SENAO Wireless Compact Flash Card

Users Guide

Before operating the unit, please read this manual and retain it for future

Model no.:SL-2511CF

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Introduction

This product is an IEEE 802.11b Wireless Compact Flash Adapter that uses a standard Type I CF adapter interface which integrated with wireless LAN technology. It provides an easy and fast way to access the Internet via wireless network. This Wireless Compact Flash adapter allows the users to install on PDAs (Personal Digital Assistants), Pocket/Handheld PCs and other devices equipped with a Type I CF slot. This Compact Flash Card is 802.11b compliant and the data rate of connection is up to 11Mbps. With an 802.11b Compact Flash Card you can send and receive E-mail, synchronize with your desktop computer, and surf the Internet while on the move.

Features and Benefits

11Mbps data transfer rate	High-speed data transmission
IEEE 802.11b compliant	Fully interoperable with IEEE802.11b compliant products
Automatic data rate scaling at 11, 5.5, 2 and 1 Mbps	Optimized throughput, range and connectivity
Wired Equivalent Privacy (WEP) encryption and decryption support	Powerful data security at 64 and 128 bits
Compact Flash Type-I standard	Supports a variety of popular computing devices such as PDA, Pocket PC, Tablet PC, Webpad and Handheld device
Supports both Pocket PC and Windows PC operating systems	Flexible to work with both your PDA and your notebook PC
Wide coverage range up to 300 meters in open space	Wireless connectivity for all your computers
Advanced Power Management and Suspend on WLAN	Very low power consumption delivers extended battery life for client devices
Plug and Play Compact Flash Type-I interface	Easy installation
Significantly improved indoor multipath distortion	Higher link quality in indoor environment
Seamless roaming	Full mobility
Direct Sequence Spread Spectrum (DSSS) technology	Provides robust, interference-resistant, and secure wireless connection

Wireless Solutions and Application

Access existed networks for mobile workers

Allow doctors, nurses, sales access their database while keeping mobility in the hospitals, retail stores, office campus or other buildings.

Difficult-to-wire environment

There are many situations where wires cannot or cannot easily be laid. Historic buildings, older buildings, open areas and across busy streets make the installation of LANs either impossible or very expensive.

Frequently changed environment

Show rooms, meeting rooms, retail stores, and manufacturing sites where the workplace located are frequently rearranged.

Wired LAN backup

Network managers implement wireless LANs to provide backup for mission-critical applications running on wired networks.

Wireless extensions to wired networks

Network managers in dynamic environments can minimize the overhead caused by moves, extensions to networks, and other changes with wireless LANs.

Temporary workgroup

Trade shows, exhibitions, and construction sites that require a temporary network. Retailers, airlines, and shipping companies need additional workstations during peak periods.

Small Office/ Home Office (SOHO) Networks

SOHO users need a cost-effective, easy and quick installation of a small network.

Package Contents

- Compact Flash Card Unit
- Installation CD (Include User's Manual, Acrobat® Reader and Packet PC Utility Program)
- Quick Installation Guide

System Requirements

For using this Compact Flash Card, the following requirements are needed:

- A Handheld/Pocket PC running Windows CE 3.0 with an available Compact Flash Type I slot.
- A computer which uses Windows 95/98/ME/2000/XP operating system has an ActiveSync program to connect with the Pocket PC

Installing Setup Utility of Wireless LAN Compact Flash Card

1. Create a connection between Hand PC and Desktop/Laptop by **Microsoft Active Sync**.
2. Install the PDA's driver and utility by executing **CFDR.exe** as shown in ***Figure1*** **and** ***Figure 2***.

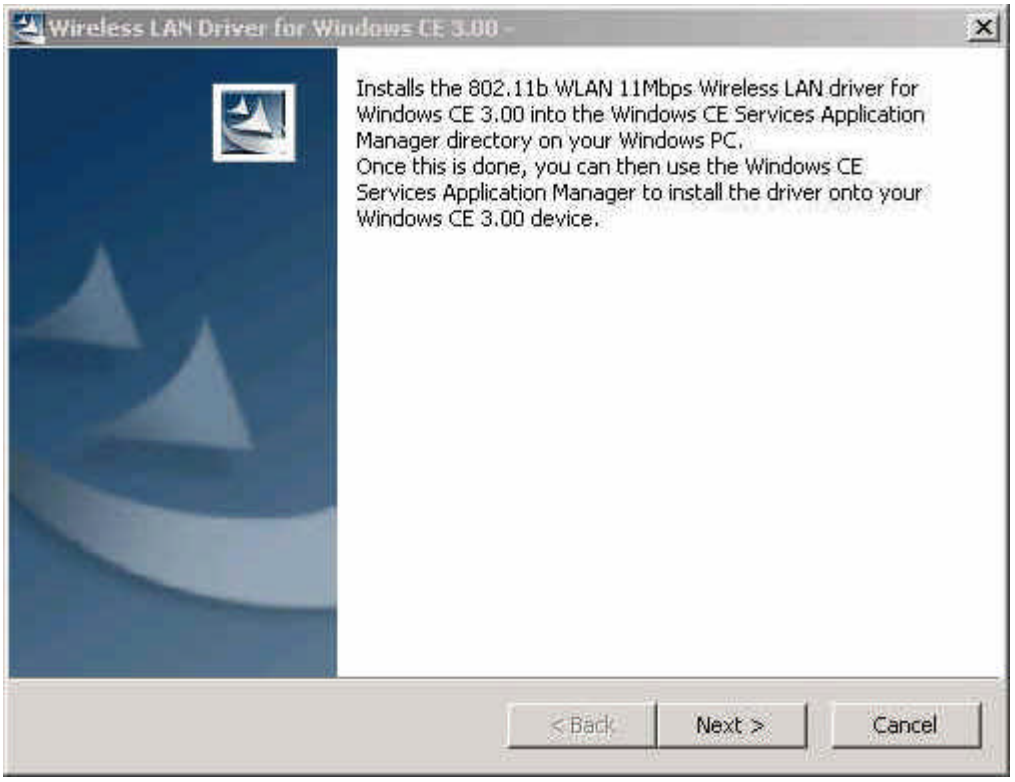


Figure 1

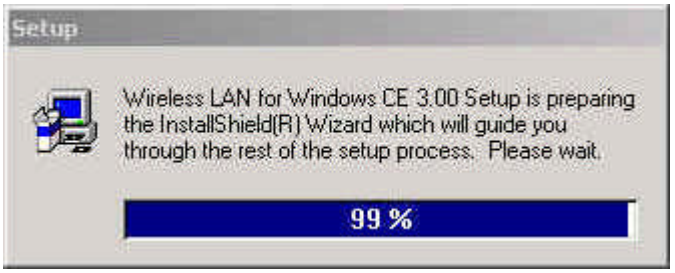


Figure 2

3. After the Install Shield Wizard window appears, click **Next** to continue as shown in ***Figure3***.

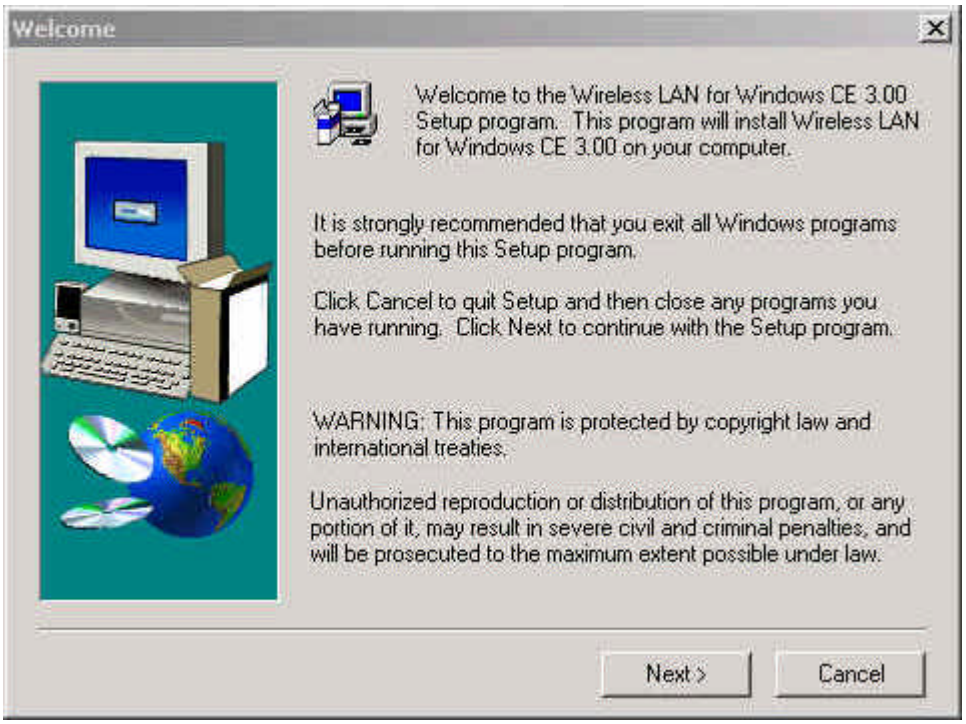


Figure 3

4. In the **Software License Agreement** dialog window, click **Yes** to accept all the terms of the License Agreement as shown in ***Figure4***.

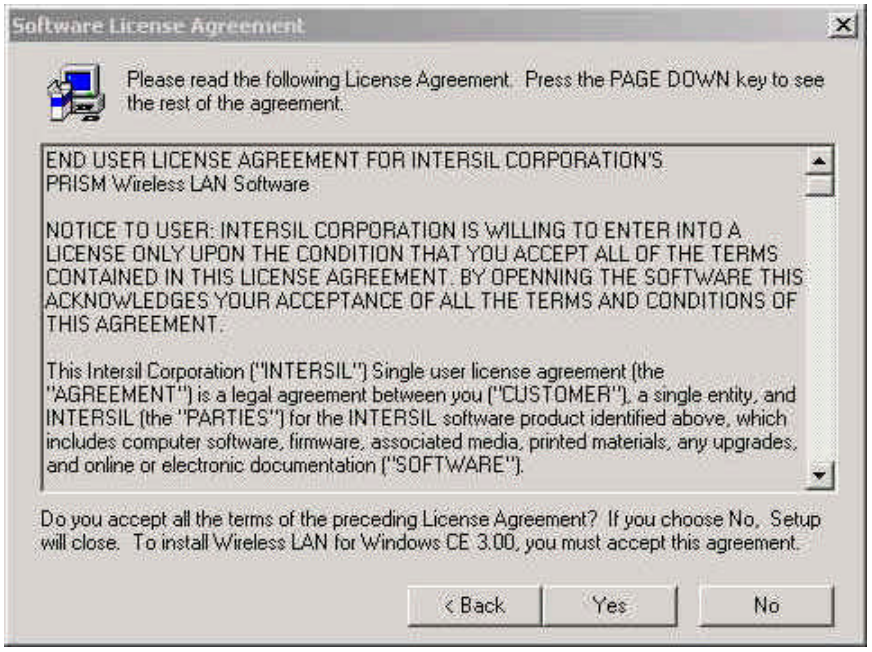


Figure 4

5. Click **Yes** to install the driver in the default install directory as shown in ***Figure 5***, then click **OK** to continue the setup procedure as shown in ***Figure 6***.

Figure 5

Figure 6

6. Click **Finish** to complete the setup procedure.

Figure 7

NOTE: Insert the Wireless Compact Flash card to the PDAs **AFTER** the Setup Utility and Driver's installation procedure.

7. Start the **Microsoft ActiveSync** to check the installation status of the PDAs. In the **Microsoft ActiveSync** dialog window, click **Tools** and then choose **Add/ Remove Programs** to check out the drivers or programs that has been installed as shown in ***Figure 8***.

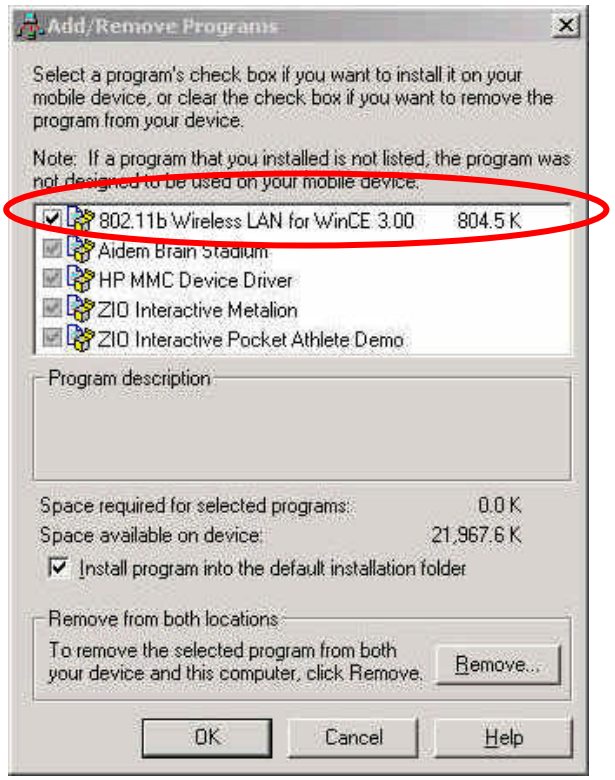


Figure 8

Wireless LAN Setting

1. Connect the wireless compact flash card to PDAs.
2. Select **Start→Settings** on the handheld. In the **Settings** dialog, click **Connections** and then click **Network** icon as shown in ***Figure 9***.

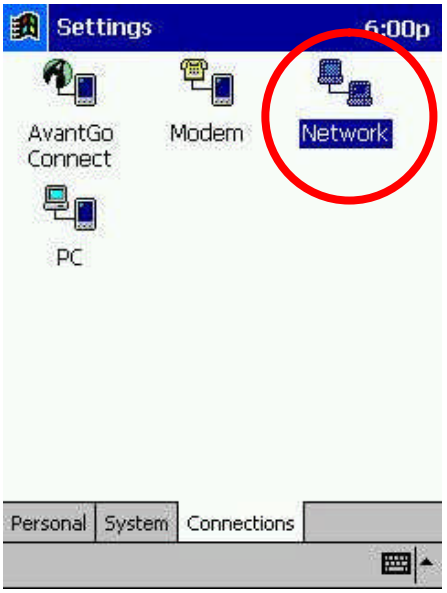


Figure 9

3. In the **Adapter** tab, choose **802.11b WLAN 11Mbps Wireless LAN PC** to set up the IP address as shown in ***Figure 10***.

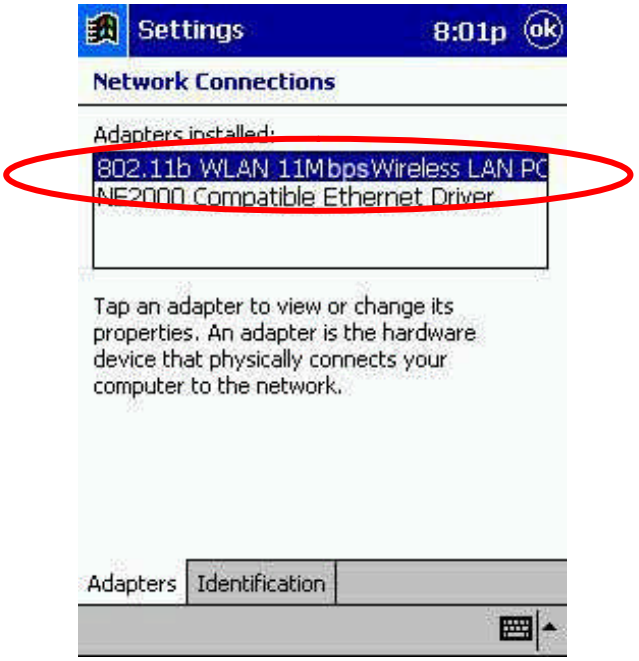


Figure 10

4. In the **IP Address** label, choose **Use server-assigned IP address** if there is a DHCP server in your own network as shown in ***Figure 11***.

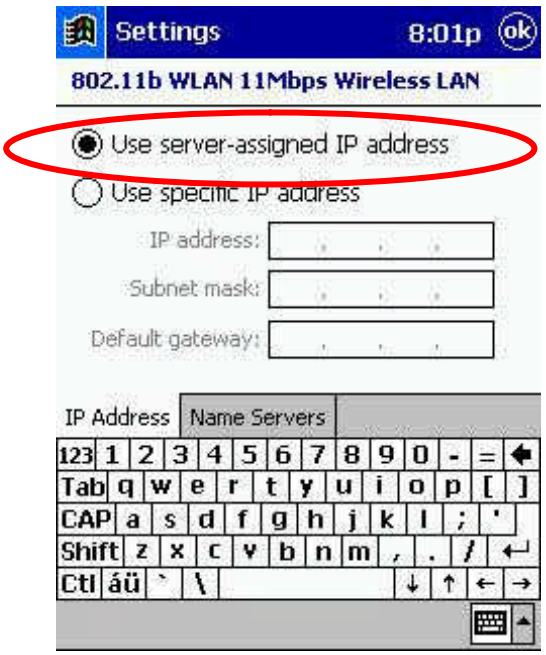


Figure 11

5. In the **IP Address label**, choose **Use specific IP address** if you need to set up the fix IP address as shown in ***Figure 12***.

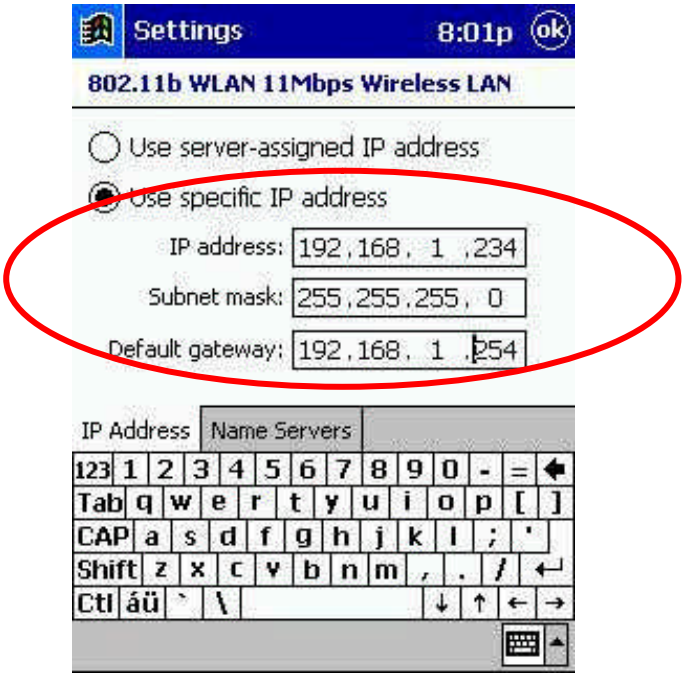


Figure 12

6. After the setting of Step 5, move to **Name Servers** to set up the **DNS** server as shown in ***Figure 13***.

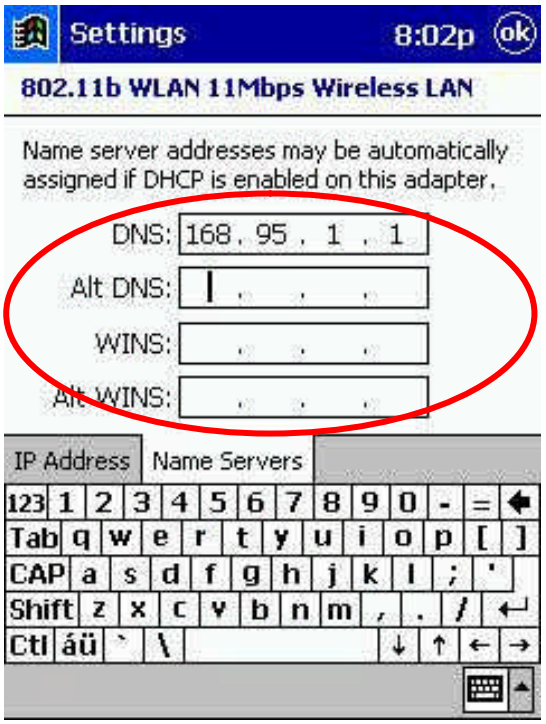


Figure 13

7. Choose **Use proxy server** in the **Connections** tab of the Internet Explorer's options as shown in ***Figure 14*** when you connect Internet via Proxy Server.

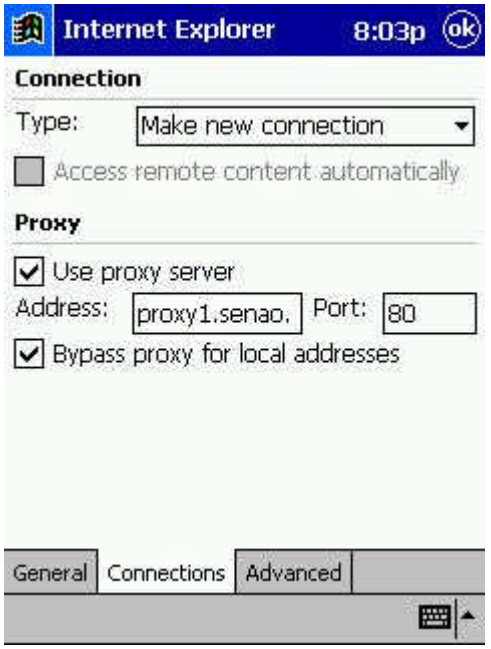


Figure 14

Using the Wireless LAN Utility

This Wireless Compact Flash Adapter is a “ready-to-use” device. The default settings have finished for a typical **Infrastructure Wireless LAN**. After installing the Setup Utility and the Driver into the handheld devices, simply install the Wireless LAN Compact Flash Card onto your handheld devices and it is ready to use. In some situations, however, you may want to adjust the configuration settings to manage your wireless network. The Wireless LAN Utility of this Compact Flash Card provides you to make the configuration changes by an easily interface. If you need to adjust the settings, please following the instructions below.

Status

State

This item shows status information about the radio link as shown in ***Figure 15***.

- Associated BSSID – means the wireless client is connected to an access point. BSSID is shown in the form of six hex digits which is the MAC address of the access point.
- Scanning – means the wireless client is searching for an available access point in infrastructure mode.
- Disconnected – means there are no access points or other wireless clients (if communicating in Ad-hoc mode), or the PC Card is unplugged in your computer.

Current Tx Rate (Mbits/s)

The data speed that wireless client is transmitting.

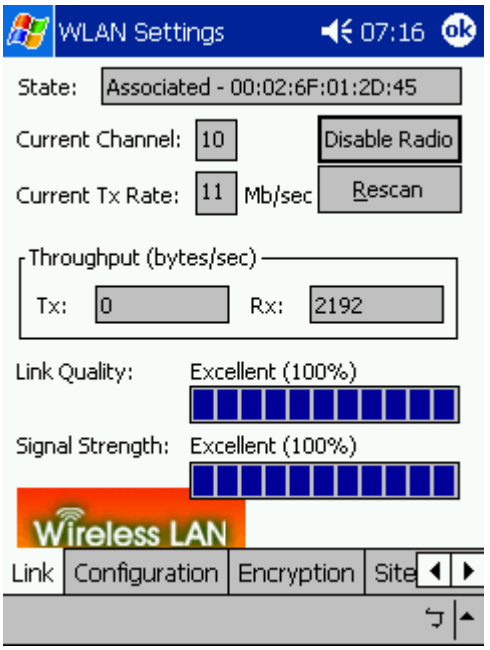


Figure 15

Current Channel

The operation radio frequency channel that wireless client is using in infrastructure mode. In infrastructure mode, wireless client will always go the same channel as their Access Point.

Throughput (Bytes/sec)

Tx: shows the outgoing (sent) data speed.

Rx: shows the incoming (received) data speed.

Link Quality

In infrastructure mode, this bar displays the transmission quality between a WLAN station (Access Point) and Wireless LAN PC Card. In Peer-to-Peer mode (Ad-Hoc), this bar displays the link quality between two Wireless LAN PC Cards.

Signal Strength

This bar displays the signal strength level. The higher bar is, the more powerful radio signal is received by the PC Card.

Disable/Enable Radio

This button is used like a switch that allows users to turn off the wireless radio by clicking this button and turn it on again.

Rescan

The radio will rescan all available channels by pressing this button. You can push this button to rescan the channels for better link quality when the link quality is poor.

Configuration

Make configuration changes by specifying the proper configuration parameters on this configuration tab as shown in ***Figure 16***.

Profile

You can give a name for this field to a setting of configuration parameters, such as Network Name, Network Type, Transmit Rate, Encryption (WEP Security), etc. It makes much easier for users to change WLAN configuration settings who need to switch working places frequently. Suppose that a user has to work between the two different offices where there are different network settings. In this case, this user just needs to setup two profiles for the two offices and simply selects the proper profile when the user switches to the different office.

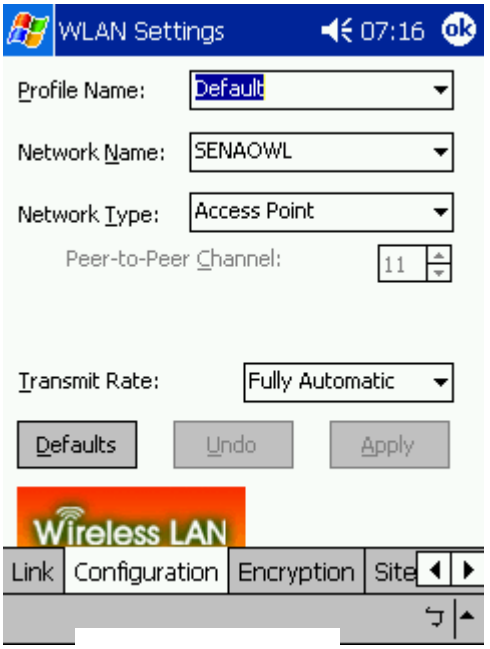


Figure 16

Network Name

For infrastructure mode, you need to type in the SSID of the access point to which your computer connects. For Ad-Hoc (peer-to-peer) mode, you need to type in the virtual SSID of the Ad-Hoc network to which your computer attaches.

Network Type

There are two types of network modes in this drop-down list, Peer-to-Peer and Access Point (Infrastructure).

- **Peer to Peer:** If two or more stations exchange data directly without an access point, you need to select Peer-to-Peer mode. Each station in a Peer-to-Peer (Ad-Hoc) network must specify the same **network name (SSID)** and **peer-to-peer channel**.
- **Access Point:** If at least one access point involves in the communications in a group of stations, you need to select Infrastructure mode. Each station needs to specify the same **network name (SSID)** as the access point.

Peer-to-Peer Channel

This option is just for **Peer-to-Peer (Ad-Hoc)** mode. You need to specify a channel on which the communications are established. Each station in a Peer-to-Peer (Ad-Hoc) network must specify the same **channel** and **network type (SSID)**.

Power Save Mode

Power Save function as shown in ***Table 1*** .This function can conserve more battery energy and extend the battery life. This function has three options for power save mode. Below is detailed description.

On:	Enable Power Save function.
Off:	Disable Power Save function.
Auto:	Utility will automatically detect what kind of power supply a machine uses and then determine to enable or disable Power Save function. If device uses battery, Power Save Mode is set to on. If device uses AC Power, Power Save Mode is set to off.

Table 1

Transmit Rate

The transmission rate on which the data packets are transmitted by the client can be specified in this drop-down list as shown in ***Table 2***. Below are the available transmission rates.

Full Automatic	PC Card chooses the highest available transmission rate
11 Mbps	allows only 11 Mbps operation
5.5 Mbps	allows only 5.5 Mbps operation
Auto 1 or 2 Mbp	allows only 1 or 2 Mbps operation

Table 2

Defaults

Once this button is pressed, all the settings will be set back to the default settings.

Encryption

Encryption is designed to make the data transmission more secure. you can select 64 or 128-bit WEP (Wired Equivalent Privacy) key to encrypt data (Default setting is **Disable**). WEP encrypts each frame transmitted from the radio using one of the Keys from this panel. When you use WEP to communicate with the other wireless clients, all the wireless devices in this network must have the same encryption key or passphrase.

Encryption (WEP)

Choose one of the encryption key (64 bit or 128bit) from the **Encryption (WEP Security)** drop-down list to create encryption key. Click either on **Create Keys Manually** radio button or on **Create Keys with Passphrase** radio button. There are two ways, **Alphanumeric** and **Hexadecimal**, to set the different characters as shown in ***Table 3***.

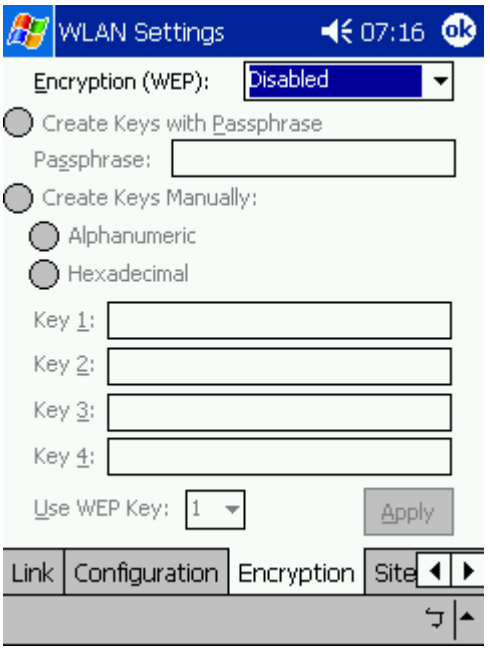


Figure 17

Create Keys Manually: Alphanumeric

Type 5/13 alphanumeric characters in the key field

Create Keys Manually: Hexadecimal

Type a 10/26 hexadecimal numbers (1-9; A-F) in the key field

Use WEP Key

This drop-down list allows you to specify which of the four encryption keys that you want to use.

Create Keys with Passphrase

Type a character string in the field Passphrase.

Mode \ Data	Alphanumeric	Hexadecimal
64 bit	5	10
128 bit	13	26

Table 3

Disabled

Select **Disabled** item in the **Encryption (WEP)** drop-down list allows you to disable the encryption function.

Site Survey

Browse the available access points in your network environment by clicking the **Scan** button and make a connection to one of them by pushing the **Connect** button in the **Site Survey** tab as shown in ***Figure 18***.

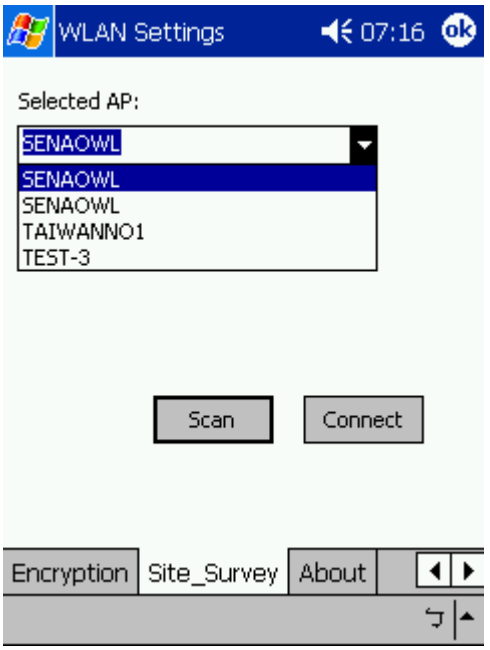


Figure 18

About

About tab shows the product/driver/utility/PC Card firmware version as shown in ***Figure 19***. Users have to use this version number when reporting their problems to technical support.

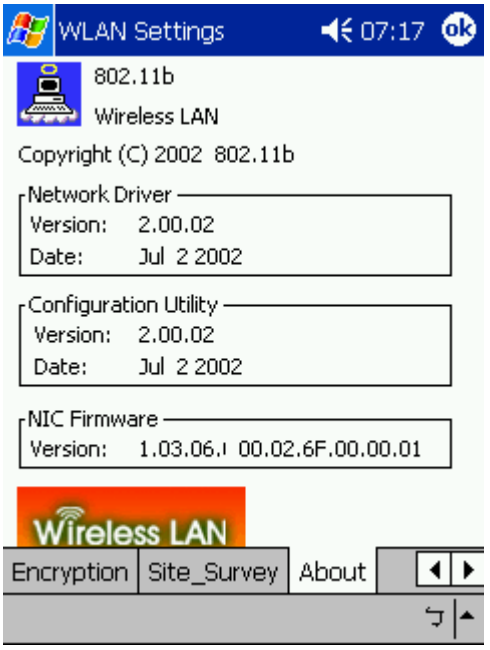


Figure 19

Specification

General

Radio Data Rate	11, 5.5, 2 and 1 Mbps, Auto Fall-Back
Range (open environment)	11 Mbps –150m 5.5 Mbps –200m 2 Mbps – 300m 1 Mbps –400m
Operating Voltage	3.3V
Regulation Certifications	FCC Part 15/UL, ETSI 300/328/CE
Compatibility	Fully interoperable with IEEE802.11b compliant products
LED Indicator	RF Link activity

Network Information

Network Architecture	Support ad-hoc, peer-to-peer networks and infrastructure communications to wired Ethernet networks via Access Point
Driver Software Support	Windows XP/ME/2000/98/CE 3.0/PocketPC 2002
Access Protocol	CSMA/CA
Roaming	IEEE802.11b compliant
Security	64/128-bit WEP data encryption

Radio

Frequency Range	U.S., Europe and Japan product covering 2.4 to 2.484 GHz, programmable for different country regulations
Radio Type	Direct Sequence Spread Spectrum (DSSS)
Modulation	CCK (11, 5.5Mbps) DQPSK (2Mbps) DBPSK (1Mbps)
Operation Channels	11 for North America, 14 for Japan, 13 for Europe, 2 for Spain, 4 for France
RF Output Power	13dBm
Antenna	Integrated, with built-in diversity
Sensitivity @FER=0.08	11 Mbps <-85dbm ; 5.5 Mbps <-87dbm 2 Mbps <-89dbm ; 1 Mbps <-91dbm

Environmental

Temperature Range	-10°C to 50°C (14°F to 122°F)-operating -30°C to 80°C (-22°F to 176°F)-storage
Humidity	95% maximum non condensing

Physical Specifications

Form Factor	Fits Compact Flash Type-I Slots
Dimensions	55.4(L) mm x 42.8(W) mm x 3.3(H) mm 2.18(L) in x 1.69(W) in x 0.13(H) in
Weight	45.36 g/ 1.6oz

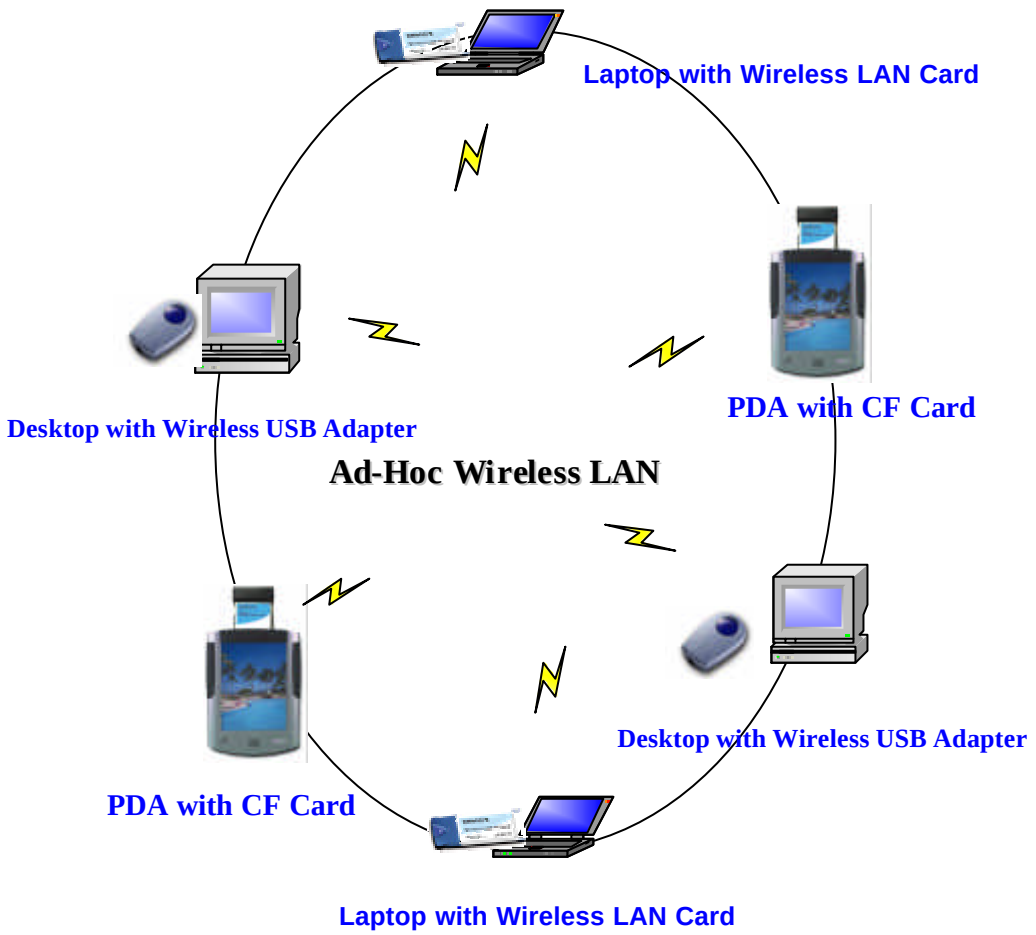
Appendix A

Network Topology

To better understand how the wireless LAN products work together to create a wireless network, it might be helpful to depict a few of the possible wireless LAN USB Adapter network configurations. The wireless LAN products can be configured as:

1. Ad-hoc (or peer-to-peer) for departmental or SOHO LANs.
2. Infrastructure for enterprise LANs.
3. IP Sharing for 56K/ISDN TA/Cable/DSL Modem – Connect Internet and your SOHO network.

Ad-Hoc Wireless Network

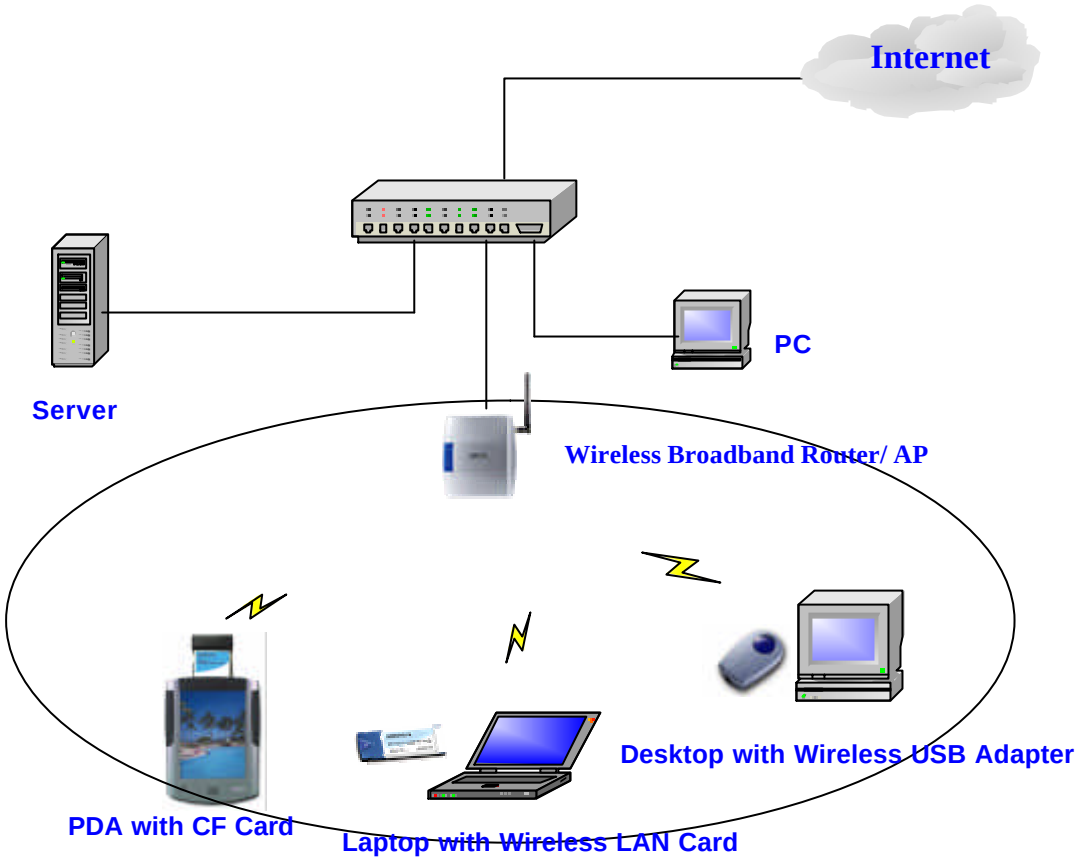


1

An Ad-Hoc wireless LAN is a group of computers as well as PDAs that are equipped with a wireless adapter, connected as an independent wireless LAN (Local Area Network).

NOTE: Must configure all wireless devices in the same **Radio Channel**, **SSID** and **Encryption Key** (if WEP is enabled).

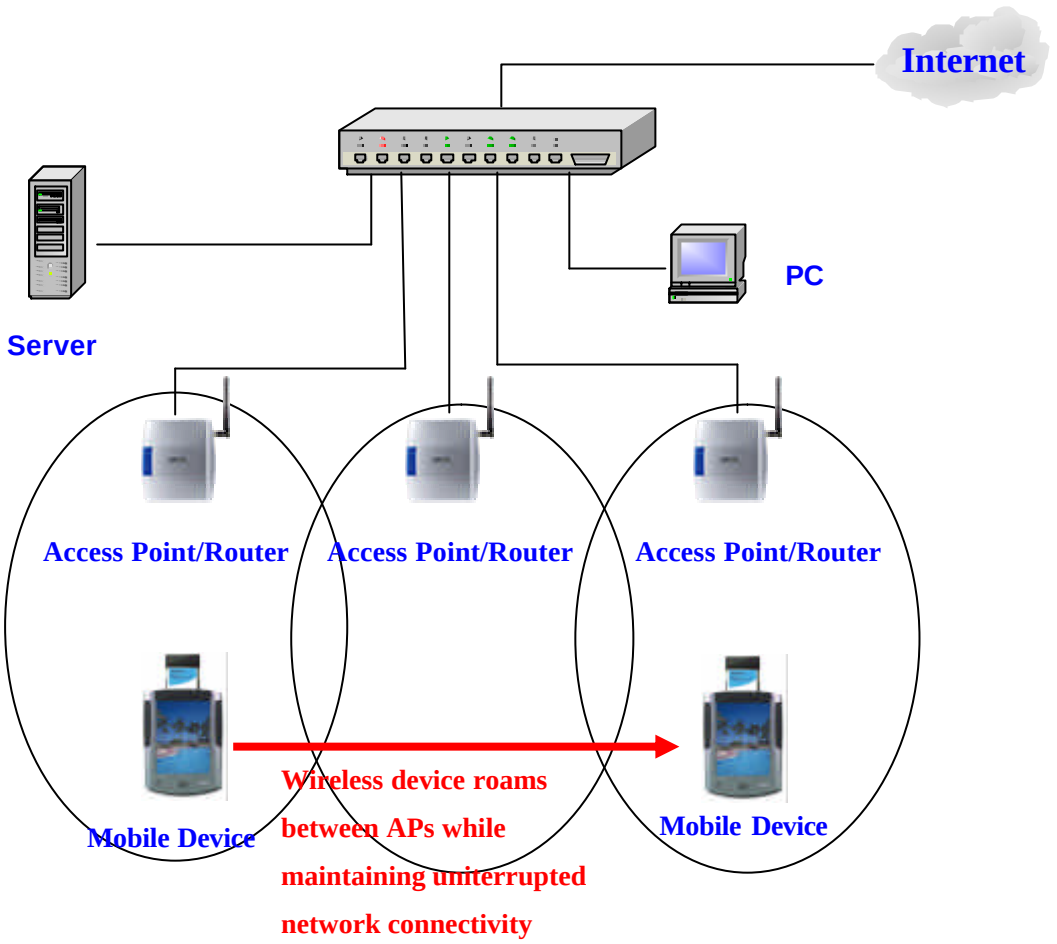
Infrastructure Wireless Network



All of the Senao's wireless devices provide access to a wired LAN through the wireless extension of the local network. An integrated wireless and wired LAN by using the Access Points is called an **Infrastructure** configuration.

Infrastructure configuration allowed users extend the accessibility of the wireless and wired LAN. Multiple 802.11b Access Points will allow roaming and will increase the effective transmission range.

Roaming



The mobile client will connect to any 802.11b AP that is within range. Each 802.11b Access Point within a roaming network must have a **unique Channel** and the same **SSID** and **Encryption Keys** (if WEP is enabled). 802.11b products can use three non-overlapping Channels within the same vicinity (Channels 1, 6, and 11 are non-overlapping). Users can move between the 802.11b Access Points in the network freely.

Appendix B

Radio Frequency Interference Requirements

This device complies with Part 15 of FCC Rules and Canada RSS-210.
Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. To comply with RF safety requirements, you must maintain a distance of 2.5 cm from the antenna when operating the device.
4. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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.

FCC Caution:
Any changes or modifications not expressly approved by the party responsible for compliance could void the user' s authority to operate this equipment.