

802.11b Wireless Short  
PC Card

**User Manual**

M73-APO01-

# 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 model 802.11b Wireless Short PC Card (WB1500S) 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.

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



**CAUTION:**

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

**IMPORTANT NOTE.**

1) In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2) To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

**End Product Labeling**

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, and similar equipment). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: **MQ4WB1K5S**."

**Technical Support**

*AboCom Systems, Inc.*

*300 1F, No.21, R&D Rd.II, SBIP, Hsin-Chu, Taiwan , R.O.C.*

*Head office :*

*Tel: 886-3-5789090*

*Fax: 886-3-5789520*

*Technical Support:*

*Tel: 0800-079-123*

***E-Mail: support@abocom.com.tw***

*Website: www.abocom.com.tw*

**U.S Service Center:**

D-LINK CORPORATION

53 DISCOVERY DRIVE, IRVINE CA 92618, USA

TEL: 714-788-0805

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# Introduction

## Wireless Basics

Compliant with IEEE 802.11b, the **802.11b Wireless Short PC Card** provides an ideal solution for users to enjoy the instant connectivity via a wireless local area network (LAN). A wireless LAN is like a regular LAN, except that you can share information anywhere 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 ensure privacy and noninterference by the use of separate radio frequency.

## 802.11b Wireless Short PC Card

The 802.11b Wireless Short PC Card lets you 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's simplicity and flexibility,

you can eliminate the needs 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**

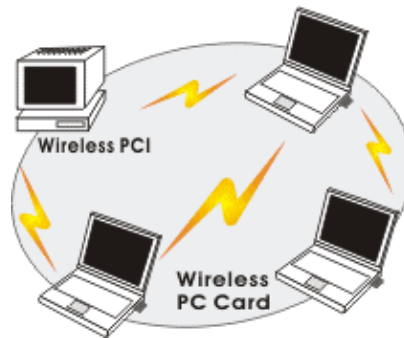
- Compliant with IEEE 802.11b standard for 2.4GHz Wireless LAN
- Compliant with PCMCIA Type II
- Supports PC Card hot swap and true Plug & Play
- Works with all existing network infrastructure
- Compatible with specific wireless products and services
- Capable of up to 128-Bit WEP Encryption Protocol
- Freedom to roam while staying connected
- 11 Mbps High-Speed Transfer Rate
- Rich diagnostic LED indicators with Integrated Antenna
- Compatible with Window 95(OSR2)/98/2000/ME/XP/NT
- Lower power consumption
- Easy to install and configure



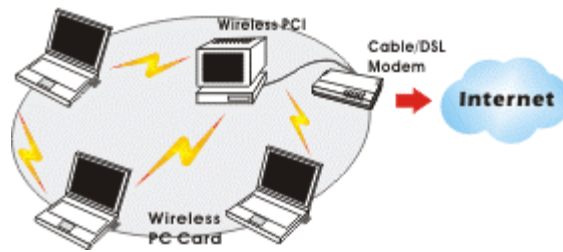
## Wireless Network Options

### 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.

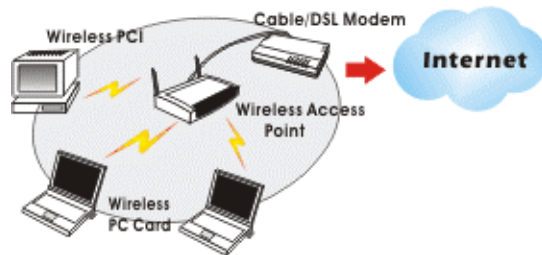


Or you can use one computer as an Internet Server to connect to a wired global network and share files and information with other PCs via a wireless LAN.



### 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**.



# Hardware Installation

## Installation for Access Point Manufacturer

1. Align the Wireless PC Card toward the PCMCIA slot of Access Point. Push evenly and steadily until it is seated.



2. Plug the cable of Antenna of AP into the MMCX connectors of Wireless PC Card and the connectors of cable must screw on properly.



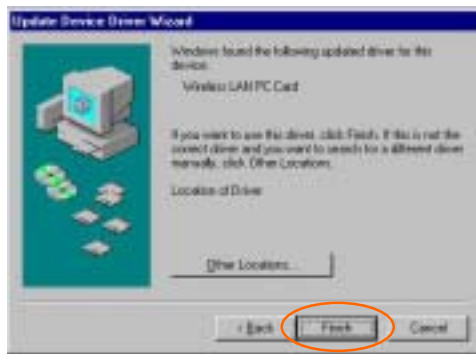
# Software Installation

## Installation for Windows 95 (OSR2)

1. Once the Wireless LAN Adapter is connected to your computer, Windows 95 (applicable for Windows OSR2 only) will automatically detect the new hardware device as shown below. Click **Next**.



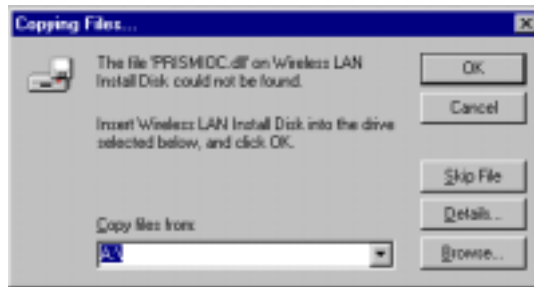
2. Insert the device driver diskette into your floppy drive.
3. Windows will find the driver for this device automatically. Click **Finish**.



4. While copying the necessary files into your system, Windows prompt a message asking for the **Wireless LAN Install Disk**. Click **OK** to proceed.



*Note that you have to direct Windows to copy the needed files from the **root directory (A:)**.*

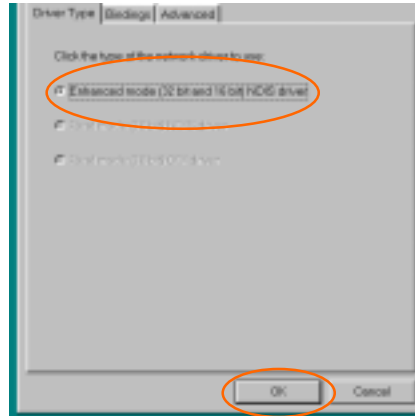


5. When copying files is done, click **OK** when the following figure appears.

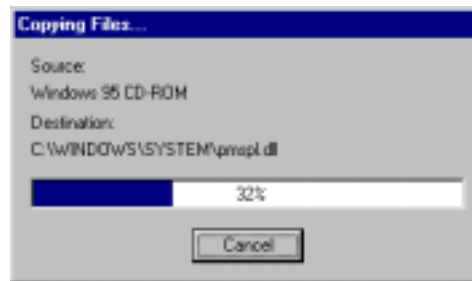


6. The **Wireless LAN PC Card Properties** window will appear. The modification of default settings may result in network errors. It is recommended to **remain the default settings**. Click **OK**.

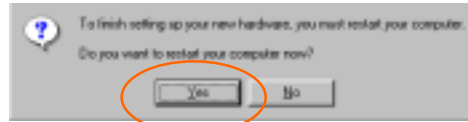
**Note:** For the detailed ways to configure the wireless PC Card, please refer to the [Configuration Utility](#) section.



7. Windows may prompt you to insert **Windows 95** CD-ROM in the selective drive. Please do so to have Windows copy all the necessary files to your system.



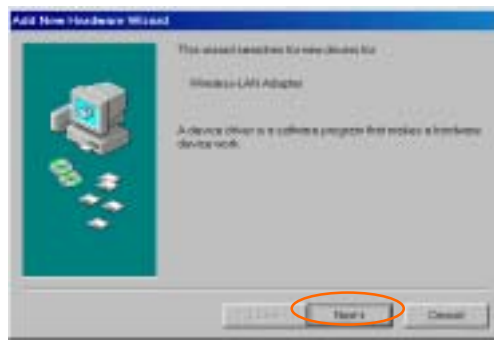
8. Click **Yes** to restart your computer.



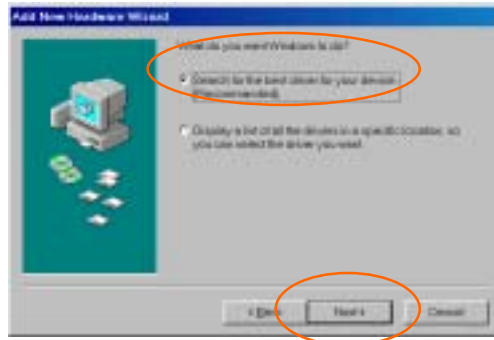
## **Installation for Windows 98**

1. Once the Wireless LAN Adapter is connected to your computer, Windows 98 will automatically detect the new hardware device as shown below. Click **Next**.

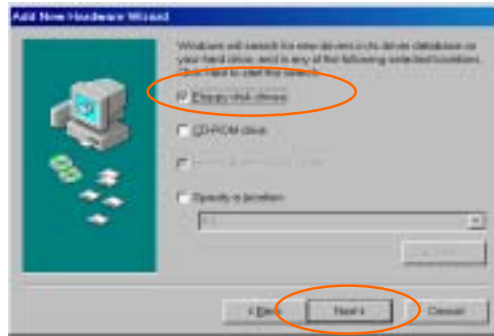




2. Insert the device driver diskette into your floppy drive. Click **Next**.

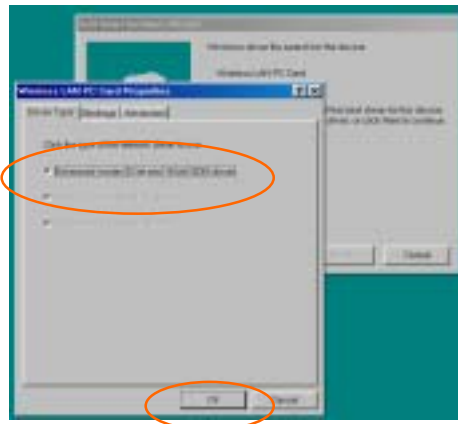


3. Select **Floppy disk drives** and click **Next**.

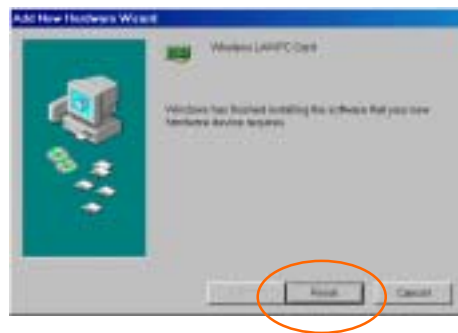


4. Click **Next**.
5. The Wireless LAN PC Card Properties window will appear. The modification of default settings may result in network errors. It is recommended to remain the default settings. Click **OK**.

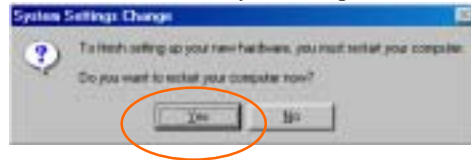
**Note:** For the detailed ways to configure the wireless PC Card, please refer to the [Configuration Utility](#) section.



6. Windows may prompt you to insert **Windows 98** CD-ROM in the selective drive. Please do so to have Windows copy all the necessary files to your system. . When the following window appears, click **Finish**.

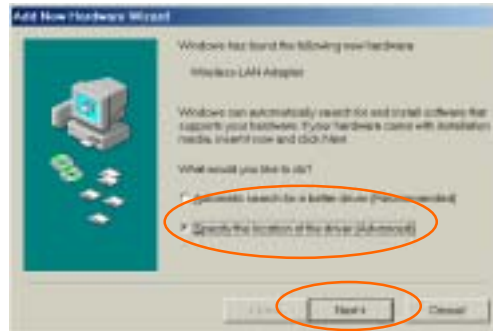


7. Click **Yes** to restart your computer.

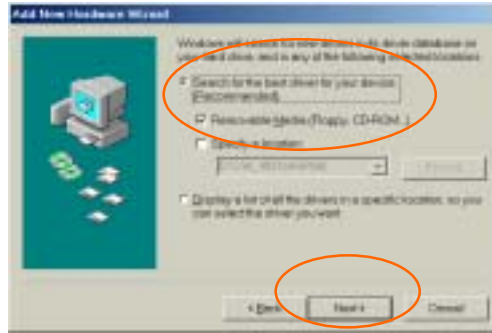


## Installation for Windows ME

1. Once the Wireless LAN Adapter is well connected to your computer, Windows ME will automatically detect the new device. Select **Specify the Location of the driver...** and click **Next**.

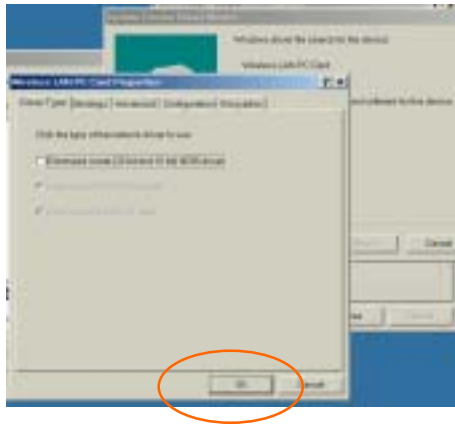


2. Insert the device driver disk into the floppy disk drive on your system. Select **Removable Media (Floppy, CD-ROM...)** and click **Next**.

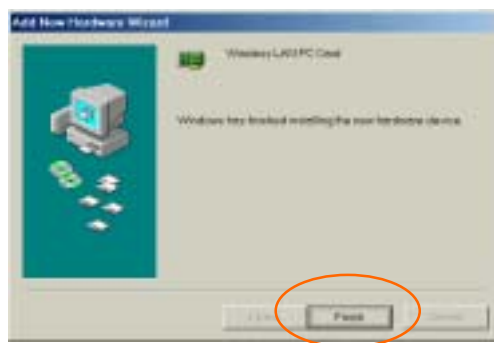


3. Click **Next**.
4. The **Wireless LAN PC Card Properties** window will appear. The modification of default settings may result in network errors. It is recommended to remain the default settings. Click **OK**.

*Note: For the detailed ways to configure the wireless PC Card, please refer to the [Configuration Utility](#) section.*



5. Windows may prompt you to insert **Windows ME** CD-ROM in the selective drive. Please do so to have Windows copy all the necessary files to your system. . When the following window appears, click **Finish**.

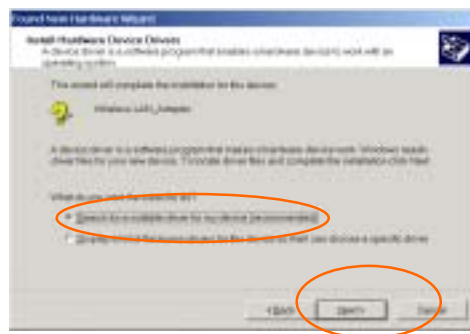


## Installation for Windows 2000

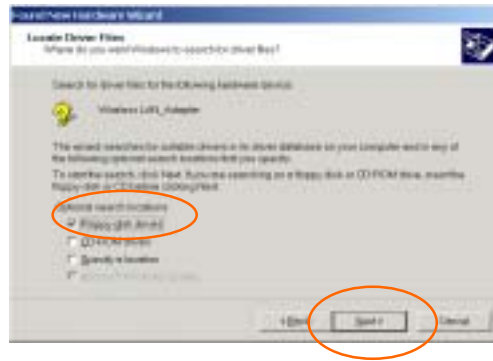
1. Once the Wireless LAN Adapter is well connected to your computer, Windows 2000 will automatically detect the new device. Click **Next**.



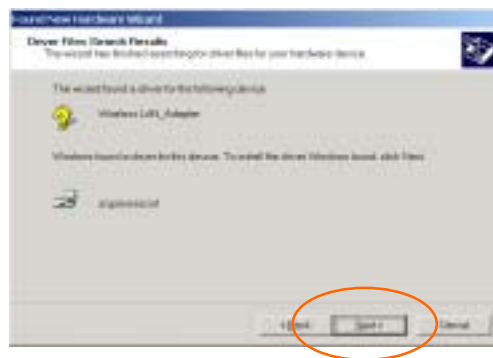
2. Select **Search for a suitable driver...** and press **Next**.



3. Insert the device driver diskette into your floppy drive. Select **Floppy disk drives** and click **Next**.

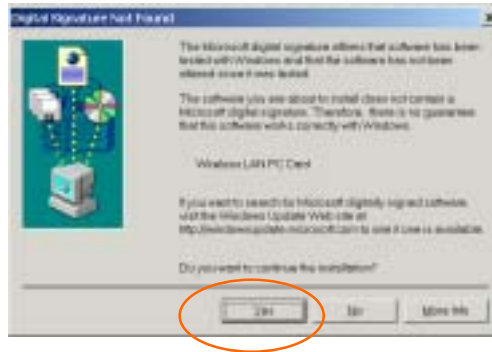


4. Click **Next** to continue.



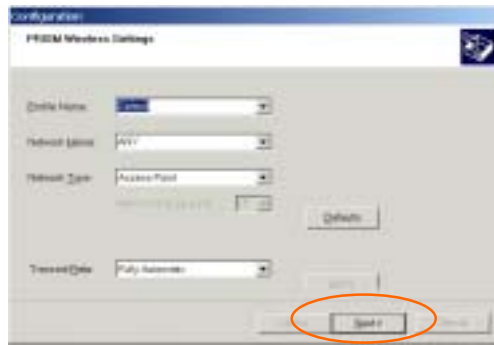


5. Click **Yes** to continue.

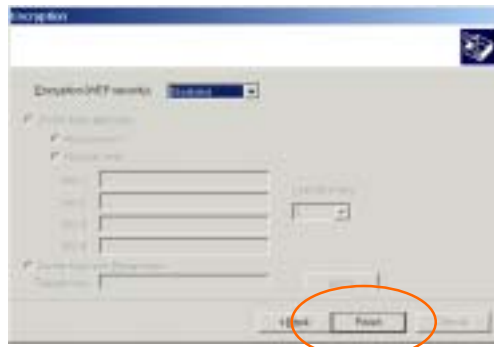


6. The **Configuration** window will appear and prompt you to configure the Network PC Card's driver software, but the modification of default settings may result in network errors. It is recommended to remain the default settings. Click **Next** to proceed.

**Note:** For the detailed ways to configure the wireless PC Card, please refer to the [Configuration Utility](#) section.



7. Click **Finish**. The PC Card driver installation is successfully completed.

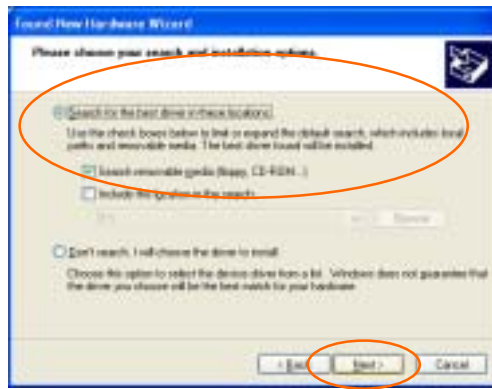


## Installation for Windows XP

1. Once the Wireless LAN Adapter is well connected to your computer, Windows XP will automatically detect the new device. Click **Install from a list...** and click **Next**.



2. Insert the device Driver Disk into the floppy disk drive on your system. Select **Search removable media (floppy, CD-ROM...)** and click **Next**.



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

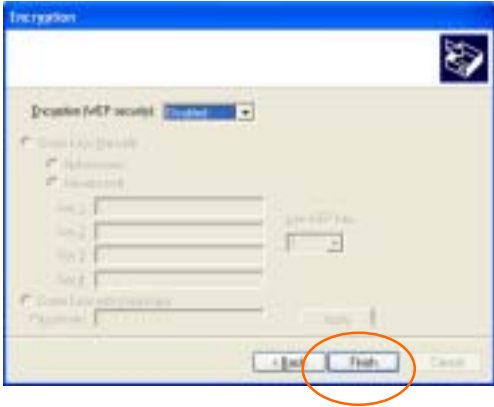


4. After windows XP copies the appropriate driver to your system, the **Configuration** window will appear and prompt you to configure the Network PC Card's driver software, but the modification of default settings may result in network errors. It is recommended to remain the default settings. Click **Next** to proceed.

*Note: For the detailed ways to configure the wireless PC Card, please refer to the [Configuration Utility](#) section.*



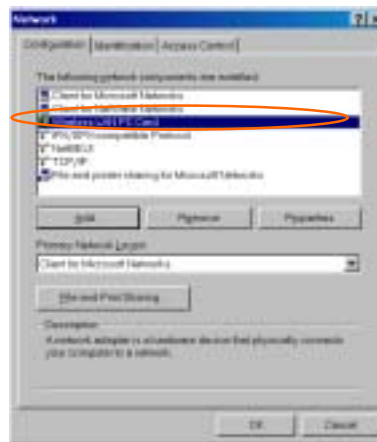
5. Click **Finish**. The software installation for this network device is now completed.



# Network Connection

## Configuring the Network Protocols for Windows 95 (OSR2)/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** and make sure that you have all the following components installed.



- **Wireless LAN PC Card**
- **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. After clicking **Add**, highlight the component you need, click **Add**, highlight Microsoft, and then double click on the item you want to add.

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

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.

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.**”





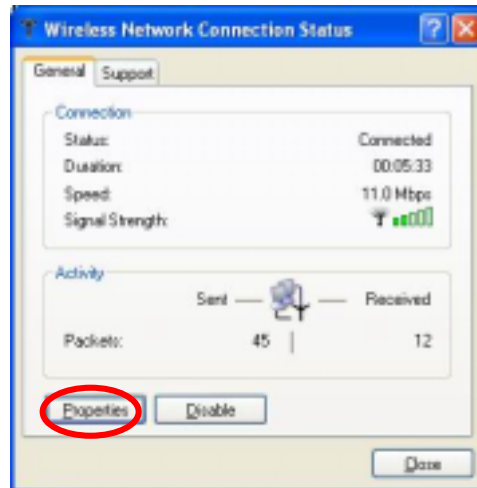
When finished, reboot your computer to activate the new device.

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.

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

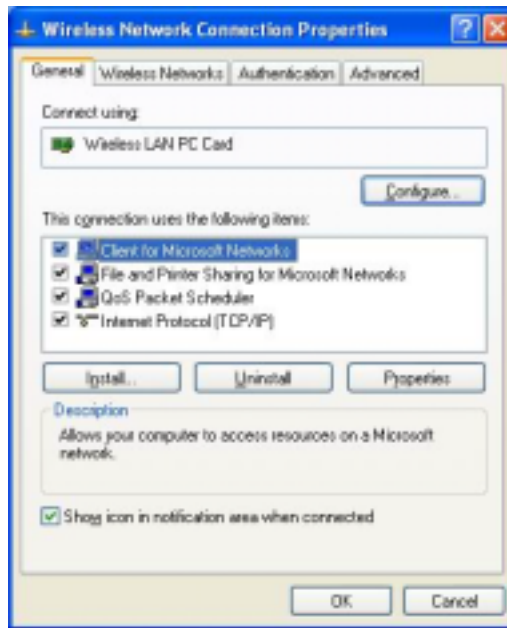
Once the driver has been installed, you must check if some necessary network components are well setup in your computer. Click **Settings** → **Control Panel** → **Network Connections** → **Wireless Network Connection Enabled** **Wireless LAN PC Card** → **Properties**.



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 Utility

After installing the Wireless PC Card's driver successfully, the **Network Status** icon will appear in the taskbar.

*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)

## Network Status Icon & Icon Menu

### The Status Icon

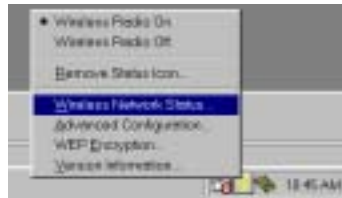
Icon	Link Status
	Green indicates a strong link.
	Yellow indicates a weak link.
	Red indicates no or a very poor link.

To view the exact link quality of the wireless PC Card, move the cursor over the status icon, as shown below.



### **Icon Menu**

After clicking on the icon, the icon menu as displayed below will prompt you to configure the wireless PC Card.



Items	Description
<b>Wireless Radio On</b>	These two items allows you to enable or disable the wireless radio.
<b>Wireless Radio Off</b>	
<b>Remove Status Icon...</b>	Removes the icon from the taskbar. Each time you power on your PC, the icon will reappear.
<b>Wireless Network Status</b>	Clicking these items will launch the <b>Wireless</b>

<b>Advanced Configuration...</b>	<b>Settings</b> window, as described below.
<b>WEP Encryption...</b>	
<b>Version Information...</b>	

**Status**

The **Status** tab provides you the status of the wireless PC Card.



**State**  
Displays the connection state of the wireless PC Card with the wireless network.

**Current Tx Rate**

Displays the current transfer rate.

**Current Channel**

Displays the channel that is currently used by the wireless PC Card.

**Disable Radio**

Disables the wireless radio. The wireless PC Card will disconnect with the wireless network.

**Rescan**

Forces the radio to rescan all available channels. While the link quality is poor, clicking on the button to search for a better connection.

**Throughput**

Displays the transferring (Tx) and receiving (Rx) data rate in bytes per second.

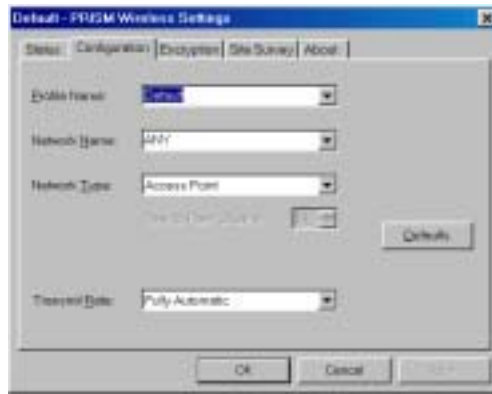
**Link Quality and Signal Strength**

Displays the quality and strength of the connection between the wireless PC Card and the Access Point it connects.

**Configuration**

The **Configuration** tab allows to set parameters for the wireless PC card.





### **Profile Name**

Saves values for all previous setting parameters. The **default** values contain the parameters configured at installation.

Once the demands for switching between different networking environments are required, you can also set the additional profiles to eliminate the configuration time. To save the current parameters, highlight the Profile field, type a new name, and click on the **Apply** button.

### **Network Name (SSID)**

A specific name shared among connected wireless PC Card, Access Points and other wireless stations on the wireless network. The

name must be identical for all devices and points attempting to connect to the same network. The default name is **ANY**. To change the Network Name, simply enter a new name in the field and click on the **Apply** button.

### **Network Type**

The **Network Type** setting determines the arrangement of your wireless network. The supported modes displayed are **Access Point** and **Peer-to-Peer**.

- **Access Point** – The default settings. This mode lets you connect the wireless LAN to a wired and existed network via an Access Point.
- **Peer-to-Peer** – The mode is used for sharing information between wireless PC Cards without Access Points.

*Note:* For the detailed illustration about Access Point and Peer-to-Peer modes, please refer to the [Wireless Network Options](#) section.

### **Transmit Rate**

The default setting is **Fully Automatic**. There are other options, 5.5Mb, 11Mb, Auto 1Mb or

2Mb. For best performance, it is recommended to remain the **Fully Automatic** setting.

### **Peer-to-Peer Channel**

To communicate with other wireless PC Card, you must specify the same channel. Click the up and down arrow at the right of the Peer-to-Peer Channel to set the desired channel.

The field is grayed out in Access Point mode.

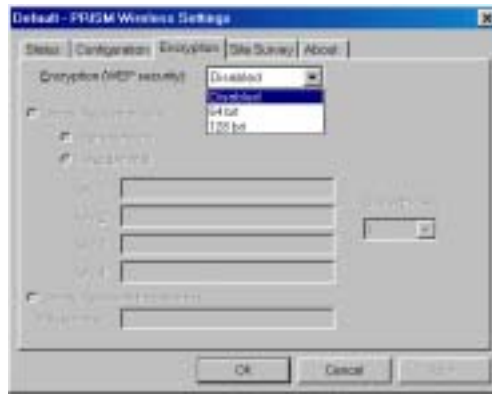
### **Defaults**

Clicks the button to restore to the default settings.

## **Encryption**

WEP (Wired Equivalent Privacy) encryption can be used to ensure the security of your wireless network. The window allows you to set to **64bit** or **128bit** Encryption (WEP) by using either **Passphrase** or **Manual Entry** methods.

*Note:* To allow Decryption and communication, all wireless devices must share the identical encryption key on the same network.



### **Create Keys with Passphrase**

A Passphrase can be entered to generate four keys used for WEP. For the easiest configuration, the Passphrase method is recommended.

### **Create Keys Manually**

These four fields can be used to enter WEP keys manually. The method is required to match the keys of other wireless devices on the existing network.

### **Use WEP Key**

The default key field can be used for specifying which of the four encryption keys to transmit data on the wireless network.

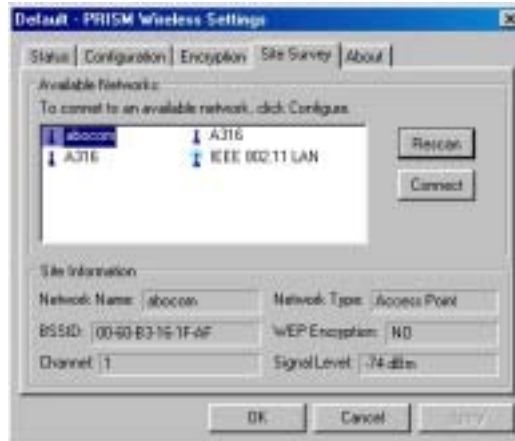
### Apply

Once you set up the encryption (WEP), click on the **Apply** button to activate the settings.

## Site Survey

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

Highlight the access point displayed in the left list box, and you can see its features illustrated in the following fields.



### **Rescan**

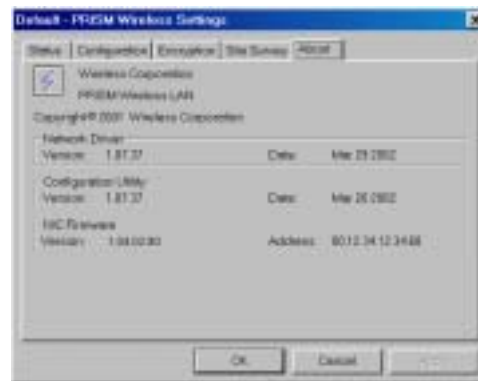
Searches for all available networks. Clicking on the button, the PC Card will start to rescan and list all available sites in the left box.

### **Connect**

To connect with a new access point, highlights the desired one in the left list box and clicks on the **Connect** button. Wait a while and the selected one will be marked as a current used access point.

## **About**

The **About** tab shows the information and version of the Configuration Utility.



## 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**.

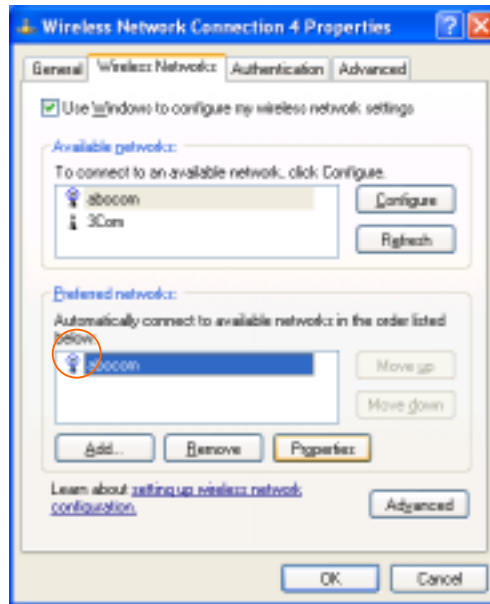


**Note:** Double-click the **Wireless Network Connection** icon and you can see the status of the wireless PC Card as described below.



3. In **Wireless Network Connection Properties** window, select the **Wireless Networks** tab.





**☐ Use Windows to configure...**

Check the box to enable windows configuration.

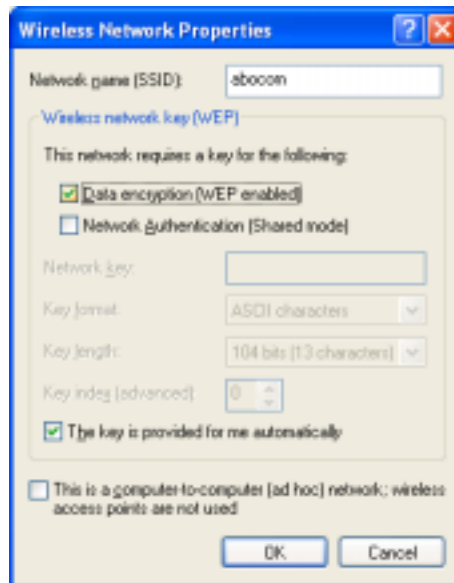
**Note:** Once you enable windows configuration, there will be only two tabs, **Status** and **About**, left in the Configuration Utility. You cannot use this utility to configure the wireless settings.

### **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

<b>Standards</b>	IEEE 802.11b, Wi-Fi compliant
<b>Host Interface</b>	PC Card Type II slot
<b>Power Requirement</b>	Operating Voltage: 5V <ul style="list-style-type: none"> <li>• TX consumption: 250mA (Max)</li> <li>• RX consumption: 180mA (Max)</li> </ul>
<b>Frequency Range</b>	2.412GHz-2.4835GHz
<b>Number of Selectable Channels</b>	USA, Canada: 11 channels Japan: 14 channels Europe: 13 channels
<b>Modulation Technique</b>	Direct Sequence Spread Spectrum (CCK, DQPSK, DBPSK)
<b>Security</b>	0/64/128 bit WEP
<b>Spreading</b>	11 chip Barker sequence
<b>Bit Error rate</b>	Better than $10^{-5}$
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Supported OS</b>	Windows 95(OSR2)/98/ ME/ 2000/XP/NT
<b>EMC Certification</b>	- FCC Part 15 in US - EN300328/826 (301489-17) in Europe

