

Exhibit E

User's Manual

NATIONAL DATACOMM

CORPORATION

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Wireless LAN PC Card

InstantWave Wireless LAN ISA/PC Card

User Guide

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FCC INFORMATION

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

The 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 instruction, may cause harmful interference to radio communication. However, there is no grantee 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.

The user should not modify or change this equipment without written approval from NATIONAL DATACOM CORPORATION. Modification could void authority to use this equipment.

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FCC WARNING

This equipment generates and uses radio frequency energy, and, if not installed and used in accordance with the installation guide, may cause interference to radio and television reception, which can be determined by turning the equipment on and off. This equipment has been tested and found to comply with part 15 of the FCC rules.

Notice : The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Packing List

The package contents vary depending on whether you have purchased the PnP ISA Card, or the PC (formally PCMCIA) Card version:

The PnP ISA Card package should contain the following items:

- ✓ One PnP ISA Card
- ✓ One Antenna
- ✓ One Utility Driver Diskette
- ✓ This User Guide

The PC Card package should contain the following items:

- ✓ One PC Card
- ✓ One Utility Driver Diskette
- ✓ This User Guide

Introduction

Welcome to the InstantWave Wireless LAN User Guide. The guide gives comprehensive instructions on fitting the Plug and Play (PnP) ISA Network Interface Card and the PC Card into your computers.

How to Use this Guide

InstantWave is extremely versatile in providing varying levels of network management. For the Small Office/Home Office user, initial setup and configuration, using the default settings, is simple, quick, and convenient.

Overview

Hardware Platform

A station must be an Intel type PC with ISA bus or PCMCIA interface. The minimum system configuration will be the same as that required to run MS Windows (Win 95, Win NT 4.0, Win CE) and Novell Netware 3.1 and above.

Software Environment

The stations operate in conjunction with most of the MS Windows (Win 95, Win NT4.0, Win CE) and Novell NetWare series operating systems.

Network Topology

A network is usually formed by several stations and one Access Point (AP), with the stations within a set distance from the AP. This is called an infrastructure Network" (Figure 1).

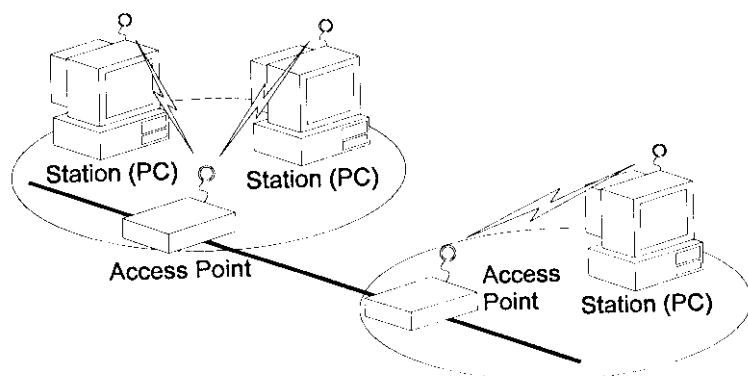


Figure 1. An Infrastructure Network

Any station in the LAN may communicate with any other station in the same LAN. The stations may also communicate with a station connected to another wired or wireless LAN through the AP, which functions as a bridge.

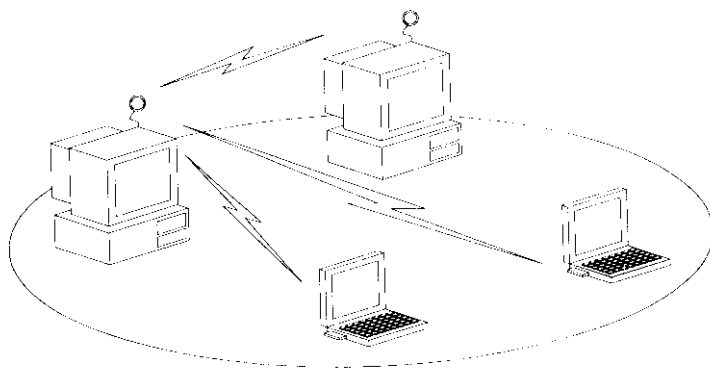


Figure 2. An Ad Hoc Network

A network can also function without an AP and is called an "ad hoc" network (Figure 2).

The stations communicate via radiowaves to form a Local Area Network (LAN). For the user, the shared resources on the wireless LAN will appear as they would on a regular wired LAN. The wireless operation of the LAN is totally transparent.

Size of Network

On an infrastructure network, one AP can serve 5-10 stations for heavy users, and 20 stations for occasional users. On an Ad Hoc network there is no actual limit to the number of stations that can be operational within the area of the Wireless LAN (WLAN). However, a practical limit, based on usage patterns, should be established for each site.

Getting Started

Overview

Getting Started explains how to quickly setup a wireless station.

Hardware Installation

PnP ISA Wireless LAN Card Installation

To install the ISA Wireless LAN Card into a computer simply follow these steps:

1. Turn off the power to your computer and all peripherals and unplug the power cord from the wall socket.
2. Make a note of the cables and cords that are connected to the main system unit (the actual computer itself) and disconnect them. Remove the computer cover (Figure 3).

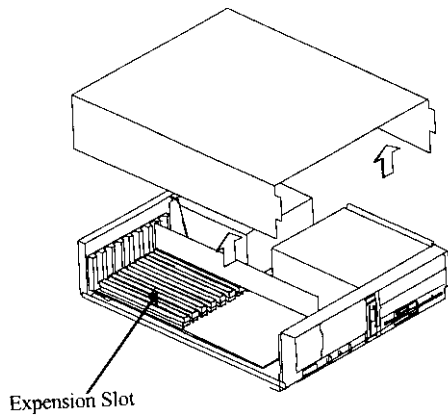


Figure 3. Removing the Computer Cover

3. Select a free expansion slot and remove the slot cover.

4. Carefully install the card in the expansion slot by firmly pressing until the card is snugly seated. Be sure the card is fully home then fasten the retaining bracket with the screw from the slot cover (Figure 4).

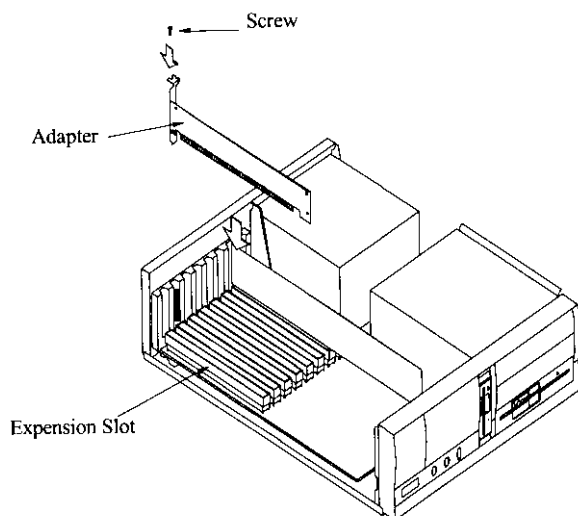


Figure 4. Inserting the Card

5. Replace the computer cover (Figure 5) and reconnect the previously disconnected cables.

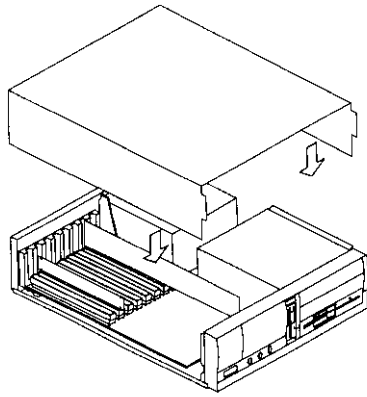


Figure 5. Replacing the Computer Cover

6. Screw the antenna into the Wireless LAN card (Figure 6).

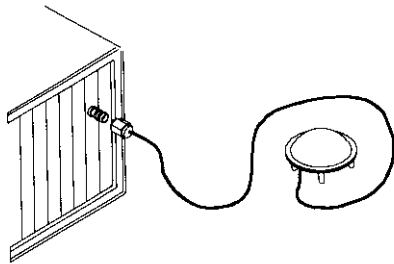


Figure 6. Connecting the Adapter Card Antenna

7. Repeat the above procedure to fit a WLAN card into each of the other computers to be networked.

PC Card Installation

The PC card fits into a Type II or Type III PC slot. The antenna is encased in a plastic case in line with the main body of the PC card such that it extends outside the PC slot when the card is inserted. The slot must allow for a card extension of up to 30mm as specified in the PC card specifications.

1. Insert the PC card into the type II slot of the computer. Insert the card with the 68-pin connector facing the slot and the label facing up (Figure 7).

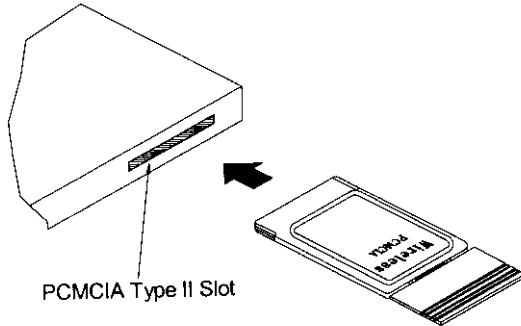


Figure 7. Inserting the PC Card

2. Repeat the above procedure for each of the other computers to be networked.

Adapter Card Driver Installation

1. Turn on the power to the PC.
2. Start the Windows 95 operating system.
3. The "New Hardware Found" dialog box will open. Depending on the adapter type, the title for the dialog box will be different. The Figure 8 shows the title "ISA PnP Wireless LAN Adapter" for the ISA adapter. The dialog box will display "PCMCIA Wireless LAN Adapter" title if a PCMCIA adapter is found.

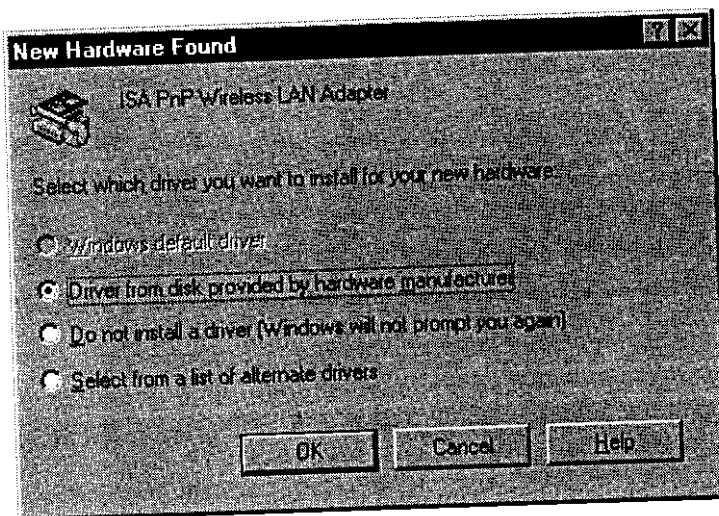


Figure 8. New Hardware Found

4. Choose "Driver from disk provided by hardware manufacturer" and click **OK**.
5. The "Install From Disk" dialog box will open (Figure 9).

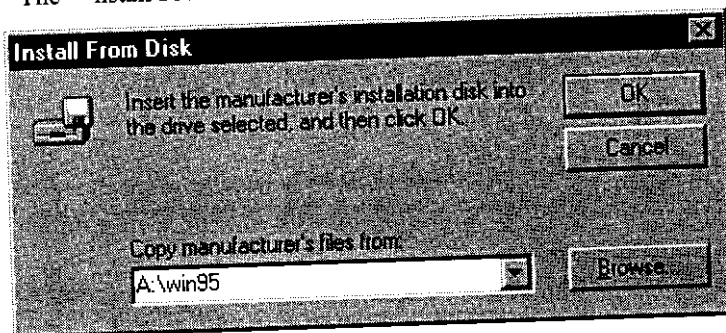


Figure 9. Install From Disk

6. Insert the driver diskette into drive a: (or b:).

7. The Network Interface Card (NIC) driver is in the win95\ directory of the driver diskette. Type **a:\win95** (or **b:\win95**) and click **OK**.
8. The system will copy the required files to the Windows 95 system. Depending on your current installation of Windows 95, the setup program may ask you to insert the Windows 95 CD-ROM.
9. The System Settings Change dialog box will ask you if you want to restart your computer. Remove the floppy disk from the floppy drive and then choose **Yes**.

That completes the Adapter card hardware and hardware driver installation.

Installing the Wireless LAN Utility Program

Overview

The NDC InstantWave Wireless LAN (WLAN) Utility program is a Windows application running on 16-bit or 32-bit Windows. It allows the user to monitor and test network performance and it diagnoses and configures the WLAN adapter. It also provides a tool, 'Site Survey,' to help users detect radio signals from an Access Point (AP), a central point with which the wireless stations communicate, and to position the AP for optimum performance.

The system architecture and all functions of the Utility program are explained in this section. The system architecture is shown in the following diagram:

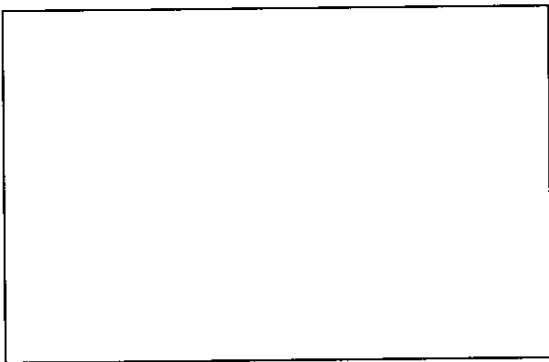


Figure 10. System Architecture

- **WLAN Station Utility** - This is the program described in this section. The Utility is used to configure and diagnose the Wireless LAN (WLAN) adapter. The program locates the WLAN adapter by accessing the Windows 95 registry and communicates with MAC firmware running on the WLAN adapter.

- **WLAN Adapters** - The adapters comply with the IEEE 802.11 wireless standard and are supplied as PnP ISA bus or PCMCIA cards. The adapters provide a physical interface with the wireless medium and also contain MAC firmware which is executed on the adapter.
- **WLAN NDIS3 Driver** - This is the WLAN driver responsible for transferring data between the upper protocol layers and the WLAN adapter. When the driver initializes it accesses the Windows 95 registry to get the settings of the WLAN adapter.
- **Registry** - The configuration database of Windows 95. The settings and parameters of the WLAN adapter are stored in this database. These parameters are referred to by the Utility program and the WLAN NDIS driver.
- **Windows 95** - NDC InstantWave Wireless LAN operates in a Windows 95 environment.
- **Transport/Network Protocol Stack** - The protocol stack mounted on the LAN driver.

Installation

Insert the Wireless LAN Utility program setup disk into drive A:

From the **Start** menu select **Run**, and type **:\TOOLS\SETUP.EXE**

Click the **OK** button to start the Setup program. The WLAN setup screen will appear. After reading the installation description, click the **Next** button to advance to the Choose Destination Location dialog box.

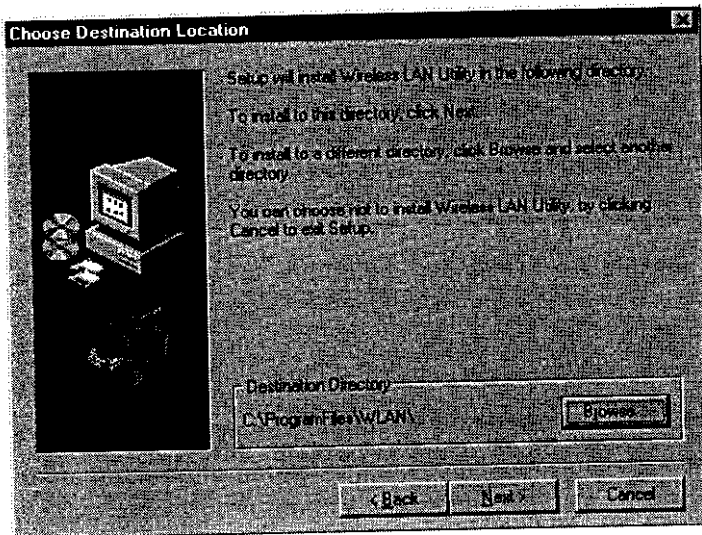


Figure 11. Choose Destination Location

From the Choose Destination Location dialog box copy the program files to the default location, **:\ProgramFiles\WLAN**, or click **Browse** to choose another location. Then click **Next**. You can stop the process anytime by clicking **Cancel**.

The setup program will copy the necessary files into the specified directory. File copying progress will be displayed in the WLAN utility setup screen.

After the program files have been copied, an Information screen will tell you how to start the WLAN utility program from the Programs menu. Click **OK** when you have read the message.

Using the Wireless LAN Utility Program

The following section explains how to use your InstantWave wireless LAN.

- 1? First click the start button on the Windows 95 taskbar.
- 2? Go to "Programs" and click on "Wireless LAN Utility." The Wireless LAN Station Utility main window will open (Figure 12).
- 3? Click on the *Configuration* menu item.

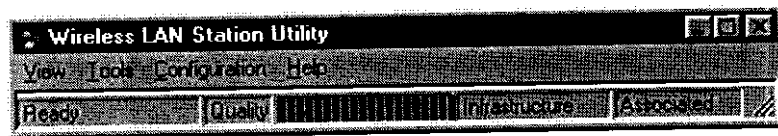


Figure 12. Wireless LAN Station Utility

Configuration

Configuration displays, and allows you to modify, some important parameters of the Wireless LAN (WLAN) adapter. All parameter changes are saved in the Windows 95 registry and are referred to by the WLAN driver when the Windows 95 system boots. Therefore, most of the parameter changes require a system reboot to make them effective. Changes to Power Saving, Roaming, and the Max. Number of Data Transmission Retries, do not require a system reboot. Modifications to these parameters are saved in the MAC layer in the Windows 95 registry. The configuration dialog box is shown below (

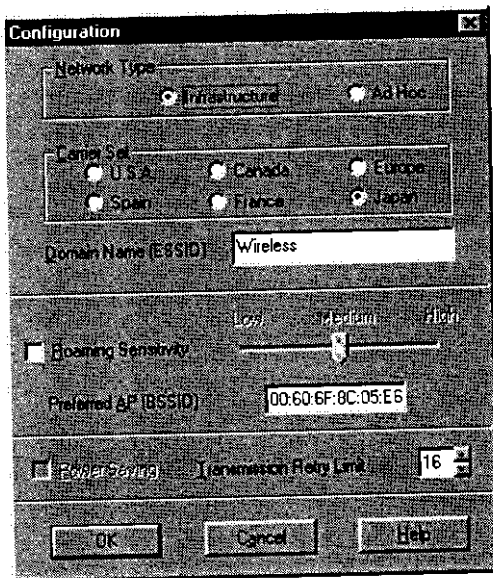


Figure 13).

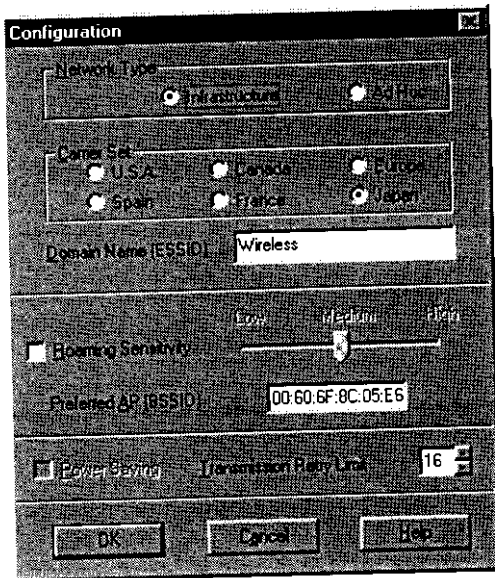


Figure 13. Configuration

- **Network Type** - The 802.11 Wireless Specifications allow for two types of network, *Infrastructure* or *Ad Hoc*. *Infrastructure* is set when networking with an Access Point (AP).
- **Carrier Set** - Selects the country carrier set to comply with national wireless regulations.
- **Domain Name (ESS ID)** - Stations and APs in the same group must use the same domain name. This field is defined in the 802.11 Wireless Standard as ESS ID (Extended Service Set ID).
- **Roaming** - Enables/Disables the Roaming function. Roaming is enabled only when the adapter is configured for an *Infrastructure* network. When Roaming is enabled, the station will associate with an AP with the same domain name (ESS ID).
- **Sensitivity** - Sets the Roaming sensitivity level. Low, Medium, and High correspond to 0%, 40%, and 80% signal reception. If the

setting is set to 'low' the station will not begin to scan for another AP until the current AP has gone off the air. Setting the sensitivity level to 'high' causes the station to begin scanning for an Access Point (AP) with a better signal once the current beacon (signal) quality has dropped below 80%.

- **Power Saving** - Enables/Disables MAC layer power saving. The power saving function is implemented in the MAC layer in compliance with the 802.11 Wireless Standard. It can only be enabled on a PC card adapter. If the WLAN card is an ISA PnP card this function will be disabled and the power saving mode will be set to off (Power saving not enabled).
- **Max. Number of Data Transmission Retries** - Sets the maximum number of MAC layer data transmission retries. Changes in this field will cause immediate changes in the MAC layer.
- **Preferred AP (BSS ID)** - Typing an Access Point (AP) BSS ID in this field will cause the WLAN adapter to search for that particular AP only. If this field is left blank the WLAN adapter will search for the AP with the strongest signal within its domain.
- Click **OK** to close the window and then reboot your computer to make the changes effective. After rebooting open the WLAN utility again and click on the *Tools* menu item and then the *Site Survey* sub-item.

Tools

Site Survey

Site Survey scans for all BSS in range and displays each AP signal strength and quality. It gives users the option of selecting an Access Point to associate with, or to join manually. If the user chooses to associate with an Access Point (AP) the received signal strength and quality will be dynamically shown on the status bar.

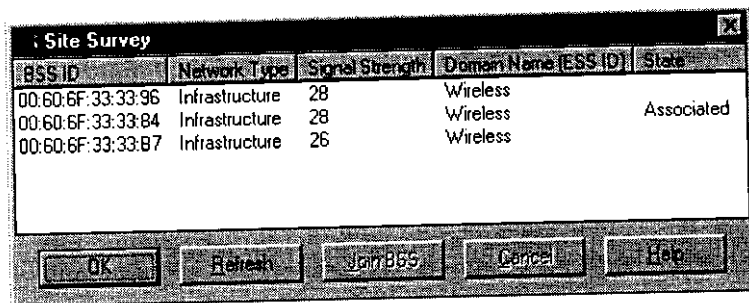


Figure 14. Site Survey

When Site Survey is run the program first reads and displays information stored in the MAC layer database. Click **Refresh** to obtain and display updated data. You may need to wait a short time depending on the number of BSS replies received. Select one of the BSS IDs from the view list. This will enable the **Join BSS** button. When the **Join BSS** button is clicked the Utility program issues a command to the MAC layer to scan for and join the selected BSS. Once you have made a connection the Wireless Station Utility will automatically connect to the same AP each time it starts (unless the AP has gone off the air).

If the scanning and joining can not be accomplished within 10 seconds (possibly due an AP that has gone off the air since the data was last refreshed, to RF interference, or a busy AP) the BSS of the MAC layer will enter into the *Failed* state (see " , page 19). If this happens you may retry joining the same BSS again, or select another BSS to join.

If the AP has connected successfully, click on the Network Neighborhood icon and click on the server you wish to access. A screen will appear asking you to type in your user name and password.

View

Clicking **View** opens a sub-menu. This group of functions provide the user with information about the adapter settings and Basic Service Set (BSS) information. The following sections explain each View function in more detail.

Properties

Clicking *Properties* opens the Adapter Properties window (Figure 15). The window is divided into three sections as described below:

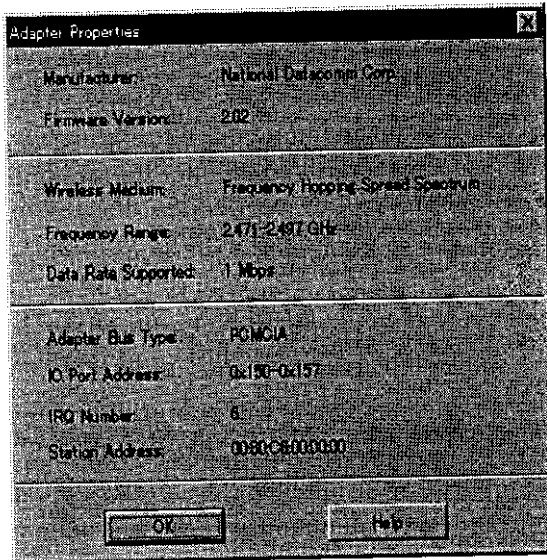


Figure 15. Adapter Properties

- **Basic Information** - This section contains the manufacturer name and the MAC firmware version number. The information is read from the MAC firmware of the WLAN adapter.
- **Radio Frequency (RF) Specifications** - The communications mode of the wireless medium, the frequency range, and the data rate supported are shown in this section. The information is read from the MAC firmware of the adapter.
- **Configuration** - Shows the adapter bus type, IO address, IRQ number, and station address. The station address is read from the MAC firmware. The other information is read from the Windows 95 Registry.

Information

Clicking Information displays the Wireless Network Information window (Figure 16) showing the BSS related parameters currently in use in the MAC layer of the WLAN.

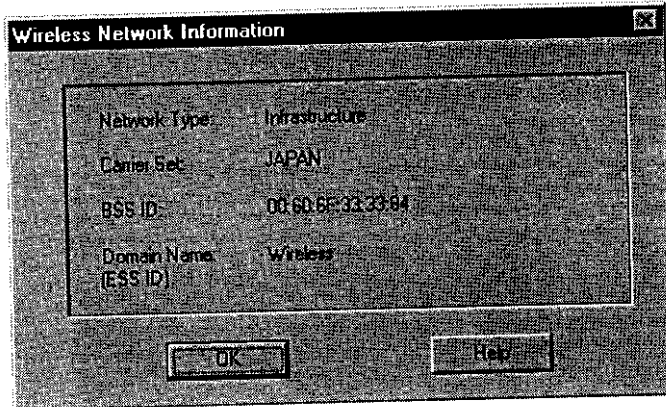


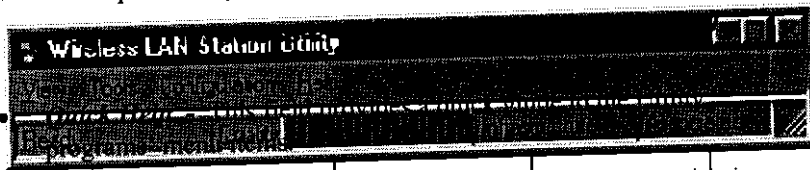
Figure 16. Wireless Network Information

- **Network Type** - Shows the network type currently configured in the MAC layer. It may be *Infrastructure* or *Ad Hoc*.
- **Carrier Set** - This can be set to the US, Europe or Japan. The parameter shown indicates which Radio Frequency (RF) 802.11 specification is currently in use in the adapter.
- **BSS ID** - Shows the Basic Service Set ID (BSS ID) currently in use in the MAC layer.
- **Domain Name (ESS ID)** - Shows the domain name currently in use in the MAC layer. The 802.11 specifications refer to the term "Domain Name" as ESS ID (Extended Service Set ID).

On-line Status Bar

If the wireless station is associated with an Access Point (AP), the received signal strength and quality will be shown in the status bar of the main

window (Figure 17). The data displayed is read from the MAC layer of the WLAN adapter and updated dynamically every two seconds.



- **Received Signal Strength and Quality** - If the wireless station is configured as *Infrastructure* and associated with an Access Point (AP), this field will be displayed. By moving the cursor on top of the small utility icon in the Windows 95 taskbar (at the opposite end from the 'Start' button, see Figure 18) shows the strength and the quality. The received signal strength is calculated in the MAC layer by sampling the Received Signal Strength Indicator (RSSI) of the *Beacon* (radio signal) for one second, and then repeating the sampling ten seconds later. The result is indicated as a percentage, calculated from the number of frames received, divided by the number of frames expected, over the last 10 seconds. When the quality value is above 61%, the indication bar shows GREEN. If the quality drops to 31% - 60%, it shows as a YELLOW bar. However, if the quality is between 00% to 30%, it will warn users with a RED bar.

These two statistics provide users with a reference when signal transmission or reception appears to be poor.

Strength is used for range reference. If *Strength* drops below 20, the signal quality becomes poor, indicating the distance between the AP and the station may be too great.

The *Quality* value shows the received frame error rate; when *Quality* is displayed as 97%, the on-air frame error rate is 3%. If *Quality* drops close to 80%, signal reception becomes poor.

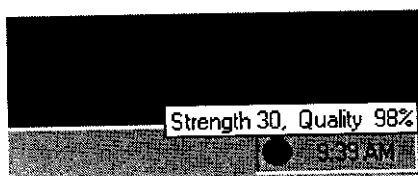


Figure 18. The Strength and Quality Status

- **Network Type** - Displays the network type currently in use in the MAC layer. (Infrastructure or Ad Hoc)
- **BSS State** - Shows the current Basic Service Set (BSS) status in the MAC layer. The possible states of the BSS are described below:
 - 1? **Idle** - Indicates the BSS is in an idle state. Usually this state occurs during initialization of the MAC firmware.
 - 2? **Failed** - Indicates the BSS failed. This can only occur when joining the BSS manually from the *Site Survey* tool.
 - 3? **Scanning** - Indicates the WLAN adapter is scanning for an Access Point (AP).
 - 4? **Roaming** - Indicates the WLAN adapter is in Roaming state, trying to associate with an AP with a better signal quality.
 - 5? **Joining** - Indicates the WLAN adapter is trying to associate with an AP. In the MAC layer it is waiting for an authentication or association response from an AP.
 - 6? **Rejoining** - Indicates the WLAN adapter is trying to rejoin the original BSS. On an *Ad Hoc* network this will occur when the adapter has not received a *Beacon* (signal) from another station for over one minute. On an *Infrastructure* network the adapter will go to the *Rejoining* state when the station has not received a *beacon* (signal) from an Access Point (AP) for over one minute.
 - 7? **Joined** - Indicates the WLAN adapter has joined with other WLAN stations in an *Ad Hoc* network

- 8? ***Started*** - Indicates the WLAN station is the first in the group and has yet to receive a *beacon* (signal) from another station.
- 9? ***Associated*** - Indicates the wireless station has successfully associated with an AP.

Uninstalling the Utility Program

Should you wish to uninstall the Wireless LAN Utility program from the Windows 95 environment click on the *Control Panel* group. Click on *Add/Remove Programs* and select Wireless LAN Utility. Click the ***Remove*** button.

Troubleshooting

Installation Problems:

Problem	Possible Cause	Action to Take
Windows 95 could not find the ISA PnP card	ISA PnP card not properly seated in the expansion slot	Remove and reinsert the card making sure the card is fully home
	Older version adapter drivers are present in your system	Remove the previous adapter drivers. Be sure to delete IWND3.SYS and ISA30S.DWN. These files are probably located in the c:\windows\system directory. Reboot the PC
Card not functioning correctly	The driver has been loaded before but not removed	Remove the extra driver(s) and adapters (Control Panel\Network\Configuration) and reinstall
	The card did not install correctly	Remove the adapter, driver, and re-install again

Windows 95 Wireless LAN Station Utility Error messages:

Error Message	Possible Cause	Action to Take
Can't find the Wireless LAN adapter	There is no ISA PnP adapter card on the PC	Insert an ISA PnP adapter card and carry out the installation procedure
	Defective card	Reboot the PC to see if the error message is repeated. If so, and if possible, try the card in another PC to verify that the problem is in the card and not its environment

Adapter is not responding	Defective card	Reboot the PC to see if the error message is repeated. If so, and if possible, try the card in another PC to verify that the problem is in the card and not its environment
The Wireless LAN driver has not been installed properly	Driver didn't install	Check (My computer\Properties\Device Manager\Network adapters\ISA PnP Wireless LAN Adapter\Properties) and install the ISA PnP card's driver OR Remove the device and reboot the PC to re-install the ISA PnP card driver
Performance (quality) less than expected	Antenna is not connected	Check the antenna connections
	Local noise high or local traffic busy	Wait a short time or connect to another AP
	AP-to-station range limit exceeded	Connect to a closer AP or move your station within the operating range of the current AP
	Defective card	Change the ISA PnP card. If possible, try the card in another PC to verify that the problem is in the card and not its environment
Can't associate with the Preferred AP at PC boot up	Antenna is not connected	Check the antenna connections

	Different Domain Name (ESS ID)	Change the ESS ID using the Wireless LAN Utility\Configuration program OR go to Network Panel\ISA PnP Wireless LAN Adapter\Properties\Advanced\ESS ID
	AP not switched on	Check the Preferred AP is switched on and functioning
	Network traffic busy	Join the AP using the Wireless LAN Utility\tools\site survey
	AP-to-station range limit exceeded	Connect to a closer AP or move your station within the operating range of the current AP
Ad-Hoc stations can't join each other.	Two stations started at the same time	Reboot one station
	Different Domain Name (ESS ID)	Change the ESS ID using the Wireless LAN Utility\Configuration program OR go to Network Panel\ISA PnP Wireless LAN Adapter\Properties\Advanced\ESS ID
The value must not be blank	The BSSID value has been left blank. This value is the ID of this station Preferred AP.	Go to Network Panel\ISA PnP Wireless LAN Adapter\Properties\advances\BSSID and insert the Preferred AP BSSID OR If you do not wish to have a Preferred AP insert twelve zeros (000000000000) in the blank space NOTE: When the Roaming function is on, the Preferred AP function is inoperable

SPECIFICATIONS OF NDC INSTANTWAVE

Standards Compliance

The radio characteristics will conform to FCC part 15.247, CEPT 300-328 and MKK RCR-31 rules for frequency hopping spread spectrum operation in the 2.4 GHz band.

The on air protocol and radio characteristics conforms to IEEE802.11 standard (Frequency Hopping) with the intention of allowing inter-operability with similar cards from other manufacturers.

Data Rate

The data rate can be selected between 1Mbps and 2Mbps by the user. The default setting is 1 Mbps in order to achieve the farthest operating range. An automatic mode is also provided. Under this automatic mode the system will operate at 2 Mbps initially. Once the data error rate exceeds the preset limit, the system will automatically fall back and operate at 1 Mbps.

HARDWARE SPECIFICATIONS

Bus Interface

ISA/WLAN

The ISA/WLAN card is compatible with the IEEE P996, Draft D2.02 (ISA) interface. The ISA/WLAN card will use only the 16 bit I/O transfer mode of the ISA interface. The ISA/WLAN card maps registers into 16 I/O contiguous byte address locations in the host I/O space. The mapping location of the registers in the host I/O address space will be controllable by the host via the Microsoft Plug-and-Play (PnP) provisions of Windows 95. The card will have a default window address of 240H~38FH, 16-byte/EA and will have the ability to be

reprogrammed to the default address using a utility in a non PnP environment.

PCMCIA/WLAN

The PCM/WLAN card will be compatible with host machines supporting the PCMCIA V2.1 interface. The PCM/WLAN card will use the 16 bit I/O transfer mode of the interface as well as the PCMCIA attribute access mode. The PCM/WLAN card maps registers into 8 I/O contiguous byte address locations in the host I/O space. The mapping location of the registers in the host I/O address space will be controllable by the host PCMCIA implementation and is negotiated by card services or the PCMCIA enabler program.

Electrical/ Environmental Specs

Both the ISA/WLAN and PCM/WLAN card operate from a single +5V±10% supply provided by the host computer. All other supply voltages are generated by the card.

The current consumption of both cards will be nominally:

ISA/WLAN	max. 800mA
PCM/WLAN	max 400mA for transmit/270ma for receive/30ma for standby

The operation temperature range of the cards is 0°C to 50°C.
Storage temperature range is
-10°C to 80°C non-condensing.

Mechanical Specification

PCMCIA/WLAN

The PCM/WLAN card will fit into a Type II or Type III PCMCIA slot. The slot must allow for a card extension of up to 30mm as allowed in the PCMCIA card specification. The antenna will be encased in a plastic radome in line with the main body of the PCMCIA card such that it extends outside of the PCMCIA slot when the card is inserted.

The overall dimensions of the PCMCIA card are: 115mm x 54mm x 5.8mm as shown Figure 19.

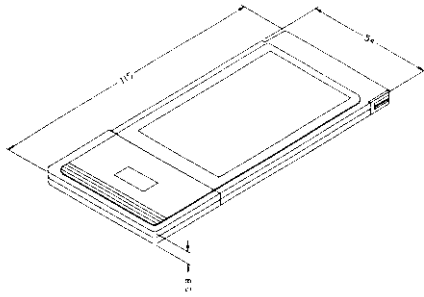
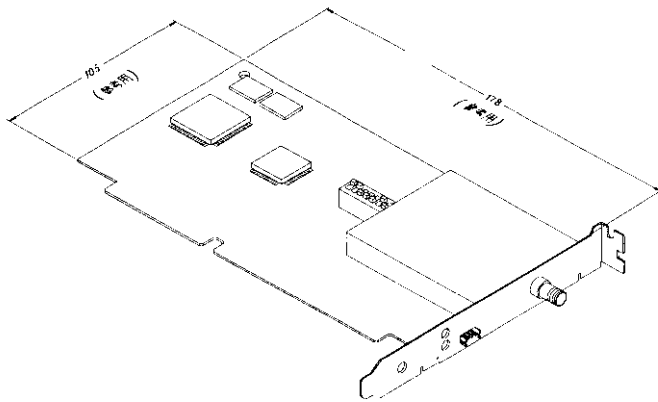


Figure 19 PCM/WLAN Dimension

ISA/WLAN

The ISA/WLAN card will fit into a single 16 bit bus half card ISA slot. The ISA card will be a four Layer PCB of thickness 1.6mm. The radio portion will be in a metal cased subassembly which will be soldered onto the ISA card. The antenna feed structure will run to an unbalanced antenna attached to the rear metal plate of the ISA card. The overall dimensions (178mm x 105mm) of the ISA card are shown in Figure 20 and dimensions (75mm x 75mm x 30mm) of the antenna are shown in Figure 21.



• Figure 20 ISA/WLAN Card Profile

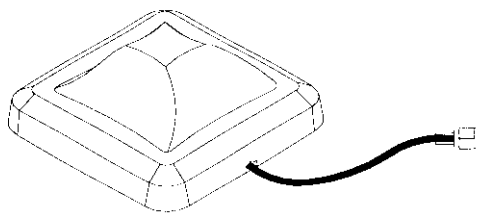


Figure 21 Antenna

SOFTWARE SPECIFICATIONS

Station

Several software programs will be required for the operation of the system. These will be provided in executable form to the customer as part of an installation diskette. The programs required are listed in the following figure:

Figure 22 Station Program

Program Name	Program Function	Program Type
ECARD.EXE	PCMCIA Enabler / card configuration utility	DOS EXE
UTIL.EXE	Installation program WLAN card diagnostic & IRQ/memory selection program	DOS EXE
IWISA.COM	DI workstation driver	DOS EXE
IWND3.SYS	NDIS 3 driver	WINDOWS/WIN95/WIN NT 4.0
ISA30S.DWN	Firmware for ISA/WLAN Card	Data
PCM30S.DWN	Firmware for PCM/WLAN Card	Data

ECARD.EXE

If the host machine has compatible PC card (formally PCMCIA) and socket services, the installation and setup of the PC card should be straight forward. However, in many cases there are compatibility problems or the services are not provided by the host. In these cases the PCMCIA enabler program identifies the hardware and attempts to setup the PCM/WLAN card by direct manipulation of the hardware.

UTIL.EXE

UTIL.EXE is a utility program which installs the necessary files onto the system hard disk and makes configuration changes appropriate to the type of system and type of card being installed. This is an executable DOS program which will also initiate a DOS window under WIN 3.1, WIN 95, or Win NT 4.0. The program may decompress stored files if necessary. Moreover, this program will launch necessary diagnostic procedure to test the card, and give user the option of selecting card IRQ/memory setting.

IWND3.SYS—miniport

This NDIS 3 driver is designed for Windows NT 4.0 and WIN 95. The driver would be installed during the operation of UTIL.EXE. It will download the DWN file for the card processor to run.

IWISA.COM

This ODI driver is designed for Novell NetWare. The driver would be installed during the operation of UTIL.EXE. It will download the DWN file for the card processor to run.

ISA30S.DWN/PCM30S.DWN

ISA30S.DWN and PCM30S.DWN are the firmware programs which are executed by the processor on the ISA/PCM/WLAN cards. These files are not executable by the PC and are treated by the PC as the data files. The ISA30S.DWN is passed down to the ISA/WLAN card & the PCM30S.DWN is passed down to the PCM/WLAN card during initialization by the driver program.

ADMIN.EXE

This program runs on 16-bit or 32-bit Windows. It is a windows application that is designed to allow the user to monitor and test network performance. The program will have the following operations:

- View wireless adapter properties.
- View wireless network information
- Site survey
- Configuration
- On-line status

RADIO SPECIFICATIONS

Operating Frequency	2.471GHz to 2.497GHz	Japan
	2.4GHz to 2.4835GHz	USA and Europe
Spread Spectrum Method	Frequency Hopping	
Power Output	18.5+/-1.5dBm	
Receive Sensitivity	-80dBm for 1 Mbps -70dBm for 2 Mbps	for BER 10E-5
Antenna System	Dual antenna diversity	Receiving diversity
Frequency Stability	±20ppm	
Modulation Type	2 GFSK for 1 Mbps 4 GFSK for 2 Mbps	BT = 0.5
Hop Rate	5 hops/sec	Minimum
Operating Distance	50~100m for 1 Mbps	Indoor (depend on environment)
	30~50 m for 2 Mbps	Indoor (depend on environment)
Operating Temperature	0°C ~ +50°C	
Regulation compliance	FCC Part 15.247 MKK RCR STD-33A ETSI 300-328	
IEEE Standard Compliance	IEEE 802.11 Standard compliance	