802.11b Wireless
CardBus PC Card

User Guide

Doc. No.: 041902-01

REGULATORY STATEMENTS

FCC STATEMENT

This model 802.11b Wireless CardBus PC Card (WB2000) must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

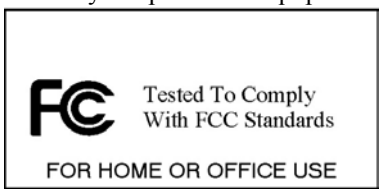
This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

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.

Warring: Changes or modifications not expressly approved by party responsible for compliance could void the user the user authority to operate the equipment.



CAUTION:

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

Technical Support
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Introduction

The 802.11b Wireless 32bit CardBus PC Card 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 CardBus PC Card allows you to take full advantage of your PC'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 never be done more easily

Features

- Complies with IEEE 802.11b standard for 2.4GHz Wireless LAN.
- Complies with CardBus 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.

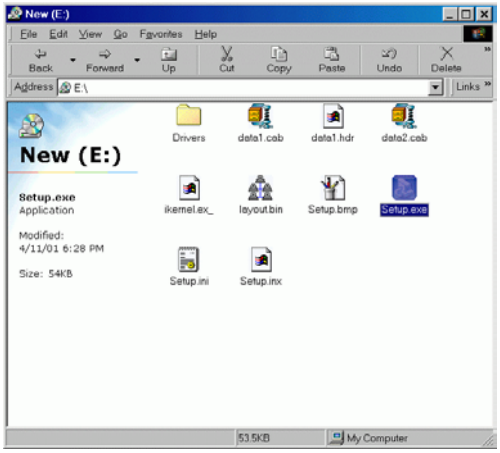
LED Indicators

- LINK
- A CT

Installation the Utility under Windows 98/ME/2000

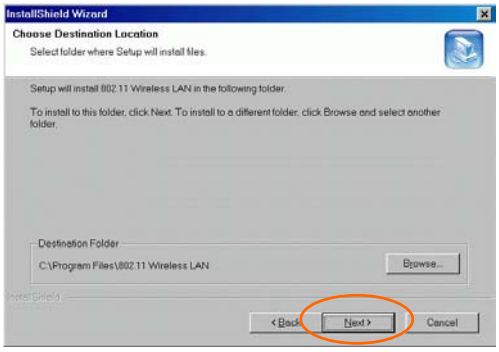
Precaution for Windows 98, 2000, and ME users: You must install the Adapter's software before installation of the hardware.

1. Insert the **Setup Utility CD-ROM** into the CD-ROM drive and double click on **Setup.exe** to install the Configuration & Monitor Utility.

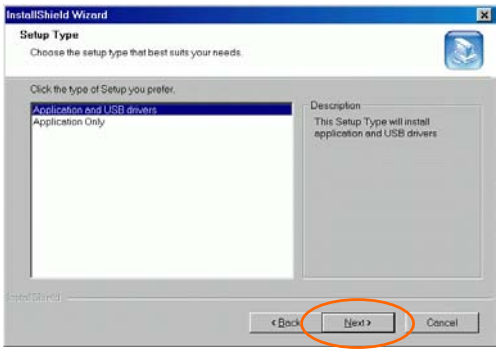


2. When the Welcome screen appears, click **Next** to continue.

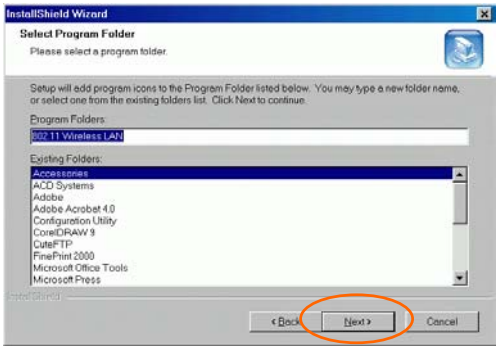
3. The **Choose Destination Location** screen will show you the default destination chosen by the utility. Click **Next** to continue.



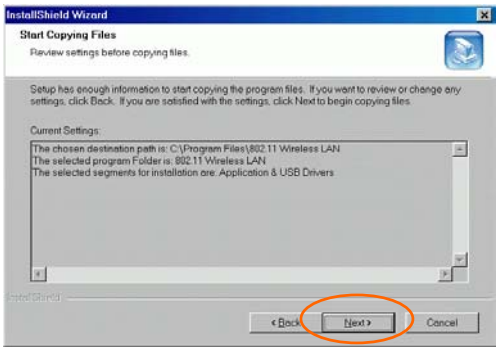
4. In **Setup Type**, choose **Application and USB drivers** and then click **Next**.



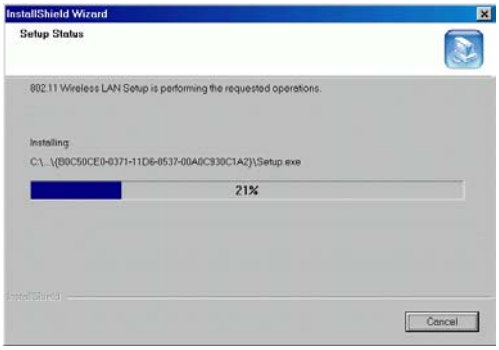
5. Follow the instruction to select the program folder. Click **Next** to continue.



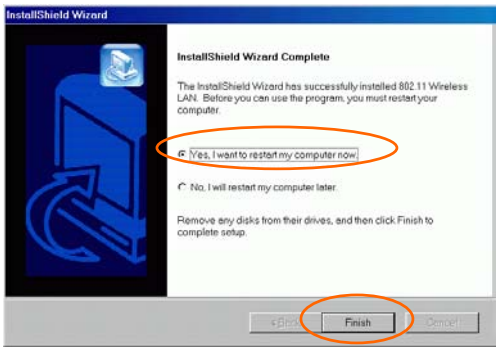
6. In **Start Copying Files**, click **Next** to continue.



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



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



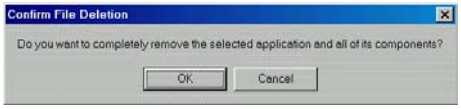
> ***Note***: In case you need to uninstall the Utility or device, please refer to below section.

Uninstall Procedure Under Windows 98/ME/2000

Uninstall the Configuration Utility

1. Go to **Start → Programs → 802.11 Wireless LAN → Uninstall Configuration and Monitor Utility.**

2. Click **OK** to continue.



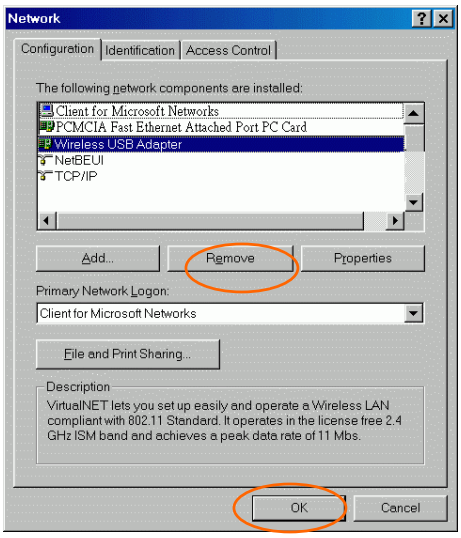
3. Click **Finish** to complete the uninstalled procedure.

Uninstall the Device

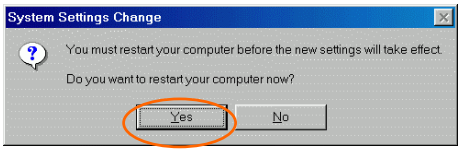
Under Windows 98/ME

1. Go to **Start → Settings → Control Panel → Network**.

2. Select **Wireless USB Adapter** then click **Remove**. Click **OK**.



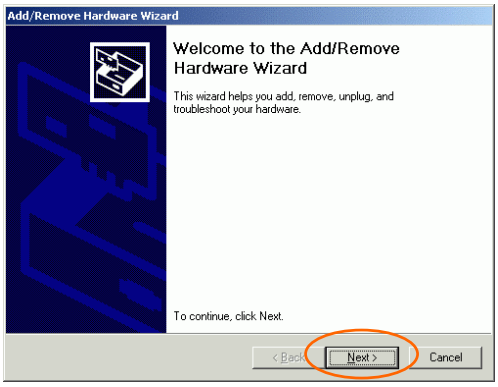
3. The system will prompt you to restart your computer. Click **Yes**.



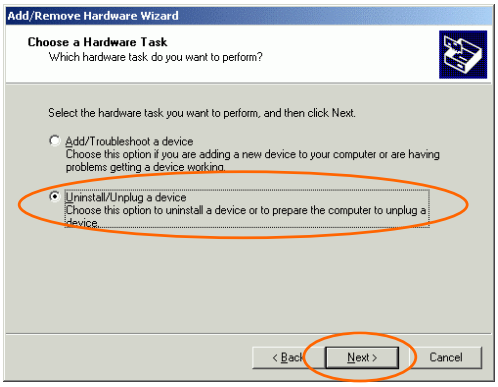
Under Windows 2000

1. Go to **Start** → **Control Panel** → **Add/Remove Hardware**.

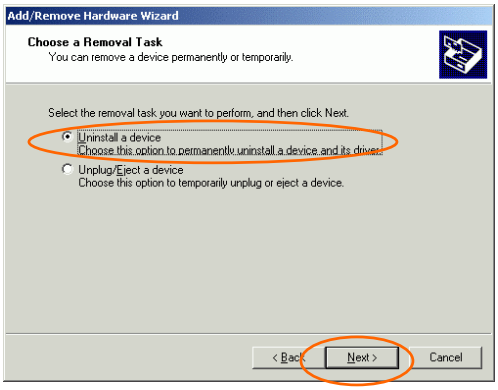
2. When the Welcome screen appears, click **Next** to continue.



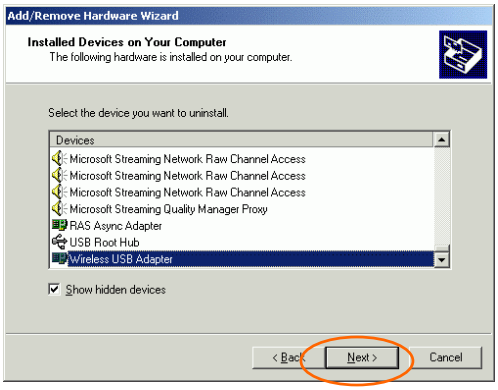
3. In **Choose a Hardware Task**, select **Uninstall/Unplug a device** and click **Next** to continue.



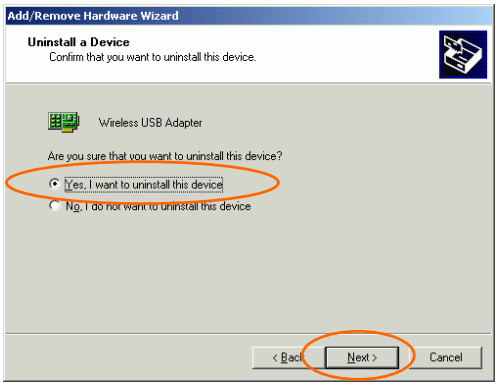
4. In **Choose a Removal Task**, select **Uninstall a device** and click **Next**.



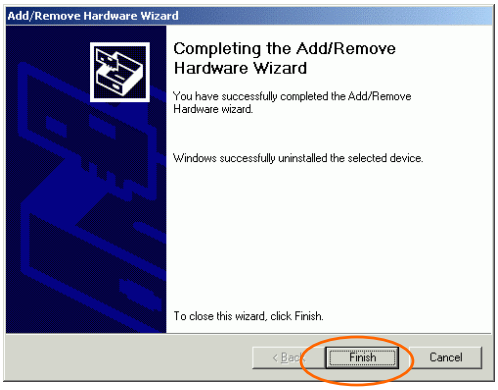
5. Check the **Show hidden devices** check box and locate the device in the device list. Select the device and click **Next**.



6. Select **Yes, I want to uninstall this device** and click **Next**.



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



Hardware Installation

Precaution for Windows 98, 2000, and ME users: Please do NOT install the hardware until the Application setup in Installation the Utility under Windows98/ME/2000 has been completed.

1. Plug the square end (Type B) of USB cable into the adapter's USB port.

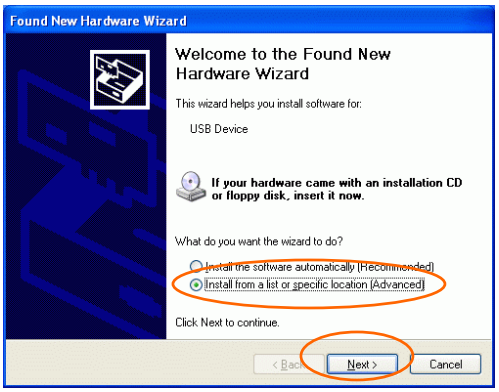
2. Plug the rectangle end (Type A) of USB cable into the PC's USB port.

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.

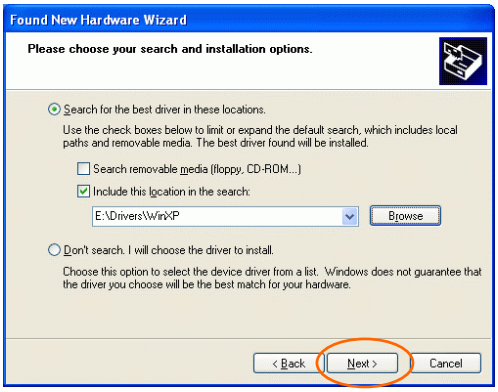
Precaution for Windows XP users: You must install the Adapter's hardware, and then go to Installation of the USB Adapter for Windows XP.

Installation of the USB Adapter for Windows XP

1. Once the device is well connected to your computer, Windows XP will automatically detect the new device. Click **Install from a list…** and click N**ext.**

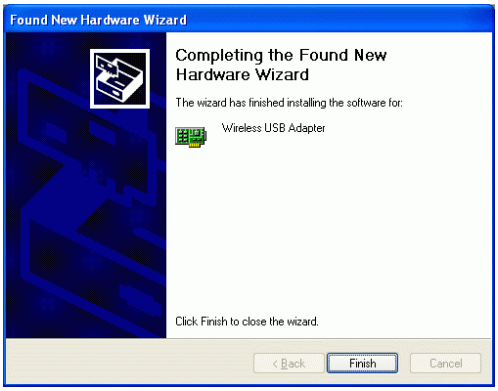


2. Insert the **Setup Utility CD-ROM** into the CD-ROM drive. Select **Include this location in the search:** and click Browse to provide the appropriate path (e.g. **E:\Drivers\WinXP**). Click **Next**.



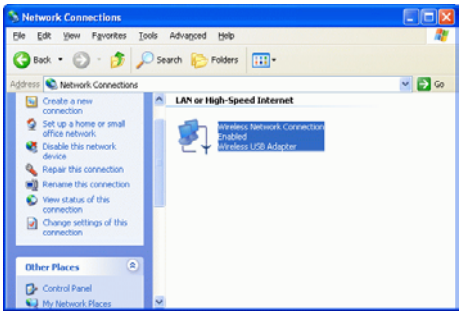
3. Click **Continue Anyway** to proceed.

4. Click **Finish** to complete the Utility installation.

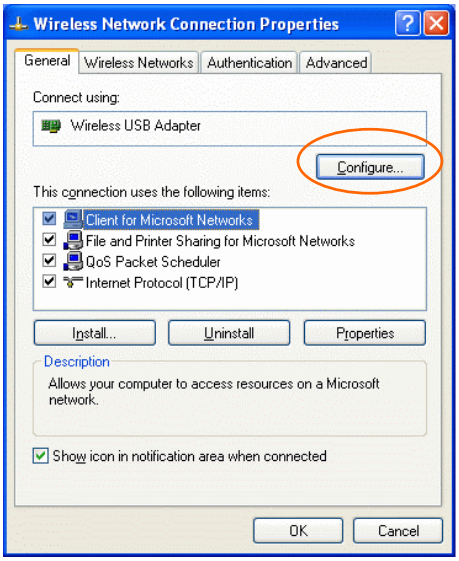


Uninstall Procedure Under Windows XP

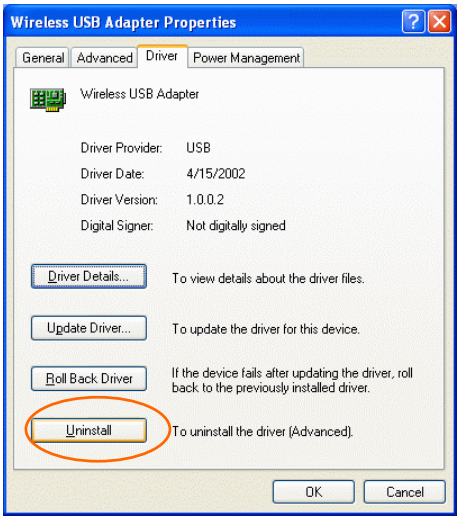
1. Go to **Start → Control Panel → Network Connections → Wireless Network Connection Enabled Wireless USB Adapter → Properties**.



2. Click **Configure** to continue.



3. Click **Uninstall** to uninstall this device.

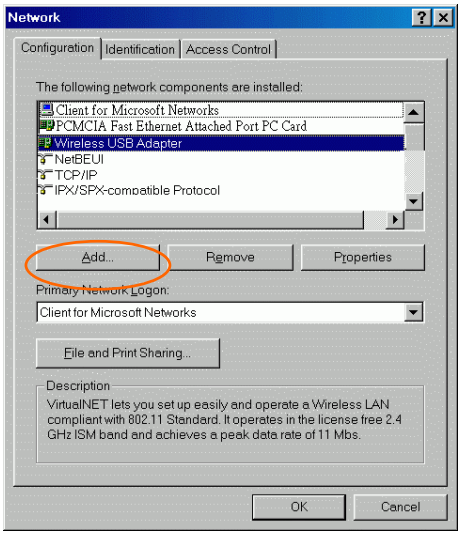


4. Click **OK** to complete the uninstalled procedure.

Network Connection

Configuring the Network Protocols for Windows 98/ME/2000

1. Once the driver has been installed, you must make some changes to your network settings. Click **Start → Settings → Control Panel → Network.**
2. Make sure that you have all the following components installed.

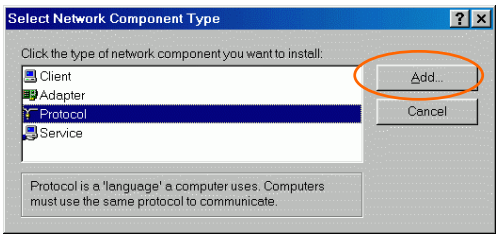


- **Wireless USB Adapter**
- **IPX/SPX-compatible Protocol**

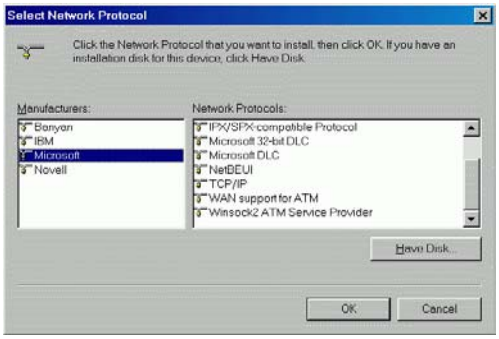
- **NetBEUI**
- **TCP/IP**

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

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

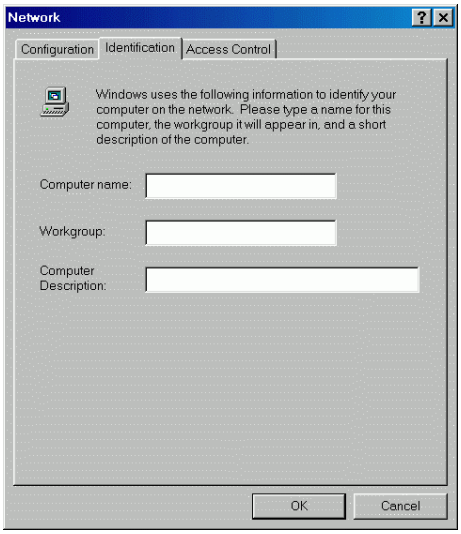


4. Highlight **Microsoft**, and then double click on the item you want to add.

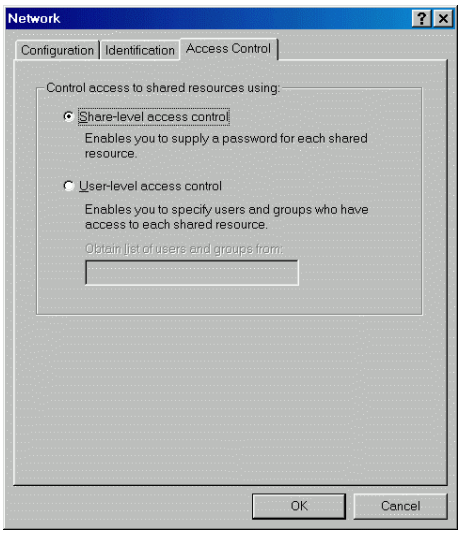


5. For making your computer visible on the network, enable the **File and Printer Sharing**.

6. 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 used by all of the other PCs on the network.



7. 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**."



8. When finished, reboot your computer to activate the new device.

9. 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.

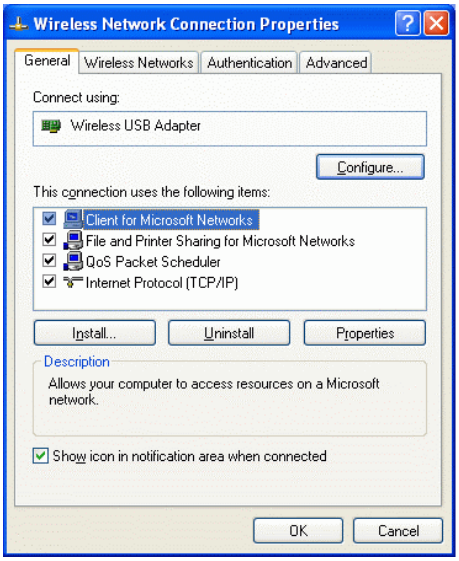
10. Double-click the **Network Neighbourhood** icon on the windows desktop, and you should see the names of the other PCs on the network.

Configuring the Network Protocols for Windows XP

Once the driver has been installed, you must check if some necessary network components are well setup in your computer. Click **Start→ Control Panel → Network Connections → Wireless Network Connection Enabled Wireless USB Adapter → Properties**.

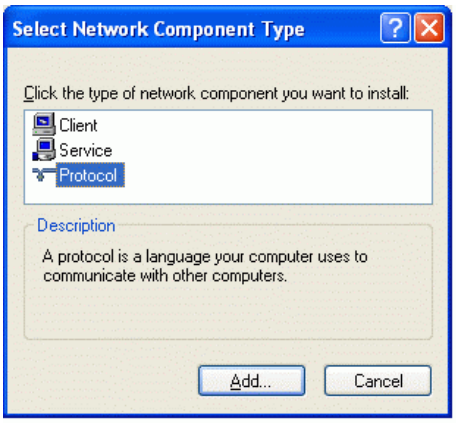
Make sure that you have all the following components installed.

- **Client for Microsoft Networks**
- **IPX/SPX-compatible Protocol**
- **TCP/IP**



If any components are missing, click on the **Install…**button to select the **clients/service/ protocols** required. After selecting the component you need, click **Add…**to add it in.

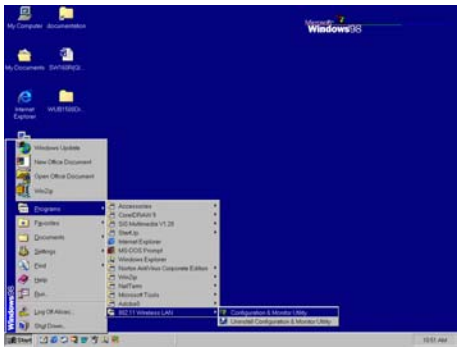
For making your computer visible on the network, enable the **File and Printer Sharing**.



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

Configuration and Monitor Utility for Windows 98/ME/2000

After installing the device successfully, go to **Start → Programs → 802.11 Wireless LAN → Configuration and Monitor Utility**.



The **Wireless LAN Monitor Utility** icon will appear in the taskbar every time the device is running. You can open it by double-clicking on this icon.

Icon Status

Mode	Icon	Link Status
Access Point mode		Red. The station is not associated to an Access Point.
		Blue. The station associates itself to an Access Point.
Peer-to-Peer mode		Red. The color is red only when the card is during resetting and initialization procedure.
		Blue. The color is always blue, except when the card is during resetting and initialization procedure.

***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)

All settings are categorized into 6 tabs:

Status

Statistics

Site Survey

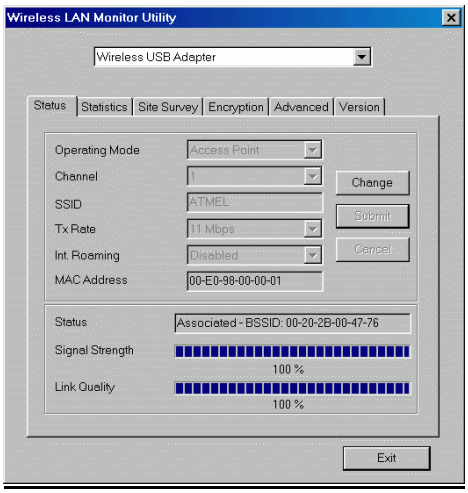
Encryption

Advanced

Version

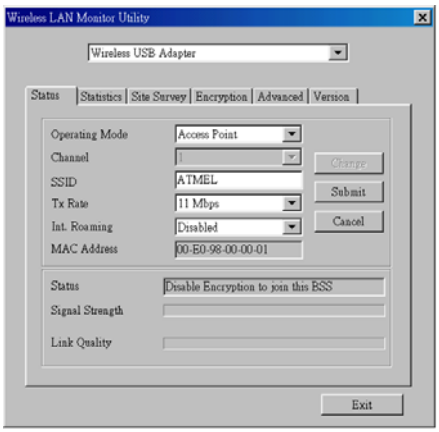
Status

The **Status** tab will display the current status of the Wireless USB Adapter.



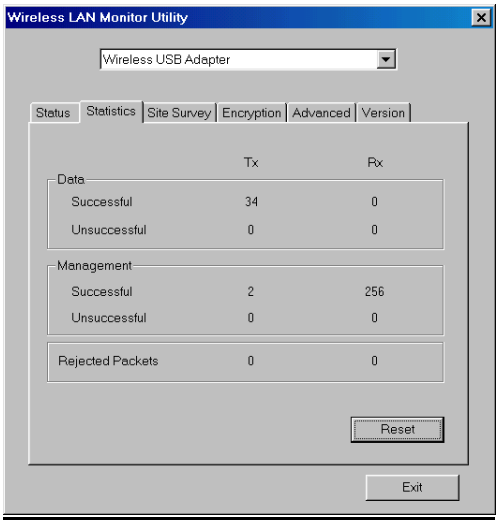
Item	Description
Operating Mode	It displays the current operating mode. (**Access Point** or **Peer-to-Peer**).
Channel	It shows the selected channel that is currently used. (There are 14 channels available, depends on the country.)
SSID	The **SSID** is the unique name shared among all points in your 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 USB Adapter.

Item	Description
Tx Rate	It shows the current transfer rate. (**1, 2, 5.5, or 11Mbps** or **Auto**)
Int Roaming	It displays the current roaming status. (**Disabled** or **Enabled**)
MAC Address	It displays the MAC address of the Wireless USB Adapter.
Status	It displays the information about the status of the communication (the BSSID of the Access Point to which the card is associated).
Signal Strength	It displays the signal strength of the connection between the Wireless USB Adapter and the Access Point it connects.
Link Quality	It displays the link quality of the connection between the Wireless USB Adapter and the Access Point it connects.
Change	Click **Change** to change the configuration parameters such as **Operating Mode**, **SSID**, **Tx Rate**, and **Int Roaming**. (Refer to below page)
Submit	Click **Submit** to save the changes.
Cancel	Click **Cancel** to ignore the previous setting.


Wireless LAN Monitor Utility
Wireless USB Adapter
Status
Statistics
Site Survey
Encryption
Advanced
Version
Operating Mode
Access Point
Channel
1
Change
SSID
ATMEL
Submit
Tx Rate
11 Mbps
Cancel
Int. Roaming
Disabled
MAC Address
00-E0-98-00-00-01
Status
Disable Encryption to join this BSS
Signal Strength
Link Quality
Exit

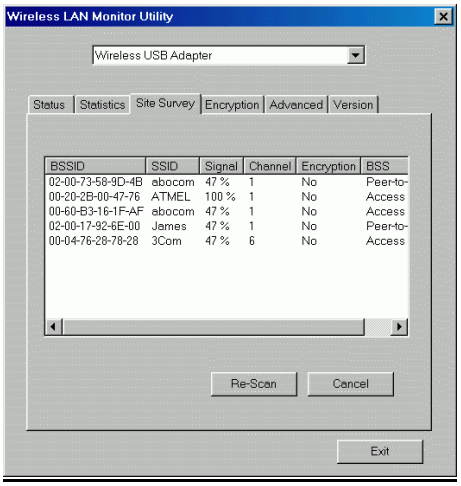
Statistics

This option shows you to view the available statistic information (**Data packets**, **Management Packets** and **Rejected packets**). Press the **Reset** button to renew or update this list of statistics.



Site Survey

The **Site Survey** tab shows all the available Access Points and their features.

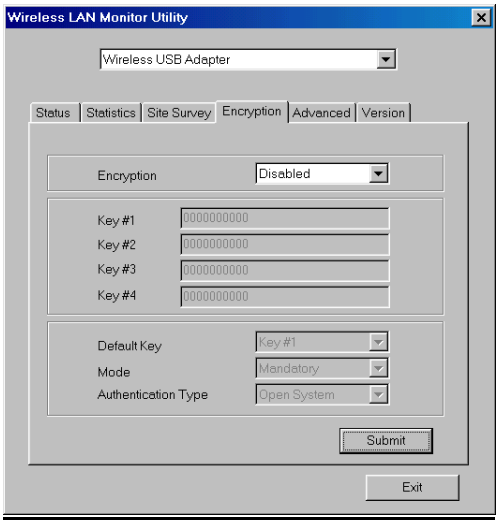


Item	Description
BSSID	A set of wireless stations is referred to as a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSS ID.
SSID	The **SSID** is the unique name shared among all points in your wireless network. The name must be identical for all devices and points attempting to connect to the same network.

Item	Description
Signal	It displays the signal strength of the connection between the Wireless USB Adapter and the Access Point it connects.
Channel	It shows the selected channel that is currently used.
Encryption	It displays the status of WEP Encryption.
BSS	It displays the type of Basic Service Set. **Access Point:** allows the Adapter to communicate with a wired network which employing an Access Point. **Peer-to-Peer:** allows PC-to-PC, station-to-station communication without employing an Access Point.
Re-Scan	Search for all available networks. Clicking on the button, the device will start to rescan and list all available sites.
Cancel	Click **Cancel** to ignore the previous setting. (Do not press **Cancel** while **Re-Scan** is working.)
Exit	Click **Exit** to exit the application.

Encryption

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



Item	Description
Encryption	**WEP** is a data privacy mechanism based on a 64-bit/128-bit shared key algorithm. Under the drop-down box, you can choose to have WEP encryption **Disabled**, **64 Bit**, or **128 Bit**.

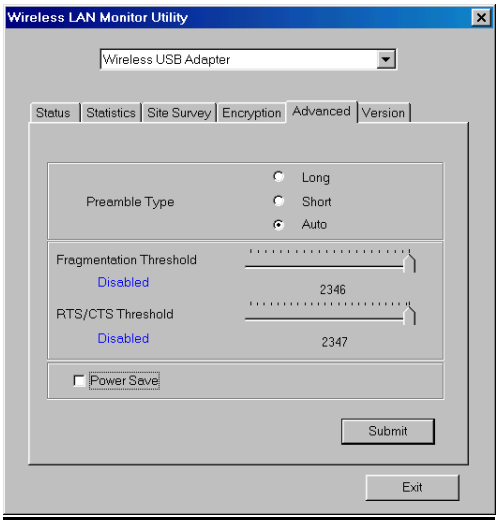
Key1/Key2/ **Key3/Key4**	This setting is the configuration key used in accessing the wireless network via WEP encryption. To generate an encryption key: 1. Select 64 Bit or 128 Bit. 2. Click "Key1" or "Key2" or "Key3" or "key4" item, then fill in the appropriate value/phrase.
Default Key	You can specify up to 4 different keys to *decrypt* wireless data. Select the Default key setting from the pull-down menu.
Mode	Two WEP modes are available as below: **Mandatory** and **Optional**. **Mandatory**: WEP Encryption is required to establish connection with other stations within the wireless network. **Optional**: Your station can communicate with other stations within the wireless network regardless if they use WEP or not.
Authentication Type	The authentication type 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 System**, **Shared Key**, and **Auto**. **Open System:** If the Access Point

	is using "**Open System**" authentication, then the wireless adapter will need to be set to the same authentication type. **Shared Key**: **Shared Key** is when both the sender and the recipient share a secret key. **Auto:** Select **Auto** for the USB adapter to select the Authentication type automatically depending on the Access Point Authentication type.
Submit	Click **Submit** to save the changes.
Exit	Click **Exit** 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.

Advanced

You can change advanced configuration settings, such as the **Preamble Type**, **Fragmentation Threshold** and **RTS/CTS Threshold**.

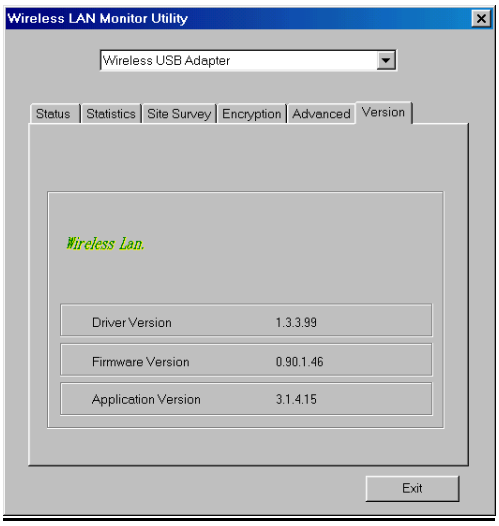


Item	Description
Preamble Type	A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter.
⊙ **Long**	IF in a "noisy" network environment, the Preamble Type should be set to **Long**.
⊙ **Short**	The **Short** preamble is intended for applications where minimum overhead and maximum performance is desired. If in a "noisy" network environment, the performance would be decreased.
⊙ **Auto**	Select **Auto** for the USB adapter to select the Preamble type automatically depending on the Access Point Preamble type.
Fragmentation Threshold	To fragment MSDU or MMPDU into small sizes of frames for increasing the reliability of frame (The maximum value of 2346 means no fragmentation is needed) transmission. The performance will be decreased as well, thus a noisy environment is recommended.
RTS/CTS 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.

Power Save	Check the box to allow the Adapter to go to sleep mode, during which data communication could be interrupted.
Submit	Click **Submit** to save the changes.
Exit	Click **Exit** to exit the application.

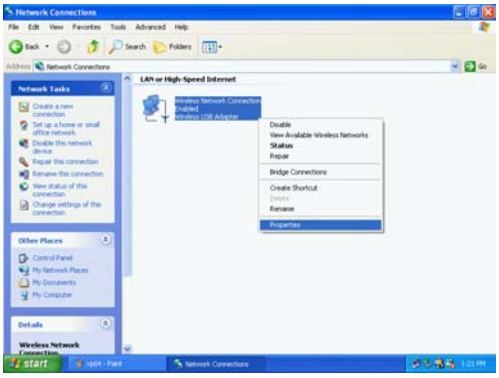
Version

You can view basic information about the Utility like the **Driver**, **Firmware** and **Application** Version. Use the **Exit** button to exit the application.

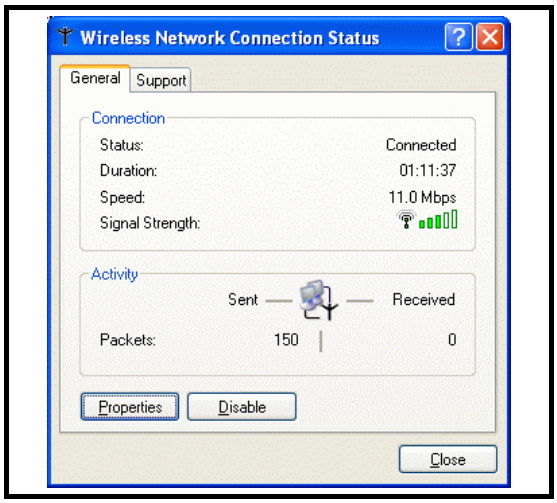


Configuration for Windows XP

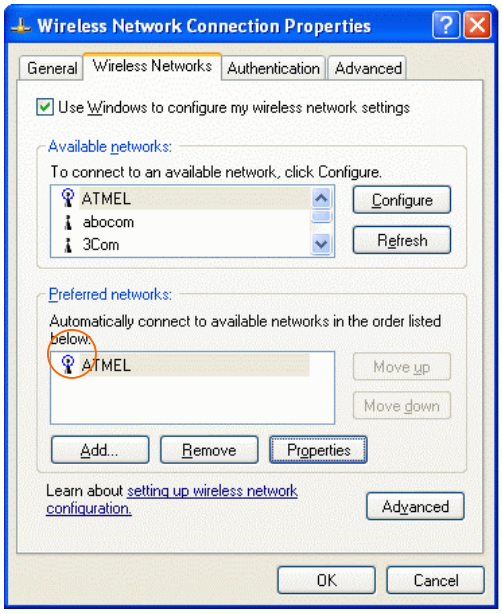
1. Go to **Start** → **Control Panel** → **Network Connections**.
2. In **Network Connections** window, right-click the **Wireless Network Connections** icon, and select **Properties**.



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 **Wireless Networks** tab.



☐Use Windows to configure…

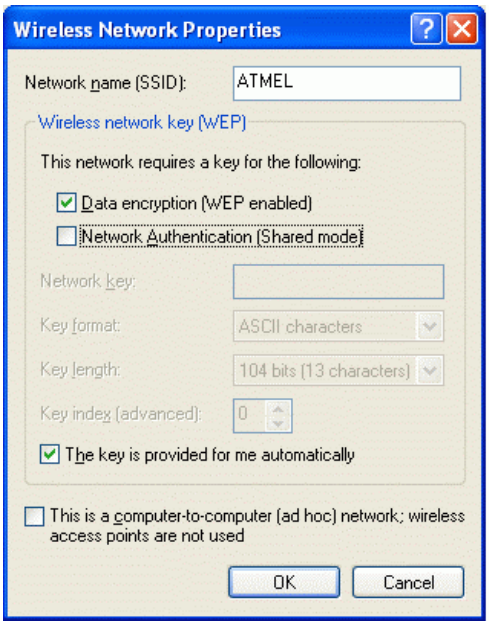
Check the box to enable windows configuration.

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 select preferred one(s) 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.

Specifications

Standards	IEEE 802.11b,Wi-Fi compliant
Host Interface	32-bit CardBus
Antenna	Built-in Diversity Antenna
LED Indicators	▪ LINK:Green,ON ▪ ACT:Orange,ON
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
Power Requirement	Operating Voltage: 3.3V ▪ TX consumption : 450mA (Max) ▪ RX consumption: 300mA (Max)
Physical Specifications	Weight: 40 g Dimension: 119(L)x53.94(W)x 6.88(H) mm

Environment Specifications	▪ OperatingTemperature: 0~65℃ambient temperature ▪ Storage Temperature: -20~75 ℃ ambient temperature ▪ Operating humidity: 95% maximum (non-condensing) ▪ Storage humidity: 95% maximum (non-condensing)
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