

User's Manual

IEEE 802.11b Wireless USB Adapter



GW-US11H

About This Manual

This user's manual describes how to install and operate the GW-US11H. Please read this manual before you install the product.

This manual includes the following topics:

- Product description, features and specifications
- Hardware installation procedures
- Software installation procedures

Technical Support

The firmware version of the GW-US11H is displayed on the utility **About** window. Users could download the most recent software version from the supplier's web site or refer to the selling contact for the latest software information. If you have difficulty resolving the problem while installing or using the GW-US11H, please contact the supplier for support.

1. Introduction

Congratulations on your purchase of this GW-US11H. This product is designed specifically for your 11Mbps wireless LAN environment needs. It is easy to configure and operate even for non-technical users. Instructions for installing and configuring this product are included in this manual. Before you install and use this product, please read the manual carefully so you may take full advantage of its functions.

2. About GW-US11H

The 11Mbps IEEE 802.11b GW-US11H is a standard USB adapter that fits into any standard USB slot in a notebook computer. Its 11Mbps data rate gives equivalent Ethernet speed to access corporate network or the Internet in a wireless environment. When installed, GW-US11H is able to communicate with any 802.11 and 802.11b compliant products.

3. The GW-US11H Features

Wireless Features

- Fully IEEE 802.11b compatible.
- Direct Sequence Spread Spectrum (DSSS) technology provides robust, interference-resistant and secure wireless connection.
- Supports 1, 2, 5.5 and 11 Mbps data rate.
- Working range up to 800 ft. in an open environment.
- Greater flexibility to locate or move networked PCs.
- Wireless connection without the cost of cabling.
- Low power consumption.

Security

- 64-bit and 128-bits WEP encryption capable.

Configuration & Management

- Easy to install and user friendly, just Plug and Play.
- Seamless connectivity to wired Ethernet and PC network LAN's augments existing networks quickly and easily.
- Supports a variety of operating systems (Win98/ME/2000/XP)
- Provides Window-based Diagnostic Tools, most notably, Link Quality Test and

Access Point Browser.

Applications

GW-US11H offers a fast, reliable, cost-effective solution for wireless client access to the network in applications like these:

1. Remote access to corporate network information

E-mail, file transfer and terminal emulation.

2. Difficult-to-wire environments

Historical or old buildings, asbestos installations, and open area where wiring is difficult to deploy.

3. Frequently changing environments

Retailers, manufacturers and those who frequently rearrange the workplace and change location.

4. Temporary LANs for special projects or peak time

C1- Trade shows, exhibitions and construction sites where a temporary network will be practical.

C2- Retailers, airline and shipping companies need additional workstations during peak period.

C3- Auditors requiring workgroups at customer sites.

5. Access to database for mobile workers

Doctors, nurses, retailers, accessing their database while being mobile in the hospital, retail store or office campus.

6. SOHO (Small Office and Home Office) users

SOHO users need easy and quick installation of a small computer network.

7. High security connection

The secure wireless network can be installed quickly and provide flexibility. (Please refer to page 22 for encryption configuration.)

4. Package Contents

GW-US11H comes with the following items. Please go through each item below. If any of listed items appears to be damaged or missing, please contact your local dealer.

- One GW-US11H
- One MiniUSB Cable
- One CD-ROM (GW-US11H Driver and Utility Software)
- One User's Manual Installation Guide

5. Hardware Installation

This chapter describes the instructions that guide you through the proper installation of your GW-US11H for the Windows XP/2000/ME/98 operating systems.

The complete installation of the GW-US11H consists of the following steps

STEP 1: Insert your GW-US11H into your notebook.

STEP 2: Install the corresponding driver and utility.

STEP 3: Set basic settings.

STEP 4: Finish Installation.

5-1 Before Installation

In addition to the items shipped with the client adapter, you will also need the following in order to install the adapter:

1. A computer equipped with a Type II or Type III USB slot, and a USB card and socket services compliant with revision 2.10 of the USB specification (or higher).
2. Windows 98/ME/2000/XP (with a Windows installation CD-ROM, diskettes for use during installation)
3. Minimum 500 Kbytes free disk space for installing driver and utility program.

5-2 Insert the GW-US11H

To install the GW-US11H, please do the following:

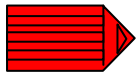
1. Find an available USB slot on your computer.
2. Insert the GW-US11H, with its label facing up, into the USB slot on your computer.



CAUTION : Do not force the client adapter into the slot. Forcing it will damage both the client adapter and the slot. If the client adapter does not go in easily, remove the card and reinsert it

6. Install Driver for Windows

This section describes the installation of the GW-US11H driver for the Windows 98/ME/2000 and Windows XP operating systems.



Note: Before you start the installation, you are advised to keep the Windows CD-ROM in case you might need certain system files.

6-1 Set up GW-US11H for Windows 98/ ME

Step 1: After inserting the GW-US11H into the USB slot on your computer, Windows will auto-detect new hardware and will display an “Add New Hardware Wizard” window. Click **Next** to continue.



Step 2: Select “**Search for the best driver for your device (Recommended)**” and click **Next** to proceed.



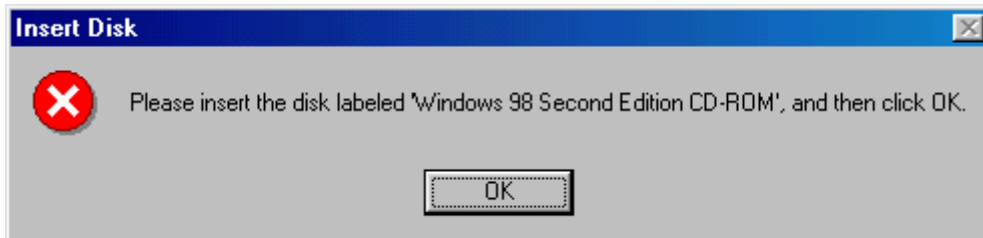
Step 3: Insert the Product CD-ROM into the CD-ROM drive. Select the “**CD-ROM drive**” check box and click on **Next** to install the driver.



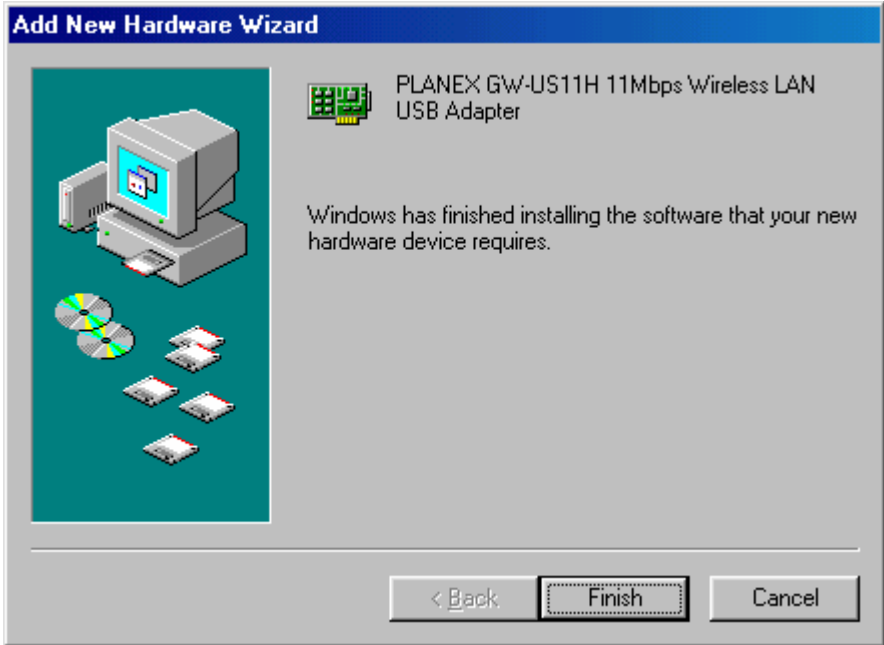
Step 4: The Windows will find “**GW-US11H**”. Click **Next** to continue.



Step 5: Once the [Please insert the disk labeled “Windows 98/ME CD-ROM”, and then click OK] window appears, enter the path corresponding to the appropriate drives and click **OK**. Usually these files can be found at C:\Windows or C:\Windows\system.



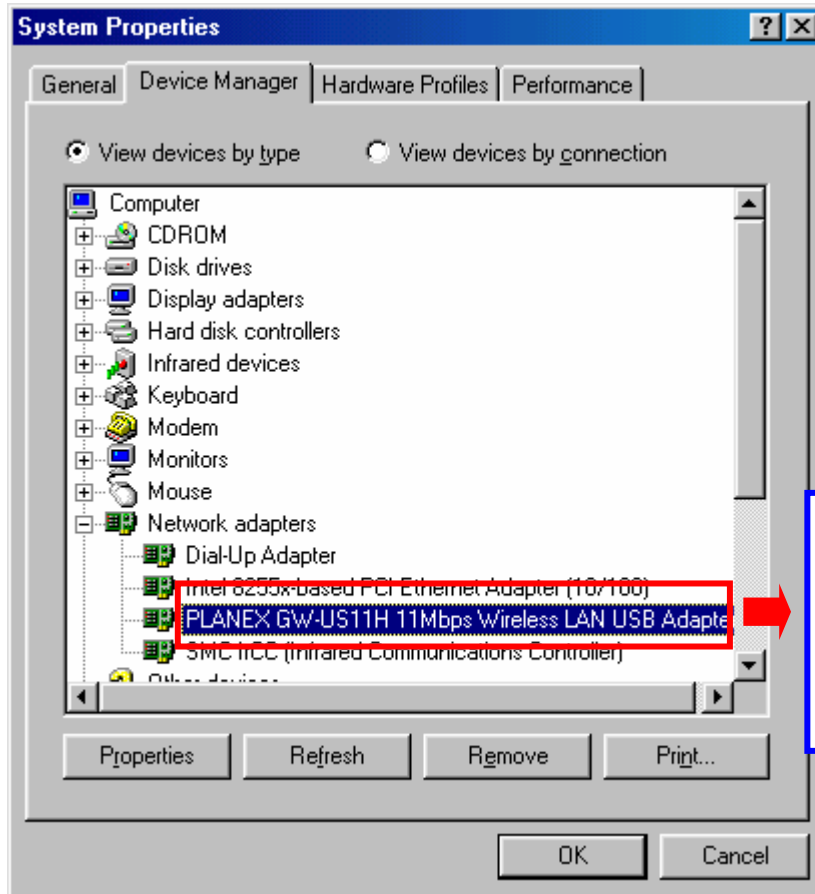
Step 6: Click **Finish** to complete the software installation.



Step 7: Restart the computer.



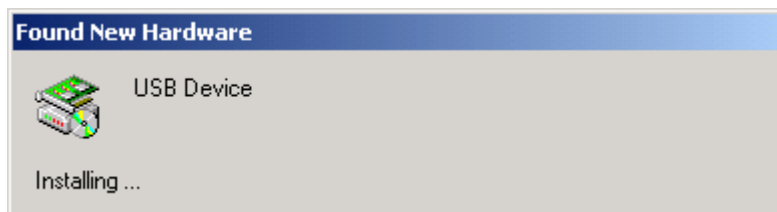
Step 8: Open **Control Panel/System/Device Manager**, and check **Network Adapters** to see if any error icon appears next to the IEEE 802.11 GW-US11H. If no, your GW-US11H is working well.



Check if there is any error icon next to the **PLANEX GW-US11H 11Mbps Wireless LAN USB Adapter**

6-2 Set up GW-US11H for Windows 2000

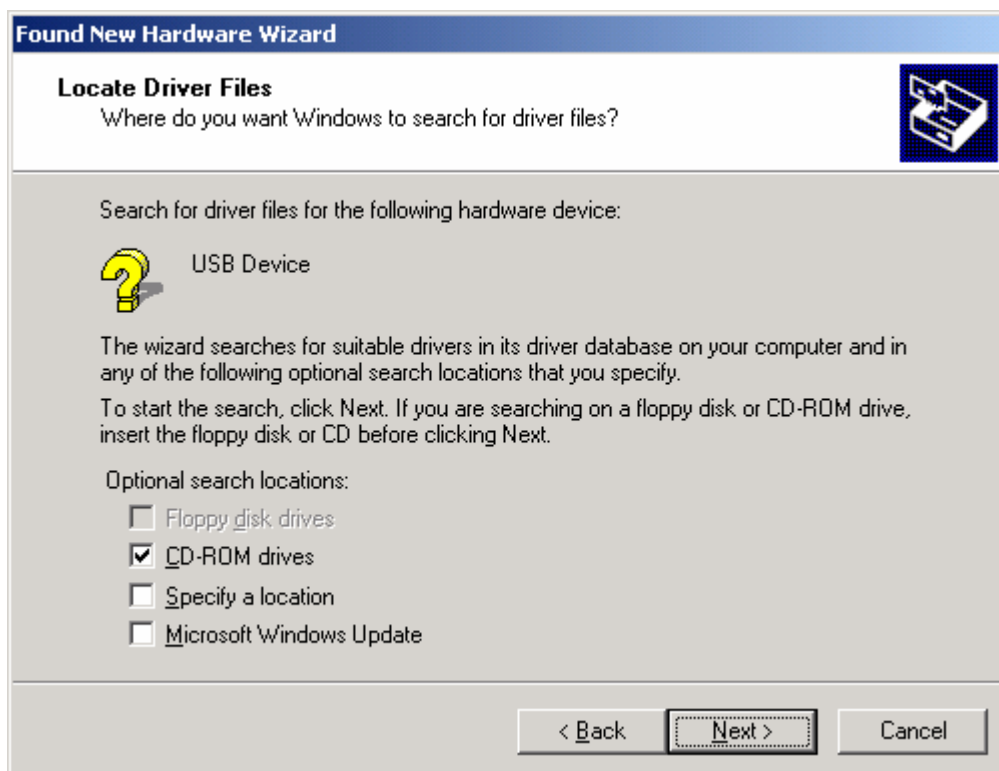
Step 1: After inserting the GW-US11H into the USB slot on your computer, Windows will auto-detect the GW-US11H.



Step 2: A “Found New Hardware Wizard” window shows up. Click **Next** to proceed.



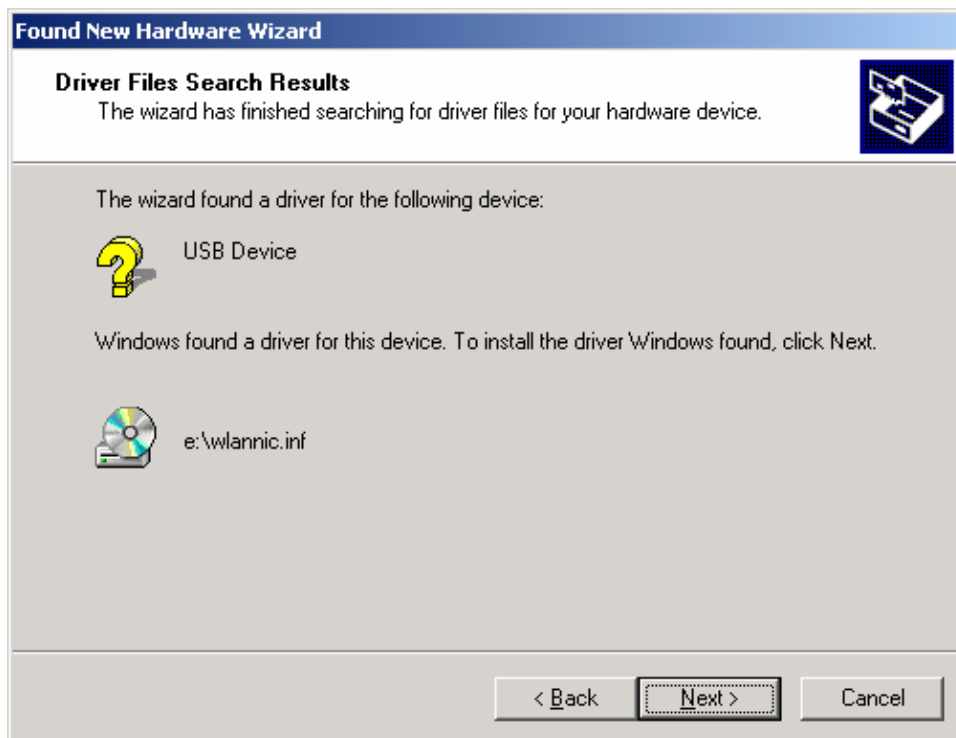
Step 3: Select “Search for a suitable driver for my device (recommended)”.



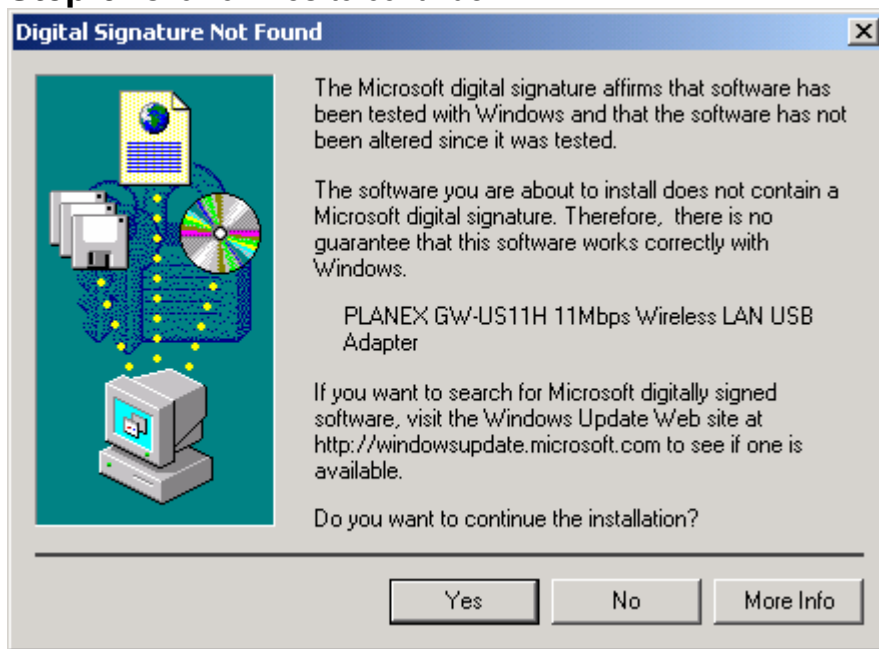
Step 4: Insert the Product CD-ROM into the CD-ROM drive. Specify the location where the driver is placed. Click on **Next** to install the driver.



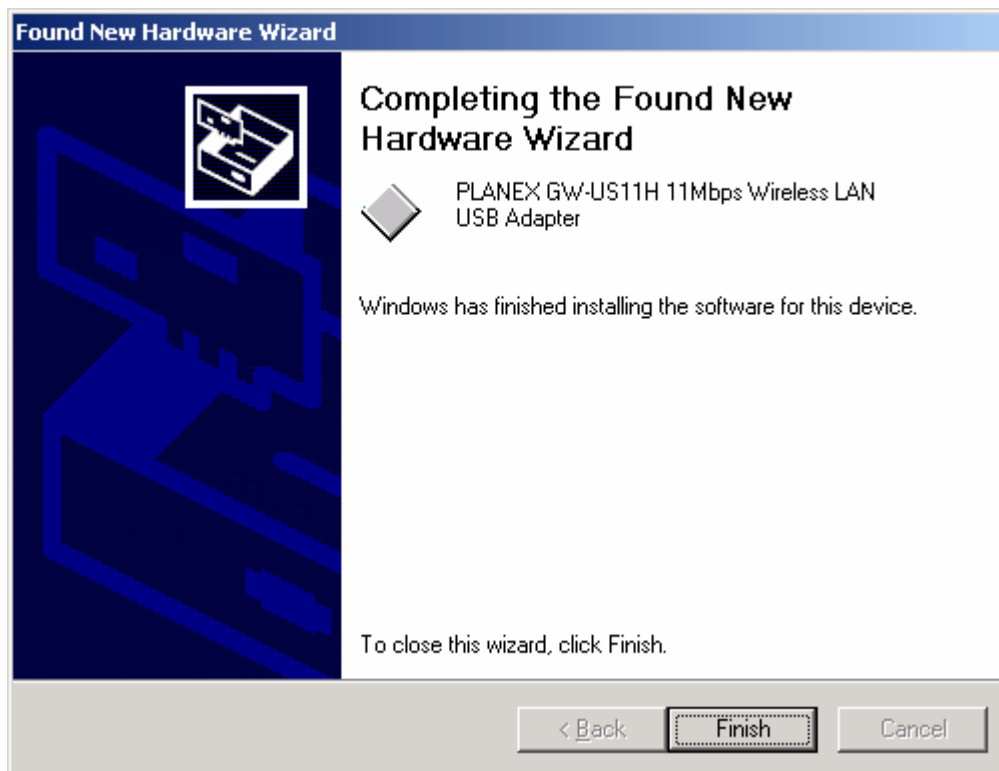
Step 5: The windows will find “USB Device”. Click on **Next** to continue.



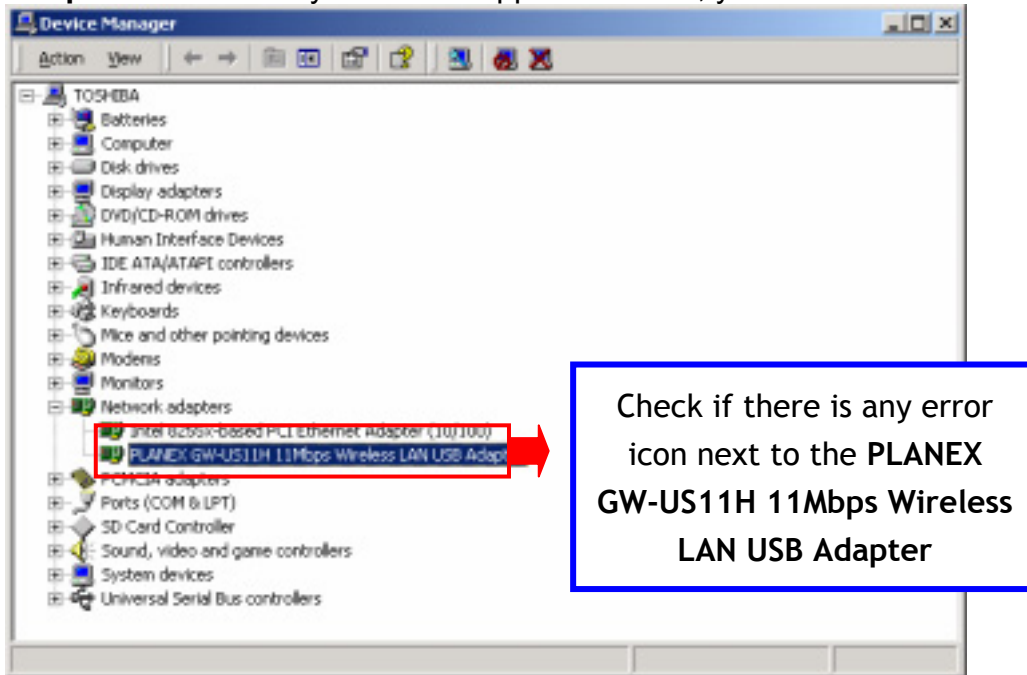
Step 6: Click on **Yes** to continue



Step 7: Click **Finish** to complete the installation.



Step 8: Open **Control Panel/System/Device Manager**, and check **Network Adapters** to see if any error icon appears. If no, your GW-US11H is working well.

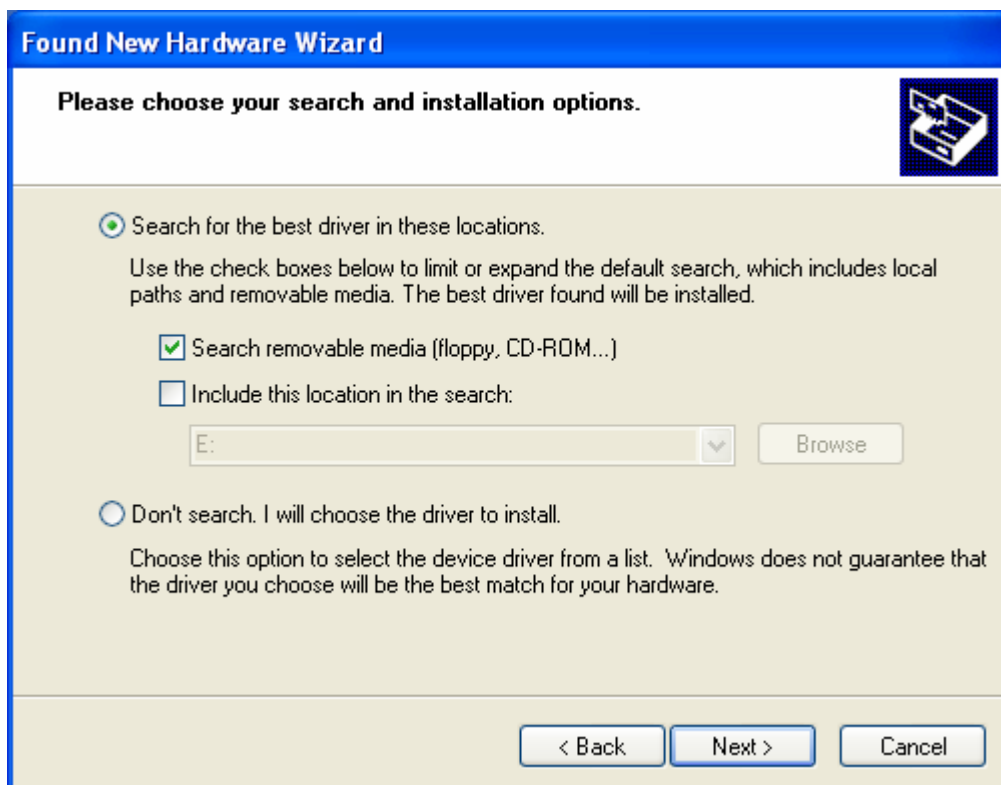


6-3 Set up GW-US11H for Windows XP

Step 1: After inserting the GW-US11H into the USB slot on your notebook, the Windows will auto-detect the GW-US11H and a “**Found New Hardware Wizard**” window will show up. Select “**Install from a list or specific (Advanced)**” to install the driver.



Step 2: Insert the Product CD-ROM into the CD-ROM drive. Check the “**Search removable media (floppy, CD-ROM...)**” check box and click on **Next** to install the driver.

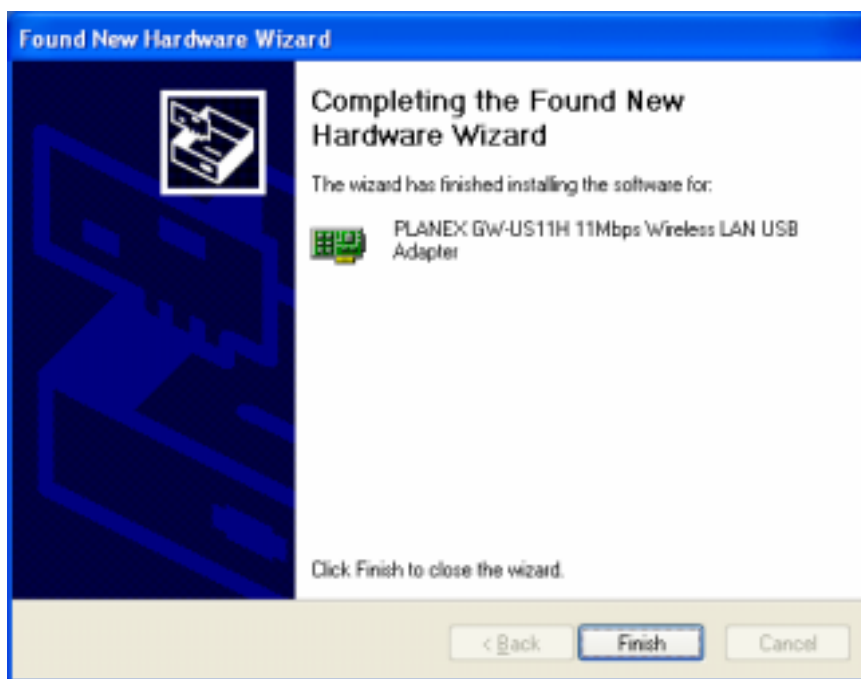


Step 3: The windows will find “**GW-US11H**” and start copying corresponding files into

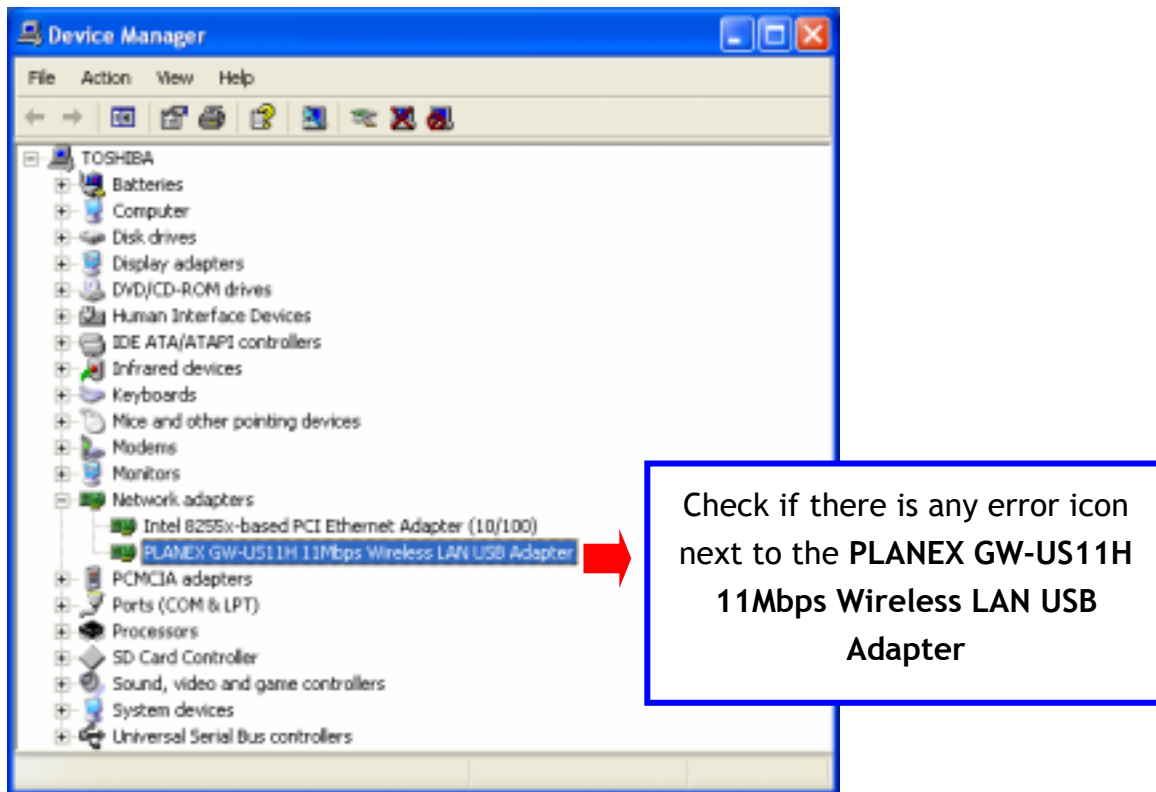
the system. Click on **Continue Anyway** to continue.



Step 4: Click **Finish** to complete the installation.



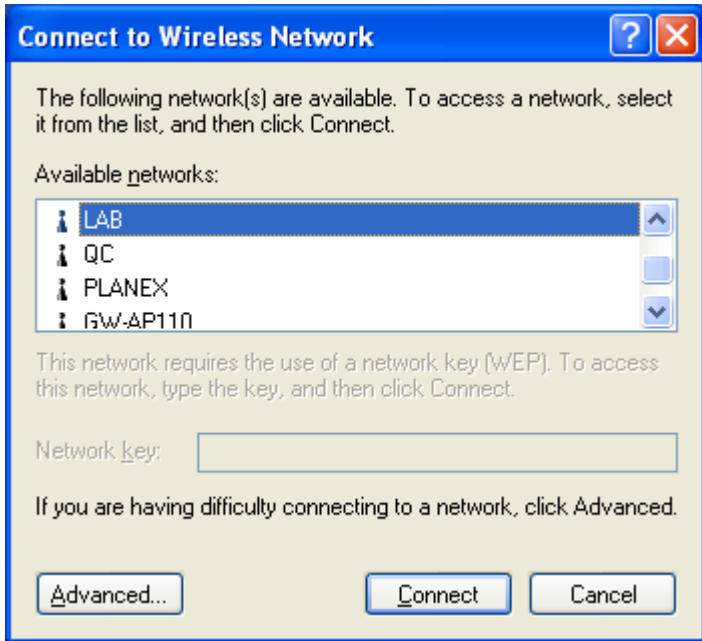
Step 5: Right click "My Computer" from **Start**, select **Properties**, go to the **Hardware** tab and click the **Device Manager** button to see if any error icon appears next to the **Network Adapter/GW-US11H**. If no, your GW-US11H is working well.



Step 6: After installing the GW-US11H, the Windows XP will display a “Wireless Network Connection” message.

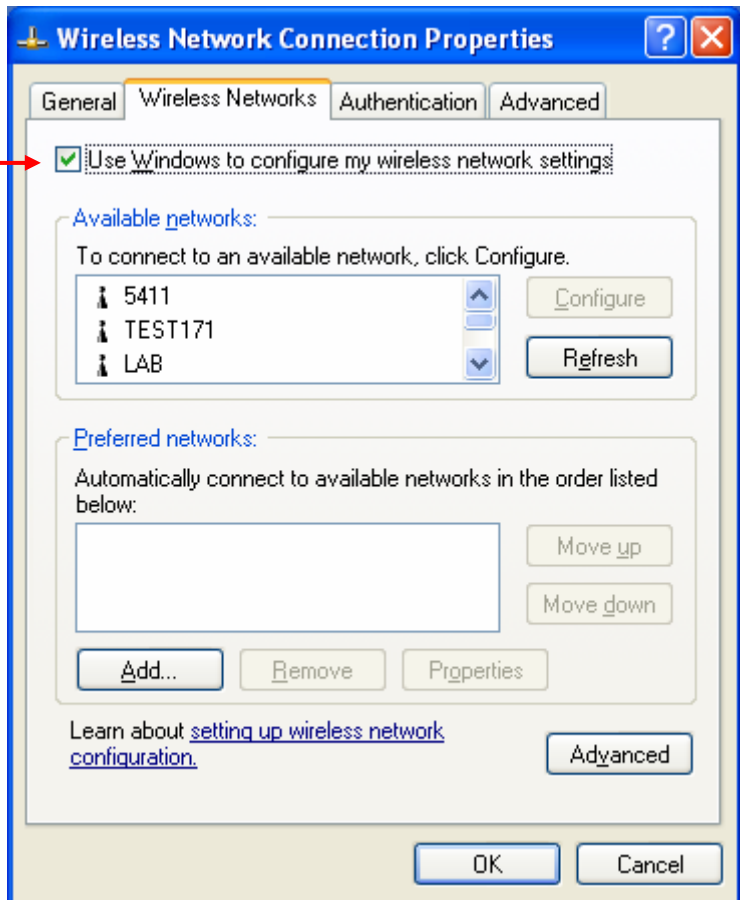


Click on the message and the “*Automatic Wireless Network Configuration*” will then appear automatically and allow use to choose to connect a wireless infrastructure network (Access Point), shown as the below figure. You may click the **Advanced** button to make advanced configuration for the Wireless LAN CF Card, shown as below.



For more information on using the automatic wireless network configuration please refer to Windows XP **Help** file.

If you desire to use our WLAN Utility, you need to disable the Windows XP Automatic Wireless Network Configuration first by un-checking this check box.



However, the WLAN Utility, which comes with the GW-US11H, provides you more tools to configure the GW-US11H and monitor the wireless connection. For more

information on installing and using the WLAN utility, please refer to the following sections “*Installation of the WLAN Utility*” on page 18 and “*Usage of the WLAN Utility*” on page 20.



Note: To use the WLAN utility under Windows XP, you need to disable the ***Automatic Wireless Network Configuration*** first. Steps are described as follows:

- Right click the **Network Connections** icon. Select **Properties**.
- Go to the **Wireless Networks** tab.
- Uncheck the “**Use Windows to configure my wireless network settings**” check box and click the **OK** button (see the above picture).

7. Configure the GW-US11H

This chapter gives you assistance with detailed configuration for the GW-US11H under Windows XP/2000/98/ME.

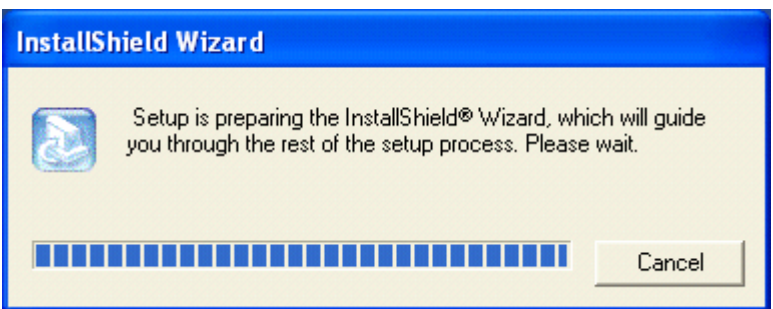
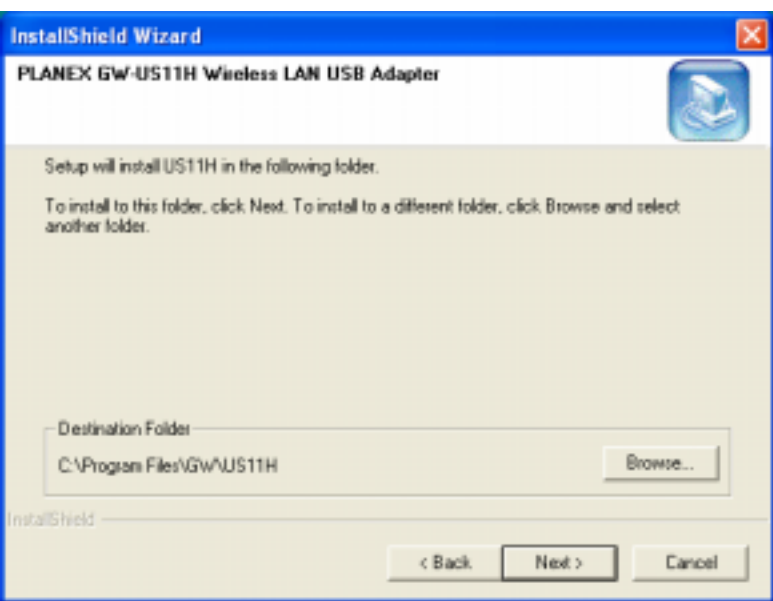
7-1 Install the WLAN Utility

To install the WLAN Utility, follow these steps:

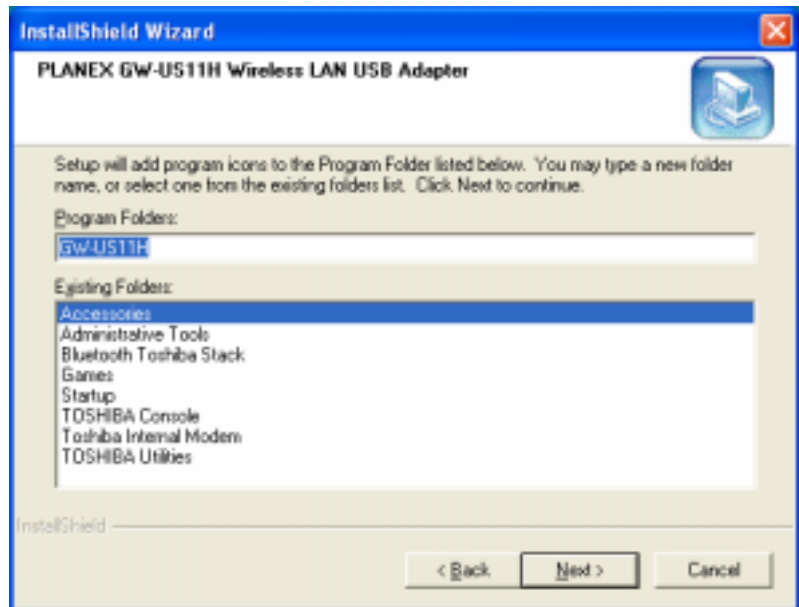
Step 1: Insert the Product CD-ROM or floppy disk again.

Step 2: Go to the **utility** folder and run **setup.exe**.

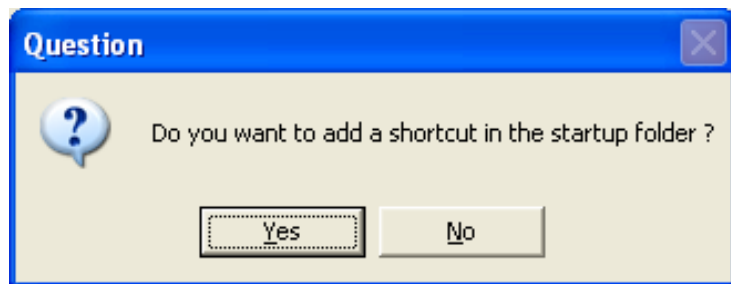
Step 3: The InstallShield Wizard will show up and guide you through the rest of the setup process.

<p><i>Run the Setup Utility</i></p>	 <p>The screenshot shows the 'InstallShield Wizard' window. The title bar is blue with the text 'InstallShield Wizard'. The main area has a light beige background. On the left, there is a blue icon of a floppy disk. To the right of the icon, the text reads: 'Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.' Below this text is a progress bar consisting of 20 small blue squares. At the bottom right of the window is a 'Cancel' button.</p>
<p><i>Choose Destination Location and click Next to continue.</i></p>	 <p>The screenshot shows the 'InstallShield Wizard' window. The title bar is blue with the text 'InstallShield Wizard'. Below the title bar, the text reads: 'PLANEX GW-US11H Wireless LAN USB Adapter'. On the right side of the window is a blue icon of a floppy disk. The main area has a light beige background. The text reads: 'Setup will install US11H in the following folder. To install to this folder, click Next. To install to a different folder, click Browse and select another folder.' Below this text is a text box labeled 'Destination Folder' containing the path 'C:\Program Files\GW\US11H'. To the right of the text box is a 'Browse...' button. At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.</p>

*Select a program folder and click **Next**.*



You may add a shortcut in the startup folder as desired.



Upon completion, go to **Program Files** and run the WLAN Utility and its icon will appear in the **System Tray** in the bottom right corner of your task bar. Clicking on the icon will open the configuration window. When you minimize the window, the system tray icon will be loaded in the System Tray again.



The color behind the system tray icon indicates the link status:



Blue indicates a good or excellent link.



Yellow indicates a usable but weak link.



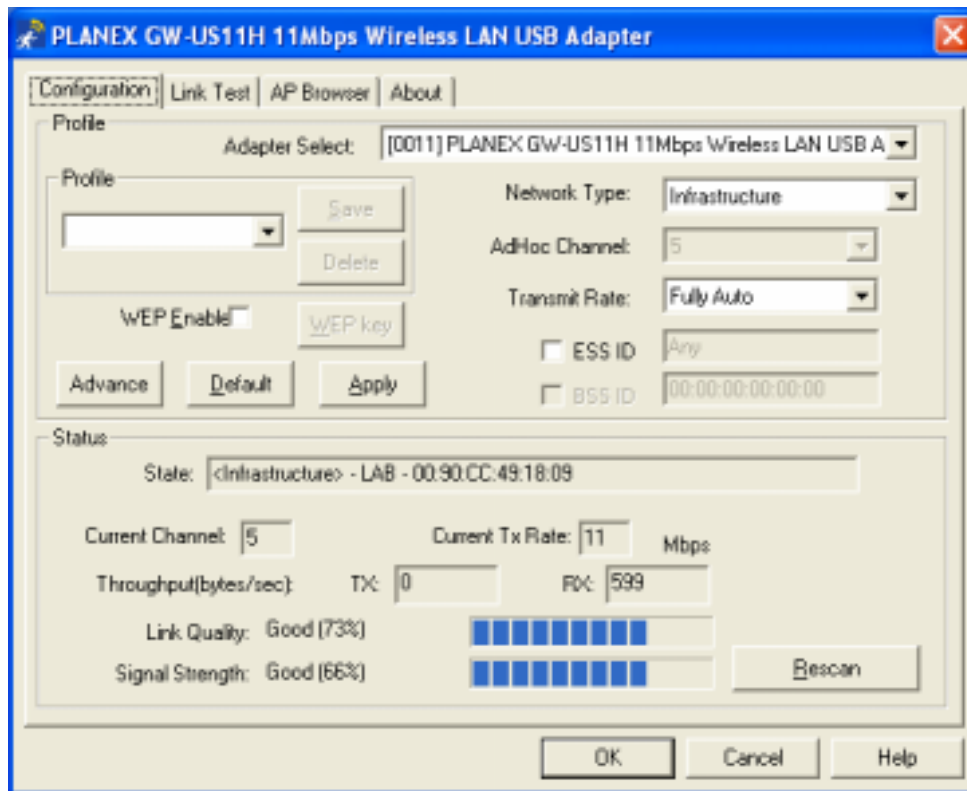
Red indicates no or very poor link quality.

7-2 Use the WLAN Utility

The WLAN Utility enables you to make configuration changes and perform user-level diagnostics on your GW-US11H in the Windows XP/2000/98/ME operating system environments. The WLAN Utility consists of window with 4 items for you to monitor and configure the GW-US11H: **Configuration**, **Link Test**, **AP Browser** and **About**.

Configuration:

The **Configuration** item allows you to modify the configuration parameters for the GW-US11H such as **Profile**, **Network Type**, **Ad-Hoc Channel**, **Transmit Rate**, **ESSID**, **WEP**, **RTS/CTS**, **Fragment Threshold**, and **Power Save** mode. Furthermore, you may monitor the current status of the GW-US11H such as **State**, **Current Channel**, **Current Tx Rate**, **Throughput**, **Link Quality** and **Signal Strength**.

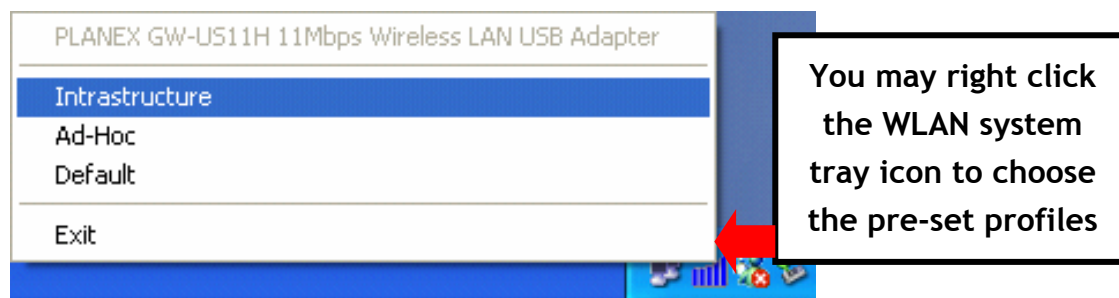


Profile

The **Profile** field allows you to set values for all parameters by selecting a previously defined profile. To create the profile, go to the **Profile** field, type a profile name and set the corresponding parameters. If one of the profiles is no longer used, you may remove it by clicking the **Delete** button. After changing parameters, save the profile and click the **Apply** button to take effect. You can have multiple profiles and modify the profile at any time.

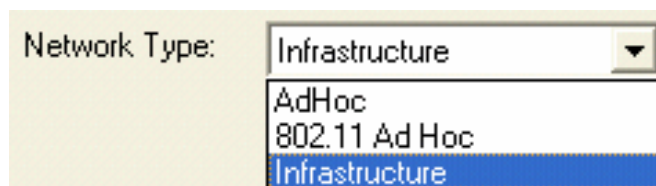


Alternatively, you may choose the profile by right clicking the system tray icon on the task bar, making the configuration more friendly and efficient.



Network Type

There are 3 network types for the GW-US11H to operate. If you need to access company network or Internet via an Access Point, select "**Infrastructure**". To set up a group of wireless stations for file and printer sharing, select "**Pseudo AdHoc**" or "**802.11 AdHoc**" (without Access Point). If **Pseudo Ad-Hoc (without access point)** is selected, you need to set wireless stations with the same channel. For **802.11 AdHoc**, the same ESS ID are required to the wireless stations.



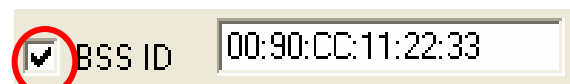
ESSID

The ESS ID is the unique ID used by Access Points and stations to identify a wireless LAN. Wireless clients associating to any Access Point must have the same ESSID. The default setting is ANY, which allows your GW-US11H to automatically associate to any Access Point (Infrastructure mode) in the vicinity of your wireless adapter. Alternatively, you may check the **ESS ID** check box to specify the ESS ID. It will then attempt to associate with Access Points or stations with the same ESS ID. The ESS ID can be set up to *32 characters* and is case sensitive.



Check here before entering the ESS ID

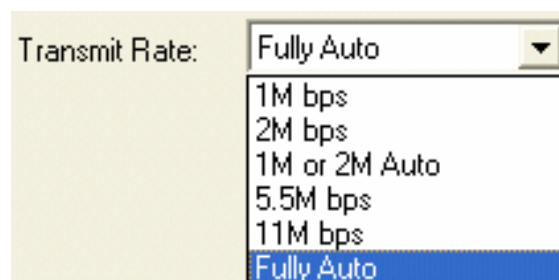
If there two Access Points with the same ESSID, you may check the BSS ID check box and enter the MAC address of the Access Point you desire to connect to.



Check here before entering the BSS ID

Transmit Rate

The GW-US11H provides various data rate options for you to select. Data rates options include **Fully Auto**, **2 Mb**, **Auto 1 or 2 Mb**, **5.5 Mb**, and **11 Mb**. In most networking scenarios, you will see that the factory-set default “**Fully Auto**” will prove the most efficient. This setting will allow your GW-US11H to operate at the maximum data rate. When the communications quality drops below a certain level, the PC Card will automatically switch to a lower data rate. Transmission at lower data speeds are usually more reliable. However, when the communications quality improves again, the GW-US11H will gradually increase the data rate again, until it has reached the highest available transmit rate.



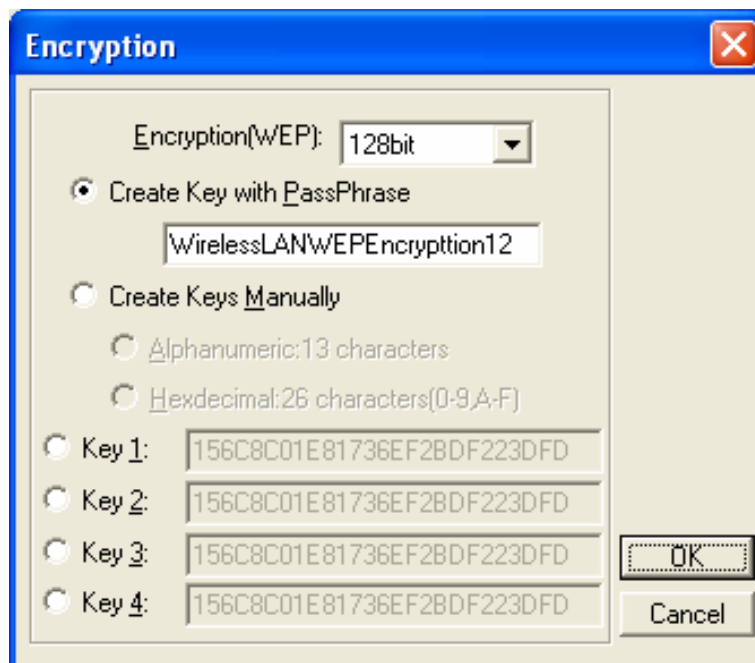
WEP

To prevent unauthorized wireless stations from accessing data transmitted over the network, the WLAN Utility offers highly secure data encryption, known as WEP, making your data transmission over air more secure. To activate the WEP Encryption, check the **WEP Enabled** check box. An Encryption window will then appear. The instructions are as follows:

- Pull down the **Encryption (WEP)** menu and select either **64bit** or **128bit** encryption method.
- Specify the encryption keys. There are two methods to set the WEP keys, as described below:

Create Encryption Keys by Using a Passphrase

To create encryption keys by using a passphrase, click the **Create Key with Passphrase** check box and type a character string in the **Passphrase** field. As you type, the utility uses an algorithm to generate 4 keys automatically. Select either the **64bit** or **128bit** encryption first, and type a string in the **Create Key with Passphrase** field. Select one key from the 4 WEP keys and click **OK**. Then click the **Apply** button on the **Configuration** tab to make the setting take effect.



Create Encryption Keys Using a Passphrase (128bit)

Create Encryption Keys Manually

You can also create encryption keys manually by clicking the **Create Keys Manually** check box.

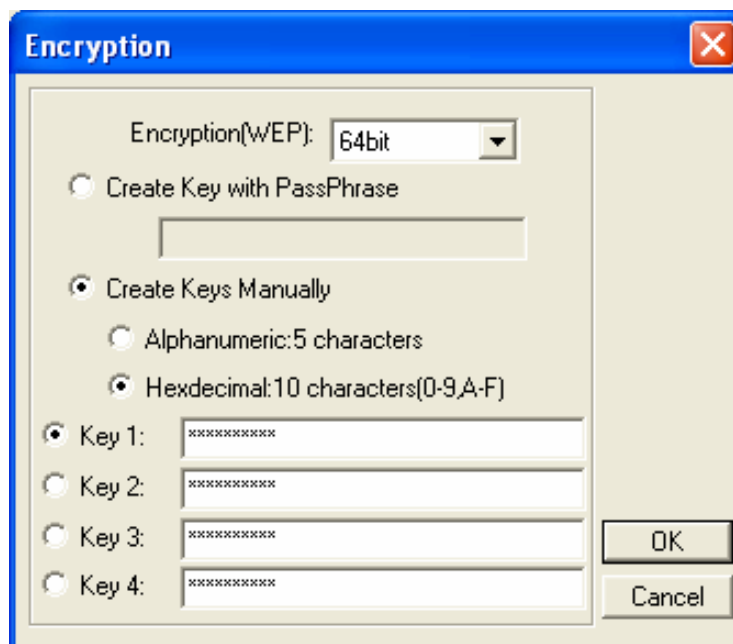
For 64bit encryption you may choose:

- **Alphanumeric: 5 characters** (case sensitive) ranging from “a-z”, “A-Z” and “0-9” (e.g. MyKey)
- **Hexadecimal: 10 hexadecimal digits** in the range of “A-F”, “a-f” and “0-9” (e.g. 11AA22BB33)

For 128bit encryption you may choose:

- **Alphanumeric: 13 characters** (case sensitive) ranging from “a-z”, “A-Z” and “0-9” (e.g. MyKey12345678)
- **Hexadecimal: 26 hexadecimal digits** in the range of “A-F”, “a-f” and “0-9” (e.g. 00112233445566778899AABBCC).

After entering the WEP keys in the key field, select one key as active key, click the **OK** button and then click the **Apply** button on the **Configuration** tab to make the setting take effect.



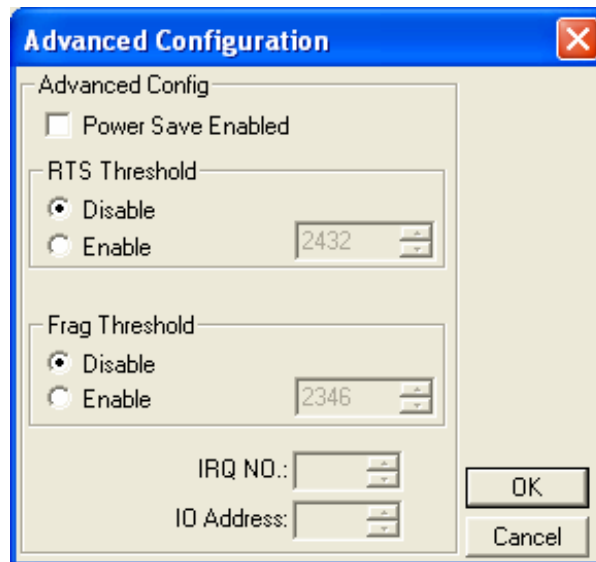
Create Encryption Keys Manually – Hexadecimal (64bit)



Note: The WEP key must be set up exactly the same on the Wireless LAN stations as they are on the wireless Access Points. If you set “MyKey” for the Wireless LAN CF Card, the same WEP Key “MyKey” must be assigned to the Access Point or other stations.

Advance

The WLAN Utility also offers the advanced configuration for user to set the GW-US11H under certain network environment. These advanced options include Power Management, RTS/CTS and Fragmentation Threshold. To enable the advanced configuration, go to the **Configuration** tab and click the **Advance** button.



Power Management

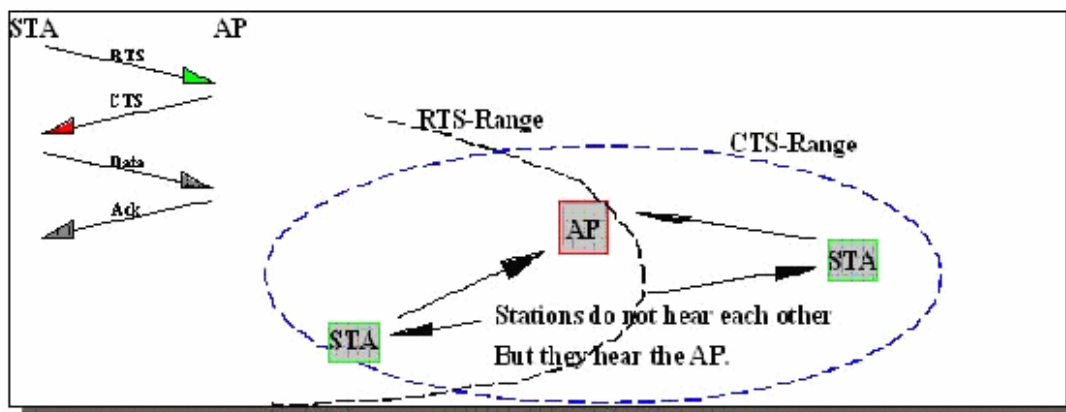
The Power Save option is designed to conserve battery life of you computer. When Power Save is enabled, your 11Mbps Wireless LAN CF Card will go into sleep mode to minimize power consumption.



Note: When power saving mode is enabled, the Access Points you use need to support power saving as well so that the communication can be established.

RTS Threshold

RTS Threshold is a mechanism implemented to prevent the “Hidden Node” problem. “Hidden Node” is a situation in which two stations are within range of the same Access Point, but are not within range of each other. The following figure illustrates an example of the “Hidden Node” problem. Both stations (STA) are within range of the Access Point, however, they cannot hear each other. Therefore, they are hidden nodes for each other. When a station starts data transmission with the Access Point, it might not notice that the other station is already using the wireless medium. When these two stations send data at the same time, they might collide when arriving simultaneously at the Access Point. The collision will most certainly result in a loss of messages for both stations.



Thus, the RTS Threshold mechanism provides a solution to prevent data collisions. When you enable RTS Threshold on a suspect “hidden station”, this station and its Access Point will use a Request to Send/Clear to Send protocol (RTS/CTS). The station will send an RTS to the Access Point, informing that it is going to transmit the data. Upon receipt, the Access Point will respond with a CTS message to all station within its range to notify all other stations to defer transmission. It will also confirm the requestor station that the Access Point has reserved it for the time-frame of the requested transmission.

If the “Hidden Node” problem is an issue, please specify the packet size. The RTS mechanism will be activated if the data size exceeds the value you set. It is highly recommended that you set the value ranging from 0 to 1500. The default value is **Disable**.

Note: Enabling RTS Threshold would cause redundant network overhead that could negatively affect the throughput performance instead of providing a remedy.

Frag. Threshold

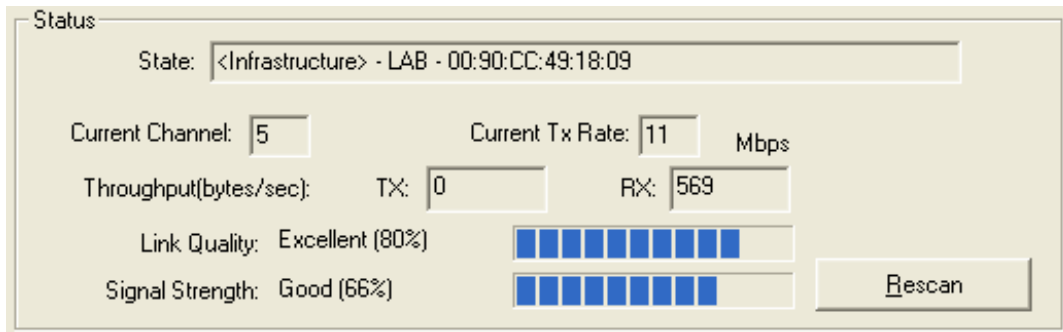
Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If your GW-US11H often transmit large files in wireless network, you can enable the Fragmentation Threshold by clicking the **Enable** button and the mechanism will split the packet. The value can be set from 256 to 1500. The default value is **Disable**.

IRQ NO./IO Address

To avoid device conflict, you may modify the IRQ No. and IO Address for your device (Only available under Windows NT).

Status:

The Status field on the **Configuration** menu provides the following information.



State: When operating in Infrastructure mode, this field shows the MAC address of the Access Point with which the GW-US11H is communicating. When operating in Ad-Hoc mode, it shows the virtual MAC address used by computers participating in the Ad-Hoc network.

Current Channel: Shows the channel on which the connection is made.

Current Tx Rate: Shows the highest transmit rate of the current association.

Throughput: Shows the short term transmit and receive throughput in bytes/second, and is continuously updated.

Link Quality: Based on the quality of the received signal of the Access Point beacon. There are 5 states of link quality:

100%~80%: Excellent link.

80%~60%: Good link quality.

60%~40%: Fair link quality.

Under 40%: Poor or no connection.

Signal Strength: Based on the received signal strength measurement of the baseband processor of the Beacon signal. Same as link quality, there are 5 states of signal strength:

100%~80%: Excellent signal strength.

80%~60%: Good signal strength.

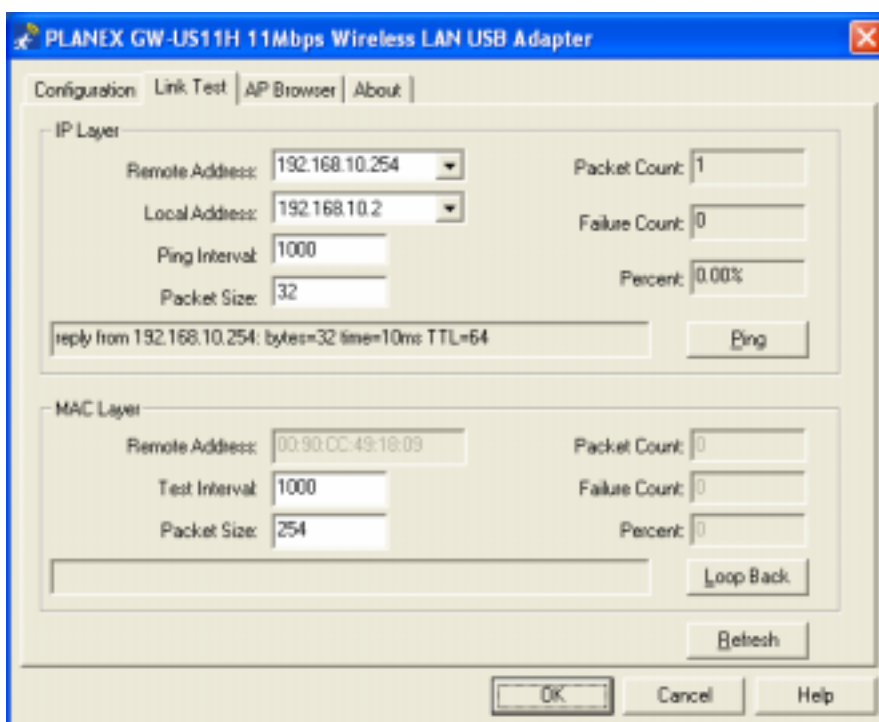
60%~40%: Fair signal strength.

Under 40%: Poor or no signal strength.

You can click the **Rescan** button to force the radio to rescan all available channels. If your link quality or signal strength is poor, rescanning can be used to push the radio off a weak Access Point and search for a better link with another Access Point.

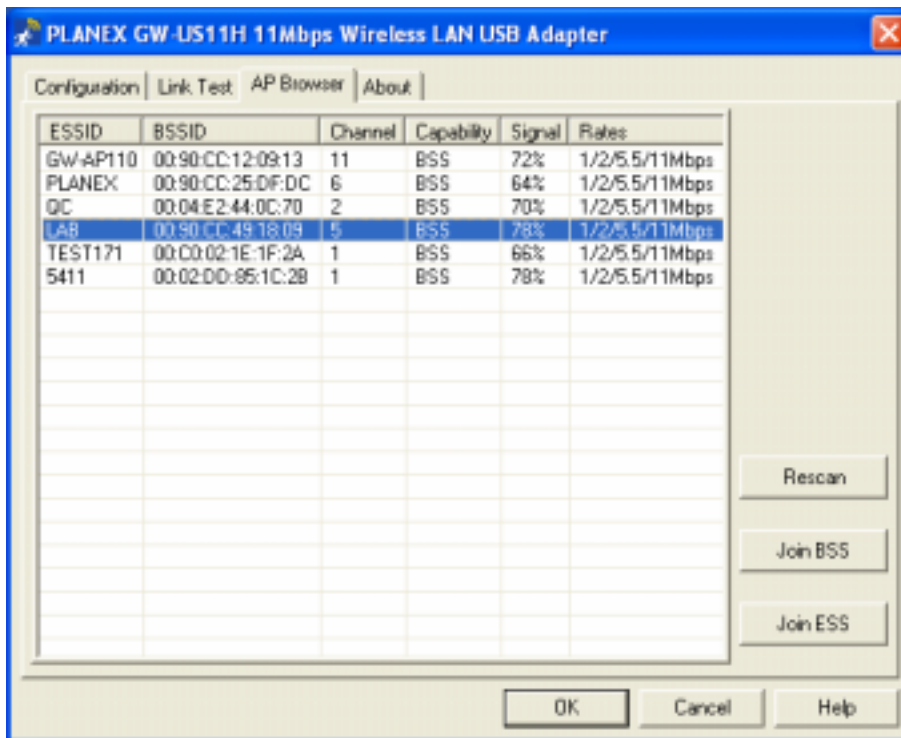
Link Test:

The **Link Test** tool helps you examine data transmission quality between your GW-US11H and any workstation on the network. By entering IP address of 2 remote station, setting ping interval and packet size, you may know whether communication has been made successfully or not. Additionally, you may run the loopback test (proprietary) by clicking the **Loop back** button to verify the communication quality between your wireless station and Access Point. The **Refresh** button is used for setting the counters back to 0.



AP Browser:

By clicking the **Rescan** button, the AP Browser can display Access Points around the working environment. Besides showing the ESSID of each Access Point, it also displays BSSID, Channel, Signal, Quality and Supported Rates. To join any of the displayed Access Points, highlight the Access Point you desire to connect and then click the **Join BSS** (when there are more than 2 Access Points with the same ESSID), or **Join ESS** button to join the group.



About:

The **About** item shows the versions of the Wireless LAN Utility, driver, firmware of the GW-US11H. Also, the MAC address and frequency domain are displayed.

