

The logo for Fritz! is the word "FRITZ!" in a bold, red, sans-serif font with a black outline and a slight 3D effect. It is positioned inside a yellow diamond shape that has a black border and a slight shadow, giving it a three-dimensional appearance. The diamond is set against a dark blue background.

FRITZ!

FRITZ!Box

Fon 5113

**Installation,
Configuration
and Operation**



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FRITZ!Box Fon 5113

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AVM Audiovisuelles Marketing
und Computersysteme GmbH
Alt-Moabit 95
D 10559 Berlin

AVM Computersysteme
Vertriebs GmbH
Alt-Moabit 95
D 10559 Berlin

AVM in the Internet: www.avm.de/en

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Symbols and Highlighting

The following sections present explanations about the symbols and highlighting used in this manual.



This symbol indicates useful hints to assist you in working with the FRITZ!Box.



This symbol indicates important instructions that must be observed to avoid malfunctions.

The table below explains the highlighting used in this manual.

Highlighting	Function	Examples
Quotation marks	Keys Buttons Settings pages Menus Commands File paths File names	F1 key “Help” “Advanced” “Edit/Paste” “Copy” “C:/My Documents” “Documentation”
Underlined text	Text input	fritz.box
Pointed brackets	Joker	<MSN>
Bold	Emphasis	Do not click the button...

I CONNECTING AND OPERATION

1 Security and Handling

What to watch out for

Safety Instructions

When working with the FRITZ!Box Fon 5113, observe the following security instructions in order to protect yourself and the FRITZ!Box from harm.

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

Handling the FRITZ!Box

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

- ◆ Place or hang the FRITZ!Box in a dry location that is free of dust and protected from direct sunlight.
- ◆ Do not place FRITZ!Box on excessively heat-sensitive surfaces, as the base of the device can heat up during normal operation.
- ◆ Make sure that the ventilation slits are unobstructed. For this reason the FRITZ!Box should not be placed on a carpet or on upholstered furniture. The ventilation slits provide for air cooling of the FRITZ!Box.
- ◆ When connecting FRITZ!Box to your computer using the network, remember to take the length of the cable into account.

- ◆ If you would like to establish wireless connections between FRITZ!Box and the computer, position the device at a central location.
- ◆ Make sure to keep sufficient distance from potential sources of interference like microwave devices or electric devices with large metal housings.



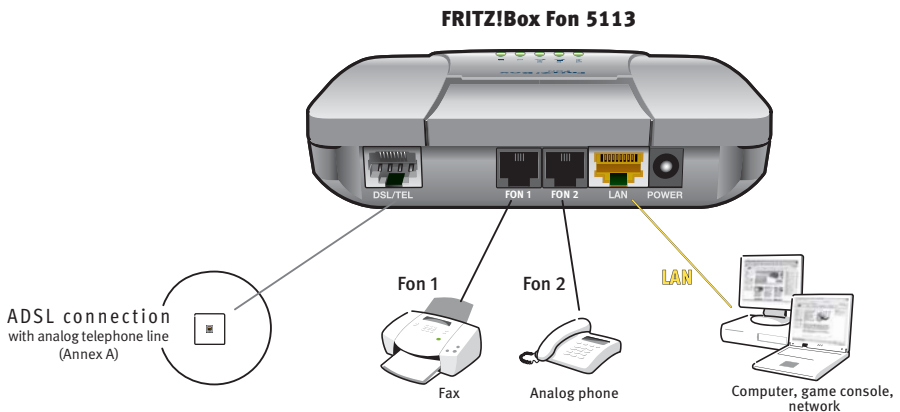
For detailed information about the symbols, numerals and function keys used in the manual, see the section “Symbols and Highlighting” from page 6 and “Instructions for Operation at the Telephone” from page 32.

2 FRITZ!Box Fon 5113 An Overview

The FRITZ!Box connects your computers directly with your DSL line. Each connected computer can establish an Internet connection over the FRITZ!Box.

The FRITZ!Box is a Private Branch Exchange (PBX) for making telephone calls via the Internet and the fixed-line network.

The FRITZ!Box connects your analog telephone and your computer with the Internet. The FRITZ!Box can be connected directly via the DSL line or using an already existing Internet connection. With the analog telephone you can make telephone calls via the Internet and the analog fixed-line network. The Internet connection is available for all connected computers.



Possibilities for connecting FRITZ!Box

PBX Two analog telephones, fax machines and answering machines can be connected to FRITZ!Box.

Connecting Computers A computer can be connected directly to the FRITZ!Box using the LAN port.

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

Local Network All of the computers connected with the FRITZ!Box constitute a network and can share access to any files released for file sharing.

Internet All of the computers connected to the FRITZ!Box can access the Internet.

The FRITZ!Box works as a DSL router, making the Internet connection available to all connected computers. All connected computers can then use the Internet connection at the same time.

Firewall The FRITZ!Box is equipped with an integrated firewall. The integrated firewall protects your network from attacks from the Internet as long as the FRITZ!Box is operated as a router.

Network Devices Other network devices can also be connected to the network ports of the FRITZ!Box, for instance game consoles.

Operating Systems Supported The FRITZ!Box can be connected to computers with Windows operating systems, the Linux operating system or Apple computers with the Mac OS X operating system.

2.1 Package Contents

The following is included in the FRITZ!Box Fon 5113 package:

- ◆ FRITZ!Box Fon 5113
- ◆ one power supply unit with a cable for connection to the power mains
- ◆ one DSL/telephone cable for connecting the FRITZ!Box to your DSL line
- ◆ one network cable for connection to a computer or a network
- ◆ one FRITZ!Box CD with
 - installation Help
 - documentation for all enclosed AVM products
- ◆ one quick guide

2.2 Operation Requirements

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

- ◆ a Web browser that supports Java script (for instance, Internet Explorer version 6.0 or higher, or Firefox version 1.5 or higher)
- ◆ DSL line, ITU G.992.1 standard, ITU G.992.3 standard, ITU G.992.5 standard
- ◆ for connection via network cable:
computer with a network port (network adapter standard Ethernet 10/100 Base-T)
- ◆ for fixed-line telephony:
one analog telephone line

3 Connection

Connecting FRITZ!Box

This chapter contains instructions on the following topics:

- ◆ launching FRITZ!Box operation
- ◆ connecting FRITZ!Box to electrical power
- ◆ connecting one or several computers to the FRITZ!Box
- ◆ connecting FRITZ!Box to DSL
- ◆ connecting FRITZ!Box to the analog telephone line
- ◆ connecting analog terminal devices to the FRITZ!Box



Please see the instructions about setting up the FRITZ!Box in section “Security and Handling” on page 7.

3.1 Launching Operation



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

Using the Installation Help on the CD

On computers with Windows operating systems you can use the Installation Help on the FRITZ!Box CD. The Installation Help presents instructions on the screen, guiding you through the steps required to launch operation of the FRITZ!Box.

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

The Installation Help starts automatically.

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

At the conclusion of the Installation Help, you will be routed directly to the FRITZ!Box user interface.

Launching Operation without the Installation Help CD

If you do not want to use the Installation Help on the FRITZ!Box CD, then work through the instructions below in the recommended order:

1. Mounting FRITZ!Box; see the section “Security and Handling” from page 7.
2. Connecting FRITZ!Box to the power supply; see the section “Connecting to Electrical Power” on page 15.
3. Connecting FRITZ!Box to the computer(s); see the section “Connecting the Computer” on page 15.
4. Connecting FRITZ!Box to DSL; see section “Connecting to the DSL Line” from page 18.
5. If you would like to use the FRITZ!Box to make calls over your analog telephone line, please read section “Connecting with the Analog Telephone Line” on page 20.
6. If you want to make telephone calls and fax using the FRITZ!Box over the Internet and/or the fixed-line network, connect your analog equipment to the FRITZ!Box: See the section “Connecting a Telephone, Fax, or Answering Machine” on page 21.

3.2 Connecting to Electrical Power



Connecting to the power supply

Connecting Set aside the power supply unit out of the FRITZ!Box package.

1. Connect the power supply unit to the socket on the “PowerFRITZ!Box.”
2. Plug the other end into an AC power outlet.

The green “Power” LED will light up after a few seconds.

3.3 Connecting the Computer

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

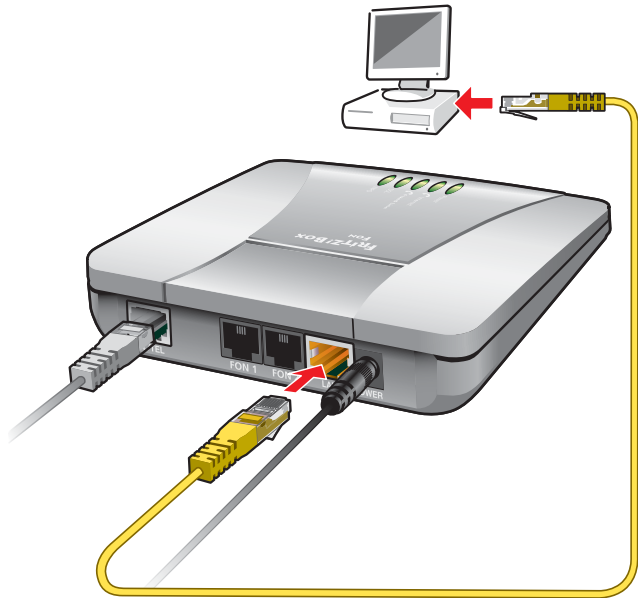
Connection Scenarios Note the following when connecting computers to the FRITZ!Box:

- ◆ A computer can be connected to FRITZ!Box’s LAN port directly, or using a USB hub/switch.
- ◆ The way a computer is connected to the FRITZ!Box is the same regardless of the operating system on the computer.
- ◆ All of the computers connected with the FRITZ!Box constitute a network.

3.4 Connecting Computers to the LAN Port



If you would like to connect a computer to the LAN port of the FRITZ!Box, make sure the computer is equipped with a LAN port (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

Connecting

Set aside the network cable (yellow) from the FRITZ!Box package.

1. Switch on your computer.
2. 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.

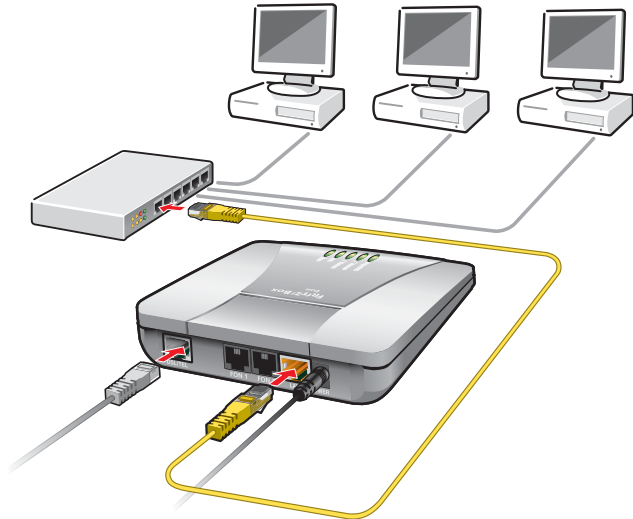
Insert one end of the LAN cable to the computer’s network adapter.

3. Connect the other end of the network cable to one of the sockets on the FRITZ!Box labeled “LAN 1”.

Now the FRITZ!Box and computer are connected to each other.

Connecting a Network Hub or Switch

You can connect a network hub or switch to the LAN port if you would like to connect multiple computers to the FRITZ!Box via LAN.



Connecting FRITZ!Box to a network hub

Connecting Set aside the network cable (yellow) from the FRITZ!Box package.

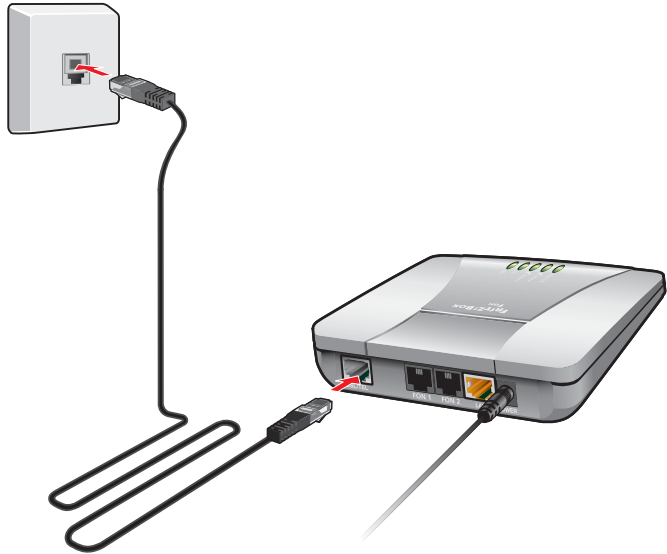
1. Connect one end of the LAN cable to the uplink port of the network hub or switch.
2. Connect the other end of the cable to the socket on the FRITZ!Box labeled LAN.

The FRITZ!Box and network hub are now connected with each other.

3.5 Connecting to the DSL Line

Depending on whether you have a DSL line and a telephone line, or a DSL line without a telephone line, the FRITZ!Box is connected to DSL with two different cables.

Connecting to the Telephone Line



FRITZ!Box on the DSL line: Connecting to the telephone socket

Connecting

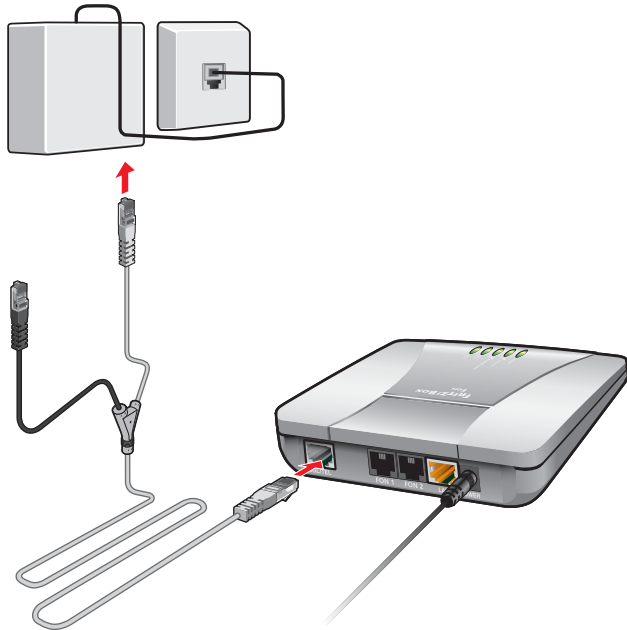
If you have a DSL line without a telephone line, connect the FRITZ!Box to DSL using the DSL cable (gray).

1. Insert one end of the DSL cable into the socket on the FRITZ!Box labeled “DSL/TEL”.
2. Insert the other end into the appropriate socket on your telephone socket.

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

For instructions on how to connect your telephony equipment, read from the section page 21.

DSL and Telephone Line



Connecting to the DSL splitter

Connecting

If you have a DSL line and a telephone line, then connect the FRITZ!Box using the DSL/telephone cable (gray-black).

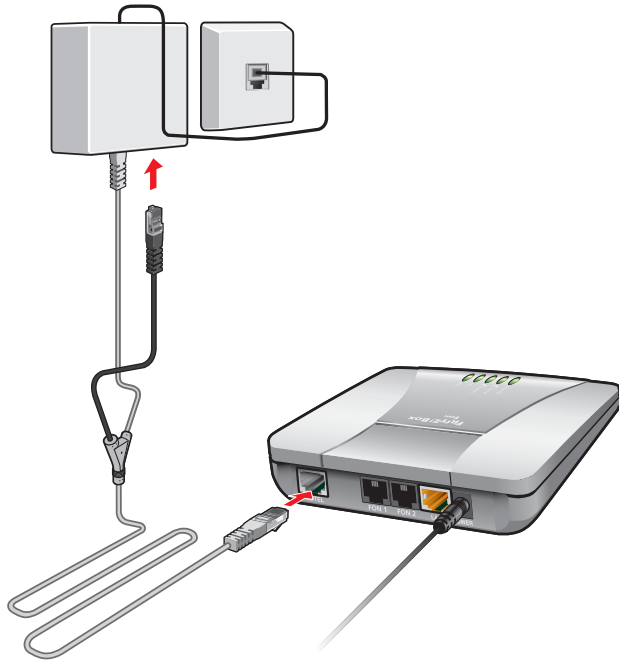
1. Connect the longer of the two gray ends of the cable to the port labeled “DSL/TEL”.
2. Then connect the shorter, gray end of the cable to the appropriate socket on the DSL splitter.



The black branch of the Y-shaped cable is for connection to the telephone line (see page 20).

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

3.6 Connecting with the Analog Telephone Line



Connecting to the analog telephone line via the DSL splitter

Connecting

Set aside the Y-shaped cable (gray-black) delivered in the package. This cable is a combined DSL/telephone cable.

1. Connect the longer gray end of the cable to the socket on the FRITZ!Box labeled “DSL/TEL”.
2. Then insert the black plug into the appropriate jack of your DSL splitter.

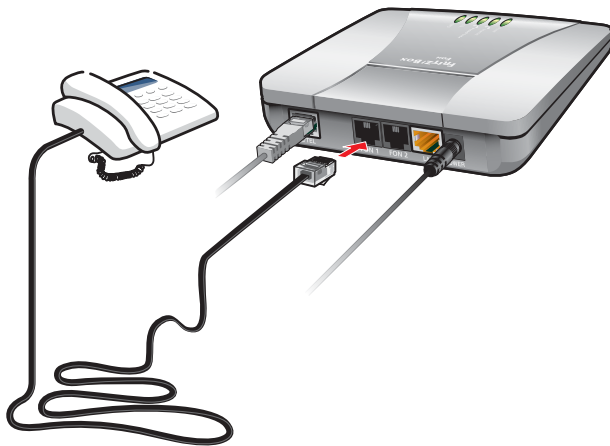
Now the FRITZ!Box and the analog telephone line are connected.

3.7 Connecting a Telephone, Fax, or Answering Machine

The FRITZ!Box provides Internet and/or fixed-line telephony for analog terminal devices.

You can connect two analog terminal devices like telephones, fax machine or answering machine to the FRITZ!Box.

Analog equipment with an RJ11 plug are connected to the RJ11 sockets “FON 1” and “FON 2”. These two jacks are located on the back panel of the FRITZ!Box.



Connecting an analog telephone to an RJ11 jack

Now your analog device is connected with the FRITZ!Box.

4 Opening the User Interface fritz.box

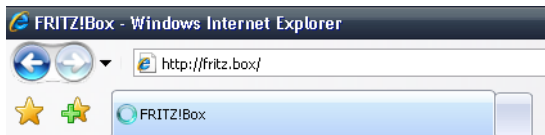
The FRITZ!Box has a user interface that can be used in a web browser.

The user interface presents information about the FRITZ!Box product, terminals and connections. This is where you configure all of the settings for operating the FRITZ!Box.

The user interface can be opened from any computer connected with the FRITZ!Box. The settings you configure are saved in the FRITZ!Box.

Starting

1. Start a web browser on your computer.
2. Enter “fritz.box” in the address line of the browser.



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

The FRITZ!Box user interface opens.



If the user interface does not open, please see the instructions in the section “Errors Opening the User Interface” from page 51.

4.1 Password Protection

Use the password protection set up for the user interface to protect your settings and all information in the FRITZ!Box from unauthorized access.

Here is how to set up the password protection in the FRITZ!Box:

1. Open the FRITZ!Box user interface.
2. Select “Advanced Settings / System / FRITZ!Box Password” in the “Settings” area.

3. Enable password protection and enter a password.
4. Save your settings by clicking “Apply”.

Be sure to use a password you can remember easily. If you forget the password, the only way to access the FRITZ!Box is to restore the factory settings. All settings made during operation will be overwritten. Then you can open the user interface again in order to reconfigure your settings or restore the settings you saved during previous operation.

4.2 Saving Settings

The settings you made in the FRITZ!Box can be saved as a file on your computer. This file contains all user-defined settings, including the account information for the Internet and telephony connections. This settings file can be loaded back into your FRITZ!Box at any time.

The FRITZ!Box features a Wizard to accompany you step by step through the process of saving and restoring your settings.

5 Internet Connections

Setting Up the Internet Connection

In order to allow Internet access with the FRITZ!Box, you must first configure the Internet connection in the FRITZ!Box user interface.



See also the Help available in the user interface for assistance in configuring the Internet access.

5.1 Configuring the Internet Connection Using the Wizard

If the FRITZ!Box is connected directly to the DSL line, the account information from your Internet Service Provider is required to configure the Internet connection in the FRITZ!Box.

Use the Wizard to configure the Internet connection:

1. Open the FRITZ!Box user interface.
2. In the “Settings” area, please select the “Wizards” menu command.
3. Click the “Set Up Internet Connection” Wizard and follow the instructions.

Once configuration has been completed, all of the computers connected with the FRITZ!Box can be used to surf the Internet without any further settings required.

5.2 Configuring the Internet Connection Manually

Changes to the Internet connection settings can be made in the FRITZ!Box user interface.

Proceed as follows:

1. Open the FRITZ!Box user interface.
2. Select the “Advanced Settings” menu in the “Settings” area.
3. Select “Internet / Account Information”.
4. Select the setting “Use one Internet connection for all computers (router)” if this setting is not already configured.

5. Enter in these fields the Internet account information you received from your Internet Service Provider.
6. As a final step, click “Apply”.

If the FRITZ!Box is connected to a cable modem, a DSL modem or a router, or integrated into an existing network, you must also configure your Internet connection as described above. To do so, enable the expert settings in the “System / Expert Mode” menu.

6 Telephone Connections

Configuring FRITZ!Box for Telephony

Using the FRITZ!Box you can make telephone calls via the Internet and the fixed-line network.

Once you have connected the FRITZ!Box as described in the chapter “Connection” from page 13, you can configure the FRITZ!Box for making telephone calls.

The configuration is performed in two consecutive steps:

- ◆ entering your phone numbers
- ◆ configuring the connected telephony terminal devices



In the “Settings” area of the FRITZ!Box user interface there are various Wizards for the configuration of your FRITZ!Box. We recommend using these step-by-step instructions.

6.1 Entering your Phone Numbers

The “Enter Outgoing Caller ID” Wizard supports you in performing the following tasks:

- ◆ entering Internet telephone numbers
- ◆ entering fixed-line telephone numbers
- ◆ changing numbers already entered
- ◆ deleting entered numbers



If you used the Basic Settings Wizard after connecting your FRITZ!Box and entered numbers then, these numbers are already entered in your FRITZ!Box. In this case you can start right away with the configuration of the connected telephony devices.

Entering New Internet Telephone Numbers

In order to be able to make calls via the Internet with the FRITZ!Box, you will need an Internet telephone number from an Internet telephony provider. Enter the Internet telephone number in the FRITZ!Box.

You can enter multiple Internet numbers in the FRITZ!Box. The Internet numbers can be from one or from multiple different Internet telephony providers.

Entering Fixed-line Numbers

In order to make calls via the analog fixed-line network with the FRITZ!Box, enter your telephone numbers in the FRITZ!Box.

6.2 Setting Up Telephony Devices

For the configuration of telephony equipment, the “Configure Telephony Devices” Wizard is available in the FRITZ!Box.

Telephony Devices Supported

The following telephony devices are supported by the FRITZ!Box:

- ◆ telephones
 - analog telephones
 - analog telephones with an integrated answering machine
- ◆ answering machine

If you have connected an analog answering machine (to the “FON 1” or “FON 2” jack, for instance), configure it as an answering machine.
- ◆ fax machines
 - analog fax machines
 - analog fax-telephone combinations

Settings for Telephony Devices

The following settings for telephony devices can be configured in the “Configure Telephony Devices” Wizard:

Devices Connected to the FRITZ!Box

- ◆ telephone
 - kind of connection used to connect the telephone with the FRITZ!Box
 - internal name for the telephone
 - Number used to conduct outgoing calls: With this entry you specify whether outgoing calls should be conducted via the Internet or the fixed-line network.
 - Call acceptance: Specify here whether the telephone should react to all calls or only to calls for certain telephone numbers.
- ◆ fax machine
 - kind of connection used to connect the fax machine with the FRITZ!Box
 - internal name for the fax machine
 - Number used to send faxes: This entry defines whether outgoing faxes are sent via the Internet or the fixed-line network.
 - Call acceptance: Here you define the numbers to which the fax machine should react.
- ◆ answering machine
 - kind of connection used to connect the answering machine with the FRITZ!Box.
 - internal name for the answering machine
 - Call acceptance: Enter here whether the answering machine should react to all calls or only to calls for certain numbers.

6.3 Telephony Functions

More functions and settings options for telephony are available in the “Settings / Advanced Settings” area, in the “Telephony” menu.

Call List

The Call List displays outgoing calls, incoming calls, as well as incoming calls in absence.

If the number of a caller or someone called is entered in the Telephone Book, the Call List will display the name from the Telephone Book.

The Call List can be saved as a file.

Menu The Call List is found in the “Settings / Advanced Settings” area, in the “Telephony / Calls” section.

Blocking Calls

The telephone number block of the FRITZ!Box offers you the following options:

- ◆ blocking of numbers and number ranges for outgoing calls

From the FRITZ!Box no outgoing calls to a blocked number range are possible. In this manner you can block connections to certain mobile networks, for instance.

- ◆ blocking telephone numbers for incoming calls

For incoming calls you can block certain numbers to avoid receiving calls from unwanted callers.

Menu The command for blocking calls is located in the “Settings / Advanced Settings” area, in the “Telephony / Calls” menu.

Telephone Book

A telephone book is at your disposal in the FRITZ!Box.

Menu The “Telephone Book” is found in the “Settings / Advanced Settings” area, in the “Telephony” menu.

Alarm

With the alarm function you can use the telephones connected to the FRITZ!Box as alarm clocks.

- ◆ You can specify several different times for the alarm to go off.
- ◆ An individual telephone can be selected for the alarm function.

Menu The “Alarm” function is located in the “Settings / Advanced Settings” area, in the “Telephony” menu.

Dialing Rules

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

All connections to number ranges for which a dialing rule has been defined are established using the specified connection type.

Menu The “Dialing Rules” menu is located in the “Settings / Advanced Settings / Telephony” area.

7 Configuration and Operation on the Telephone

FRITZ!Box Keypad Sequences

Many of the FRITZ!Box functions and features can be configured and used over a telephone connected to a FRITZ!Box 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.








Acknowledgment Tone

Entries input on the telephone are confirmed with acknowledgement tones (see also “Audible Signals” on page 33):

- ◆ Entries made correctly are confirmed with a positive acknowledgement tone (a single tone of one second in length).
- ◆ If the entry was not successful, because of an incorrect key sequence, for instance, you hear a negative acknowledgement tone (an intermittent tone broken into intervals of about 0.25 seconds).

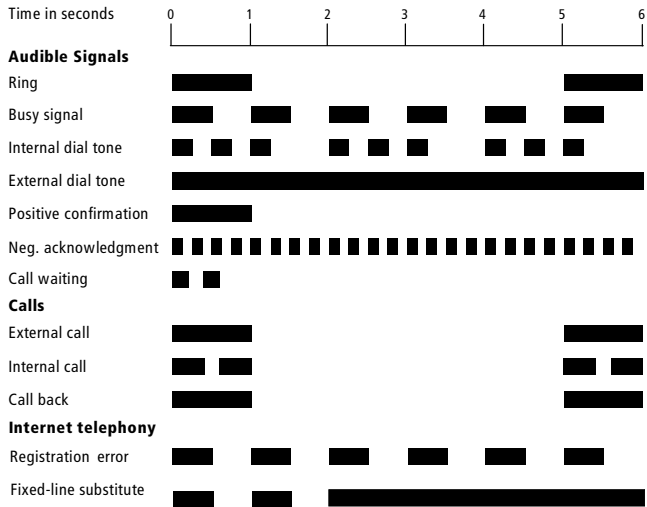
7.1 Instructions for Operation at the Telephone

The table explains the symbols used in this chapter:

	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.
<DNo>	Enter an external telephone number (destination number). In the place of the abbreviation <DNo>, enter the complete number of the external line.
<DNo./Ext.>	Enter the external telephone number (destination number) or extension number (Ext.) to which your calls are to be diverted.

7.2 Audible Signals

The following diagram illustrates the duration and intervals of the various audio signals and ring tones of the telephones connected to the FRITZ!Box Fon 5113.



Audio signals and ring tones of the connected telephones



7.3 Configuring Using the Telephone

Saving New Settings

In this section, saving refers to **all** current settings made in the FRITZ!Box. It is not necessary to save the configuration immediately after every change. You may first configure all of your settings as desired, and then save them permanently.



Permanent saving cannot be reversed. However, you can change the settings by using new commands or restore the FRITZ!Box to its factory settings.

Saving Permanently	
	Pick up the handset.
#91**	Save all settings permanently by dialing the sequence shown at left.
	Hang up the handset.

Restoring Factory Settings

The FRITZ!Box can be reset to its condition upon delivery by restoring factory settings.



All settings you made in the FRITZ!Box—including the configured Internet connection—are deleted when the factory settings are restored.

Restoring Factory Settings	
#991*159 01590*	resets the FRITZ!Box to its condition upon delivery

After restoring factory settings, the FRITZ!Box is restarted.

Do Not Disturb

You can enable a Do Not Disturb function for any telephone connected to FRITZ!Box in the user interface. When Do Not Disturb is enabled, the telephone will not ring. In configuring this function you can choose between enabling the function immediately and selecting a specific time period.

Immediately

When Do Not Disturb is enabled immediately, no incoming calls will be signaled at the specified extension. The Do Not Disturb setting will remain enabled until it is disabled.

Enabling Do Not Disturb Effective Immediately	
#81<Ext.>*0*	immediately enables Do Not Disturb for the extension entered as <Ext>

Period

Alternatively, 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 then automatically 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 20:00 p.m. until 07:00 a.m. daily. Enter the value “2000” for <Start> and “0700” for <End>.

Enabling Do Not Disturb for a Prescribed Period	
#80<Ext.>* <Start>*<End>*	defines the period for Do Not Disturb at extension <Ext.>
#91**	saves the settings
#81<Ext.>*6*	enables Do Not Disturb for the defined period

Disabling

Both kinds of Do Not Disturb settings can be disabled by means of a keypad sequence.

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

Alarm

The telephones connected to the FRITZ!Box can be used for an alarm call. The alarm can be configured individually for each connected 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 07:00 a.m. Enter the value “0700” as the <Time> and save this setting.

Configuring the Alarm for a Telephone	
#881* <Time>* <Ext.>*	defines for the extension <Ext.> the time at which the telephone should ring
#91**	saves the settings

Enabling/Disabling the Alarm	
#881**	enables the alarm function for all extensions on which a time was set
#881#	disables the alarm function for all extensions

Call Waiting



Call waiting can be switched on or off for each extension. Some older terminal devices 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 “Waiting Calls” on page 42 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.

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.



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.



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. When CLIR is permanently enabled, this setting is saved for the extension and always enabled for outgoing connections.

If you would like to conduct only certain calls with the Caller ID suppressed, prefix the number dialed with a keypad sequence. This enables CLIR only for the current connection.

Enabling CLIR Permanently	
	Pick up the handset.
#51<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.

Disabling CLIR Permanently	
	Pick up the handset.
#51<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.

CLIR on a Case-by-Case Basis	
	Pick up the handset.
*31#	Dial the sequence shown at left. Now you hear the external dial tone.
	Dial the number you want to call.



Displaying 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 Display of Incoming Caller ID (CLIP)	
	Pick up the handset.
#50<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.

Disabling Display of Incoming Caller ID (CLIP)	
	Pick up the handset.
#50<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.

Disabling Automatic Outside Dialing

The FRITZ!Box offers the possibility of disabling automatic outside dialing. This means that you will hear an internal dialing tone when you lift the handset at the corresponding extension. This makes sense at any extension which is used to make many internal calls, for instance, between the extensions of the FRITZ!Box. When automatic outside dialing is disabled, for an external call the **0** must be dialed before the telephone number.

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.

Enabling Automatic Outside Dialing	
☎	Pick up the handset.
#1<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.

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 hears a busy signal whenever the extension is busy.

Enabling Busy on Busy	
☎	Pick up the handset.
#52<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.

Disabling Busy on Busy	
Ⓜ	Pick up the handset.
#52<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.

7.4 Operation at the Telephone

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

Shortening the Dialing Procedure

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

You have the possibility of shortening the dialing procedure by closing your entry with the # key.

Shortening the Dialing Procedure	
<Number> #	indicates that a number has been dialed to shorten the dialing procedure

Define the Outgoing Number and the Type of Connection

For outgoing connections you can specify the kind of connection to be used for the next dialing procedure. For this entry you can use settings already made, or circumvent the settings currently configured. In this case the dialing rules are suspended for the given dialing procedure.

By entering precisely which Internet telephony account should be used it is possible to have the dialing procedure conducted via a certain Internet telephone number, even though this number was never previously configured for the extension used.

Selecting the Outgoing Number and the Type of Connection	
* 111 # ⟨Phone number⟩	dials up this connection using the fixed line
* 12 # ⟨Phone number⟩	establishes a connection for this dialing procedure using the first Internet telephone number
* 12 ⟨P⟩#	establishes an Internet telephony connection via the specified Internet telephone number. For ⟨P⟩ enter the position of the Internet telephone number in the List of Internet Telephone Numbers.

Making Internal Calls






All calls conducted between telephones connected to the FRITZ!Box are internal telephone calls. These calls are free of charge.

Dialing Internal Calls with Automatic Outside Dialing	
Ⓡ	Pick up the handset. You can hear the external dial tone immediately, since the extension is set for automatic outside dialing.
* * ⟨Ext.⟩	If you would like to make an internal call to one of the extensions, dial * * , followed by the number of the extension, for instance 1 or 2 .

Dialing Internal Calls without Automatic Outside Dialing	
Ⓡ	Pick up the handset. You hear the internal dial tone.
⟨Ext.⟩	Dial the desired extension number, for instance 1 or 2 .

Picking up a Call from the Answering Machine







Use this function to pick up incoming calls on your telephone that already have been taken by the answering machine.

Picking up a Call	
	Pick up the handset.
  	Dial the sequence shown at left.
	The call is now connected to your extension. You are now connected to the caller.

Waiting Calls

When the “Call Waiting” feature is enabled and you are conducting a call, you will be notified as soon as an external call arrives on your your line. This call will be signaled by an acoustic signal in the handset. 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” on page 36.

Accepting or Reject Waiting Calls	
 	To accept a waiting call, dial the sequence shown at left. Your original call is now on hold.
 	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.
 	To reject a waiting call, dial the sequence shown at left.

Alternating Between Calls

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











Alternating between Calls	
Call 1 ⌋	You are talking to Caller 1.
R	Press the Hold button. Caller 1 is now on hold.
#	To establish a second call, simply dial * * * plus the desired extension number for an internal call, or the desired external number.
Call 2 ⌋	If the call is answered, you can consult on this line. The original caller is still on hold.
R 2	To switch back from Caller 2 to Caller 1, dial the sequence shown at left.
Call 1 ⌋	Caller 1 is now active again and Caller 2 is on hold.
R 2	To switch back again from Caller 2 to Caller 1, dial the same sequence. In this way you can alternate between the two connections.

Ending Hold	
T	The caller on hold hangs up. You can continue talking on the active connection.
R 1	You end the active connection by dialing the sequence shown at left. The call that was on hold is now active again, and there is no call left on hold.
T ⌋ Call ⌋	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.



Three-Party Conference Call

FRITZ!Box 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.

Conducting a Three-Party Conference Call	
	Pick up the handset.
	Dial the external number of the first party. Talk.
	Press the Hold button.
	To establish a second call, simply dial * * * plus the desired extension number for an internal call, or the desired external number. You can now conduct a second conversation 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.

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.

Consultation / Hold	
Call 1 📞	You are talking to Caller 1.
Ⓜ	Press the Hold button. Caller 1 is now on hold and you can consult someone else.
☎	To establish a second call, simply dial *+* plus the desired extension number for an internal call, or the desired external number.
Call 2 📞	If the call is answered, you can consult on this line. The original caller is still on hold.
Ⓜ	If the number you dialed is busy or the call is not answered, press the Hold button again to return to Caller 1.
Ⓜ1	To switch back to Caller 1 after talking on the second connection, dial the sequence shown at left. Call 1 is now active again.



If you return to Caller 1 by pressing the Hold button, the connection to Caller 2 is not cleared down until Caller 2 hangs up.

Ending Consultation	
Call 1 📞	You can also return to Caller 1 by hanging up the handset: this ends the connection to Caller 2. In this case, your phone rings as soon as you hang up. Pick up the handset to return to Caller 1 again.
Ⓣ	Hang up the handset to end the connection.

Transferring Calls

The “Call Transfer” function allows you to transfer a connection from one of FRITZ!Box’s extension to another.

Transferring Calls	
Call 1 📞	You are talking to Caller 1.
Ⓜ	Press the Hold button. Caller 1 is now on hold.
* * <Ext.>	To establish a connection to Caller 2, dial the star key twice and then her or his extension number.
Call 2 📞	You can now talk with Caller 2.
Ⓣ	To transfer the Caller 1 to Caller 2, simply hang up the handset.

Explicit Call Transfer (ECT)

Use the “Explicit Call Transfer” function to connect two external parties with each other while one connection is active and the other is 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.
☎	Dial the number for your second external call. You can now conduct a second conversation while your first call is on hold.
	To clear your connection while allowing the external parties to continue the call, connect the parties with each other.
Ⓜ4	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	
T	Pick up the handset.
#	Dial the external number of the first party. Talk.
R	Press the Hold button.
#	Dial the number for your second external call. You can now conduct a second conversation while your first call is on hold.
R 3	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.
R 2	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.
R 4	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.
T	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). 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.



When using this feature, it is advisable to activate the speaker phone function.

Enabling Room Monitoring	
	Pick up the handset or activate the speaker phone function of your telephone.
 4 <level>  <number> 	Dial the sequence shown at left. For <Level>, enter a number between 1 (the most sensitive sound level) and 3 . 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.





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

Using Keypad Messages

The “Keypad” function allows you to control services and features on the telephone line by entering characters and strings on the telephone keypad.

These keyboard entries are called keypad messages. Ask your telephone carrier for the specific keypad messages.

Entering Keypad Sequences 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 telephone carrier.

Entering Keypad Sequences 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 telephone carrier.

8 Troubleshooting

Help for Errors

This chapter provides assistance if you are not able to open the user interface of your FRITZ!Box, if you are having problems with the Internet connection, or if you want to change the IP settings on your computer.

8.1 Errors Opening the User Interface

If an error message is returned when you open the user interface, this can have various causes. Check the possible causes and attempt to resolve the error.

Restarting the FRITZ!Box

The user interface cannot be opened or does not react.

Possible Cause

Inconsistencies within the FRITZ!Box.

Remedy

1. Restart the FRITZ!Box.
Remove the power cable from the socket.
2. Wait about five seconds before reconnecting to the power supply.
3. Try again to open the FRITZ!Box user interface by entering fritz.box in the address field.

Checking the Cable Connections

The user interface of the FRITZ!Box does not appear in the window of your web browser.

Possible Cause

The cable connections are not secure.

Remedy

Make sure that all cable connections are plugged in securely.

Checking the Name Resolution

The user interface of the FRITZ!Box cannot be opened by entering fritz.box.

Possible Cause

The name resolution of the FRITZ!Box does not work.

Remedy

1. In the web browser, enter the following IP address in place of fritz.box:
192.168.178.1
2. If the user interface cannot be reached via this address, check the settings configured for your network adapter as described in section “Obtaining an IP Address Automatically” from page 57.

Checking the IP Address

The user interface of the FRITZ!Box cannot be reached at the address fritz.box nor at 192.168.178.1.

Possible Cause

The IP address set on the connected computer is inapplicable.

Remedy

Set the network adapter to DHCP so that the IP address can be obtained via the DHCP server of the FRITZ!Box. Adjust the settings to those described in the section “Obtaining an IP Address Automatically” from page 57.

[Disabling Dial-Up Connections](#)

The user interface is not opened; a window for a dial-up connection appears instead.

Possible Cause

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.

Remedy

You can disable the automatic attempt to establish a Dial-Up Networking connection. The following example explains how to check the settings of Internet Explorer 6:

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

Disabling Online Operation

The user interface does not appear in the window of your web browser.

Possible Cause

The web browser is set for offline operation.

Remedy

Configure the web browser for online operation. Using the example of Internet Explorer 6:

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.

Checking the Proxy Settings

The user interface does not appear in the window of your web browser.

Possible Cause

The proxy settings of the web browser prevent the user interface from being opened.

Remedy

Enter the DNS name and the IP address of the FRITZ!Box as an exception 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 “Local Area Network (LAN) settings” area, and in the next window, click the “Advanced...” button in the “Proxy server” area.

3. Under “Exceptions” enter: “fritz.box; 192.168.178.1; 169.254.1.1” and click “OK”.

Checking the CGI Settings

The user interface does not appear in the window of your web browser.

Possible Cause

The execution of CGI scripts is disabled in the web browser.

Remedy

Configure the web browser so that the execution of scripts is allowed in the user interface. Using the example of the Internet Explorer 6:

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 in the Internet browser.
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 Security Software

The user interface cannot be displayed in the web browser.

Possible Cause

Security software is blocking access to the user interface.

Remedy

Security software like firewalls can prevent access to the user interface of the FRITZ!Box. Configure exceptions for the FRITZ!Box in all of the enabled security software.



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

Opening the User Interface of the FRITZ!Box

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

Fixed IP address	169.254.1.1
------------------	-------------

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

1. Connect the FRITZ!Box to the computer using the network cable (yellow). See the section “Connecting Computers to the LAN Port” from page 16 for more information.
2. Make sure that the computer obtains its IP address automatically. You can check this setting in the computer’s IP settings (see section “Obtaining an IP Address Automatically” from page 57).
3. Restart your computer.

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

169.254.1.1

The FRITZ!Box user interface opens



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

8.2 Obtaining an IP Address Automatically

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

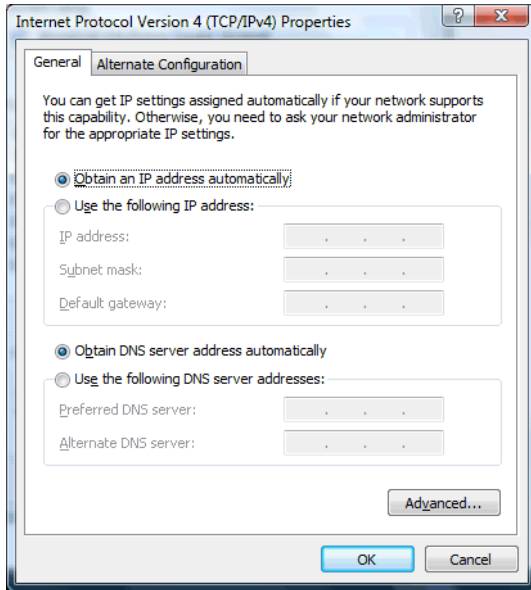


If FRITZ!Box is operated in a network, no other DHCP server may be activated in this network.

Obtaining an IP Address Automatically in Windows Vista

1. Click the “Start” button in the task bar and select “Control Panel / Network and Sharing Center”.
2. From the “Tasks”, select “Manage network connections”.
3. In the “LAN or High-Speed Internet” area, select the LAN connection between your computer and the FRITZ!Box. Click the right mouse button and select “Properties”.
4. If the “User Account Control” window is displayed, click “Continue” in this window.
5. Under “This connection uses the following items”, select the “Internet Protocol Version 4 (TCP/IPv4)” entry and click “Properties”.

6. On the “General” tab, enable the options “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



Properties of the Internet protocol (TCP/IP)

7. Confirm your selection by clicking “OK”.

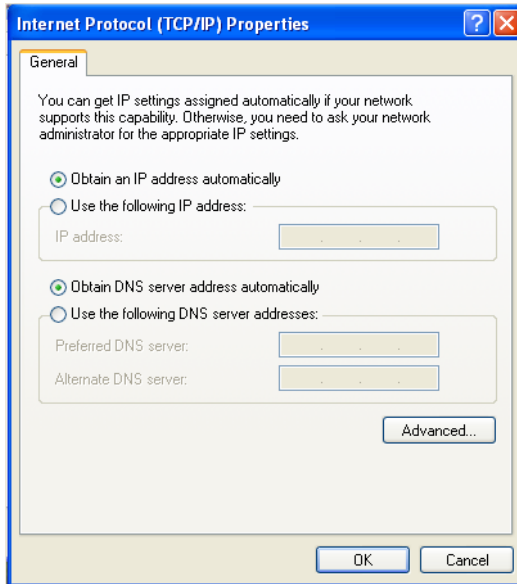
If necessary, repeat steps 5 through 7 for the “Internet Protocol Version 6 (TCP/IPv6)” as well.

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

Obtaining an IP Address Automatically in Windows XP

1. Go to “start / Control Panel / Network and Internet Connections / Network Connections” and double-click the LAN connection icon of the network adapter connected to the FRITZ!Box.
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. On the “General” tab, enable the options “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



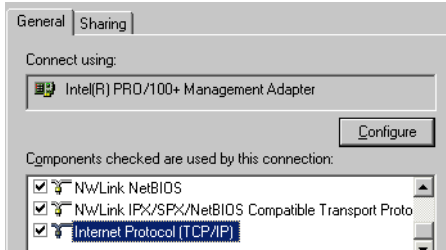
Properties of the Internet protocol (TCP/IP)

5. Confirm your selection by clicking “OK”.

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

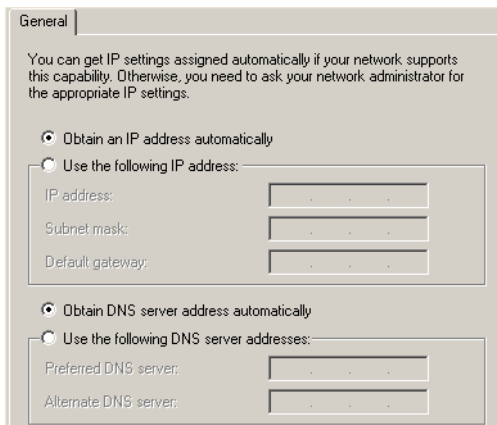
Obtaining an IP Address Automatically in Windows 2000

1. Select “Start / Settings / Control Panel / Network and Dial-up Connections”.
2. Double-click to select the Local Area Network connection of the network adapter bound to the FRITZ!Box.
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. On the “General” tab, enable the options “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



Properties of the Internet protocol (TCP/IP)

6. Confirm your selection by clicking “OK”.

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

Obtaining an IP Address Automatically in Mac OS X

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 IPv4” drop-down menu.
5. Click “Apply Now”.

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

Obtaining an IP Address Automatically in Linux

For comprehensive information and tips on the topic of network settings in Linux, see, for example:

www.tldp.org/HOWTO/NET3-4-HOWTO-5.html

9 Uninstalling the FRITZ!Box

Disconnecting the FRITZ!Box from the Computer

This chapter describes how to remove the FRITZ!Box from the computer and uninstall the corresponding software.

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

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

II PRODUCT DETAILS AND USEFUL INFORMATION

1 Product Details

FRITZ!Box Fon 5113

This chapter provides you with product details on FRITZ!Box Fon 5113. You receive information on the LEDs, the audible signals, cables and adapters, technical data and further details.

1.1 Cables

See the information in the following section on the individual cables and adapters on the FRITZ!Box Fon 5113.

DSL/Telephone Cable

The DSL/telephone cable is a special combined cable developed by AVM to connect the FRITZ!Box Fon 5113 to the DSL splitter and the ISDN NT or analog telephone line.

If you need a longer cable, you can extend one or multiple ends of the combined cable using RJ45 double couplings. Which ends of the cable you extend depends on the spatial conditions at your location.

You will need the following components to extend the length of one or more ends of your DSL/telephone cable:

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

Both components are available from specialized vendors.

AVM recommends a final length of no more than 10 meters.



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



DSL Cable

For a description of the exact contents of your FRITZ!Box package, see the cardboard box in which the FRITZ!Box was delivered.

The DSL cable serves to connect the FRITZ!Box to a DSL line without a telephone line.

You will need the following components to extend the length of the DSL cable on the end with the RJ45 connector:

- ◆ 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 cable be extended with a standard network cable to a length of no more than 20 meters.

Network Cable



Additional network cable is required if you would like to use all of the FRITZ!Box Fon 5113 network ports.



The FRITZ!Box Fon 5113 network cable (yellow) 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. You can use either straight cable or cross-link cable. All components are available from specialized vendors.

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

1.2 LEDs

Five LEDs are built into the top of the FRITZ!Box Fon 5113, which flash or light up to display various connection statuses.

“INFO” LED Here you can define what additional information should be displayed on the “INFO” LED. For details, see the “Settings / Advanced Settings / System / “INFO” Display” section of the user interface of your FRITZ!Box Fon 5113.

LED	Status	Meaning
Power	on	<ul style="list-style-type: none"> ◆ FRITZ!Box on standby ◆ the device has electrical power and the DSL line is ready for operation
	flashes	<ul style="list-style-type: none"> ◆ the device has electrical power ◆ 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 carrier)
 Fixed Line		no function
DSL	on	an Internet connection is active
INFO	flashes	◆ updating the firmware
		◆ the value specified for the online meter has been reached
		◆ signals an event that can be configured freely by the user

1.3 Technical Specifications

Ports and Interfaces

- ◆ DSL/Telephone port
 - DSL modem compatible with 1TR112/U-R2 and ADSL2+ (Annex A)
 - telephone port for connecting to the analog network
- ◆ two a/b ports for connecting two analog terminal device via RJ11 sockets
- ◆ one LAN port over a RJ45 socket(standard Ethernet, 10/100 base-T)

Router Function

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

User Interface and Display

- ◆ Configuration and status messages via a web browser on a connected computer
- ◆ Five LEDs indicate the condition of the device

Physical Specifications

- ◆ Dimensions (w x h x d) approx. 123 x 125 x 31 mm
- ◆ Supply voltage: 230 V / 50 Hz
- ◆ Maximum power consumption: 8.5 W
- ◆ Average power consumption: 6 W
- ◆ Firmware can be updated
- ◆ Conform to CE standards
- ◆ Ambient conditions
 - operating temperature: 0°C – +40°C

- storage temperature: -20°C – +70°C
- relative humidity (operation): 10 % – 90 %
- relative humidity (idle): 5 % – 95 %

1.4 Declaration of CE Conformity

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

herewith declares that the product

FRITZ!Box Fon 5113
Type: ADSL Router

complies with the following directives:

1999/5/EC	R&TTE Directive: Radio Equipment and Telecommunications Terminal Equipment
2004/108/EC	EMC Directive: Electromagnetic Compatibility
73/23/EEC	Low Voltage Directive: Electrical equipment designed for use within certain voltage limits

The following norms were consulted to assess conformity:

- EN 60950-1:2006	- EN 55024/9.98 + A1/10.01 +
- CTR 3/1998.06.17	A2/01.03 Class B
- ETSI TS 101 388 V1.4.1 (2007-08)	- EN 55024/9.98 + A1/10.01 +
- ITU-T G.992.1	A2/01.03
- ITU-T G.992.2	
- ITU-T G.992.3	
- ITU-T G.992.4	
- ITU-T G.992.5	
- ITU-T G.994.1	
- ETSI ETR 328 (1996-11)	



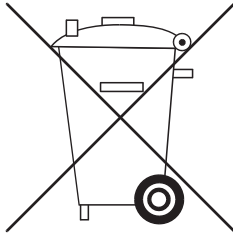
The CE symbol confirms that this product conforms with the above mentioned norms and regulations.

Berlin, 2009-03-24

Peter Foxel, Technical Director

1.5 Disposal

Electrical and electronic equipment must be disposed of separately from household waste.



Labeling of electrical and electronic scrap

In accordance with European regulations and the Electrical and Electronic Equipment Act (ElektroG), the FRITZ!Box Fon 5113, as well as all devices and electronic components contained in the FRITZ!Box Fon 5113 package may not be disposed with household waste. Please bring these to your local collection points for disposal.

2 More about Networks

The FRITZ!Box is delivered with preconfigured network settings. According to these settings, all network devices connected with the FRITZ!Box are located in a single network.

The network settings can be changed and adapted to your conditions and needs. But you should do so only if you are well versed in networking technology.



- ◆ The Glossary explains concepts and terminology having to do with IP networks.
- ◆ The section “Network Overview” from page 69 introduces the network overview of the FRITZ!Box.
- ◆ The sections “IP Address” from page 72, “DHCP Server” from page 73 and “Subnetwork” from page 74 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.

2.1 Network Overview

The FRITZ!Box user interface shows an overview with all of the devices and users connected with the FRITZ!Box.

The “Devices and Users” network overview is found in the following two menus: “Start Menu / Network” or “Settings / Advanced Settings / System / Network”.

There is an entry in the network overview for each user and each network device. The columns have the following meanings:

Icon	The icon in front of each name indicates whether the entry is a user or a network device. In the case of network devices the icon also indicates whether the device is connected with a network (LAN) cable.
Name	This column displays the name under which the user or the network device is known to the FRITZ!Box. The name can be changed by clicking the button to edit the entry.
IP Address	For network devices, also displayed is the IP address with which the device is integrated into the FRITZ!Box network.
Properties	This column indicates whether port forwarding or child protection is enabled for the respective user or network device.
	Button for editing an entry The button opens the detailed view of the entry. This view displays information about the network device, for instance on child protection or port forwarding settings. The name of the device in the FRITZ!Box can be changed here.
	Button for deleting the entry Users or network devices that do not have an active connection to the FRITZ!Box can be deleted from the network overview by clicking this button.

Always Assign the Same IP Address

In the properties of the network devices, the setting “Always assign this network device the same IP address” is displayed.

When this setting is enabled for a network device, the DHCP server of the FRITZ!Box will always assign the same IP address to this device each time the connection is established.

Start Computer: Wake on LAN

The properties page for network devices that are connected with the FRITZ!Box via a network (LAN) port includes the “Start Computer” button. Use this button to start computers that support Wake on LAN.

With the Wake on LAN function you can start computers in your FRITZ!Box via the Internet. For instance, you can access a computer at any time using remote maintenance software, without wasting electricity by keeping the computer switched on permanently.

2.2 IP Settings

The IP settings of the FRITZ!Box are preset upon delivery with the following values:

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 yield the following values:

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

The following addresses are reserved for certain purposes:

192.168.178.1	is used by the FRITZ!Box itself
192.168.178.254	reserved for internal use
192.168.178.255	broadcast address used to send messages into the network

2.3 UPnP Settings

The Universal Plug-and-Play (UPnP) service included in your FRITZ!Box provides status information about the FRITZ!Box to all connected computers. Programs with UPnP support on these computers can receive this information and use them to display the status of the FRITZ!Box (e.g., DSL synchronization, connection status, data transmission). UPnP service thus allows you to monitor your FRITZ!Box from a connected computer.

2.4 IP Address

Upon delivery the FRITZ!Box is assigned the following IP address:

192.168.178.1

If you would like to change the IP address, please read through the following sections. Also note the additional information in the section “Reserved IP Addresses” on page 72.

When Does It Make Sense to Change the IP Address?

You should change the IP address of the FRITZ!Box if the following applies 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 to the subnet in order to make the FRITZ!Box features available to all of the computers in the subnet.

Reserved IP Addresses

The entire IP network 192.168.180.0 in the FRITZ!Box is reserved for internal purposes.

IP addresses from this network may **not** be assigned to the FRITZ!Box.

2.5 DHCP Server

The FRITZ!Box is equipped with its own DHCP server. The DHCP server is enabled by default in the factory settings. The following range of IP addresses is reserved for the DHCP server in the factory settings:

192.168.178.20 - 192.168.178.200

This IP address can be changed as needed.

Every time the operating system on a computer connected with FRITZ!Box is started, the DHCP server assigns it an IP address from the IP address range of the DHCP server.



Only one DHCP server may be active within any network.

Assigning the IP addresses via the DHCP server ensures that all of the computers connected with the FRITZ!Box 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 “Obtaining an IP Address Automatically” from page 57.

Fixed IP Addresses when the DHCP Server Is Enabled

If you would like to configure fixed IP addresses on individual computers connected with the FRITZ!Box despite the enabled DHCP server, please note the following:

- ◆ The IP addresses must be from the IP network of the FRITZ!Box.
- ◆ The IP addresses may not come from the address range of the DHCP server.
- ◆ Each IP address can be assigned only once.

Disabling the DHCP Server

You can disable the DHCP server.

To make sure that all computers remain in the same IP network as the FRITZ!Box, 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, 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.

2.6 Subnetwork

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

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

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

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

Disabling "All computers are located in the same IP network"

If you switch off the setting "All computers are located in the same IP network", the interfaces of the FRITZ!Box will receive their own IP addresses.

Factory Settings

Upon delivery the interfaces of the FRITZ!Box are configured as follows:

Interface	IP Address	Subnet Mask	DHCP Server
LAN	192.168.178.1	255.255.255.0	enabled

Thus the following address pools are available to the DHCP server:

Interface	Address Pool of the DHCP Server at the Interface
LAN	192.168.178.20 - 192.168.178.200

Computers connected with the FRITZ!Box via different interfaces are located in different IP networks.

Interface	Network Address of the IP Network
LAN	192.168.178.0

2.7 Changing the Network Settings

In order to change the network settings of the FRITZ!Box, the Expert Mode must be enabled in the user interface:

1. Start a web browser on your computer and enter fritz.box in the address line of the browser.
2. Select the “Advanced Settings / System” menu in the “Settings” area.
3. Click “Expert Mode” in the System menu, enable the setting “Show expert settings” and confirm this setting by clicking “Apply”.

Here is how to change the network settings:

1. Select the “Advanced Settings / System / Network” menu in the “Settings” area.
2. Select the “IP Settings” tab.
3. Click the “IP Addresses” button.
The “IP Settings” page is opened.
4. Once all desired changes to the settings have been configured, confirm by clicking “OK” to apply them.



Please note that changes to the network settings in the FRITZ!Box may make it necessary to adjust the network settings of your computer so that you can continue to access the FRITZ!Box user interface.

3 More about Internet Telephony Voice over IP (VoIP)

Internet telephony has already been in use for years, but today it allows even private customers the convenience familiar from conventional telephony, usually at significantly lower prices.

Internet telephony has also made it considerably more convenient to use applications like conference calls and answering machines in networks. Further advantages include global availability at a single telephone number, and the development of new standards for security and voice quality.

Data Transfer

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.

3.1 Telephony Scenarios

If you have configured both a fixed-line number and an Internet telephone number in FRITZ!Box, 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.

4 Customer Service Guide

Help on All Important Service Topics

AVM is there to help should any questions or problems arise. Here you will find the important information you need, in the form of manuals, updates and support.

Microsoft Updates In many cases problems which arise during operation can be resolved by installing the current Microsoft Service Pack or other Microsoft updates.

The current service packs and updates can be obtained free of charge from Microsoft at the address:

www.microsoft.com

4.1 Documentation

To take advantage of all commands and features of your FRITZ!Box Fon 5113, consult the following documentation:

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

Readme 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 CD.

Manual The manual of the FRITZ!Box Fon 5113 is included in PDF format in the “Info” folder on the FRITZ!Box CD.



The current Adobe Acrobat Reader for reading PDF documents can be downloaded from the Internet free of charge at www.adobe.com.

4.2 Information in the Internet

On its web site AVM presents comprehensive information on your 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

4.3 Updates and Software

AVM provides firmware updates and various software for the FRITZ!Box Fon 5113 for free downloading over the Internet.

Firmware Use the “Firmware Update” Wizard on the FRITZ!Box user interface to perform an update of your firmware.

In the “Settings” area, open the “Wizards / Update Firmware” command to download the firmware from the Internet and perform the update with a single mouse click.

Programs The “Software” menu in the “Settings” area shows all of the software for your FRITZ!Box available for downloading from the Internet.

The latest software is also available for download at the following address:

www.avm.de/en/download

FTP 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:

ftp.avm.de

4.4 Support from the Service Team

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

1. If you have questions about starting operation of your FRITZ!Box, please consult the chapter “Connection” from page 13.
2. Please see the information in the section “Product Details” from page 63.
3. If you have any problems, seek “first aid” by consulting the chapter “Troubleshooting” from page 51.

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

4. 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.

5. If you do not find the answer you need in the FAQs, AVM Support will assist you. 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 English-language e-mail request at any time using the Service area of our web site. The Service area can be reached at:

www.avm.de/en/service

From the Support aerea, select the product, your operating system, and the toppic for which you need support. Click the “Mail Form” link to open the e-mail form. Fill out the form and send it to AVM support by clicking the “Send” button. Our Support team will respond by e-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 English 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

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 are you using (e.g., Windows Vista or Windows XP)?
- ◆ 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 the message?

- ◆ Which firmware does FRITZ!Box use? The firmware version is displayed on the “Overview” page of the FRITZ!Box user interface.

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

Glossary

- ADSL** abbreviation for Asymmetric Digital Subscriber Line
- Designates a fast kind of file transfer that works with standard copper cables and transports signals in both directions at different speeds (upstream at 640 Kbit/s and downstream at up to 9 Mbit/s).
- ADSL2** abbreviation for Asymmetric Digital Subscriber Line 2
- ADSL 2 (G.992.3) is a further development of the ADSL norm G.992.1/G.992.2).
- ADSL2 offers range much greater than did the first ADSL generation, and is significantly more robust than ADSL, as it can simply disable single carrier frequencies when they produce interference. This feature allows ADSL2 to prevent synchronization losses.
- With a throughput rate of up to 12 Mbit/s downstream, ADSL2 offers considerably greater bandwidth than ADSL.
- ADSL2 is completely downward compatible, meaning that terminal equipment compliant with ADSL can also be operated on ADSL2 lines, although they cannot exploit the advantages of ADSL2.
- ADSL2+** abbreviation for extended bandwidth Asymmetric Digital Subscriber Line 2
- ADSL2+ (G.992.5) is a further development of the ADSL norm (G.992.1/ G.992.2).
- ADSL2+ offers a doubled frequency range used for downstream transmission, and thus double the maximum bandwidth achievable for downstream to 24 Mbit/s.
- ADSL2+ is completely downward compatible, meaning that terminal equipment compliant with ADSL and ADSL2 can also be operated on ADSL2+ lines, although they cannot exploit the advantages of ADSL2+.

ADSL-Controller An ADSL-Controller is an electronic hardware module that allows a computer to access an ADSL line. ADSL-Controllers are stationary equipment, included on internal ADSL cards (for the PCI bus) or in external ADSL modems (with USB or Ethernet ports).

Alias Alias means different, else and also known as. An alias is often a short, catchy substitute for a long, complicated string of characters, for example, the actual name of the user J.Smith@my-internetprovider.com in place of the string 030123456@my-internetprovider.com. Here the name J.Smith functions as an alias for 030123456.

Context Menu The context menu is a menu that is normally not visible. The context menu opens only when you click a button, a graphic or a word with the right mouse button. Depending on where you clicked, the context menu contains only the most common menu commands for the given object.

If you are using an Apple computer, press the “Ctrl” key while clicking instead.

Default Gateway see gateway

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

DHCP Server The DHCP server assigns each client an IP address that is 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.

DNS abbreviation for Domain Name System

Domain Name Service takes care of determining the IP address for a given domain name, Domain Name Service is running on every computer. It accepts the domain name entered by a user and inquires about the corresponding IP address at a DNS server known to the service. If a DNS server cannot answer the inquiry itself, it can inquire about the IP address (DNS resolution) at other DNS servers.

If the Domain Name Service receives negative information from the DNS server (domain name not known), it can send inquiries to other DNS servers it knows or return a corresponding error message to the user. If it receives the desired IP address instead, the application can use the IP address to retrieve the destination desired by the user.

This hierarchical system of DNS servers is known as the Domain Name System. The addresses of the DNS servers at which the Domain Name Service is to inquire by default generally are handed over to the computer by the Internet Service Provider automatically whenever a connection to the Internet is established. In local networks addresses can also be assigned via DHCP. Otherwise they must be entered manually in the TCP/IP settings of the PC by the user or the system administrator.

DSL Modem A DSL modem connects a computer to the Internet via the DSL line. In contrast to the analog modem, a connection via the DSL modem does not mean that the telephone line is busy.

DSL Router A combination of a DSL modem and a router is called a DSL router.

Dynamic DNS abbreviation for Dynamic Domain Name System

Dynamic DNS is a service which allows a computer always to be reached under the same domain name despite constantly changing IP addresses. This means that even private users have an economical way of placing their own Internet offers on their computer at home.

It works by transmitting the current IP address to a special DDNS server each time the IP address changes. Except for the few seconds between the cancellation of the old IP address and the notification of the new IP address, the computer can always be reached at the selected domain name.

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 she or he 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.

FAQ abbreviation for Frequently Asked Questions

FAQs are collections with answers to frequently asked questions on a certain subject area.

Firewall A firewall protects a computer or local network against attacks from the Internet.

Most firewalls work with packet filters, which merely check the IP addresses and port numbers of incoming and outgoing data packets and filter the packets according to prescribed rules.

Some firewalls also integrate additional concepts like IP masquerading and NAT to decouple data traffic by distinguishing strictly between the internal and external network.

Especially effective firewalls go even further, analyzing and evaluating the contents of the packets and filtering them according to prescribed rules. Such techniques may also include a Stateful Packet Inspection Firewall, for instance.

Firmware

The firmware is saved in programmable components within a device. Through the possibility of updating the firmware by computer at any time, manufacturers enjoy great flexibility in reacting to the demands of the operational environment, integrating new functions requested by customers, and eliminating errors discovered after production.

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).

FTP

abbreviation for File Transfer Protocol

The File Transfer Protocol allows files to be exchanged between two computers operating in the Internet. Data exchange takes place via an FTP server and what is known as an FTP client. The more convenient FTP clients are available as stand-alone software or are components of some ISDN data transfer software; simple FTP clients are now included in many web browsers.

Gateway Gateway is a general term designating an interface between two computer networks. Such a network interface can be realized using a router or a bridge, for instance.

If a computer wants to transfer data packets to a computer in another network, it must first transmit the packet to the gateway. To do this, the computer must know the address of the gateway.

If all packets that cannot be delivered in a local network always are to be transmitted to their given recipients via the same gateway, for this purpose the address of the gateway must be saved as the default gateway in the network settings of the computer.

Such a default gateway for the computer is negotiated automatically by the operating system or the dialing software whenever an ISDN-Controller or DSL-Controller establishes a connection to the Internet. If a router is used for the shared Internet access in a local network, the IP address of the router must be entered as the default gateway in the TCP/IP settings of each computer that wishes to use the Internet connection. If the TCP/IP setting is configured by means of a DHCP server, there is no need to enter the gateway address manually.

IP 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 Address abbreviation for Internet Protocol address

In IP-based networks, for instance in the Internet and local networks, all connected devices are addressed via their IP addresses. 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 numbers (for instance, 192.168.178.247). 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. See the corresponding entries in the glossary for more information.

IP Addressing Addressing is one of the main functions of the Internet Protocol (IP). Internet addresses can be written in decimal, octal or hexadecimal notation. The FRITZ!Box uses “dotted-decimal” notation: The four bytes of an address are represented by decimal numbers separated by dots. The full set of IP addresses, called the address space, is grouped into address classes designated as A, B, C, D and E. Only the first three of these five address classes are actually used. These classes can be described as follows:

Classes	Properties	Network Address, Decimal Value
Class A address	Few networks, many hubs	0-127
Class B address	Intermediate distribution of networks and hubs	128-191
Class C address	Many networks, few hubs	192-223

Properties of IP Address Classes

Every IP address consists of two parts: the network address and the host address. The sizes of the network address and the host address are variable, and determined by the first four bits (of the first byte) of the IP address.

IP Masquerading

By means of IP masquerading a computer or LAN can be protected from unauthorized connection request from the Internet. Masquerading works by converting the IP addresses used in a network to one public IP address. From the outside it appears that all requests are sent from a single computer.

IP Network

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

Outside Dialing Prefix

The outside dialing prefix is the digit dialed at an extension line to obtain an outside line. Generally this is “0”.

Port

So that a single network connection on a computer can be used by multiple applications to exchange data with remote sites at the same time, a computer administers what are known as ports for the IP-based protocols TCP and UDP. Ports substantiate the point of access for the data packets delivered via the IP Internet protocol. While the IP address determines the destination computer quite generally, the port addresses the communication interface provided by an application for a certain communication procedure.

The Internet protocol allots 16 bits for the specification of the port number. Thus a total of 65,535 different port numbers can be specified. Ports up to port number 1,024 are reserved for special system applications and typical Internet applications. These include, for instance, the port numbers 21 for FTP (File Transfer Protocol), 25 for SMTP (Simple Mail Transfer Protocol), 53 for DNS (Domain Name Service) and 80 for HTTP (Hypertext Transfer Protocol).

Ports are primarily of interest to users for their role in protecting an Internet connection from external attacks. Most firewalls offer the possibility of preventing data traffic on

certain ports. This means that certain port numbers can be blocked to prevent data from being delivered to system services. This is also a way of preventing any Trojans (malicious applications opening backdoors on a computer) that may have infected your computer from receiving data on ports it created as means of accessing your computer for potentially damaging activities. A firewall blocks most atypical port numbers not required for normal operation of an application and offers specialized users the opportunity to forward specified ports.

Port Forwarding

With port forwarding it is possible to specify ports that will allow all incoming or outgoing data packets to pass through a router or firewall.

If a computer from the local network offers server services, for instance, the settings of a router using NAT or IP masquerading must enable or forward the port used by the server service for access to incoming data packets and thus keep it open permanently. The private IP address of the given PC must be saved as the destination address for all of the packets arriving at the port.

Typical server applications which require port forwarding are FTP and Web servers. To allow access to a computer via remote management software like Symantec's pcAnywhere or Microsoft's Remote Desktop, or even use of a file-sharing program like eDonkey, the required ports must be released for port forwarding. Port forwarding settings for the most important application cases are quite simple as long as the settings of the router or the firewall already contain rules with a corresponding preconfiguration.

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.

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 uniquely assigned public IP address. This address is usually negotiated dynamically with the Internet Service Provider when a connection to the Internet is dialed. The Internet Service Provider assigns the negotiated IP address to the computer or router for the duration of an Internet session.

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:	192.168.178.247
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:	192.168.178.247
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. Therefore a maximum of 254 computers can be included in the subnetwork.



Example 2	
IP address:	192.168.178.247
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:	
Network address of the subnet:	192.168.0.0
Address of the computer in the subnet:	192.168.178.247
IP address pool in the subnet:	192.168.0.0 - 192.168.255.255 That's 65,536 IP addresses. 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.

TCP/IP abbreviation for Transmission Control Protocol / Internet Protocol

TCP/IP is the “language” of the Internet. TCP/IP is used to refer to a suite of protocols used for data communication over the Internet. TCP and IP are the network and transport protocols underlying most Internet services, including file transfer (FTP) and e-mail communication (SMTP). TCP/IP is available for practically all computer systems. TCP/IP thus offers the advantage of trouble-free communication between otherwise incompatible networks and systems.

TR-069 T-069 is an HTTP-based protocol for communication between CPE (Customer Premises Equipment) and an Auto Configuration Server (ACS) belonging to the Internet Service Provider. The TR-069 protocol is also known under the alternative name CPE WAN Management Protocol (CWMP). It offers the possibility of setting up the terminal device

securely and automatically and thus, most importantly, facilitates simple initial configuration of the ADSL terminal equipment by the end customer.

The TR-069 protocol can be used for automatic configuration only if it is actively supported by the given terminal device. For this an Auto Configuration Client (ACC) must be integrated in the device. The specifications for automatic configuration of the ADSL terminal device are stored on the Auto Configuration Server by the given Internet Service Provider. The process of automatic configuration via TR-069 is initiated by the ADSL terminal device. First the user enters a security key and then the settings are retrieved from the Auto Configuration Server and implemented in the ADSL terminal device without any further interaction with the user. During this process all of the communication between the ADSL terminal device and the Auto Configuration Server takes place in encrypted form.

Traffic Shaping

Traffic shaping is a technology for the optimization of capacity loads in a communication connection. Especially for asymmetrical DSL connections, using traffic shaping can prevent that a download is delayed or blocked by high upload traffic.

Data transfer in the Internet is generally based on the TCP/IP protocol, which waits for the remote site to confirm reception after sending one or more data packets. Additional data packets are not sent until this confirmation of reception arrives. If no confirmation arrives over a longer period of time, the non-confirmed data packets are transmitted again. The dispatch of such a confirmation can be delayed, for instance, because the bandwidth for transfer (upload) is already being used by the data packets of other applications. But since the remote site does not signal the reception of the expected confirmation packets until after they have arrived, this could cause noticeable delays in rendering a requested web site or a drop in the throughput rate of a download. In the worst-case scenario, the remote site will abort transmission after several apparently unsuccessful attempts to transfer of the data packets. Typical causes for such a blockade situation include

sending an e-mail message or the use of a program for private data exchange (also known as file sharing or peer-to-peer software).

Through traffic shaping these delays are avoided by providing the dispatch of confirmation packets with bandwidth suitable for the given download activities. All of the packets to be sent are also assigned a priority suitable for their packet types.

Update A more recent version of software or firmware is called an update. Updates are often free of charge, resolve minor programming errors, and sometimes also offer new functions.

Upload This term designates the procedure of transmitting files from one's own computer to another computer in the Internet.

UPnP abbreviation for Universal Plug and Play (UPnP)
UPnP is an extension of the Microsoft Plug & Play standard that allows devices to network globally and to exchange services – without a central server or computer.

UPnP allows devices from all kinds of manufacturers (stereo systems, routers, printers, house controls) to be controlled via an IP-based network, with or without central control through a gateway. It is based on a number of standardized network protocols and data formats. Expressed simplistically, devices can communicate with each other using UPnP to exchange information.

Today the UPnP forum specifies the UPnP standard and certifies devices that are compliant with the standard.

VoIP abbreviation for Voice over IP, also known as Internet telephony

Voice over IP makes telephone calls possible via the Internet. The technology has already been in use for years, but today it allows even private customers the convenience familiar from conventional telephony, usually at significantly lower prices. VoIP has also made it considerably more

convenient to use applications like conference calls and answering machines in networks. Added to this are global accessibility under a single telephone number and new VoIP features like the Buddy List known from chat rooms.

Internet telephony used to be possible only with a headset connected to the computers of the callers and their conversation partners. Today voice connections via the Internet, even to fixed-line and mobile networks, can be conducted conveniently using VoIP telephone systems that allow already existing analog telephones to be used even when the computer is switched off. Various Internet Service Providers and telephony carriers provide SIP-fixed-line gateways for this purpose. Such a gateway is used to produce voice connections between the Internet and conventional telephone networks. In principle VoIP conversations are possible via every DSL access point, but for convenient use with existing terminal equipment, and for conversations with the fixed-line and mobile networks, it is important that the DSL provider supports what is known as the SIP standard. SIP is the current standard defined for VoIP by the IETF (Internet Engineering Task Force).

VPN abbreviation for Virtual Private Network

VPN serves to integrate devices from a neighboring network into your own network, without the networks having to be compatible with each other.

A VPN is generally an independent company network distributed over several locations, which uses the infrastructure of a public communications network to link its partial networks or to link individual computers to the rest of the network. A VPN uses tunneling technologies and typically builds on the infrastructure of the Internet.

Using a Virtual Private Network it is possible to use all network applications of the company network even from distant locations. This means it is possible to use the advantages of the network even over large geographical distances.

VPN facilitates optimum information flow without delay throughout the entire company, even to offices in other locations. E-mail servers, file sharing and other central applications of the company network can thus be made available via VPN even to distant branch offices, subsidiaries and home offices. With VPN, field representatives of a company can also be granted secure access to the company network.

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