



# PW2X\_HF2211\_HF2221\_HF9610

## Wi-Fi Products

## Operation Guide

This document applies to the following series of products, please refer to the user manual for product hardware description.

		PW21
Single UART		HF2211
		HF9610

	 <p>The HF9610C is a black PCB-mounted module. It features a terminal block on the top with orange and green terminals. A white label on the top surface contains the model number 'HF9610C' and various pin headers including 'VCC', 'GND', 'Earth', 'TX+', 'TX-', 'RX+', 'RX-', 'A+', 'A-', 'DOE', 'DOA', 'Rel', 'PL485', and 'Rel'. A red reset button and a gold SMA connector are visible on the bottom edge.</p>	<p>HF9610C</p>
<p>Dual UART</p>	 <p>The HF2221 is a black PCB-mounted module with a grey top cover. It has two RJ45 Ethernet ports on the top left, two RS485 ports on the top right, and a DC power input on the top center. The top cover has a label with the model number 'HF2221' and the description '2 Ports WiFi Serial Device Server'. Below the label, there are status LEDs for 'Net-1', 'Net-2', 'Active-1', 'Active-2', 'WiFi', and 'Power'. A red reset button and an IOT logo are also present on the top cover. The bottom edge has a multi-pin connector.</p>	<p>HF2221</p>

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# 1. HARDWARE INTRODUCTION

PW2X, HF2211, HF9610, and HF2221 are serial ports to Ethernet and Wi-Fi serial servers. The hardware interfaces of HF2211 and HF9610 are exactly the same, but HF9610 is specially optimized for the application scenarios of remotely reading and writing PLC programs. The recommended application is HF9610. HF2221 has one more serial port and network port than HF2211. This article mainly uses HF2211 as an example. The usage of other products is similar. This article mainly introduces the configuration using the IOTService tool, but the webpage can also be configured, and the content is repeated without special instructions.

The related tools mentioned in this article can be downloaded from the official website.

[http://www.hi-flying.com/index.php?route=download/category&path=1\\_4](http://www.hi-flying.com/index.php?route=download/category&path=1_4)

## 1.1 HF2211/HF9610 Hardware Introduction

1 RS232 / RS485 / RS422 serial port

1 network port, default WAN, can be configured as LAN.

- WAN: Obtain IP from superior equipment, router has only one WAN port, obtain IP from superior access operator.
- LAN: Assign IP to lower-level equipment. The router usually has 4 LAN ports. 802.11bgn router-level Wi-Fi.



## 1.2 HF2221 Hardware Introduction

2 RS232 / RS485 / RS422 serial ports

2 network ports, 1 default WAN, can be configured as LAN, and the other LAN.

802.11bgn router-level Wi-Fi.



### 1.3 PW2X Hardware Introduction

- 1 RS485(PW21) or RS232(PW20) serial ports
- 1 network ports, 1 default WAN, can be configured as LAN, and the other LAN.
- 802.11bgn router-level Wi-Fi.



## 2. INITIAL SETUP

HF Products provide multiple methods to config, webpage and IOTService tools. Webpage is easy to use, but only for local setup and can not manage multiple device, recommend to use IOTService tools.

### 2.1 Webpage Set

Power on product:

- ◆ EW1X green LED will be repeat flash on 0.3s, then off 0.3s, indicate it works normally.
- ◆ HF2211S Link LED will be repeat flash on 0.3s, then off 0.3s, indicate it works normally.
- ◆ PW1X Net LED will be repeat flash on 0.3s, then off 0.3s, indicate it works normally.

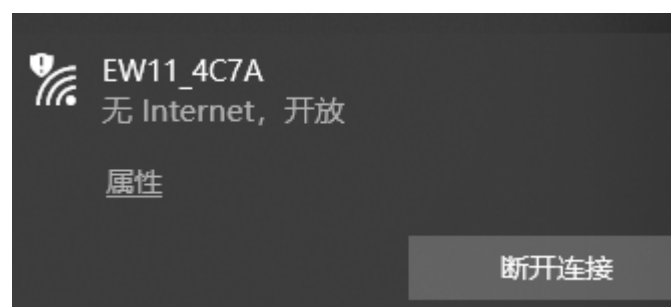
PC Wi-Fi to search AP, different products with different SSID, XXXX is the end 4 characters of MAC.

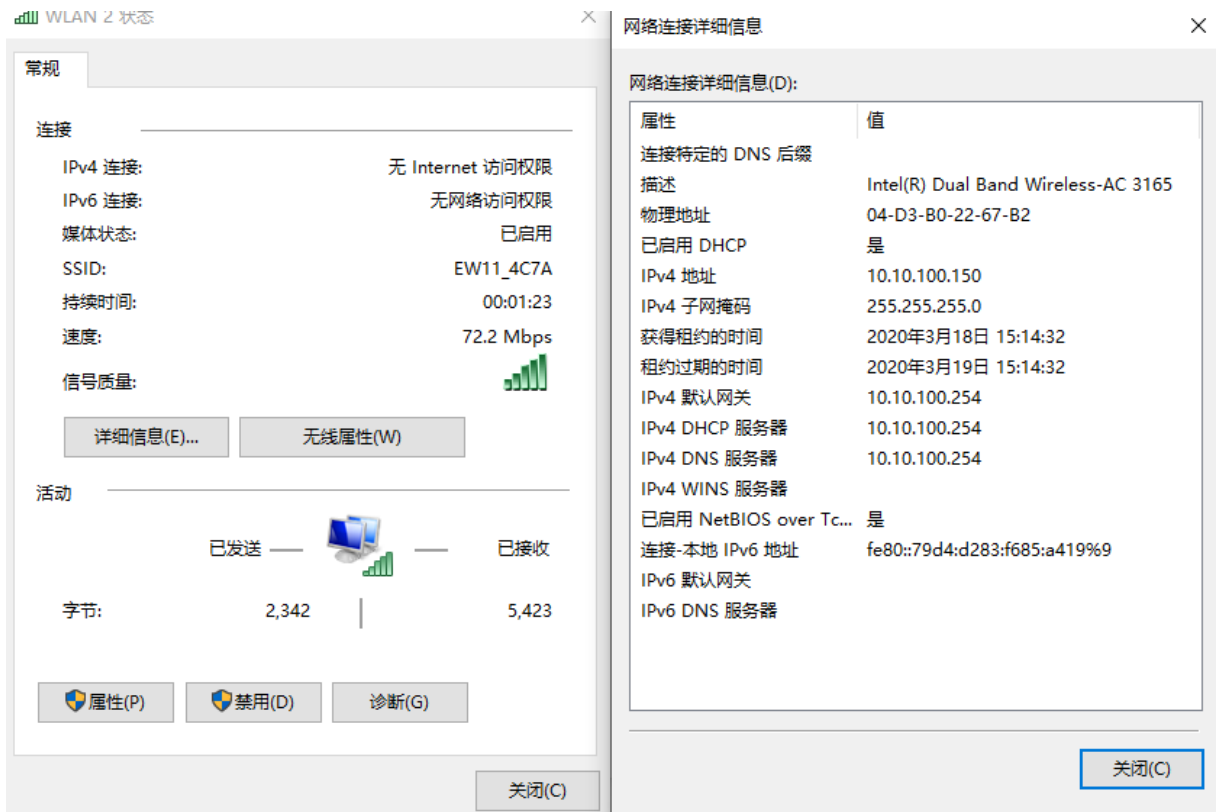
- ◆ EW1X SSID is EW10\_XXXX or EW11\_XXXX.
- ◆ HF2211S SSID is HF2211S\_XXXX
- ◆ PW1X SSID is PW11\_XXXX

Set PC IP with Auto DHCP.

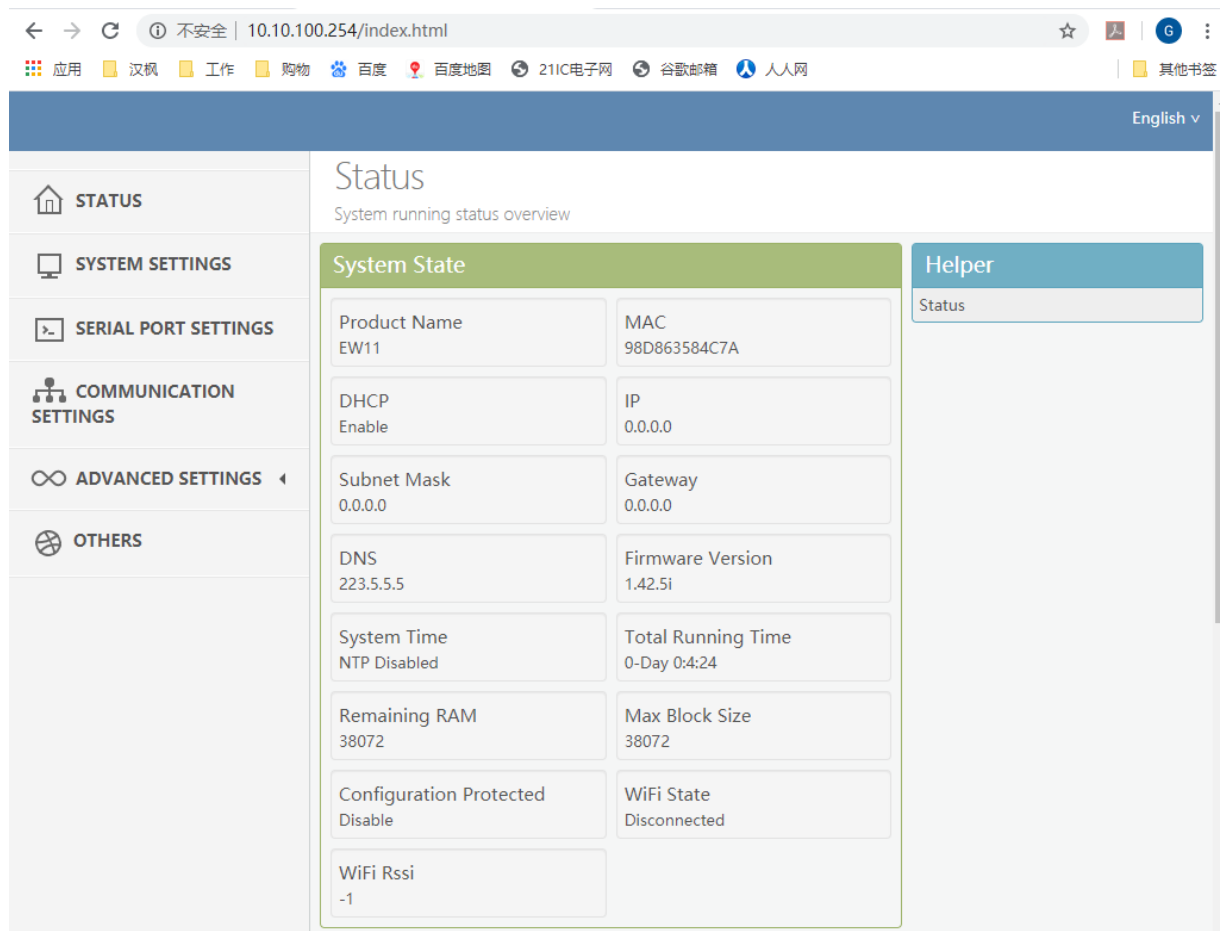


PC Wi-Fi connect to products and got IP as following picture

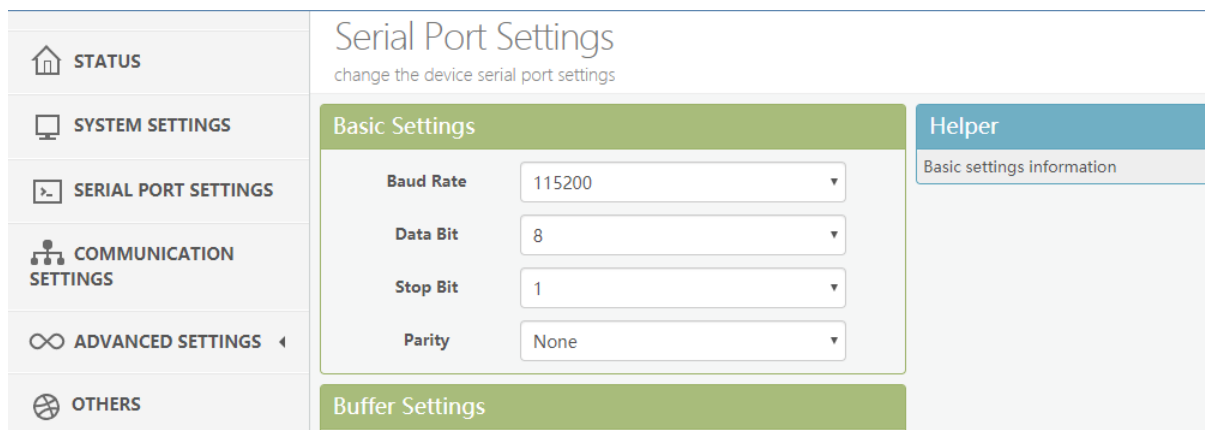




Browser input 10.10.100.254, input default user name and password with admin/admin to login in. The main page is as following.

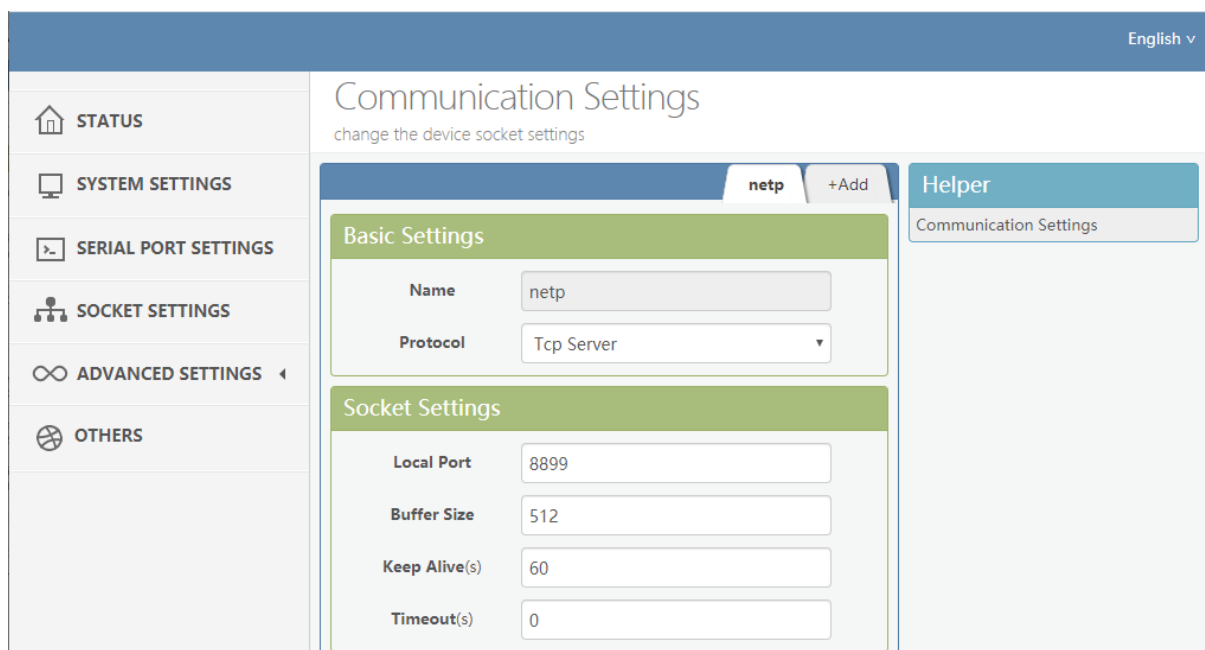


Default UART parameters is as following.



The screenshot shows the 'Serial Port Settings' page. On the left is a navigation menu with options: STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS (selected), COMMUNICATION SETTINGS, ADVANCED SETTINGS, and OTHERS. The main content area is titled 'Serial Port Settings' with the subtitle 'change the device serial port settings'. It is divided into two sections: 'Basic Settings' and 'Buffer Settings'. The 'Basic Settings' section contains four dropdown menus: Baud Rate (115200), Data Bit (8), Stop Bit (1), and Parity (None). To the right of the settings is a 'Helper' box with the text 'Basic settings information'.

Default socket parameters is as following.



The screenshot shows the 'Communication Settings' page. The top right corner has a language dropdown set to 'English'. The left navigation menu includes: STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS, SOCKET SETTINGS (selected), ADVANCED SETTINGS, and OTHERS. The main content area is titled 'Communication Settings' with the subtitle 'change the device socket settings'. It features a tabbed interface with a 'netp' tab selected and a '+Add' button. The 'Basic Settings' section includes a text input for 'Name' (netp) and a dropdown for 'Protocol' (Tcp Server). The 'Socket Settings' section includes four text inputs: 'Local Port' (8899), 'Buffer Size' (512), 'Keep Alive(s)' (60), and 'Timeout(s)' (0). A 'Helper' box on the right contains the text 'Communication Settings'.

Products by default works as AP mode, if need to set it connect to router, set it to STA or AP+STA working mode as following. Select the scanned list and input the router password.


**Note:** setting is valid after reboot.



## WiFi Settings

WiFi Mode:

STA SSID:

STA KEY:  

ID	SSID	Rssi	Channel	Security	Choose
1	UPGRADE-AP_aaaa	100	6	✓	<input type="radio"/>
2	111!@#\$%^&**()_+	100	11	✓	<input type="radio"/>
3	LAND	98	1	✓	<input type="radio"/>
4	UPGRADE-AP	96	11	×	<input type="radio"/>
5	OULUN_TEST	94	6	×	<input type="radio"/>
6	WX-114	92	10	×	<input type="radio"/>
7	kingsir	92	11	✓	<input type="radio"/>

If need static IP in STA mode, set DHCP to off and input static IP.


Note: setting is valid after reboot.

## System Settings

Change the device system settings

**Authentication**

User Name:

Password:  

**Basic Settings**

Host Name:

**WAN Settings**

DHCP:  OFF

**WAN IP**:   
The WAN IP field must contain a valid IP.

**Subnet Mask**:   
The Subnet Mask field must contain a valid IP.

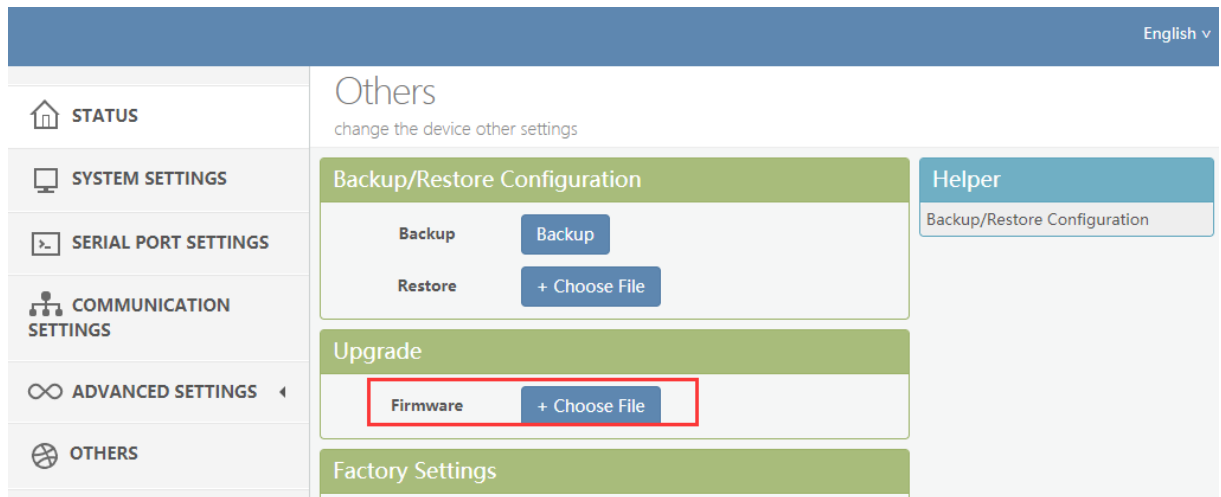
**Gateway**:   
The Gateway field must contain a valid IP.

**DNS**:

**Helper**

Basic Settings

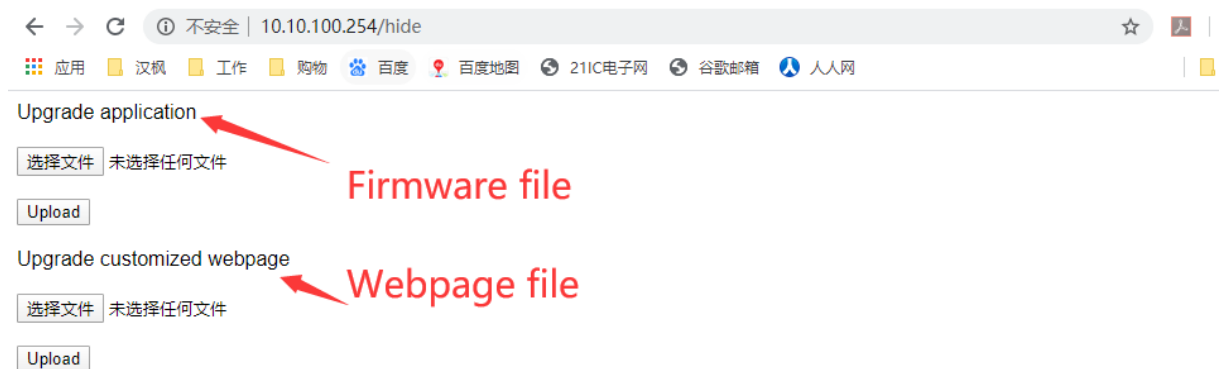
If upgrade firmware at the following position.



There is another internal webpage for upgrade the firmware and webpage (external config webpage as above, this source code is open at our website for customer to change). Login with IP/hide.

Webpage source file:

<http://www.hi-flying.com/download-center-1/application-notes-1/download-item-iot-device-webpage-source-code>



## 2.2 IOTService Set

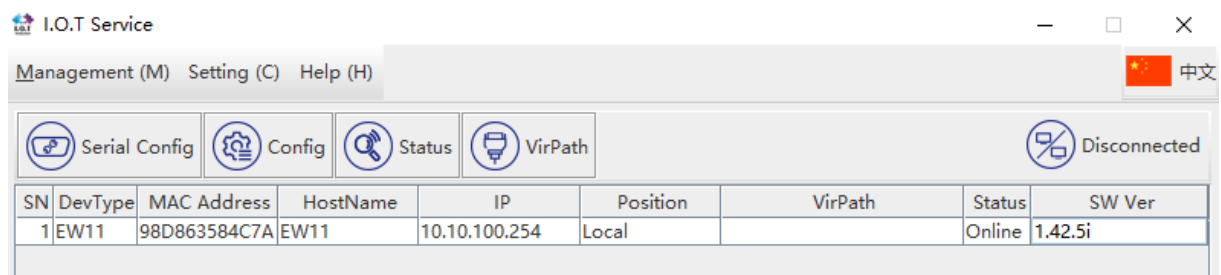
IOTService is simple to manage the products, config and even communicate with it.

Download address:

<http://www.hi-flying.com/download-center-1/applications-1/download-item-iot-service>

Install IOTService and register account in the IOTBridge cloud(<http://bridge.iotworkshop.com/>) according to that tools doc.

PC connect to products AP(Same as previous chapter), and open tools, The device will be shown in IOTService.



Note: See IOTService doc for more detailed usage, here just simply use it.

Double click the product list to see the device status.

**System**

Product ID: EW11  
Software Version: 1.42.5i  
RTC Time: NTP Disabled  
Up Time: 0-Day 2:14:39  
Total Free Memory: 16376  
Max Block Size: 16376

**SOCKET**

SOCKET Name: netp  
Protocol: MQTT  
Status: Disconnect  
Server IP: 47.115.117.98  
Recv Bytes: 0      Recv Frames: 0  
Send Bytes: 0      Send Frames: 0  
Fail Bytes: 0      Fail Frames: 0

**Network**

HostName: EW11  
DHCP: Enable  
IP Address: 0.0.0.0  
Mask: 0.0.0.0  
Gate Way: 0.0.0.0  
MAC Address: 98D863584C7A

**UART**

UART No: UART 1  
Config: 115200,8,1,NONE  
Recv Bytes: 9      Recv Frames: 6  
Send Bytes: 0      Send Frames: 0  
Fail Bytes: 0      Fail Frames: 0

Buttons: Reload, Restart, Edit

Click Edit to change product setting.

Note: some setting need reboot to be valid. Better do restart operation after setting.

**System**

User: admin  
Password: admin  
HostName: EW11  
DHCP: Enable  
IP Address: 0.0.0.0  
Mask: 0.0.0.0  
Gate Way: 0.0.0.0  
DNS: 223.5.5.5  
Network Mode: Router  
Longitude: 0.0  
Latitude: 0.0

**SOCKET**

SOCKET Name: netp  
Protocol: MQTT  
Server Addr: mqtt.guanliyuan.vip  
Server Port: 1883  
Local Port: 0  
Keep Alive: 60  
Time Out: 0  
Rout: uart  
Buffer Size: 512

**WiFi**

Mode: AP  
AP SSID: EW11\_4C7A  
AP Key:   
AP Channel: AUTO  
STA SSID: EW11  
STA Key:   
Scan

**UART**

UART No: UART 1  
Baudrate: 115200  
Data Bits: 8  
Stop Bits: 1  
Parity: NONE  
Flow Control: Half-Duplex  
Buffer Size: 512

**LAN**

IP Address: 10.10.100.254  
Mask: 255.255.255.0  
DHCP: Enable  
Eth Wan: Disable  
 LAN Separate

Buttons: New SOCKET, SOCKET Del, Confirm, Cancel, Detail, Export, Import, VirPath, F-Set Upd..., F-Set Clear, DiDo

Set to STA or AP+STA mode to make products connects to router, and may also set static IP.

Device Setting

**System**

User:

Password:

HostName:

DHCP:

IP Address:

Mask:

Gate Way:

DNS:

Network Mode:

Longitude:

Latitude:

**UART**

UART No:

Baudrate:

Data Bits:

Stop Bits:

Parity:

Flow Control:

Buffer Size:

**SOCKET**

SOCKET Name:

Protocol:

Server Addr:

Server Port:

Local Port:

Keep Alive:

**WiFi**

Mode:

AP SSID:

AP Key:

AP Channel:

STA SSID:

STA Key:

**Scan**

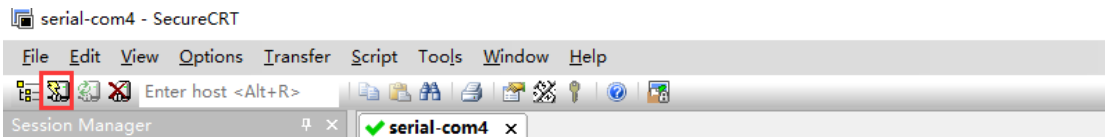
Select	Channel	SSID	MAC Address	RSSI	Has Key
<input type="radio"/>	6	UPGRADE-AP_aaaa	C8:3A:35:54:B3:70	100	Yes
<input type="radio"/>	11	111!@#%&^&*(()_+	78:44:FD:26:9A:7C	100	Yes
<input type="radio"/>	1	LAND	3C:33:00:A8:35:2C	94	Yes
<input type="radio"/>	10	WX-114	28:2C:B2:D2:E5:96	88	No
<input type="radio"/>	5	HF-LPB130	A8:CF:23:FF:88:88	84	No
<input type="radio"/>	1	UPGRADE-AP	04:4A:6C:70:9B:9C	80	No
<input type="radio"/>	6	ChinaNet-xuanyin	78:44:FD:AB:73:76	64	Yes
<input type="radio"/>	3	OPPO R15	D6:1A:3F:68:FB:DB	61	Yes
<input type="radio"/>	13	tp_jiehui	94:D9:B3:73:37:39	59	Yes
<input type="radio"/>	11	HF2211_A990	98:D8:63:11:A9:90	59	No
<input type="radio"/>	11	yongheng	00:0E:E8:B6:57:2C	57	Yes
<input type="radio"/>	6	HF-Demo-Specia	54:75:95:73:88:38	54	Yes
<input type="radio"/>	13	JACK 2G	8C:AB:8E:66:85:F0	52	Yes
<input type="radio"/>	1	zqx	24:69:68:7F:68:6E	49	Yes
<input type="radio"/>	11	TP-LINK_4C6F	34:96:72:19:4C:6F	49	Yes
<input type="radio"/>	8	zxcv	E4:28:53:67:D2:FA	47	Yes

LAN Separate

## 3. SERIAL PORT SETTINGS

### 3.1. Serial Port Tool SecureCRT

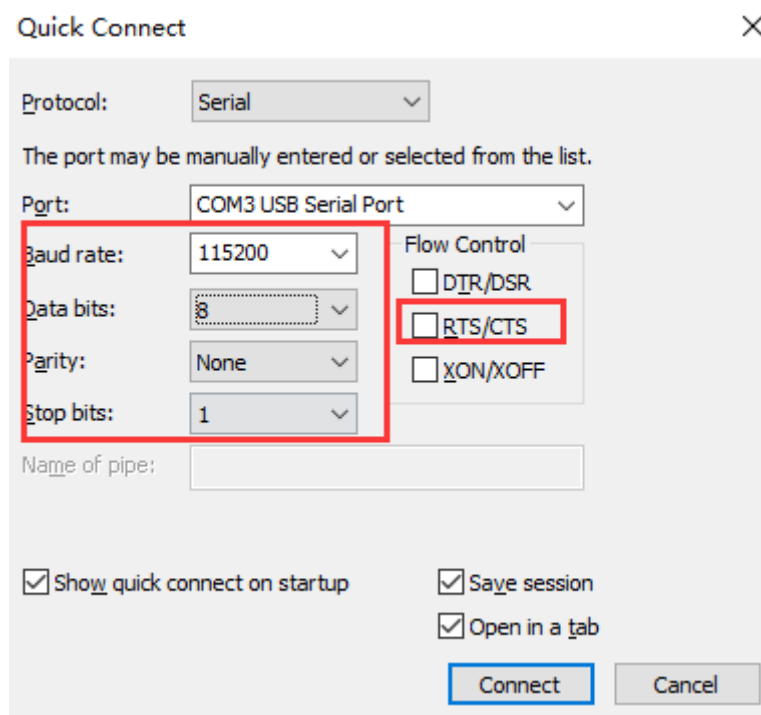
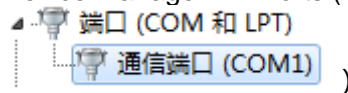
Open SecureCRT find an executable program, click Open.  
Click the Quick Connect button to create a connection.



### 3.2. Setting Serial Port Parameters

Protocol: Serial

Port: The port that the computer is actually connected to (see "My Computer"-> "Device Manager"-> "Ports (COM and LPT)", as shown in the figure.



**Note:** The default serial port data of the device is as shown in the figure above. Users can modify the working parameters of the product by using IOTService.

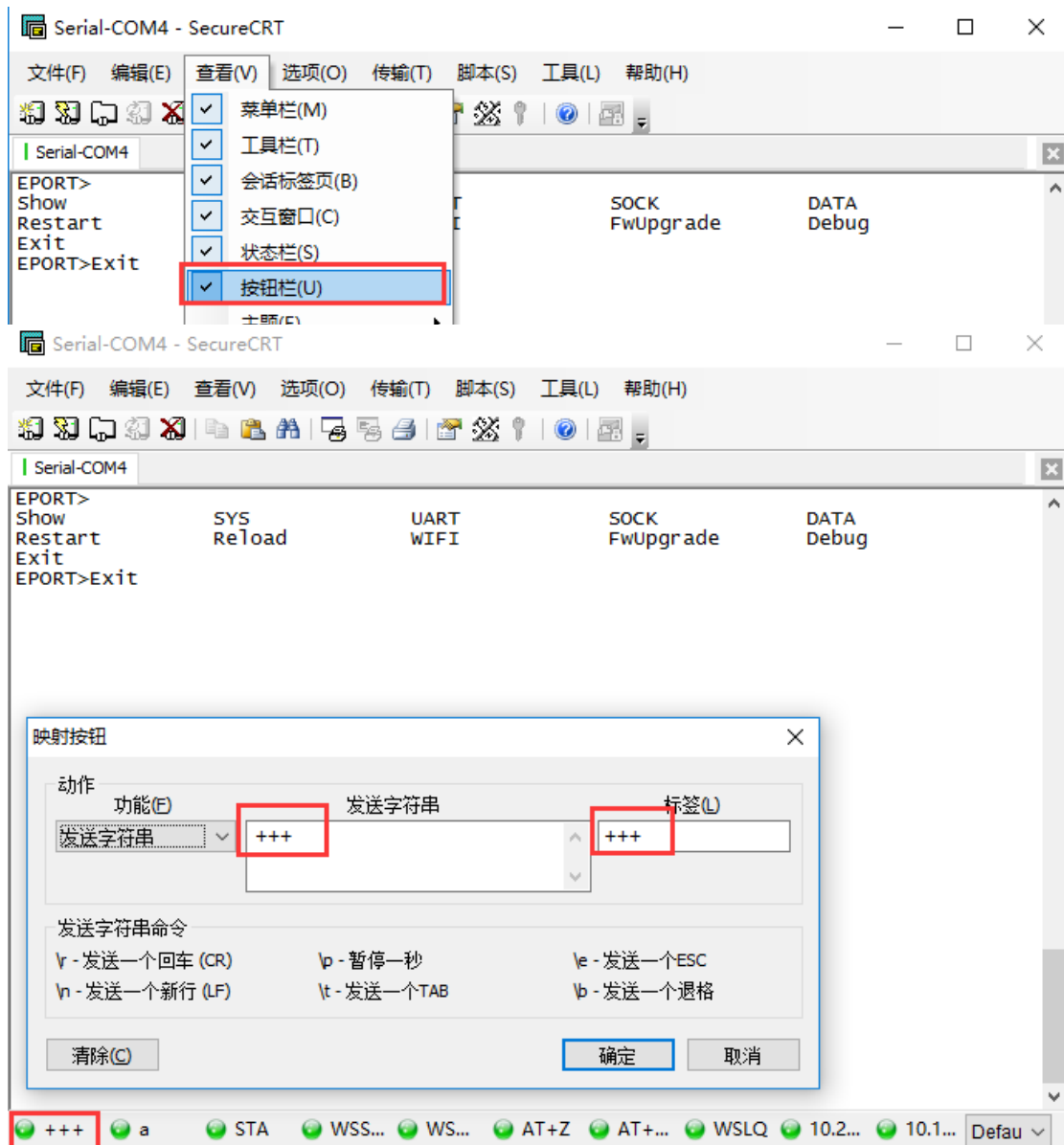
### 3.3. Cli Instruction Mode

Data transmission needs to be in the transparent transmission mode (the default transparent transmission mode upon power-on). If you need to enter the Cli command mode for configuration, you can do as follows.

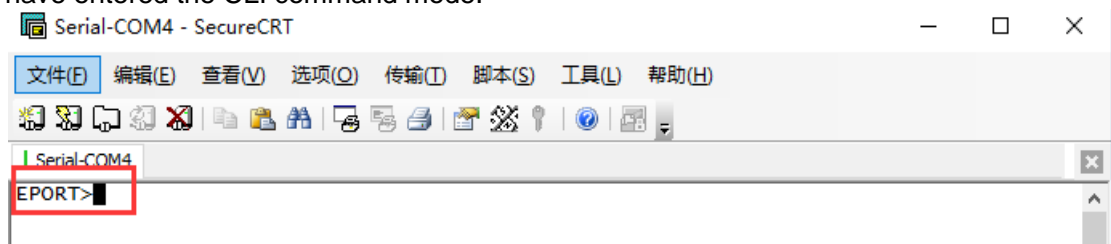
- Serial port mode.

Set the parameters of the SecureCRT serial port software according to the above.

Add "+++" button command to the button bar.



Click the button to send the corresponding data. When the interface displays "EPORT>", you have entered the CLI command mode.

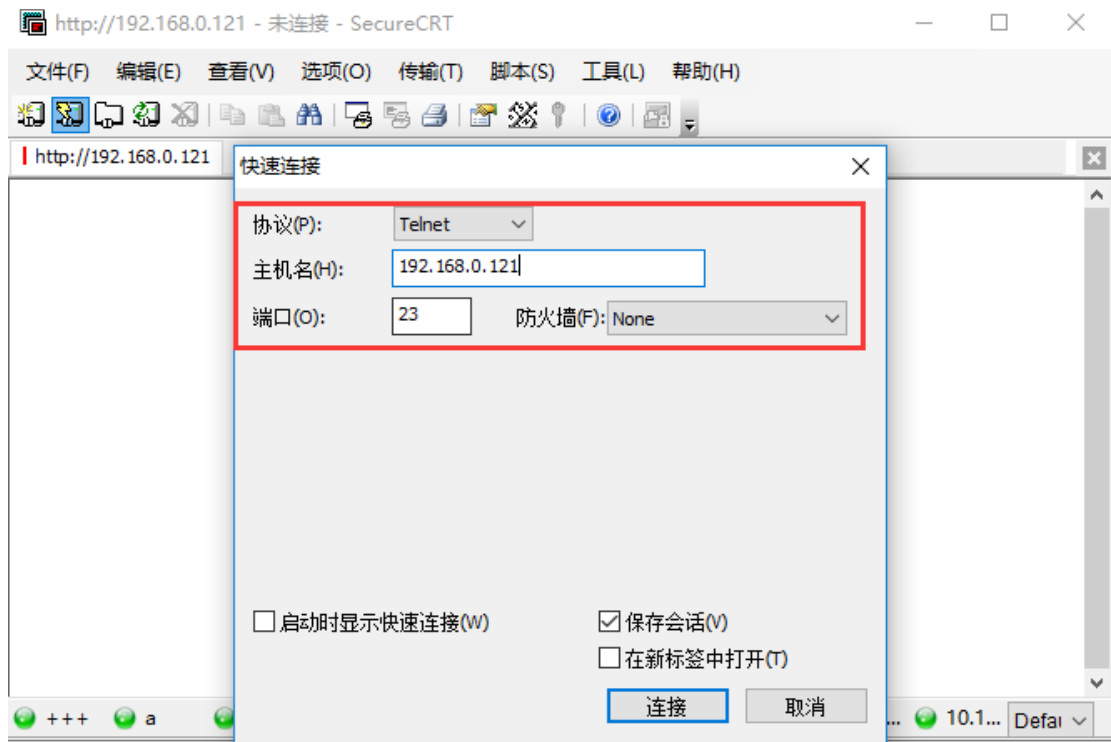


Note:

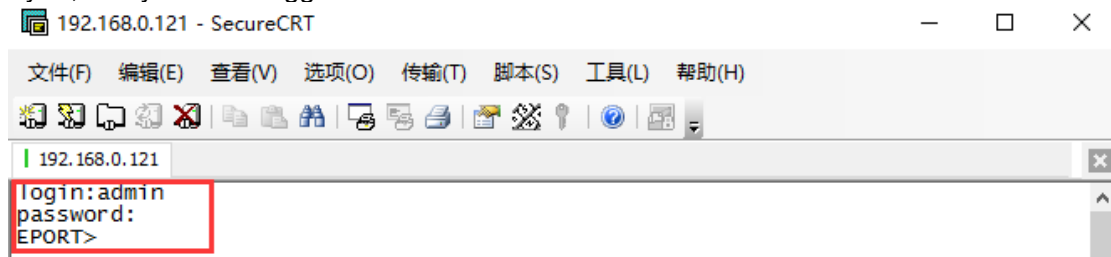
Any serial tool can do this. Sending "+++" must be a continuous package of data, and there can be no other data before and after (such as carriage return and line feed).

- Telnet mode.

Step 1: Enter the IP address of the device (the IP address can be obtained by searching through the IOTService tool, which will be detailed later), port 23.



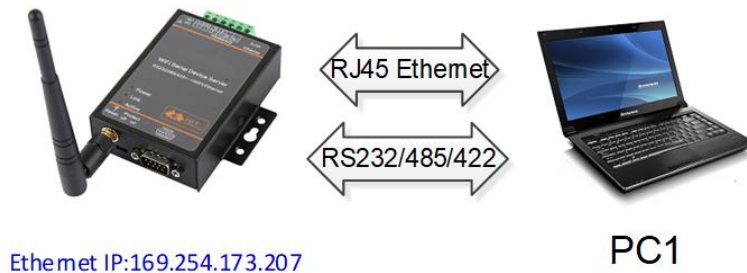
Step 2: The default login name and password are both admin, then "EPORT>" is displayed, and you have logged in to the Cli command mode.



## 4. TEST EXAMPLE

### 4.1. Auto-IP Function Networking

The device is directly connected to the PC via Ethernet, and the module automatically uses the default IP for the PC to directly access for parameter configuration or data transmission communication (it takes about 15 seconds to wait until the PC uses the default 169.254.XXX.XXX IP). The module IP in the following example: 169.254.173.207 (this IP is generally fixed, and it will be replaced automatically when there is an IP conflict).



Note:

Auto-IP function is that the network port is in WAN mode, and the two parties agree to use the default IP. Wi-Fi works in AP mode, you can manually switch to WAN or LAN mode, the default is WAN.

The screenshot shows the 'Device Setting' interface with several tabs: System, SOCKET, UART, LAN, and WiFi. The 'LAN' tab is active, and the 'Eth Wan' dropdown menu is open, showing 'Enable', 'Disable', and 'LAN' options. The 'LAN' section shows IP Address: 10.10.100.254, Mask: 255.255.255.0, and DHCP: Enable. The 'System' tab shows User: admin, Password: admin, HostName: Eport-HF2211, IP Address: 192.168.83.102, and Network Mode: Router. The 'WiFi' tab shows Mode: AP, AP SSID: HF2211\_6CF8, and STA SSID: HF2211. At the bottom, there are buttons for Confirm, Cancel, Detail, Export, Import, F-Set Upd..., F-Set Clear, and VirPath.

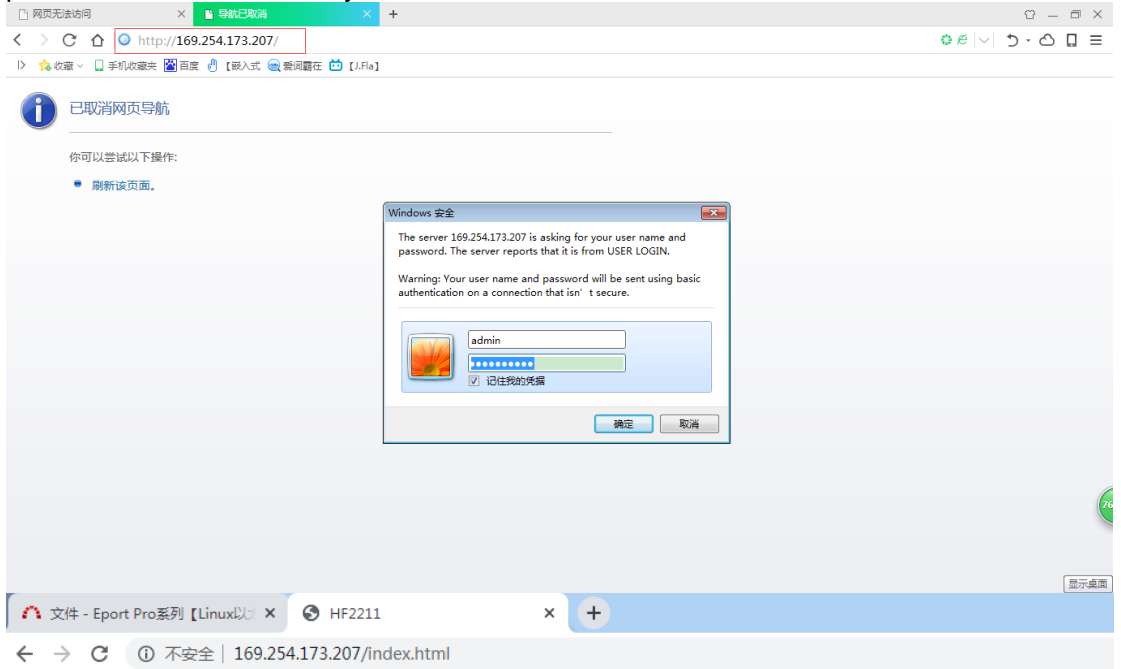
If working in STA or AP + STA mode, the network port will automatically switch to LAN mode, and the HF2211 will assign the IP of its own LAN network segment to the PC (10.10.100.XXX network segment).

Connect the network port of the device to the PC with a network cable. After opening the IOTService tool, the device information is automatically displayed, as shown in the figure below.



SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	HF2211	F0FE6B5D9F14	Eport-HF2211	169.254.173.207	Local		Online	1.40.3

According to the device IP address shown in the figure above, you can also use the webpage configuration method to edit the device parameters. The username and password are both admin by default.



- STATUS
- SYSTEM SETTINGS
- SERIAL PORT SETTINGS
- COMMUNICATION SETTINGS
- ADVANCED SETTINGS
- OTHERS

## Status

System running status overview

System State	
Product Name HF2211	MAC F0FE6B5D9F14
DHCP Enable	IP 169.254.173.207
Subnet Mask 255.255.0.0	Gateway 0.0.0.0
DNS 10.10.100.254	Firmware Version 1.40.3
System Time NTP Disabled	Total Running Time 0-Day 0:3:35
Remaining RAM 1497088	Max Block Size 1497088

The product's RS232 interface is connected to a computer. Open the serial debugging tool. It is recommended to use the SecureCRT software tool (other serial tools are also available).

Note: The role of the network cable directly connected:

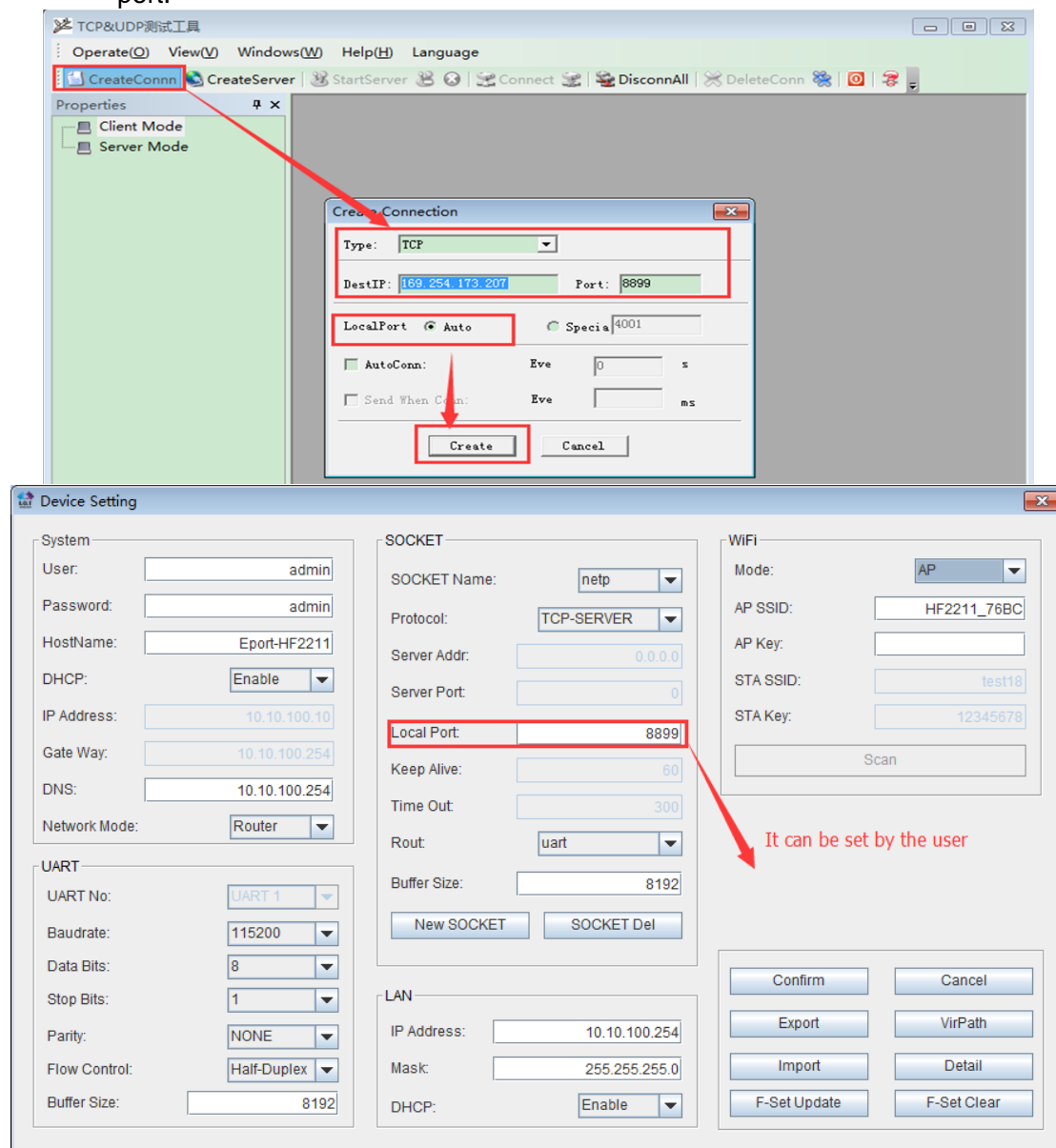
- In the absence of other routers, the network cable is directly connected to the

- application, or used to modify the working parameters of the product.
- When the Wi-Fi connection or product communication is abnormal (Wi-Fi parameter changes or other), you can directly connect the PC to the network to view the currently configured parameters and working status (in STA mode, the network cable is directly connected, and the IP of the PC It's 10.10.100.XXX).

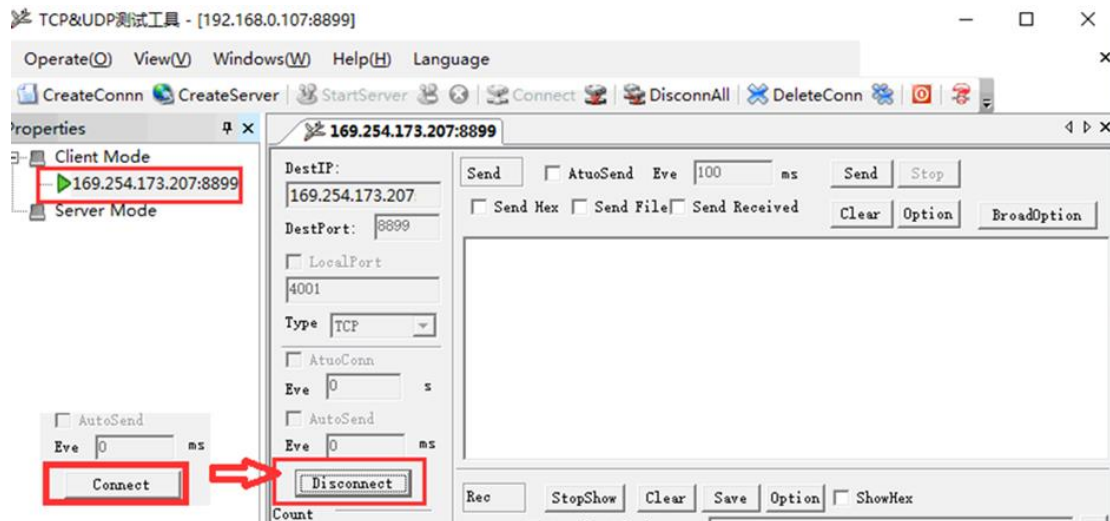
## 4.2. TCP Server Test in Auto-IP Mode

Open the TCP & UDP test tool (download this tool from the previous article), the product has created a TCP Server (port 8899) by default, and establish a TCP connection according to the following process.

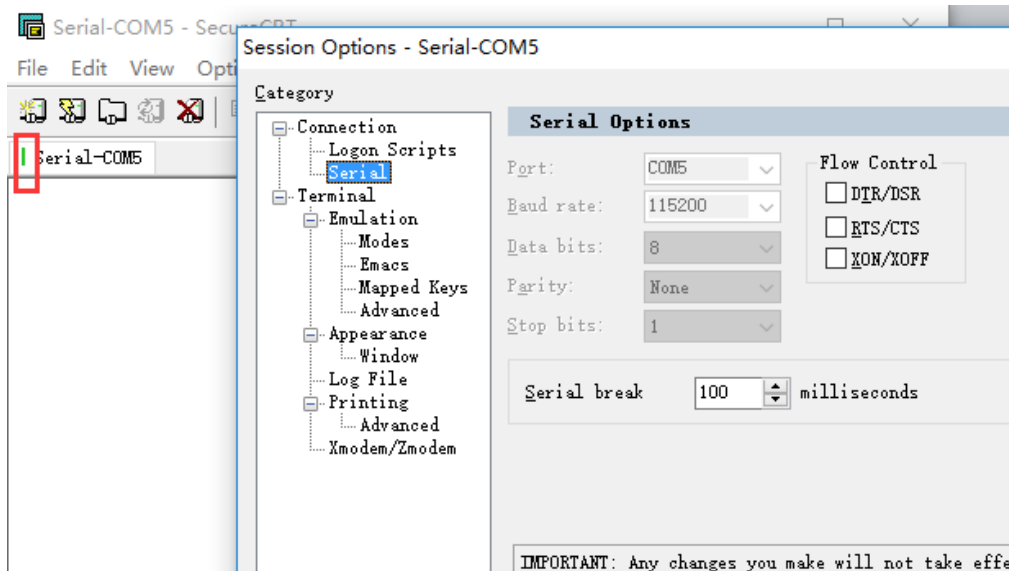
- DestIP: Destination IP address, fill in the product IP.
- Port: Destination port number, fill the product communication socket channel port.



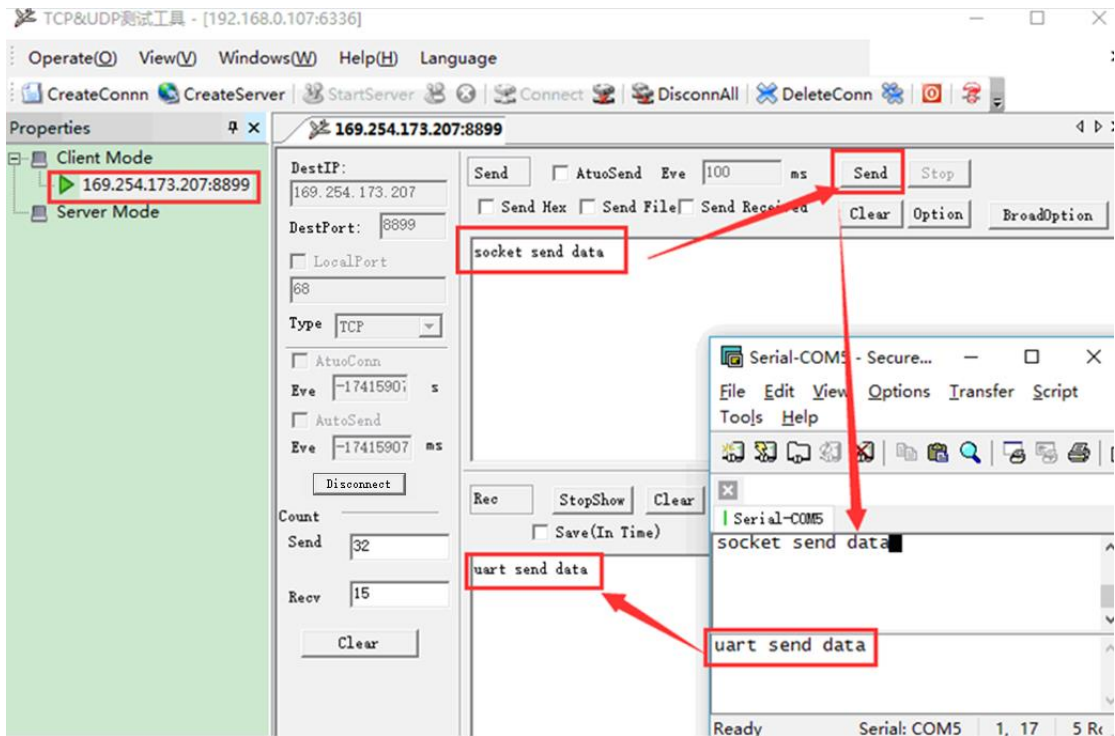
Click the Connect button to establish a TCP connection. After the connection is successfully established, the left side becomes a green arrow, and if the connection fails, a yellow arrow.



Open the serial tool according to the following parameters.

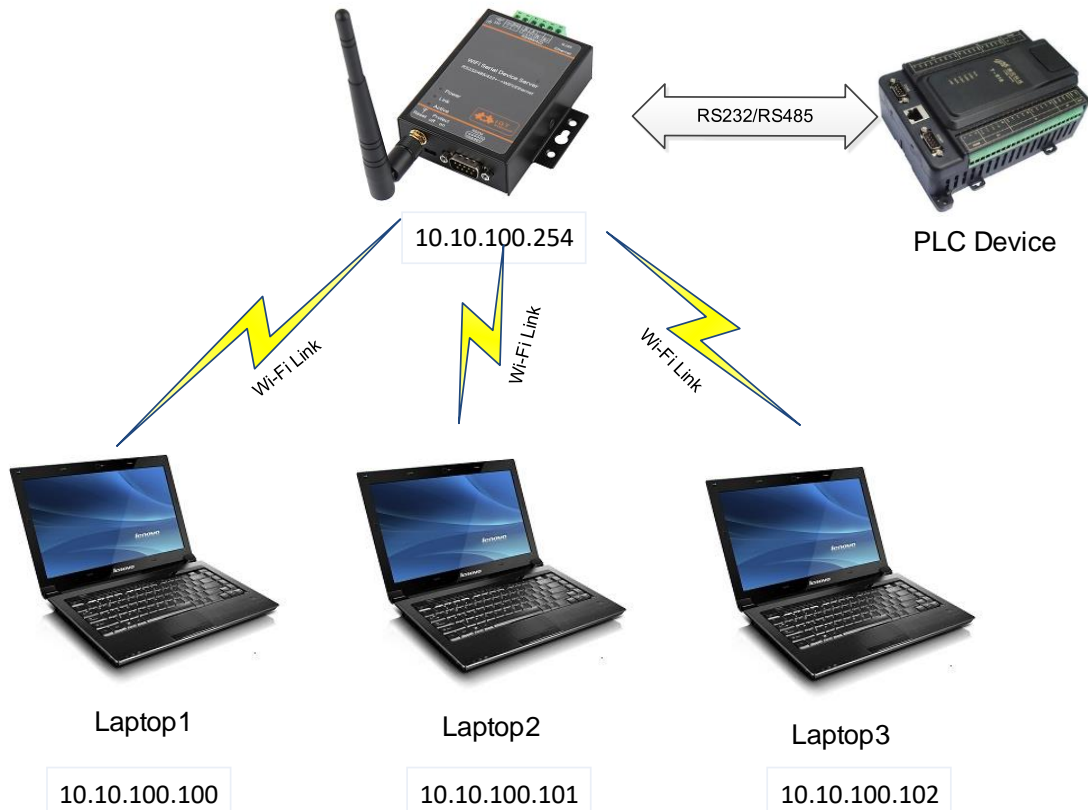


TCP and serial port transfer data to each other (data transmission needs to be in transparent transmission mode, if you have entered the Cli command mode before, you can restart or Exit command to exit).



### 4.3. AP-based Networking

This product acts as an AP to form a wireless network. All STAs use APs as the center of the wireless network, and mutual communication between STAs is completed through AP forwarding. As shown below:



Before using the HF2211 to form the AP mode, you must first understand the AP signal name of the device. The default is "HF2211\_ + the last 4 digits of the MAC address". You can also query through the CLI command "Show".

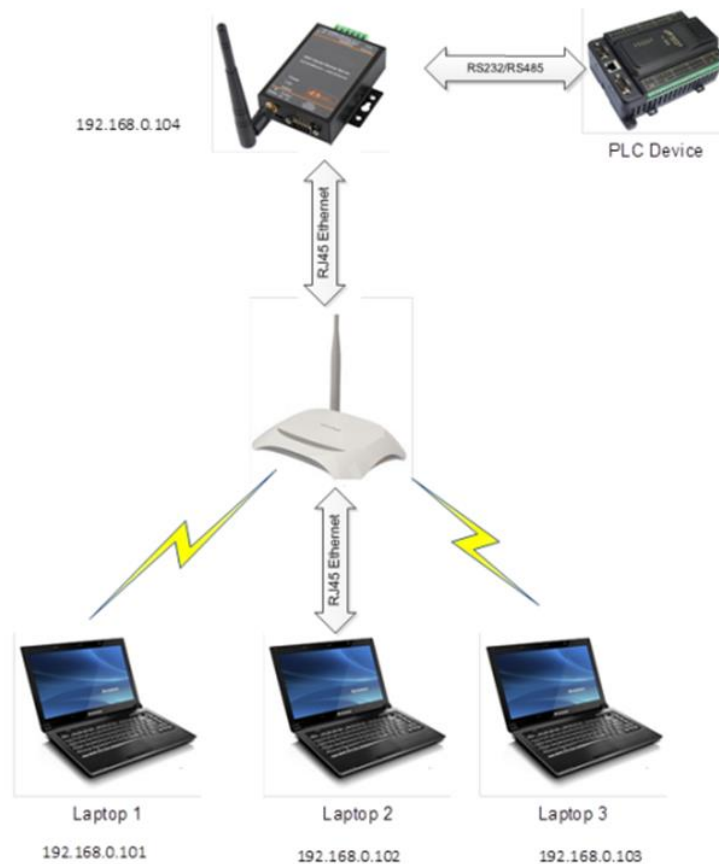
Open Network and Sharing Center-> Change adapter settings.



After opening IOTService, you can find that the device has been successfully connected. In AP mode, the HF2211 assigns the IP of its LAN segment to the PC (that is, 10.10.100.XXX).

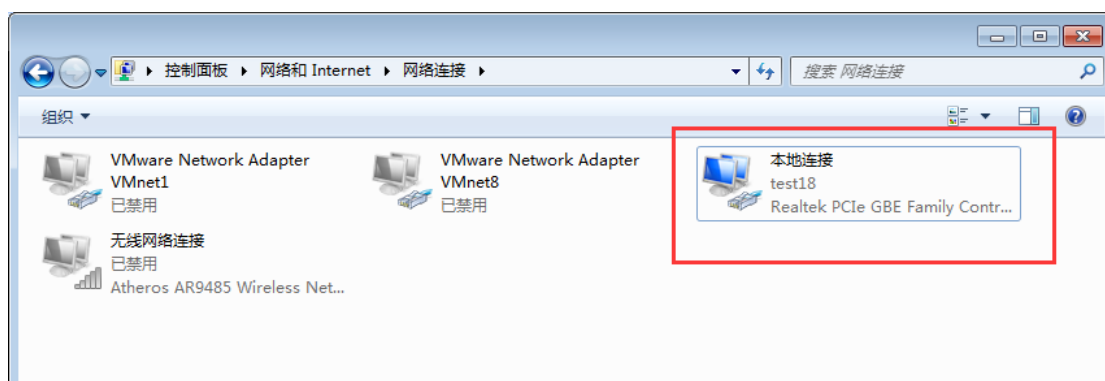
SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	HF2211	F0FE6B5D9F14	Eport-HF2211	10.10.100.254	Local		Online	1.40.3

## 4.4. AP + Ethernet-based Networking

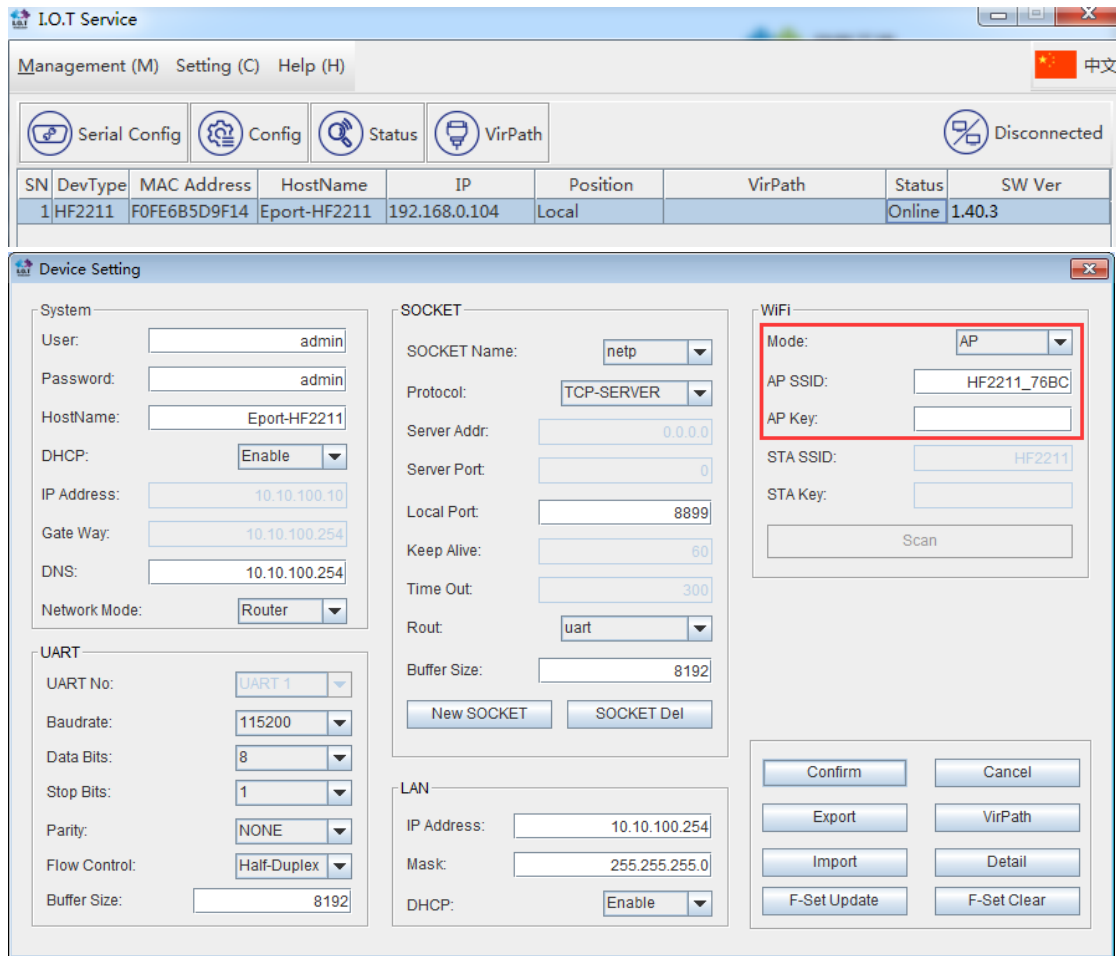


As shown in the figure above, the HF2211 Ethernet is connected to the LAN port of the router. The PC can be connected to the router via Ethernet or wireless to form a network connection.

In AP mode, HF2211 Ethernet defaults to WAN mode. In STA or AP + STA mode, HF2211 Ethernet automatically switches to LAN mode.



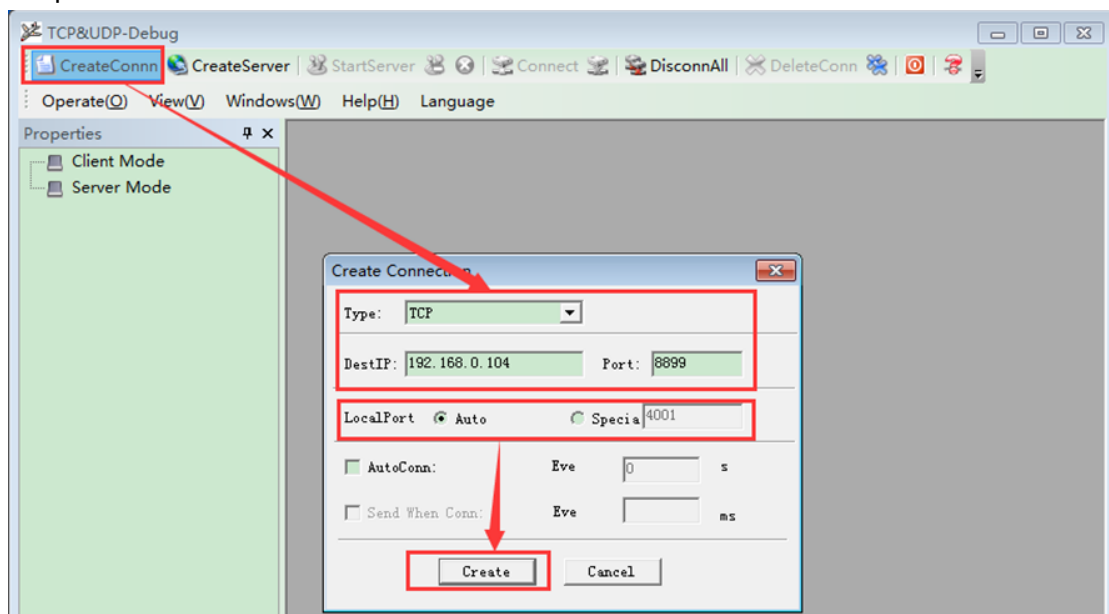
Open IOTService to display the device information. If you need to modify the AP hotspot name and password, you can enter the device edit to modify the parameter information.

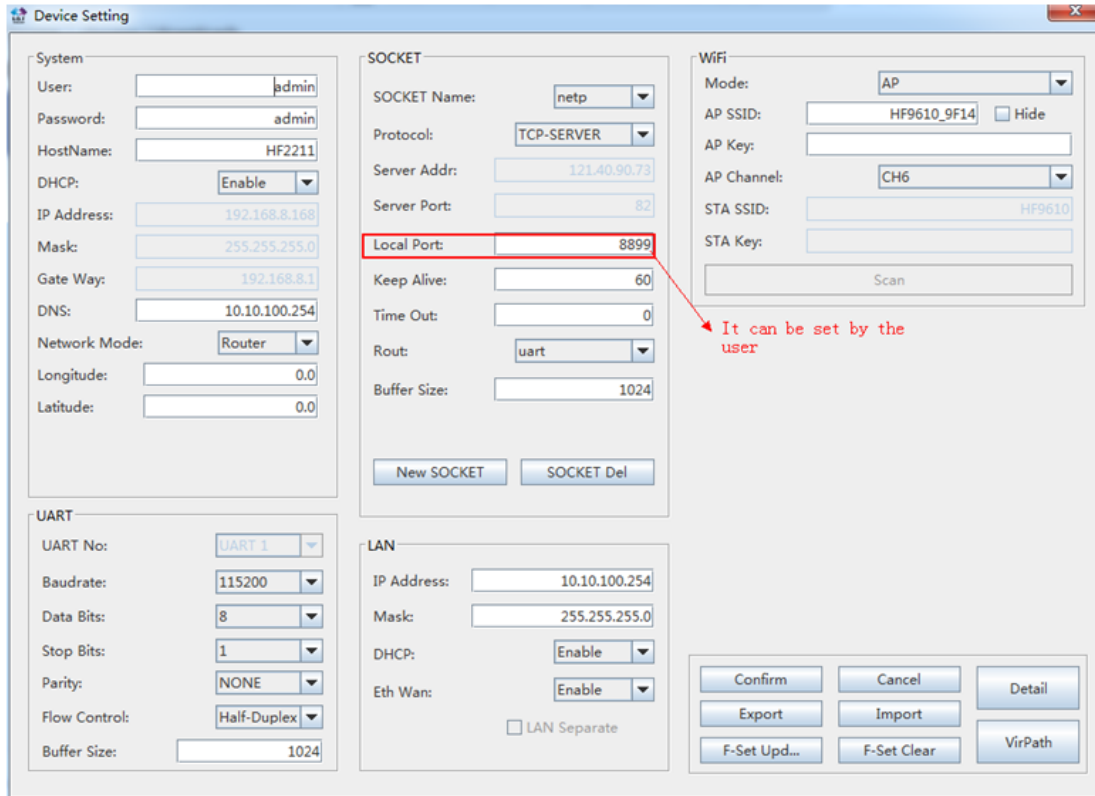


## 4.5. TCP Server Test in AP Mode

Open the TCP & UDP test tool and establish a TCP connection according to the following procedure. By default, the product has created a TCP server (port 8899) for use.

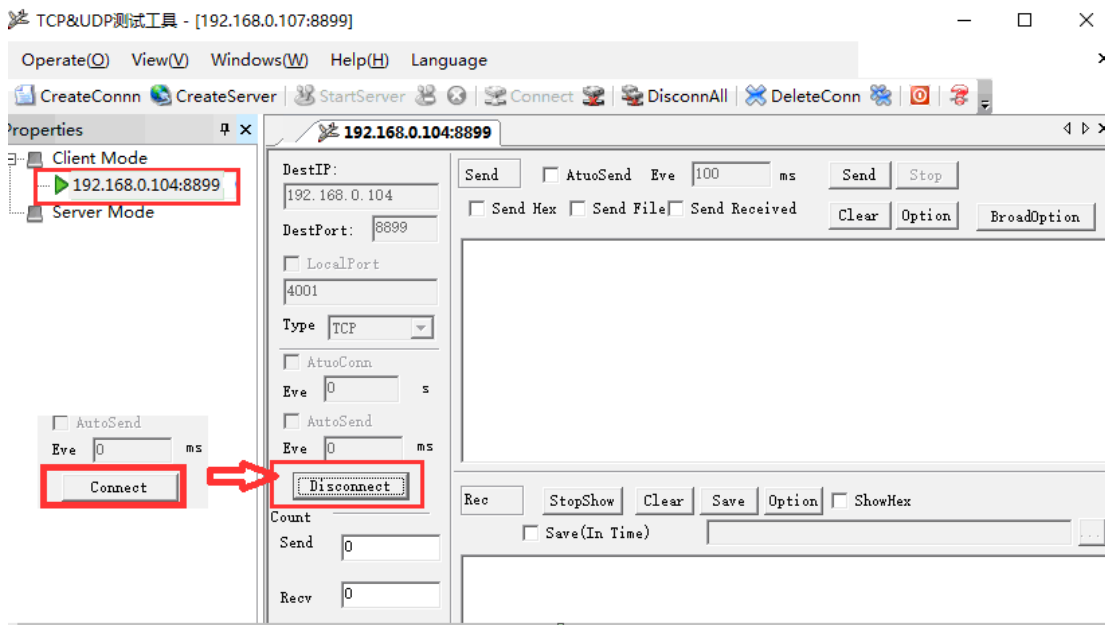
The TCP & UDP tool fills in the device IP (viewed from the IOTService software), and the port number.





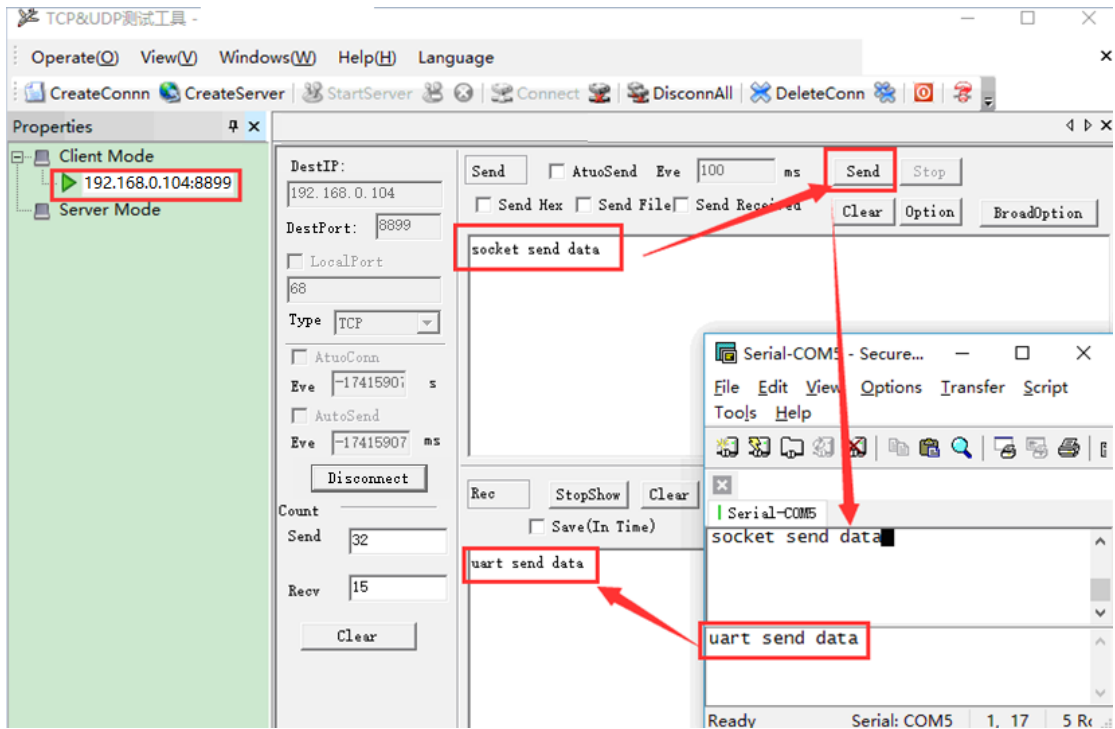
Click the Connect button to establish a TCP connection.

- After the connection is successfully established, the left side becomes a green arrow, and if the connection fails, a yellow arrow.

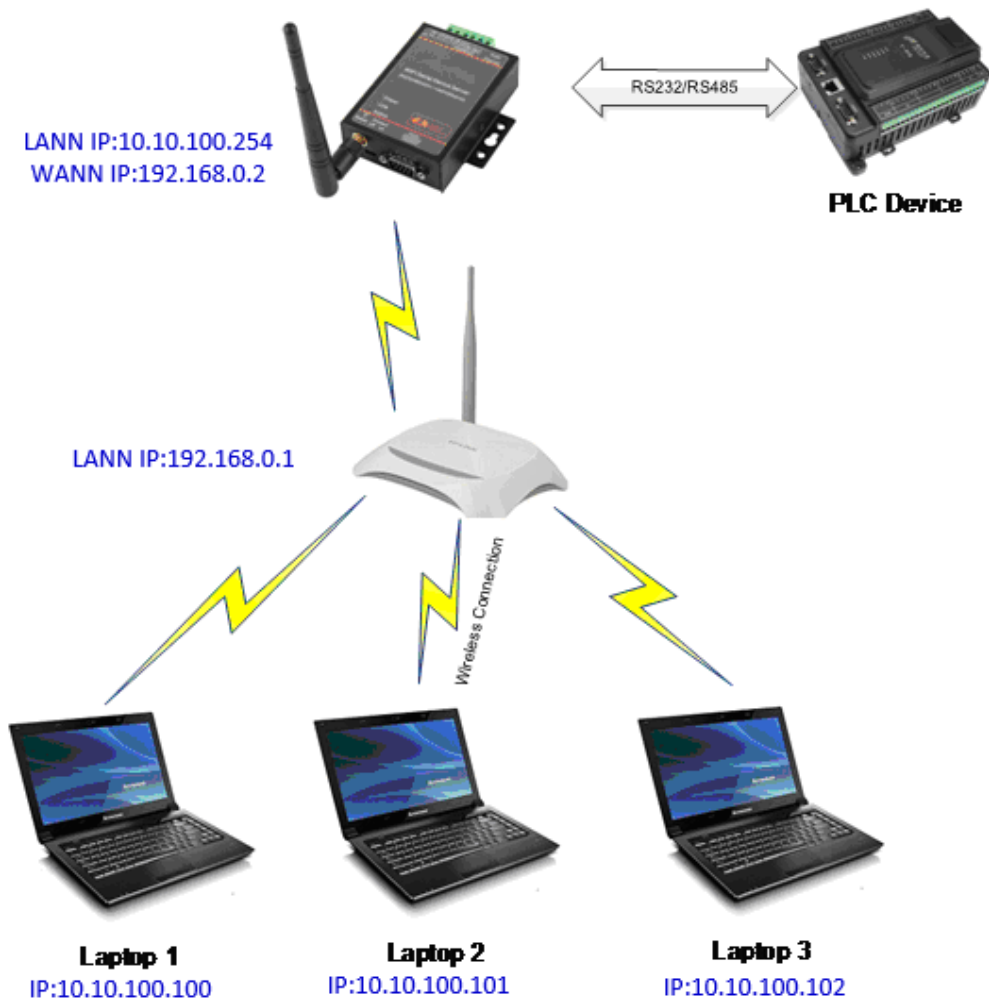


The transparent data is shown in the figure below.



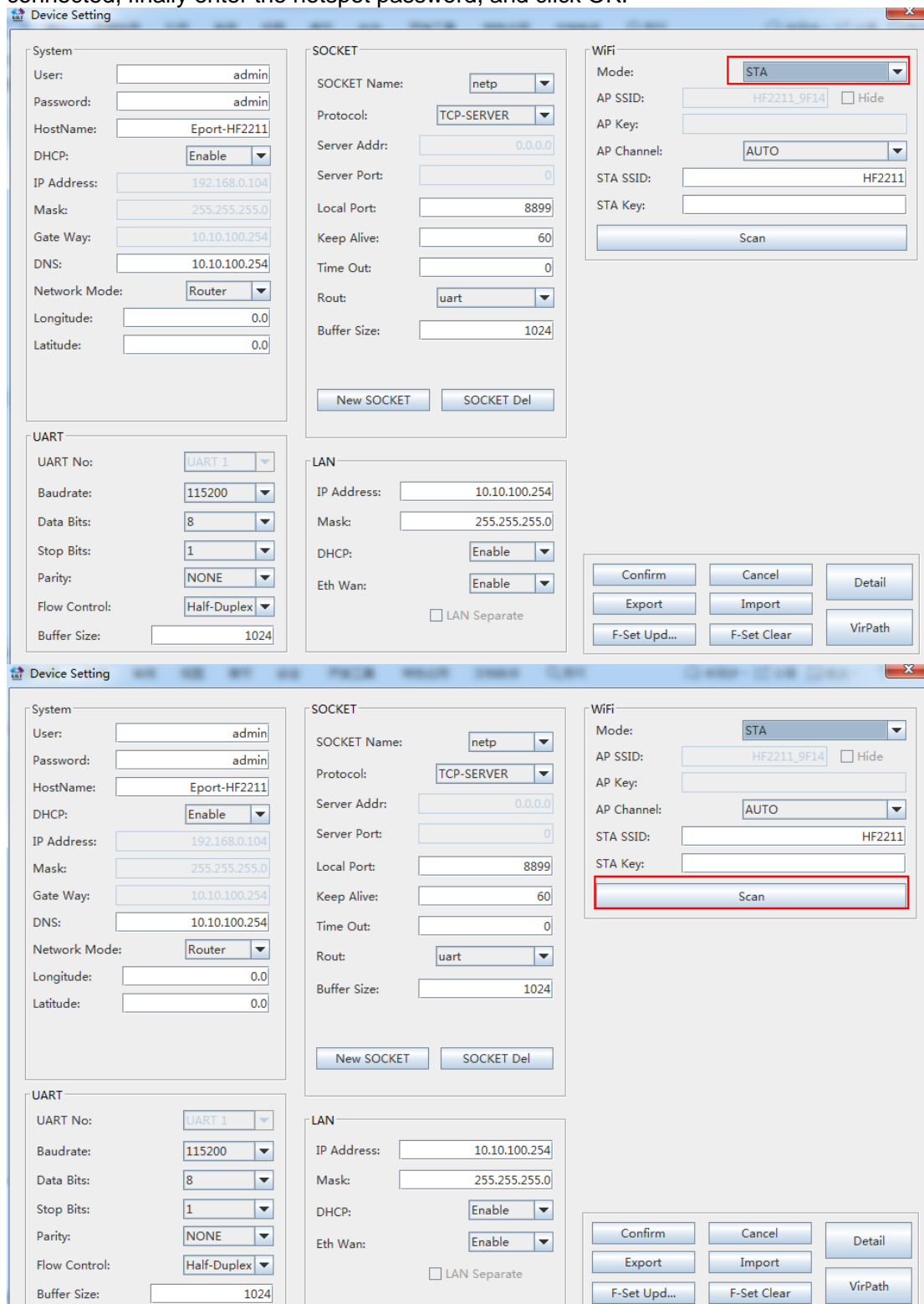


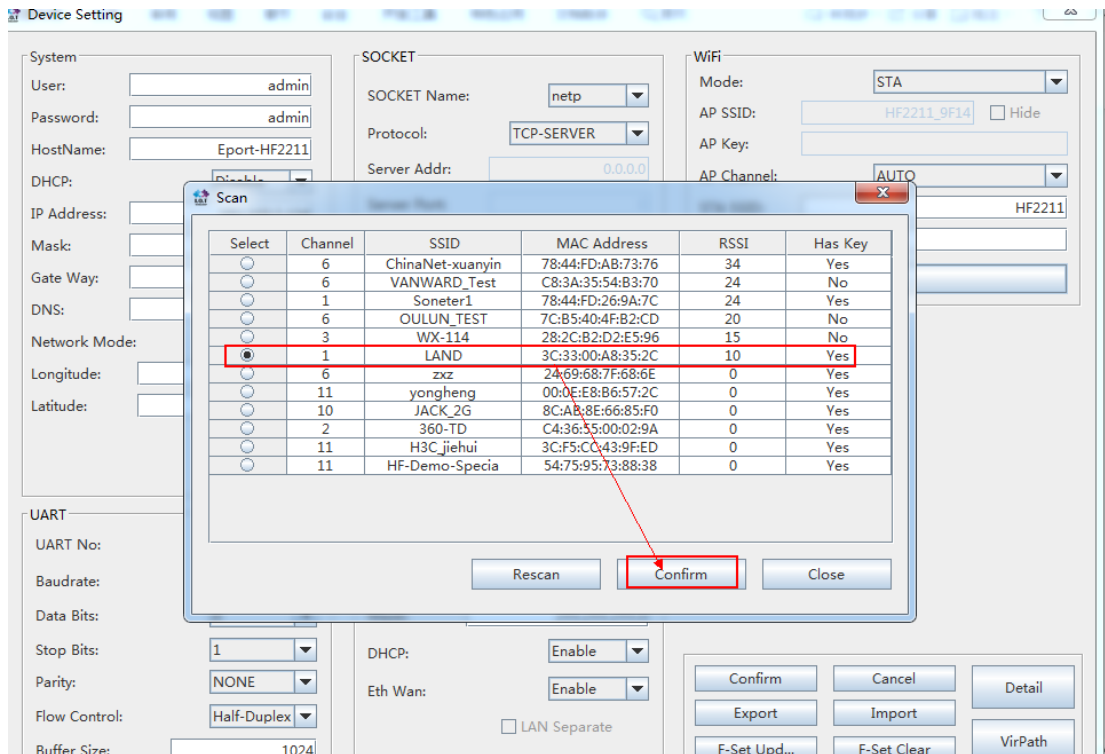
#### 4.6. STA Wireless Network Mode-based Networking



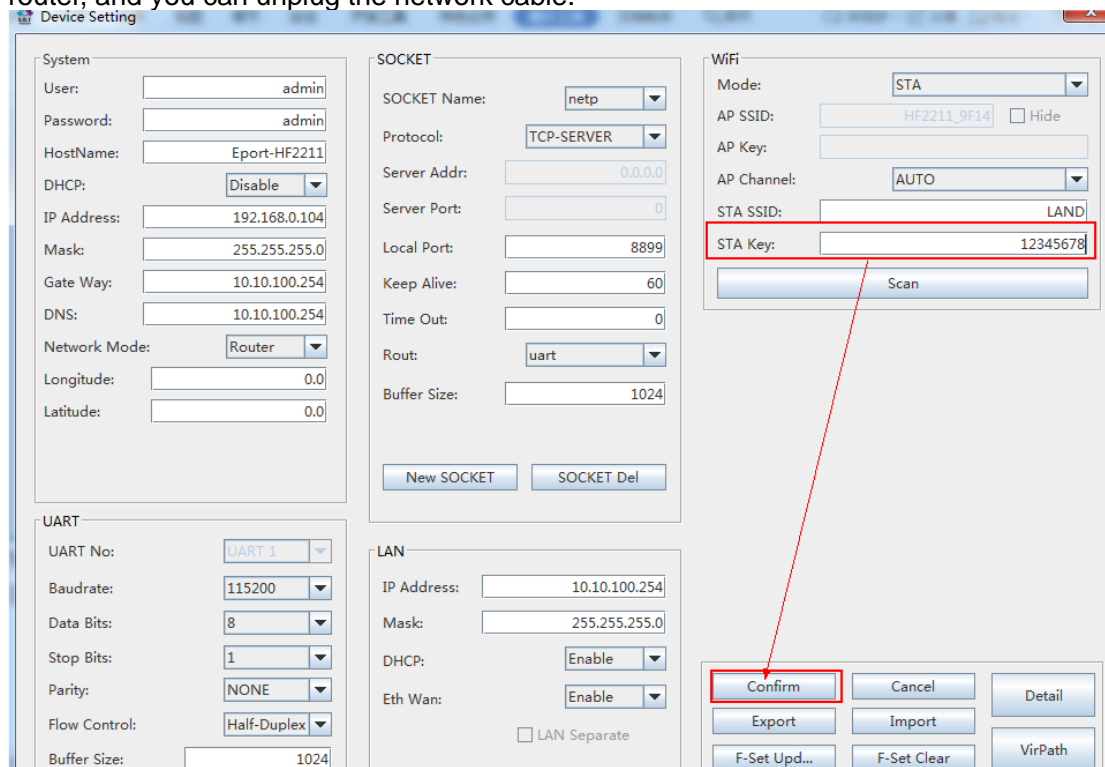
HF2211 factory default AP networking mode. If you want to change to STA networking, you can use PC wireless direct connection AP hotspot, PC Ethernet direct connection device, or PC, device Ethernet direct connection router.

After entering the device editing, select STA mode, scan the signal hotspots to be connected, finally enter the hotspot password, and click OK.

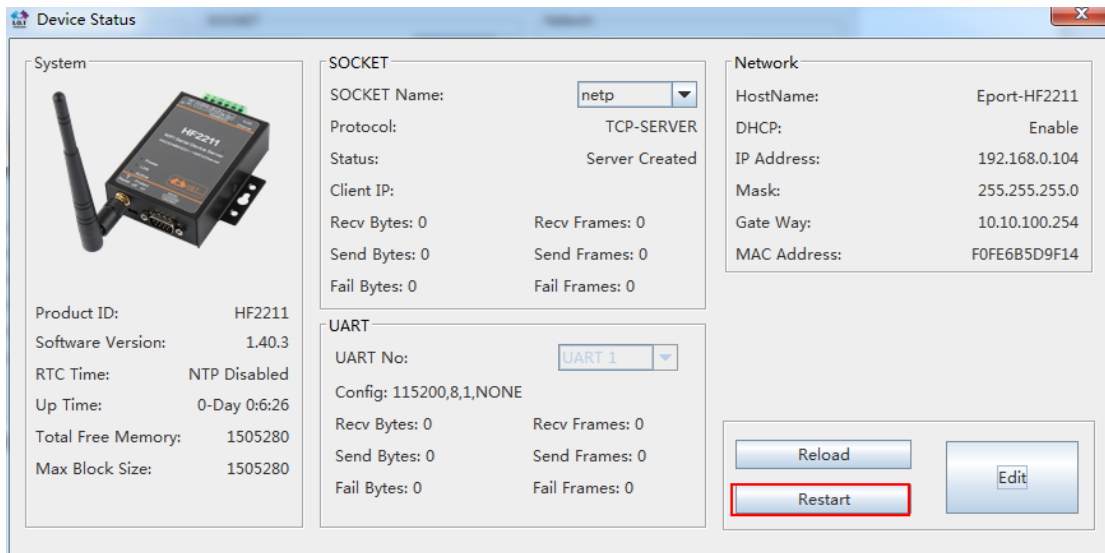




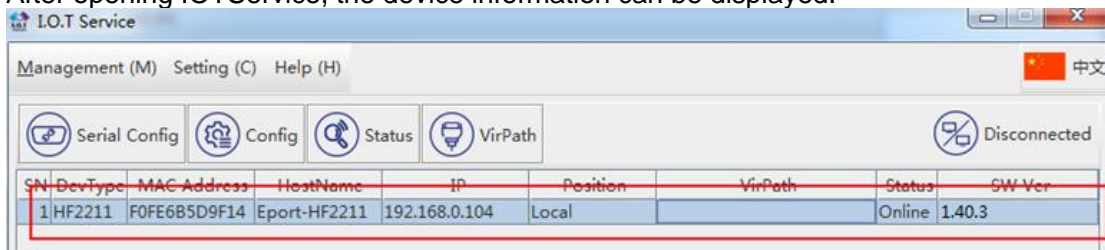
The device restarts. At this point, the HF2211 has established a connection with the router, and you can unplug the network cable.



- When the AP mode is switched to STA mode, the Ethernet of the device will automatically switch from WAN to LAN mode.
- After the device changes the networking mode, it needs to be restarted to take effect.

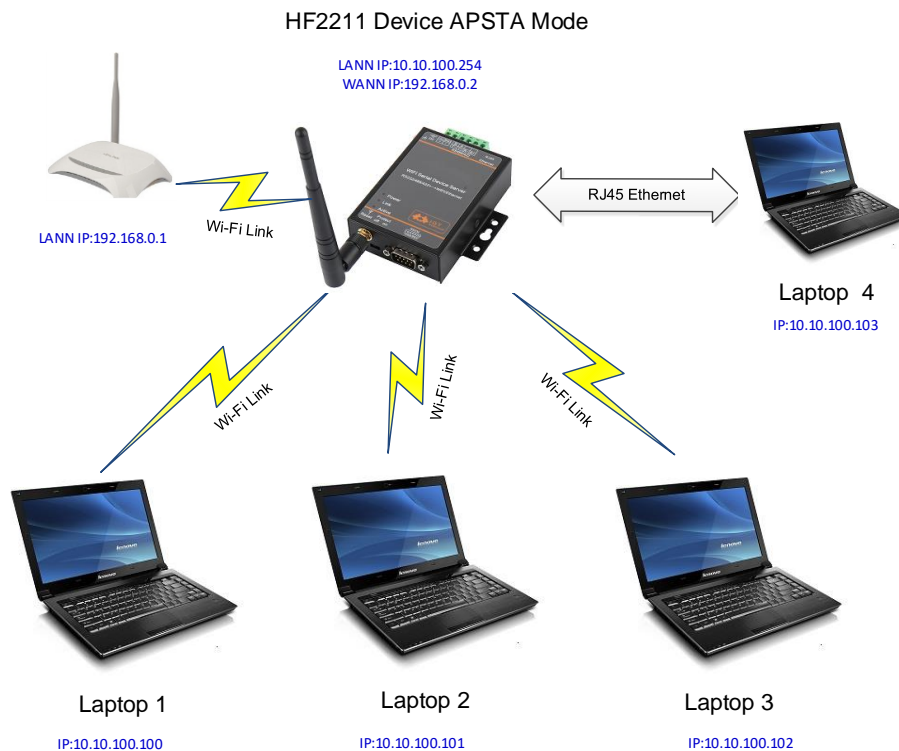


After the connection is successfully established, the Link light of the device is on. After opening IOTService, the device information can be displayed.



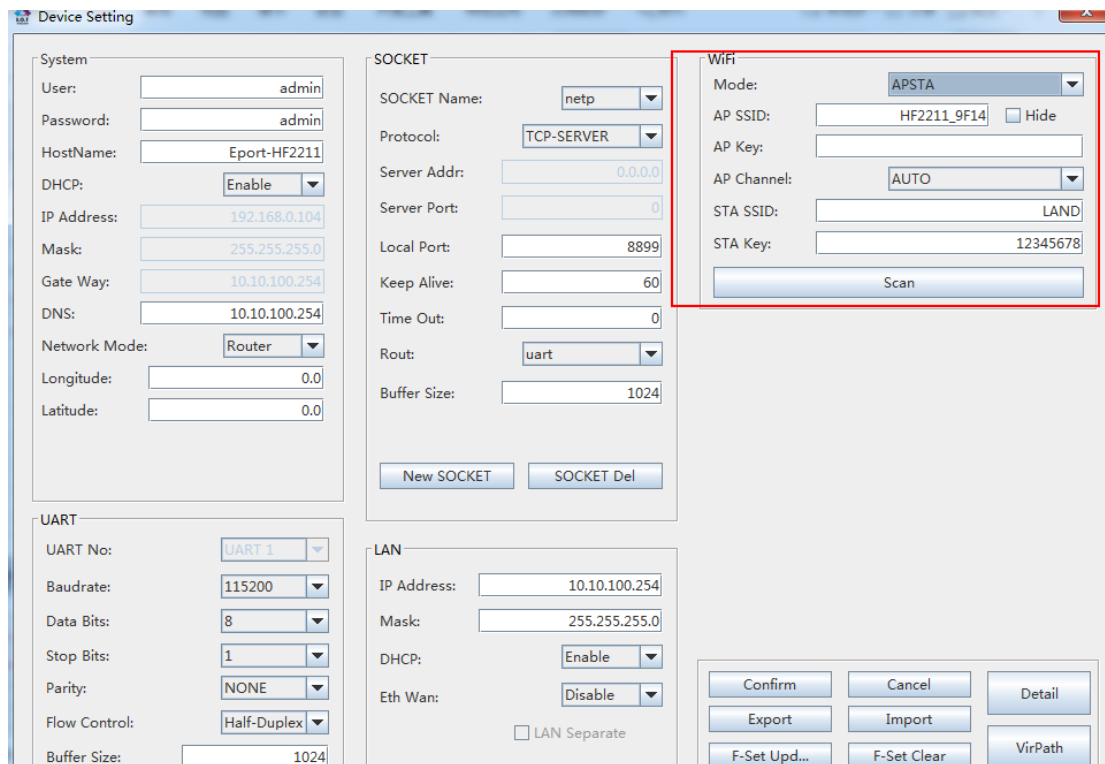
The test method for transmitting data between the TCP tool and the serial port in the STA mode is the same as described above.

## 4.7. AP-STA Wireless Network Mode-based Networking

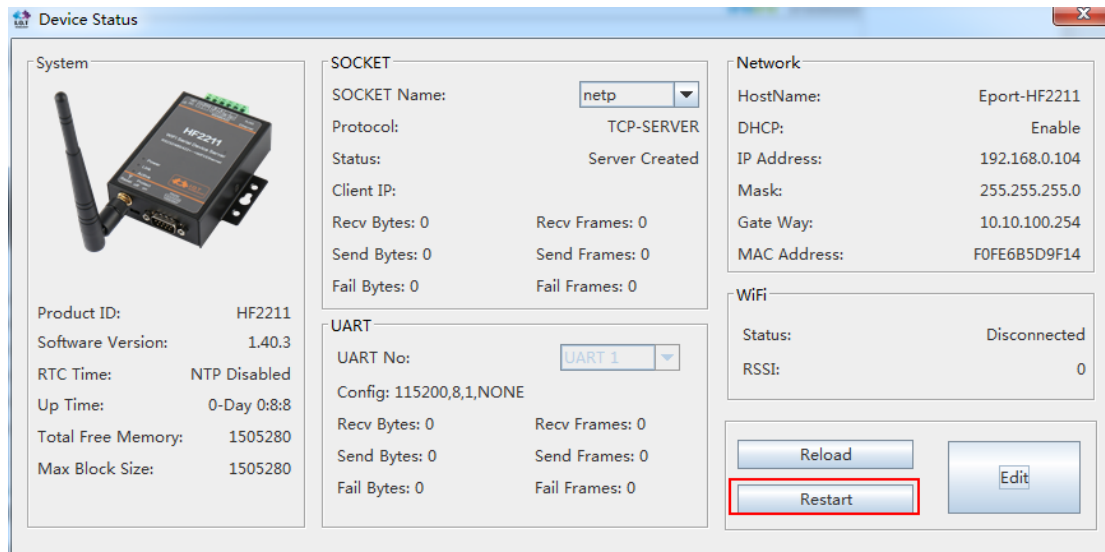


Factory default AP networking mode. Use tools or web configuration to modify to AP + STA mode.

After entering the device editing, select APSTA mode, scan the signal hotspots to be connected, finally enter the hotspot password, and click OK.



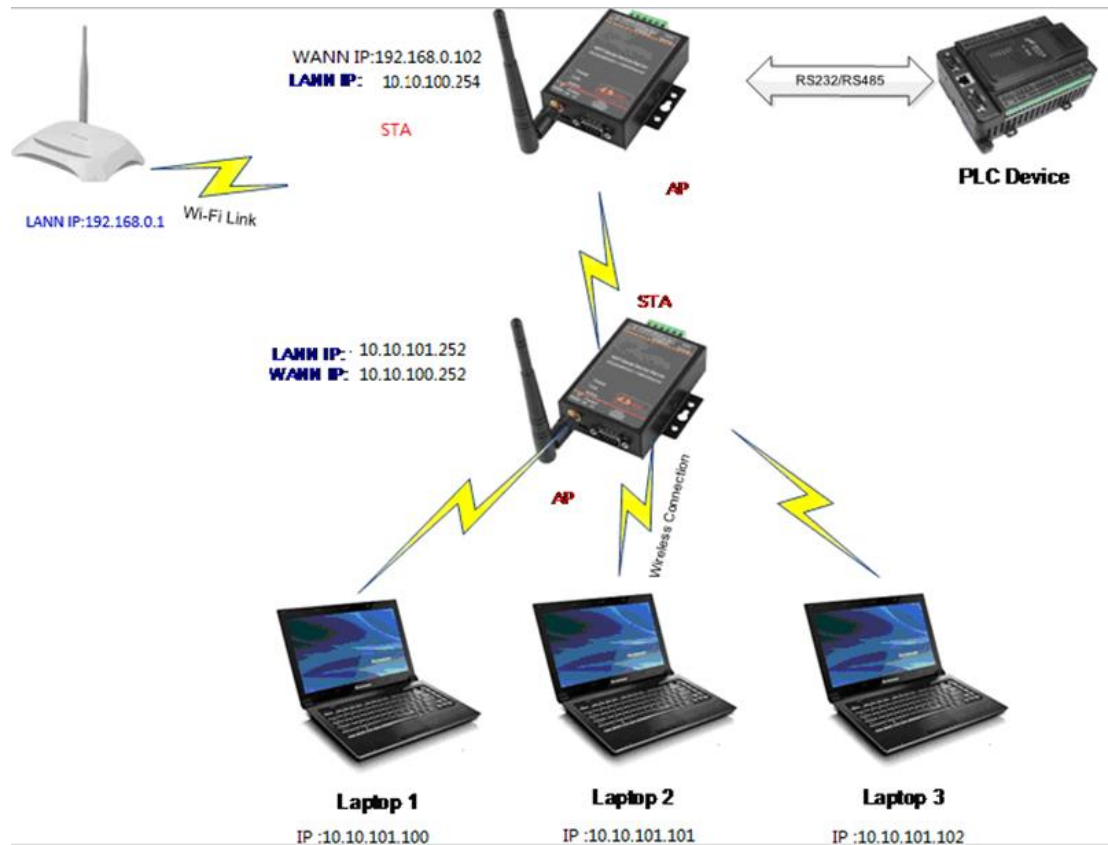
Whenever the networking mode is changed, the device needs to restart networking to take effect.



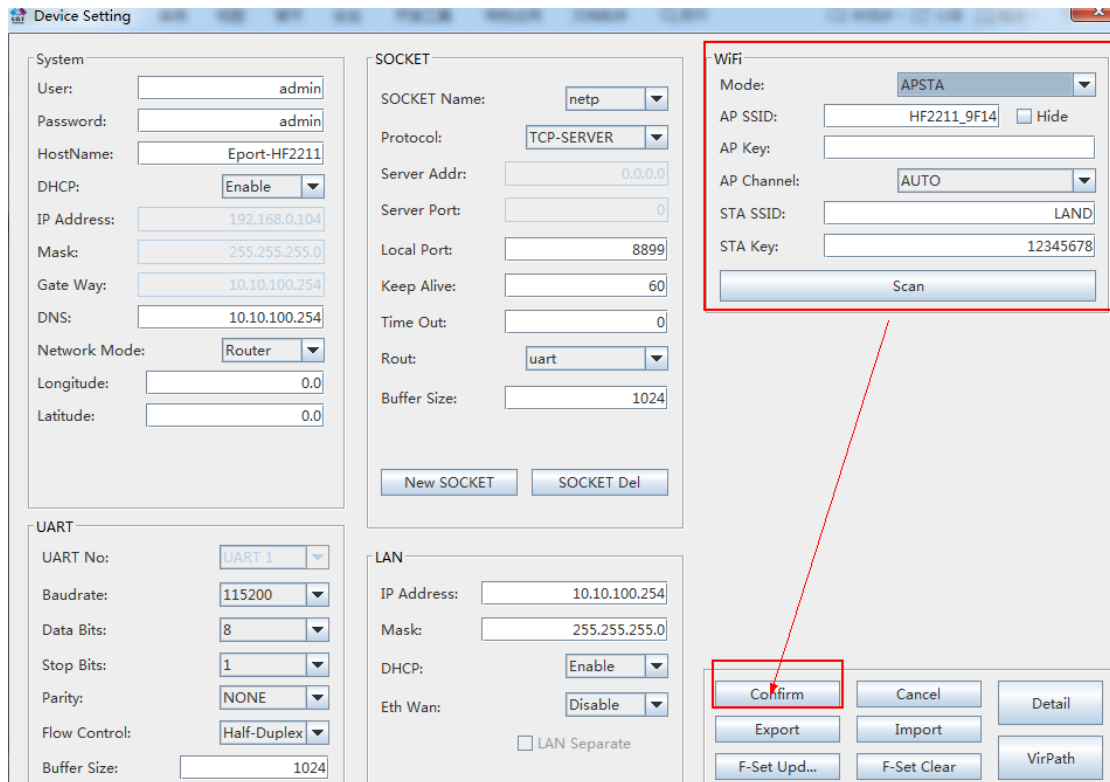
After restarting, you can unplug the network cable after the Link light of the device is turned on. The device and terminal AP-STA are successfully networked. At this time, the HF2211 is connected to the router hotspot signal in STA mode. After the PC is connected to the AP's hotspot, the router, HF2211, and PC are on the same network segment. The tool can see the device.

SN	DevType	MAC Address	HostName	IP	Position	VirPath	Status	SW Ver
1	HF2211	F0FE6B5D9F14	Eport-HF2211	192.168.0.104	Local		Online	1.40.3

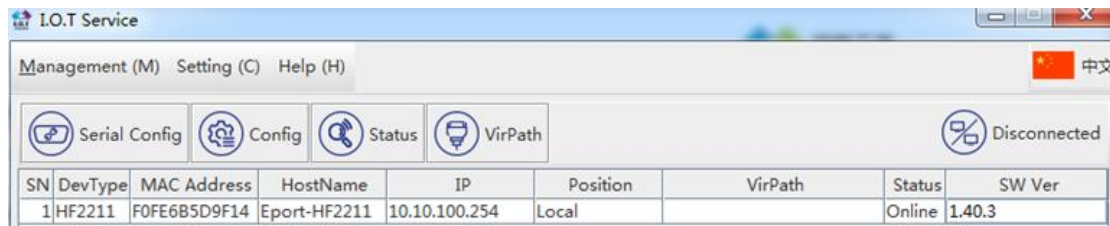
## 4.8. AP-STA Wireless Cascade Mode-based Networking



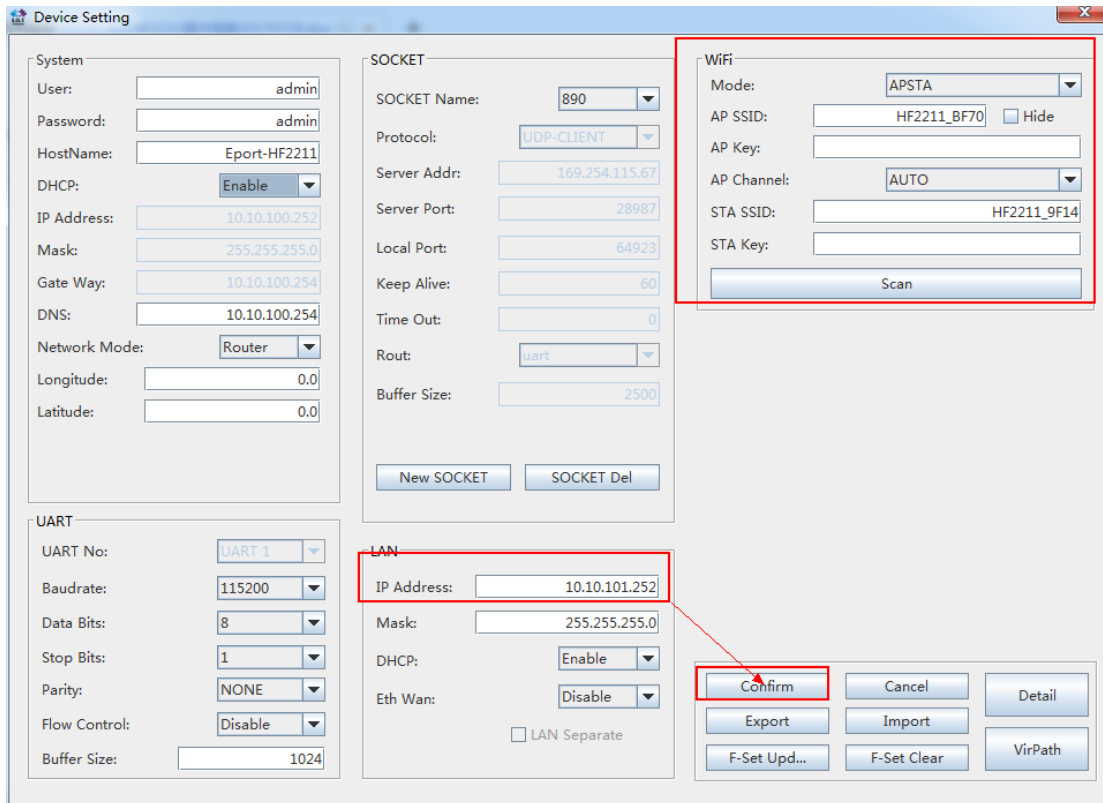
The PC is wired or wireless connected to the first level HF2211. Open IOTService and click on the device to edit. Set the networking mode to AP + STA. The STA is connected to the router. After the setting is complete, restart the module.



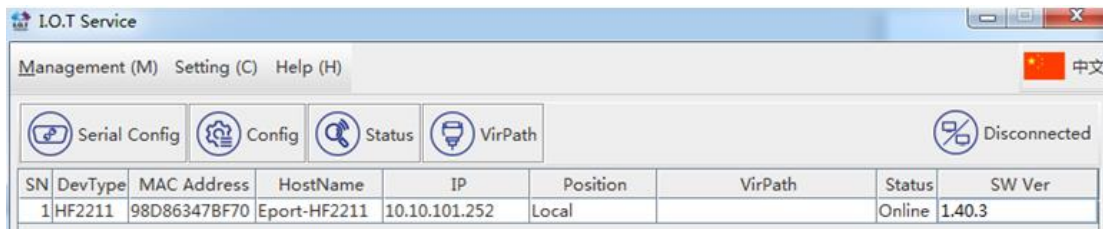
After the device restarts, the Link light is on, the first-level HF2211 has been connected to the router, and the PC can see the device status.



The PC wired or wireless connection to the second level HF2211, configure STA to connect to the first level HF2211 , **and changes the IP address in the local area network so that the LAN address and WAN address of the second-level device are not on the same network segment (the WAN IP is obtained from the first-level HF2211 )**.

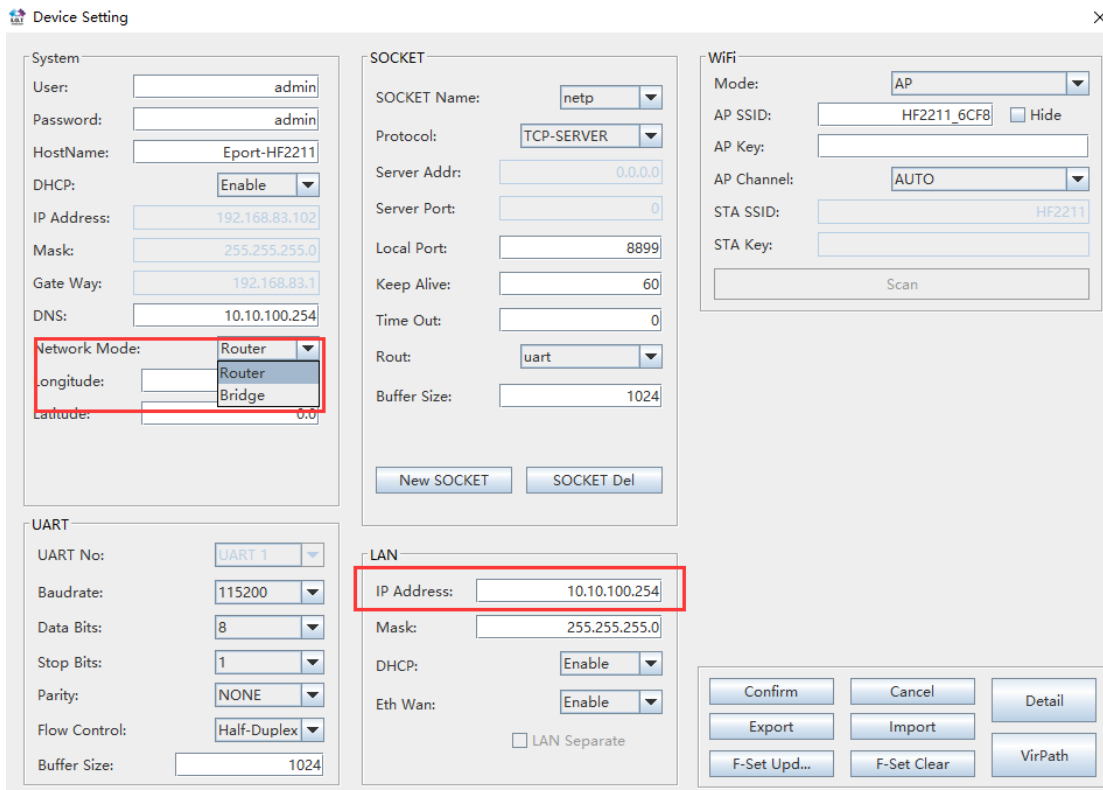


Restart the device after successful setting. PC Wi-Fi is connected to the secondary device hotspot. The IOTService tool can see the device information. At this time, the HF2211 cascade networking was successful.



If all the devices in the network need to be in the same local area network (IP is assigned by the highest-level router), you can configure the device to work in bridge mode and set the local area network IP to the router network segment (192.168.0.XXX), so that all The HF2211 device and the IP communication connected to the HF2211 device are under the same router (192.168.0.XXX).

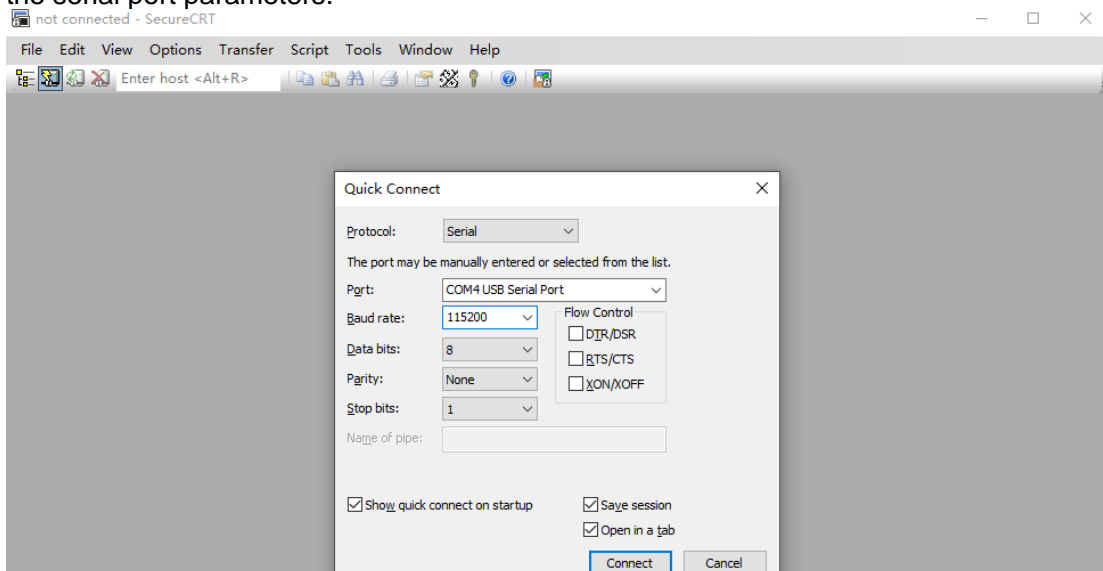




## 4.9. Router Mode TCP Server Test

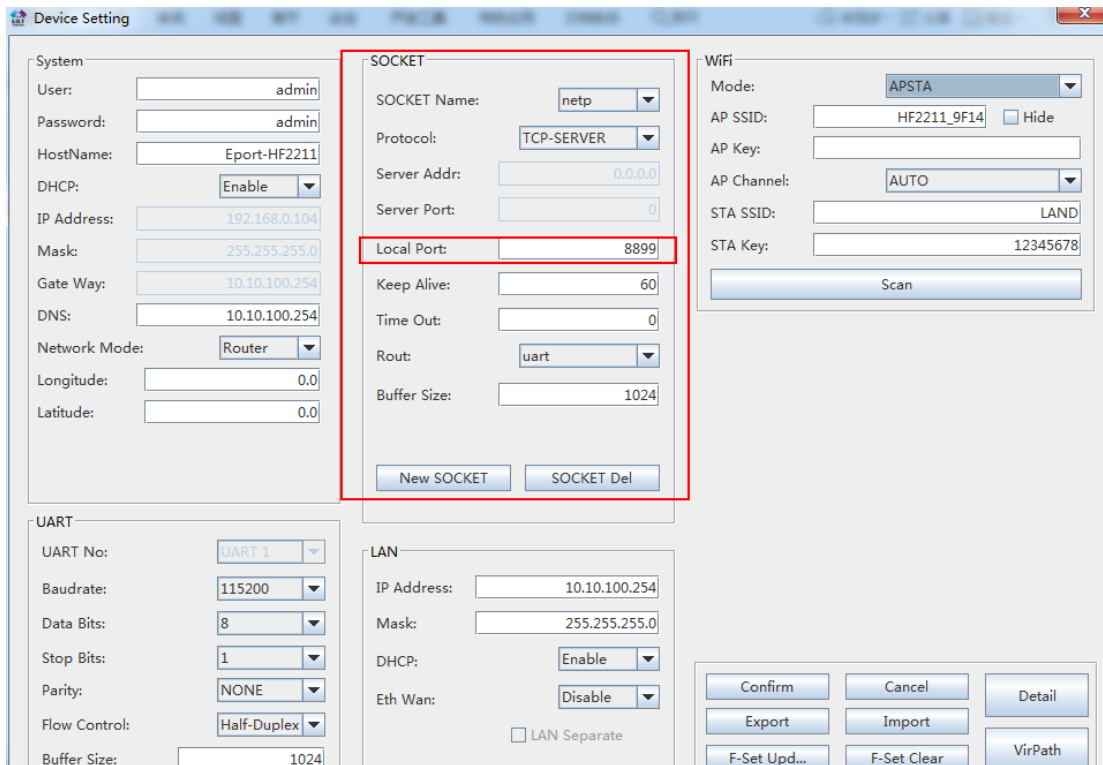
The test is a simulation test of data transmission after the first-level device is used as the server and the second-level device is used as the client.

The serial cable PC is connected to the first-level device. Open SecureCRT and set the serial port parameters.



Open the TCP & UDP test tool and establish a TCP connection according to the following procedure.

The first level device has already created a TCP Server (port 8899) for use by default. If required, users can also set it by themselves.

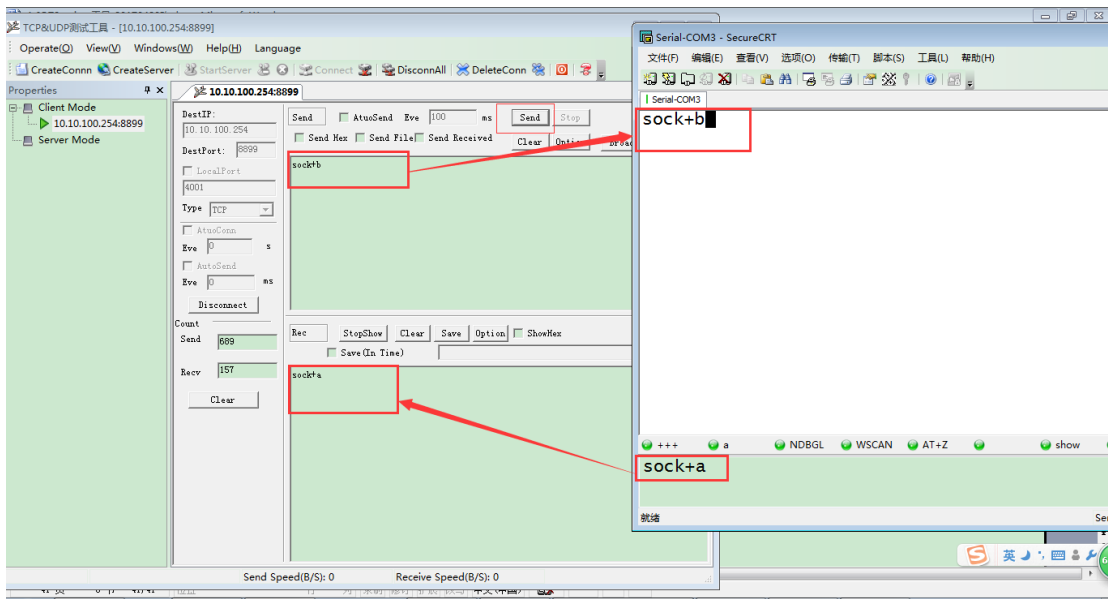


The PC Wi-Fi is connected to the second-level device hotspot. Open the TCP & UDP tool to create a client, and fill in the LAN port IP address (see above) and port number of the first-level device.

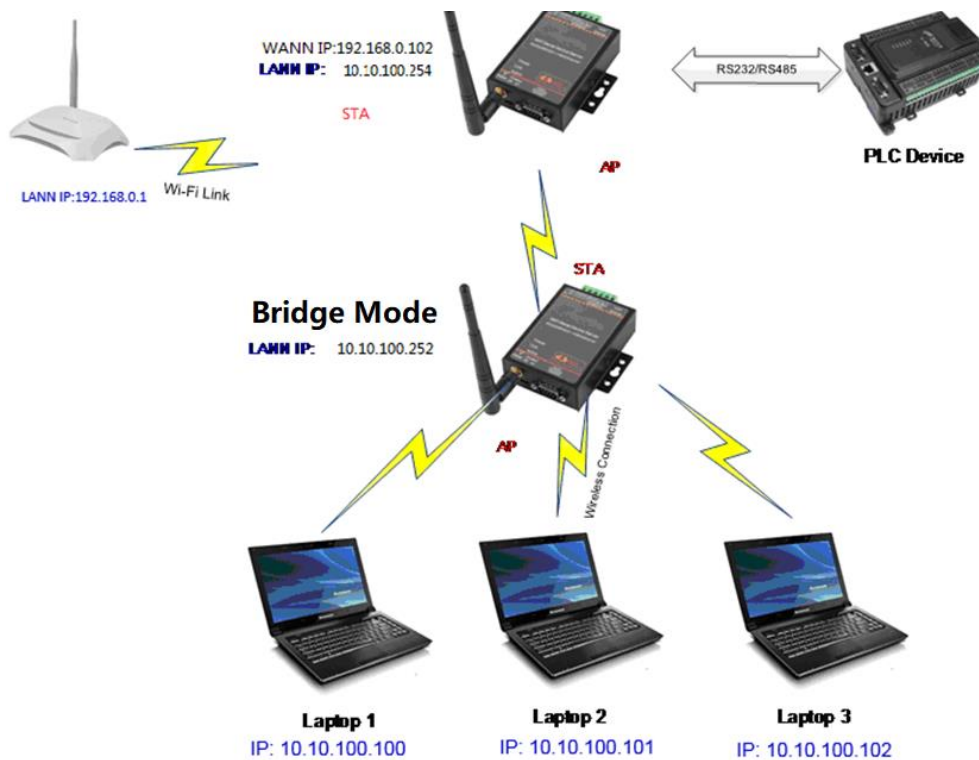




The PC serial port is connected to the first-level device and can transparently transmit data.

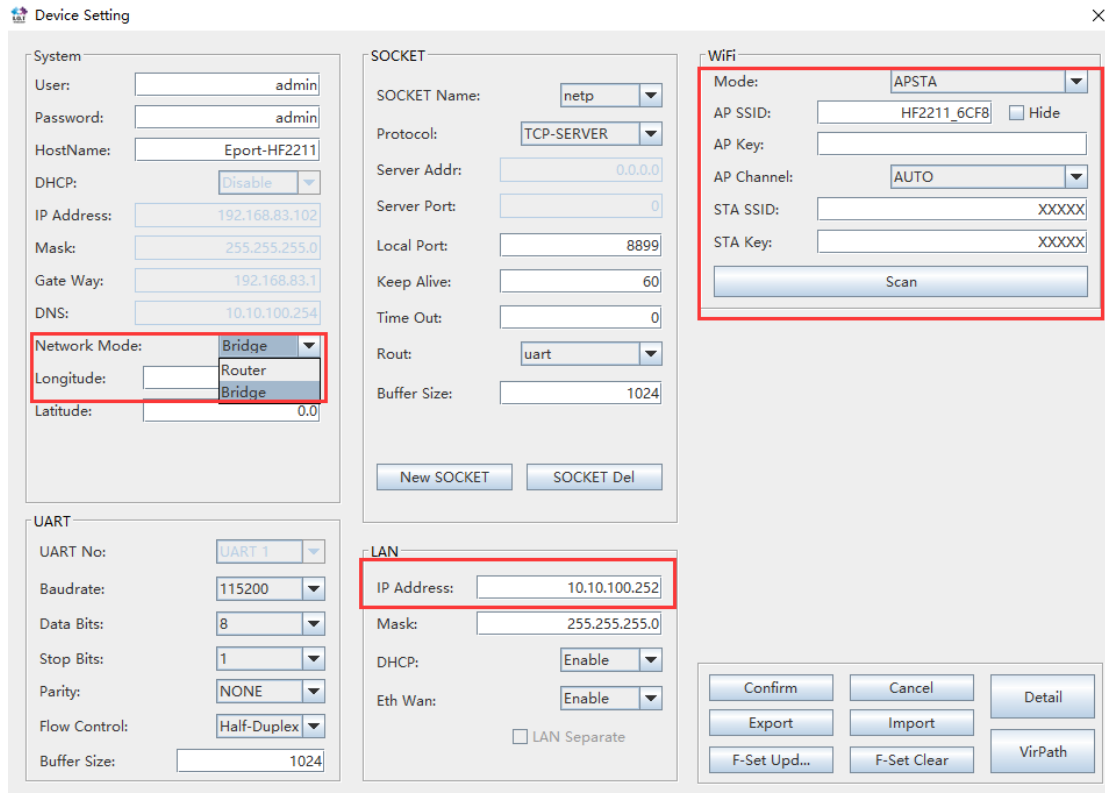


## 4.10. Bridge TCP Server Test



As shown in the figure above, the primary device works in routing mode (WAN / LAN IP is in different network segments), and the secondary device is configured in bridge mode. The IP addresses of the PCs connected to the secondary device are assigned by the primary device. The specific configuration process is as follows.

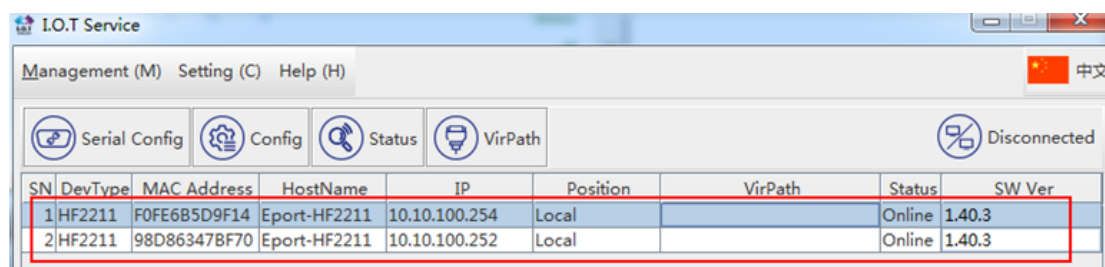
The PC is connected to the secondary device through wired or wireless mode. The network mode is set to bridge mode, the LAN IP is modified to 10.10.100.252, and the Wi-Fi parameters are configured to connect AP + STA or STA to the primary device.



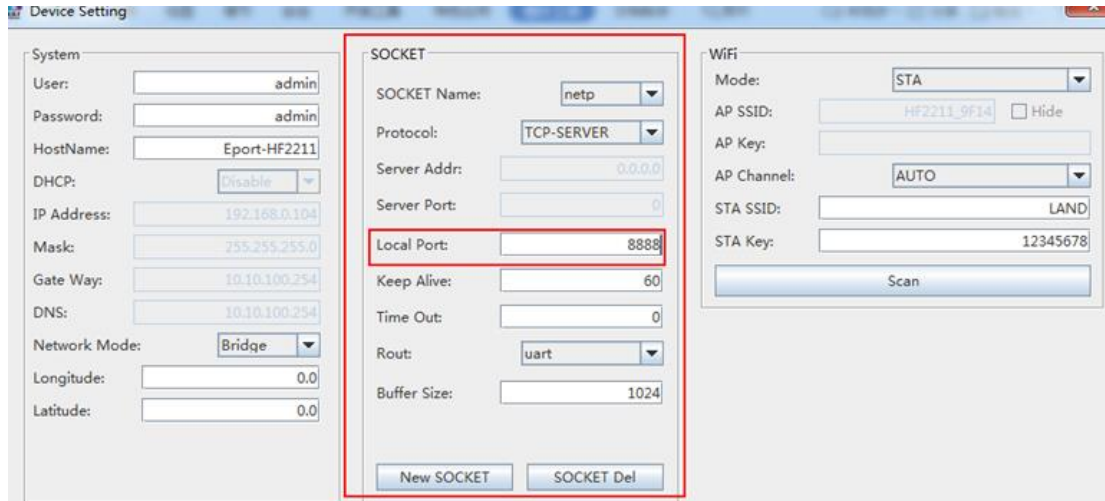
After the setting is successful, restart the secondary device and connect the PC to the WiFi hotspot of the primary device.



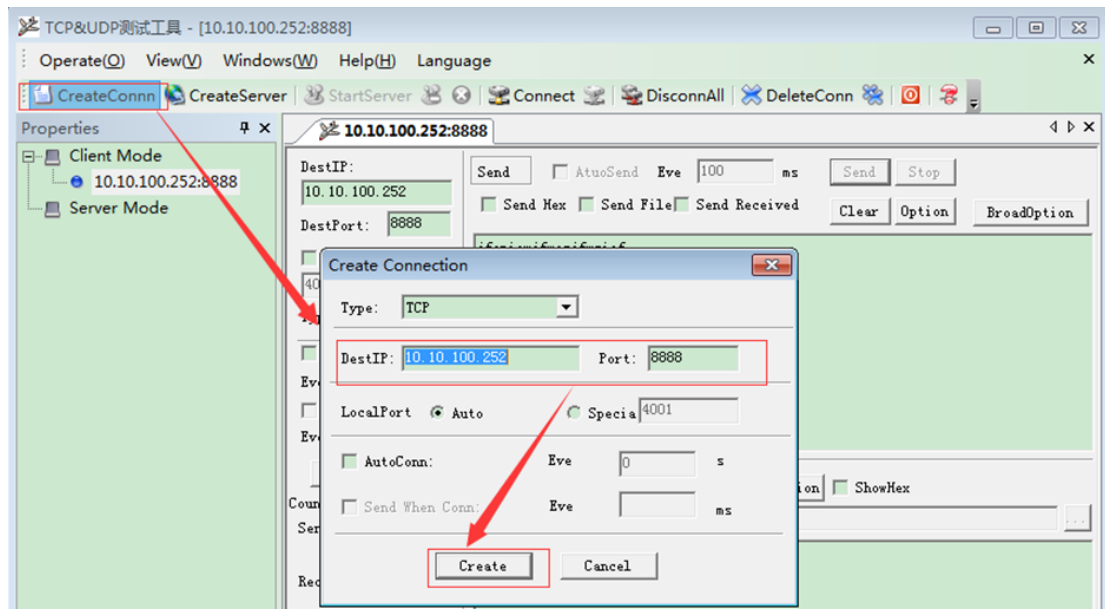
You can see 2 sets of HF2211, number 1: first-level equipment, number 2: second-level equipment.



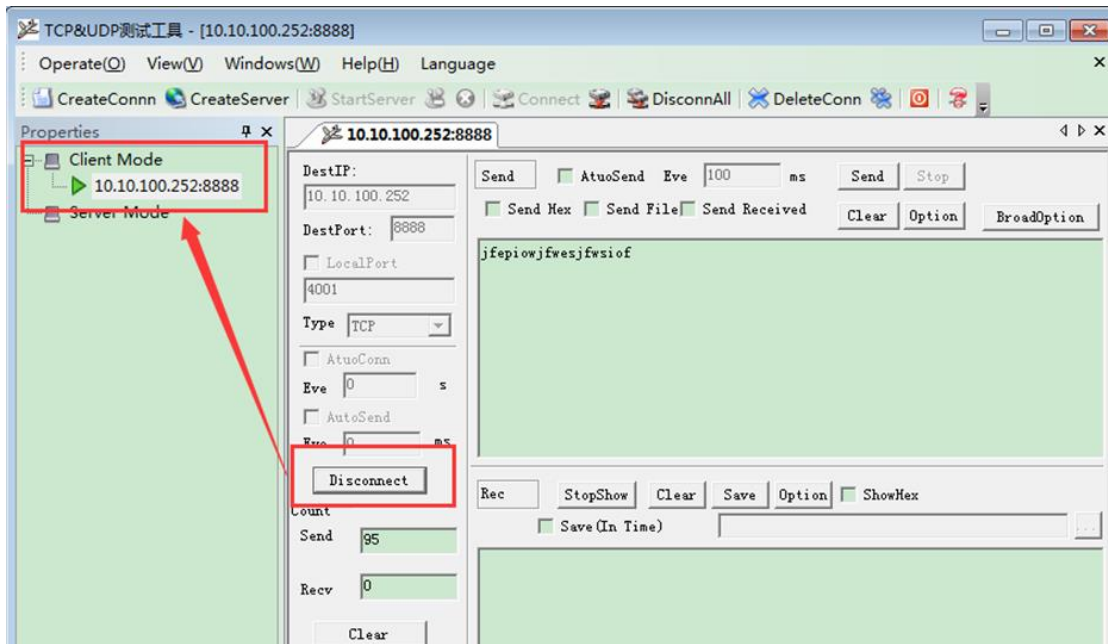
Open the secondary device editor and modify the communication parameters as shown below.



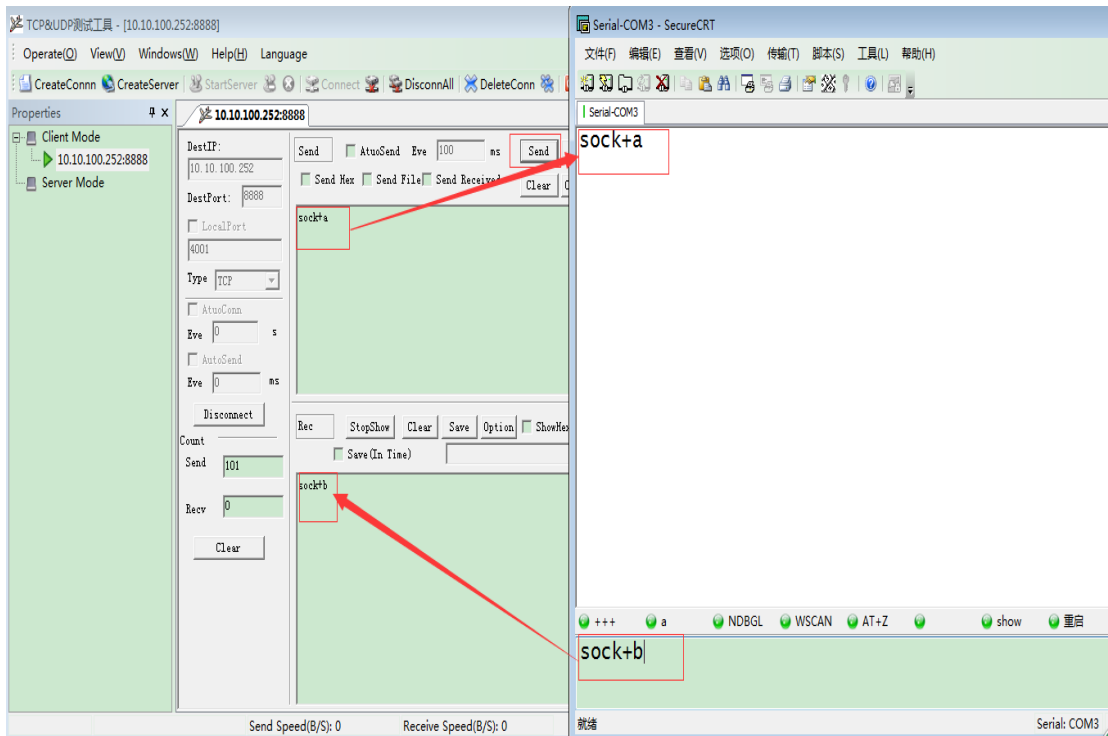
Restart the device after the setting is complete. Open the TCP & UDP test tool, create a client, and enter the communication IP and port number of the secondary device.



After creating the connection, click Connect. A green arrow appears in front of the client, indicating that the connection is successfully established.

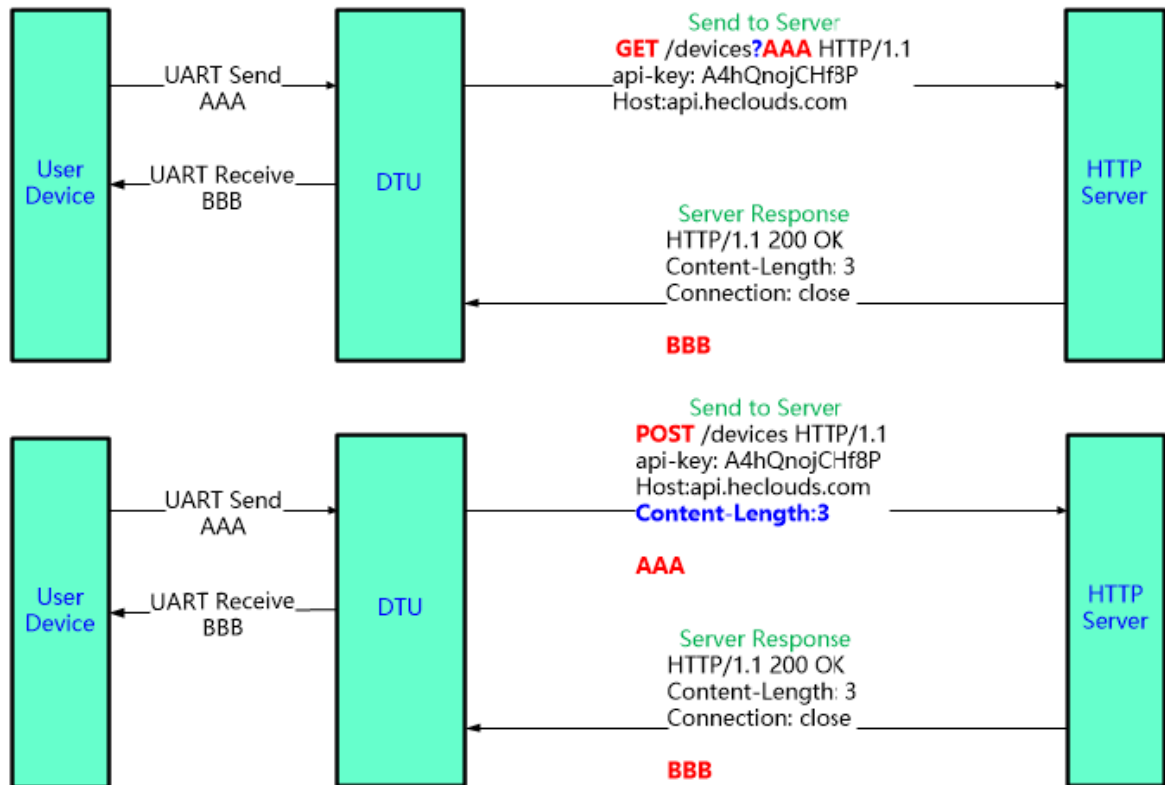


The PC serial line is connected to the secondary equipment, and TCP and serial ports transmit data to each other.



#### 4.11. STA HTTP Client Test

HTTP data flow is as following.



- **HTTP GET Test:**

Test server address: 115.29.164.59

Test server port: 8432

Path: /iot

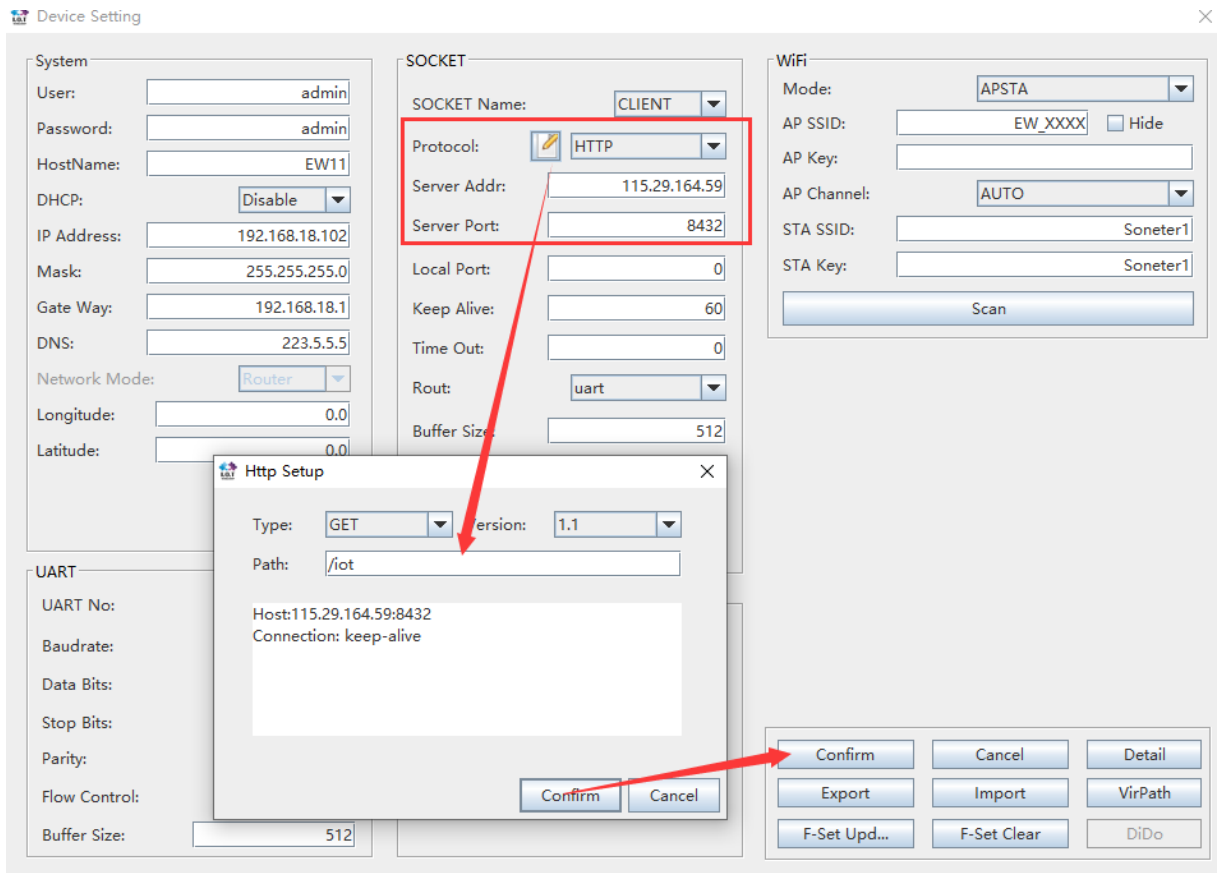
Header:

Host:115.29.164.59:8432

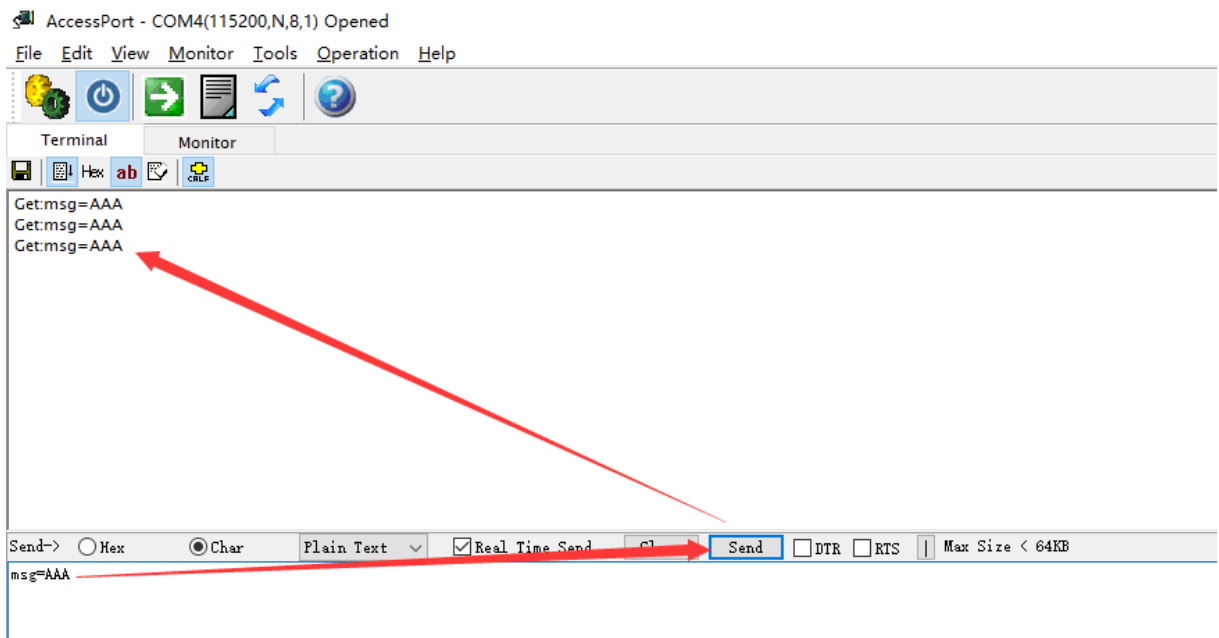
Connection: keep-alive

Products setting as following.

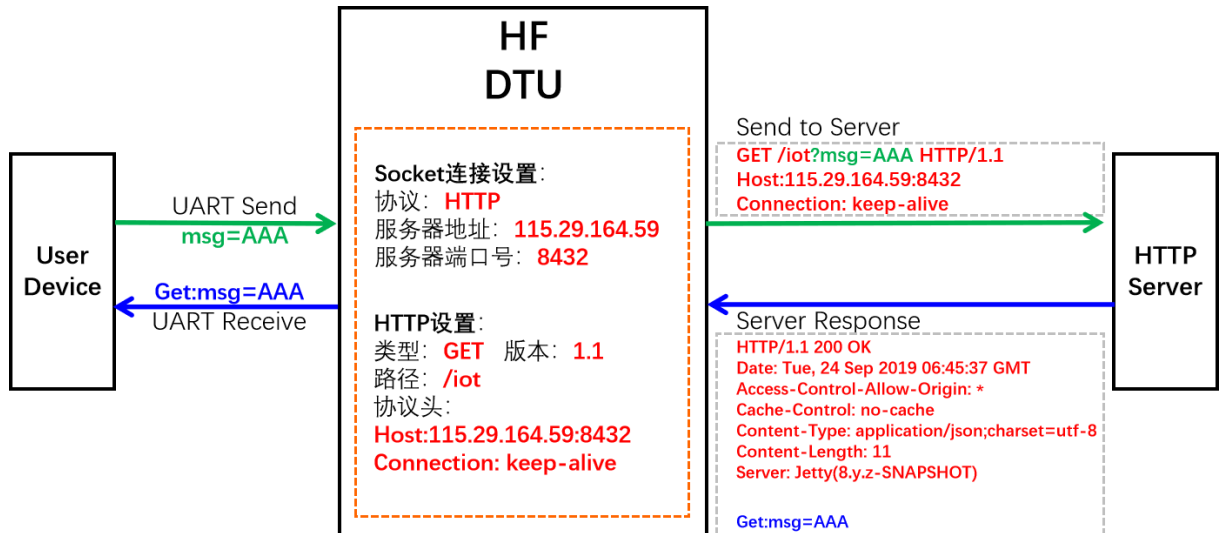




Server response back and products UART output packet. It filter the HTTP response header and only output the header.

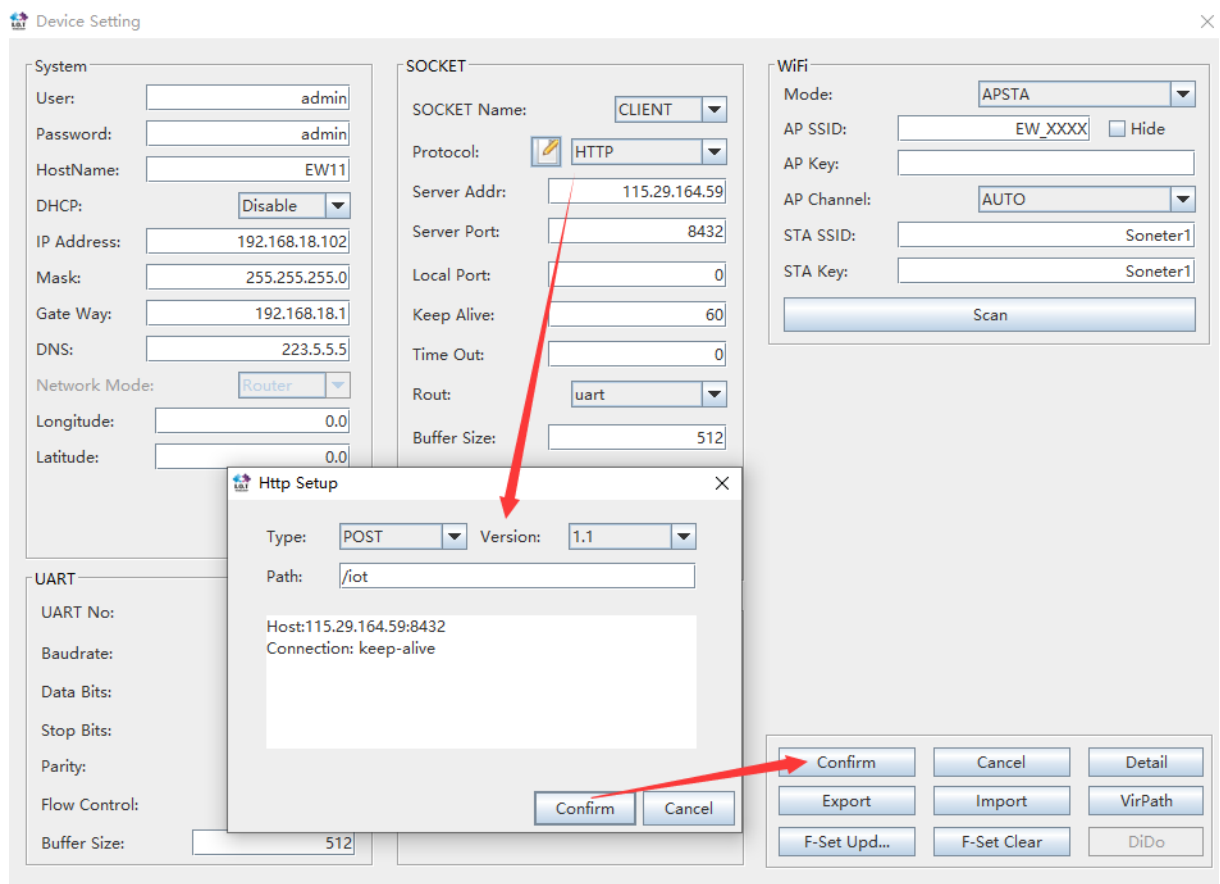


Data flow is as following.

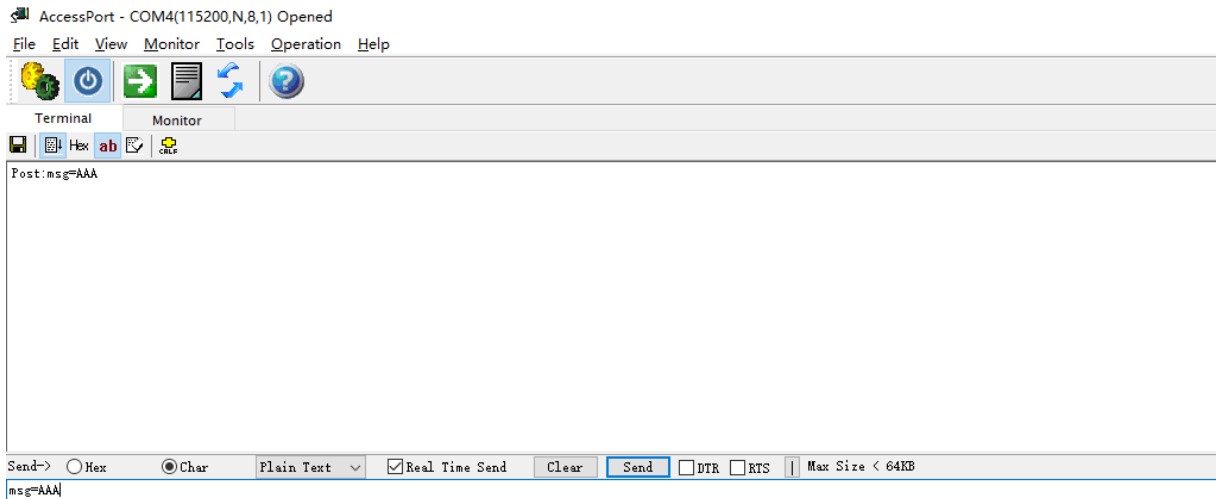


● **HTTP POST Test:**

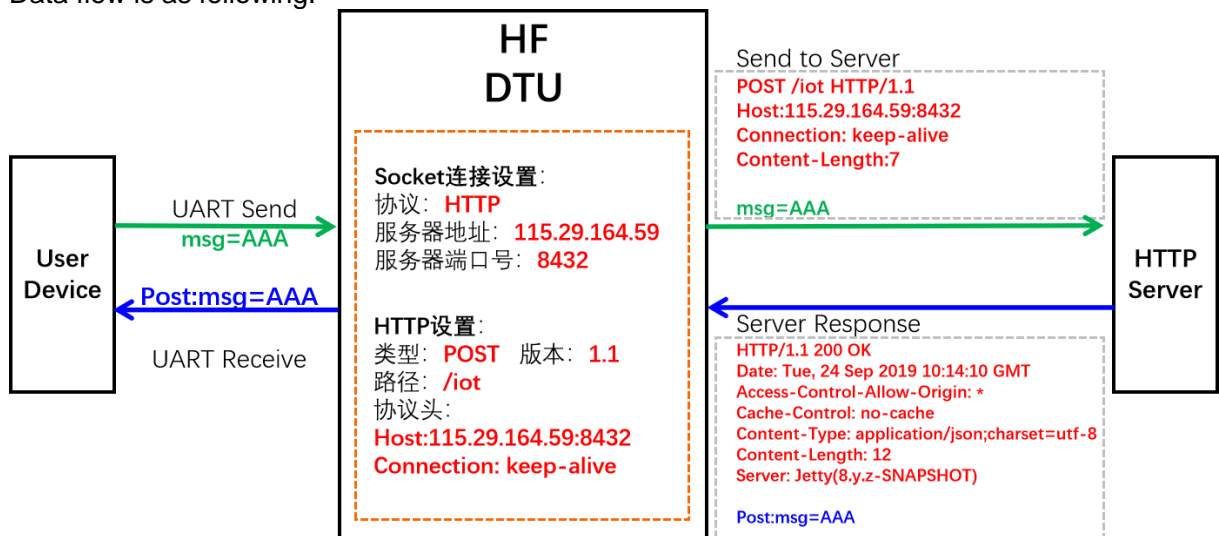
Test server address: 115.29.164.59  
 Test server port: 8432  
 Path: /iot  
 Header:  
 Host:115.29.164.59:8432  
 Connection: keep-alive  
 Products setting as following.



Server response back and products UART output packet. It filter the HTTP response header and only output the header.



Data flow is as following.

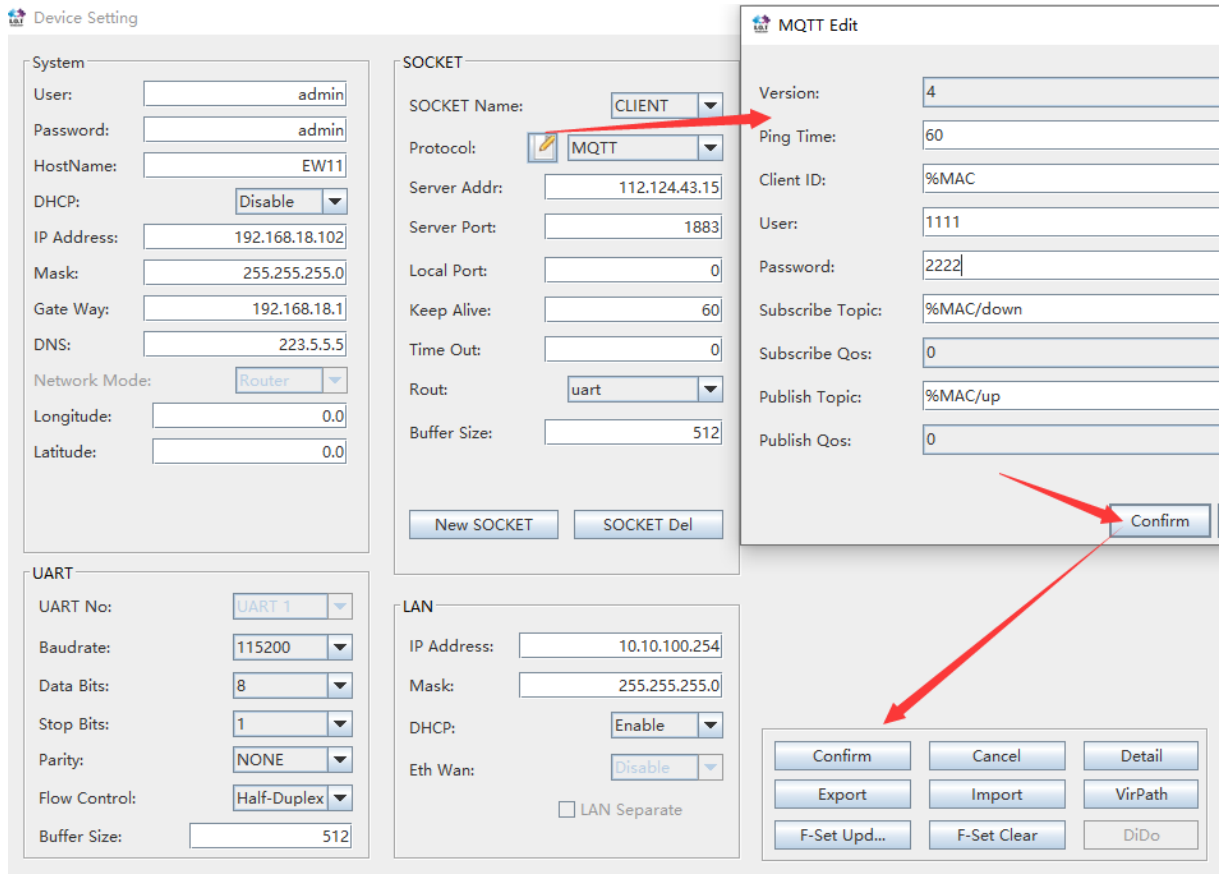


## 4.12. STA MQTT Client Test

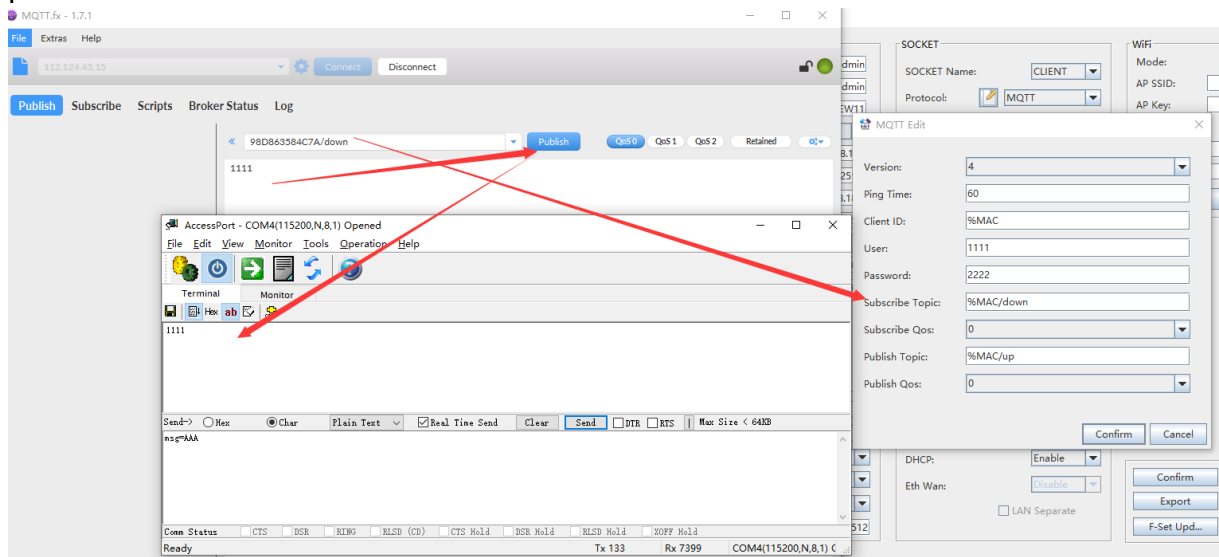
Test server address: 112.124.43.15

Test server port: 1883

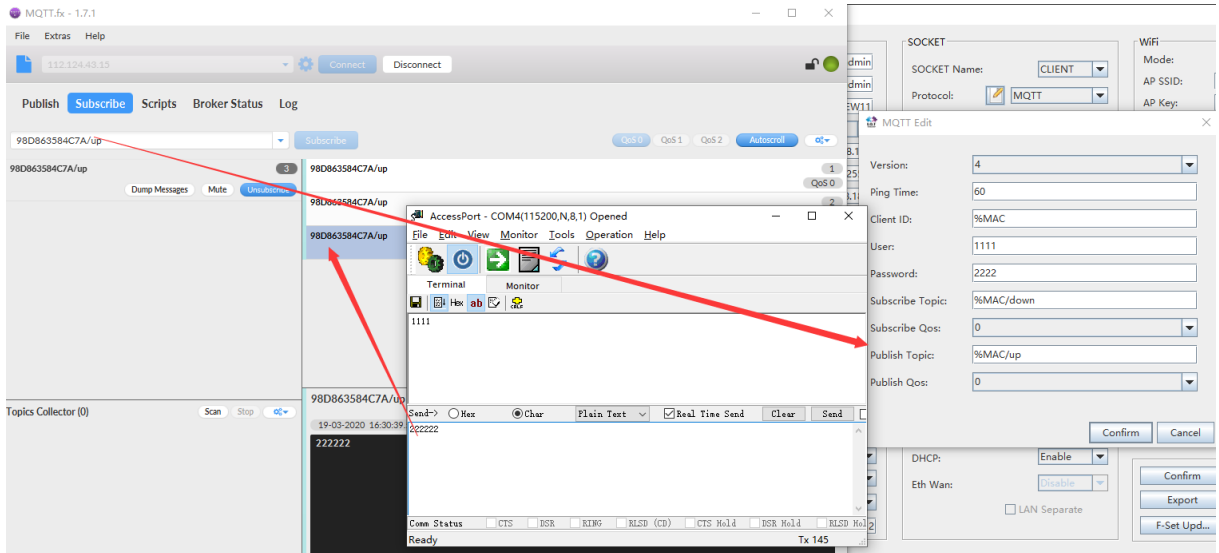
Device setting is as following.



Use MQTT.fx tools to test, set publish topic to the device Subscribe Topic and the publish data will be sent to device UART.



Set tools subscribe topic to the device publish topic and the send UART data, the MQTT.fx tools got the packet.

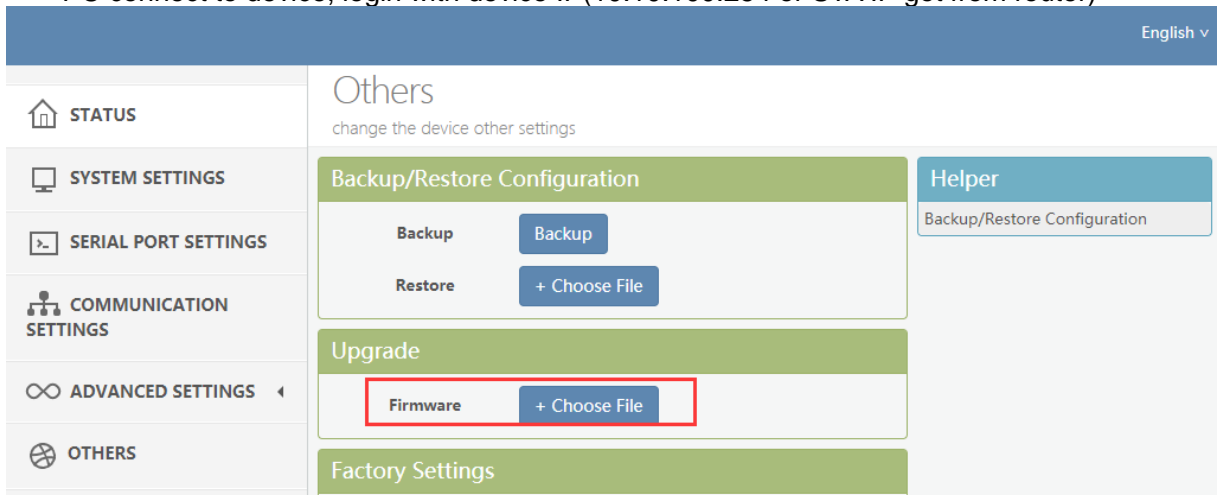


## 4.13. Firmware Upgrade

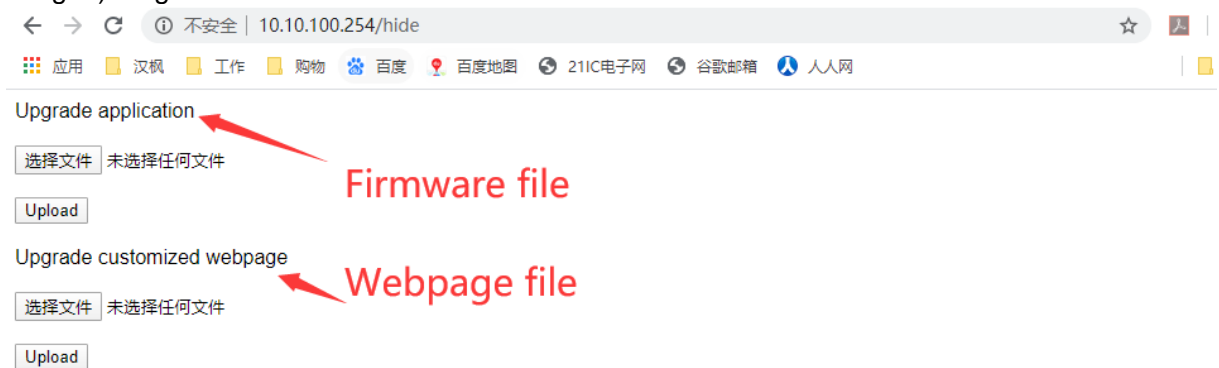
Firmware download address:

[http://www.hi-flying.com/index.php?route=download/category&path=1\\_3](http://www.hi-flying.com/index.php?route=download/category&path=1_3)

- **Webpage Local Upgrade:**  
PC connect to device, login with device IP(10.10.100.254 or STA IP got from router)



There is another internal webpage for upgrade the firmware and webpage (external config webpage as above, this source code is open at our website for customer to change). Login with IP/hide.



- **IOTService Remote Upgrade:**  
Refer to IOTService tools doc for remote upgrade.

## 4.14. Restore to Factory Setting

If device works in STA mode and not yet connect to router AP, do the following operation to recover and reconfig.

- **UART Cli command to reload**

```
Serial-COM4 x
EPORT>COM4
Show          SYS          UART          SOCK          DATA
Restart      Reload      FwUpgrade    Debug         CfgVer
ScriptCrc    Exit
EPORT>rekiad
EPORT>Reload
Restart...
```

- **Reload button to restore to factory setting.**


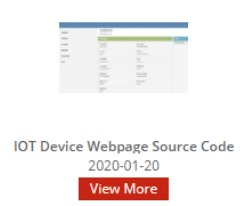


Reload Pin (Button) function:

1. After module is powered up, long press this button (“Low” > 4s) and loose to make the module recover to factory setting.

## 4.15. More Application Case

See following for more.

[http://www.hi-flying.com/index.php?route=download/category&path=1\\_7](http://www.hi-flying.com/index.php?route=download/category&path=1_7)

 <p>Industry products application ma... 2020-03-30 <a href="#">View More</a></p>	 <p>IOT Device Webpage Source Code 2020-01-20 <a href="#">View More</a></p>	 <p>HIS SCRIPT HIS_Script 2019-11-14 <a href="#">View More</a></p>	 <p>OneNET CMCC OneNET 2018-12-26 <a href="#">View More</a></p>
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## 5. HF2221 TEST

HF2221 supports two network ports and two serial ports, and the serial port parameters of each channel can be independently configured.

Device Setting

**System**

User: admin  
Password: admin  
HostName: Eport-HF2221  
DHCP: Enable  
IP Address: 192.168.83.107  
Mask: 255.255.255.0  
Gate Way: 10.10.100.254  
DNS: 10.10.100.254  
Network Mode: Router  
Longitude: 0.0  
Latitude: 0.0

**SOCKET**

SOCKET Name: netp  
Protocol: TCP-SERVER  
Server Addr: 0.0.0.0  
Server Port: 0  
Local Port: 8899  
Keep Alive: 60  
Time Out: 300  
Rout: uart1  
Buffer Size: 8192

New SOCKET   SOCKET Del

**WiFi**

Mode: AP  
AP SSID: HF2221\_E6A0  Hide  
AP Key:  
AP Channel: AUTO  
STA SSID: HF2221  
STA Key:  
Scan

**UART**

UART No: **UART 1**  
Baudrate:  
Data Bits: 8  
Stop Bits: 1  
Parity: NONE  
Flow Control: Half-Duplex  
Buffer Size: 8192

**LAN**

IP Address: 10.10.100.254  
Mask: 255.255.255.0  
DHCP: Enable  
Eth Wan: Enable  
 LAN Separate

Confirm   Cancel   Detail  
Export   Import  
F-Set Upd...   F-Set Clear   VirPath

The data received by the Socket connection channel can also be specified to be output to any serial port.

Device Setting

**System**

User: admin  
Password: admin  
HostName: Eport-HF2221  
DHCP: Enable  
IP Address: 192.168.83.107  
Mask: 255.255.255.0  
Gate Way: 10.10.100.254  
DNS: 10.10.100.254  
Network Mode: Router  
Longitude: 0.0  
Latitude: 0.0

**SOCKET**

SOCKET Name: netp  
Protocol: TCP-SERVER  
Server Addr: 0.0.0.0  
Server Port: 0  
Local Port: 8899  
Keep Alive: 60  
Time Out: 300  
Rout: **uart1**  
Buffer Size: **uart2**

New SOCKET   SOCKET Del

**WiFi**

Mode: AP  
AP SSID: HF2221\_E6A0  Hide  
AP Key:  
AP Channel: AUTO  
STA SSID: HF2221  
STA Key:  
Scan

**UART**

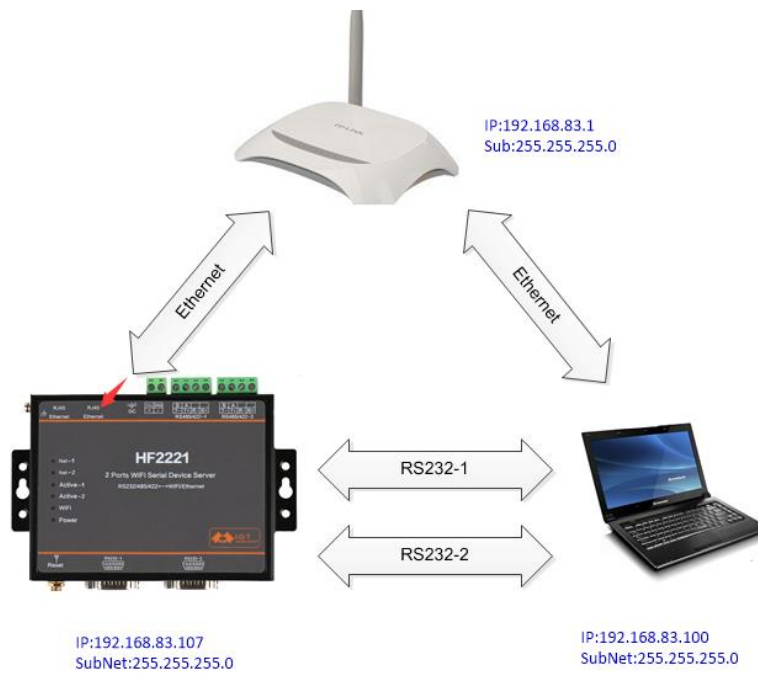
UART No: UART 1  
Baudrate: 115200  
Data Bits: 8  
Stop Bits: 1  
Parity: NONE  
Flow Control: Half-Duplex  
Buffer Size: 8192

**LAN**

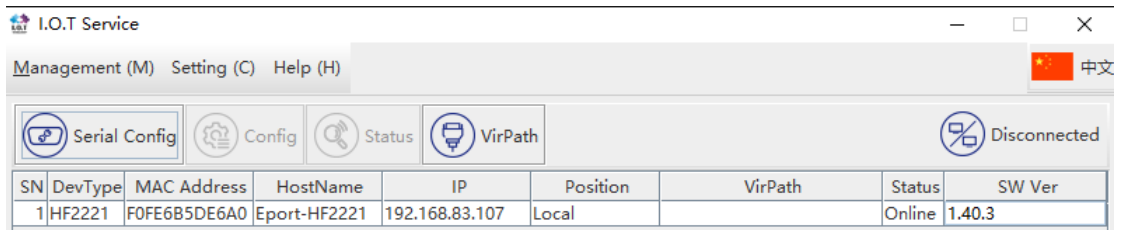
IP Address: 10.10.100.254  
Mask: 255.255.255.0  
DHCP: Enable  
Eth Wan: Enable  
 LAN Separate

Confirm   Cancel   Detail  
Export   Import  
F-Set Upd...   F-Set Clear   VirPath

As shown in the figure below, HF2221 (using the WAN / LAN switchable network port, close to the DC power input) and PC are connected to the router LAN port.

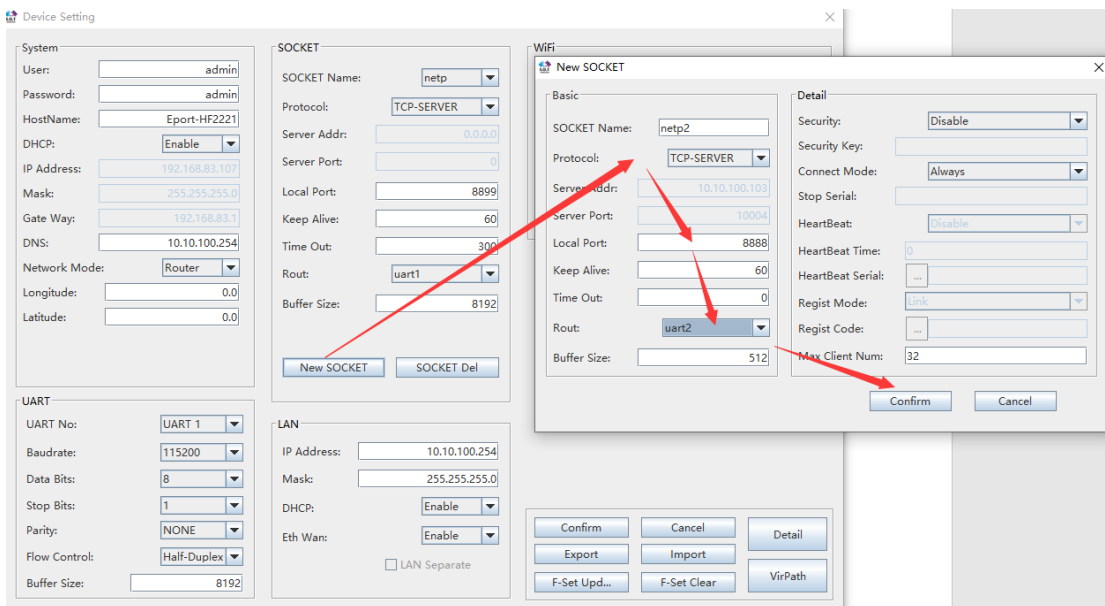
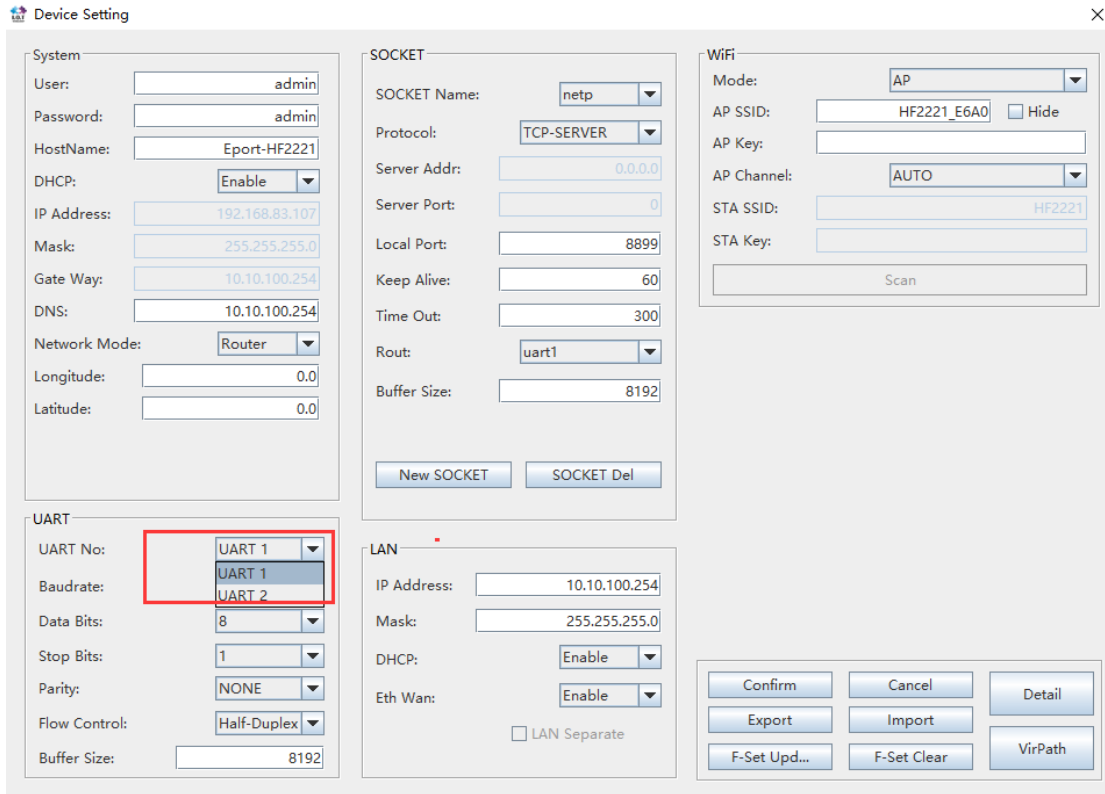


The tool can find this device.

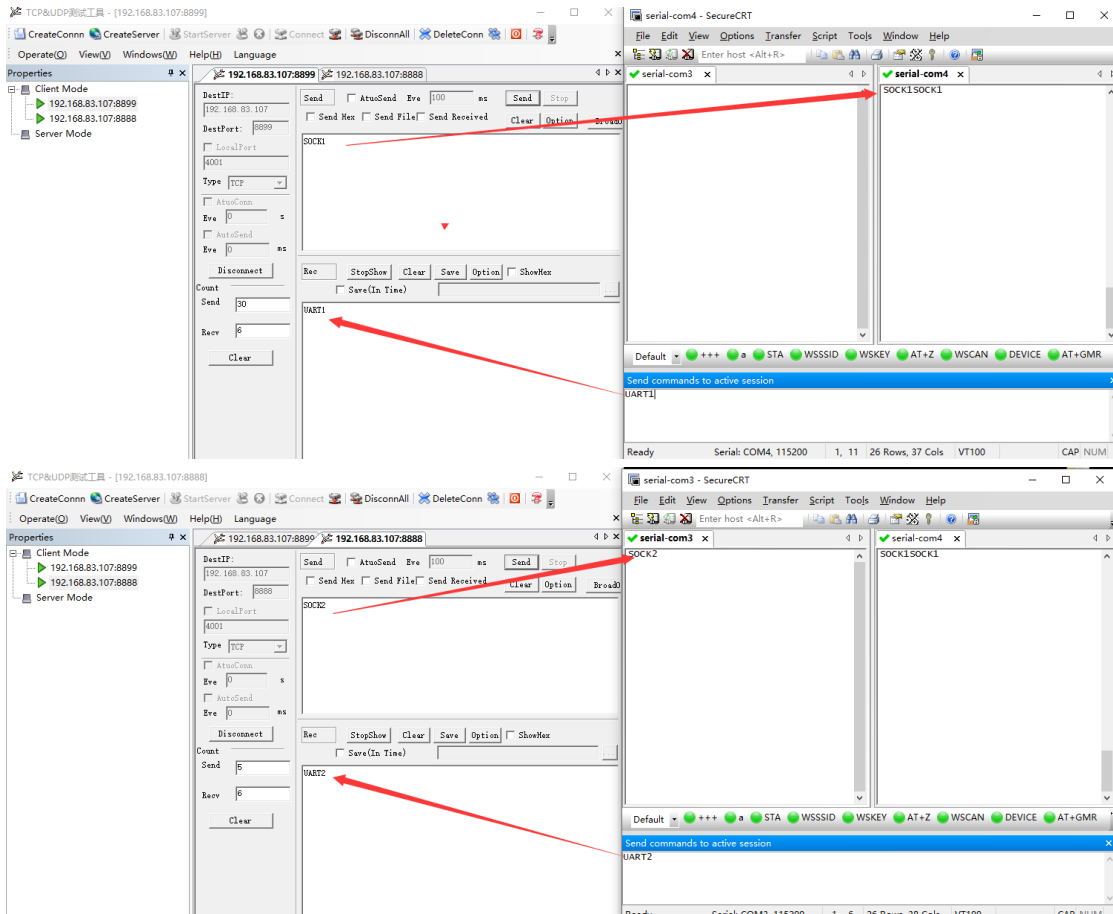


By default, the two serial ports of HF2221 are 115200 baud rate. The netp connection channel created by default is connected to serial port 1. Here, a new communication channel (up to 5 communication channels can be created), port 8888, connected to serial port 2.





As shown in the figure below, two sockets communicate at the same time, and the serial port is transparent.



# APPENDIX A:REFERENCES

## A.1. IOTService Test Tools

IOTService Configure Software:

<http://www.hi-flying.com/download-center-1/applications-1/download-item-iotservice>