English Edition

INSTALLATION, CONFIGURATION AND OPERATION OF FRITZ!BOX FON WLAN 7050

FRITZ!
DSL/WLAN
FRITZ!Box Fon WLAN 7050

HIGH-PERFORMANCE COMMUNICATION BY ... AVM

FRITZ!Box Fon WLAN 7050

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Contents

Symbols and Highlighting

This manual uses the following symbols for warnings and tips:

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

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

The table below explains the highlighting used in this manual.

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

The Telephone Keypad

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

Instructions for Operation at the Telephone

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

Icons Designating the Functions and Features

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

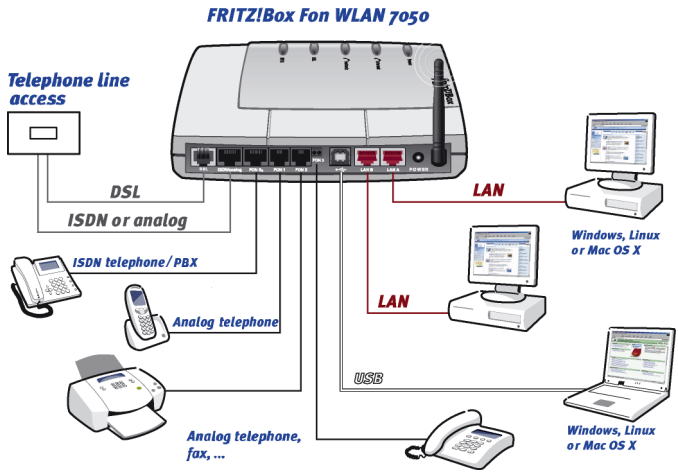
Safety Instructions

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

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

1 This Is FRITZ!Box Fon WLAN 7050

FRITZ!Box Fon WLAN is a Private Branch Exchange (PBX) for making telephone calls via the Internet and the fixed-line network. FRITZ!Box Fon WLAN connects one or more computers directly with your DSL line. Each connected computer can establish an Internet connection over FRITZ!Box Fon WLAN. As a WLAN access point, FRITZ!Box Fon WLAN offers you the possibility of connecting your computer to the DSL line wirelessly.



Possibilities for connecting FRITZ!Box Fon WLAN

PBX for Internet and Fixed-Line Telephony

FRITZ!Box Fon WLAN 7050 is a PBX for the connection of analog and ISDN terminal devices. You can connect three analog telephones to FRITZ!Box Fon WLAN 7050. Up to eight ISDN telephony devices can be connected to the integrated ISDN S_0 port. You can make telephone calls using the Internet, ISDN, or the analog fixed-line network using all of the connected telephones.

Connecting One or More Computers

Three computers can be connected to FRITZ!Box Fon WLAN at the same time using the USB port and the two LAN ports. Using WLAN you can connect multiple computers with FRITZ!Box Fon WLAN wirelessly.

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

All computers connected to FRITZ!Box Fon WLAN 7050 are networked together and can access shared files and printers.

Internet Connection for All Computers

All of the computers connected to FRITZ!Box Fon WLAN 7050 can access the Internet. There are two different ways of establishing an Internet connection. Both cases require Internet account information from an Internet Service Provider:

- The Internet connection is established by FRITZ!Box Fon WLAN 7050.
  For this the Internet account information must be registered in FRITZ!Box Fon WLAN 7050. In this case FRITZ!Box Fon WLAN 7050 works as a DSL router and all computers can use the Internet connection at the same time.
- The computers connected establish the Internet connections themselves.
  For this, Internet access software must be installed and the Internet account information entered on the given computer. In this case FRITZ!Box Fon WLAN 7050 works as a DSL modem.

Protection by the Integrated Firewall

When FRITZ!Box Fon WLAN 7050 is operated as a DSL router, the integrated firewall protects your network from attacks from the Internet.

Port for Network Devices

Network devices can be connected to the FRITZ!Box Fon WLAN 7050 LAN port along with network hubs or switches, including game consoles.

WLAN Access Point

FRITZ!Box Fon WLAN 7050 is a WLAN access point. Computers equipped with a WLAN adapter can be wirelessly connected to FRITZ!Box Fon WLAN 7050.

Operating Systems Supported

FRITZ!Box Fon WLAN 7050 can be connected via USB to computers with Windows operating systems, the Linux operating system or Apple computers with the Mac OS X operating system.

FRITZ!Box Fon WLAN 7050 can be used with all operating systems via the LAN ports or WLAN.

1.1 Package Contents

The package contains:

- FRITZ!Box Fon WLAN 7050
- one AC power adapter with cable for connection to the power mains
- one 4 m DSL cable (gray) for connecting FRITZ!Box Fon WLAN 7050 to the DSL splitter
- one 4 m analog or ISDN cable (black) for connecting FRITZ!Box Fon WLAN 7050 to the ISDN network terminator (NT) or the analog telephone line
- one USB cable (white) for connecting FRITZ!Box Fon WLAN to a computer with a USB interface
- one network cable (red) for connecting FRITZ!Box Fon WLAN to a computer or network hub
- one RJ45-RJ11 adapter (gray) for the DSL line (required in some countries)

- one RJ45-RJ11 adapter (black) for connecting FRITZ!Box Fon WLAN 7050 to the analog telephone network
- one FRITZ!Box Fon WLAN CD with
  - Installation Help
  - driver software for FRITZ!Box Fon WLAN
  - the DSL software FRITZ!DSL
  - documentation for all enclosed AVM components

1.2 Operation Requirements

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

- a Web browser that supports Java Script (for instance, Internet Explorer from version 6.0 or Netscape 4.0)
- an ISDN point-to-multipoint line in accordance with the Euro ISDN protocol DSS1, or an analog telephone line
- a DSL line must be available: Standard ITU G.992.1 Annex A or B (depending on the FRITZ!Box Fon WLAN 7050 model)
- If you want to connect FRITZ!Box Fon WLAN over the computer's LAN port, a computer with the following specifications is required:
  - LAN port (standard network adapter Ethernet 10/100 Base-T), game console or other devices that support a network
  - To connect additional computers or a network, you also need an Ethernet hub or switch.
- If you would like to connect FRITZ!Box Fon WLAN wirelessly using WLAN, you will need a computer equipped with a WLAN adapter (in accordance with IEEE 802.11b/g), for instance, a FRITZ!WLAN USB Stick.
- If you want to connect FRITZ!Box Fon WLAN over the computer's USB port, a computer with the following specifications is required:

- USB port (USB version 1.1 or 2.0), hard drive and CD drive
- Operating system: Microsoft Windows XP, Windows Me, Windows 2000, Windows 98, Linux (from SUSE 9.0 upwards) or Mac OS X (from version 10.3.3 upwards)

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

2 Starting FRITZ!Box Fon WLAN 7050 Operation

This chapter describes the various possibilities for connecting and installing FRITZ!Box Fon WLAN. These include the following steps:

- Mounting FRITZ!Box Fon WLAN
- Connecting FRITZ!Box Fon WLAN to electrical power, DSL and ISDN or the analog telephone line
- Connecting analog terminal devices to FRITZ!Box Fon WLAN
- Connecting ISDN terminal devices to FRITZ!Box Fon WLAN
- Connecting FRITZ!Box Fon WLAN to the computer

All steps required for connecting and installing the system are described here in the manual and in the Installation Help on the FRITZ!Box Fon WLAN CD. Insert the FRITZ!Box Fon WLAN CD in your CD-ROM drive so that you can follow the installation instructions on the screen. The Installation Help starts automatically. If the Installation Help is not displayed automatically, double-click the file "setup.exe" in the root directory of the FRITZ!Box Fon WLAN CD. Follow the instructions in the Installation Help to connect FRITZ!Box Fon WLAN to your computer.

If you would like to connect and install FRITZ!Box Fon WLAN without this Installation Help, see the instructions in the following sections.

2.1 Mounting FRITZ!Box Fon WLAN

Set or hang up FRITZ!Box Fon WLAN in a dry, dust-free location shaded from any direct sunlight.

Please note the following:

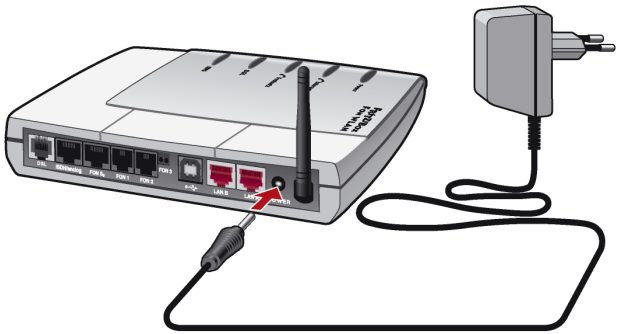
- If you would like to connect the device using the USB or network cable supplied with the package, remember to consider the maximum length of the cable and select a location close to your computer.
- If you would like to establish wireless connections to FRITZ!Box Fon WLAN from computers, set up or mount the device in a central location in the office or at home.

  Make sure to keep sufficient distance from potential interference sources like microwave devices or electric devices with large metal housings.

2.2 Connecting FRITZ!Box Fon WLAN to the Power Supply

Perform the following steps to connect FRITZ!Box Fon WLAN to the power supply:

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



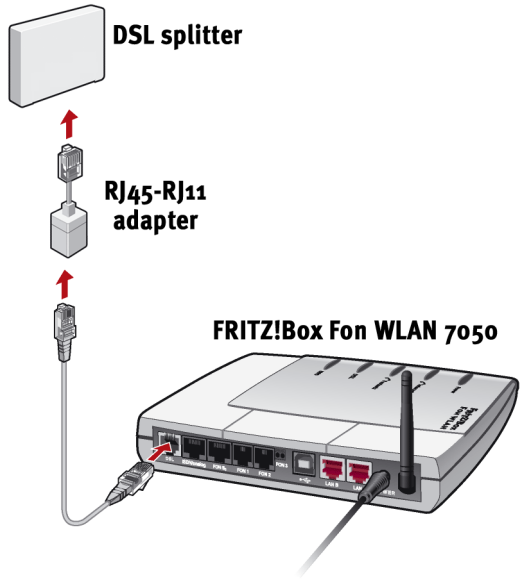
Connecting FRITZ!Box Fon WLAN to the power supply

4. The green “Power” LED begins flashing after a few seconds.

2.3 Connecting FRITZ!Box Fon WLAN to DSL

Perform the following steps to connect FRITZ!Box Fon WLAN to DSL:

1. Remove the enclosed DSL cable (gray) from the package.
2. Connect one end of the cable to the socket labeled “DSL”, located at the far left of the back panel of FRITZ!Box Fon WLAN.
3. Then connect the other end of the cable to the socket on the DSL splitter labeled “DSL”. If the DSL line cable does not fit in the splitter, insert the cable into the gray RJ45-RJ11 adapter enclosed in the package and then plug the adapter into the splitter socket.



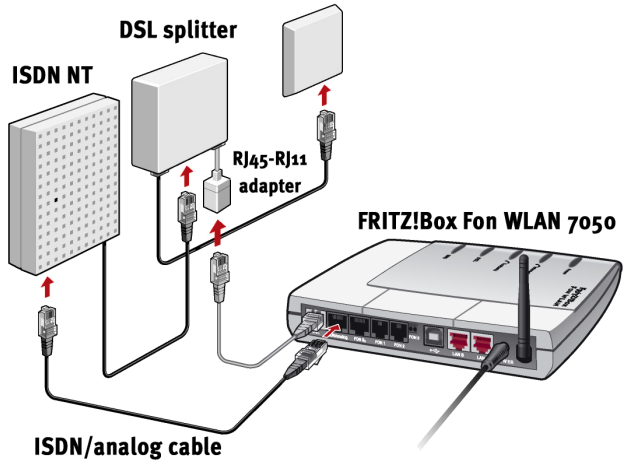
Connecting FRITZ!Box Fon WLAN to the DSL splitter

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

2.4 Connecting FRITZ!Box Fon WLAN 7050 to ISDN or the Analog Telephone Line

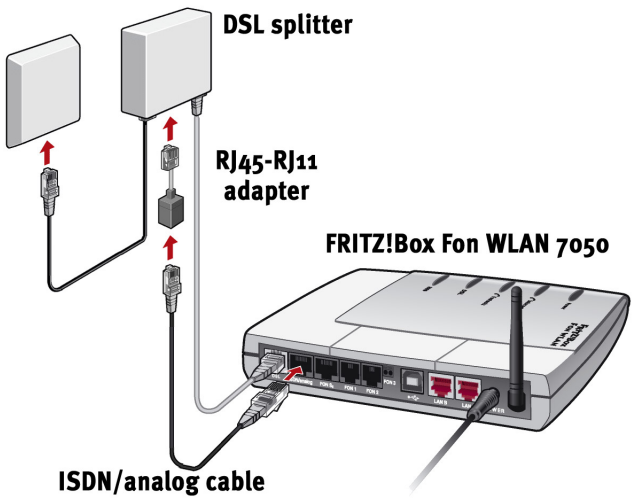
FRITZ!Box Fon WLAN can be connected to an ISDN or an analog telephone line. To establish a connection, perform the following steps:

1. Remove the black ISDN/analog cable from the package.
2. Connect one end of the cable to the socket on FRITZ!Box Fon WLAN labeled “ISDN/analog”.
3. If you have an ISDN line, connect the other end of the cable to the socket of your ISDN network terminator (NT).



Connecting FRITZ!Box Fon WLAN 7050 to the ISDN NT

If you have an analog telephone line, connect the other end of the cable to the black RJ45-RJ11 adapter included in the package. Then use the adapter to connect FRITZ!Box Fon WLAN to the socket of your DSL splitter.



FRITZ!Box Fon WLAN 7050 connected to the broadband line and the analog telephone line over the DSL splitter

2.5 Connecting Analog Terminal Devices to FRITZ!Box Fon WLAN 7050

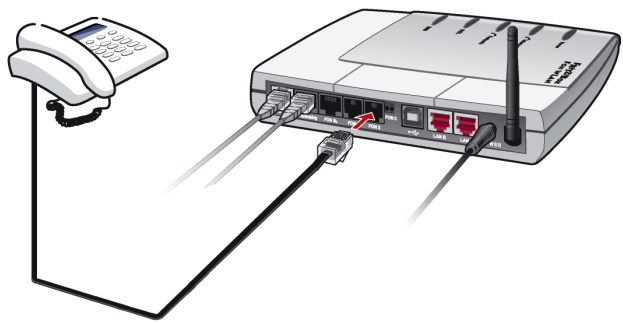
FRITZ!Box Fon WLAN has been tested and CE-certified in accordance with European Union directives. All analog telecommunication devices with CE certification can be connected to its extensions.

FRITZ!Box Fon WLAN offers the two ports “FON 1” and “FON 2” to plug in analog terminal devices. Devices are connected to the “FON 3” by means of wire clips.

Connecting with a Plug

To connect analog terminal devices such as telephones, fax machines or answering machines, proceed as follows:

To connect analog terminal devices like a telephone, fax device or answering machine, insert the plugs of your analog devices into the “FON 1” or “FON 2” socket on FRITZ!Box Fon WLAN 7050.



Connecting an analog telephone to FRITZ!Box Fon WLAN

Connecting Using Wire Clips

To connect the terminal devices by means of the cable clips, please note the following:

- The wire diameter must be 0.5 - 1 mm.
- Strip the insulation from the wire to expose a length of 10 mm.

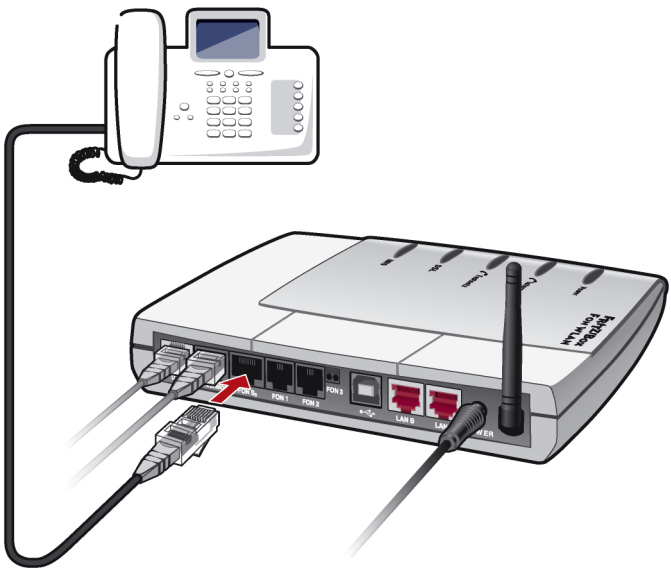
To connect a cable, press back the orange lever, insert a wire and release the lever. Repeat the procedure with the second wire of the cable.

2.6 Connecting ISDN Telephones to FRITZ!Box Fon WLAN

ISDN telephones are connected to the "FON S_0" port. With appropriate cabling, up to eight ISDN telephones can be connected.

Connect them using an ISDN cable.

1. Connect one end of the ISDN cable with the ISDN telephone.
2. Connect the other end of the ISDN cable with the "FON S_0" port of FRITZ!Box Fon WLAN.



Connecting an ISDN telephone to FRITZ!Box Fon WLAN

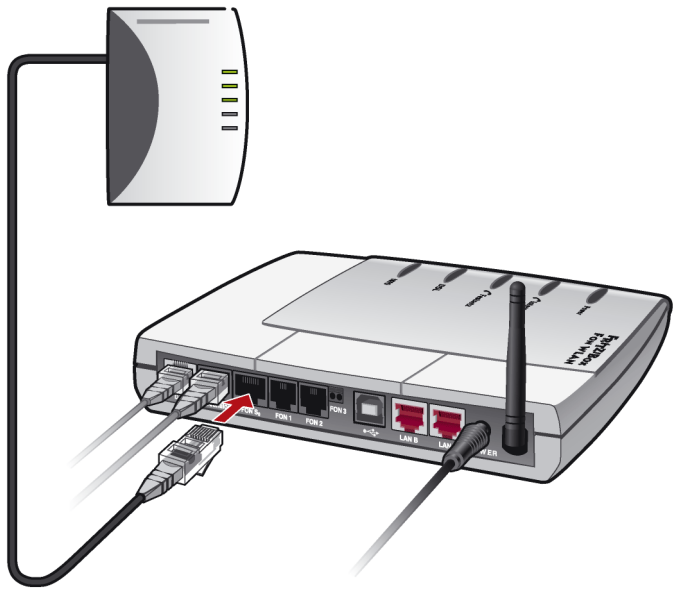
2.7 Connecting ISDN PBXs to FRITZ!Box Fon WLAN

ISDN telephones are connected to the “FON S_0” port.

If you would like to connect an ISDN PBX to FRITZ!Box Fon WLAN, the PBX must support a point-to-multipoint line.

Connect ISDN PBXs using an ISDN cable.

1. Connect one end of the ISDN cable with the ISDN PBX.
2. Connect the other end of the ISDN cable with the “FON S_0” port of FRITZ!Box Fon WLAN.



Connecting an ISDN PBX to FRITZ!Box Fon WLAN

If only one or two analog devices are connected to the PBX, you can connect them directly to FRITZ!Box Fon WLAN and do without the PBX.

2.8 Connecting FRITZ!Box Fon WLAN to the Computer

FRITZ!Box Fon WLAN can be connected to a computer in three different ways:

- via the LAN ports (LAN A and LAN B)
- wireless with WLAN
- via the USB port

An individual computer can be connected to FRITZ!Box Fon WLAN by only one of these means.

If you would like to connect several computers to FRITZ!Box Fon WLAN at the same time, you have the following possibilities:

- Three computers can be connected to FRITZ!Box Fon WLAN at the same time using the USB port and the two LAN ports.
- A network hub or network switch can be connected to the FRITZ!Box Fon WLAN LAN ports to make all FRITZ!Box Fon WLAN features available to several computers or an entire network.
- With WLAN you can connect multiple computers to FRITZ!Box Fon WLAN wirelessly at the same time and thus make all FRITZ!Box Fon WLAN features available to an entire network.
- All of the above possibilities for connecting one or more computers to FRITZ!Box Fon WLAN can be combined at will. Examples:
  - Connecting one computer to the USB port of FRITZ!Box Fon WLAN and simultaneously connecting several computers wirelessly via WLAN.
  - Connecting a Network via a FRITZ!Box Fon WLAN LAN port and simultaneously connecting several computers wirelessly via WLAN. In this manner two different networks can be connected to FRITZ!Box Fon WLAN.

Please note:

- If you would like to connect FRITZ!Box Fon WLAN to your computer by means of one of the LAN ports, first make sure that your computer is equipped with a LAN port. A LAN port is usually designated by the icon at left or labeled “LAN”.

  For more information, see the instructions in the section “Connecting FRITZ!Box Fon WLAN to the LAN Port” from page 23.

  If you would like to use both LAN ports on FRITZ!Box Fon WLAN, you will need a second network cable. In purchasing a cable, note the instructions in the section “Linking up the cable network” on page 63.

- If you would like to connect FRITZ!Box Fon WLAN wirelessly with a computer via WLAN (Wireless LAN), the computer must have a WLAN adapter installed that complies with the standard IEEE 802.11b (up to 11 Mbit/s) or 802.11g (up to 54 Mbit/s).

- If your computer is equipped with neither a LAN port nor a WLAN adapter, connect FRITZ!Box Fon WLAN using the USB port.

  When you connect FRITZ!Box Fon WLAN with a USB cable to a computer with the operating system Windows 98 or Windows Me, you will need the FRITZ!Box Fon WLAN CD for the driver installation.

An operating system version of 10.3.3 or higher is required to connect FRITZ!Box Fon WLAN to the USB port of an Apple Macintosh computer. If your Apple Macintosh computer works with an older version, connect FRITZ!Box Fon WLAN via the LAN port of your computer!

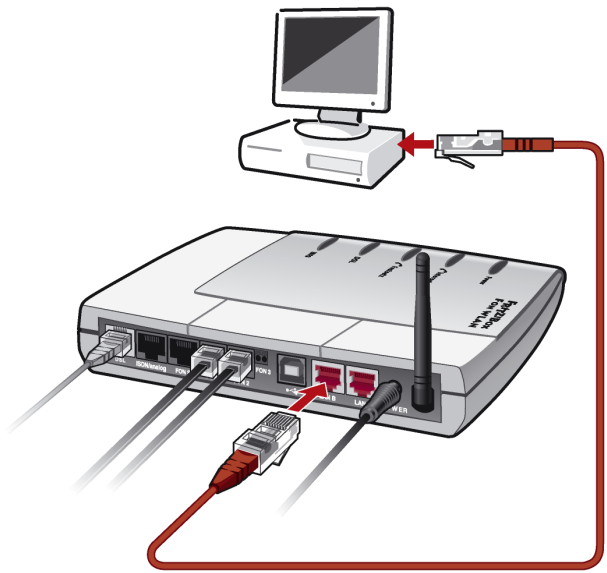
2.9 Connecting FRITZ!Box Fon WLAN to the LAN Port

FRITZ!Box Fon WLAN can be connected to a computer directly via a LAN cable. If you would like to connect a network to FRITZ!Box Fon WLAN in order to connect several computers with DSL, then connect FRITZ!Box Fon WLAN to a network hub or switch using the LAN cable at the uplink port.

Computers with any operating system can be connected via LAN cable. All computers to be connected via the LAN port must be equipped with a network adapter (Ethernet card).

Connecting FRITZ!Box Fon WLAN to the LAN Port of a Computer

The red LAN cable is required for connection to the LAN port.



Connecting FRITZ!Box Fon WLAN to the computer's network adapter

1. Once the FRITZ!Box Fon WLAN has been connected to the power mains and DSL as described on Page 14, switch on your computer.

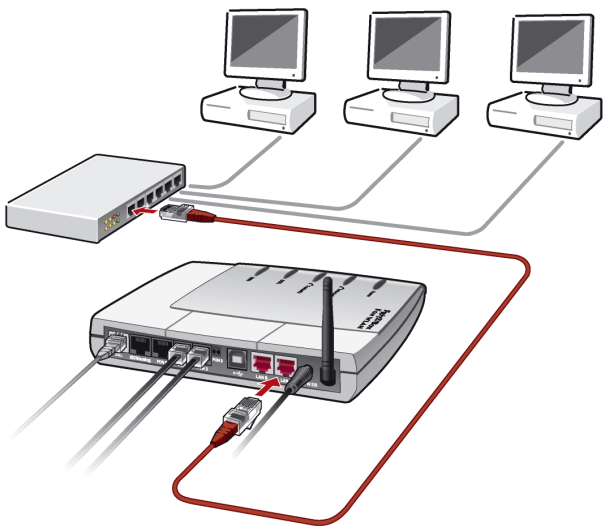
If you work with a Linux operating system, use YaST to configure your network card with the setting “DHCP”, if this setting is not already configured.

2. Insert one end of the red LAN cable to the computer’s network adapter.
3. Connect the other end of the network cable to the socket on FRITZ!Box Fon WLAN labeled “LAN A” or “LAN B”.
4. Please see the instructions in the section “Opening the User Interface” on page 37.

No additional driver installation is necessary on the computer.

Connecting FRITZ!Box Fon WLAN to a Network Hub

1. Connect FRITZ!Box Fon WLAN to the power supply and to DSL as described on Page 14.
2. Connect one end of the red LAN cable to the uplink port of the network hub or switch.
3. Connect the other end of the network cable to the socket on FRITZ!Box Fon WLAN labeled “LAN A” or “LAN B”.



Connecting FRITZ!Box Fon WLAN to a network hub

4. Please see the instructions in the section “Opening the User Interface” on page 37.

2.10 Connecting FRITZ!Box Fon WLAN to a Computer Wirelessly via WLAN

FRITZ!Box Fon WLAN can be connected to a computer wirelessly using WLAN.

Computers with any operating system can be connected via LAN cable. Each computer to be connected to FRITZ!Box Fon WLAN via WLAN must support WLAN, by means of a compatible WLAN adapter, for instance.

For more information on WLAN, see the section “WLAN: Wireless Local Area Networks” from page 58.

Presettings in FRITZ!Box Fon WLAN

The following values are configured in the FRITZ!Box Fon WLAN factory settings:

Setting	Preset value
SSID (name of the WLAN radio network)	FRITZ!Box Fon WLAN 7050
Encryption	WEP
Key length	128 bits
Key	The key is printed on the stickers on the base of the device and on the cover of the FRITZ!Box Fon WLAN CD.
Type of Authentication/Registration	Open key
Network mode	Infrastructure
Channel	6

Connecting FRITZ!Box Fon WLAN with the WLAN Adapter of a Computer

1. Once the FRITZ!Box Fon WLAN has been connected to the power mains and DSL as described on Page 14, switch on your computer.
2. Install the WLAN adapter in your computer along with the appropriate software. Please take note of the instructions in the documentation of the adapter.
3. Once installation has been completed, you generally have a user interface available to control your WLAN connections. In the Windows operating systems you can open the user interface by clicking an icon in the taskbar (specific to each manufacturer) or from the start menu.
4. To establish a WLAN connection to FRITZ!Box Fon WLAN, you can use the WLAN software available in the operating system or use the user interface provided by the manufacturer.

The following section presents two descriptions: one with instructions for using the WLAN connection settings in Windows XP, and another for using the manufacturer's user interface.

If you are working with the Windows XP operating system, it is advisable to configure the settings for the WLAN adapter using the Windows XP WLAN connection settings.

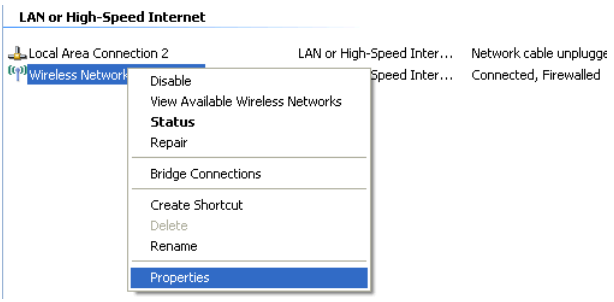
Both descriptions use the values given in the section "Presettings in FRITZ!Box Fon WLAN" on page 25. If you have changed the preset values in FRITZ!Box Fon WLAN, you must used the changed values to set up the WLAN connection or reset the system to its factory settings via a LAN or USB connection.

Setting up a WLAN Connection with the WLAN Connection Settings in Windows XP

1. Open the “Control Panel” from the start menu and double-click the category “Network and Internet Connections”.

2. In the “Network and Internet Connections” dialog, click the Control Panel icon “Network Connections”.

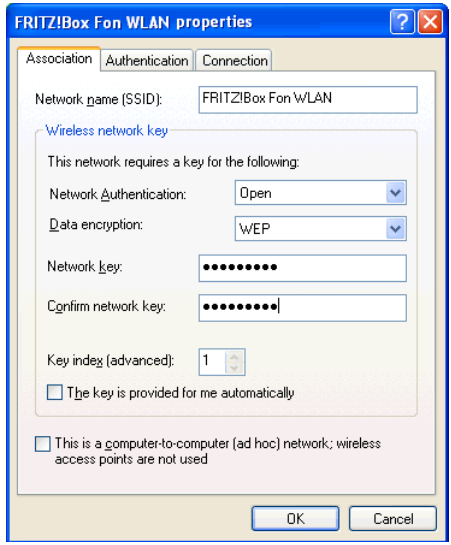
3. In the “Network Connections” window, select the entry “Wireless Network Connection” and select the “Properties” command from the context menu.



Open properties window for wireless network connection

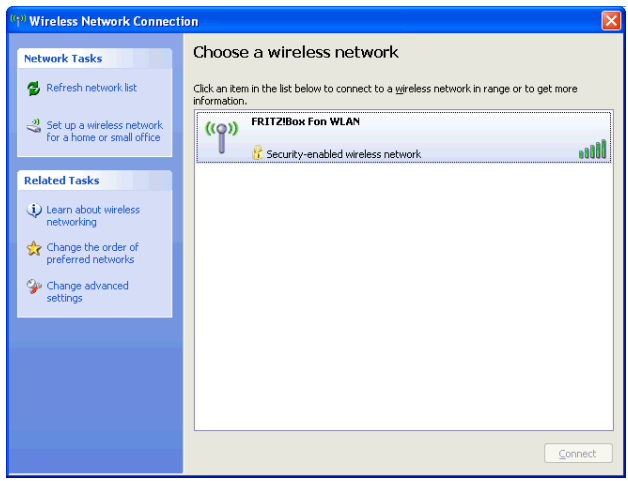
The “Wireless Network Connection Properties” window opens.

4. On the “Wireless Networks” settings page, enable the setting “Use Windows to configure my wireless network settings” and then click the “View Wireless Networks” button in the “Available networks” area.



Wireless network connection properties

The “Wireless Network Connection” window opens. All wireless networks found at the location are displayed in a list.



Available wireless networks

If the wireless network FRITZ!Box Fon WLAN is not displayed in the list, please see the instructions in the section “The Radio Network Is Not Displayed” from page 72.

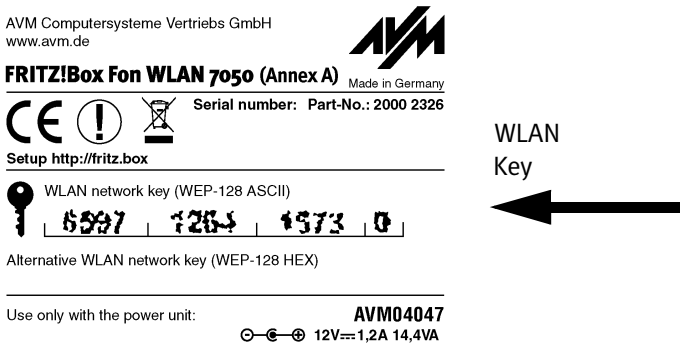
5. Select the entry “FRITZ!Box Fon WLAN 7050” from the list and click the “Connect” button.

   Now the system will attempt to set up a connection to the wireless network FRITZ!Box Fon WLAN 7050. The “Wireless Network Connection” window is opened.

6. Enter the WLAN key of your FRITZ!Box Fon WLAN in the “Network key” field.

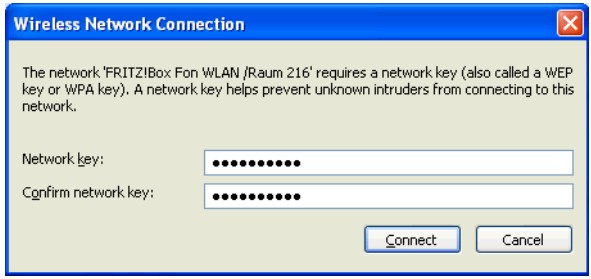
   The WLAN key is printed on the stickers on the base of the FRITZ!Box Fon WLAN device and on the cover of the FRITZ!Box Fon WLAN CD. Use the entry from the “WLAN network key (WEP-128 ASCII)” line.

   The following illustration shows a sticker with sample values. Enter the value printed on your sticker as the WLAN key.



Sticker with sample values

Repeat your entry in the “Confirm network key” field and then click the “Connect” button.



Entering the WLAN network key

The WLAN connection is set up.

If problems occur in setting up the WLAN connection, check your WLAN settings as described in the section "WLAN Connection Is Not Established" from page 73.

7. Now read the information in section "Opening the User Interface" on page 37 and follow the security instructions in the section "Security" on page 59.

Setting up a WLAN Connection Using the Manufacturer's User Interface

Not all settings described below appear in every manufacturer's user interface. Some settings are configured automatically by certain manufacturers.

1. Select the SSID (WLAN radio network) "FRITZ!Box Fon WLAN 7050" in the user interface.

   If the radio network is not displayed, follow the instructions in the section "The Radio Network Is Not Displayed" from page 72.

2. Set "Infrastructure" as the network mode.
3. Select "128 bit" or "WEP 128 bit" encryption.
4. Set "Open Key" as the type of encryption or registration.
5. Enter the preset key in the "Key 1" field. Be sure to enter the key in the desired format, ASCII or hexadecimal. The key is printed on the sticker on the base of the device and on the cover of the FRITZ!Box Fon WLAN CD. The key is printed in both formats.

If you have the choice of entering the key in ASCII or hexadecimal format, we recommend selecting ASCII.

6. Make sure that “Key 1” is selected as the default key.
7. Confirm your entries using the relevant button in the user interface (for instance, “OK”, “Send”, “Submit” or “Connect”).
8. Now read the information in section “Opening the User Interface” on page 37 and follow the security instructions in the section “Security” on page 59.

2.11 Connecting FRITZ!Box Fon WLAN to the USB Port of a Computer

FRITZ!Box Fon WLAN can be connected to a computer with the USB cable in a few easy steps. First read the instructions in the next section, “Connecting the USB Cable”, and then see the section describing installation in your operating system.

An operating system version of 10.3.3 or higher is required to connect FRITZ!Box Fon WLAN to the USB port of an Apple Macintosh computer. If your Apple Macintosh computer works with an older version, connect FRITZ!Box Fon WLAN to your computer via the network port or WLAN.

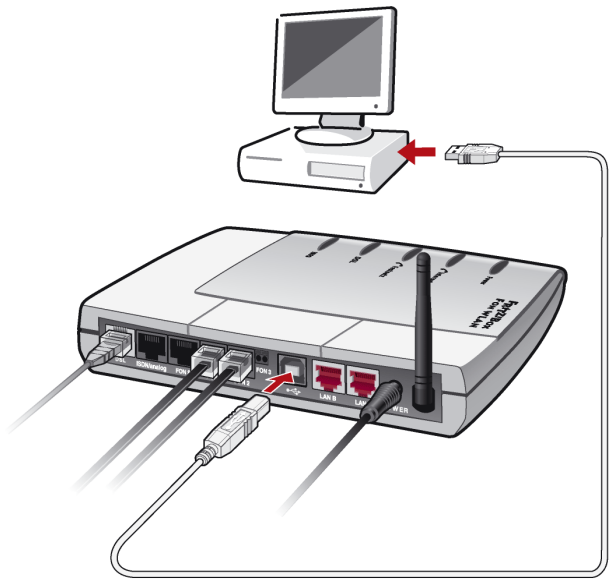
Connecting the USB Cable

You will need the white USB cable for this step. In the Windows operating systems Windows Me and Windows 98, the FRITZ!Box Fon WLAN CD is also required for driver installation. No driver installation is necessary in the operating systems Windows XP, Windows 2000, Mac OS X and Linux.

1. Once the FRITZ!Box Fon WLAN has been connected to the power mains and DSL as described on Page 14, switch on your computer.

   If Windows Me or Windows 98 are installed on the computer, insert the FRITZ!Box Fon WLAN CD.

2. Connect FRITZ!Box Fon WLAN to the USB port. The USB cable has two different connectors: one is flat and rectangular and the other is square.



Connecting FRITZ!Box Fon WLAN to the USB port of a computer

Pick up the USB cable and plug the flat, black connector into a free USB port on your computer.

3. Then plug the square, white connector into the socket labeled "⇐●⇒" on FRITZ!Box Fon WLAN.

   FRITZ!Box Fon WLAN and your computer are now connected over the USB cable.

4. Continue the installation as described in the following sections. Select the section that describes the next steps for the operating system installed on your computer.

In some Windows operating systems the display of menus and folders can be changed. The following instructions are based on the standard installation of each operating system.

Installing the USB Drivers for FRITZ!Box Fon WLAN in Windows XP

Administrator rights are required to install the driver software in Windows XP.

1. Once you have connected FRITZ!Box Fon WLAN to your computer, FRITZ!Box Fon WLAN will be detected automatically and the required drivers will be installed.

   A progress bar is shown on your screen so that you can monitor the progress of the installation.

2. As soon as the procedure is complete, the FRITZ!Box Fon WLAN user interface opens and FRITZ!Box Fon WLAN is ready for operation.

This concludes the installation in Windows XP. Please see the instructions in the chapter "Configuring FRITZ!Box Fon WLAN for Internet Connections" from page 42.

Installing the USB Drivers for FRITZ!Box Fon WLAN in Windows Me

1. Insert the FRITZ!Box Fon WLAN CD in the CD-ROM drive of your computer.
2. Windows Me Plug & Play detects a new plug-and-play device to be installed. Follow the instructions displayed on the screen.
3. When asked: "What would you like to do?", select the option "Automatic search for a better driver (Recommended).".

   The drivers for FRITZ!Box Fon WLAN are installed.
4. Conclude the installation by clicking "Finish".
5. Please see the instructions in the section "Opening the User Interface" on page 37.

Installing the USB Drivers for FRITZ!Box Fon WLAN in Windows 2000

Administrator rights are required to install the driver software in Windows 2000.

1. Once you have connected FRITZ!Box Fon WLAN to your computer, FRITZ!Box Fon WLAN will be detected automatically and the required drivers will be installed.
2. As soon as the procedure is complete, the FRITZ!Box Fon WLAN user interface opens and FRITZ!Box Fon WLAN is ready for operation.

This concludes the installation in Windows 2000. Please see the instructions in the chapter "Configuring FRITZ!Box Fon WLAN for Internet Connections" from page 42.

Installing the USB Drivers for FRITZ!Box Fon WLAN in Windows 98

Insert the FRITZ!Box Fon WLAN CD in your CD-ROM drive to start the Installation Help automatically. If the Installation Help does not start automatically, open the "setup.exe" file on the CD. Follow the instructions in the Installation Help to install FRITZ!Box Fon WLAN at your computer's USB port.

If you would like to install FRITZ!Box Fon WLAN without this Installation Help, first follow the instructions in the section "Connecting the USB Cable" and then perform the following steps:

1. Windows 98 Plug & Play detects a new plug-and-play device to be installed. Follow the instructions displayed on the screen.
2. When asked: "What do you want Windows to do?", select the option "Search for the best driver for your device. (Recommended)."
3. Insert the FRITZ!Box Fon WLAN CD in your CD-ROM drive.
4. When the program asks where the driver is located, activate **only** the option "CD-ROM drive".

Specifying the driver location in Windows 98

5. Click “Next” in the window illustrated below.

Confirm driver selection

6. If you are asked which driver you want to install, choose the option “The updated driver (Recommended) AVM FRITZ!Box Fon WLAN” and click “Next” twice.

   The drivers for FRITZ!Box Fon WLAN are installed.

7. Conclude the installation by selecting “Finish” and re-start the computer.

8. Please see the instructions in the section “Opening the User Interface” on page 37.

Installing the USB Drivers for FRITZ!Box Fon WLAN in Mac OS X

1. Select “System Preferences / Network”. You receive the message that a new port, “Ethernet port en‹No.›”, was found. Confirm the message by clicking “OK”.
2. Under “Show”, select the new port found, “Ethernet port en‹No.›”.
3. Confirm your entries with “Activate Now”.
4. Please see the instructions in the section “Opening the User Interface” on page 37.

Installing the USB Drivers for FRITZ!Box Fon WLAN in a Linux Operating System

The example of SUSE Linux 9.0 is used here to describe how to install FRITZ!Box Fon WLAN to the USB port in Linux.

1. Open the YaST Control Center.
2. Select the option “Network Devices” and click “Network Card”.
3. The “Network cards configuration” dialog appears.
4. Select “Other (not detected)” and the “Configure...” button.
5. The device type of the network in the “Manual network card configuration” window should be set to “Ethernet”. Select the “USB” check box as well and click “Next”.
6. In the input mask “DSL Configuration”, the PPP mode should be set to “Ethernet”, for “Network cards to configure” select “Other (not detected)”. Click the “Configure...” button.
7. In the next dialog, “Network address setup”, select the “Automatic address setup (via DHCP)” option. Click “Next”.
8. Changes to the configuration take effect when the “Finish” button is clicked.

In SUSE Linux 9.0, only one Ethernet adapter at a time can be set to DHCP. If you have an additional network adapter, assign it a fixed IP address. Otherwise problems may arise with name resolution (cf. /etc/resolv.conf).

For a comprehensive of the basics on network configuration in Linux, see, e.g.:
http://www.linux.org/docs/ldp/NET3-4-HOWTO-5.html

Please see the instructions in the next section.

2.12 Opening the User Interface

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

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

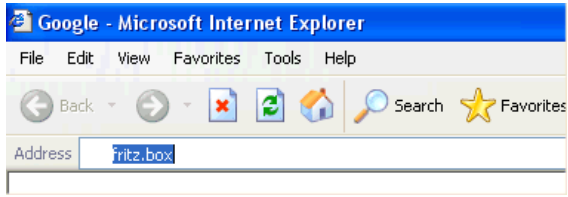
There are two ways to open the FRITZ!Box Fon WLAN user interface:

- with the FRITZ!DSL Software

  Install the FRITZ!DSL software included in the FRITZ!Box Fon WLAN package on your computer, and open the FRITZ!Box Fon WLAN user interface from the FRITZ!DSL Start Center. For more information about FRITZ!DSL, see the chapter “FRITZ!DSL: The Software Suite” from page 53.

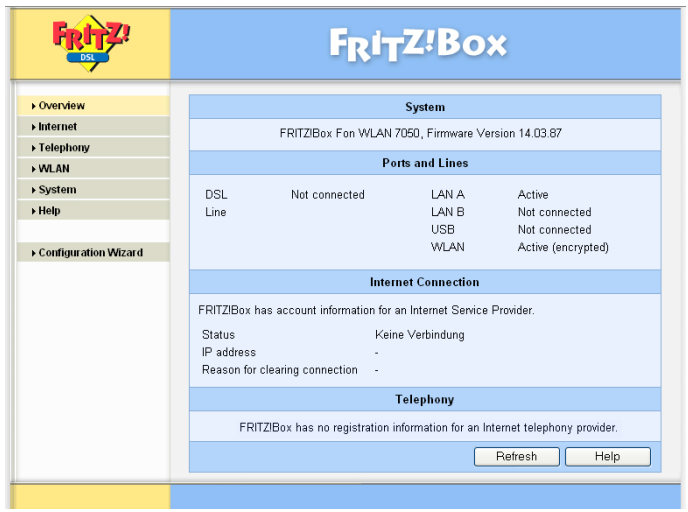
- with a web browser

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



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

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



The FRITZ!Box Fon WLAN user interface

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

If the user interface does not open, see the instructions in the section "Errors Opening the User Interface" from page 69.

See the section "Configuring FRITZ!Box Fon WLAN for Internet Connections" from page 42 for instructions on configuring Internet connections for FRITZ!Box Fon WLAN.

3 Configuring FRITZ!Box Fon WLAN 7050 for Internet Connections

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

- FRITZ!Box Fon WLAN establishes the connection with the Internet.
  For this an Internet connection with the account information from the Internet Service Provider must be set up in the FRITZ!Box Fon WLAN user interface. All connected computers can then use this Internet connection at the same time. It is not necessary to install any additional Internet access software on the other connected computers.

  In this mode FRITZ!Box Fon WLAN 7050 works like a DSL router and uses the Internet Service Provider's account information. For information about how to configure FRITZ!Box Fon WLAN 7050 for this operating mode, see the section "FRITZ!Box Fon WLAN Uses the Internet Service Provider's Account Information" from page 40.

Internet telephony can only be used when FRITZ!Box Fon WLAN 7050 establishes the Internet connection itself.

- The computers connected to FRITZ!Box Fon WLAN establish the Internet connections themselves.
  In this case FRITZ!Box Fon WLAN works like a DSL modem and is responsible only for forwarding data. An Internet connection must be configured on the connected computers, using the Internet access software and the account information from an Internet Service Provider. The Internet access software is also required to establish Internet connections.

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

The FRITZ!Box Fon WLAN package includes the FRITZ!DSL software, which can also be used as Internet access software. See the chapter "FRITZ!DSL: The Software Suite" from page 53 for an overview of the software.

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

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

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

3.1 FRITZ!Box Fon WLAN Uses the Internet Service Provider's Account Information

For FRITZ!Box Fon WLAN to establish Internet connections itself, you must set up an Internet connection in the FRITZ!Box Fon WLAN user interface, entering the Internet account information from your Internet Service Provider.

FRITZ!Box Fon WLAN is equipped with a Configuration Wizard to support you in every step of setting up the Internet connection.

Proceed as follows:

1. Have the Internet access information you received from your Internet Service Provider handy.
2. Open the FRITZ!Box Fon WLAN user interface and select the "Configuration Wizard" menu.
3. Follow the instructions of the "Configuration Wizard".

Once you have set up the Internet connection with the Configuration Wizard, FRITZ!Box Fon WLAN works as a DSL router and all connected computers can use the Internet access at the same time.

You can open the Configuration Wizard at any time to change your entries. All information about Internet access and Internet telephony can also be changed directly in the corresponding menu in the user interface.

Enable the "Hang up after... seconds" option in the "Internet / Account Information" menu if your Internet connection is charged for online time. This function clears an idle connection after the period specified here.

3.2 Dialing an Internet Connection

FRITZ!Box Fon WLAN indicates active Internet connections on the "DSL" LED.

FRITZ!Box Fon WLAN Establishes the Internet Connection

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

Make sure FRITZ!Box Fon WLAN automatically assigns IP addresses to all computers that are supposed to use this Internet connection. For instructions, see the section "IP Settings" from page 75.

The Computers Connected Establish the Internet Connections Themselves

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

4 Making Calls with FRITZ!Box Fon WLAN 7050

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

- Entering account information and Internet numbers for Internet telephony
- Entering numbers for calls over fixed lines
- Configuring connected analog terminal devices, ISDN telephones or ISDN PBXs at FRITZ!Box Fon WLAN

Information on the following topics is also presented here:

- Dialing rules for Internet and fixed-line telephony
- How does Internet telephony work with FRITZ!Box Fon WLAN?

4.1 Entering Account Information and Internet Numbers for Internet Telephony

If you would like calls from the Internet to be able to reach you at all times, then disable the option "Hang up after... seconds" in the "Internet / Account Information" area.

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

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

Proceed as follows to set up an additional Internet number:

1. Start a web browser.
2. Enter "fritz.box" in the Address field.
3. Click the "Internet Telephony" command in the "Telephony" menu.

4. Click the “New Internet Number” button.
5. Enter the account information you received from your Internet telephony provider in the appropriate fields.
6. Click the “Apply” button.

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

4.2 Entering Numbers for Calls over Fixed Lines

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

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

4.3 Configuring Analog Terminal Devices at FRITZ!Box Fon WLAN

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

The following settings are preconfigured at the analog lines “FON 1”, “FON 2” and “FON 3”:

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

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

To do this, perform the following steps:

1. Start a web browser.
2. Enter “fritz.box” in the Address field.
3. Click the “Extensions” command in the “Telephony” menu.
4. In the “Analog Extensions” area, click the “Change Settings” button next to the number of the extension.
5. Select a number from the “Number of the extension” drop-down menu in the “Extension FON 1” area.

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

7. Click the “Apply” button.
8. If desired, set up the “Extension FON 2” and the “Extension FON 3” in the same manner.

4.4 Configuring ISDN Telephones at FRITZ!Box Fon WLAN

Up to eight ISDN phones can be connected to FRITZ!Box Fon WLAN. Connect the ISDN telephones to the ISDN S_0 port “FON S_0”.

The following ISDN services are supported: voice, telephony, audio 3.1 and Fax G2/G3.

Assigning Internet and Fixed-Line Numbers to ISDN Telephones

If the connected ISDN telephones should only react to certain numbers, MSNs must be configured in the ISDN telephones.

Proceed as follows to specify whether calls are conducted on the fixed-line network or over the Internet:

No MSNs Are Configured in the ISDN Telephone

If no MSNs are configured in the ISDN telephone, the main number is used for outgoing calls. The main phone number is listed in the “Telephony / ISDN Terminal Devices” menu.

- If the main number is a fixed line, all calls will be conducted on the fixed-line network.
- If the main number is an Internet number, all calls will be conducted over the Internet.

MSNs Are Configured in the ISDN Telephone

- If you specify an Internet number as the outgoing MSN in the ISDN telephone, outgoing calls will be conducted over the Internet.
  Internet numbers can be set up in the ISDN phone just like MSNs.

- If you have entered only fixed-line numbers as MSNs in the ISDN telephone, all calls will be conducted on the fixed-line network. If you want to use Internet telephony, you must replace an MSN with an Internet number.

See the documentation for your ISDN telephone for instructions on setting up MSNs.

In FRITZ!Box Fon WLAN you can enter additional Internet or fixed-line numbers, which can then be assigned to the ISDN telephones. A list of these numbers is displayed in the "Telephony / ISDN Terminal Devices" menu.

All of the MSNs set up in the ISDN terminal devices must also be entered in FRITZ!Box Fon WLAN.

4.5 ISDN PBXs on FRITZ!Box Fon WLAN

ISDN PBXs can be connected to the ISDN S_0 port "FON S_0" of FRITZ!Box Fon WLAN.

The following ISDN services are supported: voice, telephony, audio 3.1 and Fax 2/G3.

When PBXs are connected, only the ISDN BRI (basic rate interface) is supported.

1. If not all of your MSNs have been configured in the PBX, enter your MSNs now. The MSNs must correspond to the numbers in the "Existing numbers" saved in FRITZ!Box Fon WLAN.
2. If you want to use Internet telephony, the Internet numbers must be set up in the ISDN PBX. The Internet numbers are then assigned to the extensions of the PBX as outgoing numbers.

See the documentation for your ISDN PBX for instructions on setting up MSNs.

4.6 Dialing Rules for Internet and Fixed-Line Telephony

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

Perform the following steps to define dialing rules:

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

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

4.7 Selecting the Type of Connection Manually

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

Fixed-line Connections

✱1011#	establishes a fixed-line connection

Internet Connections

✱102#	establishes an Internet connection. The Internet number used is the Internet number set for line 1
✱102 ◔ #	establishes an Internet connection for a selected Internet number. For “P”, enter the position of the Internet number in the “List of Internet Numbers”.

4.8 How Does Internet Telephony Work?

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

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

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

Telephony Scenarios

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

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

and receive calls from all directions as well.

Bandwidth Management with FRITZ!Box Fon WLAN

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

5 FRITZ!DSL: The Software Suite

The FRITZ!DSL software suite is included in the FRITZ!Box Fon WLAN package. The software includes a number of programs and tools we will introduce briefly in this chapter.

Once you have installed FRITZ!DSL, the “Start Center” icon appears on your desktop. All of the programs in the FRITZ!DSL software suite can be started from the FRITZ!DSL Start Center.

To install FRITZ!DSL after the rest of the software, insert the FRITZ!Box Fon WLAN CD in your drive, start “Setup.exe” and select “View CD Contents / Install FRITZ!DSL”.

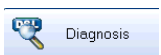
The Start Center contains the following buttons:

Click the “Internet” button to start the FRITZ!DSL Internet program. FRITZ!DSL Internet is the Internet access and Internet monitoring software with features to ensure security, speed and control.

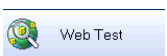
The “Protect” button starts the **FRITZ!DSL Protect** program. FRITZ!DSL Protect controls outgoing connections to the Internet and complements the firewall functions of FRITZ!Box Fon WLAN and FRITZ!DSL Internet.

Click the “FRITZ!Box” button to open the **user interface** of FRITZ!Box Fon WLAN in your web browser.

Click the “Update” button to check whether a **firmware update** for your FRITZ!Box Fon WLAN is available on the AVM web site.



The “Diagnosis” button starts the FRITZ!DSL **Diagnosis**. It displays all data relevant to your DSL connection, checks the installation and connection of FRITZ!Box Fon WLAN to simplify thepossible search for a error.



Click the “Web Test” button to start the **WebWatch** program. WebWatch can measure the quality of your Internet connection to any remote site.

For detailed information on configuring and using FRITZ!DSL programs, see the corresponding Online Help programs.

5.1 Installing FRITZ!DSL

Proceed as follows to install the software:

1. Insert the FRITZ!Box Fon WLAN CD and start “Setup.exe”.
2. Select “View CD Contents / Install FRITZ!DSL”.
3. The “File Download” window opens. Select the “Open” button in this window.
4. The FRITZ!DSL welcome screen appears. Confirm with “Next”.
5. Specify the folder in which you want to install FRITZ!DSL on your computer. Confirm with “Next”.
6. The next step is to specify the program folder for FRITZ!DSL in the Start menu. Confirm with “Next”.

   The system files are copied into the specified folder and the DSL software is installed on your computer.
7. Confirm with “Finish”.

This completes the installation of the DSL software.

5.2 FRITZ!DSL Internet

FRITZ!DSL Internet is the Internet access and Internet monitoring software with features to ensure security, speed and control. For instructions on how to configure FRITZ!DSL Internet and use it to connect to the Internet, see the Online Help on FRITZ!DSL Internet.

Using FRITZ!DSL Internet with FRITZ!Box Fon WLAN Configured as a DSL Router

If FRITZ!DSL Internet is used in combination with a router, the program displays the connection status, provides information about the course of data transmissions, and allows the Internet connection of FRITZ!Box Fon WLAN to be established or cleared from the computer.

FRITZ!Box Fon WLAN takes care of dialing into the Internet, firewall protection from unauthorized incoming connections, and keeping track of transmission volume and online time. The FRITZ!DSL Protect program can also be implemented to provide added protection against unauthorized **connections to the Internet**.

Using FRITZ!DSL Internet with FRITZ!Box Fon WLAN Configured as a DSL Modem

FRITZ!DSL Internet makes surfing convenient and secure. The Short-Hold Mode with its automatic idle timeout ensures that the Internet connection is cleared as soon as no new access to Internet pages is requested for the specified amount of time. When you do request new data, FRITZ!DSL Internet establishes a new connection in the background within seconds so that you can continue surfing. This saves connection charges. The integrated traffic shaping optimizes DSL transmission, allowing full DSL speed to be exploited even when uploading and downloading data at the same time. The Internet connection protocol used is PPPoE.

To protect your computer from **attacks from the Internet**, FRITZ!DSL Internet is equipped with firewall functions. This protects your computer from unauthorized access, even when the computer is online for long periods of time. The FRITZ!DSL Protect program can also be implemented to provide added protection against unauthorized **connections to the Internet**.

5.3 FRITZ!DSL Protect

FRITZ!DSL Protect keeps your PC safe from unwanted Internet connections. You can specify or prohibit Internet access for each program individually. For instance, specifying that only your default web browser and your e-mail program are granted Internet access, is a reliable way of preventing undesired connections like those Trojans and worms attempt to establish. You can permanently allow or prohibit programs access to the Internet, or specify that you should be consulted every time access is attempted.

An overview shows the programs already set up in FRITZ!DSL Protect along with their access rights. A Journal grants you an overview of all successful and rejected attempts to access the Internet.

5.4 FRITZ!Box

Click the "FRITZ!Box" button to open the **user interface** of FRITZ!Box Fon WLAN in your web browser. In the FRITZ!Box Fon WLAN user interface you can set up a shared Internet access for all connected computers and change the FRITZ!Box Fon WLAN settings.

5.5 Webtest

Click the "Web Test" button to start the **WebWatch** program. WebWatch is a program that detects the quality of an Internet connection in a simple way to make the Internet more transparent for the user.

WebWatch displays the quality of the current Internet connection and the data packets' path through the Internet.

Once a URL is entered, WebWatch sends a signal to the destination address. The response times are measured and evaluated and then displayed in a diagram.

5.6 FRITZ!DSL Diagnosis

FRITZ!DSL Diagnosis reports comprehensively about all of the details of the DSL connection, including data transmission and the activated fast-path mode. The integrated comprehensive DSL diagnosis makes it possible to monitor the FRITZ!Box Fon WLAN connection and installation.

5.7 Update

New firmware updates for FRITZ!Box Fon WLAN are provided by AVM at regular intervals, free of charge. The updates can add new functions to your FRITZ!Box Fon WLAN.

Click the “Update” button to check whether there is a new update available for the FRITZ!Box Fon WLAN firmware.

When the FRITZ!DSL Start Center is started, it checks the AVM web site for new updates every 30 days. You will be informed when a new update is available.

6 WLAN: Wireless Local Area Networks

WLAN is a radio technology that allows Ethernet networks and access to the Internet to be provided without cable connections. This allows multiple users to share one wireless Internet connection. A notebook and a WLAN adapter is all you need for an Internet connection at locations with public WLAN access points, for instance at airports.

Standards

The WLAN standards IEEE 802.11b, IEEE 802.11g and IEEE 802.11i were developed by the Institute of Electrical and Electronic Engineers (IEEE).

IEEE 802.11b and IEEE 802.11g

With 802.11b technology, transmission rates of up to 11 Mbit/s are possible; with 802.11g technology, up to 54 Mbit/s. FRITZ!Box Fon WLAN supports both standards. WLAN adapters based on either of these standards can establish connections to FRITZ!Box Fon WLAN.

The range within a given WLAN depends to a high degree on the WLAN adapter used as well as the physical surroundings of the network.

IEEE 802.11i

The WLAN security concept was expanded with the standard IEEE 802.11i. The term WPA2 is often used in place of 802.11i. WPA2 is an extension of the familiar security mechanism WPA (Wi-Fi Protected Access). The WPA mechanism stipulates the TKIP (Temporary Key Integrity Protocol) for encryption. The WPA2 mechanism also defines the AES-CCM encryption procedure, which is based on the AES (Advanced Encryption Standard) procedure. CCM (Counter with CBC-MAC) defines how the AES procedure is applied to WLAN packets.

FRITZ!Box Fon WLAN supports the IEEE 802.11i WLAN standard and thus the WPA2 mechanism as well.

Security

Security is of utmost importance within radio networks. Radio signals can also be received outside of office or residential spaces and abused for criminal purposes.

Therefore it is important that no unauthorized users can register in a WLAN to use its Internet access or shared network resources.

FRITZ!Box Fon WLAN includes settings on various levels that contribute to the security of your WLAN and thus to the security of your computers.

Encryption

The most important security setting is encryption. FRITZ!Box Fon WLAN supports the security mechanisms WEP (Wired Equivalent Privacy), WPA (Wi-Fi Protected Access) and WPA2 as follows:

- As part of the WEP mechanism a static key is determined to serve for the encryption of the user data. The key must also be entered in the WLAN settings of the WLAN clients.

  The factory settings of FRITZ!Box Fon WLAN include a WLAN network key with a length of 128 bits. You should enter your own individual value for the WLAN network key as soon as possible.

- The WPA and WPA2 mechanisms provide for authentication while the connection is being established. For this a WPA password must be defined.

  Select an encryption method to be used to encrypt the user data: TKIP using the WPA mechanism, or AES using the WPA2 mechanism.

  The user data are encrypted using an automatically generated key. This key is regenerated at regular intervals.

The WPA password used may be 8 to 63 characters in length. For increased security, however, the password should be at least 20 characters long. Use numerals, letters and special characters and combine capitals and lower-case letters.

In FRITZ!Box Fon WLAN, encryption with WEP is the default setting. It is advisable to change the preconfigured WLAN settings as soon as possible. Changes to the settings can be configured on the FRITZ!Box Fon WLAN user interface.

The encryption method you set in FRITZ!Box Fon WLAN must also be supported by your WLAN adapter. To configure the best security settings possible with FRITZ!Box Fon WLAN and your WLAN adapter, please note the following recommendations:

- Your WLAN adapter supports WPA2 (i.e., it supports the 802.11i standard):

  Select the WPA mechanism and the AES encryption procedure.

- Your WLAN adapter supports the WPA mechanism, but not the WPA2 mechanism:

  Select the WPA mechanism and the TKIP encryption procedure.

- Your WLAN adapter supports neither the WPA nor the WPA2 mechanism:

  Select the WEP mechanism and replace the WLAN network key preconfigured in FRITZ!Box Fon WLAN with your own key value.

We strongly recommend the use of a WLAN adapter that supports WPA or WPA2 (for instance, the FRITZ!WLAN USB Stick). WEP is out of date and data encrypted with WEP can be deciphered within a few hours.

Password Protection

Access to the FRITZ!Box Fon WLAN user interface can be protected by means of a password. When password protection is enabled, the FRITZ!Box Fon WLAN settings are protected from unauthorized access. Use unusual character strings as passwords. Avoid birthdays or names.

WLAN Radio Network Name (SSID)

The factory settings of FRITZ!Box Fon WLAN include a value of "FRITZ!Box Fon WLAN 7050" preset for the SSID (Service Set Identifier). Change the SSID as soon as possible.

Frequency Range

WLAN uses the frequency range around 2.4 GHz in the ISM band. WLAN thus works in the high-frequency range, like Bluetooth. Microwave devices and cordless telephones use this range as well. Thus interference can occur within WLANs operated in the vicinity of such devices. Generally the only adverse effects are to the transmission rate; aborted connections and data losses are rare.

Please note that in certain countries outside of Europe the use of some frequencies is prohibited by the national regulatory agency.

In Europe, 13 channels are provided for WLAN in the 2.4 GHz range. One channel has a bandwidth of 22 MHz. A 5-MHz interval is left empty between adjacent channels. That means that channels located directly next to each other can overlap and result in mutual interference. If several WLANs are operated within a small space, a distance of at least 5 channels should be left empty between each two channels used. For instance, if channel 1 is selected for one WLAN, the channels 7 through 13 can be selected for a second WLAN. This maintains the minimum distance between channels.

WLAN channels in the 2.4 GHz range:

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472

7 Guidebook

The guidebook contains detailed instructions on the following subjects:

- Linking up the cable network
- DHCP server

7.1 Linking up the Cable Network

If you would like to use both LAN ports on FRITZ!Box Fon WLAN, you will need an additional LAN cable. LAN cables can be purchased at any computer electronics outlet.

Extending the length of the FRITZ!Box Fon WLAN cables is no problem. Cables of the length needed can be obtained from a computer electronics outlet. Remember that the quality of the line may be decrease as the distance from the central switching station increases.

Follow the instructions below when purchasing extension cables:

	Maximum Length	Cable Properties
Network cable	100 m	10bT network cable, 1.1 wired, STP
DSL cable	20 m	10bT network cable, 1.1 wired, UTP
USB cable	3 m	
Analog or ISDN cable	10 m	

7.2 DHCP Server

FRITZ!Box Fon WLAN is equipped with its own DHCP server. In the factory settings, the DHCP server and the setting “All computers are located in the same IP network” are enabled by default. Every time a computer connected with FRITZ!Box Fon WLAN is restarted, it is assigned an IP address by the DHCP server.

The computers can receive their IP addresses from the DHCP server only if the setting "Obtain an IP address automatically" is enabled in the their IP settings. For more information, see the section "IP Settings" from page 75.)

Only one DHCP server may be active within any network.

DHCP Server Settings in the User Interface

Proceed as follows to open the DHCP server settings:

1. Make sure that the setting "Show expert settings" is enabled on the "Expert Mode" page ("System / Expert Mode").
2. Open the menu "System / Network Settings" in the FRITZ!Box Fon WLAN user interface.
3. Click the "IP Addresses" button.

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

IP Networks

The settings "All computers are located in the same IP network" specifies whether all of the computers connected with FRITZ!Box Fon WLAN are located in the same IP network or in different IP networks.

"All computers are located in the same IP network" Is Enabled

- The IP network of FRITZ!Box Fon WLAN is specified by the settings "IP address" and "Subnet mask". The address registered in the "IP address" field is the IP address of FRITZ!Box Fon WLAN. FRITZ!Box Fon WLAN can be reached at this address in the IP network. The IP address preset upon delivery is 192.168.178.1.

- All computers connected with FRITZ!Box Fon WLAN must receive an IP address from FRITZ!Box Fon WLAN's IP network.

"All computers are located in the same IP network" Is Disabled

- Each FRITZ!Box Fon WLAN interface receives its own IP address and subnet mask.
- The IP network of an interface is specified by the settings "IP address" and "Subnet mask". The address registered in the "IP address" field is the IP address of the interface. FRITZ!Box Fon WLAN can be reached at this address in the IP network. The following table shows the IP addresses preset upon delivery:

Interface	IP address
LAN A	192.168.181.1
LAN B	192.168.178.1
USB	192.168.179.1
WLAN	192.168.182.1

- All computers connected with FRITZ!Box Fon WLAN via an interface must receive an IP address from the interface's IP network.

Addresses of the IP Networks

In the "IP address" fields you can enter any IP address you wish. Please note the following restrictions and recommendations:

- It is always advisable to use 1 in the fourth block of the IP address.
- The address may not be from the following address range:

  192.168.180.1 - 254

  This address range is reserved in FRITZ!Box Fon WLAN for internal purposes.

- If the DHCP server is enabled, the addresses between 20 and 200 in the fourth block of the IP address are reserved in an IP network for the DHCP server.

IP Address Range of the DHCP Server

In every IP network, the addresses between 20 and 200 in the fourth block of the IP address are reserved for the DHCP server.

If you are using the settings configured upon delivery, the following address ranges are available for the DHCP server:

- "All computers are located in the same IP network" is enabled:

  Address range of the DHCP server: 192.168.178.20 - 200

- "All computers are located in the same IP network" is disabled:

Interface	Address range of the DHCP server at the interface
LAN A	192.168.181.20 - 200
LAN B	192.168.178.20 - 200
USB	192.168.179.20 - 200
WLAN	192.168.182.20 - 200

Fixed IP Addresses when the DHCP Server Is Enabled

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

The IP addresses you assign to the computers may not be from the IP address range of the DHCP server.

The DHCP Server of FRITZ!Box Fon WLAN 7050 Is Disabled

When the DHCP server of FRITZ!Box Fon WLAN is disabled, every computer connected to FRITZ!Box Fon WLAN must be assigned a fixed IP address. Otherwise FRITZ!Box Fon WLAN cannot be reached.

The IP addresses you assign to the computers must be from the correct IP network. This means that the IP address ranges from which you can assign IP addresses are determined by the IP settings in FRITZ!Box Fon WLAN.

The following tables indicate the IP address ranges available according to the factory settings: The tables also list the addresses for subnet mask, default gateway and DNS server. These three entries are also required for the computer's IP settings.

The Option "All computers are located in the same IP network" Is Enabled

Settings	Addresses
The IP addresses from this IP address range may be assigned to the computers:	192.168.178.2-250
Subnet mask:	255.255.255.0
Default gateway:	192.168.178.1
DNS server:	192.168.178.1

The Option “All computers are located in the same IP network” Is Not Enabled

In this case the computers connected with FRITZ!Box Fon WLAN over the same interface are located in the same IP network:

Interface	Settings	Address
USB	IP address range: Subnet mask: Default gateway: DNS server:	192.168.179.2-250 255.255.255.0 192.168.179.1 192.168.179.1
LAN A	IP address range: Subnet mask: Default gateway: DNS server:	192.168.181.2-250 255.255.255.0 192.168.181.1 192.168.181.1
LAN B	IP address range: Subnet mask: Default gateway: DNS server:	192.168.178.2-250 255.255.255.0 192.168.178.1 192.168.178.1
WLAN	IP address range: Subnet mask: Default gateway: DNS server:	192.168.182.2-250 255.255.255.0 192.168.182.1 192.168.182.1

8 Troubleshooting

8.1 Errors Opening the User Interface

LAN and USB Connections

You have connected FRITZ!Box Fon WLAN to a computer using a LAN or USB port and the IP settings in FRITZ!Box Fon WLAN comply with the prescribed factory settings. Yet when you attempt to open the user interface, you receive an error message. Check the following:

- Make sure that all cable connections are plugged in securely.
- The IP addresses of the connected computers must be assigned automatically (see “IP Settings” from page 72).
- In the Internet browser, enter one of the following IP addresses in the place of “fritz.box”:
  - 192.168.178.1
  - 192.168.179.1
  - 192.168.182.1
- No Internet connection may be established via FRITZ!DSL Internet.

WLAN Connection

You have established a WLAN connection to FRITZ!Box Fon WLAN, but cannot open the user interface by entering “fritz.box” or “192.168.178.1”.

Check IP Settings

A prerequisite for this check is that the IP settings in FRITZ!Box Fon WLAN are the same as the factory settings active upon delivery.

Make sure that the computer automatically obtains its IP address from the DHCP server of FRITZ!Box Fon WLAN. For information about how to check this settings and change it if needed, see the section “IP Settings” from page 72.

Checking the WLAN Adapter Settings

Open the WLAN software you use to make settings for the WLAN adapter and proceed as follows:

- Enter the key in hexadecimal format, not in ASCII format.
- Make sure that “Open” or “Open key” is set as the kind of registration or authentication.

  In the Windows XP WLAN software, this means you must disable the “Network Authentication (integrated mode)” setting. This setting is located on the “Assignment” settings page in the “Wireless Network Properties” window.
- Check the key index. When operation is started for the first time, the key index must be “1”.

  If four fields are available for the key entry in your WLAN software, “Key 1” through “Key 4”, then you must enter the key in the field “Key 1”.

  The Windows XP WLAN software has only one field for the key entry, “Network key”. The key index must be set in the field “Key index (advanced)”. This setting is located on the “Association” settings page in the “Wireless Network Properties” window.

If this procedure is not successful, change the settings in FRITZ!Box Fon WLAN as described in the section “Changing Settings in FRITZ!Box Fon WLAN” from page 69.

How FRITZ!Box Fon WLAN 7050 Can Be Reached at All Times via a LAN Connection

FRITZ!Box Fon WLAN has a fixed IP address, which cannot be changed and which can be used to access FRITZ!Box Fon WLAN at any time. This fixed IP address is: 192.168.178.254

Proceed as follows to reach the FRITZ!Box Fon WLAN user interface at this address:

1. If a USB or WLAN connection already exists, remove the USB cable or disable the WLAN connection before connecting the LAN cable.

   Connect FRITZ!Box Fon WLAN and the computer using the red network cable (see the section "Connecting FRITZ!Box Fon WLAN to the LAN Port" from page 25).

2. Take note of the computer's IP settings.

3. Change the IP settings by entering the following fixed IP address: 192.168.178.150

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

5. Configure the computer's IP settings you took note of, and reconnect the computer to FRITZ!Box Fon WLAN if necessary (by USB or WLAN).

8.2 The Radio Network Is Not Displayed

When the WLAN adapter is configured, the radio network "FRITZ!Box Fon WLAN 7050" is not displayed.

Checking the WLAN Adapter Settings

Make sure that the network mode "Infrastructure" is set rather than "Ad-hoc" in the WLAN software you use to configure the WLAN adapter.

In the Windows XP WLAN software this setting is configured using the "Advanced" button on the "Wireless Networks" settings page in the "Wireless Network Connection Properties" window. In the "Advanced" window, select the setting "Access point (infrastructure) networks only".

If the radio network is still not displayed, continue with the next item.

Changing Settings in FRITZ!Box Fon WLAN

1. Establish a connection to FRITZ!Box Fon WLAN via the LAN or USB port and open the user interface.
2. Open the "System / Reset" menu.
3. Click the "Restart FRITZ!Box and Load Factory Settings" button.
4. Clear the LAN or USB connection again (by removing the connecting cable) and attempt to establish a WLAN connection again.

If this attempt is unsuccessful, continue as follows:

1. Establish a connection to FRITZ!Box Fon WLAN again via the LAN or USB port and open the user interface.
2. In the "WLAN" menu, click the "Security" command and select "enable non-encrypted access". As a final step, click "Apply".

This non-secured condition should be used only for testing, to find out whether a WLAN connection is possible at all.

3. Clear the LAN or USB connection again (by removing the connecting cable) and attempt to establish a WLAN connection again without security settings.

If this attempt is not successful either, check the installation of the WLAN adapter and contact the manufacturer of the WLAN adapter if necessary.

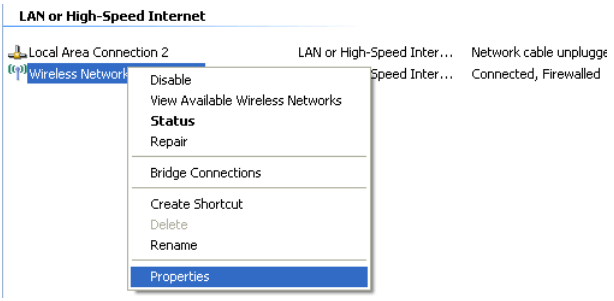
8.3 WLAN Connection Is Not Established

If you use the WLAN connection settings in Windows XP for the WLAN connection, make sure that the settings agree with the entries in the following description before attempting to establish the connection again. The description proceeds from the factory settings configured in FRITZ!Box Fon WLAN upon delivery:

Setting	Preset value
SSID (name of the WLAN radio network)	FRITZ!Box Fon WLAN 7050
Encryption	WEP
Key length	128 bits
Key	The key is printed on the stickers on the base of the device and on the cover of the FRITZ!Box Fon WLAN CD.
Type of Authentication/Registration	Open key
Network mode	Infrastructure
Channel	6

WLAN Connection Settings in Windows XP

1. In the “Network Connections” window, select the entry “Wireless Network Connection” and select the “Properties” command from the context menu.



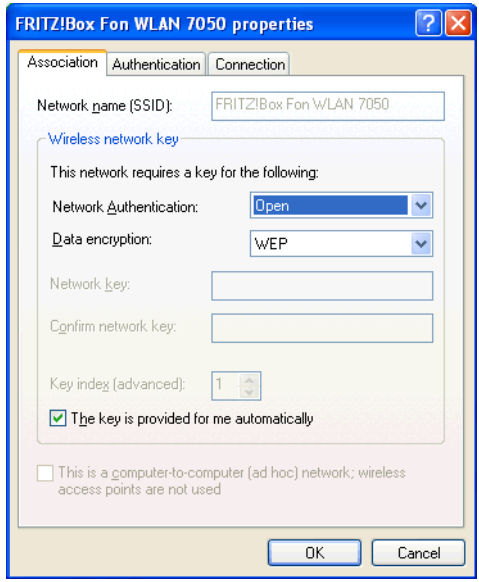
Opening the properties window for wireless network connection

The “Wireless Network Connection Properties” window opens.

2. Make sure that the setting “Use Windows to configure my wireless network settings” is enabled on the “Wireless Networks” settings page.

3. In the “Preferred networks” area, select from the list the entry “FRITZ!Box Fon WLAN 7050” and click the “Properties” button. The “FRITZ!Box Fon WLAN 7050 properties” window opens.

4. On the “Association” settings page, the settings must match those in the following illustration:



WEP data encryption settings in Windows XP

8.4 IP Settings

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

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

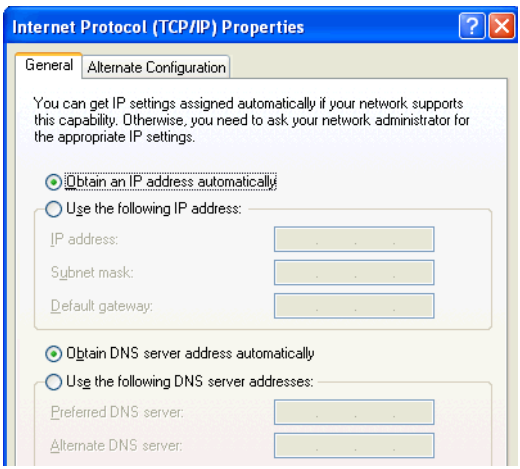
Linux

For comprehensive information and tips on the topic of network configuration in Linux, see:
http://www.linux.org/docs/ldp/howto/NET3-4-HOWTO-5.html

Obtaining an IP Address Automatically in Windows XP

Proceed as follows in Windows XP:

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



Properties of the Internet protocol (TCP/IP)

5. Confirm your selection by clicking “OK”.

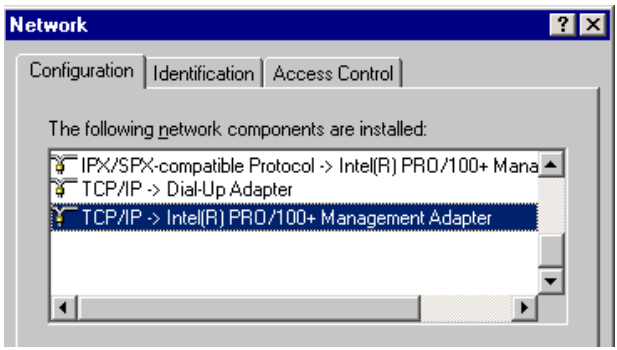
The computer now receives an IP address from FRITZ!Box Fon WLAN.

Obtaining an IP Address Automatically in Windows Me/98

Proceed as follows in Windows Me/98:

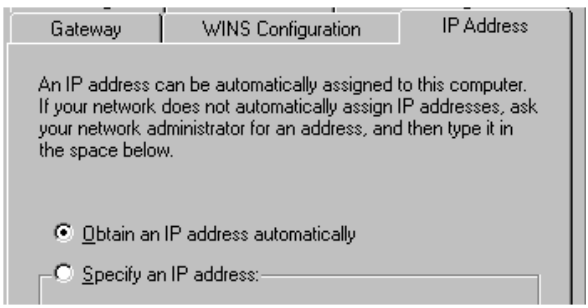
Keep your Windows CD handy, as this may be required for changes to your network settings.

1. Select “Start / Settings / Control Panel”.
2. Double-click the “Network” entry to open it.
3. In the list, double-click to select the binding designated with an arrow, “(TCP/IP) -› ‹network adapter bound to FRITZ!Box Fon WLAN 7050›”.



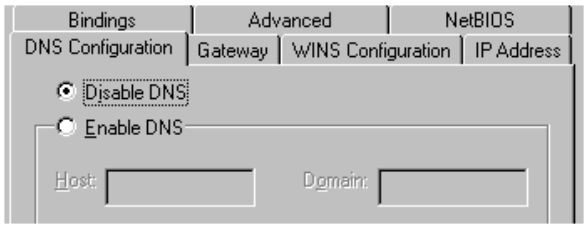
TCP/IP binding to a network adapter

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



The “Obtain an IP address automatically” option

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



The "Disable DNS" option

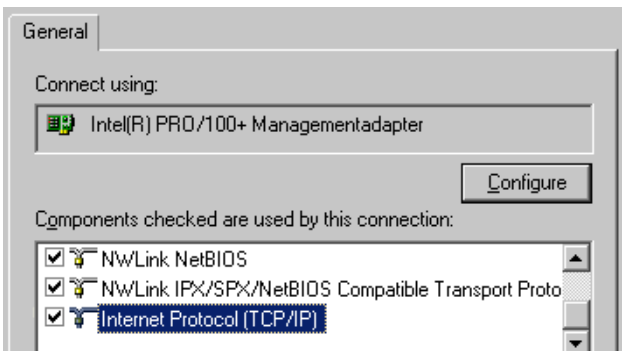
6. Confirm your selection by clicking "OK".

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

Obtaining an IP Address Automatically in Windows 2000

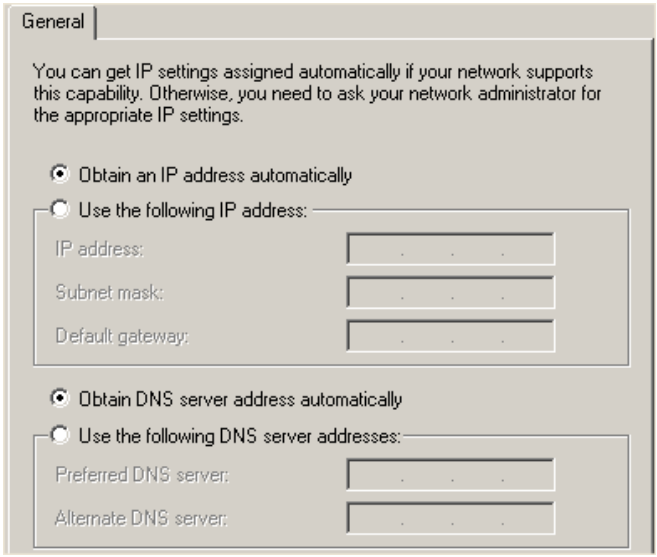
Proceed as follows in Windows 2000:

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



Properties of the LAN connection of a network adapter

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



The "Obtain an IP address automatically" option

6. Confirm your selection by clicking "OK".

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

Obtaining an IP Address Automatically in Mac OS X

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

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

9 Removing the FRITZ!Box Fon WLAN 7050

Follow the instructions below to remove FRITZ!Box Fon WLAN:

- If FRITZ!Box Fon WLAN is connected to the computer's LAN port or to a network hub, all you need to do is remove the LAN cable.
- If FRITZ!Box Fon WLAN is connected to one or more computers wirelessly via WLAN, no uninstallation is required.
- If FRITZ!Box Fon WLAN was installed at the USB port of the computer, uninstallation must be performed in the Windows operating systems.

  No uninstallation is necessary in the operating systems Mac OS X and Linux.

In the Windows operating systems, proceed as follows for uninstallation:

1. Insert the FRITZ!Box Fon WLAN CD in your CD-ROM drive. The installation Help is started.
2. Click the button "FRITZ!Box Fon WLAN 7050".
3. Click the "View CD Contents" button.
4. Click the "USB Driver" button.
5. Click the "Install Now" button.
6. In the "File Download" window, click "Open". The "setup.exe" program is started for FRITZ!Box Fon WLAN.
7. Click "Continue" in the Welcome window and then select "Removal" from the following window.

   FRITZ!Box Fon WLAN will be removed.

10 Configuration and Operation by Telephone

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

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

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

For more information concerning the audible signals, see the corresponding section “Audible Signals” on page 117.

Designation of the Functions and Features

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

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

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

10.1 Operating FRITZ!Box Fon WLAN 7050 by Phone

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

Shortening the Dialing Procedure

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

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

‹number›#	indicates to FRITZ!Box Fon WLAN that the number can be dialed immediately (can shorten the dialing procedure)

ISDN analog VoIP

Selecting the Outgoing Number and the Type of Connection

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

Defining the Type of Connection Using Existing Settings in FRITZ!Box Fon WLAN

Up to ten different numbers can be assigned to each FRITZ!Box Fon WLAN extension. The numbers assigned also determine what kind of connection will be established for outgoing calls.

If you would like to establish outgoing connections using a certain type of connection, you can use a keypad code to specify the connection type to be used for outgoing calls to a configured number.

✪1# ‹number›	establishes outgoing calls using the type of connection specified for the first entry of the extension connected to the telephone
✪2# ‹number›	establishes outgoing calls using the type of connection specified for the second entry of the extension connected to the telephone
✪3# ‹number›	establishes outgoing calls using the type of connection specified for the third entry of the extension connected to the telephone

Defining the Type of Connection Independent of the Settings in FRITZ!Box Fon WLAN

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

✪1111# ‹number›	dials up this connection using the fixed-line
✪12# ‹number›	dials up this connection using the Internet (Internet number for access 1)

Dialing Internal Calls

Dialing Internal Calls with Automatic Outside Dialing

	Pick up the handset. You hear the external dial tone immediately, since the extension is set for automatic outside dialing.
R or ✱✱	Press the Hold button, or press the asterisk key twice. You now hear the internal dial tone.
	Dial the desired extension number.

Dialing Internal Calls Without Automatic Outside Dialing

	Pick up the handset. You hear the internal dial tone.
	Dial the desired extension number.

Group Call

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

	Pick up the handset.
9	Instead of an extension number, dial "9". All extensions that are not busy ring.

ISDN analog VoIP

Alternating Between Calls

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

To alternate between two connections, proceed as follows:

Call 1 ✆	You are talking to Caller 1.
R	Press the Hold button. Call 1 is now on hold.
⌨	To dial a second call, simply dial either the desired extension number or the outside line access “0” followed by the desired external number.
Call 2 ✆	If the call is answered, you can consult with caller 2 on this line. Call 1 is still on hold.
R2	To switch back from Call 2 to Call 1, dial the sequence shown at left.
Call 1 ✆	Call 1 is now active again and Call 2 is on hold.
R2	To switch back again from Call 2 to Call 1, dial the same sequence. In this way you can alternate between Call 1 and 2.

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

⏻	The caller on hold hangs up. You can continue talking on the active connection.
R1	You end the active connection by dialing the sequence shown at left. The call that was on hold is now active again.
⏻ 🔔 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.

Picking Up Calls from Another Extension

The pickup function allows you to respond to a call ringing on another extension at your own phone. Calls can be picked up from known and unknown extension numbers.

This function can also be used to pick up incoming calls that have already been accepted by an answering machine at another extension. A call that has already been answered can only be picked up if the "Group Call" function has been disabled and the "Disabled call waiting" option has been enabled for the given extension.

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

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

Picking up a Call from a Known Extension

To pick up a call from a known extension (1, 2,...), proceed as follows:

☎	Pick up the handset.
✪0Ext.	Dial the sequence shown at left. Enter the number of the extension for "Ext.".
✆	The call is now connected to your extension, and you can talk to the caller.

ISDN analog VoIP

Transferring Calls

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

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

ISDN analog VoIP

Consultation / Hold

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

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

Call 1 	You are talking to Caller 1.
	Press the Hold button. Caller 1 is now on hold and you can consult someone else.
	To dial a second call, simply dial either the desired extension number or the outside line access “0” followed by the desired external number.

Call 2 ✆	If the call is answered, you can consult with caller 2 on this line. Call 1 is still on hold.
®R	If the line you dialed is busy or the call is not answered, press the Hold button again to return to Call 1.
®R1	To switch back to Call 1 from Call 2, dial the sequence shown at left. Call 1 is now active again.

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

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

10.2 Configuring FRITZ!Box Fon WLAN 7050 by Phone

Saving New Settings

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

Saving Permanently

↑	Pick up the handset.
#9100	Save all settings made to your FRITZ!Box Fon WLAN permanently by dialing the sequence shown at left.
↓	Hang up the handset.

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

Specifying the Outside Dialing Mode

Automatic outside dialing can be enabled or disabled for each extension. When automatic outside dialing is set, the dial tone sounds as soon as you lift the handset. If the extension is set to internal dialing, the dial tone will not sound until after you dial "o".

Enabling Automatic Outside Dialing

↑	Pick up the handset.
#1 Ext. *10	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
↓	Hang up the handset.

Disabling Automatic Outside Dialing

☎	Pick up the handset.
#1 Ext.*00	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN analog VoIP

Call Waiting Option

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

See section "Call Waiting" on page 103 for information about how to accept a call while another connection is active.

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

Disabling Call Waiting

☎	Pick up the handset.
#2 Ext.*10	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Enabling Call Waiting

☎	Pick up the handset.
#2 Ext.*00	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN analog

Call Rejection on Busy (Busy on Busy)

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

Enabling the Busy on Busy Function

☎	Pick up the handset.
#52Ext.*10*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100*	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Disabling the Busy on Busy Function

☎	Pick up the handset.
#52Ext.*00*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100*	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Baby Monitoring Phone Function

The baby monitoring phone function allows you to use your PBX to monitor sounds in the room. A PBX extension must be located in the room to be monitored. Enter a code to activate the room monitoring. Lay the handset next to the phone or activate the speaker phone. The volume level of the phone can be set to any of eight levels.

It is preferable to use the speaker phone function.

To enable the baby monitoring phone function, proceed as follows:

☎	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 “8”. For “Number”, enter the number to be called. This may be the number of another internal extension, a “9” for an internal group call, or any external number desired.
⋯	Wait for the acknowledgement tone. The baby monitoring phone function is now enabled.
	Do **not** hang up the handset!

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

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

10.3 Advanced Features

ISDN analog VoIP

Call Diversion over FRITZ!Box Fon WLAN

Incoming calls to the FRITZ!Box Fon WLAN telephones can be diverted to a different extension or to an external number. In contrast to call diversion over FRITZ!Box Fon WLAN, there is also call forwarding (call diversion via the central exchange). How to use call forwarding by phone is described in the section "Call Forwarding (Call Diversion via the Central Exchange)" from page 93.

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

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

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

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

Call Diversion Immediately (Without Ringing)

↑	Pick up the handset.
#41 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#9100*	Save your settings if desired by dialing the sequence shown at left.
↓	Hang up the handset.

Call Diversion After the Third Ring

↑	Pick up the handset.
#42 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#9100*	Save your settings if desired by dialing the sequence shown at left.
↓	Hang up the handset.

Call Diversion When Busy

↑	Pick up the handset.
#43 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#9100*	Save your settings if desired by dialing the sequence shown at left.
↓	Hang up the handset.

Call Diversion After the Third Ring or When Busy

↑	Pick up the handset.
#44 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#9100*	Save your settings if desired by dialing the sequence shown at left.
↓	Hang up the handset.

Call Diversion Immediately by Ringing

☎	Pick up the handset.
#45 Ext. * XNo./Ext. *	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Disabling Call Diversion

☎	Pick up the handset.
#40 Ext. **	Dial the sequence shown at left.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN analog VoIP

Three-Party Conference Call

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

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

☎	Pick up the handset.
⌨	Dial the external number of the first party. Talk.
R	Press the Hold button.
⌨	To dial a second call, simply dial either the desired extension number or the outside line access “o” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
R3	Dial the sequence shown at left to begin a three-party conference call.

3	Now all three participants can confer together. If either of the other two parties hangs up, your connection with the remaining participant remains active.
0	You can end the three-party call by hanging up the handset.
R2	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 your initiated the three-party conference is now active again. The other call is on hold. You can alternate between the two connections by dialing the same sequence again.

analog

Using FRITZ!Box Fon WLAN Features on the Analog Line

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

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

ISDN analog

Call Forwarding (Call Diversion via the Central Exchange)

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

In addition to call forwarding, there is also call diversion via FRITZ!Box Fon WLAN. Use this kind of call diversion to divert calls to internal and external lines. See the section “Call Diversion over FRITZ!Box Fon WLAN” from page 90 for more information.

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

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

Call Forwarding Immediately

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

Call Forwarding Immediately for Your Extension’s Outgoing Caller ID

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

Call Forwarding Immediately for Any MSN

☎	Pick up the handset.
✱21✱ XNo. ✱ MSN #	Dial the sequence shown at left.
⋯	Wait for the acknowledgement tone.
☎	Hang up the handset.

Call Forwarding Immediately for All MSNs

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

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

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

Disable Call Forwarding Immediately for Any MSN

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

Disable Call Forwarding Immediately for All MSNs

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

Call Forwarding When Busy

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

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

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

Call Forwarding When Busy for Any MSN

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

Call Forwarding When Busy for All MSNs

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

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

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

Call Forwarding When Busy for Any MSN

☎	Pick up the handset.
✱67✱✱ MSN #	Dial the sequence shown at left.
⋯	Wait for the acknowledgement tone.
☎	Hang up the handset.

Disable Call Forwarding When Busy for All MSNs

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

Call Forwarding Delayed

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

Call Forwarding Delayed for Your Extension's Outgoing Caller ID

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

Call Forwarding Delayed for Any MSN

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

Call Forwarding Delayed for All MSNs

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

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

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

Disable Call Forwarding Delayed for Any MSN

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

Disable Call Forwarding Delayed for All MSNs

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

ISDN analog VoIP

Caller ID Suppression for Outgoing Calls (CLIR)

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

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

Enabling CLIR Permanently

☎	Pick up the handset.
#51 Ext. *1*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Disabling CLIR Permanently

☎	Pick up the handset.
#51 Ext. *0*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN analog VoIP

Displaying the Incoming Caller ID (CLIP)

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

This feature is only effective if your telephone supports CLIP.

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

Enabling CLIP

☎	Pick up the handset.
#50 Ext. *10*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100*	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Disabling CLIP

☎	Pick up the handset.
#50 Ext. *00*	Dial the sequence shown at left. Type in the number of the extension in the "Ext." field.
#9100*	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN

Connected Line Identification Restriction and Presentation (COLR / COLP)

By default, a caller's display always shows the Multiple Subscriber Number (MSN) of the extension she or he dialed. If you accept the call at another extension, the MSN of this extension will be displayed, as long as the caller is using an ISDN phone with the COLP feature enabled. If you do not want the caller to know that the call has been picked up at another extension (see Page 83) and thus do not wish this number to be displayed, you have the option of suppressing transmission of the connected line. The caller's display will continue to show the number she or he called.

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

Enabling Connected Line Identification Restriction Permanently

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

☎	Pick up the handset.
#53 Ext. *10*	Dial the sequence shown at left to disable transmission of the connected line number. Type in the number of the extension in the "Ext." field.
#9100*	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

Enabling Connected Line Identification Presentation Permanently

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

☎	Pick up the handset.
#53Ext.*00	Dial the sequence shown at left to enable transmission of the connected line number. Type in the number of the extension in the "Ext." field.
#9100	Save your settings if desired by dialing the sequence shown at left.
☎	Hang up the handset.

ISDN analog VoIP

Call Waiting

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

For instructions on how to turn the "Call Waiting" function on and off, see the section "Call Waiting Option" on page 87.

R2	To accept a waiting call, dial the sequence shown at left. Your original call is now on hold.
R1	To return to your original connection, dial the sequence shown at left. You can also accept to 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.
R0	To reject a waiting call, dial the sequence shown at left.

ISDN analog VoIP

Explicit Call Transfer (ECT)

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

Explicit Transfer of One Active and One Held Connection

	Pick up the handset.
	Dial the external number of the first party. Talk.
R	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “0” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	To clear your connections while allowing the external parties to continue the call, connect the parties with each other.
R4	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.

Explicit Call Transfer from a Three-party Conference Call

	Pick up the handset.
	Dial the external number of the first party. Talk.
R	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “o” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
R3	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.
R2	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 your 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.
R4	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.

ISDN

One-time Explicit (External) Call Transfer

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

	Pick up the handset.
*32#	Dial the sequence shown at left. You hear the external dial tone.
	Dial the external number of the first party. Talk.
R	Press the Hold button.
	To dial a second call, simply dial either the desired extension number or the outside line access “0” followed by the desired external number. You can now talk to the second subscriber while your first call is on hold.
	To clear your connections while allowing the external parties to continue the call, connect the parties with each other.
R4	Dial the sequence shown at left. The connection on hold and the active connection are connected with each other. The external parties continue the call while you clear the connection.
	Hang up the handset.

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

ISDN

Call-back on Busy (CCBS)

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

This feature is supported for both external and internal connections.

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

To enable this feature, proceed as follows:

	You have just dialed a number and now you hear the busy signal.
5	If the call is not answered, within twenty seconds, either dial the number "5"
	or
R*37#	the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset.
	As soon as the subscriber you dialed hangs up, your telephone will ring.
	Pick up the handset. The subscriber's number is dialed again automatically.

ISDN

Call-back on no Response (CCNR)

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

This feature is supported for both external and internal connections.

This command can be activated five times for each port.

To enable this feature, proceed as follows:

	You have just dialed a number and hear a ring tone.
5	If the call is not answered, within twenty seconds, either dial the number "5"
	or
R*37#	the sequence shown at left.
	Wait for the acknowledgement tone.
	Hang up the handset. As soon as the party you dialed conducts a conversation from her or his phone and this call is ended, your phone rings.
	Pick up the handset. The number of the remote party is dialed automatically.

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

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

ISDN

Suspend/Resume

The "Suspend/Resume" feature, also known technically as "Terminal Portability", allows you to suspend an existing connection and resume it at another point on the S_0 bus. The connection can be resumed at a different ISDN terminal device (such as an ISDN telephone) that is connected to your BRI line along with FRITZ!Box Fon WLAN.

To suspend a call, proceed as follows:

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

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

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

To resume the connection, proceed as follows:

☎	Pick up the handset again. (You may not have a call on hold. Otherwise, FRITZ!Box Fon WLAN will attempt to suspend it.)
✱1PC✱	Dial the sequence shown at left. Type in the parked-call ID as “PC”. The parked-call ID is the number you entered when you suspended the call.

ISDN

Call Tracing (MCID)

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

R✱39#	Dial the sequence shown at left.

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

ISDN

Using Keypad Messages

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

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

Entering Keypad Messages on an Extension with Automatic Outside Dialing

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

Entering Keypad Messages on an Extension without Automatic Outside Dialing

☎	Pick up the handset.
0✱# Seq	Dial the sequence shown at left. “Seq” stands for the keypad sequence you received from your ISDN provider.

11 Information, Updates and Support

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

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

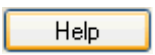
11.1 Sources of Information

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

Documentation

FRITZ!Box Fon WLAN includes comprehensive documentation in a variety of formats:

- The Readme on FRITZ!Box Fon WLAN
  The Readme contains the latest information which was not yet available at the time the manual was printed. The Readme file is included on the FRITZ!Box Fon WLAN CD and in the “FRITZ!Box Fon WLAN” entry in the start menu.



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

Internet

AVM provides comprehensive information on the AVM home page. Enter the following address:

www.avm.de/en

- Click “Products” for the latest information about all AVM products as well as announcements of new products and product versions.

11.2 Updates

AVM makes new drivers for FRITZ!Box Fon WLAN and updates for the PBX software available free of charge over the Internet.

To download updates from the Internet, please enter the following URL:

www.avm.de/en/download

Driver software for FRITZ!Box Fon WLAN can be downloaded from this location.

The AVM FTP server can also be used to download current driver software. Click the "FTP Server" link in the download area, or enter the following address:

www.avm.de/ftp

11.3 Assistance from AVM Support

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

AVM's Support team is at your service with direct assistance should problems arise during installation, the initial configuration and your first steps in operating FRITZ!Box Fon WLAN.

The support desk can be reached by e-mail or by fax. AVM Support then will contact you to assist in solving your problem. You will receive an e-mail or a fax.

Support by E-mail

Support requests can be sent to AVM by e-mail. Please use the AVM Support request form at:

www.avm.de/en/service/support

Select the product for which you require technical support. Fill out the form and send it to AVM support by clicking the "Send" button.

Support by Fax

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

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+49 (0)30 / 39 97 62 66
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Prepare the following information for your Support consultant:

- Your name and address.
- An e-mail address or fax number at which you can be reached.
- The serial number of the product. The number is printed on the sticker on 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 XP or Windows 98?)
- Is FRITZ!Box Fon WLAN connected using the USB cable or the network cable?
- At what step of the installation or in which application does an error message appear? What is the exact wording of the message?
- With which USB driver version is FRITZ!Box Fon WLAN installed? See the Device Manager for the version number.
- Which firmware does FRITZ!Box Fon WLAN use? The firmware version is displayed on the "DSL Info" page of the FRITZ!Box Fon WLAN user interface.

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

12 Product Details

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

12.1 FRITZ!Box Fon WLAN LEDs

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

LED		Event Type
Power	on	FRITZ!Box Fon WLAN ready for operation; power supply is connected and the DSL line is ready for operation
	flashes	The device is connected to the power mains, but the connection to DSL has been lost
Internet	on	a telephone connection to the Internet is active
	flashes	there are messages in your mailbox (this function must be supported by your Internet telephony provider)
Fixed Line	on	a telephone connection to the fixed-line network is active
	flashes	there are messages in your mailbox (this function must be supported by your Internet telephony provider)
DSL	on	displays existing Internet connections
INFO	flashes	the value specified for the online meter has been reached firmware will be updated
	on	a telephone connection between two Internet telephony subscribes is active, the call is free of charge (this feature must be supported by your Internet telephony provider)

12.2 Technical Specifications of FRITZ!Box Fon WLAN

Ports and Interfaces

- DSL line

  Standard ITU G.992.1 Annex A or Annex B (depending on the FRITZ!Box Fon WLAN 7050 model)

- One USB port (USB version 1.1)
- Two LAN ports via RJ45 sockets (standard Ethernet, 10/100 base-T)
- Two extensions over RJ11 sockets
- One extension connected by wire clips
- One ISDN S_0 NT port

  S_0 bus with support for ISDN telephony devices; the CIP services voice, telephony, audio 3.1 and Fax G2/G3 are supported.

- One analog or ISDN socket
- Two a/b ports for connecting two extensions via RJ11 sockets
- WLAN

  WLAN access point with support for radio networks in accordance with IEEE 802.11b (11 Mbit/s) and IEEE 802.11g (54 Mbit/s). The 802.11g++ standard is also supported and can be used when a compatible WLAN adapter is installed.

Router Function

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

User Interface and Display

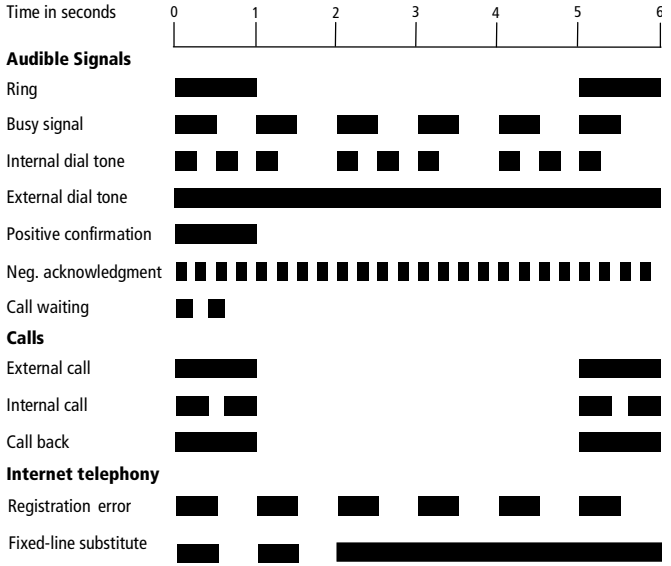
- Configuration and status messages via an Internet browser of a connected computer
- Five LEDs indicate the condition of the device

Physical Specifications

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

12.3 Audible Signals

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



Handset and ring patterns on FRITZ!Box Fon WLAN 7050

Index

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Declaration of CE Conformity

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

herewith declares that the product

Product	FRITZ!Box Fon WLAN 7050
Type	ADSL-WLAN Router

complies with the following directives:

- 1999/5/EEC R&TTE Directive:Radio Equipment and Telecommunications Terminal Equipment
- 89/336/EEC 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:

- CTR 3/1998.06.17
- EN 55022/9.98 + A1/10.00 + A2/01.03 Class B
  EN 55024/9.98 + A1/10.01 + A2/01.03
  EN 301489-1/2001
  EN 301489-17 (08.2002)
- EN 60950/2001
- ETSI TS 101 388, ITU-T G.992.1, ITU-T G.994.1, ETSI ETR328
- EN 300328-2 (12.2001)
  EN 300328-1/7.2001

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

Berlin, 01/03/2005 Peter Faxel, Technical Director