

# WIZ550S2E Programmer's Guide

## Overview

This page provides detailed information about AT commands set and how to use the Configuration tool, which retrieves and sets all configurations of WIZ550S2E via Ethernet. Users can change any value of the WIZ550S2E and communicate with the peer system through TCP(or UDP) socket by sending AT commands.

2014/07/29 10:12 · [jameskim](#)

## WIZ550S2E AT Command Set

This section provides a list of WIZ550S2E AT commands and their functions. Users can input commands and parameters through USART line. Every command starts with "AT." Any other initial character will cause an error in return. Commands and parameters are all ASCII characters, i.e. when you input 'AT+NSTAT', you should input ASCII characters 'A', 'T', '+', 'N', 'S', 'T', 'A', 'T' and 'Enter Key' which is CR, LF (0x0d, 0x0A).

**All commands should be terminated with CR(0x0D), LF(0x0A)**

Some parameters are mandatory and others are optional. Parameters must be entered in the order of format column given by the command tables. Although the optional parameter is not used, the comma delimiters must still be included in the command. In most cases, valid commands return the character [S] and invalid inputs return [F]. The possible responses sent from WIZ550S2E to the user are described as Responses. Below are examples of user input. As you can see, WIZ550S2E return "\r\n" back instead of "\r", which means user (host system) always handle '\r\n' as the only delimiter.

<b>Input by User</b>	AT\r\n (0x61 0x74 0x0d 0x0a)
<b>Output from WIZ550S2E</b>	[S]\r\n (0x5b 0x53 0x5d 0x0d 0x0a)

## Responses

### Response Format

[ (Type) , (Id) , (Param1) , (Param2) , (Param3) , (Param4) , (Param5) , (Param6) ] ↓ (Data) ↓

- (Type): Type of response. It can be one of **S**, **D**, **F**, **W**, **R** and **V**.

- (Id): Socket Identifier. This is the mandatory in Async mode.
- (Param1) ~ (Param6): ): These are included in case of commands retrieving module's setting value.
- ↓: This means 'Enter' key as delimiter and CR, LF(0x0d, 0x0a) are its real value.
- (Data): When huge data are needed, 'Data' will be followed in case of Type of response, D and R.

Responses are listed below.

Response	Description
Success Response	[S,(Id),(Param1),(Param2),(Param3),(Param4),(Param5),(Param6)]↓ Command Request Success, outputs with param when it's needed.
Success Dump Response	[D,(Id),(Size)]↓(Data)↓ Command Request Success, Outputs large data include 'Enter key' value.
Fail Response	[F,(Id),(ErrorCode),(ErrorParam)]↓ Command Request Fail, outputs with param when it's needed.
Wait Response	[W,(Id)]↓ Command is started with ID in Async mode.
Data Receive Response	[R,(SockId),(ReceivedSize),(SrcIP),(SrcPort)]↓(Data)↓ Outputs the received data.
Event Response	[V,(Id),(EventCode)]↓ Event occurred.

- (Id): 0 - System ID or 0~n - Socket Number
- (Size): Byte size of to output data
- (ErrorCode): Error Code
- (ErrorParam): Value of description for Error Code
- (SockId): Socket Identifier of the socket which received data
- (ReceivedSize): Byte size of received data
- (SrcIP): Sender's IP address. This is mandatory in case of UDP. In case of TCP this is omitted.
- (SrcPort): Sender socket's port number. This is mandatory in case of UDP.
- (EventCode): Indication of which event happened.

## Error Code

### General Error Code

Code	Error Name	Description
0	ERR_Undefined	Undefined Error
1	ERR_WrongOperator	Wrong Operator
2	ERR_WrongCommandSign	Wrong Command Sign
3	ERR_WrongArguments	Wrong Arguments
4	ERR_OurofRange	Parameter is out of Range
5	ERR_FuncDisabled	This function is disabled
6	ERR_NotAllowed	Not Allowed
7	ERR_CommandBusy	Command Busy
8	ERR_CommandTimeout	Command Timeout

## Socket Error Code

Code	Error Name	Description
10	ERR_SockNotAvail	Socket Not Available
11	ERR_SockClosed	Socket Closed
12	ERR_SockPortNumNotAvail	Port Not Available
13	ERR_SockNotConnected	Not Connected
14	ERR_SockWrongAddr	Wrong Address
15	ERR_SockDataNotAvailable	Data Not Available

## Other Error Code

Code	Error Name	Description
20	ERR_NoFreeMem	No Free Memory

## Event Code

### Socket Event Code

Code	Socket Event Name	Description
0	EVENT_SockConnected	Connected. Socket transition from Listen state to established state
1	EVENT_SockDisconnected	Disconnected. Socket transition from established state to disconnected state
2	EVENT_SockClosed	Closed. Socket transition to closed state
3	EVENT_SockDataRcvd	Data Received. The corresponding socket received data from its peer

## Network Commands

Command	Prop.	Input Parameter	Response
AT+NSET	None or ?		[S,,S,(IP),(SN),(GW),(DNS)] [S,,D]
	=	S,(IP),(SN),(GW),(DNS)	[S]
		D	[S]
	-	num,Param	[S]
AT+NSTAT	None or ?		[S,,S/D,(IP),(SN),(GW),(DNS)]
AT+NMAC	None or ?		[S,,(MAC)]
	=	(MAC)	[S]
AT+NOPEN	=	S/C/U,(SrcPort),(DstIP),(DstPort)	[W,(SockId)]
		A	[S,(SockId)]
AT+NCLOSE	=	(SockId)	[W,(SockId)]
			[S,(SockId)]
AT+NSEND	=	(SockId),(size),(DstIP),(DstPort)	[W,(SockId)]
			[S,(SockId)]

AT+NSOCK	None or ?		[D,,(Size)]↓(Data)
	=	(SockId)	[S,,S/C/U,(SrcPort),(DstIP),(DstPort)]

AT+NSET

- **Format:**

AT+NSET=<DHCP>,<IP>,<SN>,<GW>

- **Meaning:** Network Configuration

<DHCP>: Static/DHCP

Parameter	Meaning
S	DHCP Off, Static
D	DHCP On, DHCP Client

<IP>: IP Address (Optional)

<SN>: Subnet Mask (Optional)

<GW>: Gateway Address (Optional)

- **Response:**

[S]

- **Example 1:**

AT+NSET\r\n

AT+NSET?\r\n

- **Meaning:** Get Current Network Setting

Note that <IP>,<SN>,<GW> address of response are not actual addresses, but addresses stored in the memory. So when DHCP is on, they are usually different from actual addresses.

- **Response:**

[S,,S,192.168.11.100,255.255.255.0,192.168.11.1,8.8.8.8]

[S,,D]

- **Example 2:**

```
AT+NSET-2,192.168.11.110\r\n
```

- **Meaning:** *Update Second Parameter*

- **Response:**

```
[S]
```

---

AT+NSTAT

- **Format:**

```
AT+NSTAT
```

```
AT+NSTAT?
```

- **Meaning:** Display Current Network Status

- **Response:**

```
[S,,<DHCP>,<IP>,<SN>,<GW>,<DNS>]
```

- **Example 1:**

```
AT+NSTAT\r\n
```

```
AT+NSTAT?\r\n
```

- **Meaning:** *Display Current Network Status*

- **Response:**

```
[S,,S,192.168.11.100,255.255.255.0,192.168.11.1,8.8.8.8]
```

```
[S,,D]
```

AT+NMAC

- **Format:**

```
AT+NMAC
```

```
AT+NMAC?
```

- **Meaning:** Get MAC Address

- **Response:**

```
[S,,<MAC>]
```

- **Example 1:**

```
AT+NMAC=00:08:dc:1d:bb:8b\r\n
```

- **Meaning:** Set MAC Address

- **Response:**

```
[S]
```

- **Example 2:**

```
AT+NMAC\r\n
```

```
AT+NMAC?\r\n
```

- **Meaning:** Get MAC Address

- **Response:**

```
[S,,00:08:dc:1d:bb:8a]
```

AT+NOPEN

- **Format:**

```
AT+NOPEN=<SockType>,<SrcPort>,<DstIP>,<DstPort>
```

- **Meaning:** Initialize Socket

<SockType>: Socket Type

Parameter	Meaning
S	TCP Server Socket
C	TCP Client Socket
U	UDP Socket

<SrcPort>: Local Port Number

<DstIP>: Destination IP Address

<DstPort>: Destination Port Number

- **Response:**

```
[W,(SockId)]
```

```
[S,(SockId)]
```

- **Example 1:**

```
AT+NOPEN=C,3000,192.168.11.100,3000\r\n
```

- **Meaning:** Create Client Socket

- **Response:**

```
[W,0]  
[S,0]
```

```
[W,0]  
[F,,1]
```

- **Example 2:**

```
AT+NOPEN=S,5000,,\r\n
```

- **Meaning:** Create Server Socket

- **Response:**

```
[S,,0]
```

---

AT+NCLOSE

- **Format:**

```
AT+NCLOSE=(SockId)
```

- **Meaning:** Close Socket

<SockId>: Socket ID

- **Response:**

```
[W,(SockId)]
```

```
[S,(SockId)]
```

- **Example 1:**

```
AT+NCLOSE\r\n
```



- **Meaning:** Close Socket

- **Response:**

```
[W,0]
[S,0]
```

```
[F,,11]
```

AT+NSEND

- **Format:**

```
AT+NSEND=<SockId>,<size>,<DstIP>,<DstPort>
```

- **Meaning:** Send Data

<SockId>: Socket ID

Parameter	Meaning
S	TCP Server Socket
C	TCP Client Socket
U	UDP Socket

<SrcPort>: Local Port Number

<DstIP>: Destination IP Address

<DstPort>: Destination Port Number

- **Response:**

```
[W,(SockId)]
```

```
[S,(SockId)]
```

- **Example 1:**

```
AT+NSEND=0,4\r\n
aaaa
```

- **Meaning:** In TCP mode, Destination IP and port are not need.
- **Response:**

```
[W,0]  
[S,0]
```

## Management Commands

Command	Prop.	Input Parameter	Response
AT	None		[S]
	?		[D,,(Size)]↓(Data)
AT+MSTAT	None or ?		[S,,(Version)]
AT+MUSART	None or ?		[S,,(BR),(W),(P),(S),(F)]
	=	(BR),(W),(P),(S),(F)	[S]
	-	num,Param	[S]
AT+MSAVE	None		[S]
AT+MRST	None		[S]
	=	F	[S]
AT+MDATA	None		[S]

AT

- **Format:**

```
AT
```

- **Meaning:** Terminal Check
- **Response:**

```
[S]
```

AT+MSTAT

- **Format:**

AT+MSTAT

AT+MSTAT?

- **Meaning:** Get Current Version

- **Response:**

[S,,&lt;Version&gt;]

AT+MUSART

- **Format:**

AT+MUSART=&lt;BR&gt;,&lt;W&gt;,&lt;P&gt;,&lt;S&gt;,&lt;F&gt;

- **Meaning:** Serial Interface Configuration

&lt;BR&gt;: Baud rate

Parameter	Meaning
300	300bps
600	600bps
1200	1200bps
2400	2400bps
4800	4800bps
9600	9600bps
19200	19200bps
38400	38400bps
57600	57600bps
115200	115200bps
230400	230400bps

&lt;W&gt;: Word length

Parameter	Meaning
7	7 bits
8	8 bits

&lt;P&gt;: Parity bit

Parameter	Meaning
N	NONE
O	ODD

E	EVEN
---	------

<S>: Stop bit

Parameter	Meaning
1	1 bits
2	2 bits

<F>: Flow Control

Parameter	Meaning
0	NONE
1	RTS/CTS
2	RS422
3	RS485

- **Response:**

```
[S,,<BR>,( <W>, <P>, <S> ) <F>]
```

- **Example1:**

```
AT+MUSART
```

```
AT+MUSART?
```

- **Meaning:** Get Serial Interface Information

- **Response:**

```
[S,,<BR>,( <W>, <P>, <S> ) <F>]
```

- **Example2:**

```
AT+MUSART=,,E,,0
```

- **Meaning:** Set Serial Interface Information

- **Response:**

```
[S]
```

AT+MDATA

- **Format:**

AT+MDATA

- **Meaning:** Terminal Check

- **Response:**

[S]

## Function Commands

Command	Prop.	Input Parameter	Input Resp.	Query Response
AT+FDNS	None		[D,,(Size)]↓(Data)	

AT+FDNS

- **Format:**

AT+FDNS

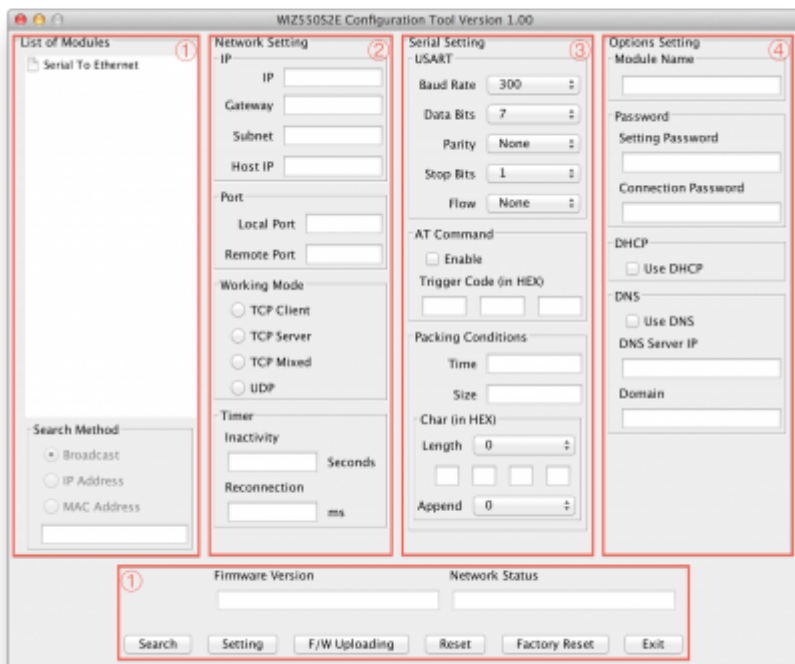
- **Meaning:** Do DNS Query and then return its result. Using Domain and DNS Server IP what has set via Configuration Tool.

- **Response:**

[D,,13]  
DNS Timeout

[D,,17]  
173.194.126.180

2014/07/28 12:14 · [ywkwon](#)  
Configuration Tool  
Description



WIZ550S2E Configuration tool is an application program which is based on java and can be used in most OS platforms including Windows, MAC OS and Linux. Please download .jar file and execute it over Java Virtual Machine.

There are two options on how to run the configuration tool.

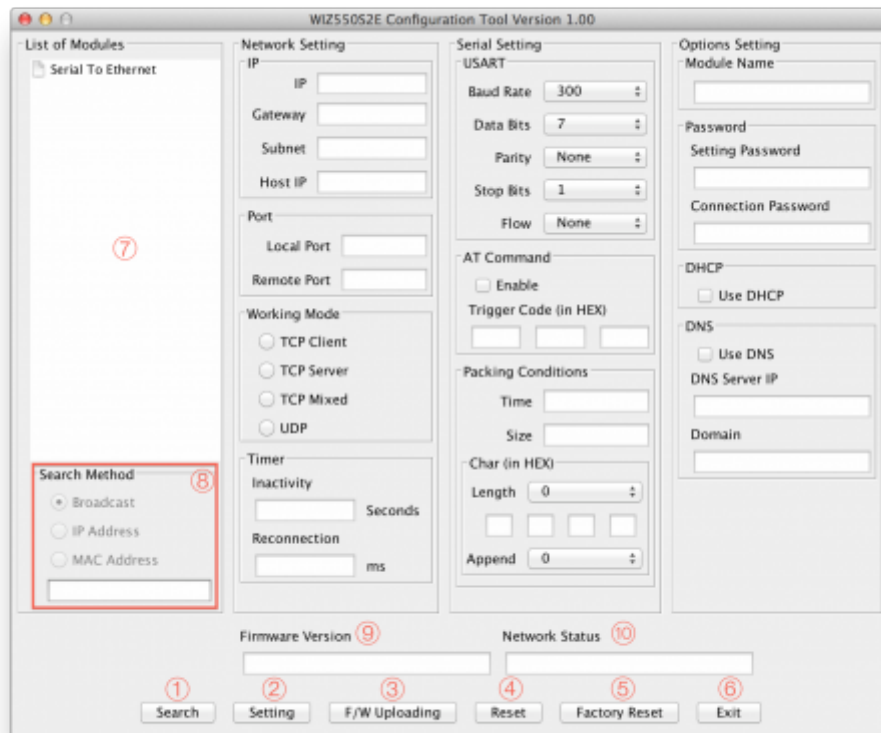
1. Run the jar file from the GUI environment.
  1. The jar file cannot be opened if the jar file is perceived as a compressed file. In this case, modify the setting of the compression software to not open the jar file.
  2. In case of Linux or Mac, the following must be given permission.
    1. `chmod 0755 WIZ550S2E_Configuration_Tool.jar`
2. Enter the following command in the terminal to run.
  1. `java -jar WIZ550S2E_Configuration_Tool.jar`

WIZ550S2E Configuration tool consists four sections

1. Common Configuration Section
2. Network Configuration Section
3. Serial Configuration Section
4. Option Configuration Section

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## Common Configurations



## Search

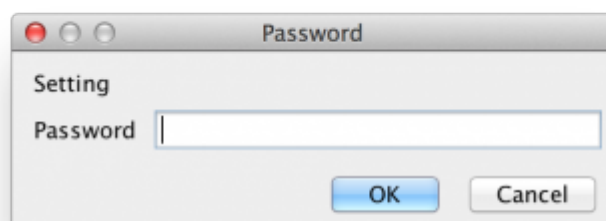
The Search function is used to search for all existing modules on the same LAN. By using UDP broadcast, it finds all modules on the same subnet, and found devices will be listed in the "Serial to Ethernet" tree(Search Window) with its MAC address.

## Setting

This function is used to apply your configurations.

When you select the MAC address from the "Search Window", the default value of the module will be displayed. Modify your configurations and click "Setting" button to apply your settings. The module will re-initialize and save the changed configurations.

Users can change the configurations by following the steps below.



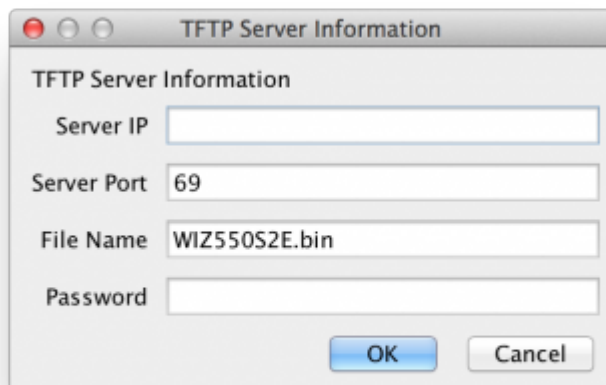
1. Select the MAC address of the device which you would like to modify in the "Search Window"
2. Modify the settings according to your needs
3. Click the "Setting" button and then "Password Input Windows" pop up
  - Default Password is "WIZnet"



4. Input "Setting Password" and Click "OK" button
5. The module will be initialized by a re-booting process
6. To verify your settings, please click 'Search' button and view your new settings

### F/W Uploading

Firmware will be uploaded through TFTP. Click "F/W Uploading" Button and then pop up windows following figures.



Server IP : TFTP Server IP  
Server Port : TFTP Server Port (TFTP default Port : 69)  
File Name : Firmware File Name  
Password : Setting Password

☞ WIZ550S2E Configure tool is not supported TFTP server. So you use TFTP program separately.

### Reset

This is the function which makes WIZ550S2E reboot. This requires "Setting Password".

### Factory Reset

All setting value is initialized to factory default, if the "Factory Reset" button is clicked. Factory default values of WIZ550S2E are listed below.

Category	Item	Value
Network	Local IP	192.168.11.100
	Local Gateway	192.168.11.1
	Local Subnet	255.255.255.0
	Local Port	5000
	Remote Port	5000
	Working Mode	TCP Server
	Inactivity	0
	Reconnection	1000

<b>Serial</b>	Baud Rate	115200
	Data Bits	8
	Parity	NONE
	Stop Bits	1
	Flow	NONE
	AT Command USE	Enable
	Trigger Code	2B/ 2B / 2B
	Packing Condition Time	0
	Packing Condition Size	0
	Delimiter Length	0
	Delimiter	2D / 2D / 2D / 2D
	Delimiter Appendix	0
<b>Options</b>	Module Name	WIZ550S2E
	Setting Password	WIZnet
	Connection Password	WIZnet
	DHCP USE	Disable
	DNS USE	Disable
	DNS Server IP	8.8.8.8

Exit

Close the configuration tool program window.

Search Window

If you click the “Search” button, all MAC addresses on the same subnet will be displayed.

Search Method

Reserved

Firmware Version

It displays the firmware version.

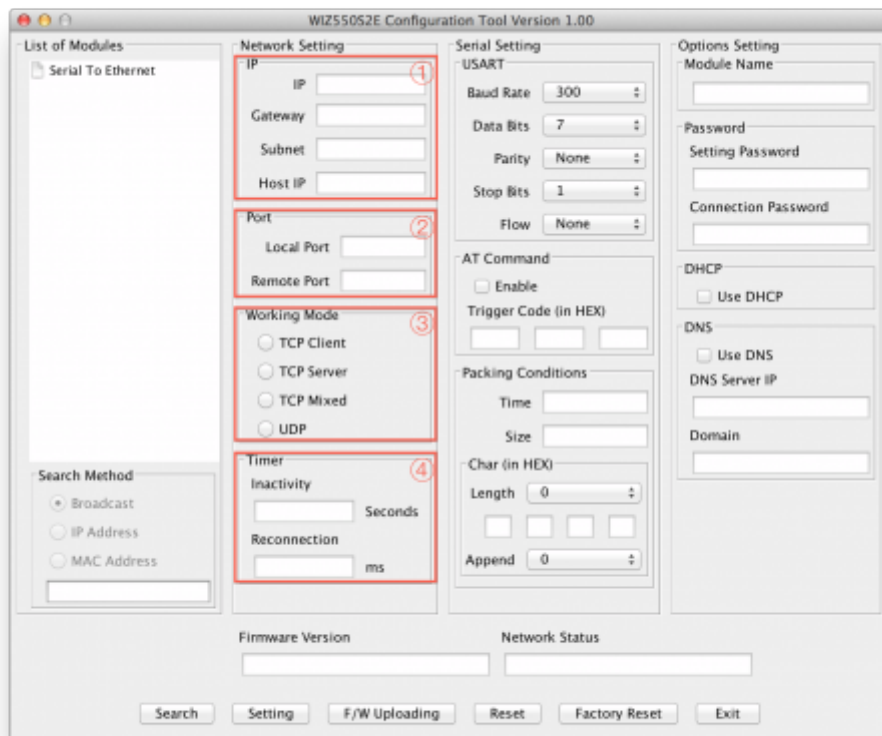
Network Status

This field shows the current status of network connection.

Connected : This means that TCP connection is established.  
Disconnected : This means that TCP connection is disconnected.  
UDP : This means that UDP mode is used.

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Network Configurations



## IP

This section is for setting WIZ550S2E mode's network information

### IP:

WIZ550S2E's IP Address

### Gateway:

WIZ550S2E's Gateway Address

### Subnet mask:

WIZ550S2E's Subnet Mask

### Host IP:

Peer system's IP address which WIZ550S2E connects(or sends) to, when its operating mode is "Client mode", "Mixed mode" or "UDP mode".

☞ If you are unclear about your Local IP, Subnet Mask, Gateway information, you have to get this information from your network administrator. If the IP address is not correct, IP collision or network problems may occur.

## Port

This section is for setting WIZ550S2E's Port information.

### Local port :

WIZ550S2E's local port number

### Remote port :

Peer system socket's port number which WIZ550S2E connects(or sends) to , when its operating mode is "Client mode", "Mixed mode" or "UDP mode".

## Working Mode

Client / server / mixed TCP establishes connection before data communication, but UDP processes the data communication without connection establishment. The network mode of WIZ550S2E can be divided into TCP Server, TCP Client and Mixed mode according to the connection establishing method. During TCP server mode, WIZ550S2E operates as the server and waits for the connection trial from the client. WIZ550S2E operates as the client in TCP Client mode and tries to connect to the server's IP and Port. Mixed mode supports both Server and Client. The communication process of each mode is as below.

### TCP server mode communication

During the TCP Server mode, WIZ550S2E waits for the connection request. TCP Server mode can be useful when the monitoring center attempts to connect to the device, while WIZ550S2E is installed, in order to check the status or provide commands. Normally WIZ550S2E is on the waiting status, and if connection request (SYN) from the monitoring center is received, the connection is established (ESTABLISH), and data communication is processed (Data Transaction), and finally connection is closed (FIN). In order to operate this mode, "Device IP", "Subnet mask", "Gateway" and "Local port" should be configured first.

For TCP server mode communication, all network configurations including Local IP, Subnet, Gateway and Local port number should be set correctly.

The Data transmission proceeds as below.

1. The host connects to the WIZ550S2E which is configured as TCP Server mode.
2. As the connection is established, data can be transmitted in both directions

(host → WIZ550S2E / WIZ550S2E → host)

### TCP client mode communication

If WIZ550S2E is set as TCP Client, it tries to establish connection to the server. To operate this mode, "Device IP", "Subnet mask", "Gateway", "Remote host", and "Remote port" should be set. If "Remote host" has a domain name, you should use the "DNS server" field. In TCP Client mode, WIZ550S2E can actively establish a TCP connection to a host computer when power is supplied.

The Data transmission proceeds as below:

1. As power is supplied, WIZ550S2E 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

(host → WIZ550S2E / WIZ550S2E → host)

### Mixed mode Communication

In this mode, WIZ550S2E normally operates as TCP Server and waits for the connection request from the peer. However, if WIZ550S2E 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, during mixed mode, the server mode is operated prior to the client mode.

Like TCP Server mode, the Mixed mode is useful in case where the monitoring center attempts to connect to the serial device, while WIZ550S2E is used, to check the 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.

### UDP mode Communication

UDP is not a connection oriented protocol but the communication port should be defined well. If UDP mode is selected, the data from serial interface can be defined where to deliver via the "Remote host" and "Remote port." The WIZ550S2E can also be defined where to receive Ethernet data from via the "Remote host" and "Local port" definition.

If the data destination and source are the same, the two IP addresses will also be the same. Please note that the destination and source are using the same port.

### Timer Inactivity

When there is no data transmission, the connection will close automatically after the specified inactivity time. If the default value '0' is set as the Inactivity time, the network connection is maintained even though there is no data transmission. In this case, you should use the 'Close' command to close the connection.

This function is useful when there are two or more systems connected to the WIZ550S2E module. If one system is connected to the WIZ550S2E, other systems cannot connect to the module simultaneously. Therefore, the inactivity time should be set and the other system can connect to the module after the inactivity time is elapsed.

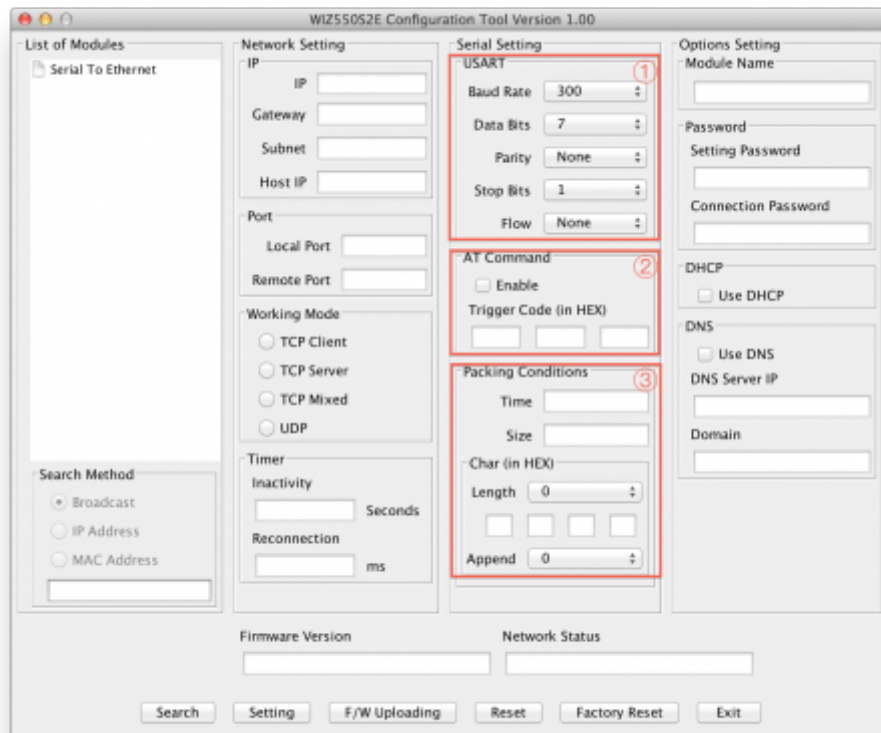
Inactivity Time can also be used if the server system unexpectedly shuts down. In this case, there is no data communication, and WIZ550S2E will close the connection and enter into waiting state if the defined inactivity time elapses.

### Reconnection

This is the interval time which WIZ550S2E tries to connect again after connection is closed. This is valid only in "Client mode" or "Mixed mode" having data from serial prior to TCP connection is established.

---

## Serial Configurations



## USART

This menu is used for setting the serial port.

Baud Rate :  
WIZ550S2E's Baud Rate  
Data Bits :  
WIZ550S2E's Data Bits (7,8,9)  
Parity :  
WIZ550S2E's Parity Bits  
Stop Bits :  
WIZ550S2E's stop Bits  
Flow :  
WIZ550S2E's Flow Control & RS422/RS485

## AT Command

This function is for module configuration through network with the configuration tool serial communication. The serial command mode is enabled as default.

## Packing Conditions

Normally, data received from UART are sent to Ethernet immediately. But in many cases, users want to send data as a chunk of the whole frame without separated ones. This option is for packetizing data into one frame.

Time :  
This field is for specifying time value to judge whether one frame is received totally. If the time specified in this field is expired

after receiving one byte, then WIZ550S2E notice one data frame is finished,  
make an Ethernet packet with all data in its serial buffer and send it to the peer system via Ethernet.

If WIZ550S2E receives another byte from UART before the specified time is expired,  
it restart timer and add the received one to the end of serial data buffer.

('0': Function Disable)

Size :

This field is for specifying size value to judge whether one frame is received totally. If the size specified in this field is received, then WIZ550S2E

notice one data frame is finished, make an Ethernet packet with specifying size's

data in its serial buffer and send it to the peer system via Ethernet.

('0': Function Disable)

Char :

This field is for specifying delimiter value to judge whether one frame is received

totally. Char delimiters can be set up to 4 bytes in HEX and valid character count is decided

according to the value in Length field. In case the value of Length field is '0',

this option becomes inactivated.

Appendix is another option for this. If user selects any value in Appendix field, WIZ550S2E make

an ethernet packet with all received data by Char delimiter and next bytes in counts,

which designated by Appendix field.

When Appendix is set with any value, not '0', even though WIZ550S2E received Char delimiters,

it will wait until it receives next data.

---

## Options Configurations

## Module Name

The device name is displayed in this area.  
User can use this name to distinguish this module with others

## Password

This is password field for authentication.

## Setting Password :

Configure Tool Setting Password. Critical functions like "Setting", "Firmware Upload", "Reset" and "Factory Reset" need this password to try issued action and avoid

unauthorized users' command.

When user wants to change its default Setting Password with new one, put new one in this field.

## Connection Password :

When WIZ550S2E is tcp server, it needs connection password to check whether client is an unauthorized user or not. After Client is connected, it must transfer correct

"Connection Password" within 3 seconds. Otherwise, WIZ550S2E will close its TCP connection.

## DHCP

This decides how to obtain IP address. If user selects "Use DHCP" then WIZ550S2E will obtain IP address dynamically by DHCP operation. Otherwise, it will operate in static mode.



**Static mode :**

If user uses this mode by deselecting "Use DHCP", user has to set WIZ550S2E with specific network information.

1) First, select "MAC address" in "Search Windows"

2) Then, IP setting section will be activated

3) Fill those fields with information which user want to set.

4) And press "Setting" button then network information will be changed with value user entered.

**DHCP mode :**

WIZ550S2E's network information will be set automatically without user's interference.

**DNS**

This is valid in TCP Client mode only. Normally, TCP Client mode has to know its peer system's IP address. But there are some cases where the IP address is unknown and especially when the IP address change frequently.

In this case, DNS function is needed.

User has to select "Use DNS" option and set DNS Server IP address and peer systems' Domain name in string. Put DNS Server IP, provided by ISP, into "DNS Server IP" field and peer system's Domain name into "Domain" field.

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