TEW-221PC

802.11b Wireless

CardBus PC Card

User Manual

REGULATORY STATEMENTS

FCC Certification

The United States Federal Communication Commission (FCC) and the Canadian Department of Communications have established certain rules governing the use of electronic equipment.

Part15, Class B

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interface, and

2) This device must accept any interface received, including interface that may cause undesired operation. 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 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 distance between the equipment and receiver.

   - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

CAUTION:

1) To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

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

Table of Contents

Introduction

The 802.11b Wireless 32bit TEW-221PC is a device that lets you connect your notebook to a wireless local area network (LAN). A wireless LAN is like a regular LAN, except that you can share information without looking for a place to plug in, and augment networks without installing or moving wires. Based on radio frequency (RF) technology, a wireless LAN transmits and receives data over the air, along with the guarantee to provide privacy and noninterference by the use of separate radio frequency.

The 802.11b Wireless 32bit TEW-221PC allows you to take full advantage of your notebook's mobility with access to real-time information and online services anytime and anywhere. Plus, with the network installation simplicity and flexibility, you can eliminate the need to pull cable through walls and ceilings and allow the network to go where wires cannot go. Exploring WWW and augmenting networks can't be done more easily.

Features

- ??Complies with IEEE 802.11b standard for 2.4GHz Wireless LAN
- ??Complies with PC Card standard
- ??Supports PC Card hot swap and true Plug & Play

- ✍✍Works with all existing network infrastructure
- ✍✍Complies with specific wireless products and services
- ✍✍Capable of up to 128-Bit WEP Encryption
- ✍✍Freedom to roam while staying connected
- ✍✍11 Mbps high-speed transfer rate
- ✍✍Rich diagnostic LED indicators with Integrated Antenna
- ✍✍Complies with Window 98/2000/ME/XP
- ✍✍Lower power consumption
- ✍✍Easy to install and configure

Wireless Network Options

The Peer-to-Peer Network

This network installation lets you set a small wireless workgroup easily and quickly. Equipped with wireless PC Cards or wireless PCI, you can share files and printers between each PC and laptop.
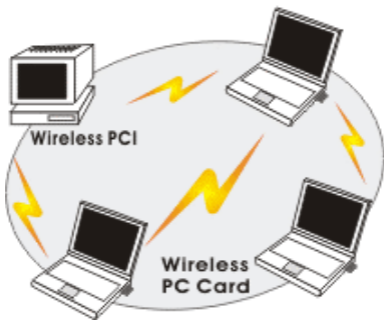
Or you can use one computer as an Internet Server to connect to a wired global network and share files and information with other PCs via a wireless LAN.
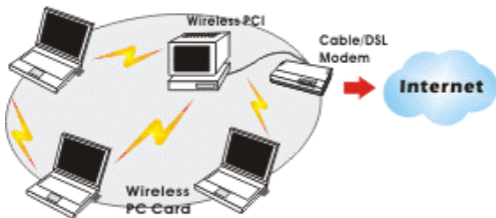
The Access Point Network

The network installation allows you to share files, printers, and Internet access much more conveniently. With wireless PC Cards, you can connect wireless LAN to a wired global network via an **Access Point**.
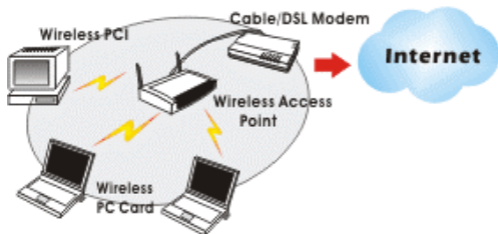
LED Indicators

Link: Green (On/Off)

Glow – linking to an Access Point or Peer-to-Peer mode.

Act: Orange (Blink)

*Blink* – Transmitting/receiving wireless data.

Installing the Utility

For Windows XP users:

There are two options for you to choose:

⋔ Follow below instructions to install the utility.

⋔ Skip this section. Go to **Installing the Device** – **Manually** - **Under Windows XP** section to install the device, and then you can use the built-in utility in Windows XP.
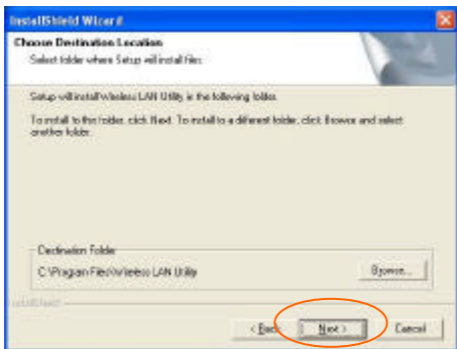
1. Insert the **Setup Utility CD-ROM** into the CD-ROM drive and double click on **Setup.exe** to install the **Wireless LAN Utility**.
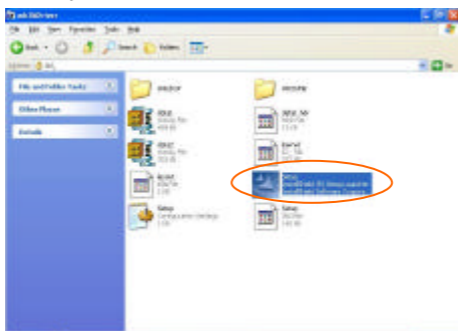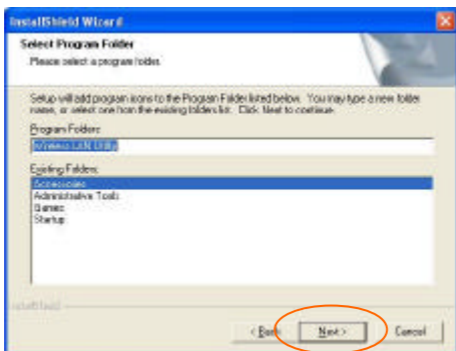

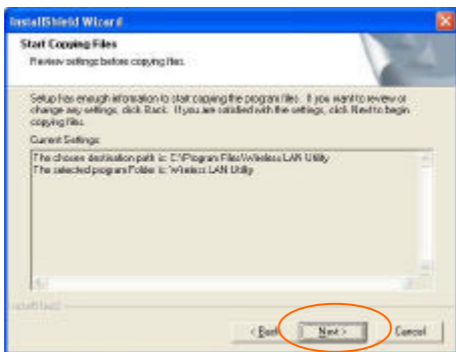2. When the Welcome screen appears, click **Next** to continue.
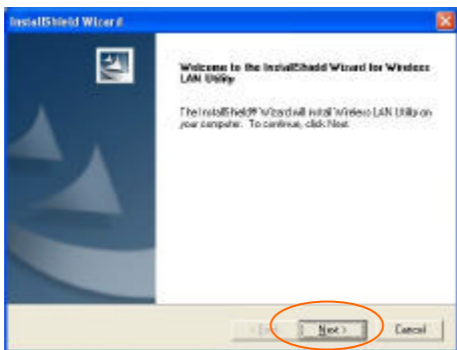
3. The **Choose Destination Location** screen will show you the default destination chosen by the utility. Click **Next** to continue.
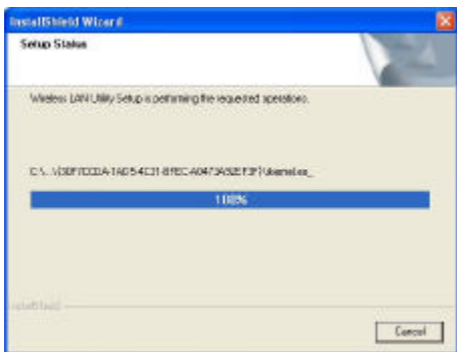

4. Follow the instruction to select the program folder. Click **Next** to continue.
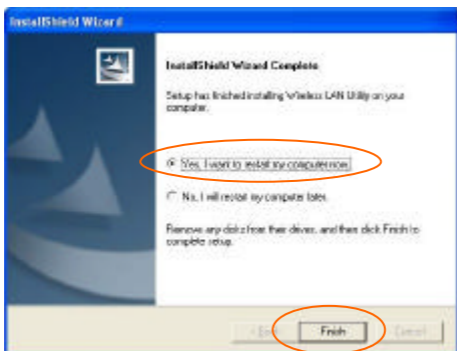
5. In **Start Copying Files**, click **Next** to continue.

6. In **Setup Status**, the InstallShield Wizard will begin copying the files.

7. After the **Wireless LAN Utility** has been successfully installed, select **Yes, I want to restart my computer now**, and then click **Finish** to restart.

Installing the Device

If the Application setup in **Installing the Utility** section has been completed, follow the steps below to install the device.

1. Locate the CardBus slot of your system.
2. Align the Wireless PC Card toward the CardBus slot. Push evenly and steadily until it is seated.

After the device has been connected to your computer, Windows will detect the new hardware and then automatically copy all of the files needed for networking.

For Windows 98 users: As you perform the installation, have your Windows 98 CD-ROM at hand. You may be asked to insert the Windows 98 CD-ROM for the system to download a specific driver.

For Windows 2000 users: When **Digital Signature Not Found** screen appears, click **Yes** to continue.

For Windows XP users:

1. Select **Install from a list or specific location (Advanced)** and click **Next.**
2. Click **Continue Anyway.**
3. Click **Finish** to complete the installation.

If you want to install the device before installing the utility program, please follow the steps below.

1. Locate the CardBus slot of your system.
2. Align the Wireless PC Card toward the CardBus slot. Push evenly and steadily until it is seated.
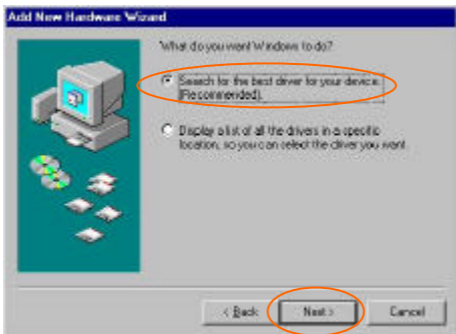
After the device has been connected to your computer, Windows will detect the new hardware automatically.

Under Windows 98

1. In **Add New Hardware Wizard**, click **Next**.
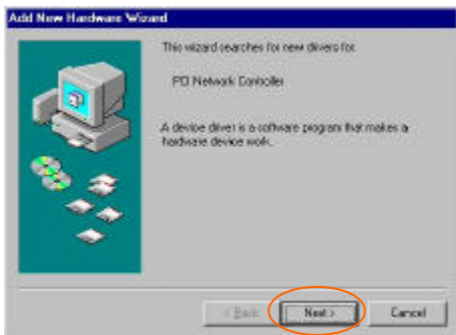
2. Select **Search for the best driver for your device (Recommended)**. Click **Next**.

3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM** and **Specify a location:** and click **Browse** to provide the appropriate path (e.g. **D:\Win9xMe**). Click **Next**.
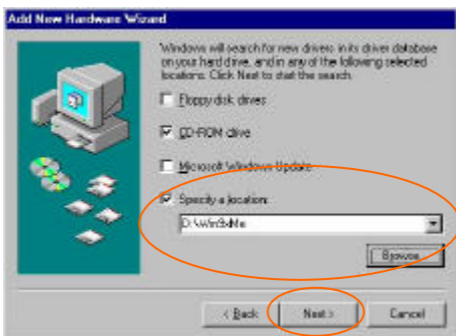
4. Click **Next**, Windows will copy all the necessary files to your system.
5. Insert **Windows 98** CD-ROM, and then click **OK**.

Insert Disk

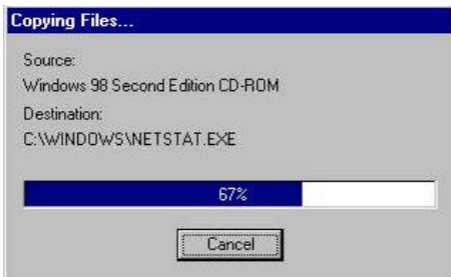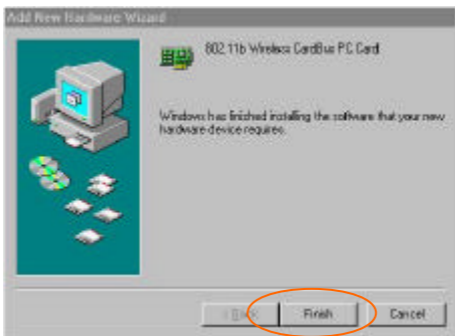Please insert the disk labeled 'Windows 98 Second Edition CD-ROM', and then click OK.

OK

Copying Files...

Source:

Windows 98 Second Edition CD-ROM

Destination:

C:\WINDOWS\NETSTAT.EXE

67%

Cancel

6. Click **Finish** to complete the installation.

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Windows has finished installing the software that your new hardware device requires.

Back   Finish   Cancel

7. When Windows prompts you to restart your computer, click **Yes**.

Under Windows ME

1. Select **Specify the location of the driver (Advanced)**, click **Next**.

2. Insert the device driver CD-ROM into the CD-ROM drive. Select **Search for the best driver for your device (Recommended)** and click **Browse** to provide the appropriate path (e.g. **D:\Win9xMe**). Click **Next**.

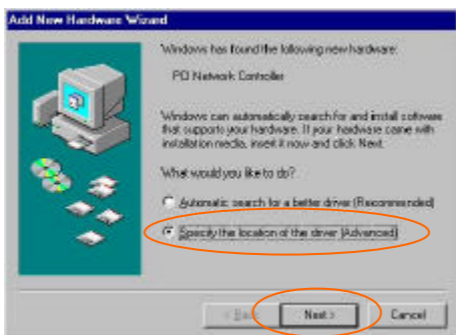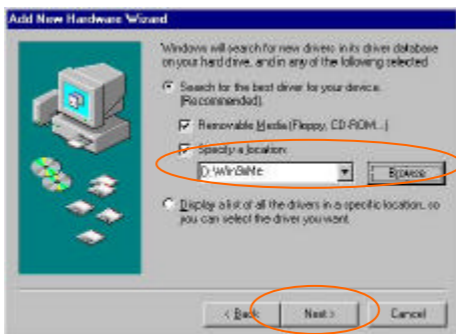3. Click **Next**, Windows will copy all the necessary files to your system.

4. Click **Finish** to complete the installation.
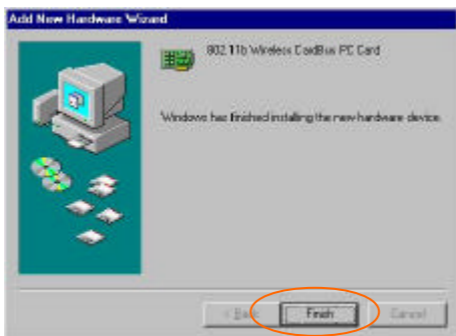
5. When Windows prompts you to restart your computer, click **Yes**.

Under Windows 2000
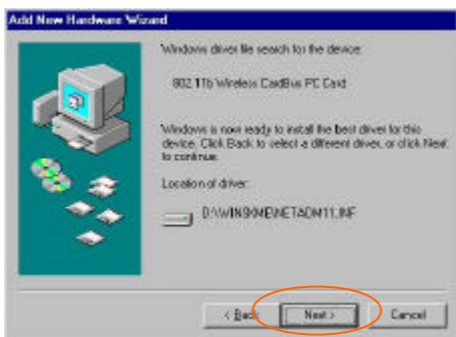
1. In **Found New Hardware Wizard**, click **Next**.

2. In **Install Hardware Device Drivers**, select **Search for a suitable driver for my device (recommended)**, click **Next**.
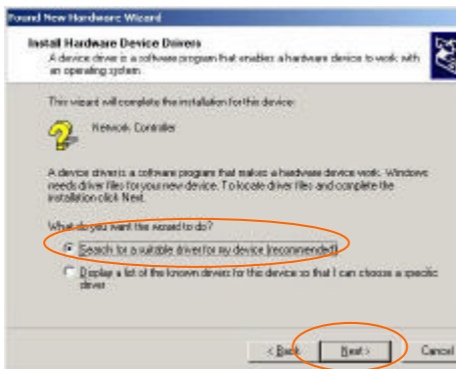
3. Insert the device driver CD-ROM into the CD-ROM drive. Select **CD-ROM drivers** and **Specify a location**, click **Next**.
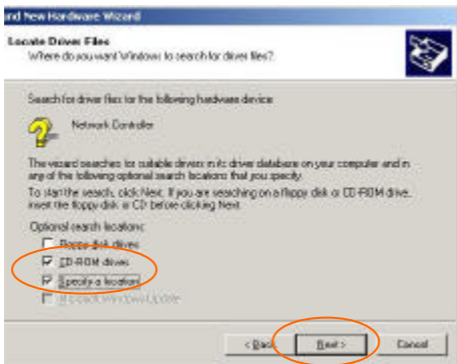
4. Click **Browse** to provide the appropriate path (e.g. **D:\Win2kXP**). Click **OK**.

5. Click **Next**, Windows will copy all the necessary files to your system.

The wizard found a driver for the following device:

Network Controller

Windows found a driver for this device. To install the driver Windows found, click Next.

d:\win2kxp\netad11.inf

6. In **Digital Signature Not Found** window, click **Yes** to continue.

The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.

The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.

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If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.

Do you want to continue the installation?

7. Click **Finish** to complete the installation.
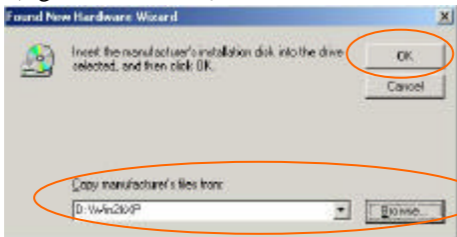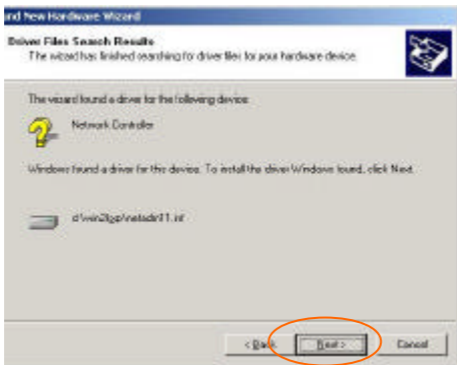8. Restart your computer.

Under Windows XP

1. Once the device is well connected to your computer, Windows XP will automatically detect the new device. Select **Install from a list or specific location (Advanced)** and click **Next.**
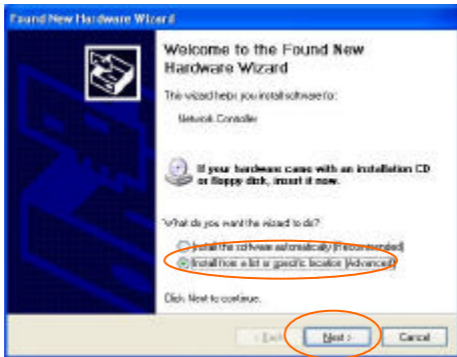
2. Insert the **Setup Utility CD-ROM** into the CD-ROM drive. Select **Include this location in the search:** and click **Browse** to provide the appropriate path (e.g. **D:\Win2kXP**). Click **Next**.
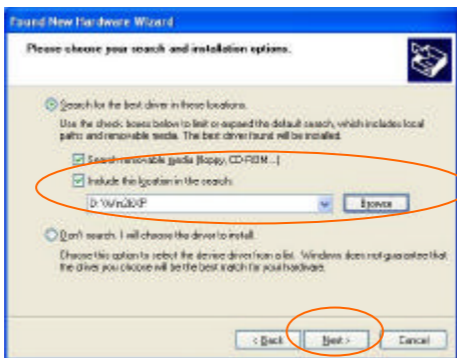
3. Click **Continue Anyway** to proceed. Windows will copy all the necessary files to your system.
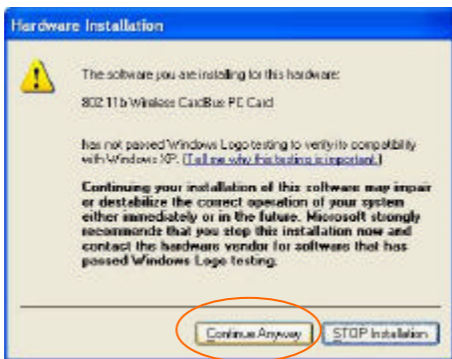
4. Click **Finish** to complete the installation.
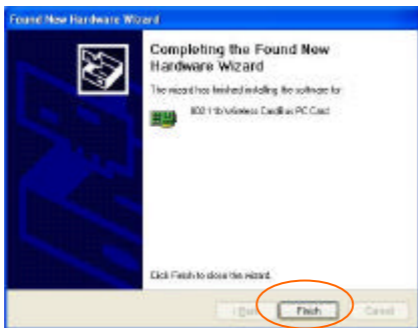
Verify

To verify that the device exists in your computer and is enabled, go to **Start ☞ Settings ☞ Control Panel ☞ System ☞ Hardware**. Click the **Device Manager** tab. If the **802.11b Wireless CardBus PC Card** is found, it means that your device is properly installed and enabled.
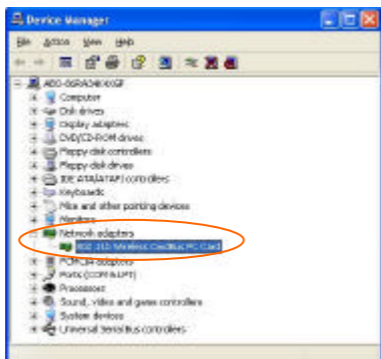
Network Connection

Once the driver has been installed, you must make some changes to your network settings.

1. Go to **Start ⊿ Settings ⊿ Control Panel ⊿ Network**.
2. Make sure that you have all the following components installed.
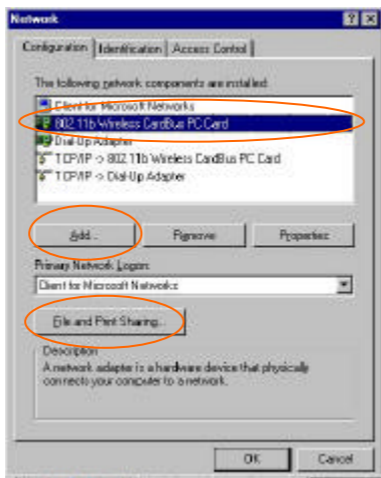
⊿⊿ **802.11b Wireless CardBus PC Card**

⊿⊿ **IPX/SPX-compatible Protocol**

⊿⊿ **NetBEUI**

- **21** -

ℯℯ **TCP/IP**

If any components are missing, click on the **Add** button to add them in. Microsoft provides all the protocols and clients required and listed above.

5. After clicking **Add**, highlight the component you need, click **Add**.

6. Highlight **Microsoft**, and then double click on the item you want to add. Click **OK**.
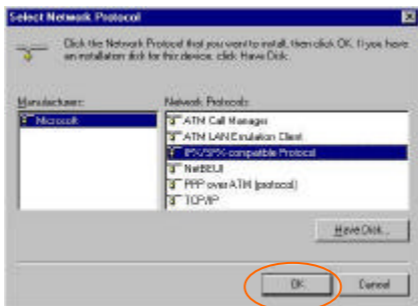
7. For making your computer visible on the network, enable the **File and Printer Sharing**.

8. Click the **Identification** tab. Make up a name that is unique from the other computers' names on the network. Type the name of your workgroup, which should be the same name used by all of the other PCs on the network.
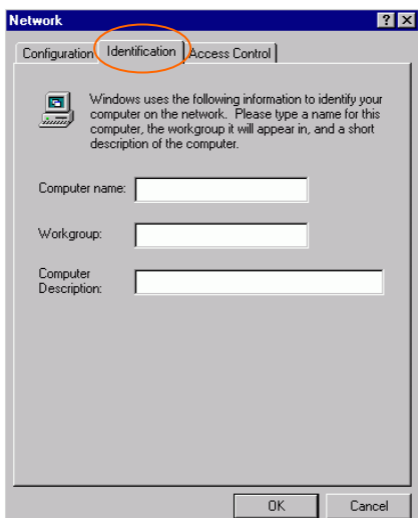
9. Click the **Access Control** tab. Make sure that "**Shared-level access control**" is selected. If connecting to a Netware server, share level can be set to "**User-level access control**."
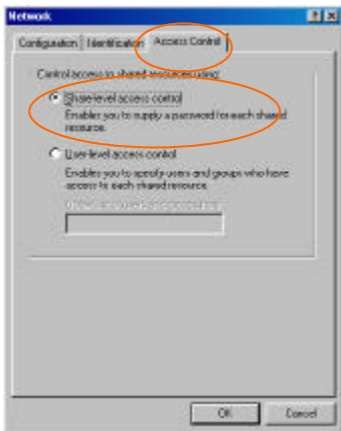
10. When finished, reboot your computer to activate the new device.
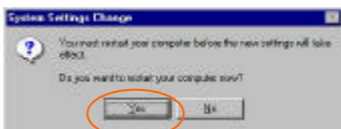
11. Once the computer has restarted and Windows has booted up, a **Logon** window will appear and require you to enter a username and password. Make up a username and password and click **OK**. Do not click the **Cancel** button, or you won't be able to log onto the network.

12. Double-click the **Network Neighborhood** icon on the windows desktop, and you should see the names of the other PCs on the network.

Configuring the Network Protocols for Windows 2000/XP

1. (For **Windows 2000**)

    Go to **Start** ✍ **Settings** ✍ **Control Panel** ✍ **Network and Dial-up Connections** ✍ **Local Area Connection** ✍ **Properties**.

    (For **Windows XP**)

    Go to **Start** ✍ **Settings** ✍ **Control Panel** ✍ **Network and Internet Connections** ✍ **Network Connections** ✍ **Wireless Network Connection Enabled 802.11b Wireless CardBus PC Card** ✍ **Properties**.
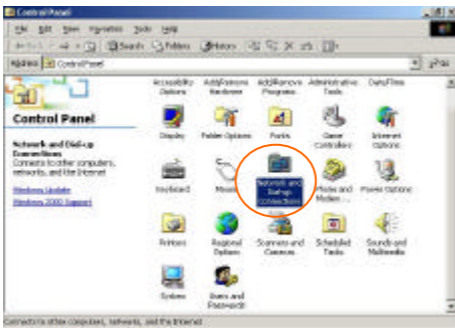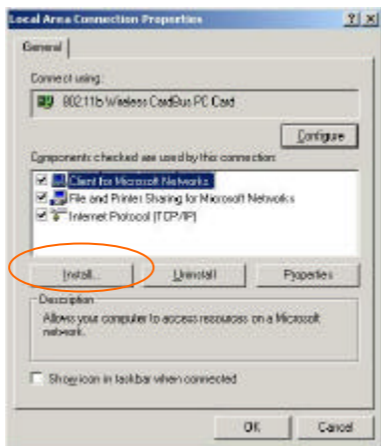
2. Make sure that you have all the following components installed.

- ✍ **Client for Microsoft Networks**
- ✍ **NWLink NetBIOS**
- ✍ **NWLink IPX/SPX/NetBIOS Compatible Transport Protocol**
- ✍ **Internet Protocol (TCP/IP)**

3. If any components are missing, click on the **Install…** button to select the **Client/Service/Protocol** required. After selecting the component you need, click **Add…** to add it in.

Select Network Component Type

Click the type of network component you want to install:

- Client
- Service
- Protocol

Description

A protocol is a language your computer uses to communicate with other computers.

Add... | Cancel

Select Network Protocol

Click the Network Protocol that you want to install, then click OK. If you have an installation disk for this component, click Have Disk.

Network Protocol:

- AppleTalk Protocol
- DLC Protocol
- NetBEUI Protocol
- Network Monitor Driver
- NWLink IPX/SPX/NetBIOS Compatible Transport Protocol

Have Disk...

OK | Cancel

4. For making your computer visible on the network, make sure you have installed **File and Printer Sharing for Microsoft Networks**.

5. When finished, you must restart your computer to complete installation.

Configuration Utility

After installing the Wireless PC Card's driver successfully, the **Network Status** icon will appear in the task bar. You can open it by double-clicking on this icon.

If the icon doesn't appear automatically, go to **Start ☞ Programs ☞ Wireless LAN Utility ☞ Wireless LAN Utility, it will appear in the task bar**.
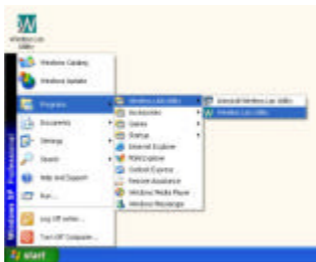
Note: Except for the following configuration utility, using Windows to configure the wireless network settings in the Windows XP is recommended. (Please skip to the **Configuration for Windows XP** section)

The Status Icon

Icon	Link Status
	Access Point mode. (Please refer to below table for the exact link quality)
	Peer-to-Peer mode.
	No connection.

Icon	Signal Strength
	Excellent link quality.
	Good link quality.
	Poor link quality.
	Bad link quality.
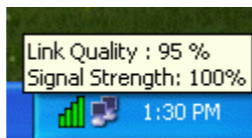
Link Info

The **Link Info** tab will display the current status of the Wireless Network Adapter.
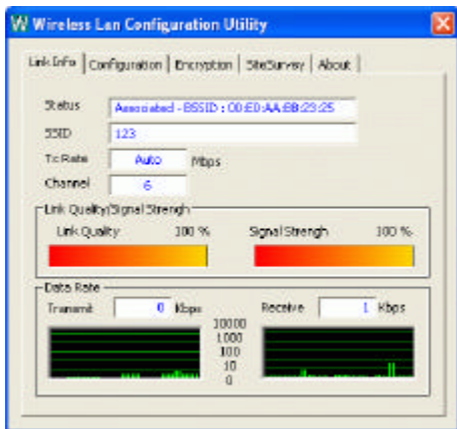
Item	Description
Status	It displays the information about the status of the communication (the BSSID of the Access Point to which the card is associated).
SSID	The **SSID** is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network. It shows the current SSID setting of the Wireless Network Adapter.
Tx Rate	It shows the current transfer rate. (**1, 2, 5.5, 11Mbps** or **Auto**)

Item	Description
Channel	It shows the selected channel that is currently used. (There are 14 channels available, depends on the country.)
Link Quality	It displays the link quality of the connection between the Wireless Network Adapter and the Access Point.
Signal Strength	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point.
Data Rate	It displays the current transmitting and receiving rate.

Configuration

You can change advanced configuration settings, such as the **SSID, Operation Mode, Tx Rate** and **Preamble Type**.
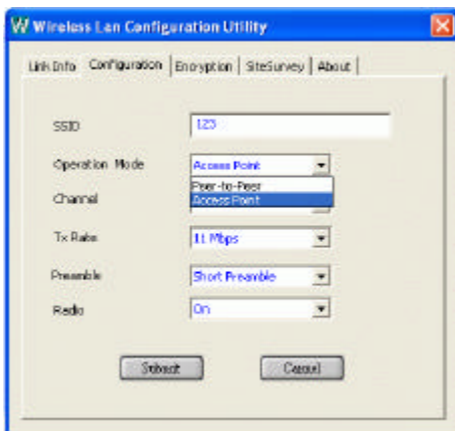
Item	Description
SSID	**SSID** is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set to the same SSID.
Operating Mode	It displays the current operating mode. (**Access Point** or **Peer-to -Peer**).
Channel	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the

Item	Description
	wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
Tx Rate	Select (**1**, **2**, **5.5**, **11Mbps** or **Auto**) from the drop-down list to change the current transfer rate
Preamble	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter.
✍ **Auto**	Select **Auto** for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.
✍ **Long Preamble**	In a "noisy" network environment, the Preamble Type should be set to **Long Preamble**.
✍ **Short Preamble**	The **Short Preamble** is intended for applications where minimum overhead and maximum performance is desired. In a "noisy" network environment, the performance would be decreased.
Radio	Select **On/Off** from the drop-down list to **enable/disable** the Radio Module function of the Wireless Network Adapter.

Encryption

WEP (Wired Equivalent Privacy) encryption can be used to ensure the security of your wireless network.

Item	Description
Data Encryption	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm.
	Check this box to enable WEP encryption.
Auth. Mode	The authentication mode defines configuration options for the sharing of wireless networks to verify identity and access privileges of roaming wireless network cards.
	You may choose between **Open Authentication**, **Shared Authentication**, and **Auto**.
Open Authentication	If the Access Point is using "**Open Authentication**", then the wireless adapter will need to be set to the same authentication mode.
Shared Authentication	**Shared Authentication** is when both the sender and the recipient share a secret key.
Auto	Select **Auto** for the network adapter to select the Authentication mode automatically depending on the Access Point Authentication mode.
Key Length	**64 Bit** or **128 Bit**.
WEP Key ✍ **1** ✍ **2** ✍ **3** ✍ **4**	This setting is the configuration key used in accessing the wireless network via WEP encryption.
	Fill in the appropriate value/phrase.
Apply	Click **Apply** to save the changes.

Cancel	Click **Cancel** to exit the application.

Note: You must use the same value/phrase or WEP key settings for all wireless computers in order for the wireless network to function well

Site Survey

The **Site Survey** tab shows all the available Access Points and their features.
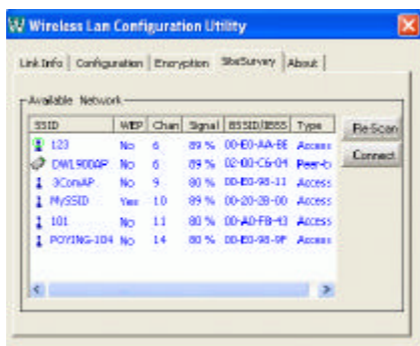
Item	Description
SSID	It displays the current SSID setting of the Wireless Network Adapter.
WEP	It displays the status of WEP Encryption.
Channel	It displays the selected channel that is currently used.
Signal	It displays the signal strength of the connection between the Wireless Network Adapter and the Access Point.
BSSID/IBSSID	A set of wireless stations is referred to as a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSS ID.

Item	Description
Type	It displays the type of Basic Service Set. (🏠 Access Point or ◇ Peer-to-Peer)
Re-Scan	Search for all available networks. By clicking on the button, the device will start to rescan and list all available sites.
Connect	Select one from the list to connect.

Info

You can view basic information about the Utility like the **Driver** and **Utility** Version.

Configuration for Windows XP

1. Go to **Start** ☞ **Control Panel** ☞ **Network Connections**.
2. In **Network Connections** window, right-click the **Wireless Network Connections** icon, and select **Properties**.

Note: Double-click the **Wireless Network Connection** icon and you can see the status of the wireless PC Card as described below.
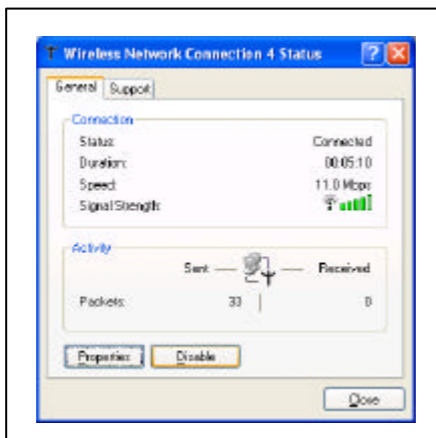
3. In **Wireless Network Connection Properties** window, select the **General** tab. Click **Configure** to enable Windows configuration.

Wireless Network Connection Properties

General | Wireless Networks | Authentication | Advanced

Connect using:

802.11b Wireless CardBus PC Card

Configure...

This connection uses the following items:

☑ Client for Microsoft Networks
☑ File and Printer Sharing for Microsoft Networks
☑ QoS Packet Scheduler
☑ NWLink NetBIOS

Install... | Uninstall | Properties

Description

Allows your computer to access resources on a Microsoft network.

☑ Show icon in notification area when connected

OK | Cancel

802.11b Wireless CardBus PC Card Properties

General | Advanced | Driver | Resources

The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value on the right.

Property:

Antenna
Channel
Data Rate
Network Type
Preamble Mode
RTS Threshold
Select ShareKey Index
ShareKey1
ShareKey2
ShareKey3
ShareKey4
SSID
WEP

Value:

Diversity

OK | Cancel

Property	Description
Antenna	(**Diversity, Antenna A or Antenna B**): These settings determine which antenna will be used to transmit or receive.
Channel	Select the appropriate channel from the list provided to correspond with your network settings. All devices in the wireless LAN must be configured to share the same radio channel in order to work correctly. (There are 14 channels available, depends on the country.)
Data Rate	Select (**1**, **2**, **5.5**, **11Mbps** or **Auto**) from the drop-down list to change the transfer rate.
Network Type	Select the appropriate Network Type from **802.11 AdHoc Mode (Active)**, **802.11 AdHoc Mode (Passive)** or **Infrastructure**. In **AdHoc mode**, **Active mode** is recommended since it can generate/pass beacon packet automatically.
Preamble	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter.
✍ **Auto**	Select **Auto** for the Network adapter to select the Preamble type automatically depending on the Access Point Preamble type.

| ☒ **Long Preamble**	In a "noisy" network environment, the Preamble Type should be set to **Long Preamble**.
☒ **Short Preamble**	The **Short Preamble** is intended for applications where minimum overhead and maximum performance is desired. In a "noisy" network environment, the performance would be decreased.
RTS Threshold	This value should remain at its default setting of **2347**. Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
Select Sharedkey Index	Select from **1**, **2**, **3**, **4** or **No selection**.
Sharekey1 Sharekey2 Sharekey3 Sharekey4	This setting is the configuration key used in accessing the wireless network via WEP encryption. Fill in the appropriate value/phrase.
SSID	**SSID** is the unique name shared among all points in your wireless network. It must be identical for all points in the network. It is case-sensitive and must not exceed 32 characters. Make sure that all points in the network are set to the same SSID.
WEP	WEP is a data privacy mechanism based on a 64 Bit/128 Bit shared key algorithm. Select **WEP key 128bit** or **WEP key 64bit** to enable WEP encryption.

4. In **Wireless Network Connection Properties** window, select the Wireless Networks tab.
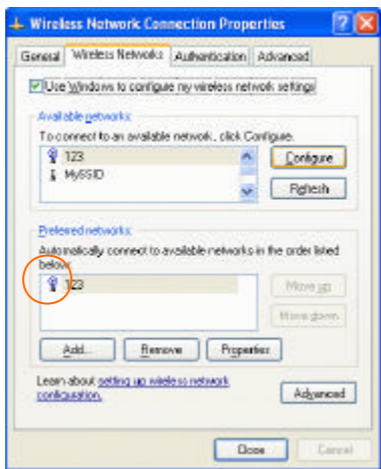
?? **Use Windows to configure…**

Check the box to enable windows configuration.

> *Note*: Once you enable windows configuration, then the Network Status in the taskbar will disappear. You cannot use this utility to configure the wireless settings.
>
>
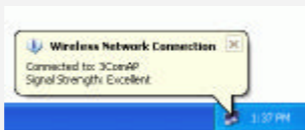
Note2: If you want to use the utility in Configuration Utility section to configure the wireless settings. Make sure the check box is **not** enabled then click the Network Status icon in the taskbar.
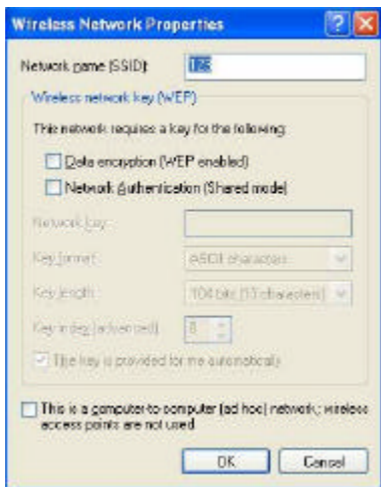

Available networks

Displays all available networks.

Configure

Click the button to set up a new network or WEP configuration as illustrated as below.

Refresh

Click the button to refresh and search for all available networks.

Preferred networks

From available network(s) listed above, you can set preferences in an order that you can arrange.

The marked one is the currently used network.

Move up

Move the selected network forward one position.

Move down

Move the selected network back one position

Add…

Click the button and the **Wireless Network Properties** window will appear. In the **Network name** field, enter your desired network name listed in the above **Available networks** box, and click **OK**.

Note: The new settings will be active only after you click on **OK** in the Wireless Network Connection Properties window.

Remove

Highlight the unwanted network listed in the **Preferred networks** box, and click the button to remove it.

Properties

Highlight the network listed in the above **Preferred networks** box, and click the button to display its properties.
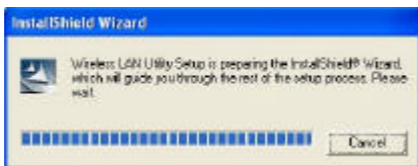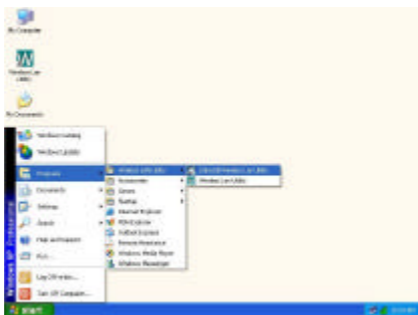
Once network configuration is done, make sure to click **OK**. The new parameters will be saved and active only after doing so.
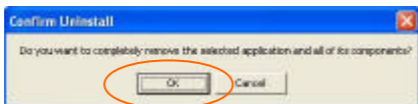
Uninstall Procedure

Note: In case you need to uninstall the Utility or device, please refer to below section.
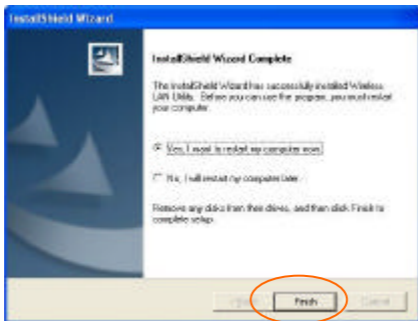
Uninstall the Configuration Utility

1. Go to **Start** ✍ **Programs** ✍ **802.11 Wireless LAN** ✍ **Uninstall Configuration & Monitor Utility**.

InstallShield Wizard

Wireless LAN Utility Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
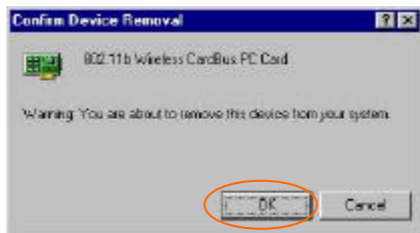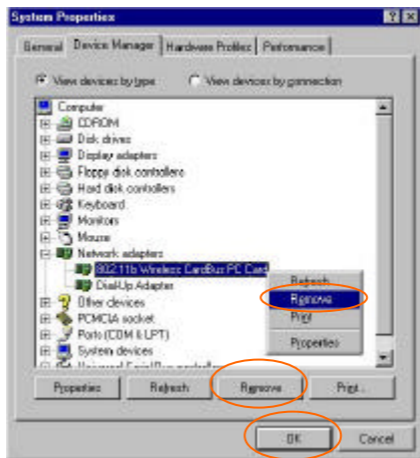
2. Click **OK** to continue.

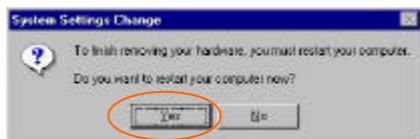3. Click **Finish** to complete the uninstalled procedure.

Uninstall the device

1. Right-click **My Computer ？ Properties ？ Hardware ？ Device Manager**.
2. Select or right-click **802.11b Wireless CardBus PC Card** then click **Remove**. Click **OK**.

3. The system will prompt you to restart your computer. Click **Yes**.

Specifications

Standards	IEEE 802.11b, Wi-Fi compliant
Host Interface	32-bit CardBus
Antenna	Built-in Diversity Antenna
Physical Specifications	Weight: 40 g Dimension: 119(L) x 53.94 (W) x 6.88(H) mm (4.7"x2.12"x0.27")
LED Indicators	LINK: Green (ON) ACT: Orange (Blink)
Power Requirement	Operating Voltage: 3.3V TX consumption: 450mA (Max) RX consumption: 300mA (Max)
Operating Frequency Range	2.412GHz-2.4835GHz
Number of Selectable Channels	USA, Canada: 11 channels Europe: 13 channels Japan: 14 channels
Modulation Technique	Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)
Security	0/64/128 bit WEP
Spreading	11 chip Barker sequence
Bit Error rate	Better than 10^{-5}
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Supported OS	Windows 98/ME/2000/XP
EMC Certification	FCC Part 15 in US EN300328 and EN300826 (EN301489-17) in Europe Japan-Telec in Japan

Environment Specifications	Operating Temperature: 0~65? (32~149?F) ambient temperature Storage Temperature: -20~75? (-4~167?F) ambient temperature Operating humidity: 95% maximum (non-condensing) Storage humidity: 95% maximum (non-condensing)