PE1X_EE1X_HF51XX_Eport

Ethernet Products

Operation Guide

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

Single Ethernet		PE11
		EE10, EE11
		HF5111S, HF5111B, HF5111A

		E10, E20, E30, EP10, EP20, EP40
Double Ethernet		HF5122
Quad Ethernet		HF5142B, HF5142A

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1. HARDWARE INTRODUCTION

PE1X, EE1X, HF51XX, Eport are all serial ports to Ethernet products. This doc takes one product as example, others usage is the same.

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

1.1. Protoss-PE1X Hardware Introduction

1 RS485(Protoss-PE11) or RS232(Protoss-PE10) serial ports
1 Ethernet Port.

1.2. Elfin-EE1X Hardware Introduction

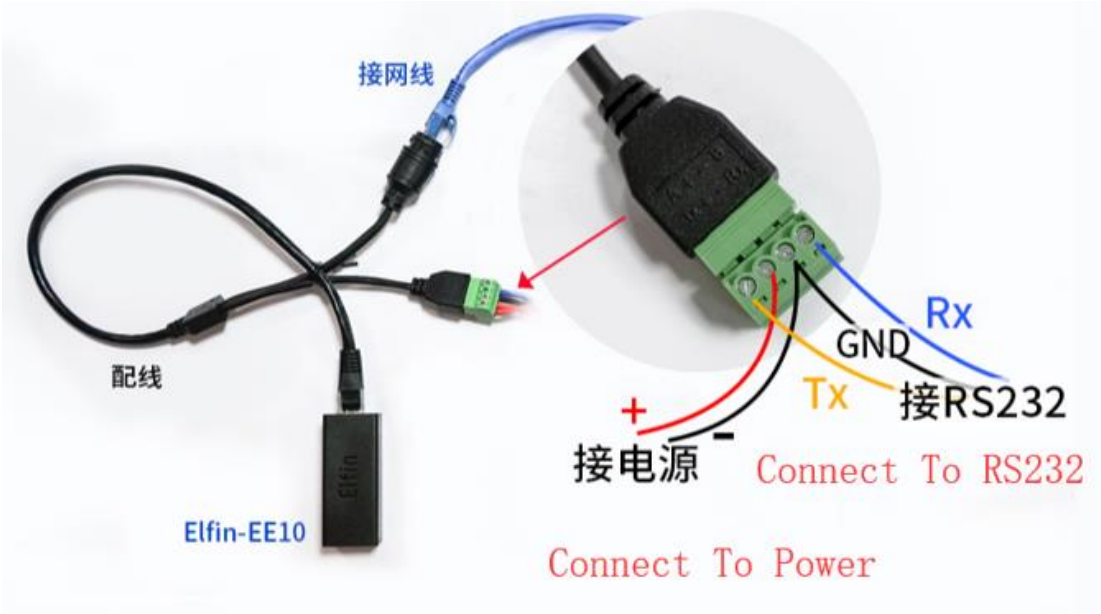
Elfin-EE10 is RS232 interface and Elfin-EE11 is RS485 interface. The EVK include the following attachment.

- Elfin-EE1X product
- Screw driver
- RJ45 to Terminal Transformer

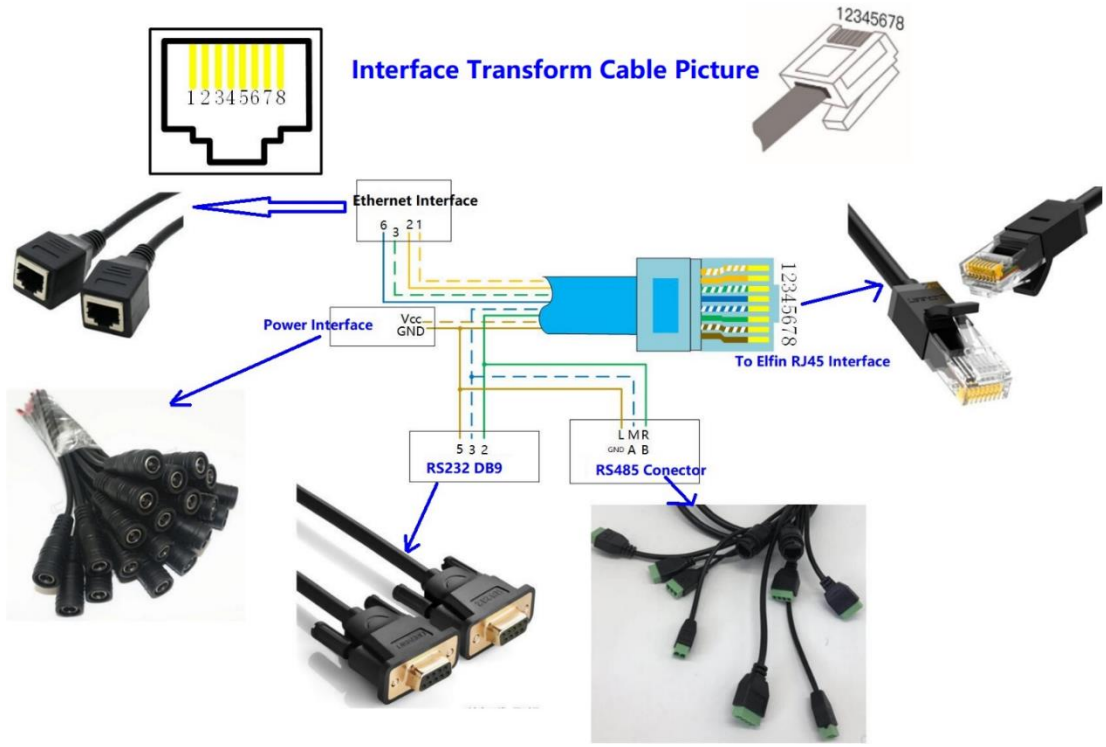
- **EE10 8PIN Connector**

- **EE11 8PIN Connector**

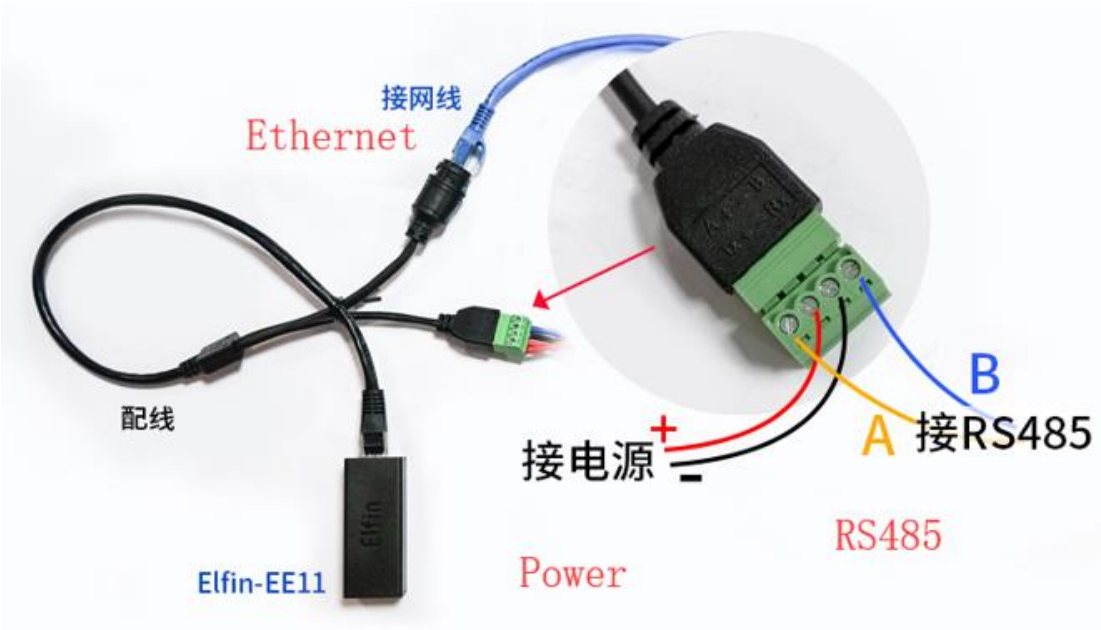
- **EE10 Interface Conversion Cable**



May also make cable according to the following picture.



- **EE11 Interface Conversion Cable**



1.3. HF5111S/HF5111B/HF5111A Hardware Introduction

1 RS232 / RS485 / RS422 serial port (HF5111B, HF5111A), 1 RS485 (HF5111S)
1 Ethernet port

1.4. E10/E20/E30/EP10/EP20/EP40 Hardware Introduction

1 3.3V TTL UART
1 Ethernet port

1.5. HF5122 Hardware Introduction

2 RS232 / RS485 / RS422 serial port
2 Ethernet port

1.6. HF5142B/HF5142A Hardware Introduction

4 RS232 / RS485 / RS422 serial ports(Internal integrate 4 depedent E10-PCBA or EP10-PCBA)
4 Ethernet ports.


RJ45
Uplink
RJ45
Ethernet
DC
9~50V
Port1
RS485/422
Port2
RS485/422
Port3
RS485/422
Port4
RS485/422
LINK1 ACT1
LINK2 ACT2
LINK3 ACT3
LINK4 ACT4
NET POWER
HF5142
4 Ports Serial Device (Linux) Server
RS232/485/422←→Ethernet
I.O.T
WORKSHOP
RS232-1
RS232-2
RS232-3
RS232-4

2. INITIAL SETUP

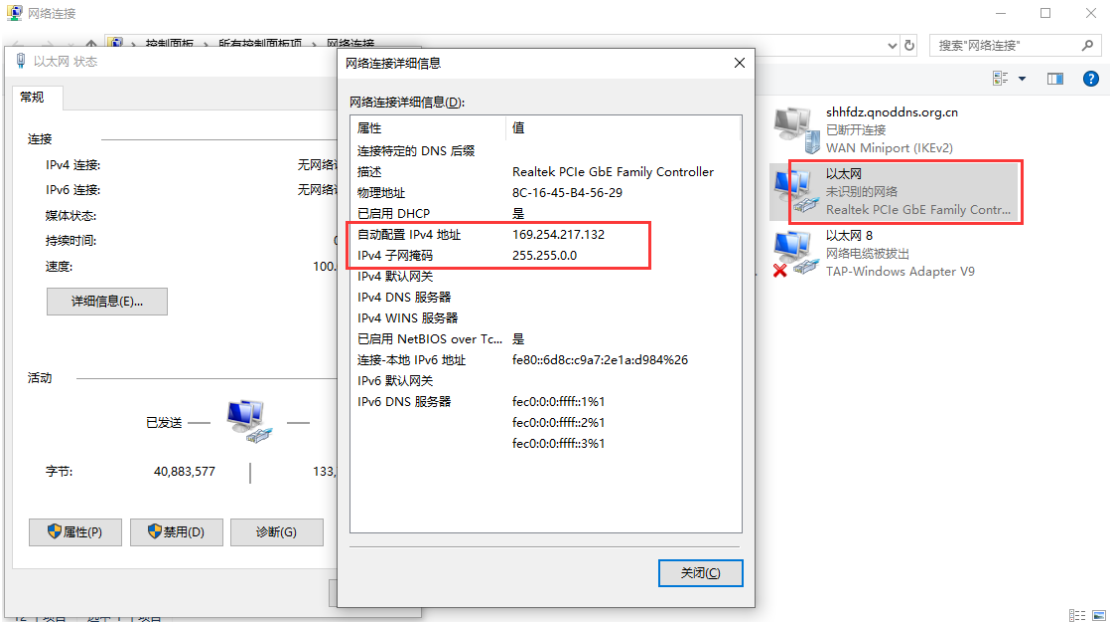
HF Products provide multiple methods to config, webpage and IOTService tools.

Webpage is easy to use, but only for local setup and can not manage multiple device, recommend to use IOTService tools.

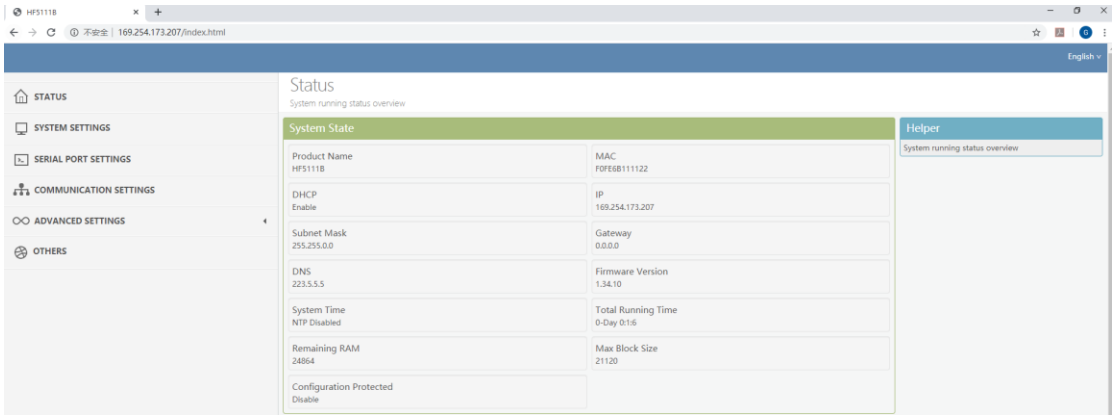
2.1 Webpage Set

Power on product, PC Ethernet connect to product. Set PC IP with Auto DHCP.

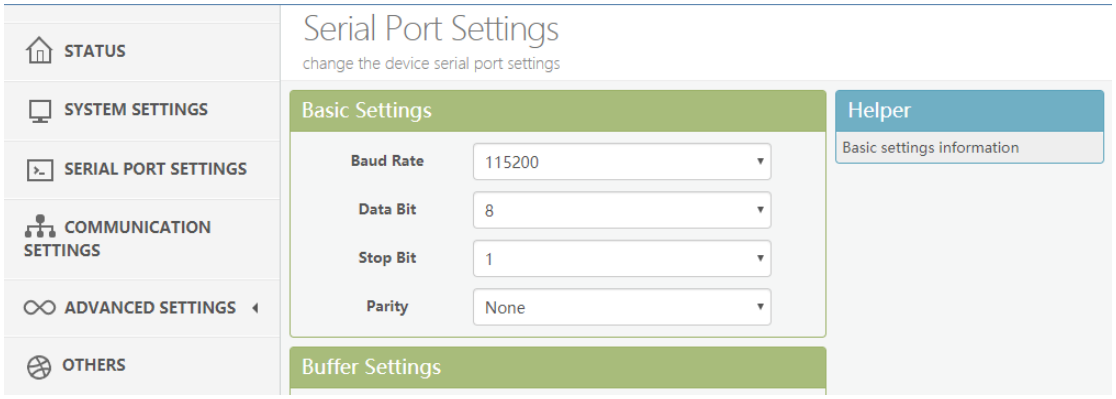
PC got auto-IP 169.254.XXX.XXX.



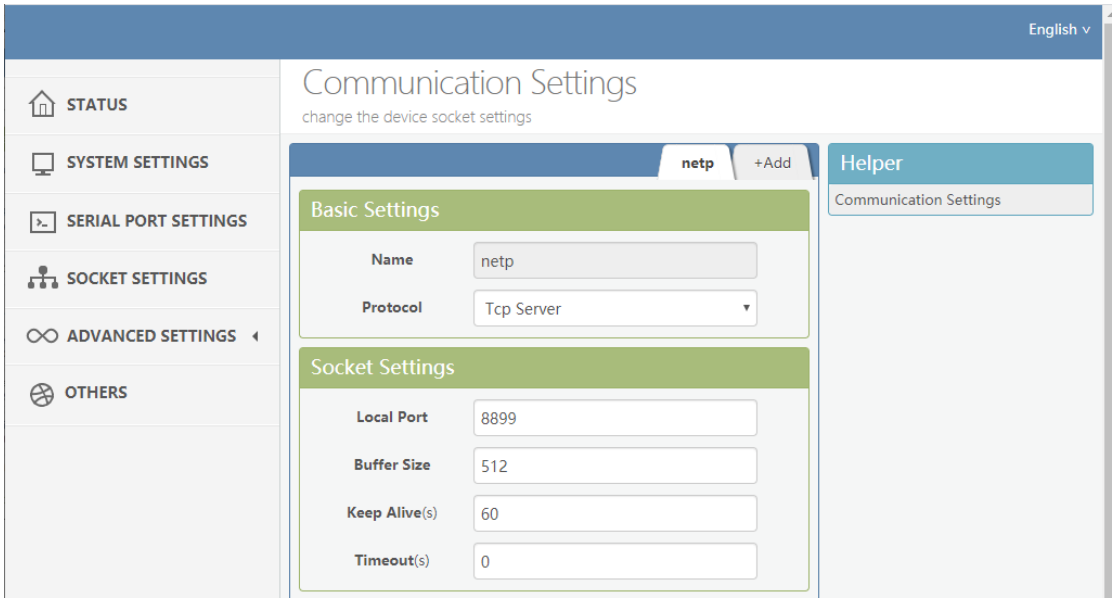
Brower input 169.254.173.207(Except EE10/EE11, these two use 169.254.1.1), input default user name and password with admin/admin to login in. The main page is as following.



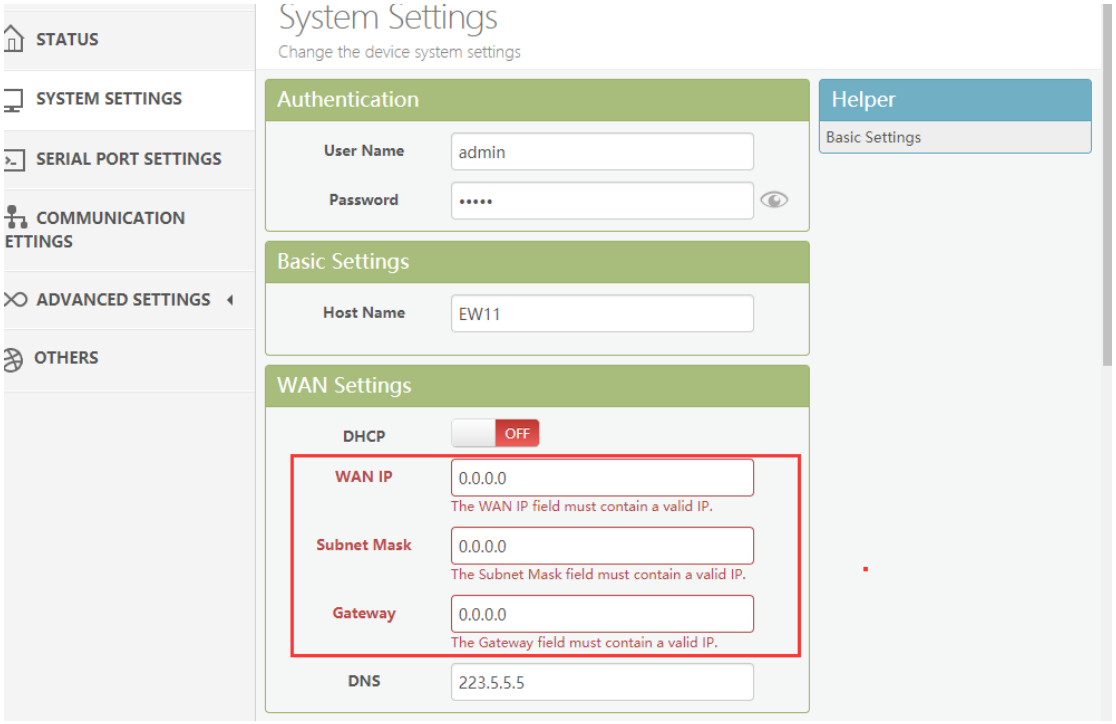
Default UART parameters is as following.



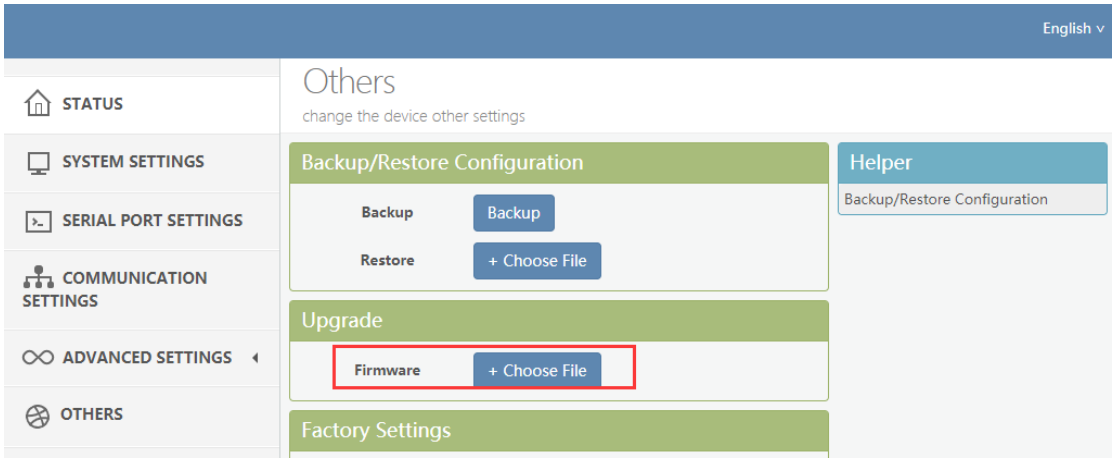
Default socket parameters is as following.



If need static IP, set DHCP to off and input static IP.
Note: setting is valid after reboot.



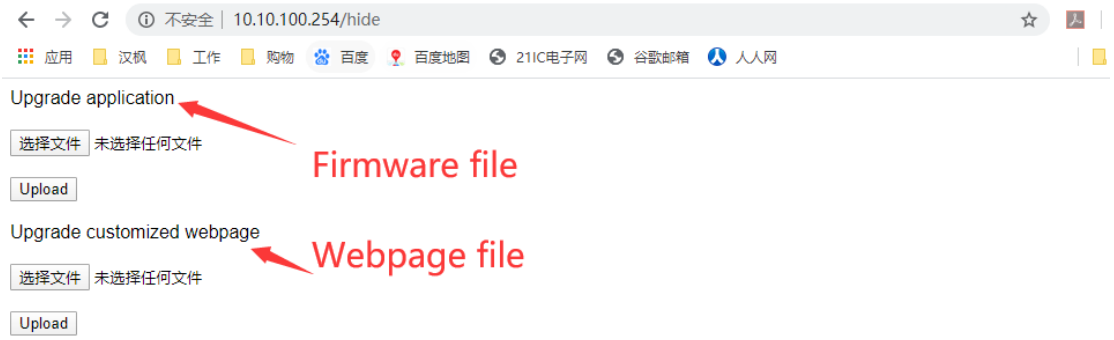
If upgrade firmware at the following position.



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



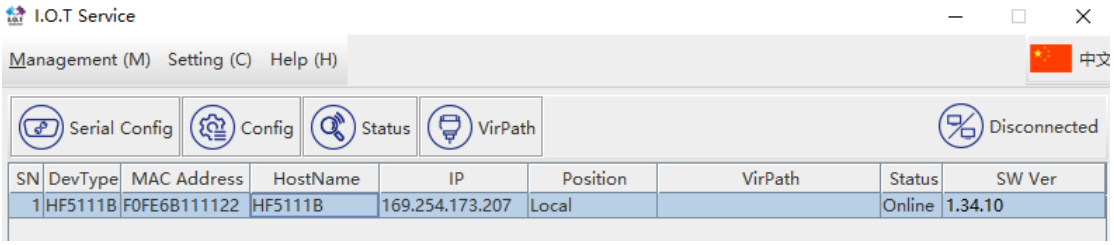
2.2 IOTService Set

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

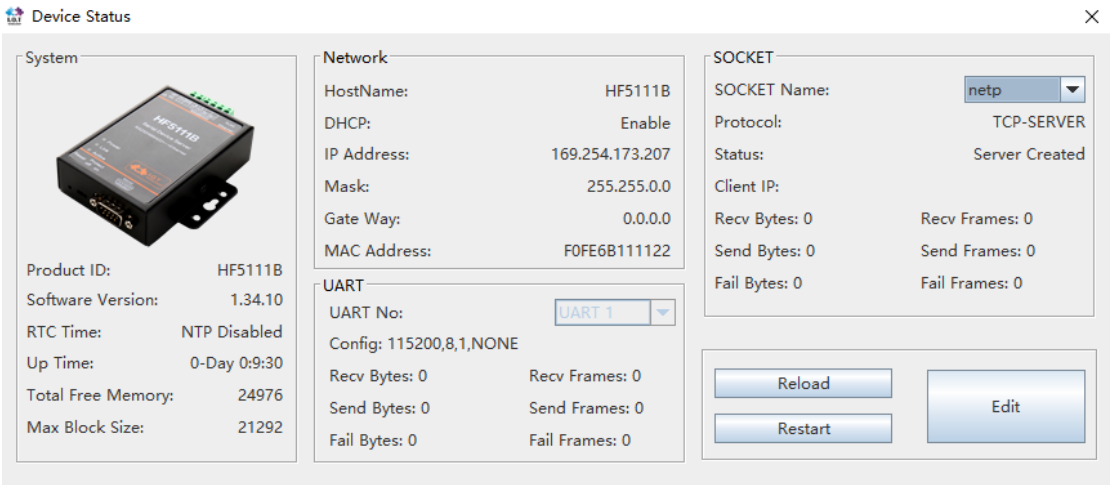
http://www.hi-flying.com/download-center-1/applications-1/download-item-iotservice

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

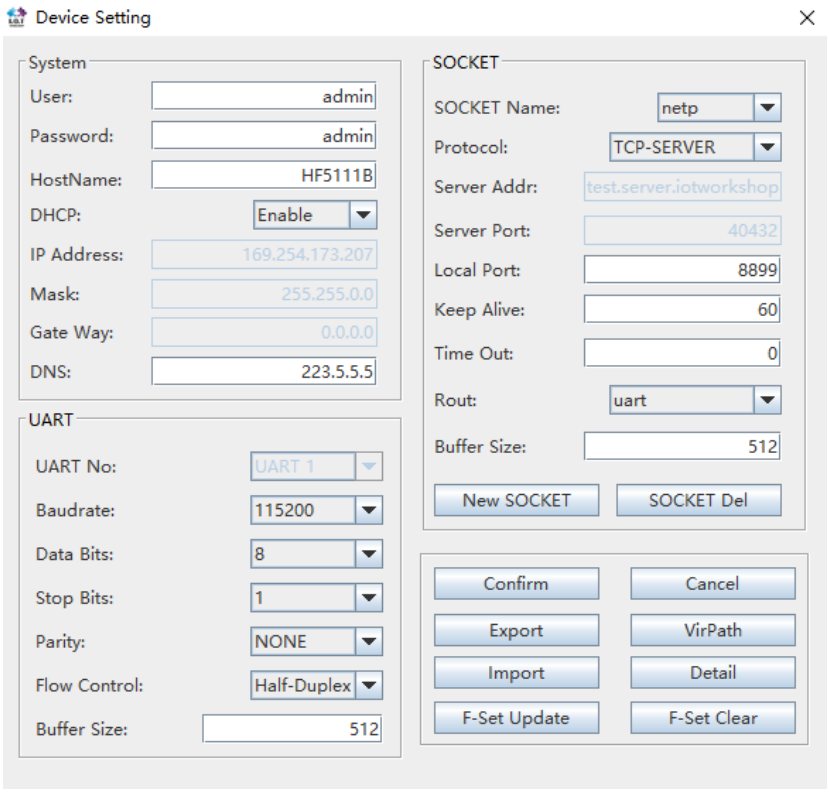
PC connect to products AP(Same as previous chapter), and open tools, The device will be shown in IOTService.



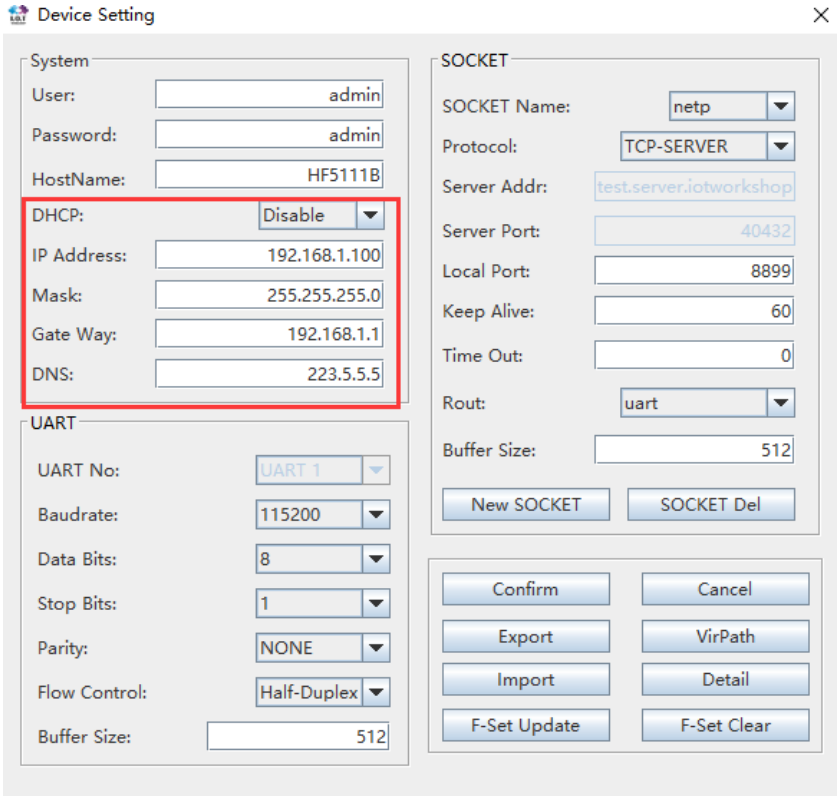
Note: See IOTService doc for more detailed usage, here just simply use it.
Double click the product list to see the device status.



Click Edit to change product setting.
Note: some setting need reboot to be valid. Better do restart operation after setting.



Set static IP if needed.



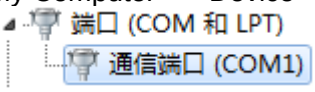
3. SERIAL PORT SETTINGS

3.1. Serial Port Tool SecureCRT

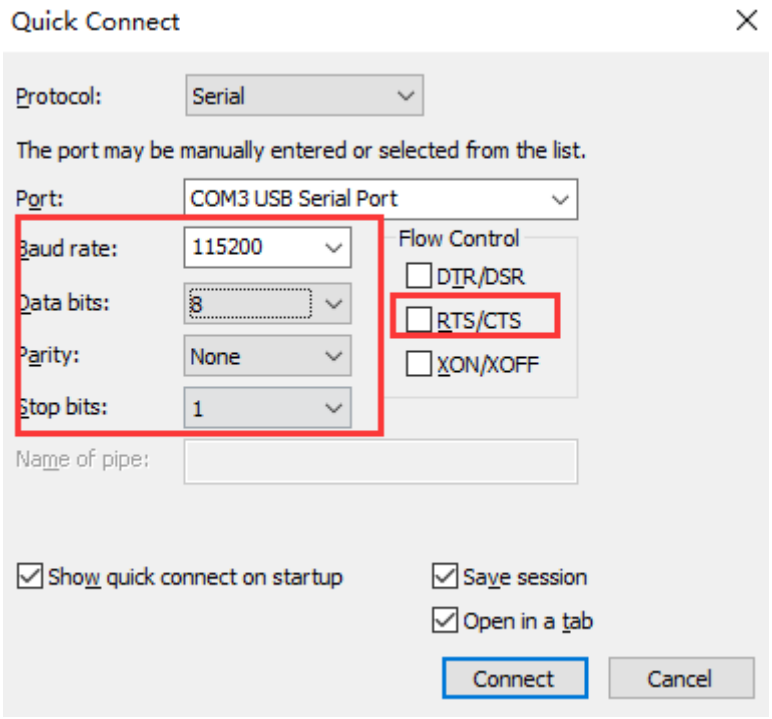
Open SecureCRT find an executable program, click Open.
Click the Quick Connect button to create a connection.

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.



)



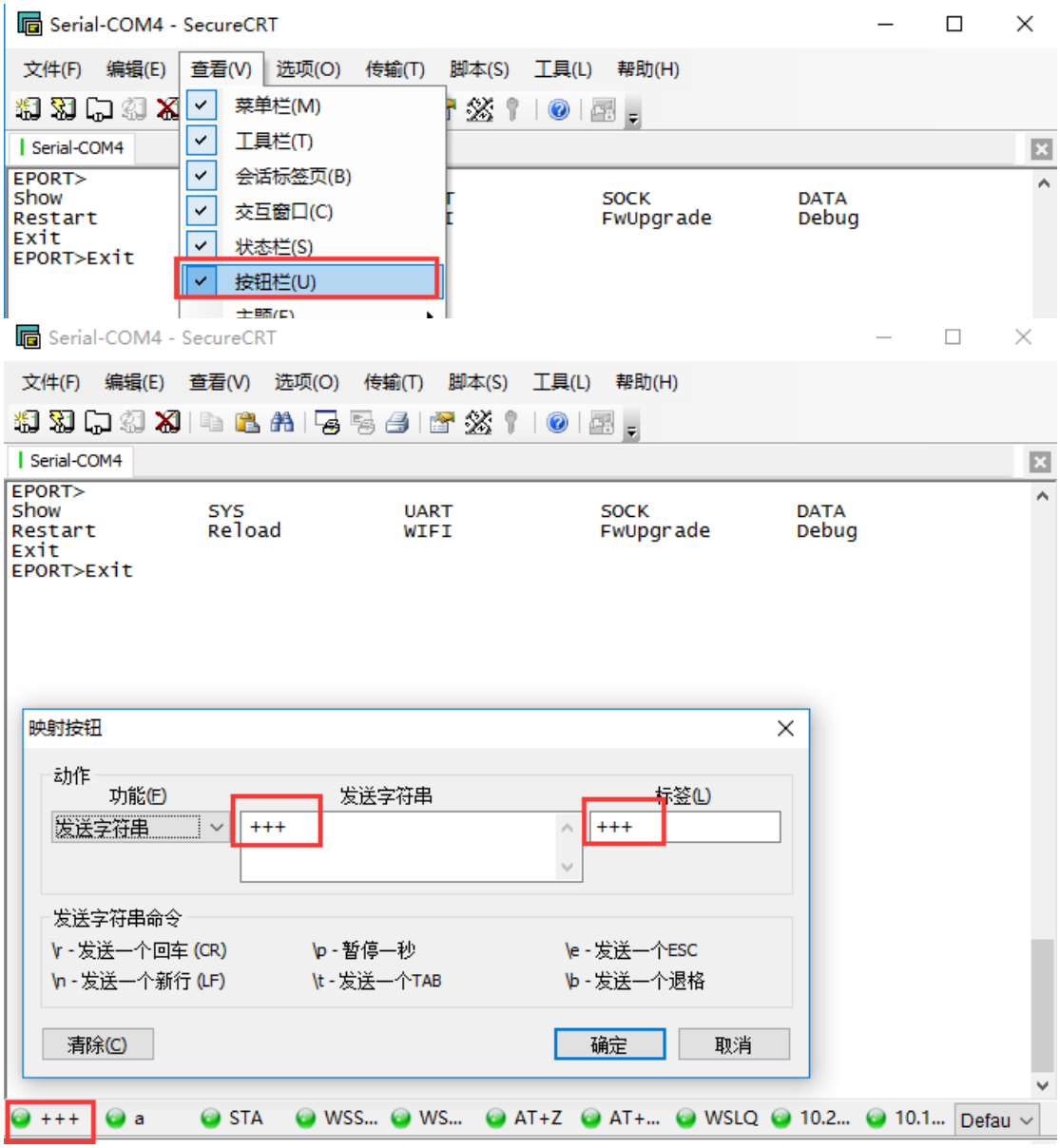
Note: The default serial port data of the device is as shown in the figure above. Users can modify the working parameters of the product by using IOTService.

3.3. Cli Instruction Mode

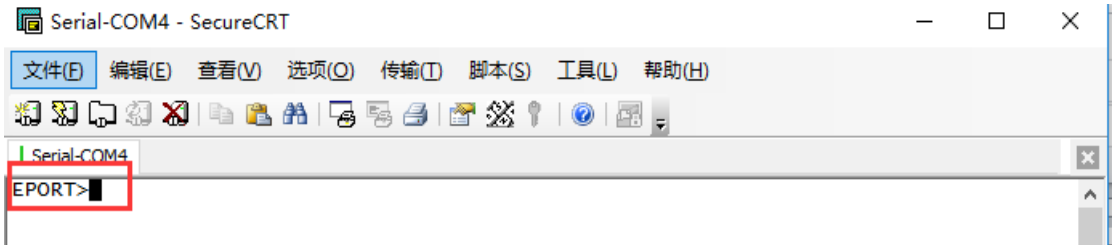
Data transmission needs to be in the transparent transmission mode (the default transparent transmission mode upon power-on). If you need to enter the Cli command mode for configuration, you can do as follows.

- 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.

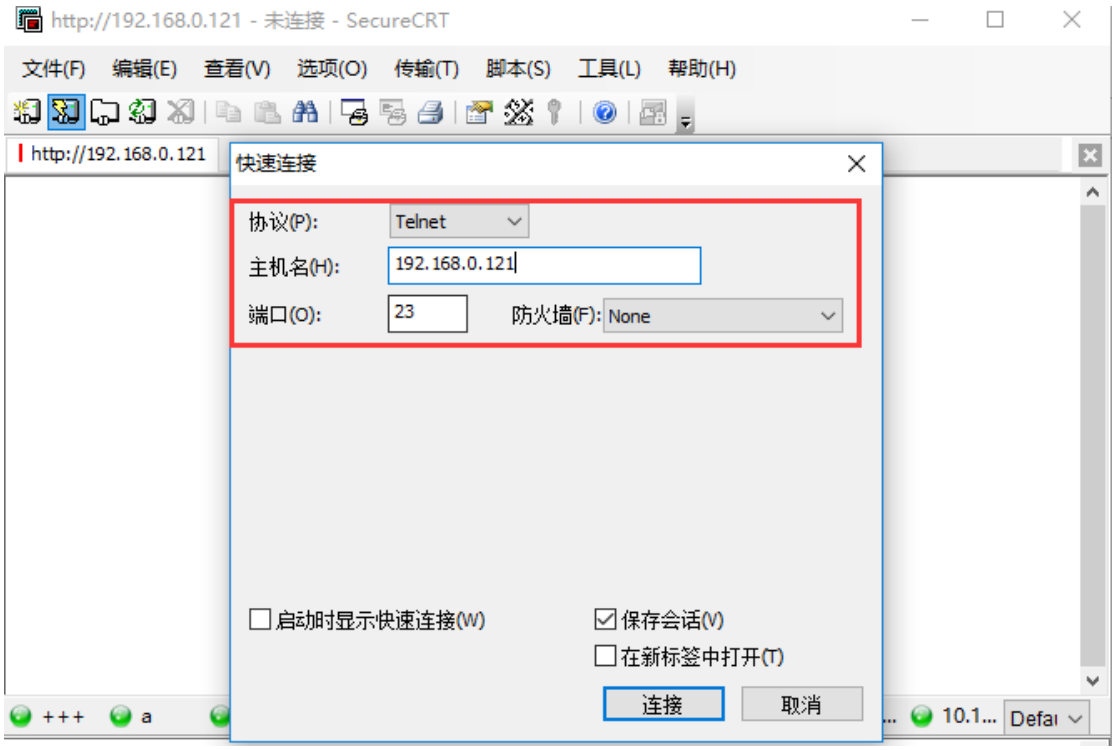


Note:

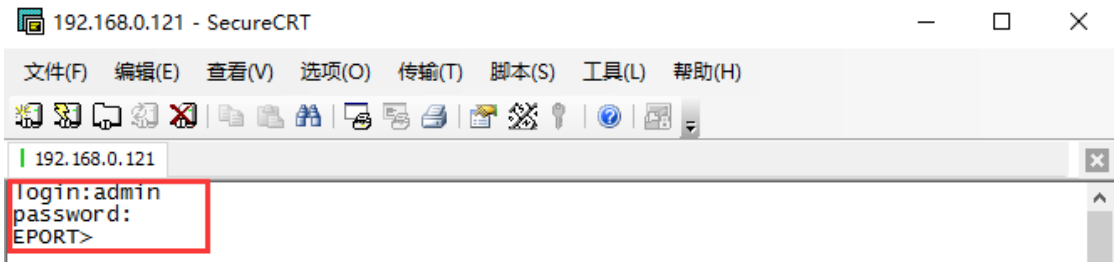
Any serial tool can do this. Sending "+++" must be a continuous package of data, and there can be no other data before and after (such as carriage return and line feed).

- 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.

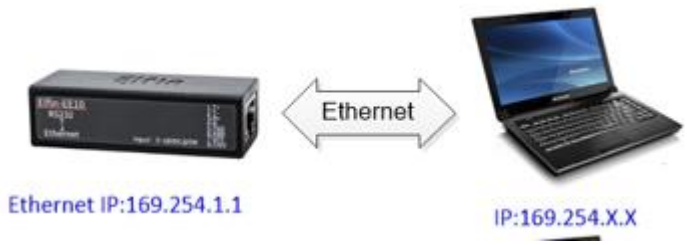


4. TEST EXAMPLE

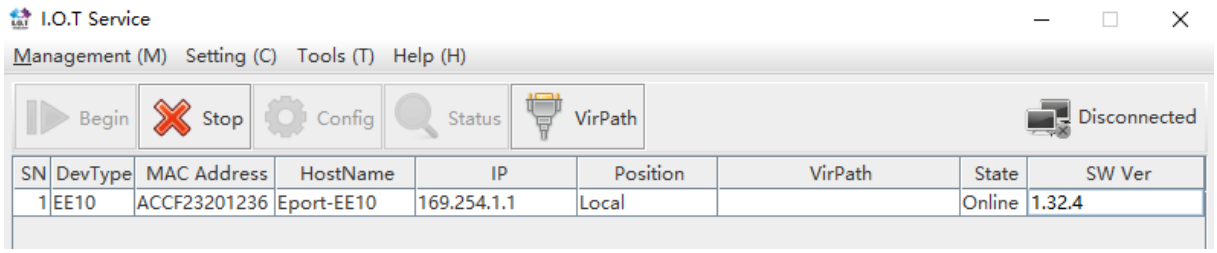
Elfin-EE1X use TCP/IP protocol for communication. There is two main parameters one for IP address and another for port number.

4.1. Ethernet Direct Connect Networking

Auto-IP is used for local area when there is no DHCP server exist, devices will use the Class B 169.254 for communication. Connect device Ethernet with PC, the device will use default auto IP**(EE10 and EE11 use 169.254.1.1, others use 169.254.173.207)**. The PC may use this IP to config the device or transfer data. As the following example



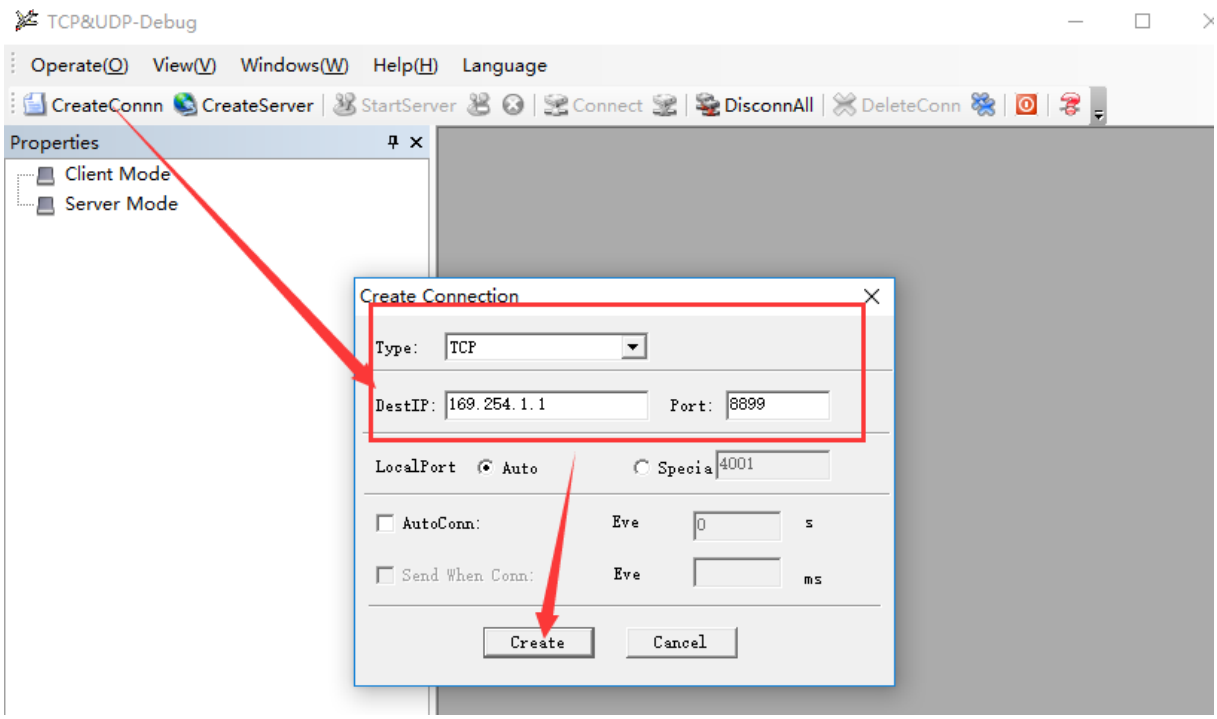
Open IOTService and find the device.



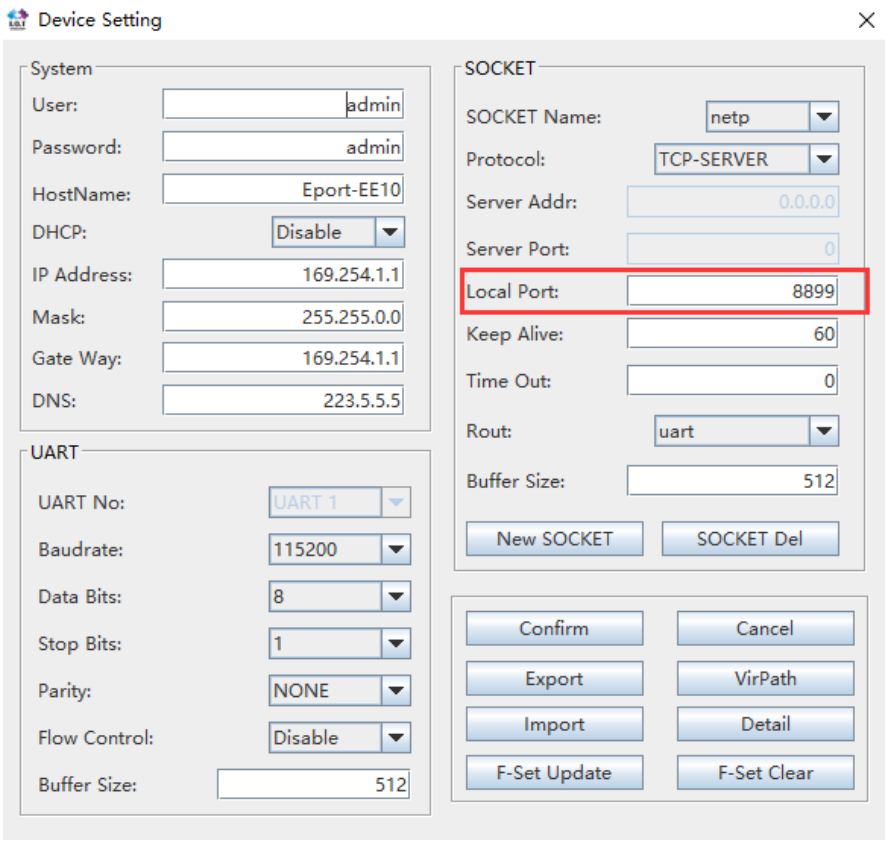
4.2. TCP Server Test in Auto IP Mode

Open TCP&UDP test tool and generate TCP connection as following steps. Device has already created a TCP Server (port 8899) for use. TCP&UDP test tool can be downloaded from our website:

- DestIP：IP address of device which can be found by IOTService.
- Port：Port of TCP Server which can be found by IOTService or set by users own.

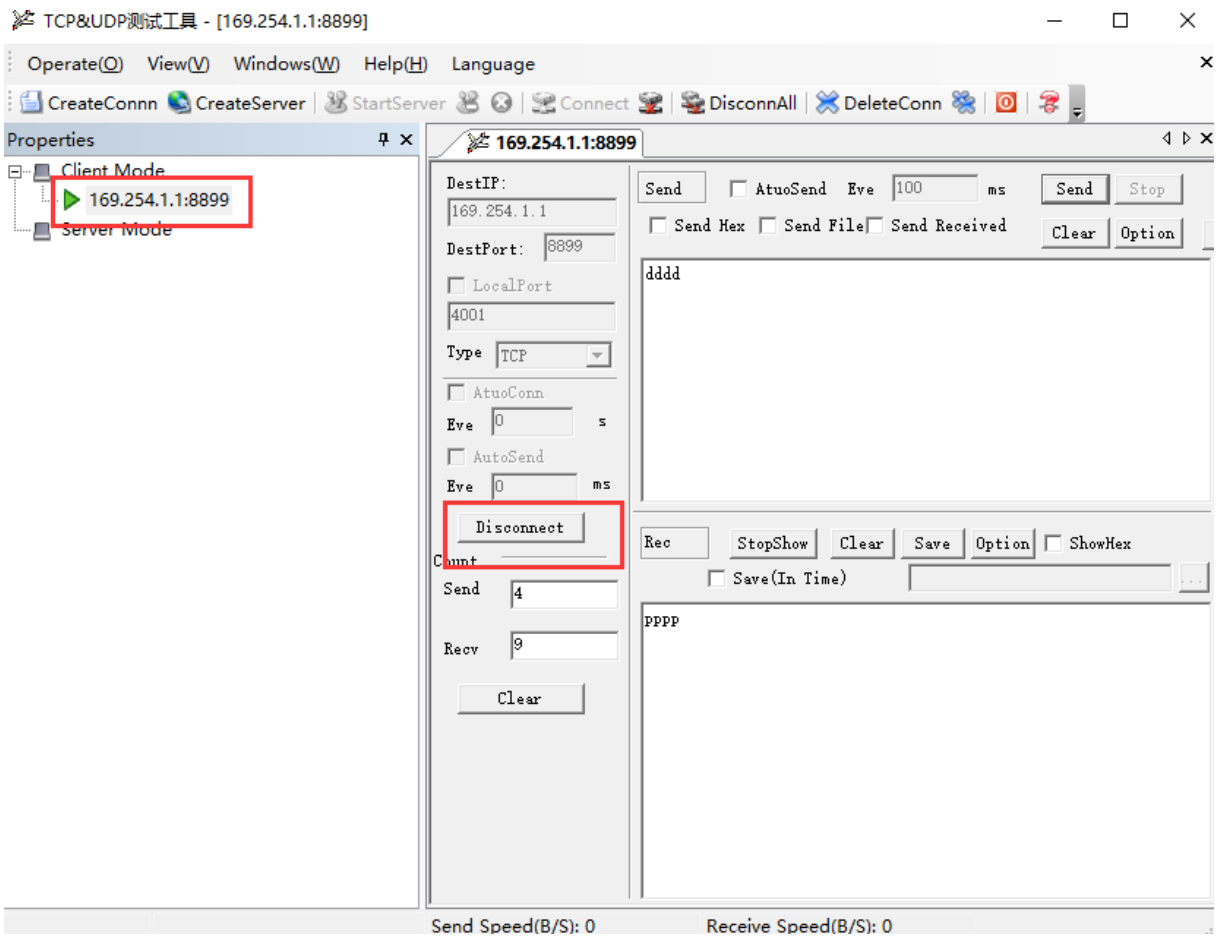


The default socket used by product.

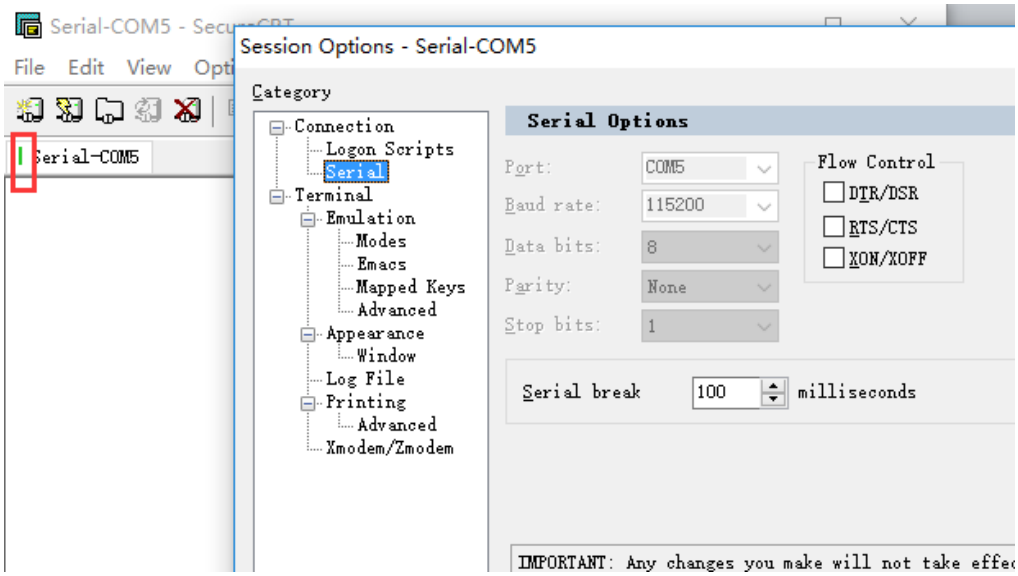


Click Connection to generate TCP connection

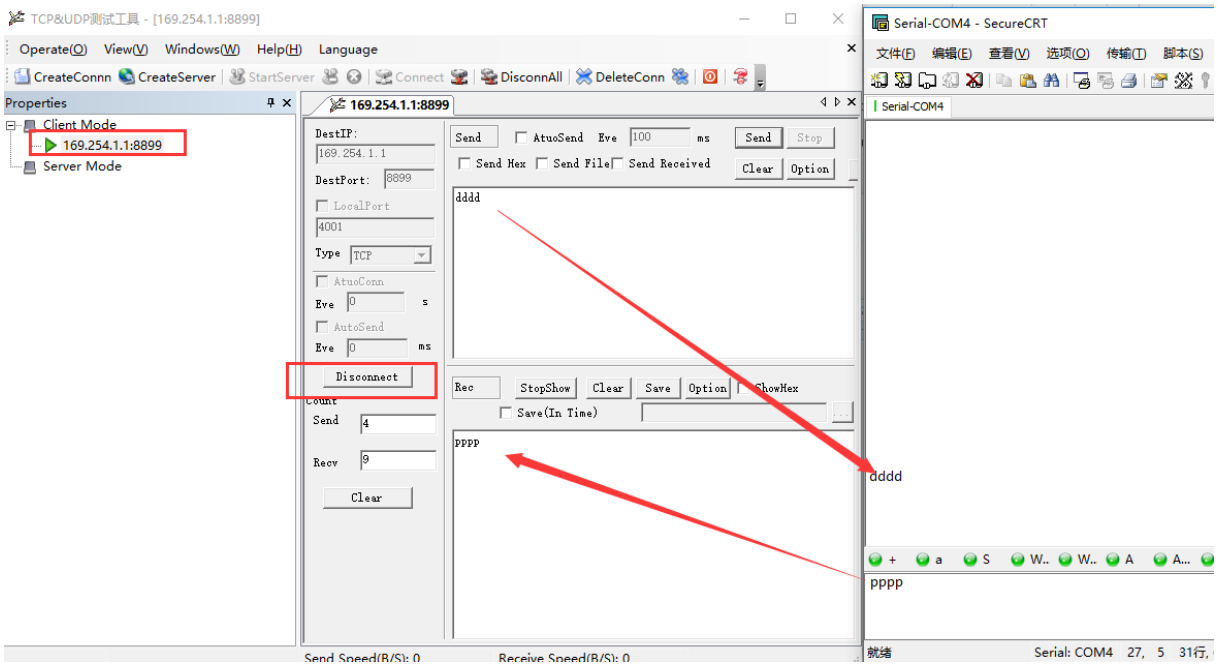
- After successful connection, the left turns to be green arrow, yellow if fails.



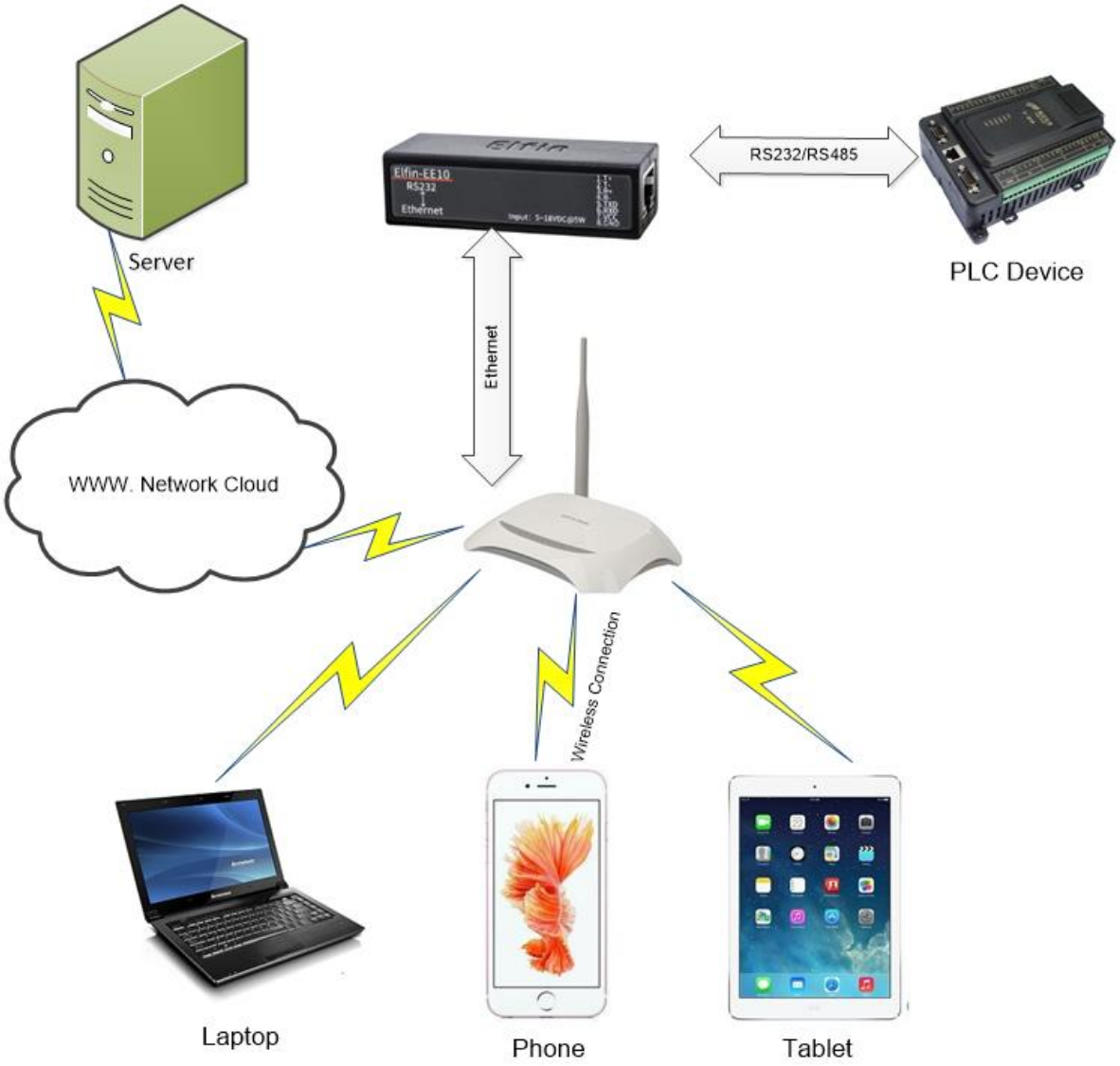
Open serial tool according to following parameters (115200 baud rate as default)



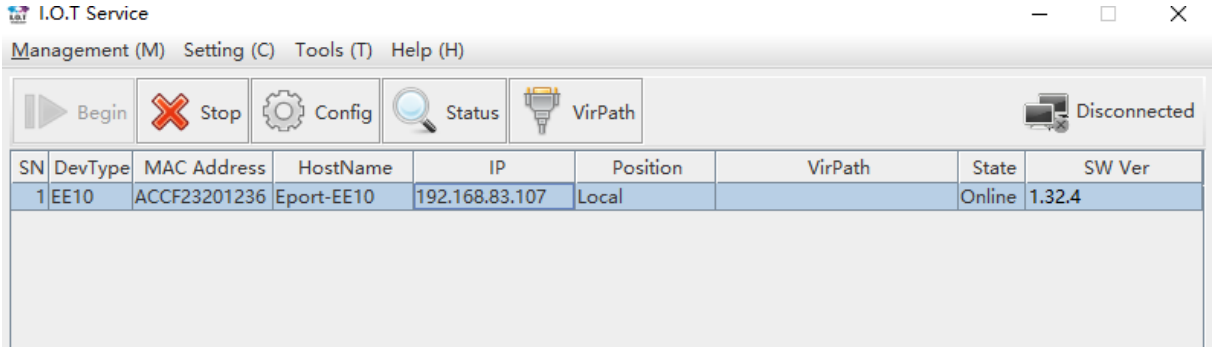
Data transmission between TCP and UART is as following.


TCP&UDP测试工具 - [169.254.1.1:8899]
Operate(O) View(V) Windows(W) Help(H) Language
CreateConnn CreateServer StartServer Connect DisconnAll DeleteConn
Properties
Client Mode
169.254.1.1:8899
Server Mode
169.254.1.1:8899
DestIP:
169.254.1.1
DestPort:
8899
LocalPort
4001
Type TCP
AtuoConn
Eve
AutoSend
Eve
Disconnect
Count
Send
4
Recv
9
Clear
Send AtuoSend Eve 100 ms Send Stop
Send Hex Send File Send Received Clear Option
dddd
Rec StopShow Clear Save Option ShowHex
Save(In Time)
pppp
Send Speed(B/S): 0
Receive Speed(B/S): 0
Serial-COM4 - SecureCRT
文件(F) 编辑(E) 查看(V) 选项(O) 传输(T) 脚本(S)
Serial-COM4
dddd
pppp
就绪
Serial: COM4 27, 5 31行,

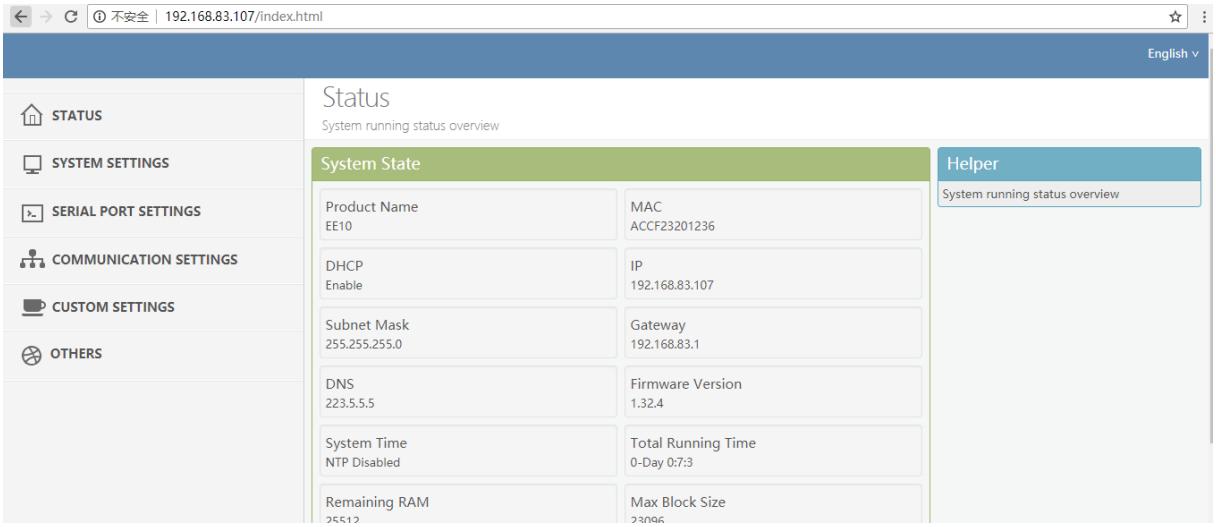
4.3. Router Networking



Elfin-EE1X connect to router LAN and PC also connect to the same router. PC open IOTService tools and the device will show on the tools.



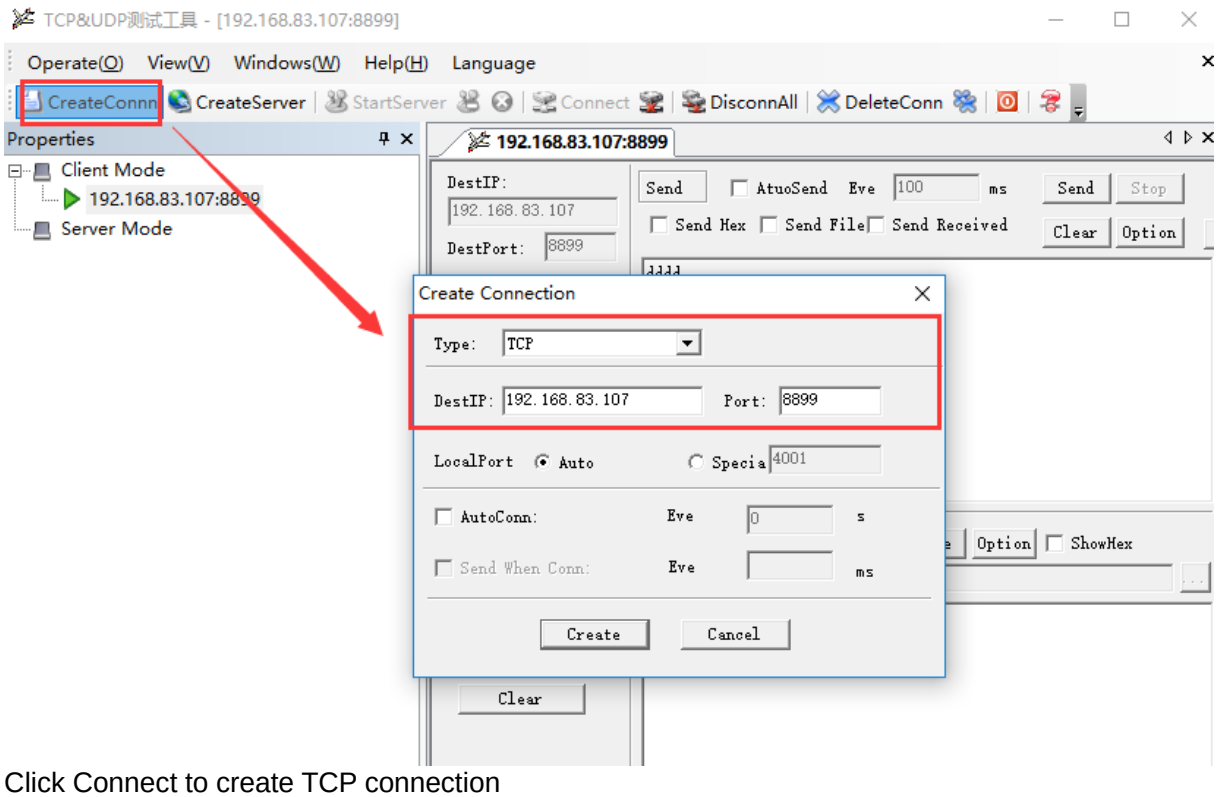
Can also use this IP to enter the device webpage (default login account is admin/admin)



4.4. TCP Server Test

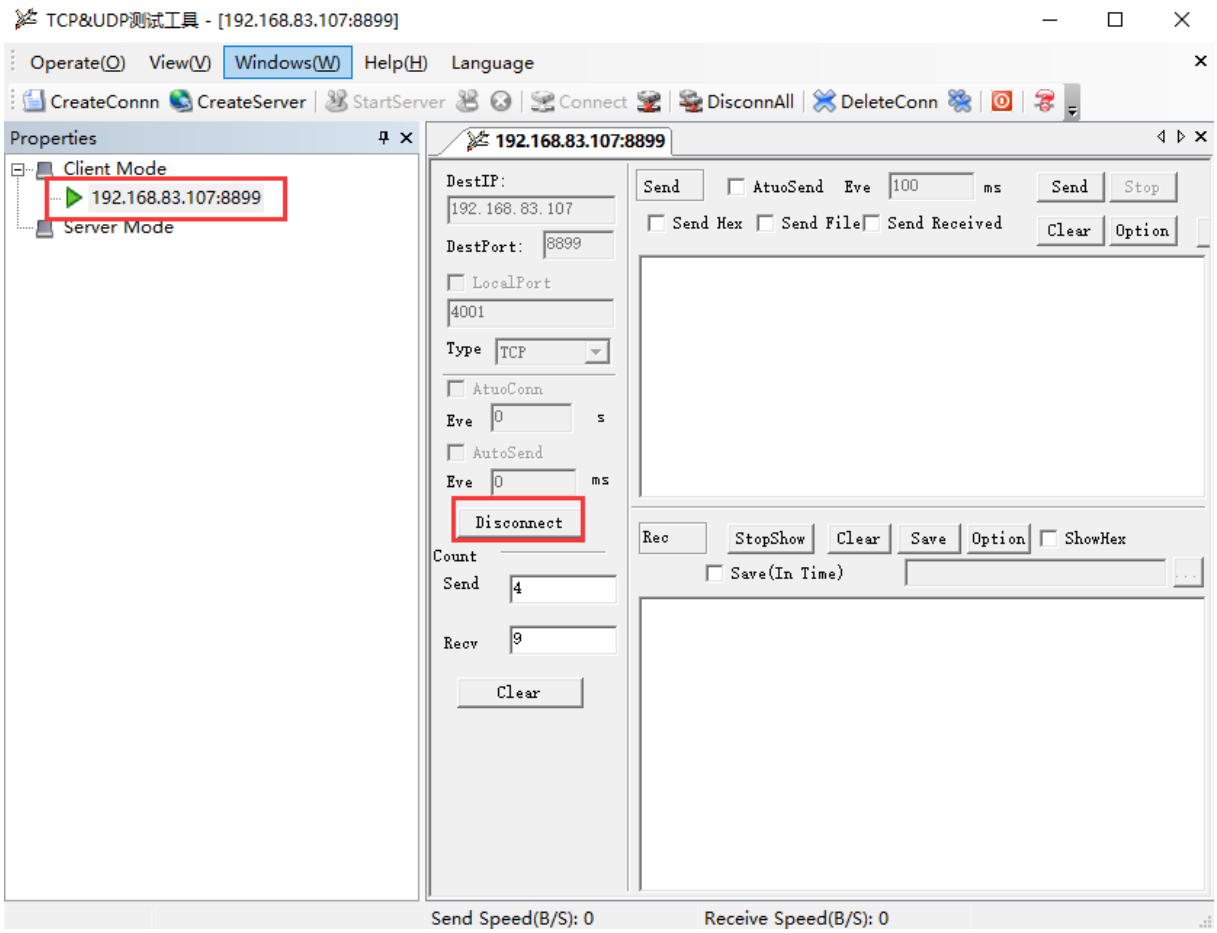
Open TCP&UDP test tool and generate TCP connection as following steps. Device has already created a TCP Server (port 8899) for use. TCP&UDP test tool can be downloaded from the website:

- DestIP：Destination IP address.
- Port：Destination Port.

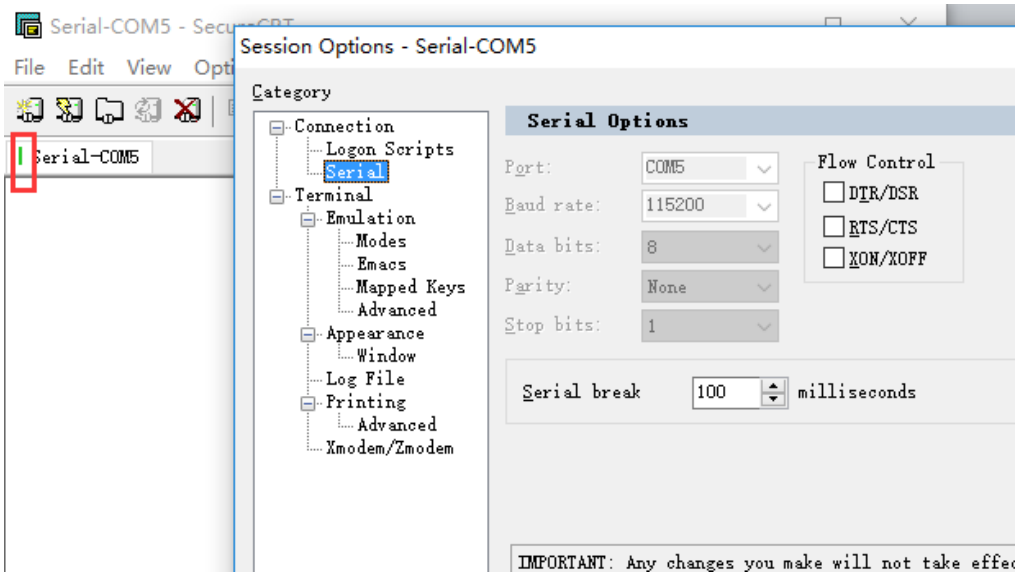


Click Connect to create TCP connection

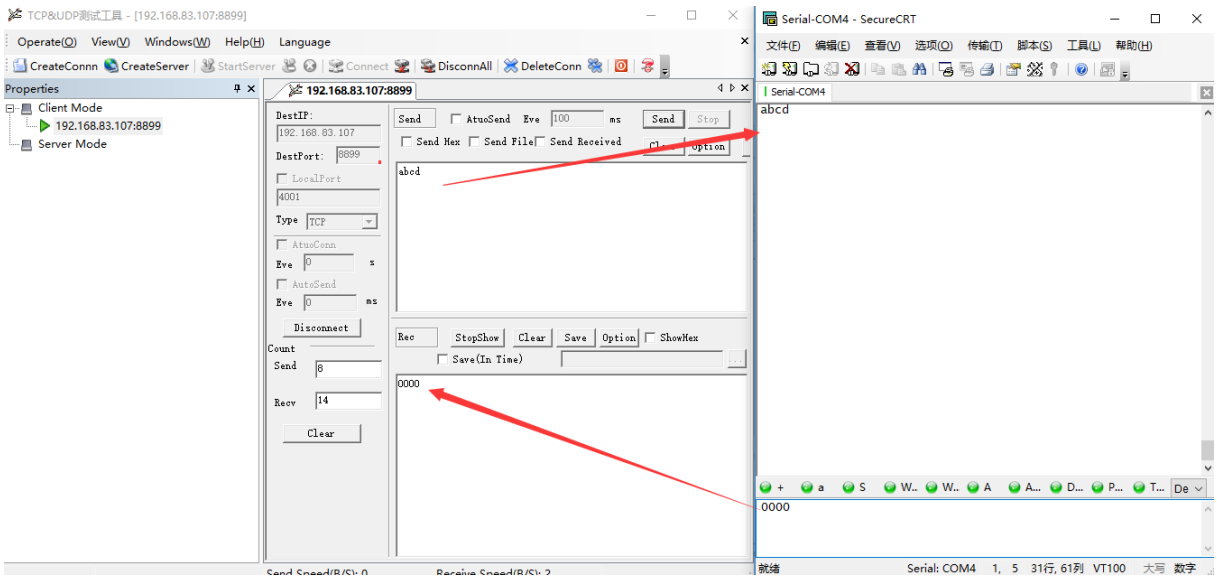
- After successful connection, the left turns to be green arrow.



Open serial tool according to following parameters (115200 baud rate as default)

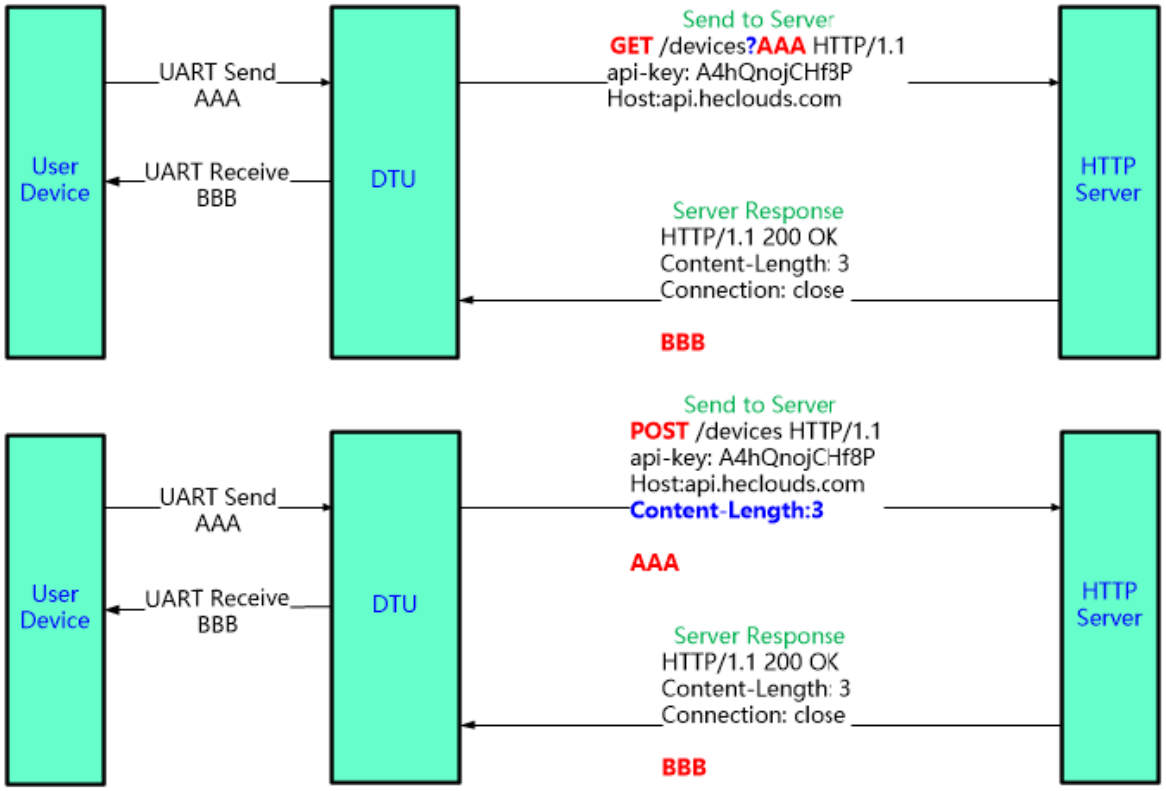


Mutual data transmission between TCP and serial port.



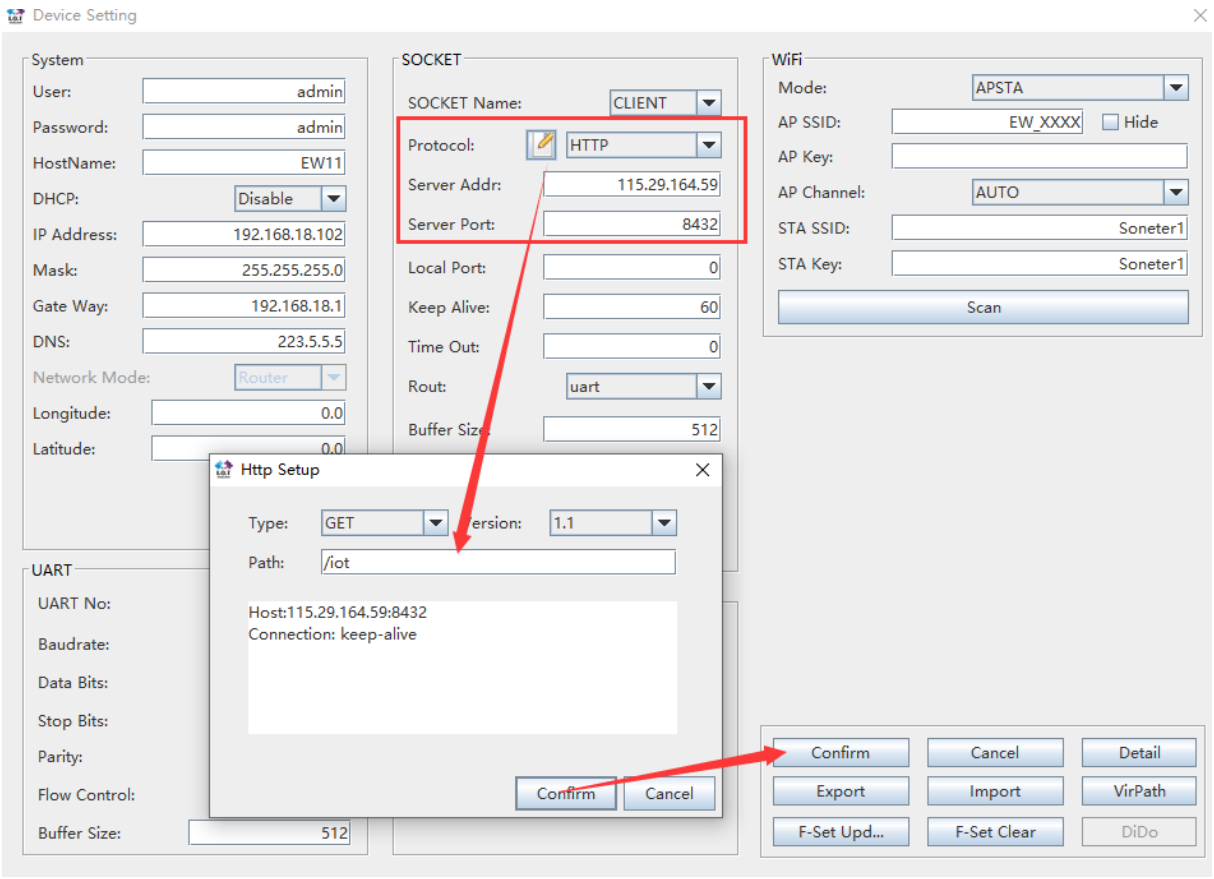
4.5. HTTP Client Test

HTTP data flow is as following, take EW11 as example, all HTTP related setting is the same.

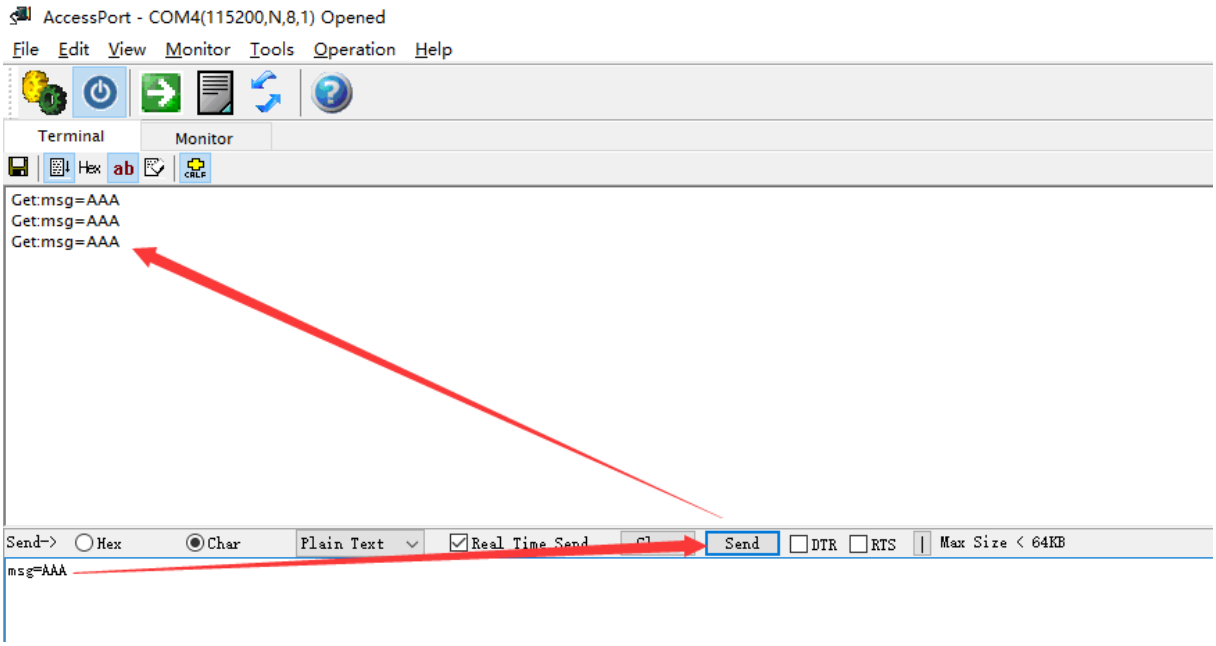


- **HTTP GET Test:**

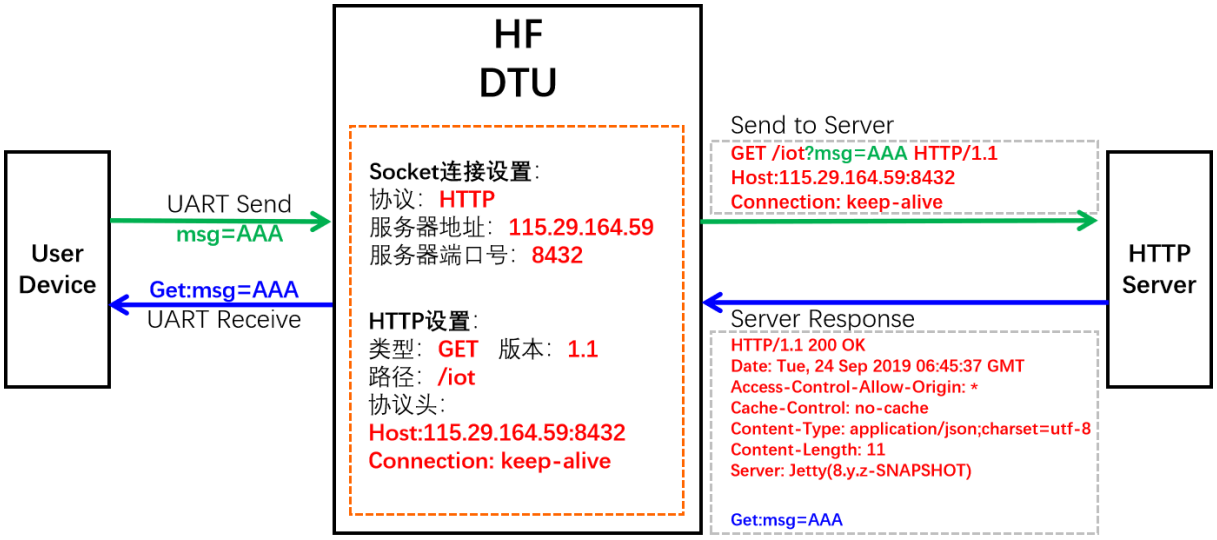
  Test server address: 115.29.164.59
  Test server port: 8432
  Path: /iot
  Header:
  Host:115.29.164.59:8432
  Connection: keep-alive
  Products setting as following.



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

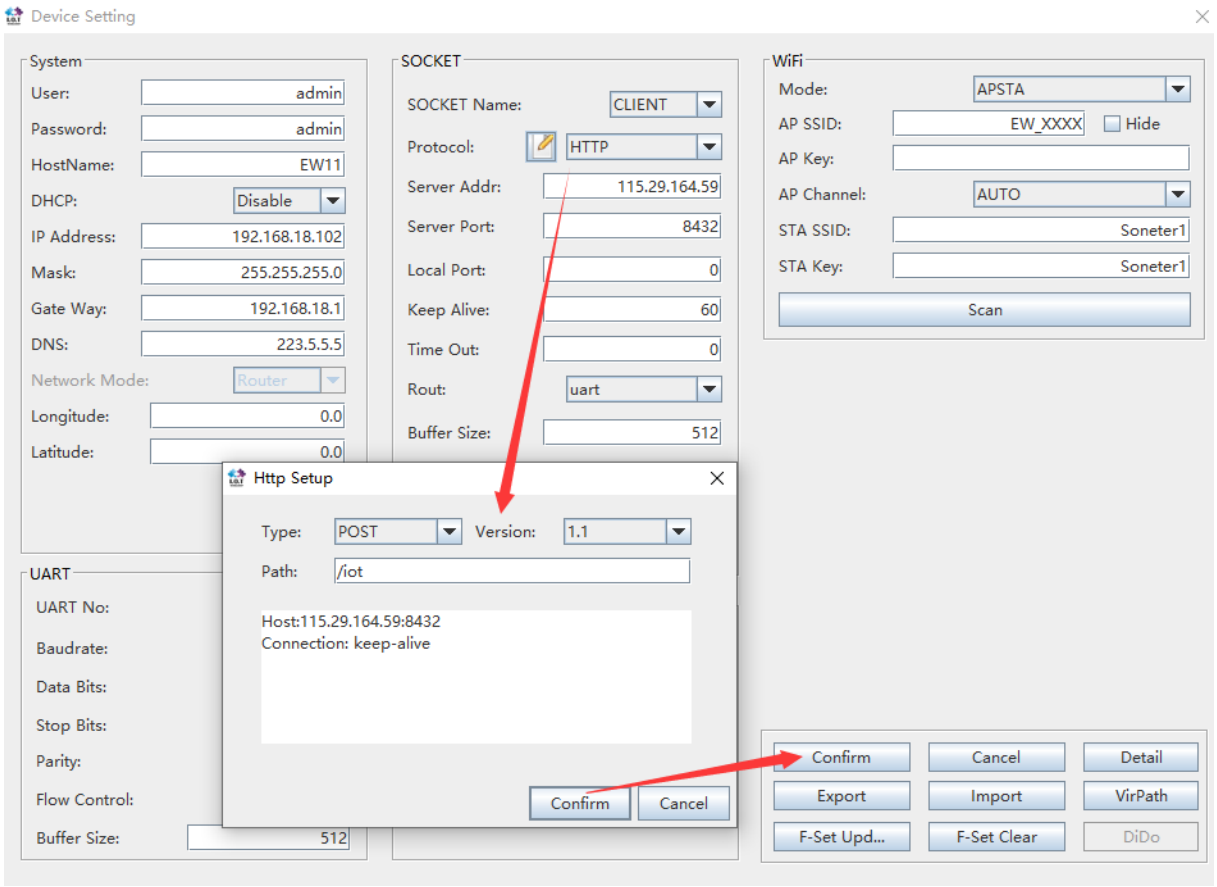


Data flow is as following.

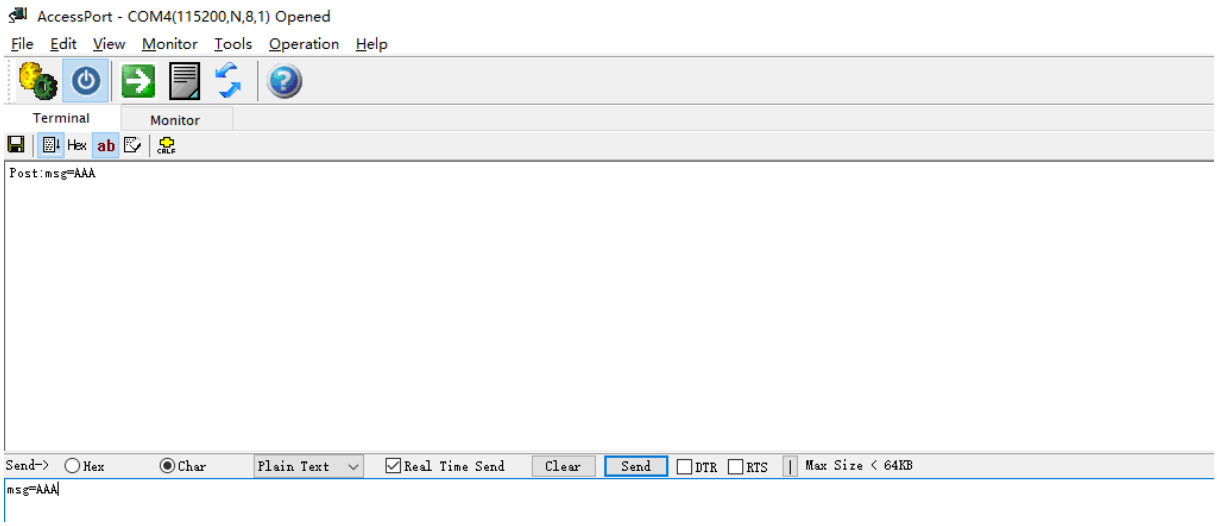


- **HTTP POST Test:**

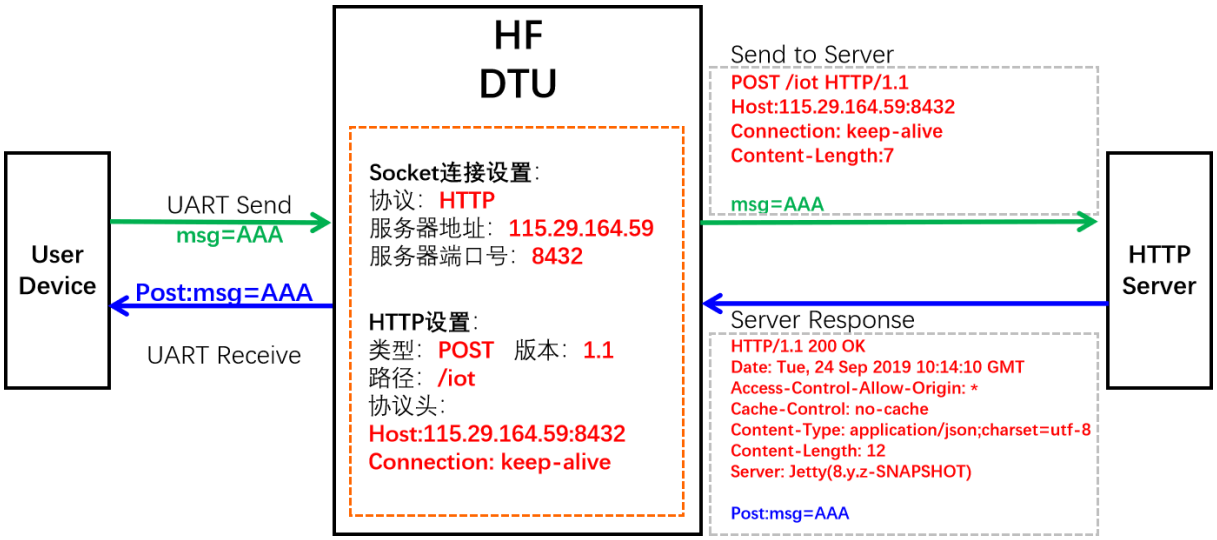
  Test server address: 115.29.164.59
  Test server port: 8432
  Path: /iot
  Header:
  Host:115.29.164.59:8432
  Connection: keep-alive
  Products setting as following.



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

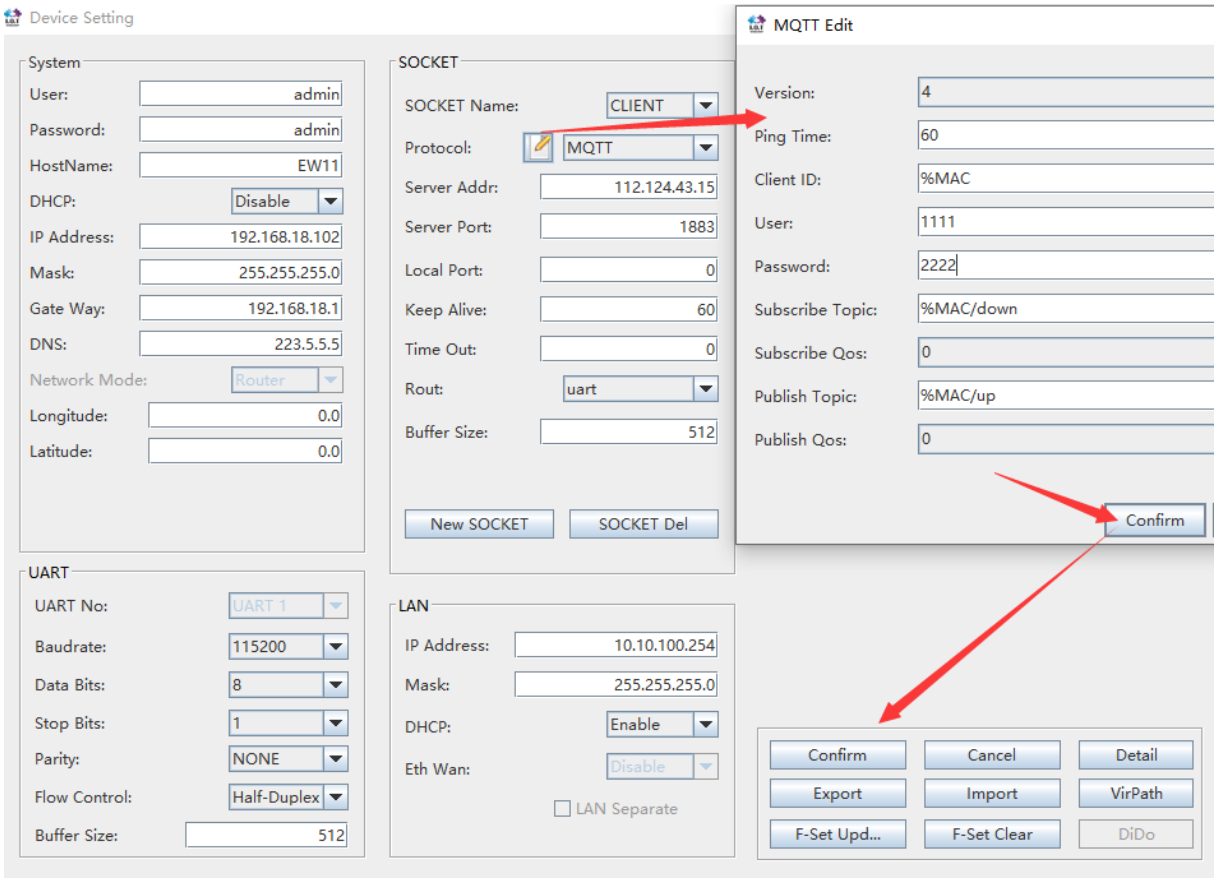


Data flow is as following.

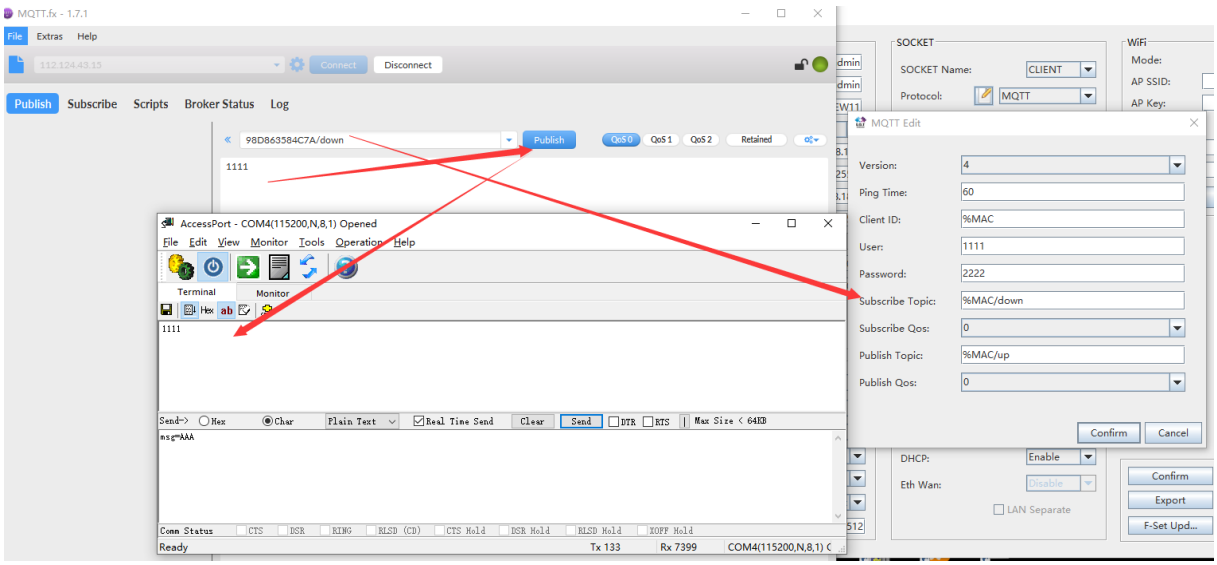


4.6. MQTT Client Test

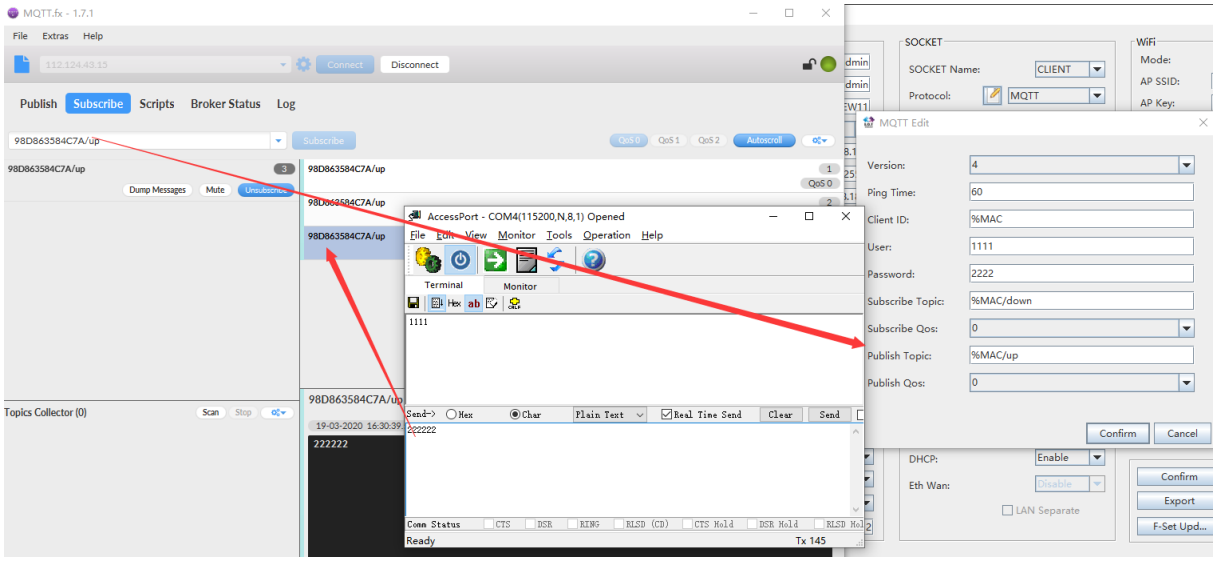
Test server address: 112.124.43.15
Test server port: 1883
Device setting is as following.



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.

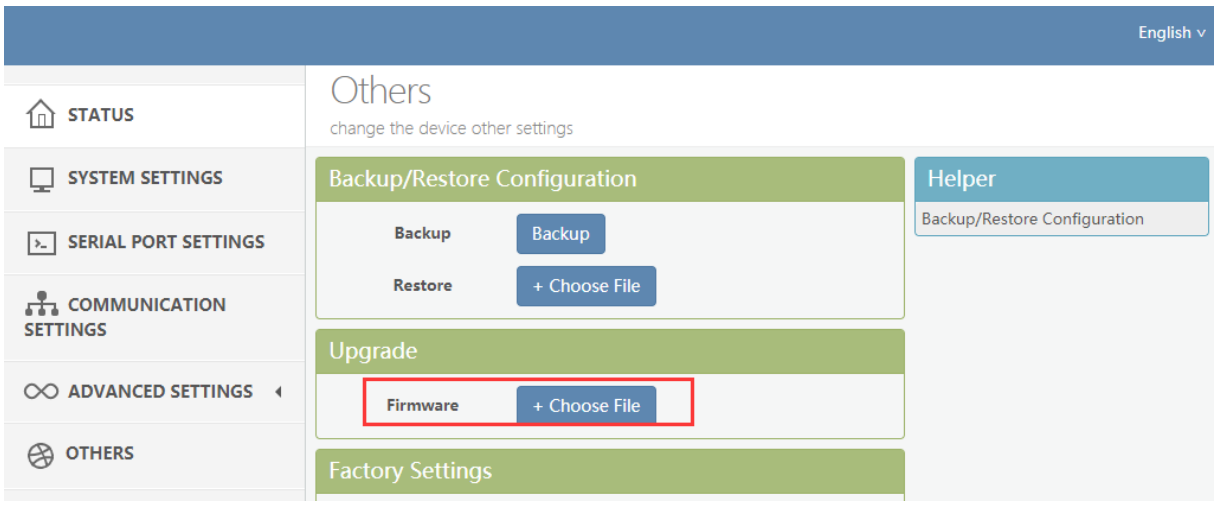


4.7. Firmware Upgrade

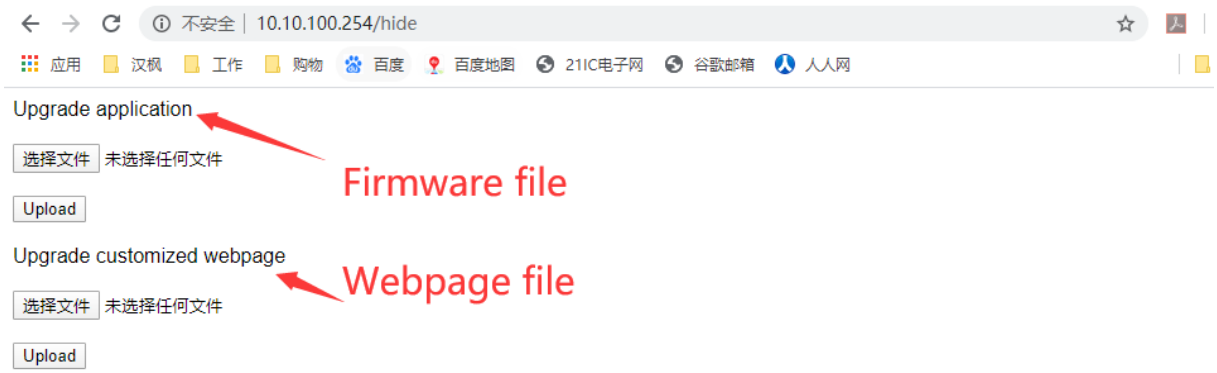
Firmware download address:

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 chagne). Login with IP/hide.

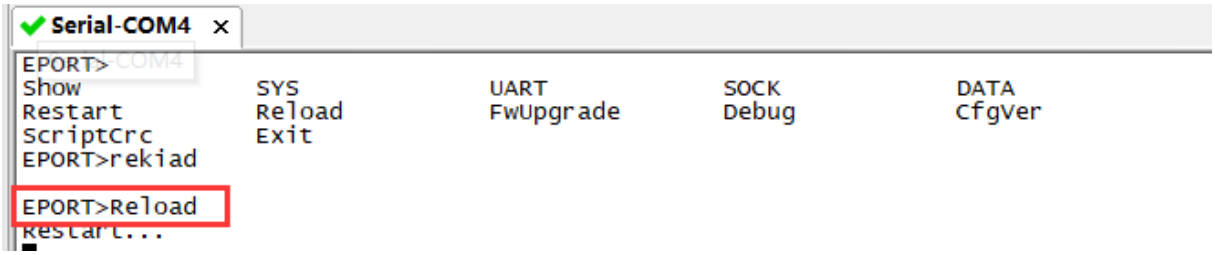


- **IOTService Remote Upgrade:**
  Refer to IOTService tools doc for remote upgrade.

4.8. 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**



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

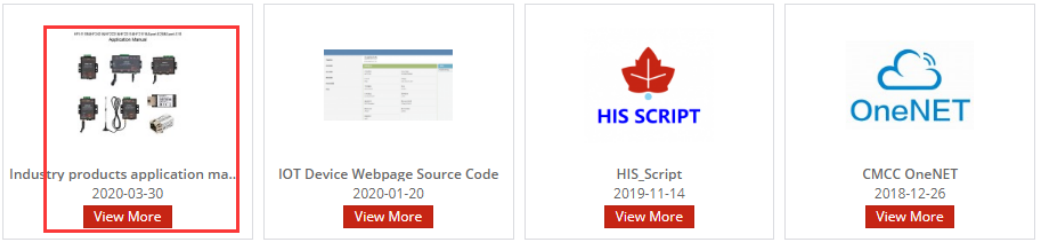
Reload Pin (Button) function:

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

4.9. More Application Case

See following for more.

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



5. HF5122 NETWORK CREATION

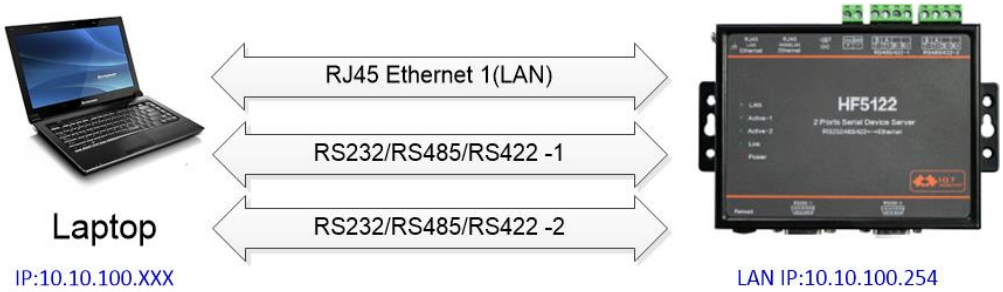
5.1. Basic Usage

The Single UART usage is the same as above, the following introduce double UART usage.

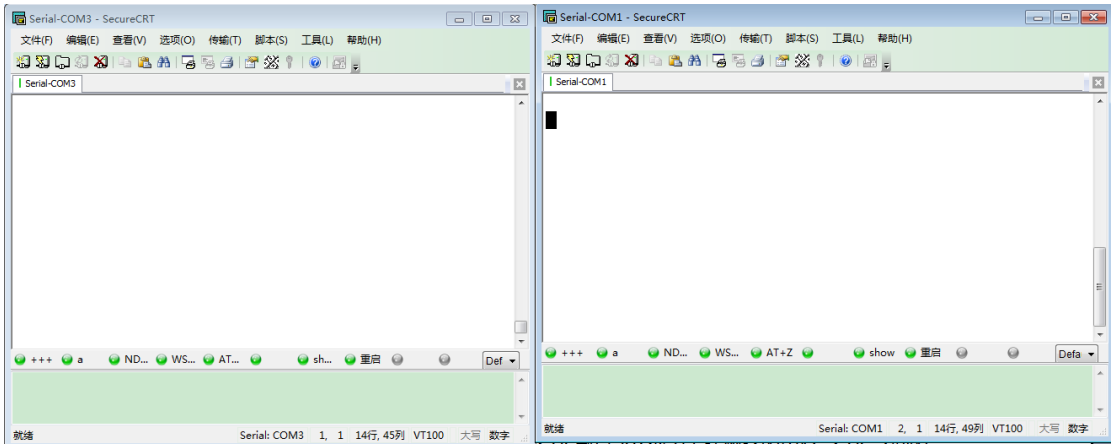
5.2. TCP Server Test Two

This chapter will explain dual serial port and Socket to send and receive data in the same time.

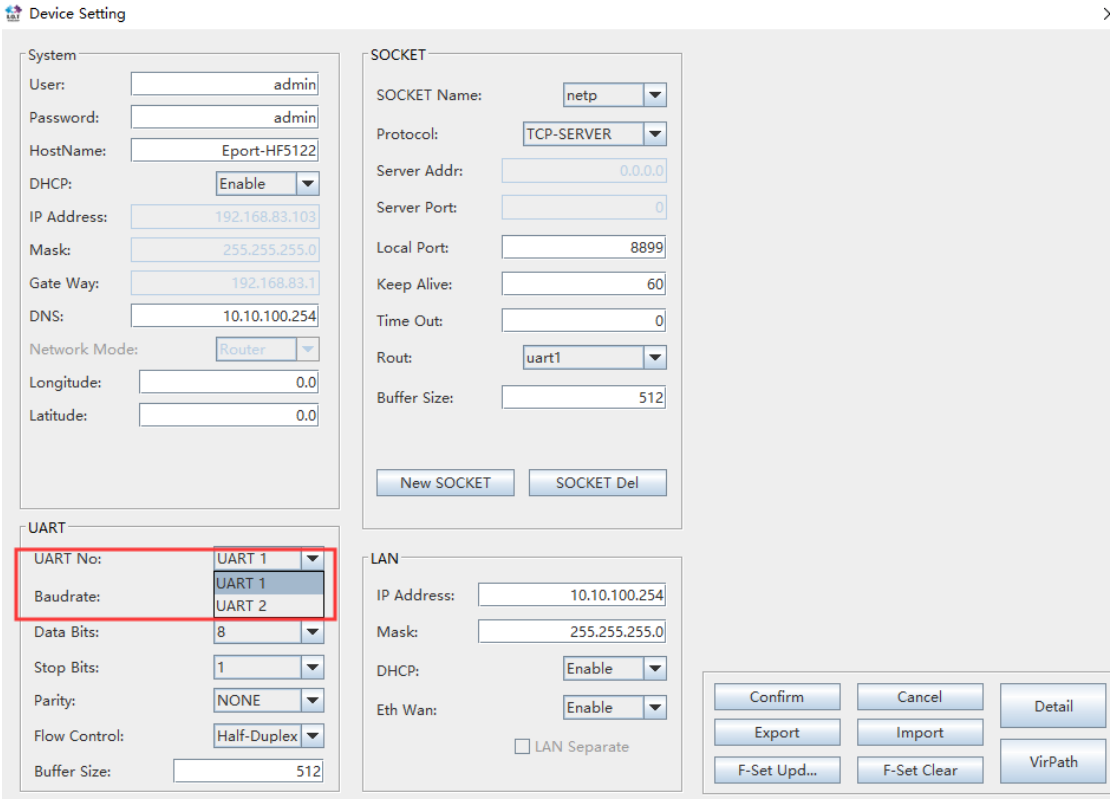
Use serial cable to connect RS232-1 and RS232-2 with PC.



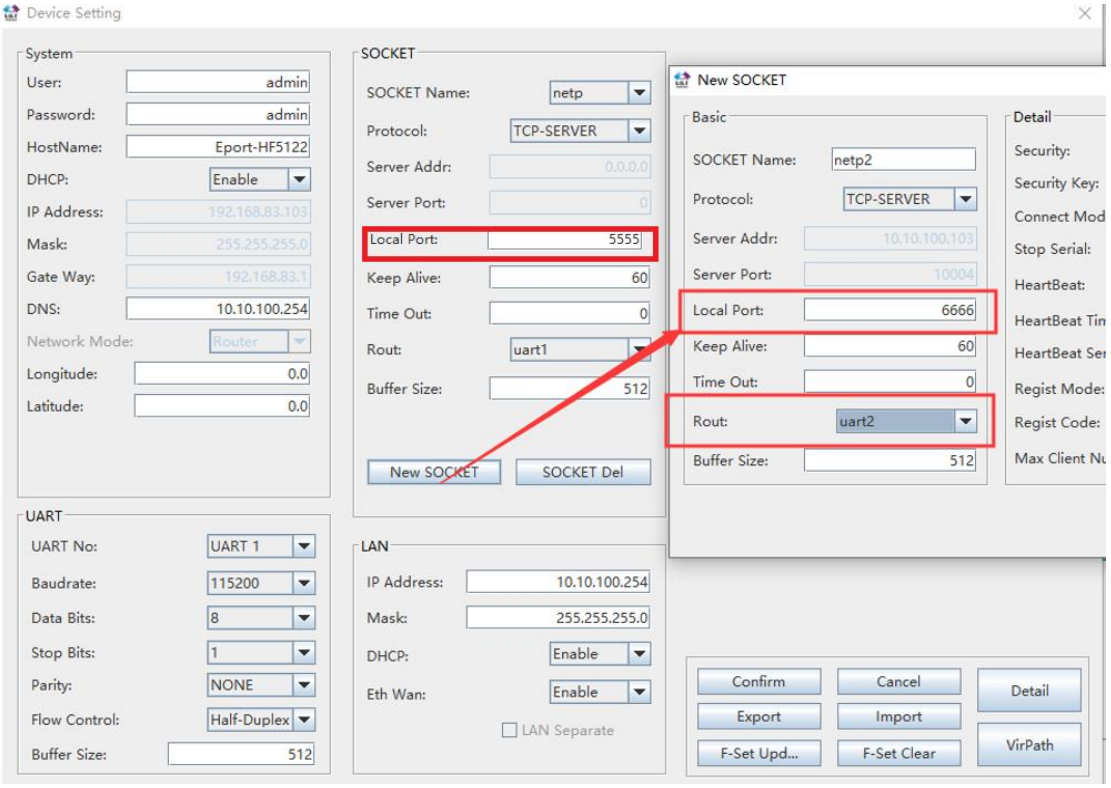
Open SecureCRT software and it shows two serial port connected.



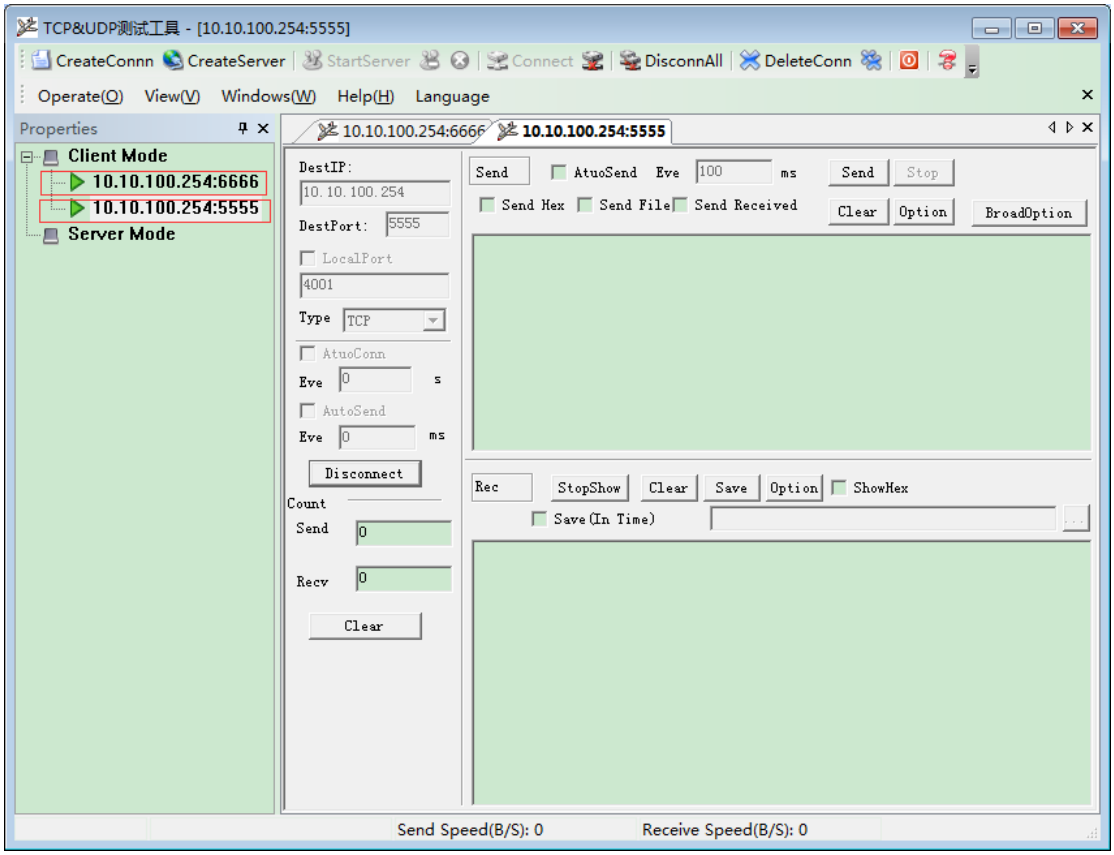
Open IOTService and click device setting. The following figure can set two serial parameter.



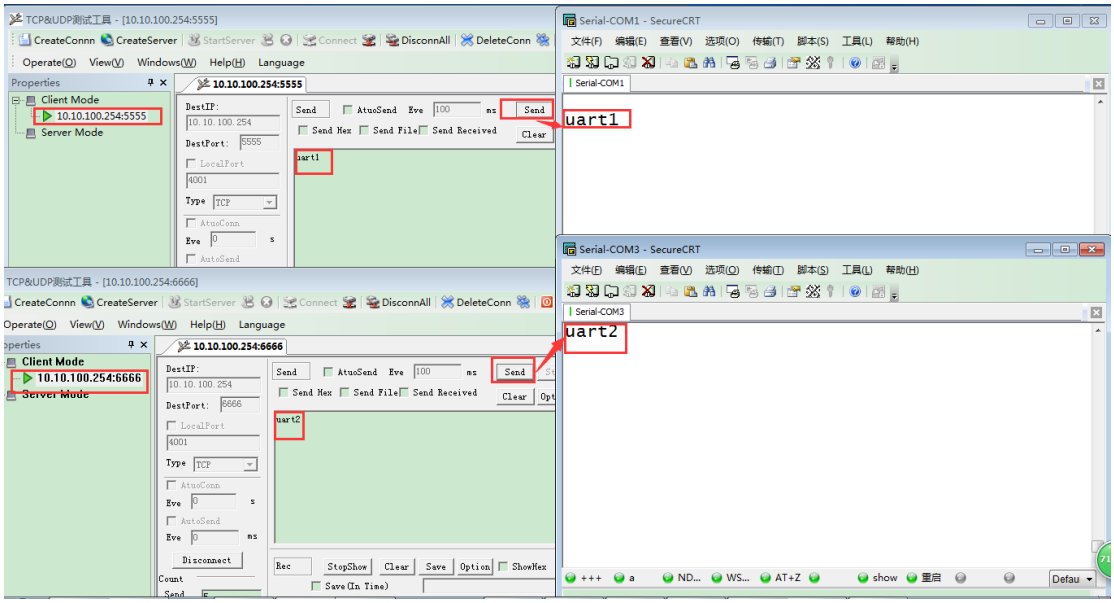
Create another socket and choose uart2.



Reboot device. Open TCP&UDP test tool and create two clients connect to device TCP Server（port numbers are 5555 and 6666）

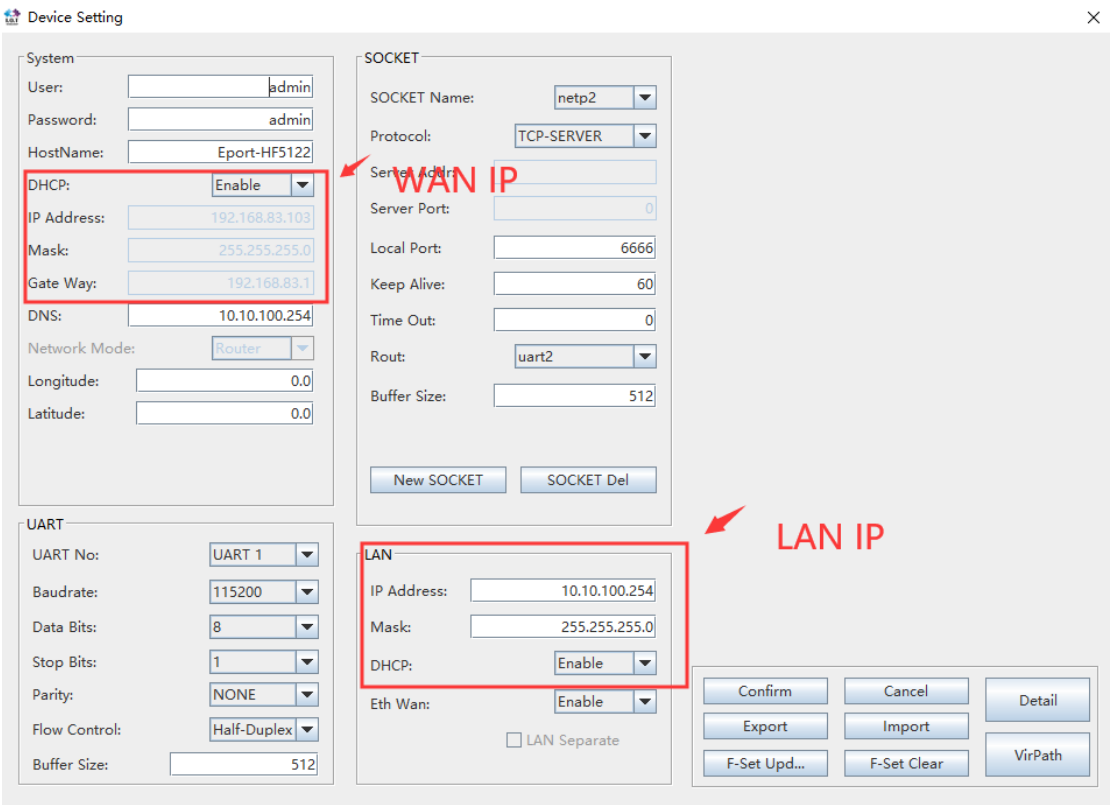


Mutual data transmission between TCP and two serial ports.



5.3. Multiple Ethernet Connection

HF5122 has two Ethernet interfaces and it can be connected by Ethernet cable, note that the LAN and WAN IP must be in different subnet.

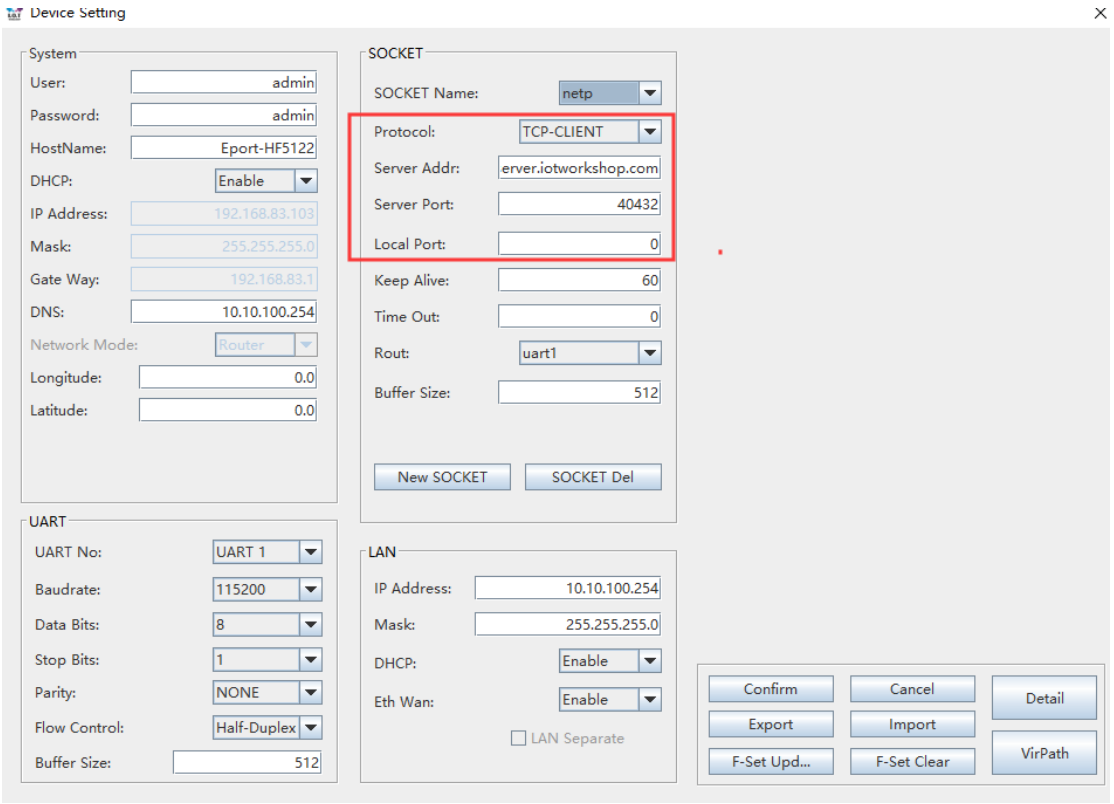


Modify device socket information, make it working as TCP Client connecting to our test server. The test server will reply with the received packet.

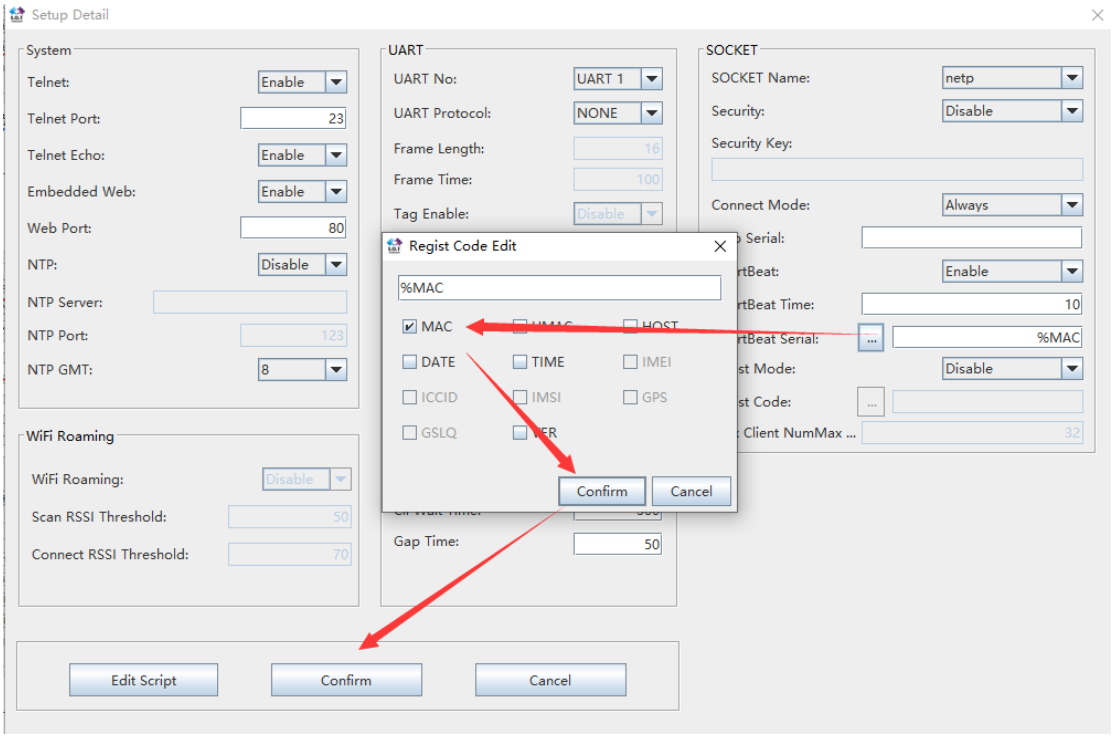
HF test server：test.server.iotworkshop.com

TCP port：40432

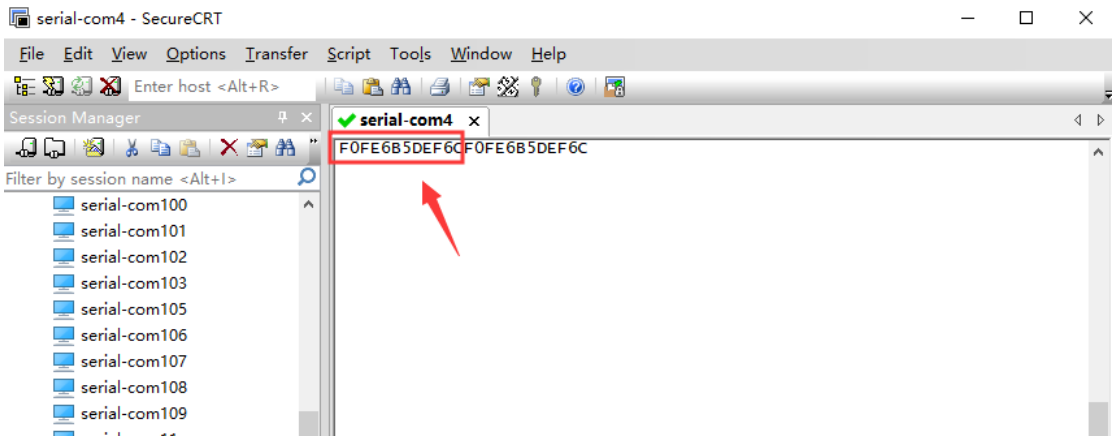
UDP port：40431



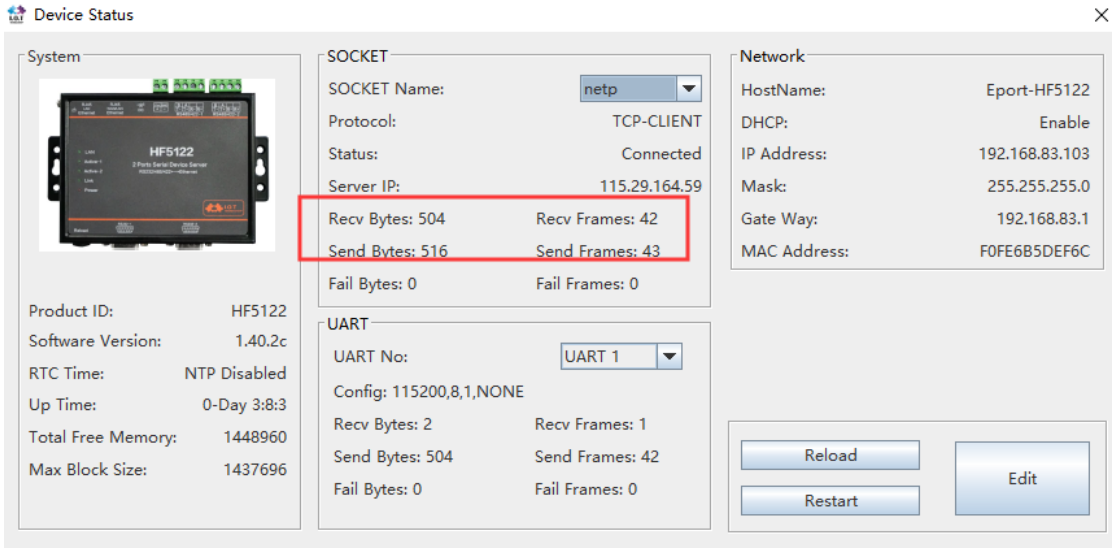
Add heartbeat packet function and set it to MAC address. Device will send this heatbeat packet to server every 10 seconds.



Our test server will response with the received data, so the PC uart will get MAC address every 10 seconds.



The Device Status page will see the packet statistics information.



APPENDIX A:REFERENCES

A.1. Test Tools

IOTService Configure Software:

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