802.11b Wireless

LAN Cardbus

User Guide

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Federal Communication Commission 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 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 technician for help.

FCC Caution

This equipment must be installed and operated in accordance with provided instructions and a minimum 2.5 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.
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.
Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Federal Communication Commission (FCC) Radiation Exposure Statement
This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5cm (8 inches) during normal operation.

R&TTE Compliance Statement
This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)
The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety
This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use
The ETSI version of this device is intended for home and office use in Austria Belgium, Denmark, Finland, France, (with Frequency channel restrictions) Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.
The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

EU Countries Not intended for use
None.

Potential restrictive use
France: Only channels 10,11,12, and 13

Table of Contents

FEATURES

- Complies with IEEE 802.11b 2.4GHz (DSSS) standard
- Complies with 32-bit Cardbus interface
- Supports PC Card hot swap and true Plug n' Play
- Works with all existing network infrastructure
- Supports up to 128-bit WEP Data Encryption function
- Up to 11 Mbps high speed data transfer rate
- Rich diagnostic LED indicators with built-in antenna
- Complies with Window 98/98SE/2000/ME/XP
- Supports Power Save Mode
- Easy to install and configure

SYSYEM REQUIREMENTS

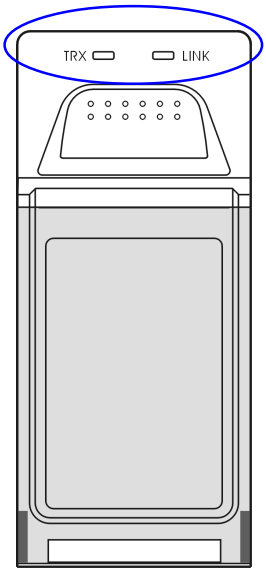
- Laptop with 32-bit Cardbus Controller
- Windows 98/98SE/2000/ME/XP opearting systems

PACKAGE CONTENTS

- Wireless Cardbus X 1
- Installation CD (Driver/Utility/User Guide) X 1
- Quick Guide X 1

LED INDICATORS

LED	DESCRIPTION
LINK	LIT: Connects to a network OFF: No conneciton
TRx	BLINK: Transmitting and receiving data. OFF: Standby



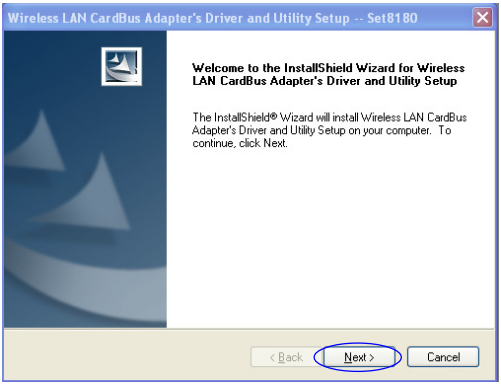
SPECIFICATIONS

Standard	• IEEE 802.11b
Adapter Type	• 32-bit Cardbus interface
Protocols	• TCP/IP • IPX/SPX • NetBEUI • NDIS5 • DHCP
Data Security	• 64/128-bit WEP (Wired Equivalent Privacy) Encryption and SW TKIP
Data Rate	Mbps/channel • 11 : CCK • 5.5 : CCK • 2 : DQPSK • 1 : DBSK
Operating Ranges	• Indoors: 30-100 m • Outdoors: 100-300 m
Diagnostic LED	• Link, TRx
Power Voltage	• 3.3V
Power Consumption	• Tx consumption: 282 mA • Rx consumption: 165 mA • Power Save Mode power consumption: 20 mA
RF Output	• 50mW
Receive Sensitivity	Nominal Temp Range: • 11 Mbps FER < 8%@ - 83 dbm
Media Access Protocol	• CSMA/CA with ACK
Network Architecture	• Supports Ad-Hoc Mode or AP Infrastructure Mode • Compatible with IEEE 802.11b Standard
Antenna	• Built-in Diversity Antenna
Frequency Range	• 2.4 - 2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)
Operating Channels	• 1-11 United States (FCC) • 1-11 Canada (DOC) • 1-13 Europe (Except France) (ETSI)
Physical Dimensions	• L = 124.3 ; W = 54 ; H = 9
Temperature	• Operating Temperature: 0°C to 65°C • Storage Temperature: -20°C to 80°C
Humidity	• 0%~95% (Non-condensing)
Emissions	• FCC Part 15 in US • EN300328 and EN300826 (EN301489-17) in Europe
Warranty	• 1 year

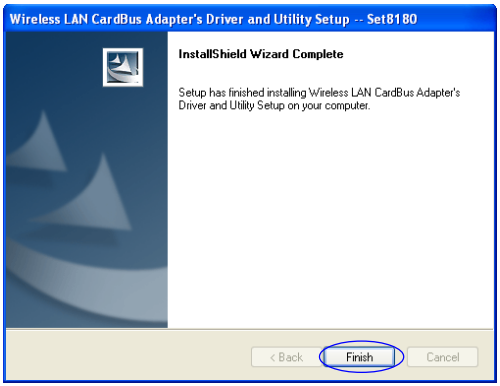
Chapter 1. Driver & Utility Installation

Note1: The following installation was operated under Windows XP. (Procedures are very similar for Windows 98/98SE/Me/2000.)
Note2: If you have installed the Wireless PC Card driver & utility before, please uninstall the old version first.

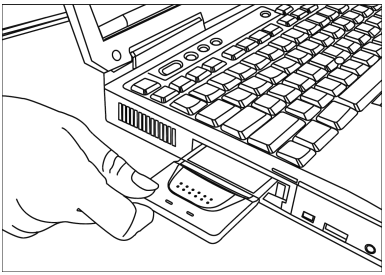
1. Insert the installation CD into the CD-ROM drive of your laptop and execute the "**setup.exe**" program.
2. The following dialog box appears. Click **Next** to continue.



3. The installation starts. Upon completion, click **Finish** to exit.

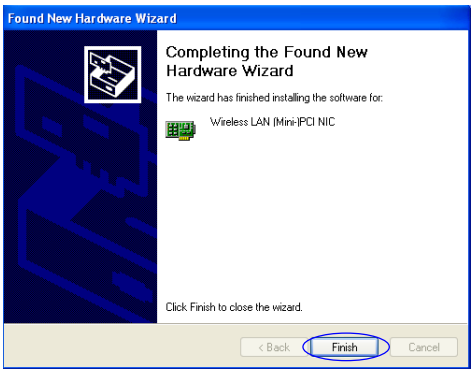


4. Insert the Cardbus adapter into a Type II PCMCIA slot of your laptop as illustrated below.



5. The **Found New Hardware Wizard** dialog box appears. Click **Next** to continue.

6. The system will find its driver and complete the installation automatically.
7. Click **Finish** to exit.



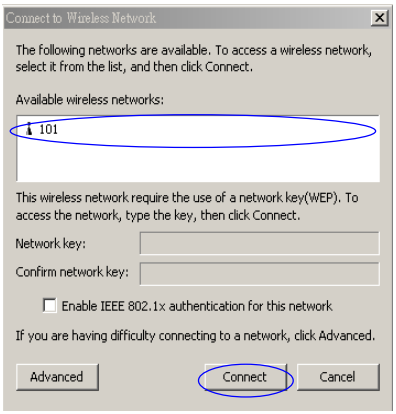
Note: If you are installing the driver and utility in Windows 98/98SE/ME, the system may ask you to restart the computer, click **OK** to finish.

Using the Cardbus Adapter

Double click on the icon located on the system tray (Windows taskbar) or the shortcut on the desktop. Select a available wireless network from the list and click **Connect** to start using the adapter.

On the desktop

On the system tray



Using the Cardbus Adapter Configuration Utility

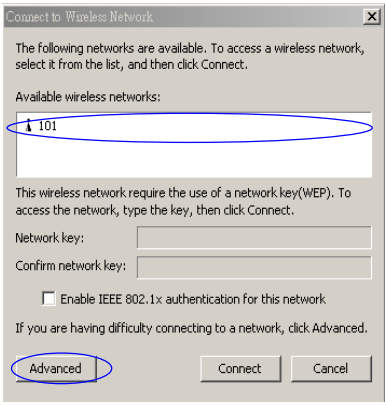
The cardbus adapter utility is a helpful application that allows you to monitor and configure the WLAN cardbus adapter during the communication.

To launch the utility, do either of the following:

1. Double click on the utility shortcut on the desktop.

or

2. Double click on the icon located on the system tray (Windows taskbar). Select a available wireless network from the list and click **Advanced**.

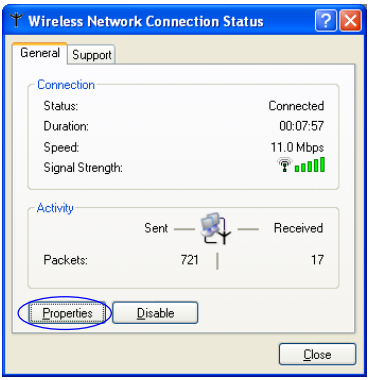


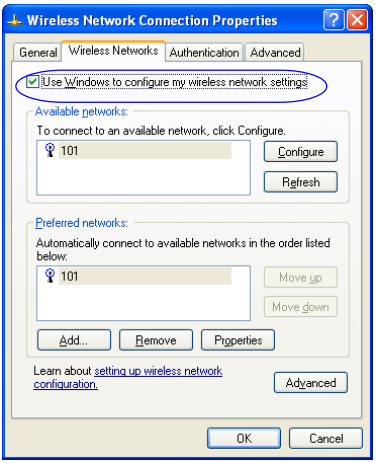
Using Windows XP WLAN Utility

Windows XP itself has built-in wireless network utility. However we strongly recommend you to use the utility of this particular cardbus adapter bundled with the package.

Note: If you choose to use Windows WLAN utility, the cardbus adapter utility is still available though some functions will be disabled.

To check the utility setting, double click on the  icon located on the system tray, the **Wireless Network Connection Status** dialog box appears. Click on the **Properties** button and select the **Wireless Networks** tab. To use cardbus adapter utility and disable Window utility, uncheck **"*Use Windows to configure my wireless network settings*"**.



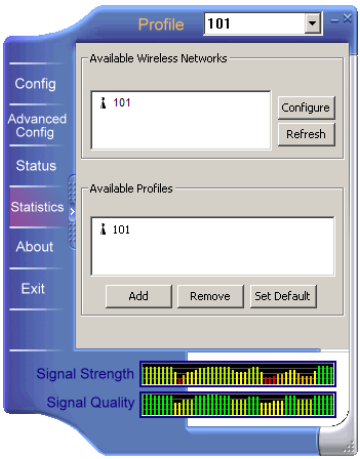


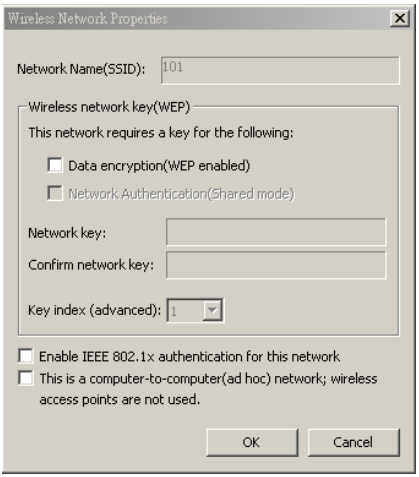
Chapter 2. Cardbus Adapter Utility Configuration

This utilty provides tools for users to configure and diagnose the wireless network.

Configuration

In **Config** page you can set up the following parameters for the adapter.





- **Profile**

  Select an available network from the list.

- **Available Wireless Network(s)**

  The list displays the available networks nearby.

  Configure: Press the button to enter Wireless Network Properties dialog box. In this page, you can choose to enable data encryption, network authentication, IEEE 802.1x authentication, ad-hoc mode network and choose the key index you want to communicate with the host station.

  Refresh: Press the button to survey all the wireless devices nearby.

- **Available Profile(s)**

  The list displays the available profiles. You can save different configurarion for different profiles.

  Add: Press to add more profiles.

  Remove: Press to delete current selected profile.

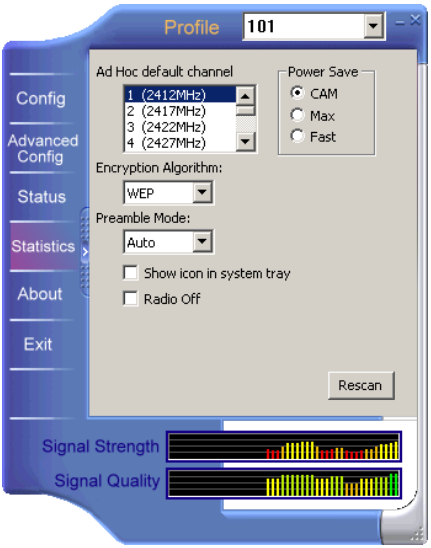
  Set Default: Press to set the selected profile as default.

  Edit: Press to enter Wireless Network Properties dialog box. Refer to “Configure” above.

- **Signal Strength**
  Displays the signal strength level. The strength level is indicated by colors. Green indicates excellent signal, yellow means the signal is fair and red means the signal is poor.
- **Signal Quality**
  Displays the quality of the connection. Green indicates excellent signal, yellow means the signal is fair and red means the signal is poor.

Advanced Configuration

In **Advanced Config** page you can set up the following parameters for the adapter.

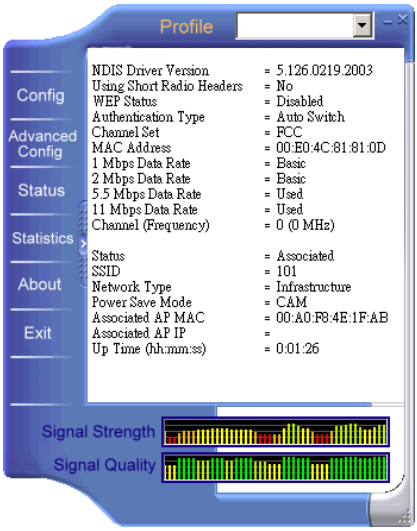


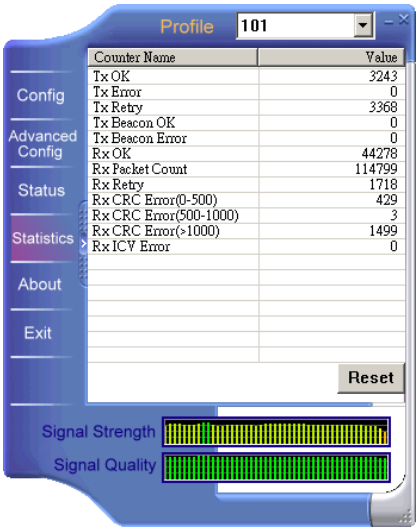
- **Profile**
  Select an available network from the list.
- **Ad Hoc default channel**
  Select a radio channel for networking in Ad Hoc mode.
- **Power Save**
  CAM(Continuous Access Mode): The adapter is always in active mode when enabled.
  Max: Set to enable the adapter in most power saving mode when idled.
  Fast: Set to enable the adapter in power saving mode when idled. But some functions are still available.
- **Encryption Algorithm**
  WEP: Select to enable the WEP Encryption Algorithm. When this item is selected, continue to set Network Key.
  TKIP: Select to enable the TKIP Encryption Algorithm. When this item is selected, continue to set Network Key.
  AES: Select to enable the AES Encryption Algorithm. When this item is selected, continue to set Network Key.
- **Preamble Mode**
  Auto: Select to enable Auto Preamble Mode.
  Long: Select to enable Long Preamble Mode.
  Short: Select to enable Short Preamble Mode.
- **Show icon in system tray**
  Enable/disable the utility icon shown on the Windows taskbar.
- **Radio Off**
  Disable the wireless connection.

- **Rescan**
  Click the button to search for more available network connections (e.g. an access point).
- **Signal Strength**
  Displays the signal strength level. The higher the frequency wave, the more radio signal been received.
- **Signal Quality**
  Displays the quality of the connection. The higher the frequency wave, the better the quality.

Status

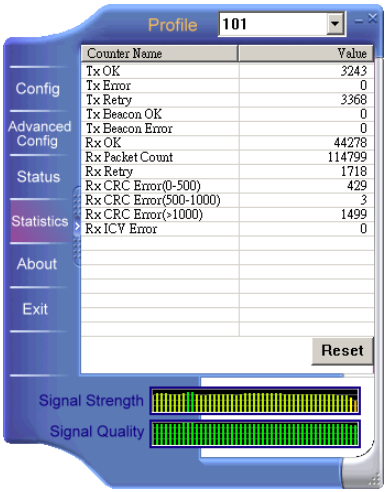
Status page (read-only) displays the *NDIS Driver Version*, *WEP Status*, *MAC Address*, *SSID* and etc. You can monitor the link status and get all the necessary information.





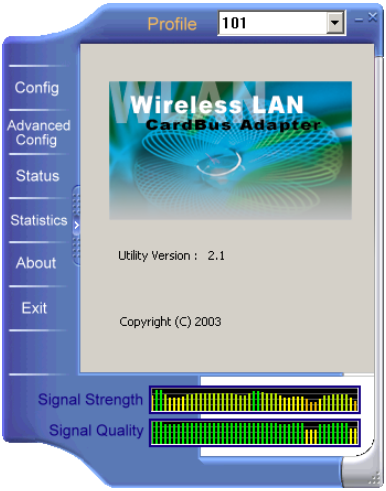
Statistics

Statistics page displays the current transmission and receiving status. Click **Reset** to stop the current communication and re-start the transmission and receiving.



About

About page displays the copyright and version information about the utility.



Exit

Click to close the utility.

Chapter 3. Troubleshooting

This chapter provides solutions to problems that might occur during the installation and operation of the cardbus adapter. Please read and consult to the following remedies to overcome these difficulties.

Q1. Does my cardbus adapter installed successfully?

A1. Follow the steps below to check.

- Right-click on **My Computer** icon and select **Properties**.
- Select **Hardware** tab and click **Device Manager**.
- Double click on **Network Adapters** and right-click on your cardbus adapter.
- Select **Properties** and check the *Device status* field.
- Select **Driver** tab to check if the driver is installed properly.

Q2. My notebook does not recognize the cardbus adapter.

A2. This is often caused by an unsuccessful installation. See below for remedies.

- Make sure the adapter is properly inserted into the PC card slot of your notebook.
- If Windows does not detect the adapter after the insertion the device, remove completely the driver and repeat the installtion (hardware and software) again.

Q3. Can not connect to the access point.

A3. See below for remedies.

- Make sure you did not set
- Make sure the Network Name (SSID) on the adapter is exactly the same as it is on the access point.
- Check the distance between your adapter and the access point.
- Disable all security settings. (WEP, TKIP, AES)
- Make sure your adapter is in proper channel.
- Turn off the Access Point and the computer with the adapter. Turn on the Access Point then your computer.
- Press the Refresh button in the Utility.

Q4. The Link LED and the TRx LED of the cardbus adapter are not on.

A4. This is often caused by an unsuccessful installation. See below for remedies.

- Check if the hardware (adapter) is found by the system.
  Right-click on **My Computer** icon and select **Properties**. Select **Hardware** tab and click **Device Manager**. Double click on **Network Adapters**. Check if your cardbus adapter is listed.

  If the adapter is not listed in the **Device Manager**, re-load it.
- Check if the driver is installed properly.
  Right-click on your cardbus adapter. Select **Properties** and check the *Device status* field. Select **Driver** tab to check if the driver is installed properly.

  If the driver is not successfully installed, click **Update Driver** to re-install.

Chapter 4. Glossary

IEEE 802.11b standards (802.11 High Rate or Wi-Fi)
A wireless LAN technology developed by the IEEE that provides 11 Mbps transmission in the 2.4 GHz band.

Ad-Hoc Mode
An 802.11 networking framework in which devices or stations communicate directly with each other without the use of an access point (AP).

Infrastructure Mode
An 802.11 networking framework in which devices communicate with each other by the use of an Access Point (AP).

WEP (Wired Equivalent Privacy)
A security protocol for wireless local area networks (WLANs) defined in the 802.11b standard. WEP aims to provide the same level of security as that of a wired LAN.

TKIP (Temporal Key Integrity Protocol)
A security protocol for wireless local area networks (WLANs) defined in the 802.11i standard. A major difference from WEP is that TKIP changes temporal keys every 10,000 packets. This provides a dynamic distribution method that significantly enhances the security of the network communication.

AES (Advanced Encryption Standard)
A security protocol for wireless local area networks (WLANs) defined in the 802.11i standard. AES is the U.S. government's new cryptography algorithm, a chip-based security, which ensures the highest degree of security for digital data over airwaves for now.

SSID (Service Set Identifier)
The SSID is the unique name identified in a wireless LAN. You may specify a SSID for the adapter and then only the device with the same SSID can interconnect to the adapter.

MAC Address (Media Access Control address)
The MAC address is a physical address specified to the network interface card. The MAC address consists of 3-byte vendor code and 3-byte user code. The vendor code conforms to the IEEE standards and the user code is dedicated by the network interface card manufacturer.

Chapter 5. Appendix

The list below displays the channels supported by this WLAN cardbus adapter.

Channel Number	Center Frenquency	FCC	Canada	ETSI	Spain	France
1	2412	✔	✔	✔		
2	2417	✔	✔	✔		
3	2422	✔	✔	✔		
4	2427	✔	✔	✔		
5	2432	✔	✔	✔		
6	2437	✔	✔	✔		
7	2442	✔	✔	✔		
8	2447	✔	✔	✔		
9	2452	✔	✔	✔		
10	2457	✔	✔	✔	✔	✔
11	2462	✔	✔	✔	✔	✔
12	2467			✔		✔
13	2472			✔		✔