FRITZ!WLAN
USB Stick N **2.4**

Installation,
Configuration
and Operation

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FRITZ!WLAN USB Stick N 2.4

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Table of Contents

Safety Instructions

When working with the FRITZ!WLAN USB Stick N, follow the instructions below to protect yourself and the FRITZ!WLAN USB Stick N from damage.

- Do not install FRITZ!WLAN USB Stick N during an electrical storm.

- Unplug the FRITZ!WLAN USB Stick N from the computer during an electrical storm.

- Never let liquids get inside the FRITZ!WLAN USB Stick N. Otherwise, electric shocks or short circuits may result.

- Protect the FRITZ!WLAN USB Stick N from dust, moisture and steam. Clean the FRITZ!WLAN USB Stick N with a slightly moist, lint-free cloth. Intensive cleaning products or solvents are not suitable.

- FRITZ!WLAN USB Stick N is intended for indoor use only.

- Do not open the FRITZ!WLAN USB Stick N housing. The device contains hazardous components and should only be opened by authorized repair technicians.

Disposal

The symbol next to this text means that old appliances and electronic parts must be disposed of separate from household waste.

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

Symbols and Highlighting

The following highlighting and icons are used to designate important information:

This symbol indicates useful hints to assist you in working with the FRITZ!WLAN USB Stick N.

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

The table below explains the highlighting used in this manual.

Highlighting	Function	Example
Quotation marks	Keys	"F1" key
	Buttons	"Help"
	Settings pages	"Advanced"
	Menus	"Edit / Paste"
	Commands	"Copy"
	File paths	"C:/My Documents"
	File names	"Documentation"
Pointed brackets	Joker	‹MSN›
Bold	Emphasis	Do **not** click the button...

1 FRITZ!WLAN USB Stick N 2.4
An Overview

FRITZ!WLAN USB Stick N 2.4 is a WLAN adapter for the Universal Serial Bus (USB).

With the FRITZ!WLAN USB Stick N, you can connect your computer directly with a WLAN access point, for example, with a FRITZ!Box WLAN by AVM. You can also connect to other WLAN devices, to printers, and to PDAs. This grants you high mobility while allowing you to work with all of the advantages of wireless connections, high throughput rates and fast connections at maximum security.

1.1 Package Contents

The package contains:

- one AVM WLAN-Controller FRITZ!WLAN USB Stick N 2.4
- one USB docking station
- one FRITZ!WLAN USB Stick N CD with
  - driver software
  - control software with Online Help
  - manual in PDF format
- one printed quick guide

1.2 Operation Requirements

In order to operate FRITZ!WLAN USB Stick N 2.4, your computer must meet the following requirements:

- A free port on your computer for USB devices. A USB 2.0 port is recommended; USB 1.1 works at a lower throughput rate.
- A computer with one of the following operating systems installed:
  - Microsoft Windows 7 (32- or 64-bit edition)
  - Microsoft Windows Vista (32- or 64-bit edition)

– Windows XP (32- or 64-bit edition)

Installation of the latest service packs and updates is recommended.

- pentium-class computer or notebook (500 MHz CPU or better)
- at least 64 MB RAM and 5 MB free memory on the hard drive
- one CD drive

You can install FRITZ!WLAN USB Stick N if your computer meets all of these requirements.

If you would like to connect additional computers, additional FRITZ!WLAN USB Sticks are required.

1.3   LEDs

During operation, the LEDs on the FRITZ!WLAN USB Stick N indicate the following:

| green: | USB | remains lit as soon as the FRITZ!WLAN USB Stick N has been detected by the operating system |
| yellow: | WLAN | flashes during data exchange between WLAN devices |

1.4 Technical Specifications

LEDs:	2 (connection / activity)
USB port:	USB version 2.0, compatible with USB 1.1 with reduced data through-put
WLAN module:	Support for radio network in accordance with IEEE 802.11n IEEE 802.11g and IEEE 802.11b
Frequency band:	2.4 GHz
Encryption:	WPA (Wi-Fi Protected Access) / WPA2 (802.11i) / WEP 64-/128-bit (Wired Equivalent Privacy)
Antennae:	integrated
Operating systems supported:	Windows 7 (32-bit or 64-bit edition), Windows Vista (32-bit or 64-bit edition), Windows XP (32-bit or 64-bit edition)
Dimensions (WxDxH):	approx. 53 x 20 x 11 mm
Weight:	approx. 10 g
Power supply:	powered by USB, no external power supply required
Maximum power consumption:	1.35 W (transfer)
Transmitter power:	max. 76 mW
Receiver sensitivity:	min. -101 dBm
Supported data throughput rates (gross):	802.11n up to 150 Mbit/s* 802.11g up to 54 Mbit/s* 802.11b up to 11 Mbit/s*
	* The user data rate that can actually be achieved is somewhat below the specified value (see the table on "Standards for the Throughput Rate" on page 30).

|	
Firmware:	can be updated
Channels:	1 through 13 (ETSI)
Ambient temperature (during operation):	-5 to 45ºC
Ambient temperature (idle):	-10 to 70ºC
Humidity (idle/operation):	5 to 90%, no-condensation
Certification:	CE

2 AVM Stick & Surf Technology
Connecting Securely with a FRITZ!Box WLAN

With the AVM Stick & Surf technology the FRITZ!WLAN USB Stick N can take over the WLAN security settings from FRITZ!Box WLAN products. This allows a secure WLAN connection to be established between your computer and your FRITZ!Box without any additional configuration.

For this, your FRITZ!Box WLAN must be equipped with a port for USB devices (USB host function).

In order to use the AVM Stick & Surf technology for secure WLAN connections, perform the following steps:

1. Insert the FRITZ!WLAN USB Stick N into the USB port on your FRITZ!Box.
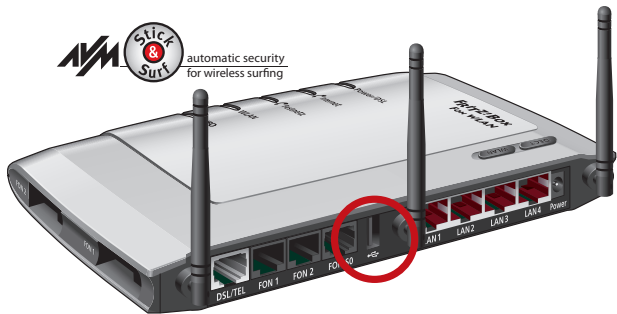
Port for USB devices (here on the FRITZ!Box Fon WLAN 7270)

2. The FRITZ!Box "INFO" LED begins flashing to indicate that the WLAN security settings are being transmitted to the FRITZ!WLAN USB Stick N.

3. When data transmission has been completed, the "INFO" LED stops flashing on the FRITZ!Box and remains lit.

4. Remove the FRITZ!WLAN USB Stick N from the FRITZ!Box USB port.

The WLAN security settings have now been transmitted to the FRITZ!WLAN USB Stick N.

As soon as you connect the FRITZ!WLAN USB Stick N to your computer, the security settings of your WLAN are implemented in the FRITZ!WLAN control software and then deleted from the Stick. The AVM Stick & Surf logo appears and a WLAN connection to your FRITZ!Box is established automatically.

If you are using a FRITZ!Box WLAN without a USB port or a device from a third-party manufacturer as a WLAN access point, you can still use WPS (Wi-Fi Protected Setup) or enter the network key manually to establish a secure WLAN connection.

For more information, see the section "WPS (Wi-Fi Protected Setup)" from page 35"WPS (Wi-Fi Protected Setup)" from page 35 and the Help on the FRITZ!WLAN control software, which is available as soon as your FRITZ!WLAN USB Stick N has been installed.

3 Installation
Installing FRITZ!WLAN USB Stick N

The FRITZ!WLAN USB Stick N can be installed in the operating systems Windows 7 (32-bit and 64-bit edition), Windows Vista (32-bit and 64-bit edition) and Windows XP (32-bit and 64-bit edition).

Please install the current Microsoft Service Packs using Microsoft Windows Update and use a USB 2.0 port for optimum performance of your FRITZ!WLAN USB Stick N.

You can change the display of menus and folders in most operating systems. The following instructions are based on the standard installation of each operating system.

If you have a FRITZ!Box WLAN with USB host function, first use Stick & Surf (see "AVM Stick & Surf Technology" from page 12) to transmit the WLAN security settings from your FRITZ!Box WLAN to your computer.

3.1 Installation in Windows 7 / Windows Vista 32-bit Edition

Administrator rights are required to install the FRITZ!WLAN USB Stick N in Windows 7 or Windows Vista! Over the course of installation Windows will request the rights required for installation. Answer every inquiry by clicking "Continue" in the dialog.

Perform the following steps to install the software:

1. Switch on the WLAN device you wish to connect to.

2. Switch on your computer.

3. Insert the FRITZ!WLAN USB Stick N into the USB port on your computer.

    Windows detects the FRITZ!WLAN USB Stick N automatically. This process may take some time.

4. In the dialog for running the "AVM FRITZ!WLAN USB Stick N Installation", click the "Install or Run FRITZ!WLAN USB Stick N" entry.

5. Then click "Yes" (Windows 7) or "Continue" (Windows Vista) in the "User Account Control" dialog.

    The drivers and the control software for the FRITZ!WLAN USB Stick N will be installed now.

    If you are prompted to do so, insert the FRITZ!WLAN USB Stick N CD and follow the instructions on the screen.

    If an additional Windows dialog asks if you want to install software not digitally signed by Microsoft, click "Continue Anyway". This request depends on the driver signature options set on your computer.

    A progress bar indicates the progress and the conclusion of the installation.

This completes the driver installation for the FRITZ!WLAN USB Stick N. Continue reading from section "Information on WLAN Connections" on page 18.

3.2   Installation in Windows 7 / Windows Vista 64-bit Edition

Administrator rights are required to install the FRITZ!WLAN USB Stick N in Windows 7 64-bit Edition or Windows Vista 64-bit Edition!

Perform the following steps to install the software:

1. Switch on the WLAN device you wish to connect to.

2. Switch on your computer.

3. Insert the FRITZ!WLAN USB Stick N into the USB port on your computer.

    Windows detects the FRITZ!WLAN USB Stick N automatically. This process may take some time.

4. In the "Autoplay" dialog, select the "FRITZ!WLAN USB Stick N Installation" option.

5. Then click "Yes" (Windows 7) or "Continue" (Windows Vista) in the "User Account Control" dialog.

6. In the "Found New Hardware" window, select "Locate and install driver software (recommended)".

    If Windows reports that the program may not have been installed correctly, click "The Program was installed correctly." or "Cancel".

7. Then click "Yes" or "Continue" in the "User Account Control" dialog.

8. If Windows asks whether you would like to search for drivers online, select the "Do not search for drivers online" option.

9. Insert the FRITZ!WLAN USB Stick N CD when Windows prompts you to do so.

    The driver software is installed automatically.

This completes the driver installation for the FRITZ!WLAN USB Stick N. Continue reading from section "Information on WLAN Connections" on page 18.

3.3 Installation in Windows XP 32-bit Edition

Administrator rights are required to install the FRITZ!WLAN USB Stick N in Windows XP!

Perform the following steps to install the software:

1. Switch on the WLAN device you wish to connect to.

2. Switch on your computer.

3. Insert the FRITZ!WLAN USB Stick N into the USB port on your computer.

    Windows detects the FRITZ!WLAN USB Stick N automatically. This process may take some time.

4. The drivers and the control software for your FRITZ!WLAN USB Stick N are installed automatically.

If you are prompted to do so, insert the FRITZ!WLAN USB Stick N CD and follow the instructions on the screen.

If an additional Windows dialog asks if you want to install software not digitally signed by Microsoft, click "Continue Anyway". This request depends on the driver signature options set on your computer.

A progress bar indicates the progress and the conclusion of the installation.

This completes the driver installation for the FRITZ!WLAN USB Stick N. Continue reading from section "Information on WLAN Connections" on page 18.

3.4   Installation in Windows XP 64-bit Edition

Administrator rights are required to install the FRITZ!WLAN USB Stick N in Windows XP 64-bit Edition!

Perform the following steps to install the software:

1. Switch on the WLAN device you wish to connect to.

2. Switch on your computer.

3. Insert the FRITZ!WLAN USB Stick N into the USB port on your computer.

   Windows detects the FRITZ!WLAN USB Stick N automatically. This process may take some time.

4. When asked whether you would like to connect to Windows Update, select the option "No, not this time" and then click "Next".

   The "Add New Hardware" Wizard starts and searches for drivers.

5. Insert the FRITZ!WLAN USB Stick N CD and select the option "Install software automatically (recommended)". Confirm with "Continue".

    If an additional Windows dialog asks if you want to install software not digitally signed by Microsoft, click the "Continue Anyway" button. This request depends on the driver signature options set on your computer.

6. A message appears: "The Wizard has finished installing the software for this device". Conclude the installation by clicking "Finish".

This completes the driver installation for the FRITZ!WLAN USB Stick N. Continue reading in the next section, "Information on WLAN Connections".

Information on WLAN Connections

If you performed **installation using Stick & Surf,** no further steps are necessary to establish a WLAN connection. Your FRITZ!Box WLAN will be identified automatically as WLAN access point. A WLAN connection you can use immediately will be established.

If you performed **installation without using Stick & Surf,** you have to select the WLAN remote site (the WLAN access point) to connect with manually in your WLAN control software. Please see the corresponding chapter of the control software for more information:

- If you are using the control software FRITZ!WLAN, please continue by reading the section "Establishing a Connection with a WLAN Access Point (Infrastructure Network)" from page 21.

- If you are using Microsoft Windows's WLAN Service, depending on the version of Windows you use, continue reading in the section "Establishing a WLAN Connection (Windows 7)" from page 25, "Establishing a WLAN Connection (Windows Vista)" from page 27 or "Establishing a WLAN Connection (Windows XP from Service Pack 2)" from page 28.

4 The FRITZ!WLAN Control Software
Establishing and Clearing WLAN Connections

With the FRITZ!WLAN USB Stick N you can establish wireless network connections (WLANs) with various WLAN devices. The FRITZ!WLAN control software is available to manage all these WLAN connections.

With FRITZ!WLAN you can configure, establish and clear WLAN connections as well as view connection information.

4.1 Operating FRITZ!WLAN

After FRITZ!WLAN USB Stick N is installed, FRITZ!WLAN appears as a program icon in the notification area of the task bar. You can open the user interface of the control software in two ways:

- Double-click the FRITZ!WLAN program icon in the notification area of the Windows task bar.

- Or click the FRITZ!WLAN program icon with the right mouse button to open the context menu and select the "Display Connection..." command.
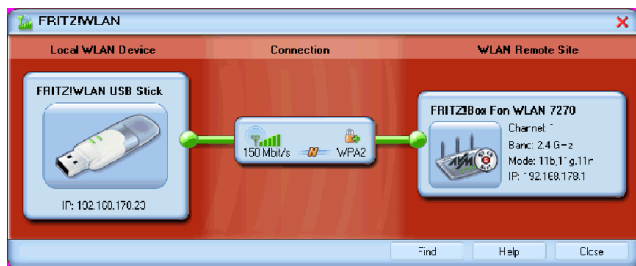
FRITZ!WLAN user interface (connection example)

User Interface   All elements of a WLAN connection are displayed as icons in the user interface. The user interface window is divided into three sections.

The left side shows your own WLAN device, the FRITZ!WLAN USB Stick N 2.4, complete with name and IP address.

The middle section displays the icon of the WLAN connection as a box with links to the devices on the left and on the right. The small icons in the box display the connection quality and the encryption used.

The right side shows the WLAN remote site with which you are currently connected or were connected most recently.

Context Menus   The features of FRITZ!WLAN are available using the context menu:

1.   Click the device or connection icons in the FRITZ!WLAN user interface, or the FRITZ!WLAN program icon in the notification area of the task bar.

    The corresponding context menu opens.

2.   Select the desired command from the list.

Each icon displays its own selection of commands. You can search for WLAN devices at your location and configure them as WLAN remote sites, establish or clear WLAN connections to known remote sites, and have information displayed on device and connection properties.

For more information, please see the section "Establishing a WLAN Connection" from page 21 or click the "Help" button in the user interface to open the FRITZ!WLAN Online Help.

Connection Status   The colors of the connection icons in the FRITZ!WLAN user interface and the FRITZ!WLAN program icon in the notification area of the task bar show the current condition of the connection:

Icon	Meaning
and	WLAN connection active
	WLAN connection is being established or the ad-hoc network you offered is ready to connect
and	No WLAN connection

4.2   Establishing a WLAN Connection

With FRITZ!WLAN you can establish WLAN connections to WLAN remote sites (access points), which can provide access to DSL, to printers, to mobile phones, PDAs, and even to other WLAN clients. Direct connections are also possible to other FRITZ!WLAN USB Sticks.

No matter which device you want to connect to, connecting with FRITZ!WLAN is always based on the principle: search, find, and connect.

There are two basic types of WLAN connections:

Infrastructure Network

When WLAN users connect with a WLAN access point like the FRITZ!Box WLAN, they establish what is called an infrastructure network. In this network the WLAN access point manages bandwidth so that each device receives the optimum amount. The access point can be used to establish connections to a cable-connected network or the Internet.

In the device lists in the FRITZ!WLAN control software, this type of connection is designated by the infrastructure network icon.

Ad-hoc Network

When WLAN users connect directly with each other without using an access point, they have established an ad-hoc network. This kind of direct connection is practical when WLAN users in the immediate vicinity want to exchange data with each other quickly and directly. The ad-hoc network participants have to share the existing bandwidth.

In the device lists in the FRITZ!WLAN control software, this type of connection is designated by the ad-hoc connection icon.

Establishing a Connection with a WLAN Access Point (Infrastructure Network)

If you performed **installation using Stick & Surf**, no further steps are necessary to establish a WLAN connection. Your FRITZ!Box WLAN will be identified automatically as WLAN access point. A WLAN connection you can use immediately will be established.

If you performed **installation without using Stick & Surf**, you have to select the WLAN remote site (the WLAN access point) to connect with manually. In this case the control software FRITZ!WLAN automatically searches for WLAN devices at your location. Once a list of the WLAN access points found is displayed, proceed as follows:

1. Select the WLAN device to which you would like to establish a connection and confirm your selection by clicking "Select" or "Connect".

2. Enter the network key of the WLAN access point.

    On the AVM FRITZ!Box family products, the network key is printed on the underside of the device.

3. The WLAN connection is established.

Once the connection is established, the **WLAN icon** in the notification area of the Windows task bar turns green. Click the icon to display connection details.

An active WLAN connection between the FRITZ!WLAN USB Stick N and a known WLAN remote site that has been cleared because the computer has been shut down will be re-established automatically every time the computer is started whenever the remote site is accessible.

Connecting Two WLAN Users Directly (Ad-hoc Network)

To establish a direct connection via WLAN, one WLAN party has to offer an ad-hoc network that other ad-hoc parties may join.

How to Create an Ad-hoc Network

1. In the FRITZ!WLAN user interface, click the icon of the WLAN remote site with the right mouse button or click the FRITZ!WLAN program icon in the notification area of the task bar and select the command "Create Ad-hoc Network…".

    The "Ad-hoc Network" window opens.

2. Enter the WLAN key in the "WLAN key" field.

    All other WLAN parties of the ad-hoc connection must also enter this key.

    See also the encryption instructions in the section "Encryption" from page 33.

    Confirm the settings configured earlier for the ad-hoc network. If you would like to change these settings, click the "Edit" button.

3. Confirm with "OK".

The ad-hoc network is now ready for operation and awaits other WLAN users.

In the FRITZ!WLAN control software, yellow waves in the ad-hoc network icon indicate that it is ready to establish ad-hoc connections.

The connection icon in FRITZ!WLAN: ready for ad-hoc connections

How to Join an Ad-hoc Network

1. Open the FRITZ!WLAN control software on all of the computers to be connected to the ad-hoc network by double-clicking the FRITZ!WLAN icon in the notification area of the task bar.

2. Click the "Find" button to display the WLAN devices at your location.

    Possible ad-hoc parties found at your location are designated by the ad-hoc icon in the list of accessible WLAN devices.

3. Select the desired ad-hoc remote site in the list of WLAN devices found. Then click the "Select" button.

4. Next, enter the shared WLAN key in the "Ad-hoc Network" window and confirm your entry by clicking "OK".

See the encryption instructions in the section "Encryption" from page 33.

The ad-hoc network is displayed on the FRITZ!WLAN console as a known device and the WLAN connection is established.

The process of automatically assigning IP addresses can take up to 3 minutes and is signaled by a flashing IP traffic light in the control software.

Connecting to the Internet

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

Connecting Using the WLAN Access Point

The WLAN access point (FRITZ!Box WLAN, for instance) establishes the connection with the Internet. For this the account information of the Internet Service Provider must be configured in the WLAN access point. 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. With this configuration, the WLAN access point can be used as a router for multiple-workplace operation. Instructions on how to configure the WLAN access point for multiple-workplace operation are presented in your WLAN access point manual.

Establishing Connections Using the Computer

The computer to which a FRITZ!WLAN USB Stick N is connected establishes the Internet connections itself. In this case the WLAN access point works like a DSL modem and is responsible only for forwarding data. An Internet connection must be configured on the connected computer, using Internet access software (FRITZ!DSL, for instance) and the account information from an Internet Service Provider. The Internet access software is also required to establish Internet connections.

5   Microsoft WLAN Service
Establishing and Clearing WLAN Connections

In Windows 7, Windows Vista and Windows XP with Service Pack 2, the Microsoft WLAN service WZC (Wireless Zero Configuration) can be used to manage wireless devices rather than the FRITZ!WLAN program.

Information on the WLAN Control Software

In your FRITZ!WLAN USB Stick N, FRITZ!WLAN is provided as the default application for WLAN connections.

If you prefer to work with the Microsoft WLAN Service as WLAN control software, you can switch to this program as follows:

1.   Click the WLAN icon in the notification area of the task bar.

2.   Select the "Microsoft WLAN" entry.

Establishing a WLAN Connection (Windows 7)

To establish a WLAN connection in Windows 7 using Microsoft WLAN Service, work through the following steps:

1.   Click the Microsoft WLAN icon in the notification area of the Windows taskbar with the right mouse button.
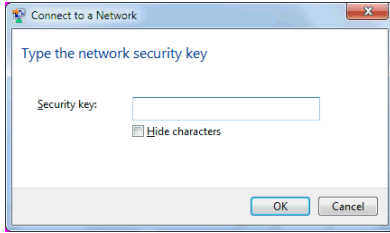
   All wireless networks found at your location (mostly WLAN access points) are displayed in a list.
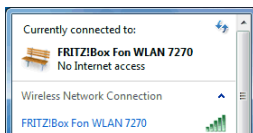
Available wireless networks (example view)

2.   Select the desired WLAN access point and click the "Connect" button.

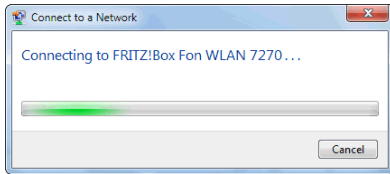   The window for entering the network security key opens:

Entering the network key

3. Enter the network security key of the selected WLAN access point in the "Security key" field. Click the "OK" button.

On the AVM FRITZ!Box family products the network key is printed on the underside of the device.

The WLAN connection is established.

Should difficulties arise in establishing a WLAN connection, see the sections "WLAN Connection Is Not Established" from page 41 and "Errors During Installation" on page 38.

For information on AVM Stick & Surf, see the section "AVM Stick & Surf Technology" from page 12.

To display all important status information for your WLAN connection, click the FRITZ!WLAN program icon in the notification area of the task bar.

## Establishing a WLAN Connection (Windows Vista)

To establish a WLAN connection in Windows Vista using Microsoft WLAN Service ("automatic WLAN configuration"), work through the following steps:

1. Click the Microsoft WLAN icon in the notification area of the task bar and select the option "Connect to a network".
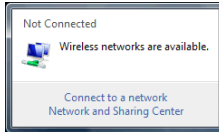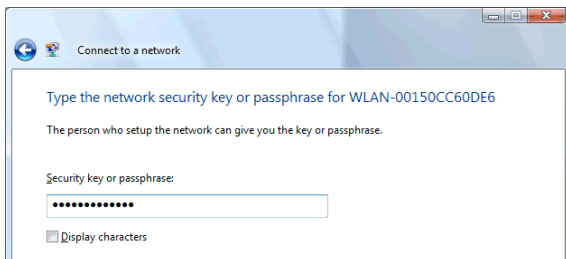

All wireless networks found at your location (mostly WLAN access points) are displayed in a list.
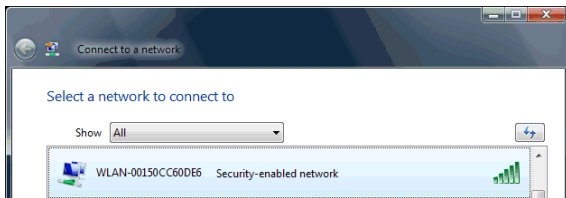
Available wireless networks (example view)

2. Select the desired WLAN access point and click the "Connect" button.

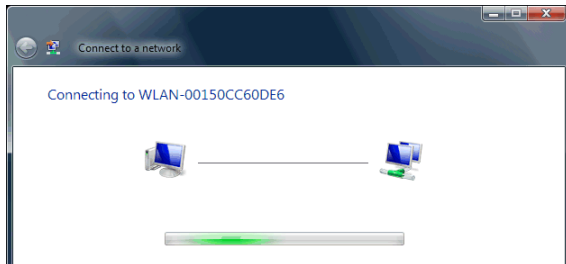The window for entering the network security key opens:

Entering the WLAN key

3. Enter the WLAN key of the selected WLAN access point in the "Security key or passphrase" field and click "Connect".

   On the AVM FRITZ!Box family products the network key is printed on the underside of the device.

The WLAN connection is established.

Should difficulties arise in establishing a WLAN connection, see the sections "WLAN Connection Is Not Established" from page 41 and "Errors During Installation" on page 38.

For information on AVM Stick & Surf, see the section "AVM Stick & Surf Technology" from page 12.

To display all important status information for your WLAN connection, click the FRITZ!WLAN program icon in the notification area of the task bar.

Establishing a WLAN Connection (Windows XP from Service Pack 2)

To establish a WLAN connection using Microsoft WLAN Service ("Wireless Zero Configuration Service") in Windows XP from Service Pack 2, proceed as follows:

1. Click the Microsoft WLAN icon in the notification area of the task bar.

   The "Wireless Network Connection" window opens. All wireless networks found at your location (mostly WLAN access points) are displayed in a list.

Available wireless networks (example of display)

2. Select the desired WLAN access point and click the "Connect" button.

   The "Wireless Network Connection" window is opened.

3. Enter the WLAN key of the WLAN access point in the "Network key" field.

   On the AVM FRITZ!Box family products the network key is printed on the underside of the device.

4. Repeat your entry in the "Confirm network key" field and then click the "Connect" button.
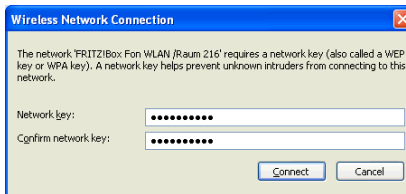
Entering the WLAN key

The WLAN connection is established.

Should difficulties arise in establishing a WLAN connection, see the sections "WLAN Connection Is Not Established" from page 41 and "Errors During Installation" on page 38.

For information on AVM Stick & Surf, see the section "AVM Stick & Surf Technology" from page 12.

To display all important status information for your WLAN connection, click the FRITZ!WLAN program icon in the notification area of the task bar.

6 More about WLAN
AVM and WLAN

WLAN (Wireless Local Area Network) is a radio technology that allows networks and access to the Internet to be provided without cable connections. This allows multiple users to share one wireless Internet connection.

6.1 Standards

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

The standards IEEE 802.11a, IEEE 802.11b, IEEE 802.11g and IEEE 802.11n define the transmission rate within a wireless LAN. The IEEE 802.11i standard is a security standard.

Standards for the Throughput Rate

Data Throughput

The FRITZ!WLAN USB Stick N 2.4 supports the 802.11n wireless standard and is downward compatible to 802.11b and g networks. The standard used in a given WLAN depends on the settings of the WLAN access point.

Standard	Frequency Band	Gross Data Throughput	Net Data Throughput up to
802.11b	2.4 GHz	11 Mbit/s	5 Mbit/s
802.11g	2.4 GHz	54 Mbit/s	25 Mbit/s
802.11n	2.4 GHz	150 Mbit/s	80 Mbit/s

The throughputs listed differentiate between gross and net transmission rates. The net speed describes the transmission rate of the user data.

Range	The range within a WLAN is highly dependent on the following three factors:

- the WLAN adapter used,
- the structural conditions, and
- the amount of radio traffic on the same frequency band. Other wireless networks may be active, but also what are known as analog interferers (for instance baby monitors, video bridges, DECT telephones, Bluetooth transmitters for mobile telephones, and microwave ovens).

IEEE 802.11b	With a maximum throughput rate of 11 Mbit/s, this is the oldest standard for radio networks in the 2.4-GHz frequency range (ISM). First-generation WLAN access points, for example, can use this standard to communicate with the FRITZ!WLAN USB Stick N.
IEEE 802.11g	This is currently the most common WLAN standard. It communicates with a maximum of 54 Mbit/s gross in the 2.4-GHz frequency range (ISM) and guarantees broad compatibility with many WLAN devices.
	However, due to heavy use of the 2.4-GHz range, interference is quite common.
IEEE 802.11n	This standard provides for high throughput speeds and ranges. The FRITZ!WLAN USB Stick N 2.4 supports 802.11n in the 2.4-GHz frequency band.

The use of the 802.11n standard—and thus the availability of higher throughput rates—is possible only if the WLAN connection is secured using the WPA2 security mechanism (AES-CCMP).

The Standard for Security

IEEE 802.11i The WPA2 security mechanism is defined in the IEEE 802.11i standard. WPA2 is an extension of the familiar security mechanism WPA (Wi-Fi Protected Access).

The main feature of the extension of WPA to WPA2 is the AES-CCM encryption process.

Mechanism	Encryption
WPA	TKIP (Temporary Key Integrity Protocol)
WPA2	TKIP
	AES-CCM based on the extremely secure AES (Advanced Encryption Standard) procedure. CCM (Counter with CBC-MAC) defines how the AES procedure is applied to WLAN packets.

The FRITZ!WLAN USB Stick N supports the AES encryption procedure as part of the WPA2 mechanism, and the TKIP encryption procedure as part of the WPA mechanism. This means that the FRITZ!WLAN USB Stick N can be used in combination with any WLAN access points that also support WPA2 with AES or WPA with TKIP.

6.2 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.

The necessary requirements for this, which contribute to the security of your WLAN and of your computers, are integrated in the FRITZ!WLAN control software.

Encryption

The most important security setting is encryption. The FRITZ!WLAN USB Stick N 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 be registered in the WLAN settings of the WLAN client and correspond with the WLAN settings of the WLAN access point.

- The FRITZ!WLAN USB Stick N uses WEP 64/128 with the setting "Open" or "Open Key", respectively. When establishing a WLAN connection using products from other manufacturers, always make sure that the setting "Open" or "Open Key" is set for registration or authentication in the manufacturer's software. If necessary, consult the manufacturer's documentation for more information.

- If you use a WEP key, make sure that it is the correct length.

WEP	ASCII Characters	Hex. Characters
64	5	10
128	13	26

- The WPA and WPA2 mechanisms provide for authentication while the connection is being established. The user data are encrypted using an automatically generated key. This key is regenerated at regular intervals.

If the WPA security mechanisms are supported by your WLAN remote sites, use WPA for your WLAN encryption. WEP is out of date and data encrypted with WEP can be deciphered within minutes.

6.3 Frequency Range

WLAN uses the frequency range around 2.4 GHz in the ISM band or, alternatively, the frequency range at 5 GHz.

With the FRITZ!WLAN USB Stick N 2.4 you can use the 2.4-GHz frequency band.

A WLAN in the 2.4-GHz frequency band works in the same band as Bluetooth, DECT, microwave devices, video bridges and baby monitors. This means that interference may 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.

In the 2.4-GHz frequency range the European regulation authorities have designated 13 channels for WLAN. One channel has a bandwidth of 20 or 40 MHz.

Channels located directly next to each other may overlap and result in mutual interference. For instance, if several WLANs are operated close to each other in the 2.4-GHz frequency range, a distance of at least five channels should be left empty between each two channels used. This means that if channel 1 is selected for one WLAN, the channels 6 through 13 can be selected for a second WLAN. This maintains the minimum distance between channels.

Should interference in a WLAN persist, the first step should be to select a different channel. If your WLAN access point is equipped with an autochannel function, you can automatically have it search for the WLAN channel in your frequency range that is subject to the least interference. For more instructions, see the section "WLAN Connection Is Not Established" from page 41.

Allocation of the WLAN Channels in the 2.4-GHz Range

Channel	Frequency (GHz)	Channel	Frequency (GHz)
1	2.412	8	2.447
2	2.417	9	2.452
3	2.422	10	2.457
4	2.427	11	2.462
5	2.432	12	2.467
6	2.437	13	2.472
7	2.442		

6.4 WPS (Wi-Fi Protected Setup)

The FRITZ!WLAN USB Stick N supports the standardized WPS networking procedure (Wi-Fi Protected Setup). With WPS you can establish a secure WLAN connection between your FRITZ!WLAN USB Stick N and your WLAN access point. All of the necessary WLAN security settings are transferred in the process.

When establishing a WLAN connection via WPS you can use either the push-button or the PIN method:

- For the **push-button method** (WPS-PBC) your WLAN access point must be equipped with a hardware or software switch that is used to enable WPS functionality.

- For the **pin method,** you enter the PIN specified by the FRITZ!WLAN USB Stick N in the WPS data of your WLAN access point.

WPS can be used only in combination with WLAN access points that also support WPS. See the documentation of your WLAN access point to find out whether it supports WPS and which connection methods can be selected.

Establish WLAN Connection Using WPS

Proceed as follows to establish a WLAN connection using WPS:

1. Double-click the program icon in the notification area of the Windows task bar to open the FRITZ!WLAN user interface, and then click the "Find" button.

   All WLAN devices found are displayed in the "Find and Select WLAN Devices" window. The WPS icon indicates which devices support WPS.
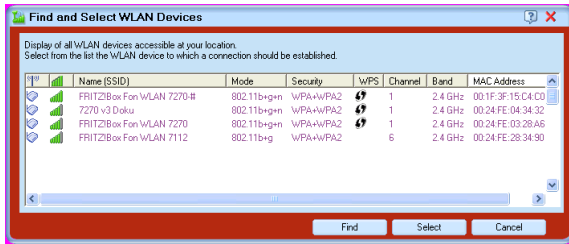
2. Select from the list the WLAN access point to which a connection is to be established, and then click the "Select" button.

3. If the device you selected supports WPS, next the "WPS Quick Connection" window will open.
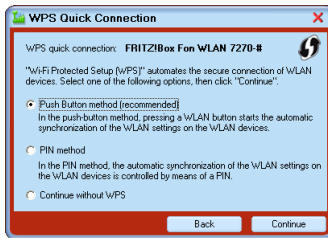
   Select the desired connection method here and follow the relevant instructions.

The WPS connection to the selected WLAN access point will be established automatically.

7   Uninstallation
Removing Software and Program Entries

The instructions for removing the FRITZ!WLAN USB Stick N are valid for all operating systems. The FRITZ!WLAN USB Stick N driver software and the FRITZ!WLAN control software are removed at the same time.

Proceed as follows:

1.   Insert the FRITZ!WLAN USB Stick N CD.

2.   Run the "setup.exe" file.

For the operation systems Windows 7 64-bit edition, Windows Vista 64-bit edition and Windows XP 64-bit edition, the required setup.exe file is located in the "Windows7_Vista_XP_x64" folder on the CD.

3.   Click "Continue" in the following window.

4.   Select the "Removal" option.

The FRITZ!WLAN USB Stick N will be removed.

5.   Click "Finish" to complete the process of uninstalling the software.

8 Troubleshooting
Help for Errors

This chapter provides assistance if you are having problems with the WLAN connection, or if you want to change the IP settings on your computer.

8.1 Errors During Installation

If an error message is returned during installation of the FRITZ!WLAN USB Stick N, this can have various causes. Check the possible causes and attempt to resolve the error.

Checking the Installation

After installing the FRITZ!WLAN control software and the FRITZ!WLAN USB Stick N, the FRITZ!WLAN icon does not appear in the notification area of the Windows task bar.

Possible Cause

The FRITZ!WLAN software or drivers for the FRITZ!WLAN USB Stick N were not installed correctly or the device is disabled in the "Device Manager".

Remedy

First check the "Device Manager" in the "Control Panel" to see whether the device is listed and disabled. Enable the device.

If it is not listed, uninstall the FRITZ!WLAN USB Stick N and repeat the installation as described in the manual.

Checking the USB Port

The computer does not detect the FRITZ!WLAN USB Stick N.

Possible Cause

The FRITZ!WLAN USB Stick N is not inserted correctly into the USB port or the chip set drivers of your computer are out of date.

Remedy

Make sure that the FRITZ!WLAN USB Stick N is inserted firmly into the USB port. Pull the FRITZ!WLAN USB Stick N out if it is not positioned correctly and insert it into the USB port again.

Install the latest chip set drivers. See the documentation for your mainboard to find out which drivers your computer requires. To obtain the latest chip set drivers, visit the Internet pages of the following manufacturers:

www.intel.com

www.nvidia.com

www.viaarena.com

Uninstalling the WLAN Adapter Software

The AVM FRITZ!WLAN software is installed, but every time Windows 7/Vista/XP is restarted, the Microsoft WLAN control is applied, no matter which settings were configured before.

Possible Cause

The FRITZ!WLAN USB Stick N is utilized in the notebook along with an Intel Pro Wireless Adapter.

Remedy

Remove the Intel Pro Wireless Software (not the driver) to eliminate the problem.

Installing the Latest Service Packs

The FRITZ!WLAN USB Stick N is detected automatically in the Windows XP operating system. However, the device is not fully functional.

Possible Cause
The necessary service packs have not been installed.

Remedy
USB 2.0 support was integrated into the operating systems for the first time with the Microsoft Service Packs. To ensure full operation capability, install the current service packs and updates using the Windows Update function. We recommend at least Service Pack 2 for Windows XP.

For more information on the subject of support for USB 2.0 in Microsoft operating systems, see:

USB 2.0 support in Windows XP

Knowledge base article 822603

8.2 WLAN Connection Is Not Established

Make sure that the settings in the WLAN access point and in the FRITZ!WLAN control software agree with the entries in the following table. Try again to establish a WLAN connection.

For the settings in this table it is presumed that an AVM WLAN product from the FRITZ!Box family is used with WPA/WPA2 encryption (mixed mode). In general it is always advisable to secure your WLAN using the most secure mechanism supported by your WLAN remote site.

Setting	Preset Value
SSID (name of the WLAN radio network)	Name of the WLAN access point, for example: FRITZ!Box Fon WLAN 7270
Encryption	WPA or WPA2
Key	The key (ASCII format) is printed on the underside of the device and on the back of the installation CD.
Type of authentication/registration	Pre-shared key
Network mode	Infrastructure
Frequency band	2.4-GHz (mode: 802.11n/g/b)
Channel	The channel (1 - 13) depends on the settings of the WLAN access point.

For more support on problems with WLAN connections, see the following sections.

Checking the Data of the WLAN Connection

Could not register at the WLAN remote site.

Possible Cause

The settings of the WLAN remote site and the entries in the "WLAN Remote Site" area of the FRITZ!WLAN control software do not match.

Remedy

Check whether the correct WLAN access point has been selected from the list of WLAN devices and make sure that the WLAN key and the name (SSID) of the WLAN remote site have been entered correctly. Pay special attention to capitalization.

For a WLAN product from the AVM FRITZ!Box family, the default name always begins with "FRITZ!Box". On AVM FRITZ!Box products, the WLAN key is printed on the underside of the device and on the installation CD jewel case.

If you are using a WLAN access point from another manufacturer, please see the documentation of this device.

In a direct connection, the preconfigured name of the ad-hoc network in the FRITZ!WLAN control software is "ad hoc".

Then connect with the WLAN remote site again.

Setting the 2.4-GHz Frequency Band in the WLAN Access Point

Could not register at the WLAN remote site.

Possible Cause

The WLAN remote station transmits in the 5-GHz frequency band (802.11n/a mode).

FRITZ!WLAN USB Stick N 2.4 supports only the 2.4-GHz frequency band, however (see "Frequency Range" from page 34).

Remedy

Switch the WLAN remote station to 2.4-GHz transmission (802.11n/g/b mode, channel 1 - 13).

Changing the Position of the WLAN Devices

No WLAN remote sites are found.

Possible Cause

The WLAN remote site has not been turned on or is located too far away from the FRITZ!WLAN USB Stick N.

Remedy

Make sure that the power supply of the WLAN remote site is secure and that the device is switched on.

Check whether the WLAN remote site is within transmission range of the FRITZ!WLAN USB Stick N. Reduce the distance and try to establish the connection again.

Installing the Patch for WPA2 with Microsoft WLAN Service

The WLAN connection to an access point cannot be established using the Microsoft WLAN Service (WZC) in Windows XP with Service Pack 2.

Possible Cause

The required Microsoft patch for WPA2 (IEEE 802.11i) may not be not installed.

Remedy

Support for WPA2 in Microsoft WLAN service was not available until the current patch for Windows XP with Service Pack 2. Install the current patch from Microsoft:

support.microsoft.com/kb/917021/en-us

Alternatively, you can install Service Pack 3 instead.

8.3 Errors During Data Exchange with Other Devices in the Network

Checking the WLAN Access Point

The FRITZ!WLAN USB Stick N and the WLAN access point cannot exchange any data with each other.

Possible Cause

The WLAN access point is not connected correctly or not switched on.

Remedy

Check whether the WLAN access point is connected correctly and make sure that the device and the WLAN function are switched on.

Allowing Network Access

Two or more computers are networked via FRITZ!WLAN USB Stick N, but you cannot access files and connected devices on the remote site.

Possible Cause

The desired resources like folders, drives, printers or Internet connections are not configured for network sharing.

Remedy

Make sure that those resources are configured for network sharing. Further information is provided in the Online Help of your operating system.

Checking the Network Data

You computer recognizes the network and the router, but cannot access the Internet or the network (limited connectivity).

Possible Cause

The WLAN key is wrong or the IP address was not assigned by Windows automatically (note: the process can take up to three minutes).

Remedy

Check the WLAN key entry. On AVM FRITZ!Box products, the WLAN key is printed on the underside of the device and on the installation CD jewel case. If you are using a WLAN access point from another manufacturer, please see the documentation of this device. Make sure that the automatic assignment of IP addresses is enabled in your operating system. For details, see the section "Checking the IP Settings" from page 46.

Checking the Data of the Ad-hoc Connection

The FRITZ!WLAN USB Stick N and a further WLAN adapter are connected directly via WLAN, but cannot exchange any data with each other.

Possible Cause

The IP address was not assigned by Windows automatically (note: the process can take up to three minutes), or the network key, workgroup or ad-hoc network names do not match.

Remedy

Make sure that the ad-hoc network name of your connection and the network key match, and that automatic assignment of IP addresses is enabled in your operating system. The connected computers must be in the same working group (see also: "Encryption" from page 33 and "Checking the IP Settings" from page 46).

Switching the WLAN Channel

An undefined malfunction occurs.

Possible Cause
Radio traffic is subjected to interference by strong irradiation.

Remedy
Switch the WLAN channel setting on the access point.
Find a better location for the WLAN devices to avoid potential interference from baby monitors, video bridges, microwaves, cordless DECT telephones or Bluetooth devices.

8.4 Checking the IP Settings

A WLAN access point, for instance, a FRITZ!Box WLAN, has its own DHCP server, which assigns IP addresses to the connected computers. For this the computers must be configured to obtain an IP address automatically from the DHCP server of the access point. The steps for checking and adjusting this option differ among the operating systems. See the relevant section for your operating system.

Obtaining an IP Address Automatically in Windows 7

Proceed as follows in Windows 7:

1. Click the "Start" button in the task bar and select the "Control Panel / Network and Internet".

2. Under "Network and Sharing Center", click "View network status and tasks".

3. From the left column, select the "Change adapter settings" command.

4. Click the "Wireless Network Connection" icon with the right mouse button and select "Properties".

5. Under "This connection uses the following items", select the "Internet Protocol Version 4 (TCP/IPv4)" entry and click the "Properties" button.

6. On the "General" tab, enable the options "Obtain an IP address automatically" and "Obtain DNS server address automatically".
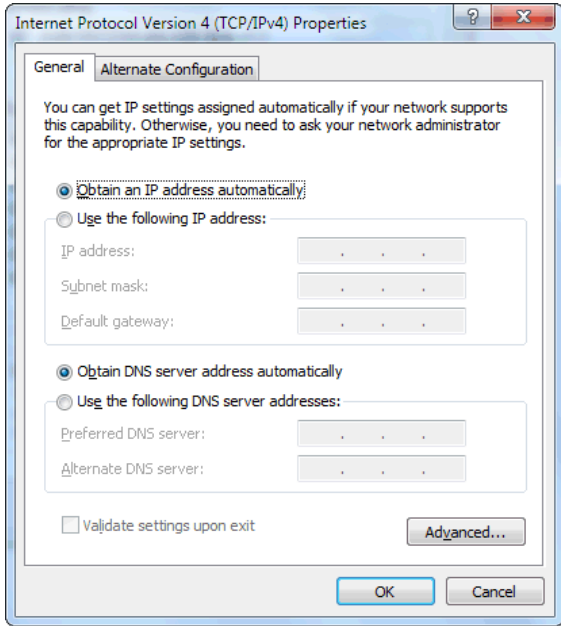
Properties of the Internet protocol (TCP/IP)

7. Confirm your selection by clicking "OK".

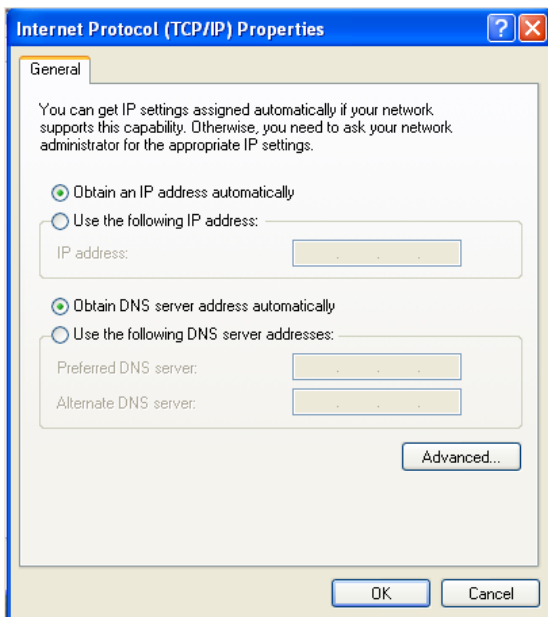If necessary, repeat steps 5 through 7 for the "Internet Protocol Version 6 (TCP/IPv6)" as well.

The computer now receives an IP address from the WLAN access point.

For WLAN products of the AVM FRITZ!Box family, automatic IP address assignment (DHCP) is enabled in the factory settings.

Obtaining an IP Address Automatically in Windows Vista

Proceed as follows in Windows Vista:

1. Click the "Start" button in the task bar and select "Control Panel / Network and Internet / View Network Status and Tasks".

2. From the "Tasks", select "Manage network connections".

3. Click the wireless network connection icon with the right mouse button and select "Properties".

4. Under "This connection uses the following items", select the "Internet Protocol Version 4 (TCP/IPv4)" entry and click the "Properties" button.

5. On the "General" tab, enable the options "Obtain an IP address automatically" and "Obtain DNS server address automatically".
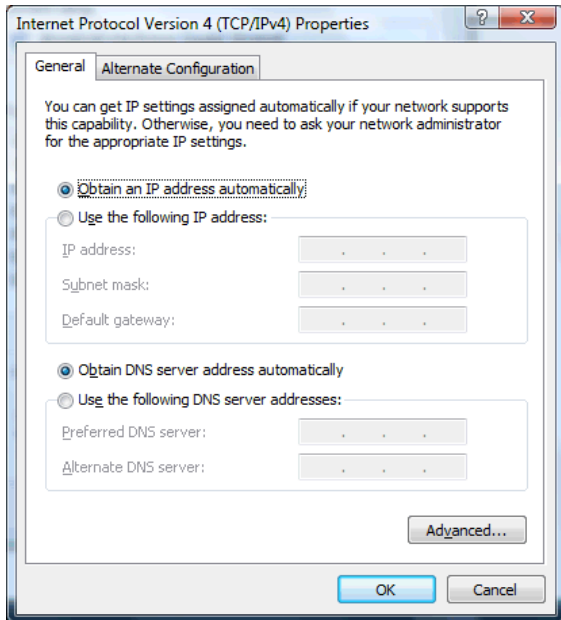
Properties of the Internet protocol (TCP/IP)

6. Confirm your selection by clicking "OK".

   If necessary, repeat steps 4 through 6 for the "Internet Protocol Version 6 (TCP/IPv6)" as well.

The computer now receives an IP address from the WLAN access point.

For WLAN products of the AVM FRITZ!Box family, automatic IP address assignment (DHCP) is enabled in the factory settings.

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 "Wireless Network Connection" of the FRITZ!WLAN USB Stick N 2.4.

2. Click the "Properties" button.

3. Select "Internet Protocol (TCP/IP)" in the list of items used in this network connection and click the "Properties" button.

4. On the "General" tab, enable the options "Obtain an IP address automatically" and "Obtain DNS server address automatically".

Properties of the Internet protocol (TCP/IP)

5. Confirm your selection by clicking "OK".

The computer now receives an IP address from the WLAN access point.

For WLAN products of the AVM FRITZ!Box family, automatic IP address assignment (DHCP) is enabled in the factory settings.

9   Customer Service Guide
Help on All Important Service Topics

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.

MS Service Pack   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 packs can be obtained free of charge from Microsoft at the address:

www.microsoft.com

9.1   Documentation

To take advantage of all commands and features of your FRITZ!WLAN USB Stick N, consult the following documentation as well:

FRITZ!WLAN Help   In the FRITZ!WLAN control software you can open the detailed Online Help by selecting the "Help" button, clicking the Help icon or pressing "F1".

Readme   The Readme file contains current information which was not yet available at the time the manual was completed. The "Readme" file is included on the FRITZ!WLAN USB Stick N CD.

Manual   The manual of the FRITZ!WLAN USB Stick N is included in PDF format in the "Info" folder on the FRITZ!WLAN USB Stick N CD.

You can install the Adobe Acrobat reader to view PDF documents from the "Info" folder of the FRITZ!WLAN USB Stick N CD.

9.2 Information in the Internet

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

Frequently Asked Questions (FAQs)

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

The FAQs can be viewed at the following address:

www.avm.de/en/service/FAQs

9.3 Updates

FRITZ!WLAN USB Stick N 2.4 provides software updates for the AVM and the software applications for free downloading over the Internet.

To download updates from the Internet, go to:

www.avm.de/en/download

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

ftp.avm.de

9.4 Support from the AVM Service Team

Should problems with your FRITZ!WLAN USB Stick N 2.4 arise, we recommend taking the following steps:

1. Read the FAQs in the Internet:

    www.avm.de/en/service/FAQs

    This site contains answers to questions our customers have frequently asked our Support team.

2. If you do not find the answer you need in the FAQs, the AVM Service Team will assist you. The support desk can be reached by e-mail or by fax.

Support by E-mail

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

www.avm.de/en/service/support

Click in the support area on the "Mail Form" link after your product. Select the operation system you use. Fill out the form and send it to AVM support by clicking the "Send" button. Our Support team will respond by e-mail as quickly as possible.

Support by Fax

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

+49 (0)30 / 39 97 62 66

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

- Your name and address.

- An e-mail address or fax number at which you can be reached.

- Which operating system are you using (e.g., Windows 7 or Windows Vista)?

- At what step of the installation or in which application does an error occur or an error message appear? What is the exact wording of the message?

- Keep the version numbers of the FRITZ!WLAN USB Stick N driver at hand. Information on the version can be viewed using the context menu of the FRITZ!WLAN program icon.

    - Click the icon in the notification area of the task bar and select the menu command "About".

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

Index

Declaration of CE Conformity

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

herewith declares that the product

Type	WLAN-Controller
Product	FRITZ!WLAN USB Stick N 2.4

complies with the following directives:

- 1999/5/EC — R&TTE Directive: Radio Equipment and Tele-communications Terminal Equipment
- 2004/108/EC — EMC Directive: Electromagnetic Compatibility

The following norms were consulted to assess conformity:

- EN 55024/9.98 + A1/10.01 + A2/01.03
- EN 301 489-1 V 1.8.1 (2008)
- EN 301 489-17 V 1.3.2 (2008)
- EN 300 328 V 1.6.1 (11.2004)

CE ⚠ The CE symbol confirms that this product conforms with the above men-tioned norms and regulations.

Berlin, 2009-02-23   Peter Faxel, Technical Director

Indication of Countries

This product may be operated in the countries of the European Union and in Switzerland, Norway and Iceland. Certain restrictions of user rights or licensing requirements apply in France and Italy.