WIZ100SR User's Manual

(Version 2.0)

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Table of Contents

Figures

Tables

1. Introduction

WIZ100SR is a gateway module that converts RS-232 protocol into TCP/IP protocol. It enables remote gauging, managing and control of a device through the network based on Ethernet and TCP/IP by connecting to the existing equipment with RS-232 serial interface.   In other words, WIZ100SR is a protocol converter that transmits the data sent by serial equipment as TCP/IP data type and converts back the TCP/IP data received through the network into serial data to transmit back to the equipment

1.1. Key Features
- Direct Connection to the Serial Device
  - Adding Network Function Simply and Quickly
  - Providing Firmware Customization
- System Stability and Reliability by using W5100 Hardware Chip
- Supports PPPoE Connection & its Authenticaiton Configuration
- Supports Serial Configuration – with Simple and Easy command
- Supports Password for the Security
- Configuration Tool Program for easy Configuration
- 10/100 Ethernet Interface and max 230Kbps Serial Interface
- Supports DHCP, Statict & PPPoE for Network Configuration
- Supports DNS
- RoHS Compliant

1.2. Products Contents (EVB model)

	WIZ100SR Module
	WIZ100SR Test Board
	Serial Cable (to connect Serial device and Test board)
	Network Cable (Crossover Cable)
	Power (DC 5V 500mA Adaptor)
	CD (including Manual, H/W Schematic, and S/W)

Table 1. Products Contents

1.3. **Products Specification**

1.3.1. **WIZ100SR Module**

Category	Specification
Protocol	TCP, UDP, IP, ARP, ICMP, IGMP, MAC, DHCP, PPPoE, DNS
Network Interface	10/100 Base-T Ethernet (Auto detection)
Serial Port	1 RS-232 port (3.3V LVTTL)
CPU	8051 compatible
Serial line format	8-N-1, 8-O-1, 8-E-1, 7-O-1, 7-E-1
Serial flow control	None, XON/XOFF, CTS/RTS
Serial signal	TXD, RXD, RTS, CTS, DTR, DSR, GND
Software	Remote Downlod and Configuration
Serial Transmission Speed	1200bps ~ 230Kbps
Memory	Internal Memory (62KB Flash Memory, 2KB EEPROM, 16KB SRAM)
Temperature	10'C ~ 80'C (Operating), -40~85'C (Storage)
Humidity	10~90%
Power	3.3V, 150mA
Connector type	2x12 2mm Pin header array
Size	50mm x 30mm x 8.85mm

Table 2. WIZ100SR Module Specification

1.3.2. WIZ100SR Test Board
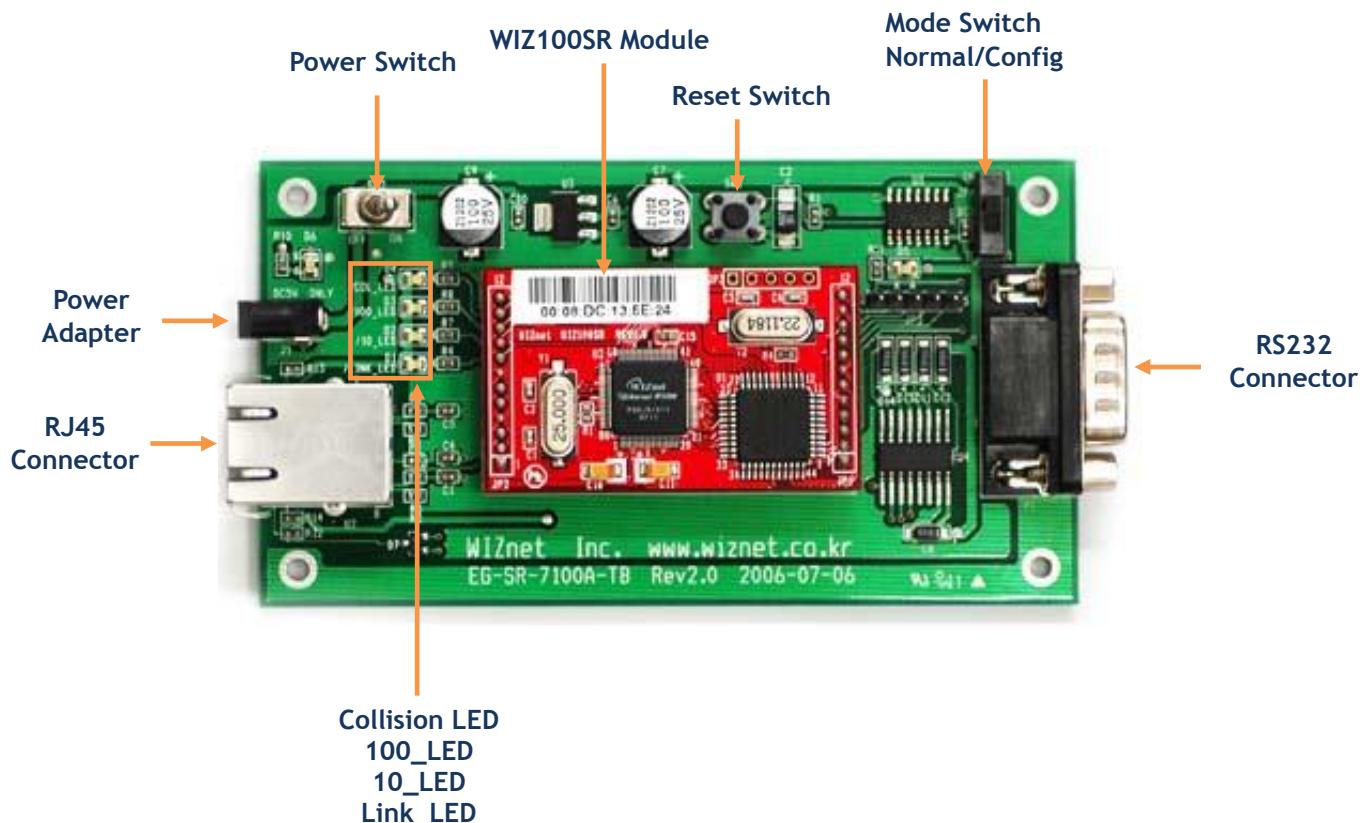
Figure 1. WIZ100SR Test Board

☞ **NOTE : Be careful of setting Mode Switch. If Mode Swich is set as Config mode, the network function is not normally operated. For the function test, set it as Normal mode.**

➔ **If LED(D5) is on, it indicates that network is connected or Config mode is set.**

1.3.2.1. Serial Interface
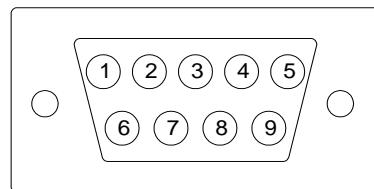
Figure 2. Serial Pin Assignment of WIZ100SR Test Board

Pin Number	Signal	Description
1	NC	Not Connected
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	NC	Not Connected

Table 3. Serial Pin Description

■ RxD, TxD, GND : These are all you need if the device does not use hardware handshaking.

■ RxD, TxD, GND, RTS, CTS : These are the signals used when serial device uses hardware handshaking.

■ DTR, DSR : not used
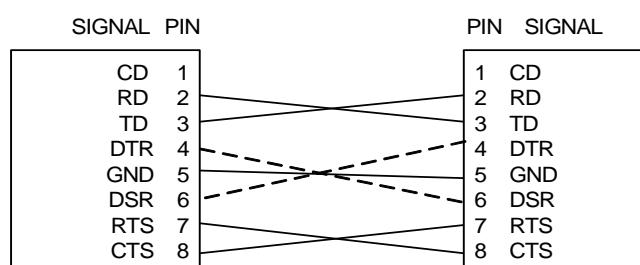
Figure 3. Serial Cable

1.3.2.2. LED

■ Power LED: displays power stauts of WIZ100SR

■ Link LED: indicates network link is established

■ 10 LED: indicates network speed is 10Mbps

■ 100 LED: indicates network speed is 100Mbps

■ Collision LED: indicates a packet transmitted from the Ethernet controller to the
   network has collied with antother packet

2. Getting Started

2.1. Hardware Installation Procedure

For the testing, module and test board should be prepared.

- **STEP1:** Plug the WIZ100SR module into the sockets on the test board.

  ☞ **Be careful of connecting the JP1 on the module to the correct JP1 on the test board.**

  ☞ **Use test board rev 2.0 or above for WIZ100SR testing.**

- **STEP2:** Connect the RJ-45 connector of WIZ100SR test board to the Ethernet hub or LAN port of PC.

- **STEP3:** Connect the DB9 jack of WIZ100SR and serial device with RS-232 serial line.

- **STEP4:** Connect the 5V (500mA) DC power adaptor to the WIZ100SR test board. The power used fo WIZ100SR is 3.3V.

2.2. **Configuration Tool**

2.2.1.   Network Configuration
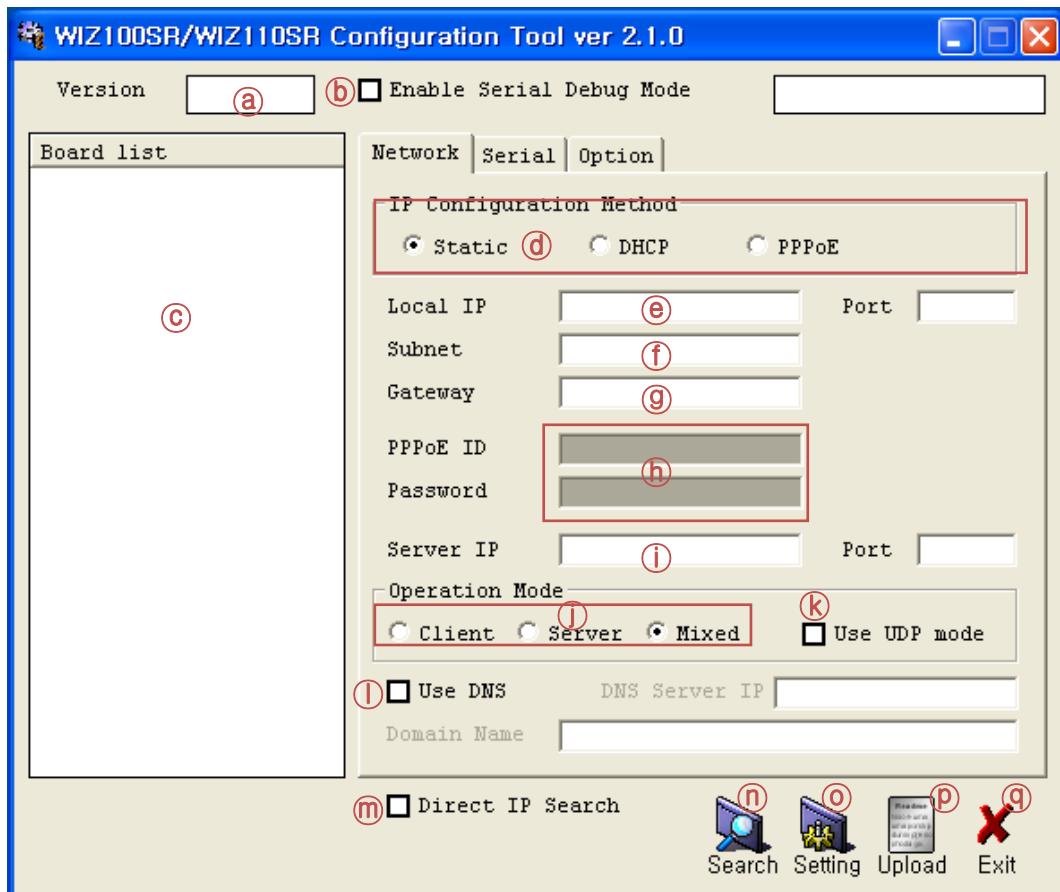
Figure 4. Configuration Tool (Network Config)

ⓐ **Version :** Displays firmware version.

ⓑ **Enable Serial Debug Mode :** If this mode is checked, you can monitor the status module and socket message (listen OK, connect fail etc.) through serial terminal. If Debug mode is on, debug message can cause abnormal operation of the serial device. Therefore, just use this mode only for Debug mode.

ⓒ **Board List :** If you click "Search" button, all the MAC addresses on a same subnet, will be displayed.

ⓓ **IP Configuration Method:** Select IP setting mode, you can select one of Static, DHCP, PPPoE mode.
- **Static**: "Static" is option for setting WIZ100SR IP with static IP address. Firstly, select MAC

address which you wanted to set as static IP in the 'board list'. Then "Local IP, Subnet, Gateway box will be enabled. Input Static IP address and click "setting" button. Then set the IP address as you wanted. (PPPoE ID, Password box is disabled)

- **DHCP**: Set this option to use DHCP mode. Firstly, check 'DHCP' and click 'Setting' button. If IP address is successfully acquired from DHCP server, the MAC address will be displayed on the configuration windowt. (It takes some time to acquire IP address from DHCP server)
When a module on the board list is selected, IP address, Subnet mask and Gateway are displayed. If module could not acquire network information from DHCP server, IP address, Gateway Address and Subnet mask will be initialized to 0.0.0.0.

- **PPPoE :** WIZ100SR supports PPPoE for ADSL user. When you select PPPoE at the "IP Configuration Method", PPPoE ID & Password box is enabled.
1. To set PPPoE, connect PC to WIZ100SR directly and execute Configuration Tool program on PC. (Configuration Tool Version should be 2.1 or above)
2. Select 'PPPoE' of the "IP Configuration Method" tab and input ID & Password.
3. Click "setting" button to apply.
4. Connect Module to ADSL Line.
5. If "Enable Serial Debug Mode" is selected, you can see PPPoE access status via serial console.

WIZ100SR/WIZ110SR Ver. 02.02
-- PHASE 0. PPPoE(ADSL) setup process --

-- PHASE 1. PPPoE Discovery process -- ok

-- PHASE 2. LCP process -- ok

-- PHASE 3. PPPoE(ADSL) Authentication mode --
Authentication protocol : c223 00,
-- Waiting for PPPoE server's admission --ok

-- PHASE 4. IPCP process --ok

Figure 5. PPPoE Access Process

ⓔ **Local IP/Port :** WIZ100SR's IP address and Port number for network connection

☞ *Be sure to input correct network information. If you input incorrect IP address, it can cause network collision or mal-function.*

ⓕ **Subnet :** WIZ100SR's subnet mask

ⓖ **Gateway :** WIZ100SR's Gateway address

ⓗ **PPPoE ID/Password :** If you select 'PPPoE' mode, input ID/Password which you received from ISP company.

ⓘ **Server IP/Port :** When WIZ100SR is set as "Client mode" or Mixed mode", server IP and port should be set. WIZ100SR attempts to connect this IP address.

ⓙ **Network mode:**

- client/server/mixed : This is to select the communication method based on TCP. TCP is the protocol to establish the connection before data communication, but UDP just processes the data communication without connection establishment.

  The Network mode of WIZ100SR can be divided into TCP Server, TCP Client and Mixed mode according to the connection establishing method. At the TCP server mode, WIZ100SR operates as server on the process of connection, and waits for the connection trial from the client. WIZ100SR 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. The communication process of each mode is as below.

.

<TCP server mode Communication>
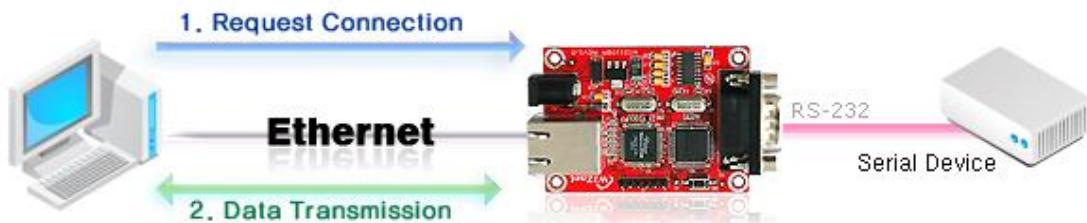
Figure 6. TCP Server mode

At the TCP Server mode, WIZ100SR waits for the connection requests.

TCP Server mode can be useful when the monitoring center tries to connect to the device (where WIZ100SR is installed) in order to check the status or provide the commands. In normal time WIZ100SR is on the waiting status, and if there is any connection request (SYN)

from the monitoring center, the connection is established(ESTABLISH), and data communication is processed (Data Transanction). Finally connection is closed (FIN).

In order to operate this mode, Local IP, Subnet, Gateway Address and Local Port Number should be configured first.

As illustrated in the above figure, data transmission proceeds as follows,

1. The host connects to the WIZ100SR which is configured as TCP Server mode.

2. As the connection is established, data can be transmitted in both directions – from the host to the WIZ100SR, and from the WIZ100SR to the host

<TCP client mode Communication>
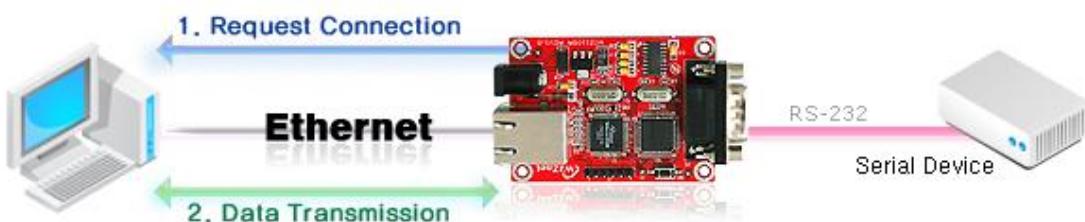
Figure 7. TCP Client mode

If WIZ100SR is set as TCP Client, it tries to establish connection to the server.

To operate this mode, Local IP, Subnet, Gateway Address, Server IP, and Server port number should be set. If server IP had domain name, use DNS function.

In TCP Client mode, WIZ100SR can actively establish a TCP connection to a host computer when power is supplied.

As illustrated in the above figure, data transmission proceeds as follows:

1. As power is supplied, WIZ100SR board operating as TCP client mode actively establishes a connection to the server.

2. If the connection is complete, data can be transmitted in both directions – from the host to the WIZ100SR and from WIZ100SR to the host

<Mixed mode Communication>

In this mode, WIZ100SR normally operates as TCP Server and waits for the connection request from the peer. However, if WIZ100SR receives data from the serial device before connection is established, it changes to the client mode and sends the data to the server IP. Therefore, at the mixed mode, the server mode is operated prior to the client mode.

As like TCP Server mode, the Mixed mode is useful for the case that the monitoring center tries to connect to the serial device (in which WIZ100SR is used) to check device status. In addition to this, if any emergency occurs in the serial device, the module will change to Client mode to establish the connection to the server and deliver the emergency status of the device.
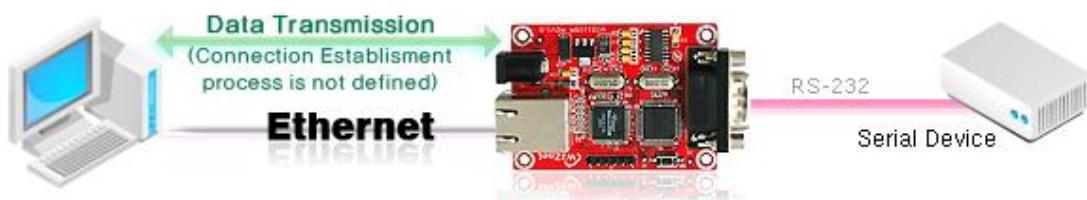
ⓚ **Use UDP mode**

Figure 8. UDP mode

At the UDP mode, the connection establishment is not defined. Just set the IP address and port number of the peer and send the data.

ⓛ **Use DNS :** If DNS function is needed, check this option and input the domain name of DNS server. DNS(Domain Name System) is the database system having information about IP address and corresponding domain name. When connecting to domain name, you can use DNS function of WIZ100SR. Input IP address of DNS server provided by ISP in *DNS Server* IP, and domain name in the *Server (Domain)*

If server has dynamic IP address, but domain name, if you use DNS function, you do not need to configure server IP address whenever it's changed.

ⓜ **Direct IP Search**

Direct IP Search can be used for searching WIZ100SR not installed in the same subnet.

If the Direct IP search is checked, the configuration tool use the TCP instead UDP broadcast to search modules. Therefore, network information of the module such as IP address, subnet mask and gateway is required for the search.

If you check Direct IP search, the field in which IP address is input, will be activated. In this field, input IP address of the module, and click "Search" button.

☞ **If module does not have valid network information, Direct IP search is not available. Check if module is connected to the NAT or private network. If so, it is not possible to connect to the module from outside.**

ⓝ **Search**

The Search function is used to search all modules existing on the same LAN. By using UDP broadcast, all modules on the same subnet will be searched.

The searched module is displayed as MAC address in the "Board list".

ⓞ **Setting**

This function is to complete the configuration change.

If you select the MAC address from the "Board list", the default configuration value of the module will be displayed. Change the configuration and click "Setting" button to complete the configuration. The module will re-initialize with the changed configuration. Changed value is saved in the EEPROM of the module. Thus, the value is not removed even though power is disconnected.

The configuration value can be changed in below steps.

① Select the mac address of which configuration value should be changed in the "Board list. The values configured will be displayed.

② Change the value

③ Click "Setting" button. The configuration change will be complete.

④ The module will be initialized to the changed values (re-booting is processed)

⑤ To check configuration result, click 'Search' button.

ⓟ **Upload**

Firmware will be uploaded through network

☞ **After uploading the firmware, 20~30 seconds are required for initialization.**

ⓠ **Exit :** Close the configuration tool program.

2.2.2. Serial configuration
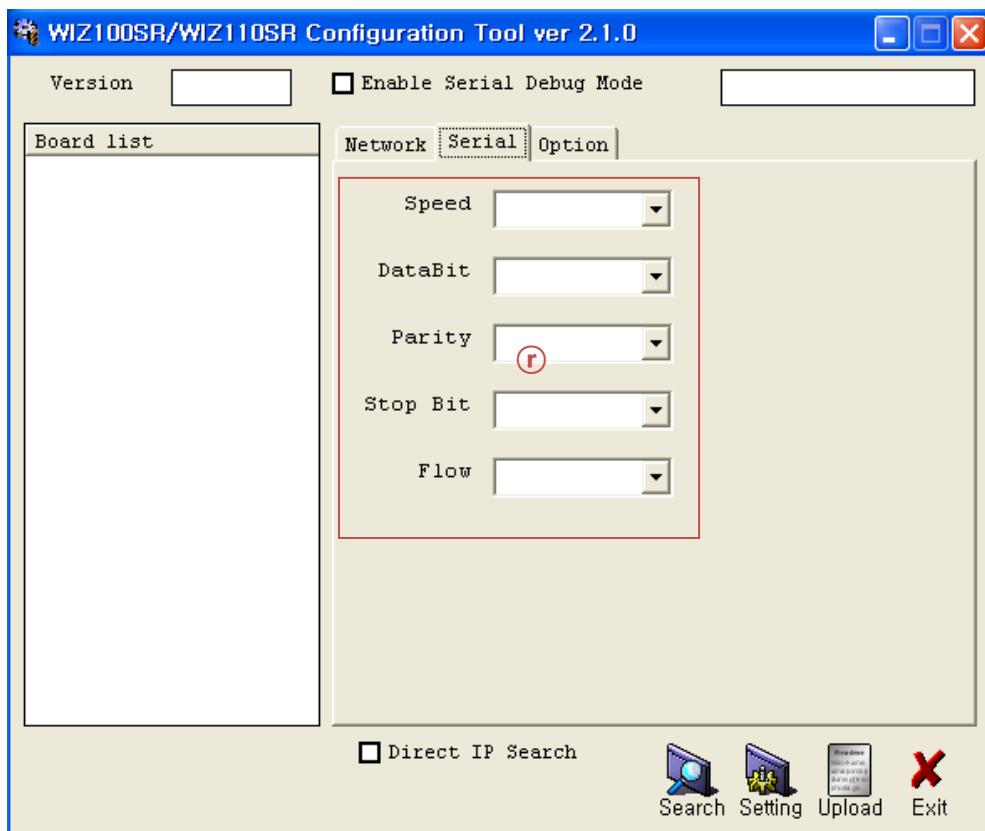
Figure 9. Configuration Tool (Serial Config.)

ⓕ **Serial**

Serial Configuration value of selected module is displayed.

In order to change the serial configuration of WIZ100SR, this menu can be used.

☞ **By clicking the "Setting" button, changed value can be applied.**

.

2.2.3.　Option configuration
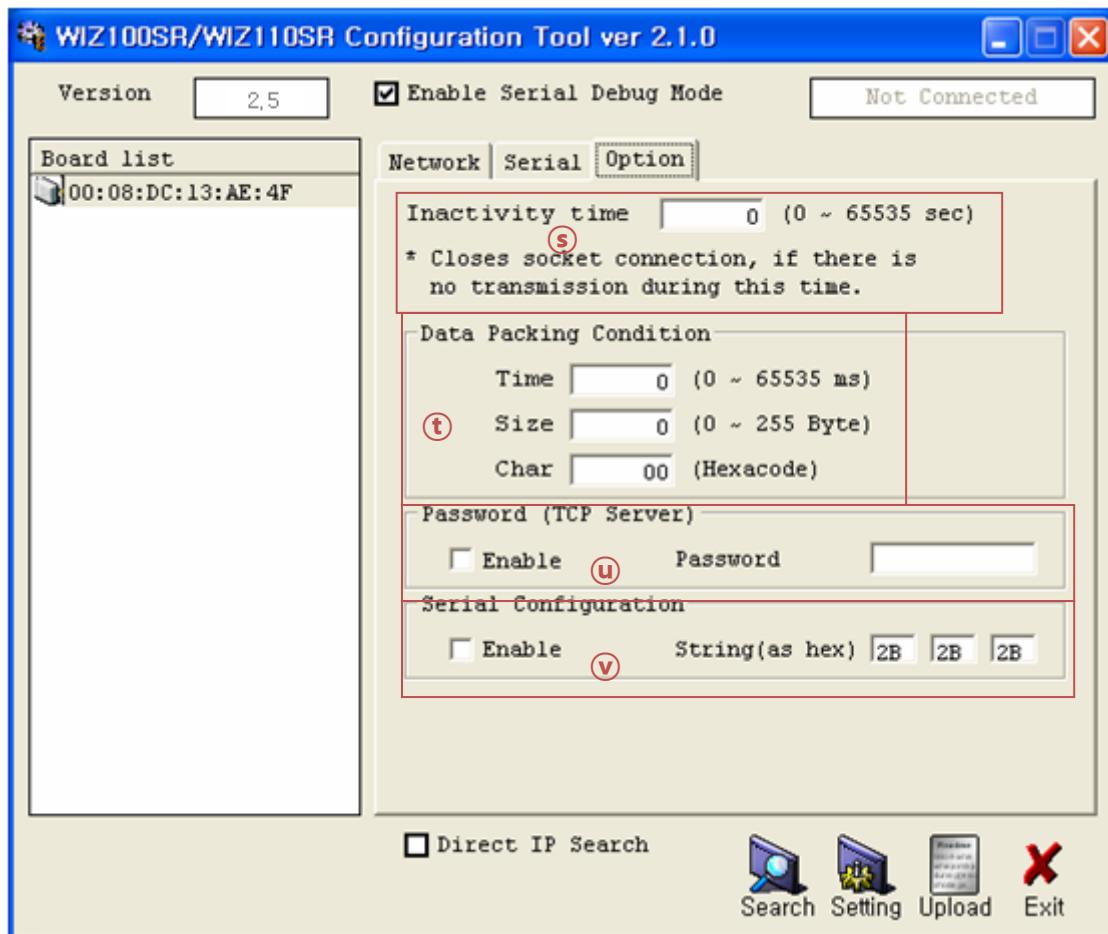
Figure 10. Configuration Tool (Option Config.)

Ⓢ **Inactivity time**

After the connection is established, if there is not data transmission within the time defined in Inactivity time, the connection is closed automatically.

The default value is '0'. If '0' is set, this function is not activated. In this default setting, the connection is maintained even though there is no data transmission. In order to close the connection, the 'Close' command should be given.

This function can be used for more than two or more systems to connect to a WIZ100SR module. If one system holds the connection to the WIZ100SR, other systems can not connect to the module. If there is no data transmission during the time defined in Inactivity time, the connection will be closed for other system to be connected.

Inactivity Time also can be useful for the case when the server system is unexpectedly shut down. In this status, if there is not any data communication during the time defined in the

Inactivity time, WIZ100SR will close the connection and enter into waiting status.

ⓣ **Data Packing Condition**

You can designate how the serial data can be packed to send to the Ethernet.

In default mode, WIZ100SR checks the serial buffer and sends any received data to Ethernet without any standard. Therefore, the data can be regarded as error data due to inconsistent data lenth. In order to solve this problem, the data from serial can be packed according to the specified condition before sending to Ethernet. The condition is as below.

Time: If there is not any new data during designated time, all data in the serial buffer is converted to Ethernet packet. If new data is received, the time is re-calculated and the received data is saved in the serial buffer. Time condition can be utilized when the serial data size is variable and has no ending character, but needs to be delivered in frame unit. (If the value is '0', option is not used)

Size: When data is collected as much as the defined size in the serial buffer, it is transmitted to Ethernet (If the value is '0', option is not used)

Character: The data is collected in the serial buffer until specified charater is received, and transmitted to Ethernet. The character can be specified in Hex formation. (The value is '0', this option is not used)

One of three condition is satisfied, the data is trnasmited to the Ethernet.

Ex) Delimiter: Size=10, Char=0x0D

Serial data : 0123456789abc

Ethernet data : 0123456789

☞ "abc" data remains in the serial buffer of module.

ⓤ **Password**

'Password' function is for blocking client's access which is not allowed.

'Password' function can be operated only in 'TCP Server' mode. When 'password' function operates, clients should input password to access.

1. Execute Configuration Tool program.(Configuration Tool version should be 2.1 or above)
2. Select 'Server' of "Operation Mode".
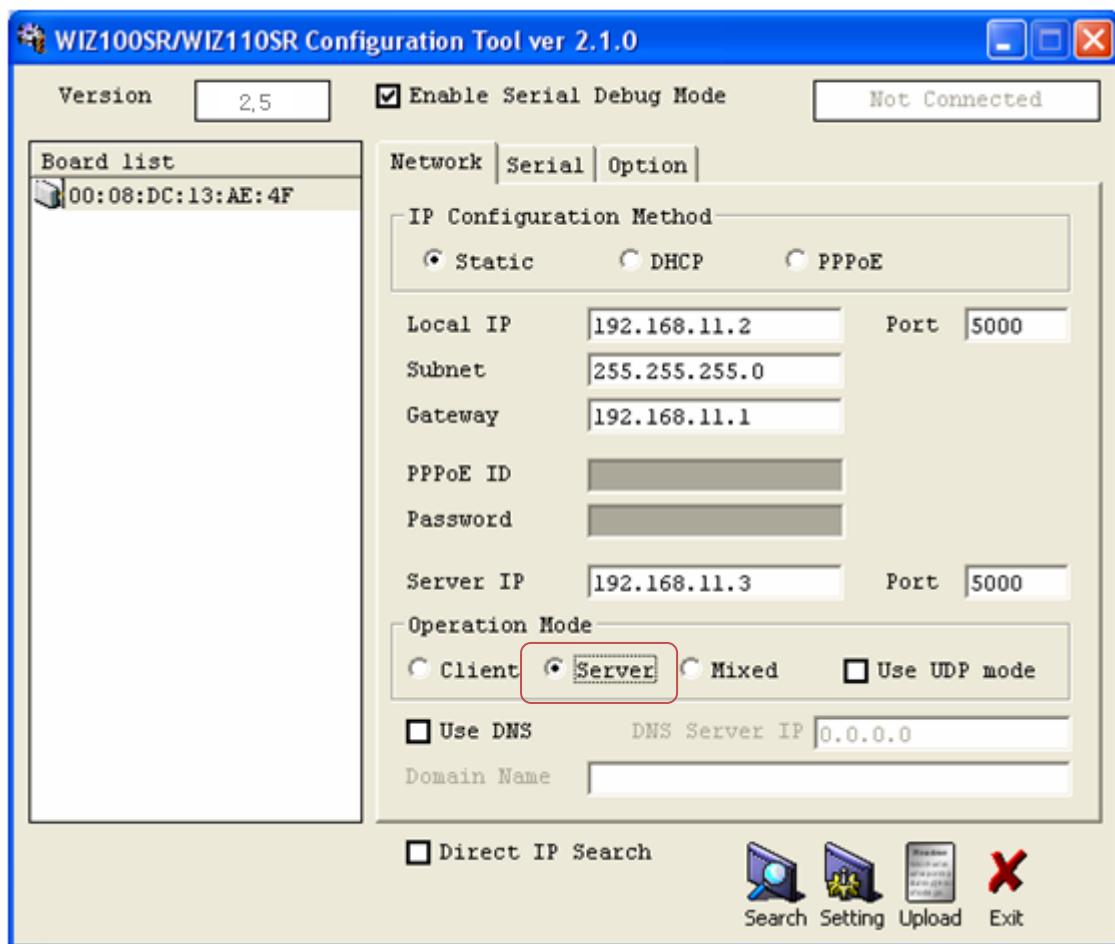
Figure 11. Operation Mode for Password Setting

3. As shown in Figure 10, select Option tab and check 'Enable' combo box of "Password" menu.
4. Input password.
5. Click "Setting" button to apply password setting
6. When any client accesses the module, client should send 'password' to server module first, and then acess will be allowed.

ⓥ**Serial Configuration:**

This function is for module configuration not through network with Configuration tool but through serial communication. When you want to set via serial communication, check "enable". Please detail about serial configuration refers to "4. Serial Configuration".

3. Firmware Upload

① Run 'WIZ100SR/WIZ100SR Configuration Tool' program, and click "Search" button.

② If the moduel is properly connected to the network, "Complete Searching" message and MAC address will be displayed on the "Board List" as shown below Figure.
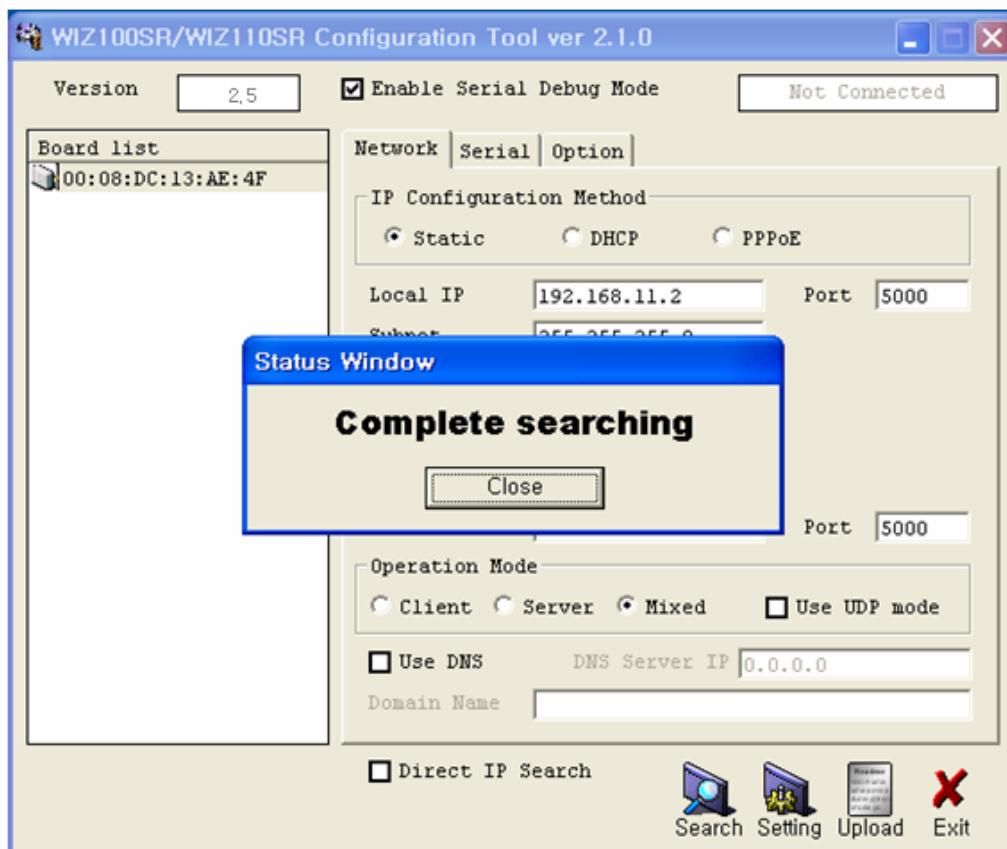
Figure 12. Board Search Window

① Select a module shown in "Board list", and click "Upload" button.

☞ **Before uploading through Ethernet, you should set the network information of WIZ100SR first by Configuration Tool program as shown abovr Fig 10. By using Ping test, you can check if network is correctly configured.**

② When the window as shown below Figure is displayed, select file for upload and click "Open" button.
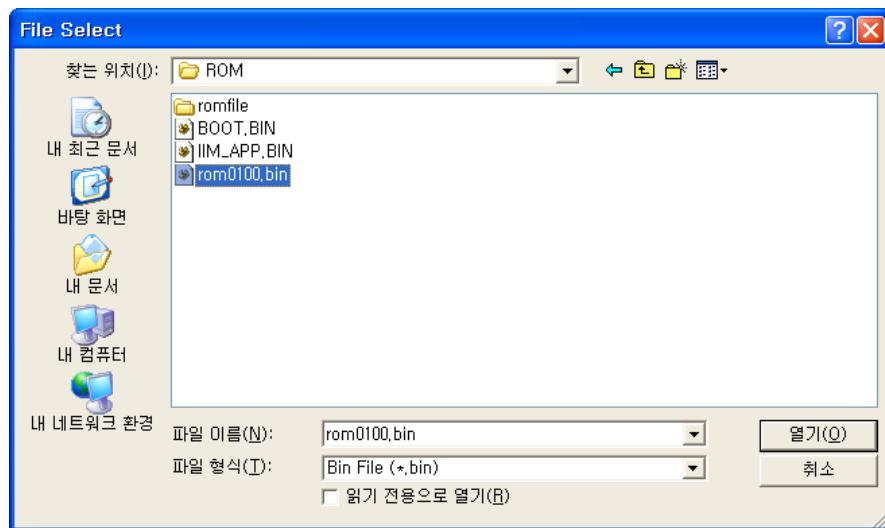
Figure 13. Open dialog box for uploading

☞ **Do not upload any other files except for WIZ100SR application firmware file.**

③ A dialogue box titled "Processing" will be displayed as below.
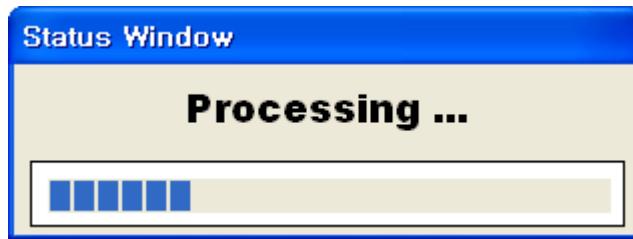
Figure 14. Firmware uploading window

④ When uploading is complete, a message box with "Complete Uploading" will be displayed as shown in Figure 14.

Figure 15. Complete Uploading

4. Serial Configuration

4.1. Serial Command Format

It is possible to configure WIZ100SR by using serial command.
By inputting specified 3 characters you can enter into the configuration mode. The characters can be defined at the Configuration Tool.

< Frame Format >

Command Frame format

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

Table 4. Serial Configuration Frame format

Reply Frame format

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

Table 5. Serial Configuration Reply Frame format

STX & ETX

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

Table 6. Serial Configuration STX & ETX

Reply Code

Reply	Comments
S	Command was successful
F	Command failed
0	Invalid STX
1	Invalid command
2	Invalid parameter
3	Invalid ETX
E	Enter Serial Command Mode

Table 7. Serial Configuration Reply Code

Command Code

Command	Parameter	Comments
WI	xxx.xxx.xxx.xxx (eg. 192.168.11.133)	Set Local IP
WS	xxx.xxx.xxx.xxx (eg. 255.255.255.0)	Set Subnet mask
WG	xxx.xxx.xxx.xxx (eg. 192.168.11.1)	Set Gateway
WP	0~65535	Set Local IP's port number
WD	0 : Static, 1 : DHCP, 2 : PPPoE	Set the IP configuration method
WM	0 : TCP Client, 1 : TCP Mixed, 2 : TCP Server	Set the TCP operation mode
WK	0 : TCP, 1 : UDP	Set Protocol(TCP or UDP)
WB	XXXX 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	Set the serial baud rate, data, parity and flow control. 4bytes:[Baud][data byte][parity][flow]
WT	0 : Disable, 1 : Enable	Set the serial command method
WU	0 : Not use 1 : Use	DNS Use or Not
WE	xxxxxx (eg. In hex format : 2B 2B 2B)	Set the command mode character
WX	xxx.xxx.xxx.xxx (eg. 192.168.11.144)	Set server IP address
WN	0~65535	Set server port number
WR		Restart
WV	xxx.xxx.xxx.xxx (eg. 255.255.255.0)	DNS IP Configuration
WW	xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx (eg. wiznet.co.kr)	Domain Configuration
WY	PPPoE ID	PPPoE ID Configuration
WZ	PPPoE Password	PPPoE Password Configuration
OC	XX	Set delimiter character in hex
OS	0~255	Set delimiter size
OT	0~65535	Set delimiter time
OI	0~65535	Set Inactivity timer value
RA	MAC Address	Get MAC Address
RU	0 : Not Use, 1 : Use	DNS Use or Not
RV	IP address	DNS IP Check
RW	Domain	Domain Check
RY	PPPoE ID	PPPoE ID Check

Command	Parameter	Comments
RZ	PPPoE Password	PPPoE Password Check
RI	IP Address	Get Local IP
RS	Subnet Mask	Get Subnet mask
RG	Gateway address	Get Gateway
RP	Local Port Number	Get Local IP's port number
RD	0 : Static, 1 : DHCP, 2 : PPPoE	Get the IP configuration method
RM	0 : TCP Client, 1 : TCP Mixed, 2 : TCP Server	Get the operation mode
RK	0 : TCP, 1 : UDP	Get the Protocol
RB	XXXX 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	Get the serial baud rate
RT	0 : Disable, 1 : Enable	Get the serial command method
RE	xxxxxx (eg. In hex format : 2B 2B 2B)	Get the command mode character
RF	x.x (eg. 3.1)	Get the firmware version
RX	xxx.xxx.xxx.xxx (eg. 192.168.11.144)	Get the server IP address
RN	0~65535	Get the server port number
QC	XX	Get delimiter character in hex
QS	0~255	Get delimiter size
QT	0~65535	Get delimiter time
QI	0~65535	Get Inactivity timer value

Table 8. Serial Configuration Command Code

4.2. WIZ100SR Configuration with Serial Command
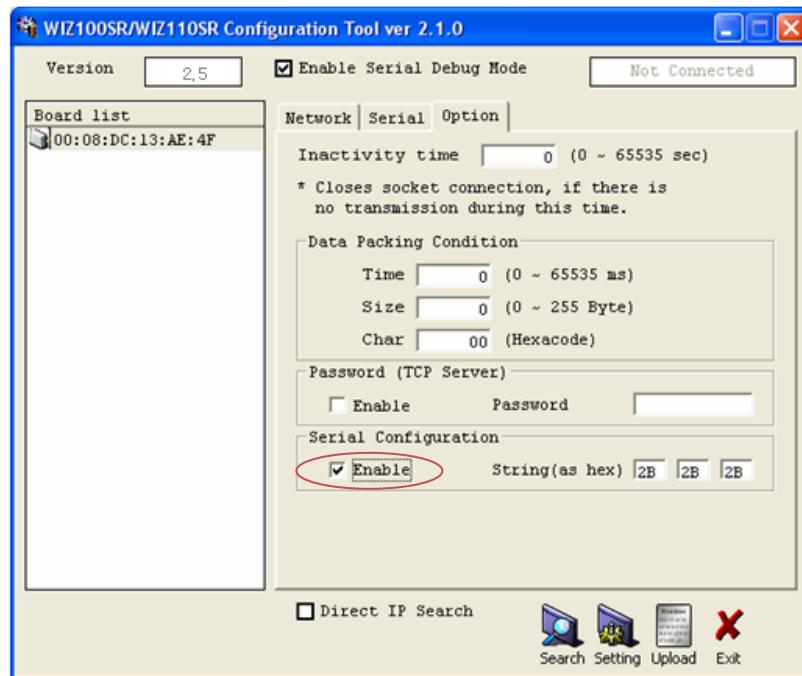
Figure 16. Serial Configuration Enable Setting

① Check WIZ100SR Firmware Version. If Version is lower, download the latest firmware from download page of http://www.wiznet.co.kr

② At the default status, the serial configuration is disabled. So, click 'enable' check box of serial configuration and click 'setting' button. The defaut value of string is "+++".

③ The testing can be processed as below. This testing is checking module IP and changing to another.

1	Input "+++"	Enter Serial Configuration mode
2	Check "<E>" response	Successfully entered
3	Input "<WI192.168.11.3>"	Change the IP address to 192.168.11.3
4	Check "<S>" response	Sucessfully change the IP address
5	Input "<RI>"	Check IP address of the module
6	Check "<S192.168.11.3>" response	Check changed IP address
7	Input "<WR>"	Re-boot
8	Check "<S>" response	Successfully re-booted
9	Module re-booting	

Table 9. Serial Configuration Test Procedure

Above process is shown in the serial console as below figure.

```
WIZ100SR/WIZ110SR Ver. 03.01
MAC ADDRESS        : 00.08.DC.13.5E.24
SUBNET MASK        : 255.255.255.0
G/W IP ADDRESS     : 192.168.11.1
LOCAL IP ADDRESS : 192.168.11.2


> Config socket : ok
> Listen : Ok
<E><S><S192.168.11.3><S>
WIZ100SR/WIZ110SR Ver. 03.01
MAC ADDRESS        : 00.08.DC.13.5E.24
SUBNET MASK        : 255.255.255.0
G/W IP ADDRESS     : 192.168.11.1
LOCAL IP ADDRESS : 192.168.11.3


> Config socket : ok
> Listen : Ok
```

Figure 17. Serial Configuration Console Display

5. Hardware Configuration

At the Serial Configuration, entering serial configuration mode is processed by using specified string. Hardware Configuration enables you to enter into configuration mode by port control.

If you supply the power or reset the module by asserting low 12th pin of JP1, hardware configuration is allowed.

At the hardware configuration mode, networking is not possible. Thererfore, after finishing the configuration, be sure to assert high JP1.12 for normal operation.

5.1. Frame Format

Command Frame format

Descriptor	STX	Command code	Parameter	ETX
Command	'>'(0x3E)	R / W / X	Variable	'CR'(0x0D)
Length(bytes)	1	1	Variable	1

Table 10. Hardware Configuration Frame format

Reply Frame format

Descriptor	STX	Reply code	Parameter	ETX
Command	'<'(0x3C)	S	Variable	'CR''LF'(0x0D0A)
Length(bytes)	1	1	Variable	2

Table 11. Hardware Configuration Reply Frame format

Command Code

Command	Comments
R	Read Parameter
W	Write Parameter
X	Exit Hardware Command mode
E	Command Error

Table 12. Hardware Configuration Command Code

The lenth of parameter can be different according to firmware version.

Value(byte)	Description								
0008DCxxxxxx(6)	MAC address (xxxxxx is uniquely factory set)								
01 (1)	Mode (00: TCP Client, 01 : TCP Mixed, 02 : TCP Server)								
00000000 (4)	IP address								
00000000 (4)	Subnet mask								
00000000 (4)	Gateway address								
0000 (2)	Local Port number (Module's Port Number)								
00000000 (4)	Server IP address								
0000 (2)	Server Port number								
FE (1)	Serial speed (bps) Default is FE								
	BB: 230400	FF: 115200	FE: 57600	FD: 38400	FA: 19200	F4: 9600	E8: 4800	D0: 2400	A0: 1200
08 (1)	Serial data size (08: 8 bit), (07: 7 bit)								
00 (1)	Parity (00: No), (01: Odd), (02: Even)								
01 (1)	Stop bit								
00 (1)	Flow control (00: None), (01: XON/XOFF), (02: CTS/RTS)								
00 (1)	Delimiter character								
0000 (2)	Delimiter size								
0000 (2)	Delimiter time								
0000 (2)	Delimiter inactivity time								
00 (1)	Debug code (00: ON), (01: OFF)								
03 (1)	Software major version								
01 (1)	Software minor version								
00 (1)	DHCP option (00: DHCP OFF, 01:DHCP ON)								
00 (1)	UDP mode (00: TCP; 01: UDP)								
00 (1)	Connection Status (00:not connected, 01: connected)								
00 (1)	DNS Flag (00:not use DNS, 01:use DNS)								
00000000 (4)	DNS Server IP address								
00......00 (32)	Server Domain Name								
00 (1)	Serial command method(00:disable, 01:enable)								
2B2B2B (3)	Serial command mode character(Hex)								
002020......2020 (32)	PPPoE ID								
002020......2020 (32)	PPPoE Password								
00 (1)	Password option for TCP Server (00:disable, 01:enable)								
0000000000000000 (8)	Password for TCP Server								
FF	Last Byte (It means end of parameter)								

Table 13. Hardware Configuration Parameter descriptions

Reply for Entrance Hardware Command Mode (Hex : 0x3B)

```
[Normal mode]
;

[Debug mode]
 WIZ100SR/WIZ110SR Ver. 03.01
 ;
```

Table 14. Hardware Configuration Entrance Message

5.2. **Hardware Configuration Examples**

5.2.1. Read Parameter

STEP 1. Supply the power into the module by assrting 12th pin of JP1.

STEP 2. Check if the message (':') is displayed to notify the entering of Hardware Configuration. If module is set as 'Debug mode', the message is displayed after showing model name and version.

```
WIZ100SR/WIZ110SR Ver. 03.01
;
```

STEP 3. Input '>R' and Carriage Return(0x0D).

STEP 4. Check response message.

```
WIZ100SR/WIZ110SR Ver. 03.01
;<S0008DC135E2401C0A80B03FFFFFF00C0A80B011388C0A80B011388FE080001
000000000000000000030100000000000000000002020202020202020202020
2020202020202020202020202020202020020012B2B2B00202020202020202020202020
2020202020202020202020202020202020202020202020000020202020202020202020
202020202020202020202020202020202020202000000000000000000000FF
```

5.2.2. Changing IP Address
When changing the parameter value, the MAC addres is not changed. As MAC address is the unique value for the module, user can't change it. When changing the IP address, input the new value after first 6bytes.

STEP 1. Check HEX value of new IP address. In here, the new IP address is assumed as '192.168.11.10'. Therefore, the hex value 'C0A80B0A' is input.

STEP 2. Input '>W01**C0A80B0A**FFFFFF00 … 00FF'.

STEP 3. Check '<S' message is displayed. After displaying this message, CR(0x0D) & LF(0x0A) are displayed together.

STEP 4. After completing the change, check if changed value is appropriated saved by using READ command.

6. PIN Assignment and Dimenstion
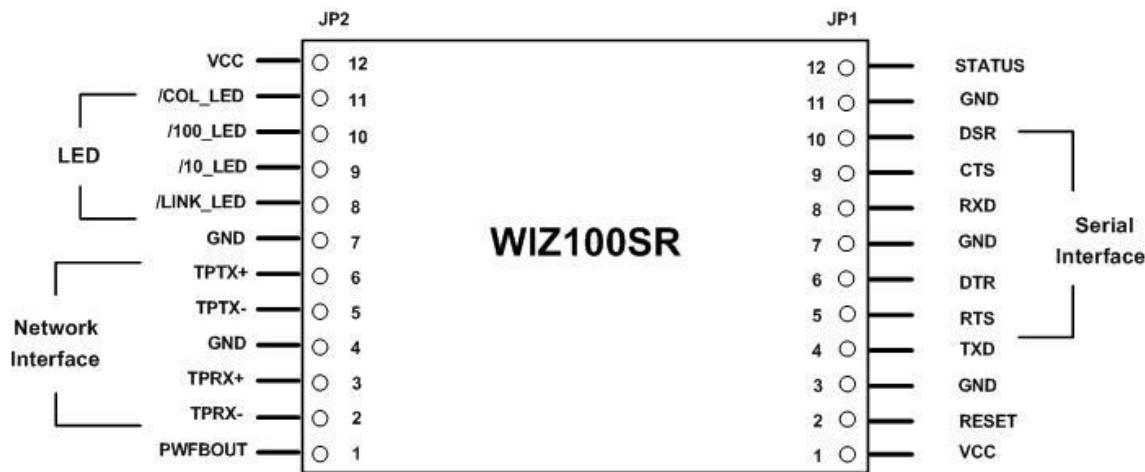
Figure 18. WIZ100SR Pin Assignment

PIN NAME	Functions	I/O	
RESET	Reset (Active High)	Input	
TXD	RS-232 Data Output	Output	
RTS	RS-232 Request To Send	Output	Optional
DTR	RS-232 Data Terminal Ready	Output	Optional
RXD	RS-232 Data Input	Input	
CTS	RS-232 Clear To Send	Input	Optional
DSR	RS-232 Data Set Ready	Input	Optional
TPRX-	Ethernet Differential Input-	Input	
TPRX+	Ethernet Differential Input+	Input	
TPTX-	Ethernet Differential Output-	Output	
TPTX+	Ethernet Differential Output+	Output	
/LINK_LED	Link LED	Output	
/10_LED	10 Mbps LED	Output	
/100_LED	100 Mbps LED	Output	
/COL_LED	Collision LED	Output	
Status	High: Not connected	Output	

	Low: Connected		
PWFBOUT	Power Feedback Out	Output	
VCC	3.3V Power	Power	

Table 15. WIZ100SR PIN Functions

1) **All signal level is 3.3V LVTTL.**
2) **A high on RESET pin about minimum 1.2 usec must be applied for proper operation.**
3) **'Connected' of Status pin means the TCP socket of WIZ100SR is connected to remote system.**
4) **/LINK_LED pin is used to check if Ethernet cable is physically connected or not.**
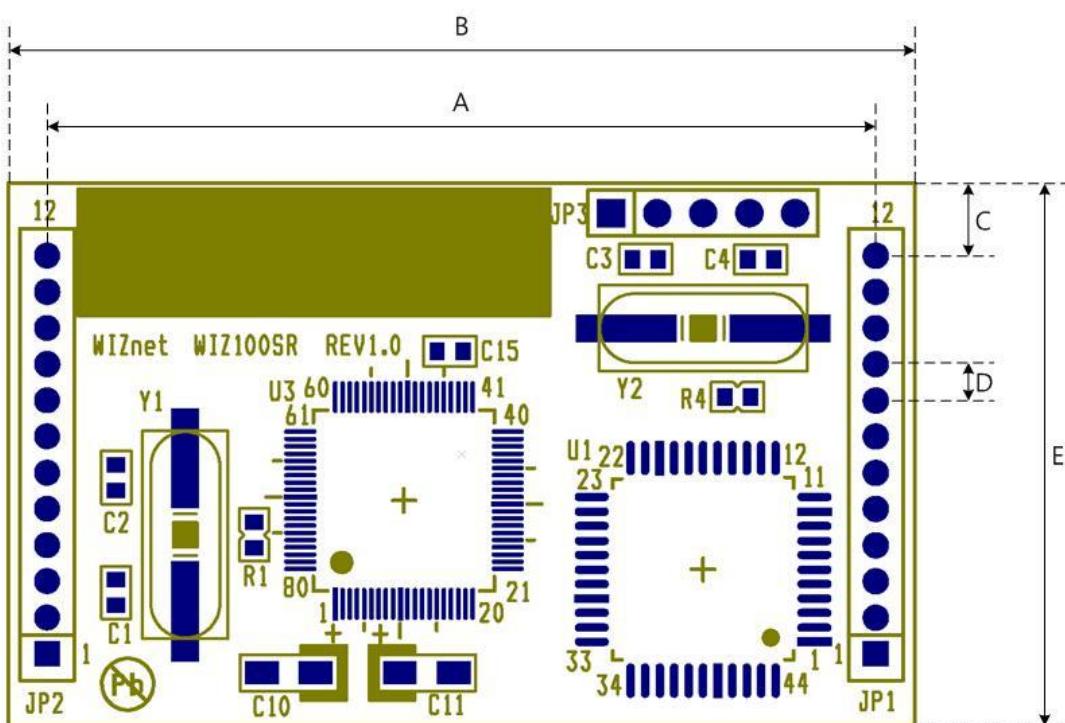
Figure 19. WIZ100SR Board Dimension

Symbol	Dimension(mm)
A	45.7
B	50.0
C	4.0
D	2.0
E	30.0

Table 16. WIZ100SR Board Dimension

7. Demonstration and Test

In this chapter, we give an example that can be used to test the function of WIZ100SR.
The testing environment is as follows;

<Hardware>

- PC having RS-232 serial port
- WIZ100SR & WIZ100SR Test Board (The test board for WIZ100SR should be Rev 2.0 or above)
- Ethernet cable (Direct or Crossover) to connect PC and WIZ100SR
- Serial cable to connect the COM port of PC and serial port of WIZ100SR

<Software>

- WIZ100SR Configuration tool
- Hyper Terminal (or any other terminal program)
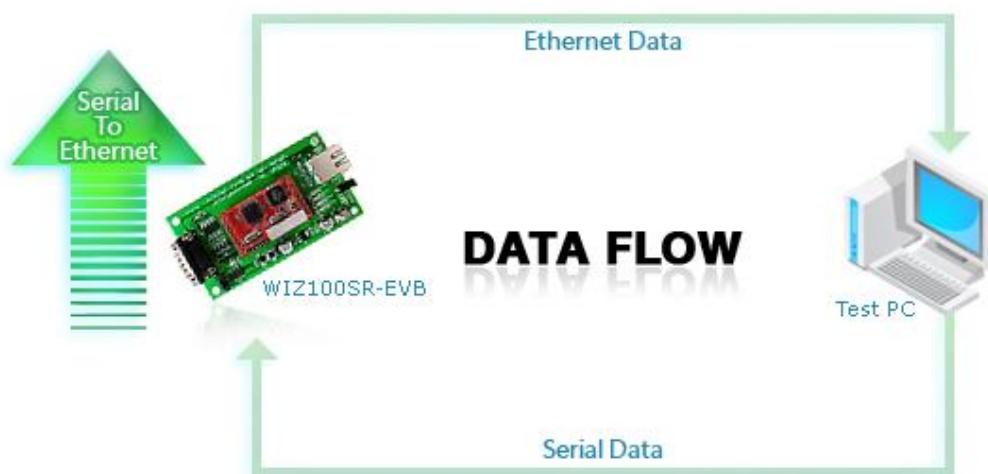
**Figure 20. Data Flow (Serial->Ethernet)**
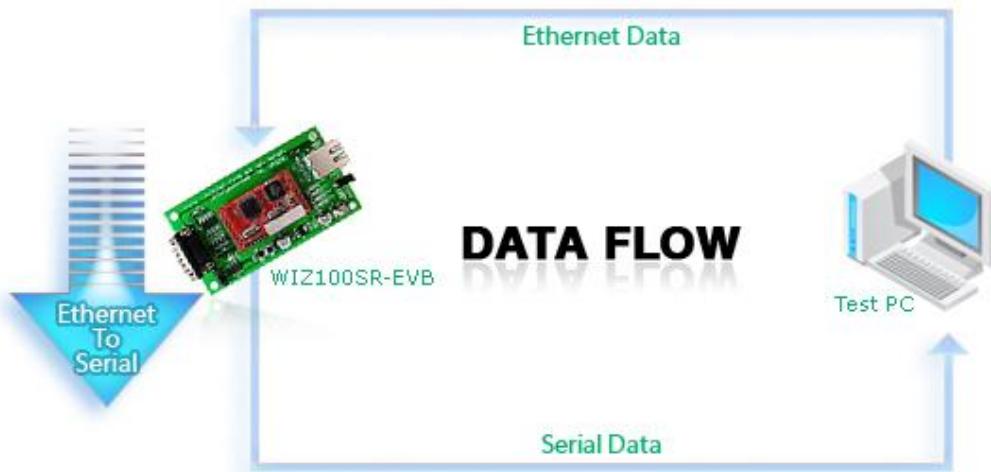
Figure 21. Data Flow (Ethernet -> Serial)

STEP1.

① Make sure JP4(Mode Switch) is set as normal mode. (If it is set as Config mode, the network is disabled, and Configuration Tool can not be used)

② Connect the PC and WIZ100SR Test board by using serial cable.

③ Connect the PC and WIZ100SR Test board by using Ethernet cable.

④ Power on the WIZ100SR Test Board.

STEP2. (WIZ100SR Environment Setup)

① Modules are searched by click search button of the Configuration Tool.

② Select the board to be configured and change the value. To apply the changed value, click Setting button.

③ If changed value is succefully applied, the "Complete setting" message is displayed as shown below figure.
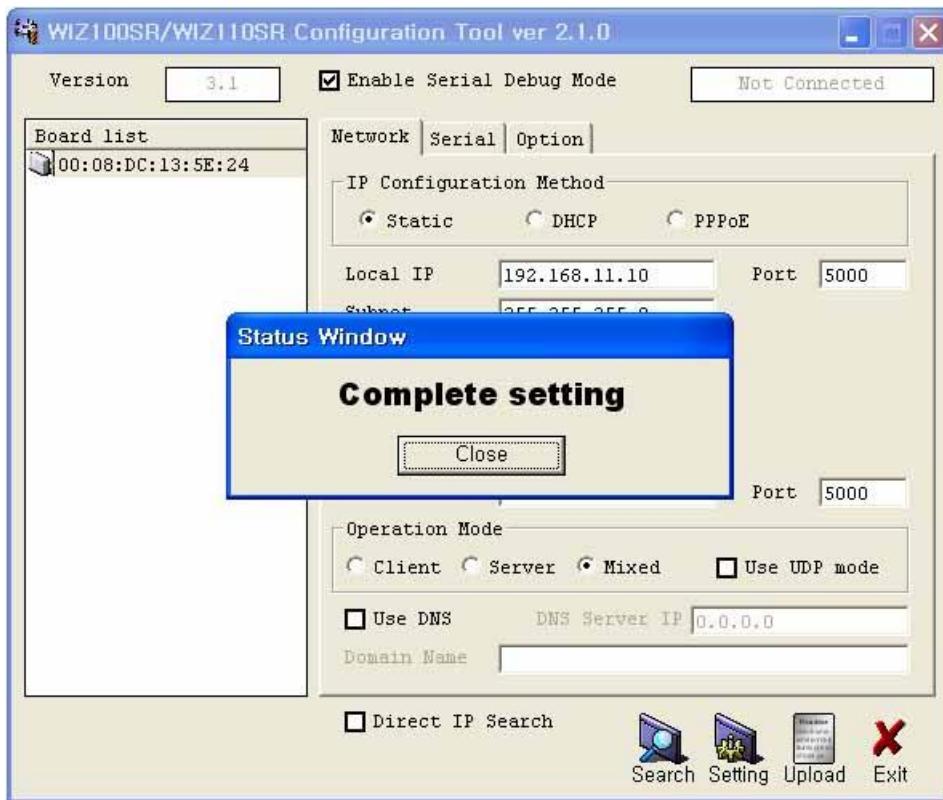
**Figure 22. Result Window after Running "Setting"**

STEP3. (Data Transmission)

① Run terminal emulator program (e.g. Hyper terminal) on Test PC.

② Set the baud rate as the same value of WIZ100SR
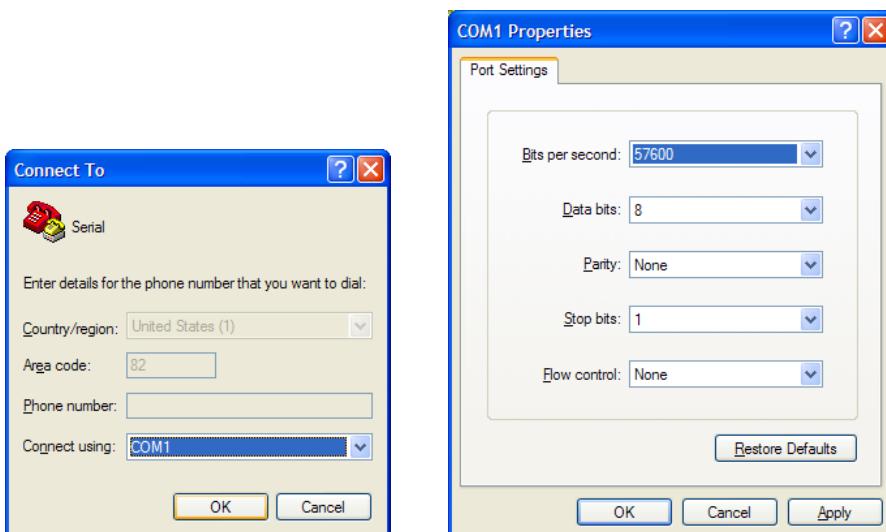
Figure 23. Serial Terminal Program configuration

③　Execute another Hyper terminal and set the IP address and port number.
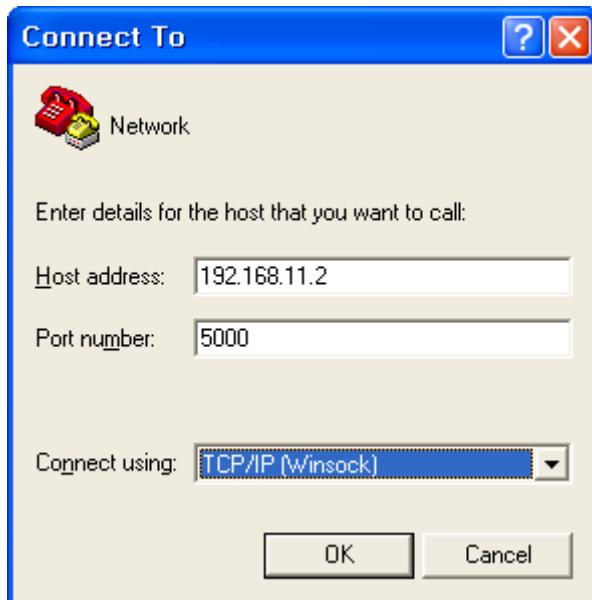
Figure 24. Network Terminal Program configuration

④　Type some charater on the serial Hyper terminal screen. In this example, "01234567890" is entered.

⑤　Make sure this data is shown on the Network Hyper terminal window. (Serial to Ethernet)
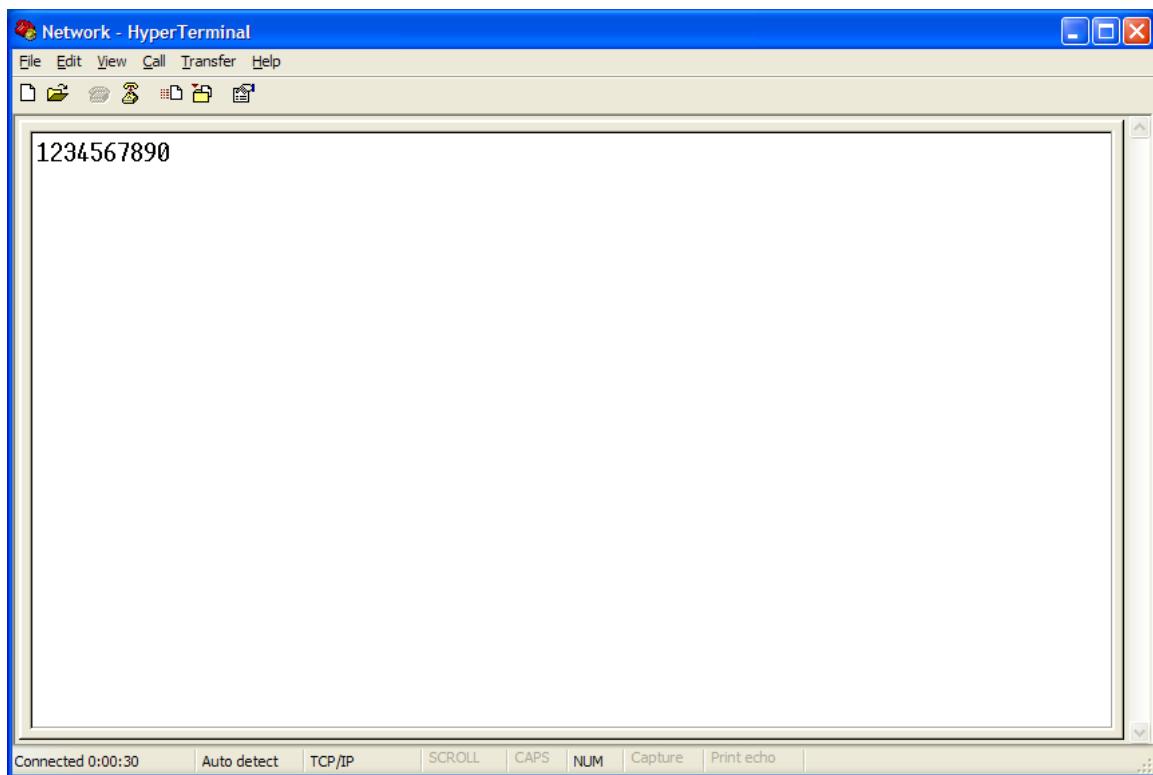
Figure 25. Received Data by Network Terminal Program

⑥　As the same way, type some charaters on the network Hyper terminal, and then make

sure these data are shown in the serial Hyper terminal window. (Ethernet to Serial)

* Above test can be performed more easily and conveniently by using Device Terminal program. Below is the screen of the Devie Terminal program.
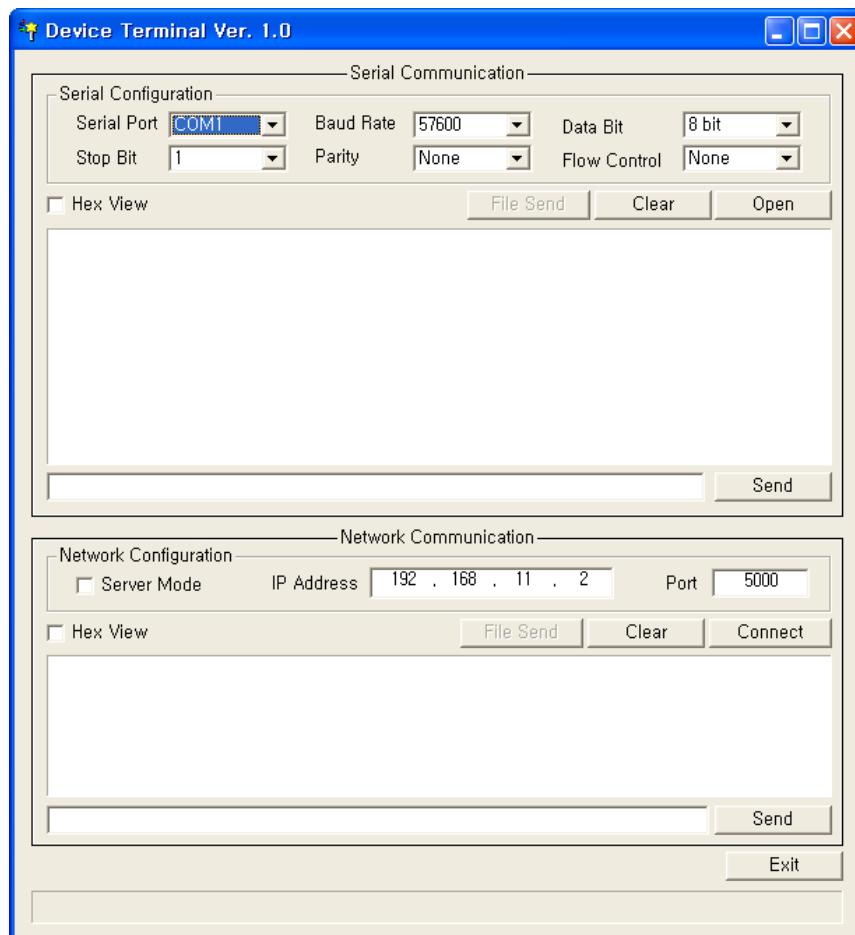

Figure 26. Device Terminal Program

Device Terminal is the program into which serial and network terminals integrated for more efficient testing of WIZnet gateway modules.

As shown in Figure 26, at the upper part of the program, you configure serial setting of WIZ100SR. By click "Open" button, serial communication is available.

At the Network Terminal, the lower part of the program, it is possible to test both of TCP Client and TCP Server modes. If Server Mode is checked, Device Terminal will operate as server mode, and the WIZ100SR module will work as client mode. The PC where the Device Terminal is operating will work as a server, the IP address of the PC should be set as Server IP of the module. If Server mode is not checked, Device Terminal will operate as client mode, and the module as server. For the IP address and port, input IP address and port number of WIZ100SR and click "Connect" button for network communication.

When serial and network terminals are connected, input any charater at the Data Input window and click "Send" button. You can check the data transferred to another window.

8. Reference Schematic
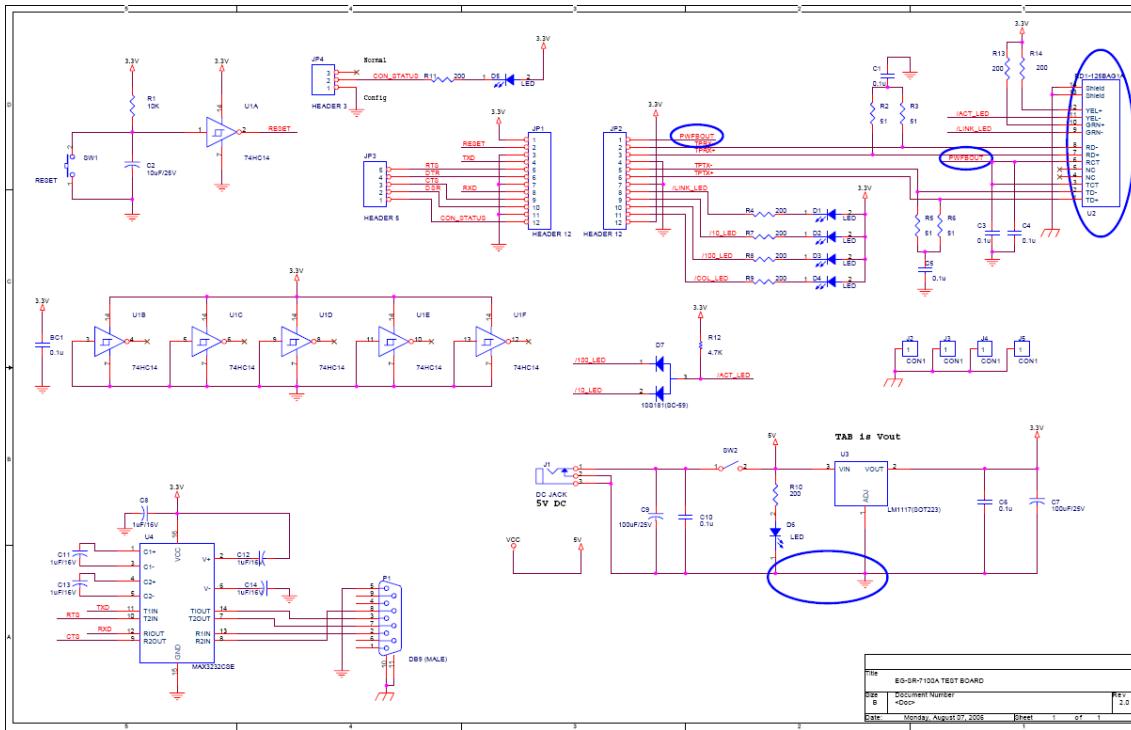
Figure 27. Schematic

Document Revision History

Date	Revision	Changes
2007-09-01	V1.0	First Release
2008-02-27	V1.1	Added PPPoE descriptions(F/W updated) Added serial configuration command Removed Hardware configuration description
2008-06-04	V2.0	Added and modified serial configuration Command (F/W updated to ver3.1) Added Hardware Configuration (Chapter 5)