SIEMENS

Remote Maintenance with WinCC flexible
Communication via a Wide Area Network (WAN)

Communication via an Analog Modem **Issue 12/04**

Foreword

This document describes a possible means of connecting a PC to the wide area network (WAN) via an analog modem.

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Warranty

The entries relate to selected suggested solutions for queries with complex tasks which have been dealt with in Customer Support. We also wish to point out that current technology not does permit us to exclude the possibility of errors in software programs taking all application conditions into account. The entries have been compiled to the best of our knowledge. We cannot agree to accept any liability over and beyond the standard warranty for class C software in accordance with our "General Terms and Conditions for the Transfer of Software Products for Automation and Drive Technology". The programs are available on the Internet under individual licenses. They are non-transferable.

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1.1 Overview

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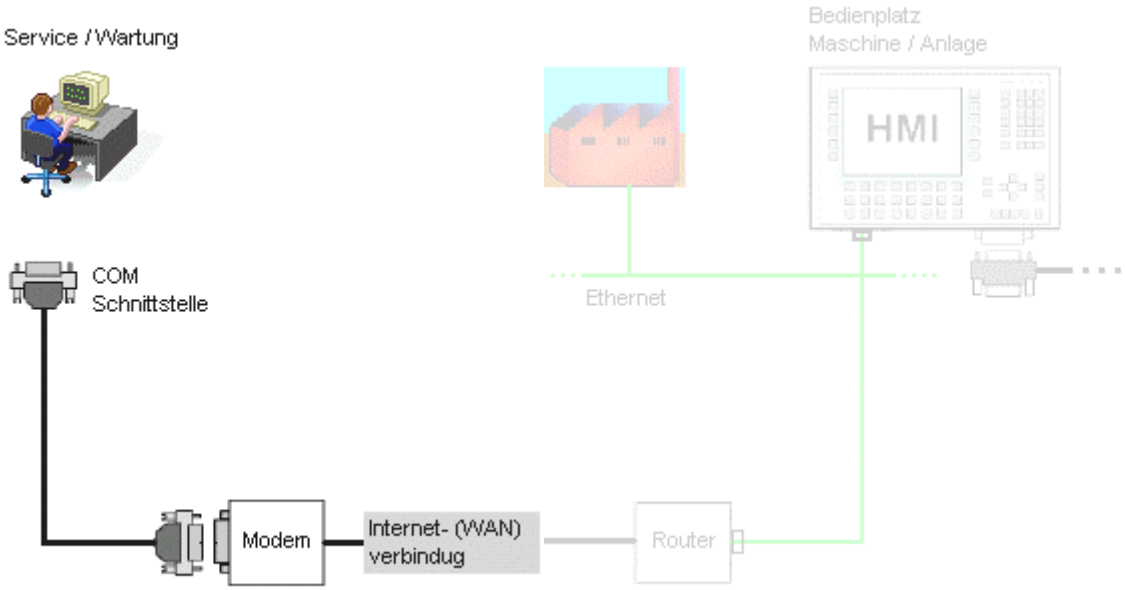
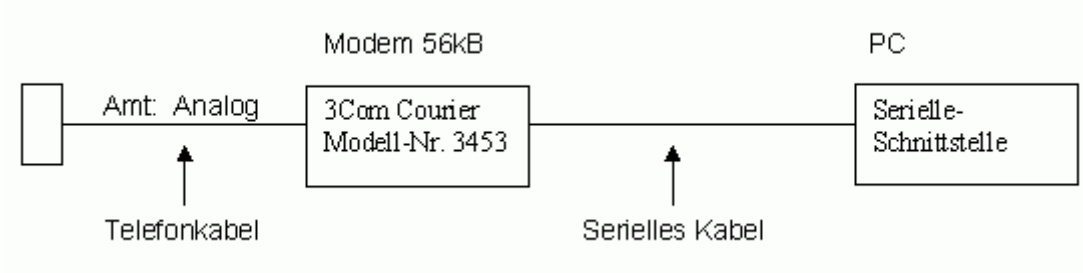


1.2 Structure of the link via a modem

Overview: PC ←→ Exchange

Fig. 1-3



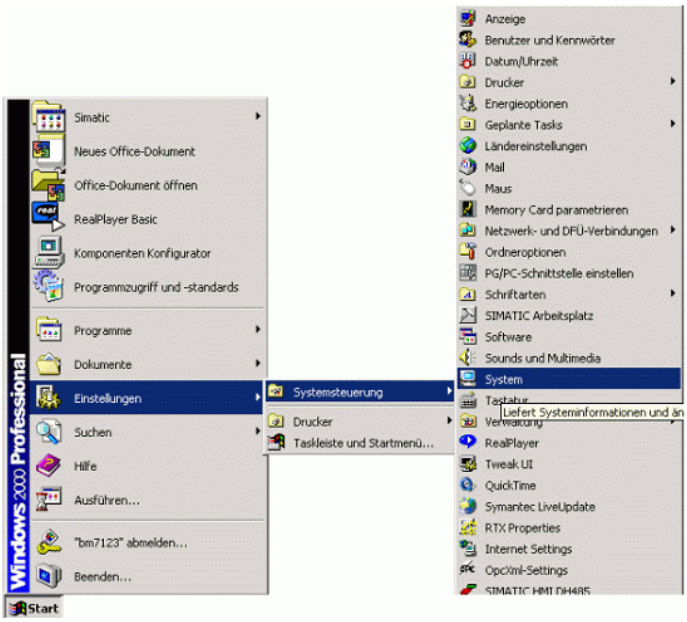
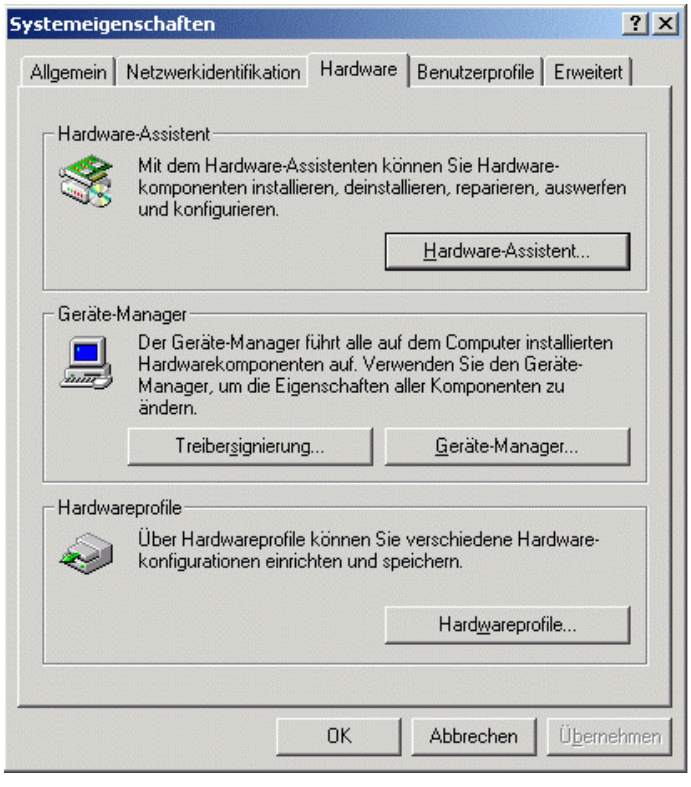
1.2.1 Hardware used

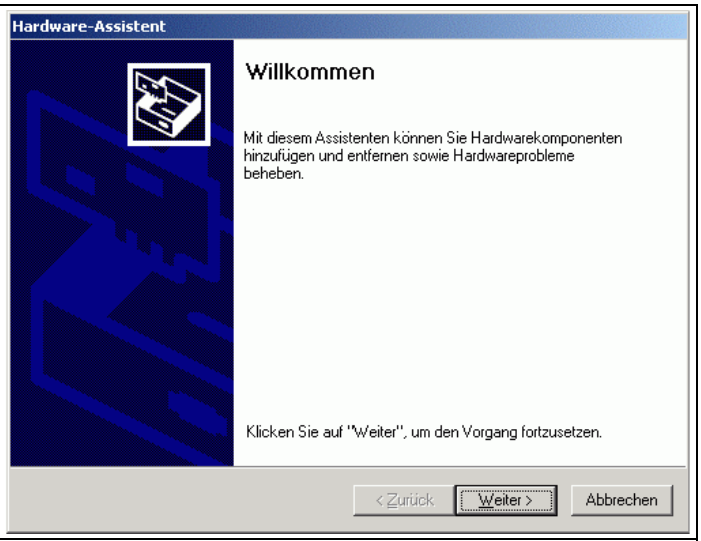
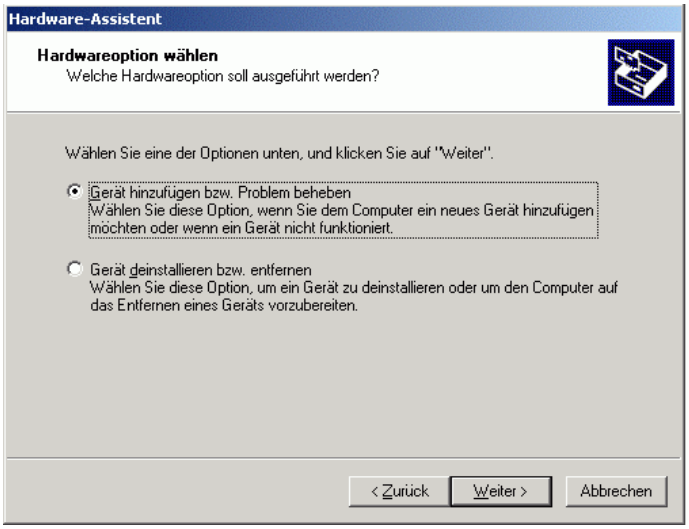
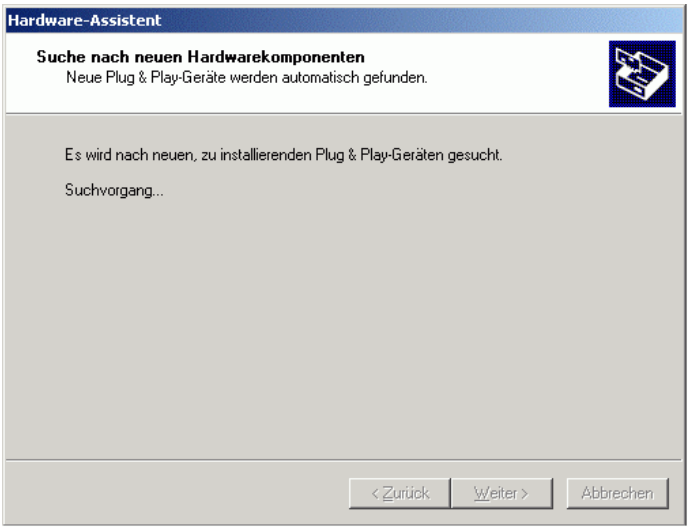
Table 1-1

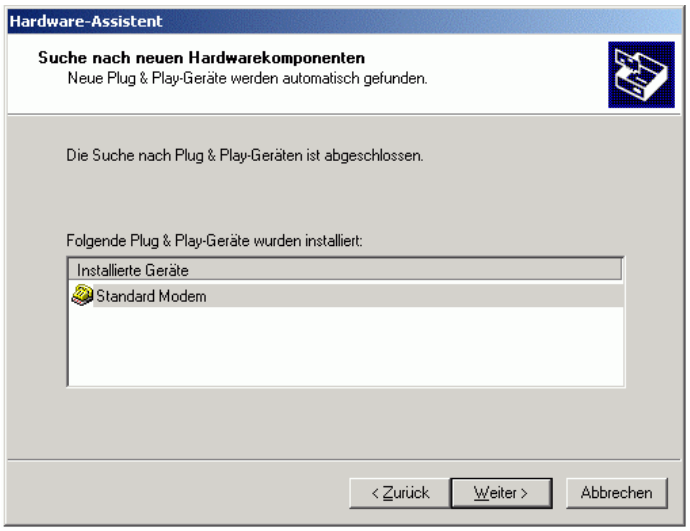
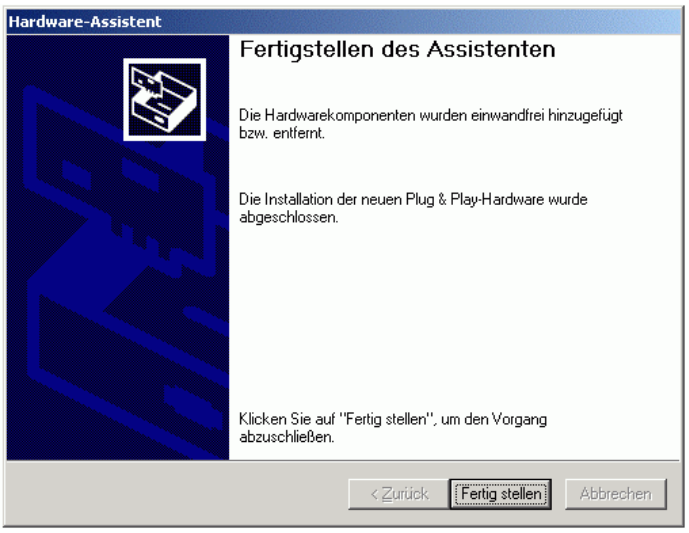
Hardware	Manufacturer	Other details
Telephone cable	Standard cable	
Standard modem cable	Generally included with the modem.	Serial cable.
56K modem	US Robotics Model: 3Com Courier Model no. 3453	

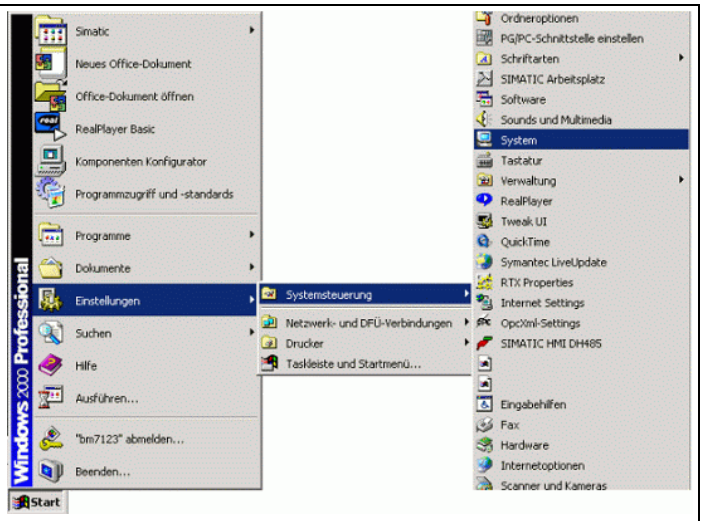
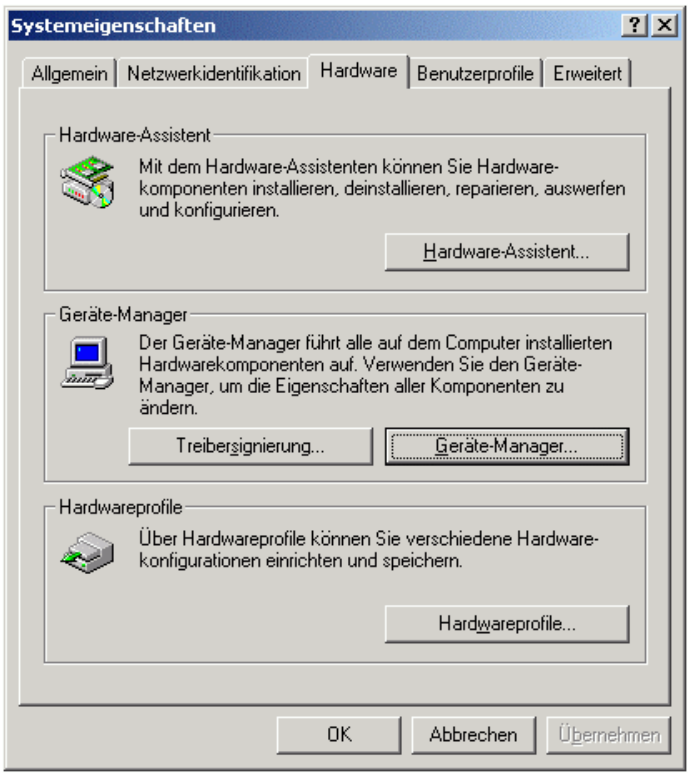
1.3 Configuration and installation of the modem

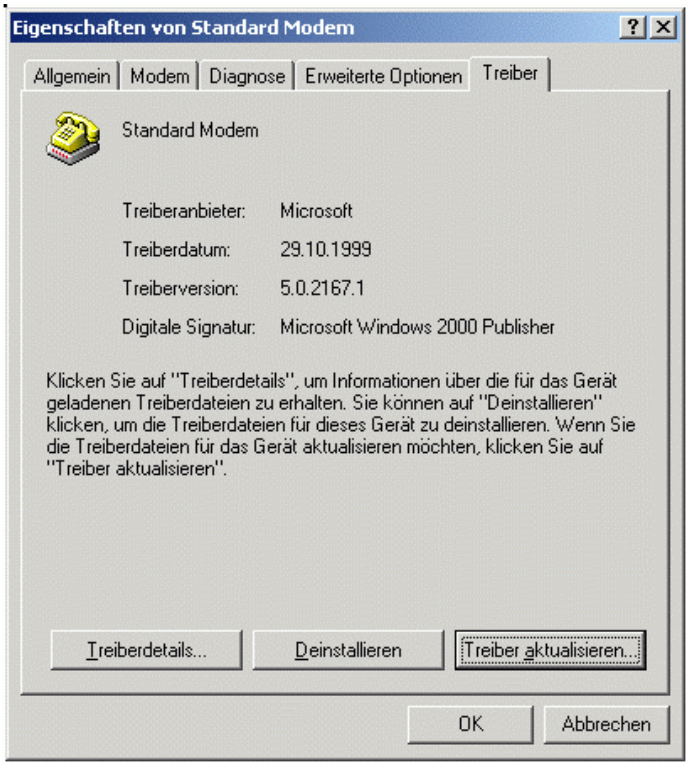
Table 1-2

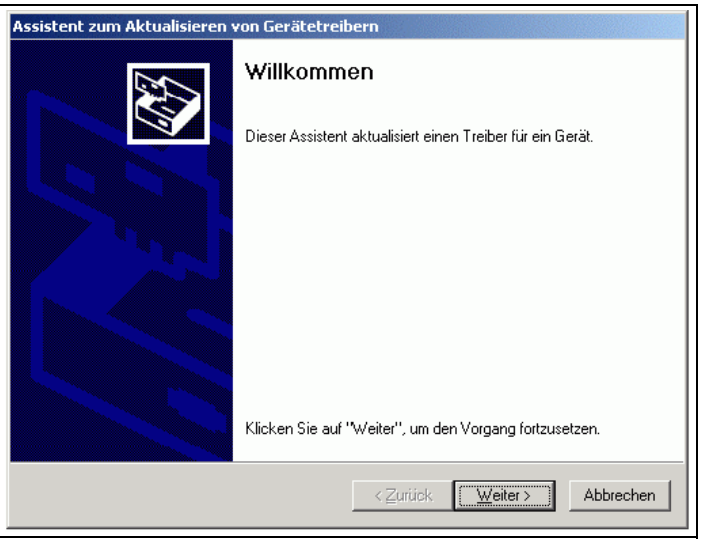
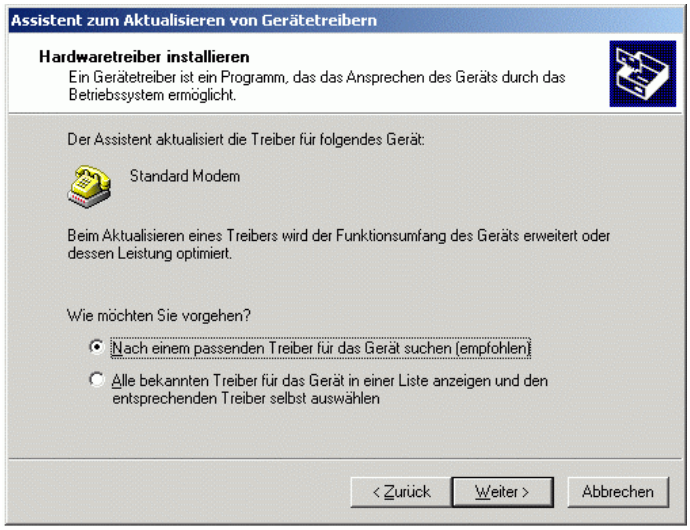
No.	Action	Note
1	Once you have performed the modem setup following the instructions in the modem manual, you can connect the serial cable to the COM1 or COM2 port on your PC. Hardware identification by your operating system does not take place automatically at the COM ports. You have to start the hardware identification manually.	
2	You will find the **Add Hardware Wizard** under the **Hardware** tab in **System**.	

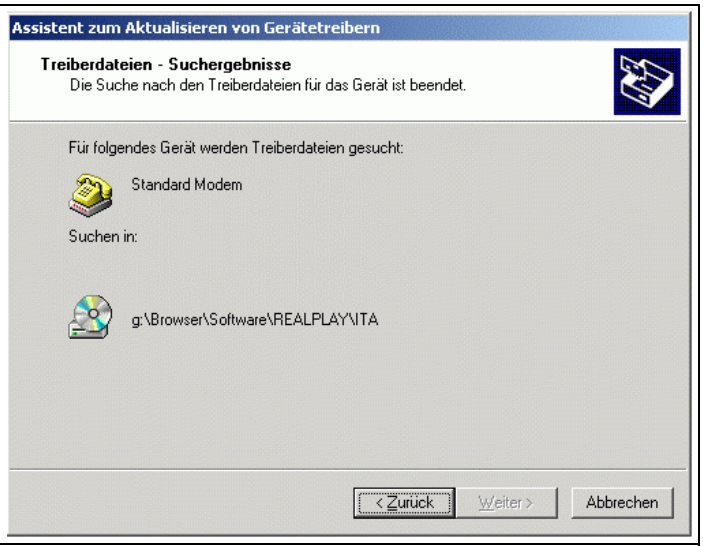
3	After starting the hardware wizard, you are guided through the individual dialogs, which are required for installing the modem.	
4	Select **Add device ...** and click **Next** to confirm.	
5	The operating system now starts browsing all the internal and external slots.	

6	Under normal circumstances, the operating system only identifies the modem as a standard device and only inserts it in the device manager as a standard modem. Since there is very little difference between modem drivers, this installation is ordinarily sufficient for working with the modem.	
7	Click **Next** to confirm the call**.**	
8	Click **Finish** to complete the installation.	

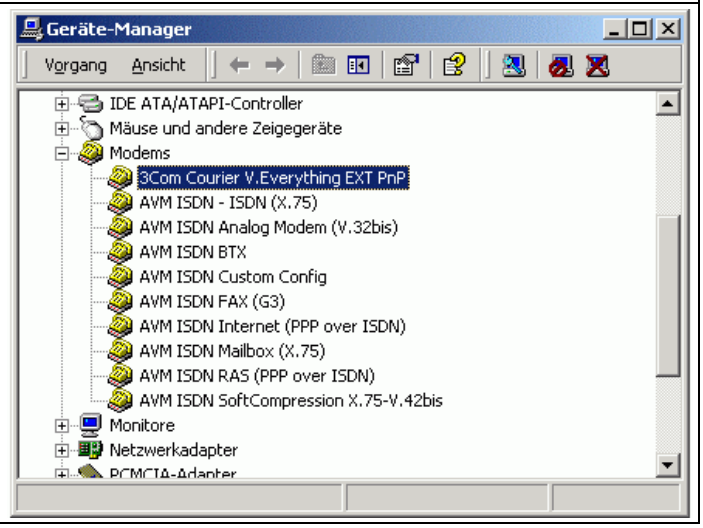
9	The standard driver for a modem has been installed. This standard driver should now be replaced by the modem manufacturer's original modem driver. In order to do this, open the device manager. Start > Settings > Control Panel > **System**.	
10	In the **Hardware** tab under **System** you will find the **Device Manager**.	

11	I You will find the standard modem in the device manager. Double-click to open the modem properties.	
12	Click **Update Driver…** under the **Driver** tab in **Properties**.	

13	After you click this, a wizard appears again which will guide you through the update process.	
14	Select the recommended setting which automatically searches for the right driver. **Search for a better driver than the one your device is using now. (Recommended)**	
15	If you have inserted the installation CD, simply enable the search for **CD ROM drives**	

16	The system searches for driver files.	
17	Driver files have been found. Once the search has been completed, the wizard finds one or more device drivers. To display them, check **Install one of the other drivers** and click **Next**.	
18	Wählen Sie nun den passenden Treiber für Ihr Modem aus und vervollständigen Sie die Installation mit **weiter**.	

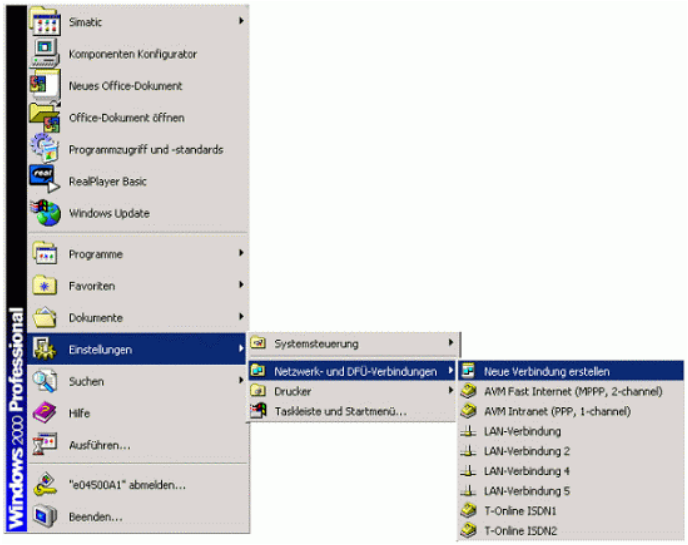
19	Creating the signature.	
20	Completing the installation.	

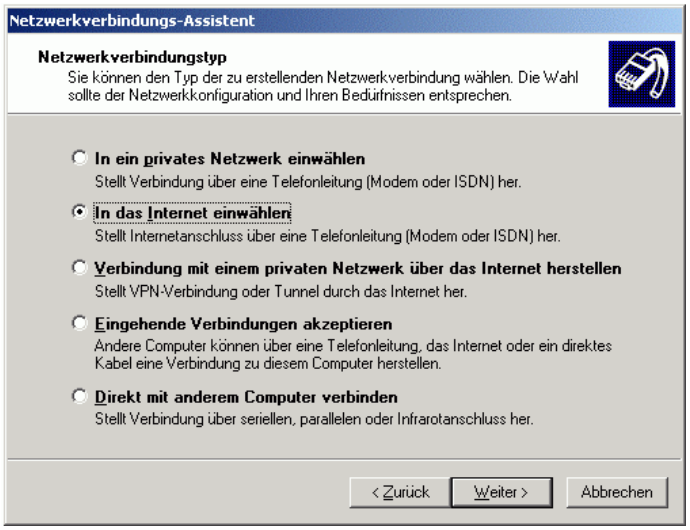
21	Once the installation is complete, you can find your modem with the correct name in the device manager.	
22	View of the device manager.	

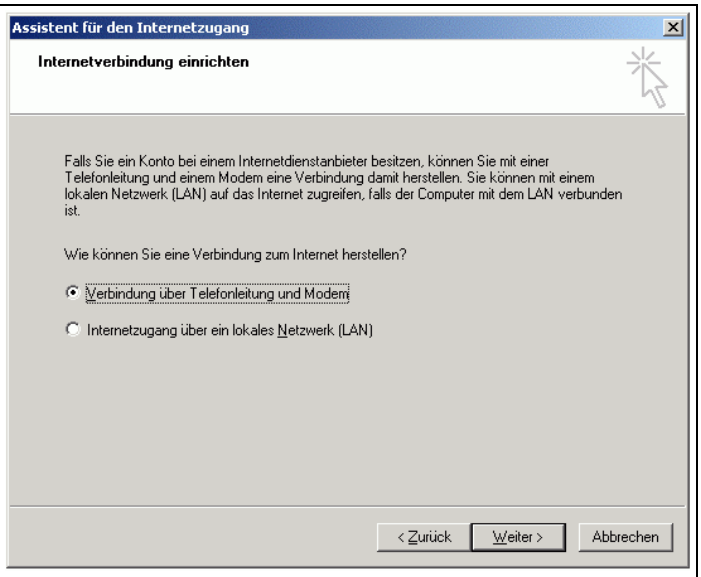
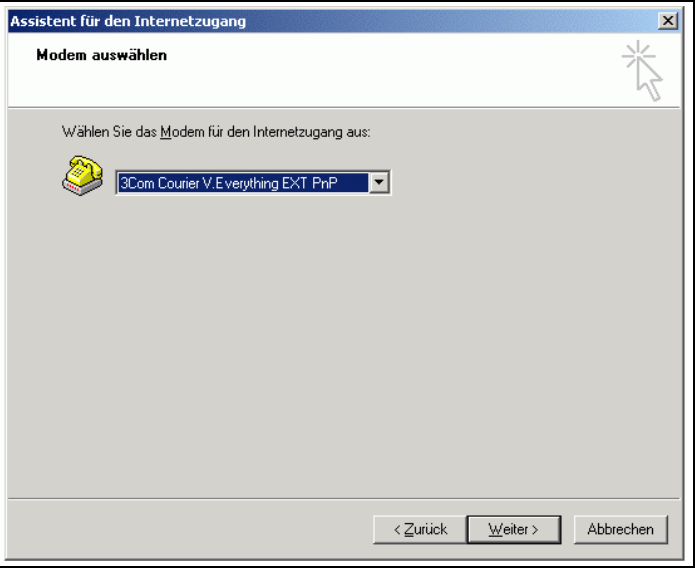
1.4 Configuring the Internet connection:

A dial-up connection is configured completely via software components, which are already installed in your operating system.

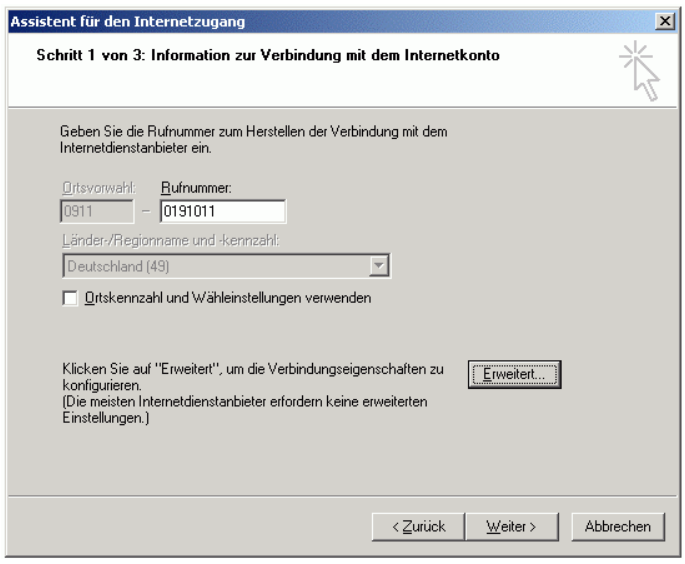
Table 1-3

No.	Action	Note
23	Create a new connection via Start > Settings > Network and dial-up connections > **Create a new connection**.	
24	When you create your dial-up connection, you are guided through the individual steps of the installation by a wizard.	

25	In the first dialog select the option **Connect to the Internet**.	
26	In the next dialog select the **Manual setup** option because the Microsoft wizard otherwise retrieves the values from the Internet, in which case you have no influence over the settings.	

27	In the settings that follow, select **Connection via a phone line and modem**. Selecting Internet access via a local network is not an option in the case of an ISDN connection. In the case of closed company Intranets, an automatic configuration script is generally loaded, containing the settings, by specifying a proxy server when this option is selected.	
28	Select your installed modem here, **3Com Courier V. Everything EXT PnP**. **Note:** If there are no entries in the list of devices, this indicates that your modem is not correctly installed. In this case, check that you have performed all the installation steps that the device manager has recommended.	

29	Now you come to the settings that are particularly important for your Internet service provider. In some cases, they may differ from these. However, this procedure is always described on the ISP's website. Telekom's details are described here. In the case of Telekom, you are given the following details: • Line identification • T-Online number • Co-user no. • Access password **Phone number:** The phone number for the T-Online server is 0191011. When accessing via an extension, the phone number must be preceded by the exchange line seizure number (generally a zero). In the case of modems, a dialing pause must be inserted (e.g. two commas): 0,,0191011. Do not enter anything in the area code box. No changes have been made in the advanced settings in our example. **Note:** Bear in mind that these settings may also differ.
30	Phone number entry:



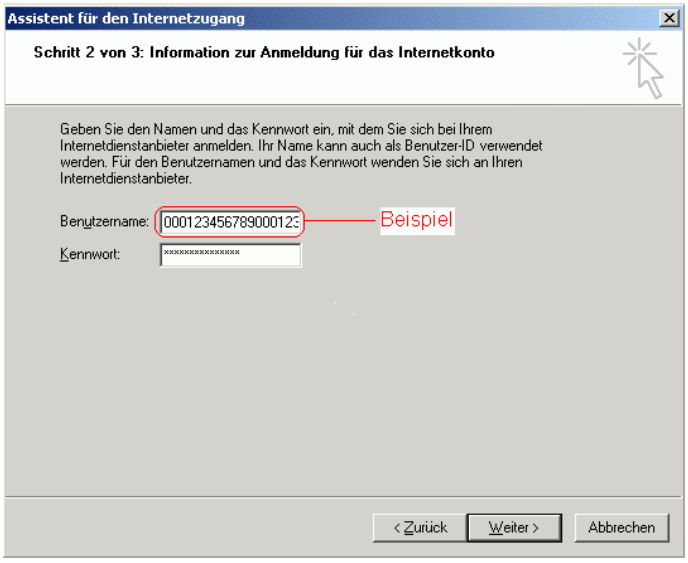
31	When accessing via an extension, the phone number must be preceded by the exchange line seizure number (generally a zero). In the case of modems, a dialing pause must be inserted (e.g. two commas): 0,,0191011. Do not enter anything in the area code box. No changes have been made in the advanced settings in our example. **Note:** Bear in mind that these settings may also differ.

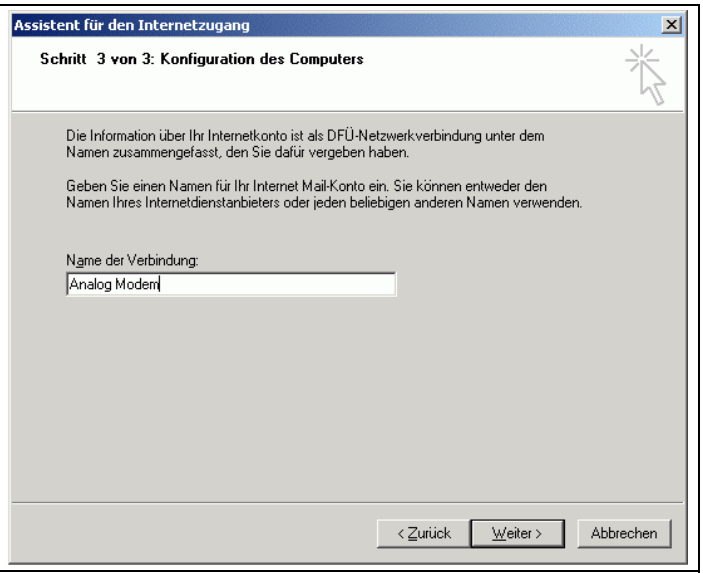
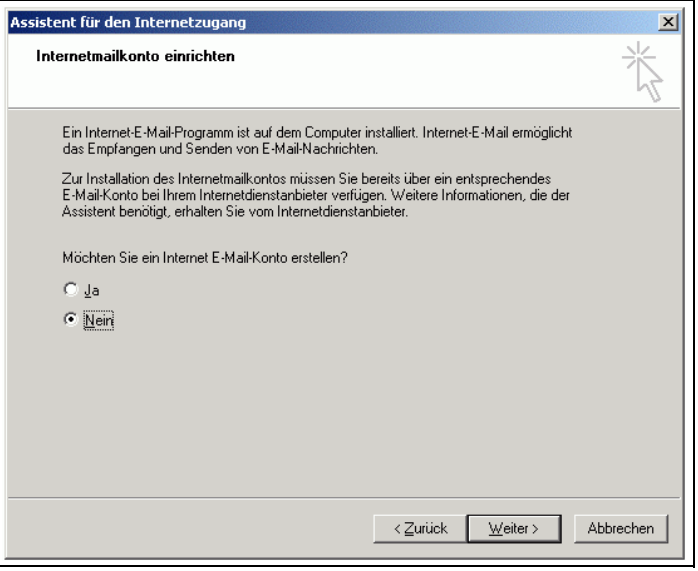
1.4.1 Entering access data

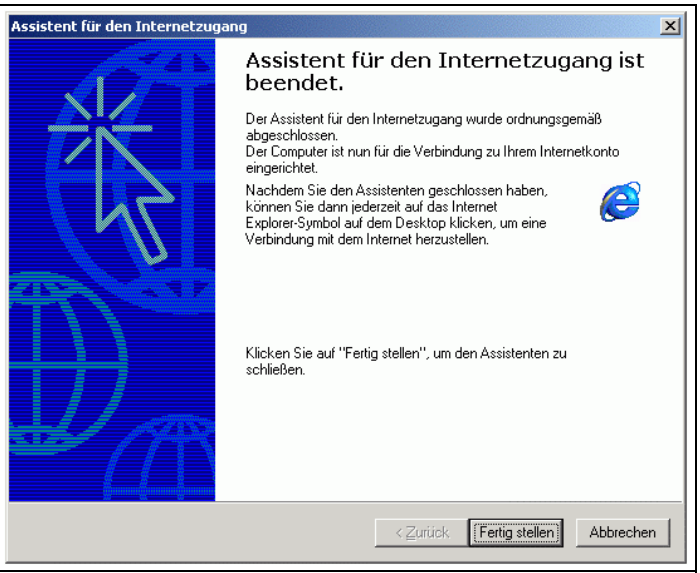
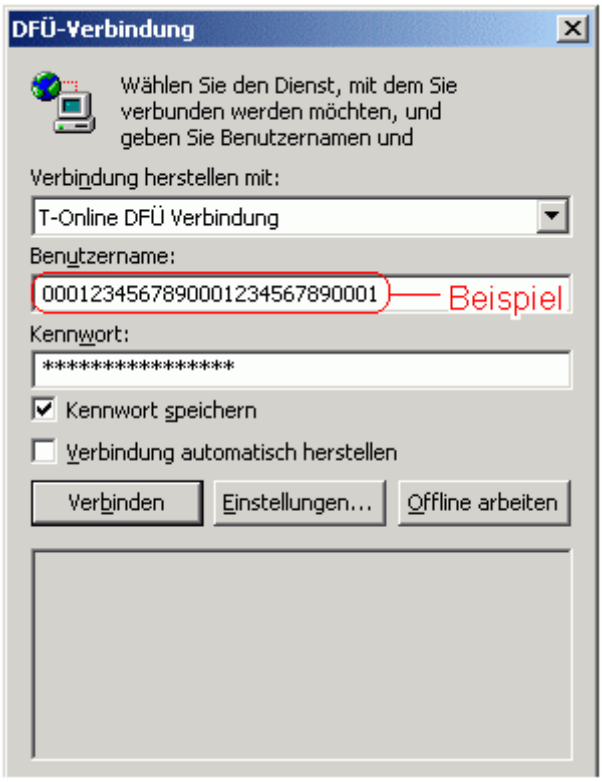
User name:
Enter the following numbers in this box in consecutive order, inserting no spaces: line identification (12-digit) + T-Online number (generally 12-digit)+ co-user number (always 0001 for the main user).

If your T-Online number is less than 12 digits long, you will need to insert the "#" character between the T-Online number and the co-user number. Your user name should then look as follows:
000123456789061123456 78#0001

Table 1-4

No.	Action	Note
32	**Password:** Enter your access password in this box (your personal T-Online password).	

33	Assign a name to your connection.	
34	No e-mail account has been created in this example. This is not necessary for communication. You can also create an e-mail account directly online on the individual ISP's websites, e.g. GMX, Freenet, T-Online, Web.de, etc.	

35	You have now successfully created a dial-up connection and can perform a function test immediately with the Internet Explorer.	
36	After double-clicking the icon, the following dialog appears	

1.4.2 Entering a password:

Windows allows you to keep your password permanently saved.
However, bear in mind that a password that is saved in the computer can be spied on by other users or special programs.
Therefore, for security reasons you should not save it, you should re-enter it every time you connect.

If you wish to browse the Internet or view your system with WinCC flexible, the computer must already be connected and online.

The dialog for the Internet connection is not automatically called as you are used to with the Internet Explorer.
Since this type of connection via modem is mainly only used for short-term monitoring, there is no need to place the connection in Autostart.

2 Glossar

Table 2-1

No.	Abbreviation	Description
1	ADSL	Stands for Asymmetric Digital Subscriber Line. ADSL supports the use of the infrastructure in the existing phone network for broadband utilities. Additional data for Internet utilities is transmitted on the copper two-core conductors of the analog and digital telephone lines (POTS or ISDN) in the case of ADSL. For this purpose, the spectrum of frequency used by ADSL is divided into several sections. This enables the telephony and data signals to be transported side-by-side between the subscriber's line and the local exchange. There is a splitter on either side to separate and combine the signals. In ADSL, the maximum transmission rate that can be achieved is asymmetric in both directions, upstream and downstream. ADSL supports upstream transmission of up to 1.5 MBit/s and downstream of up to 8 MBit/s. However, as the transmission rate which can be achieved drops significantly the further apart the local exchange and subscriber are, these values cannot be achieved in practice for the majority of lines. The asymmetric DSL variants, in which there is a speed of up to 256 kBit/s available for upstream and up to 3 MBit/s available for downstream, are particularly suitable for private users and small businesses who do not wish to make large volumes of frequently requested Internet content available on their PC for other users.
2	BBAE	Stands for Broadband Access Equipment. The BBAE represents a subscriber's terminal connection to a line that is used for broadband. It separates the provider network from the subscriber line cable and conditions the signals for transmission via the connection element. In the case of ADSL connections, the BBAE generally also features the splitter that separates the broadband and narrow band signals from one another and combines them again.
3	CAPI	Stands for Common Application Programming Interface. A standardized software interface for communication between software and hardware. CAPI is the name of a program which is supplied with an ISDN card and which is used to activate it. Other programs that wish to transmit data via the card only have to pass this data on to the CAPI driver.
4	DSL	Stands for Digital Subscriber Line. DSL technology enables data transmission to be accelerated substantially via conventional phone lines, making it especially suitable for high-speed Internet use. ISDN services or analog telephony continue to run undisrupted on the same line. The high transmission rates are achieved by enlarging the frequency range

		used. For example, ADSL supports transmission rates of up to 8 MBit/s. Lines with capacities of 768 kBit/s are very common. The name DSL represents a whole family of technologies that are combined under the collective term xDSL. In Germany, lines for private customers are mainly offered with asymmetric DSL (ADSL) and single pair DSL (SDSL) technologies. ADSL, which is much more common, transmits the Internet data in the existing telephone network above telephony frequencies between 138 and 1,104 kHz. For example, ADSL is also the basis for the T-DSL product offered by Deutsche Telekom AG.
5	DynDNS	The term DynDNS stands for dynamic DNS and is meant to indicate that you as the customer can enter the IP address belonging to a name in the DNS server yourself. The partner's IP address is contacted, and the connection is established. However, since fixed IP addresses are expensive, most users connect to service providers and are assigned a dynamic IP address. This changes every time you connect (hence the term dynamic), making it impossible to locate a partner with a dynamic IP address. DynDNS servers on the Internet offer assistance in this respect. They enable partners to be located despite their dynamic IP address. If the partner is known, i.e. if its IP address is known, there is nothing to prevent communication. In the interests of security, communication with the partner can be encrypted with the aid of IPSec, for example, in a second step.
6	IPsec (Internet Protocol Security)	IPSec is a protocol that can be used to establish a secure IP connection. A distinction is made between two modes: 1. Tunnel mode The entire IP package is encrypted in this mode. Tunnel mode is primarily used to transmit data between two company locations or between a private PC and a company network (to enable staff to work from home, for example) via the Internet secure from monitoring (VPN). 2. Transport mode Here only the data part is encrypted. This is used to transmit critical data, e.g. in passwords.
7	ISDN	Stands for Integrated Services Digital Network. The striking feature of ISDN phone lines is that there are at least two basic access channels (B-channels) available for use simultaneously. This means that a subscriber is contactable by phone whenever it is online or sending a fax. It also supports two parallel phone calls from one line. In addition, higher transmission rates are possible than with an analog line. Each B-channel can transmit 64 kBit/s, i.e. the two together support 128 kBit/s. ISDN digital transmission and switching technology supports diverse forms of communication on the phone line such as telephony, faxing

		or Internet connections. ISDN continues to use the cabling from the previous analog telephone network in order to connect the customers to the exchange. However, ISDN technology uses this with much greater efficiency and flexibility. Connections can be established more quickly, speech quality is much improved, and not only is data transmission is quicker, it is also extremely reliable thanks to error correction.
8	NTBA	Stands for Network Termination Basic Rate Access. The NTBA forms the network termination to the public ISDN network. It converts the signal from the network provider from its two-wire line (UK0 bus) to a four-wire line (S0 bus). The exchange supplies current to the NTBA via the ISDN supply voltage – the NTBA, in turn, supplies the S0 bus. In normal operating mode, power is also fed to the NTBA via a power supply unit. In this mode it can supply up to four terminals which are connected to the S0 bus and which do not possess a power supply of their own. If the NTBA is operated without an additional power supply unit or if the power supply fails, the NTBA uses the network provider's ISDN supply voltage in order to operate on standby.
9	Port Forwarding	Port forwarding is a technology which supports the mapping of ports to IP addresses in NAT networks (Network Address Translation), i.e. if router ports have to be forwarded permanently to a specific IP address. This mapping technology is a function offered by many of the current DSL routers. For this purpose, the advanced settings for the router generally include a table in which a port that has to be mapped is permanently allocated to a specific local IP address.
10	Routers	Routers are first and foremost hardware devices or software programs that can be used to connect one or more computers or whole networks to other networks. The router acts as the control center in order to forward connection requests to the required network or the service. In addition to their basic functionality, hardware routers and, in particular, the current ISDN or DSL routers possess DHCP services or servers which can be used to manage address allocation and control centrally. Depending on the settings, IP addresses can be supplied in this way to whole networks, which is beneficial to inexperienced users, in particular.
11	Splitters	Splitters In ADSL lines, the splitter divides the incoming signal from the provider network into the broadband ADSL signal and the narrow band ISDN signal or analog telephone signal. For transmission in the opposite direction, the two parts of the signal are combined to facilitate simultaneous transmission via the subscriber line. The splitter is frequently contained directly in the broadband access equipment (BBAE).

12	TCP	TCP, which stands for Transmission Control Protocol, is an important component of the TCP/IP protocol. It is based on connections and requests receipt of confirmation for every package sent.
13	TCP/IP	TCP/IP stands for Transmission Control Protocol/Internet Protocol. This generally refers to the whole family of protocols. It was developed to facilitate connection between computers in different networks. Nowadays TCP/IP is used in many LANs (Local Area Networks) and is the basis for the world wide web.
14	T-DSL	Deutsche Telekom has been offering DSL lines under the name T-DSL since the late 90s. T-DSL is the most commonly used variant of DSL, which also makes it the most common type of broadband Internet access in Germany. Deutsche Telekom is not the only organization which offers T-DSL access to the Internet via its subsidiary T-Online, this is also available from a relatively large number of resellers. However, they all use Deutsche Telekom infrastructure to establish the physical link to the customer. The remaining providers primarily use their own versions of ADSL or else SDSL, although this works symmetrically and supports data rates of up to 2.3 MBit/s.
15	VPN (Virtual Private Network)	Company employees can use a Virtual Private Network (VPN) to connect to the company network (Intranet) from home or from locations outside the company via the Internet. A number of company sites can also be linked this way. The advantage of this is that there is no need for modem links or leased channels, simply a connection to the Internet. The employee connects to the Internet first of all. An encrypted channel (tunnel) is then established between the VPN client and VPN server. Following authentication via user name and password or public key/certificate, an encrypted IPSec tunnel is set up via which data can be transmitted without risk of being monitored.
16	WAN	The term WAN (Wide Area Network) refers to networks which transmit data over a larger distance than a LAN (Local Area Network).

3 Warranty and Support

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