IEEE 802.11b WLAN Adapter

Users Guide

Version: 1.0 -- December 2001

Copyright Statement

TABLE OF CONTENTS

1. Introduction **4**
1.1 About the IEEE 802.11b WLAN Adapter 4
2. Installation and Configuration **5**
2.1 Kit Contents 5
2.2 Installation Requirements 5
2.3 Installation 5
2.4 Configuration 7
2.5 “New Partnership” Setup 8
3. Viewing and editing the settings and the versions **9**
3.1 IP Address Page 9
IP Address
Subnet mask
Default gateway
3.2 Name Servers Page 10
DNS, Alt DNS
WINS, Alt WINS
3.3 Link Page 11
SSID
Channel
TxRate
BSSID
IP Address
Subnet Mask
Gateway
3.4 Configuration Page 12
Mode
SSID
Channel
Country
Rescan
Radio on/off
Link Quality
3.5 Advanced Page 13
Wired Equivalent Privacy
Transmission Rate
Power Saving
3.6 Scan Page 14
Rescan
3.7 Info Page 15
MAC Address
Firmware version
Driver version
Utility version
4. Specifications **16**
5. Troubleshooting **19**

FCC Class B Radio Frequency

Interference Statement

Note:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

Notice 1:
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:
Shielded interface cables, if any, must be used in order to comply with the emission limits.

Notice 3:
This device complies with part 15 of the FCC Rules. The operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.

Caution: FCC Warning Statement:
This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. At least 20 cm separation distance should be maintained from the radiator to the body of the user excluding hands, wrists and ankles. The radiator is prohibited to be operated when this device is on the user's pocket or belt-clipped on the body.
This device is specific for pocket PC (PDA) host. It is not allowed to be used in laptop computer which is possible to have a separation distance shorter than 20 cm.

1. Introduction

Thank you for purchasing our product. The IEEE 802.11b WLAN Adapter is a Compact Flash (CF) Type II wireless card, which can connect a Pocket PC wirelessly to an existing IEEE 802.11b wireless network. Using the adapter with the Pocket PC, you can enjoy the complete mobile and high-speed wireless Internet connectivity wherever you are.
Please read this manual carefully to get familiar with this product. This manual contains detailed instructions in the operation of this product. Please keep this manual for future reference.

Safety precautions
Warning!
Do not immerse this product in any liquids.
Do not use solvents or abrasive materials to clean this product.

1.1 About the IEEE 802.11b WLAN Adapter

- Supports Windows CE3.0 Handheld PC, Pocket PC 2000 and Pocket PC 2002 O.S.
- Supports StrongARM CPU.
- Fits handheld devices with CF Type II extended card slots.
- Small and lightweight (0.88oz).
- Has 2 operating modes: Infrastructure and 802.11Ad Hoc modes.
- Has Power Saving mode.
- Transmission rate up to 11 Mbps.
- Automatically adjust rate scale of 11, 5.5, 2 or 1 Mbps for maximum range.
- Supports 64-bit and 128-bit WEP (Wired Equivalent Privacy).
- Range up to 328ft(100m) in standard office environments.
- Simple and fast installation.
- Has already been tested on Compaq (iPAQ H38xx & iPAQ H36xx), Toshiba(e-570), NEC (MobilePro P300), and Casio(E-200).
- LED indicates the different status of connection:

Status	**Function**
Off	Power off
Steady red	Connected to Access Point, or, being under 802.11 Ad Hoc mode (either connected or disconnected).
Flashing red	Searching for the Access Point (disconnected)

2. Installation and Configuration

Before installation, make sure you have all the items listed under the “Kit Contents”, and all required hardware listed under the “Installation Requirements”. After installation, please continue the configuration steps.

2.1 Kit Contents

The contents of the box should include the following components:

- An IEEE 802.11b WLAN Adapter
- An Installation Software CDROM
- Users Guide

If you find any incorrect, missing or damaged parts, please contact your local distributor immediately.

2.2 Installation Requirements

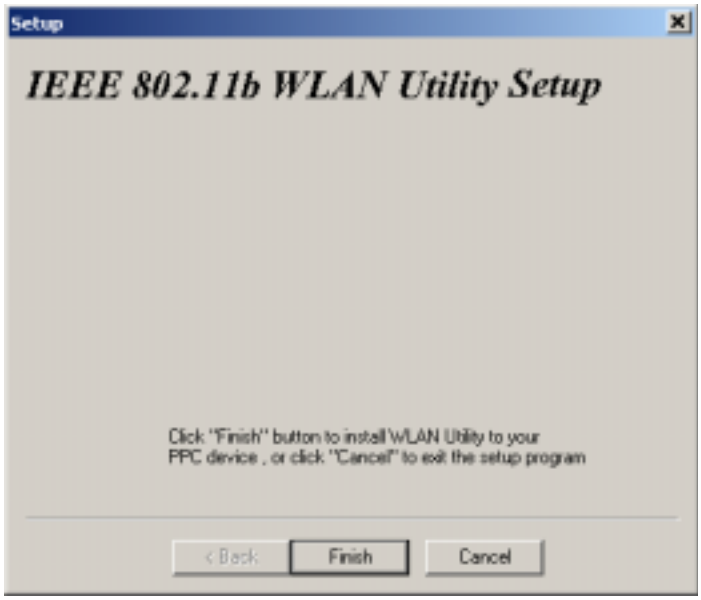
Besides the components included in the box, other requirements are as follows:

- A Pocket PC with a Type II CF extended card slot or PC card slot with the Adapter for CF card.
- A PC with a CDROM drive

2.3 Installation

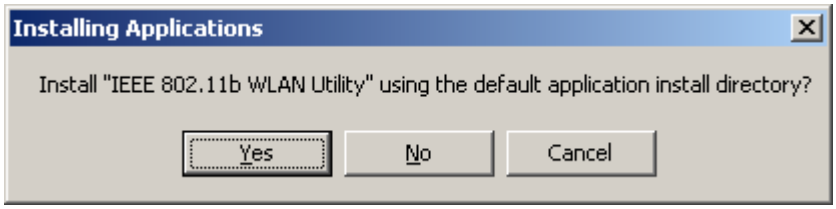
Note! Make sure you have already setup the partnership for your Pocket PC with your host computer before you install the Driver and Utility. For “New Partnership” setup procedures, please see chapter 2.5 “New Partnership” Setup.

1. Insert the installation software CDROM into the CDROM drive on the Host Computer. Click on the proper Driver & Utility installation software. The window shown below displays. Click Finish.

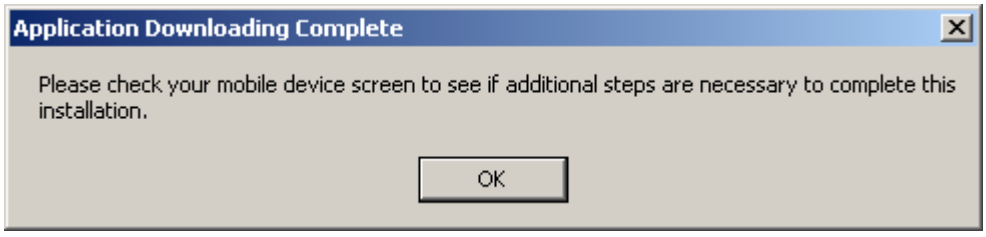


Click Finish

2. The “Installing Applications” page displays. You will be asked whether or not to install “IEEE802.11b WLAN Utility” using the default application install directory. Click Yes and follow the instructions.



3. After installation, the “Application Downloading Complete” window displays, which reminds you to check your mobile device screen to see whether additional steps are necessary to complete this installation. Click Ok.

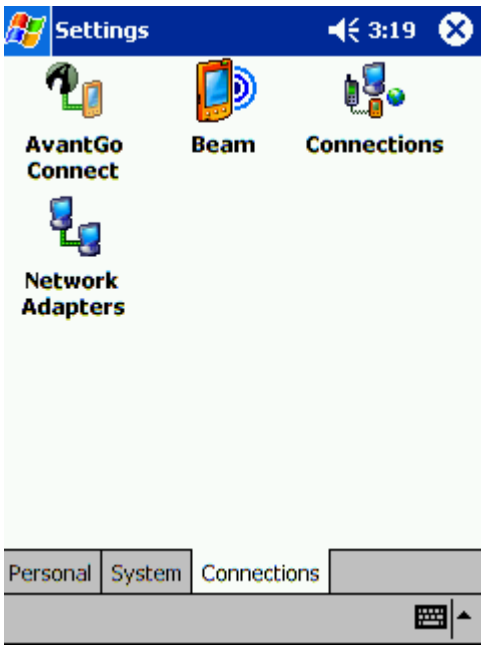


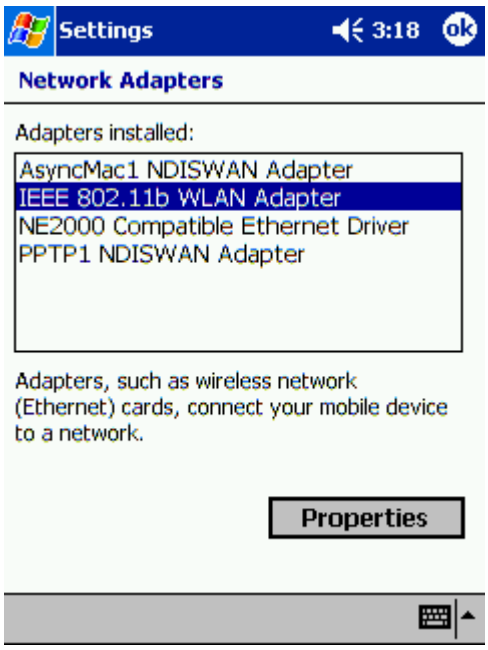
You can find an “IEEE 802.11b WLAN ” icon created in your Pocket PC (Start →Programs→IEEE 802.11b WLAN)

2.4 Configuration

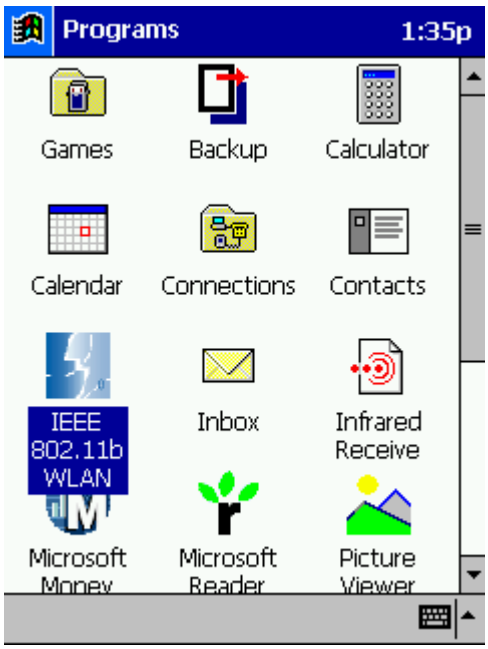
1. Properly insert the IEEE 802.11b WLAN Adapter into the CF slot of your Pocket PC.

2. For the first time installing the adapter, the IP Address page will display automatically. Set IP address, Subnet mask and Default gateway settings. Click OK to save the settings. If later you want to re-enter IP Address page, Click Start→Settings→Connections→Network Adapters→"IEEE 802.11b WLAN Adapter"→Properties→IP Address.





3. Click Start→Programs→IEEE 802.11b WLAN , to view or adjust other configuration settings, such as Mode and SSID etc. Click Apply and Ok to save and implement the settings.



Note!

For additional information of configuring the IEEE 802.11b WLAN Adapter, please refer to Chapter 3 Viewing and editing the settings and the versions.

2.5 “New Partnership” Setup

1. Connect the sync cable to a serial or USB port between the Host computer and the Pocket PC.
2. The “New Partnership” setup wizard automatically starts (if not, click “ActiveSync”) and the “New Partnership” window displays. You will be asked whether to set up a partnership or not. Click Yes, and then click Next.
3. The next page will ask you to name your Pocket PC. Enter a unique device name and then click Next.
4. The next page will ask you to select the type of information you want to synchronize. Select the check boxes of the items you choose. For some items, you may tap Settings to check the advanced settings. Click Apply and Ok to go to the next step.
5. The next page will tell you that the New Partner Setup is complete. Click Finish to exit this setup wizard.
6. In the “Microsoft ActiveSync” window, you can see the device name and synchronization status. Now, you can start to install “IEEE 802.11b WLAN”(see chapter 2.3).

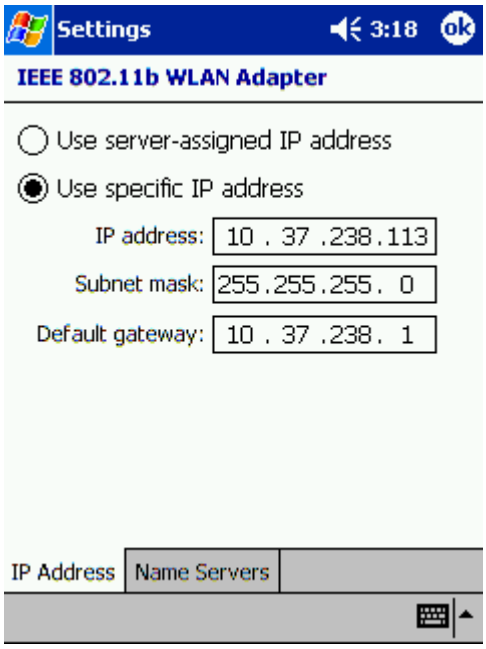
3. Viewing and editing the settings and the versions

To view and edit the settings and versions:

- click Start→Settings→Connections→Network Adapters→"IEEE 802.11 WLAN Adapter"→Properties, or,
- click Start→Programs→IEEE 802.11b WLAN.

3.1 IP Address Page

Use IP Address Page to view and edit the *IP address, Subnet mask* and *Default gateway.*
Click Start→Settings→Connections→Network Adapters→"IEEE 802.11b WLAN Adapter"→Properties→IP Address



- IP Address

IP Address is Internet Protocol Address; a numeric address such as 10.37.238.100 that the domain name server translates into a domain name. Each node on the IP network should have a unique IP address.

- Subnet mask

A number used to identify a subnetwork when multiple networks share an IP address. For example 255.255.255.0

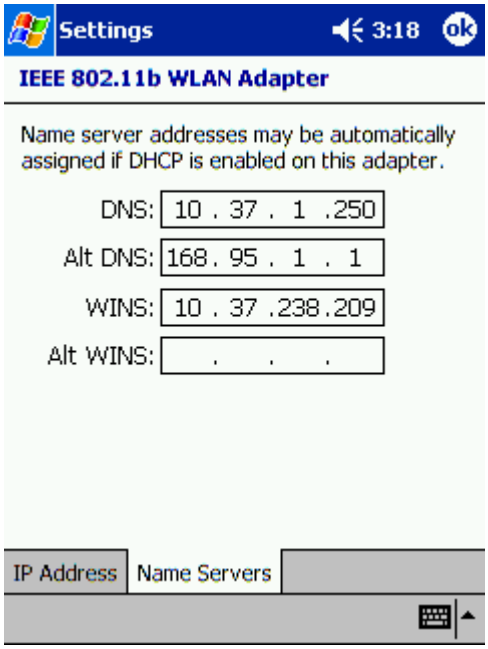
- Default gateway

This is a device used to forward IP packets to and from a remote destination.

3.2 Name Servers Page

Use Name Servers Page to view and edit *DNS, Alt DNS, WINS* and *Alt WINS*.

Start→Settings→Connections→Network Adapters→"IEEE 802.11b WLAN Adapter"→Properties →Name Servers



- DNS

Domain Name System is a database system that translates addresses and domain names. For example, a numeric address like 232.245.021.54 can become something like cba.com. DNS can also be used to control Internet email delivery.

- WINS

In Pocket PC, Windows Internet Naming Service has two functions; one is a Microsoft Net BIO name server that eliminates the broadcasts needed to resolve computer names to IP addresses by providing a cache or database of translations. The other one is to set the IP address of the host computer that you already construct the partnership for Network adapter Active sync purpose. **Note! Without setting the host computer's IP address in the WINS, you cannot wirelessly synchronize your Pocket PC with your host computer.**

- Alt DNS

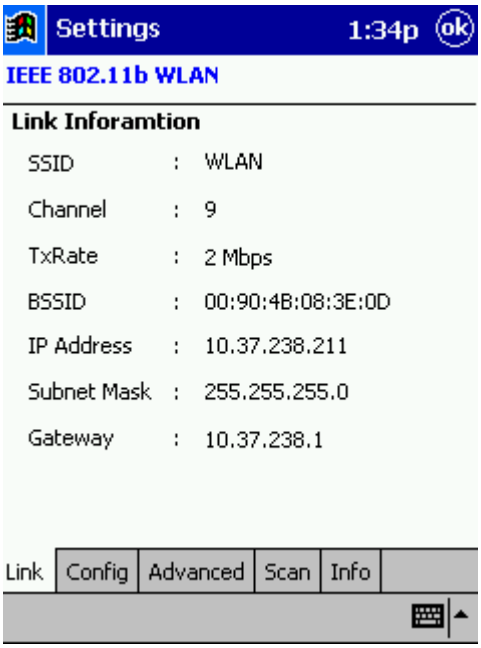
Alt DNS stands for Alternative Domain Name System. Used to substitute main DNS when necessary.

- Alt WINS

Alt WINS stands for Alternative Windows Internet Naming Service. Used to substitute main WINS when necessary.

3.3 Link Page

Use the Link page to view *SSID, Channel, TxRate, BSSID, IP Address, Subnet Mask* and Gateway. Click Start→Programs→IEEE 802.11b WLAN →Link



- SSID: An up to 32 character case sensitive name shared among all devices on a wireless network. The name been selected from the Scan page will appear in this field. The default value is "ANY", which will automatically scan and connect the best performance Access Point nearby.
- Channel: Indicates the channel currently in use for Access Point or 802.11 Ad Hoc stations.
- TxRate: Indicates the current data transmission rate in use.
- BSSID: Indicates the current Basic Service Set ID of the Access Point or 802.11 Ad Hoc network been selected. You can check the BSSID list in the Scan page.
- IP Address: Indicates the current Internet Protocol Address of the network in use.
- Subnet Mask: Indicates the Mask of the subnetwork been used currently.
- Gateway: Indicates the IP Address of the gateway been used currently.

When the adapter is disconnected with the Access Point or the 802.11 Ad Hoc network, "Non-associated" will appear in the BSSID field.

3.4 Configuration Page

Use the Configuration page to set the *Mode, SSID, Channel and Country*, and to view *Link Quality* as well.

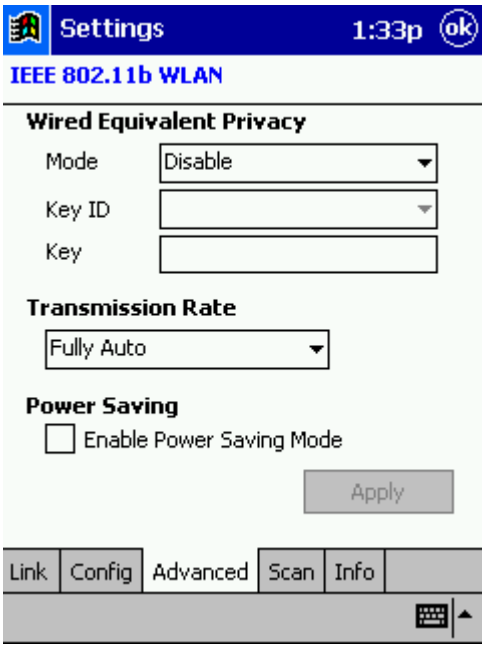
Click Start→Programs→IEEE 802.11b WLAN →Configuration

- Mode: Use the Mode pull-down menu to select the operating mode.
  Infrastructure – This is a default mode. This mode allows the adapter to transmit and receive data with an Access Point. This mode enables roaming between AP cells in the network.
  802.11 Ad Hoc – This mode allows the adapter to form its own local network where adapters, using a shared SSID, communicate peer-to-peer without Access Points.
- SSID: Service Set Identifier is a group name that will be shared by every member of your wireless network. You will only be able to connect with an Access Point (AP), which has the same SSID. Note that the SSID will be case sensitive. Under 802.11Ad Hoc mode, the SSID must be the same among stations so that the computers can communicate properly within the local area network.
- Channel: The channel is set by the adapter, which starts the 802.11Ad Hoc network. Under 802.11Ad Hoc mode. The first station forms the 802.11 Ad Hoc network should choose a proper SSID and the channel for use. Other stations will only need the same SSID set to join the 802.11 Ad Hoc network automatically.
- Country: Select the country where you are. Different countries have different regulations. Please do not illegally use the un-licensed channel.
- Rescan: Used to search the proper Access Point close to the adapter.
- Radio on/off: Click to turn on or turn off the radio of the adapter.
- Link Quality: An indicator of how clearly the adapter can hear the Access Point.

3.5 Advanced Page

Use Advanced page to view and edit *Power Saving Mode*, *Transmission Rate* and *Wired Equivalent Privacy (WEP)*.

Click Start→Programs→IEEE 802.11b WLAN → Advanced



- Wired Equivalent Privacy: To set the adapter security level to prevent information theft, use the Wired Equivalent Privacy pull-down to select different algorithms: Disable, 64-bit or 128-bit. An Access Point and an adapter should use the same encryption algorithm to be able to transmit and receive data.

  Disable: This is the default setting. When Disable is selected, the encryption is disabled.

  64-bit: When 64-bit is selected, the user is required to type 10 hexadecimal values in the following range (0~F). Tap Apply to save and implement the encryption key data.

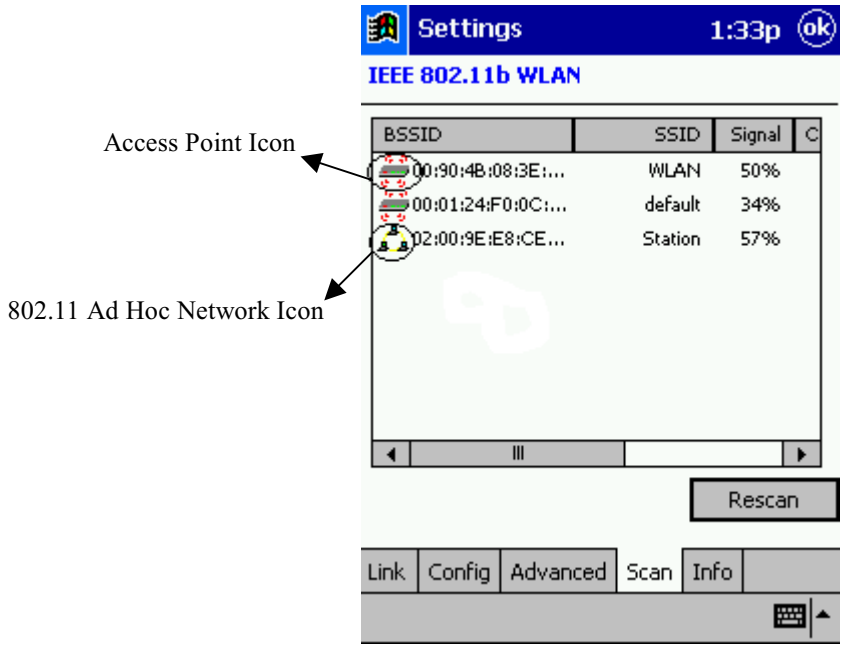
  128-bit: When 128-bit is selected, the user is required to type 26 hexadecimal values in the following range (0~F). The 128-bit encryption option provides a higher level of security than 64-bit encryption while maintaining an 11 Mbps data rate. Tap Apply to save the encryption key data.

- Transmission Rate: Use the Transmission Rate pull-down menu to select one of the transmission rates as follows: Fixed 1Mbps, Fixed 2Mbps, Fixed 5.5Mbps, Fixed 11Mbps Auto Select 1 or 2 Mbps, and Fully Auto. For best performance, select Fully Auto to allow the adapter to automatically adjust the transfer speed.
- Power Saving: Select or clear the check box to enable or disable the Power Saving Mode. If you are in 802.11Ad Hoc mode, you cannot enable Power Saving Mode.

3.6 Scan Page

Use Scan page to scan and select the available Access Points and 802.11 Ad Hoc networks.

Click Start→Programs→IEEE 802.11b WLAN → Scan



- Rescan: The Scan Page displays the available local wireless Access Points and 802.11 Ad Hoc networks. If you don't see all the 802.11b networks you are expecting, click the Rescan button. Double click the BSSID field to choose the wireless network you want to connect with. Once the wireless network is chosen, Scan page will disappear and Link page with current link information will display automatically.
- Network Selection: Each Access Point is identified by its BSSID and SSID. Double-click on the BSSID to choose the Access Point/802.11 Ad Hoc group you want to connect with.
- Signal: Indicates the signal strength of the Access Point.
- Channel: Indicates what channel the network is set to use.
- Encryption (Scroll to the right): Indicates whether or not encryption has been enabled.

3.7 Info Page

Use Info Page to view *MAC Address, Utility version, Driver version* and *Firmware version*.
Click Start→Programs→IEEE802.11b WLAN →Info

- MAC Address

MAC stands for Media Access Control address. The physical address of a device connected to a network expressed as a 48-bit hexadecimal number. This parameter cannot be changed.

- Versions

Please verify the versions to ensure optimal functionality.

4. Specifications

General

Data speed option:	Fully Auto, Fixed 11, Fixed 5.5, Fixed 2, Fixed 1 and Auto Select 1 or 2 Mbps per channel
Solution (Chipset):	Intersil Prism2.5→Mac with B.B (ISL3873), I/Q Modem (ISL3783), RF/IF(ISL3685) and RF Pwr Amplifier (ISL3984)
Operation range:	Outdoor (line of sight): 300 meter max at 11 Mbps Indoor: 35 to 100 meter max at 11 Mbps
IF bandwidth/channel bandwidth:	17MHz
Transmit first side lobes:	-30dBc
Transmit second side lobes:	-50dBc
Receiver sensitivity: (BER<1e^{-5}) (dBm)	Auto-select: -84dBm 11Mbps: -84dBm 5.5 Mbps: -86dBm 2 Mbps: -88 dBm 1 Mbps: -90 dBm
Receiver sensitivity: (1e^{-5} BER)	11Mbps: -84dBm
Selectable sub-channels:	USA, Canada: 11 channels (1~11) 2412M, 2417M, 2422M, 2427M ,2432M, 2437M, 2442M, 2447M, 2452M, 2457M, 2462MHz ETSI: 13 channels (1~13) 2412M, 2417M, 2422M, 2427M, 2432M, 2437M, 2442M, 2447M, 2452M, 2457M, 2462M, 2467M, 2472MHz FRANCE: 4 channels (10~13) 2457M, 2462M, 2467M, 2472MHz JAPAN: 13 channels (1~13) .or. 14th channel 2412M, 2417M, 2422M, 2427M, 2432M, 2437M, 2442M, 2447M, 2452M, 2457M, 2462M, 2467M, 2472Mhz, 2484Mhz
Certifications	FCC part 15.247 class B (USA) IC RSS 210 (Canada) ETS 300-328, ETS300-826, EN60950 RCR STD-33, ARIB STD-T66 (Japan)
Standard:	IEEE802.11b and Wi-Fi compliance.

LED Indicators	Off—Power off Steady red—Connected to Access Point Flashing red—Searching for the Access Point (disconnected), or, being under 802.11 Ad Hoc mode (connected or disconnected)
Power Consumption	Run mode: Tx: 310mA(typical), Rx: 260mA(typical) Power saving mode: 13mA Idle mode: 3mA
ActiveSync	Supports wireless synchronization with laptop or desktop computer.
Antenna:	External Ceramic antenna directly soldered on CF PCB module through the coaxial cable.

Bounded Specification:

Rated Spec. / Conditions	Tx Power (dBm)	Rx Sensitivity (dBm)	PER (%)	FTP (Mbps)
LV (3.13v)	13 to 17	-84	Under 8	Over 5
HV (5.25)	13 to 17	-84	Under 8	Over 5
LT (0℃)	13 to 17	-84	Under 8	Over 5
HT (60℃)	13 to 17	-84	Under 8	Over 5
LT-LV	13 to 17	-84	Under 8	Over 5
HT-LV	13 to 17	-84	Under 8	Over 5
LT⟷HTCycling	13 to 17	-84	Under 8	Over 5
Long Range (300m)	13 to 17	-84	Under 8	Over 5

Network Information

Security	64-bit WEP encryption, optional 128-bit RC4
Network Architecture	Supports 802.11 Ad Hoc peer-to-peer networks and communication to wired networks via Access Point
Operation System:	Windows CE3.0, Rapier/Merlin.
Roaming	Roaming among Access Points

Radio

Frequency Range	2.4G~2.5GHz
IF Frequency:	374MHz
LO Frequency:	Channel frequency-IF frequency
Radio Type	DSSS (Direct Sequence Spread Spectrum) with DBPSK (1Mbps), DQPSK (2Mbps), and CCK (5.5&11Mbps)
Radio Power	+13~+17 dBm
Supply Voltage	(3.3~5V)± 5% dc

Environmental	
Temperature Range	0~60℃(operating); -20~75℃(storage)
Humidity (non-condensing)	5% to 95%
Electrical Interface	50 pin standard Compact Flash connector

Physical	
Form Factor	Compact Flash Type II
Weight	0.88oz (25g)
Dimension	37mm(W,±0.2)×54mm(L,±0.2) ×4.47+0.08mm(T)
Shipping Configuration	IEEE802.11b WLAN Adapter, Quick Start Guide, Installation CDROM and Users Guide.

5. Troubleshooting

If you encounter some problems while using our product, please refer to this troubleshooting section. After installing the driver and utility, you can find more information from Help File on your Pocket PC.

Problems	Solutions
The Pocket PC does not recognize the adapter	■ Uninstall the driver and reinstall the driver again. ■ Check whether the adapter is inserted properly. ■ Remove and reinsert the adapter.
Cannot connect to the network	■ Check the SSID is correct (note that it is case-sensitive) ■ Check Link Quality in Configuration Page. If the link quality is poor, rescan and find another Access Point. ■ Check the operating mode is set properly. See Chapter 3.4 Configuration Page. ■ Check the WEP key is correctly entered (see Chapter 3.5 Advanced Page). ■ Be sure you are in the range of a working Access Point.
IP address is not recognized by the Pocket PC	■ Remove and reinsert the adapter. ■ Restart the Pocket PC for changes to the IP address to take effect.
The host computer cannot wirelessly connect with my Pocket PC?	■ Make sure you have setup the partnership for your Pocket PC and your host computer. ■ Make sure you are within the range of a working network. ■ Make sure you have entered the IP address of the host computer as the WINS server on your Pocket PC. ■ Reset your Handheld PC or Pocket PC to make the TCP/IP settings take effect. ■ Make sure the SSID, WEP keys and channel for all devices in the network are set the same.
Cannot edit the "Channel" and "Country" field in "Infrastructure" Mode?	■ In Infrastructure mode, country and channel are decided by the Access Point. You can only

	join the existing network formed by the working Access Point, not to create a new Wireless Network.
The Pocket PC freezes	■ Reset the Pocket PC.