TRENDnet®

User's Guide

TEW-421PC
TEW-423PI

Regulatory notes and statements

Wireless LAN, Health and Authorization for use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions however are far much less than the electromagnetic energy emissions from wireless devices like for example mobile phones. Wireless LAN devices are safe for use frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments for example:

·On board of airplanes, or

·In an explosive environment, or

·In case the interference risk to other devices or services is perceived or identified as harmful

In case the policy regarding the use of Wireless LAN devices in specific organizations or environments (e.g. airports, hospitals, chemical/oil/gas industrial plants, private buildings etc.) is not clear, please ask for authorization to use these devices prior to operating the equipment.

Regulatory Information/disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, of the substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

USA-FCC (Federal Communications Commission) statement

This device complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause interference, and

2. This device must accept any interference, including interference that may cause undesired operation of this device.

FCC Radio Frequency Exposure statement

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65 and found compliant to the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices. The radiated output power of this Wireless LAN device is far below the FCC radio frequency exposure limits. Nevertheless, this device shall be used in such a manner that the potential for human contact during normal operation is minimized.

When nearby persons has to be kept to ensure RF exposure compliance, in order to comply with RF exposure limits established in the ANSI C95.1 standards, the distance between the antennas and the user should not be less than 20 cm.

FCC 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. If not installed and used in accordance with the instructions, it 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 and correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.

2. Increase the distance between the equipment and the receiver.

3. Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

4. Consult the dealer or an experienced radio/TV technician for help.

Export restrictions

This product or software contains encryption code that may not be exported or transferred from the US of Canada without an approved US Department of Commerce export license.

Safety Information

Your device contains a low power transmitter. When device is transmitted it sends out radio frequency (RF) signal.

CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Protection requirements for health and safety – Article 3.1a

Testing for electric safety according to EN 60950 has been conducted. These are considered relevant and sufficient.

Protection requirements for electromagnetic compatibility – Article 3.1b

Testing for electromagnetic compatibility according to EN 301 489-1, EN 301 489-17 and EN 55024 has been conducted. These are considered relevant and sufficient.

Effective use of the radio spectrum – Article 3.2

Testing for radio test suites according to EN 300 328-2 has been conducted. These are considered relevant and sufficient.

CE in which Countries where the product may be used freely:

Germany, UK, Italy, Spain, Belgium, Netherlands, Portugal, Greece, Ireland, Denmark, Luxembourg, Austria, Finland, Sweden, Norway and Iceland.

France: except the channel 10 through 13, law prohibits the use of other channels.

TABLE OF CONTENT

INTRODUCTION

Congratulations on your purchase of this 54Mbps IEEE 802.11g Wireless LAN Adapter.

This manual contains detailed instructions regarding the operation of this product. Please keep this manual for future reference.

With a Wireless LAN Adapter, a laptop or desktop computer can communicate with another computer in a wireless way. An easy-to-use utility is bundled with Wireless LAN Adapter for configuration, monitoring, and diagnosis purposes.

Wireless LAN Adapter can wirelessly transmit and receive data at a speed of up to 54Mbps.

The Wireless LAN Adapter provides users with access to real-time information anywhere in their organization. The mobility of the Wireless LAN Adapter provides productivity and service, which are not available under wired networks. The Wireless LAN Adapter configuration can easily adapt from peer-to-peer networks, suitable for a small number of users, to full infrastructure networks of thousands of users that allow roaming around a broad area.

Overview of this User's Guide

Introduction.	Describes the 54Mbps IEEE 802.11g Wireless LAN Adapter.
Unpacking and Setup.	Helps you get started with the basic installation of the 54Mbps IEEE 802.11g Wireless LAN Adapter.
Hardware Installation.	Describes the LED indicators of the 54Mbps IEEE 802.11g Wireless LAN Adapter.
Software Installation.	Describes how to setup the driver and the utility setting.
Technical Specifications.	Lists the technical (general, physical and environmental) specifications of the 54Mbps IEEE 802.11g Wireless LAN Adapter.

UNPACKING AND SETUP

This chapter provides unpacking and setup information for the 54Mbps IEEE 802.11g Wireless LAN Adapter.

Unpacking

The box should contain the following items:

- One 54Mbps IEEE 802.11g Wireless LAN Adapter
- One Driver & Utility with User's Guide CD-ROM
- One Quick Installation Guide

If any item is found missing or damaged, please contact your local reseller for replacement.

Setup

Before installation, check the following:

- Make sure your computer is running at least a 300Mhz or above processor with 256MB RAM or above
- The operating system on your computer must be the following: Windows XP/2000/ME/98SE
- Make sure your computer has a 32-bit CardBus Type II Card slot (TEW-421PC)
- Make sure your computer has a 32-bit PCI 2.2 slot (TEW-423PI)
- Make sure the environment has minimal interference and obstructions

LED INDICATORS

LED Indicator for CardBus

Link

The Link LED lights green when the 54Mbps IEEE 802.11g Wireless LAN Adapter is connected to wireless network successfully.

ACT (Activity)

The ACT LED blinks green when the 54Mbps IEEE 802.11g Wireless LAN Adapter is transmitting or receiving data.

LED Indicator for PCI

Link

The Link LED lights green when the 54Mbps IEEE 802.11g Wireless LAN Adapter is connected to wireless network successfully.

Check the Installation

The LEDs of the Wireless LAN Adapter are clearly visible and the status of the network link can be seen instantly:

1. Once the device is plugged into the computer's CardBus/PCI slot, the LED of the Wireless LAN Adapter will light up indicating a normal status.
2. Once the device is plugged into the computer's CardBus and the drivers are installed, the ACT LED will start alternate blinking which means the device is beginning to scan for nearby wireless devices (TEW-421PC only).
3. When the Wireless LAN Adapter links up and transmit data to the Access Point or to other Wireless LAN station, the Link LED will light green.

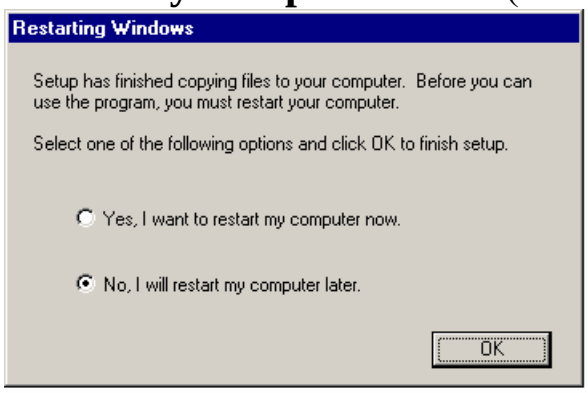
HARDWARE AND SOFTWARE INSTALLATION

This section will lead you to install the driver and utility of the Wireless LAN Adapter.

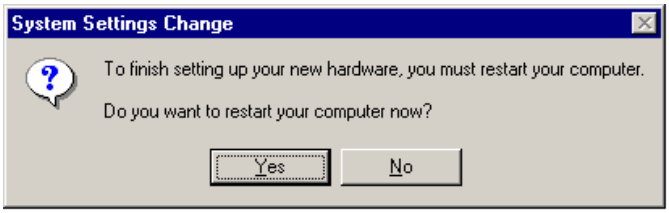
Windows 98SE/ME/2000/XP Utility and Driver Installation

1. Insert the Utility and Driver CD-ROM into your computer's CD-ROM Drive and then click **Install Utility**. If the autorun window does not appear, go to the Start menu, choose ***Run***, type "D:\Setup.exe" in the dialog box (D:\ will depend on where your CD-ROM drive is located) and click **OK**.

2. The Install Shield Wizard screen will appear. Click "**Next**" to continue.
3. The installation program will help in setting up the Wireless LAN utility.
4. Click **Finish**.
5. Click **No, I will restart my computer later** (Windows 98SE and ME only)



6. Shutdown your computer, plug the Wireless LAN Adapter into an available CardBus or PCI slot and then reboot the computer.
7. Drivers will install automatically.
8. Click **Yes** to restart your computer (Windows 98SE and ME only).



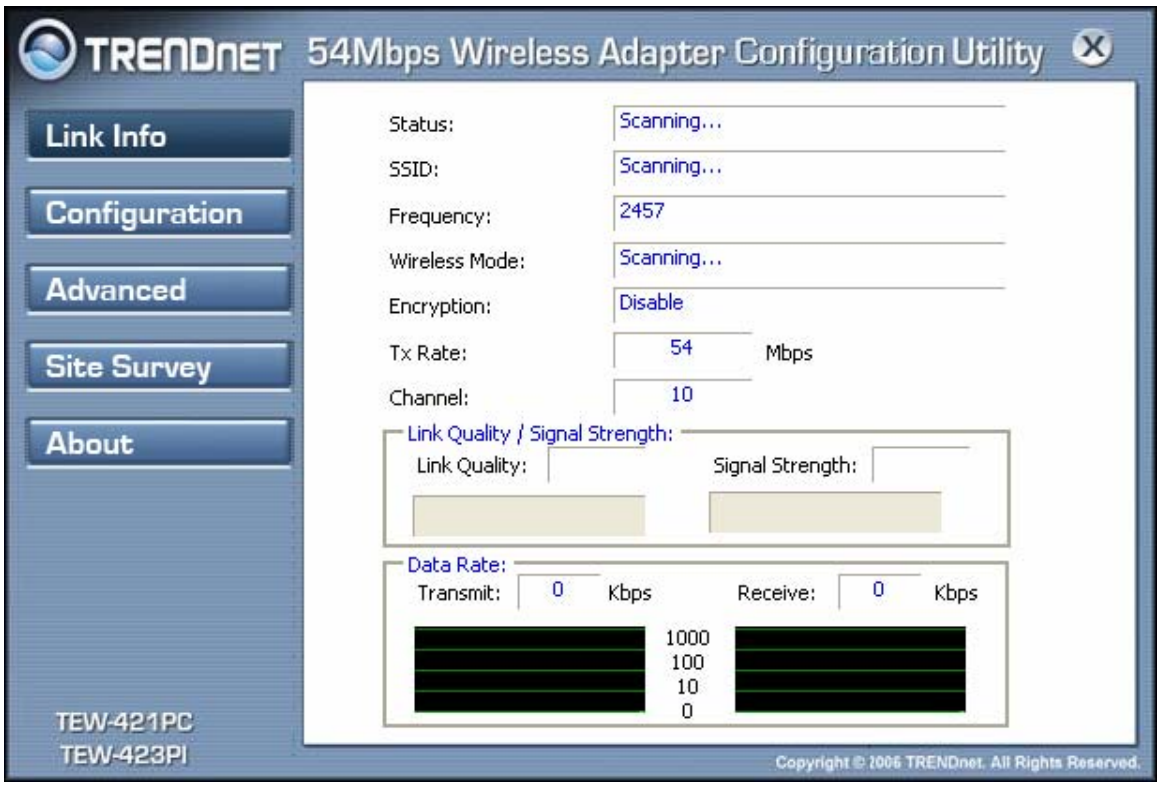
WIRELESS UTILITY SETTING

The user can configure the wireless settings using the Wireless Adapter Configuration Utility. Double-click the utility icon that appears in the taskbar.

The Wireless Adapter Configuration Utility is divided into five sections: Link Info, Configuration, Advanced, Site Survey and About.

Link Information

The default page is as below after launching the Utility program.



Status: Shows the BSSID associated, which can be used to identify the wireless network.

SSID: Shows the current SSID, which must be the same for the wireless client and AP in order for communication to be established.

Frequency: Shows the current frequency used for wireless network.

Wireless Mode: Shows the current wireless mode used for wireless communication.

Encryption: Shows the current encryption mode used for wireless network.

TX Rate: Shows the current data rate used for transmitting.

Channel: Shows the current channel for communication.

Link Quality: Shows the link quality of the wireless LAN adapter with the Access Point.

Signal Strength: Shows the wireless signal strength of the connection between the wireless LAN adapter and the Access Point.

Data Rate: Shows the data transfer statistics; the calculation is based on the number of packets transmitted and received.

Configuration

This is the screen where you set the basic settings of the wireless LAN adapter.

SSID: Service Set Identifier, which is a unique name shared among all clients in a wireless network. The SSID must be identical for each client and node in the wireless network.

Wireless Mode: There are two modes available for selection

- Infrastructure – to establish wireless communication with LAN and other wireless clients through the use of Access Points.
- Ad-Hoc – to establish point-to-point wireless communication directly with other wireless client devices such as wireless network PCI Adapters.

Adhoc Band: There are two bands available for selection- 11B and 11G

Channel: The channel the AP operate on. Users can select channels ranging from 1 to 11 for North America (FCC) domain and 1 to 13 for European (ETSI) domain.

Power Mode: There are 3 modes to choose.

- Continuous Access Mode (default) – the wireless LAN adapter is constantly operating with full power and it consumes the most power.
- Maximum Power Save – the wireless LAN adapter consumes the least power and only operates when there is wireless network activity.
- Power Save – the wireless LAN adapter consumes moderate level of power.

Preamble: Select "Long" or "Short & Long" Preamble types. Preamble is a sequence of bits transmitted at 1Mbps that allows the PHY circuitry to reach steady-state demodulation and synchronization of bit clock and frame start. Two different preambles and headers are defined: the mandatory supported Long Preamble and header, which interoperate with the 1 Mbit/s and 2 Mbit/s DSSS specification (as described in IEEE Std 802.11), and an optional Short Preamble and header (as described in IEEE Std 802.11b). At the receiver, the Preamble and header are processed to aid in demodulation and delivery of the PSDU. The Short Preamble and header may be used to minimize overhead and, thus, maximize the network data throughput. However, the Short Preamble is supported only from the IEEE 802.11b (High- Rate) standard and not from the original IEEE 802.11. That means that stations using Short-Preamble cannot communicate with stations implementing the original version of the protocol.

Support Band: There are two modes the users can select; 11B and 11G. The default setting is 11B and 11G are enabled, which is interoperable with both 11B and 11G devices.

Note: *user must select at least one: 11B or 11G.*

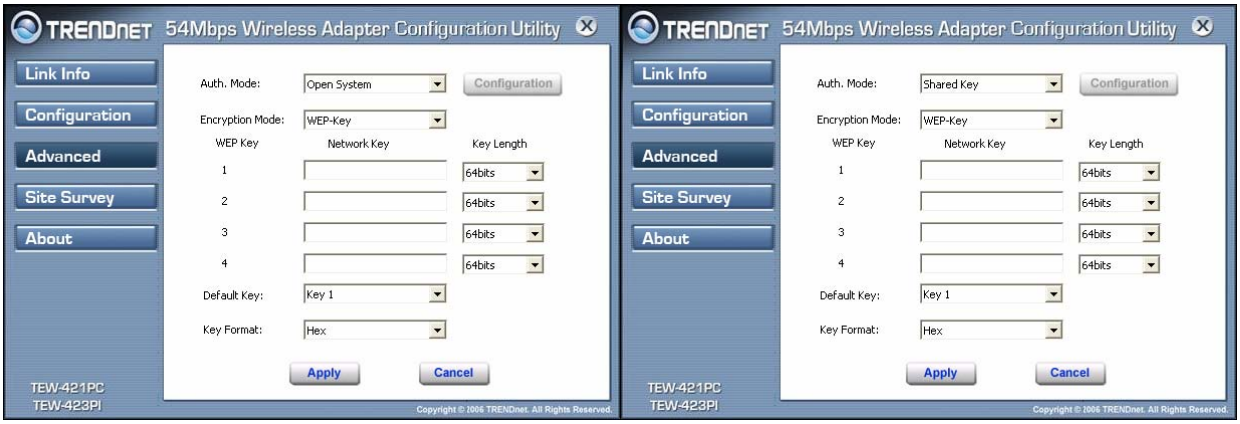
Click "Apply" to save any changes.

Advanced

This screen is where you configure the Security settings for the 54Mbps IEEE 802.11g Wireless LAN Adapter.

Auth Mode: In the dropdown list, select one of the following authentication types: Disable, Open System, Shared Key, WPA, WPA-PSK, WPA2 and WPA2-PSK.

Open System / Shared Key



WEP Key 1~4: choose the encryption, either in HEX or ASCII formats, and enter the password in the blank space.

Key Length: select 64 or 128-bit as the length of the keys. If you select 64-bit Hex, you must type 10 characters in the following range (0~F, hexadecimal). If you select 64-bit ASCII, you must type 5 characters in the following range (0~9, A~Z and a~z Alphanumeric). If you select 128-bit Hex, you must type 26 characters in the following range (0~F, hexadecimal). If you select 128-bit ASCII, you must type 13 characters in the following range (0~9, A~Z and a~z Alphanumeric).

Default Key: select one of the 4 keys to use.

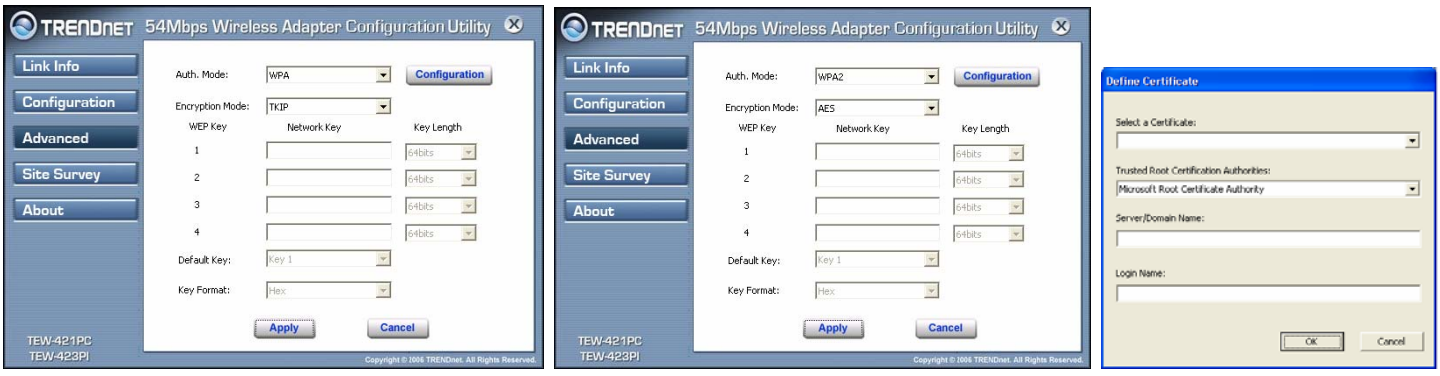
Key Format: ***ASCII*** or ***HEX***.

WPA-PSK / WPA2-PSK

If WPA-PSK or WPA2-PSK is selected, the above screen is shown. Please select the encryption type from drop down menu and press ***Configuration*** button to configure the passphrase key.

Encryption: Select the encryption type for either TKIP or AES.

WPA / WPA2



If WPA or WPA2 is selected, the above screen is shown. Please select the encryption type from the drop down menu and press ***Configuration*** to setup parameters for the RADIUS server.

WARNING：WPA, WPA2 is not supported for Windows 98SE/ME .

Encryption: Select the encryption type for either TKIP or AES.

Site Survey

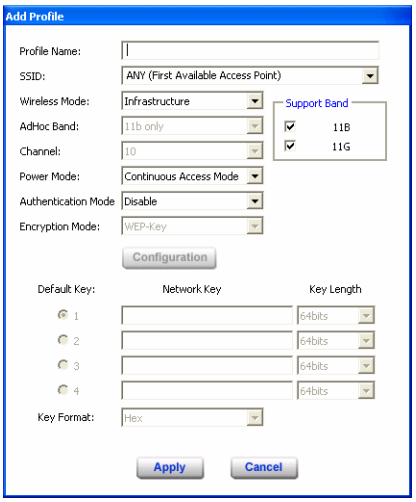
This screen allows the user to scan for the available wireless network (wireless clients and Access Points). It also allows the user to establish wireless communications with an available wireless network.

Available Network – displays the wireless networks (wireless clients and Access Points) that are within range.

Select any one of the wireless networks by double clicking on it or clicking on the "**Connect**" button.

Click "**Refresh**" to scan for available networks.

Profile – The user can create and manage the created profiles for home, work or public areas. By double-clicking on one of the created profiles, the utility setting apply specific settings such as SSID, channel, and encryption type as saved by that particular profile.



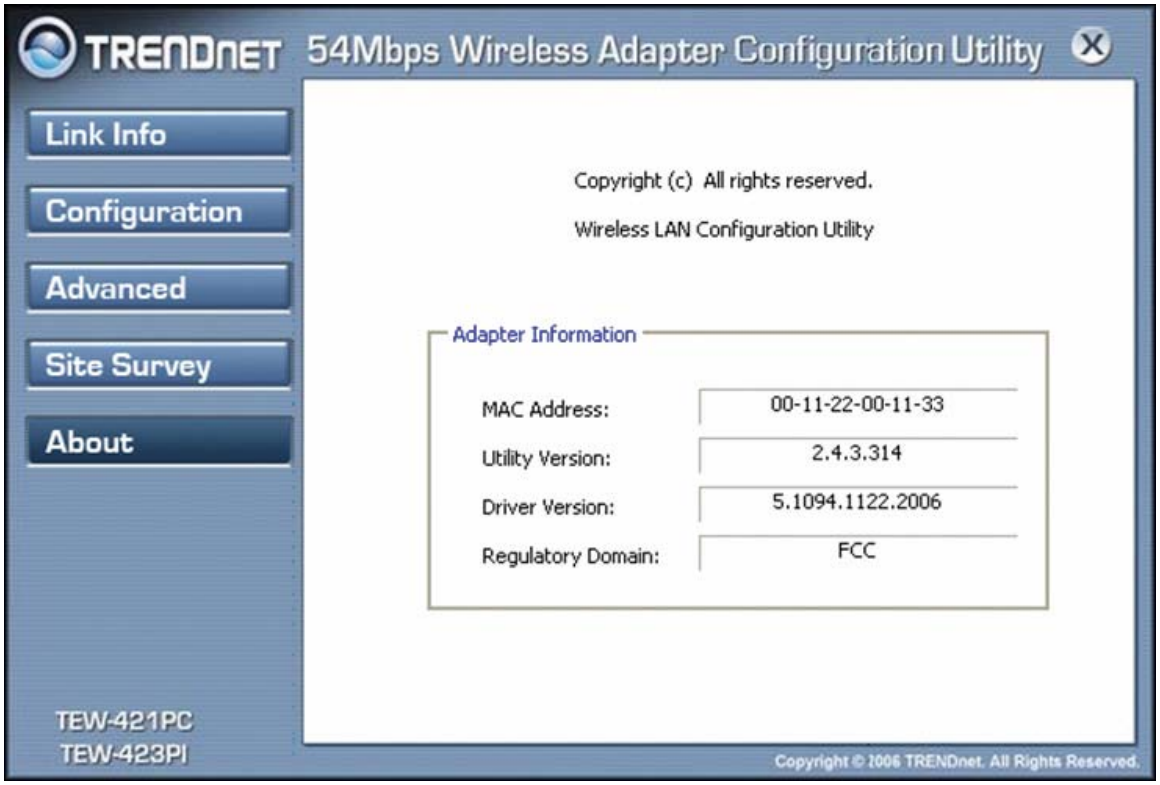
Add: Adds a profile. The screen to the right will appear. The user can enter the necessary information required for accessing Access Points or Wireless Router

Edit: View and/or change the profile's settings

Remove: Deletes the selected profile.

About

This screen displays some information about the 54Mbps IEEE 802.11g Wireless LAN Adapter utility. When a new version of the utility becomes available for upgrade, users will be able to identify by version numbers.



TECHNICAL SPECIFICATIONS

General	
Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum (DSSS) IEEE 802.11g Orthogonal Frequency Division Multiplexing (OFDM)
Interface	CardBus: 32-bit CardBus, PCI Adapter: 32-bit PCI bus
Data Transfer Rate	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54Mbps
Receiver Sensitivity	54Mbps: Typical -70dBm @ 10% PER (Packet Error Rate) 11Mbps: Typical -86dBm @ 8% PER (Packet Error Rate)
Transmit Power	802.11b: 15±2dBm 802.11g: 13±2dBm
Frequency Range	2412 ~ 2484 MHz ISM band
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM
Channels	1~13 Channels (Universal Domain Support)
Media Access Protocol	CSMA/CA with ACK
Security	64/128-bits WEP Encryption, WPA-PSK, WPA2-PSK, WPA, WPA2
Diagnostic LED	CardBus: Link, ACT, PCI Adapter: Link
Antenna	CardBus: Integrated printed dual diversity antennas PCI: 2dBi dipole antenna
Physical and Environmental	
Driver Support	Windows 98SE, ME, Windows 2000, Windows XP
Temperature	Operating: 0° ~ 40° C, Storage: -10° ~ 70° C
Humidity	10% ~ 95% RH, no condensation
Dimensions	CardBus:, 115 x 54 x 8.7 mm, PCI Adapter: 13 x 121 x 21.6
Certifications	FCC Part 15.247 for US, ETS 300 328 for Europe,

Limited Warranty

TRENDnet warrants its products against defects in material and workmanship, under normal use and service, for the following lengths of time from the date of purchase.

Wireless	Three years

If a product does not operate as warranted above during the applicable warranty period, TRENDnet shall, at its option and expense, repair the defective product or deliver to customer an equivalent product to replace the defective item. All products that are replaced will become the property of TRENDnet. Replacement products may be new or reconditioned.

TRENDnet shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to TRENDnet pursuant to any warranty.

There are no user serviceable parts inside the product. Do not remove or attempt to service the product through any unauthorized service center. This warranty is voided if (i) the product has been modified or repaired by any unauthorized service center, (ii) the product was subject to accident, abuse, or improper use (iii) the product was subject to conditions more severe than those specified in the manual.

Warranty service may be obtained by contacting TRENDnet office within the applicable warranty period for a Return Material Authorization (RMA) number, accompanied by a copy of the dated proof of the purchase. Products returned to TRENDnet must be pre-authorized by TRENDnet with RMA number marked on the outside of the package, and sent prepaid, insured and packaged appropriately for safe shipment.

WARRANTIES EXCLUSIVE: IF THE TRENDNET PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, THE CUSTOMER'S SOLE REMEDY SHALL BE, AT TRENDNET'S OPTION, REPAIR OR REPLACEMENT. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. TRENDNET NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF TRENDNET'S PRODUCTS.

TRENDNET SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY: TO THE FULL EXTENT ALLOWED BY LAW TRENDNET ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATE, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT TRENDNET'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

Governing Law: This Limited Warranty shall be governed by the laws of the state of California.

Note: AC/DC Power Adapter, Cooling Fan, Cables and Power Supply carry 1-Year Warranty

TRENDnet Technical Support

US • Canada

Toll Free Telephone: 1(866) 845-3673

24/7 Tech Support

Europe (Germany • France • Italy • Spain • Switzerland • UK)

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English/Espanol - 24/7
Francais/Deutsch - 11am-8pm, Monday - Friday MET

Worldwide

Telephone: +(31) (0) 20 504 05 35

English/Espanol - 24/7
Francais/Deutsch - 11am-8pm, Monday - Friday MET

Product Warranty Registration

Please take a moment to register your product online.
Go to TRENDnet's website at http://www.trendnet.com

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