# WIFI232-A/B Quick Start

(This document is for WIFI232-A/B,WIFI501)

WIFI232 series product is used for convert data from RS232 to WIFI TCPIP, Two-way transparent transmission, user need not know the WIFI and TCPIP detail, update the product for WIFI control. All the convert work is done by the module, for users, the RS232 side is only as a serial device, at the WIFI side, for user is TCPIP Socket data. User can setup the work detail by sample settings, setup via inside web pages or RS232 port, the setup work need only do once, then it will save the setting forever.

# Content

# 1. Module Test

## 1.1 Hardware connect

In order to test WIFI module, we connect module RS232 to PC and also WIFI to PC.

Most PC has RS232 COM port but no WIFI while most Notebook has WIFI but no RS232 COM port. In order to has both of RS232 port and WIFI network, You may use PC add USB WIFI network Card or Notebook add USB to RS232 cable. But notice, Do use High quality USB to RS232 convert module (We suggest cables make by FT232 chip only).

WIFI232-A and WIFI232-B WIFI core module RS232 is 3.3V TTL lever, can not connect to PC directly, For user test, we supply some mother module, now we WIFI501 as sample.


Notice: When the WIFI232 using serial mode to communicate, short the outside line and middle line pins ( as shown in the above picture); when using RS485 modes, short the middle and inner line pins.

After hardware connect, Power on module, wait about 20 seconds (LINUX system start up), while Ready led light, it means system is ready for use, go to next step.

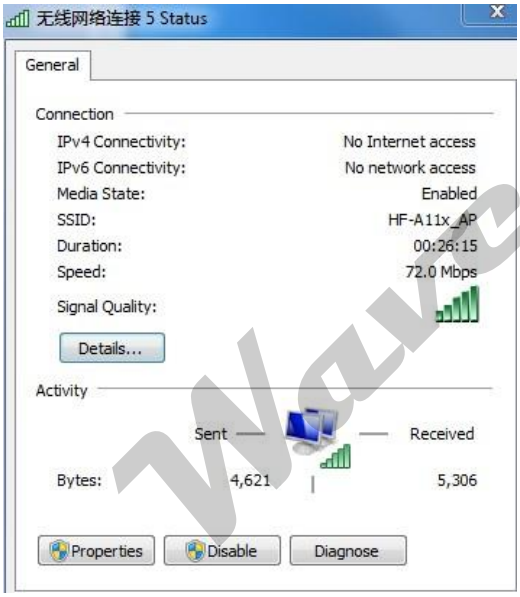
Notice:The cable link to PC must across the RXD and TXD(PIN2 and PIN3), and across RTS CTS(PIN7 PIN8) or not connect. We supply this special RS232 serial cable.

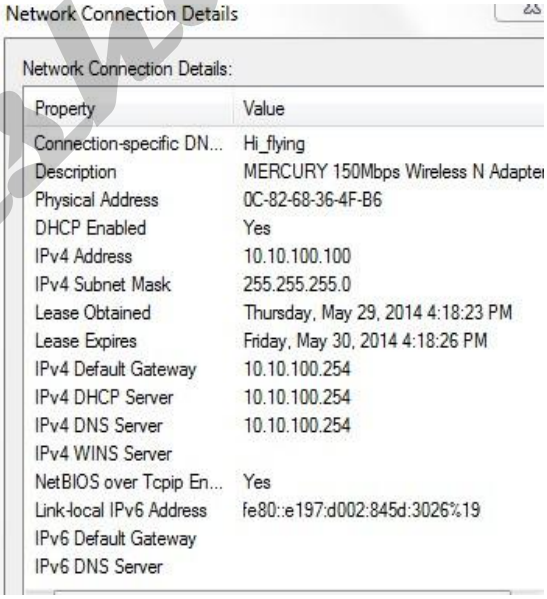
## 1.2 Network connection

Notebook enable WIFI, or PC with USB WIFI Network Card and install Drive, you may see the WIFI icon .

Search Network, find SSID named HF-A11x_AP, as follow picture.


Join this network, choose auto get IP Address, WIFI module has DHCP Server function and is on by default, it will allocate an IP to PC.



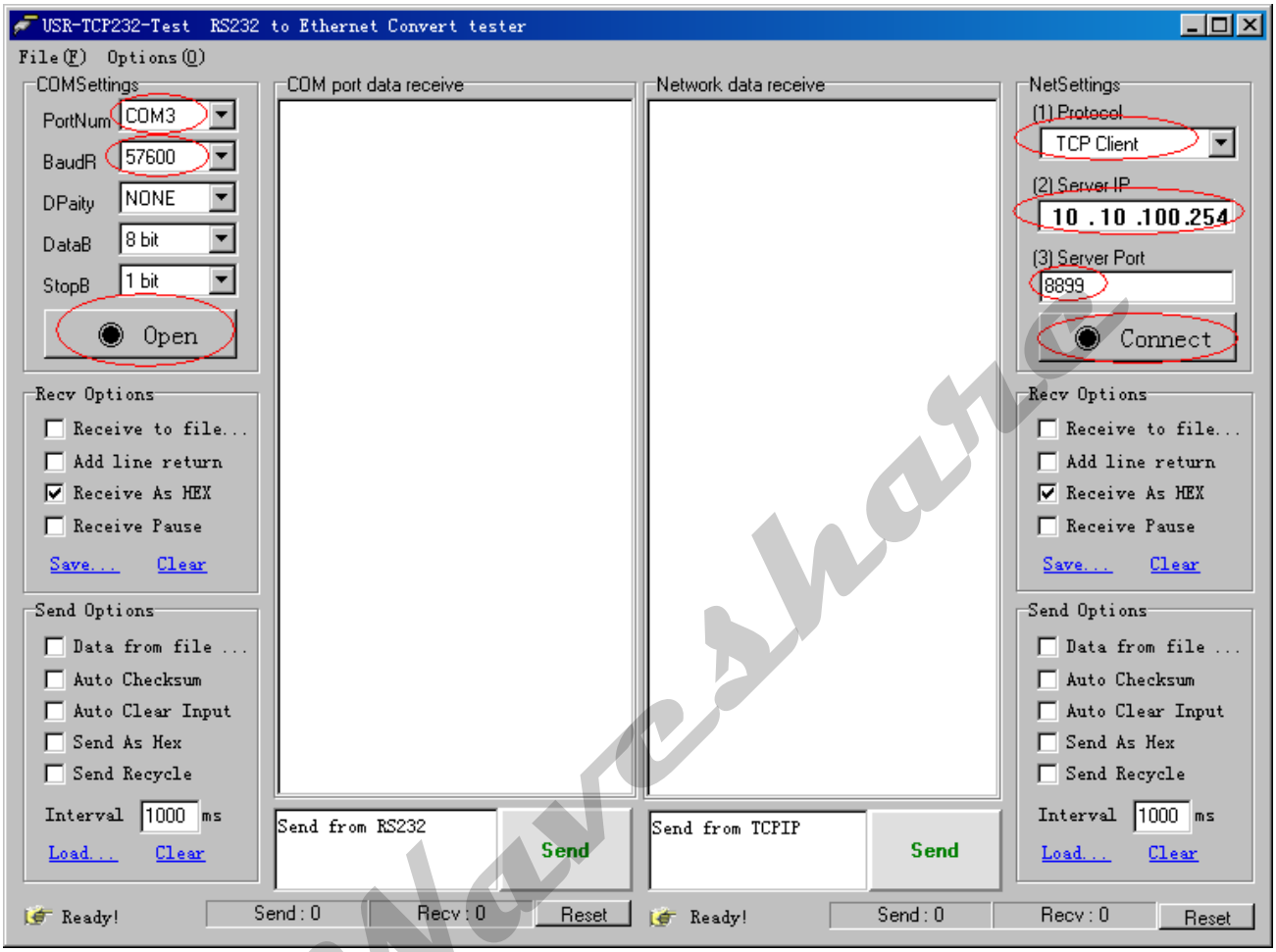




Now the Link Led should light, means link connected.

## 1.3 Send and Receive test

COM Settings area (left): Open the test software **TCP232.exe(**software/**)**, Choose COM port witch has connect the module, there is **COM3,** choose band rate to **57600**, this is the default band rate of WIFI module, Click **Open** COM port.

Net Settings area (right): choose **TCP client** mode,Server IP write **10.10.100.254**, it is the WIFI default IP address, Server port to **8899**, It is the default Port the WIFI module listen, Click **Connect** to link to the module.

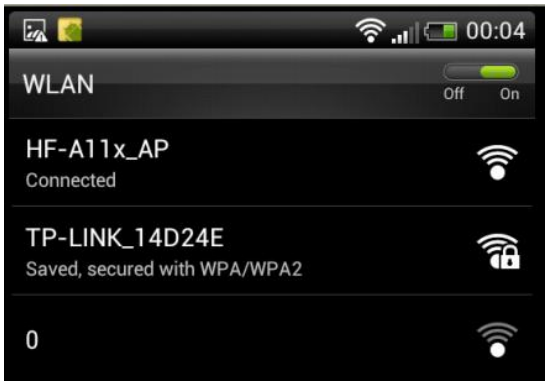



Now, you can test send data between RS232 and WIFI, COM port to WIFI: PC COM port -> Module COM Port -> Module WIFI -> PC WIFI, WIFI to COM port: PC WIFI -> Module WIFI -> Module RS232 -> PC RS232.

When you send data, you can see the TXD and RXD Led flash when data through.

## 1.4 Android mobile communication with COM port

Not only the test tool on PC, we supply a TCP Test tool for Android system, download by scanning the follow Two-dimensional code.




Keep the test software TCP232-Test still on.

Open mobile WIFI, find HF-A11X-AP and join the WIFI network as upon right picture.

Open NetworkTool software on mobile, change to TCP Client view, click Add, create a TCP Connection to 10.10.100.254 port 8899, after create success, it will auto connect.

After connect created, now you can send data from mobile to PC COM port, and when send data from PC COM port, both of WIFI on mobile and PC can receive data.

This test show the function for module works as AP can allow more than one Station for join, it support up to 32 Stations, and work as TCP Server, it support up to 32 TCP Clients.

## 1.5 iphone mobile communication with COM port

we also supply a TCP Test tool for iphone system, download by scanning the follow Two-dimensional code.

Scan the QR code and get the following URL, paste it into safari browser then open (if failed for the first time, you may want to paste and try again):

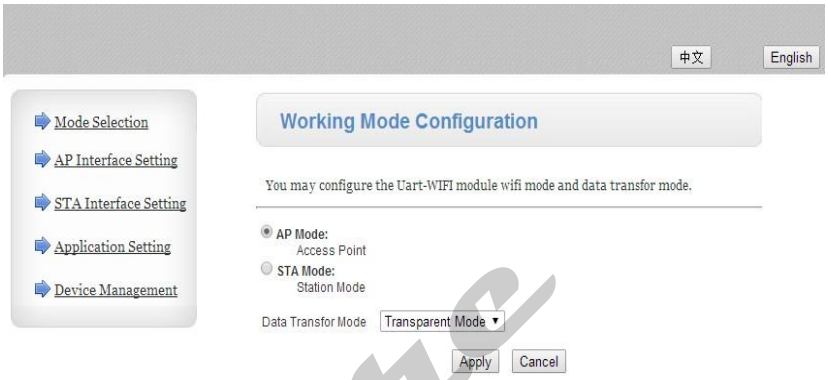
itms-services://?action=download-manifest&url=http://www.waveshare.net/downloads/accBoard/WIFI232/NetWorkTool.plist

# 2. Module setup

Now, you can close the upon test softwares, the follow setup method, you can just use one of them.

## 2.1 Set up via Web pages

Keep WIFI network connection, login web page **http://10.10.100.254,** the user name and password are both admin.


## 2.2 Setup via COM port software

Connect the module COM port to PC COM port, install the software runtime lib(software/WIFI232-Setup/**gtk2-runtime.exe**), then run **A11_Config_serial_en.exe**(software/WIFI232-Setup/), , click **Connect**, after success ,click **Read** ,then you can setup the settings.

## 2.3 Hand AT Command

This method is similar with 2.2, it is by hand while the 2.2 do by software. This show the AT commands work detail, if you would like to configure the module via you MCU, this is important for you.

Connect your module COM Port to PC COM port.

First send three plus signs **+++**, notice only three chars, no <CR> and no <LF>, you will receive a char a send back from module, then in three seconds, send back a char a back to the module, after that you will receive +ok to notice it has go in to AT command mode, send AT+H and Enter (CR and LF ,0x0D + 0x0A) to get help, AT+ENTM and Enter for back to transparent transmission mode. More detail AT commands description please see the data sheet, the test step screen is here, (Only receive message, send chars can't be see)

# 3. Program demo

## 3.1 UART RS232 program

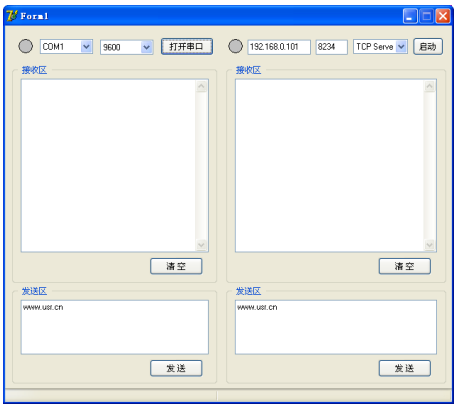
AT default transparent transmission work mode, the module UART port for user can be looks as a normal RS232 device, almost all kinds of MCU has UART use demo code, please GOOGLE them.

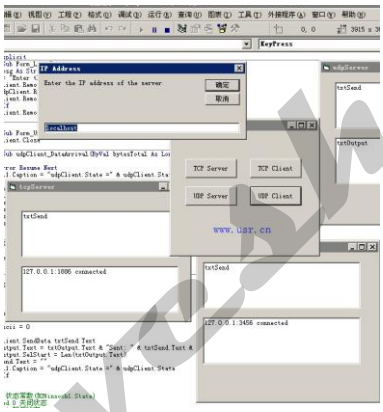
User MCU connect to WIFI module is TXD to RXD and RXD to TXD, detail please see hardware description docs.

Notice, because the LINUX need about 20 seconds to start up, if your data can't be lost, advise you use a GPIO connect to Ready pin, after the Pin go to Low and delay 2 seconds then send user data. Also there is a Link IO for declare the WIFI network connect status. An other compatible method is use hardware control RTS, CTS.

## 3.2 TCP IP Socket program

For network , it is a stand TCPIP socket data, we supply VB/Delphi/Boland C++ and android demo code for user, the socket programs always use OCX or API for communication, such as winsock.OCX, network can use TCP Server/TCP client/UDP any one of them, can be setup in the module and software opposite with it,TCP Server with TCP Client, UDP opposite UDP, follow picture is Delphi/VB and android demo code screen.

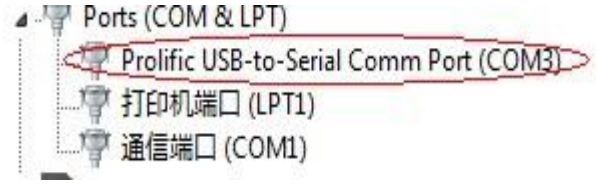


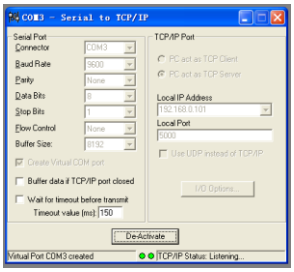





## 3.3 Virtual COM PORT

Sometimes the user has RS232 link system, in order to do less work, you can use Virtual COM PORT soft ware to convert TCPIP data to Virtual Serial Port, your old RS232 software can still be used, the software convert it to TCPIP and send via WIFI, it looks like an wireless RS232 COM port, More detail please look at the COM-RED software user guide and the application detail.



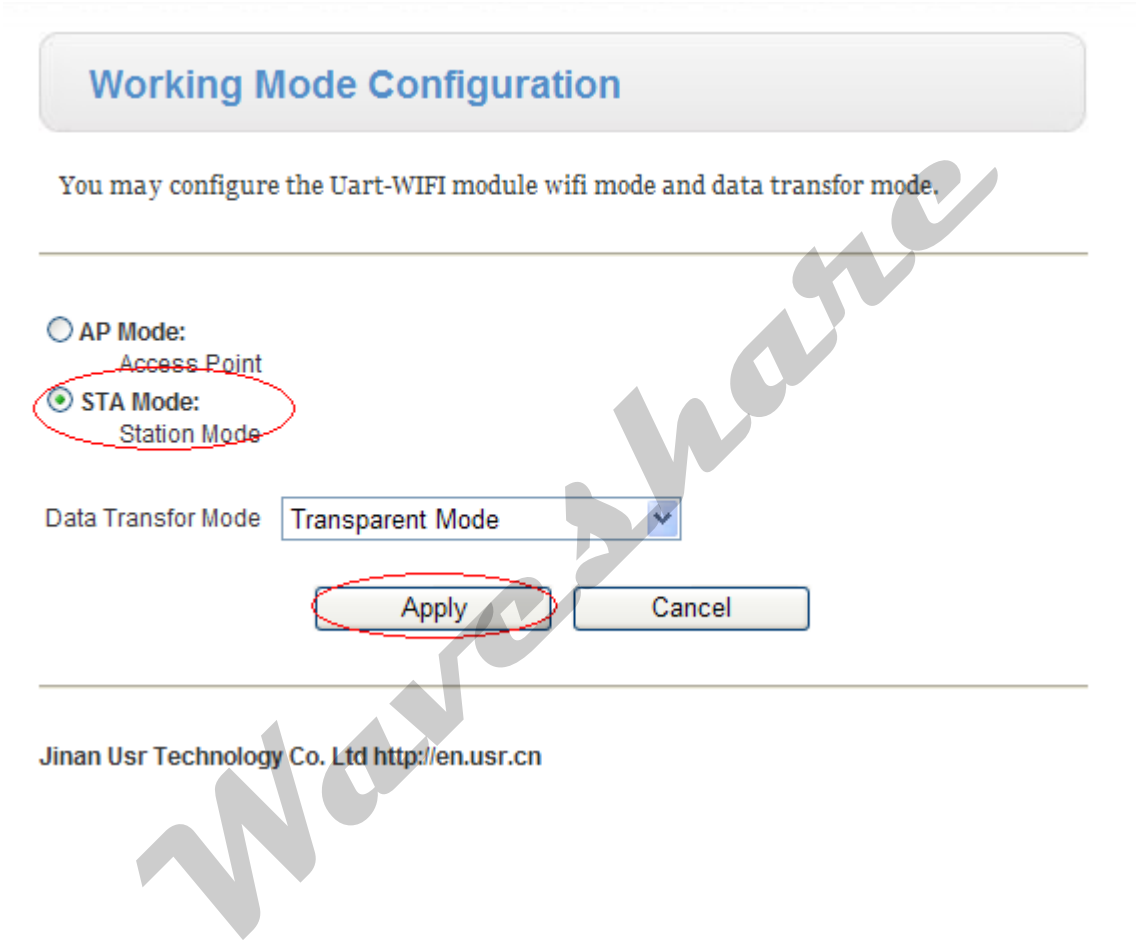



# 4. Join module to normal home WIFI network

Above description is just is LAN, in practical application, you may need to connect to normal WIFI network, to connect data to LAN server, now we have a short description on this.

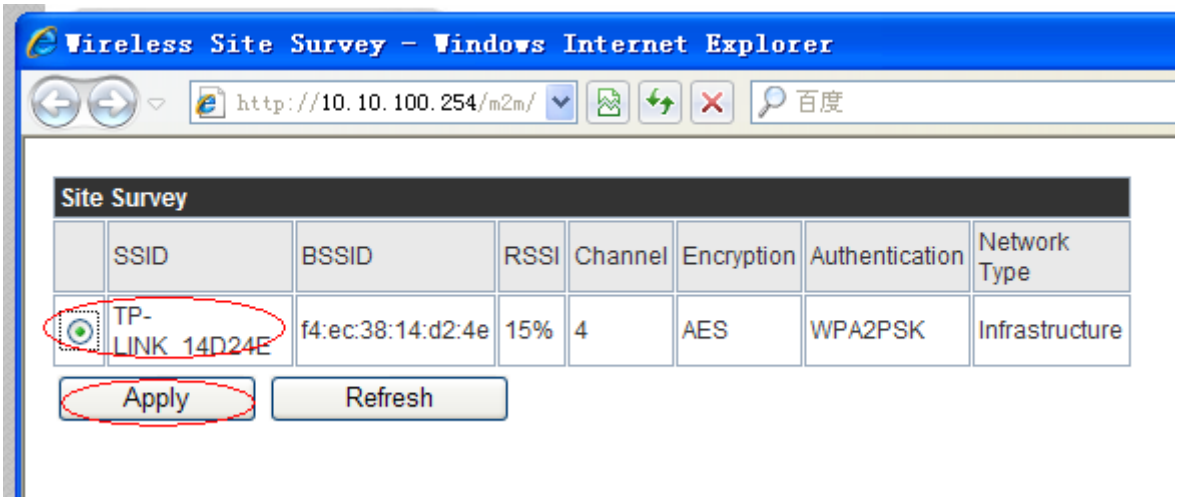
4.1 first, you need to login to your WIFI router to see some information, SSID name, user name and password, Encrypt type.

4.2 visit http://10.10.100.254 go to setup web page. Choose Station work mode.



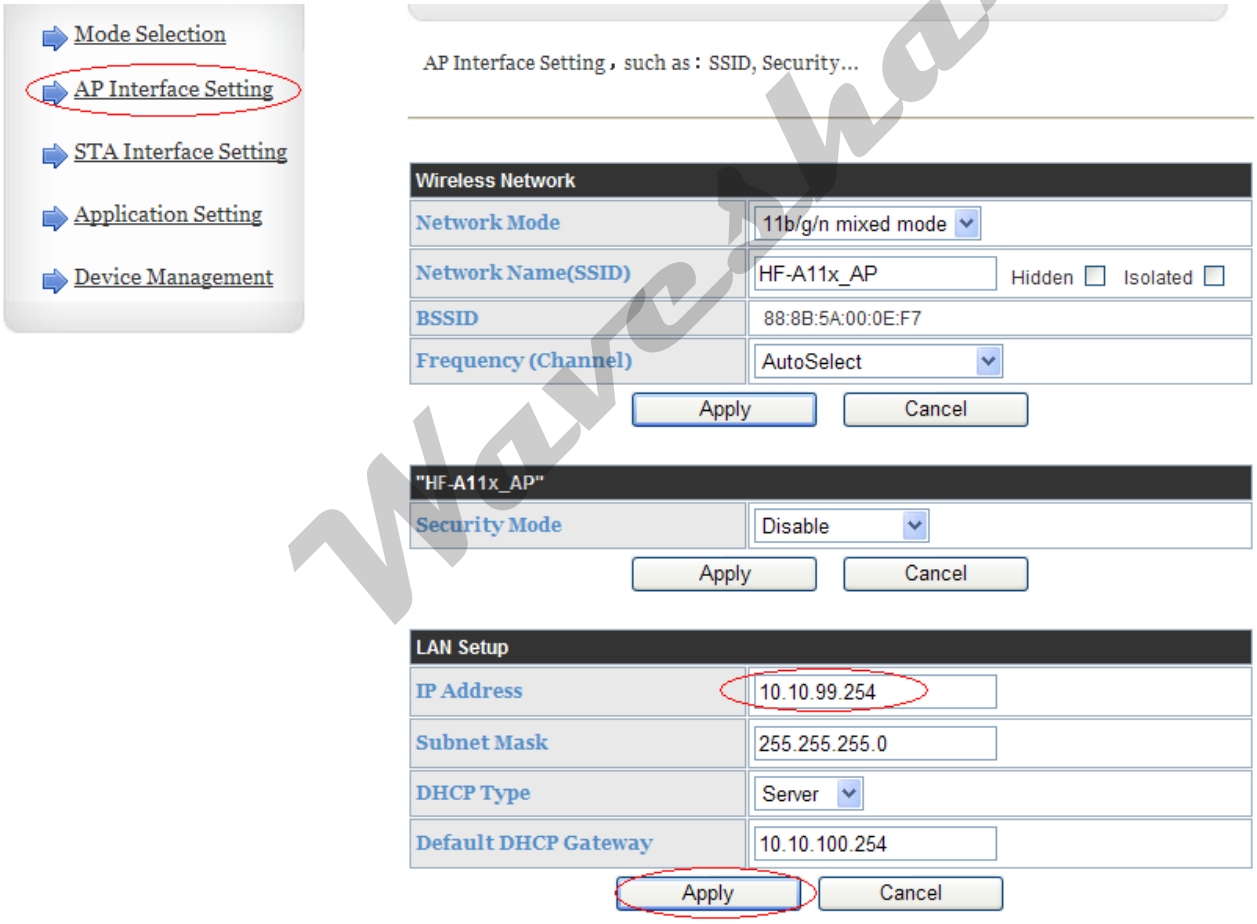

4.3 Go to STA Interface Setting page, fill the settings, SSID, Security Mode and password then click Apply.

Also we supply a new function for search router , Click **Search** near the SSID input form,

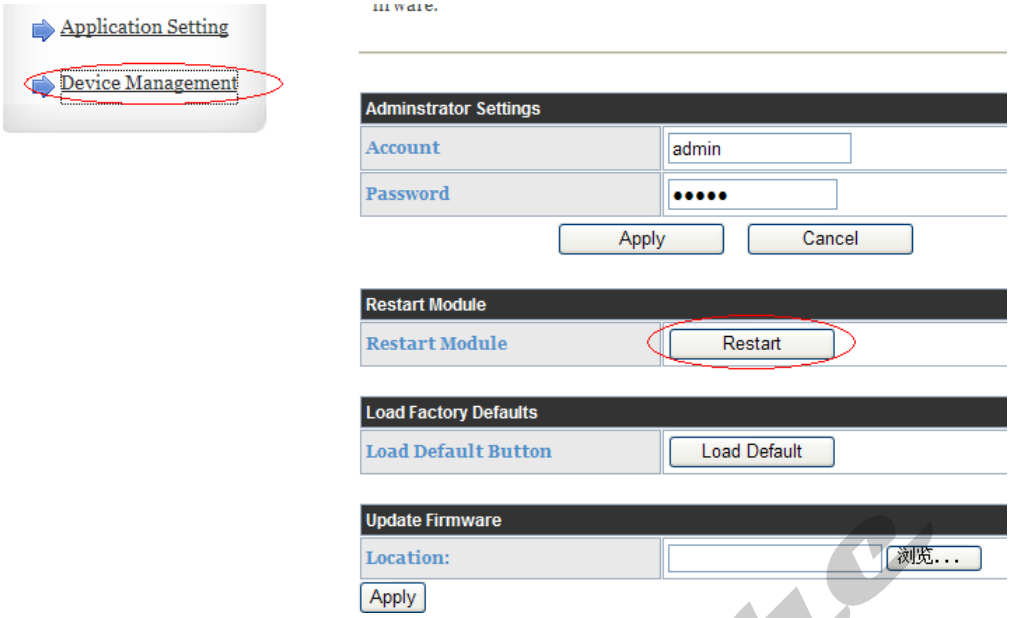



Choose the network you want to connect and Click Apply and back to fill password then apply.

Notice: If your AP still use our module, You need to change the Module LAN IP to not same with AP, for example to 10.10.99.254, to avoid IP conflict, other wise it would not work.




4.4 Go to Device Management page, Restart module.

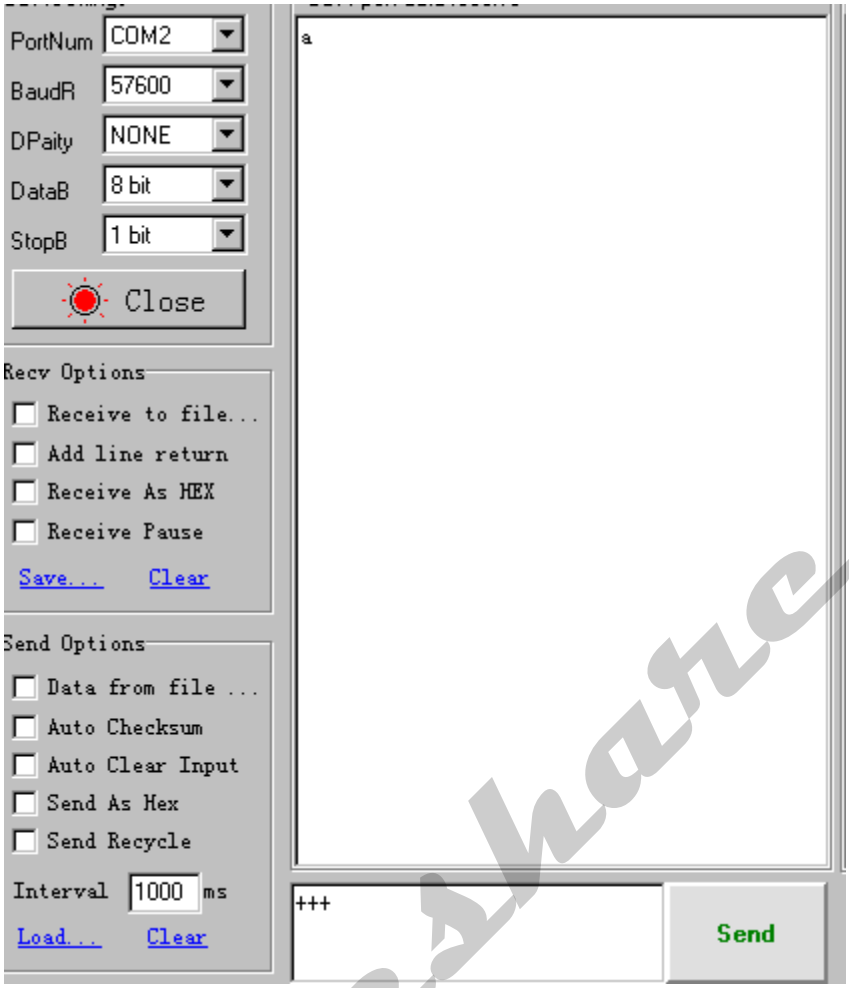



## 5、Connect the computer to WIFI through the RJ45

The WIFI501 is used for demonstration.

5.1 Connect the WIFI232 module to the Router WIFI as described before, then connect the module to the computer through a RJ45 cable (the computer local network connection will be disconnected for the moment).

5.2 Launch the TCP232.exe, select the COM port, send +++ (without Enter or any space), then send character a in 3 seconds. The COM port will return +ok and enter AT command mode.




5.3 input **"AT+FEPHY=on",** press **Enter,** then Send it
to open Ethernet interface (which is shut down by default to save power consumption). The COM port should return +ok if successful.

5.4 input **"AT+FVER=z",** press **Enter,** then Send it
to config network work mode. The COM port should return +ok if successful.

5.5 input **"AT+RELD",** press **Enter,** then Send it
to reset the WIFI232 module in about 3 seconds.

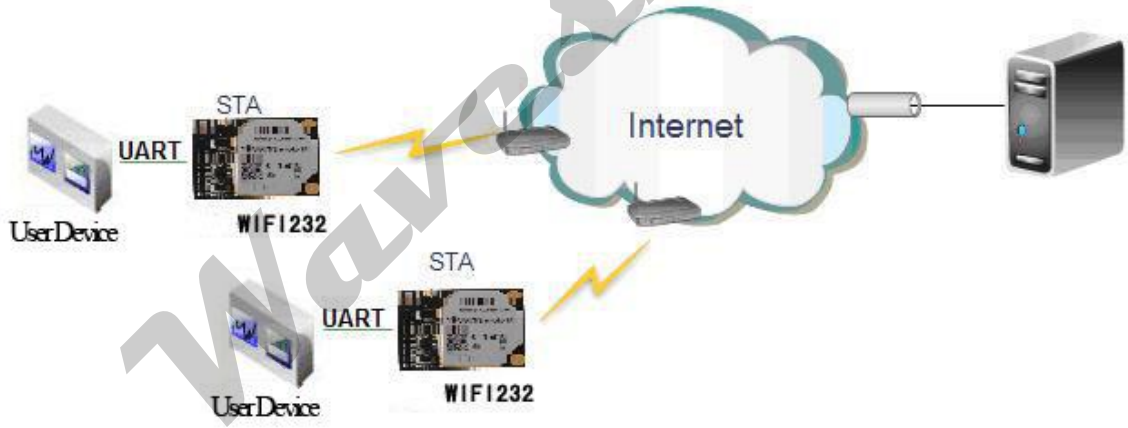
5.6 The computer local network connection will be connected, and the IP will be "10.10.100.x". Disable the local network connection, and enable it again, the computer will get a new IP assigned by the router and connect to WIFI successfully.

# 6、Configuration Examples

## 6.1 Wireless Control Application


For this wireless control application, WIFI232-A/B works as AP mode. Module's serial port connects to user device. So, control agent (Smart phone for this example) can manage and control the user device through the wireless connection with WIFI232-A/B module.

## 6.2 Remote Management Application

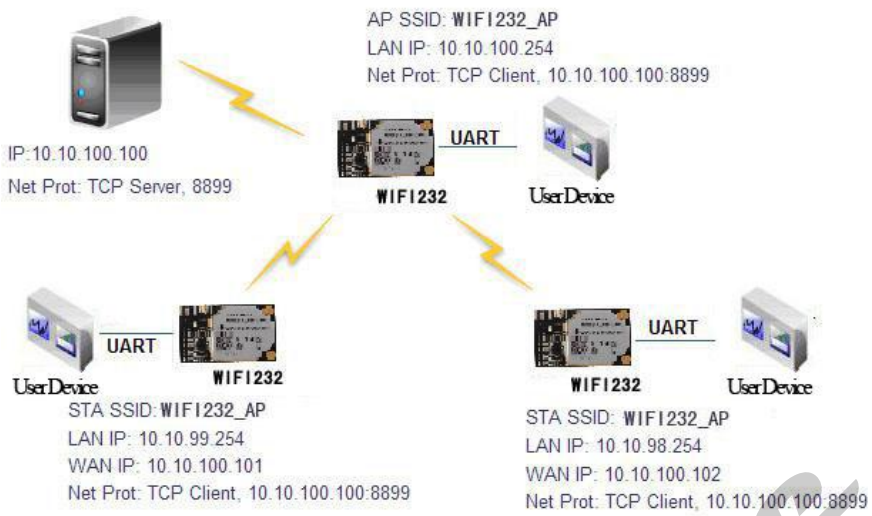



For this remote management application, WIFI232-A/B works as STA mode and connects to Internet through wireless AP. Module configured as TCP Client and communicates with remote TCP server at Internet. Module's serial port connects to user device.

So, user device's data or sampling information can send to remote TCP server for storage or processing. Also remote TCP server can send command to control and manage the user device through the wireless network.

## 6.3 Wireless Data Acquisition Card Application

For this wireless data acquisition card application, one PC works as data server and every data acquisition card connects with a WIFI232-A/B module to support wireless connection function.




As above figure, one WIFI232-A/B configured as AP mode and all others configured as STA mode. All WIFI232-A/B which configured as STA and data server PC connected to WIFI232-A/B which configured as AP to make up a wireless network.

Data server PC open TCP/Server protocol and all WIFI232-A/B modules open TCP/Client protocol. All data acquisition cards' data and sampling information can be transmitted to data server PC for operation.

## 6.4 Transparent Serial Port Application

For this transparent serial port application, two WIFI232-A/B modules connect as below figures to build up a transparent serial port connection.


For left side WIFI232-A/B module, configured as AP mode and use default SSID and IP address, network protocol configured as TCP/Server mode, and protocol port ID: 8899.

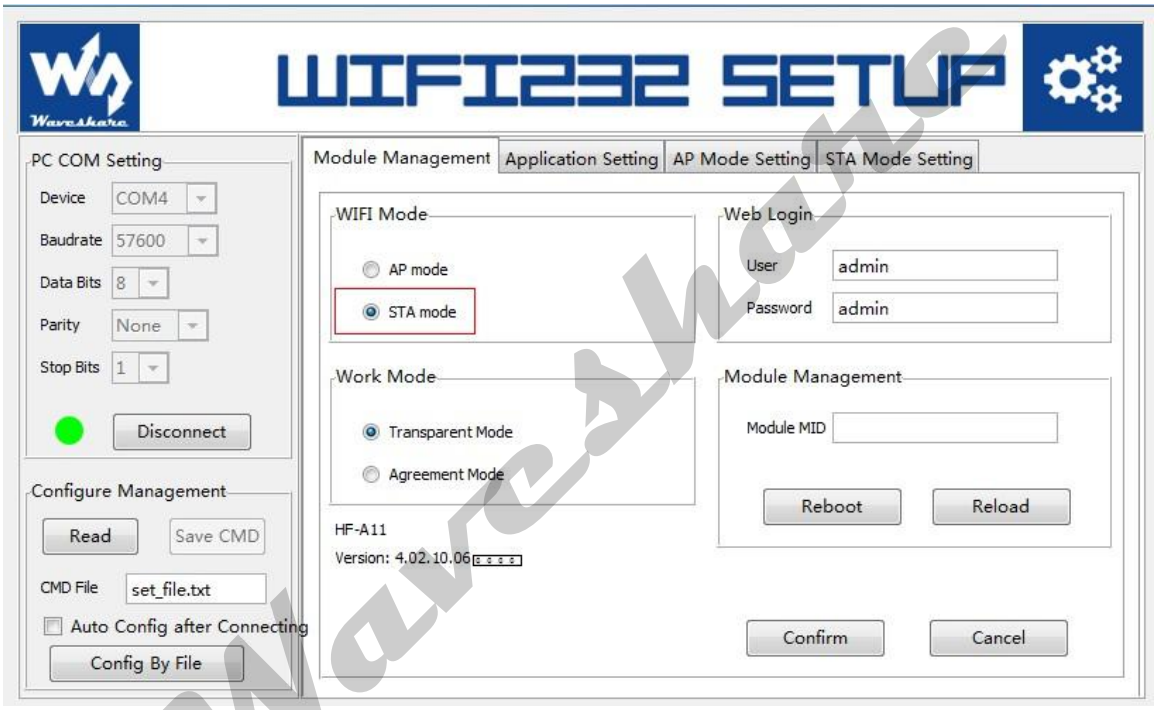
For right side WIFI232-A/B module, configured as STA mode and setting the same SSID （"HF-A11_AP" for this example）with left side WIFI232-A/B module, enable DHCP network and network protocol configured as TCP/Client

mode, protocol port ID: 8899. Target IP address part setting the same IP address with left side WIFI232-A/B module ("10.10.100.254" for this example).

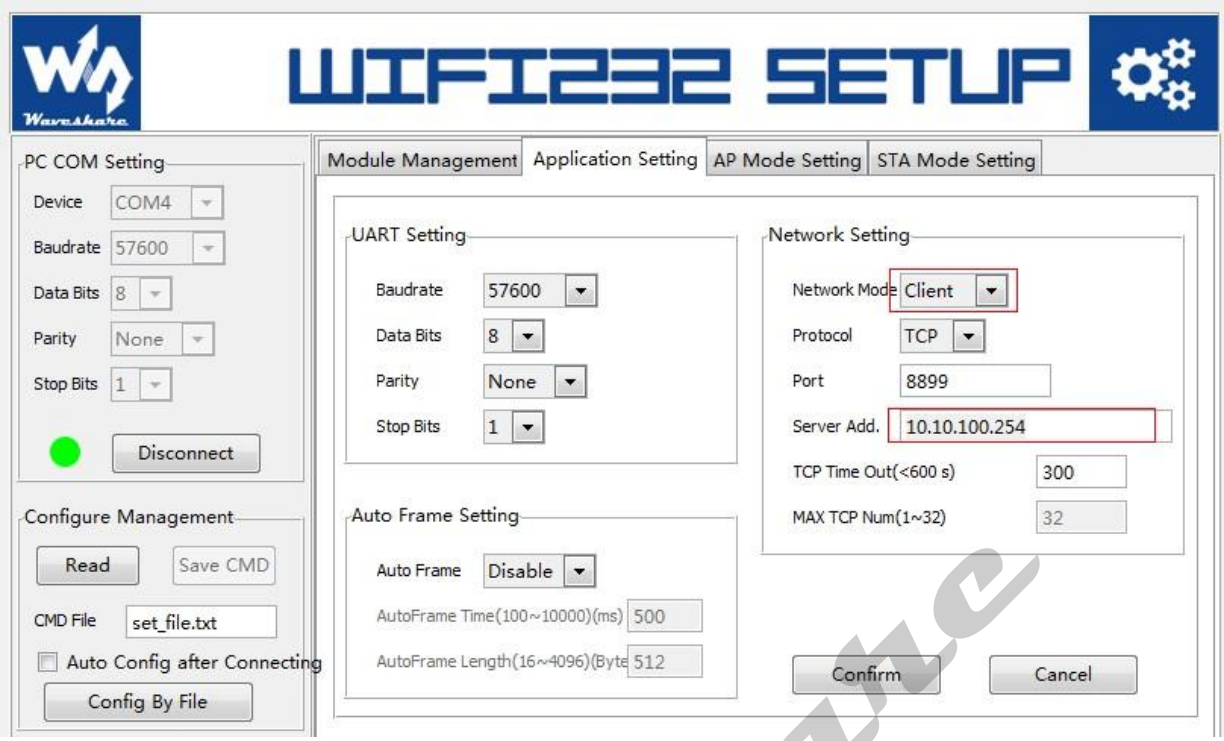
When right side WIFI232-A/B boot up, it will find wireless AP (SSID：HF-A11_AP for this example) and open TCP/Client network protocol to connect with left side module's TCP/Server. All these operation will be automatic and after finished, the two user devices connected to WIFI232-A/B module through serial port can communicate each other and the connection between them is fully transparent.

Notes: Change the IP address of LAN port to different network address of WAN port, as shown in figure, change for 10.10.99.254. (WAN Port DHCP gets address 10.10.100.xxx from the left module)

Configure the modules in webpage, take 6.4 as an example
1. As AP mode, the WIFI module keeps default settings, no need to change;
2. Configure the STA module:
   2.1 Configure the module as STA site:

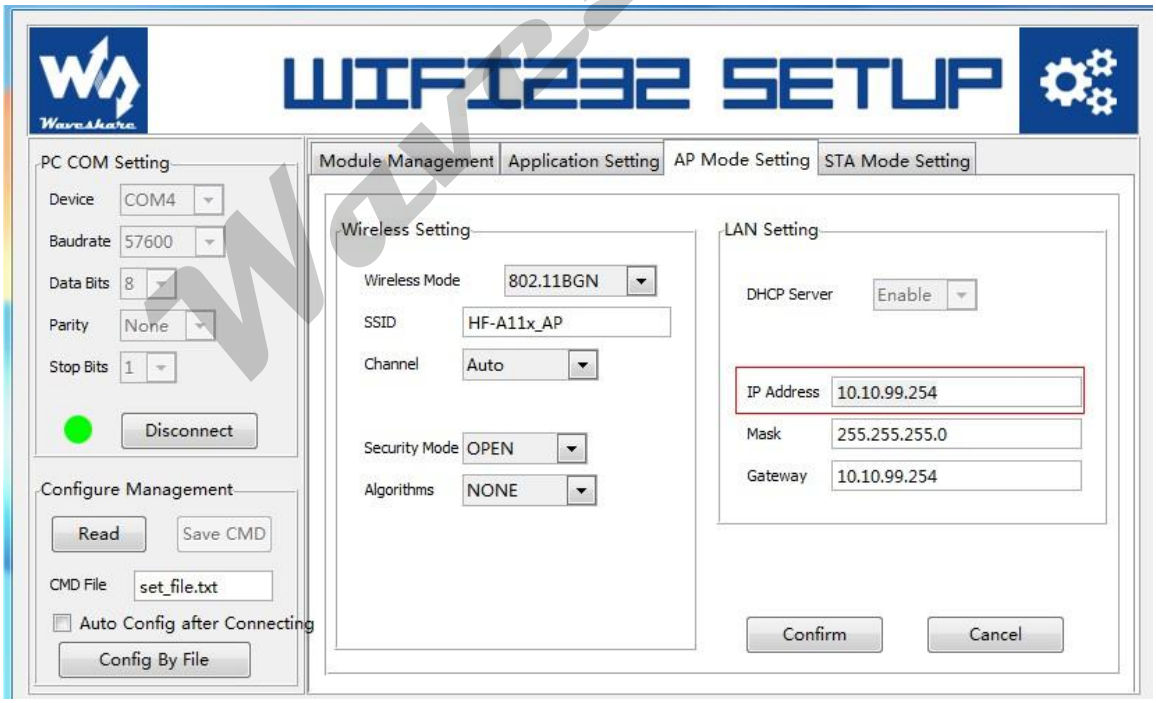



   2.2 Set up basic parameters and server address of the module



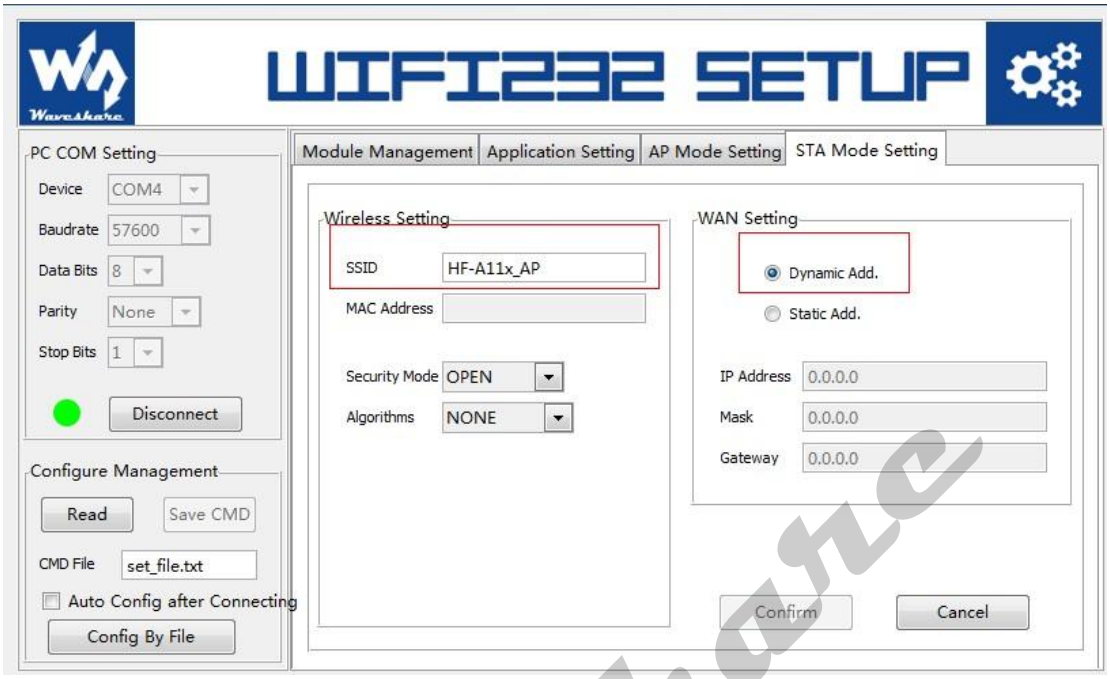

Notes: AP side is server-side, so the STA side should select client-side, it's server IP is the IP of AP side.

2.3 Set up the LAN IP:



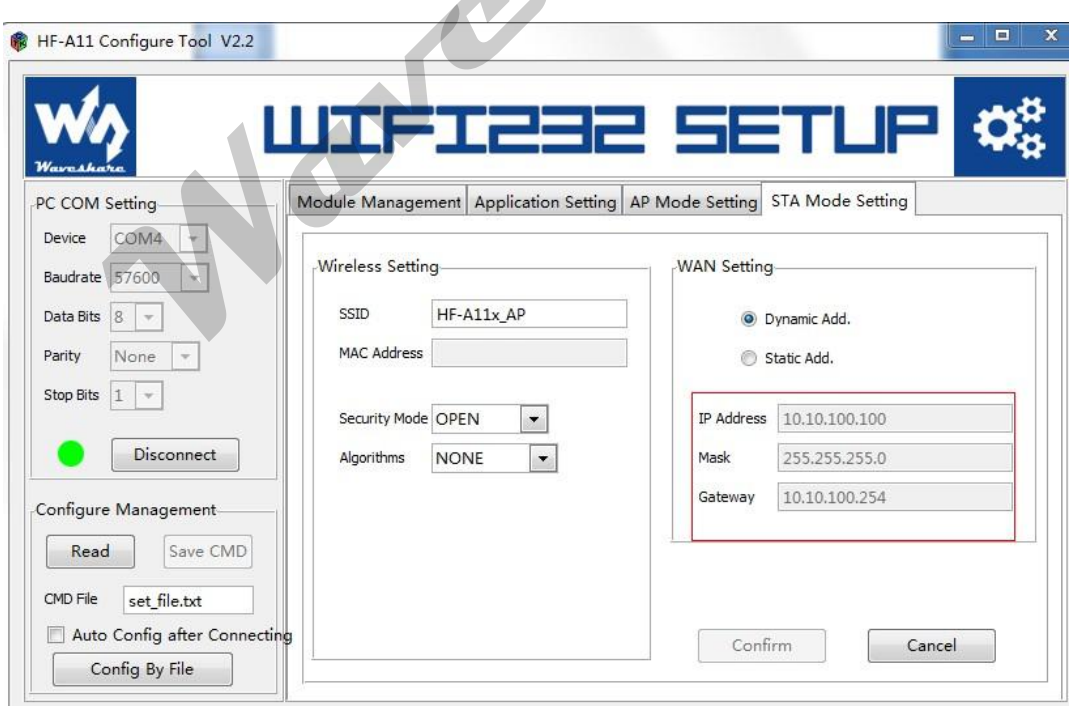
Notes: The IP of this LAN port parameters and IP of AP side should be in the same network segment.

2.4 Set up the network name and WAN IP which need to be connected:

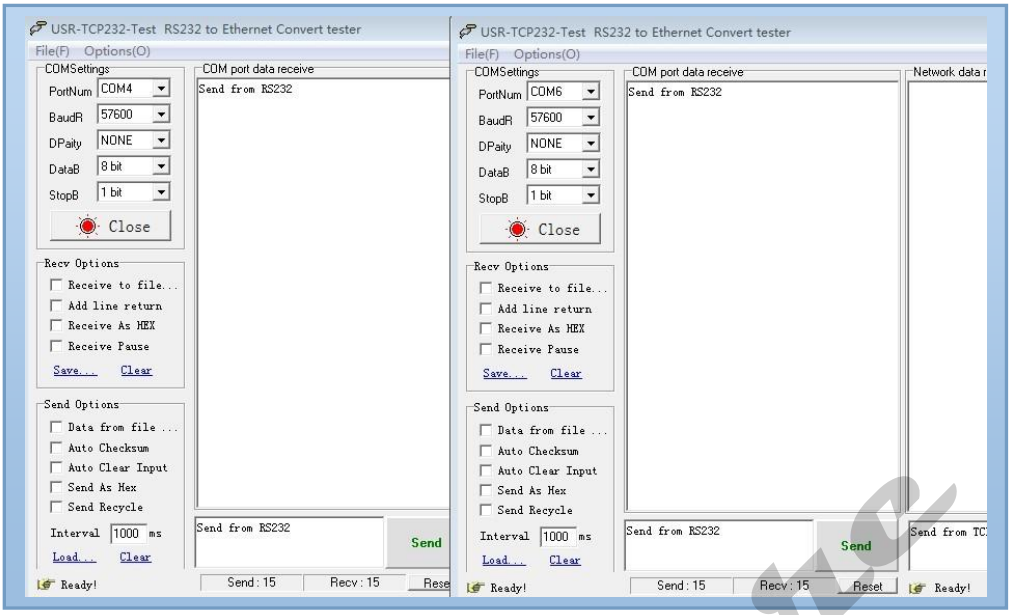



Notes: The network name in wireless parameter is the network name of AP side which needs to be connected.

2.4 Reboot STA mode of the module when finished setting:



2.6 Experiment result:



# 7. Recover to factory settings

There are three methods to do factory setting recover.

7.1 Hard ware Reload pin

Power on the module, wait about 10 second until the module start up. Connect Reload Pin to GND more than 3 seconds and then free it, wait 10 seconds until the module restart up. It will back to the default factory setting.

7.2 Web page

Login the web page, device admin page, reload button.

7.3 AT command

Use at command AT+RELD to load default settings.