WIZnet’s Online Technical Support

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Technical Support: support@wiznet.co.kr

Sales & Distribution: sales@wiznet.co.kr

For more information, visit our website at http://www.wiznet.co.kr
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1. Introduction
WIZ110SR 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, WIZ110SR 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
- Supports Serial Configuration - with Simple and Easy command
- Supports Password for the Security
- Configuration Tool Program
- 10/100 Ethernet Interface and max 230Kbps Serial Interface
- RoHS Compliant

1.2. Specification

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCU</td>
<td>8051 compliant (having internal 62K Flash, 16K SRAM, 2K EEPROM)</td>
</tr>
<tr>
<td>TCP/IP</td>
<td>W5100 (Ethernet MAC &amp; PHY Embedded)</td>
</tr>
<tr>
<td>Protocol</td>
<td>TCP, UDP, IP, ARP, ICMP, MAC, DHCP, PPPoE, DNS</td>
</tr>
<tr>
<td>Network Interface</td>
<td>10/100 Mbps(Auto detection), RJ-45 Connector</td>
</tr>
<tr>
<td>Serial Interface</td>
<td>RS232(DB9)</td>
</tr>
<tr>
<td>Serial Signal</td>
<td>TXD, RXD, RTS, CTS, GND</td>
</tr>
<tr>
<td>Serial Parameters</td>
<td>Parity : None, Even, Odd</td>
</tr>
<tr>
<td></td>
<td>Data Bits : 7, 8</td>
</tr>
<tr>
<td></td>
<td>Flow Control : None, RTS/CTS, XON/XOFF</td>
</tr>
<tr>
<td></td>
<td>Speed : up to 230Kbps</td>
</tr>
</tbody>
</table>
### Table 1. Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>DC 5V</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Under 180mA</td>
</tr>
<tr>
<td>Temperature</td>
<td>0°C ~ 80°C (Operation), -40°C ~ 85°C (Storage)</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ~ 90%</td>
</tr>
</tbody>
</table>

### 1.3. Products Contents

Table 2. Products Contents

☞ If there is any missing item, contact to the shop where you purchased.
☞ The optional items should be purchased separately.
2. WIZ110SR Board

2.1. Block Diagram

![Block Diagram of WIZ110SR](image)

Figure 1. Block Diagram

WIZ110SR is a protocol converter that transmits the data sent by serial equipment to Ethernet and converts back the TCP/IP data received through the network into serial data to transmit back to the equipment. When the data is received from serial port, it is sent to W5100 by MCU. If any data is transmitted from Ethernet, it is received to the internal buffer of W5100, and sent to the serial port by MCU. MCU in the module controls the data according to the configuration value that user defined.
2.2. Configuration Tool

2.2.1. Network Configuration

Figure 2. Configuration Tool (Network Config)

ⓐ Version : Displays firmware version.
You can use PPPoE, Serial Command, Password function from firmware Ver.2.5.

ⓑ Enable Serial Debug Mode : If this mode is checked, you can monitor the status and socket message of WIZ110SR (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 among Static, DHCP, PPPoE mode.

Static: “Static” is the option for setting WIZ110SR with static IP address. First select MAC address that you want to set it as static IP in ‘board list’. Then, the “Local IP, Subnet, Gateway boxes are enabled. Input Static IP address and click “setting” button. Then IP is set as you want. (PPPoE ID, Password box will be disabled)

DHCP: Set this option to use DHCP mode. First, check ‘DHCP’ and click ‘Setting’ button. If IP address is successfully acquired from DHCP server, the MAC address will be displayed on the board list. (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: WIZ110SR supports PPPoE for ADSL user. When you select PPPoE in “IP Configuration Method” PPPoE ID and Password box will be enabled.
1. To set PPPoE, connect PC to WIZ110SR 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.

```
WIZ110SR/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 3. PPPoE Connection Process in Serial Console
⑥ Local IP/Port: WIZ110SR’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.

① Subnet: WIZ110SR’s subnet mask

② Gateway: WIZ110SR’s Gateway address

③ PPPoE ID/Password: If you select ‘PPPoE’ mode, input ID/Password which you received from ISP company.

④ Server IP/Port: When WIZ110SR is set as “Client mode” or Mixed mode”, server IP and port should be set. WIZ110SR attempts to connect this IP address.

⑤ 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 WIZ110SR can be divided into TCP Server, TCP Client and Mixed mode according to the connection establishing method. At the TCP server mode, WIZ110SR operates as server on the process of connection, and waits for the connection trial from the client. WIZ110SR 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>

At the TCP Server mode, WIZ110SR waits for the connection requests.

Figure 4. TCP Server mode
TCP Server mode can be useful when the monitoring center tries to connect to the device (where WIZ110SR is installed) in order to check the status or provide the commands. In normal time WIZ110SR 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 Transaction). 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 WIZ110SR 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 WIZ110SR, and from the WIZ110SR to the host.

<TCP client mode>

![TCP Client mode diagram]

Figure 5. TCP Client mode

If WIZ110SR 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, WIZ110SR 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, WIZ110SR 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 WIZ110SR and from WIZ110SR to the host.
<Mixed mode>
In this mode, WIZ110SR normally operates as TCP Server and waits for the connection request from the peer. However, if WIZ110SR 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 WIZ110SR 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 6. UDP mode](image)

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 WIZ110SR. 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 WIZ110SR 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.

① 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”.

② 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.

⑥ Upload
Firmware will be uploaded through network
☞ After uploading the firmware, 20-30 seconds are required for initialization.

⑦ Exit : Close the configuration tool program.
2.2.2. Serial configuration

Figure 7. Configuration Tool (Serial Config.)

_serial
Serial Configuration value of selected module is displayed.
In order to change the serial configuration of WIZ110SR, this menu can be used.
☞ By clicking the “Setting” button, changed value can be applied.
### 2.2.3. Option configuration

![Configuration Tool](image)

**Figure 8. Configuration Tool (Option Config.)**

⑤ **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 WIZ110SR module. If one system holds the connection to the WIZ110SR, other systems cannot 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, WIZ110SR will close the connection and enter into waiting status.

① Data Packing Condition
You can designate how the serial data can be packed to send to the Ethernet. In default mode, WIZ110SR 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 length. 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 character is received, and transmitted to Ethernet. The character can be specified in Hex formation. (The value is ‘0’, this option is not used)

Any one of three conditions is satisfied, the data is transmitted to the Ethernet.

Ex) Delimiter: Size=10, Char=0x0D
    Serial data : 0123456789abc
    Ethernet data : 0123456789
    ☞ “abc” data remains in the serial buffer of module.

② 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”.

```
3. As shown in Figure 8, 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 access 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/WIZ110SR Configuration Tool’ program, and click “Search” button.

② If the module is properly connected to the network, “Complete Searching” message and MAC address will be displayed on the “Board List” as shown below Figure.

③ Select a module shown in “Board list”, and click “Upload” button.

☞ Before uploading through Ethernet, you should set the network information of WIZ110SR first by Configuration Tool program as shown above Fig 10. By using Ping test,

④ When the window as shown below Figure is displayed, select file for upload and click “Open” button.
Do not upload any other files except for WIZ110SR application firmware file.

5 A dialogue box titled “Processing” will be displayed as below.

6 When uploading is complete, a message box with “Complete Uploading” will be
4. Serial Configuration

4.1. Serial Command Format

It is possible to configure WIZ110SR 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

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>STX</th>
<th>Command code</th>
<th>Parameter</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length(bytes)</td>
<td>1</td>
<td>2</td>
<td>Variable</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3. Serial Configuration Frame Format

Reply Frame format

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>STX</th>
<th>Reply code</th>
<th>Parameter</th>
<th>ETX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length(bytes)</td>
<td>1</td>
<td>1</td>
<td>Variable</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4. Serial Configuration Reply Frame Format

STX & ETX

<table>
<thead>
<tr>
<th>Setting</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>STX</td>
<td>‘&lt;’ : Hex = 3Ch</td>
</tr>
<tr>
<td>ETX</td>
<td>‘&gt;’ : Hex = 3Eh</td>
</tr>
</tbody>
</table>

Table 5. Serial Configuration STX & ETX

Reply Code

<table>
<thead>
<tr>
<th>Reply</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Command was successful</td>
</tr>
<tr>
<td>F</td>
<td>Command failed</td>
</tr>
<tr>
<td>0</td>
<td>Invalid STX</td>
</tr>
<tr>
<td>1</td>
<td>Invalid command</td>
</tr>
<tr>
<td>2</td>
<td>Invalid parameter</td>
</tr>
<tr>
<td>3</td>
<td>Invalid ETX</td>
</tr>
<tr>
<td>E</td>
<td>Enter serial command mode</td>
</tr>
</tbody>
</table>

Table 6. Serial Configuration Reply Code
### Command Code

<table>
<thead>
<tr>
<th>Command</th>
<th>Parameter</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>WI</td>
<td>xxx.xxx.xxx.xxx (eg. 192.168.11.133)</td>
<td>Set Local IP</td>
</tr>
<tr>
<td>WS</td>
<td>xxx.xxx.xxx.xxx (eg. 255.255.255.0)</td>
<td>Set Subnet mask</td>
</tr>
<tr>
<td>WG</td>
<td>xxx.xxx.xxx.xxx (eg. 192.168.11.1)</td>
<td>Set Gateway</td>
</tr>
<tr>
<td>WP</td>
<td>0~65535</td>
<td>Set Local IP's port number</td>
</tr>
<tr>
<td>WD</td>
<td>0 : Static, 1 : DHCP, 2 : PPPoE</td>
<td>Set the IP configuration method</td>
</tr>
<tr>
<td>WM</td>
<td>0 : TCP Client, 1 : TCP Mixed, 2 : TCP Server</td>
<td>Set the TCP operation mode</td>
</tr>
<tr>
<td>WK</td>
<td>0 : TCP, 1 : UDP</td>
<td>Set Protocol(TCP or UDP)</td>
</tr>
<tr>
<td>WB</td>
<td>XXXX</td>
<td>Set the serial baud rate, data, parity and flow control. 4bytes:[Baud][data byte][parity][flow]</td>
</tr>
<tr>
<td>WT</td>
<td>0 : Disable, 1 : Enable</td>
<td>Set the serial command method</td>
</tr>
<tr>
<td>WU</td>
<td>0 : Not Use, 1 : Use</td>
<td>DNS Use or not</td>
</tr>
<tr>
<td>WE</td>
<td>xxxxxx (eg. In hex format : 2B 2B 2B)</td>
<td>Set the command mode character</td>
</tr>
<tr>
<td>WX</td>
<td>xxx.xxx.xxx.xxx (eg. 192.168.11.144)</td>
<td>Set server IP address</td>
</tr>
<tr>
<td>WN</td>
<td>0~65535</td>
<td>Set server port number</td>
</tr>
<tr>
<td>WR</td>
<td></td>
<td>Restart</td>
</tr>
<tr>
<td>WV</td>
<td>xxx.xxx.xxx.xxx (eg. 255.255.255.0)</td>
<td>DNS IP Setting</td>
</tr>
<tr>
<td>WW</td>
<td>xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx (eg. wiznet.co.kr)</td>
<td>Domain Setting</td>
</tr>
<tr>
<td>WY</td>
<td>PPPoE ID</td>
<td>PPPoE ID Setting</td>
</tr>
<tr>
<td>WZ</td>
<td>PPPoE Password</td>
<td>PPPoE Password Setting</td>
</tr>
<tr>
<td>OC</td>
<td>XX</td>
<td>Set delimiter character in hex</td>
</tr>
<tr>
<td>OS</td>
<td>0~255</td>
<td>Set delimiter size</td>
</tr>
<tr>
<td>OT</td>
<td>0~65535</td>
<td>Set delimiter time</td>
</tr>
<tr>
<td>OI</td>
<td>0~65535</td>
<td>Set Inactivity timer value</td>
</tr>
<tr>
<td>RA</td>
<td>MAC Address</td>
<td>Get MAC Address</td>
</tr>
<tr>
<td>RU</td>
<td>0 : Not Use, 1 : Use</td>
<td>Check DNS Use or Not</td>
</tr>
<tr>
<td>RV</td>
<td>IP address</td>
<td>DNS IP Check</td>
</tr>
<tr>
<td>RW</td>
<td>Domain</td>
<td>Domain Check</td>
</tr>
<tr>
<td>Command</td>
<td>Parameter</td>
<td>Comments</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>RY</td>
<td>PPPoE ID</td>
<td>PPPoE ID Check</td>
</tr>
<tr>
<td>RZ</td>
<td>PPPoE Password</td>
<td>PPPoE Password Check</td>
</tr>
<tr>
<td>RI</td>
<td>IP Address</td>
<td>Get Local IP</td>
</tr>
<tr>
<td>RS</td>
<td>Subnet Mask</td>
<td>Get Subnet mask</td>
</tr>
<tr>
<td>RG</td>
<td>Gateway address</td>
<td>Get Gateway</td>
</tr>
<tr>
<td>RP</td>
<td>Local Port Number</td>
<td>Get Local IP’s port number</td>
</tr>
<tr>
<td>RD</td>
<td>0 : Static, 1 : DHCP, 2 : PPPoE</td>
<td>Get the IP configuration method</td>
</tr>
<tr>
<td>RM</td>
<td>0 : TCP Client, 1 : TCP Mixed, 2 : TCP Server</td>
<td>Get the operation mode</td>
</tr>
<tr>
<td>RK</td>
<td>0 : TCP, 1 : UDP</td>
<td>Get the Protocol</td>
</tr>
<tr>
<td>RB</td>
<td>XXXX</td>
<td>Get the serial baud rate</td>
</tr>
<tr>
<td>RT</td>
<td>0 : Disable, 1 : Enable</td>
<td>Get the serial command method</td>
</tr>
<tr>
<td>RE</td>
<td>xxxxxxx (eg. In hex format : 2B 2B 2B)</td>
<td>Get the command mode character</td>
</tr>
<tr>
<td>RF</td>
<td>x.x (eg. 3.1)</td>
<td>Get the firmware version</td>
</tr>
<tr>
<td>RX</td>
<td>xxx.xxx.xxx.xxx.xxx (eg. 192.168.11.144)</td>
<td>Get the server IP address</td>
</tr>
<tr>
<td>RN</td>
<td>0~65535</td>
<td>Get the server port number</td>
</tr>
<tr>
<td>QC</td>
<td>XX</td>
<td>Get delimiter character in hex</td>
</tr>
<tr>
<td>QS</td>
<td>0~255</td>
<td>Get delimiter size</td>
</tr>
<tr>
<td>QT</td>
<td>0~65535</td>
<td>Get delimiter time</td>
</tr>
<tr>
<td>QI</td>
<td>0~65535</td>
<td>Get Inactivity timer value</td>
</tr>
</tbody>
</table>

**Table 7. Serial Configuration Command Code**
4.2. WIZ110SR Configuration with Serial Command

① Check WIZ110SR Firmware version. If version is lower, download the latest firmware from download page of [http://www.wiznet.co.kr](http://www.wiznet.co.kr)

![Serial Configuration Enable Setting](image)

② At the default status, the serial configuration is disabled. So, click ‘enable’ check box of serial configuration and click ‘setting’ button. The default value of string is “+++”.

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

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input “+++”</td>
<td>Enter Serial Configuration mode</td>
</tr>
<tr>
<td>2</td>
<td>Check “&lt;E&gt;” response</td>
<td>Successfully entered</td>
</tr>
<tr>
<td>3</td>
<td>Input “&lt;W192.168.11.3&gt;”</td>
<td>Change the IP address to 192.168.11.3</td>
</tr>
<tr>
<td>4</td>
<td>Check “&lt;S&gt;” response</td>
<td>Successfully change the IP address</td>
</tr>
<tr>
<td>5</td>
<td>Input “&lt;RI&gt;”</td>
<td>Check IP address of the module</td>
</tr>
<tr>
<td>6</td>
<td>Check “&lt;S192.168.11.3&gt;” response</td>
<td>Check changed IP address</td>
</tr>
<tr>
<td>7</td>
<td>Input “&lt;WR&gt;”</td>
<td>Re-boot</td>
</tr>
</tbody>
</table>
### Table 8. Serial Configuration Testing Process

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Check “&lt;S&gt;” response</td>
</tr>
<tr>
<td>9</td>
<td>Module re-booting</td>
</tr>
</tbody>
</table>

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

```plaintext
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 : 192.168.11.2

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

Figure 14. Serial Configuration Console Display
5. Demonstration and Test

In this chapter, we give an example that can be used to test the function of WIZ110SR.

The testing environment is as below.

<table>
<thead>
<tr>
<th>PC</th>
<th>WIZ110SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>1) RS232 Port  \n2) LAN Port</td>
</tr>
<tr>
<td>Software</td>
<td>1) Configuration Tool Program  \n2) Hyper Terminal</td>
</tr>
</tbody>
</table>

Table 9. Testing Environment of WIZ110SR

5.1. Hardware Interface

Install as below steps.

**STEP 1**: By using RJ45 Ethernet cable, connect the WIZ110SR to the network.

**STEP 2**: Connect the WIZ110SR to the serial device by using serial cable.

**STEP 3**: Connect 5V DC adaptor for power supplying.

5.2. Testing Serial to Ethernet Function

**STEP 1**: Power on WIZ110SR board.

**STEP 2**: Configure the WIZ110SR by using Configuration Tool program.

**STEP 3**: Execute terminal emulator program such as Hyper Terminal, and select the COM port.
that WIZ110SR will use.

**STEP4:** Set the Baud rate as WIZ110SR.

**STEP5:** Execute another Hyper terminal, and open the TCP/IP(Winsock) for setting IP and Port.

**STEP6:** Type some characters at the screen of serial Hyper terminal. For example, “01234567890” is input.

**STEP7:** The input characters of STEP 6, is displayed in the screen of network Hyper terminal.

(Checking “Serial to Ethernet” function)

**STEP8:** You can check “Ethernet to Serial” function by inputting some character in the screen of Network terminal and checking them in the serial terminal.

- Above function can be tested by Device Terminal program that WIZnet is providing.

![Figure 15. Device Terminal](image-url)
6. WIZ110SR Hardware Specification

6.1. Parameters

- **Power**: 5V DC / 180mA
- **Dimension**: 75 x 50 x 17 (L x W x H)
- **Temperature**: Operating Temperature: 0 ~ 80 °C
- **Ethernet**: 10/100 Base-T Ethernet (Auto detection)
- **Serial interface**: RS-232

6.2. Specification

- **MCU**: 8051 Compliant
- **FLASH**: 62KByte (MCU Internal)
- **SRAM**: 16KByte (MCU Internal)
- **EEPROM**: 2KByte (MCU Internal)

6.3. Board Dimensions and Pin Assignment

6.3.1. Dimensions

![WIZ110SR Dimension Figure]

**Figure 16. WIZ110SR Dimension**
6.3.2. Connector Specification

6.3.2.1. RJ45

Ethernet port Pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+</td>
</tr>
<tr>
<td>2</td>
<td>TX-</td>
</tr>
<tr>
<td>3</td>
<td>RX+</td>
</tr>
<tr>
<td>6</td>
<td>RX-</td>
</tr>
</tbody>
</table>

![RJ-45 PIN Assignment](image)

6.3.2.2. RS-232

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC</td>
<td>Not Connected</td>
</tr>
<tr>
<td>2</td>
<td>RxD</td>
<td>Receive Data</td>
</tr>
<tr>
<td>3</td>
<td>TxD</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>Request To Send</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>9</td>
<td>NC</td>
<td>Not Connected</td>
</tr>
</tbody>
</table>

![RS-232 PIN Assignment](image)

Table 10. RS-232 PIN Assignment
7. Warranty

WiZnet Co., Ltd offers the following limited warranties applicable only to the original 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 WIZ110SR board and labor warranty after the date of original retail purchase. During this period, WiZnet will repair or replace 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 warranty applies only to defects which occur during normal use and does not extend to damage to products or parts which results from alternation, repair, modification, faulty installation or service by anyone other than someone authorized by WiZnet Inc.; damage to products or parts caused by accident, abuse, or misuse, 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 the distributors or dealers together with the completed RMA request form. All products returned for warranty must be carefully repackaged in the original packing materials.
3. Any service issue, please contact to sales@wiznet.co.kr
## Document Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Changes</th>
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<td>2007-09-01</td>
<td>V1.0</td>
<td>First Release</td>
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<tr>
<td>2008-02-27</td>
<td>V1.1</td>
<td>- Added PPPoE descriptions (F/W updated)</td>
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<td>- Added serial configuration command</td>
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<tr>
<td></td>
<td></td>
<td>- Removed hardware configuration description</td>
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<tr>
<td>2008-06-04</td>
<td>V2.0</td>
<td>- Added and modified serial configuration command (F/W updated to ver3.1)</td>
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<tr>
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<td></td>
<td>- Modified board dimensions (Chapter 6.3.1)</td>
</tr>
</tbody>
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