

IEEE802.11b PCMCIA Card

Quick Installation Guide

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11 Mbps Wireless PCMCIA Card

WN3302A-ZZ
E092002-R01
150200004800A

Compliances

FCC - Class B

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 instructions, may cause harmful and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that the 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 the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

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

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

CAUTION STATEMENT: FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

In order to maintain compliance with the limits for a Class B digital device, it requires that you use a quality interface cable when connecting to this device. Changes or modifications not expressly approved could void the user's authority to operate this equipment.

Industry Canada - Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

EC Conformance Declaration - Class B

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

- RFI Emission:
- Limit class B according to EN 55022:1998, IEC 60601-1-2 (EMC, medical)
 - Limit class B for harmonic current emission according to EN 61000-3-2/1995
 - Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3/1995
- Immunity:
- Product family standard according to EN 55024:1998
 - Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: ± 4 kV, Air Discharge: ± 8 kV)
 - Radio-frequency electromagnetic field according to EN 61000-4-3:1996 (80 - 1000 MHz with 1 kHz AM 80% Modulation: 3 V/m)
 - Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: ± 1 kV, Data/Signal lines: ± 0.5 kV)
 - Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: ± 1 kV, AC/DC Line to Earth: ± 2 kV)
 - Immunity to conducted disturbances, Induced by radio-frequency fields: EN 61000-4-6:1996 (0.15 - 80 MHz with 1 kHz AM 80% Modulation: 3 V/m)
 - Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (1 A/m at frequency 50 Hz)
 - Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10 ms, 30% Reduction @500 ms, >95% Reduction @5000 ms)
- LVD:
- EN 60950 (A1/1992; A2/1993; A3/1993; A4/1995; A11/1997)
- MDD:
- IEC 60601-1

Safety Compliance

Wichtige Sicherheitshinweise (Germany)

1. Bitte lesen Sie diese Hinweise sorgfältig durch.
 2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
 3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssigoder Aerosolreiniger. Am besten eignet sich ein angefeuchtetes Tuch zur Reinigung.
 4. Die Netzanschlus ßsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
 5. Das Gerät ist vor Feuchtigkeit zu schützen.
 6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Beschädigungen hervorrufen.
 7. Die Belüftungsöffnungen dienen der Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
 8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
 9. Verlegen Sie die Netzanschlus ßleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
 10. Alle Hinweise und Warnungen, die sich am Gerät befinden, sind zu beachten.
 11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
 12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
 13. Öffnen sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
 14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a. Netzkabel oder Netzstecker sind beschädigt.
 - b. Flüssigkeit ist in das Gerät eingedrungen.
 - c. Das Gerät war Feuchtigkeit ausgesetzt.
 - d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
 15. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3 kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75 mm² einzusetzen.
- Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70 dB(A) oder weniger.

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Introduction

This Wireless PCMCIA Card is an 11 Mbps wireless network adapter that seamlessly integrates with existing Ethernet networks to support applications such as mobile users or temporary conferences. This solution offers a high data rate and reliable wireless connectivity with considerable cost savings over wired LANs (which include long-term maintenance overhead for cabling). Just install enough wireless access points to cover your network area, plug wireless cards into your notebooks, and start networking.

Using this card in conjunction with a wireless access points, you can create an instant network that integrates seamlessly with 10 Mbps Ethernet LANs. Moreover, moving or expanding your network is as easy as moving or installing additional access points – no wires!

Features

- 1, 2, 5.5 and 11 Mbps data rate.
- Wireless connection without the hassles and cost of cabling
- Greater flexibility to locate or move networked PCs
- Integrates with or replaces wired LANs at dramatically lower cost than wired alternatives
- Seamless connectivity to wired Ethernet LANs augments existing networks quickly and easily
- Easy installation
- Working range up to 160 m (528 ft) at 11 Mbps, up to 350 m (1155 ft) at 1 Mbps (indoor communication)
- Direct Sequence Spread-Spectrum (DSSS) technology provides robust, interference-resistant and secure wireless connection
- Supports a wide range of systems (Windows 95/98/Me/2000/XP)
- Plug-and-Play
- Provides a user-friendly interface for configuration
- Enhances your network security with WEP data encryption
- Built-in antenna

Applications

The wireless products offer fast, reliable, cost-effective network access for wireless clients in applications such as:

- **Remote access to corporate network information**
E-mail, file transfer, and terminal emulation
- **Difficult-to-wire environments**
Historic or old buildings, asbestos installations, and open areas where wiring is difficult to employ

Introduction

- **Frequently changing environments**

Retailers, manufacturers, and banks who frequently rearrange the workplace and change location

- **Temporary LANs for special projects or peak time**

Trade shows, exhibitions, and construction sites that need to setup for a short time period. Retailers, airline, and shipping companies who need additional workstations for peak periods. Auditors who require workgroups at customer sites

- **Access to databases for mobile workers**

Doctors, nurses, retailers, white-collar workers who need access to databases while being mobile in a hospital, retail store, office, campus etc

- **SOHO users**

SOHO (Small Office Home Office) users who need quick and easy installation of a small computer network

System Requirements

Before you install the Wireless PC Card, check your system for the following requirements:

- A computer with a PCMCIA Type II slot, and PCMCIA card and socket services compliant with revision 2.10 of the PCMCIA specification
- Windows 95/98/Me/2000/XP (Prepare the Windows installation CD-ROM for use during installation.)
- A minimum of 1500 Kbytes of free disk space for installing the driver and utility program
- Another IEEE 802.11b compliant device installed in your network, such as the wireless access point, or another PC with a wireless adapter

Package Checklist

The Wireless PC Card package includes:

- 1 Wireless PC Card
- 1 Driver, Utility, & Documentation CD
- This Quick Installation Guide

Please register this product and upgrade the product warranty.

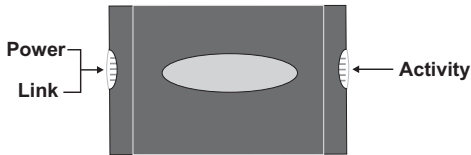
Please inform your dealer if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing materials. Use them again to repack the product if there is a need to return it for repair.

Hardware Description

The Wireless PC Card supports 1, 2, 5.5 and 11 Mbps half-duplex connections to Ethernet networks. This card is fully compliant with 2.4 GHz DSSS CSMA/CA wireless networking as defined in IEEE 802.11b. It can be installed in any notebook with a Type II PCMCIA slot. Support is currently provided for Windows 95/98/Me/2000/XP.

LED Indicator

The Wireless PC Card includes two status LED indicators, as described in the following figure and table.



LED	Status	Description
Power/Link	On	Indicates a valid connection with an access point.
	Flashing	Indicates that the Wireless PC card is operating in the 802.11 AdHoc mode.
Activity	Flashing	Indicates that the Wireless PC card is browsing active access points.

Hardware Installation

Warning: Network cards are sensitive to static electricity. To protect the card, always touch the metal chassis of your computer before handling the card.

1. Turn on your computer and boot your operating system.
2. Find an available Type II or Type III PCMCIA slot in your computer.
3. With the PC Card's 68-pin connector facing the PCMCIA slot and the "Wireless PC Card" label facing up, slide the card completely into the PCMCIA slot as shown below.



Note: The Wireless PC Card allows you to "hot swap" PC Cards any time, even when your computer is powered on.

4. For Windows 95 (OSR2.1 or above)/98/Me/2000, PCMCIA card and socket services compliant with revision 2.10 of the PCMCIA specification are required.
5. Install the appropriate network driver for your operating system. Drivers can be found on the Driver, Utility, & Documentation CD. See "Driver & Utility Installation" on the next page for more information.
6. To modify or reinstall the Utility program for your wireless PC card. The SETUP.EXE file of the utility program can be found on the CD.

Driver & Utility Installation

The installation CD labeled “Driver, Utility, & Documentation CD,” that comes with the package contains all the software drivers available for the Wireless PC Card.

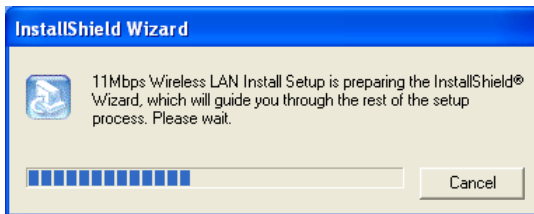
This installation CD enables you to install driver and utility software just one time, save more time and effort for your best convenience.

To communicate with other 11 Mbps Wireless devices, you may need to configure the Wireless PC Card. Follow the instructions below to install driver and utility software.

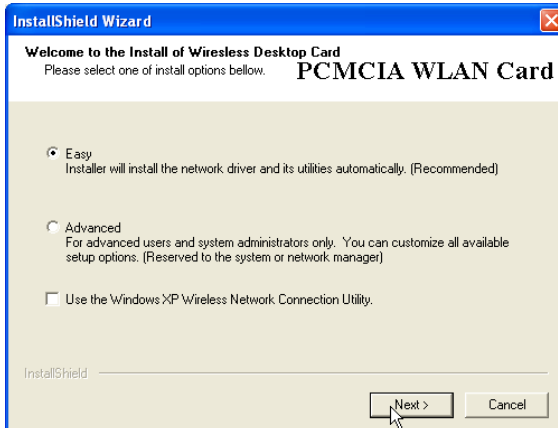
Note: You may find that the instructions here do not exactly match your version of Windows.

This is because these steps and screenshots were created from Windows XP. With the provided CD-ROM, you will find the installation steps for Windows 95/98/Me and 2000 are very similar, but not identical, to Windows XP.

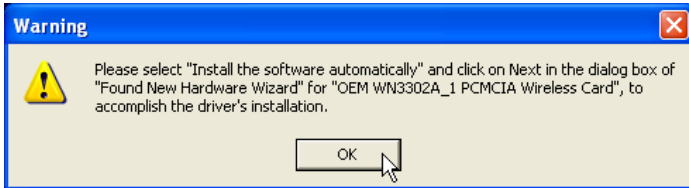
1. Insert the “Driver, Utility, & Documentation CD” into your CD-ROM drive. Follow the on-screen instructions to finish the installation.



2. Check “Easy (Recommended)” and click “Next” to install utility software.



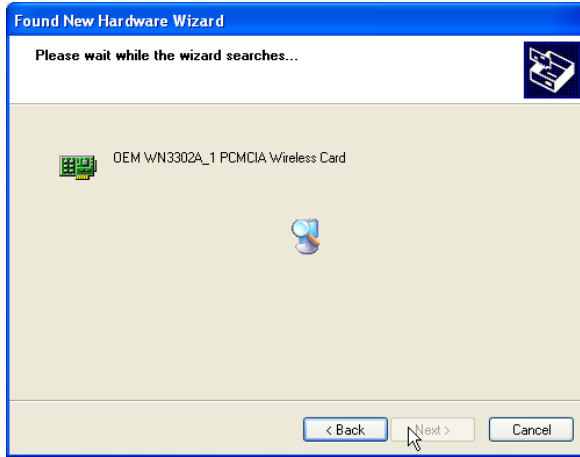
3. Plug in the Wireless PC Card into your PCMCIA II slot.



4. Windows will automatically detect the new hardware and install the driver from provided CD. Check "Install the software automatically (Recommended)" and click "Next."



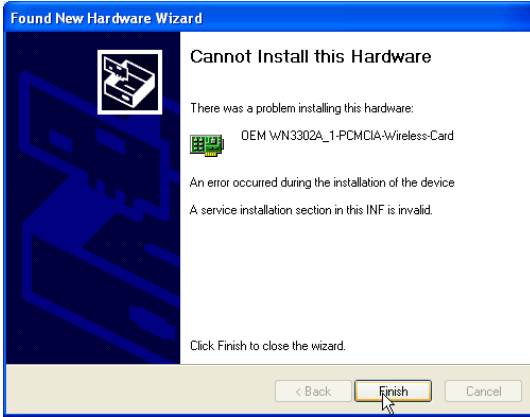
5. Windows will find the "Wireless PC Card." Click "Next" to install driver.



6. Though the software is fully compatible with Windows XP, it has not yet been Logo tested by Microsoft. On the Hardware Installation screen click "Continue Anyway." (This information may be varied to your Windows version)



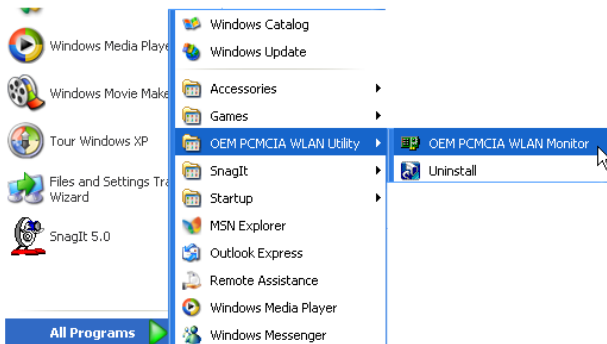
7. After the software has been installed, click "Finish" to complete the driver installation.



Utility Configuration

Using Monitor Utility

Once the installation is complete, the configuration utility can be accessed from the “Start” menu, as shown below.



Quick-Launch Icon

When the utility program is running, there will be a quick launch icon in the lower right-hand corner of the task bar. If the icon is GREEN, you have a good connection. If it shows RED, you may need to check the access point and place it in a higher position, or move closer to the access point you wish to connect to.

Double-clicking the quick launch icon will open the Wireless PC Card Utility program, providing quick access to the adapter settings.



The configuration utility includes the following tools:

Status – Allows you to monitor network status and configure wireless adapter parameters.

Statistics – Shows wireless adapter statistics.

Site Survey – Scans/Shows all the access points in range.

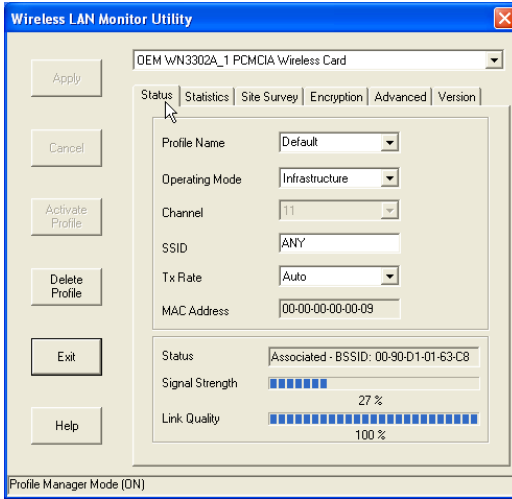
Encryption – Provides WEP security control.

Advanced – Allows you to configure the advanced settings.

Version – Shows the version information.

Status

When you start the wireless PC Card utility, the information window for the Wireless PC Card is shown as in the figure below.



Click “Change” to configure the “Operating Mode,” “Channel,” “SSID” and “Tx Rate.” After making a configuration change, the Submit button will become enabled. Click “Submit” to save the changes.

Operating Mode – Set the station operation mode to “802.11 Ad Hoc” for network configurations that do not have an access point, or to “Infrastructure” for configurations with an access point (“Infrastructure” is the default setting.)

Channel – If you are setting up an ad hoc wireless LAN (See “Network Topologies” on page 18.), set the channel number to the same radio channel as that used by the other wireless clients in your group. However, if you are connecting to a network via an access point, then the channel is automatically set to the channel of the access point to which the adapter connects.

Note: The Channel can only be set when the Operating Mode is “802.11 Ad-Hoc.”

SSID – Input an SSID string for the wireless network to which you want to connect (“WLAN” is the default setting.) If you will be roaming among multiple access points with different BSSIDs, set the SSID to “ANY” to allow connection to any access point.

Tx Rate – Indicates the data transmission rate. Select an appropriate transmission speed. Lower speeds will give better range. (Default: Auto.)

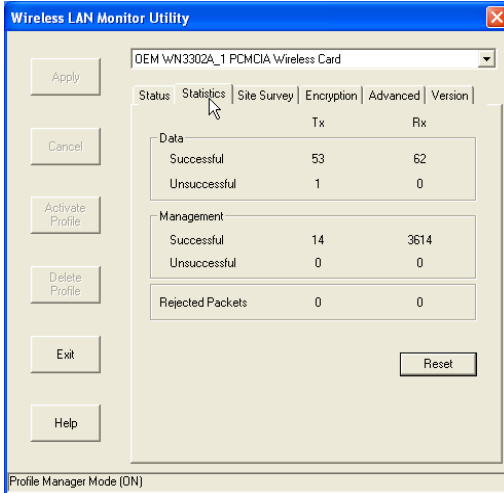
Status - Shows the MAC address of the associated access point (BSS ID).

Signal Strength – Shows the relative strength of the wireless connection to the access point.

Link Quality – Shows the relative link quality (e.g., lack of frame errors) of the wireless connection to the access point.

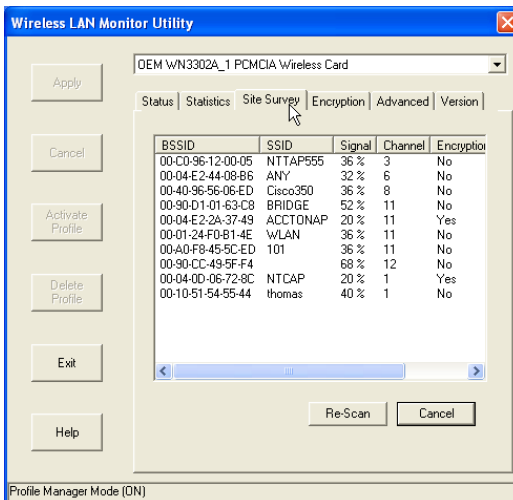
Statistics

The Statistics screen displays “Data Packets” and “Management Packets.”



Site Survey

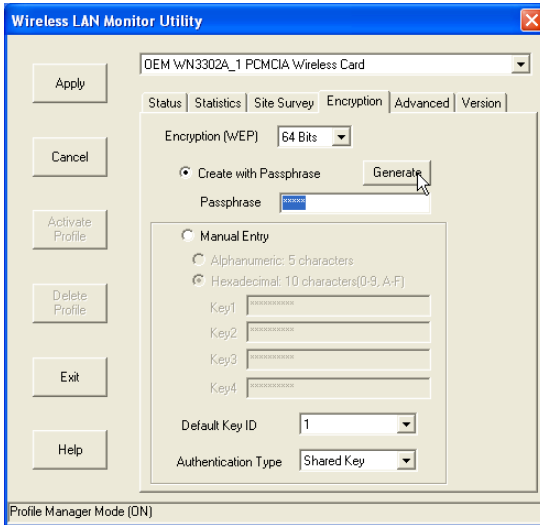
Site Survey scans and displays all access points in the wireless LAN. You can choose one of them to connect to by double-clicking on an entry.



Encryption

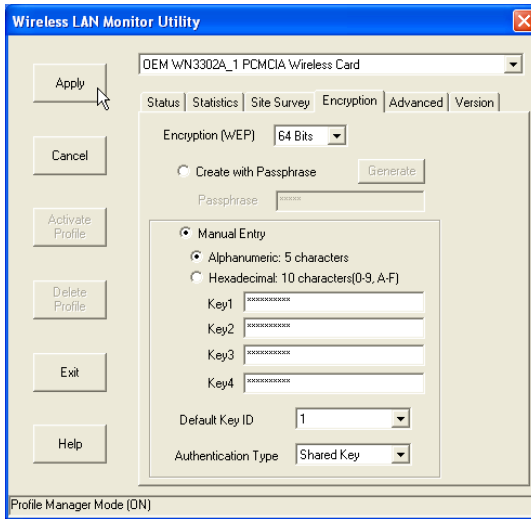
Encryption – Wired Equivalent Privacy (WEP) is implemented in the adapter to prevent unauthorized access. For more secure data transmissions, set encryption to “128-bit” or “64-bit”. The 128-bit setting gives a higher level of security. The setting must be the same for all clients in your wireless network. (Default: Disabled.)

The WEP (Wired Equivalent Privacy) implemented in Wireless PC Card is based on the RC4 encryption algorithm. The security keys are four 10 digit keys for the 64-bit WEP setting and one 26-digit key for the 128-bit WEP setting. WEP security protects your wireless LAN against eavesdropping and unauthorized access by hackers or intruders.



Create with Passphrase – Security keys for WEP encryption are generated from your Passphrase string, so you must use the same passphrase on all the other stations in your network.

Manual Entry – “Manual Entry” allows you to manually enter key elements (two hexadecimal digits in each block, 0~9 & A~F, e.g., D7 0A 9C 7F E5.)



Default Key ID – Choose the Key ID that has the encryption string you prefer. If you are using a key generated from the passphrase, you must use the same passphrase and key on each station.

To use the WEP function, take the following steps:

1. Select “128-bit” or “64-bit” in the “Encryption” field.
2. Choose “Create with Passphrase,” type a string in the Passphrase field, and click “Generate.”
3. Select the key, and click “Apply.”

Note: A passphrase string can consist of up to 32 alphanumeric characters.

Or

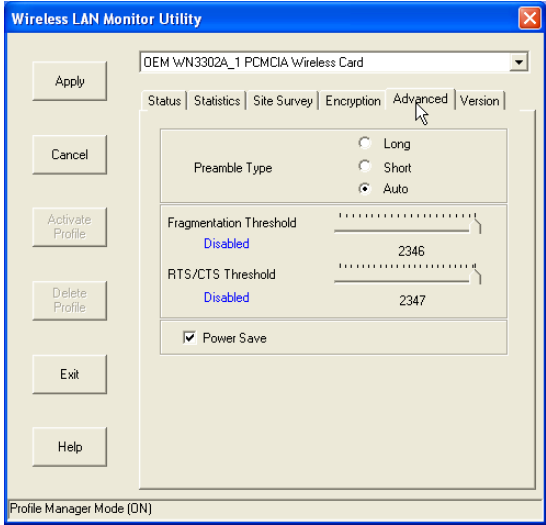
1. Check “Manual Entry” and enter hexadecimal numbers into one of the key fields. The bit key must be in hexadecimal numerals (0~9, A~F, e.g., D7 0A 9C 7F E5.)
2. Click “Apply.”

Advanced Screen

If you are not sure whether all the clients and access points in your wireless network support the Short RF preamble, then leave the setting of “Preamble Type” on “Auto” (Default.) See “Terminology” on page 25 for a description of “Preamble Type.”

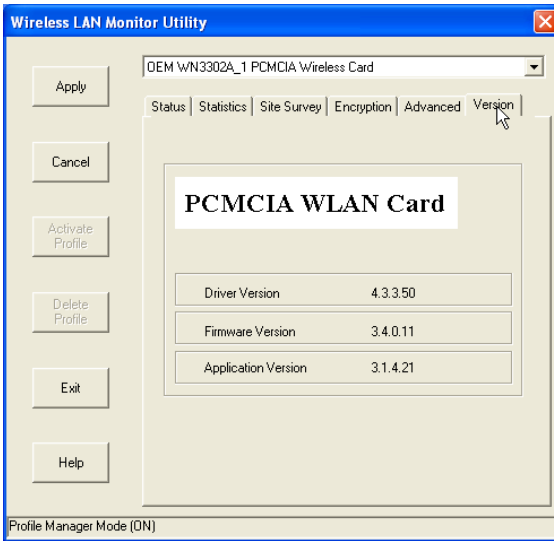
Use this screen to set values for “Fragmentation Threshold” (Default: 2346 means Disabled), and “RTS/CTS Threshold” (Default: 2347 means Disabled.)

The power save mode enables this PC card to conserve battery power when there is no need to send data.



Version

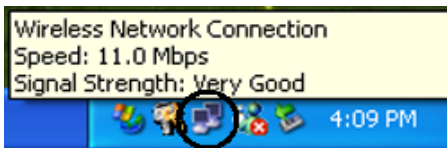
The following screen shows the version information.



Using the Windows XP Configuration Tool

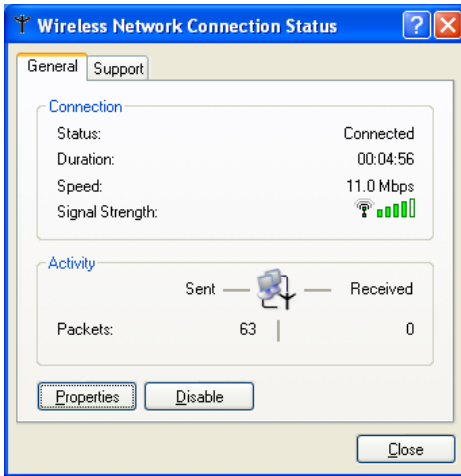
Basic Settings

1. Right-click the network connection icon on the toolbar.

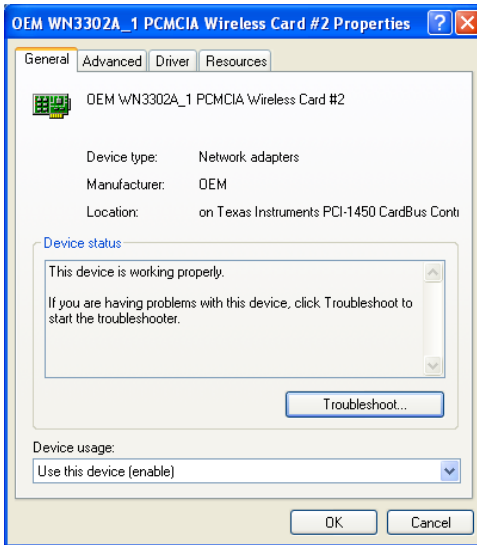


Utility Configuration

- On the popup menu, click "Status." The Wireless Network Connection Status box will open.



- Click "Properties." The Wireless Network Connection Properties box will open. Click the "Wireless Networks" tab.

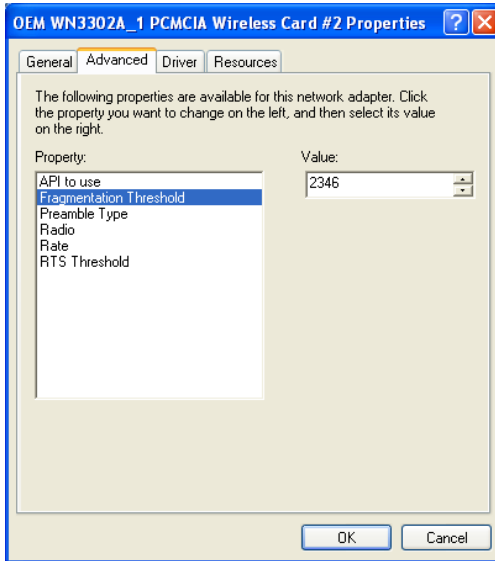


- In the lower section of the screen, click "Learn about setting up wireless network configuration" and complete the wireless configuration according to the Help and Support Center instructions.

Advanced Settings

Click the “General” tab (see the previous screen). In the “Connect using” field, make sure that the adapter shown is the Wireless PC Card.

1. Click “Configure.” Click the “Advanced” tab.



2. Set the “Fragmentation Threshold.” (The default 2,346 means “Disabled.”) See See “Terminology” on page 25 for a description of “Fragmentation Threshold.”
3. “Preamble Type” offers a dropdown list with three options: Auto, Long, or Short. If you aren’t sure whether all the clients and access points in your wireless network support the Short RF preamble, then leave this setting on “Auto” (Default.) See See “Terminology” on page 25 for a description of “Preamble Type.”
4. “Rate” is the data transmission/reception rate setting. It can be set to Auto, 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps. Usually this should be set to Auto. In a radio frequency hostile environment, a lower rate can provide more stable transmission quality.
5. Set the “RTS Threshold” to the same as that used by other devices in your network (The default 2,347 means “Disabled.”) See See “Terminology” on page 25 for a description of “RTS Threshold.”

Network Configuration and Planning

The Wireless Solution supports a stand-alone wireless network configuration, as well as an integrated configuration with 10/100 Mbps Ethernet LANs.

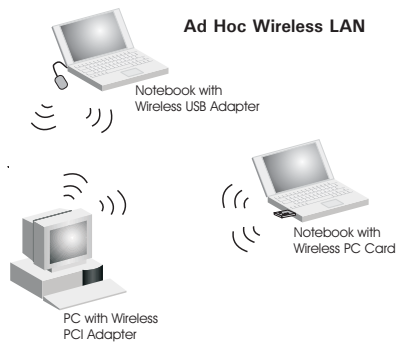
The Wireless PC Card can be configured as:

- Ad hoc - for small groups that only communicate with each other
- Infrastructure - for wireless LANs

Network Topologies

Ad Hoc Wireless LAN

An ad hoc wireless LAN consists of a group of computers, each equipped with one wireless adapter, connected via radio signals as an independent wireless LAN. Computers in a specific ad hoc wireless LAN must therefore be configured to the same radio channel. An ad hoc wireless LAN can be used in a SOHO or temporary environment.

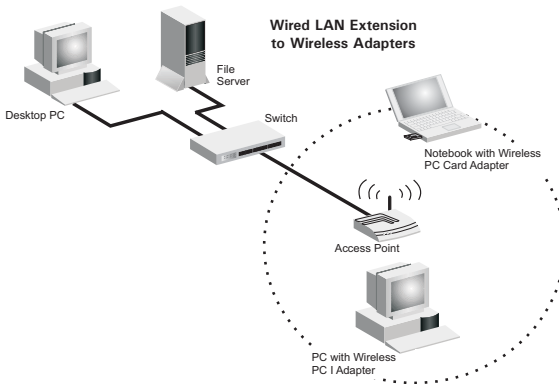


Infrastructure Wireless LAN

The access point can also provide wireless workstations with access to a wired LAN. An integrated wired and wireless LAN is called an infrastructure configuration. A Basic Service Set (BSS) consists of a group of wireless PC users, and an access point that is directly connected to the wired LAN. Each wireless PC in this BSS can talk to any computer in its wireless group via a radio link, or access other computers or network resources in the wired LAN infrastructure via the access point.

The infrastructure configuration not only extends the accessibility of wireless PCs to the wired LAN, but also extends the effective wireless transmission range for wireless PCs by passing their signal through one or more access points.

A wireless infrastructure can be used for access to a central database, or for connection between mobile workers, as shown in the following figure.



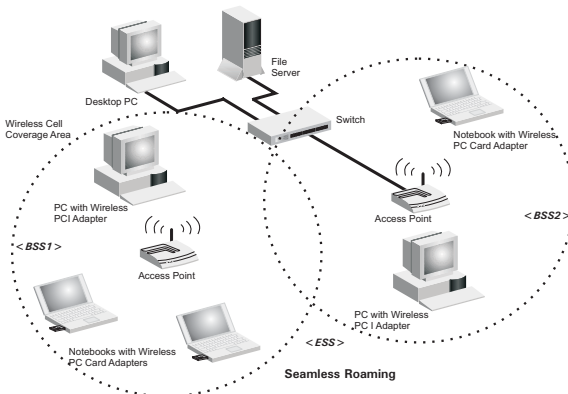
Setting the Communication Domain

Stationary Wireless PCs

The Basic Service Set (BSS) is the communication domain for each access point. For wireless PCs that do not need to support roaming, set the domain identifier (SSID) for the wireless card to the SSID of the access point you want to connect to. Check with your administrator for the SSID of the access point you should connect to.

Roaming Wireless PCs

A wireless infrastructure can also support roaming for mobile workers. More than one access point can be configured to create an Extended Service Set (ESS). By placing the access points so that a continuous coverage area is created, wireless users within this ESS can roam freely. All wireless adapters and access points within a specific ESS must be configured with the same SS ID and to the same radio channel.



Network Configuration and Planning

Before setting up an ESS for roaming, you need to choose a clear radio channel and ideal location for the access points to maximize performance. (Refer to “Troubleshooting” on page 21 for detailed information on installation and usage.)

Troubleshooting

Check the following troubleshooting items before contacting your dealer's Technical Support.

Adapter Installation Problems

If your computer cannot find the Wireless PC Card or the network driver does not install correctly, check the following:

- Make sure the adapter is securely seated in the PCMCIA slot. When you insert the wireless adapter into the notebook's slot, a beep should be heard if the adapter is properly inserted. Check for any hardware problems, such as physical damage to the card's connector.
- Try the card in another PCMCIA slot. If this also fails, test your computer with another Wireless PC Card that is known to operate correctly.
- When operating under Windows NT, make sure a PCMCIA card and socket services driver is installed in your computer. Also check for resource conflicts using the Windows NT Diagnostics utility.
- Make sure your computer is using the latest BIOS.
- If there are other network adapters in the computer, they may be causing conflicts. Remove all other adapters from the computer and test the wireless adapter separately.
- If it still does not work, take out the wireless adapter. Delete CW10.sys from c:\windows\system. Then go to "Control Panel" and delete the adapter from your network configuration menu. Restart your PC and reinstall the card.

Network Connection Problems

If the Link LED on the PC Card does not light, or if you cannot access any network resources from the computer, check the following:

- Make sure the correct software driver is installed for your operating system. If necessary, try reinstalling the driver.
- Make sure the computer and other network devices are receiving power.
- The access point you want to attach to may be defective. Try using another access point.
- If you cannot access a Windows or NetWare service on the network, check that you have enabled and configured the service correctly. If you cannot connect to a particular server, be sure that you have access rights and a valid ID and password.
- If you cannot access the Internet, be sure you have configured your system for TCP/IP.

Troubleshooting

If your wireless station cannot communicate with a computer in the Ethernet LAN when configured for Infrastructure mode, check the following:

- Make sure the access point that the station is associated with is powered on.
- If you still can't connect, change the access point and all the stations within the BSS to another radio channel.
- For a station with roaming disabled, make sure the SSID is the same as that used by the access point, or the same as that used by the access points in the extended service set (ESS.)

IEEE802.11b Wireless Product Maximum Distance Table

Important Notice

Maximum distances posted below are actual tested distance thresholds. However, there are many variables such as barrier composition and construction, as well as local environmental interference that may impact your actual distances and cause you to experience distance thresholds far lower than those posted below.

	Speed and Distance Ranges			
Environmental Condition	11 Mbps	5.5 Mbps	2 Mbps	1 Mbps
Outdoors: A line-of-sight environment with no interference or obstruction between the Access Point and users.	160 m (528 ft)	195 m (640 ft)	255 m (837 ft)	350 m (1155 ft)
Indoors: A typical office or home environment with floor to ceiling obstructions between the Access Point and users.	72 m (236 ft)	73 m (240 ft)	73 m (240 ft)	75 m (246 ft)

Specifications

General Specifications

Functional Criteria

Data Rate	1, 2, 5.5, 11 Mbps
Transmission Mode	Half duplex
Network Connection	IEEE 802.11b - Wireless LAN,
Operating Range	Up to 350 m (1155 ft) at 1 Mbps, Up to 160 m (528 ft) at 11 Mbps

Radio Signal

Signal Type	Direct Sequence Spread-Spectrum (DSSS)
Operating Frequency	USA, Canada: 2.412-2.162 GHz Europe (ETSI): 2.412-2.472 GHz Spain: 2.457-2.462 GHz France: 2.457-2.472 GHz Japan: 2.412-2.484 GHz
Sensitivity	-80 dBm (typical)
Modulation	CCK, BPSK, QPSK
Output Power	+12.60 dBm (max)

Physical Characteristics

Power Consumption	3.3 V, 380 mA transmit, 290 mA receive (normal)
Dimensions	Type II PC Card + antenna 12.8 x 5.3 cm (5.04 x 2.09 in.)
Antenna	Built-in diversity antenna with -1.0dBi antenna gain
LED Indicator	Power/Link, Activity
Host Interface	PCMCIA, Type II

Standards Conformance

Wireless Standard	IEEE 802.11b
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Environmental

Temperature	Operating: 0 to 50 °C (32 to 122 °F) Storage: 0 to 70 °C (32 to 158 °F)
Humidity	5 to 80% (noncondensing)
Vibration/Shock/Drop	IEC 68-2-34, IEC 68-2-27, IEC68-2-32

Specifications

Certification

CE Mark	EN50081-1, EN55022 Class B EN50082-1, IEC 61000-4-2/3/4/6/11, IEC 60601-1-2
Emissions	FCC Part 15(B), ETS 300-328, VCCI
Safety	EN60950 UL1950/CSA22.2 No.950 IEC 60601-1

Software Drivers

Drivers	Windows 95 OSR2.1 or above Windows 98 Windows Me Windows 2000 Windows XP Linux 2.0.x
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Terminology

The following is a list of terminology that is used in this document.

Access Point – An internetworking device that seamlessly connects wired and wireless networks.

Ad Hoc – An ad hoc wireless LAN is a group of computers, each with LAN adapters, connected as an independent wireless LAN.

Backbone – The core infrastructure of a network. The portion of the network that transports information from one central location to another central location where it is unloaded onto a local system.

Base Station – In mobile telecommunications, a base station is the central radio transmitter/receiver that maintains communications with the mobile radiotelephone sets within its range. In cellular and personal communications applications, each cell or micro-cell has its own base station; each base station in turn is interconnected with other cells' bases.

BSS – BSS stands for "Basic Service Set." It is an Access Point and all the LAN PCs that are associated with it.

CSMA/CA – Carrier Sense Multiple Access with Collision Avoidance.

ESS – ESS (ESS-ID, SSID) stands for "Extended Service Set." More than one BSS is configured to become an Extended Service Set. LAN mobile users can roam between different BSSs in an ESS (ESS-ID, SSID).

Ethernet – A popular local area data communications network, which accepts transmission from computers and terminals. Ethernet operates on a 10 Mbps baseband transmission rate, using shielded coaxial cable or shielded twisted-pair telephone cable.

Fragmentation Threshold – In the 802.11 Standard, the MAC Layer may fragment and reassemble directed MSDUs or MMPDUs. The fragmentation and defragmentation mechanisms allow for fragment re-transmission.

Infrastructure – An integrated wireless and wired LAN is called an Infrastructure network.

Preamble Type – Some Access Points and Client card drivers have a radio setting for "Short" RF Preamble. If all the Clients and Access points in your wireless network have this feature, then enabling it can boost your throughput. However, if a radio does not support this feature, then it will not be able to communicate with any other radios that have this set to "Short."

Roaming – A wireless LAN mobile user moves around an ESS and maintains a continuous connection to the Infrastructure network.

RTS Threshold – Transmitters contending for the medium may not be aware of each other. The RTS/CTS mechanism can solve this "Hidden Node Problem." If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.

Terminology

WEP – “Wired Equivalent Privacy” is based on the use of 64-bit or 128-bit keys and the popular RC4 encryption algorithm. Wireless devices without a valid WEP key are excluded from network traffic.

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