User's Manual

Version 1.0

FW-C502 Wireless LAN CardBus Adapter

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- **Note**

Information in this manual is subject to change without notice.

Federal Communications Commission Compliance Notice

To ensure continued compliance, use only shielded interface cables when connecting to the computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission (FCC) 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.

FCC Radiation Exposure Statement

- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

- This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

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1 Introduction

This chapter introduces the features and functions of the product.

1.1 About 802.11b Wireless LAN CardBus Adapter

Congratulations on purchasing this Wireless Local Area Network (WLAN) Card. Your 802.11b Wireless LAN CardBus Adapter's 11 Mbps data rate provides an equivalent Ethernet speed to access corporate networks or the Internet in a wireless environment. When installed, the WLAN Card is able to communicate with any 802.11b-compliant product, allowing you to work anywhere in the coverage area, enjoying its convenience and mobility.

1.2 Features and Benefits

- IEEE 802.11b and Wi-Fi-compliant 11 Mbps WLAN access solution
- Direct Sequence Spread Spectrum (DSSS) standard
- Built-in antenna
- Wired Equivalent Privacy (WEP) 128-bit data encryption
- Frequency range at 2.4 GHz ISM band
- Automatic data rate selection at 11 Mbps, 5.5 Mbps, 2 Mbps, and 1 Mbps (automatic data rate fallback under noisy environment)

1.3 Product View

802.11b Wireless LAN CardBus Adapter

	Component	Description
❶	**802.11b Wireless LAN CardBus Adapter Connector**	Connects to your computing device. The interface is PCMCIA slot.
❷	**Wireless Connection Indicator (LINK)**	Glows green when the WLAN Card has successfully linked with an Access Point (*Infrastructure* mode) or with another wireless station (*Ad-Hoc* mode).
❸	**Integrated Antenna**	Allows the WLAN Card to receive and transmit wireless data.

2 Getting Started

This chapter provides the information that you need before you start to install the 802.11b Wireless LAN CardBus Adapter.

2.1 Package Contents

If any of the listed items are damaged or missing, please notify your local dealer.

- FW - C502 802.11b Wireless LAN CardBus Adapter
- CD-ROM (containing Drivers and Manual)
- Quick Installation Guide

2.2 System Requirements

Before installing the FW-C502 802.11b Wireless LAN CardBus Adapter, the following equipments may be required in order to install the adapter properly:

- Operating system: Windows 98SE, Windows Me, Windows 2000, or Windows XP
- Desktop or laptop computer with CD-ROM drive
- ISA to CardBus or PCI to CardBus controller in case of desktop
- PCMCIA type II or type III card slot in case of laptop

NOTE: CardBus controller must support 3.3V PC card.

Caution!

Do not insert your WLAN Card into the PCMCIA slot at this stage until you have finished installation.

2.3 LED Indicators

The 802.11b Wireless LAN CardBus Adapter has two LED indicators, which will glow or blink to reflect operation status. The described as below:

- Power LED (PWR) – The LED lights up when the 802.11b Wireless LAN CardBus Adapter is receiving power.
- Link Activity LED (LINK)– The LED blinks fast when the 802.11b Wireless LAN CardBus Adapter is linking with the network and LED blinks slowly when the 802.11b Wireless LAN CardBus Adapter is receiving or transmitting data.

2.4 Safety Precautions

- Be sure to read and follow all warning notices and instructions.
- In order to extend the life of the device it is advised to store it in a protective casing whenever carrying the computing device on travel and not operating the device.
- Never use abrasive materials or rinse the device with liquids.
- At all times, it will be the responsibility of the end-user to ensure that an outdoor antenna installation complies with local radio regulations.
- Do not service the product by yourself. Refer all servicing to qualified service personnel.
- In order to limit Radio Frequency (RF) exposure, the following rules should be applied:
    1. Install the antenna in a location where a distance of 20 cm from the antenna may be maintained.
    2. While installing the antenna in the location, please do not turn on power of the device.
    3. While the device is working (transmitting or receiving), please do not touch or move the antenna.
    4. Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.

- For Laptop (laptop) computer users, in order to comply with the FCC RF exposure limits, it is recommended when using a laptop with a wireless device that the device's integrated antenna should not be positioned closer than 5 cm (2 inches) from your body or nearby persons for extended periods of time while it is transmitting (or operating). If the antenna is positioned less than 5 cm (2 inches) from the user, it is recommended that the user limit exposure time.

2.5 Site Selection

Typical outdoor operating range:

	11 Mbps (High speed)	5.5 Mbps (Medium speed)	2 Mbps (Standard speed)	1 Mbps (Low speed)
Range	250 M	280 M	350 M	420 M

The range of the wireless signal is related to the Transmit Rate of the wireless communication (Tx Rate on the Status utility of **the Configuration & Monitor Application utility**). Communications at lower transmit range may travel larger distances.

If you intend to use the WLAN Card as part of an outdoor antenna installation, the range of the outdoor antenna installation will be related to clearance of the radio signal path.

The typical conditions when used indoors in "office environments" can be described as follows:

- In **Open Office environments**, there should be no physical obstructions between two antennas. This is an ideal indoor antenna installation.
- In **Semi-open Office environments**, workspace is divided by shoulder-height, hollow wall elements; antenna are at desktop level. This describes the typical indoor antenna installation.
- In **Closed Office environments**, workspace is separated by floor-to-floor ceiling and walls are made of out brick or concrete. This type of indoor antenna installation is not applicable to your WLAN card.

NOTE 1: The range values listed above are typical distances measured. These values may provide a rule of thumb and may vary according to the actual radio conditions at the location where the WLAN card will be installed.

NOTE 2: The range of your wireless devices can be affected when the antennas are placed near metal surfaces and solid high-density materials.

NOTE 3: Obstacles in the signal path of the radio that may either absorb or reflect the radio signal also affect the range.

3 Install & Uninstall the 802.11b Wireless LAN CardBus Adapter for Windows

This chapter provides the instructions that guide you through the driver installation or uninstallation of your 802.11b Wireless LAN CardBus Adapter for the Windows XP\2000\98SE\ME operating systems. The installation processes for Windows XP, please refer to ***3.1 Windows XP Installation***; for Windows 2000 refer to ***3.2 Windows 2000 Installation***; for Windows98SE/ME, please see ***3.3 Windows 98SE/ME Installation***.

3.1 Windows XP Installation & Uninstallation

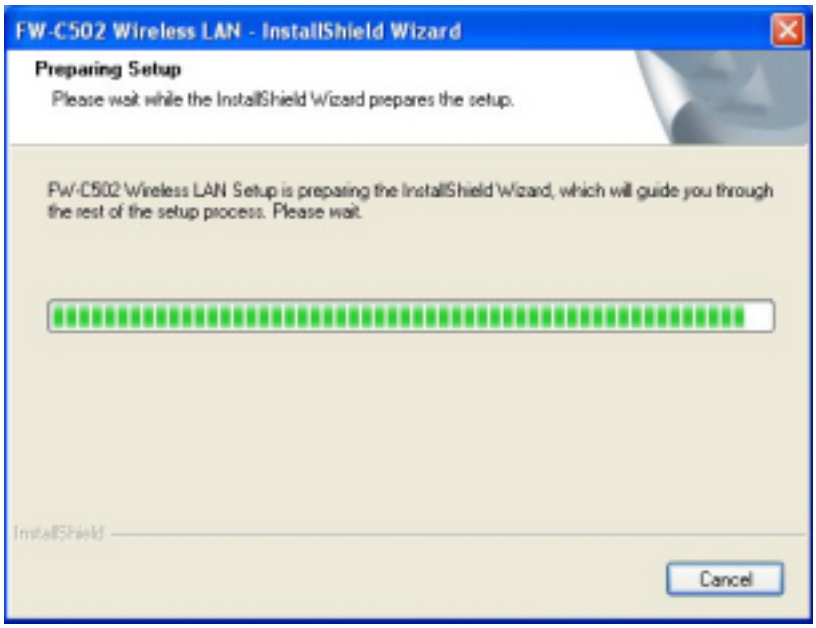
Follow the instructions below to install the driver and utility on a computer running Windows XP.

1. Turn on the computer and insert the driver CD into the appropriate drive.

Do not insert your WLAN Card into the PCMCIA Slot until you have finished the software installation.

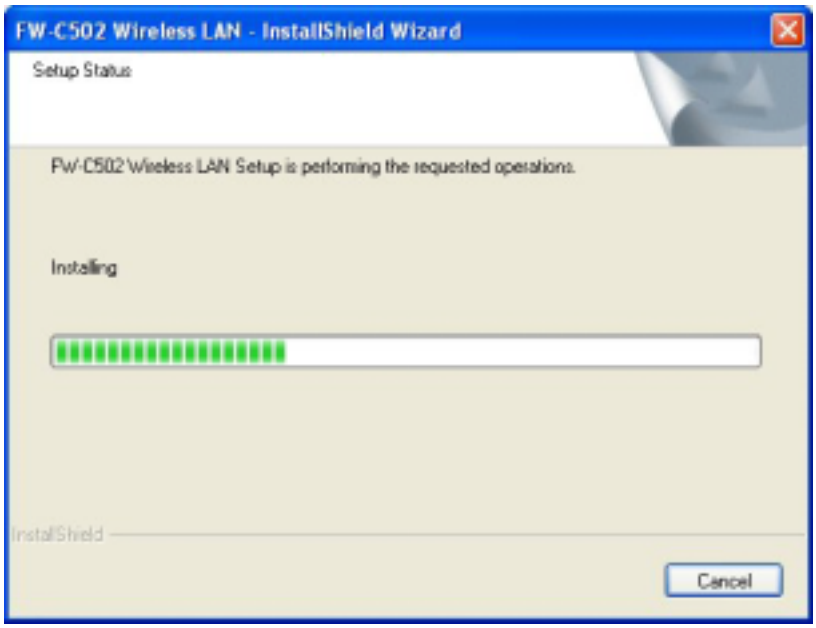
2. The install will automatically appear.

3. The installation will start.



4. Click **"Next"** button to continue installation.

5. Finish the installation.



If the AutoRun function on your computer does not automatically start, then select your CD-ROM driver and double-click the file, *SETUP.EXE* under the Windows directory.

6. Find the location of the PCMCIA slot on your laptop.

7. Insert the Wireless CardBus Adapter into the PCMCIA slot on your laptop. (as shown)

8. After inserting the WLAN Card into your computer, Windows will automatically detect that new hardware has been installed. Depending on which operating system you are using, the steps and screens may differ slightly. Click **"Next"** to continue installing.

9. For Windows XP, the following screen may appear. Click **"Continue Anyway"**.

10. Click **"Finish"** to finalize the installation.

Follow the instructions below to uninstall the driver and utility on a computer running Windows XP.

1. Exit the Configuration & Monitor Utility icon. If it is currently active, this icon is loaded on the system tray of Windows task bar, right click to exit then eject the WLAN Adapter.

2. Select the *"Uninstall Cardbus Wireless LAN Adapter"* option by clicking on **Start**, then **Programs** → Wireless LAN Adapter and the uninstall wizard will guide you through the uninstall process.

3. The other way to uninstall is to access the Windows Control Panel and select the *"Add/Remove Programs"* option and follow the instructions to uninstall.

If during the uninstall process you receive an error message, insert the driver CD and try to uninstall again.

3.2 Windows 2000 Installation & Uninstallation

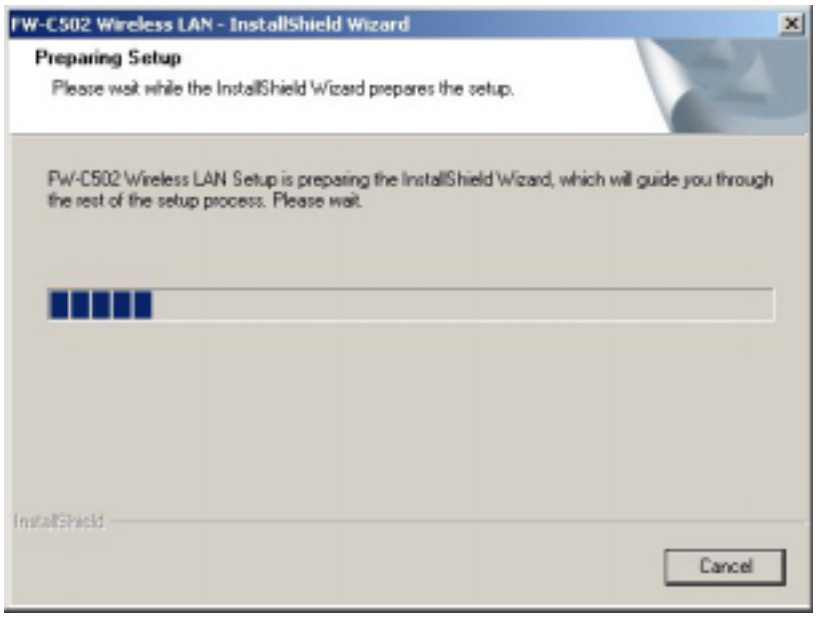
Follow the instructions below to install the driver and utility on a computer running Windows 2000.

1. Turn on the computer and insert the driver CD into the appropriate driver.

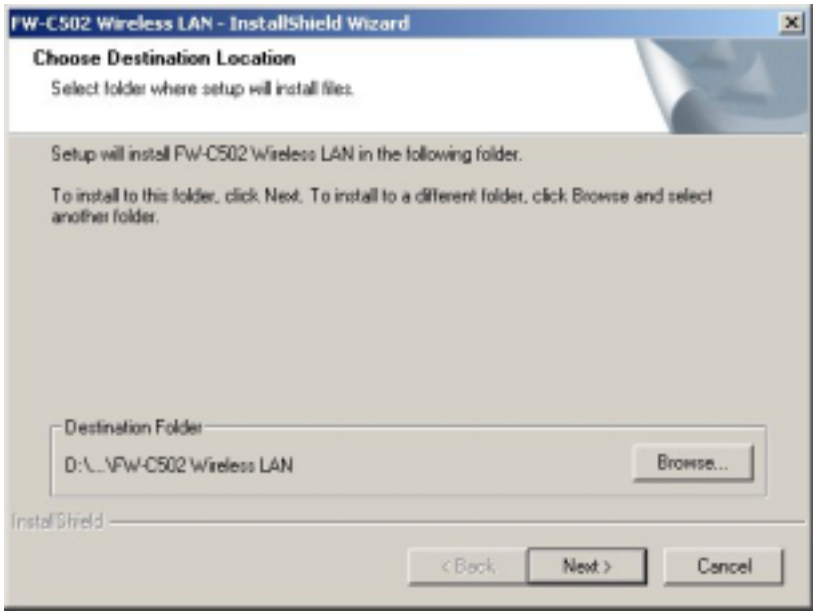
Do not insert your WLAN Card into the PCMCIA slot at this stage until you have finished installation.

2. The install screen will automatically appear.

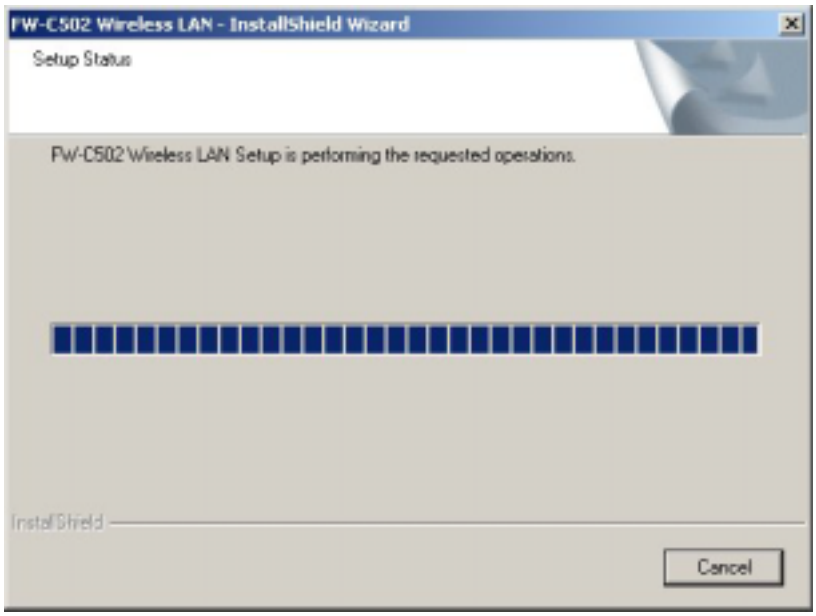
3. The installation will start.



4. Click **"Next"** button to continue installation.



5. Finish the installation.



If the AutoRun function on your computer does not automatically start, then select your CD-ROM driver and double-click the file, SETUP.EXE under the Windows directory.

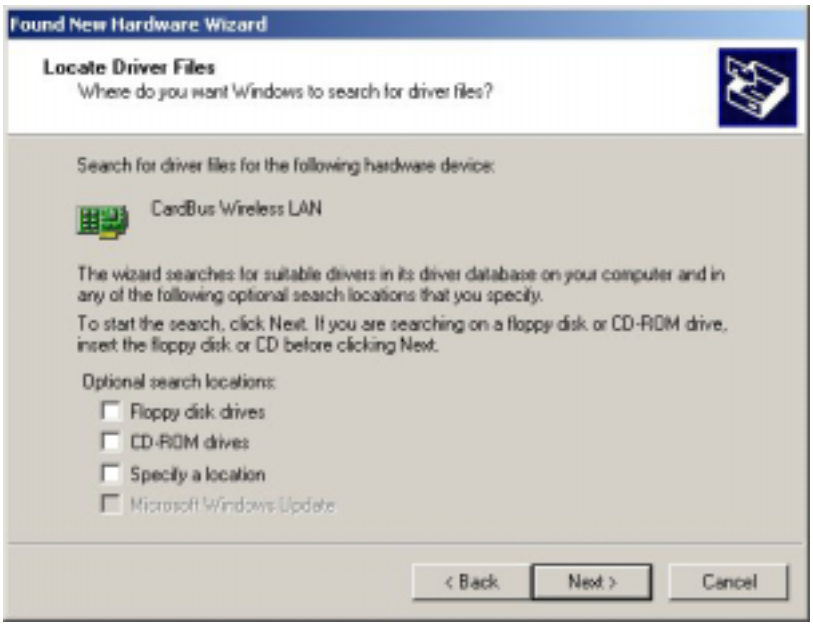
6. Find the location of the PCMCIA slot on your laptop.

7. Insert the Wireless CardBus Adapter into the PCMCIA slot on your laptop.

8. After inserting the WLAN Card into your computer, Windows will automatically detect that new hardware had been installed. Depending on which operating system you are using, the steps and screens may differ slightly. Click **"Next"** to continue installing.

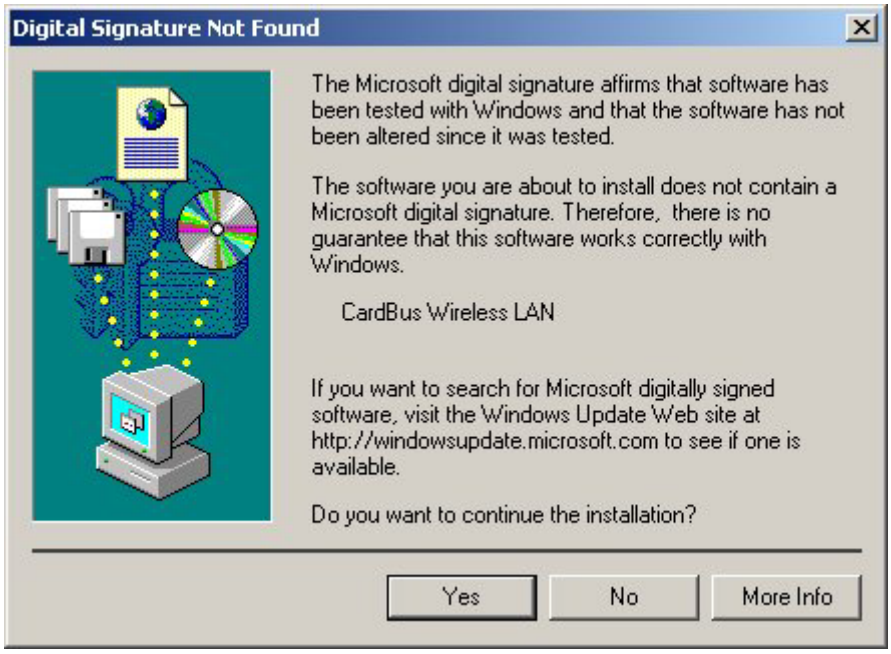
9. Select **"Search for a suitable driver for my device (recommended)"** and click **Next** to proceed.

10. Un-check all check box and click on Next to install the driver.



11. The Windows will find **"CardBus Wireless LAN"**. Click Next to continue.

12. For Windows 2000, a Digital Signature Not Found message will appear. Click **"Yes"** to continue setup.



13. Complete the installation.

Follow the instructions below to uninstall the driver and utility on a computer running Windows 2000.

1. Exit the Configuration & Monitor Utility icon. If it is currently active, this icon is loaded on the system tray of Windows task bar, right click to exit then eject the WLAN Adapter.

2. Select the *"Uninstall Cardbus Wireless LAN Adapter"* option by clicking on **Start**, then **Programs** → Wireless LAN Adapter and the uninstall wizard will guide you through the uninstall process.

3. The other way to uninstall is to access the Windows Control Panel and select the *"Add/Remove Programs"* option and follow the instructions to uninstall.

If during the uninstall process you receive an error message, insert the driver CD and try to uninstall again.

3.3 Windows 98SE/ME Installation & Uninstallation

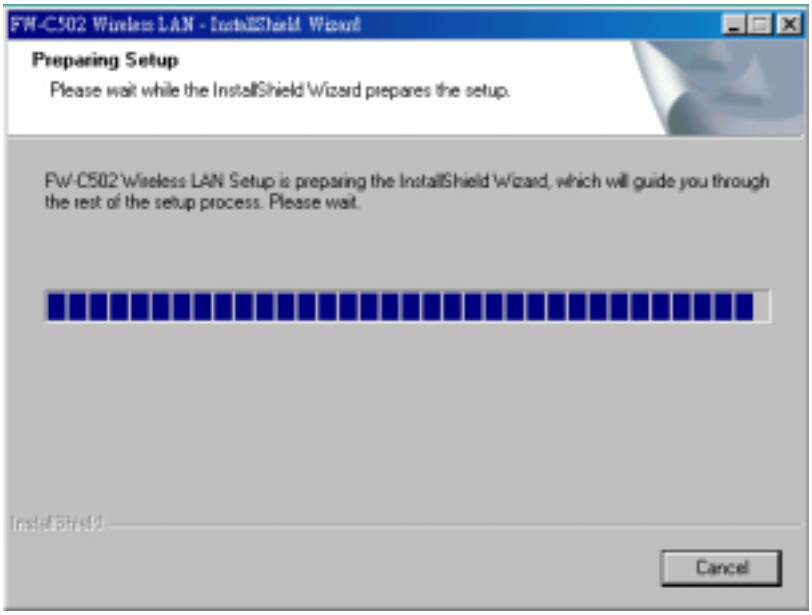
Follow the instructions below to install the driver and utility on a computer running Windows 98SE/ME.

1. Turn on the computer and insert the driver CD into the appropriate drive.

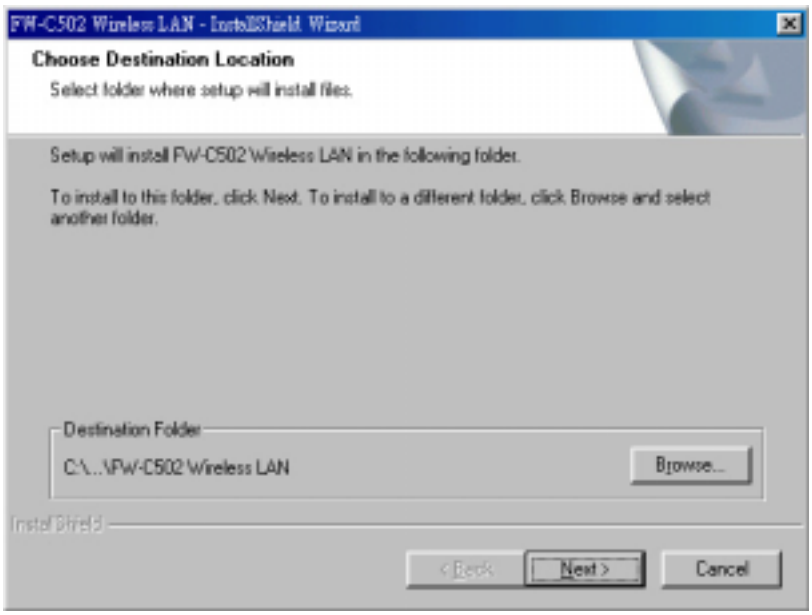
Do not insert your WLAN Card into the PCMCIA slot at this stage until you have finished installation.

2. The install screen will automatically appear.

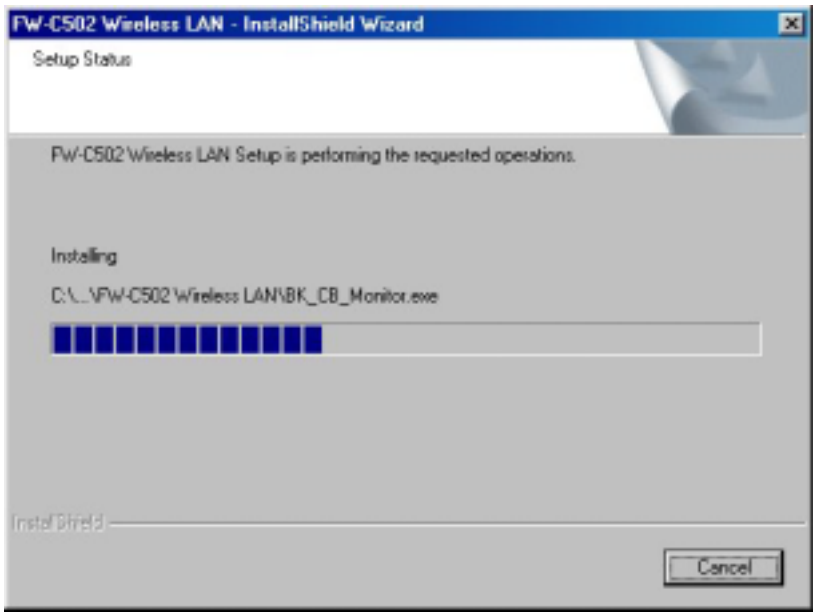
3. The screen will start.



4. Click **“Next”** to continue installation.



5. Finish the installation.



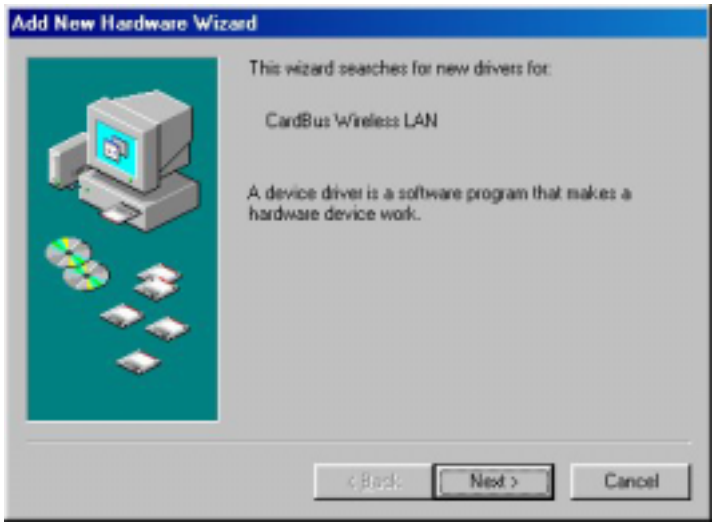
6. Restart the computer.

If the AutoRun function on your computer does not automatically start, then select your CD-ROM drive and double-click the file, *SETUP.EXE* under the Windows directory.

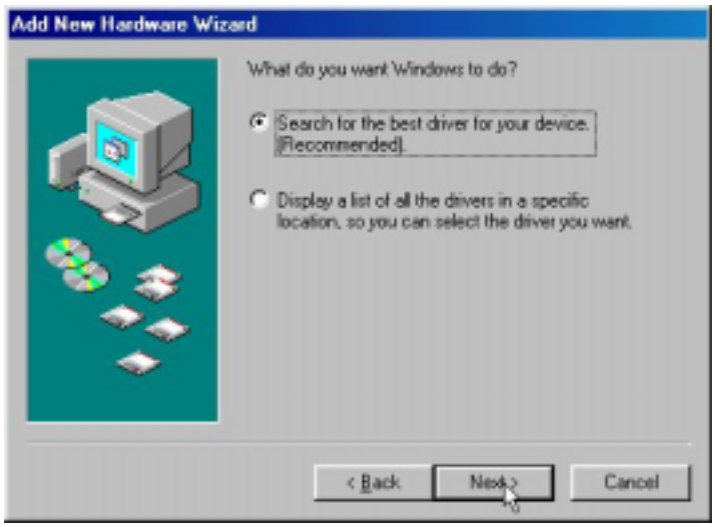
7. Find the location of the PCMCIA slot on your laptop.

8. Insert the Wireless CardBus Adapter into the PCMCIA slot on your laptop (as shown)

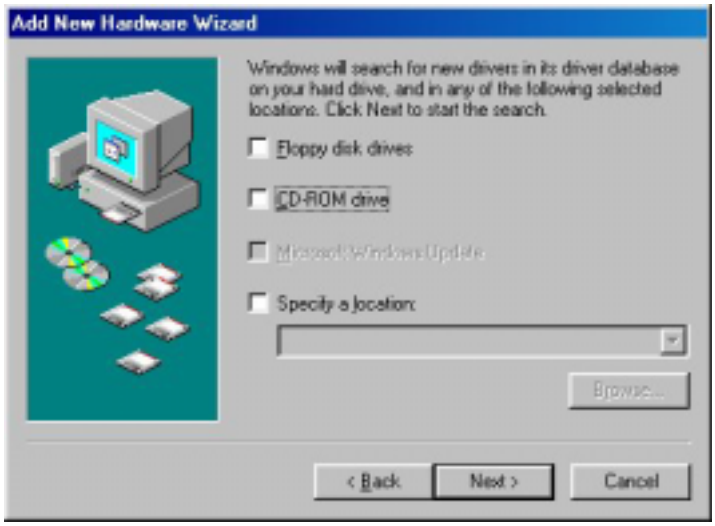
9. After inserting the WLAN Card into your computer, Windows will automatically detect that new hardware has been installed. Depending on which operating system you are using, the steps and screens may differ slightly. Click **"Next"** to continue installing.



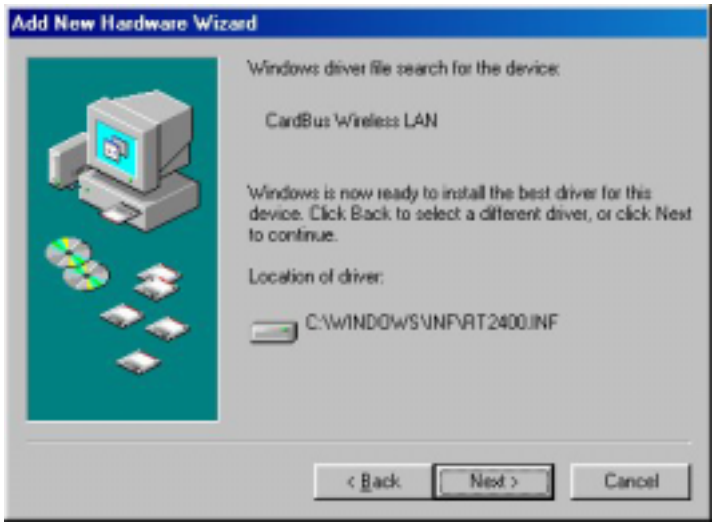
10. Select **"Search for the best driver for your device (Recommended)"** and click **"Next"** to proceed.



11. Un-check all check box and click on **"Next"** to install the driver.

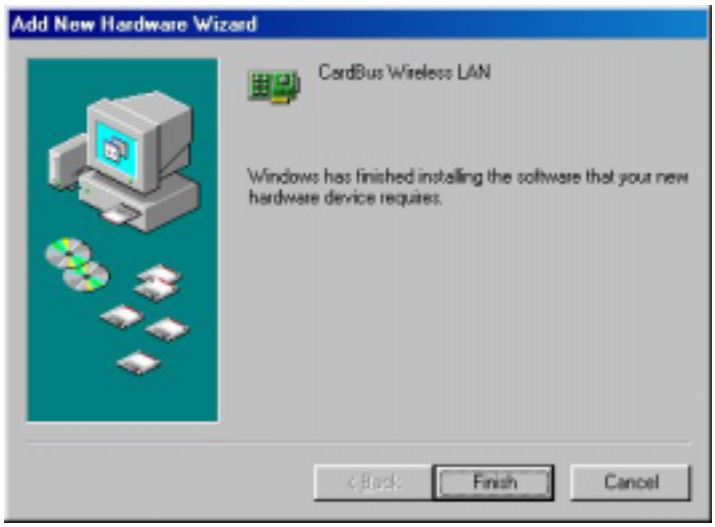


12. The Windows will find **“CardBus Wireless LAN**”. Click **“Next”** to continue.



13. Follow the instructions to install driver. For Windows 98SE, [Please insert the disk labeled “Windows 98 Second Edition CD-ROM CD-ROM”, and then click OK] window appears, insert and enter the path corresponding to the appropriate drives and click **OK**. Usually these files could be found at C:\\ Windows or C:\\Windows\system.

14. Click “Finish” to complete the software installation.



15. Restart the computer.

Follow the instructions below to uninstall the driver and utility on a computer running Windows 98SE/ME.

1. Exit the Configuration & Monitor Utility icon. If it is currently active, this icon is loaded on the system tray of Windows task bar, right click to exit then eject the WLAN Adapter.

2. Select the *"Uninstall Cardbus Wireless LAN Adapter"* option by clicking on **Start**, then **Programs** → Wireless LAN Adapter and the uninstall wizard will guide you through the uninstall process.

3. The other way to uninstall is to access the Windows Control Panel and select the *"Add/Remove Programs"* option and follow the instructions to uninstall.

If during the uninstall process you receive an error message, insert the driver CD and try to uninstall again.

4 Verifying the 802.11b Wireless LAN CardBus Adapter for Windows

This section provides the instructions that guide you to verify proper operation of the driver and utility of your 802.11b Wireless LAN CardBus Adapter for the Windows XP\2000\98SE\ME operating systems.

4.1 Inserting the 802.11b Wireless LAN CardBus Adapter

To insert the 802.11b Wireless LAN CardBus Adapter, please follow the guidelines below:

1. Find an available PCMCIA type II or type III card slot in your computing device.
2. With the WLAN Card adapter's connector facing the PCMCIA slot, slide the card completely into the slot (refer to your system manual for the correct orientation).
3. Your WLAN card should start searching for wireless signals from an AP (*Infrastructure* mode) or another wireless station (*Ad-Hoc* mode).

NOTE: Make sure that the 802.11b Wireless LAN CardBus Adapter's driver as well as the Configuration & Monitor Application utility has been properly installed (see previous section).

4.2 Verifying Driver Installation

To verify that you have properly installed the driver of the 802.11b Wireless LAN CardBus Adapter, check the 802.11b Wireless LAN CardBus Adapter's LED or verify driver installation under Windows XP/2000/98SE/ME operating systems.

Verifying Driver Installation under Windows XP

1. **Start** → Select **"Settings"** → click **"Control Panel"** and double-click the **"System"** icon.
2. Click on **"My Computer"** → select **"Properties"** from the Windows XP desktop.
3. Click on the **"Hardware"** folder tab and click the **"Device Manager"** button.
4. Click the **"Network adapters"**.

5. There should be no *yellow exclamation* or *red cross-sign* in the front of the 802.11b Wireless LAN CardBus Adapter.
6. Double-click the 802.11b Wireless LAN CardBus Adapter and the Device Status windows should indicate that the 802.11b Wireless LAN CardBus Adapter is working properly.

Verifying Driver Installation under Windows 2000

1. **Start** → Select **"Settings"** → click **"Control Panel"** and double-click the **"System"** icon.
2. Click on **"My Computer"** → select **"Properties"** from the Windows 2000 desktop.
3. Click on the **"Hardware"** folder tab and click the **"Device Manager"** button.
4. Click the **"Network adapters"**.
5. There should be no *yellow exclamation* or *red cross-sign* in the front of the 802.11b Wireless LAN CardBus Adapter.
6. Double-click the 802.11b Wireless LAN CardBus Adapter and the Device Status windows should indicate that the 802.11b Wireless LAN CardBus Adapter is working properly.

Verifying Driver Installation under Windows 98SE/Me

1. **Start** → Select **"Settings"** → click **"Control Panel"** and double-click the **"System"** icon.
2. Click on **"My Computer"** → select **"Properties"** from the Windows 98/ME desktop.
3. Click on the **"Hardware"** folder tab and click the **"Device Manager"** button.
4. Click the **"Network adapters"**.
5. There should be no *yellow exclamation* or *red cross-sign* in the front of the 802.11b Wireless LAN CardBus Adapter.
6. Double-click the 802.11b Wireless LAN CardBus Adapter and the Device Status windows should indicate that the 802.11b Wireless LAN CardBus Adapter is working properly.

4.3 Verifying Utility Installation

To verify the utility of the 802.11b Wireless LAN CardBus Adapter for properly installation, be sure the Configuration & Monitor Utility icon is loaded on the system tray of Windows task bar every time the card is running. You can open

it by double-clicking on this icon. While the station is in infrastructure mode and not associated to an Access Point, the color of the icon is red. As soon as the station associates itself to an Access Point (see 5-2 page 34 “Site Survey”), the icon color automatically turns to blue. In Ad-Hoc mode the color is always blue, except when the card is resetting and initializing where it turns to red during the reset and initialization procedure.

4.4 Removing the WLAN Card

This section provides instructions for removing the WLAN Card. The PCMCIA slot permits “hot swapping” of PC cards, allowing you to insert or remove the 802.11b Wireless LAN CardBus Adapter from the slot whenever you like, even when the power to your computer is on. However, you are advised to always disable the 802.11b Wireless LAN CardBus Adapter prior to removing it from the PCMCIA slot. This allows the Windows operating system to:

- Log off from the network server.
- Disable the driver properly through the Control Panel.
- Disconnect power to the PCMCIA slot.

Follow the steps below to stop using the WLAN Card:

1. Click on Unplug or Eject Hardware icon on the system tray of Windows task bar.

2. Select the “Stop CardBus Wireless LAN #2 ”

3. Wait a few seconds until the system pop-up a message to indicate that you can safely remove the WLAN Card from the system. Click **“OK”** and then you may eject WLAN Card.

Normally, you would use the eject button to remove the WLAN Card. However, you are advised to refer to your system's manual on properly ejecting your 802.11b Wireless LAN CardBus Adapter from the slot.

5 Using the Configuration & Monitor Utility

In special circumstances, you may need to change configuration settings depending on how you would like to manage your wireless network. The Configuration & Monitor Application utility enables you to make configuration changes and perform user-level diagnostics on your WLAN Card as well as monitor the status of communication.

5.1 Configure 802.11b Wireless LAN CardBus Adapter Under Windows XP

Windows XP is the only operating system right now that enables you to configuration the WLAN Card without using the Configuration & Monitor Application utility. Therefore, if your laptop is running on Windows XP, you need to decide whether to configure your WLAN Card through Windows XP or Configuration & Monitor utility.

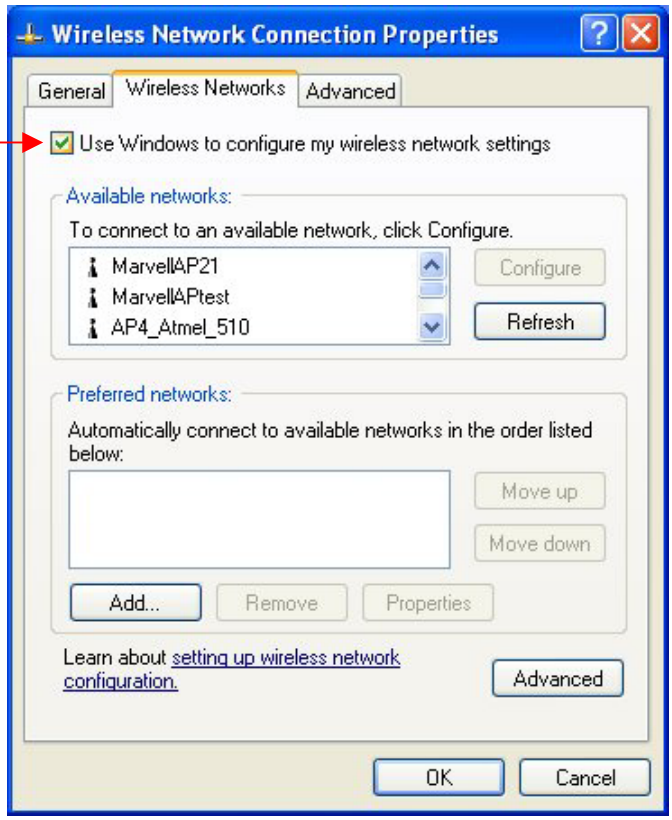
After you install complete, the Configuration & Monitor utility will start to run it automatically. If you choose to configure your WLAN Card through Windows XP instead of Configuration & Monitor utility, follow the steps below:

1. Exit the Configuration & Monitor Utility icon. If it is currently active, this icon is loaded on the system tray of Windows task bar, right click to exit Configuration & Monitor Utility.
2. Windows XP will appear a “Wireless Network Connection # ” message.

3. Click on the message and the “Automatic Wireless Network Configuration” will display automatically. You may click **“Connect”** button to connect with an available Access Point.

4. You also may click **"Advanced"** button to make advanced configuration for the 802.11b Wireless LAN CardBus Adapter, Select the **Wireless Networks** tab shown as below.

Note: You must select one way to configure 802.11b Wireless LAN CardBus Adapter either of using the Configuration and Monitor Utility by un-checking this check box or using Windows XP *Automatic Wireless Network Configuration* first by checking this check box. When using the Configuration and Monitor Utility, the check box will be un-checked automatically.



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

However, the Configuration & Monitor utility provides you more settings to configure the 802.11b Wireless LAN CardBus Adapter and monitor the wireless network connection. Please refer to the following section "Usage of the Configuration & Monitor utility".

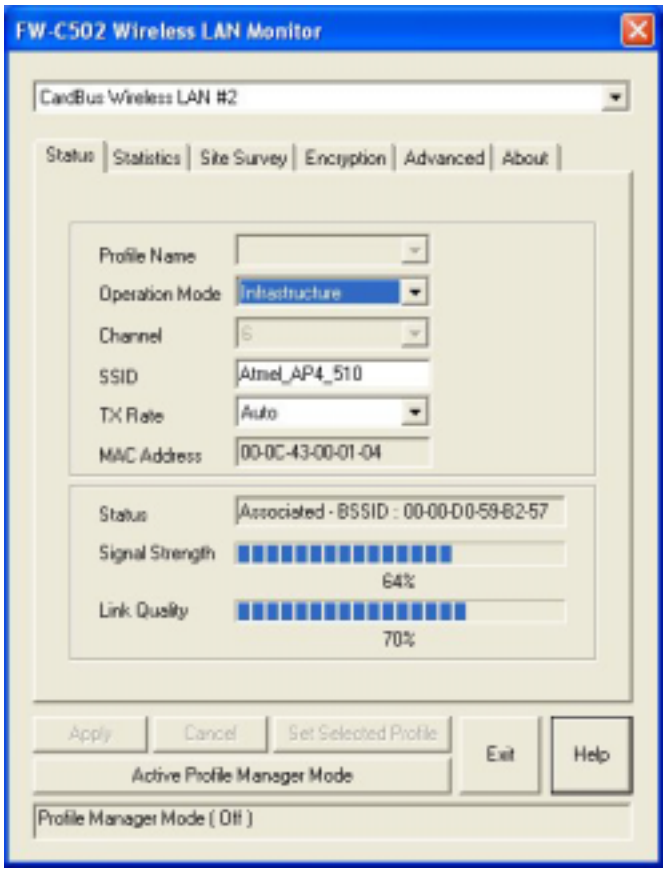
5.2 Usage of the Configuration & Monitor Utility

1. Insert the 802.11b Wireless LAN CardBus Adapter into the PCMCIA slot on the laptop. The Configuration & Monitor Application utility will appear as an icon on the system tray of Windows task bar. Double-click on this icon or go to **Program File** and run the CardBus Wireless LAN.

> ☆ When the station is in *Infrastructure* mode and not associated with an AP, color of the icon is red.
> ☆ When the station is in *Infrastructure* mode and associated with an AP, color of icon is blue.
> ☆ When the station is in *Ad-Hoc* mode, color of icon is always blue.
> ☆ When the station is in *Ad-Hoc* mode and the WLAN Card is resetting and initializing, color of icon is red.

2. The next window appears on screen (the following pages describe the Configuration & Monitor Application utility in sequence).

Status



<u>The following configuration parameters are shown:</u>

- **Profile Name**

  The Profile field allows you to set values for all parameters by selecting a previously defined profile or allows you to create a new profile for 802.11b Wireless LAN CardBus Adapter. To create a new profile, enter a Profile Name in Profile field and set the corresponding parameters. After complete the setting, click **"Set Selected Profile"** and click **"Apply"** button to take effect. If you don't want to use the profile, click the **"Cancel Profile Manager Mode"**. You could have multiple profiles and modify a profile at any time.

- **Operating Mode**

  Allows you to choose between *Ad-Hoc* or *Infrastructure* mode. In *Ad-Hoc* mode the wireless stations can communicate directly with each other. In *Infrastructure* mode the use of an Access Point (AP) is necessary for wireless stations to communicate with each other.

- **Channel**

  This item is available only if *Ad-Hoc* mode was selected in the previous field. Select the 14 channels available for use.

- **SSID**

  When using the wireless station in an *Ad-Hoc* mode then all participating stations should have the same SSID. When using the wireless station in an *Infrastructure* mode the SSID must be the same as the SSID of the AP it is associated with.

- **Tx Rate**

  Your WLAN Card provides various transmission (data) rate options for you to select. In most networking scenarios, the option *Auto* will prove the most efficient. This setting allows your WLAN Card to operate at the maximum transmission rate. When the communication quality drops below a certain level, the WLAN Card will automatically switch to a lower transmission rate. Transmission at lower data speeds is usually more reliable. However, when the communication quality improves again, the WLAN Card will gradually increase the transmission rate again until it reaches the highest available transmission rate. If you wish to balance speed versus reliability, you can select any of the available options.

- **MAC Address**

  Indicates the MAC address of the 802.11b Wireless LAN CardBus Adapter. MAC address could be used as the unique ID of the WLAN Card.

<u>The communication status is also shown:</u>

- **Status**

  Indicates the status of connection and MAC address of the associated Access Point when the FW-C502 802.11b Wireless LAN CardBus Adapter is configured in Infrastructure mode.

- **Signal Strength**

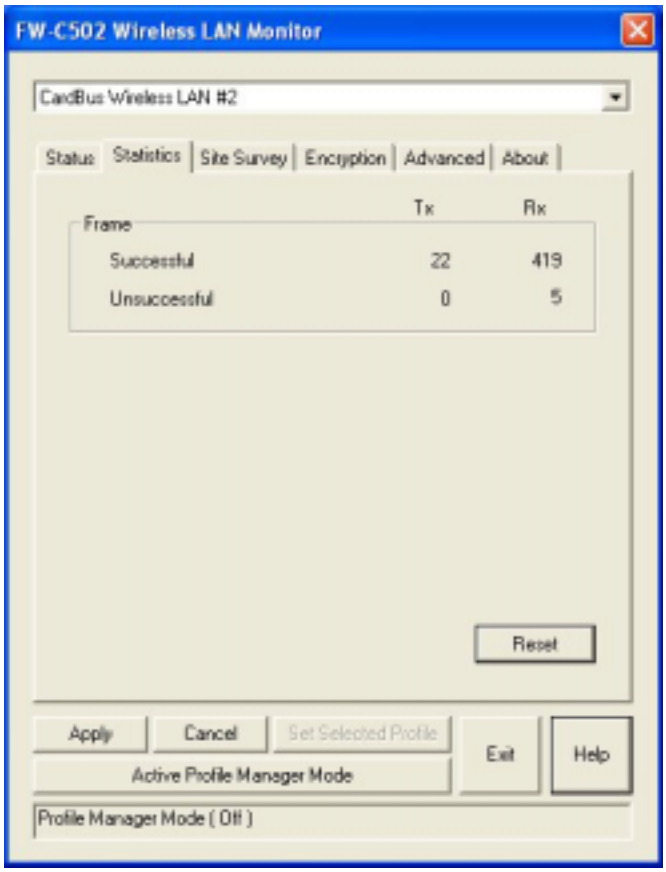
  Signal level when receiving the last responding packet. Signal strength is calculated as the percentage of its signal level measurement relative to the full signal level.

- **Link Quality**

  The transmission quality between your WLAN Card and the AP it is associated with (Infrastructure mode). Based on the quality of the received signal of the Access Point beacon.

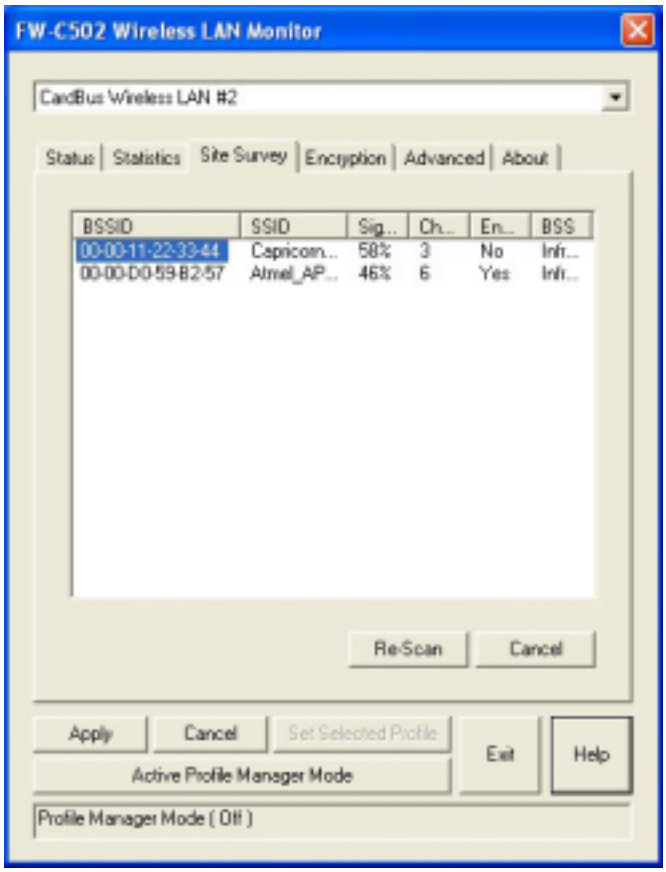
After changing parameters, click the **Apply** button to take effect.

Statistics



The **Statistics** utility allows you to view the statistic (Packets) information (Data Packets, Mgmt Packets, and Rejected Packets). To renew or update the list of statistics, press **"Reset"**.

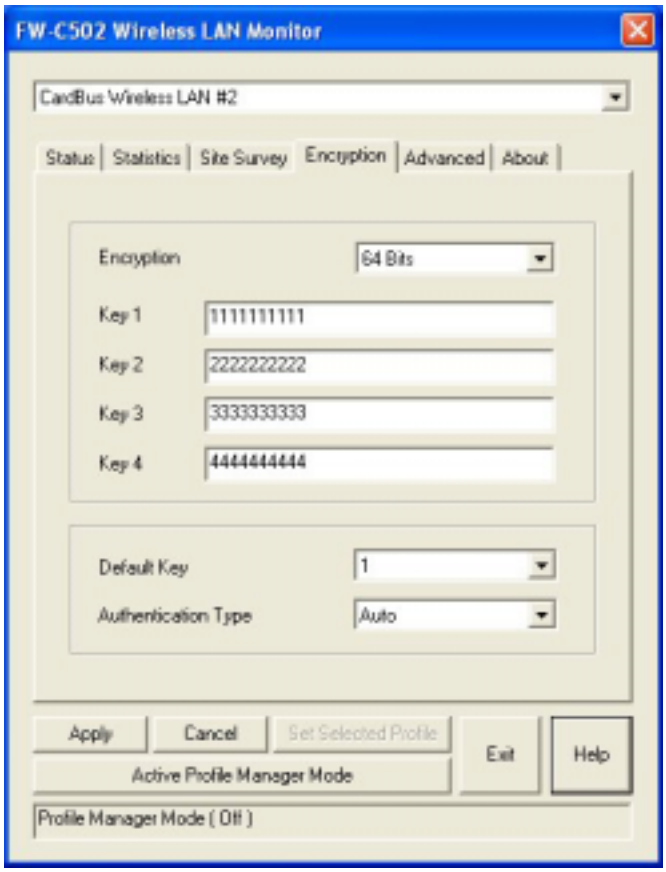
Site Survey



The **Site Survey** utility allows you to scan all the channels to locate all the APs (Access Points) within the range of your WLAN Card. When an/various AP(s) are located, information regarding the BSSID and SSID, signal strength and channel where the AP operates, whether or not WEP encryption is used, and the operating mode is shown. Click **"Re-Scan"** to update the list. You may stop rescanning by press the **"Cancel"** button.

To associate with any of the APs listed, double-click on your choice (on the BSSID field) and the utility will take you back to the **Status** utility showing you the parameters of the newly established connection.

Encryption



To prevent unauthorized wireless stations from accessing data transmitted over the network, the **Encryption** utility offers highly secure data encryption by allowing you to set four different WEP keys (must be the same for the participating wireless stations) and specify which one to use. To set encryption:

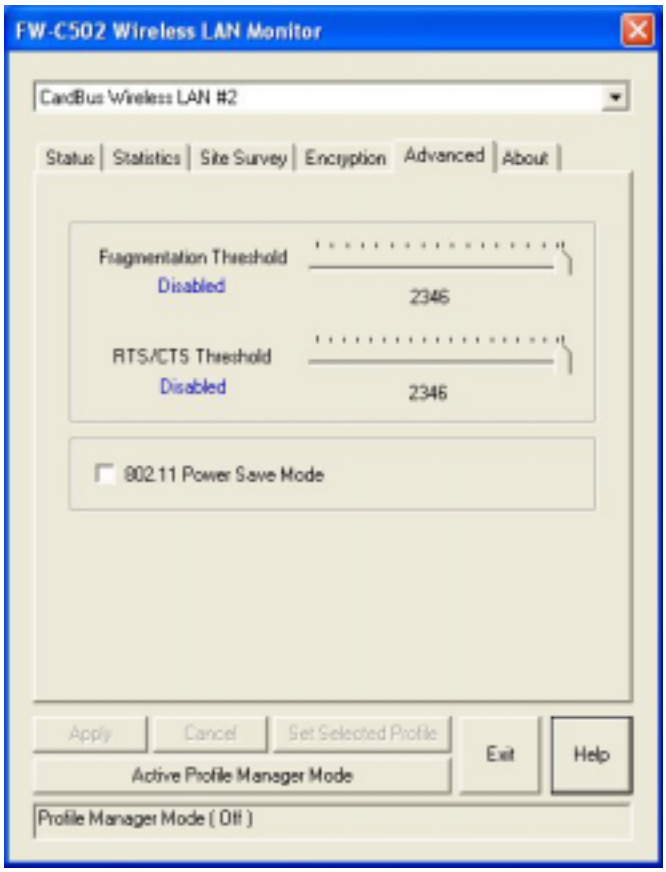
1. Choose *Enabled* on the **Encryption** window and select either 64 Bits or 128 Bits Encryption.

2. Select any of the available WEP keys (**Key #1** to **#4**) on the **Default Key** field. The WEP keys must be in HEX (hexadecimal) format in the range of *a* to *f*, *A* to *F*, and *0* to *9*.

3. Select the **Authentication Type** (*Open System* or *Shared Key or Auto*).

4. Press **"Apply"** for any changes to take effect.

Advanced



The **Advanced** utility allows you to change the following advanced configuration settings:

- **Fragmentation Threshold**

  Allows you to set the Fragmentation Threshold (threshold for the activation of the fragmentation mechanism). The Fragmentation function is used for improving the efficiency when high traffic flows along in the wireless network. If you often transmit large files in the wireless network, move the slide bar with your mouse and then use the right and left arrow keyboard keys to select an exact number. The figure shows the recommended configuration setting.

- **RTS/CTS Threshold**

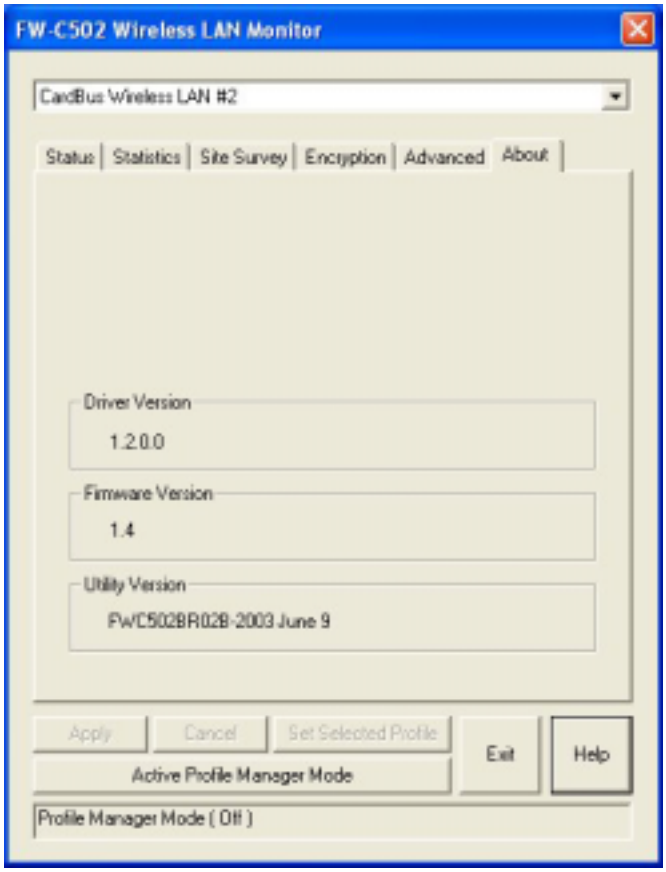
  Allows you to set the RTS Threshold (threshold for the activation of the RTS/CTS mechanism). Transmitter contending for the medium may not hear

each other. RTS/CTS (Request-To-Send/Clear-To-Send) mechanism can solve this “Hidden Node Problem.” If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will not be enabled. To enable RTS/CTS Threshold, move the slide bar with your mouse and then use the right and left arrow keyboard keys to select an exact number. The figure shows the recommended configuration setting.

- **802.11 Power Save**

  Allows you to minimize power consumption and conserve the battery life of your computer.

About



By choosing this option, you can get the information on the version of the driver, firmware and application. Use the **“Exit”** button in order to exit the application.

On a Local Area Network (LAN) or other network, the MAC (Media Access Control) address is your computer’s unique hardware number. On an Ethernet

LAN, it is the same as your Ethernet address.

5.3 Usage of the Change Region Tool

This option is used for changing the Channel of the Region for the WLAN Adapter according to your current region. The default Channel will be Channel 1 to Channel 11 for USA, Canada and Taiwan. If you don't locate in the default countries, please go to the FW-C502 Change Region Tool and select the Channel Region that you locate. If you don't select the right Channel Region, it may occur your WLAN Adapter cannot work properly. After selecting the correctly Region, click **"OK"** button to make the Change Region take effect.

6 Troubleshooting

This chapter covers potential problems you may run into and the possible remedies. After each problem description, some instructions are provided to help you to diagnose and solve the problem.

Q: When you encounter problems, there are some preliminary checklists that can help you to dig out the problems before you take further actions?

A: - Try to isolate which part of the computer's network connection is causing the problem.
- Absence of, or conflict of the WLAN Card driver. Make sure that all device drivers are correctly installed (refer to chapter 3).
- Determine if the location of your WLAN Card is not conducive for wireless transmission (refer to chapter 2 "Site Selection").

If a problem persists after you follow the instructions in this chapter, contact an authorized dealer for help.

Q: When you encounter problems during Installation?

A: Don't insert your WLAN Card into the PCMCIA slot until you have finished the installation. If in case you should mistakenly insert your WLAN Card into your computer before installing the driver and utility, then perform the following to correct it:

– Remove the WLAN Card from the PCMCIA slot.

– Insert the driver CD into the CD-ROM drive and double-click the file **SETUP.EXE** under the Windows directory. It would locate the already installed driver and utility and uninstall it.

– Re-boot your system after uninstalling.

– Refer to chapter 3 and follow the instructions to properly install the driver and utility before inserting the WLAN Card.

- Re-insert the WLAN Card to the computer again.
- Check if the I/O and IRQ for the WLAN Card have conflict problems with other devices connected to your computer.

For Windows 98SE / 2000 / Me operating system, make sure that the PCMCIA device driver is installed on your computer.

Q: During using Configuration & Monitor Utility, when you encountered the problem to connect?

A: - Use the **Monitor** utility of your **Configuration & Monitor Utility** to check the *Link Quality* of your WLAN Card with the AP it is associated with (*Infrastructure* mode) or with other wireless station(s) (*Ad-Hoc* mode).

- Use the **Site Survey** utility of your **Configuration & Monitor Utility** to check if there is high interference around the environment.

Q: When you cannot connect with Access Point?

A: - Make sure that the Access Point that your WLAN Card is associated with is powered on and all the LEDs are working properly.

- Reconfigure and reset the Access Point.
- Use the Web Manager / Telnet of the Access Point to check whether it is connected to the network.

Q: When Infrastructure mode is configured, the WLAN card cannot communicate with the computer in the Ethernet?

A: - Make sure that the Access Point your WLAN Card is associated with is powered on.

- Use the **Site Survey** utility of the **Configuration & Monitor Utility** to verify if the operating radio *channel* is in good quality. Or, change the Access Point and all the wireless station(s) within the *BSSID* to another radio *channel*.

- Out-of-range situation, which prevents the WLAN Card from establishing a wireless connection with the network. Move the WLAN Card closer to the Access Point it is associated with.

- Make sure that your WLAN Card is configured with the same security option (encryption) to the Access Point.

- Make sure that the *BSSID* is the same as the Access Point for a roaming-disabled wireless station, or the *ESSID* is the same as the Access Point for a roaming-enabled wireless station.

Q: What should I do when I cannot access the network?

A: - Make sure that the necessary driver(s) was correctly installed.
- Make sure that the network configuration is appropriate.
- Make sure that the user name or password is correct.
- You have moved out of range of the network.
- Turn off power management.

Q: When the Configuration & Monitor Utility does not work correctly.

A: - Make sure that the Configuration & Monitor Utility is correctly installed (refer to chapter 5).
- If you are sure the operation has stop, reset the computer.

Appendix A WLAN CardBus Adapter Specification

Product	802.11b Wireless LAN CardBus Adapter
Model	FW – C502
Attach Interface/ bus	PCMCIA Type II
LED Indicators	LINK and PWR
Operating Frequency/Channel	2.412 ~ 2.462 GHz (FCC, Canada), 11 Channels 2.412 ~ 2.4835 GHz (Japan, TELEC), 14 channels 2.412 ~ 2.472 GHz (Euro ETSI), 13 channels 2.457 ~ 2.462 GHz (Spain), 2 channels 2.457 ~ 2.472 GHz (France), 4 channels
RF Modulation	Direct Sequence Spread Spectrum (DSSS) Technology CCK, DQPSK, DBPSK
RF Output Power	11 dBm typical
Sensitivity	-80 dBm at 11Mbps -82 dBm at 5.5Mbps -87 dBm at 2Mbps -88 dBm at 1Mbps
Data Rate	11, 5.5, 2, 1 Mbps with automatic fall back
Media Access Protocol	CSMA/CA + ACK, IEEE 802.11b compliant
Working Mode	Ad-Hoc, Infrastructure
Power Consumption	TX: 3.3 V, 420 mA
	RX: 3.3 V, 350 mA
Physical Dimension	119(mm) x 54.0(mm) x 5.0(mm)
Humidity	20% to 70% in operating
	20% to 90% Non-condensing in storage
Temperature	0 ~ 55 degree C in operation
	-20 ~ 70 degree C in storage
Driver Support	Windows 98SE/ ME/2000/XP
Electromagnetic Compatibility	FCC, CE