSW7 v2 TS with internal 56k modem).
- Via menu item “*Adapter / Select COM port/serial number*”, the required interface is selected.

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).



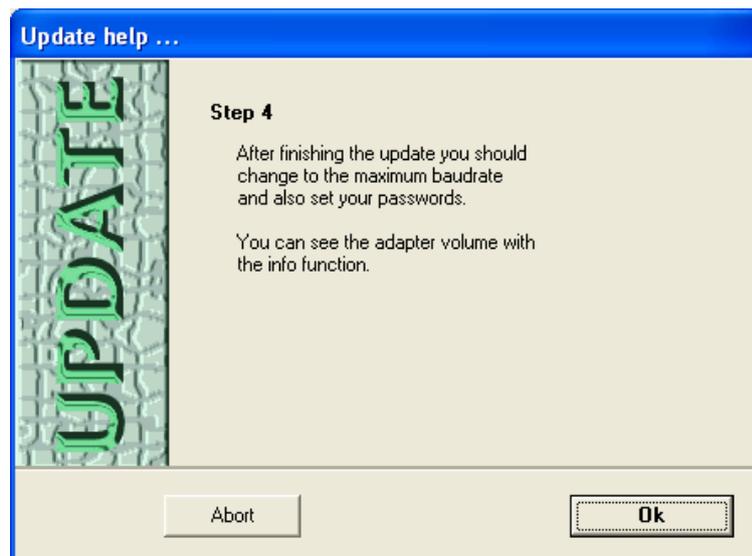
- After step 1 is confirmed, an attempt to establish a link to the SSW7-TS with analog modem follows. If this is successful, updating of the firmware chapters, of which later versions are available, begins automatically.
- If, under “File / Settings” the “Automatic update” option is deselected, the user can select the components that will be updated. The update process is started by pressing the “Update” button.



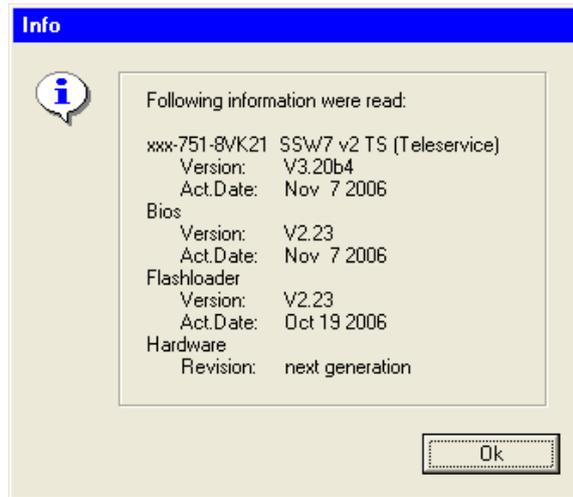
Transmission of the new firmware can take several minutes depending on the transmission rate of the link and must not be interrupted!

For updating via modem link, up to three automatic dial-up operations are required.

- Step 4 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”*.



4.3.3 Parameterization with SHTools

SHTools is an alternative to the TeleService software for parameterizing the SSW7-TS with analog modem.

Once TeleService parameters have been set, they can be stored on the computer in a file and can, for example, be transferred to further SSW7-TS with analog modems or conventional TS adapters such as the SSW7-TS.

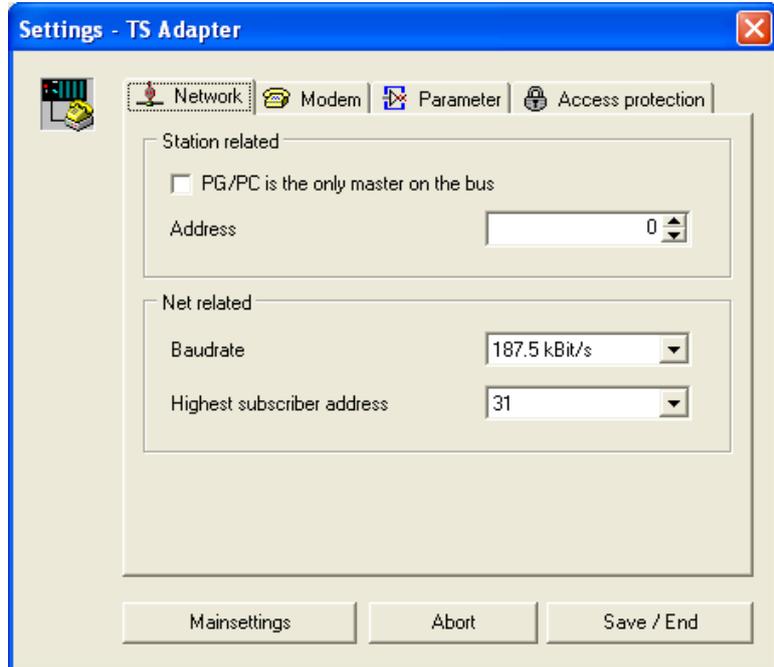
For parameterization, a link must be established between the SSW7-TS with analog modem and a RS232 interface on the PC on which SHTools is installed. The micro-switch on the SSW7-TS with analog modem must be put into the “PC” position. The “PC” operating mode is indicated by the lit green “TS/MDM/PC”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

With the *“Adapter / Read parameters”* menu item, it is possible to read the current parameterization out of the SSW7-TS with analog modem.

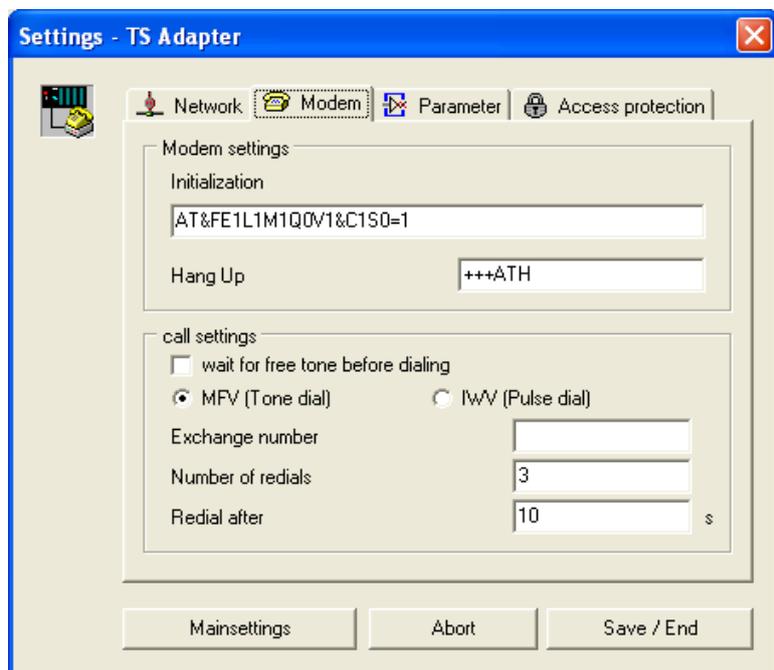
The read parameters are displayed in the *“Settings – TS adapter”* window.

The window contains four tabs providing access to functionally independent parameterization options:

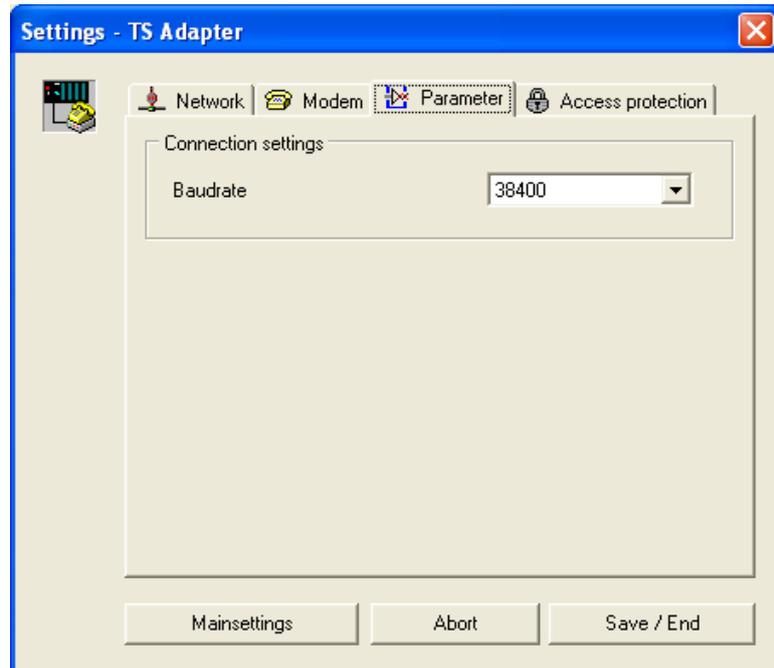
- Setting the MPI-specific parameters



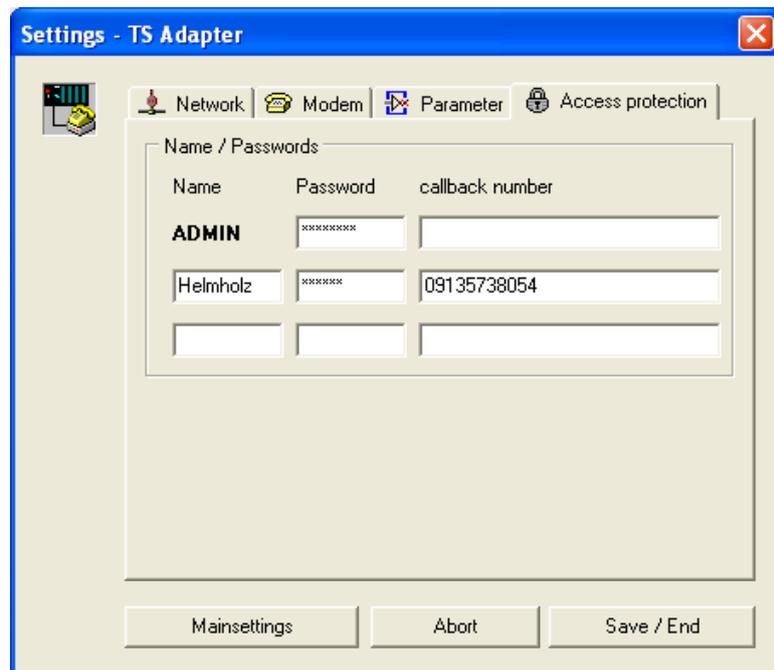
- Setting the modem-specific parameters



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



- Setting the access protection for remote access



With the “Save / End” button, the edited contents of the four tabs are transferred to the SSW7-TS with analog modem.

Pressing the “Abort” button closes the setting window without making the changes.

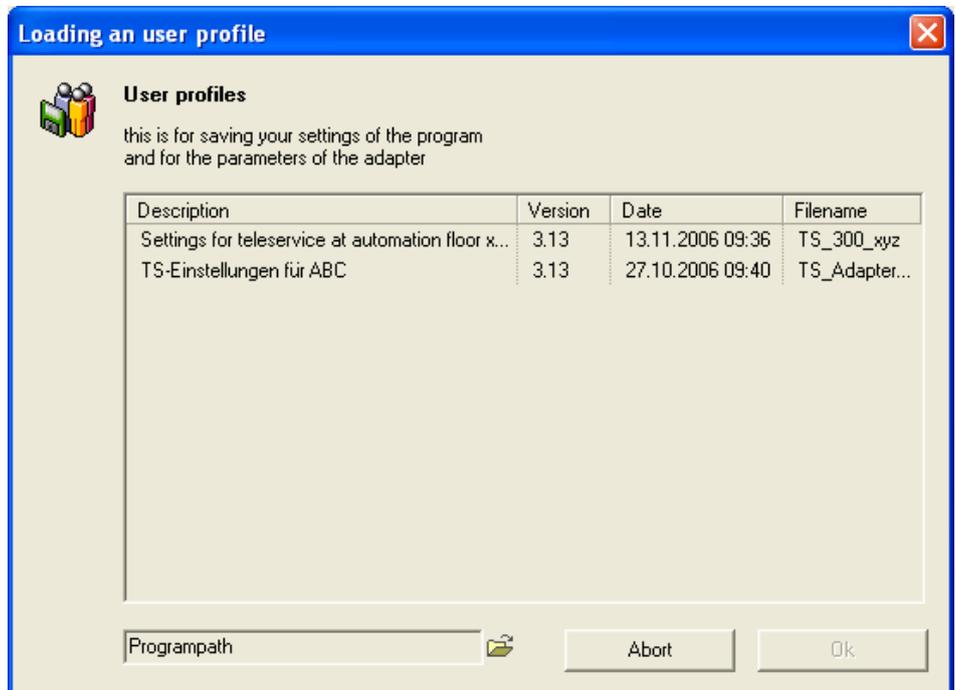
You can display the basic settings (as-delivered state) by pressing the “Mainsettings” button.

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 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 with analog modem 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 with analog modem offers the option of communicating with the modem via the RS232 interface. The MPI functionality of the SSW7-TS with analog modem is deactivated in this case.

5.1 RS232 direct operation on a programming device/PC

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

The SSW7-TS with analog modem can also be operated locally as a PC adapter. The TeleService software does not need to be installed on every PC with local access to the SSW7-TS with analog modem.

5.2 Modem operation in a telephone network

To use the SSW7-TS with analog modem 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 is going out.

When the device is supplied with power only the "Power" LED and, after some time, also the "Active" LED should be active. On the local computer that is to communicate with the SSW7-TS with analog modem via a telephone link, a functioning modem link to the outside world and, for example, the TeleService software from Siemens are required.

5.3 RS232-to-modem operation

To use the modem of the SSW7-TS with analog modem as a simple analog modem that does not provide TS adapter functionality, the micro-switch 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 RS232, for example, to flash or parameterize the modem.

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

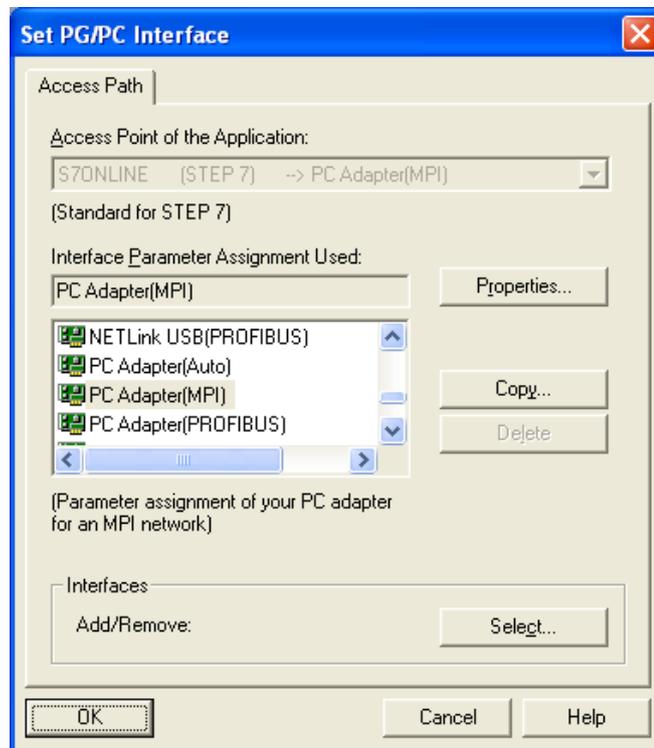
6 Configuration of the Simatic tools

6.1 SSW7-TS with analog modem in direct operation

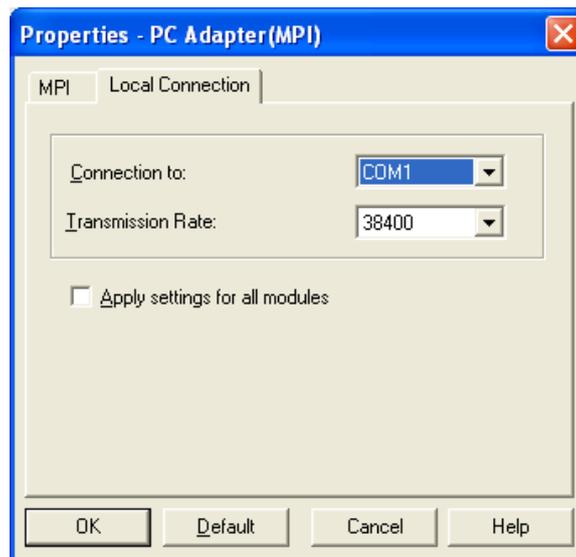
The SSW7-TS with analog modem is connected with the programming device or PC for direct operation via the RS232 cable supplied.

If the micro-switch is in the "PC" position, which is indicated by a green "TS/MDM/PC" LED, the SSW7-TS with analog modem is used as a TS adapter in direct operation or as a PC adapter.

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 can always be used for direct operation.



Under “*Properties*”, the MPI settings and the COM port have to be changed before first use.

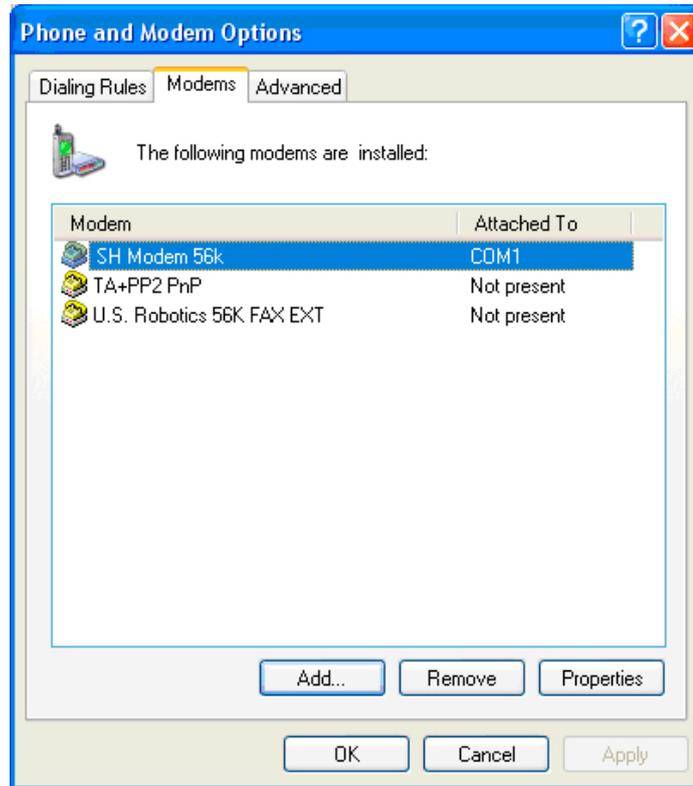


6.2 SSW7-TS with analog modem for teleservice (modem operation)

To select a SSW7-TS with analog modem, 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 “Phone 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 Helmholtz GmbH. The relevant telephone numbers can be obtained from the technical support of Systeme Helmholtz GmbH.

6.2.1 Settings on the SSW7-TS with analog modem

On the SSW7-TS with analog modem, the micro-switch position “TS” is set, which is indicated by the “TS/MDM/PC” LED going out.



When the "Power" and "Active" LEDs are on, the SSW7-TS with analog modem is ready to accept a call.

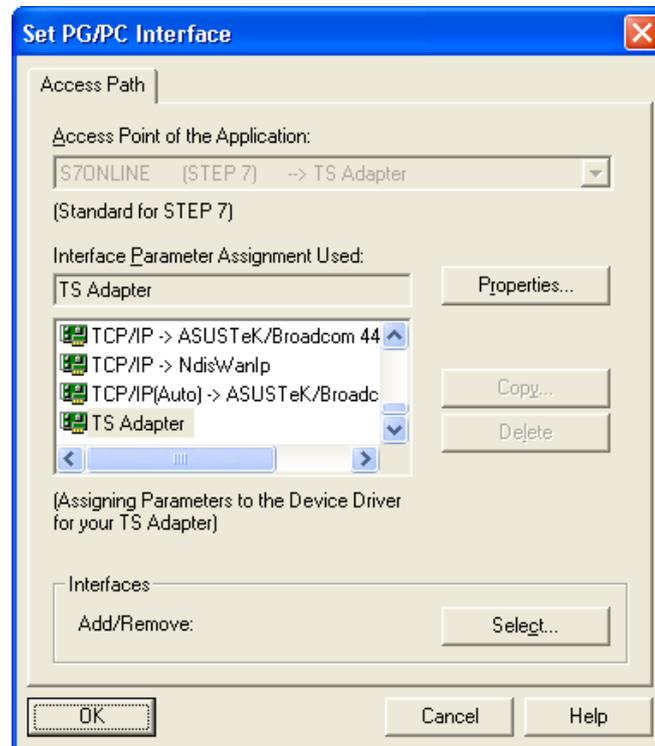
When the device is supplied with power only the “Power” LED and, after some time, also the “Active” LED should be active. The SSW7-TS with analog modem is now signed onto the MPI bus and has parameterized the internal modem.

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

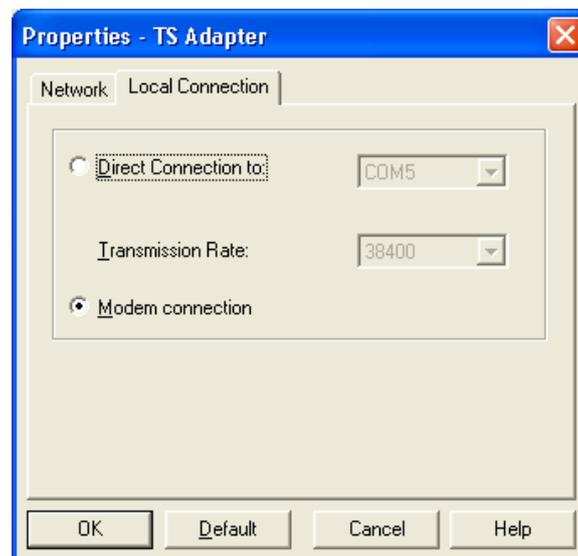
If no further user-specific settings have to be made, the SSW7-TS with analog modem is then ready for teleservice.

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 with analog modem through TeleService.



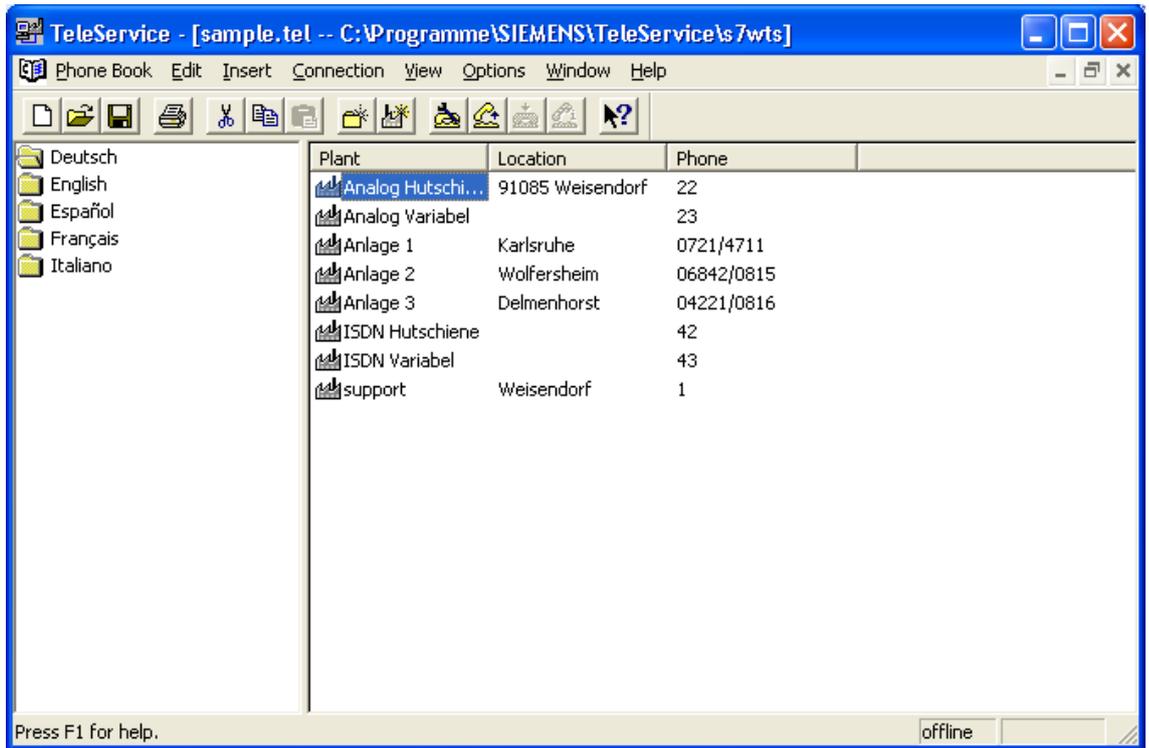
For teleservice, the “*Modem connection*” mode must be selected on the “*Local connection*” tab card in the properties of the TS adapter.



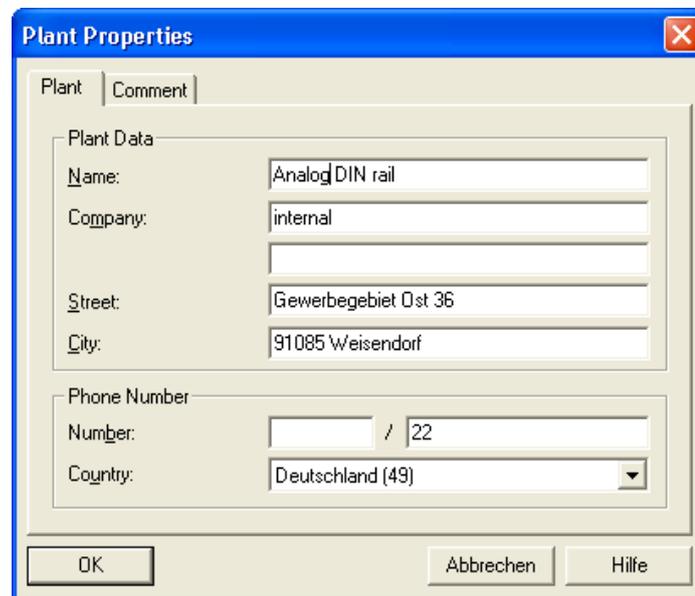
6.2.3 Settings through TeleService

For teleservice, you will also need an additional software module for your programming software, e.g.

TeleService from Siemens (version 3.0 and later), to establish a link and manage further links (telephone book of stored systems).



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 with analog modem can be made with the TeleService software or SHTools (see chapter 4.3.3).

The specific settings can be changed locally by TeleService or via the telecommunication link.

Via the SHTools, parameterization can only be performed locally.

Direct (local) parameterization using the null modem cable supplied on the programming device or PC interface and the TeleService software is described below.

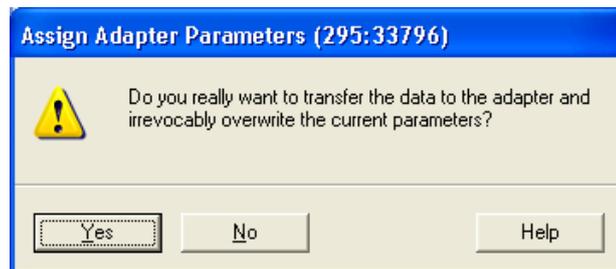
The micro-switch on the SSW7-TS with analog modem must be in the "PC" position, which is indicated by the lit green "TS/MDM/PC" LED.

In the TeleService software, the settings for the SSW7-TS with analog modem can be made via the "Tools / Parameterize adapter" menu item.

After parameterization in the "Parameterize adapter" window, the data are transferred to the SSW7-TS with analog modem with the "OK" button. But first, you must confirm that you want to overwrite the existing parameterization.



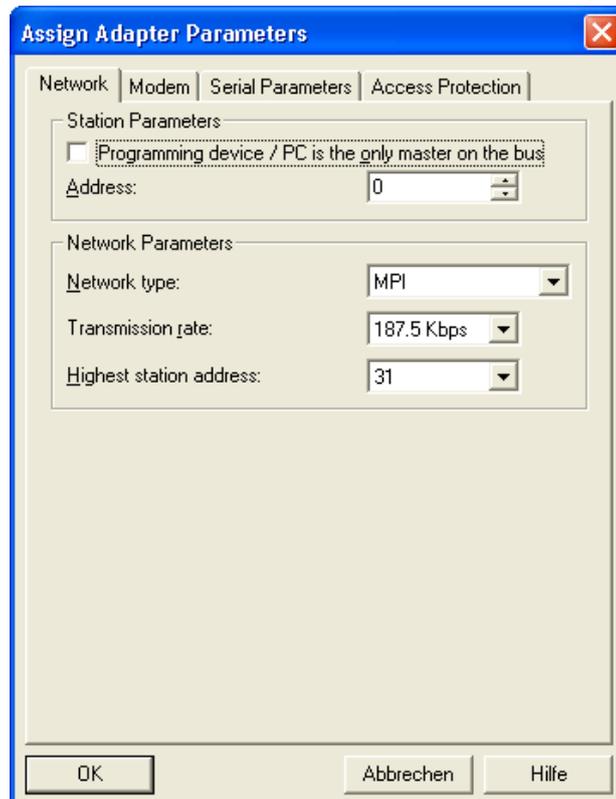
It may be necessary to redial the controller via a telecommunication link after making a change.



6.2.3.1 Bus parameters

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

Please note that the SSW7-TS with analog modem is only suitable for the network type "MPI" and transmission rates "19.2 kbps" and "187.5 kbps".





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

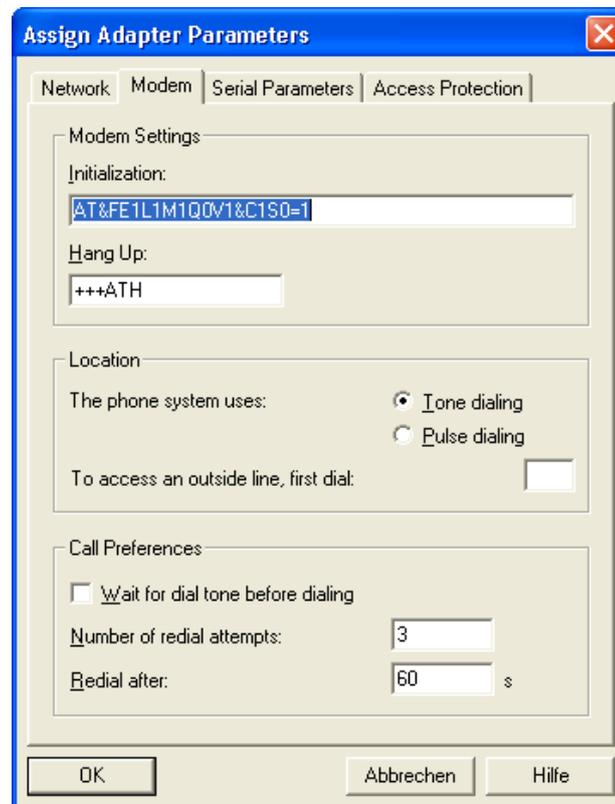
The settings for

- Network type
- Transmission rate
- Highest station address

must match the hardware configuration of the connected CPU. Moreover, the SSW7-TS with analog modem should be assigned an MPI address that has not yet been assigned in the MPI network.

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 with analog modem 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 with analog modem is prepared for use abroad, it is advisable to adapt it using the relevant country code. This makes specific settings for the public telephone network in that country (for example, voltage adaptation, waiting times during the handshake procedure signal level, etc.).

The following command characters are appended to the initialization string:

+GCI=xx

“xx” stands for the relevant country code (see chapter 8.3.1).

The entire initialization string could look something like this:

AT+GCI=FD;E1L1M1Q0V1&C1S0=1

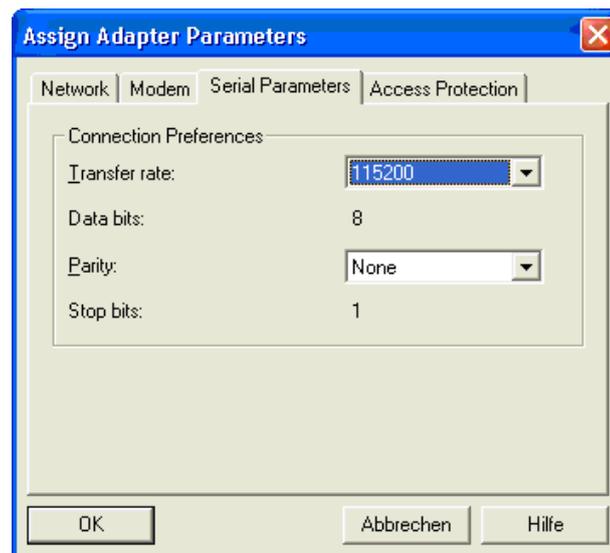
The semicolon is used as the command separator for the preceding command. The semicolon ensures clear separation of the AT commands so that the command sequence is interpreted unambiguously.

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

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

6.2.3.3 Serial parameters

The “*Serial parameters*” tab of the “*Parameterize adapter*” window contains all parameters for serial communication 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!

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 with analog modem can be configured to permit teleservice via the TeleService software only with the relevant authorization.

Administrator	Password	Callback number
ADMIN	*****	
User	Password	Callback number
Martin	*****	08154711
Konrad	*****	

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 with analog modem 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

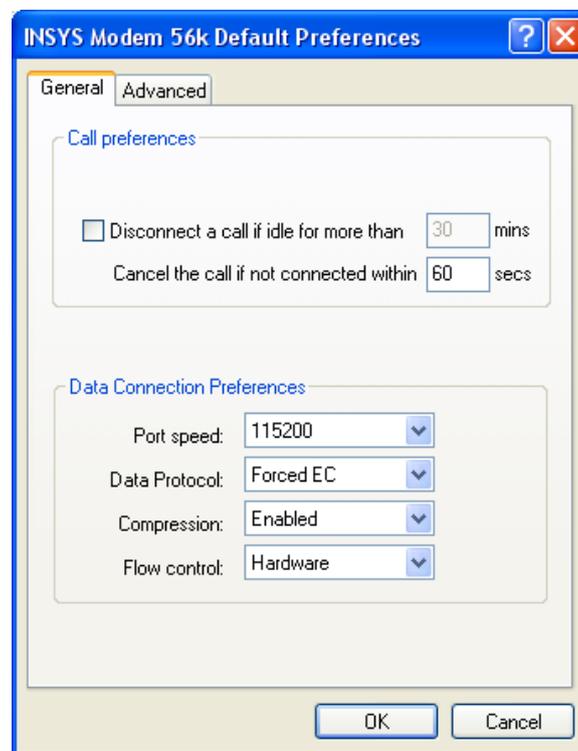
The points described here show some typical errors that can occur in day-to-day work with the SSW7-TS with analog modem.

If a problem is not described here and this manual does not provide any information on how to remedy it, the support of Systeme Helmholtz GmbH will gladly help you to solve the problem.

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 Helmholtz 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 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 Helmholtz GmbH.

8 Appendix

8.1 Technical Data

Device type	700-751-8MD21 (analog)
Degree of protection	IP 20
Dimensions	135 x 67 x 30 mm ³ (LxWxH)
Weight	approx. 240 g
Operating voltage	+24 V DC \pm 25%, external or via the programming device
Current consumption	Approx. 100 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	
- Interface (front)	9-way Sub D socket / RS485, isolated
- connecting cable	1,2 m flexible control line with copper shield netting
- Transmission rates	19.2 kbps to 187.5 kbps
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 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 Assignment of the MPI interface

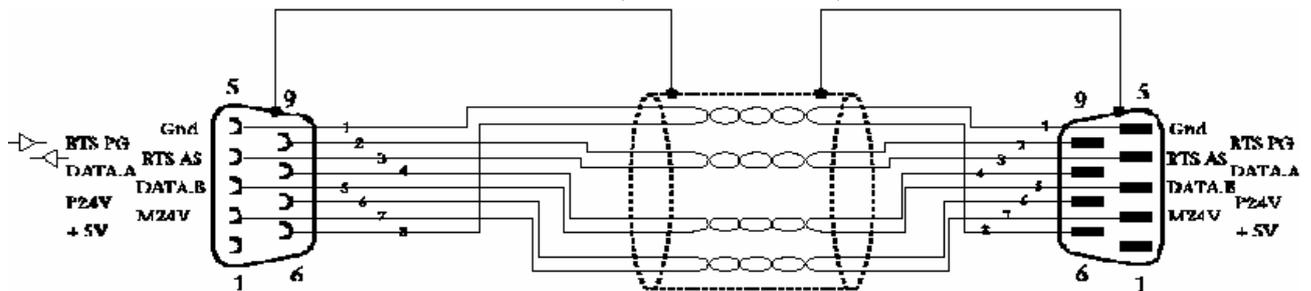
Connector	Signal	Meaning
1	-	unused
2	-	unused
3	RxD- / TxD-P	receive / transmit data-P
4	RTS_AS	CPU transmit ID
5	DGND	Ground for bus termination (looped through)
6	DVCC	5 V DC for bus termination (looped through)
7	-	unused
8	RxD / TxD-N	receive / transmit data-N
9	RTS_PG	Programming device transmit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

8.2.2 analog modem connection

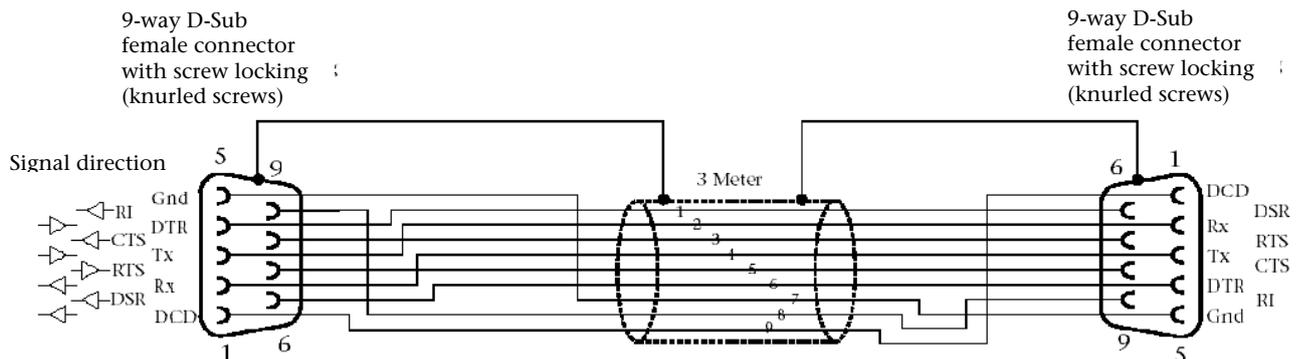
RJ11 pins	Designation	Meaning
1	-	unused
2	LA1	looped-through telephone connection
3	LA	telephone line
4	LB	telephone line
5	LB1	looped-through telephone connection
6	-	unused

8.2.3 Connecting cable

MPI extension cable (700-751-6VKx1):



PG/PC to SSW7-TS for direct operation or use of the modem (700-751-7VK81):



8.2.4 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



These country codes are not valid until hardware version 7-3!

The HW status is printed on the housing of the SSW7-TS + Modem.

If unclarities emerge contact our technical support!

	country code		country code
Europe TBR21	FD (Default)	Jordania	FE
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	Macedonia	FE
Belgium*	0F	Malaysia	6C
Birma (Myanmar)	FE	Mexico	73
Bolivia	FE	Monaco	FD
Bosnia-Herzegowina	FE	Montenegro	FE
Brasil	16	Morocco	FE
Brunei	FE	Netherlands*	7B
Bulgaria	1B	New Zealand	7E
Cambodscha	FE	Nicaragua	FE
Canada	20	Nigeria	81
Chile	25	Norway*	82
China	26	Oman	FE
Columbia	27	Pakistan	84
Corea (Republic)	61	Panama	85
Costa Rica	FE	Paraguay	87
Croatia	FA	Peru	FE
Cyprus	2D	Philippines	89
Czechia	2E	Poland	8A
Denmark*	31	Portugal*	8B
Domenican Republic	33	Romania	8E
Ecuador	FE	Russia	B8
Egypt	36	San Marino *	FD
El Salvador	FE	Saudi Arabia	98
Estonia	F9	Senegal	99
Finland*	3C	Serbia	FE
France*	3D	Singapore	9C
Germany*	42	Slovakia	FB
Great Britain*	B4	Slovenia	FC
Greece*	46	South Africa	9F
Guatemala	FE	Spain*	A0
Honduras	FE	Sri Lanka	A1
Hong Kong	50	Sweden*	A5
Hungary	51	Switzerland*	A6
Iceland*	52	Taiwan	FE
India	53	Thailand	A9
Indonesia	54	Tunisia	FE

continuation	Country code		Country code
Ireland*	57	Turkey	AE
Israel	58	Ukraine	FE
Italy*	59	United Arab Emirates	B3
ITU/Taiwan	FE	Uruguay	B7
Japan	00	USA	B5
Jemen	FE	Venezuela	BB
		Vietnam	FE

* The standard setting TBR21 (FD) applies to all public telephone networks of these countries. The explicit setting of the specified country code is only required for old telephone systems.

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. The quasi standard is defined in the Hayes command set. 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 with analog modem works with the basic command set.

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

Systeme Helmholtz 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 baud rate, number of data bits and stop bits and the parity.

Each AT command starts with the letters "AT" and ends with "CR" (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 "variable"

(alphanumeric information) 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
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 Helmholtz 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