

ISDN fOr The PC, telephone and fax

English Edition

Manual

FRITZ!X PC



High-Performance ISDN by ...



FRITZ!X PC

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Symbols used in this manual:



Attention



Lift receiver



Dial



Note



Replace Receiver



Party

1 INTRODUCTION

FRITZ!X PC is a combined private exchange branch (PBX) and ISDN controller which allows you to connect your computer and four analog terminals to a Euro-ISDN line. Telephones, cordless telephones, answering machines, fax machines, modems or any other type of analogue terminal can connect to **FRITZ!X PC** to take advantage of the advanced ISDN technology. Both touch-tone terminals and pulse-dial terminals can be connected.

The ISDN Controller integrated in **FRITZ!X PC** and the **FRITZ!32** communications software allow you to use your computer to run data applications like ISDN data transfer, telefax (Group 3), mailbox terminal, answering machine functions and internet services.

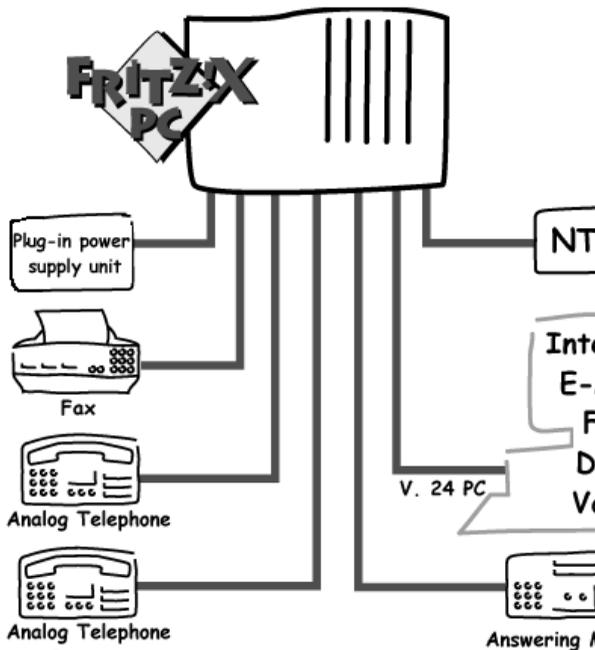


Fig. 1 Connection of computer and analog terminal devices to ISDN using FRITZ!X PC

The configuration of the PBX can be defined using either the **FRITZ!X PC Configuration Program** or via touch-tone telephone.



This manual describes the configuration of the PBX using the FRITZ!X PC configuration software. For information about configuring FRITZ!X PC with your telephone, please see the PDF file CONFIG-TELEPHON.PDF in the \DOCS directory on the FRITZ!X PC CD-ROM.

Installation, Step by Step

This manual first describes installation, then configuration, and finally, the operation of the PBX.

The four analog extensions (e.g. telephone and fax machine) are ready for operation upon completion of the PBX installation.

To take advantage of all **FRITZ!X PC** functions and features, including ISDN data transmission and the Internet, you must install the **FRITZ!32** software package as well.

Take note of the following order:

1. Unpack your package. The section „Package Contents“ illustrates and explains the function of all sockets, plugs and cables.
2. Install the hardware.
3. Install the CAPI Driver.
4. Install the **FRITZ!X PC Configuration Program**.
5. Configure **FRITZ!X PC**
6. Install the **FRITZ!32** communications software.
7. Install an AVM system driver.

Instructions about how to perform these steps are provided in the following chapters.

Package Contents

Once you have opened the box and unpacked its contents, you will have the following items before you:

- 1 ISDN **FRITZ!X PC** PBX
- 1 **FRITZ!X PC** CD-ROM with installation software
- 1 plug-in power supply unit with cable
- 1 ISDN cable
- 1 V.24 cable for connecting **FRITZ!X PC** to the computer
- 3 universal adapters, type RJ12/TAE
- 1 type RJ12/TAE-NFN adapter
- 1 **FRITZ!X PC** manual
- 1 **FRITZ!32** manual
- 1 drilling template



The FRITZ!X PC sockets, plugs, and cables are illustrated and discussed in the following sections.

Sockets

The following illustration is a rear view of **FRITZ!X PC**. Here you see the socket connector with sockets for the supply connection, the analog extensions, the computer and for the ISDN connection.

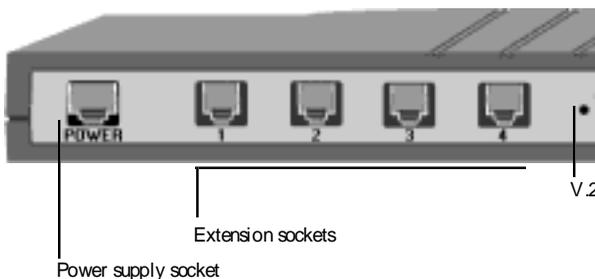


Fig. 2 FRITZ!X PC Socket Connector

Plugs

The following plugs are used in **FRITZ!X PC**:

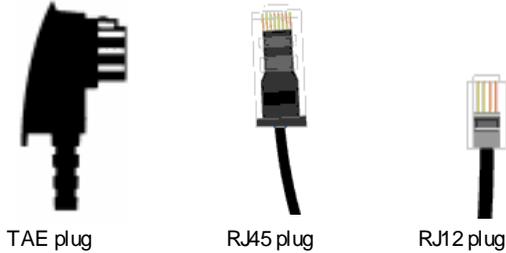


Fig. 3 Plug types

The majority of analog devices sold in Germany has a cable with a TAE plug.

The **FRITZ!X PC** ISDN cable is equipped with an RJ45 plug on both ends. The power cable also has an RJ45 plug.

Analog devices are connected to **FRITZ!X PC** with an RJ12 plug. If your analog device is equipped with a TAE plug, this device can be connected to **FRITZ!X PC** using one of the adapters delivered with the product.

Cables

FRITZ!X PC is connected to ISDN by means of the ISDN cable to the ISDN base terminal of the ISDN services provider.



Fig. 4 FRITZ!X PC ISDN Cable

The computer is connected to **FRITZ!X PC** with the computer connection cable.



Fig. 5 FRITZ!X PC Computer Connection Cable

FRITZ!X PC is connected to the power network by means of the plug-in power supply unit.

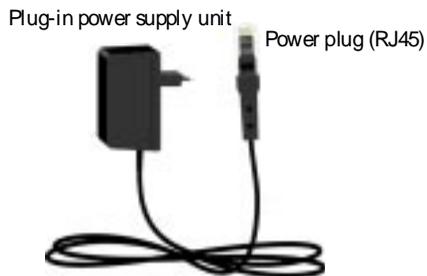


Fig. 6 FRITZ!X PC Plug-in Power Supply Unit

Adapters

The type RJ12/TAE-NFN adapter allows several terminal devices with TAE plugs to be connected to one **FRITZ!X PC** RJ12 socket.

The type RJ12/TAE universal adapter permits the connection of terminal devices with TAE plugs to **FRITZ!X PC** RJ12 sockets. These adapters also allow you to connect devices with non-standard RJ12 connector pin assignments (a and b cores to pins 2 and 5 rather than 3 and 4).

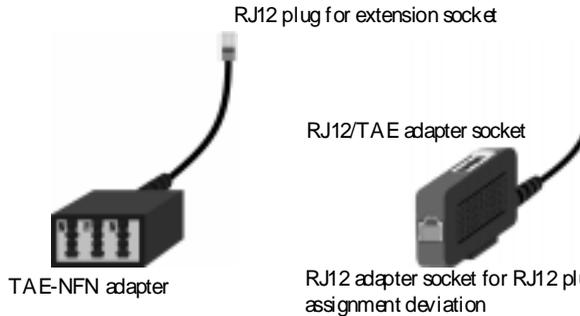


Fig. 7 Adapters



Please note that the universal adapters can be used only to connect terminal devices. If both sockets of the universal adapter are occupied, FRITZ!X PC will address the terminal device with the TAE plug. The RJ12 socket then is deactivated automatically.

FRITZ!X PC Requirements

For smooth installation and operation of **FRITZ!X PC**, a number of prerequisites must be met:

- **FRITZ!X PC** is configured for use with a multiple-device ISDN connection according to the Euro-ISDN protocol DSS1. Operation with other connections may cause the unit to malfunction.
- Only devices conforming to EN 60950 or a corresponding standard may be connected to **FRITZ!X PC**.

To install the **FRITZ!32** communications software and access the Internet, your computer must fulfil the following requirements:

- IBM or 100% IBM-compatible computer with hard disk and CD-ROM drive
- Pentium with frequency of at least 90 MHz and at least 16 MB working memory
- Microsoft Windows 95

- A free serial interface (COM-Port) with a UART 16550 interface chip and a throughput rate of at least 115 KBit/s. Most computers build in or after 1996 are equipped with such an interface chip. Contact your dealer or PC manufacturer for more information.

Technical Data and Features

- ISDN PBX for connection to the Euro-ISDN (DSS1)
- Dimensions approx. 15 x 22 x 3 cm
- 4 extensions over RJ12 sockets
- 1 V.24 connection for the PC over a D-SUB 9 socket
- 1 Euro-ISDN connection via RJ45 socket
- 5 LEDs which signal the condition of the exchange
- 3 telephone numbers (MSNs) programmable for each extension
- Hold, consultation hold, routing
- Pickup calls to other extensions
- Switching conversations
- Automatic outside dialing option
- Call waiting enable/disable
- Three-way conference calls
- Callback when busy
- Call Forwarding
- Call diversion via the second B channel
- Suppress caller ID
- Caller ID presentation for incoming calls
- Park calls on a bus
- Register Call Charges
- Quick-Dial Number Assignment

- Operating voltage: 230 Volt / 50 Hertz
- Power input when idling: 5.6 Watt
- Maximum power input during operation: 9.5 Watt
- 33,600 bit/s data throughput rate for fax and modem
- CE certification 0170 X

LEDs in FRITZ!X PC

The operating condition of **FRITZ!X PC** is indicated by five (LEDs). The LEDs have the following meaning:

LED	Color	Meaning
Power	green	signals that FRITZ!X PC is ready for operation.
1 - 4	orange	indicates the condition of the extensions: LED off: terminal device inactive at the extension, or no device is connected. LED on: terminal device active at the extension. LED blinking: extension is ringing.

Acoustic Signals

The following illustration shows the duration and intervals of the individual acoustic tones and call frequencies.

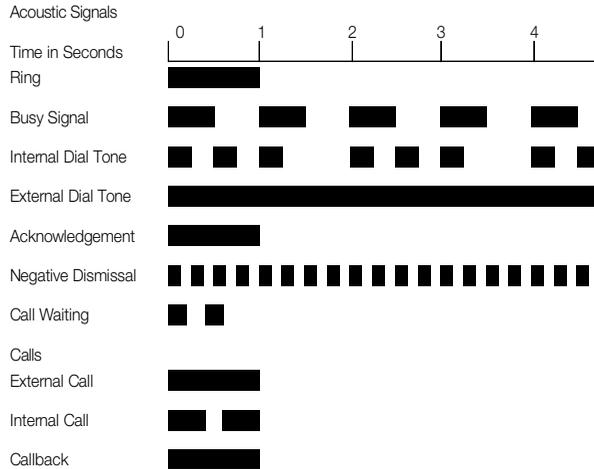


Table 1 Acoustic tones and call frequencies in FRITZ!X PC

2 FRITZ!X PC PBX INSTALLATION

This chapter describes the hardware installation: how to connect **FRITZ!X PC** to ISDN, the computer and the power network, and how to connect analog devices to **FRITZ!X PC**.

For a schematic diagram of the connection options, along with illustrations of the cables, plugs and sockets, see Chapter 1 „Introduction“.

Installing FRITZ!X PC

FRITZ!X PC should be set up or hung up in an appropriate location. This location should be dry, and free from both dust and direct sunlight.

The extension sockets on the rear panel of **FRITZ!X PC** should be accessible at all times. Make sure that the connecting lines are not kinked, stretched or subjected to any weight.

Connecting the Cables

Proceed as follows to connect the cables:

1. Position **FRITZ!X PC** so that the socket connector is facing you.
2. To connect **FRITZ!X PC** to ISDN, pick up the ISDN cable, and insert one end into the ISDN connection socket at the far right of the **FRITZ!X PC** socket connector. Insert the other end in the socket of your ISDN connection.
3. Pick up the computer connection cable and insert the appropriate end into the V.24 socket (labeled „SERIAL“) on the **FRITZ!X PC** socket connector. Insert the other end into a free serial connection (COM Port) on your computer.
4. To connect **FRITZ!X PC** to the power supply, pick up the plug-in power supply unit and insert the RJ45 plug into the socket at the far left of the **FRITZ!X PC** socket connector. Insert the other end into the power supply socket.

Note the **FRITZ!X PC** LEDs: the green „POWER“ LED signalizes that **FRITZ!X PC** is ready for operation.



FRITZ!X PC is now turned on and ready for operation. The FRITZ!X PC PBX does not have a power switch.

Once installation has been completed, **FRITZ!X PC** will operate by default with its factory settings. For information on how to adapt **FRITZ!X PC** to your own demands and needs, please see Chapter 4 „FRITZ!X PC Configuration“.



FRITZ!X PC's reaction to a power outage or to being disconnected from the power supply is described in Chapter 7 „Tips & Tricks“.

Connection of Analog Terminal Devices

FRITZ!X PC is certified according to the regulations of the German Federal Office for Post and Telecommunications and thus allows the connection of any analog telecommunications devices which conform to the standards of approval or have been granted general certification.

To connect analog devices (telephone, telefax machine, answering machine or modem) to **FRITZ!X PC**, insert the TAE plug of your telephone into the appropriate socket of an adapter (this is not necessary if the telephone is equipped with a RJ12 socket).

The adapter's RJ12 plug then must be inserted into one of the four extension sockets on **FRITZ!X PC**.

3 SOFTWARE INSTALLATION

The **FRITZ!32** communications software (for file transfer, fax and answering machine) cannot be used until the **FRITZ!X PC** driver software with the COMMON-ISDN-API (CAPI) 2.0 ISDN interface is installed. Once this has been completed you can install **FRITZ!32**.

All components can be installed with the installation help on the **FRITZ!X PC** CD-ROM. These help files will guide you through the installation and give you various installation tips.

The installation help starts automatically when you insert the CD-ROM in your CD drive. You can start the installation help manually as well, by clicking on the „INTRO.HLP“ file in Windows Explorer.

Installation of the CAPI Driver



Please note that you can install only one CAPI Driver on your computer. If you have had other ISDN adapters installed on your computer in the past, these must be deinstalled before you can install the FRITZ!X PC CAPI Driver.

To install the CAPI Driver software on your computer, proceed as follows:

1. Insert the **FRITZ!X PC** CD-ROM in your CD drive.
2. Click on the CAPI icon in the second window of the CD-ROM introduction and then on the **Start Installation** button on the next page. An overview of the available hardware components will be displayed. Mark the **Other Components** option and click **Next**. Wait a moment for the next window to appear.
3. Click on the **Diskette...** button in this window and then enter the path for the installation files, e.g. D:\CARDWARE\WINDOWS.95, if D: is your CD drive.
4. In the next window **FRITZ!X PC** is recognized as a hardware component and is displayed. Click **Next**.

5. A warning appears, informing you that Windows now can install the hardware. Confirm with **Next**.
6. The Add New Hardware Wizard now will copy the installation files from the CD-ROM into a temporary directory. Once this procedure has been completed, the log-in window of the set-up program will appear. Click **Next**. You can end installation at any time with the **Cancel** button.
7. Select the „Installation“ option in the following window and click **Next**.
8. In the next window enter the directory to which the CAPI driver software is to be installed. The directory C:\IDRIVER is suggested by default, but you are free to enter any other preferred directory. Once your entries are complete, click the **Continue** button.
9. In the next window, enter the serial connection (COM port) to which the V.24 cable is attached. Confirm with **Continue**.

The installation program now copies all files to the specified directory. The driver will be entered in the registry so that the CAPI Driver software is activated automatically whenever Windows 95 is started.
10. After installation has been completed successfully, the settings are displayed in an information window. Confirm with **OK**.
11. A window will tell you to re-start Windows 95. Confirm this command by clicking **Yes**.

Once Windows 95 has been re-started, the Program Files line in the Start menu shows a new directory with the title „AVM“.



The Readme file in this directory contains current information about the CAPI driver software. Use the „FRITZ!X PC Setup“ program to make any subsequent changes to the COM port.

Removing the CAPI Driver

Should you wish to remove the CAPI Driver software from your computer at some later date, open the „Software“ directory in the Windows Control Panel. Mark the „FRITZ!X PC V.24-ISDN“ entry and click the **Add/Remove** button to start the de-installation program. Confirm the security warning with **Continue**. Upon completion you will be commanded to re-start the computer. Re-start your computer to implement the system changes.

Connecting FRITZ!X PC and other Devices/Applications to the Same COM Interface

In the following cases, the COM interface assigned whenever Windows 95 starts will be occupied by **FRITZ!X PC** alone:

- when an application has established an ISDN connection;
- when an application is waiting for incoming calls;
- when the **FRITZ!X PC** Configuration program was run.

If none of the above apply, other programs can share the COM interface on which the CAPI Driver was installed.

FRITZ!32 Installation

For the installation of **FRITZ!32**, see the **FRITZ!32** manual included in the **FRITZ!X PC** package. The Chapter „Install FRITZ!32“ provides detailed installation instructions.

Check Settings!



After installation, check the „Settings“ in the FRITZ!fax and FRITZ!vox programs:

If **FRITZ!fax** is ready and the option „All Incoming Faxes“ on the „ISDN“ tab is selected, the analog extensions of **FRITZ!X PC** cannot receive any calls.

If **FRITZ!vox** is ready and the option „all incoming calls“ on the „ISDN“ tab is selected, **FRITZ!vox** eventually will take all calls, such that no more calls reach the analog extensions of **FRITZ!X PC**. The time interval after which **FRITZ!vox** takes calls is specified on the „Answering Profile“ tab in the „Settings“ menu.

Setting the Serial Interface

To optimize the transfer speed of the serial interface, it is advisable to make the following change after installing the **FRITZ!32** software in Windows 95:

Open the Windows 95 Control Panel (Start/Settings) and double-click on the „System“ icon. In the „Device Manager“ tab, double-click on the implemented interface in the „COM Port“ list.

On the „Connecting Settings“ tab, click **Expanded...** and set the position marker for the receive buffer to „Low (1),“ and the position marker for the send buffer to „High (16)“. Confirm the following dialogs with **OK**.

FRITZ!X PC Installation

The user-friendly interface of the **FRITZ!X PC Installation Configuration Program** simplifies the setup of your PBX.

Install the **FRITZ!X PC Configuration Program** by following the introduction on the **FRITZ!X PC** CD-ROM. This introduction guides you through the installation with tips and information. The introduction starts automatically when the CD-ROM is inserted into your CD drive. You can start the installation help manually as well, by clicking on the „INTRO.HLP“ file in Windows Explorer.

Proceed with installation as follows:

1. Insert the **FRITZ!X PC** CD-ROM in your CD drive.
2. Click on the icon for the **FRITZ!X PC Configuration Program** on the second page of the CD-ROM introduction.

3. Start the **FRITZ!X PC** installation by clicking on the **Start Installation** button on the next page. The program prepares the Setup Assistant for **FRITZ!X PC** installation.
4. First you will be asked to specify the directory in which the **FRITZ!X PC Configuration Program** is to be installed. Although a default entry of C:\PROGRAM FILES\FRITZ!XPC is suggested, you are free to specify any directory you wish.
5. Now you will be asked to specify the program group to which the **FRITZ!X PC Configuration Program** is to belong. The default setting is „FRITZ!X PC,“ but you are free to enter another name for the program group or select an existing program group from the list. Click **Continue** to proceed with installation. The files will be copied to your hard disk.

Installation of the **FRITZ!X PC Configuration Program** has been completed. Now you can start the program from the „AVM“ directory in the start menu.

Removing FRITZ!X PC

Should you wish to remove the **FRITZ!X PC** Configuration Program from your computer, open the „Software“ directory in the Windows Control Panel. Mark the entry „FRITZ!X PC“ and then click the **Add/Remove** button. The uninstallation program starts. Confirm the security warning with **Continue**. In a final dialog you will be commanded to re-start your computer. Re-start your computer to implement the changes in your computer system.

4 FRITZ!X PC CONFIGURATION

The **FRITZ!X PC Configuration Program** provides an easy, convenient set-up procedure for your PBX. With the assistance of this program you can implement the following settings:

- Telephone Number (MSN) Assignments to Individual Extensions
- Outside Dialing Options for Individual Extensions
- Call Waiting Enable/Disable for Individual Extensions
- Calling Line ID Restriction (CLIR) Enable/Disable
- Calling Line ID Presentation for Incoming Calls (CLIP) Enable/Disable
- Group Call Enable/Restrict
- Call Diversion Enable/Disable and Setups
- Quick-Dial Number Assignments
- Restore Factory Settings
- Update PBX Software

Factory Settings

Upon delivery the following default settings are active:

- No MSNs have been assigned. Since individual terminals have not been assigned specific telephone numbers, incoming calls will ring on all terminals.
- All terminals are set to preferred dial tone; the user specifies a preferred dial tone for an outside line when the receiver is lifted.
- The call waiting function is disabled on all terminals; additional incoming calls are not signalled to a busy extension.
- Call diversion via the second B channel is deactivated on all extensions.

- Call forwarding is deactivated on all extensions.
- Calling Line ID Restriction (CLIR) is deactivated on all extensions.
- Calling Line ID Presentation for incoming calls is deactivated on all extensions.

Assigning Telephone Numbers (MSNs)

The multiple subscriber numbers (MSNs) supplied by your ISDN provider must be assigned to your individual PBX extensions. The **FRITZ!X PC Configuration Program** assists you with these settings.

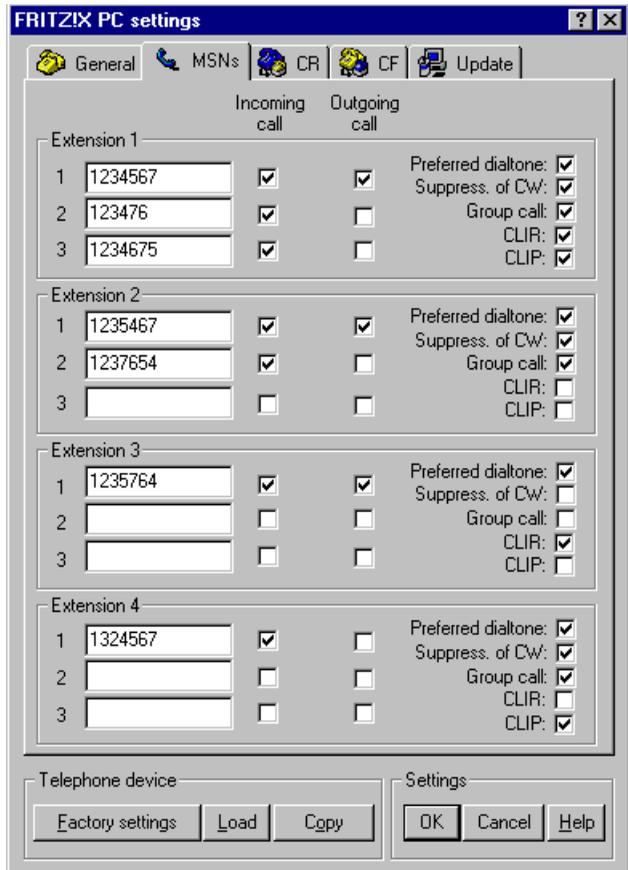


Fig. 8 MSNs tab.

Your PBX can save up to three MSNs on each of the four individual extensions. When an outside caller dials any of these MSNs, the extension to which it has been assigned will ring.

One of the MSNs also functions as the outgoing call number. The outgoing call number is the telephone number which appears on the display of the destination terminal and the number which will be charged for any calls made from that extension.

You have the option of blocking the outgoing call number for incoming calls (outgoing call number only). This number then will appear in the terminal display whenever calls are made from the extension, but the extension will not ring when dialed by an outside party. The MSN assignments are made in the „MSNs“ tab.

To program the MSNs, proceed as follows:

1. Establish which MSNs were issued for your ISDN connection by the ISDN provider.
2. Click on the „MSNs“ tab in the configuration program.
3. In the field „Extension 1“, enter the MSNs to be assigned to this extension.



Note that the numbers may comprise only the digits from 0 to 9 and have a maximum length of 20 characters.

4. To specify that Extension 1 should ring when the number assigned to it is called, click the **Incoming Call Number** checkbox next to the MSN in question.
5. Select the **Outgoing Call Number** for one of the three MSNs to define the number as an outgoing call number. This is the number which will be transmitted to the terminal when a call is placed from the extension.



Note that for each extension, only one MSN may be defined as an outgoing call number.

6. Repeat the above procedure to assign MSNs to Extensions 2, 3 and 4.

7. To save changes in the PBX, click **Transmit** at the bottom of the window. The data then will be sent to the PBX for storage in permanent memory. To load the most recently saved settings from your PBX, click **Load**.

Outside Dialing

Each extension can be configured for automatic outside dialing or as an internal extension. With automatic outside dialing, the dial tone sounds immediately when the receiver is lifted. Internal PBX configuration means that a „0“ must be dialed to access the outside dial tone.

Preferred dial tone/PBX connection

Activate automatic outside dialing for an extension by selecting the “Preferred dial tone” checkbox. A checkmark in this box indicates that the option is active

If this checkbox is empty, the line functions as an extension of the internal PBX.

Call Waiting Enable/Disable



For details about the „Call Waiting“ function, please see Chapter 5, „PBX Operation“.

Call waiting can be switched on and off for each extension. If you connect certain devices originating from non-European countries to your extension, they may misinterpret the call waiting signal. Such devices include various telefax machines and modems. If such problems arise, disable the call waiting function.



When call waiting is active, some modem and telefax connections may malfunction.

Activate the call waiting function for an extension by deactivating the „Suppress Call Waiting“ option.

When the checkbox is selected, call waiting is enabled.

Group Call



For more information about the „Group Call“ function, see Chapter 5, „PBX Operation“.

The group call function can be activated or suppressed for each extension individually. To suppress group calls, delete the checkmark next to the „Group Call“ option. If this checkbox is selected, the group call option is active for this extension.

CLIR (Calling Line Identification Restriction)



For more information about CLIR (Calling Line Identification Restriction), see Chapter 5, „PBX Operation“.

When the „CLIR“ option is active, the program prevents your telephone number from appearing on the telephone display at the call destination.

If you would like the other party to see your telephone number, deactivate the checkbox in front of the „CLIR“ option.



Settings made here will be implemented in all subsequent sessions.

CLIP (Calling Line Identification Presentation)



For more information about the „Group Call“ function, see Chapter 5, „PBX Operation“.

When the „CLIP“ option is activated, the telephone numbers of incoming calls - external and internal - on your telephone display. Thus you can take advantage of the ISDN CLIP feature even on analog terminal devices.

If you do not wish to see the telephone numbers of incoming callers on your telephone display, deactivate this function by de-selecting the checkbox for the „CLIP“ option.

Note that you can use this feature only if your telephone supports CLIP. In some cases you must activate the CLIP feature directly on your telephone.



Settings made here will be implemented in all subsequent sessions.

Call Diversion via the second B channel

Incoming calls to any **FRITZ!X PC** extension can be diverted to an internal or an external connection.

You can specify whether a call is to be diverted immediately, after the third ring, or only when the line is busy. A fourth option sets call diversion after the third ring **or** when the line is busy.

Divert Call to

Enter the telephone number to which the call is to be diverted in the “Diversion to” column.



Figure 9 CR (Call Diversion) tab

See the following section for more information about call diversion modes.

Call Diversion Mode

Select one of the following options from the “Time” column.

Off

Call diversion for the extension is disabled; incoming calls will not be diverted.

Immediate

Incoming calls are diverted immediately to the specified telephone number.

Delayed

Incoming calls are diverted to the specified number after 15 seconds (generally 3 rings).

When Busy

Incoming calls are diverted to the specified number only when this line is busy. Note that calls will not be diverted with this option when the line is busy with an external call.

Delayed/When Busy

Incoming calls are diverted when the extension is busy. If the extension is not busy, the call will be diverted after 15 seconds (generally 3 rings). Note that calls will not be diverted with this option when the line is busy with an external call.

Call Diversion to Another Number: Call Forwarding

Incoming calls to the **FRITZ!X PC** exchange extensions can be forwarded only to external lines. Calls are forwarded to an outside line by the exchange office free of charge.

To set up forwarding by the exchange, select the „Settings“ command in the „File“ menu of the main window and click the „CF“ tab.

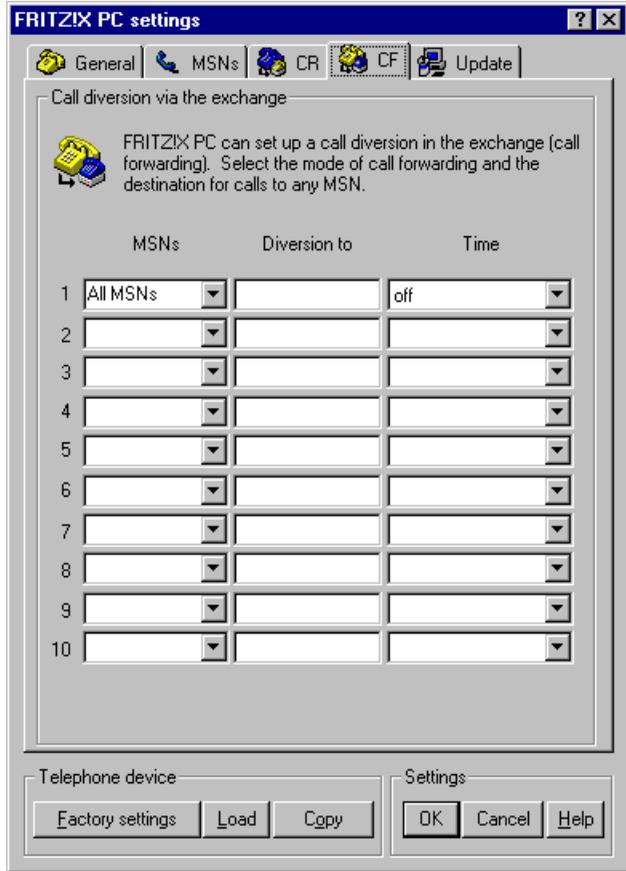


Figure 10 CF (Call Forwarding) tab

For call forwarding in Germany, you can use the T-Net box from Deutsche Telekom AG. The number 01 30 / 14 47 70 must be entered as the destination for call forwarding.

MSNs

Enter the MSNs to be forwarded in this field. You can configure forwarding for any MSN, for a device connected to another **FRITZ!X PC** extension or for all MSNs.

Forward Call to

Enter the external number to which incoming calls for the specified MSN are to be forwarded in the “Forward to” column. Note the format of the telephone number.

Call Forwarding Mode

Here you can specify whether a call is to be forwarded immediately, delayed, or only when the line is busy. A fourth option is also available to forward a call delayed from a free line and immediately when the line is busy. Select one of the following modes for forwarding from the “Time” column. All of these settings can be deactivated by mouse-click.

Off

Call forwarding is deactivated for this MSN. Incoming calls will not be forwarded.

Immediate

Incoming calls are forwarded immediately to the specified telephone number.

Delayed

Incoming calls are forwarded to the specified number after 20 seconds (generally five rings).

When Busy

Incoming calls are forwarded to the specified number whenever this MSN is busy.

Delayed/When Busy

Incoming calls are forwarded when the MSN is busy. If the MSN is not busy, the call will be forwarded after 20 seconds (generally five rings).

Communication with the PBX

The area illustrated below appears on every tab of the **FRITZ!X PC Configuration Program**. Use these buttons to save settings, to load new settings or to end the program.

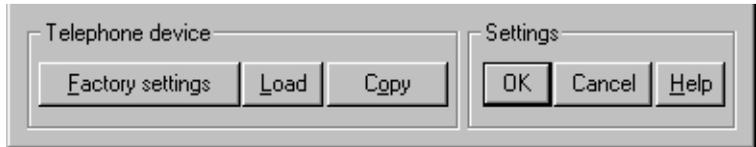


Fig. 11 Buttons for the PBX Settings

Factory Settings

Your PBX works with the factory settings until new settings are programmed. The factory settings can be activated at any time via telephone or through the **FRITZ!X PC Configuration Program**.

The factory settings are defined as follows:

- No MSNs have been assigned. Since individual terminals have not been assigned specific telephone numbers, incoming calls will ring on all terminals.
- All terminals are set to „preferred dial tone“; a dial tone sounds when the receiver is lifted.
- The call waiting function is disabled on all terminals; additional incoming calls are not signalled to an extension while it is busy.
- Call diversion over the second B channel is deactivated on all extensions.
- Call forwarding is deactivated on all extensions.
- Calling Line ID Restriction (CLIR) is deactivated on all extensions.
- Calling Line ID Presentation for incoming calls is deactivated on all extensions.

Restore Factory Settings



Your PBX works with the factory settings until new settings are programmed. The factory settings can be activated at any time via telephone or through the **FRITZ!X PC Configuration Program**.

Please note that restoring the factory settings will overwrite all settings on your PBX and your computer irretrievably.

To restore factory settings, click **Factory Settings**. Confirm the safety warning by clicking **Yes** to load the factory settings to your computer. This procedure may take several seconds.

Transmit Data

The **FRITZ!X PC Configuration Program** allows you to save the various settings in your PBX. This eliminates elaborate programming by telephone. To transmit your settings to a PBX, click **Transmit**.

Load Data

With this button you can load all of the settings in your PBX to your computer. You can transmit even those settings made via telephone. The settings then will appear in the display of the configuration window.



Please note that all previous settings on your computer will be overwritten by settings loaded from the PBX.

To load settings from the PBX to your computer, click the **Load** button.

Update the PBX Software

With the **FRITZ!X PC Configuration Program** you have the option of keeping your PBX up to the latest technical standard simply by performing an update. The software required for this procedure can be downloaded from the ADC (AVM Data Call Center).

The **FRITZ!X PC Configuration Program** will guide you through the process of transmitting the new software to the PBX.

Follow the steps below to update your software:

1. From **FRITZ!data** dial the number for the ADC (+49 30 / 39 98 43 00). Open the \CARDWARE\FRITZ!.PC\FIRMWARE folder and copy the update to your local computer.
2. Start the **FRITZ!X PC Configuration Program**.
3. Click the „Update“ tab.

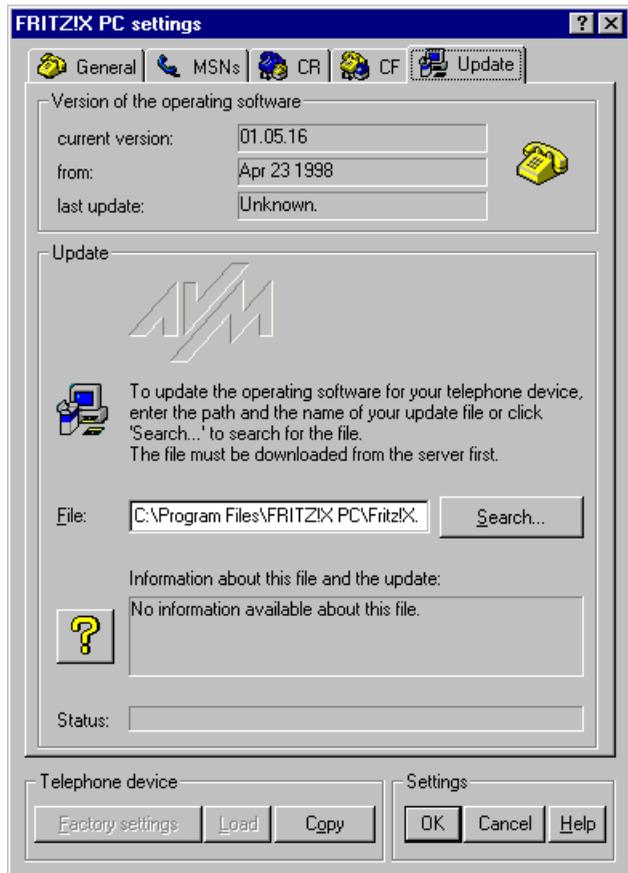


Figure 12 Update tab

4. Enter the path for the update file in the entry field.

This entry can also be made using the **Browse...** button to search for the file. The file name should end in „.dat“ and must be a valid **FRITZ!X PC** update file. When you click **Browse...**, a message in the lower window informs you whether the selected file is a **FRITZ!X PC** update file and, if so, which version it contains. If the version of the update file is newer than the current version, the program recommends that you install the update.

5. A safety warning asks you to confirm this command. If the update version is older than or the same as the existing operating system, this command must be confirmed before **FRITZ!X PC** will carry it out.



The update procedure may not be interrupted for any reason. Do not break the connection between the computer and the PBX or unplug the PBX while the update is in progress. Make sure that you really want to install the new version of the PBX software: this procedure is irreversible!

6. Once the update has been completed, a message window indicates that it has been conducted successfully. You will be asked to close and then re-start the **FRITZ!X PC Configuration Program**.

When the **FRITZ!X PC** PBX re-starts, the new version number appears in the „Information about this Version and the Update“ window. The **FRITZ!X PC Configuration Program** automatically searches for a new baud rate if this has been changed in the updated version.

Settings made in an older version of **FRITZ!X PC** can be implemented in the updated version by clicking **Load** in the „Telephone Device“ section of the „Update“ tab and then confirming with **OK**.



For more information about the FRITZ!X PC configuration software, see the FRITZ!X PC online help.

5 PBX OPERATION



For detailed information about the dialing assistance software (Computer Telephony Integration) and how to dial from your computer with the FRITZ!X PC configuration software, see the online help.

This chapter describes the operation of **FRITZ!X PC** on the telephone. Some of the functions described here are not available for telephones with pulse dialing. For more information, see the „**FRITZ!X PC** with Pulse-dial Telephones“ section later in this chapter.



The call-hold button is labelled differently on various telephone models (H, Flash, ●). Please see also the „Setting the Call-Hold Button Function“ section later in this chapter.

Outside Dialing

Outside Dialing with Automatic Dial Tone



Lift the receiver. An outside dial tone will sound immediately, as configured by the preferred dial tone setting.



Dial the desired outside telephone number.

Outside Dialing with Extension Configuration



Lift the receiver. The internal dial tone will sound.



Dial the number „0“. An outside dial tone will sound.



Dial the desired outside telephone number.

Outside dialing with Caller ID Suppression

CLIR (Calling Line Identification Restriction)

Activating this function prevents the display of your telephone number on your conversation partner's telephone display. Proceed as follows:



Lift the receiver.



Enter the key combination illustrated at left. A dial tone will sound.



Dial the desired telephone number.



When the CLIR function is activated, it is not necessary to dial „0“ from a configured extension; the line is automatically switched to automatic outside dialing.

The CLIR function must be activated each time the caller ID is to be suppressed for your number.



In some cases this feature must be enabled by the telephone services provider.

Internal Dialing

Internal Dialing with Automatic Dial Tone



Lift the receiver. The dial tone will sound immediately, as the automatic dial tone setting is active for your extension.



Select the hold button or the keys **. Now you will hear the internal dial tone.



Dial the desired extension number.

Internal Dialing with Extension Configuration



Lift the receiver. The internal dial tone will sound.



Dial the desired extension number.

Call Waiting



Call Waiting suppression can be set for each extension. For more information, please see the „FRITZ!X PC Configuration“ chapter.

You can direct **FRITZ!X PC** to signal your line if an external party wishes to reach you while your line is busy. Incoming outside calls are indicated by a call waiting tone in the receiver. You then have 30 seconds to establish a connection with the new caller, thereafter the call will be rejected. An incoming call also can be rejected actively, with the caller receiving a busy signal instead.

A waiting call is accepted by holding (see below) or by ending (hanging up) the current conversation. In the latter case the telephone will ring as soon as the receiver is returned to the cradle. Simply lift the receiver to start a conversation with the new party.

To reject a waiting call, proceed as follows:



Enter the key combination illustrated at left.

Call Hold

The „Call Hold“ function allows you to hold a current call in order to converse with another party.

Putting a caller on hold means that you can speak with other parties in the office or make a second call without the party on hold hearing your conversation. Once your consultation is complete, you can re-establish the connection to the first conversation party.

Proceed as follows to hold a conversation and then retrieve it:

Party 1



You are conducting a conversation with party 1.



Press the call hold button. Party 1 will be put on hold and you are free to speak with other parties.



To connect with party 2, enter the desired extension number, or the outside telephone number preceded by „0“.

Party 2  When the party dialed lifts the receiver, you can conduct a conversation with party 2.



If party 2's line is busy or if party does not answer, press the hold button again to return to party 1.



If you wish to return to party 1 after concluding your conversation with party 2, enter the key combination illustrated at left. This ends the hold mode.



If you end holding by pressing only the hold button, your line remains connected to party 2. Charges will continue to accrue until party 2 closes the connection.

Party 1



Instead of pressing the key combination, you can simply hang up to end the connection to party 2. The telephone then will ring and the connection to party 1 will be re-established when you lift the receiver.



End the conversation by replacing the receiver.

Consultation Hold

When you have a new caller on hold, party 2, in addition to a current conversation with party 1, you can switch back and forth between conversations as often as you wish. This function is called „consultation hold.“

Proceed as follows for a consultation hold:

Party 1



You are conducting a conversation with party 1.



Press the call hold button. Party 1 will be put on hold and you are free to speak with other parties.



To connect with party 2, enter the desired extension number, or the outside telephone number preceded by „o“.

Party 2



When the party dialed lifts the receiver, you can conduct a conversation with party 2.



If you wish to return to party 1, enter the key combination illustrated at left.

Party 1



Now you are speaking with party 1 again.



To return to your conversation with party 2, press the key combination illustrated at left again. You can consult with parties 1 and 2 by repeating this procedure as desired.

Consultation can be ended in the following ways:

The party on hold hangs up. The active parties can continue their conversation.



End the consultation to the party on hold using the key combination illustrated at left and thus re-establish the connection to party 1.

Instead of pressing the key combination, you can simply hang up to end the connection to party 2. The telephone then will ring and the connection to party 1 will be re-established when you lift the receiver.

Routing

The „Routing“ function offers you the capability to route a current conversation to a **FRITZ!X PC** extension. Proceed as follows:

Party 1



You are conducting a conversation with party 1.



Press the call hold button. Party 1 will be put on hold.



To connect with party 2, enter the desired extension number.

Party 2



The current conversation is now with party 2.



Simply hang up the receiver to route this conversation to party 1.

Conference Call

With **FRITZ!X PC** you can conduct conference calls among three parties. Two external and one internal party may participate in such a conference call.

For a three-way conference call, proceed as follows:



Lift the receiver of your telephone.



Dial the telephone number of the external party and begin conversation.



Press the hold button.



Dial „o“ followed immediately by the telephone number of your second external party. You can conduct a conversation with this second external party while party 1 is on hold.



Enter the key combination illustrated at left.



Conduct the conference call. If either of the outside parties hangs up, you can continue the conversation with the remaining party.



End the conference call by hanging up the receiver.



Just as for routing, it is possible to switch back to the original party during a conference call. Press the hold button and the number 2. This ends the conference call and the party with whom you began the conference call remains on the line. The second external party is put on hold. Enter the key combination above again to switch back and forth between parties.

Call Back When Busy

When you dial an external telephone number and this number is busy, you will receive a signal as soon as the line becomes free. Your telephone then rings for 20 seconds as for an outside call. When you lift the receiver, the telephone number of the desired party will be dialed automatically.



In some cases this feature must be enabled by the telephone services provider.

To activate this function, proceed as follows:

You have dialed a telephone number and hear the busy signal.



Dial the number „5“ within 20 seconds.



Hang up the telephone. As soon as the line of party you dialed becomes free, you will receive a callback.



Lift the receiver. The number of the desired party will be dialed automatically.

Callback requests are deleted after 45 minutes or after the completion of the requested call. Each PBX participant is allowed one open callback request.

Pickup

When another telephone rings, you can use the pickup function to retrieve the call to your telephone.

Proceed as follows to pick up a call:



Lift the receiver of your telephone.



Enter the key combination illustrated at left.



The conversation is routed to your telephone and the connection established with the incoming caller.

Group Call

FRITZ!X PC offers the option of calling all extensions at once with a group call. The connection is then established with the extension which picks up the call first.



Lift the receiver.



Dial the number „9“ rather than a concrete extension number to call all free extensions.



Group call suppression can be activated for each extension. For more information, see Chapter 4, „FRITZ!X PC Configuration.“

Setting the the Hold Button Function



Make sure to set the hold button function on your analog terminal devices. The supported flash times range from 80 ms (short flash) to 250 ms (long flash).

Instructions for setting the hold button function can be found in the instruction booklet for your telephone device, generally under a title like „Operation as an Extension“.

Pulse-dial Telephones with FRITZ!X PC

A pulse-dial telephone does not support all features of **FRITZ!X PC**. The following functionen are available with a pulse-dial telephone:

- Outside dialing
- Internal dialing (as long the telephone is not configured for automatic outside dialing)
- Accept external and internal calls
- Accept waiting calls by dialing „o“
- Consultation Hold between two existing conversations by dialing „o“
- Start consultation by dialing „o“.

The following cannot be carried out with a pulse-dial telephone:

- Programming **FRITZ!X PC**
- Picking up a call from another telephone.



See also the information about the PBX in Chapter 7, „Tips & Tricks“.

6 FRITZ!X PC AND THE INTERNET

In addition to traditional ISDN services such as file transfer, fax, videotext, **FRITZ!X PC** also supports connections to the Internet through its ISDN COMMON ISDN API (CAPI) interface. These connections are based on Dial-up Networking in Windows 98.

AVM provides two drivers which facilitate communication between **FRITZ!X PC** and the Internet:

- AVM ISDN CAPI Port Driver
- AVM NDIS WAN CAPI Driver

The Conception of the AVM System Drivers in MS Windows

Windows 95 as well as Windows 98 offers two communications models with similar functions and features: the ISDN CAPI Port Driver and the NDIS WAN CAPI Driver. While both drivers are implemented as Windows system drivers with VxD technology and controlled over the Dial-up Network, they use different mechanisms and interfaces or protocols in the operating system. The drivers achieve the same throughput rates in data communication applications. If needed, one system can handle the parallel installation of both drivers.

The AVM system drivers allow you to use not only ISDN software, but also CAPI-based communications programs like FRITZ!32 over the Windows Dial-up Network, for instance for dialing into the Internet.

The AVM ISDN CAPI Port Driver

The **AVM ISDN CAPI Port Driver** permits programs with compatible interfaces (VCOM/“Modem”) to use analog Windows communications interfaces for ISDN.

With the ISDN CAPI Port Driver you have the option of setting up several virtual modems which allow you to access desired programs. These virtual modem lines are identical except for their preconfigured registry settings. This driver can establish connections not only to the Internet (AVM ISDN Internet (PPP) modem) but also to mailboxes (hyperterminal and AVM ISDN X.75 modem) or fax machines (MS-Exchange and AVM ISDN G3 Fax modem). The most important advantage of this driver conception is that it supports the entire range of functionality of CAPI.



For a detailed description of the functions and installation of the AVM ISDN CAPI Port Driver, please see the CAPIPORT.HLP file in the WINPORT\CAPIPORT.W95 directory of the FRITZ!X PC CD-ROM.

Telephone numbers for incoming and outgoing calls may be specified. These MSNs (multiple subscriber numbers) are set with AT commands to the CAPI Port Drivers. These settings are made in the „Start / Settings / Control Panel / Modems / Features / Settings / Expanded“ window.

Set the telephone number(s) for outgoing calls with `ATS49=<MSN>` and for incoming calls with `ATS50=<MSN>`. For multiple entries, separate numbers with a semicolon.

The AVM NDIS WAN CAPI Driver

The **AVM NDIS WAN CAPI Driver** facilitates the integration of operating system functions of Windows 95 and Windows 98 into ISDN integration.

The AVM NDIS WAN CAPI Driver facilitates the use of Remote Access Services (RAS) over ISDN. With this driver you can take advantage of the enormous communications potential of Windows 95 and Windows 98 using any ISDN controller equipped with a CAPI 2.0 Driver for Windows. NDIS stands for **N**etwork **D**evice **I**nterface **S**pecification and serves as a standard for the connection of network boards (hardware) to network protocols (software). NDIS WAN is an extension of this standard, developed by Microsoft for Wide Area Networking (WAN). The NDIS WAN CAPI Driver thus allows the ISDN controller to be used

as a network board addressed over the COMMON-ISDN-API (CAPI) application interface.



For a detailed description of the functions and installation of the AVM NDIS WAN CAPI Driver in Windows 95, please see the NDIS_95.HLP file in the WINPORT\NDISWAN.W95 directory of the FRITZ!X PC CD-ROM.

Freedom of Connectivity

With **FRITZ!X PC** you can establish all kinds of connections to various remote services and transmission partners. For successful connections and transmission, the terminal device connected to the remote system must be the same or compatible.

The current standards are listed in the following:

Internet

To connect to an Internet provider with Windows 95 Dial-up Networking, use the PPP protocol over ISDN (synchronous PPP) with the ISDN AVM CAPI Port Driver or the AVM NDIS WAN CAPI Driver. For detailed information about settings and applications, contact your service provider.

Online Services

The access software of a service provider is required for dialing online services. Contact your service provider for more information about installing and configuring the application.

ISDN File Transfer

Use **FRITZ!data** with the **IDtrans** or **Eurofile** transmission protocols for ISDN file transfer. Transmission speed is reduced significantly on both ends through V.42bis data compression.

Group 3 Fax

For telefax transmission to fax machines with the G3 Fax standard, fax emulation is generated in the CAPI Driver. The recommended fax application is the user-friendly, functional **FRITZ!** module **FRITZ!fax**.

After installing the AVM ISDN CAPI Port Driver faxing is also possible over the **AVM ISDN FAX (G3)** modem. Any fax application which supports CAPI 2.0 can be implemented.

Voice

The voice functions of **FRITZ!X PC** are implemented in the **FRITZ!vox** ISDN answering machine. This module can be expanded with outside telephony software which supports CAPI 2.0.

ISDN Mailboxes

FRITZ!com with B-channel setups for X.75 and V.110 protocols facilitates dialing to ISDN mailboxes. Alternatively, you can install the AVM CAPI Port Driver and then dial using the **AVM ISDN Mailboxes (X.75)** modem or outside terminal programs.

Remote Access Service, Intranet etc.

To take advantage of the services listed above, contact the relevant providers for information about access conditions and settings.

Requirements at the Provider Site / Remote System

To access the Internet or utilize RAS connections successfully, your provider or remote system (for RAS connections) should be equipped with digital access and use the same protocol mechanisms.

The following specific requirements must be met:

- The provider / remote system must have ISDN access.
- The access should support either „synchronous PPP“ (Point-to-Point Protocol) according to the RFC 1618 standard, or „asynchronous PPP.“
- Your provider allows user registration through a telephone-number check and/or PAP/CHAP authentication.
- Optional static or dynamic Internet address assignment.

To keep telephone costs low, use a provider with a local telephone number.

ISDN CAPI Port Driver vs. NDIS WAN CAPI Driver



The possibilities for implementing the above driver concepts are discussed in detail in the relevant documentation (HLP files).

In terms of user operation with ISDN and Windows, the drivers compare as follows:

- For Internet providers offering PPP over ISDN („synchronous PPP“ according to RFC 1618), both the ISDN CAPI Port Driver and the NDIS WAN CAPI Driver are suitable. Ask your provider about possible differences.
- For Internet providers without PPP over ISDN services, dialing is possible with the CAPI Port-Modem „asynchronous PPP asynchron.“ The ISDN CAPI Port Driver allows you to operate „special solutions“ through setups in **FRITZ!Card USB**. Ask your Internet provider for more information. Due to its system design, the NDIS WAN CAPI Driver cannot support such functions.
- Both drivers are suitable for access to an RAS server.
- Non-Internet applications such as MS Money 97 or terminal programs can be used only with the ISDN CAPI Port Driver (status September 1998).

7 TIPS & TRICKS

This chapter contains useful advice to simplify working with **FRITZ!X PC** and assist in solving minor problems.

Configuring two MSNs for one Telephone

This option allows you to set up two MSNs for one telephone. For example:

You work from your home, and have the business telephone number MSN 1 and the private number MSN 2. Telephone 1, located in your office, is to ring for both business and private calls, and telephone 2, located in your living room, is to ring only for private calls. Set MSN 2 only for telephone 2, but both MSN 1 and MSN 2 for telephone 1.

Keep Call Waiting Suppressed for Telefax and Modem on FRITZ!X PC Extensions

Do not deactivate the default setting „Suppress call waiting“ for telefax and modem lines. When call waiting is active, telefax and modem connections may malfunction.

Modem Software and FRITZ!X PC Extensions

If a PC modem is connected to a **FRITZ!X PC** extension, please note the following:

Any settings made for the extension to which the modem is connected must be configured accordingly in the modem software. For instance, if the extension is set to automatic outside dialing for the modem, the modem software may not configure it as an internal extension.

The above does not apply to PCs connected to **FRITZ!X PC** via serial interface. In the **FRITZ!32** module settings, the option „Operation at an extension“ must be deactivated on the „Extension“ tab to allow **FRITZ!X PC** operation directly at the ISDN basic access.

General Error Conditions

Not every error represents an actual defect in **FRITZ!X PC** or the connected terminal devices. This chapter discusses general error conditions, their causes and possible solutions.

Work through the following checklist before starting operation:

- Check the LEDs on **FRITZ!X PC**. The meanings of the individual LEDs are listed in the „Package Contents“ section of Chapter 1.
- Is **FRITZ!X PC** ready for operation? Make sure that the green LED labelled „Power“ is lit.
- Check the orange LEDs for extensions 1, 2, 3 and 4:

When an extension is picked up or a connection is active at an extension, this is indicated by an LED lit orange. Incoming calls are signalled by a blinking LED.

If the LED for an active extension is not lit, this suggests that the telephone cable is defective or connected incorrectly.

- Is the PC cable properly connected to the PC and **FRITZ!X PC**?
- Is the cable connected to the correct serial interface?
- Check the **FRITZ!X PC** setup in the **FRITZ!X PC** directory.
- Are the plugs inserted correctly into the socket and into **FRITZ!X PC**?
- Is the ISDN cable properly plugged into the ISDN socket at the NT (Network Terminator) and into **FRITZ!X PC**?
- Are the telephone, modem, and telefax cables properly plugged into **FRITZ!X PC**?
- Is the terminal device defective? Test the device at another **FRITZ!X PC** extension or on another exchange.

No dial tone

Make sure the extension is configured for automatic outside dialing rather than as an internal extension (outside dialing preceded by “o”).

No internal dial tone

Make sure that the telephone is configured as an internal extension (outside dialing preceded by “o”) rather than for automatic outside dialing.

Busy signal sounds before number dialed

- If your telephone is set for automatic outside dialing and you hear a busy signal when you lift the receiver, this means that all outside lines are busy. In this case it is not possible to connect to an external number -- you must wait until an external line becomes free.
- If your terminal device is set up as an extension and you hear a busy signal after dialing for an outside line (with „o“), this means that all outside lines are busy. In this case it is not possible to connect to an external number -- you must wait until an external line becomes free.

Telefax machine indicates busy line

This means that all outside lines are busy. In this case it is not possible to connect to an external number -- you must wait until an external line becomes free.

No modem connections possible

Check the settings in the modem software. Any settings made for the extension to which the modem is connected must be configured accordingly in the modem software. For instance, if the extension is set to automatic outside dialing for the modem, this setting also must be active in the modem software.

Hold button functions inoperable

Your telephone does not support the hold function.

Busy signal sounds at configured extension 30 seconds after lifting receiver or switching on telefax

This condition is not an error. **FRITZ!X PC** aborts operation after 30 seconds if no number is dialed. Start dialing within thirty seconds of lifting the receiver or starting telefax operation.

No incoming calls received from outside callers

- A third party may have been given an MSN which is not configured for the extension to which the telephone is connected. Either plug the telephone or fax into the extension to which the MSN is assigned or assign the MSN to the extension to which the device is connected.
- Check whether the extension was assigned an outgoing call number which does not accept calls. Only those MSNs which have been activated by the exchange of the service provider may be transmitted. If a terminal device transmits an MSN not recognized by the exchange, it transmits instead the first MSN it knows.
- Check whether calls are being accepted by **FRITZ!32** modules.

All incoming calls accepted by ISDN Controller

Check the settings of the **FRITZ!fax** and **FRITZ!vox** programs. Is **FRITZ!fax** ready for operation? When the option to accept „all incoming faxes“ is selected on the „ISDN“ tab, no calls will reach the analog extensions of **FRITZ!X PC**.

If **FRITZ!vox** is ready for operation and the option to accept „all incoming calls“ is selected on the „ISDN“ tab, **FRITZ!vox** will accept all calls after a certain amount of time. In this case no more calls will reach the analog extensions of **FRITZ!X PC**. The time interval after which **FRITZ!vox** takes calls is specified in the „Answering profile“ in the configuration window. On the „ISDN“ tab the corresponding answering profile must be activated for accepting calls.

FRITZ!X PC After a Power Outage

When **FRITZ!X PC** operation is resumed after a power outage, the last settings saved will be active.

If the settings made to **FRITZ!X PC** were not saved, **FRITZ!X PC** will resume operation using its factory settings.

No Acknowledgement Signal During Programming

Only telephones with touch-tone dialing can be used to program **FRITZ!X PC** over the PBX. Programming can not be performed with pulse-dial telephones with pulse dialing.



Some terminal devices can be switched between pulse and touch-tone dialing. Check your telephone or fax machine.

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