

INSTALLATION, CONFIGURATION AND OPERATION OF FRITZ!BOX FON 5124



FRITZ!Box Fon 5124

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Contents

1	This Is FRITZ!Box Fon 5124	8
1.1	Package Contents	10
1.2	Operation Requirements	10
2	FRITZ!Box Fon 5124: Connecting	12
2.1	Mounting	14
2.2	Connecting to the Power Supply	14
2.3	Connecting to the DSL Line	15
2.4	Connecting the Computer(s)	16
2.5	Connecting to the LAN Port	17
2.6	Connecting to the ISDN Line	20
2.7	Connecting to the Analog Telephone Line	21
2.8	Connecting Telephone, Fax, Answering Machine	22
3	Opening the User Interface	23
4	Configuring Internet Connections	24
4.1	FRITZ!Box Fon as a DSL Router	24
4.2	FRITZ!Box Fon as a DSL Modem	26
5	USB Devices	28
5.1	Connecting USB Devices	28
5.2	USB Mass Storage Devices	29
5.3	USB Printers	30
5.4	USB Hub	35
6	Configuring FRITZ!Box Fon for Telephone Connections	36
6.1	Entering Account Information and Internet Numbers for Internet Telephony	36
6.2	Entering Numbers for Calls over Fixed Lines	37
6.3	Configuring Analog Equipment	37
6.4	Dialing Rules for Internet and Fixed-Line Telephony	38
6.5	Selecting the Type of Connection Manually	39
6.6	How Does Internet Telephony Work?	39

7	Network Settings	41
7.1	Basics	41
7.2	IP Address.	46
7.3	DHCP Server	48
7.4	Subnetwork	50
8	Troubleshooting	53
8.1	Errors Opening the User Interface	53
8.2	IP Settings.	57
9	Removing the FRITZ!Box Fon	62
9.1	Ending the Connection to the Computer.	62
9.2	Removing the Program Group	62
9.3	Removing FRITZ!DSL.	64
9.4	Uninstallation of the Printer Port.	66
10	Configuration and Operation by Telephone	67
10.1	Operating FRITZ!Box Fon 5124 by Phone.	68
10.2	Configuring FRITZ!Box Fon by Phone.	75
10.3	Advanced Features.	79
11	Customer Service Guide	100
11.1	Product Documentation.	100
11.2	Information in the Internet	101
11.3	Updates	101
11.4	Support from the AVM Service Team.	102
12	Product Details	104
12.1	LEDs FRITZ!Box Fon	104
12.2	Audible Signals	105
12.3	Cables and Sockets	105
12.4	Technical Specifications of FRITZ!Box Fon	107
	Index	108
	Declaration of CE Conformity	110

Symbols and Highlighting

This manual uses the following symbols for warnings and tips:



The hand indicates important instructions that must be observed to avoid malfunctions.



FRITZ! marks useful hints to assist you in working with the product.








The table below explains the highlighting used in this manual.

Highlighting	Function	Example
Quotation marks	Keys, buttons, icons, tabs, menus, commands	“Start / Programs” or “Enter”
Capital letters	Path and file names in running text	SOFTWARE\INFO.PDF or README.DOC
Pointed brackets	Variables	<CD-ROM drive>
Typewriter font	Information to be typed in using the keyboard	a : \setup
Gray italics	Tips, instructions and warnings	<i>... for more information, see...</i>

The Telephone Keypad

0...9	Numeric keys
*	Asterisk key
R	Hold or Flash key
#	Pound sign key

Instructions for Operation at the Telephone

	Dial a number.
	Pick up the handset.
	Hang up the handset.
	Talk.
	Three-party Conference Call
	Wait for the acknowledgement tone.
	You hear the ring tone.
Ext.	Enter an extension number (Ext.). In the place of the abbreviation “Ext.” used here, enter the number “1”, “2”, or a higher number, corresponding to the extension you would like to configure.
MSN	Enter an ISDN number (MSN). In place of the abbreviation “MSN” used here, enter the complete MSN desired, without any dialing prefix.
XNo./Ext.	Enter the external number (XNo.) or extension number (Ext.) to which your calls are to be diverted. In the place of the abbreviation “XNo.”, enter the complete number of the external line.
XNo.	In the place of the abbreviation “XNo.”, enter the complete number of the external line.

Icons Designating the Functions and Features

**ISDN
analog
VoIP**

The functions and features can be used for analog and ISDN fixed-line connections as well as for Internet telephony (VoIP).

**ISDN
analog**

The functions and features can be used for analog and ISDN fixed-line connections.

ISDN

The functions and features can be used only for ISDN fixed-line connections.

analog

The functions and features can be used only for analog fixed-line connections.

Safety Instructions



When working with FRITZ!Box Fon, follow the instructions below to protect yourself and the FRITZ!Box Fon from injury.

- Do not install FRITZ!Box Fon during an electrical storm. Disconnect FRITZ!Box Fon from the power supply during electrical storms.
- Never let liquids get inside the FRITZ!Box Fon. Otherwise, electric shocks or short circuits may result.
- FRITZ!Box Fon is intended for indoor use only.
- Do not open the FRITZ!Box Fon housing. The device contains hazardous components and should only be opened by authorized repair technicians.

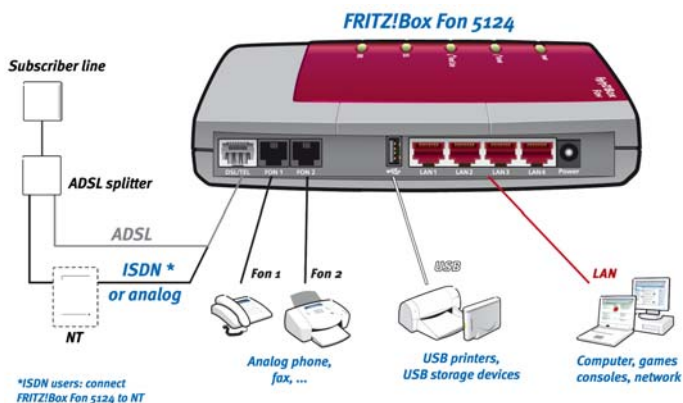
Disposal Instructions



After use, please subject this product to orderly disposal as electronic scrap in accordance with the current EU disposal regulations.

1 This Is FRITZ!Box Fon 5124

FRITZ!Box Fon 5124 connects one or more computers directly with your DSL line. Each connected computer can establish an Internet connection over FRITZ!Box Fon.



Possibilities for connecting FRITZ!Box Fon

PBX for Internet and Fixed-Line Telephony

FRITZ!Box Fon 5124 is a PBX for the connection of analog terminal devices. You can connect two analog telephones to FRITZ!Box Fon and make phone calls via the Internet, ISDN, or the analog fixed-line network.

Connecting One or More Computers

Four computers can be connected directly to the FRITZ!Box Fon using the four LAN ports.

You can also connect a network hub or switch to the LAN ports so that even more computers can be connected to FRITZ!Box Fon.

All computers connected to FRITZ!Box Fon are networked together and can access shared files and printers.

Internet Connection for All Computers

All of the computers connected to FRITZ!Box Fon can access the Internet. There are two different ways of establishing an Internet connection. Both cases require Internet account information from an Internet Service Provider:

- **The Internet connection is established by FRITZ!Box Fon.** For this the Internet account information must be registered in FRITZ!Box Fon. In this case FRITZ!Box Fon works as a DSL router and all computers can use the Internet connection at the same time.
- **The computers connected establish the Internet connections themselves.** For this, Internet access software must be installed and the Internet account information entered on the given computer. In this case FRITZ!Box Fon works as a DSL modem.

Protection by the Integrated Firewall

When FRITZ!Box Fon is operated as a DSL router, the integrated firewall protects your network from attacks from the Internet.

Connecting USB Devices

The FRITZ!Box is equipped with a USB/accessory port (also called a USB host controller). Various USB equipment can be connected to the USB/accessory port, including:

- a USB mass storage device (hard drive, memory stick)
- a printer

for connecting a printer, FRITZ!Box has a printer server.

- a USB hub

You can connect either two USB mass storage devices and one USB printer, or three USB mass storage devices to the USB hub.

Port for Network Devices

Network devices can be connected to the FRITZ!Box Fon LAN port along with network hubs or switches, including game consoles.

1.1 Package Contents

The package contains:

- FRITZ!Box Fon 5124
- one AC power adapter with cable for connection to the power mains
- one 4.25 m combined DSL-telephone cable (gray/black) for connecting FRITZ!Box Fon to the DSL splitter and the ISDN network terminator (NT) or the analog telephone line
- one network cable (red) for connecting FRITZ!Box Fon to a computer or network hub
- one FRITZ!Box Fon CD with
 - Installation Help
 - the DSL software FRITZ!DSL
 - software for connecting the printer
 - documentation for all enclosed AVM components

1.2 Operation Requirements

In order to operate FRITZ!Box Fon, you must have the following:

- a Web browser that supports Java Script (for instance, Internet Explorer from version 6.0 or Netscape 4.0)
- a DSL line must be available: Standard ITU G.992.1 Annex B, ITU G.992.5 Annex B
- If you would like to connect the FRITZ!Box Fon via the LAN port of the computer, you need a computer with a network adapter (standard Ethernet 10/100 Base-T).

- To install the DSL software FRITZ!DSL, the minimum computer requirements are:
 - 300 MHz Pentium II processor with Windows XP, Windows 2000, Windows Me or Windows 98 and CD drive
 - 32 MB RAM
 - 20 MB free memory on the hard drive

2 FRITZ!Box Fon 5124: Connecting

This chapter contains instructions on the following topics:

- Launching FRITZ!Box Fon Operation: A Recommended Procedure
- Mounting FRITZ!Box Fon
- Connecting FRITZ!Box Fon to electrical power, DSL and ISDN or the analog telephone line
- Connecting Analog Terminal Devices to the FRITZ!Box Fon
- connecting one or several computers to FRITZ!Box Fon
- Opening the FRITZ!Box Fon user interface

Using the Installation Help on the CD

If you have a computer with a Windows operating system, you can use the Installation Help contained on the FRITZ!Box Fon CD.

The Installation Help on the FRITZ!Box Fon CD presents instructions on the screen, instructing you about the steps required to launch operation of the FRITZ!Box Fon.

- Insert the FRITZ!Box Fon CD in the CD-ROM drive of your computer.

The Installation Help starts automatically.

- Follow the instructions in the Installation Help to prepare the FRITZ!Box Fon for operation.



We recommend using the Installation Help on the FRITZ!Box Fon CD when launching operation of the FRITZ!Box Fon for the first time.

Launching Operation without the CD Installation Help

If you do not use the Installation Help on the CD, then comply with the sequence of steps recommended below.

1. Set up the FRITZ!Box Fon hardware: see the section “Mounting” on page 14.
2. Connect FRITZ!Box Fon to the power supply: see the section “Connecting to the Power Supply” on page 14.
3. Connect FRITZ!Box Fon to the computer(s): see the section “Connecting the Computer(s)” from page 16.
4. Connect FRITZ!Box Fon to DSL: see the section “Connecting to the DSL Line” on page 15.
5. If you want to make telephone calls with the fixed-line network using FRITZ!Box Fon: connect to the fixed-line network.

ISDN fixed-line network: Connect FRITZ!Box Fon with the ISDN line. See the section “Connecting to the ISDN Line” from page 20.

Analog fixed-line network: Connect FRITZ!Box Fon with the analog telephone line. See the section “Connecting to the Analog Telephone Line” from page 21.

6. If you want to make telephone calls via the Internet and/or the fixed-line network using FRITZ!Box Fon: Connect analog terminal devices to the FRITZ!Box Fon. See the section “Connecting Telephone, Fax, Answering Machine” from page 22.

2.1 Mounting

You can either place FRITZ!Box Fon on a horizontal surface or mount it on a wall. Please note the following:

- Place or hang the FRITZ!Box Fon in a dry location that is free of dust and protected from direct sunlight.
- Do not place FRITZ!Box Fon on excessively heat-sensitive surfaces, as the base of the device can heat up during normal operation.
- When connecting FRITZ!Box Fon to your computer using the network cable, remember to take the length of the cable into account.
- Make sure to keep sufficient distance from potential interference sources like microwave devices or electric devices with large metal housings.

2.2 Connecting to the Power Supply



Connecting to the Power Supply

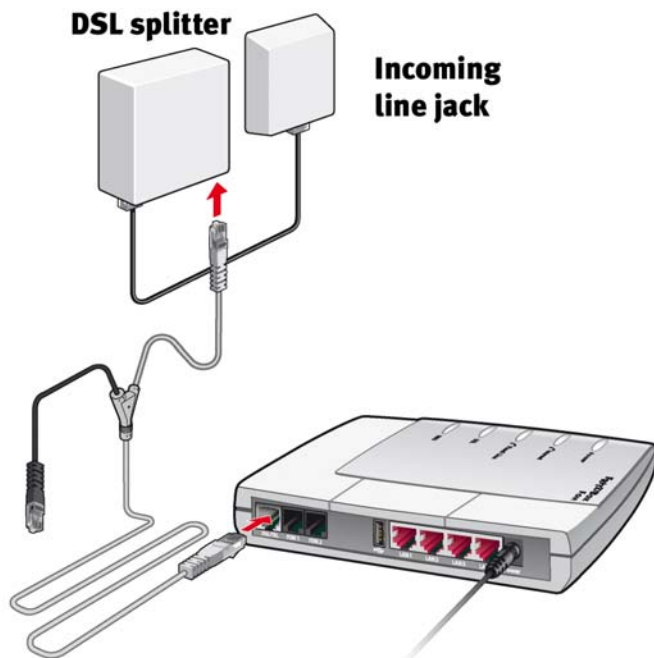
Connect the FRITZ!Box Fon to the power supply as described below:

1. Remove the power supply unit from the FRITZ!Box Fon package.

2. Connect the mains adapter to the socket labeled “Power”, located at the far right of the back panel of FRITZ!Box Fon.
3. Plug the other end into an AC power outlet.

The green “Power/DSL” LED will begin flashing after a few seconds to signal that the FRITZ!Box Fon is ready for operation.

2.3 Connecting to the DSL Line



Connecting to the DSL splitter

Cable

The gray and black Y-shaped cable is for connecting to the DSL splitter. This cable is a combination of a DSL cable and a telephone cable.

Connecting

1. Connect the longer, gray end of the cable to the socket labeled “DSL/TEL”, located at the far left of the back panel of the FRITZ!Box Fon.
2. Then connect the gray end of the Y-branch to the socket on the DSL splitter labeled “DSL”.

The black end of the cable’s Y-branch is not needed for connection to the DSL splitter.

The green “Power” LED stops flashing after a short time and remains lit to signalize that FRITZ!Box Fon is ready for Internet connections over DSL.

2.4 Connecting the Computer(s)

If you would like to surf the web using the FRITZ!Box Fon or to open the FRITZ!Box Fon user interface, then you must connect a computer with the FRITZ!Box Fon.

Connect the computer(s) to the network ports of the FRITZ!Box Fon.

Four computers can be connected directly to the FRITZ!Box Fon using the ports LAN₁ through LAN₄.

A network hub or network switch can be connected to each of the FRITZ!Box Fon LAN ports to make all FRITZ!Box Fon features available to several computers or an entire network.

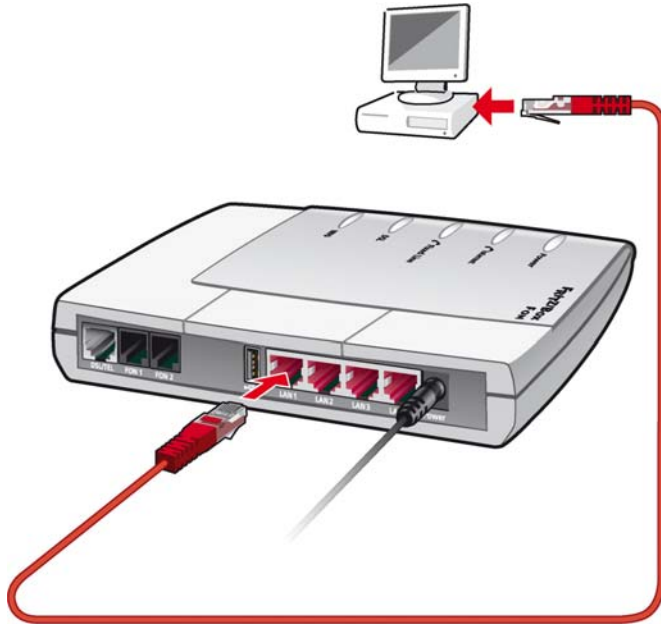
The way a computer is connected to the FRITZ!Box Fon is the same regardless of the operating system on the computer.

All of the computers connected with the FRITZ!Box Fon constitute a network.

2.5 Connecting to the LAN Port



If you want to connect a computer to one of the LAN ports on the FRITZ!Box Fon, make sure that your computer is equipped with a network adapter. A LAN port is usually designated by the icon at left or labeled “LAN”.



Connecting a computer to a LAN port on the FRITZ!Box Fon

Cable

A red network cable for connecting a computer is included in the FRITZ!Box Fon package.

Connecting

1. Remove the network cable from the package.
2. Switch on your computer.

If you work with a Linux operating system, use YaST to configure your network card with the setting “DHCP”, if this setting is not already configured.

3. Insert one end of the LAN cable to the computer's network adapter.
4. Connect the other end of the LAN cable to a socket on the FRITZ!Box Fon labeled “LAN 1”, “LAN 2”, “LAN 3” or “LAN 4”.



No additional driver installation is necessary on the computer.

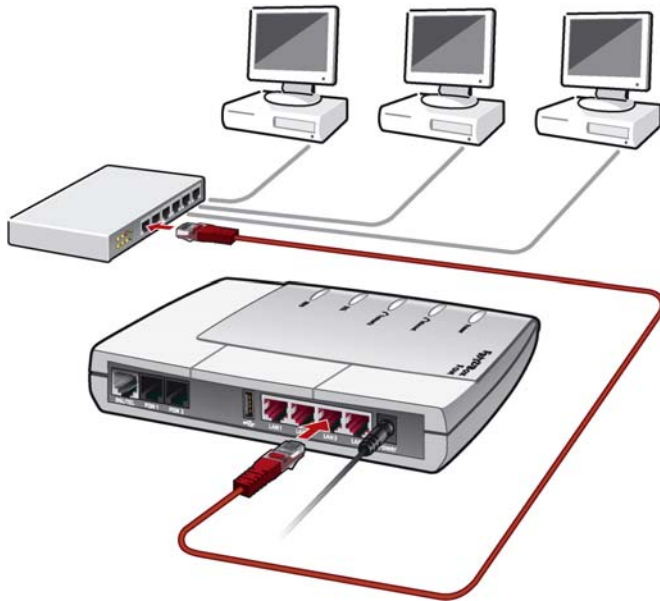
Connecting More Computers to the LAN Ports

Additional cables are required to connect further computers. In purchasing a LAN cable, note the instructions in the section “Network Cable” on page 106.

You can connect a computer to any of the four LAN ports of the FRITZ!Box Fon at any time.

If you need to connect more than four computers using the LAN ports of FRITZ!Box Fon, you can connect a network hub or network switch to expand the number of ports.

Connect a Network Hub or Switch

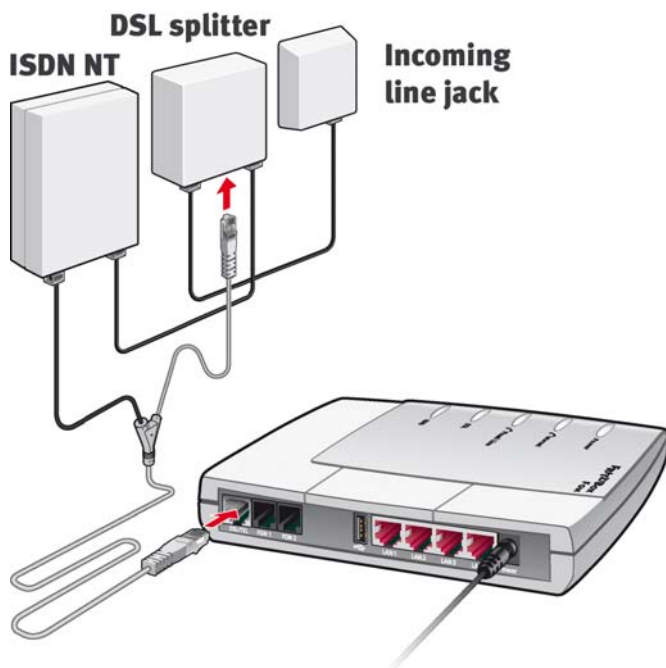


Connecting FRITZ!Box Fon to a network hub

1. Connect FRITZ!Box Fon to the power supply and to DSL as described on Seite 14.
2. Connect one end of the red LAN cable to the uplink port of the network hub or switch.
3. Connect the other end of the LAN cable to a socket on the FRITZ!Box Fon labeled “LAN 1”, “LAN 2”, “LAN 3” or “LAN 4”.
4. Please see the instructions in the section “Opening the User Interface” on page 23.

2.6 Connecting to the ISDN Line

The FRITZ!Box Fon only has to be connected to ISDN if you have an ISDN basic access.



Connecting to the ISDN NT

Cable

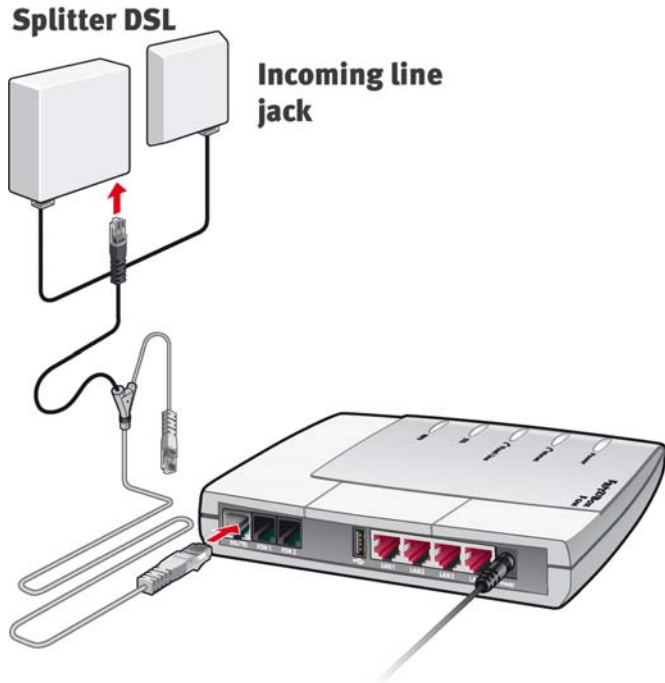
The gray and black Y-shaped cable is for connecting to the ISDN line. This cable is a combination of a DSL cable and a telephone cable.

Connecting

1. Connect the longer, gray end of the cable to the socket labeled “DSL/TEL”, located at the far left of the back panel of the FRITZ!Box Fon.
2. Insert the black end of the Y-branch of the cable into the socket of your ISDN NT.

2.7 Connecting to the Analog Telephone Line

The FRITZ!Box Fon only has to be connected to the analog telephone line if you have an analog telephone line.



Connecting to the analog telephone line via the DSL splitter

Cable

The gray and black Y-shaped cable is for connecting to the analog line. This cable is a combination of a DSL cable and a telephone cable.

Connecting

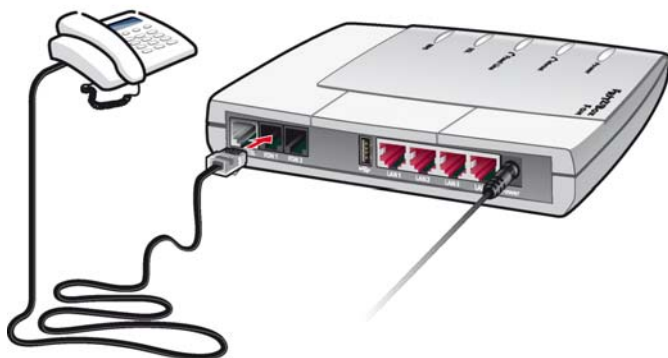
1. Connect the longer, gray end of the cable to the socket labeled “DSL/TEL”, located at the far left of the back panel of the FRITZ!Box Fon.
2. Then insert the black plug into the appropriate jack of your DSL splitter.

2.8 Connecting Telephone, Fax, Answering Machine

If you would like to use analog equipment like your telephone, fax or answering machine for Internet or fixed-line telephony with the FRITZ!Box Fon, this equipment must be connected to the FRITZ!Box Fon.

In order to use the ISDN fixed-line network, the FRITZ!Box Fon must be connected with the ISDN line (see the section “Connecting to the ISDN Line” from page 20).

In order to use the analog fixed-line network, the FRITZ!Box Fon must be connected with the analog fixed line (see the section “Connecting to the Analog Telephone Line” from page 21).



Connecting an analog telephone to FRITZ!Box Fon

Connecting

To connect analog terminal devices like a telephone, fax device or answering machine, insert the plugs of your analog devices into the “FON 1” or “FON 2” socket on FRITZ!Box Fon.

Connecting a Second Analog Device

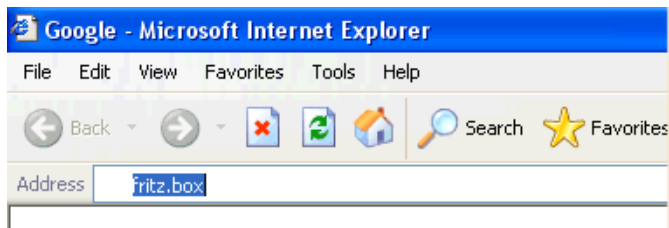
You can connect a second analog device at any time by the same method.

3 Opening the User Interface

Once you have connected FRITZ!Box Fon with one or more computers, or with a network hub or switch, you can configure the settings for operation with FRITZ!Box Fon.

The settings are configured on the FRITZ!Box Fon user interface. This interface can be accessed from any of the computers connected with FRITZ!Box Fon. The settings are saved in FRITZ!Box Fon.

Open your Internet browser on the computer and enter “fritz.box”.



The “fritz.box” address entry in the address field of an Internet browser

When the FRITZ!Box Fon user interface is started, FRITZ!Box Fon is ready for operation.

The FRITZ!Box Fon user interface has several pages, each of which can be accessed directly by clicking the menu command on the left edge.



If the user interface does not open, see the instructions in the section “Errors Opening the User Interface” from page 53.

See the section “Configuring Internet Connections” from page 24 for instructions on configuring Internet connections for FRITZ!Box Fon.

4 Configuring Internet Connections

There are two different ways for FRITZ!Box Fon to connect to the Internet. In both cases you need account information from an Internet Service Provider:

- The FRITZ!Box Fon establishes the connection with the Internet and makes it available to all of the computers connected with the FRITZ!Box Fon. In this mode the FRITZ!Box Fon functions as a **DSL router**.

For information about how to configure FRITZ!Box Fon for this operating mode, see the section “FRITZ!Box Fon as a DSL Router” from page 24.

- The computers connected to FRITZ!Box Fon establish the Internet connections themselves. In this case FRITZ!Box Fon works like a **DSL modem** and is responsible only for forwarding data.

How to configure the FRITZ!Box Fon and the computers connected with it for this operating mode is described in the section “FRITZ!Box Fon as a DSL Modem” from page 26.

4.1 FRITZ!Box Fon as a DSL Router

So that the FRITZ!Box Fon can establish the Internet connection itself, an Internet connection must be configured with the account information from your Internet Service Provider in the FRITZ!Box Fon. All connected computers can then use this Internet connection at the same time. It is not necessary to install any additional Internet access software on the other connected computers.

In this mode FRITZ!Box Fon works like a DSL router and uses the Internet Service Provider's account information.

Configuring an Internet Connection in FRITZ!Box Fon

To configure the Internet connection, enter the Internet account information from your Internet Service Provider in the FRITZ!Box Fon. To do so, proceed as follows:

1. Have the Internet access information you received from your Internet Service Provider handy.
2. Open the FRITZ!Box Fon user interface and select the “Internet / Account Information” menu.
3. Select the setting “Use one Internet connection for all computers (router)” if this setting is not already configured.
4. Enter the account information you received in the appropriate fields.
5. Click the “Apply” button to transmit your entries to the FRITZ!Box Fon.

The FRITZ!Box Fon is now configured as a DSL router and all connected computers can use the Internet access at the same time.



Use the “Clear Internet connection automatically” function if your Internet connection is charged for online time. This function clears an idle connection after the period specified here.

Establishing the Internet Connection

No further steps are necessary to establish an Internet connection. Simply start an Internet browser on any of the computers connected to FRITZ!Box Fon and start surfing the Net.



Make sure FRITZ!Box Fon automatically assigns IP addresses to all computers that are supposed to use this Internet connection. For instructions, see the section “IP Settings” from page 57.

4.2 FRITZ!Box Fon as a DSL Modem

For the computers connected to the FRITZ!Box Fon to be able to establish their Internet connections themselves and use the FRITZ!Box Fon as a DSL modem, two prerequisites must be fulfilled:

- FRITZ!Box Fon is configured as a DSL modem.
- An Internet connection must be configured on each computer, using the Internet access software and the account information from an Internet Service Provider.

If your Internet Service Provider supplies its own access software, you can use this software for your computers.



It is generally not permitted to establish more than one Internet connection at a time using the same account information from an Internet Service Provider.

A separate Internet connection must be set up on each computer if all connected computers are to be allowed Internet access at the same time. This means that you need separate account information for each computer. Each computer then establishes its own Internet connection, subject to its own charges.

If you connected multiple computers with FRITZ!Box Fon and would like to allow Internet access for all of them, it is advisable to operate FRITZ!Box Fon as a DSL router.

Configuring FRITZ!Box Fon as a DSL Modem

1. Open the FRITZ!Box Fon user interface and select the “Internet / Account Information” menu.
2. Disable the setting “Use one Internet connection for all computers (router)”.
3. Click the “Apply” button to transmit the setting to the FRITZ!Box Fon.

Now the FRITZ!Box Fon can be used as a DSL modem by all of the computers connected to it.

Configuring an Internet Connection on a Computer

1. Have the Internet access information you received from your Internet Service Provider handy.
2. Install the Internet access software on the computer.
3. Start the Internet access software and enter the account data.

Establishing Internet Connections

Use the Internet access software to establish a connection to your Internet Service Provider. As soon as the connection is established, you can start an Internet browser on your computer and surf the Internet.

5 USB Devices

The FRITZ!Box Fon has a built-in USB host controller. A USB host controller provides a USB port to which you can connect USB devices. The USB host controller is suitable for connecting the following USB devices:

- USB mass storage devices (hard drives or memory sticks)
- USB printers
- USB hubs

5.1 Connecting USB Devices

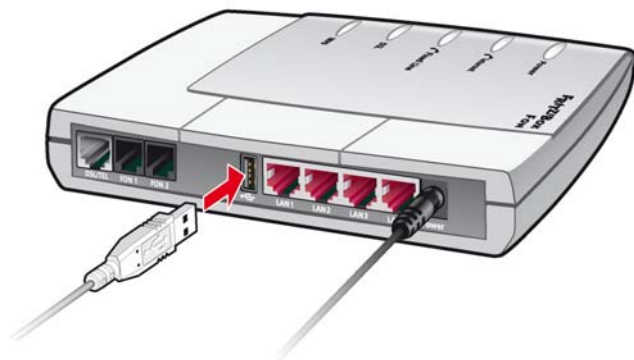
Some of the USB devices, such as memory sticks, are inserted directly into the USB port of the USB host controller. Other devices like USB printers are connected to the USB host controller by means of a USB cable.



To connect a USB device via a USB cable, insert the end of the cable with the flat plug into the USB port of the USB host controller.



The end of the cable with the square plug goes into the USB port of your USB device.



Connecting a USB cable to the USB host controller

5.2 USB Mass Storage Devices

USB mass storage devices include hard drives and memory sticks.

File Systems Supported

The USB host controller supports the mass-storage file systems FAT and FAT32.

Connecting the USB Mass Storage Device

A USB mass storage device can be connected either directly to the USB host controller, or via the USB hub (see the section “USB Hub” on page 35).

Configuring Access Rights and Password Protection for the USB Mass Storage Devices

On the FRITZ!Box Fon user interface you can configure access rights and a password to protect the USB mass storage devices.

1. Open a web browser on one of the computers connected to the FRITZ!Box Fon.
2. Open the FRITZ!Box Fon user interface (see the section “Opening the User Interface” on page 23).
3. Set up the access rights and password protection for the USB mass storage devices in the “USB Devices / Mass Storage Device” menu.



The access rights and password are valid for all USB mass storage devices. It is not possible to assign a different password for each individual mass storage device.

Accessing the Data in the USB Mass Storage Device

USB mass storage devices connected to the FRITZ!Box Fon directly or via a USB hub are displayed with their device name in the “USB Devices / Mass Storage Device” menu on the user interface.

The data saved on the USB mass storage devices are accessed by means of FTP (File Transfer Protocol):

1. Click the name of the mass storage device in the “USB Devices / Mass Storage Device” menu or open a web browser and enter “FTP://fritz.box” in the address field.
2. The folder structure of the USB mass storage device is displayed in your web browser.

If you are using Microsoft Internet Explorer, you can simply copy files from your mass storage device to your computer and vice versa (by means of “drag and drop”, for instance). If you use a different browser, see the corresponding documentation for instructions about exchanging files via FTP.

Files from the mass storage device cannot be executed or opened in a suitable program until they have been copied to your computer or your local network.

5.3 USB Printers

The FRITZ!Box Fon is equipped with a printer server that allows you to use a USB printer connected to the USB host controller as a network printer. The printer is then available to all computers connected with the FRITZ!Box Fon.

Please note the following when connecting the printer:

- Only printers that can be addressed with the device class “Printer” are supported. Please note that many multi-function devices (like fax-scanner-printer combinations) can not be addressed with the USB device class “Printer”.
- Host-based printers, like those that work according to the GDI system, are not supported for operation with the FRITZ!Box Fon.
- For multi-function devices (printers with additional functions like fax or scanning), only the printing function is supported.
- If your printer is equipped with a status monitor, you may not be able to use this.

- **Computers with Linux:**
The printer must be supported by the CUPS (Common UNIX Printing System) software and be detected correctly at the USB/accessory port on FRITZ!Box.
- **Apple computers**
A printer can be used only if its drivers can be selected in the Printer Setup Utility or if a compatible driver is available there.

The printer connection must be configured, and the suitable printer drivers installed, on every computer from which you want to use the network printer. Print jobs are forwarded to the IP address of the printer server in the local network via the printer port.

Configuring the Printer Port in Windows

If the “FRITZ!Box” entry is already listed in the “Programs” group of the start menu of the computer, this means that the printer port is already configured on this computer.

Otherwise, work through the following steps to create the entry in the start menu and thus configure the printer port:

1. Make sure that the FRITZ!Box Fon is connected to the computer and accessible.

The FRITZ!Box Fon is accessible whenever you can open the user interface (see the section “Opening the User Interface” on page 23).

2. Insert the FRITZ!Box Fon CD in your CD-ROM drive.

The Installation Help for starting operation of the FRITZ!Box Fon is started.

3. Click the “View CD Contents” button.
4. Click the “Start Menu Entry” button.

The printer port designated “AVM: (FRITZ!Box USB Printer Port)” will be configured.

Now you can install the printer drivers of the printer connected to FRITZ!Box Fon for this printer port.

Installing Print Drivers in Windows XP/2000

1. Open the start menu of the computer and click the “Printers and Faxes” entry (Windows XP) or click “Start / Settings / Printer” (Windows 2000).
2. In the “Printers and Faxes” window, click “Add a printer” in the “Printer Tasks” area on the left hand side. In Windows 2000, click “Add Printer” in the “Printers” window.

The Add Printer Wizard will be started.

3. Click “Next”.
4. Select the option “Local printer attached to this computer” (Windows XP) or “Local Printer” (Windows 2000) and make sure that the setting “Automatically detect and install my Plug and Play printer” is disabled.

You must make this selection because the printer port on the computer functions as a local port.

5. Click “Next”.
6. In the “Select a Printer Port” window, select the option “Use the following port” and select “AVM: (FRITZ!Box USB Printer Port)” from the list field. Click “Next”.
7. Select the manufacturer for the USB printer connected to the FRITZ!Box Fon from the “Manufacturers” list and then select the exact model from the “Printers” list.

If the manufacturer or the model is not included in the lists, use an installation disk or CD with the required files and click “Have Disk...”.

8. In the “Name Your Printer” window, answer the question “Do you want to use this printer as the default printer?” (Windows XP) or “Do you want your Windows-based programs to use this printer as the default printer?” (Windows 2000) with “No”.

Installing Print Drivers in Windows Me/98

1. In the “Start / Settings” menu, click the “Printers” entry.
2. In the “Printers” window, click “Add Printer”.
The “Add Printer Wizard” is started.
3. Click “Next”.
4. Select the option “Local printer” and then click “Next”.
5. Select the manufacturer for the USB printer connected to the FRITZ!Box Fon from the “Manufacturers” list and then select the exact model from the “Printers” list.

If the manufacturer or the model is not included in the lists, use an installation disk or CD with the required files and click “Have Disk...”.
6. Click “Next”.
7. From the list of “Available ports”, select the entry “AVM: (FRITZ!Box USB Printer Port)” and click “Next”.
8. Continue by following the instructions on the screen and conclude the installation of the printer driver with “Finish”.

Configuring Printers in SUSE Linux Systems

You can connect a USB printer to the USB/accessory port on the FRITZ!Box and use it as a network printer. The printer is then available to all computers connected with the FRITZ!Box.

Installing a Printer

The printer can only be installed by a "superuser". Start a console and enter the following command:

```
lpadmin -p <printer name> -E -v socket://<IP address of the FRITZ!Box> -m <printer description file.ppd>
```

For the individual installation options, consult this link:

<http://www.cups.org/man/lpadmin.html>

Example

For example, the command for a laser jet printer with the name “LaserJet4” and the printer description file “laserjet.ppd” at a FRITZ!Box Fon with the default address 192.168.178.1 would read:

```
lpadmin -p LaserJet4 -E -v socket://192.168.178.1 -m laserjet.ppd
```

You can view the printer description files installed in the system by entering the command:

```
lpinfo -m.
```

Please direct questions about the printer description files appropriate for your printer to the manufacturer of the printer or the system. Comprehensive information about the CUPS print software is presented in the following documentation:

<http://www.cups.org/documentation.php>

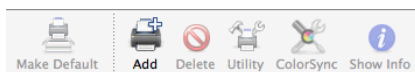
Please also direct any questions about configuration to the manufacturer of the distribution or to an Internet or usenet forum dealing especially with CUPS or the distribution used.

Configuring USB Printers on Apple Computers

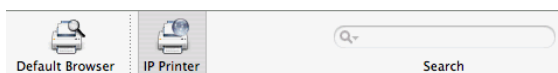
You can connect a USB printer to the USB/accessory port on the FRITZ!Box Fon and use it as a network printer. The printer is then available to all computers connected with the FRITZ!Box Fon.

Installing a Printer

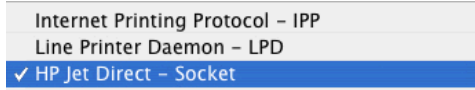
1. Under “Go / Utilities”, open the “Printer Setup Utility”.
2. Click “Add”.



3. Select “IP printer”.



- In the “Protocol” field, select the entry “HP Jet Direct - Socket”.



- Enter in the “Address” field the IP address of the FRITZ!Box Fon:
192.168.178.1:
- Leave the “Queue” field empty.
- Enter the desired values in the “Name” and “Location” fields.
- Enter a driver compatible with your printer in the “Print Using” field.
- Click the “Add” button to save your settings.



If the printer cannot be selected, try selecting a compatible printer or printer driver instead.

For information on compatible printers or printer drivers, search the Internet, for instance on the page:

http://gimp-print.sourceforge.net/p_Supported_Printers.php3

or consult the manufacturer of the printer.

5.4 USB Hub

A USB hub can be connected to the USB host controller. A USB hub is a device to extend existing USB ports.

You can connect two USB mass storage devices and one USB printer, or three USB mass storage devices (like a hard drive or memory stick) to the USB hub.



If more than one USB device without its own power supply is connected to the FRITZ!Box Fon, please note that, in accordance with the USB specification, the total current consumption may not exceed a value of 500 mA.

6 Configuring FRITZ!Box Fon for Telephone Connections

This chapter describes how to set up FRITZ!Box Fon for fixed-line and Internet telephony. The following steps are necessary:

- Entering account information and Internet numbers for Internet telephony
- Entering numbers for calls over fixed lines
- Configuring connected analog equipment

Information on the following topics is also presented here:

- Dialing rules for Internet and fixed-line telephony
- How Does Internet Telephony Work with FRITZ!Box Fon?

6.1 Entering Account Information and Internet Numbers for Internet Telephony

If you configured the Internet connection and Internet telephony using the FRITZ!Box Fon Configuration Wizard, the required data are already entered.

You can set up additional Internet numbers in FRITZ!Box Fon. To do this you will need the corresponding account information from your Internet telephony provider.

Proceed as follows to set up an additional Internet number:

1. Start a web browser.
2. Enter “fritz.box” in the address field.
3. Click the “Internet Telephony” command in the “Telephony” menu.
4. Click the “New Internet Number” button.
5. Enter the account information you received from your Internet telephony provider in the appropriate fields.
6. Click the “Apply” button.

The new number is added to the list of Internet numbers.

6.2 Entering Numbers for Calls over Fixed Lines

Your fixed-line numbers must be set up in FRITZ!Box Fon for fixed-line telephony. Proceed as follows:

1. Start a web browser.
2. Enter “fritz.box” in the address field.
3. Click the “Extensions” command in the “Telephony” menu.
4. Click the “Fixed-line Numbers” button.
5. On the “Fixed-line Numbers” page, specify whether your fixed line is an ISDN line or an analog line.
6. Enter the ISDN numbers (MSNs) or the analog number in the corresponding fields.
7. Click the “Apply” button.

6.3 Configuring Analog Equipment

FRITZ!Box Fon is configured so that you can make calls to the analog network immediately after connecting analog terminal devices, without any additional settings required.

The following settings are preconfigured on the analog lines “FON 1” and “FON 2”:

- calls can be accepted on both lines: connected terminal devices will ring at the same time
- outgoing calls can be conducted on both lines

If the connected terminal devices are to react only to certain numbers, numbers must be assigned to the extensions. The number defined as “Number of the extension” also defines whether calls from this extension will be conducted using the fixed-line network or the Internet.

To do this, perform the following steps:

1. Start a web browser.
2. Enter “fritz.box” in the address field.
3. Click the “Extensions” command in the “Telephony” menu.

4. In the “Analog Extensions” area, click the “Change Settings” button next to the number of the extension.
5. Select a number from the “Number of the extension” drop-down menu in the “Extension FON 1” area.

The terminal device connected to the “FON 1” extension reacts to incoming calls placed to this number and uses the kind of connection specified for outgoing connections with this number.
6. If you would like to assign additional numbers to the extension, select from the “Additional numbers” drop-down menus any other numbers the terminal device at the “FON 1” line should react to for incoming calls.
7. Click the “Apply” button.
8. Configure the “Extension FON 2” if necessary.

6.4 Dialing Rules for Internet and Fixed-Line Telephony

Dialing rules specify when calls are conducted on the fixed-line network, and when they take place over the Internet.

Perform the following steps to define dialing rules:

1. Start a web browser.
2. Enter “fritz.box” in the address field.
3. Click the “Dialing Rules” command in the “Telephony” menu.
4. In the “Dialing Rules” area you can define the kind of connection for ranges of numbers.

All connections to number ranges for which a dialing rule has been defined are established using the specified connection type.
5. Click the “New Dialing Rule” button to define as many dialing rules as desired.
6. Click the “Apply” button.

6.5 Selecting the Type of Connection Manually

If you would like to use a certain kind of connection (Internet or fixed-line) for a call, dial the following keys on the telephone keypad **before the number**:

Fixed-line Connections

*111# establishes a fixed-line connection

Internet Connections

*12# establishes an Internet connection. The Internet number used is the Internet number set for line 1

*12 P # establishes an Internet connection for a selected Internet number. For “P”, enter the position of the Internet number in the “List of Internet Numbers”.

6.6 How Does Internet Telephony Work?

All kinds of data transmission in the Internet use the Internet Protocol (IP). IP is packet-oriented. This means that the data are broken down into data packets for transmission and IP takes care of the transport of the individual data packets through the Internet. Language is also transmitted in the Internet in this manner.

In opposition to this, fixed-line telephony transmits data in a line-oriented manner. In this case data are transmitted in a coherent data stream.

For packet-oriented transmission in the Internet, the loss of packets cannot be ruled out completely. Under unfavorable conditions this can lead to speech quality in Internet telephony that is inferior to that in fixed-line telephony.

Telephony Scenarios

If you have configured both a fixed-line number and an Internet number in FRITZ!Box Fon, you can make calls in all directions:

- from the fixed-line network into the fixed-line network
- from the Internet into the fixed-line network
- from the Internet into the Internet

and receive calls from all directions as well.

Bandwidth Management with FRITZ!Box Fon

FRITZ!Box Fon is equipped with integrated bandwidth management. This function ensures that the speech quality during telephone calls over the Internet is not reduced by surfing activity. FRITZ!Box Fon adjusts all uploads and downloads to the currently available bandwidth. Because FRITZ!Box Fon also places a higher priority on Internet telephony connections than Internet data connections, unwelcome interference is largely avoided. However, this is also true for Internet telephony: once the conversation capacity has been reached, the remote site will receive a busy signal.

7 Network Settings

Upon delivery, the network settings of the FRITZ!Box Fon are preconfigured as follows:

Factory Settings	
All computers are located in the same IP network	enabled
IP address	192.168.178.1
Subnet mask	255.255.255.0
DHCP server	enabled

According to these settings, all computers connected with the FRITZ!Box Fon are located in the same subnetwork.

You can change any of these settings, but should only do so if you are well versed in network settings. If you do not have much experience in setting up networks, please read this chapter in full.

- The “Basics” section explains terms and concepts having to do with IP networks.
- The sections “IP Address”, “DHCP Server” and “Subnetwork” explain when it may make sense to change the preconfigured network settings, what the effects of these changes are, and how to make the changes.

7.1 Basics

What Is IP?

IP is the abbreviation for Internet Protocol.

The IP Internet Protocol is the most important basic protocol for the control of data exchange in local networks and in the Internet. The Internet protocol works without a connection; in other words, data packets are transmitted from the sender to the recipient without previous consultation. The addresses of the recipient and the sender in the data packets are given as IP addresses.

IP Network

A network in which data exchange takes place on the basis of the Internet Protocol is called an IP network.

What Is an IP Address?

The term IP address is the abbreviation for Internet Protocol address.

The IP address corresponds to the “postal” address of a device located in the Internet or in a local IP network. So that data packets are sure to be delivered to the right address, each IP address may be assigned only once within the Internet or a local IP network.

The IP address consists of four three-digit groups of numerals (e.g. 192.168.178.254). Each group of numbers can assume values between 000 and 255.

Every IP address contains two components: the network address and the host address. These two components can be read out of an IP address only if the subnet mask is also specified.

IP addresses can be public or private, and also fixed or assigned dynamically.

Public IP Address

A public IP address is an IP address valid in the Internet. Every computer or router participating in the Internet must have a public IP address. This address is usually negotiated dynamically with the Internet provider when a connection to the Internet is dialed. The Internet provider assigns the negotiated IP address to the computer or router for the duration of an Internet session.

Private IP Address

Private IP addresses are used for computers and other network devices within local IP networks.

Since many local IP networks are not connected to the Internet except via single computers or routers (gateway), certain address ranges are excluded from the publicly available IP

addresses so that they are available for assignment in local IP networks. An IP address may only be assigned once within the local network. A private IP address may exist in any number of other local networks.

Fixed IP Address

Fixed IP addresses are IP addresses which are permanently assigned to a computer or another device like a network printer.

Assigning fixed IP addresses makes sense in cases where a local network has a sufficiently large pool of IP addresses available, or when a computer is always supposed to be accessible at a certain address (such as a web server or e-mail server).

Dynamic IP Address

A dynamic IP address is an IP address valid only for the duration of one Internet or network session.

Every computer participating in the Internet must have a uniquely assigned public IP address. Since only a limited number of such IP addresses is available, they must be used sparingly. That is why most of the Internet participants who dial in to the Internet receive a dynamic IP address. They are called dynamic because every participant receives a new public address that has not been assigned yet each time he or she dials in to the Internet.

By contrast, dynamic addresses are usually used in local IP networks because they are easy to handle, and because using them avoids incorrect IP address entries or unintentional double assignments. The DHCP service is responsible for assigning unique dynamic IP addresses.

Subnetwork

A local IP network can consist of one subnetwork or be divided into multiple subnetworks. The division into subnetworks is performed when the local IP network is configured. The subnetworks of a local IP network are also IP networks.

Subnet Mask

The subnet mask indicates which part of an IP address is the network address and which the address of the computer. The network address defines what is called the subnet.

Example 1

IP Address:	192.168.178.254
-------------	-----------------

Subnet mask:	255.255.255.0
--------------	---------------

The assignment of the first three groups of numerals in the subnet mask indicates that the first three groups of numerals in the IP address define the network. The following addresses result:

Network address of the subnet:	192.168.178.0
--------------------------------	---------------

Address of the computer in the subnet:	192.168.178.254
--	-----------------

IP address pool in the subnet:	192.168.178.0 - 192.168.178.255
--------------------------------	---------------------------------

The IP addresses 192.168.178.0 and 192.168.178.255 are reserved. This means that the addresses from 192.168.178.1 to 192.168.178.254 are available for assignment to the computers.

Example 2

IP Address:	192.168.178.254
-------------	-----------------

Subnet mask:	255.255.0.0
--------------	-------------

The assignment of the first two groups of numerals in the subnet mask indicates that the first two groups of numerals in the IP address define the network. The following addresses result:

Example 2

Network address (subnet): 192.168.0.0

Address of the computer in the subnet: 192.168.178.254

IP address pool in the subnet: 192.168.0.0 - 192.168.255.255

The IP addresses 192.168.0.0 and 192.168.255.255 are reserved. This means that the addresses from 192.168.0.1 to 192.168.255.254 are available for assignment to the computers.

What Is DHCP?

DHCP is the abbreviation for Dynamic Host Configuration Protocol.

DHCP is a protocol for the dynamic negotiation of the operating parameters for the TCP/IP protocol (TCP is a transport protocol based on the Internet protocol). The computers of a local IP network (DHCP clients) access the DHCP server as part of their operating systems' start procedure.

The DHCP server assigns each client an IP address that has not yet been assigned at the present time. The DHCP server also informs the client of the IP addresses of the DNS server to be used and of the default gateway. In assigning the IP addresses the DHCP server selects from a prescribed pool of IP addresses.

The central administration of the TCP/IP operation parameters makes it possible to avoid address conflicts due to IP addresses accidentally assigned more than once.

7.2 IP Address

The FRITZ!Box Fon is delivered with an IP address preset.

Factory Settings	
All computers are located in the same IP network	enabled
IP address	192.168.178.1
Subnet mask	255.255.255.0
DHCP Server	enabled

The IP address and the corresponding subnet mask automatically yield the following values:

Network address of the subnet	192.168.178.0
Entire IP address pool for the computers	192.168.178.2 - 192.168.178.253

You can change the preset IP address.

When Does It Make Sense to Change the IP Address?

You should change the IP address of the FRITZ!Box Fon if the following apply to your network:

- You have an existing local IP network, one subnet with several computers.
- Fixed IP addresses are registered in the network settings of the computer, and you do not want to or are not permitted to change these addresses.
- You want to connect the FRITZ!Box Fon to the subnet in order to make the FRITZ!Box Fon features available to all of the computers in the subnet.

What IP Address Must You Assign for the FRITZ!Box Fon and What Else Must Be Taken into Consideration?

- The IP address must come from the address range of your existing subnet.
- The subnet mask must correspond with that of the connected subnet.
- When the DHCP server of the FRITZ!Box Fon is enabled, the addresses 20 through 200 in the fourth group of numerals of the IP address are reserved for the DHCP server. If none of the computers in your network has an address from this pool, the DHCP server can remain switched on. If one of the computers has a fixed address assigned from this pool, you should switch off the DHCP server.
- If you can no longer open the FRITZ!Box Fon user interface after entering the IP address, see the information in the section “Opening the FRITZ!Box Fon User Interface via the Fixed IP Address” from page 56.

Reserved IP Addresses

The following address range is reserved in FRITZ!Box Fon for internal purposes.

192.168.180.1 - 192.168.180.254

IP addresses from this range may not be assigned to FRITZ!Box Fon.

How Can the IP Address be Changed?

1. Open the FRITZ!Box Fon user interface (see the section “Opening the User Interface” on page 23).
2. Click “Expert Mode” in the “System” menu, enable the setting “Show expert settings” and confirm this setting by clicking “Apply”.
3. Open the “System / Network Settings” menu.
4. Click the “IP Addresses” button.

5. Make the changes on the “IP Settings” page and then click “Apply”.

7.3 DHCP Server

FRITZ!Box Fon is equipped with its own DHCP server. The DHCP server is enabled by default in the factory settings. Every time the operating system on a computer connected with FRITZ!Box Fon is started, it is assigned an IP address by the DHCP server.



Only one DHCP server may be active within any network.

Factory Settings	
All computers are located in the same IP network	enabled
IP address	192.168.178.1
Subnet mask	255.255.255.0
DHCP Server	enabled

The IP address, the corresponding subnet mask and the activated DHCP server automatically yield the following values:

Network address of the subnet	192.168.178.0
Entire IP address pool for the computers	192.168.178.2 - 192.168.178.253
Address pool of the DHCP server: 192.168.178.20 - 200	

In every subnet of the FRITZ!Box Fon, the addresses 20 through 200 in the fourth group of numerals of the IP address are reserved for the DHCP server.

Assigning the IP addresses via the DHCP server ensures that all of the computers connected with the FRITZ!Box Fon are located in a single subnet.



The computers can receive their IP addresses from the DHCP server only if the setting “Obtain an IP address automatically” is enabled in their IP settings. For more information, see the section “IP Settings” from page 57.

Fixed IP Addresses when the DHCP Server Is Enabled

If you would like to assign fixed IP addresses to individual computers connected with FRITZ!Box Fon, despite the fact that the DHCP server is enabled, then you must disable the option “Obtain an IP address automatically” in this computer’s network settings and enter the fixed IP address manually.

Which IP Addresses Can You Assign to the Computers?

- The IP addresses must be from the same subnet as FRITZ!Box Fon.
- The IP addresses may not come from the address pool of the DHCP server.

If the factory settings are not changed, that means the following IP addresses are available:

192.168.178.2 - 192.168.178.19

192.168.178.201 - 192.168.178.253

Each IP address can be assigned only once.

Disabling the DHCP Server

You can switch off the DHCP server.

To make sure that all computers remain in the same subnet as the FRITZ!Box Fon even when the DHCP server is disabled, you must enter the IP addresses manually in the computers’ network settings. First disable the option “Obtain an IP address automatically” and then enter the IP address manually in the appropriate field.

In the case of the preset IP address of the FRITZ!Box Fon, the following IP addresses are available for assignment to the computers:

192.168.178.2 - 192.168.178.253

Each IP address can be assigned only once.

Changing the DHCP Server Settings

Proceed as follows to open the DHCP server settings:

1. Open the FRITZ!Box Fon user interface (see the section “Opening the User Interface” on page 23).
2. Click “Expert Mode” in the “System” menu, enable the setting “Show expert settings” and confirm this setting by clicking “Apply”.
3. Open the “System / Network Settings” menu.
4. Click the “IP Addresses” button.

The “IP Settings” page is opened. Here you can make the settings for the DHCP server.

7.4 Subnetwork

By default the option “All computers are located in the same IP network” is enabled in the FRITZ!Box Fon.

Factory Settings	
All computers are located in the same IP network	enabled
IP address	192.168.178.1
Subnet mask	255.255.255.0
DHCP Server	enabled

If the factory settings were not changed, this setting has the following effect:

The DHCP server of the FRITZ!Box Fon assigns all of the computers connected with the FRITZ!Box Fon an IP address from the address pool of the DHCP server.

Address pool of the DHCP server: 192.168.178.20 - 200

This means that all of the computers connected with the FRITZ!Box Fon are located in the same subnet.

“All computers are located in the same IP network” Is Disabled

If you switch off the setting “All computers are located in the same IP network”, the interfaces of the FRITZ!Box Fon will receive their own IP addresses. The following settings are configured by default:

Interface	IP address	Subnet mask	DHCP server
LAN 1	192.168.178.1	The subnet mask	The DHCP server is
LAN 2	like LAN 1	255.255.255.0 is	enabled at
LAN 3	like LAN 1	set at every	every interface.
LAN 4	like LAN 1	interface.	

This the following address ranges are available to the DHCP server:

Interface	Address range of the DHCP server at the interface
LAN 1	192.168.178.20 - 200
LAN 2	like LAN 1
LAN 3	like LAN 1
LAN 4	like LAN 1

Computers connected with the FRITZ!Box Fon via different interfaces are located in different subnets.

Interface	Network address of the subnet
LAN 1	192.168.178.0
LAN 2	like LAN 1
LAN 3	like LAN 1
LAN 4	like LAN 1

Disabling the Setting “All computers are located in the same IP network”

Proceed as follows to open the DHCP server settings:

1. Open the FRITZ!Box Fon user interface (see the section “Opening the User Interface” on page 23).
2. Click “Expert Mode” in the “System” menu, enable the setting “Show expert settings” and confirm this setting by clicking “Apply”.
3. Open the “System / Network Settings” menu.
4. Click the “IP Addresses” button.

The “IP Settings” page is opened. Here you can change the setting “All computers are located in the same IP network”.

8 Troubleshooting

This chapter provides advice if you are not able to open the user interface of your FRITZ!Box Fon or if you want to change the IP settings on your computer.

8.1 Errors Opening the User Interface

If you see an error message when you open the user interface, work through the following steps to find the source of the error and resolve the error.

Checking the Cable Connections

Make sure that all cable connections are plugged in securely. The LED labeled “Power/DSL” must be lit up.

Entering the IP Address of the FRITZ!Box Fon in the Internet Browser

In the Internet browser, enter the following IP address in place of “fritz.box”:

192.168.178.1

Obtaining an IP Address Automatically

The IP addresses of the connected computers must be assigned automatically (see “IP Settings” from page 57).

Checking the Internet Browser Settings

Check the settings of the Internet browser:

- The browser must use the network connection between the computer and FRITZ!Box when the user interface is opened. For this the automatic establishment of a Dial-Up Networking connection must be disabled.
- The Internet browser must be in online operation.
- If the Internet browser uses a proxy server, the DNS name and the IP address of the FRITZ!Box must be entered as exceptions in the proxy settings of the Internet browser.
- The user interface must be allowed to execute CGI scripts.

Example: Checking the Settings of Internet Explorer 6

Disable Automatic Dial-Up Connections

1. Select the “Connections” settings page under “Tools / Internet Options...”.
2. In the “Dial-up Networking and Virtual Private Network settings” section, enable the option “Never dial a connection”.
3. As a final step, click “Apply” and then “OK”.

Configure Internet Explorer 6 for Online Operation

1. Open the “File” menu.
2. If a checkmark is displayed in front of “Work Offline”, click this line. The checkmark will be removed and Internet Explorer will switch to online operation.

Enter the DNS name and IP address of the FRITZ!Box as exceptions in the proxy settings of the web browser

1. Select the “Connections” settings page under “Tools / Internet Options...”.
2. Click the “LAN Settings...” button in the section “Local Area Network (LAN) settings”, and in the next window, click the “Advanced...” button in the “Proxy server” section.
3. Enter as “Exceptions”: fritz.box; 192.168.178.1 and click “OK”.

Allow Execution of CGI Scripts on the User Interface

1. Select “Tools / Internet Options... / Security”.
2. If the “Default Level” button is not available for selection, the “Medium” security level is already configured, which means that CGI scripts can be executed on the user interface.
3. Proceed as follows if the “Default Level” button is available for selection:
4. Select the “Local Intranet” icon and click the “Sites...” button.
5. In the next window, click the “Advanced...” button and enter in the “Add this Web site to the zone:” field:
fritz.box
6. Disable the option “Require server verification (https:) for all sites in this zone”.

Checking the Protection Software

Protection software like firewalls and security software can block access to the FRITZ!Box Fon user interface. Set exceptions for the FRITZ!Box Fon in all active protection software.



If you would like to exit protection software to test access to the FRITZ!Box Fon, remove the DSL cable first! After testing, first start the protection software before reinserting the DSL cable and connecting to the Internet!

Restarting the FRITZ!Box Fon

Restart the FRITZ!Box Fon. Remove the mains cable from the socket. Wait five seconds before reconnecting to the power supply.

If these points are all in order but you still have no access to the user interface, work through the following instructions:

Opening the FRITZ!Box Fon User Interface via the Fixed IP Address

FRITZ!Box Fon is equipped with a fixed IP address that cannot be changed. FRITZ!Box Fon **always** can be reached at this IP address. This fixed IP address is:

192.168.178.254

Proceed as follows to open the FRITZ!Box Fon user interface using this IP address:

1. Take note of the computer's current IP settings.
2. Change the IP settings by entering the following fixed IP address:

192.168.178.250

3. Start your Internet browser and enter FRITZ!Box Fon's fixed IP address:

192.168.178.254

The FRITZ!Box Fon user interface opens.

4. Once you have reached the FRITZ!Box Fon user interface again, you should check the FRITZ!Box Fon settings and correct them if necessary.

Enter the settings you noted in the computer's IP settings dialog.

8.2 IP Settings

FRITZ!Box Fon is equipped with its own DHCP server. This means that FRITZ!Box Fon assigns the connected computers their IP addresses. The connected computers must be configured such that they can receive their IP addresses automatically from FRITZ!Box Fon. The steps for checking and adjusting this option differ among the operating systems. See the relevant section for your operating system.



If FRITZ!Box Fon is operated in a network, no other DHCP server may be activated in this network. If you need to operate a DHCP server, please disable the DHCP feature in the “Advanced System Settings”.

Linux

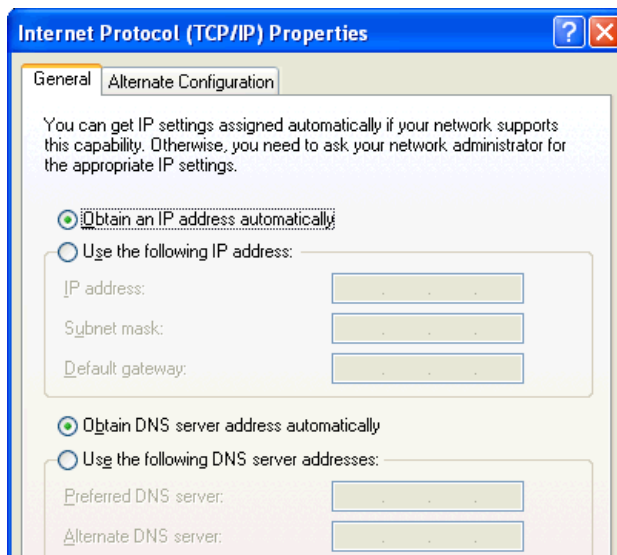
For comprehensive information and tips on the topic of network configuration in Linux, see:

<http://www.linux.org/docs/ldp/howto/NET3-4-HOWTO-5.html>

Obtaining an IP Address Automatically in Windows XP

Proceed as follows in Windows XP:

1. Go to “start / Control Panel / Network and Internet Connections / Network Connections” and double-click to select the LAN connection of the network adapter connected to FRITZ!Box Fon.
2. Click the “Properties” button.
3. Select “Internet Protocol (TCP/IP)” in the list of items used in this network connection and click “Properties”.
4. Enable the options “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



Properties of the Internet protocol (TCP/IP)

5. Confirm your selection by clicking “OK”.

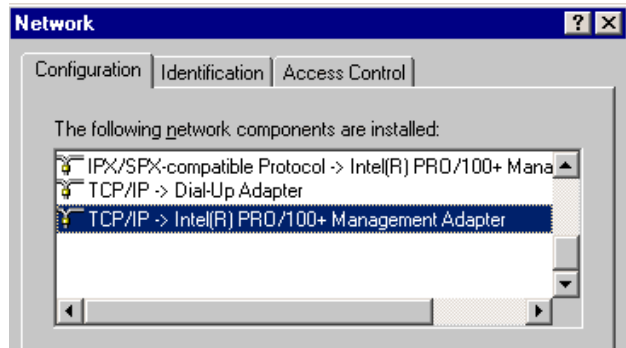
The computer now receives an IP address from FRITZ!Box Fon.

Obtaining an IP Address Automatically in Windows Me/98

Proceed as follows in Windows Me/98:

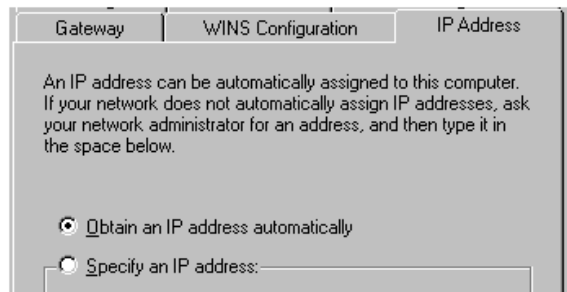
Keep your Windows CD handy, as this may be required for changes to your network settings.

1. Select “Start / Settings / Control Panel”.
2. Double-click the “Network” entry to open it.
3. In the list, double-click to select the binding designated with an arrow, “TCP/IP -> <network adapter bound to FRITZ!Box Fon 5124”.



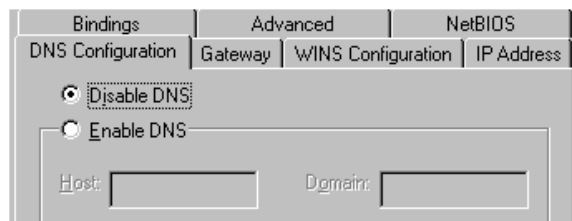
TCP/IP binding to a network adapter

4. Enable the option “Obtain an IP address automatically”.



The “Obtain an IP address automatically” option

5. On the “DNS Configuration” settings page, enable the “Disable DNS” option.



The “Disable DNS” option

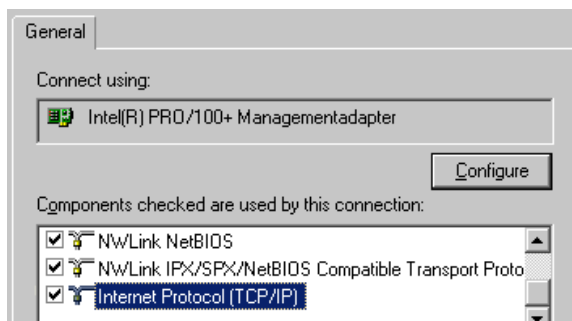
6. Confirm your selection by clicking “OK”.

The computer now receives an IP address from FRITZ!Box Fon.

Obtaining an IP Address Automatically in Windows 2000

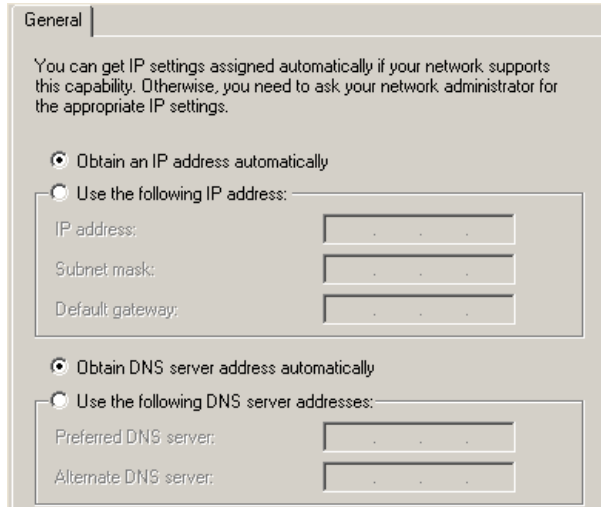
Proceed as follows in Windows 2000:

1. Select “Start / Settings / Control Panel / Network and Dial-up Connections”.
2. Double-click to select the Local Area Network connection with the network adapter bound to FRITZ!Box Fon.
3. Click the “Properties” button.
4. Double-click to select “Internet Protocol (TCP/IP)” in the list of network components.



Properties of the LAN connection of a network adapter

5. Enable the options “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



The “Obtain an IP address automatically” option

6. Confirm your selection by clicking “OK”.

The computer now receives an IP address from FRITZ!Box Fon.

Obtaining an IP Address Automatically in Mac OS X

In the Mac OS X operating system, proceed as follows to set the TCP/IP properties:

1. Select the “System Preferences” in the Apple menu.
2. In the “System Preferences” window, click the “Network” icon.
3. In the “Network” window, select the “Built-in Ethernet” entry from the “Show:” drop-down menu.
4. Switch to the “TCP/IP” settings page and select the “Using DHCP:” option from the “Configure” drop-down menu.
5. Click “Apply Now”.

9 Removing the FRITZ!Box Fon

If you would like to clear the connection between the FRITZ!Box Fon and a computer, please take note of the information in this chapter.

9.1 Ending the Connection to the Computer

LAN Ports

If the computer is connected to one of the LAN ports on the FRITZ!Box Fon, simply remove the network cable.

If the computer is connected to the FRITZ!Box Fon via a network hub or switch, remove the network cable between the computer and the network hub or switch.

9.2 Removing the Program Group

If the “FRITZ!Box” program group is installed on a computer and you would like to remove it, perform an uninstallation using the Windows Control Panel.

Removing the Program Group in Windows XP

Proceed as follows to remove the “FRITZ!Box” program group in Windows XP:

1. Open “start / Control Panel / Add or Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!Box” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes uninstallation of the program group.

Removing the Program Group in Windows Me and 98

Proceed as follows to remove the “FRITZ!Box” program group:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”.
2. Select the “AVM FRITZ!Box” entry from the list of “Currently Installed Programs”.
3. Click the “Add/Remove...” button.

Rebooting the computer concludes the uninstallation of the program group.

Removing the Program Group in Windows 2000

Proceed as follows to remove the “FRITZ!Box” program group in Windows 2000:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!Box” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes uninstallation of the program group.

9.3 Removing FRITZ!DSL

If the FRITZ!DSL Start Center software program group is installed on a computer and you would like to remove it, perform an uninstallation using the Windows Control Panel.

Removing the FRITZ!DSL Start Center in Windows XP

Proceed as follows to remove the FRITZ!DSL Start Center software in Windows XP:

1. Open “start / Control Panel / Add or Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!DSL” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes the uninstallation of FRITZ!DSL Start Center.

Removing FRITZ!DSL Start Center in Windows Me and 98

Proceed as follows to remove the FRITZ!DSL Start Center:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”.
2. Select the “AVM FRITZ!DSL” entry from the list of currently installed programs.
3. Click the “Add/Remove...” button.

Rebooting the computer concludes the uninstallation of the FRITZ!DSL software package.

Removing FRITZ!DSL Start Center in Windows 2000

Proceed as follows to remove the FRITZ!DSL Start Center software in Windows 2000:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!DSL” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes the uninstallation of FRITZ!DSL Start Center.

9.4 Uninstallation of the Printer Port

If the AVM FRITZ!Box printer port is installed on a computer and you would like to remove it, perform an uninstallation using the Windows Control Panel.

Removing the Printer Port in Windows XP

Proceed as follows to remove the “AVM FRITZ!Box Printer Port” in Windows XP:

1. Open “start / Control Panel / Add or Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!Box Printer Port” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes the uninstallation of the printer port.

Removing the Printer Port in Windows Me and 98

Proceed as follows to remove the “AVM FRITZ!Box Printer Port”:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”.
2. Select the “AVM FRITZ!Box Printer Port” entry from the list of currently installed programs.
3. Click the “Add/Remove...” button.

Rebooting the computer concludes the uninstallation of the printer port.

Removing the Printer Port in Windows 2000

Proceed as follows to remove the “AVM FRITZ!Box Printer Port” in Windows 2000:

1. Open “Start / Settings / Control Panel / Add/Remove Programs”. Make sure that the “Change or Remove Programs” button is selected in the column at left.
2. Select the “AVM FRITZ!Box Printer Port” entry from the list of “Currently installed programs”.
3. Click the “Change/Remove” button.

This completes the uninstallation of the printer port.

10 Configuration and Operation by Telephone

Many of the FRITZ!Box Fon functions and features can be configured and used over a telephone connected to a FRITZ!Box Fon extension. Only tone-dialing (dual-tone multi-frequency = DTMF) telephones can be used in configuration and operation. Pulse dialing telephones are not suitable.



The telephone network features can be used only if they are supported by your telephone network carrier and enabled on your telephone line.

Entries input on the telephone are confirmed with an acknowledgement tone. Entries made correctly are confirmed with a positive acknowledgement tone (a single tone of one second in length). An error, such as an incorrect key sequence, is indicated by a failure tone, an intermittent tone at intervals of about 0.25 seconds.

Designation of the Functions and Features

Functions and features whose application has direct effects on the connection are marked with icons. The icons indicate the connection types with which the function or feature can be used or applied.

Functions and features that have no effect on the connection are not marked.

An overview of all of the icons used in this manual is presented in the section “Symbols and Highlighting” from page 5 of this manual.

10.1 Operating FRITZ!Box Fon 5124 by Phone

This section describes how you can use the FRITZ!Box Fon features via your telephone keypad.

Shortening the Dialing Procedure

FRITZ!Box Fon automatically recognizes when a number has been entered, but not until a few seconds after the final digits are entered.

To shorten the dialing procedure, enter the “#” character after the last digit of a number.

<number>#	indicates to FRITZ!Box Fon that the number can be dialed immediately (can shorten the dialing procedure)
-----------	--



Do Not Disturb

You can enable the Do Not Disturb function for any telephone connected to FRITZ!Box Fon in the user interface. When Do Not Disturb is enabled, the telephone will not ring.

Enabling Do Not Disturb Effective Immediately

Use the following combination of keys to enable Do Not Disturb on an extension immediately. Do Not Disturb will remain enabled until you disable it.

#81<Ext.>*0*	immediately enables Do Not Disturb for extension “Ext.”.
--------------	--

Enabling Do Not Disturb for a Prescribed Period

On any extension you can enter a Do Not Disturb period during which the telephone will not ring.

At the extension for which a Do Not Disturb period is to be configured, define the period during which the phone should not ring and save your entries. Then enable Do Not Disturb. Do Not Disturb will be switched on daily at the time entered in the “Start” field and switched off again at the time defined in the “End” field.

Example: Do Not Disturb should be configured from 8:00 p.m. until 7:00 a.m. daily. Enter the value 2000 for <Start> and 0700 for <End>.

#80<Ext.>* defines the period for Do Not Disturb at extension Ext.

#91** saves the settings in the FRITZ!Box Fon.

#81<Ext.>*1* enables Do Not Disturb for the defined period.

Disabling Do Not Disturb

#81<Ext.>*6* disables Do Not Disturb for extension “Ext.”.

Alarm

The FRITZ!Box Fon includes an alarm clock function. The alarm clock can be configured individually for each connected telephone.

Configuring the Alarm for a Telephone

First enter on the telephone the time at which you would like to be awakened and save this entry. Then enable the alarm function.

Example: The telephone should ring to wake you at 7:00 a.m. Enter the value 0700 as the <Time>.

#881* <Time>* <Ext.>* defines for the extension “Ext.” the time at which the telephone should ring

#91** saves the settings in the FRITZ!Box Fon

Enabling/Disabling the Alarm Function

#881*# enables the alarm function for all extensions on which a time was configured

#881# disables the alarm function for all extensions

**ISDN
analog
VoIP**

Selecting the Outgoing Number and the Type of Connection

For outgoing connections you can specify the kind of connection that should be used. For this entry you can use settings already made in FRITZ!Box Fon or circumvent the settings currently configured in FRITZ!Box Fon.

Defining the Connection Type

You have the option of specifying the type of outgoing connection independent of the settings configured on the system. In this case the dialing rules are suspended for the given dialing procedure. To do this, enter one of the following keypad codes before dialing a number on your telephone:

***111#** dials up this connection using the fixed-line <number>

***12#** dials up this connection using the Internet <number> (Internet number for access 1)

***12 P #** establishes an Internet connection for a selected Internet number. For “P”, enter the position of the Internet number in the “List of Internet Numbers”.

Establishing a Connection Using a Selected Internet Number

By placing an Internet Number ID before the number you can specify which of your Internet numbers should be used to conduct a telephone call.

If you enter an Internet number in the FRITZ!Box Fon user interface, an ID for the Internet number is created automatically. The Internet Number ID is displayed in the “Telephony / Internet Telephony” menu of the user interface, in the “Internet Number ID” column of the list of Internet numbers.

<Internet Number ID> <number>	establishes a connection for this call using the Internet number specified by the <Internet Number ID>
----------------------------------	--

Dialing Internal Calls

Dialing Internal Calls with Automatic Outside Dialing

-
- ⤴ Pick up the handset. You hear the external dial tone immediately, since the extension is set for automatic outside dialing.

 - R or * * Press the Hold button, or press the asterisk key twice. You now hear the internal dial tone.

 - ☎ Dial the desired extension number.
-

Dialing Internal Calls Without Automatic Outside Dialing

-
- ⤴ Pick up the handset. You hear the internal dial tone.

 - ☎ Dial the desired extension number.
-

Group Call

The FRITZ!Box Fon “Group Call” feature allows you to ring all other extensions at the same time. To do so, you must first configure the extension for internal dialing. Your call is connected with whichever extension answers first.

-
- ⤴ Pick up the handset.








 - 9 Instead of an extension number, dial “9”. All extensions that are not busy ring.
-








Alternating Between Calls

Whenever you have an active call 1 and one caller 2 on hold, you can switch from one call to the other as often as you want using the Hold button.

To alternate between two connections, proceed as follows:

Call 1	You are talking to Caller 1.
	
	Press the Hold button. Call 1 is now on hold.
	To establish a second call, simply dial either the desired extension number or the outside line access "o" followed by the desired external number.
Call 2	If the call is answered, you can consult with caller 2 on this line. Call 1 is still on hold.
	
	To switch back from Call 2 to Call 1, dial the sequence shown at left.
Call 1	Call 1 is now active again and Call 2 is on hold.
	
	To switch back again from Call 2 to Call 1, dial the same sequence. In this way you can alternate between Call 1 and 2.






The alternating connections can be ended in a number of ways:

	The caller on hold hangs up. You can continue talking on the active connection.
	You end the active connection by dialing the sequence shown at left. The call that was on hold is now active again.
	You can also return to the call on hold by hanging up the handset: this ends the currently active connection. In this case the phone rings as soon as you hang up. Pick up the handset again to return to the last call that was on hold.
	
Call	
	

Picking up a Call from the Answering Machine

You can use this function to pick up incoming calls on your telephone after they have been accepted by the answering machine at a different extension. The other extension must be configured as an answering machine in the FRITZ!Box Fon.






To pick up a call from another extension, proceed as follows:

	Pick up the handset.
  	Dial the sequence shown at left.
	The call is now connected to your extension, and you can talk to the caller.



Transferring Calls

The “Call Transfer” function allows you to transfer a connection from one of FRITZ!Box Fon's extensions to the other. To do so, proceed as follows:







Call 1	You are talking to Caller 1.
	
	Press the Hold button. Caller 1 is now on hold.
	To connect to another internal user, dial her or his extension number.
Call 2	You can now talk with caller 2.
	
	To transfer the call with caller 1 to caller 2, simply hang up the handset.



Consultation / Hold



The “Consultation/Hold” feature allows you to place an existing call on hold. You then may consult with someone else at your workplace or dial a second call. The party on hold does not hear the second conversation. Once you have finished the consultation, you can return to the original connection.

To place a call on hold and then reactivate it, proceed as follows:

Call 1	You are talking to Caller 1.
	
	Press the Hold button. Call 1 is now on hold and you can consult someone else.
	To dial a second call, simply dial either the desired extension number or the outside line access "o" followed by the desired external number.
Call 2	If the call is answered, you can consult with caller 2 on this line. Call 1 is still on hold.
	
	If the line you called is busy or the call is not answered, press the Hold button again to return to Call 1.
	To switch back to Call 1 from Call 2, dial the sequence shown at left. Call 1 is now active again.



If you end the consultation by pressing the Hold button, the connection to Caller 2 is not cleared down until he or she hangs up. Connection charges continue to accrue.

Call 1	Instead of entering the keyboard shortcut, you can simply hang up the handset to end Call 2 yourself. In this case, your phone rings as soon as you hang up. Pick up the handset to return to Call 1 again.
	
	Hang up the handset to end the connection.

10.2 Configuring FRITZ!Box Fon by Phone

Restoring Factory Settings

The FRITZ!Box Fon can be reset to its condition upon delivery. All settings you made in the FRITZ!Box Fon are then deleted.



After restoring factory settings is FRITZ!Box Fon then restarted.

#991*15901590* resets FRITZ!Box Fon to its condition upon delivery.

Saving New Settings

In this section, saving refers to all current settings. It is not necessary to save the configuration after each setting is made. You may first configure all of your FRITZ!Box Fon's settings as desired, and then save them permanently.



Saving Permanently

	Pick up the handset.
#91**	Save all settings made to your FRITZ!Box Fon permanently by dialing the sequence shown at left.
	Hang up the handset.



Permanent saving cannot be reversed. However, you can re-set the PBX to its factory settings or program it with different settings.

Disabling Automatic Outside Dialing

	Pick up the handset.
#1 Ext. *0*	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Call Waiting Option



Call waiting can be switched on or off for each extension. Some older terminal equipment connected to extensions may misinterpret the call waiting signal. This is especially true of fax machines and modems. If communication errors occur, you should disable call waiting for fax and modem extensions.

See section “Call Waiting” on page 92 for information about how to accept a call while another connection is active.





When “Call Waiting” is enabled, modem and fax connections may be interrupted.

Disabling Call Waiting

	Pick up the handset.
#2 Ext. *1*	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Enabling Call Waiting



	Pick up the handset.
#2 Ext. *0*	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

ISDN
analog



Call Rejection on Busy (Busy on Busy)

Calls for an extension can be rejected using the “Busy on Busy” feature. This means that the user receives a busy signal whenever the extension is busy.

Enabling the Busy on Busy Function

	Pick up the handset.
#52 Ext. *1*	Dial the sequence shown at left. Type in the number of the extension in the “Ext.” field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Disabling the Busy on Busy Function

	Pick up the handset.
#52 Ext. *0*	Dial the sequence shown at left. Type in the number of the extension in the “Ext.” field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Room Monitoring (Baby Monitor)

The following key combination enables the function for monitoring the sound level in a room. First enter the volume level (a value between 1 and 8). 1-8). Enter a telephone number. Do not hang up the handset! When the volume in the room reaches the specified level, the number you entered will be dialed. When the telephone rings and you pick up the handset, you will be connected with the telephone on which you enabled the room monitoring function.



It is preferable to use the speaker phone function.

You can disable the function by simply hanging up the handset of the telephone at which you enabled it.



Pick up the handset or activate the speaker phone function of your telephone.



Dial the sequence shown at left. For “Level”, enter a number between “1” (the most sensitive sound level) and “8”. For “Number”, enter the number to be called. This may be the number of another internal extension, a “9” for an internal group call, or any external number desired.



Wait for the acknowledgement tone. The baby monitoring phone function is now enabled.

Do **not** hang up the handset!

Dial the number of the extension to listen in at an extension with room monitoring activated.

After initiating a room monitoring phone call, the PBX cannot generate a new call until at least one minute has lapsed.

10.3 Advanced Features



Call Diversion over FRITZ!Box Fon

Incoming calls to the FRITZ!Box Fon telephones can be diverted to a different extension or to an external number. In contrast to call diversion over FRITZ!Box Fon, there is also call forwarding (call diversion via the central exchange). How to use call forwarding by phone is described in the section “Call Forwarding (Call Diversion via the Central Exchange)” from page 83.



Do not activate both call forwarding and call diversion at the same time.



Call diversion over FRITZ!Box Fon allows you to forward calls to an external line or to another extension. This kind of diversion is organized inside FRITZ!Box Fon so that diversions to another extension are free of charge. Calls are diverted to an external number over your ISDN line’s second B channel and are subject to normal transmission charges. If the FRITZ!Box Fon is operated on an analog telephone line, incoming calls can only be diverted to a different extension or to numerical Internet numbers.

You can specify the conditions under which an incoming call will be diverted over FRITZ!Box Fon. You can select one of six different options. Different settings may be saved for each extension.





Note that only numerical Internet numbers can be entered for diversion to an Internet number.



Call Diversion Immediately (Without Ringing)

	Pick up the handset.
#41* Ext. * XNo./Ext. *	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Call Diversion After the Third Ring

	Pick up the handset.
#42* Ext. * XNo./Ext. *	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Call Diversion When Busy

	Pick up the handset.
#43* Ext. * XNo./Ext. *	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Call Diversion After the Third Ring or When Busy

	Pick up the handset.
#44* Ext. * XNo./Ext. *	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Call Diversion Immediately by Ringing

	Pick up the handset.
#45 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Disabling Call Diversion









	Pick up the handset.
#40 Ext. **	Dial the sequence shown at left.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Three-Party Conference Call

FRITZ!Box Fon allows you to hold telephone conferences with two other people at once. Two external and one internal party, or two internal and one external party can conduct a conference call with each other.



You can set up a three-party conference as follows:

	Pick up the handset.
	Dial the external number of the first party. Talk.
	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “o” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	Dial the sequence shown at left to begin a three-party conference call.
	Now all three participants can confer together. If either of the other two parties hangs up, your connection with the remaining participant remains active.
	You can end the three-party call by hanging up the handset.
	You can also switch from the three-party call back to the original two-party connection. Dial the sequence shown at left. This ends the three-party conference. The connection that was active last before you initiated the three-party conference is now active again. The other call is on hold. You can alternate between the two connections by dialing the same sequence again.

analog

Using FRITZ!Box Fon Features on the Analog Line

When FRITZ!Box Fon is connected to an analog line, a feature can be activated directly at the switching station only if the line is set for this kind of configuration.

	Pick up the handset.
 <feature>	Dial the sequence shown at left. Next enter the keyboard shortcut your network provider has defined for the desired feature. The given keyboard shortcut must be obtained from your network provider.

ISDN
analog

Call Forwarding (Call Diversion via the Central Exchange)

Call forwarding is performed by the ISDN operator's switching station. To use call forwarding, FRITZ!Box Fon must be connected to an ISDN line. Then this feature can be used to forward calls to an external line. Call forwarding is subject to charges by the network provider and cannot be used for forwarding calls to an Internet number.

In addition to call forwarding, there is also call diversion via FRITZ!Box Fon. Use this kind of call diversion to divert calls to internal and external lines. See the section "Call Diversion over FRITZ!Box Fon" from page 79 for more information.












Do not activate both call forwarding and call diversion at the same time.

For call forwarding you may specify whether you want incoming calls to be forwarded unconditionally, after the fifth ring, or when busy. Different settings may be configured separately for each number.











Call Forwarding Immediately

Incoming calls for the given MSN are always diverted immediately to the specified number. Call forwarding can only be used to forward incoming calls to an external line. Call forwarding is subject to charges by the network provider and cannot be used for forwarding calls to Internet numbers.










Call Forwarding Immediately for Your Extension's Outgoing Caller ID

	Pick up the handset.
    XNo.  	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.




Call Forwarding Immediately for Any MSN

	Pick up the handset.
    XNo.  MSN  	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.




Call Forwarding Immediately for All MSNs

	Pick up the handset.
    XNo.  	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.




Disable Call Forwarding Immediately for Your Extension's Outgoing Caller ID

	Pick up the handset.
21#	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.

Disable Call Forwarding Immediately for Any MSN

	Pick up the handset.
*21** MSN #	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.



Disable Call Forwarding Immediately for All MSNs

	Pick up the handset.
*21**#	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.



Call Forwarding When Busy

Incoming calls are only forwarded to the specified number if the extension dialed is busy. You can define call diversion for the local outgoing call number. The local outgoing call number is the first number you assigned to an extension. You can also define call diversion for any other number, e.g. a telephone at the other extension of FRITZ!Box Fon, or for all numbers. All settings can be disabled at any time.



Call Forwarding When Busy for Your Extension's Outgoing Caller ID

	Pick up the handset.
67 XNo. #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.



Call Forwarding When Busy for Any MSN

	Pick up the handset.
67 XNo. * MSN #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.



Call Forwarding When Busy for All MSNs

	Pick up the handset.
67 XNo. *#	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.



Disable Call Forwarding When Busy for Your Extension's Outgoing Caller ID

	Pick up the handset.
67#	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.

Call Forwarding When Busy for Any MSN

	Pick up the handset.
*67** MSN #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.



Disable Call Forwarding When Busy for All MSNs

	Pick up the handset.
*67**#	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.



Call Forwarding Delayed

Incoming calls are forwarded to the specified number if not answered at the number originally dialed within 20 seconds (about five rings). Call forwarding can be configured for your extension's outgoing caller ID (the first number assigned to an extension), for any number (for instance, a telephone at the other FRITZ!Box Fon extension), or for all numbers. All settings can be disabled at any time.



Call Forwarding Delayed for Your Extension's Outgoing Caller ID

	Pick up the handset.
61 XNo. #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.








Call Forwarding Delayed for Any MSN

	Pick up the handset.
61 XNo. * MSN #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.









Call Forwarding Delayed for All MSNs

	Pick up the handset.
61 XNo. * #	Dial the sequence shown at left.
+++	Wait for the acknowledgement tone.
	Hang up the handset.








Disable Call Forwarding Delayed for Your Extension's Outgoing Caller ID

	Pick up the handset.
 6  1  *  #	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.

Disable Call Forwarding Delayed for Any MSN

	Pick up the handset.
 6  1  *  * MSN  #	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.

Disable Call Forwarding Delayed for All MSNs

	Pick up the handset.
 6  1  *  * #	Dial the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.





Caller ID Suppression for Outgoing Calls (CLIR)



The CLIR (Calling Line Identification Restriction) function prevents your telephone number being displayed on the other party's phone during outgoing calls.

The CLIR function is disabled in the factory settings. You have the option of enabling this function permanently and then disabling it again. CLIR can also be used for individual connections.

Enabling CLIR Permanently

	Pick up the handset.
#51 Ext. *1*	Dial the sequence shown at left. Type in the number of the extension in the “Ext.” field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Disabling CLIR Permanently

	Pick up the handset.
#51 Ext. *0*	Dial the sequence shown at left. Type in the number of the extension in the “Ext.” field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Displaying the Incoming Caller ID (CLIP)



The CLIP (Calling Line Identification Presentation) function makes the number of callers—external and internal—visible on your telephone display.

This feature is only effective if your telephone supports CLIP.



The CLIP function is enabled in the factory settings. This function can be permanently disabled and enabled again.



Enabling CLIP

	Pick up the handset.
#50 Ext. *1*	Dial the sequence shown at left. Type in the number of the extension in the “Ext.” field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Disabling CLIP

	Pick up the handset.
#50 Ext. *0*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

ISDN



Connected Line Identification Restriction and Presentation (COLR / COLP)

By default, a caller's display always shows the Multiple Subscriber Number (MSN) of the extension she or he dialed. If you accept the call at another extension, the MSN of this extension will be displayed, as long as the caller is using an ISDN phone with the COLP feature enabled. If you do not want the caller to know that the call has been picked up at another extension (see Seite 73) and thus do not wish this number to be displayed, you have the option of suppressing transmission of the connected line. The caller's display will continue to show the number she or he called.

Transmission of the connected line's number can be switched on and off for each extension individually. Transmission of the connected line's number is permanently enabled in the PBX factory settings.



Enabling Connected Line Identification Restriction Permanently

To permanently disable transmission of the connected line's number (COLR), proceed as follows:

	Pick up the handset.
#53 Ext. *1*	Dial the sequence shown at left to disable transmission of the connected line number. Type in the number of the extension in the "Ext." field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.

Enabling Connected Line Identification Presentation Permanently

To permanently enable transmission of the connected line's number (COLP), proceed as follows:

	Pick up the handset.
#53 Ext. *0*	Dial the sequence shown at left to enable transmission of the connected line number. Type in the number of the extension in the "Ext." field.
#91**	Save your settings if desired by dialing the sequence shown at left.
	Hang up the handset.



Call Waiting

Enable the “Call Waiting” feature to be notified during a call if a second caller is dialing your line. An acoustic signal in your telephone handset notifies you that a second call is waiting. You can accept the connection with the new caller within 30 seconds. If you ignore the signal, the waiting call is rejected after 30 seconds.

For instructions on how to turn the “Call Waiting” function on and off, see the section “Call Waiting Option” on page 76.







-
- | | |
|------------|---|
| R 2 | To accept a waiting call, dial the sequence shown at left. Your original call is now on hold. |
| <hr/> | |
| R 1 | To return to your original connection, dial the sequence shown at left. You can also accept the waiting call by hanging up your existing connection, i.e., by hanging up the handset. In this case the phone rings as soon as you have hung up. Pick up the handset again to accept the waiting call. |
| <hr/> | |
| R 0 | To reject a waiting call, dial the sequence shown at left. |
-












Explicit Call Transfer (ECT)

With this feature you can connect two external parties with each other, when one connection has been active and the other has been on hold. Then you can end your own connection while the other two parties continue their conversation.

Explicit Transfer of One Active and One Held Connection

	Pick up the handset.
	Dial the external number of the first party. Talk.
	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “o” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	To clear your connections while allowing the external parties to continue the call, connect the parties with each other.
	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.








Explicit Call Transfer from a Three-party Conference Call

	Pick up the handset.
	Dial the external number of the first party. Talk.
	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “o” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	Dial the sequence shown at left to begin a three-party conference call.
	Now all three participants can confer together. If either of the other two parties hangs up, your connection with the remaining participant remains active.
	To clear your connections while allowing the external parties to continue the call, connect the parties with each other.
	You can also switch from the three-party call back to the original two-party connection. Dial the sequence shown at left. This ends the three-party conference. The connection that was active last before you initiated the three-party conference is now active again. The second external call is on hold. You can alternate between the two connections by dialing the same sequence again.
	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.

ISDN

One-time Explicit (External) Call Transfer

Explicit Call Transfer (ECT) is an ISDN feature that must be enabled by your ISDN provider and thus usually is subject to extra charges. If ECT has not been enabled on your line, you can program the PBX to initiate a one-time explicit call transfer before connecting to two parties. When you end the connection, the other two parties will be connected to each other. Proceed as follows:

	Pick up the handset.
	Dial the sequence shown at left. You hear the external dial tone.
	Dial the external number of the first party. Talk.
	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access "o" followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	To clear your connections while allowing the external parties to continue the call, connect the parties with each other.
	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.



With this type of external transfer, both parties are connected to each other over your PBX. This means that both B channels on your ISDN line remain busy with this connection as long as the parties are connected to each other.

ISDN








Call-back on Busy (CCBS)

When you dial a number and it is busy, enable this feature. As soon as the line is free, your telephone rings for 20 seconds, as it would for an external call. When you pick up your handset, the number of desired party will be dialed automatically.

This feature is supported for both external and internal connections.

A maximum of five call-back requests can be enabled for each extension at any given time.

To enable this feature, proceed as follows:

	You have just dialed a number and now you hear the busy signal.
	If the call is not answered, within twenty seconds, dial either the number “5”
	or
	the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.
	As soon as the subscriber you dialed hangs up, your telephone will ring.
	Pick up the handset. The subscriber’s number is dialed again automatically.

ISDN







Call-back on no Response (CCNR)

This function can be used when you dial a number and the party does not respond. Once the party can be reached again and conducts a call from her or his phone, this function recognizes when this conversation is ended. When the subscriber you dialed hangs up, your telephone rings for 20 seconds, as it would for an incoming call. When you pick up your handset, the number of the desired party is automatically dialed again.


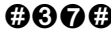

This feature is supported for both external and internal connections.

This command can be activated five times for each port.

To enable this feature, proceed as follows:

	You have just dialed a number and hear a ring tone.
	If the call is not answered, within twenty seconds, dial either the number “5”
	or
	the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset. As soon as the party you dialed conducts a conversation from her or his phone and this call is ended, your phone rings.
	Pick up the handset. The number of the remote party is dialed automatically.

Callback requests can also be deleted manually, with the oldest callback request being deleted first.




	Pick up the handset.
	Dial the sequence shown at left.
	Hang up the handset.

ISDN

Suspend/Resume

The “Suspend/Resume” feature, also known technically as “Terminal Portability”, allows you to suspend an existing connection and resume it at another point on the S₀ bus. The connection can be resumed at a different ISDN terminal device (such as an ISDN telephone) that is connected to your BRI line along with FRITZ!Box Fon.

To suspend a call, proceed as follows:

	You are talking to Caller 1.
	Press the Hold button. Call 1 is now suspended.
	Dial the sequence shown at left. Type in the parked-call ID as “PC”. The parked-call ID can be any number between 0 and 99. You will need to enter this ID again when you resume the call.

You will hear an acknowledgement tone to indicate that the call has been successfully suspended. If you hear the failure tone, this may indicate that you made a mistake, or that the Suspend/Resume feature is not enabled on your line. It is also possible that the parked-call ID you chose is already in use.



After the acknowledgement tone, the connection is suspended. You can hang up the handset. The call remains suspended at the ISDN provider's local switch for two minutes.



To resume the connection, proceed as follows:



Pick up the handset again. (You may not have a call on hold. Otherwise, FRITZ!Box Fon will attempt to suspend it.)



Dial the sequence shown at left. Type in the parked-call ID as "PC". The parked-call ID is the number you entered when you suspended the call.

ISDN

Call Tracing (MCID)

During a call or after the caller hangs up, dial the following sequence:

R*39# Dial the sequence shown at left.

For more information about this feature, contact your ISDN provider.




ISDN

Using Keypad Messages





FRITZ!Box Fon offers the "keypad" function. This function allows ISDN services and features to be controlled by entering characters and strings on the telephone keypad. These keyboard entries are called keypad messages. Keypad sequences allow you to use ISDN services and features that may not be supported by your ISDN terminal device.

Ask your ISDN provider for the specific keypad messages to access ISDN features.

Entering Keypad Messages on an Extension with Automatic Outside Dialing

- | | |
|---|---|
|  | Pick up the handset. |
|   Seq | Dial the sequence shown at left. “Seq” stands for the keypad sequence you received from your ISDN provider. |
-

Entering Keypad Messages on an Extension without Automatic Outside Dialing

- | | |
|---|---|
|  | Pick up the handset. |
|    Seq | Dial the sequence shown at left. “Seq” stands for the keypad sequence you received from your ISDN provider. |
-

11 Customer Service Guide

AVM provides numerous sources of information to assist you should any questions or problems arise. Here you will find the important information you need, in the form of manuals, updates and support.



In many cases problems which arise during operation can be resolved by installing the current Microsoft Service Pack for your operating system. The current service pack can be obtained free of charge from Microsoft.

11.1 Product Documentation

To take advantage of all commands and features of your FRITZ!Box Fon, consult the following information resources:



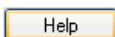
- Manual for FRITZ!Box Fon
The manual is included in the “Info” folder on the FRITZ!Box Fon CD.



You can install the Acrobat reader to view PDF documents from the “Info” folder of the FRITZ!Box Fon CD.



- Readme for FRITZ!Box Fon
The Readme file contains current information which was not yet available at the time the manual was completed. The Readme file is included on the FRITZ!Box Fon CD.



- Help for FRITZ!Box Fon
In the FRITZ!Box Fon user interface you can open the detailed Online Help by clicking the “Help” buttons.

11.2 Information in the Internet

On its web site AVM presents comprehensive information on all AVM products as well as new product announcements and new product versions.

Frequently Asked Questions (FAQs)

We would like to make our products as easy to use as possible. If you still have problems, sometimes a little tip is all you need to resolve them. That is why we present you with a selection of frequently asked questions.

The FAQs can be viewed at the following address:

www.avm.de/en/service/FAQs/

11.3 Updates

AVM provides updates of the firmware for free downloading over the Internet.

Use your FRITZ!Box Fon user interface to update your firmware. Use the “System / Firmware Update” command to download the firmware conveniently from the Internet and perform the update.

Go to the following URL to download the current driver software:

www.avm.de/en/download

Experienced users can also download updates from the AVM FTP server. Click the “FTP Server” link in the download area, or enter the following address:

www.avm.de/ftp

11.4 Support from the AVM Service Team

Should problems with your FRITZ!Box Fon arise, we recommend taking the following steps:

1. If you have questions about starting operation of your FRITZ!Box Fon, please consult the chapter “FRITZ!Box Fon 5124: Connecting” from page 12.

Please see the information in the section “Product Details” from page 104.

2. Whenever something does not work, go to the chapter “Troubleshooting” from page 53 for “first aid”.

This chapter also presents useful tips on problems with establishing connections.

3. The next step is to consult the FAQs in the Internet: www.avm.de/en/service/FAQs. This site contains answers to questions our customers have frequently asked our Support team.

4. If you do not find an answer to your question in the existing FAQs, the AVM Support Team will assist you with tips and resolutions for working with the FRITZ!Box Fon. The support desk can be reached by e-mail or by fax.



Please take advantage of the information sources described above before contacting AVM support.

Support by E-mail

You can send us an e-mail request at any time using the Service area of our website. The Service area can be reached at:

www.avm.de/en/service

Then select the product and the topic for which you need support from the Support area. You will receive a selection of FAQs. If you need more Help, click the “Support” button

to open the e-mail support form. Fill out the form and send it to AVM support by clicking the “Send” button. Our Support team will respond by mail as quickly as possible.

Support by Fax

If necessary, you can reach AVM Support at the fax number:

+49 (0)30 / 39 97 62 66

The following information should be included in your fax to the Support team:

- Your name and address.
- An e-mail address or fax number at which you can be reached.
- the serial number of the FRITZ!Box Fon

The serial number is printed on the sticker attached to the base of the device. Support staff will always check this number to ensure that you are a registered user.
- Which operating system do you use? For instance, Windows XP or Windows 98?
- At what step of the installation or in which application does an error occur or an error message appear? What is the exact wording of any error message returned?
- Which firmware does FRITZ!Box Fon use? The firmware version is displayed on the “Overview” page of the FRITZ!Box Fon user interface.

Once you have gathered this information, please fax it to AVM Support. The Support team will assist you in resolving your problem.

12 Product Details

This chapter provides you with product details on FRITZ!Box Fon. You receive detailed technical data and information on the LEDs.

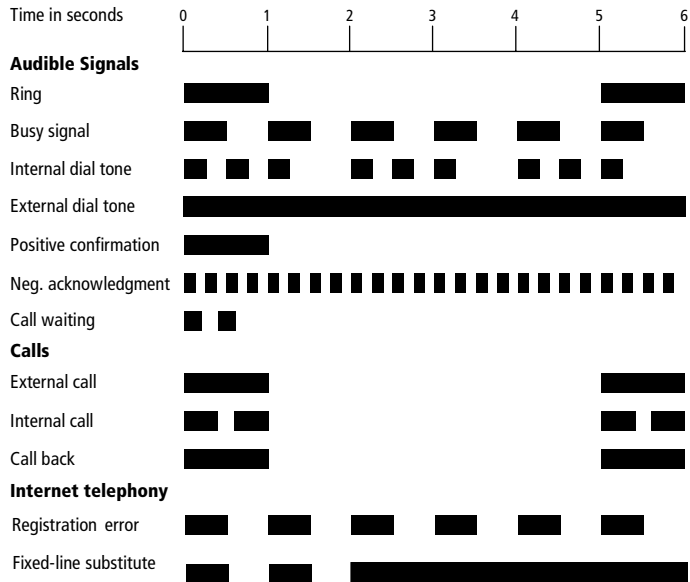
12.1 LEDs FRITZ!Box Fon

The LEDs on your FRITZ!Box Fon indicate the following conditions:

LED	State	Event Type
Power	on	FRITZ!Box Fon 5124 ready for operation; power supply is connected and the DSL line is ready for operation
	flashes	Power supply connected; the connection to DSL is being established or has been interrupted
Internet	on	a telephone connection to the Internet is active
	flashes	there are messages in your mailbox (this function must be supported by your Internet telephony provider)
Fixed Line	on	a telephone connection to the fixed-line network is active
	flashes	there are messages in your mailbox (this function must be supported by your telephony provider)
DSL	on	Internet connection is active
INFO	flashes	firmware is being updated or the value specified for the online meter has been reached
	on	a telephone connection between two Internet telephony subscribers is active, the call is free of charge (this function must be supported by your Internet telephony provider)

12.2 Audible Signals

The following diagram illustrates the duration and intervals of the various handset and ring signals on the connected telephones.



Handset and ring patterns on FRITZ!Box Fon

12.3 Cables and Sockets

See the information in the following section on the individual cables and sockets on the FRITZ!Box Fon 5124.

DSL/Telephone Cable

The DSL/telephone cable is a special combined cable 4.25m in length, developed by AVM to connect the FRITZ!Box Fon 5124 to the DSL splitter and the ISDN NT or analog telephone line.

If you would like to extend the cable, you have the following possibilities:

DSL Cable Extension

To extend the gray end of the combined cable, the one labeled „DSL“, you will need the following components:

- 1 standard network cable
- 1 standard RJ45 CAT5 double coupling

All components are available from specialized vendors.



Remember that the quality of the line may be decrease as the distance from the central switching station increases.

AVM recommends that the standard network cable be extended by no more than 20 meters.

Telephone Cable Extension

To extend the black end of the combined cable you will need the following components:

- 1 standard network cable
- 1 standard RJ45 CAT5 double coupling

Both components are available from specialized vendors.

AVM recommends that the standard network cable be extended by no more than 10 meters.

Network Cable



Additional network cable is required if you would like to use more than one of the FRITZ!Box Fon network ports.

The FRITZ!Box Fon network cable is a standard Ethernet cable. If you need a replacement cable, a longer cable or an extension, use a standard STP-type (Shielded Twisted Pair, 1:1) CAT5 Ethernet cable. To extend the cable you will also need a standard CAT5 double coupling link to RJ45.

All components are available from specialized vendors.

AVM recommends using a network cable no more than 100 meters long.

12.4 Technical Specifications of FRITZ!Box Fon

Ports and Interfaces

- DSL / fixed line
DSL modem in accordance with the standard ITU G.992.1 Annex B (G.dtm), ITU G.992.5 Annex B (ADSL2+), ITU G.994.1 (G.hs)
Fixed line for connecting to the analog network or ISDN
- four LAN ports via RJ45 sockets (standard Ethernet, 10/100 base-T)
- one USB host controller (USB version 1.1)
- two a/b ports for connecting two extensions via RJ11 sockets

Router Function

- DSL router
- DHCP server
- Firewall with IP masquerading/NAT

User Interface and Display

- Configuration and status messages via an Internet browser of a connected computer
- Five LEDs indicate the condition of the device

Physical Specifications

- Dimensions (WxDxH): approx. 185 x 140 x 35 mm
- supply voltage: 230 V / 50 Hz
- Maximum power consumption: 12 W
- Average power consumption: 9 W
- DSL transmission rate: max. 8 Mbit/s (downstream), 1 Mbit/s (upstream)
- firmware can be updated
- Conform to CE standards

Index

A

ADSL2+ 107
alarm 69
alternating between calls 72
analog terminal equipment 22

B

baby monitor 77
bandwidth management 40
busy on busy 77
busy on busy. see rejecting calls when busy

C

cables 105
 network 10
call diversion 79
call diversion via the central exchange 83
call forwarding 83
call tracing (MCID) 98
call waiting 92
call waiting option 76
call-back on busy 96
call-back on no response 96
calls on fixed lines 37
CCBS, see call-back on busy
CCNR, see call-back on no response
CLIP, see displaying the incoming caller ID (CLIP)
CLIR, see suppressing caller ID
COLP, see restriction and presentation of number dialed (COLR/COLP)
COLR, see restriction and presentation of number dialed (COLR/COLP)
combination cable 10
configuring the printer port 31
consultation 73

D

declaration of conformity 110
defining connection type 70
DHCP server 48, 57
dialing 70
dialing internal calls 71
 with automatic outside dialing configured 71
 without automatic outside dialing configured 71
displaying the incoming caller ID (CLIP) 89
disposal 7
documentation 100
DSL cable 10
DSL modem 24, 26, 107
DSL router 24
DSL/telephone cable 105

E

ECT, see explicit call transfer
explicit call transfer 93, 95

F

factory settings 75
FAQs 101
firewall 107
firmware 101
frequently asked questions 101
FRITZ!DSL 10

G

game consoles 10
group call 71

H

hold 73
hub 16, 18

I

- information in the Internet 101
- installation help 10
- installation prerequisites 10
- Internet account information 24
- Internet telephony 36, 39
- IP address 57
 - dynamic 25
- IP masquerading 107

K

- keypad messages 98

L

- LED 104
- LEDs 104, 107

M

- Mac OS X 61
- MCID, see call tracing

N

- NAT 107
- network cable 10, 106
- network hub 18, 19
- network switch 18, 19

O

- opening user interface 23

P

- package contents 10
- picking up calls 73
- pickup, see picking up a call
- print driver installation
 - in Windows XP/2000 32
 - Windows Me/98 33

R

- recycling 7

- restriction and presentation of number dialed (COLR/COLP) 90
- room monitoring 77
- router 24

S

- safety instructions 7
- selecting the outgoing number 70
- serial number 103
- service 102
- shortening the dialing procedure 68
- sockets 105
- supply voltage 107
- suppressing caller ID 88
- suspend/resume 97
- switch 16, 18

T

- technical specifications 107
- telephony scenarios 40
- transferring calls 73

U

- updates 101
- USB devices 28
 - USB hubs 28
 - USB mass storage devices 28
 - USB printers 28

Declaration of CE Conformity

The manufacturer AVM GmbH
Address Alt-Moabit 95
 D-10559 Berlin

herewith declares that the product

Product FRITZ!Box Fon
Type DSL Router

complies with the following directives:

- l 1999/5/EC: R&TTE Directive:
 Radio and Telecommunication Terminal
 Equipment
- l 89/336/EEC EMC Directive:
 Electromagnetic Compatibility
- l 73/23/EEC Low Voltage Directive:
 Electrical equipment designed for use
 within certain voltage limits

The following norms were consulted to assess conformity:

- EN 60950-1:2001/A11
- CTR 3/1998.06.17
- ETSI TS 101 388
- ITU-T G.992.1
- ITU-T G.992.5
- ITU-T G.994.1
- ETSI ETR 328
- EN 55022/9.98 + A1/10.00 + A2/01.03 Class B
- EN 55024/9.98 + A1/10.01 + A2/01.03



The CE symbol confirms that this product conforms with the above mentioned norms and regulations..

A handwritten signature in blue ink, appearing to read 'P. Foxel', is written above the printed name 'Peter Foxel, Technischer Direktor'.

Berlin, 01.10.2005

Peter Foxel, Technischer Direktor