WIZ6000 User's Manual

(Version 0.9)

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Document Revision History

Date	Revision	Changes
2009-09-09 V0.9		Beta Release

WIZnet

Certification Information

CE for Class B ITE

INFORMATION TO THE USER
Hereby, WIZnet. Declares that this WIZ6000 is in compliance with the essential requirements and other relevant provisions of directive 1999/5/EC.

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.

FCC for Class B ITE

INFORMATION TO THE USER
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 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.

WARNING: This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

KCC for Class B ITE

INFORMATION TO THE USER
This equipment has been tested for a Class B digital device.
- Trade Name or Applicant : WIZnet, Inc.
- Equipment Name : Serial to Wireless LAN Device Server
- Basic Model Number : WIZ6000
- Manufacturer / Country of Origin : WIZnet, Inc. / KOREA
- Certification Number : WWW-WIZ6000-S2W(B)

WARNING: This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference.

Near-Body Operation
To maintain compliance with FCC RF exposure requirements, maintain a **20Cm**, separation distance between the user's body and the phone, including the antenna, whether extended or retracted.

WIZnet's Online Technical Support

If you have any questions about our products, please visit our website and submit your questions on the Q&A Board. We will reply your questions as soon as possible

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1. Introduction

WIZ6000 is t he external g ate way mod ule whi ch p rovides a b ridge for RS -232 or Ethernet to IEEE802.11 b/g wirel ess communications. Device s with the interface of RS   -232C serial or Ethernet can established a wireless network which can enable remote monitoring, management and controlling.

Main Features

- Embedded 802.11b/g Wireless Networking
- Access Point, Client, Gateway, Serial to WLAN mode Supported
- Ethernet to Wireless Bridging
- Strong Security with 64/128 bit WEP, WPA, WPA2(AES)
- Support Ethernet port, Serial port, Reset Button
- Ready to use serial to wireless application
- Max 25Mbps Data Streaming
- Compact design 90.5mm X 94.5mm X 22.7mm (L x W x H)
- RoHS Compliant
- CE, FCC and KCC certificated

1.1 Products Contents

	WIZ6000 Device Server Included Dipole Antenna (3.377dBi SMA Type)
	Serial Cable
	Network Cable (Crossover Cable)
	Power (DC 5V / 2A Adaptor)
	Data CD (Manual, H/W & SW related Materials)

Table 1. Products Contents.

1.2 Product Specification

Wireless

ITEM	Specification
Wireless Standard	IEEE802.11b/g
Frequency Range	2.412~2.485GHz
Output Power (Tolerance(+/-2dBm)	802.11b: 16dBm@11Mbps (Max 10mW / 1MHz) 802.11g: 14dBm@6~54Mbps (Max 10mW / 1MHz)
Receive Sensitivity	802.11b: -65dBm@11Mbps 802.11g: -76dBm@54Mbps
Data Rates	54Mbps-1Mbps
Modulation Type	11g: OFDM(64QAM, 16QAM, QPSK, BPSK) 11b: DSS(CCK, DQPSK, DBPSK)

Table 2. Products Specification – Wireless

Software

ITEM	Specification
Operation Mode	Access Point, Clinet, Gateway, Serial to Wireless LAN
Protocol	ARP, UDP , TCP, Telnet, ICMP , IGMP DHCP , PPPoE, BOOTP, HTTP, TFTP
Security	WEP 64/128big WPA/WPA2 PSK/AES/TKIP 802.1x(Radius)
Management	HTTP, Telnet, Serial, UDP
Notification Event	Logging

Table 3. Products Specification - Software

Hardware

ITEM	Specification
Interface	Ethernet 1 Port, RS-232C 1 Port, DC 5V Power input
	3.377dBi SMA type Dipole Antenna
Temperature	Operation: -5℃~55℃
	Storage: -20℃~70℃
Humidity	Operation: 10% to 90%, Non-Condensing
	Storage: 5% to 90%, Non-Condensing
Serial (RS-232C)	Baud Rate : 230,400bps
	Stop bits: 1
	Parity: None, Odd, Even
	Flow Control: XON / XOFF (Software), CTS / RTS (Hardware), None
Power	DC 5V input
Power Consumption	Under 600mA (3.3V)
Dimension	90.5mm X 94.5mm X 22.7mm (Excluded antenna size)

Table 4. Products Specification - Hardware

1.2.1 WIZ6000 Device Server Interface
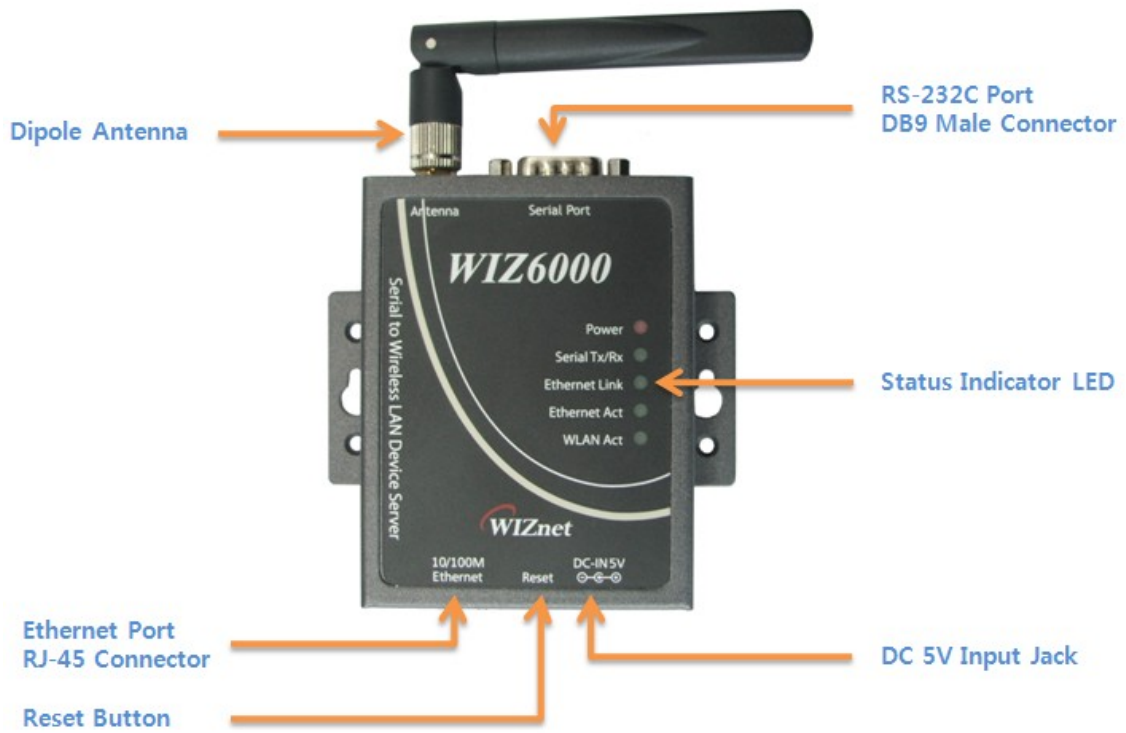
Figure 1. WIZ6000 Device Server Interface

2. Getting Started

This manual describes all configurations in detail.

For the quick and easy installation, please refer to " WIZ610wi Quick Installation Guide".

2.1 Hardware Installation

- **STEP1:** Connect the WIZ6000 to the HUB or PC by using a network cable.

- **STEP2:** Connect the WIZ6000 to the serial device by using the RS-232C serial cable.

- **STEP3:** Insert the power supply co nnector to the WIZ6000 by using the 5V / 2A
  DC power adaptor.

- **STEP4:** Configure the network parameters of WIZ6000 and your PC.

    - The default IP address of WIZ6000 is "192.168.1.254".

      Your PC's IP address should start with these three sets of numbers "192.168.1.XXX".

    - WIZ6000 and PC can be connected through wireless network.

      Connect to WIZ6000 from PC by using default SSID "WIZ610wi"

2.2 Configuration

2.2.1 Connecting the Web page of WIZ6000

1)   Open a web browser on your PC and input "192.168.1.254", the default IP address of
     WIZ6000.
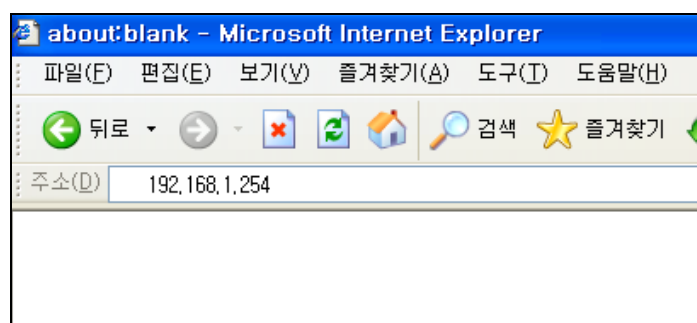
Figure 2. Connecting to the Web page of WIZ6000

2)   A pop up will request you to input your User ID and Password.

     Default User ID : admin,   Password : admin
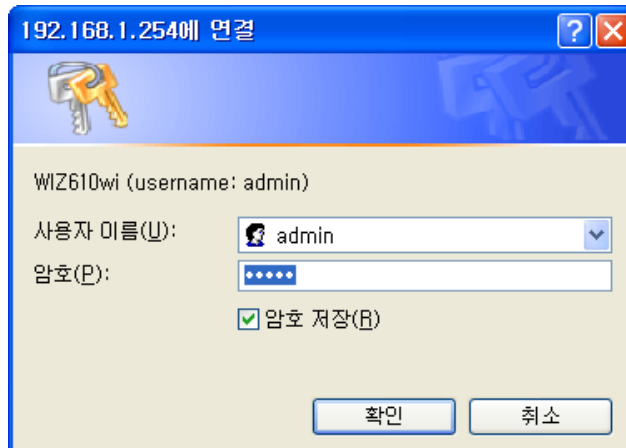
Figure 3. Input ID and Password

2.2.2 Checking Status

1) System Data

Figure 4. System Data

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ITEM	Description
Firmware Version	The firmware version of WIZ6000 is displayed
Firmware Date	The last date and time of firmware upgrade
MAC Address(LAN)	The MAC Address of WIZ6000 for Ethernet communication.
IP Address	The IP address of WIZ6000.
Network Mask	The Network Mask of WIZ6000.
Default Gateway	The Gateway of WIZ6000.
DHCP Server	Shows the DHCP server function is activated or not.
DHCP Start IP Address	Shows the first IP address to be assigned from DHCP server.
DHCP Finished IP Address	Shows the last IP address to be assigned from DHCP server.
MAC Address(WLAN)	The MAC Address for wireless communication.
SSID	The SSID of WIZ6000.
Channel	The wireless channel of WIZ6000.

Table 5. System Data

Notice

WIZ6000 supports the MAC address for both Ethernet and Wireless interface.

2) Active Client
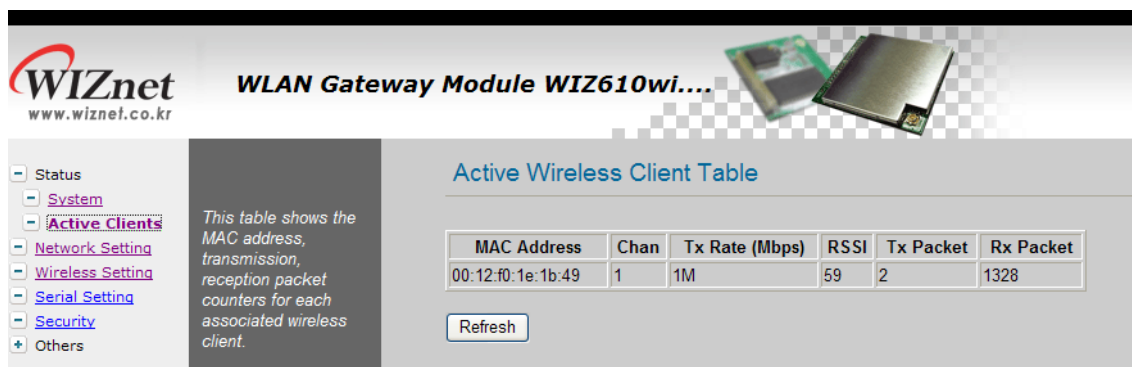
Figure 5. Active Clients

In this p age, the information of client s con necting to WIZ610wi is displ ayed. If you click "Refresh" button, the client list and information are updated.

2.2.3 Network Setting

You can configure network parameters of WIZ6000
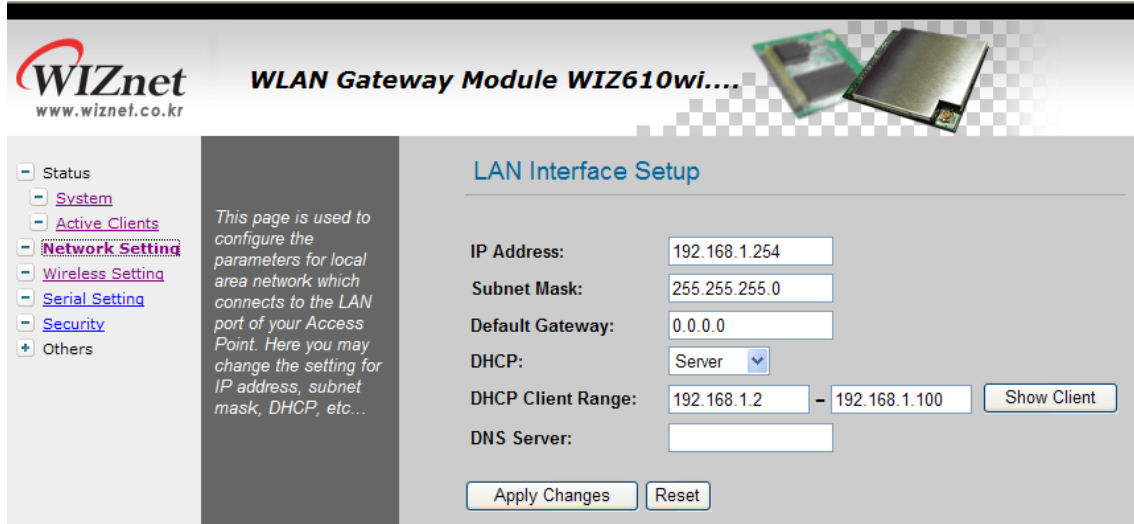
Figure 6. Network Setting

- **IP Address**: The default IP Address is set as "192.168.1.254".

- **Subnet Mask**: The default Subnet Mask is set as "255.255.255.0".

- **Default Gateway**: The default Gateway is set as "0.0.0.0".

- **DHCP**: If you want to activate the DHCP Server function, select the "Server".

    If not, select "Disable".

Notice

When the WIZ6000's IP address is managed by another DHCP server in the upper layer,

the DHCP function in your wireless module will be disabled. All your clients connecting to

your WIZ6000 can not recognize your module as a DHCP server.

- **DHCP Client Range:** When WIZ6000 operates as the DHCP Server, the IP address range

    must be assigned in order for the clients to connect. If the DHCP

    server function is disabled, this DHCP Client Range is not activated.

- **Show Client:** If you click the "Show Client" button, a window is popped up to show a list of

    clients.

- **Apply Changes:** By clicking this button, the modified values are applied. After changing,

    the page is refreshed to re-connected to the new IP address.
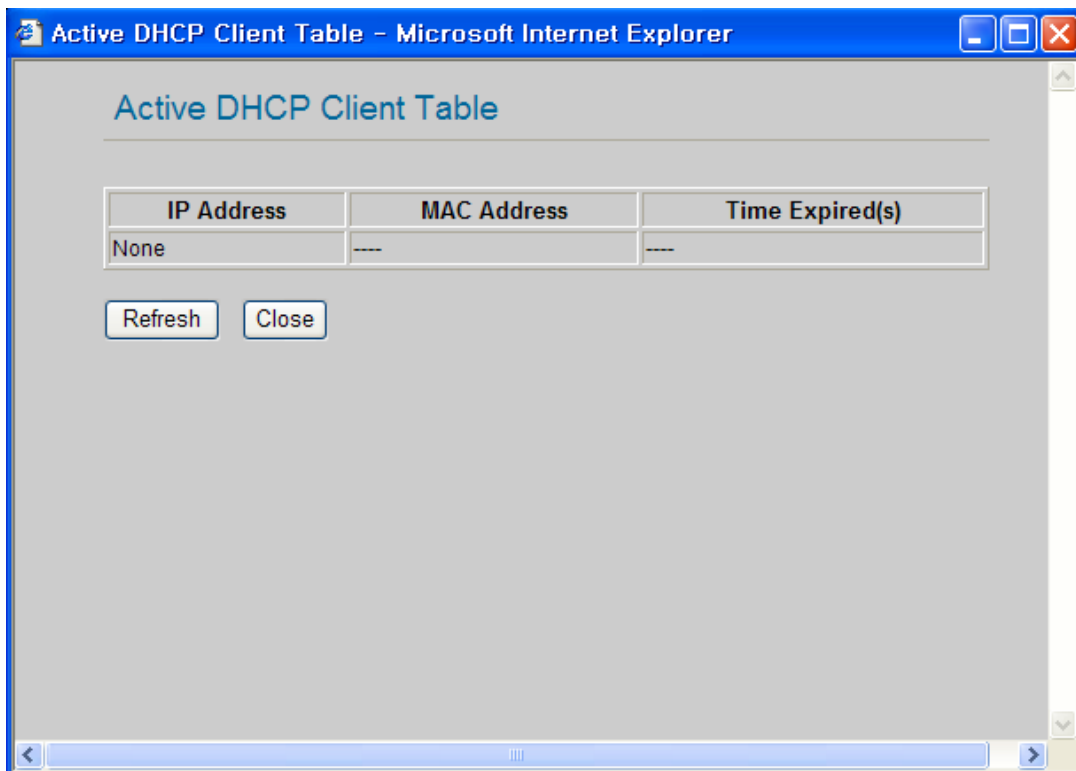
Figure 7. Active DHCP Client Table

2.2.4 Wireless Setting

2.2.4.1 Mode Selection

You can select one of Access Point, Gateway and Client for the wireless connection mode.
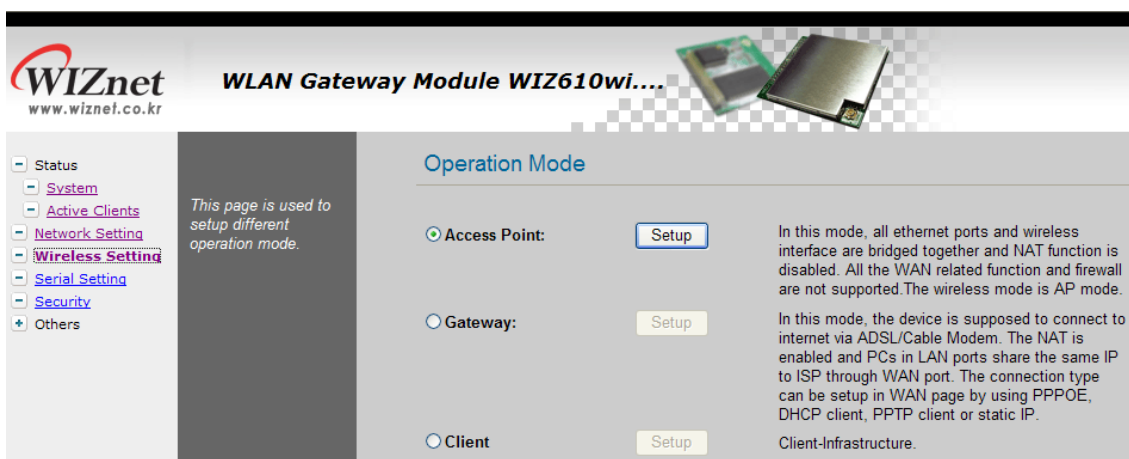
Figure 8. Operation Mode

Access Point is the default mode. If you select Gateway or Client and click the "Setup" button, the progress bar will be shown.

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Figure 9. Changing Operation Mode

1)Access Point Mode

In this mode, all Ethernet port s and wireless interface are bridged together and NAT function is disabled. All the WAN related function and firewall are not supported.

2)Gateway Mode

In this m ode, your d evice can conn ect to the inte rnet via ADS L/Cable Mo dem. The NAT is enabled and PCs in LAN ports share the same IP to ISP through WAN port. WAN connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

3)Client Mode

In this mode, your device act as a clie nt. If you configure PC or application device as DHCP client, Access Point will be the DCHP Server and WIZ610wi doesn't act as DHCP Server.

2.2.4.2 IP Configuration in Each Mode

1) Access Point Mode
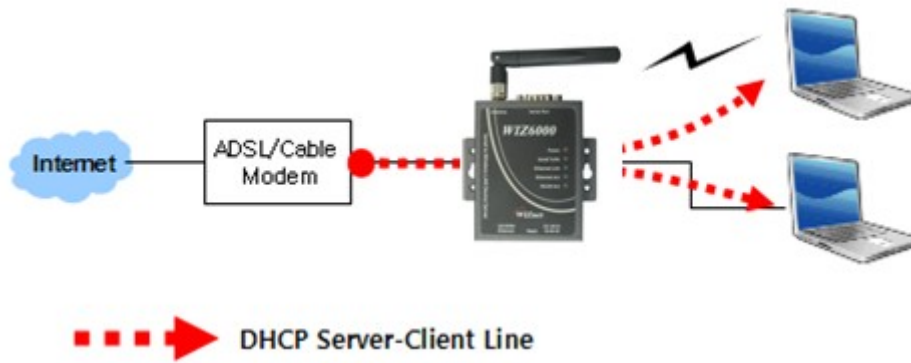
Figure 10. Access Point Mode - 1

- The IP address assigned to WIZ6000 is for administration and web configuration.
- Even though the WIZ6000 is configured as DHCP Server, the PC will acquire IP address from
  IP Sharing device or ADSL/Cable Modem.
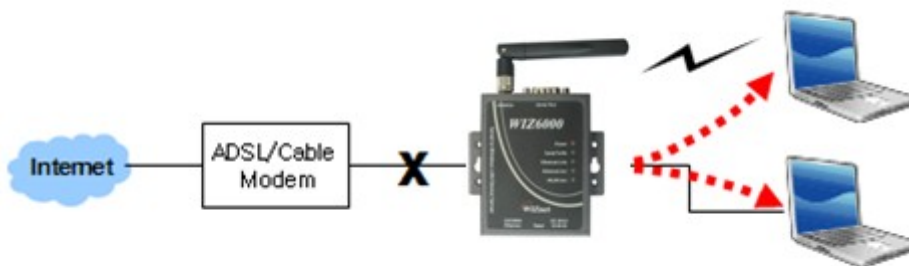
Figure 11. Access Point Mode -2

- If there is not IP Sharing Device or ADSL/Cable modem, WIZ6000 will assign the IP addresses
  which is in DHCP IP range to PCs through wired or wireless network.

2) Gateway Mode
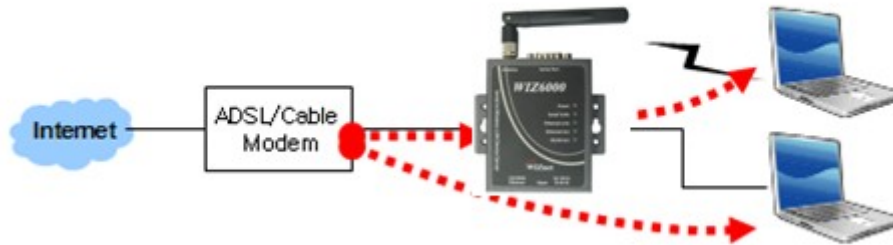
Figure 12. Gateway Mode

- WIZ6000 operates as DHCP Server for the wireless communication.
- WIZ6000 operates as Static/DHCP/Client/PPPoE for the wired (Ethernet) communication.

3) Client Mode

Figure 13. Client Mode

- WIZ6000 can be set IP as Static or DHCP client at 'Client Setup>WAN Port Setup'.
  And also WIZ6000 can b e act DHCP Server simultaneously by assigning adding 100 of fi rst DHCP server . For exam ple, if DHCP server 's cl ient r ange is XXX.XXX.XXX.2~100, then WIZ6000's assigning DHCP Client IP address to application board is XXX.XXX.XXX.102~200.

2.2.4.3 Access Point Setup

After selecting the AP mode and please click "Setup" button, the page below is shown.
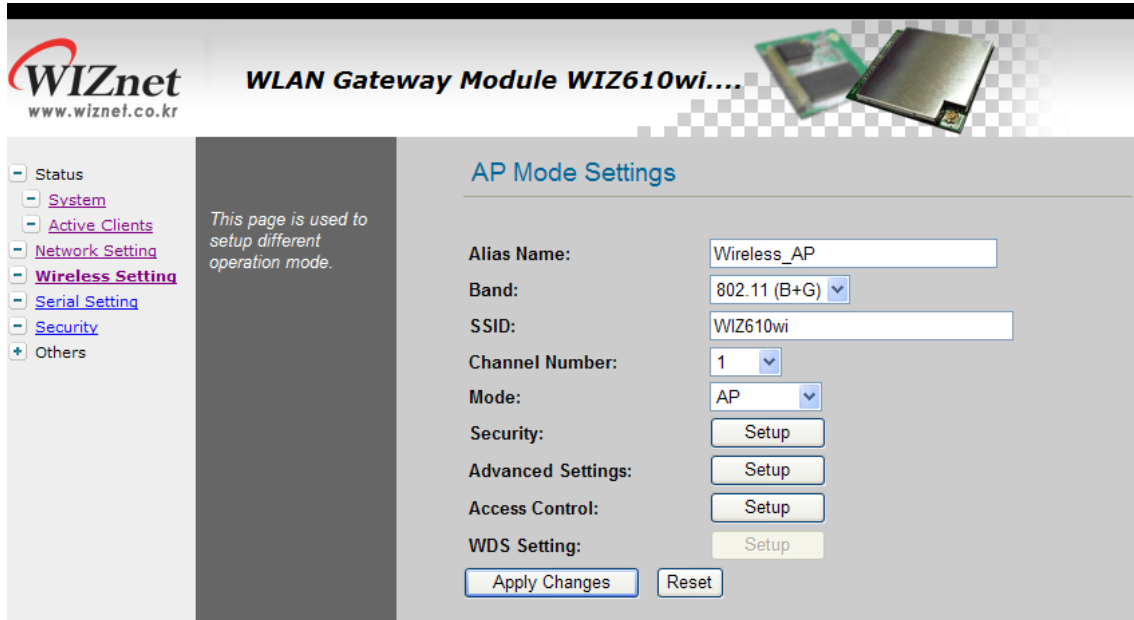
Figure 14. AP Mode Settings

• **Alias Name** : Input the name for WIZ6000.

• **Band** : Select communication protocol of WIZ6000.

Notice
802.11g protocol is compatible with 802.11b.

• **SSID**: Input SSID for wireless communication.

All devices o n the same wireless net work should h ave same S SID. The SSID ca n have max 32bytes characters composed of alphabets and numbers.

Notice
SSID field is case-sensitive.

• **Channel Number :** Select the channel frequency which you will use for wireless communication. If you select Auto, the connection is automatically processed to the channel assigned by AP.
When AP is booted, it investigates wireless channel environment and selects the lowest using channel.
And you can select a channel in the range of 1~13 manually.

● **Mode :** Select mode
  - AP : IF AP is selected, WIZ6000 operates as Access Point.
  - WDS Repeater : WDS (Wireless Distribution System) that can be used for the
                      communication between WIZ6000 and WIZ6000.
                      When this mode is selected, AP function operates at the same time.

● **Security :** Configure the security options for WIZ610wi. When you click "Setup" button, below
            page appears.
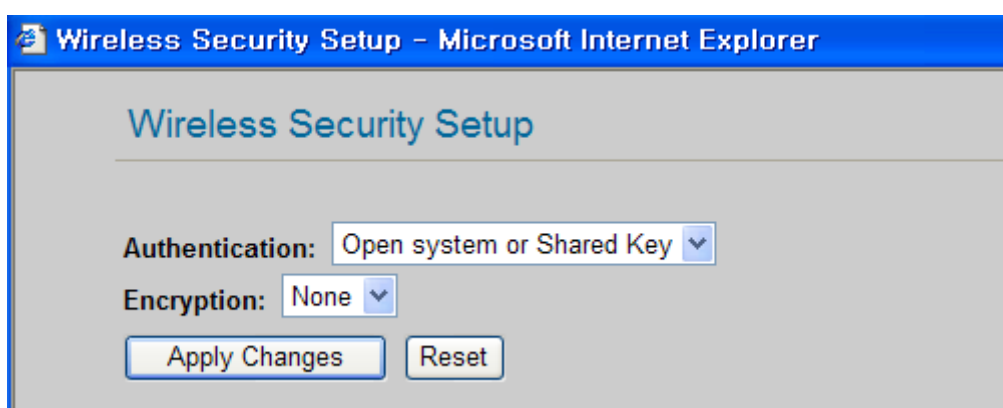
Figure 15. Wireless Security Setup

● **Authentication**
  You can select an authentication method for the clients to connect to AP.

Field	Description
Open System or Shared Key	No authentication is imposed to the WIZ6000 When enabling WEP, the configuration is activated.
Open System with 802.1x	The client authentication is performed by RADIUS server. Configure the port number, IP address and Password of RADIS server.
Shared Key	WEB function is activated. Input the Key value.
WPA RADIUS	WPA: Wi-Fi Protected Access WPA is based on TKIP(Temporal Key Integrity Protocol) IEEE802.11i standard which complements WEP(Wired Equivalent Privacy). WPA is the upgraded authentication methods by applying 802.1x and EAP (Extensible Authentication Protocol).

WPA PSK	WPA Pre-Shared-Key is the authentication method using Pre-Shared Key. Configure PSK format and input value for PSK.
WPA2 RADIUS	WPA2 is using AES(Advanced Encryption Shared) algorithm. AES is more strengthened encryption method rather than RC4 which is used for WEP or WPA. WPA2 RADIUS performs AES encryption and RADIUS server authentication. If WIZ610wi uses WPA2, it can be compatible with devices using WPA1.
WPA2 PSK	WPA2-PSK uses Advanced Encryption Standard(AES) for encryption Keys together with WPA PSK method.

Table 6. Authentication Method

● **Encryption**

It configures authentication mode fo r se curity of wirele ss network. The re a re options of WEP and None. If WEP is selected, the below items are activated for configuration.

ITEM	Description
key Length	Configure the length of WEP Key. Option : 64 or 128bit
Key Format	Configure the format of WEP Key. Option : ASCII(5 Characters) or Hex(10 Character)
Default Tx Key	Max 4 Tx Key values can be configured. Select one of them.
Encryption Key 1~4	Input the key value.

Table 7. WEP Configuration

● Advanced Settings : If you click the "Setup" button, below page is appeared.
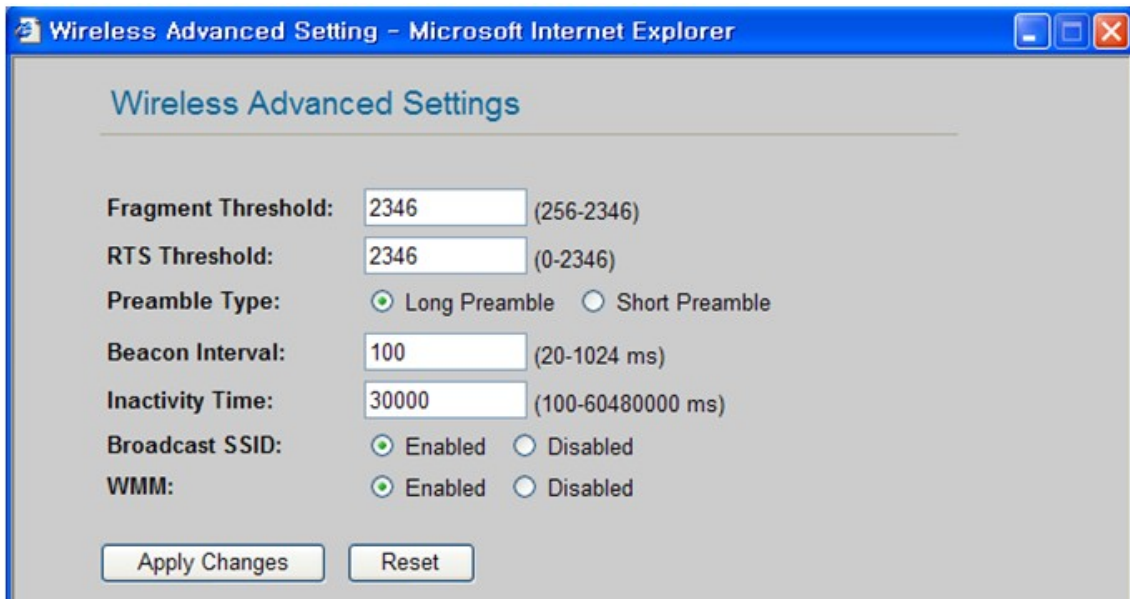
Figure 16. Wireless Advanced Settings

Field	Description
Fragment Threshold	This value specifies the maximum size for a packet before data is fragmented into multiple packets. If you experience a high packet error rate, you may slightly increase the Fragmentation Threshold. Setting the Fragmentation Threshold too low may result in poor network performance. Only minor reduction of the default value is recommended. In most cases, it should remain as its default value of **2346**.
RTS Threshold	When you encounter inconsistent data flow, only minor reduction of the default value, **2347**, is recommended. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The Router sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. The RTS Threshold value should remain as its default value of **2347**.

Preamble Type	
Beacon Interval	The default value is **100**. Enter a value between 1 and 65,535 milliseconds. The Beacon Interval value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the Router to synchronize the wireless network.

Table 8. Wireless Advanced Settings

● **Access Control**

　By registering the MAC address of a client, WIZ6000 blocks or allows the client to access. If you click the "Setup" button, page below appears.
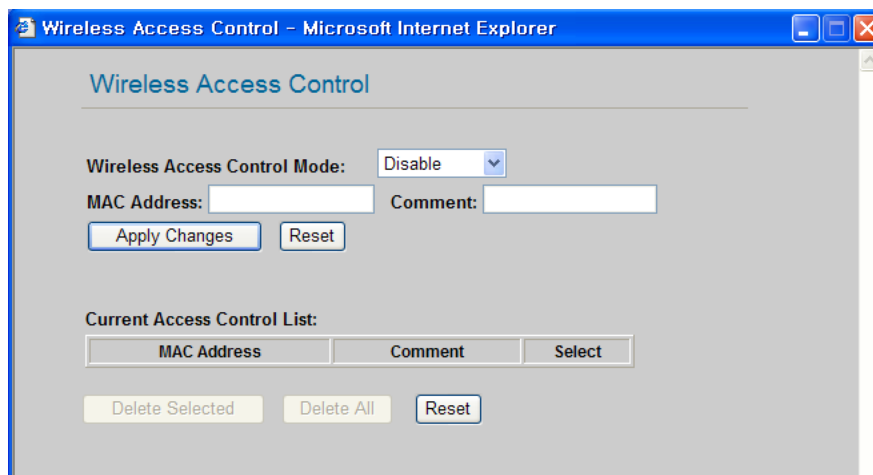
Figure 17. Wireless Access Control

Wireless Access Control Mode : This option allows you to enable or disable the "Wireless Access Control Mode". (Options: Disable / Allow Listed / Deny Listed)

Disable: Not use "Wireless Access Control Mode".

Allow Listed: clients with their MAC registered in the Control List are permitted to access.

Deny Listed: clients with their MAC registered in the Control List are denied to access WIZ6000

● **WDS Setting: :** If AP mode is set as WDS Repeater, WDS Setting button is activated. WDS is Wireless Distribution System that is working as a wireless bridge between AP and AP. If you click the "Setup" button, the page below appears.
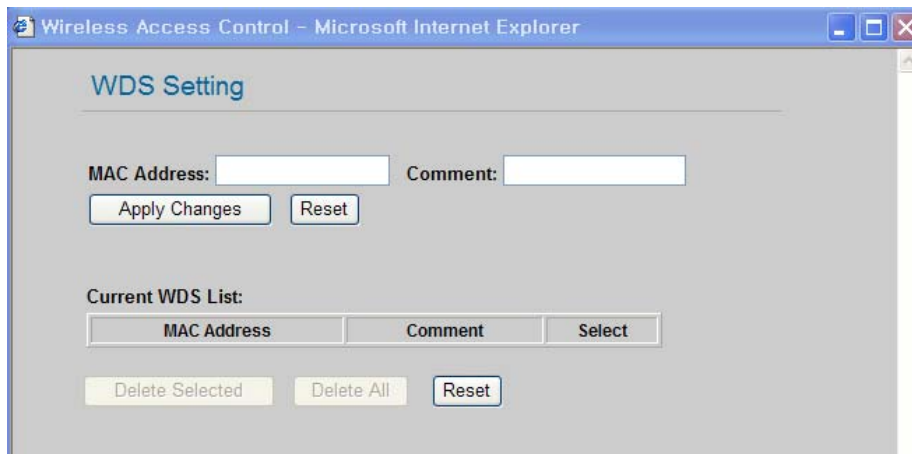
Figure 18. WDS Setting

Input wireless MAC address of the device to be connected.

Apply Changes: Add the MAC address into the WDS list

Reset: Discard all changes in all fields.

2.2.4.4 Gateway Setup

Notice
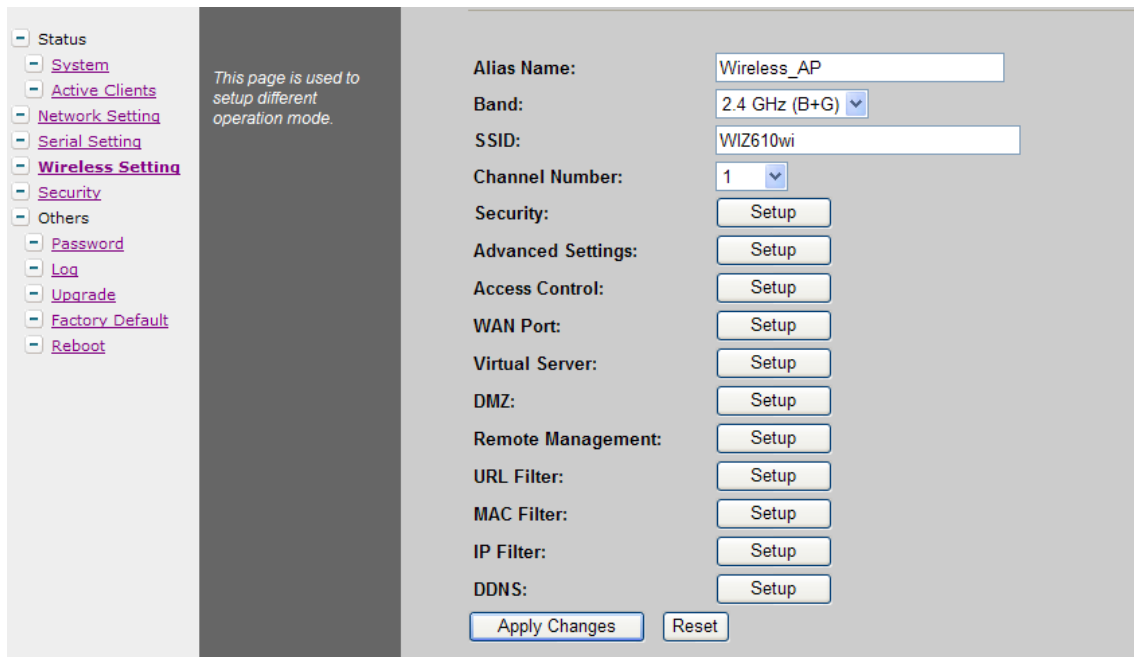
When changed to Gateway mode, wired netwo rk is disco nnected, It becau se WIZ6000's wire

port act as WAN Port. So to solve this problem..

1. Connect WIZ6000 through wireless

2. Check WAN IP of Gateway mode setup page

3. Connect 'http://WAN_IPaddress:8080 (8080 port)

First time it must be input '8080', but next time no need to add '8080'

Gateway mode can be used when you want to conn ect to the Internet thro ugh an ADSL/Cable

Modem, or IP Sharing Device. By clicking the "Setup" button, you can configure your PPPoE,

DHCP Client, PPTP or Static IP settings

Figure 19. Gateway Setup

- **Alias Name:** Refer to "2.2.4.3 Access Point Setup".

- **Band:** Refer to "2.2.4.3 Access Point Setup".

- **SSID**: Refer to "2.2.4.3 Access Point Setup".

- **Channel Number**: Refer to "2.2.4.3 Access Point Setup".

- **Security:** Refer to "2.2.4.3 Access Point Setup".

- **Advanced Settings:** Refer to "2.2.4.3 Access Point Setup".

- **Access Control:** Refer to "2.2.4.3 Access Point Setup".

- **WAN Port :** If configures WAN port. It configures the network environment for the connection to WIZ6000.

Figure 20. WAN Port Configuration

● **WAN Access Type**

  - Static IP : Manually input your IP address, Subnet Mask, Default Gateway and DNS.

  - DHCP Client : An IP address can be acquired from a DHCP server. The DNS information

    can be automatically acquired from a DHCP server or set manually

    (Set DNS Manually)..
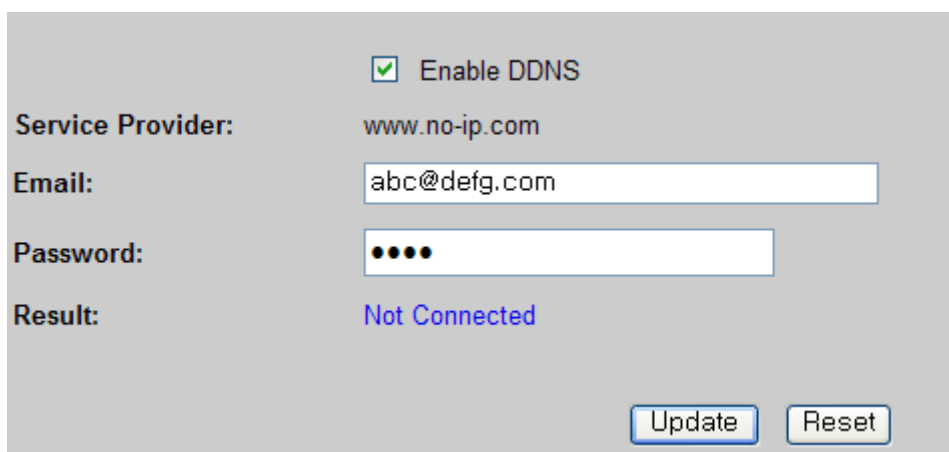
• PPTP

- **Virtual Server**: Virtual Server also known as Port Forwarding associates a port number with a private IP address(internal network). This technique allows clients from outside a network to access devices within the LAN (internal network).

- **DMZ**: This feature allows one network user to be exposed to the Internet for special-purposes such as Internet gaming or videoconferencing. DMZ hosting forwards all the ports at the same time to one PC. The Port Range Forward enhances the security of your device because only a range of ports are opened for access. DHCP should be disabled in order to avoid any changes in your IP address. Static IP address is recommended when using the DMZ

- **Remote Management** : Configure the port number for the connection to WIZ6000 from a remote site. Default Port Number is set as "8080".

- **URL Filter:** It enables to connect or disconnect to the specified URL.

- **MAC Filter:** Prevent access from a device with a specific MAC address.

- **IP Filter:** Prevent access from a device with a specific IP address

- **DDNS :** Once the DDNS server registers yours MAC address, your device can connect to the internet regardless of your address. DDNS service can be provided by www.no-ip.com. (You need to pay some fee). After registering some information at www.no-ip.com, input your E-mail address and password in the figure shown below. When you click the "Update" button, the status will change from "Not Connected" to "Connected"

Figure 21. WAN Access Type - PPPoE

2.2.4.5 Client Setup

In client mode, WIZ610wi connects to an access point.
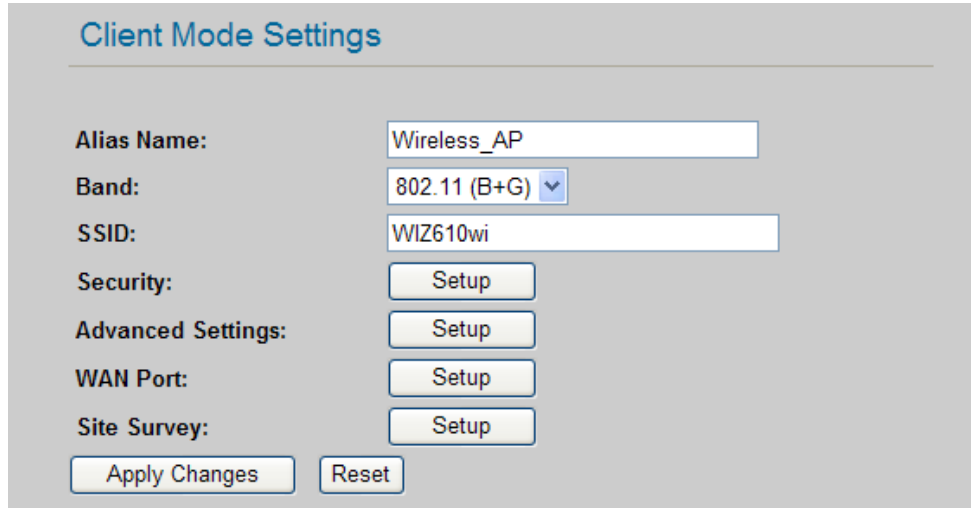
Figure 22. Client Setup

- **Alias Name**: Input the name for WIZ6000.

- **Band**: Select a communication protocol for your module. It supports 802.11b, 802.11g and 802.11b/g mode.

- **SSID**: Input the SSID of a n access poi nt. If y ou do n't know you r SSID, you can u se the "Site Survey" to search and connect to an AP.

- **Security:** Configure security settings (these should match your AP's settings)

- **Advanced Settings**: Refer to "2.2.4.3 Access Point Setup".

- **WAN Port:** Set the Static or DHCP Client of the WIZ6000's IP.

- **Site Survey:** If you click t he "Site Su rvey' button, all acce ss points ne ar your module are listed as shown in the figure below. Please select one AP and click "Connect" button. If PC or application device is set as DHCP Client, the AP will operates as its DHCP serve r and WIZ6000 d oesn't a ct a s DHCP Se rver. Wh en y ou conn ect to an AP with se curity enabled ,the "Wi reless Secu rity Setup Page" will appear a utomatically to set-up you r security settings. By using the "Site Survey", Band, SSID and Security can be configured all at the same time.
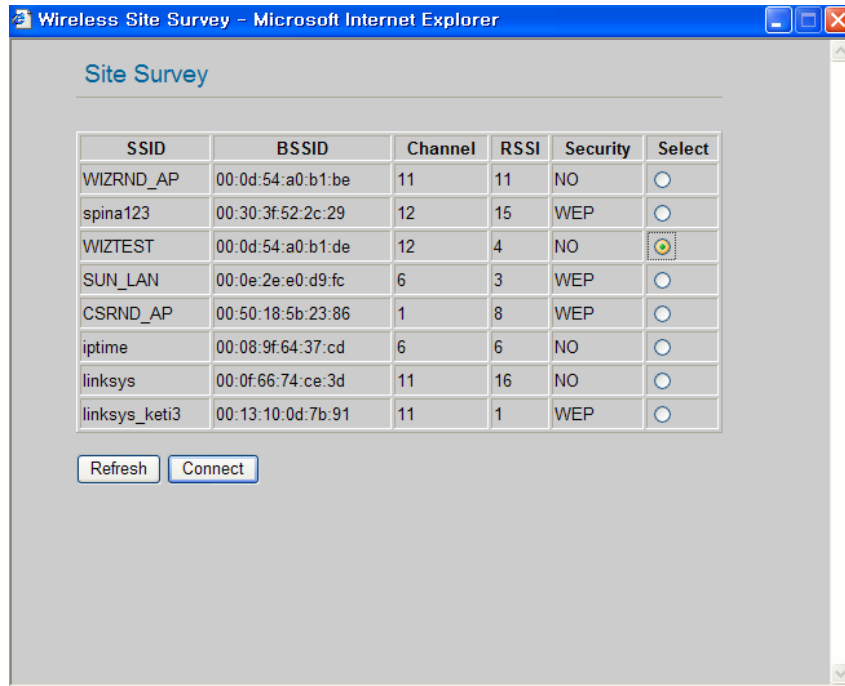
Figure 23. Site Survey

2.2.5 Serial Setting

For the 'Serial to Wireless' communication, you can configure serial parameters.
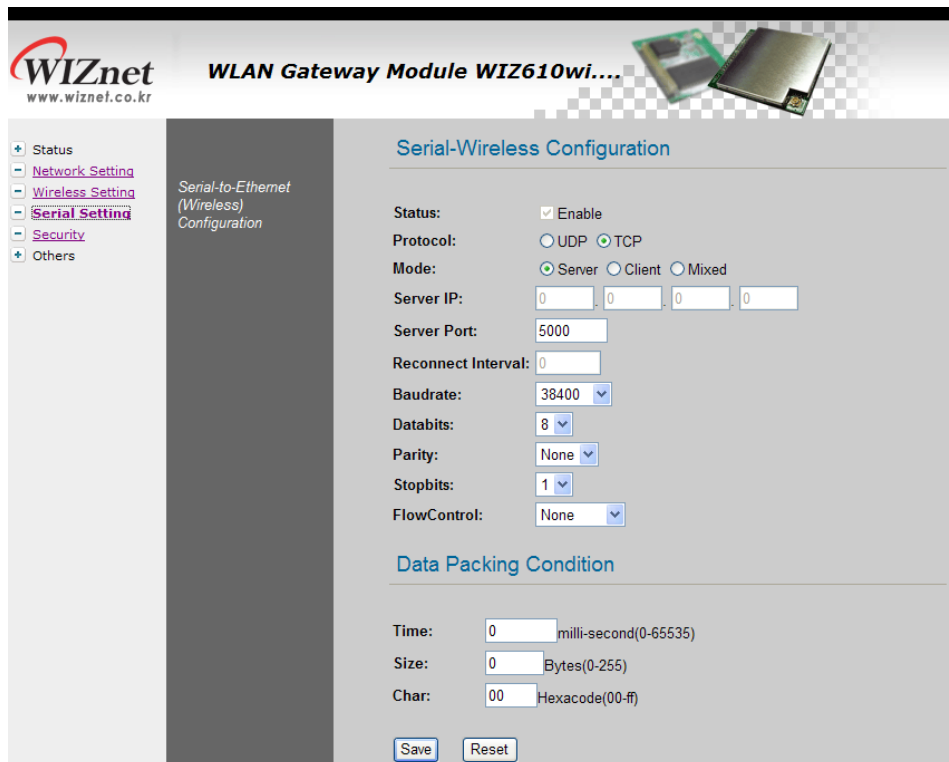
Figure 24. Serial to Ethernet Configuration

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- **Status:** Check this combo box to enable serial communication
- **Mode:** Select one mode among Server, Client and Mixed.

This mode is to select the communication method based on TCP. TCP is the protocol which establishes the connection before data communication. In server mode, WIZ6000 waits for the connection from a client. In client mode, WIZ6000 operates as client at the TCP Client mode on the process of connection, and tries to connect to the server's IP and Port. Mixed modes supports both of Server and Client at the same time.

Below describes in details regarding each mode

- **TCP server mode**

  In order to operate this mode, Local IP, Subnet, Gateway Address and Local Port Number should be configured. In monitoring applications, the server mode can be useful since it can listen for any connection from clients, and establish a connection for remote management.

  1. A client connects to the WIZ6000 which is in TCP Server mode.

  2. As the connection is established, data can be transmitted in both directions – from the host to the WIZ6000, and from the WIZ6000 to the host

- **TCP client mode**

  In TCP Client mode, your module will attempt to connect to a specified server.

  In order to operate this mode, Local IP, Subnet, Gateway Address, Server IP, and Server port number should be set. If the server IP has a domain name, please use the DNS function.

  1. When power is supplied, WIZ6000 board operating as TCP client mode actively establishes a connection to the server.

  2. Once the connection is established, data can be transmitted in both directions – from the host to the WIZ6000 and from WIZ6000 to the host

- **Mixed mode**

  In this mode, WIZ6000 normally operates as a TCP Server and waits for a connection request from a client. However, if WIZ6000 receives data from the serial device before connection is established, WIZ6000 changes to the client mode and sends the data to the server. Therefore, in the mixed mode, the server mode has higher priority than the client mode. Mixed mode takes advantages of both client and server mode. The client mode may be used for sending out emergency reports in an urgent situation while the server mode may be used for remote management.

- **Server IP :** Input server IP.

- **Server Port :** Input server port.

- **Reconnect Interval:** Set the interval retrying connecting to server.

- **Baud rate:** Configure serial communication speed.

- **Data bits:** Configure data bits.

- **Parity:** Configure parity checking option. (option: None, Odd, Even)

- **Stop bits:** Configure stop bit option.(Option: 1, 2)

- **Flow Control:** Configure flow control option. (option: none, Xon/Xoff, RTS/CTS)

- **Save :** Save the configuration values.

- **Reset :** Discard all changes in all fields

- **Data Packing Condition**

    You can specify how the serial data can be packed to be sent to the Ethernet. There are 3 delimiters - time, size and character. If all of them are set as '0', whenever the serial data is arrived, they are sent to the Ethernet immediately.

- Time: This field spe cifies the waiting time. Whe n there is n o more input from the se rial port, the module will wait for the spe cified time and then se nd out the seri al d ata to the network. Fo r example, if 2000 m s is specified, the module will send out the packet at 2000 ms after the last input from the serial port. If there is no dat a in the serial buffer, the module will not send out any data packets. ('0': Function Disable)

- Size: This field specifies the size limit in the serial buffer. Once the serial buffer reaches this limit, the dat a will be sent out to the Ethernet. If the serial buffer is greater than the size limit, the module will create an Ethernet packet and store the extra data, and send out to the Ethernet when the limit is reached again. ('0': Function Disable)

- Character: Register a chara cter to trigger th e con version of se rial dat a to n etwork packets. Whenever th e registe red character is insid e the serial buf fer, all the dat a before the registered ch aracter i s se nt out to the network e xcluding the cha racter it self. The character must be in Hexadecimal. ('0' : Function Disable)

    If any one of these conditions is met, the data will be sent to Ethernet.
    Ex) Delimiter: Size=10, Char=0x0D
    Serial data : 0123456789abc
    Ethernet data : 0123456789
    ☞ "abc" rem ains in the serial buf fer of t he module and will not be sent until the spe cified size or character has been fulfilled.

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2.2.6 Security Setup

Refer to "2.2.4.3. Access Point Setup'.

2.2.7 Others

2.2.7.1 Password

You can change the password of WIZ6000

Figure 25. Password Setup

2.2.7.2 Log

The log information can b e saved. In o rder to use this functio n, check the combo box "Enabl e Log". The log will include information such as wireless, DDNS, WAN and DHCP.

Figure 26. System Log

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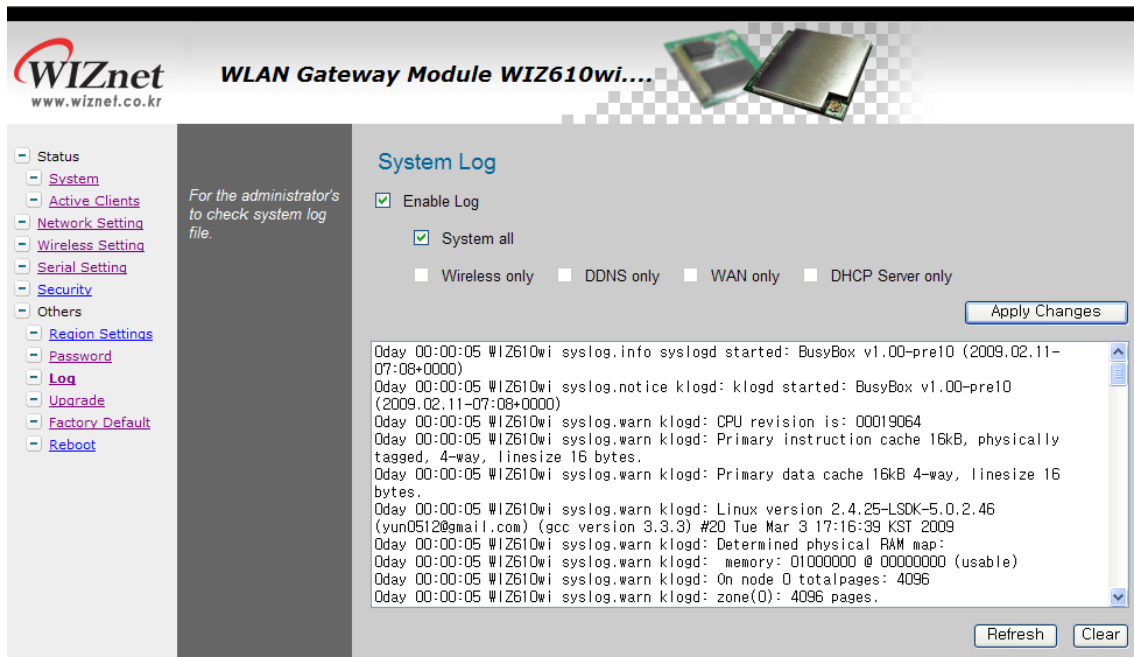
2.2.7.3 Upgrade

In this page, you can upgrade the firmware of your WIZ6000.

Browse the firmware file by clicking the "Find" button. If you click "Upload" button after selecting firmware file, the firmware starts uploading. This process will take about 60 seconds.
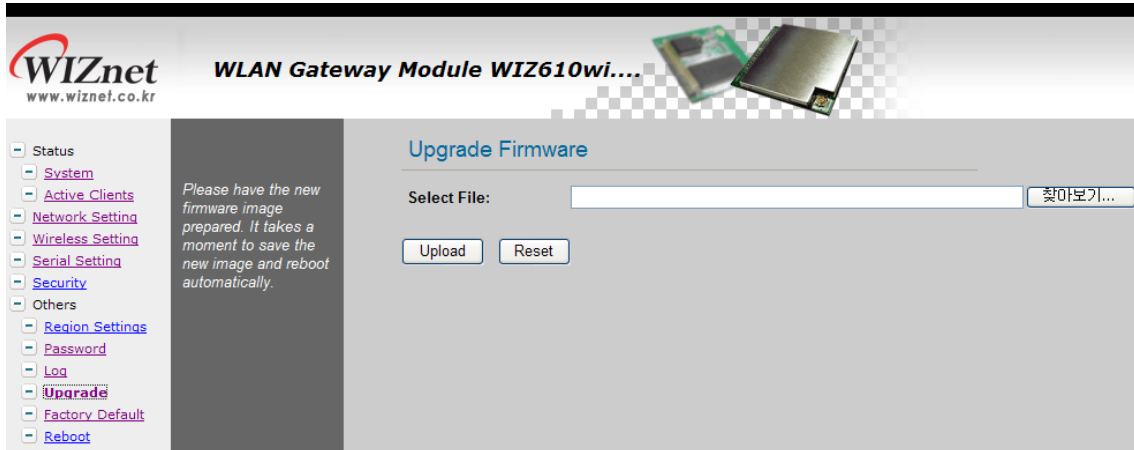
Figure 27. Upgrade Firmware

2.2.7.4 Factory Default

If you click the "Fa ctory Default" b utton, all se ttings value are resto red to the factory de fault setting. The factory default values are shown below:

Field	Default Value
IP Address	192.168.1.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Serv	er
DHCP Client Range	192.168.1.2~192.168.1.100
DNS Server	0.0.0.0
Serial Status	Disable
Serial Mode	Server
Server IP	0.0.0.0
Server Port	5000
Baudrate 3840	0
Databits 8	
Parity N	one
Flow Control	None

Wireless Mode	AP
Alias Name	Wireless_AP
Band	2.4GHz (B +G)
SSID WIZ61	0wi
Channel 1	
AP Mode	AP
Authentication	Open system or Shared Key
Encryption N	one
Fragment Threshold	2346
RTS Threshold	2346
Preamble Type	Long Preamble
Beacon Interval	100ms
Inactivity Time	30000ms
Broadcast SSID	Enable
WMM Enable	
Password Admin	
Log Disable	

Table 9. Factory Default Value

2.2.7.5 **Reboot**

In this page, you can reboot your module

Figure 28. Reboot System

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![WIZnet logo]

3. Hardware Specification
3.1 WIZ6000 Dimension
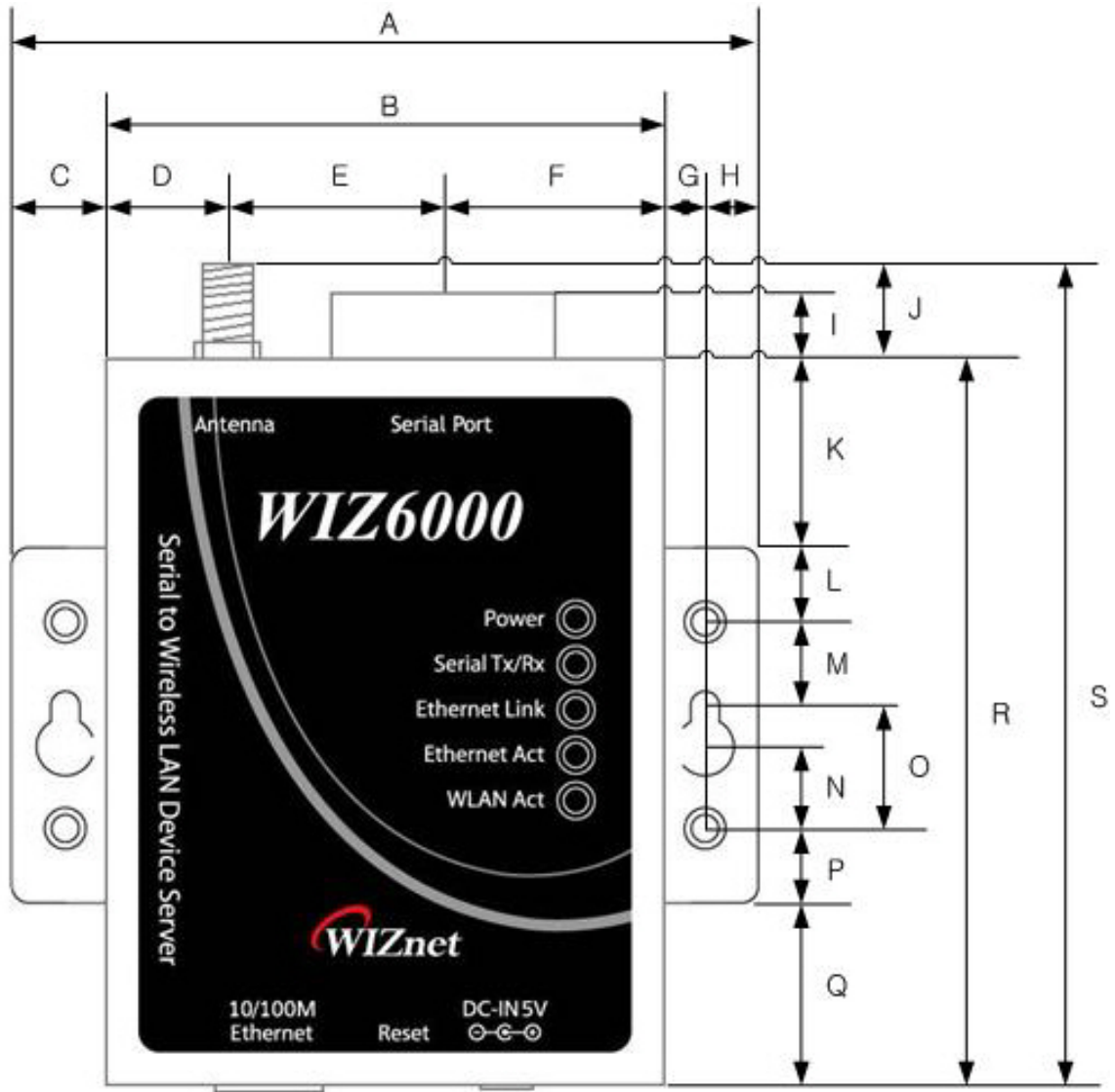
A	90.5	B	67.5	C	11.5	D	14.5
E	26.0	F	27.0	G	5.2	H	6.3
I	4.5	J	7.0	K	22.5	L	9.0
M	8.0	N	11.5	O	16.5	P	9.0
Q	22.5	R	87.5	S	94.5		

Figure 29. WIZ6000 Dimensions (unit : mm)

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3.2 Connector Specification

3.2.1 RJ-45 Connector

Ethernet port Pin outs

Pin	Signal
1 TX+	
2 TX-	
3 RX+	
6 RX-	
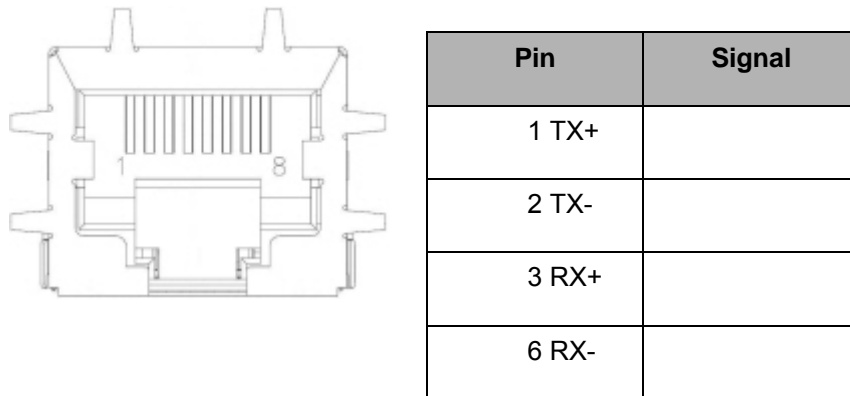
Figure 30. RJ-45 PIN Assignment

3.2.2 RS-232C Connector

Serial port Pin outs
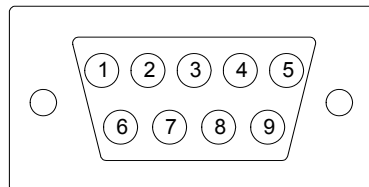
Pin Number	Signal	Description
1	H/W Trigger	Hardware Trigger signal Input
2	RxD	Receive Data
3	TxD	Transmit Data
4	EXT_GND	External Power Ground (Internally shorted to GND)
5	GND	Ground
6 NC		Not connect
7	RTS	Request To Send
8	CTS	Clear To Send
9	EXT_VCC	External Power Input (5V)

Table 10. RS-232 PIN Assignment

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4. Demonstration and Test

In this chapter, an example is provided for you to test the functionality of WIZ6000. The testing environments are the followings:

<Hardware>

- A PC equipped with a RS-232 serial port
- WIZ6000 Device Server
- Connect PC and module's Ethernet port by using an Ethernet Cable (Direct or Crossover)
- Connect PC and module's serial port by using a serial cable

<Software>

- Hyper Terminal (or any other terminal program)

• Step 1.

① Connect the PC and WIZ6000 by using a serial cable.

② Connect the PC and WIZ6000 by using an Ethernet cable.

③ Turn on the power switch of WIZ6000.

• Step 2. : WIZ610wi Environment Setup

① On your PC, go to the "Network Setting" and connect to your WIZ60 00 in the "Wi reless Network Connection".

② In your web browser, input IP address of WIZ6000 (Default : 192.168.1.254).
If configuration page appears, click "Serial setup" menu and set the serial parameters.

• Step 3. : Data Transmission

① Execute terminal program at the PC. (Ex: Hyper Terminal)

② Set the baud rate as the same value of WIZ6000.
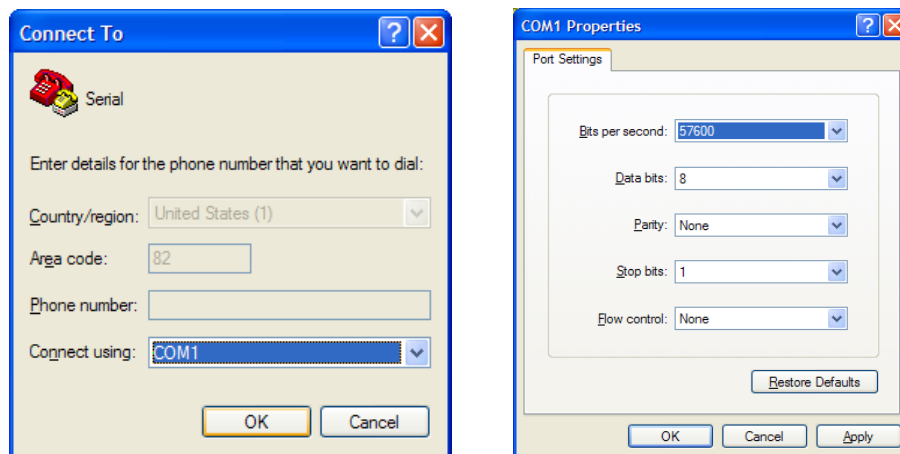
Figure 31. Serial Terminal Program configuration

③ Connect to "WIZ6000" in the Wireless Network Setting of your PC
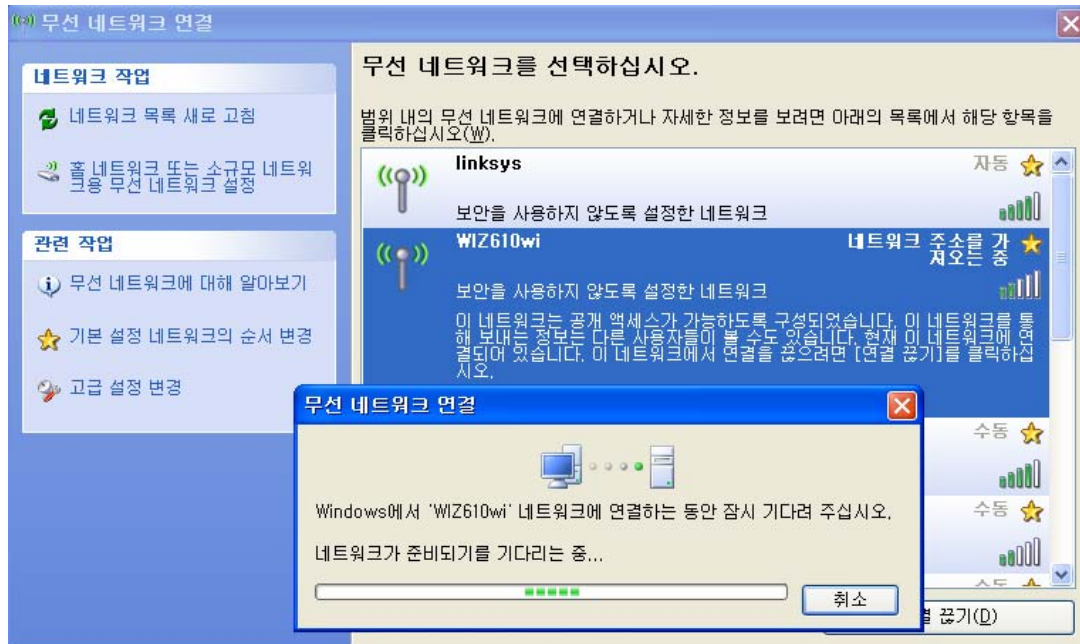
Figure 32. Wireless Network Connection

④ Execute one more terminal program, and set IP address and Port number.
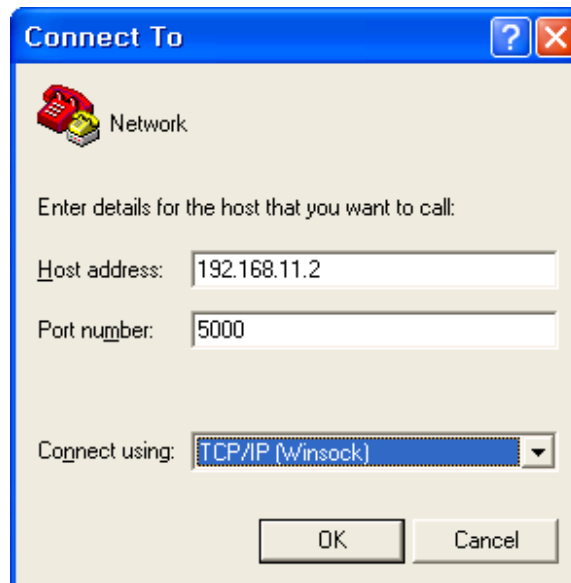
Figure 33. Network Terminal Program configuration

⑤ Input any chara   cters i n the Hype   r T erminal f or Seri al. (I n the exam   ple belo w,
"01234567890" is input).

The same characters are outputted in the Hyper Terminal for Network.

A Serial to Wireless LAN test was performed.   (Serial to Ethernet)

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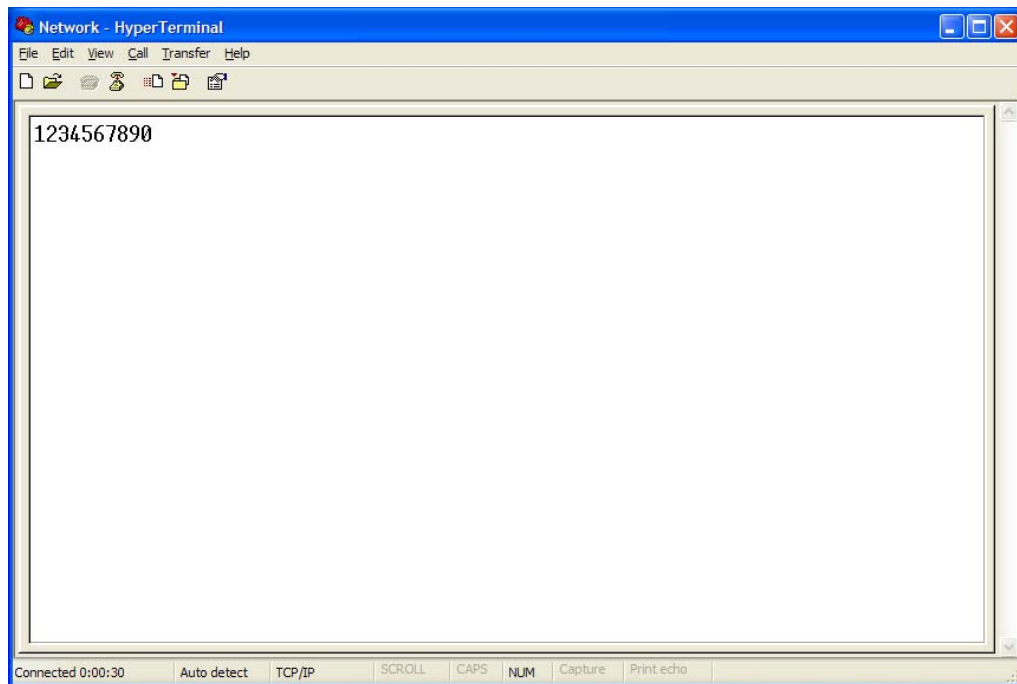
Figure 34. Received Data by Network Terminal Program

Figure 35. Serial to Wireless LAN 구성

⑥   In the same way, input an y characte r a t t he screen of terminal p rogram for ne twork, and
check if same character is displayed at the screen for serial. (Ethernet to Serial)

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※ The above test can also be performed in a program called, "Device Terminal program", which is easy and simple to use.
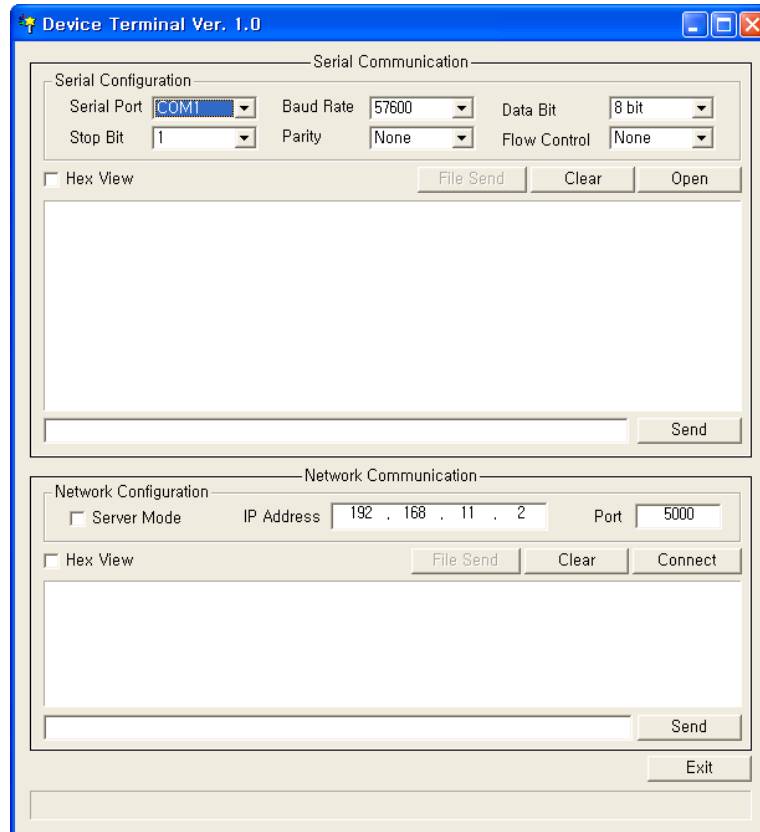
Figure 36. Device Terminal Program

Device Terminal is a program which integrates both serial and network communications into one user interface so that you can test your WIZnet gateway module easily.

As shown in above Figure, the upper part of the program allows you to config ure your serial setting of WIZ6000. By clicking the "Open" button, serial communication is enabled.

The lower part of the p rogram allows you to configure the network settings. You can test both TCP Client and TCP Server modes at the sam e time. If the Server Mod e is enabled, Device Terminal will operate as server mod e, and the WI Z6000 module will work as client mode. The PC where th e Device T erminal is op erating w ill wo rk as a server, the IP address of the PC should be set as Server IP of the module. If Se rver mode is not che cked, Device Terminal will operate as cl ient mode, and the module as serve r. For the IP ad dress and port, please inp ut your IP address and port number of WIZ6000 a nd click the "Con nect" button to start a network communication.

When serial and network terminals are connected, input any character in the Data Input window and click "Send" button. You can check the data is transferred into the another window.

5. Serial Configuration

Serial Command Format

It is possible to configure WIZ6000 by using serial command.

RS-232C port's Pin number 1 of WIZ6000 is Hardware trigger pin.

('1': H/W trigger disable, '0': enable)

< Frame Format >

Command Frame format

Descriptor STX		Command code	Parameter	ETX
Length(bytes) 1		2	Variable	1

Table 11. Serial Configuration Frame format

Reply Frame format

Descriptor STX		Reply code	Parameter	ETX
Length(bytes) 1		1	Variable	1

Table 12. Serial Configuration Reply Frame format

STX & ETX

Setting	Comments
STX	'<' : Hex = 3Ch
ETX	'>' : Hex = 3Eh

Table 13. Serial Configuration STX & ETX

Reply Code

Reply	Comments
S Comm	and was successful
F Comm	and failed
0 Invalid	STX
1 Invalid	command

2 Invalid	parameter
3 Invalid	ETX
E	Enter Serial Command Mode

Table 14. Serial Configuration Reply Code

Command Code

Com mand	Get/ Set	Comments Parameter		Time
Network				
RF Get		Firmware Version	vx.x.x 1	
RA Get		MAC Address	0:Ethernet MAC address, 1:Wireless MAC address, <0xx.xx.xx.xx.xx.xx_1xx.xx.xx.xx.xx.xx>	1
RI Get		IP Address	<Sxxx.xxx.xxx.xxx>	1
WI Set		IP Address	<xxx.xxx.xxx.xxx>	2
RS Get		Subnet Mask	<Sxxx.xxx.xxx.xxx>	1
WS Set		Subnet Mask	<xxx.xxx.xxx.xxx>	2
RG Get		Gateway	<Sxxx.xxx.xxx.xxx>	1
WG Set		Gateway	<xxx.xxx.xxx.xxx>	2
RD Get		DHCP Server	1:Enable, 0:Disable <Sx>	1
WD Set		DHCP Server	1:Enable, 0:Disable <x>	2
RH Get		DHCP Start/End IP	Start address_End address <Sxxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx>	1
WH Set		DHCP Start/End IP	Start address_End address <xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx>	3
DL Get		Wireless Active Client List	MAC address_Channel_TxRate_RSSI <Sxxxxxxxxxxxx_xx_xx_xx[:xxxxxxxxxxxx_xx_xx_xx:…]>	1
RL Get		DHCP Client List	<IP address_MAC address> <Sxxx.xxx.xxx.xxx_xxxxxxxxxxxx[:xxx.xxx.xxx.xxx_xxxxxxxxxx xx:…]>	1
WV	Set	DNS Server	1:Enable, 0:Disable	1

			<1:xxx.xxx.xxx.xxx[_xx.xx.xx.xx]> or<0>	
RV Get		DNS Server	1:Enable, 0:Disable_DNS Server IP address <Sx_xxx.xxx.xxx.xxx[_xx.xx.xx.xx]> or<0>	1
RT Get		WAN Port	0:Static, 1:DHCP Client, 2:PPPoE, 3:PPTP -Static: 0_Ipaddress_Subnet_Gateway_DNS <S0_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx> -DHCP Client: 1_IPaddress_Subnet_Gateway <S1_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx> PPPoE: 2_UserName_Password <S2_User Name_Password> -PPTP: 3_IP_Subnet_Gateway_ServerIP_UserName_Password <S3_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_UserName_Password>	2
WT Set		WAN Port	0:Static, 1:DHCP Client, 2:PPPoE, 3:PPTP -Static: 0_Ipaddress_Subnet_Gateway_DNS <0_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx> -DHCP Client: 1 <1> PPPoE: 2_UserName_Password <2_User Name_Password> -PPTP: 3_IP_Subnet_Gateway_ServerIP_UserName_Password <3_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_UserName_Password>	1
Wireless				
DB Get		Wireless Band	0: 11b+g, 2: 11b, 3:11g, 6: n, 9:b+g+n <Sx>	1
GB Set		Wireless Band	0: 11b+g, 2: 11b, 3:11g, 6: n, 9:b+g+n <x>	20
DO Get		Operation Mode	0:AP, 1:Gateway, 2: AP+WDS, 3:Client <Sx>	1
GO	Set	Operation	0:AP, 1:Gateway, 2: AP+WDS, 3:Client	45

		Mode <x>		
DS Get		SSID	1~32 chars <Sxxxx~>	1
GS Set		SSID	1~32 chars <xxxx~>	1
DC Get		Channel	Auto_0, 1~13 <Sx>	1
GC Set		Channel	Auto_0, 1~13 <x>	2
DW Get		WDS	1:Master,2:Slave _count_MACaddress_Comment[_MACaddress_Comment_...] <Sx_x_xxxxxxxxxxxx_xxx~>	1
GW Set		WDS	1:Master, 2:Slave_1:add, 2:delete_count_MACaddress_Comment[_MACaddress_ Comment_..] <x_x_x_xxxxxxxxxxxx_xxx~>	1
DP Get		Tx Power	0: off, 1-16: power(dBm), <Sxx>	1
GP Set		Tx Power	0: off, 1-16: power(dBm), <xx>	2
DR Get		Data Rate	<Sxx>	1
GR Set		Data Rate	<xx>	3
DH Get		Broadcast SSID	0:Enable, 1:Disable <Sx>	1
GH Set		Broadcast SSID	0:Enable, 1:Disable <x>	1
DM Get		WMM	1:Enable, 0:Disable <Sx>	1
GM Set		WMM	1:Enable, 0:Disable <x>	1
DA Get		MAC Access Control	0:Disable,1:AllowListed,2:DenyListed[_count[_MACaddress_Comment]] <Sx_x_xxxxxxxxxxxx_xxx~>	1
GA Set		MAC Access Control	0:Disable,1:AllowListed,2:DenyListed[_1:add,2:delete_count_MACaddress_Comment]	5

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			<x_x_x_xxxxxxxxxxx_xxx~>	
DI Get		Site Survey	SSID_BSSID_Channel_RSSI_Security <Sxxxx_xxxxxxxxxxxx_xx_xx_x>	15
DN Get		Alias Name	Alias Name <Sxxx>	1
GN Set		Alias Name	Alias Name, Max Length: 29bytes <xxx>	1
QP Get		Module Status Checking	connection status_SSID_BSSID_CHAN_RATE_RSSI Conn_status: '0' is not connected, '1' is connected. <Sx_xxxx_xxxxxxxxxxxx_xx_xxM_xx>	2
Security				
DU Get		Security Status	AuthMode_Encrypt[_KeyLength_KeyFormat_KeyValue_radius Passwd_radiusIP_radiusPort] AuthMode: 0(Open or Shared), 1(Open), 2(802.1x), 3(Shared), 4(WPA), 5(WPA-PSK), 6(WPA2), 7(WPA2-PSK), Encrypt: 0(None),1 (WEP), 2(TKIP), 3(AES), 4(TKIP_AES) KeyLength: 0(None), 1(WEP64), 2(WEP128) KeyFormat(WEP): 0(Ascii), 1(Hex) KeyFormat(WPA-PSK): 0(Passphrase), 1(Hex) <Sx_x_x_x_x_x_x_x_x>	1
GU Set		Security Control	AuthMode_Encrypt[_KeyLength_KeyFormat_KeyValue_radius Passwd_radiusIP_radiusPort] AuthMode: 0(Open or Shared), 1(Open), 2(802.1x), 3(Shared), 4(WPA), 5(WPA-PSK), 6(WPA2), 7(WPA2-PSK), Encrypt: 0(None),1 (WEP), 2(TKIP), 3(AES), 4(TKIP_AES) KeyLength: 0(None), 1(WEP64), 2(WEP128) KeyFormat(WEP): 0(Ascii), 1(Hex) KeyFormat(WPA-PSK): 0(Passphrase), 1(Hex) (WPA-PSK KeyValue:8~63byte) <x_x_x_x_x_x_x_x_x>	30
Serial				
RK Get		Protocol	TCP_0, UDP_1 <Sx>	2

WK Set	Protocol	TCP_0, UDP_1 <x>	1
RM Get	Mode	0:Client, 1:Mixed, 2:Server <Sx>	2
WM Set	Mode	0:Client, 1:Mixed, 2:Server <x>	1
RX Get	Server IP	Server IP address <Sxxx.xxx.xxx.xxx>	1
WX Set	Server IP	Server IP address <xxx.xxx.xxx.xxx>	2
RP Get	Port	0~65535 <Sxxxxx>	1
WP Set	Port	0~65535 <xxxxx>	1
RB Get	Baudrate_DataBit_Parity_Flow_Stopbits	eg. [Baudrate]1: 115200, 2: 57600, 3: 38400, 4: 19200, 5: 9600, 6: 4800, 7: 2400,8: 1200 [data byte] 7: 7bit, 8bit [parity] 0: no parity, 1: Odd, 2: Even [Flow] 0: no, 1: Xon/Xoff, 2: RTS/CTS [Stopbits]; 1: 1stop, 2:2stop <Sxxxxx>	2
WB Set	Baudrate_DataBit_Parity_Flow_Stopbits	eg. [Baudrate]1: 115200, 2: 57600, 3: 38400, 4: 19200, 5: 9600, 6: 4800, 7: 2400,8: 1200 [data byte] 7: 7bit, 8bit [parity] 0: no parity, 1: Odd, 2: Even [Flow] 0: no, 1: Xon/Xoff, 2: RTS/CTS [Stopbits]; 1: 1stop, 2:2stop <xxxxx>	5
QT Get	Time	0~65535 <Sxxxxx>	1
OT Set	Time	0~65535 <xxxxx>	1
QS Get	Size	0~255 <Sxxx>	1

OS Set		Size	0~255 <Sxxx>		1
QC Get		Char	00~ff <Sxx>		1
OC Set		Char	00~ff <xx>		1
QI Get		Inactivity Time	00~60 <Sxx>		1
OI	Set	Inactivity Time	00~60 <xx>	1	
RC Get		Connection Status(Server :Client)	0: Not Connect, 1:Connect <Sx>	1	
Others					
WF	Set	Factory Default	<WF> 55		
WR Set		Restart	<WR>		55

	S	<S> or <Sxx…>	Commend is successfully applied
	F	<F>	Failed to apply
	0	<0>	"<" is wrong
	1	<1>	There is not in command list
	2	<2>	Wrong Parameter factor
error code	3	<3>	">" is wrong
	4	<4>	Do not work in current mode
	5 <5	>	No more add list. **-Limit-** *WDS: 4 list *ACL: 16 list

	If input "_" in fact, should input"__" instead of "_".
	For example SSID, PSK etc.
	<DS> --> <S11__22>: SSID: 11_22
	<GS11_22> --> <S>: SSID: 11_22
	<QP> --> <S1_11__22_000102030405_...>: SSID: 11_22
	If multi command input, response time be delayed
	For example DA, GA, DW, GW
Notice	Security Available mode
	AP/GW Mode
	AuthMode: 0-7
	EncryptTyp e: 0-3
	Client Mode
	AuthMode: 1,3,5,7
	EncryptTyp e: 0,1,4

**Security Example parameter

<GU5_2_0_0_12345678>

<GU4_2_0_0_12345678_abcd_192.168.123.111_1812>

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6. Warranty

WIZnet Co., Ltd offers the following limited warranties applicable only to the o riginal purchaser. This offer is non-transferable.

WIZnet warrants our products and its parts against defects in materials and workmanship under normal use for period of standard ONE(1) YEAR for the WIZ6000 board and labor warranty after the date of original ret ail purchase. Duri ng this pe riod, WIZnet will repair or repl ace a defective products or part free of charge.

Warranty Conditions:

1. The warranty applies only to products distributed by WIZnet or our official distributors.
2. The warranty applies only to defects in material or workmanship as mentioned above in 6.Warranty. The warra nty applies only to   defects whi ch occu r duri ng norm al use and does not extend to dam age to pro ducts or parts which results from alternation, repair, modification, faulty installation or service by anyone other than som eone authorized by WIZnet Inc. ; damage to products or parts caused by accident, abuse, or mi suse, poor maintenance, mishandling, misapplication, or used in violation of instructions furnished by us ; damage occurring in shipment or any damage caused by an act of God, such as lightening or line surge.

Procedure for Obtaining Warranty Service

1. Contact an authorized distributors or dealer of WIZnet Inc. for obtaining an RMA (Return Merchandise Authorization) request form within the applicable warranty period.
2. Send the   products to th e dist ributors or d ealers togethe r with the complet ed RMA request fo rm. All produ cts returned fo r warr anty mu st be carefull y rep ackaged in the original packing materials.
3. Any service issue, please contact to sales@wiznet.co.kr