

User Guide

**IEEE 802.11g
Wireless To Serial Converter**



Version 1.00

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It should be declared that this 802.11g wireless to serial converter is limited in CH1~CH11 by specified firmware controlled in USA.

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Version 1.00

FCC 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 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.

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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

To maintain compliance with FCC RF exposure compliance requirements, please avoid direct contact to the transmitting antenna during transmitting.

INFORMATION TO USER:

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

Prohibition of co-location

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

MPE Statement (Safety Information)

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

CE Mark Warning

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

1. Introduction

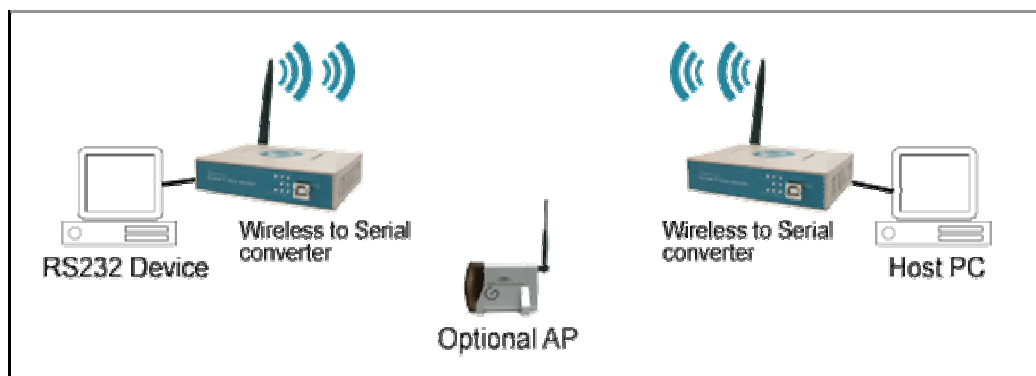
The RS232 connection application has used for a long time. RS232 cable has limitations in distance. WLAN (Wireless Local Area Network) has become a worldwide standard protocol for wireless applications. There are many applications for using RS232 connection over WLAN, including POS, data capture, telemetry, PLC controllers, remote control, vending machine, industrial control, and others. The device that supports connection over WLAN is called as Wireless to Serial Converter.

Throughout the guide, the **802.11g Wireless to Serial Converter** will be referred as **the converter**.

1.1 802.11g Wireless to Serial Converter Application

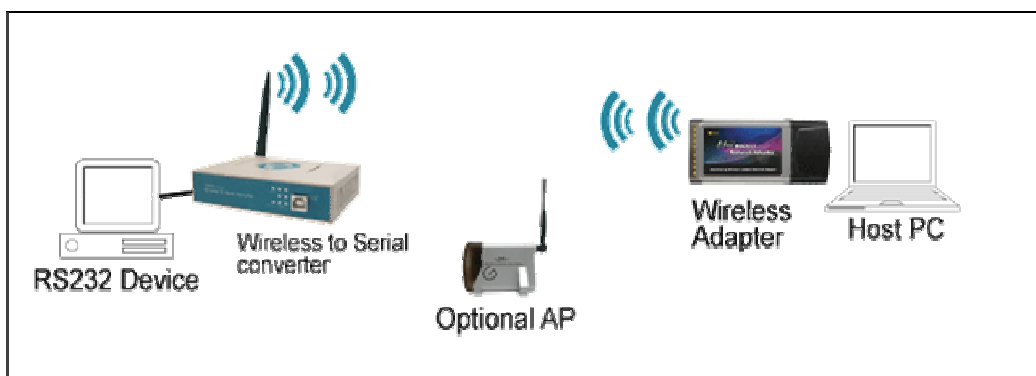
Peer to Peer

The host PC and RS232 device communicate with each other via the individual converter. The access point is optional.



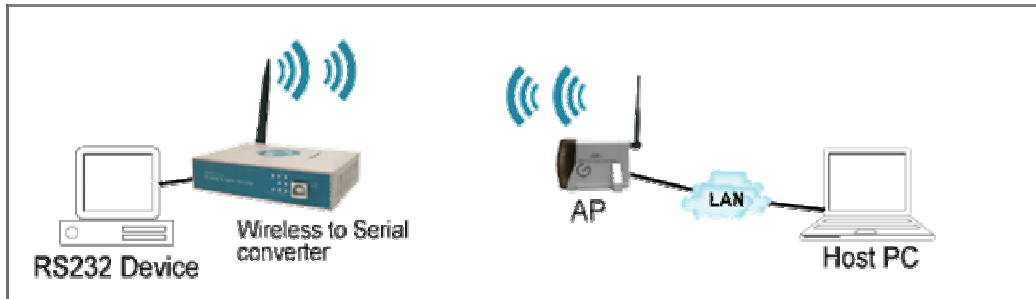
Converter to PC WLAN

The RS232 device is connected to the converter, and the PC is equipped with the wireless card. Two sides communicate through the converter and wireless card. The access point is optional.



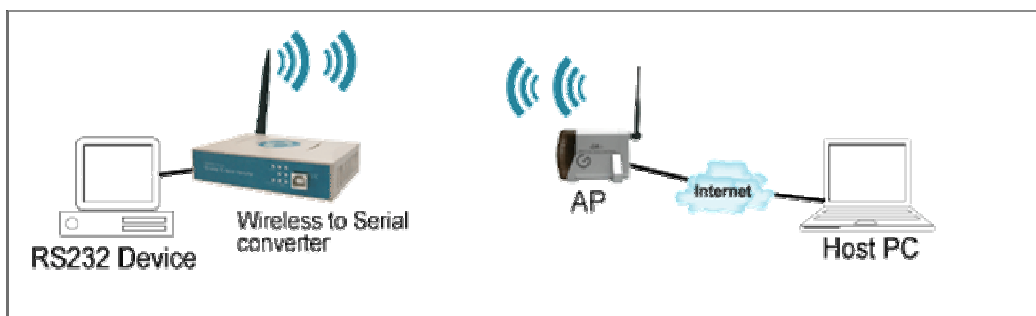
Converter to Access Point

The RS232 device is connected to the converter, the host PC is connected to the access point via LAN.



Converter over the Internet

The application is used for far end remote communication via the Internet.



Note: For environments requirement, applications listed above might require the 802.11x protocol and proprietary IP (or TCP/IP) protocol.

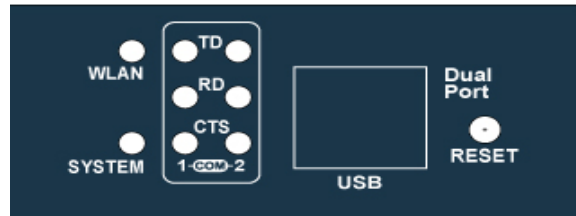
1.2 Package Content

- One 802.11g Wireless to Serial Converter
- One CD (containing setup utility and user's manual)
- One power adapter
- One USB cable

2. Getting to Know 802.11g Wireless To Serial Converter

Generally, the access point is better to place at the center of all the WLAN stations, to know the converter, please read the description.

2.1 Front Panel



LED Indication

WLAN *Blinks green* to indicate data is transmitting and receiving.

SYSTEM *Off* to indicate system is in initial status and the converter not ready to operate.

Lights yellow to indicate system is in communication mode.

Blinks to indicate system is in configuration mode.

TD *Lights red* to indicate the converter is power on.

Blinks green to indicate the converter is transferring data to RS232 device.

RD *Lights red* to indicate the cable is connected.

Blinks green to indicate the converter is receiving data from RS232 device.

CTS *Blinks green* to indicate the converter is transmitting CTS signal.

Note: TD, RD, and CTS LED are explained for COM 1 and COM 2 port.

Port Definition

USB Port Plug in the USB (B-type female) into the USB port.

RESET Press reset bottom at once to reset the system. Press reset bottom for 5 seconds to reset to default setting.

2.2 Rear Panel



POWER Plug in the power adapter of 12V DC/1A into the power port.

Config Mode User are allowed to configure the convert as switching to configuration mode.

Communication Mode The converter will transmit data as switching to communication mode.

COM 1 COM 1 port is used as DTE mode male connector. Connect PC TO the converter COM 1 (female port) port by using an RS232 (crossed wires) cable.

COM 2 COM 2 port is used as DCE mode female connector. Connect PC TO the converter COM 2 (female port) port by using an RS232 Straight (no crossed wires) cable.

Note:

1. USB port shares with COM 1 port and the priority of USB is higher than COM 1 port. As USB port is connected to the NB/PC, COM 1 port will be disabling.
2. As using USB port, power should be supplied to converter by power adapter. It might be failure to supply power to converter by the NB/PC only.
3. RS232 connection restriction is as follow. 9-pin Male DE9 connector wired as **DTE** (Data Terminal Equipment) (like a PC). 9-pin Female DE9 connector wired as **DCE** (Data Communication Equipment) (like a Modem).

3. Installation

To start the installation, please follow the steps.

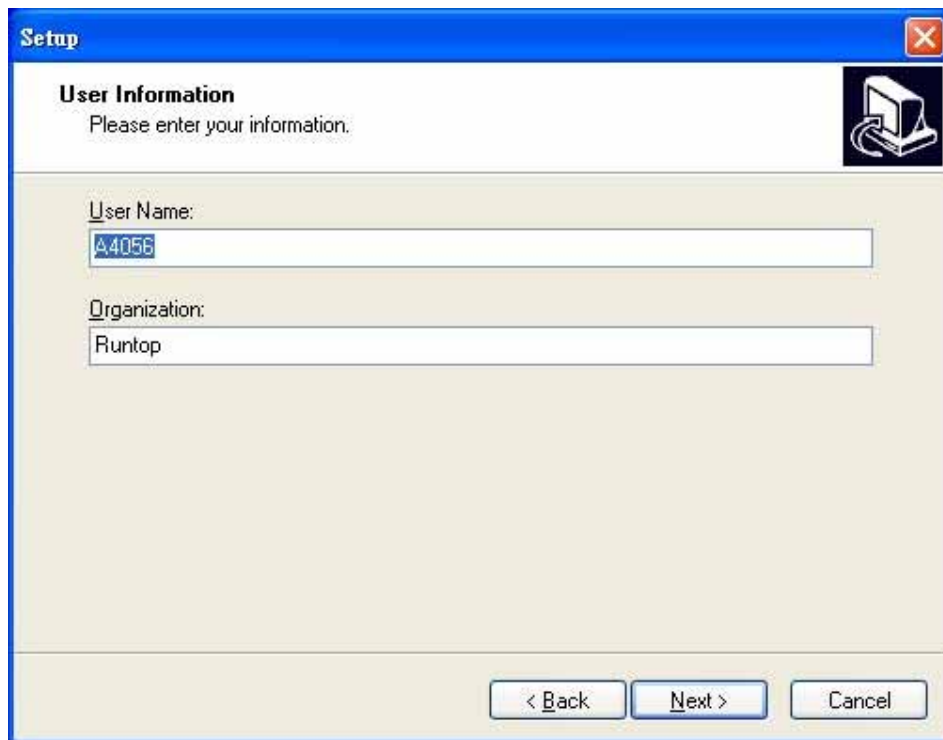
1. Insert the CD into the CD-ROM.
2. Select the setup file: **setup.exe**. Click "**setup**" to run the program. The following dialogue will appear. Click "**Yes**" to continue.



3. As entering the welcome screen, click "**Next**" to continue.



4. Enter the **User Name** and **Organization**.



Setup

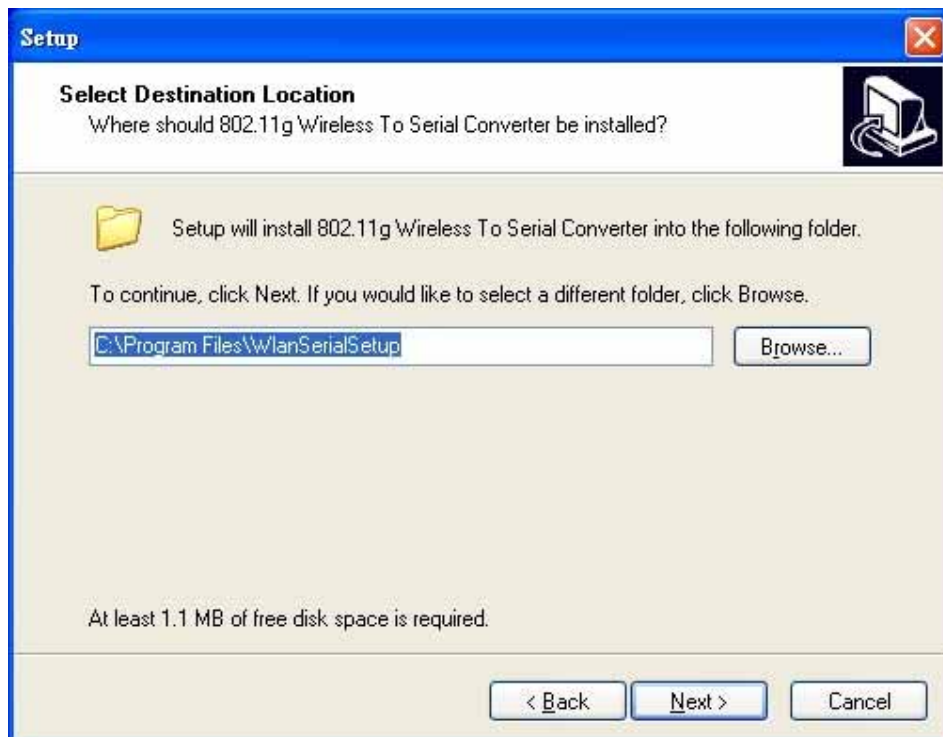
User Information
Please enter your information.

User Name:
A4056

Organization:
Runtop

< Back Next > Cancel

5. Select the folder for installing the 802.11g Wireless to Serial Converter. Click **Browse** to choose the path.



Setup

Select Destination Location
Where should 802.11g Wireless To Serial Converter be installed?

Setup will install 802.11g Wireless To Serial Converter into the following folder.

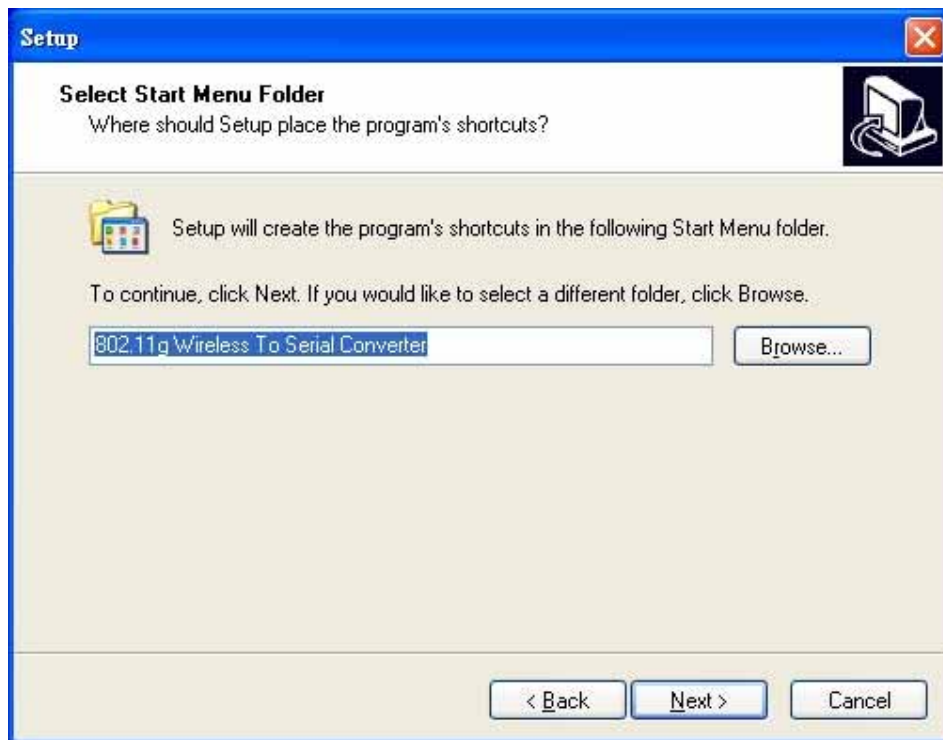
To continue, click Next. If you would like to select a different folder, click Browse.

C:\Program Files\WlanSerialSetup Browse...

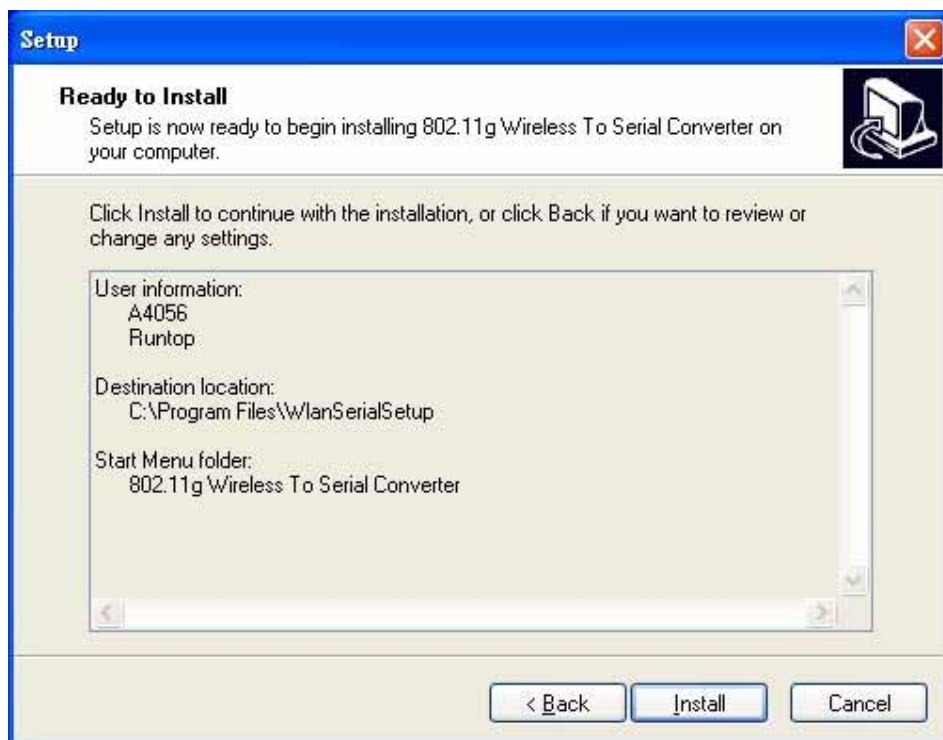
At least 1.1 MB of free disk space is required.

< Back Next > Cancel

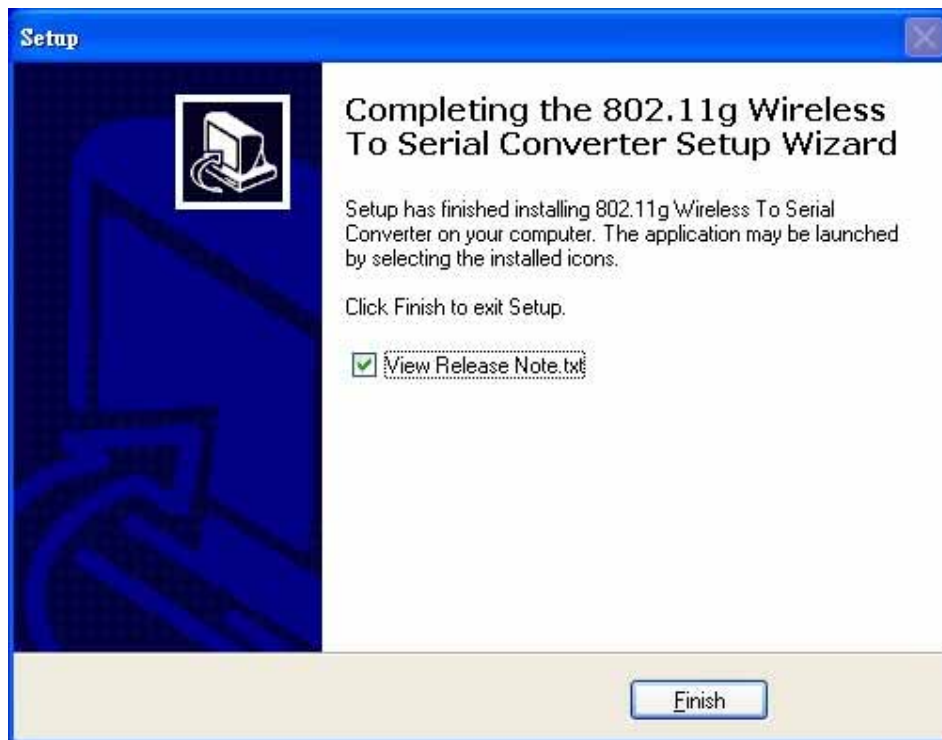
6. Select the shortcut in the following Start Menu folder. Click **Browse** to choose the path.



7. If you are ready to install, click **Install**.



8. Click **Finish** to confirm the installation.

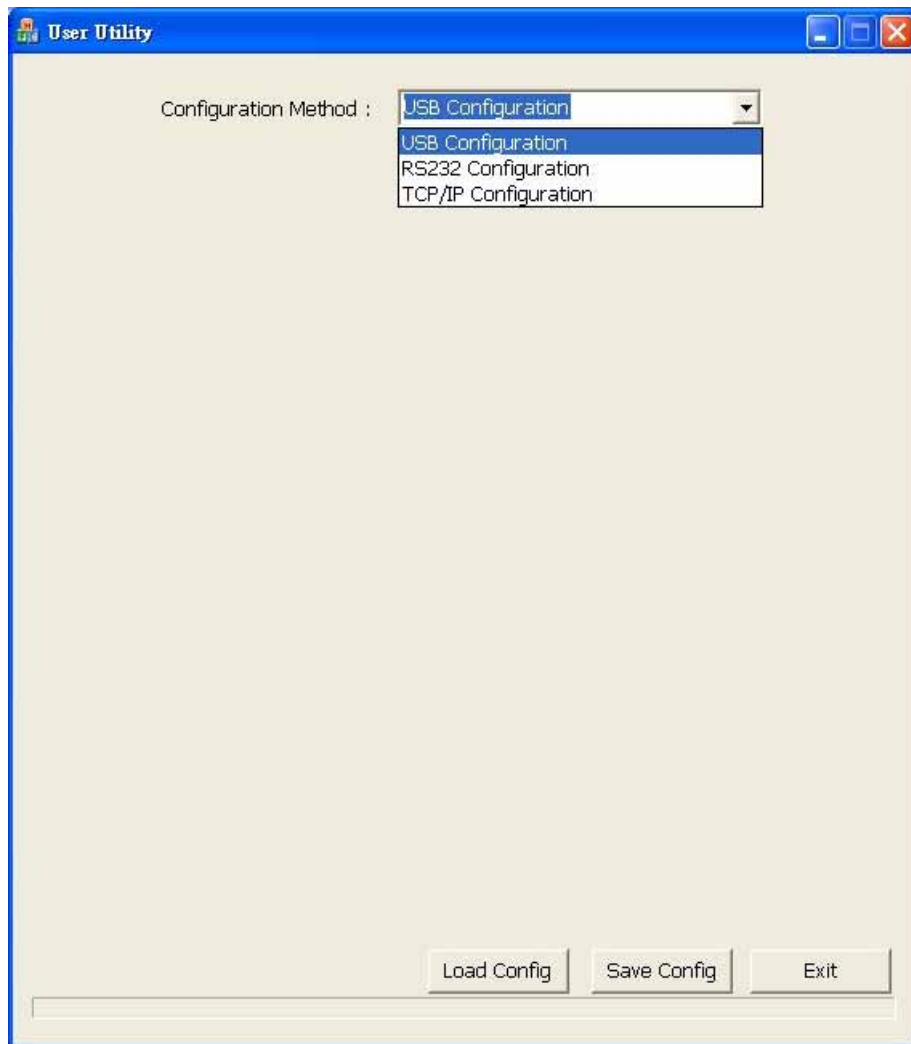


4. Configuration

To configure the converter, as the **System LED** starts to *blink*, than go to **Start → Program → 802.11g Wireless to Serial Converter → WlanSerialSetup**.

1. Select the configuration mode from: USB configuration, RS232 configuration, and TCP/IP configuration. Click **Load Config** to enter the configuration mode.

Note: Below is example for **RS232 configuration** only.



2. Before load the configuration, select the PC COM port first. Note that it is required to select the COM port of PC. Click **OK**, configuration will be loaded automatically.



3. Network section enables user to change the IP Address, IP Mask, and Gateway. To use DHCP, please click **"Enable"**.

The screenshot shows the 'User Utility' window with the 'RS232 Configuration' method selected. The 'Network' tab is active, displaying fields for IP Address (192.168.1.254), IP Mask (255.255.255.0), and Gateway (192.168.1.254). The 'Use DHCP Client' option is set to 'Disabled'. The MAC Address is 00:00:10:11:12:00. A 'Notice' box explains that when 'Use DHCP Client' is enabled, the IP Address field would not be correct and the actual IP Address would be read after the 'Load Config' button is pressed. Otherwise, the IP Address, IP Mask, and Gateway would be set to the Adapter with the 'Use DHCP Client' Disabled selected after the 'Save Config' button is pressed. At the bottom, there are buttons for 'Load Config', 'Save Config', and 'Exit'.

User Utility

Configuration Method : RS232 Configuration

Network | Wireless | RS232 Port 1 | RS232 Port 2 | Site Survey | Profile | Information

IP Address : 192 . 168 . 1 . 254

IP Mask : 255 . 255 . 255 . 0

Gateway : 192 . 168 . 1 . 254

Use DHCP Client ☒ Disabled ☐ Enabled

MAC Address : 00:00:10:11:12:00

Notice

When "Use DHCP Client" Enabled is selected, the IP Address listed above would not correct. The actual IP Address could be read after the "Load Config" button is pressed. Otherwise, the IP Address, IP Mask and Gateway would be set to Adapter with the "Use DHCP Client" Disabled selected after the "Save Config" button is pressed.

Load Config Save Config Exit

4. Wireless section enables user select the operation mode, channel, SSID, TX rate, and Encryption mode. To set the further WEP, enable the encryption function, and set the key.

The screenshot shows the 'User Utility' window with the 'RS232 Configuration' tab selected. The configuration fields are as follows:

Field	Value
Configuration Method	RS232 Configuration
Operation Mode	Infrastructure
Channel	1
SSID	WS4000
TX Rate	54 Mbps
Encryption Mode	128 Bits
WEP Key In Use	Key 1
Key #1	
Key #2	
Key #3	
Key #4	
WPA Key (pass-phrase mapping, 8 ~ 63)	
WPA Key Refresh	0 Seconds

Buttons at the bottom: Load Config, Save Config, Exit.

- **Operation Mode:** To select infrastructure or Ad-Hoc mode.
- **Channel:** As in Ad-Hoc mode, user can set the channel to match with another side station.
- **SSID:** User can set the SSID to match with the AP(Infrastructure mode) or station(Ad-Hoc mode).
- **TX Rate:** User can set the TX rate to fit with the operation environment.
- **Encryption Mode:** User can set the encryption mode to set the encryption function.

5. RS232 Port 1 section enables user to set the Baud Rate, Parity, Data Bits, Stop Bits, Flow Control, Local TCP Port, Remote IP, Remote TCP Port, Idle Time, and Port 1 Mode.

Note: For Port 1 being setting as **Client** mode, the program of remote server should be ready for connection (listening at IP listed in "Remote IP" and TCP port listed in "Remote TCP Port").

The screenshot shows the 'User Utility' window with the 'RS232 Configuration' tab selected. The configuration method is set to 'RS232 Configuration'. The settings are as follows:

Parameter	Value
Baud Rate	57600
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None
Local TCP Port	2001
Remote IP	0 . 0 . 0 . 0
Remote TCP Port	0
Idle Time	30
Port 1 Mode	Server
MTU	
Input Buffer Waiting	

Notice:
Changing This Page RS232 Attributions WON'T Change Any Of Your PC's COM Port Settings. You Need To Change Your PC's COM Port Manually In Control Panel / System.

Buttons: Load Config, Save Config, Exit

6. RS232 Port 2 section enables user to set the Baud Rate, Parity, Data Bits, Stop Bits, Flow Control, Local TCP Port, Remote IP, Remote TCP Port, Idle Time, and Port 2 Mode.

Note: The Port 2 setting is the same as Port 1.

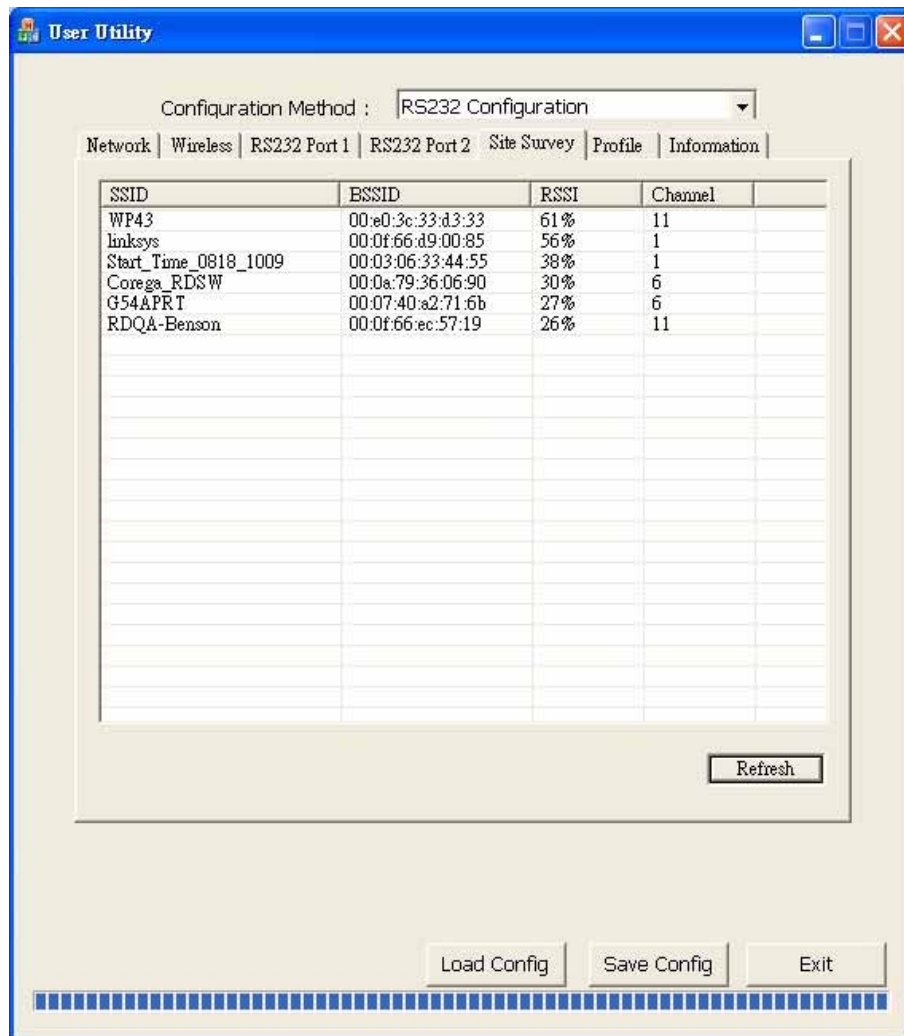
The screenshot shows the 'User Utility' window with the 'RS232 Configuration' method selected. The 'RS232 Port 2' tab is active. The configuration fields are as follows:

Field	Value
Baud Rate	57600
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None
Local TCP Port	2002
Remote IP	0 . 0 . 0 . 0
Remote TCP Port	0
Idle Time	30
Port 1 Mode	Server
MTU	
Input Buffer Waiting	

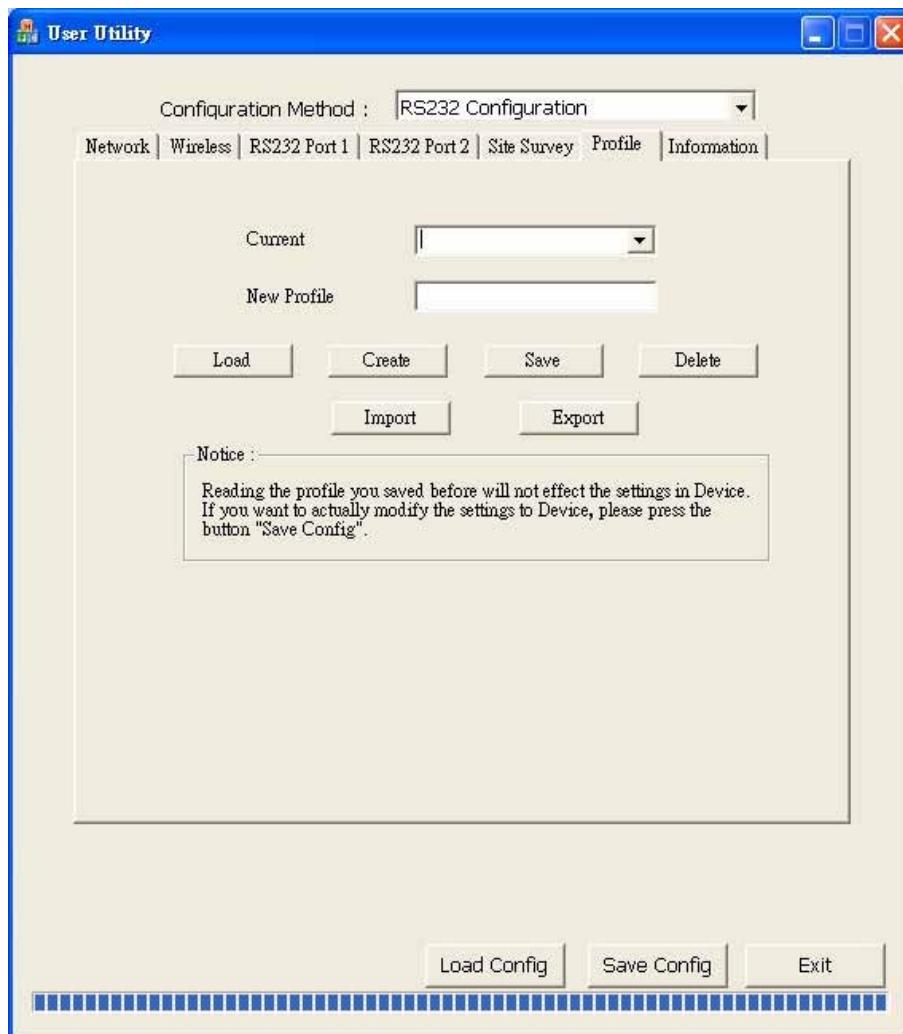
Notice:
Changing This Page RS232 Attributions WON'T Change Any Of Your PC's COM Port Settings. You Need To Change Your PC's COM Port Manually In Control Panel / System.

Buttons: Load Config, Save Config, Exit

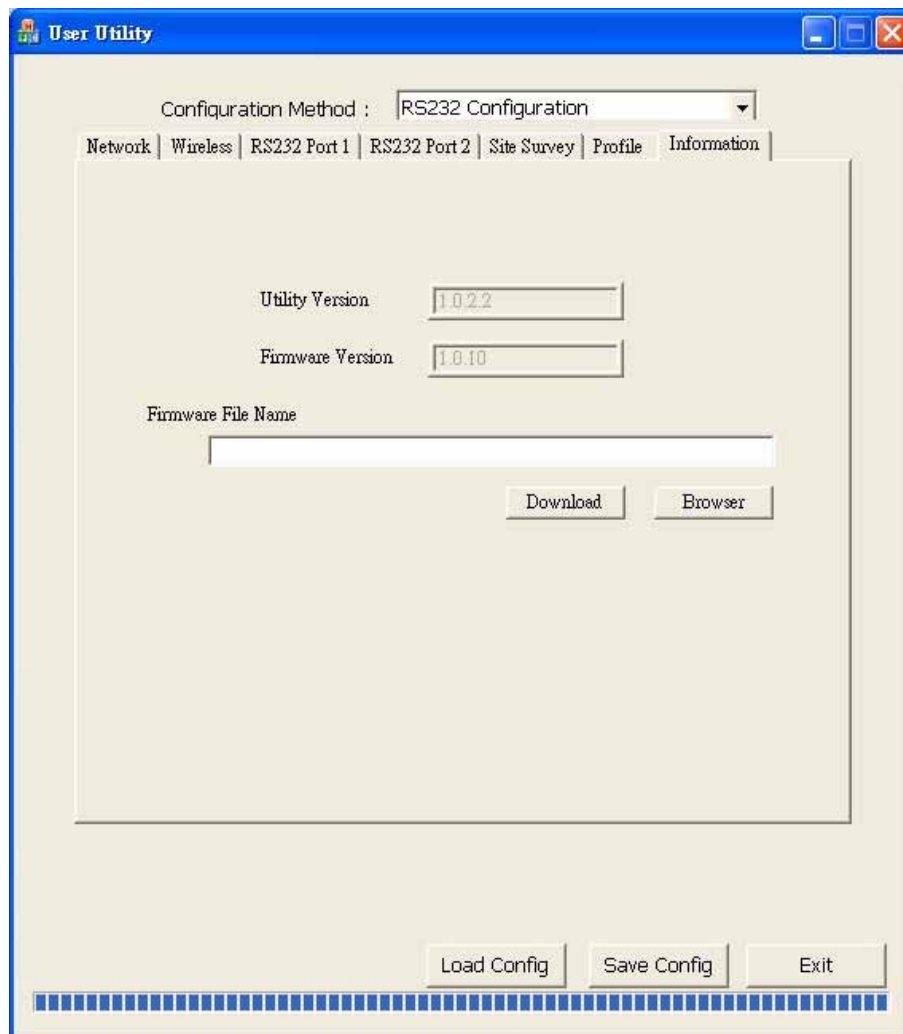
7. Site Survey section enable user to survey the AP site. Click **Refresh** to survey.



8. Profile section enables user to set and save the profile for different connection settings. User can import and export the profile to other device.



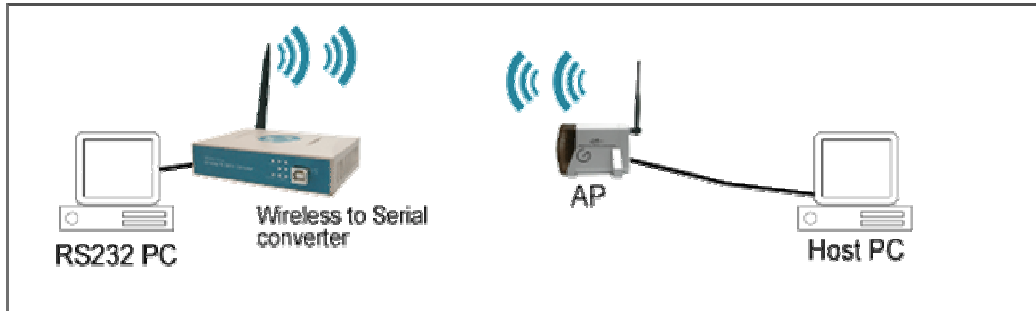
9. Information section enables user to upgrade the firmware. It is recommended to download the firmware via the TCP/IP connection for sooner transmitting.



5. Simple Demo via HyperTerminal

To establish a simple demo system via HyperTerminal, please follow the direction.

1. Open the HyperTerminal window at the **Host PC**. Go to **Start → Programs → Accessories → Communications → HyperTerminal → HyperTerm**



2. Select TCP/IP protocol to connect to the converter and specify the converter IP address and TCP port number the same as the local TCP PC. If the converter uses RS232 port 1 (port 2) to connect with RS232 PC, then TCP port number shall be that for RS232 port 1 (port 2). (Assume that the RS232 port 1 (port 2) is set to server mode.)
3. Open another HyperTerminal window at the RS232 PC. The RS232 parameters settings should be same as the values of RS232 port settings in converter.
4. The RF WLAN link should now be active. Enter any character from RS232 (or Host) PC. The Host (or RS232) PC HyperTerminal will show the character that you just enter. Or you can transfer any data or file from either PC using **Kermit protocol**, and then the other side will receive the data by using **Kermit protocol** as well.
5. If it is unable to use HyperTerminal for testing, some steps can be used to solve the problem:
 - At WLAN tap window, the SSID field is allowed to enter any character, including space character. If one converter has space character after SSID name then two converters will have different SSID.
 - Disconnect HyperTerminal at both sides before make any upgrade on the converter settings.
 - Disconnect HyperTerminal at both sides before make any change on the HyperTerminal settings.
 - Make sure the WLAN does connect to each other on both side. Use "ping" command to converter. For example, the IP "192.168.1.254" is default IP of the

converter, “ping 192.168.1.254” to testify the connection. If user can ping the IP address, the wireless connection is OK.

Note: During configuration, please close other HyperTerminal program. Any HyperTerminal might occupy the application of the COM port.

6. Specification

6.1 Technical Specifications

Standards	IEEE 802.11, IEEE 802.11b, IEEE 802.11g
Channels	11 channels (U.S., Canada), 13 channels (Europe), 14 channels (Japan), 2 channels (Spain), 4 channels (France)
Modulation	CCK (11 b), BPSK, QPSK, 16~QAM, 64-QAM (11 g)
Antenna	2 dBi
Transmission Range	Outdoor: 100~300 M, Indoor: 30~100 M
Transmission Rate	11b: 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps 11g: 6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 54 Mbps
Frequency Band	2.400~2.4835 GHz (subject to local regulations)
Security	WEP, WPA/PSK
WEP	64 and 128 bit encryption
Output Power	17 dBm
Interface	USB, RS 232
Receive Sensitivity	(Typ. @BER 10E-2): -65 dBm @ 54Mbps
Compatibility	Windows 95/98/2000/ME/XP
EMC Certification	FCC Class B, CE

6.2 Environmental Information

Size (WxDxH)	119 x 84 x 30 (mm), 4.3 x 3.3 x 1 (inch)
Weight	3.8 kg / 5.0 kg (105.8 oz / 141 oz)
Operating Temperature	0°C to 40°C (32°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Operating Humidity	20% to 85% relative humidity, non-condensing
Storage Humidity	20% to 90% relative humidity, non-condensing
Power	12V/1A

Warranty Statement

We provide this limited warranty for its product only to the person or entity who originally purchased the product from us or its authorized reseller or distributor. We guarantee that equipment is free from physical defects in workmanship and material under normal use from the date of original retail purchase of the Hardware. If the product proves defective during this warranty period, call our Customer Service in order to obtain a Return Authorization number. Be sure to have a proof of purchase on hand when calling. Return requests cannot be processed without proof of purchase. When returning a product, mark the Return Authorization Number clearly on the package pack and include your original proof of purchase. All customers outside the R.O.C shall be held responsible for shipping and handling charges.

In no event shall our liability exceed the price paid for the product from direct, incidental or consequential damage resulting from the use of the product, its accompanying software, or its documentation. We make no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaim its quality, performance, merchantability, or fitness for any particular purpose. We reserve the right to revise or update its products, software, or documentation without obligation to notify any individual or entity.