

PCI Wireless Network Card

User's Manual

Rev 1.0

Regulatory compliance

FCC Warning

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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

About this manual

This User's Manual describes how to install and operate your PCI Wireless Network Card. Please read this manual before you install the product.

This manual includes the following topics:

- Product description and features.
- Software installation procedure.
- Hardware installation procedure.
- FAQ

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Chapter 1 - Introduction

Thank you for purchasing the PCI Wireless Network Card. This high-speed PCI Wireless Network Card provides you with an innovative wireless networking solution. The Card is easy to set up and use. With this innovative wireless technology, you can share files and printers on the network—without inconvenient wires!

The Card is a network card with a rate of 1, 2, 5.5, and 11 Mbps operating in the ISM band using Direct Sequence Spread Spectrum (DSSS) transmission implementing the IEEE 802.11b standard. This card provides Device Drivers for Windows 98, Windows 2000 and Windows ME. It also provides tools for the configuration of the card. The tool, as well as the installation steps of the plug-and-play procedure for the Microsoft Windows 98, Windows ME and Windows 2000 operating systems, is described in this document.

Features

The PCI Wireless Network Card offers compliance with the IEEE 802.11b specification. This feature allows them to communicate with other wireless devices that support the standard. Features of the card are:

- **Uses 2.4GHz frequency band, which complies with worldwide requirement**
- **Wireless interface following the IEEE 802.11b standard**
- **Using PCI interface**
- **Enciphering/deciphering of wireless data by the implementation of the WEP algorithm**
- **Wire-free access to networked resources from anywhere beyond the desktop**
- **Allows users move between Access Points without resetting their connection reconfiguration**
- **Delivers data rate up to 11 Mbps**
- **Supports 11, 5.5, 2, and 1 Mbps rates**
- **Provide PCI Wireless Network Card Configuration utility**
- **The Card uses external Antenna with LEDs indicating Power and Link**
- **Supports most popular operating systems: Window 98/2000 & Windows ME**

What is Wireless LAN?

Wireless Local Area Network (WLAN) systems offer a great number of advantages over traditional wired systems. WLAN is flexible and easy to setup and manage. They are also more economical than wired LAN systems.

Using radio frequency (RF) technology, WLAN transmit and receive data through the air. WLAN combine data connectivity with user mobility. For example, users can roam from a conference room to their office without being disconnected from the LAN.

Using WLAN, users can conveniently access-shared information, and network administrators can configure and augment networks without installing or moving network cables.

WLAN technology provides users with many convenient and cost saving features:

- **Mobility:** WLAN provide LAN users with access to real-time information anywhere in their organization, providing service opportunities that are impossible with wired networks.
- **Ease of Installation:** Installing is easy for novice and expert users alike, eliminating the need to install network cables in walls and ceilings.
- **Scalability:** WLAN can be configured in a variety of topologies to adapt to specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users roaming over a broad area.

Wireless LAN Modes

Wireless LANs can be configured in one of two ways:

Ad-hoc Networking	Also known as a peer-to-peer network, an ad-hoc network is one that allows all workstations and computers in the network to act as servers to all other users on the network. Users on the network can share files, print to a shared printer, and access the Internet with a shared modem. However, with ad-hoc networking, users can only communicate with other wireless LAN computers that are in the wireless LAN workgroup, and are within range.
Infrastructure Networking	Infrastructure networking differs from ad-hoc networking in that it includes an access point. Unlike the ad-hoc structure where users on the LAN contend the shared bandwidth, on an infrastructure network the access

	point can manage the bandwidth to maximize bandwidth utilization. Additionally, the access point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. Infrastructure networking has the following advantages over ad-hoc networking: • Extended range: each wireless LAN computer within the range of the access point can communicate with other wireless LAN computers within range of the access point. • Roaming: the access point enables a wireless LAN computer to move through a building and still be connected to the LAN. • Wired to wireless LAN connectivity: the access point bridges the gap between wireless LANs and their wired counterparts.
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Notes on Wireless LAN Configuration

When configuring a wireless LAN (WLAN), be sure to note the following points:

- Optimize the performance of the WLAN by ensuring that the distance between access points is not too far. In most buildings, WLAN cards operate within a range of 100 ~ 300 feet, depending on the thickness and structure of the walls.
- Radio waves can pass through walls and glass but not metal. If there is interference in transmitting through a wall, it may be that the wall has reinforcing metal in its structure. Install another access point to circumvent this problem.
- Floors usually have metal girders and metal reinforcing struts that interfere with WLAN transmission.

This concludes the first chapter. The next chapter deals with the hardware installation of the Adapter.

Chapter 2 - Installation and Configuration of The PCI Adapter for Windows

Use the procedures described in this chapter to install and configure the PCI Wireless Network Adapter under Windows 98, Millennium, and 2000.

Throughout this chapter it is assumed that you have a basic working knowledge of Windows and of how to install new network cards on them.

What You Will Need

During the installation, you may be prompted to load operating system files from the Windows installation disc. Please have this disc handy.

You will also need the Setup Utility CD provided with your package. This Wireless PCI adapter Setup Utility will guide you through the Install and Uninstall Procedure for Windows 98, 2000, and ME.

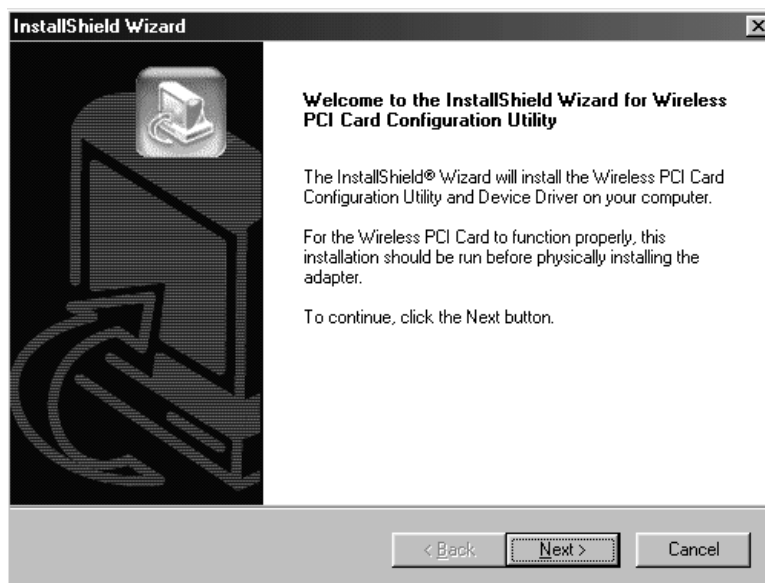
Note: You must install this software before installation of the hardware.

Software and Driver Installation

1. Insert the **Setup Utility CD** into your CD-ROM Drive. The Setup Utility should run automatically and the screen shown below should appear. If it does not, click the **Start** button and choose **Run**. In the box that appears, enter **D:/setup.exe** (where "D" is the letter of your CD-ROM drive). To install your Wireless PCI Card, click on the **Install** tab.



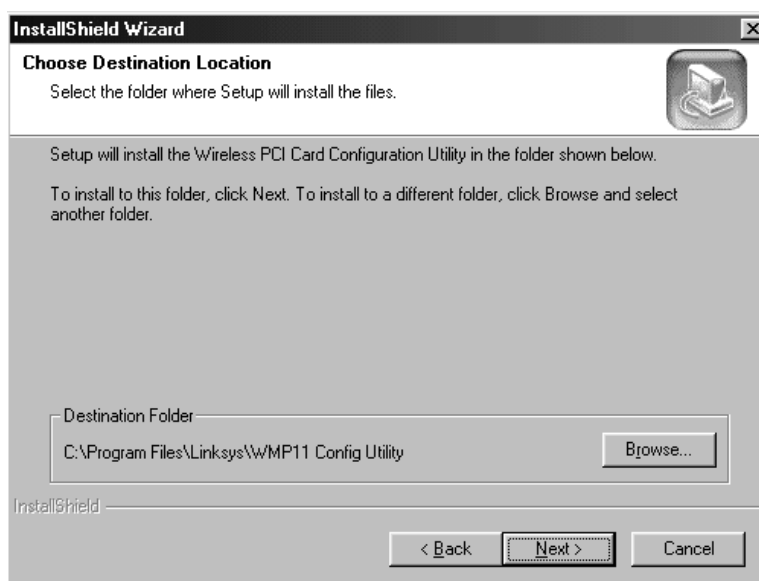
2. Once you see the following screen, click **Next** to continue.



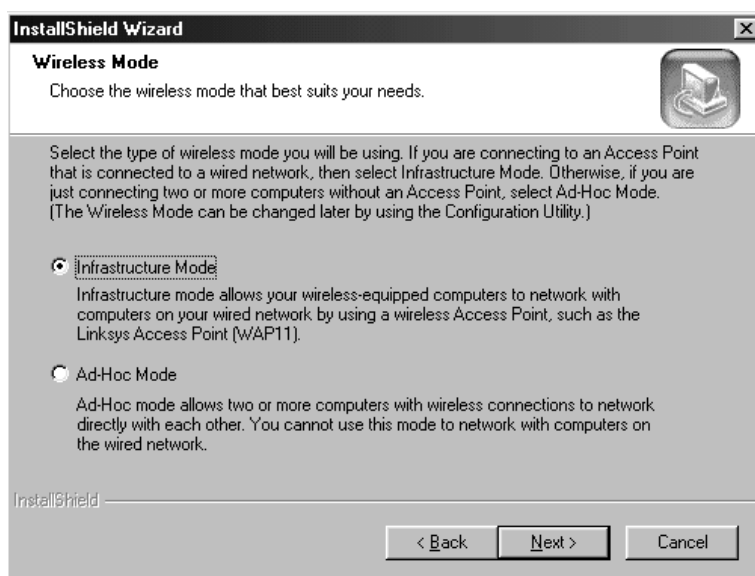
3. After reading to the Warranty Policy, click **Yes** if you agree, or **No** to end the installation.



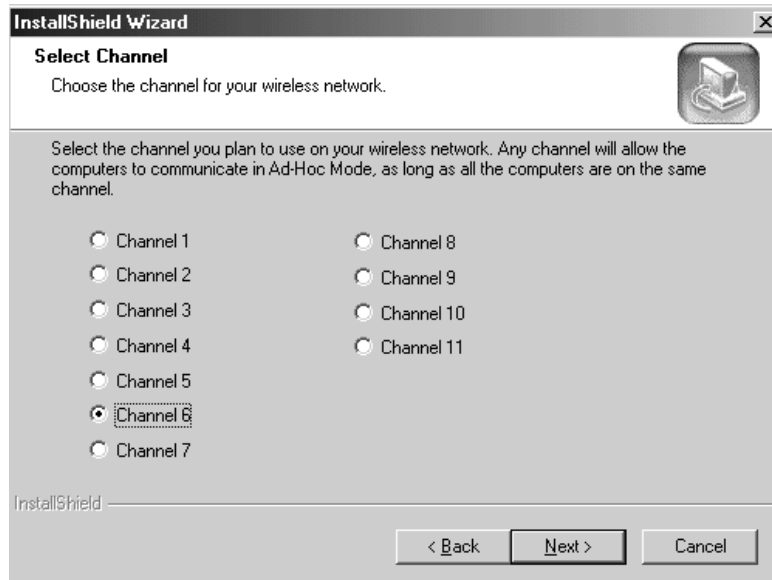
4. The InstallShield Wizard will automatically choose a folder where Setup will install files. Click **Next**.



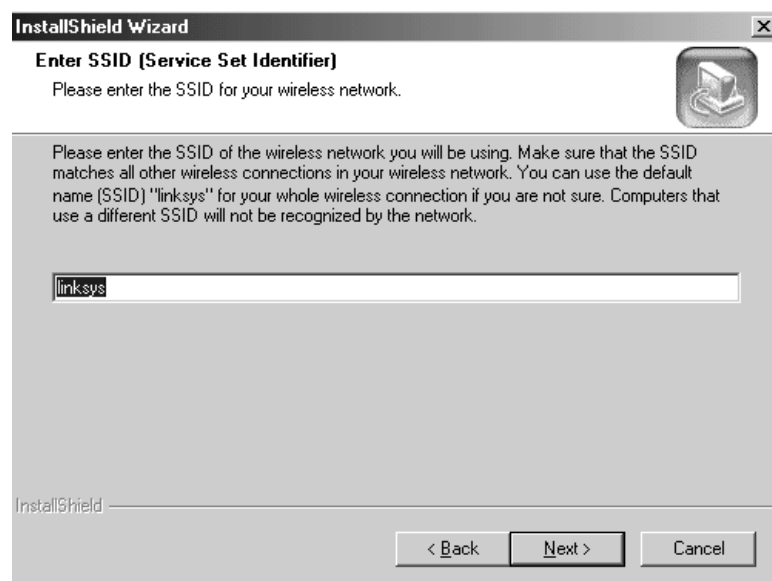
5. The InstallShield Wizard will ask you to choose a wireless mode. Choose the mode that applies to your network. **Ad-Hoc Mode** is used for simple peer-to-peer networking or sharing of local resources between wireless Networked PCs, and **Infrastructure Mode** allows a wireless network to be integrated into an existing, wired network through an access point, permitting roaming between access points while maintaining a connection to all network resources. Click **Next**.



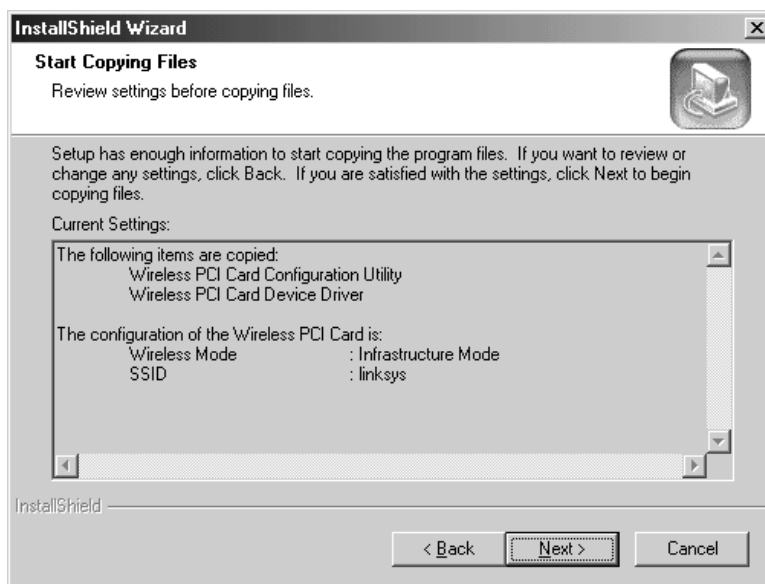
6. If you chose **Infrastructure Mode**, go on to step 7 now. If you chose **Ad-Hoc Mode**, choose the correct operation channel that applies to your network. The channel you choose should be set as the same as the other points in your wireless network. Click **Next**.



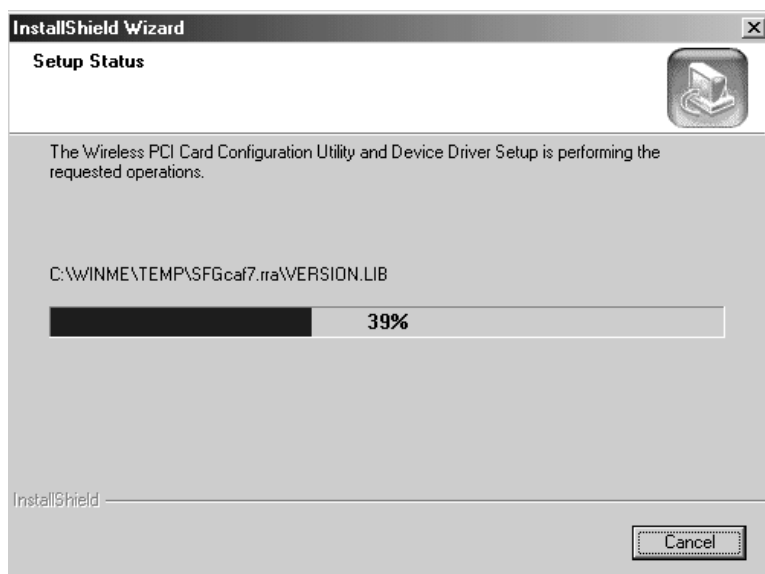
7. Enter in the name of your SSID for your Ad-Hoc or Infrastructure setting. The SSID must be identical for all points in the network. To join any available SSID, type in the default setting **Linksys**. Click **Next**.



8. The Wizard will ask you to review your settings before starting to copy files. Select Back to review or change any settings, or select Next if you are satisfied with your settings.



9. The InstallShield Wizard will begin copying the files. The bar in the middle of the screen below shows the percentage of files copied.



10. Once the Wireless PCI adapter configuration Utility has been successfully installed, the Wizard will ask you to restart your computer. Select **Yes, I want to restart my computer now.**, then click **Finish** to restart.



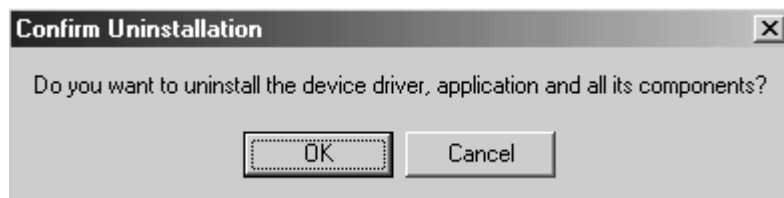
You will now have completed the installation of your Wireless PCI Network Card Configuration Utility.

Uninstall Procedures

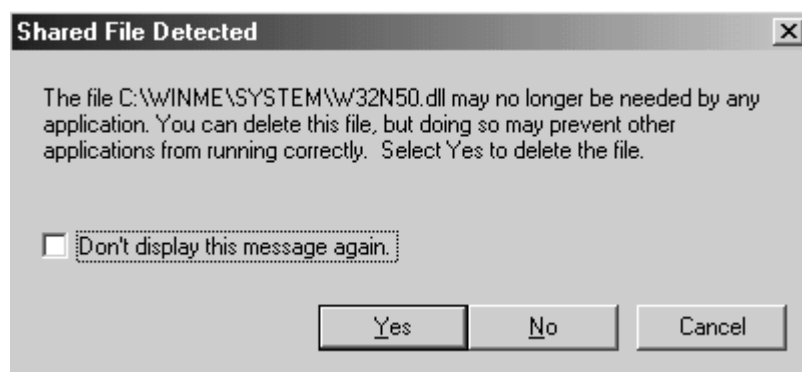
1. To uninstall the device driver and the Configuration Utility of the Wireless PCI Card, select the **Uninstall** tab in the Setup Utility.



2. A window will appear asking you to confirm uninstallation. Click **OK** to confirm.



3. Any shared files that may no longer be needed by any application will be detected. Click **Yes** to delete these files.



4. The InstallShield Wizard will tell you that uninstallation has been completed. Click **Finish** to get out of the InstallShield Wizard.



The Wireless PCI Card device driver, application, and its components have all been uninstalled.

Chapter 3 - Hardware Installation

This chapter covers connecting your PCI Wireless Network Card to PCI slot of desktop PC.

Package Contents

Please make sure that items below are included on package.

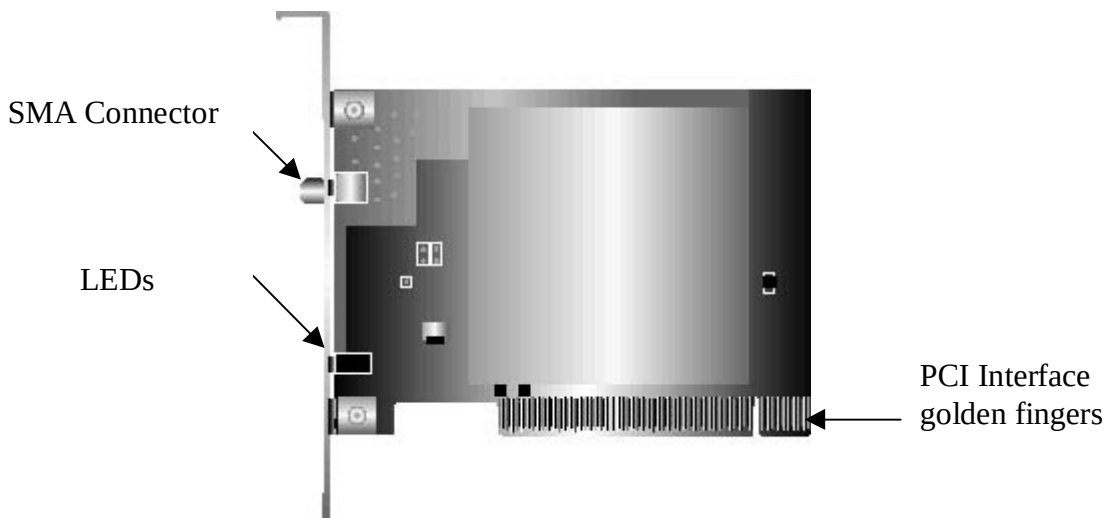
- ✓ One PCI Wireless Network Card
- ✓ One Driver / Utility CD-ROM (this use's manual included)
- ✓ One Quick Installation Guide
- ✓

System Requirements for the Card

- Operating System: MS Windows 98, Windows 2000, Windows ME
- Desktop PC with CD-ROM drive
- One free PCI slot
- Pentium-Class 90MHz or higher

Install the PCI Card

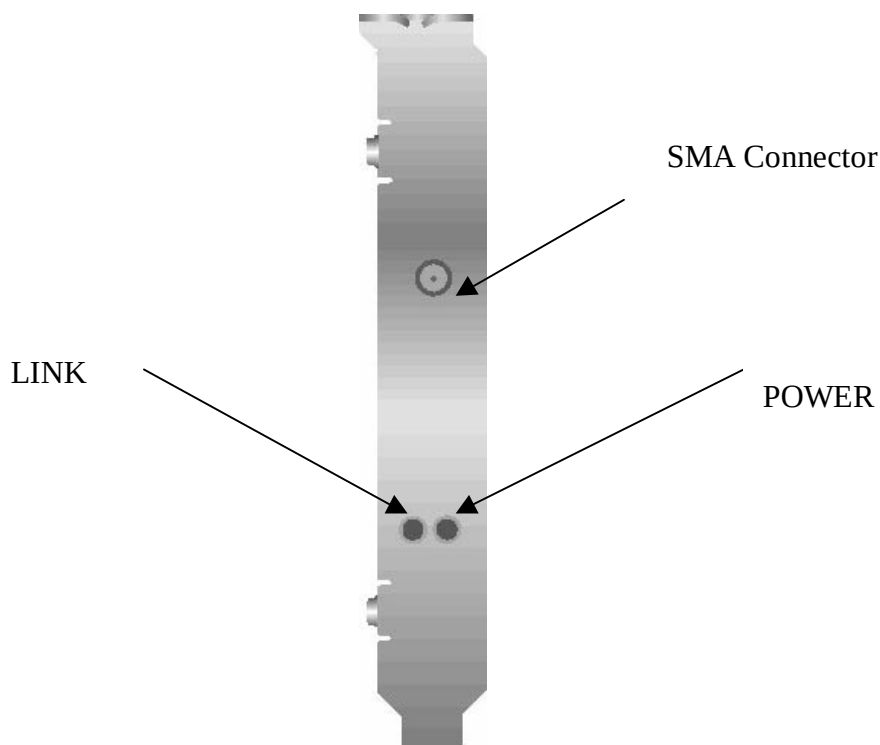
NOTE: These instructions apply to most desktop/notebook computers. For detailed information on inserting PCI card into your desktop PC, consult the desktop PC User's Manual.



The outlook of PCI wireless Network Card

1. Turn off the computer, unplug the power cord and remove the computer's cover.
2. Pick a free PCI expansion slot and remove the protective bracket.
3. Insert the card into the slot until it is fully seated.
4. Secure the adapter bracket with the screw.
5. Replace the computer's cover.
6. Reconnect the power cord and turn on the computer.

LED Indicators



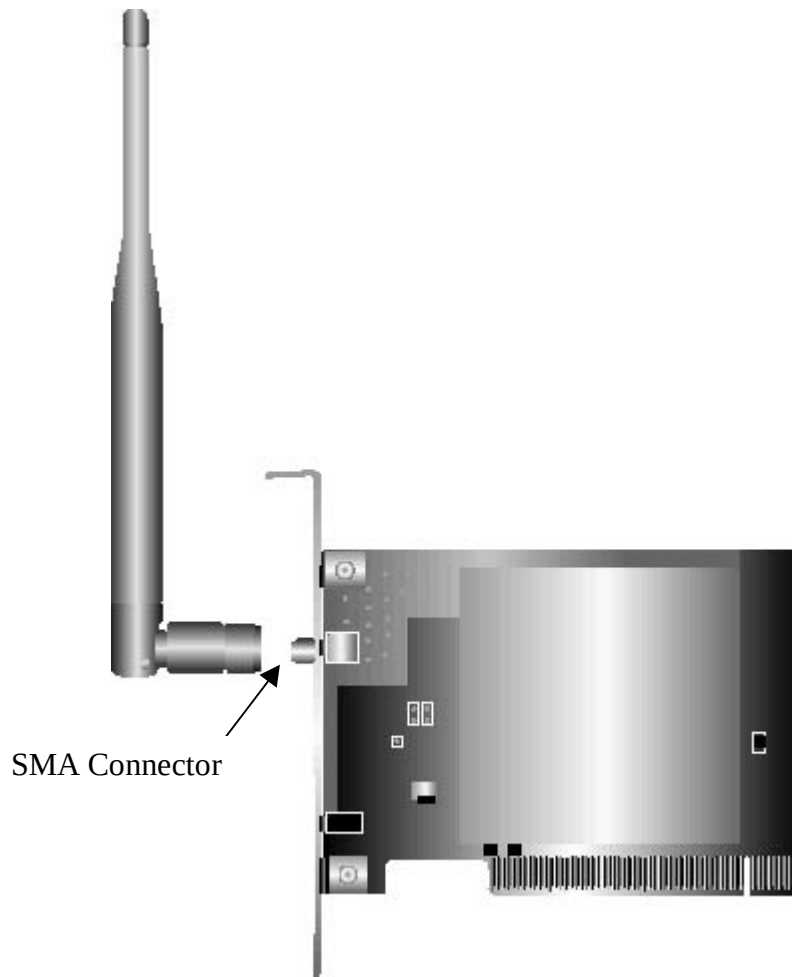
Sideview of PCI card from bracket.

The following table describes the meaning of LED indicators:

LED	MEANING
POWER	Indicates that the Adapter is powered on when the LED lights up.
LINK	Indicates link status. The LED lights up while the wireless connection is linked. If the light is blinking, it means there is data sending or receiving via wireless.

Connecting External Antenna to the Card

After installing the card on computer, connect external Antenna to the card from the SMA connector



Chapter 4 – Installing Network Protocols

Protocols are necessary for computers to be recognized on your network. Windows 2000 users need to check their Windows User Guides for protocol installation.

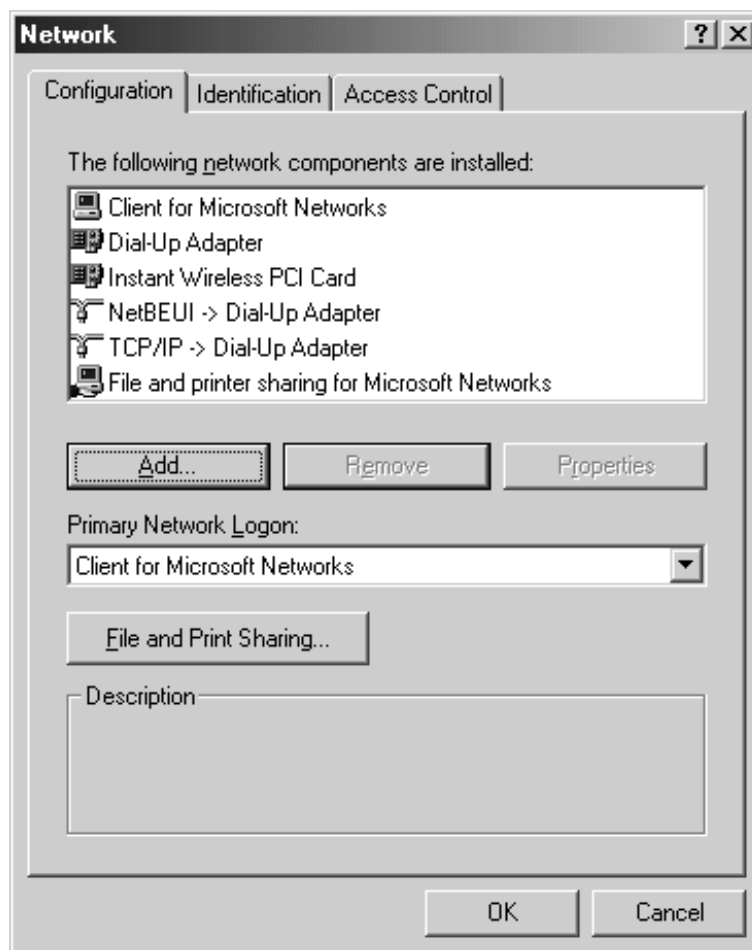
Installing the Network Protocols for Windows 98 and Millennium

1. From the **Start** Menu, select **Settings** and bring up the **Control Panel**. From the Control Panel, double-click on the **Network** icon.

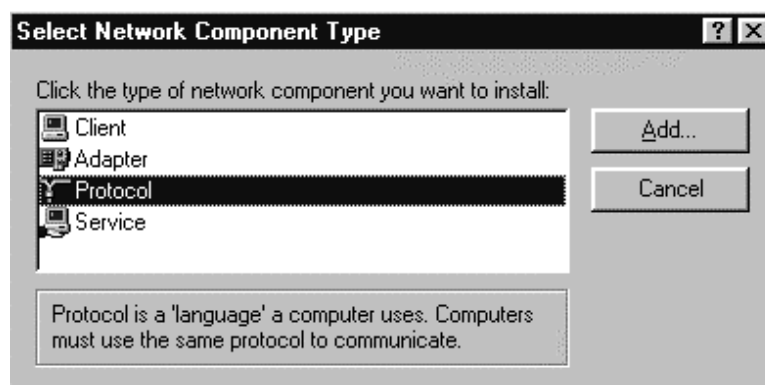


Note: Before adding any network protocols, verify that the protocol is not already installed. Never install duplicate protocols.

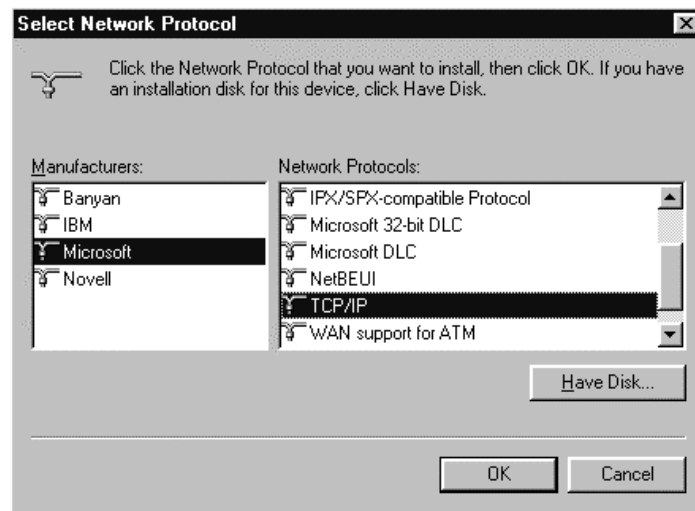
2. Select Wireless LAN PCI Card from the list and click the **Add** button.



3. Highlight **Protocol** and click the **Add** button.



4. Select **Microsoft** from the list of “Manufacturers” and **TCP/IP** from the list of “Network” Protocols” and click the **OK** button.

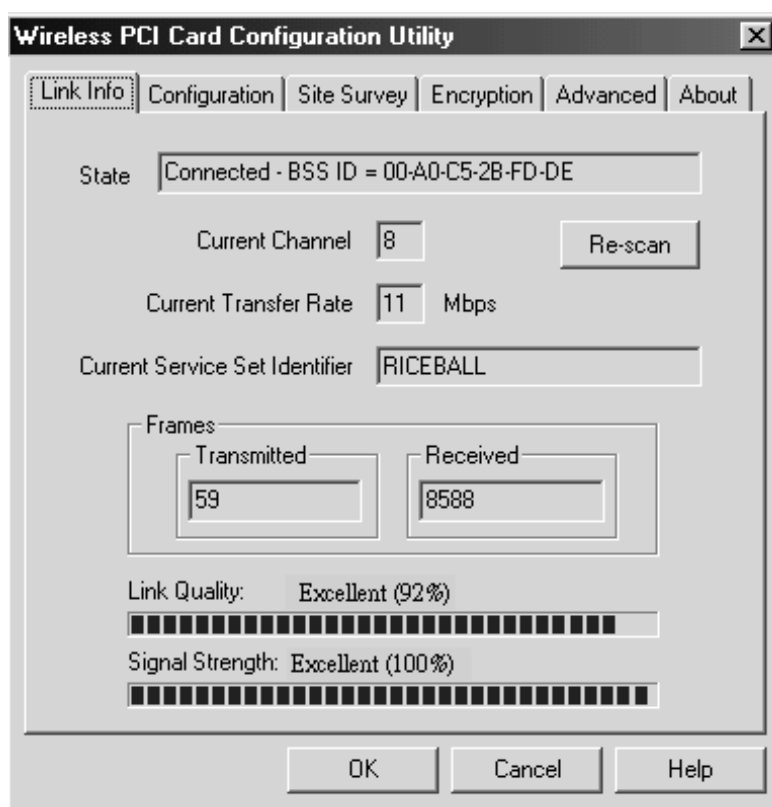


Chapter 5 – Configuring the Wireless PCI Card

1. After installing the PCI adapter, the Wireless PCI Card Configuration Utility icon will appear on your system tray. Double-click on the icon of the green monitor in the diagram below.

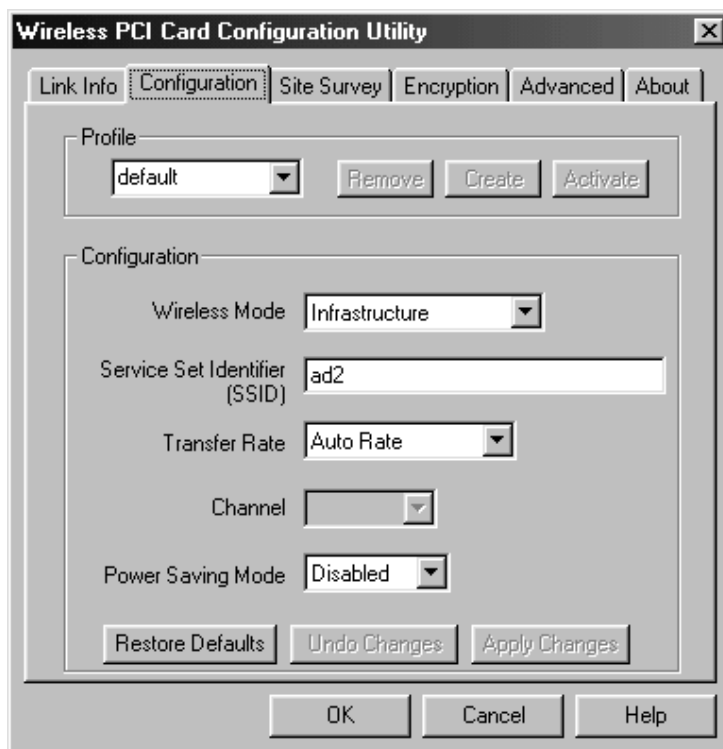


and the following screen will appear:

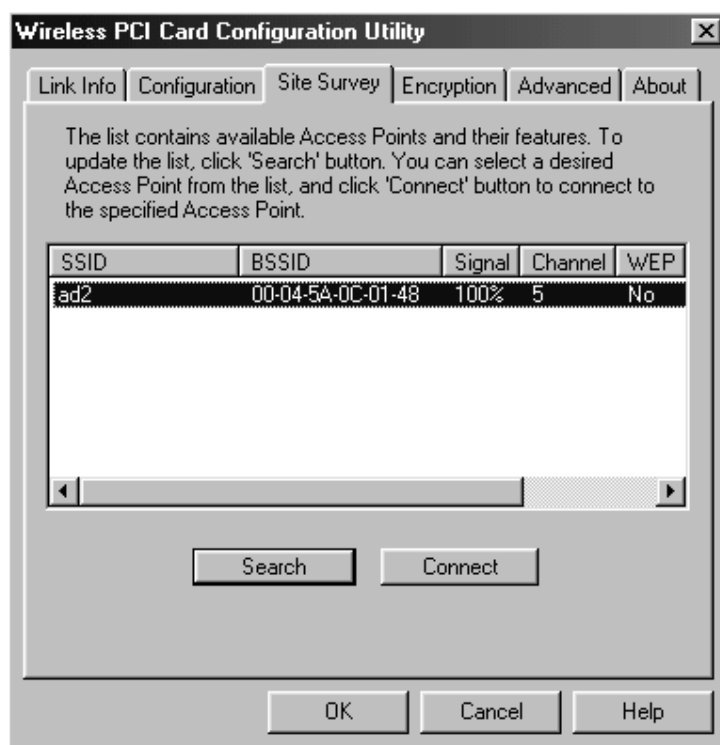


This screen shows you the status of your current connection. Click **OK** to close the Configuration Utility.

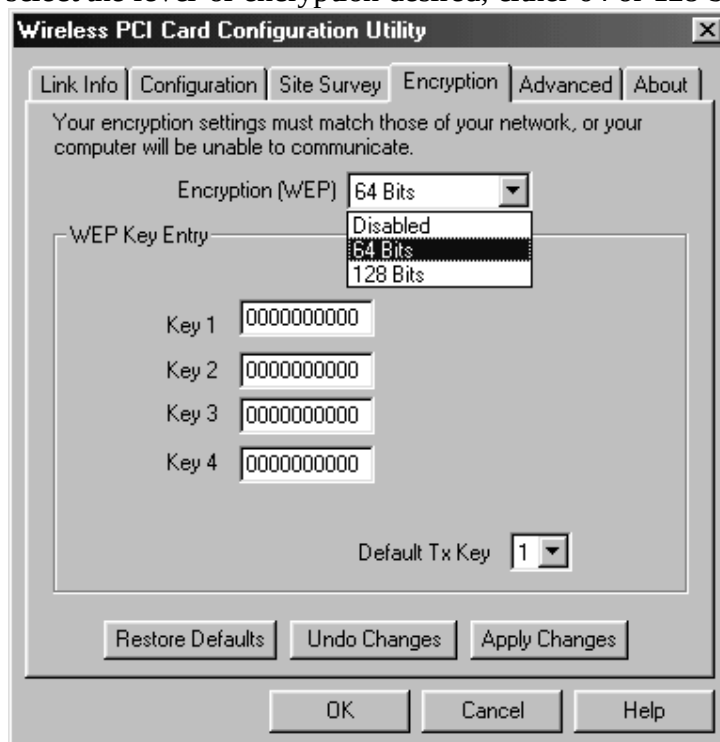
2. Select the **Configuration** tab. Under the **Wireless Mode** dropbox, you may choose either Infrastructure or Ad-Hoc. The Infrastructure mode allows a wireless adapter to communicate with a wired network employing an Access Point, while the Ad-Hoc mode allows wireless-to-wireless, peer-to-peer communication. If you choose Infrastructure, the **SSID** should have the same name as the Access Point. If you choose **Ad-Hoc**, all clients should share the same **SSID** name. You may also select which **Transfer Rate** you wish to use: **1, 2, 5.5, 11Mbps** or **Auto Rate**. Under **Power Saving Mode**, select **Disabled** for uninterrupted data communication, or **Enabled** to allow your Wireless USB Network Adapter to enter “sleep” mode. Click **Apply** to save the settings.



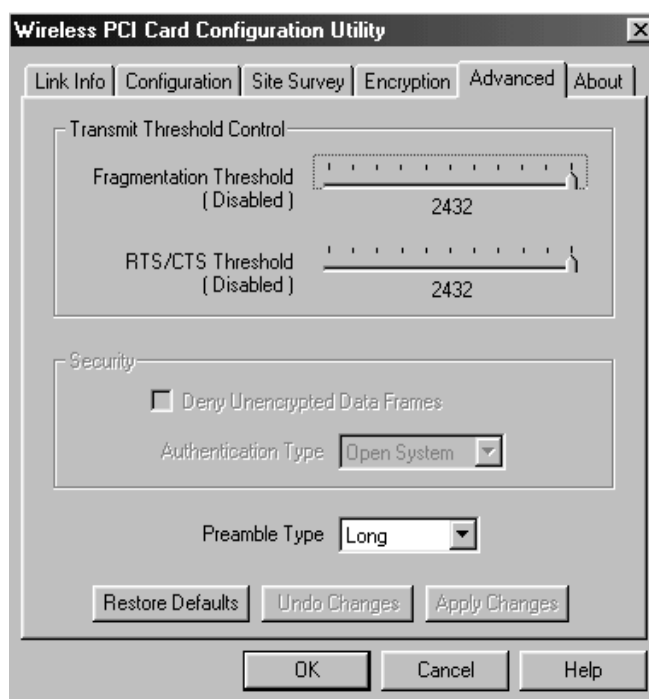
3. Select the **Site Survey** tab. The list on the adjacent screen shows you available Access Points and their features. Click on the desired Access Point, then click **Connect** to connect or **Rescan** to search for more Access Points. Click **OK** when you are finished.



4. Click on the **Encryption** tab. Under the drop-box, you can choose to have WEP encryption **Disabled**, **64-Bit**, or **128-Bit**. Wired Equivalent Privacy (WEP) is an encryption scheme used to protect wireless data communication. The Disabled setting prevents the sharing of data with other computers on the WEP network. For data sharing to be enabled, select the level of encryption desired, either 64 or 128-bit.



5. Select the “**Advanced**” tab. You can choose the **fragmentation threshold** to define the maximum data frame size your adapter will transmit. When the packet error rate is high, you may set the threshold value to transmit shorter frames. You may select **RTS/CTS threshold** to define when will your adapter send out RTS/CTS frames to reserve bandwidth for transmission. By using the RTS/CTS function, you may request bandwidth from AP to allow you have better chance to send out your data. For the **Security**, it's only applicable while WEP is enabled. You can choose the **Deny Unencrypted Data Frames** to deny to receive unencrypted data frames to prevent from unknown intruders probe your station. For the **Authentication Type**, the current supported algorithms are Open System, and Shared Key. The algorithm will be invoked when associated to Access Point. To associate to the desired Access Point you must set the same algorithm as the one of the desired Access Point. You can also select **Preamble Type** which is for framing synchronization. The possible setting are long and Short. The setting must be the same as the setting of the Access Point you are going to associate.



6. The **About** tab shows you copyright and version information about the driver, the configuration utility, and the firmware. Click **OK** to complete the configuration.



Appendix A – FAQ

1. What is IEEE 802.11 standard?

- The IEEE 802.11 is a wireless LAN industry standard, and the objective of IEEE 802.11 is to make sure that different manufactures' wireless LAN devices can communicate to each other.

2. What is WEP?

- As described in the IEEE 802.11 standard, WEP (Wired Equivalent Privacy) is a data privacy mechanism based on a 40 bit shared key algorithm.

3. My desktop PC cannot recognize the PCI Wireless Network Card.

- Please make sure that the Card is inserted into the PCI slot of your desktop PC properly.
- And also make sure that the PCI controller is enabled in the BIOS of your desktop PC.

4. In Infrastructure mode, my desktop PC cannot communicate with the others PCs on the network.

- First, make sure that the SSID is same as the others PC.
- Check that your Adapter is configured on the same channel & WEP as the others PCs on the network.

Appendix B – Specifications

Standards:	IEEE 802.11b PCI Interface
Channels:	11 Channels (US, Canada) 13 Channels (Europe) 14 Channels (Japan)
Antenna:	Dipole Antenna with revised SMA Connector
Frequency:	2.4 to 2.4835GHz (Industrial Scientific Medical Band)
Data Rate:	up to 11Mbps
Operating Ranges:	Indoor: Up to 50M @ 11Mbps Up to 80M @ 5.5Mbps Outdoor: Up to 150M @ 11Mbps Up to 300M @ 5.5Mbps