# 802.11g WIRELESS LAN USB ADAPTER

802.11g Wireless USB Adapter
With 6 dBi High-Gain Antenna

USB555WGA

## Instruction Guide

* Actual product may vary from photo

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FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Federal Communications Commission (FCC) Radiation Exposure Statement**

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5cm (1 inch) during normal operation.

**R&TTE Compliance Statement**

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

**EU Countries Intended for Use**

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

**EU Countries Not intended for use**

None.

# Table of Contents

## Introduction

Thank you for purchasing a StarTech.com 54 Mbits/sec 802.11g wireless USB 2.0 adapter with high-gain antenna. Based on the IEEE 802.11g wireless standard, the USB555WGA instantly provides your USB-enabled desktop or notebook computer with wireless LAN (WLAN) access. The integrated 6dBi high-gain antenna gives your network maximum power with greater reach, letting you enjoy reliable wireless access in the most difficult areas. The adapter supports USB 2.0 specifications for maximum throughput and comes with both WPA and WEP protection to keep your wireless network secure. The USB555WGA also works with 802.11b wireless devices to ensure compatibility with your network.

## Features

- Provides your USB-enabled laptop or desktop computer with wireless LAN access
- Offers high data transfer rate up to 54 Mbits/sec
- Includes an integrated directional 6 dBi high-gain antenna for increased range and performance
- Compatible with IEEE 802.11g and 802.11b devices
- Uses wall-mountable, flexible design for maximum performance in any network
- Uses enhanced WPA (Windows XP only) and 64/128 bit WEP data encryption for high level of security
- Provides wireless communication range up to 328 feet (100 meters) in a closed area or 2625 feet (800 meters) in an open area
- Supports Windows Plug and Play installation
- Uses automatic fallback data rate to increases data security and reliability

## Before You Begin

**System Requirements**

- A USB-enabled IBM (or compatible) computer running Windows XP/2000/Me/98SE

**Package Contents**

- 1 x wireless USB adapter with high-gain antenna
- 1 x driver/utility disk

## Installation

**Note:** Depending on your OS and the configuration of your system, the instructions below may not be identical to what you see on your screen.

**Installing the Drivers**

1. With your computer turned on, use a USB 2.0 cable to connect the adapter to your computer's USB 2.0 port.
2. Windows will automatically detect the new device. Insert your driver/utility disk into the disk drive.
3. Choose "Install from a list or specific location (Advanced)" and click **Next**.
4. Click **Browse** and browse to the Driver folder located on the CD. Inside the driver folder, choose the subfolder that is appropriate for your operating system (i.e, "D:\Driver\2K_XP" for Windows 2000 users). Click **Next**.
5. Windows will install the driver automatically. Click **Finish** to complete the installation.

**Note:** Windows XP users may see the Windows Logo Testing warning. This is normal. This message is generated by any driver not written or tested by Microsoft. The driver has not passed because it has never been tested by Microsoft. You can safely install this driver on Windows XP.

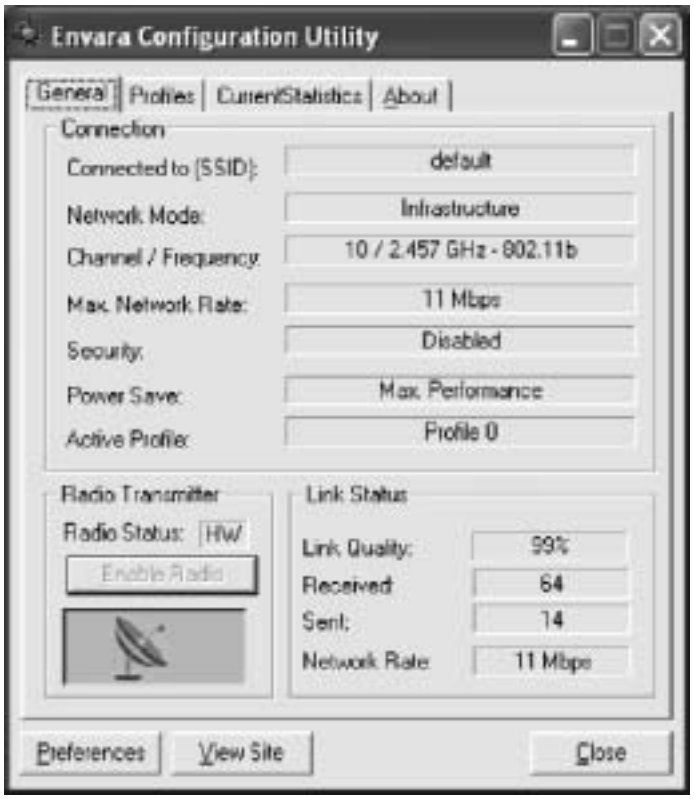
**Installing the Utility**

1. Browse to the "Utility" folder on your driver disk and launch the **setup.exe** file.
2. Click **Next**.
3. Read the End User Licensing Agreement, then chose "I accept..." and click **Next**.
4. Enter your User Name and Organization (for reference only) and click **Next**.
5. Enter the Destination Folder (or choose to use the default) and click **Next**.
6. Choose "Typical Install" and click **Next**.
7. The software will be installed automatically. Click **Finish**.

## Using the Configuration Utility

The Configuration Utility helps you configure the adapter and monitor the link status and statistics.

To launch the configuration utility, open the Configuration Utility folder from your Windows programs list (usually "Start\Programs\Envara Configuration Utility") and run the "EnvaraGui" program.




The **General** tab lets you view the configuration settings for your USB555WGA. From the General tab you can also set your display preferences and view available networks.

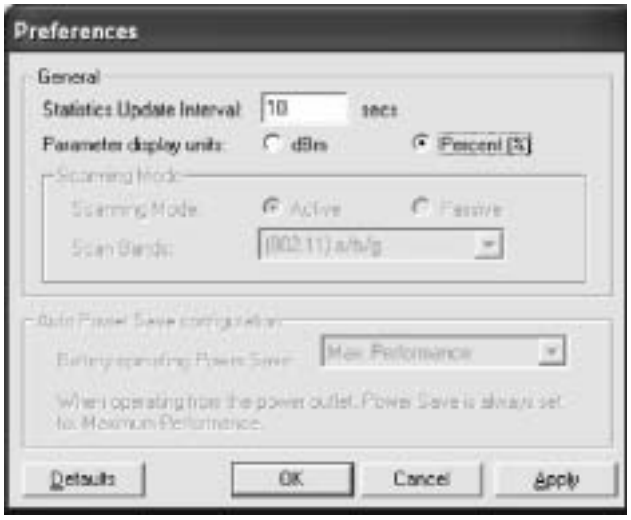
| *Parameter* | *Description* |
|---|---|
| **Connected to (SSID)** | Display the SSID of the wireless network the adapter is connecting to. |
| **Network Mode** | Displays the mode the device is operating in. There are two sorts of network types: Infrastructure and Ad Hoc. |
| **Channel / Frequency** | Displays the radio channel and frequency used by the device. |

**Configuration Utility: General, continued**

| *Parameter* | *Description* |
|---|---|
| **Max. Network Rate** | Displays the maximum link rate of the network (54 Mbits/sec for 802.11g and 11 Mbits/sec for 80211b.) |
| **Security** | Displays the security setting of the network. "Disabled" means there are no security settings in place. |
| **Power Save** | Displays the power save scheme for the adapter. The options are Max. performance, Max. battery life, or Auto). |
| **Active Profile** | Displays the current connection profile. |
| **Radio Status** | Displays the transmitter's status (On or Off). |
| **Enable Radio Button** | Enables and disables radio transmission. |
| **Link Quality** | Displays the quality of the link. The higher the percentage, the better the quality. |
| **Received** | Displays the current received baud rate (measured in KBytes/sec). |
| **Sent** | Displays the current sent baud rate (measured in KBytes/sec). |
| **Network Rate** | Displays the current data rate. To improve the data rate, adjust the direction of the adapter or the distance from other wireless stations. The data rate changes when the wireless environment changes. |
| **Preferences Button** | The Preferences button lets you configure some display features like units of link quality or the update intervals. For more information, see **Preferences** on **page 6**. |
| **View Site Button** | The View Site button lets you view available networks. For more information see **View Site** on **page 7**. |

**Preferences**

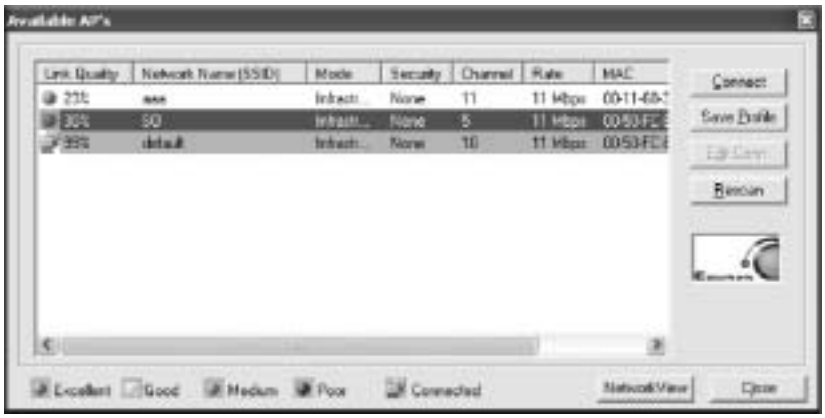
The Preferences field lets you change the statistics update interval and display units.




The default setting is **10** seconds for Statistics Update Interval and **Percent** for Parameter Display Units. If you want to set up as default values, click **Defaults**.

**Site Survey**

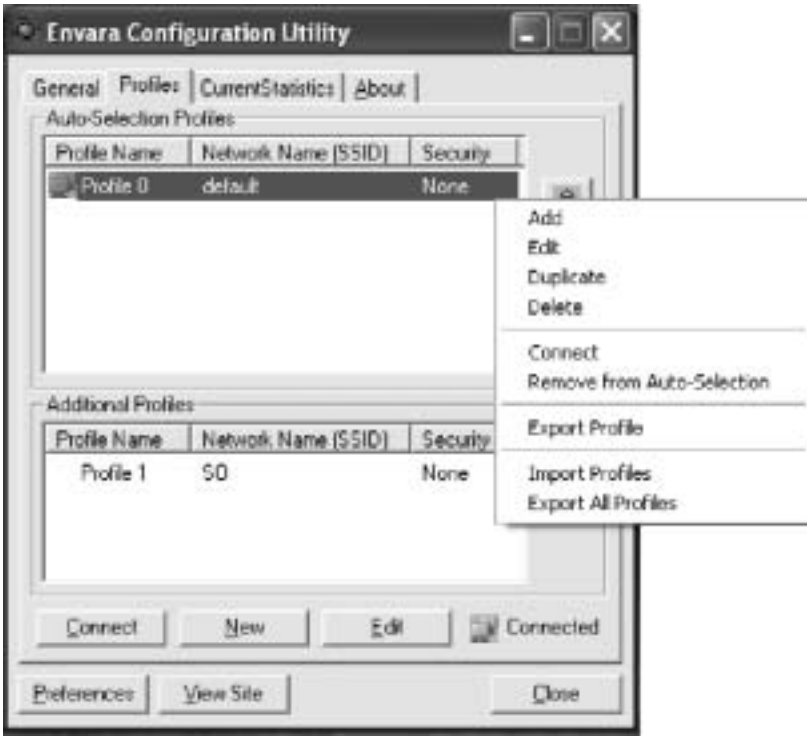
The Site Survey screen lets you view information on or connect to available wireless networks.




| *Parameter* | *Description* |
|---|---|
| **Available Networks/APs** | This list shows you available networks, along with information about them. You can see the network's link quality, network name, network mode, security settings, etc. Use this information to decide which network to connect to. |
| **Connect** | To connect your USB555WGA to a network, select one of the networks from the list and click **Connect**. The adapter will connect to the network automatically. You can also right-click on the network and select "Connect." |
| **Save Profile** | The Save Profile button lets you save the selected network as a profile. This profile will be listed in the profiles list table so that you can easily connect to the network without having to use the Site Survey screen (see **Profiles** on **page 8**). You can also right-click on the network and select "Save as Profile." |
| **Edit Connect** | If the connection network has changed their WEP security setting, click this button to update the setting of the adapter. Note that the WEP setting for your USB555WGA has to be the same as the network (See **Profiles** on **page 8** for more information). You can also right click the connection network and select "Edit Connect." |
| **Rescan** | Click Rescan to get the latest information of all the wireless networks nearby. |
| **AP/Network View** | This button changes the way the available networks are displayed. Network View displays the network information more simply. |

**Profiles**

You can make it quick and easy to connect to your wireless networks by setting each network up with a profile. You can set up a profile for each wireless network you frequently use.




| *Parameter* | *Description* |
|---|---|
| **Auto-Selection Profiles** | At startup, the USB555WGA will automatically attempt to connect to the profiles listed in the Auto-Selection Profiles table (in order of appearance). To manually connect to one of the profiles in the list, double-click the network in the list or right-click on the network and select "Connect." |
| **Additional Profiles** | The profiles listed in this table are additional network profiles. The adapter will not attempt to automatically connect to the networks in this list. To connect to one of the profiles in the list, double-click the profile or select the profile and click "Connect."<br><br>For more information on adding or removing networks from the Profile tables, see the Right-Click Functions information on the following page. |
| **New/Edit** | Clicking on the New or Edit buttons will bring up the Profile Configuration screen. See **Profile Configuration** on **page 10** for details. |

**Configuration Utility: Profiles, continued**

| *Parameter* | *Description* |
|---|---|
| **Right-Click Functions** | **Add** – Add a new profile to the list.<br><br>**Edit** – Edit the selected profile.<br><br>**Duplicate** – Copy the same profile to the list.<br><br>**Delete** – Delete the selected profile.<br><br>**Connect** – Connect to the profile.<br><br>**Add/Remove to/from Auto-Selection** – Add the profile to the Auto-Selection Profiles or remove it from Auto-Selection Profiles to Additional Profiles.<br><br>**Export Profile** – Save the profile as a new file.<br><br>**Import Profiles** – Import the profile file to the list.<br><br>**Export All Profiles** – Save all the profiles as a new file. |

**Profile Configuration: General**

If you click the New or Edit buttons available on the Profiles screen, the Profile Configuration screen will appear. Profile Configuration lets you create unique profiles for each of your available wireless networks. To set up a profile, you will need to know the information about your wireless networks (SSIDs, security settings, etc.).


| *Parameter* | *Description* |
|---|---|
| **Name** | Assign a recognizable profile name for the wireless network. |
| **Network Name (SSID)** | Enter the SSID (up to 32 printable ASCII characters) of the wireless network. |
| **Network Mode** | Choose the type of network this profile uses: **Infrastructure** – Choose Infrastructure if the network uses an Access Point for communication. **Ad-Hoc** – Choose Ad Hoc if the network is another wireless station that will communicate directly with the USB555WGA. |
| **Power Save** | Choosing Enable allows the adapter to go into power save mode when it is idle. |
| **Channel / Frequency** | (This setting is only available in Ad Hoc mode.) Choose the channel setting the network communicates on. |
| **Auto-Select Profile Member** | If you select the check box, this profile will be put in the "Auto-Selection Profiles" list. |
| **Defaults** | Click the Default button to restore the values to their defaults (Ad Hoc mode and Channel one). |

**Profile Configuration: Security**


| *Parameter* | *Description* |
|---|---|
| **Security** | **None** – Disable WEP data encryption.<br>**WEP –** Enable WEP data encryption. If you choose to enable WEP, you have to set the WEP Encryption Keys below. |
| **Encryption Key** | Select the default encryption key using the radio buttons. Fill the text box by following the rules below:<br><br>**64-bit –** Input a 10-digit Hex value (in the "A-F," "a-f" and "0-9" range) for each encryption key. For example: "0123456aef"<br><br>**128-bit –** Input a 26-digit Hex value (in the "A-F", "a-f" and "0-9" range) for each encryption key. For example: "01234567890123456789abcdef" |

Instead of WEP, Windows XP users can choose to enable WPA. For more information, see **WPA** on the following page.

**WPA**

Wi-Fi Protected Access (WPA) is a set of standards-based, interoperable security enhancements that strongly increase encryption and authentication for wireless LAN systems. The technical components of WPA include Temporal Key Integrity Protocol (TKIP) for dynamic key exchange, and 802.1x for authentication.

WPA function is enabled in the following software systems only:

- Windows XP with Service Pack 1 and the Windows XP Support Patch for Wi-Fi Protected Access program.
- Configure the card by wireless built-in utility (Wireless Zero Configuration).

1. Right-click the networking icon in your taskbar and select "View Available Wireless Networks."

2. Click **Advanced**.
3. From the Wireless Networks tab, click **Configure**.

**WPA, continued**

| *Parameter* | *Description* |
|---|---|
| **Network Authentication** | **Open** – No authentication is needed.<br><br>**Shared** – Only wireless stations using a shared key (WEP Key identified) are allowed to connect to each other.<br><br>**WPA** – This mode is for enterprise users with an authentication server (Radius Server), WPA-enabled access point, and a WPA-enabled client. Once WPA is enabled, all clients and access points on the network must be WPA-enabled in order to access the network.<br><br>**WPA-PSK** – This is a special mode designed for home and small business users who do not have access to network authentication servers. In this mode, known as Pre-Shared Key, the user manually enters the starting password in their access point or gateway, as well as in each PC on the wireless network. WPA takes over automatically from that point, keeping unauthorized users that don't have the matching password from joining the network, while encrypting the data traveling between authorized devices. |
| **Data Encryption** | **WEP –** In WPA or WPA-PSK mode, WEP is also able to be the encryption method for the transmission data.<br><br>**TKIP** – TKIP (Temporal Key Integrity Protocol) changes the temporal key every 10,000 packets (a packet is a kind of message transmitted over a network.) This insures much greater security than the standard WEP security. |

**Note:** All devices in the network should use the same encryption method to ensure communication.

**Current Statistics**

This Current Statistics screen lets you to view the sign strength and the statistic information of successful Tx and Rx baud rate. You can reset the counters by clicking **Reset**. “SNR” indicates the rate of noise and signal in the environment. The bigger the NSR value, the better of the signal strength.

**About**

The About screen gives you basic information about your USB555WGA, like driver version, firmware and utility Version.

## Appendix A: Installation Considerations

- If you are connecting the USB555WGA to an 802.11g (up to 54 Mbits/sec) network, make sure the adapter is plugged into a USB 2.0 port using a USB 2.0 cable. If connected to a USB 1.1/1.0 interface, the adapter can only support 802.11b (up to 11 Mbits/sec).

- The adapter will work in 802.11b mode when in Ad Hoc mode (this is defined in the 802.11g wireless standards). To increase the data rate up to 54 Mbits/sec, please follow the steps listed below:

  a. Go to "Network Connections."

  b. Right-click "Wireless Network Connection" and select "Properties."

  c. From the pop-up screen, click "Configure."

  d. Click on the "Advanced" tab on the "Properties" screen.

  e. Change the setting of "IBSS Originator Phy-Mode" from "802.11b" to "802.11g."

- When positioning your antenna, make sure that the USB555WGA's antenna is pointed directly at the antenna of your other wireless device. Once you have the antenna in the proper position, you can "tighten" the antenna using the black plastic screw on the side of the adapter.

The USB555WGA features a high-gain antenna that is more powerful than average wireless antennas, but there are some things to keep in mind when attempting to set up a wireless connection. The wireless signal range can be limited by the number, location, thickness, and material of ceilings, walls or similar that the signal must pass through. To maximize your wireless range, keep the following considerations in mind:

- Try to minimize the number of walls, ceilings, and similar between your wireless devices. Each wall or ceiling the signal must cross can reduce the signal range by up to 90 feet (30m). Position your receiving devices so that the path between them is as unobstructed as possible.

- The type of material the wireless signal must cross through also affects its range. A solid metal door or concrete wall can decrease the signal's range. Whenever possible, position the adapters so that the signal can pass through drywall or open doors.

- Make sure that you are aware of the line the signal must take to travel between devices. The angle that the signal is on as it travels through a door, wall, or ceiling affects how thick the obstruction is. For example, if a wall is 1.5 feet thick and the signal passes through it at a 45-degree angle, the signal must pass through 3 feet (1m) of wall. At a 2-degree angle, the wall appears to be 42 feet (14m) thick. Always try to position your devices so that the signal can travel at 90-degree angles.

- Electrical devices or appliances that generate RF noise (such as microwaves, electric motors or computer monitors) can interfere with the wireless signal. Try to keep your adapter at least 3-6 feet (1-2 m) away from these types of devices.

- Make sure your antenna is positioned in the direction of your other wireless device. For best performance, the antenna on the USB555WGA must be pointed **directly** at the antenna of the other wireless device.

## Glossary

**802.11b**: A family of IEEE-defined specifications for wireless networks. The 802.11b standard supports data transfer rates up to 11 Mbits/sec in the 2.4 GHz band using DSSS technology. Also known as WiFi.

**802.11g**: A family of IEEE-defined specifications for wireless networks. The 802.11g standard supports data transfer rates up to 54 Mbits/sec in the 2.4 GHz band. 802.11g is backwards-compatible with the slower 802.11b standard.

**Access Point**: See wireless access point.

**Ad Hoc**: A wireless computer-to-computer LAN. An Ad Hoc network can consist of two devices with wireless adapters, and does not require a WAP, wireless router, or wireless gateway. Also known as peer-to-peer mode.

**BSS** (Basic Service Set): In Infrastructure mode, a BSS consists of a Wireless Access Point and the adapters associated with it.

**DSSS** (Direct Sequence Spread Spectrum): A transmission technology used as the basis for 802.11b wireless transmissions. DSSS helps increase a signal's resistance to interference and allows for some data bit recovery.

**Encryption**: The transformation of data into encoded ciphertext to ensure data transmission can not be accessed by users outside the network. Encryption uses an encryption algorithm and encryption keys to encode and decode the information. See also WEP.

**Encryption Algorithm**: A formula used to convert data from understandable "plaintext" into encoded "ciphertext." Each algorithm uses a key (a string of bits) to perform the calculations. The larger the key (most are 64 or 128-bits in length), the more difficult to break the code.

**ESS** (Extended Service Set): In Infrastructure mode, the ESS consists of two or more BSSes in the same subnet.

**IBSS** (Independent Basic Service Set): In Ad Hoc mode, an IBSS consists of two or more wireless devices that communicate directly and do not use a wireless access point.

**Infrastructure**: A network configuration that typically combines both wired and wireless elements. Wireless devices communicate with a WAP in order to communicate with each other and with the wired elements of the network.

**IP Address** (Internet Protocol Address): An assigned number used to identify a computer on a network. An IP address consists of four numbers less than 255 separated by periods (for example, 192.168.2.1).

**LAN** (Local Area Network): A group of computers and devices connected together in a relatively small area (such as a house or an office).

**MAC Address** (Media Access Control Address): A unique serial number that identifies a piece of hardware connected to a network.

**Plug and Play**: A set of specifications that allows a computer to automatically detect and configure hardware devices. With Plug and Play computers, any new hardware device that is connected to a computer will automatically be recognized without the user having to tell the computer the device has been added.

**SSID** (Service Set Identifier): A name that uniquely identifies a WLAN. In order for wireless devices to communicate with each other, they must have the same SSID.

**Subnet**: An identifiably separate part of a network that is interconnected with, but still independent from, the rest of the network. Subnets can help improve network security and performance and typically use a router.

**Subnet Mask**: A technique used by the IP protocol to filter messages into a particular network segment or subnet. Subnet masks are expressed as four decimal numbers between 0 and 255 separated by periods. (Example: 255.255.255.1) It is used to create private IP addresses for use within a particular network. Also known as a network mask.

**WAN** (Wide Area Network): A network that connects computers in geographically separated areas. The Internet is an example of a WAN.

**WAP** (Wireless Access Point): A networking device that seamlessly connects wired and wireless networks. Used in Infrastructure networks, a wireless access point is capable of connecting to an Ethernet network as well as an 802.11 network.

**WEP** (Wired Equivalent Protocol): A security protocol designed to provide a wireless network with the same level of security as a wired LAN. WEP offers protection primarily by encrypting the information that flows between adapters.

**Wi-Fi**: See 802.11b.

**WLAN** (Wireless Local Area Network): A local area network that transmits wirelessly through the air, typically in an unlicensed frequency such as the 2.4GHz band.

## Technical Specifications

| | |
|---|---|
| Interface bus type | USB |
| Compliant standards | IEEE 802.11g/b |
| Radio technology | Industrial Scientific Medical Band (ISMB) |
| Modulation | OFDM with BPSK, QPSK, 16QAM, 64QAM (11g) BPSK and CCK (11b) |
| Security | 64/128-bit WEP Encryption & WPA (TKIP with IEEE 802.1x) |
| Frequency | 2.4 GHz |
| Antenna | 6 dBi Directional Hi-Gain Antenna |
| LED indicators | Power & Link Activity |
| Data transfer rate | Up to 54 Mbits/sec (802.11g), 11 Mbits/sec (802.11b) |
| Supported bit rates | 54/48/36/24/18/12/11/9/6/5.5/2/1 Mbits/sec |
| Data range (Closed Space) | Up to 328 feet (100 M) |
| Data range (Open Space) | Up to 2625 feet (800 M) |
| Operating temperature | 32 ~ 131ºF (0 ~ 55ºC) |
| Storage temperature | -77 ~ 158ºF (-25C ~ 70ºC) |
| OS support | Windows 98SE/Me/2000/XP |
| Certification | FCC and CE |

## Technical Support

The following technical resources are available for this StarTech.com product:

**On-line help:**

We are constantly adding new information to the *Tech Support* section of our web site. To access this page, click the *Tech Support* link on our homepage, **www.startech.com**. In the tech support section there are a number of options that can provide assistance with this product.

Knowledge Base - This tool allows you to search for answers to common issues using key words that describe the product and your issue.

FAQ - This tool provides quick answers to the top questions asked by our customers.

Downloads - This selection takes you to our driver download page where you can find the latest drivers for this product.

Call StarTech.com tech support for help:
**USA/Canada:** 1-800-265-1844
**UK/Ireland/Europe:** 00-800-7827-8324
*Support hours: Monday to Friday 9:00AM to 5:00PM EST (except holidays)*

## Warranty Information

**This product is backed by a one-year warranty. In addition, StarTech.com warrants its products against defects in materials and workmanship for the periods noted, following the initial date of purchase. During this period, the products may be returned for repair, or replacement with equivalent products at our discretion. The warranty covers parts and labor costs only. StarTech.com does not warrant its products from defects or damages arising from misuse, abuse, alteration, or normal wear and tear.**

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In no event shall the liability of StarTech.com Ltd. and StarTech.com USA LLP (or their officers, directors, employees or agents) for any damages (whether direct or indirect, special, punitive, incidental, consequential, or otherwise), loss of profits, loss of business, or any pecuniary loss, arising out of or related to the use of the product exceed the actual price paid for the product.

Some states do not allow the exclusion or limitation of incidental or consequential damages. If such laws apply, the limitations or exclusions contained in this statement may not apply to you.

**Revised:** February 23, 2004