



E103-W02 User Manual

Serial port wifi SMD small-sized PCB Antenna MQTT



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1. Product introduction

Brief introduction

E103-W02 is an ultra low power UART to Wi-Fi module with small size SMT packing and embeded PCB antenna, operating at 2.4 ~ 2.484GHz. The module can transmit and receive data through UART, which makes it easier for wireless applications.

E103-W02 is developed based on the TI CC3200, by Chengdu Ebyte Electronic Technology Co.,Ltd. It is a transparent transmission module for network access through UART by AT command, it is widely used for wearable electronics, home automation, home security, personal care, smart home, accessories & remote controller, automobile, lighting, industrial internet, etc.

E103-W02 supports standard IEEE802.11b/g/n protocol and complete TCP/IP protocol stack, supports STA/AP mode network role and multiple network operating mode, it supports SmartConfig, UART transparent transmission, transparent transmission on power-up, etc. Network connection can be achieved after easy configuration, which saves the efforts and time of the user in developing.



No.	Feature	Description
1	Ultra-low power	4 power consumption modes can be freely configured, and the standby power consumption is less than 5uA in the lowest power consumption mode.
2	High-speed transparent transmission	The module supports 3Mbit high-speed continuous transmission.
3	Support web page configuration	Module is accessible via web page and quickly read or configure the module parameters.
4	Power-on transparent transmission	Automatically connect to WIFI network after power on, and then connect to the target device through the protocol according to different network modes.
5	Automatic reconnection after network disconnection	After the network connection is disconnected and restored in STATION mode, the module automatically reconnects to the target.
6	Quick network configuration	Support Airkiss/SmartConfig function for quick network configuration of modules.
7	Remote AT command	Support remote AT command, AT command can be used to configure module remotely.
8	Heartbeat packet	When the module is used as a TCP client, it supports the heartbeat mechanism, and users can customize the heartbeat packet content to support serial port heartbeat packet.

9	Registration packet	When the module is used as a TCP client, it supports the connection registration mechanism, and users can customize the contents of the registration package.
10	Cloud platform transparent transmission	The module can realize multi-device cloud platform transparent transmission after related parameter configuration is completed.
11	Multiple network operating mode	Traditional TCP / UDP mode, multi-link TCP / UDP mode, MQTT client mode, HTTP client mode
12	Support EBYTE cloud access	Access to EBYTE cloud platform, simple cloud platform setting can quickly realize remote transparent transmission of different equipment
13	Pin status reminder	Pin level reminder varies according to different operating status
For more features, please refer to the relevant application documents		

Basic usage

No.	Instruction	Description
0	Module-to-module communication	Module 1 is set to AP mode and a TCP or UDP server is established. Module 2 is set to STATION mode and connected to AP 1 and communicates with Module 1 through TCP or UDP Client.
1	Module-to-Server communication	The Wi-Fi module is connected to the network through a wireless router, and communicates with a server on the network (LAN or Internet) through TCP Client or UDP. If connecting to an Internet server is needed, it requires to configure the corresponding port mapping on the router .
2	Module-to-Client communication	The Wi-Fi module is connected to the network through a wireless router, and establishes a TCP or UDP server to intercept connection signals. The client communicates with the module server by connecting it.
For more usage, please refer to the networking description in Section 5.		

Electrical parameter

No.	Name	Value	Remark
1	RF chip	CC3200	TI
2	Size	27 * 19 * 2.70mm	With PCB antenna
3	Average weight	2.2g	With PCB antenna
4	PCB process	4	Impedance debugging

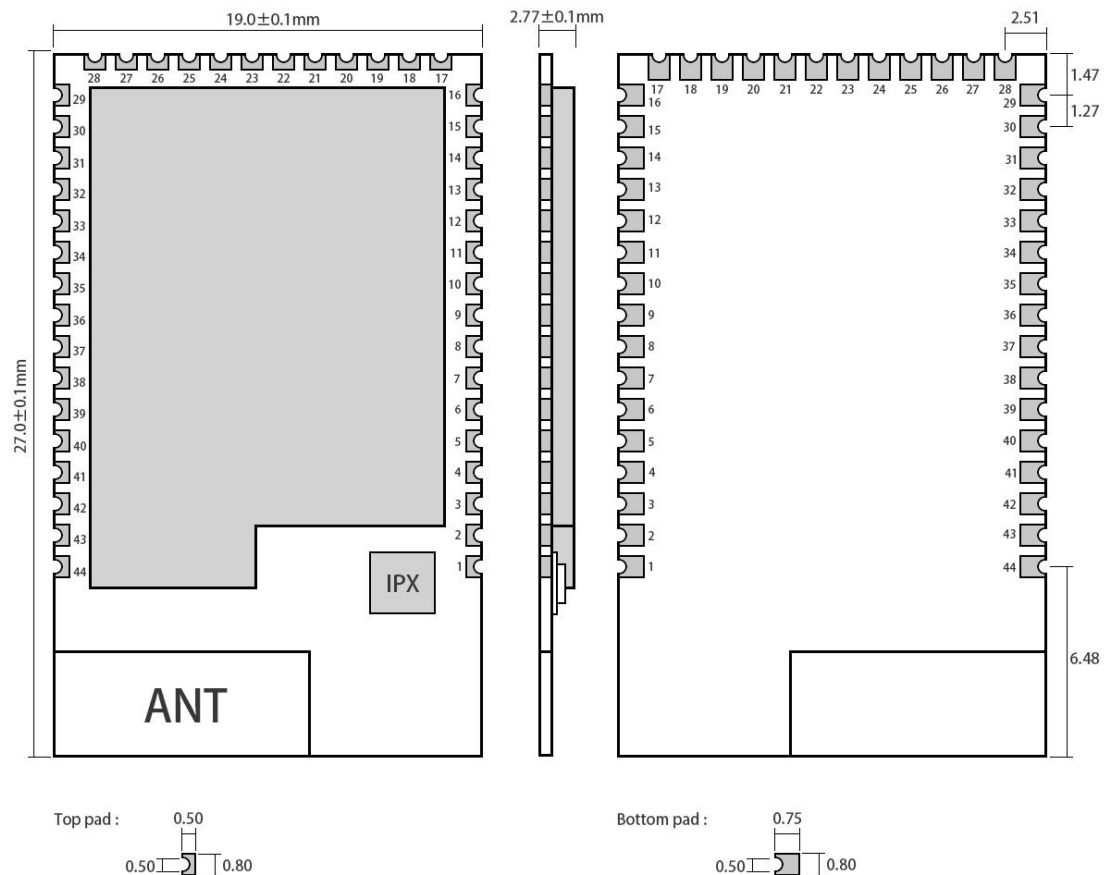
5	Working frequency	2.4~2.484 GHz	
6	Production process	Lead-free process, SMT	Wireless products must be machine-mounted to ensure batch consistency and reliability
7	Interface	1.27mm	SMD
8	Supply voltage	2.4 ~ 3.6V DC	Note: higher than 3.6V voltage will cause permanent damage to the module
9	Communication level	Maximum 3.6	It is recommended that the difference from the supply voltage is less than 0.3V to reduce power consumption
10	Measured distance	About 50m	Clear and open, maximum power, height 2m
		About 500m	Clear and open, maximum power, height 2m
11	Transmit power	20dBm	About 100mW
12	AT support	Built-in intelligent processing	Configuration parameters can be set or read via AT commands
13	Wi-Fi version	802.11 b/g/n	
14	Communication interface	UART serial port	
15	Antenna	PCB onboard antenna/IPX socket	50Ω characteristic impedance, which can be changed by yourself
16	Operating temperature	-40 ~ +85°C	Industrial grade(Chip range, please modify according to crystal parameters)
17	Operating humidity	10% ~ 90%	Relative humidity, non-condensing
18	Storage temperature	-40 ~ +85°C	Industrial grade

Electrical characteristic

Parameter		Condition	Min	Typical	Max	Unit
Storage temperature range			-40	Room temperature	85	°C
Working voltage			2.4	3.3	3.6	V
Any IO	VIL/VIH		-0.5/0.65VDD	-	0.35VDD/ VDD+0.5	V
	VOL/VOH		N/2.4	-	0.4/N	
	IMAX		-	-	3.5	mA

2. Function description

Pin definition

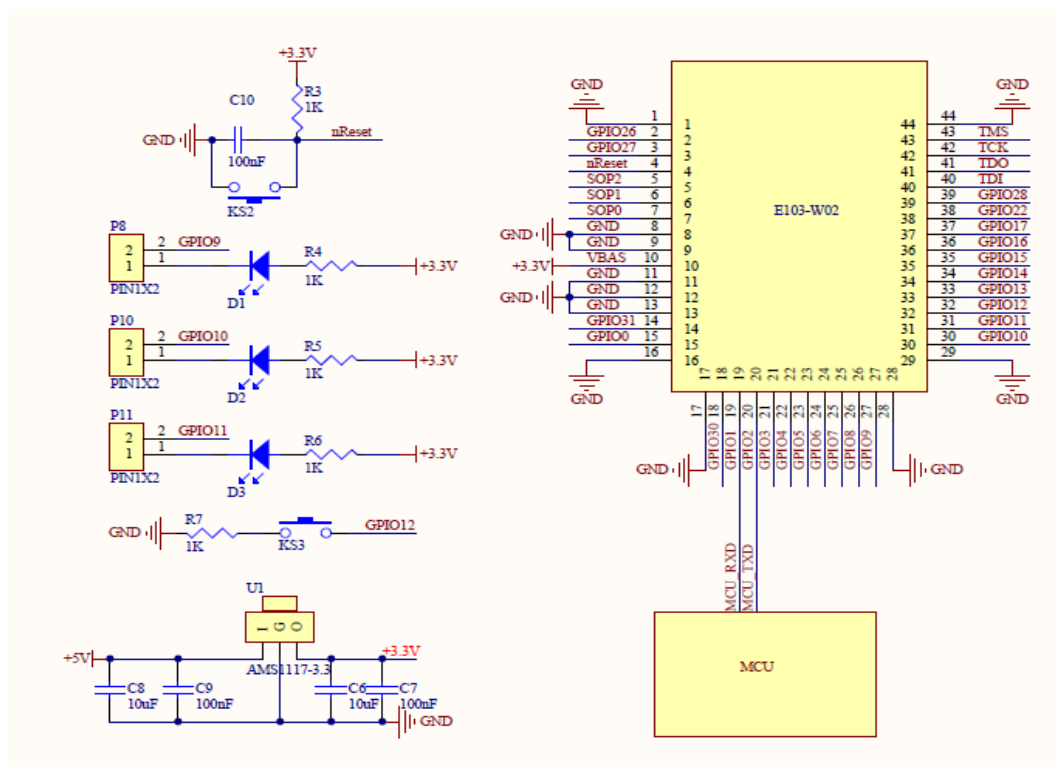


Pad quantity : 44
Unit: mm

No.	Definition	I/O	Function
1、8、9、11、12、13、16、17、28、29、44	GND		Ground
2	GPIO26	IO	General IO
3	GPIO27	IO	General IO
4	RST	I	Reset pin, low level reset
5	SOP2	I	Programming emulation mode selection
6	SOP1	I	Programming emulation mode selection
7	SOP0	I	Programming emulation mode selection
10	VCC		Device power VDC:2.4V~3.6V(over 300mA)
14	GPIO31	IO	General IO
15	GPIO0	IO	General IO
18	GPIO30	IO	General IO

19	GPIO1	O	UART TX, support AT command
20	GPIO2	I	UART RX, support AT command
21	GPIO3	IO	General IO
22	GPIO4	IO	General IO
23	GPIO5	IO	General IO
24	GPIO6	IO	General IO
25	GPIO7	IO	General IO
26	GPIO8	IO	General IO
27	GPIO9	O	Wifi connection indicator, it outputs low level when connected and high level while not connected.
30	GPIO10	O	Network connection indicator, it outputs low level when connected and high level while not connected.
31	GPIO11	O	SmartConfig status indicator, it indicates low when in SmartConfig status and high while not in the status.
32	GPIO12	I	Factory setting reset pin, keep it at lower level at power on and wait the indicator led flickers for 3 times alternately to restore factory setting. (Press the reset button when restoring factory settings)
33	GPIO13	IO	General IO
34	GPIO14	IO	General IO
35	GPIO15	IO	General IO
36	GPIO16	IO	General IO
37	GPIO17	IO	General IO
38	GPIO22	IO	General IO
39	GPIO28	IO	General IO
40	TDI	I	JTAG emulation pin
41	TDO	O	JTAG emulation pin
42	TCK	I	JTAG emulation pin
43	TMS	IO	JTAG emulation pin

Application schematic



- Note: supply voltage must be 2.4V~3.6V, 500mA LDO is recommended for steady operation of module

3.Quick start

E103-W02 module has the following 5 modes:

Mode	Description
NORMAL	In this mode, there is no difference from the function of V2.0, that is, it supports 1-channel TCP server or 1-channel TCP Client or 1-channel UDP, and supports remote AT command function.
MQTT	In this mode, it supports the general MQTT client function, and supports 1-channel subscription topic and 1-channel report topic at the same time.
HTTP	In this mode, it supports general HTTP client, and POST and GET request methods.
MULTIS	In this mode, it supports multiple TCP links. As a TCP SERVER, the module can allow 4 TCP clients to access simultaneously.
MULTIC	In this mode, it supports multiple TCP / UDP links. As a TCP / UDP client, the module can access three servers simultaneously.

E103-W02 module is easy to use. In order to allow users to quickly familiarize with the module, the following guides users to quickly use the module for different modes, and to configure and communicate in various modes through simple settings.

All the commands are used during testing are AT commands. We developed HTTP web page for users to access the module and conduct quick configuration.

The tests in this chapter are conducted with Serial debugging assistant, the module will return the current commands so that users could quickly learn the way to use AT commands. (Notes: All AT commands shall be followed with a line break except for “+++” commands)

In addition, users could use external MCU instead of baseboard to connect the UART of the module for AT commands communication to realize secondary development.

Hardware:	
1	E103-W02 Wi-Fi module*1
2	E103-W02 Wi-Fi module test baseboard*1
3	PC with Wi-Fi*1
4	Router*1 (or cellphone Wi-Fi hotspot)
Software (Download from our website)	
1	AccessPort/XCOM
2	TCP&UDP test tool

3	SmartConfig (one-key configuration) cellphone app“Wi-Fi Starter”
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3.1 Traditional mode(NORMAL)

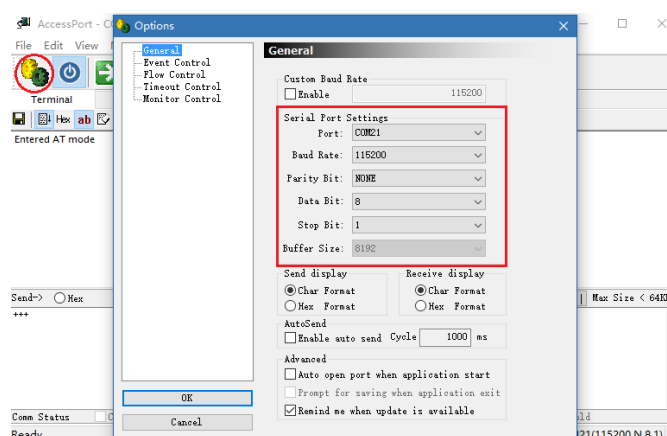
3.1.1 Link preparation

First of all, you need to know that when the module is restored to factory settings or the default status, the network role is AP, and the network mode is NORMAL mode. First, we need to connect the PC to the module to establish a network connection.

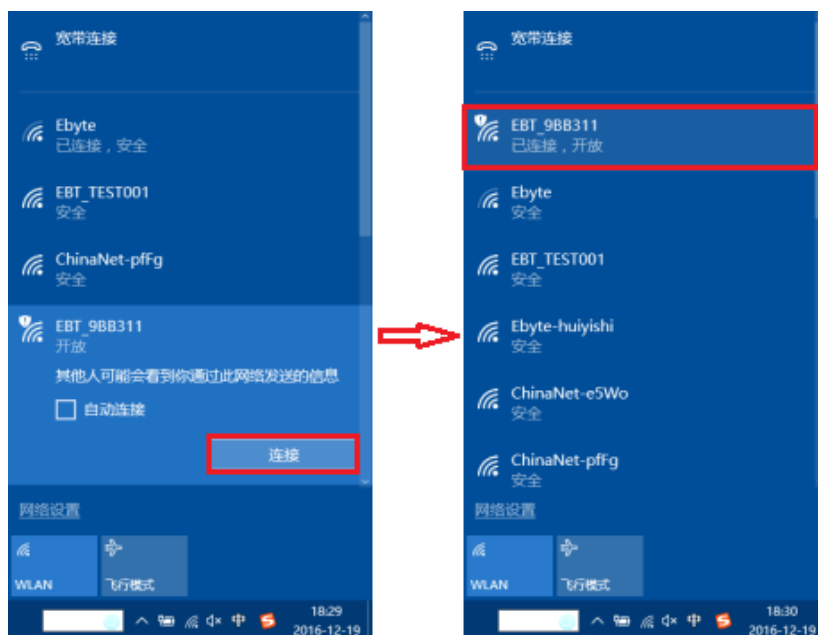
- ①. Connect the factory-made E103-W02 baseboard to the PC through the Micro USB data cable.
- ②. Open the serial port debugging assistant "AccessPort" and select the port number; if you don't know the port number, please check in the device manager (see the picture below)



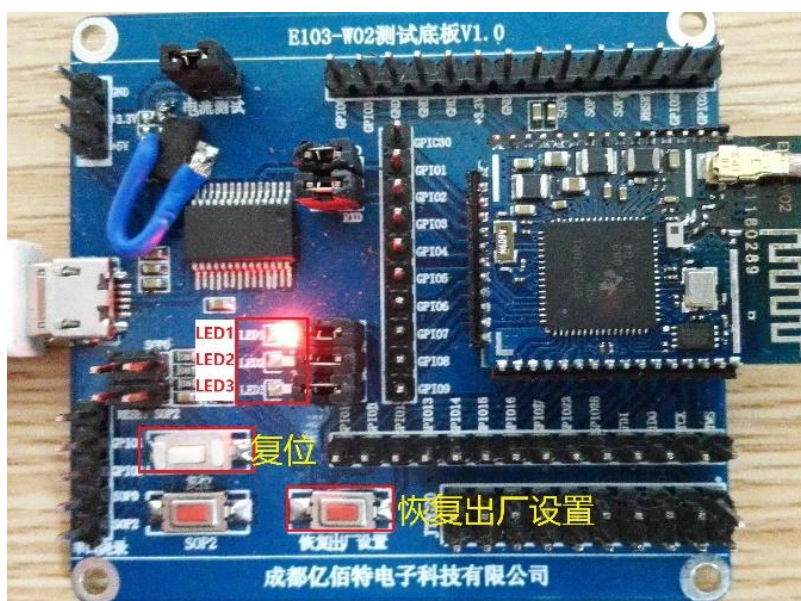
- ③ Set the serial port debugging parameters (baud rate: 115200bps, data bit: 8bit, parity bit: no parity, stop bit: 1bit).(See the picture below)



- ④. We open the wireless network on the PC, find the wireless network with SSID beginning with "EBT" (such as: EBT_9BB311), and click on "Next" to connect. ("9BB311" here is the last 6 digits of the module MAC address. The MAC address of different modules is different, so the SSID of different modules is also different.)

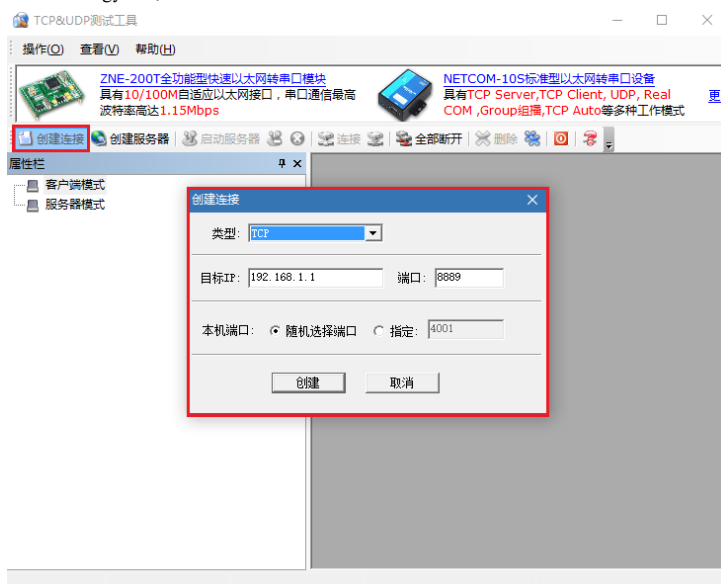


⑤. After the connection is successful, the LED1 light on the module baseboard is always on (GPIO9 is pulled low), and the PC shows that the connection is successful, otherwise please repeat the above steps.



3.1.2 Set the module as AP to establishes TCP SERVER and PC wireless connection

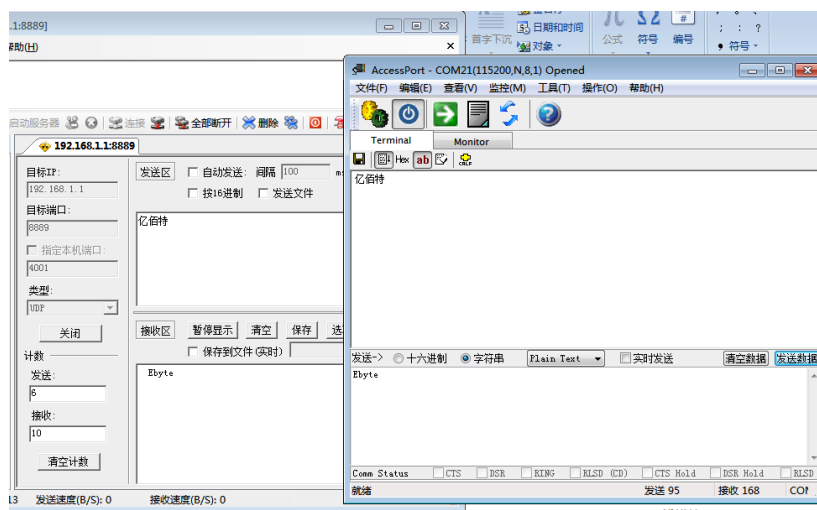
①. Open the TCP & UDP testing tool, create a connection, and set the parameters (see the figure below). (The parameter value can be sent through the serial debugging assistant to send the corresponding AT command for query and then exit the AT command mode to realize the subsequent two-way communication between the PC and the module)



②. Click on the "Create" button to complete the creation, and then click on the "Connect" button.



③ The LED 2 on the module baseboard is always on (GPIO10 is pulled low), indicating that the connection is completed, then the PC and the module can communicate with each other mutually (it means TCP & UDP testing tool and AccessPort can communicate with each other mutually), if not, please repeat above steps.



□. It can transmit documents (better in TXT format), just have a try.

3.1.3 Set the module as AP to establish a UDP server wireless connection with a PC

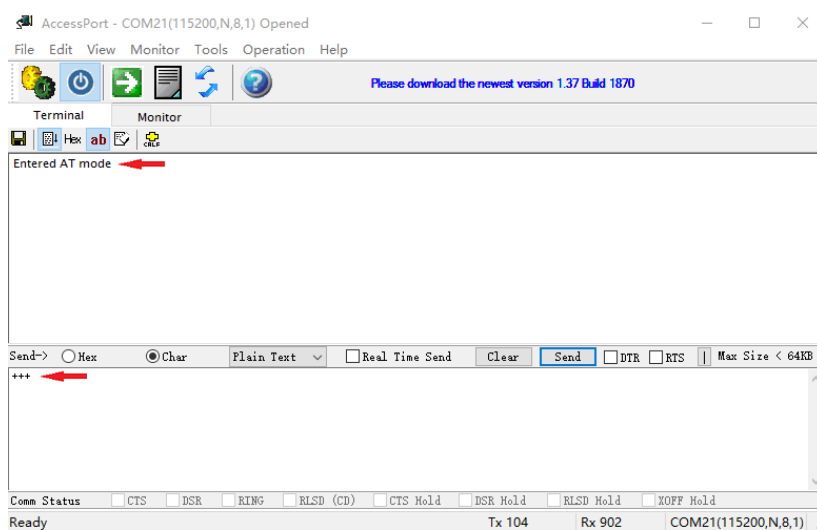
Now let's try to set up UDP communication, which needs some simple configuration on the module.

①. Make sure the link preparation is completed successfully.

② Enter AT command mode for simple configuration. (Please make sure to complete the operation of No. 1 first. Since it is sending commands, please turn off the Real Time Send function of the port in order to configure the module, if there is no Real Time Send function in your AccessPort, please ignore this notice)

a. Start to configure the port, input command “+++” in the sending textbox (please do not add line break), and click on Send button to start sending command.

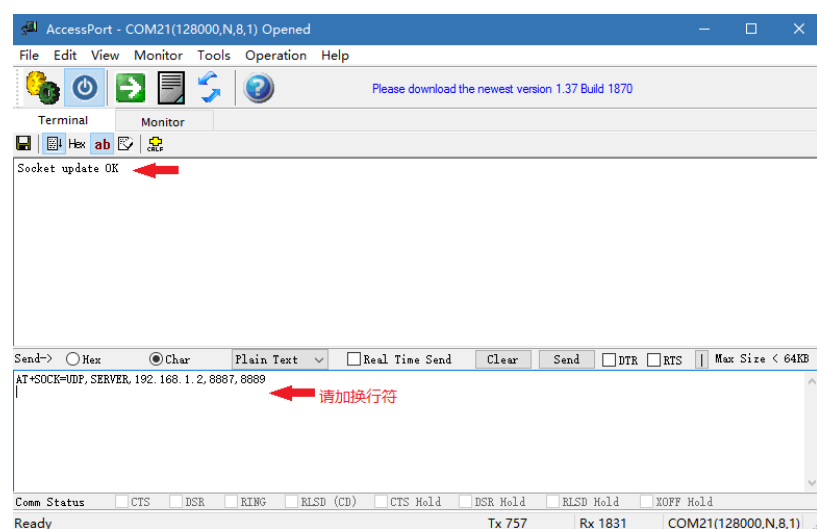
b. If the port returns “Entered AT mode”, it means the module has entered AT command mode, if not, please repeat the above steps.



□. By step □, we have entered AT command mode, now let's start to configure Socket protocol.

a. Input “AT+SOCK=UDP,SERVER,192.168.1.2,8887,8889” in the sending textbox (please add line break, which means to press Enter after “AT+SOCK=UDP,SERVER,192.168.1.2,8887,8889”), click on Send button to start sending.

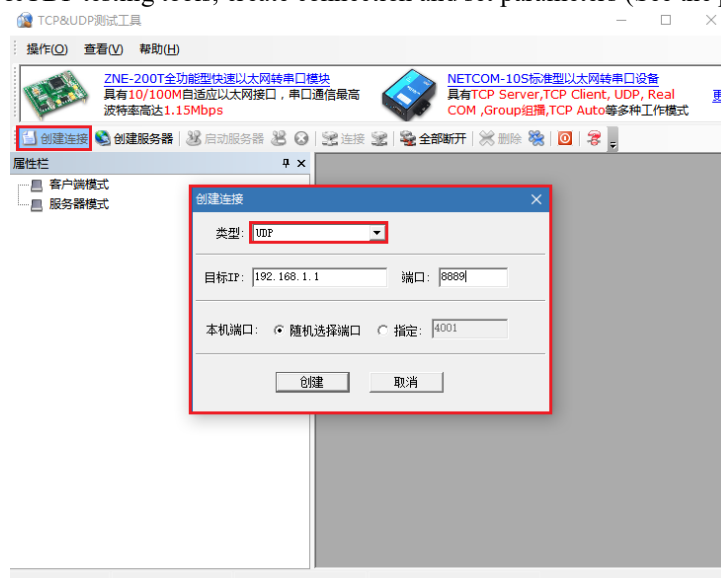
b. If the port returns “Socket update OK”, it means the command has successfully set the protocol parameters, if not, please repeat the above steps.



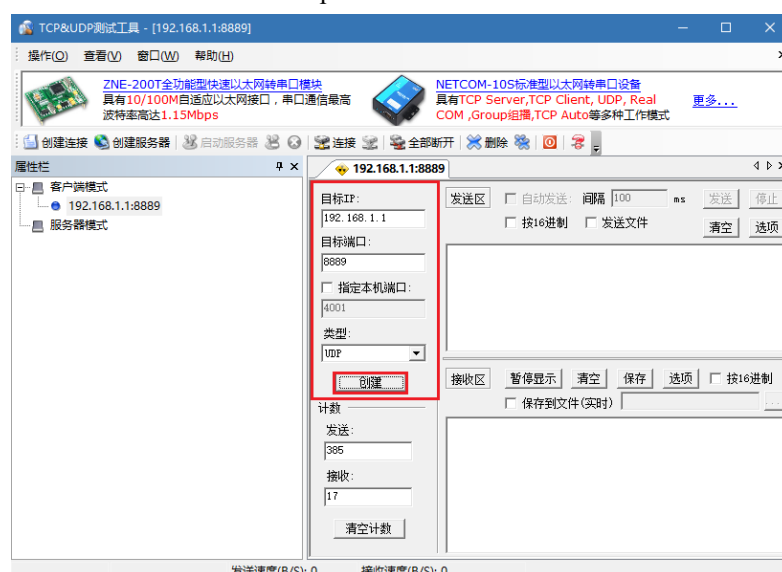
□. Reset the module or restart when power off after setting parameters to validate the settings; If there are still other parameters to set, please complete the setting before reset or repower. Because we only configure Socket protocol, so just directly reset or repower (GPT010 is pulled low), the LED2 will be lit up on the baseboard, it means the UDP protocol is available.



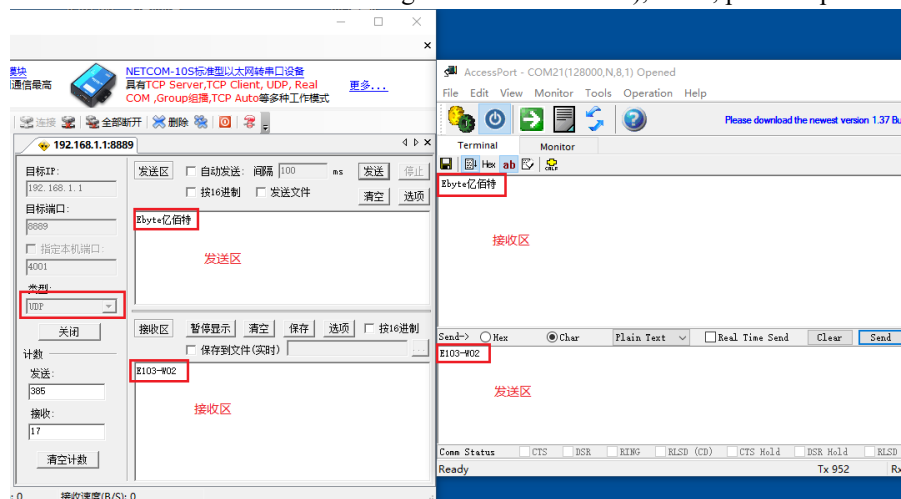
- . Open the TCP&UDP testing tools, create connection and set parameters (See the picture below).



- . Click on the “Create” button to complete the creation.



□. When creation is completed, it can realize two-way transmission between PC and module (it means transmission between TCP&UDP testing tool and AccessPort), if not, please repeat above steps.



□. It can transmit document (it is better to be in TXT format), just have a try.

In addition, customers can also set the socket link as TCP Client in AP mode. The setting method is the same as above, which will not be explained here.

3.1.4 Set module as STA (Station) to connect other WiFi hot spots

In order to make it easier for users to access the network using the roles of the left and right STA in the following chapters, a section on how to access other WIFI nodes is added here for users' reference.

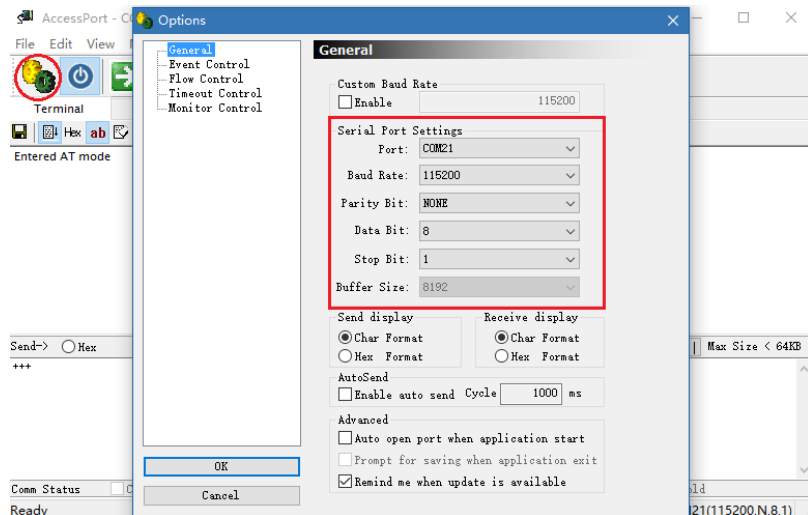
Connect other Wi-Fi hot spots as STA (Station)

□.Connect the baseboard of E103-W02 and PC with Micro USB data cable.

□.Open AccessPort, select COM number; If you are not clear about the COM number, please check in your Device Manager (see the picture below).



□.Set UART parameters (baud rate: 115200bps, data bit: 8 bits, parity bit: none, stop bit: 1 bit). (refer to the picture below)



□.Simple configuration by AT command.

(Since we are sending command, in order for better configuration, please turn off the Real Time Send function of the UART; If there is no Real Time Send function in you AccessPort, please ignore this notice)

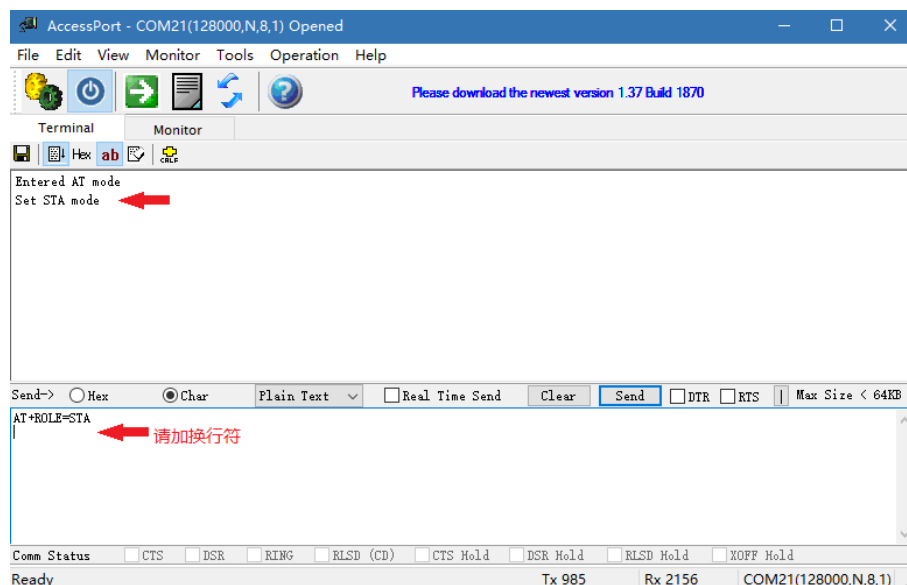
a. Start UART configuration, input “+++” in the sending textbox (no line break), click on Send button to send command.

b. If the UART returns “Entered AT mode”, it means the module has entered AT command mode, if not, please reset and repeat above steps.

□.Now our module is connecting other AP as STA, so please set the mode as STA mode.

a. Input AT command “AT+ROLE=STA” in the sending textbox (with line break), which means pressing Enter after inputting “AT+ROLE=STA”), and then click on Send button.

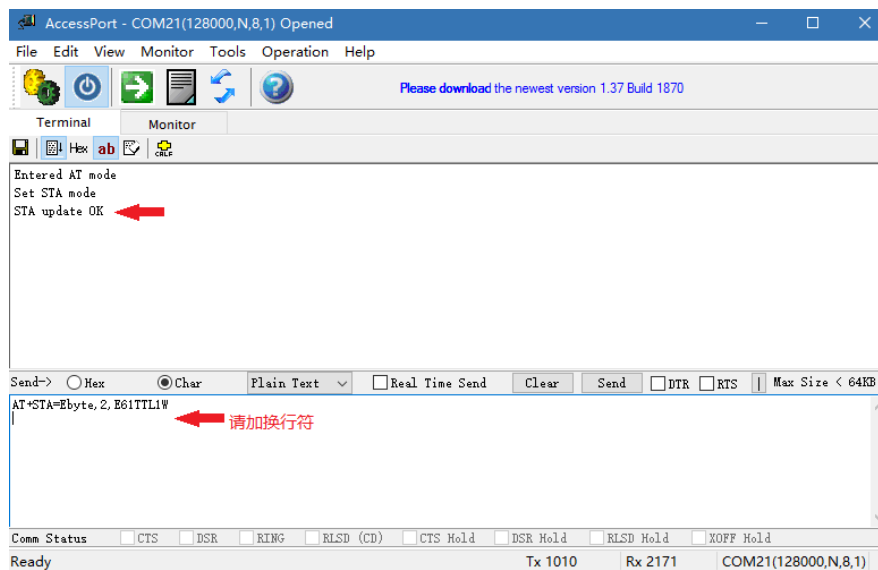
b. If the UART returns “Set STA mode”, it means the module has been set as STA mode, if not, please repeat above steps.



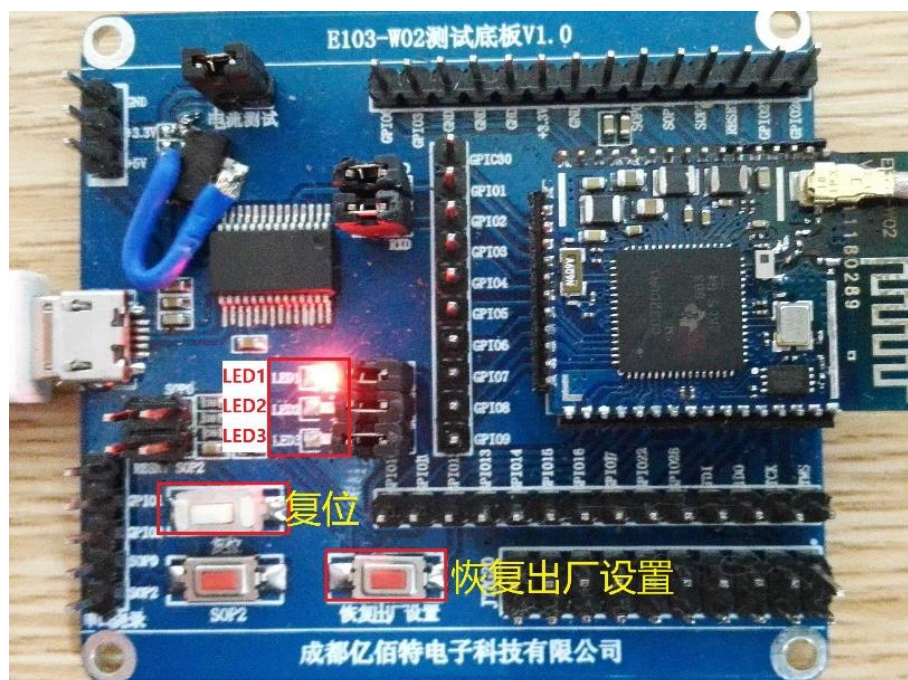
□.Set Wi-Fi hot spot parameters (STA parameters)

a. Input AT command “AT+STA=Ebyte,2,E61TTL1W” in the sending textbox of the AccessPort (with line break, which means pressing Enter after inputting “AT+STA=Ebyte,2,E61TTL1W”), and then click on Send button to send the command. <The parameters must be set according to the user’s Wi-Fi hot spot; the “Ebyte” in front of the AT command is the Wi-Fi hot spot SSID (Wi-Fi name), ‘2’ is the encryption method WPA2 (if there is no password, it shall be “0”), “E61TTL1W” is the password of the Wi-Fi (if there is no password, it shall be null)>

b. If the UART returns “STA update OK”, it means the STA parameters are set successfully by command, if not, please repeat above steps.

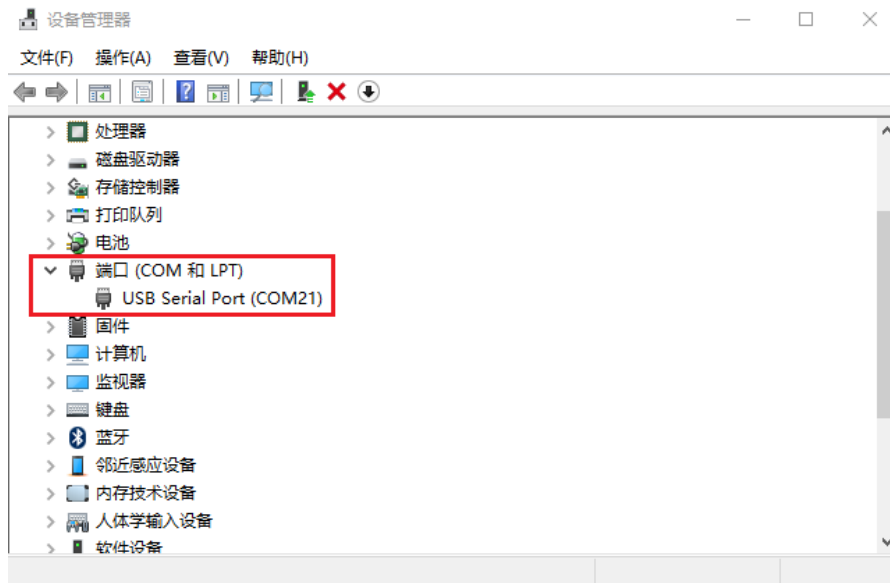


- ☐ .Reset or repower the module, if the Wi-Fi modules are far from each other, please install antennas.
- ☐ .If LED1 is lit up(GPI09 is pulled low), it means the module is successfully connected to Wi-Fi hot spot.

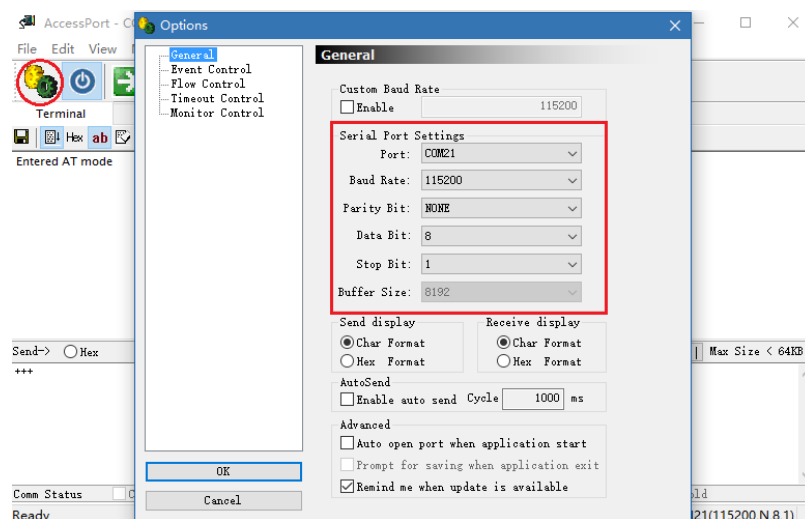


Connect other Wi-Fi hot spots as STA (Station) through SmartConfig (one-click config.)

- ☐ .Connect the E103-W02 baseboard and PC with Micro USB data line.
- ☐ .Open AccessPort, select COM number; if you are not clear about the COM number, please check in your Device Manager (see the picture below).



□.Set UART parameters (baud rate: 115200bps, data bit: 8 bits, parity bit: none, stop bit: 1 bit).(see the picture below)



□.Simple configuration by AT command.

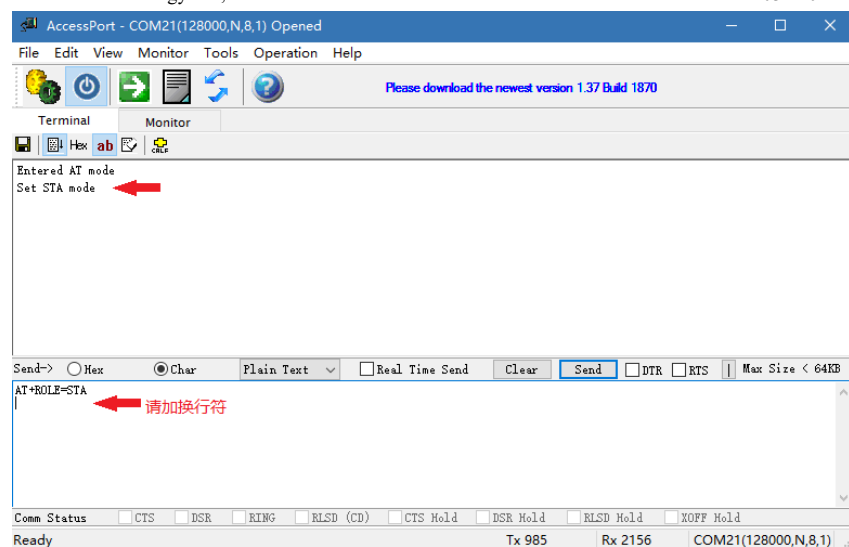
a. Start UART configuration, input “+++” in the sending textbox (no line break), click on Send button to send command.

b. If the UART returns “Entered AT mode”, it means the module has entered AT command mode, if not, please reset and repeat above steps.

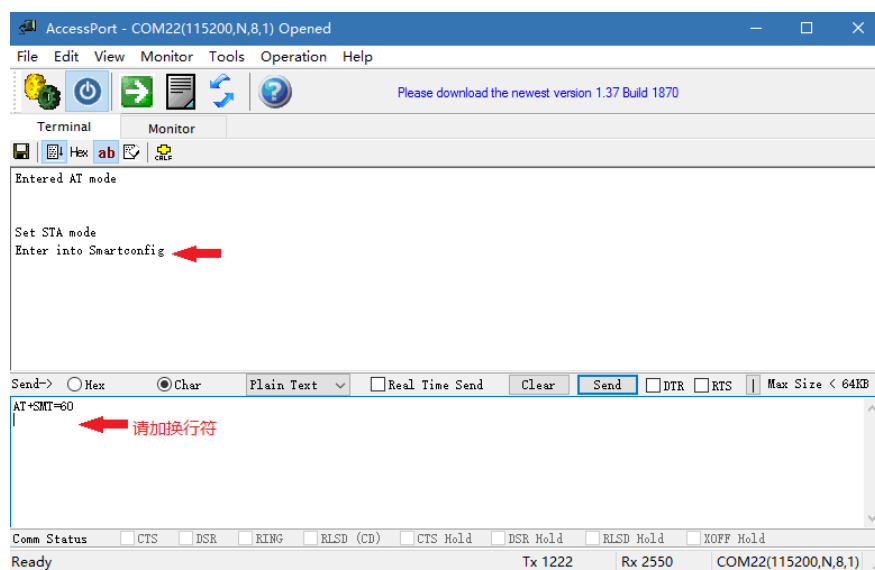
□.Please set the module as STA mode first.

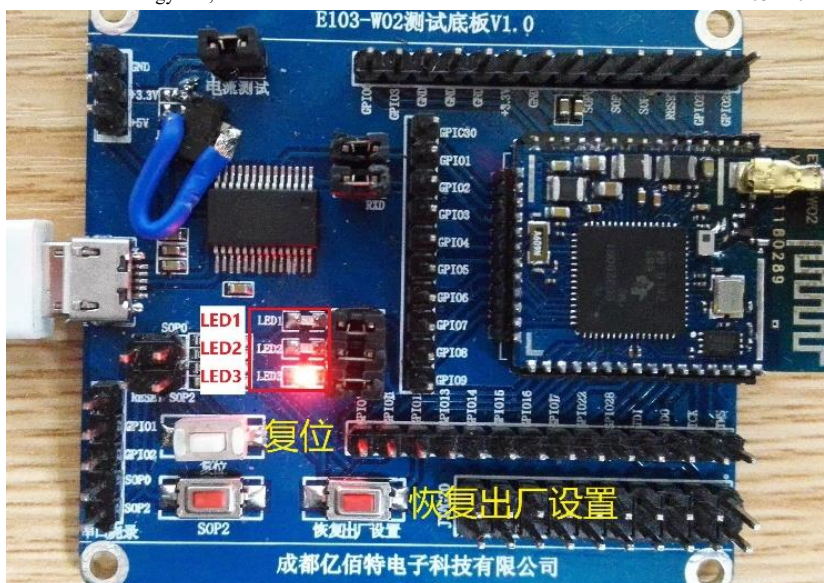
a. Input AT command “AT+ROLE=STA” in the sending textbox of the AccessPort (with line break, which means pressing Enter after inputting “AT+ROLE=STA”), and then click on Send button to send command.

b. If the UART returns “Set STA mode”, it means the module has entered STA mode successfully, if not, please repeat above steps.

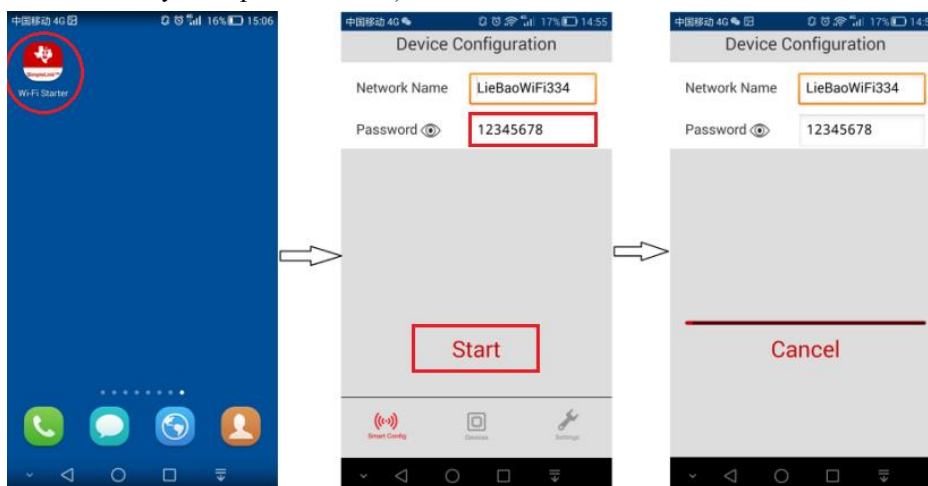


- . Rest or repower the module, and repeat the step □.
- . Enter SmartConfig (one-click config) mode.
 - a. Input AT command “AT+SMT=60” (with line break, which means pressing Enter after inputting “AT+SMT=60”), and then click Send button to send command. (The 60 in the AT command means the module will exit SmartConfig (one-click config) mode if the module fails to connect the Wi-Fi hot spot after 60s)(During this 60S, the module has been waiting to accept the instructions sent by the mobile phone, and the LED1 will be lit up when the acceptance is successful (GPIO9 is pulled low))
 - b. If the UART returns “Enter into SmartConfig”, and LED3 is lit up(GPI001 is pulled low), it means the module has entered SmartConfig (one-click config) mode, if not, please repeat above steps.

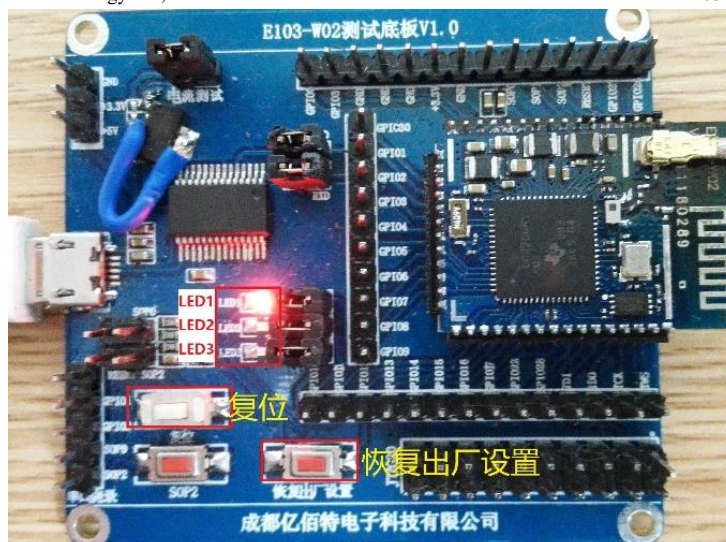




- . Turn on cellphone Wi-Fi and connect to one hot spot.
- . Install and open APP “Wi-Fi Starter”, input Wi-Fi hot spot passwords, and click on “Start”.
(Network Name is the name of the Wi-Fi hot spot your cellphone is connecting to, the software will recognize automatically, no input is needed.)



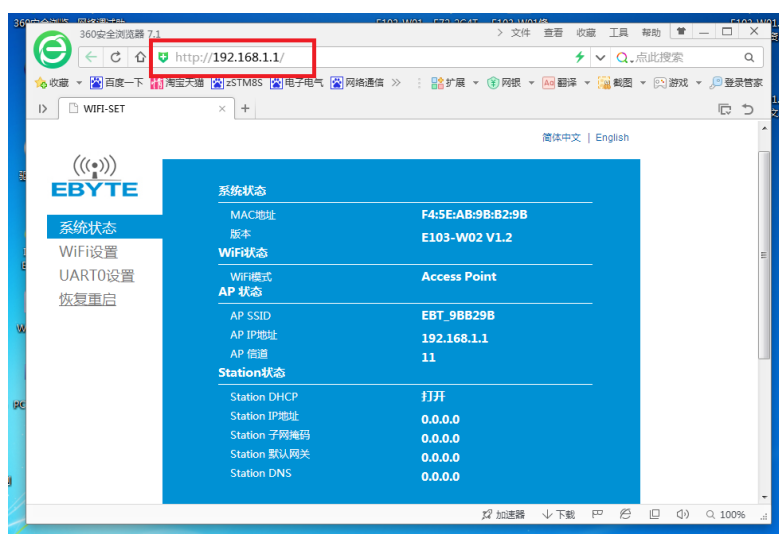
- . If the modules are far from each other, please install antennas. If the LED1 on baseboard is lit up (GPIO9 is pulled low), it means the module is successfully connected to Wi-Fi hot spot, if not, please repeat above steps. (when successfully connected, the module will remember the Wi-Fi hot spot (including passwords), it will automatically connect to it upon reset or repower next time)



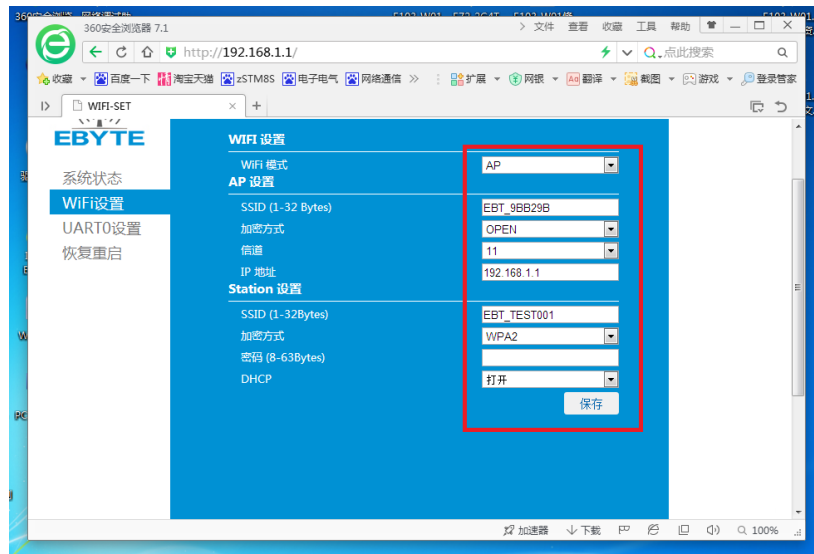
Here, users can also use the AT + AIRKISS command to implement the AIRKISS configuration.

3.1.5 Web page configuration

The E103-W02 can use the web page to reconfigure the module parameters. Before performing this operation, the module needs to connect to the PC wirelessly. After the PC displays the connection successfully, open the IP address of the browser input module (if the module is not clear) The IP address can be queried using the serial port AT command "AT+APIP=?")



Then enter the module parameter configuration page, where you can reset multiple parameters of the module.

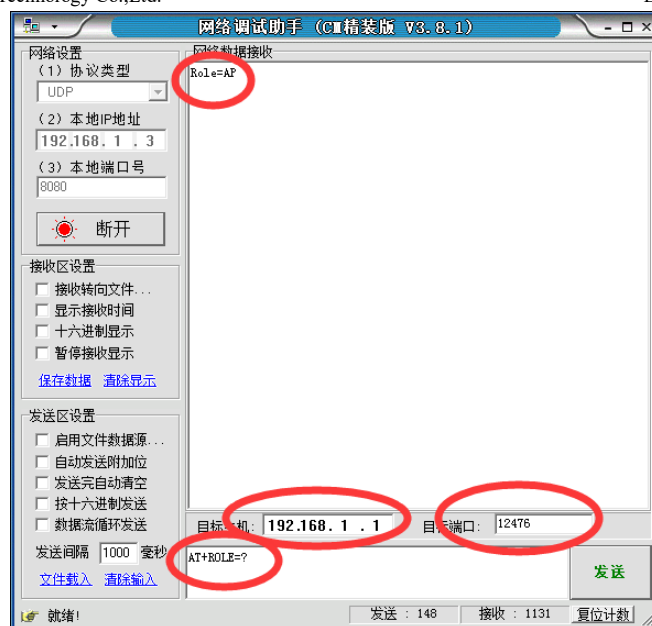


After the parameters are reconfigured, the module needs to be restarted and the configuration parameters take effect.



3.1.6 Remote AT command

The E103-W02 in NORMAL mode can use the remote AT command to send an AT command to the module 12476 port using the UDP communication protocol. When using the remote AT command, you do not need to use "+++" for mode switching. Remote command is only allowed in the module NORMAL mode, and will not be used when switching to other modes (such as MQTT, HTTP).



3.2 MQTT Client mode(MQTT)

In the NORMAL mode chapter, we introduced the module setting process and the use of AT instruction in detail. In this chapter and the introduction of other modes, we only make some simple introduction and use of the AT instruction for functions.

MQTT is a client-server based message publish / subscribe transmission protocol. The MQTT protocol is lightweight, simple, open, and easy to implement. These characteristics make it applicable to a wide range. In many cases, including restricted environments, such as machine-to-machine (M2M) communication and the Internet of Things (IoT). It has been widely used in satellite sensors to communicate with sensors, occasionally dialing medical devices, smart homes, and some miniaturized devices. Among them, communication sensors through satellite links, medical devices that occasionally dial, smart homes, and some miniaturized devices have been widely used.

1.1 3.2.1 Setting process

When the module works in MQTT mode, at this time, some sub-functions of other modes will not be enabled (such as NORMAL remote AT command will not be allowed to be used). MQTT mode is the module's role as an MQTT client to access users in the target MQTT server, when users use the MQTT mode, if they want to access the public network for long-distance transmission or access to the cloud server, they need to know that the network role of the module should be set to the STA mode. The following uses ONENET as an example to introduce the access method and communication.

1. Enter AT mode, make the current network role in STA mode

- a.
- b. +++
- c. AT+ROLE=STA
- d. 2.Connect to WIFI (AP), and connect to the network

e. AT + STA = EBYTE, 2, JSZXE880

3. Switch the mode and set the operating mode to MQTT mode

AT + MODE = MQTT

f.4. Set the MQTT connection information and connect to the ONENET MQTT server (provided that the user has created the relevant MQTT device)

AT + MADDR = 183.230.40.39,6002 (Address can be IP or URL)

5. Set MQTT access information (the specific information is filled in according to the actual parameters of users)

AT + MUSER = "ClientID", "Username", "Userpassword" (The parameters here must be distinguished by quotation marks)

6. Set MQTT subscription information

AT + MSUB = Topic, Qos

7. Set MQTT report information

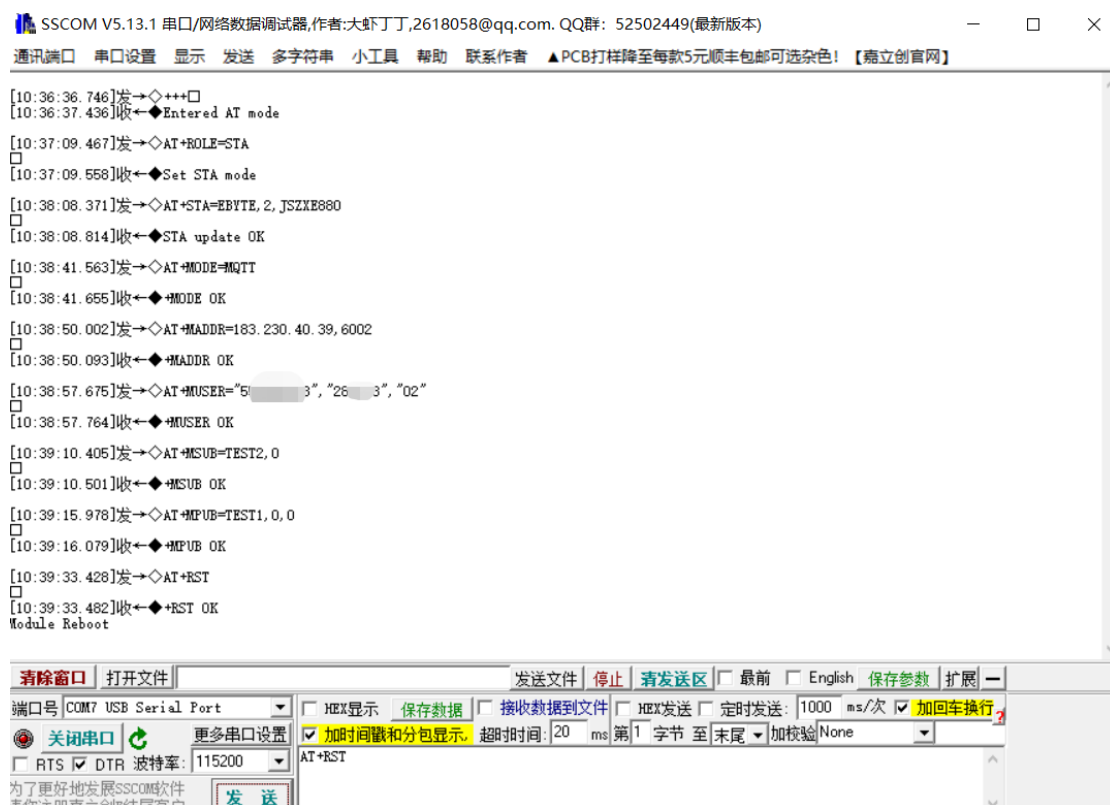
AT + MPUB = Topic, Qos, Retain

8, restart to take effect

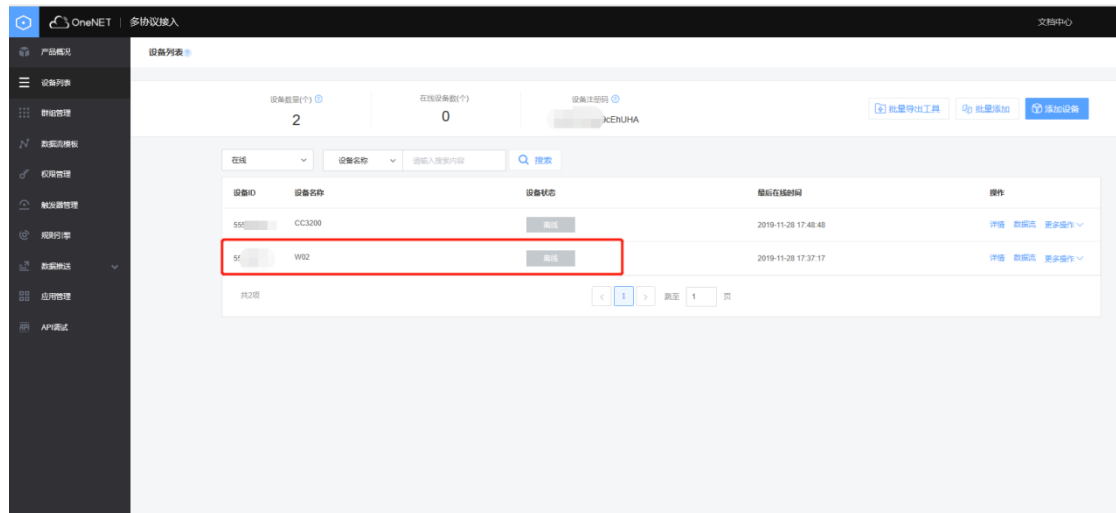
AT + RST

3.2.2 Device access demo

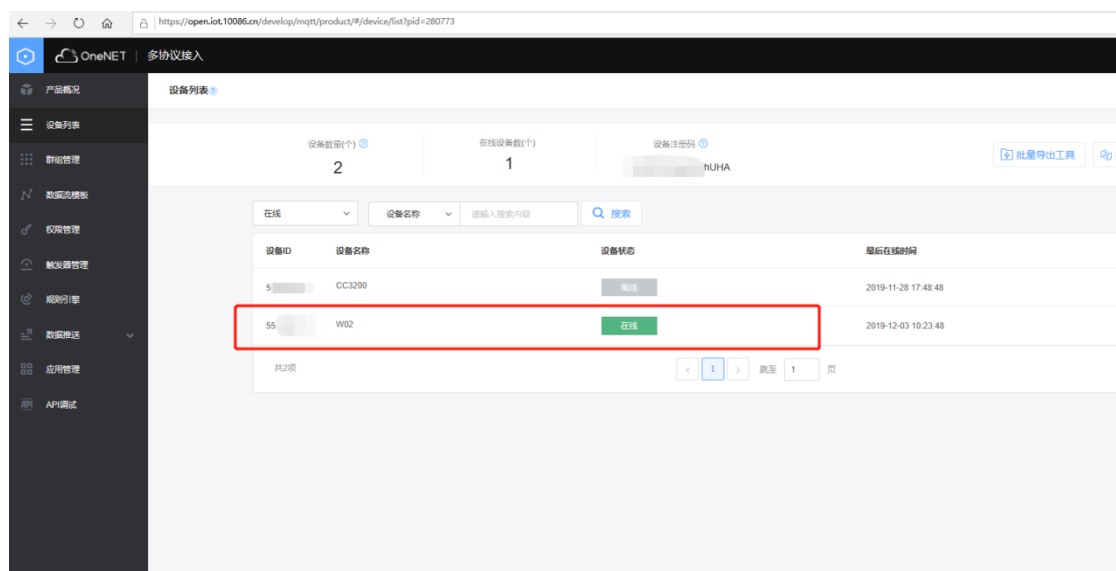
A complete set of MQTT AT command operation is shown below:



Login to our ONENET MQTT device management platform, when there is no access, the offline status is displayed, as shown in the picture below



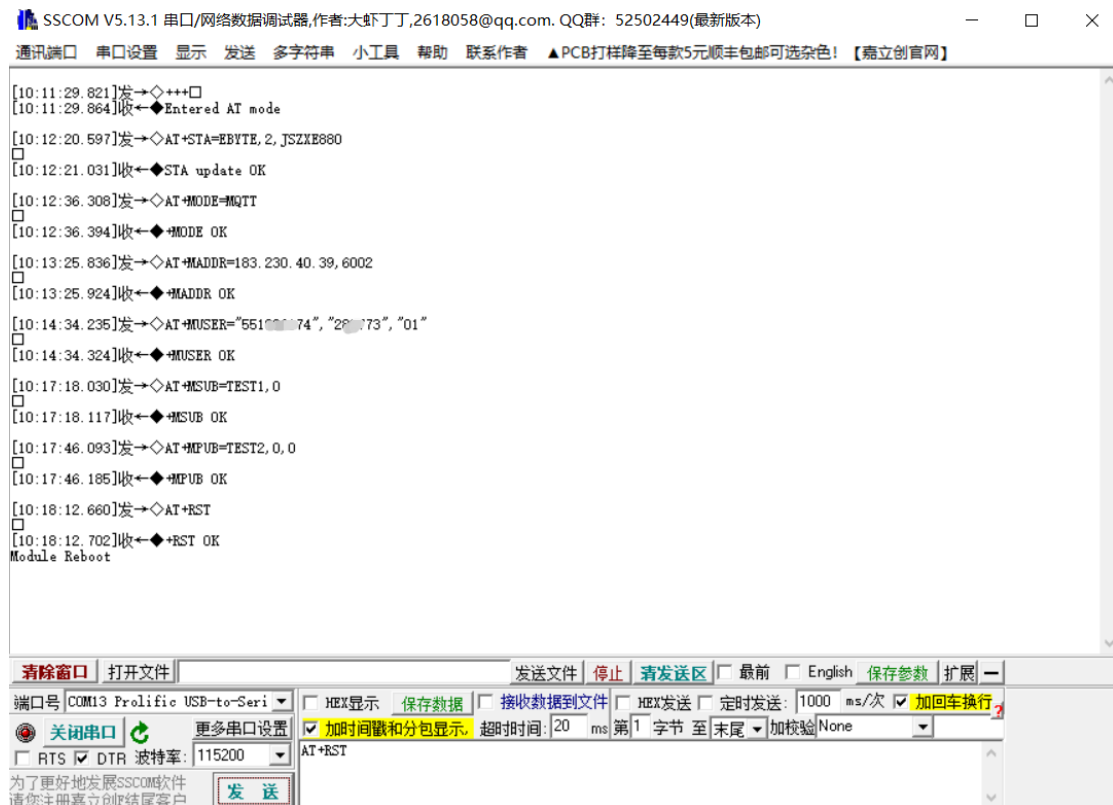
After the setting is completed, the ONENET cloud platform management displays the online status after successful access.



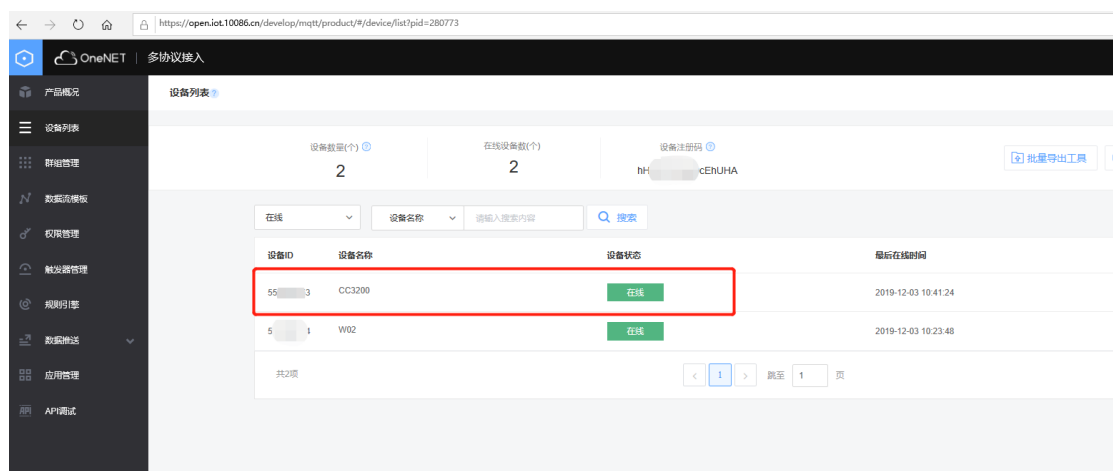
At this time, when the ONENET is successfully connected, the GPIO10 pin is pulled low at to indicate the status of successful access, and the disconnection it will be pulled high.

In order to demonstrate the data transmission process of the device intuitively, we use another W02 to follow the above steps (note that the path of subscription and reporting needs to be exchanged)

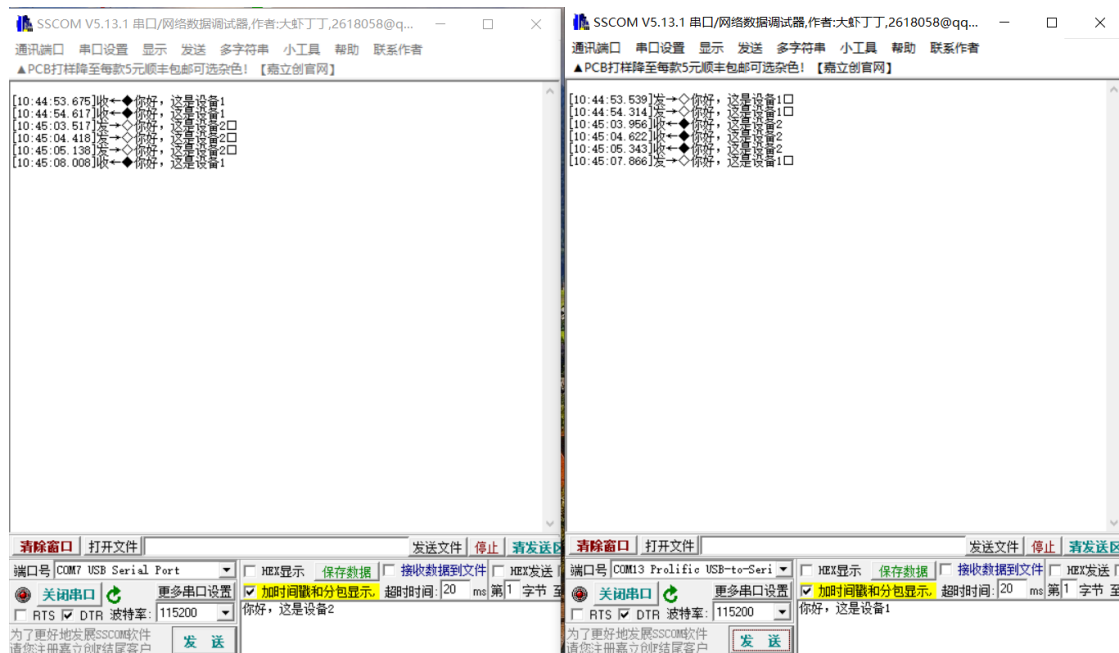
As shown in the picture below:



After connecting, as shown in the figure below:



MQTT communication between two devices is now possible.



3.2.3 MQTT precautions

In the above usage list, ONENET is used as a use case, but this function is a general MQTT function and can support different MQTT servers. In the process of use, especially when MQTT accesses the server of the MQTT service provider (such as Ali Cloud , Baidu Cloud, ONENET), need to draw the corresponding three elements of MQTT according to its rules.

3.3 HTTP Client mode (HTTP)

3.3.1 Setting process

When the module works in the HTTP Client mode, some sub-functions in other modes or modes will not be enabled at this time. In the HTTP Client mode, the module acts as an HTTP client to access the user's target HTTP server. If users want to access the Ethernet data in this mode, they need to know that the network role of the module should be set to STA mode. In the following, the access method and communication will be described.

1. Enter AT mode and put the current network role in STA mode

+++

AT + ROLE = STA

2. Connect to WIFI (AP) and connect to the network

AT + STA = EBYTE, 2, JSZXE880

3. Switch the mode and set the operating mode to HTTP mode

AT + MODE = HTTP

4. Set the HTTP connection information, connect to the destination IP and monitor port of the HTTP server

AT + HCADDR = 192.168.0.136,80 (HTTP server address of local LAN)

5. Set the request path and method of the HTTP server

AT + HCMODE = / 1.txt, POST

6. Set the HTTP client's request header options (up to 180 bytes)

AT + HCHEAD =, (Parameter sending "", means no header information is set)

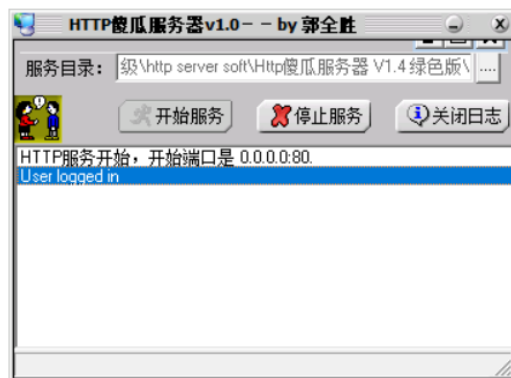
7. restart to take effect

AT + RST

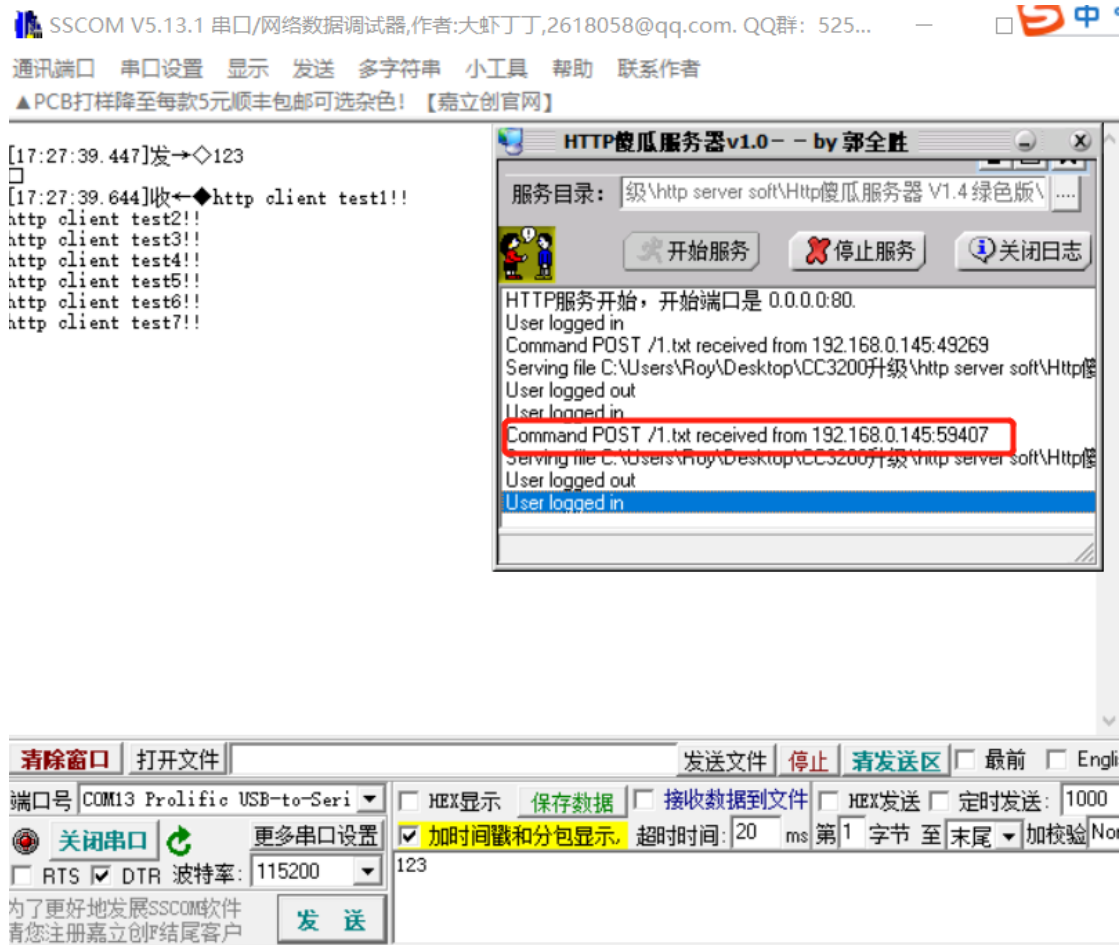
3.3.2 Use of POST request method

The AT command of AT + HCMODE = URL, POST allows the module to request data by POST. The URL is the specified access path. For the convenience of demonstration, we start a server software on the PC under the same LAN as the module, and the software creates a 1.txt file in the same directory, and writes some data into the txt file, as shown in the picture below:

名称	修改日期	类型	大小
1.txt	2019/12/3 17:19	文本文档	1 KB
2.html	2019/10/17 19:15	SLBrowser HTM...	1 KB
kissgmc.exe	2016/4/25 18:16	应用程序	408 KB



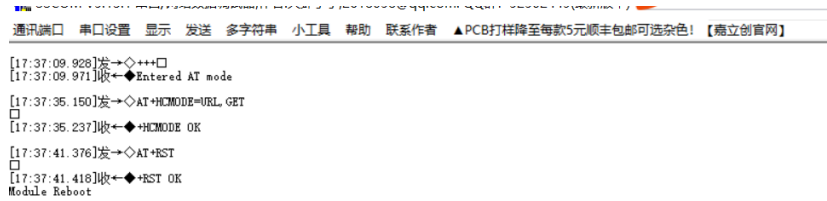
In the serial port, each time the data is sent, it will trigger the request data of the HTTP client, while the corresponding data input by the serial port is reported to the server data, and the data is sent in the serial port: 123, the module will request data from the server according to the set request path and method. After requesting data, the server will return the file to the serial port, as shown in the picture below: The red box in the figure is the request information of the module as an HTTP client.



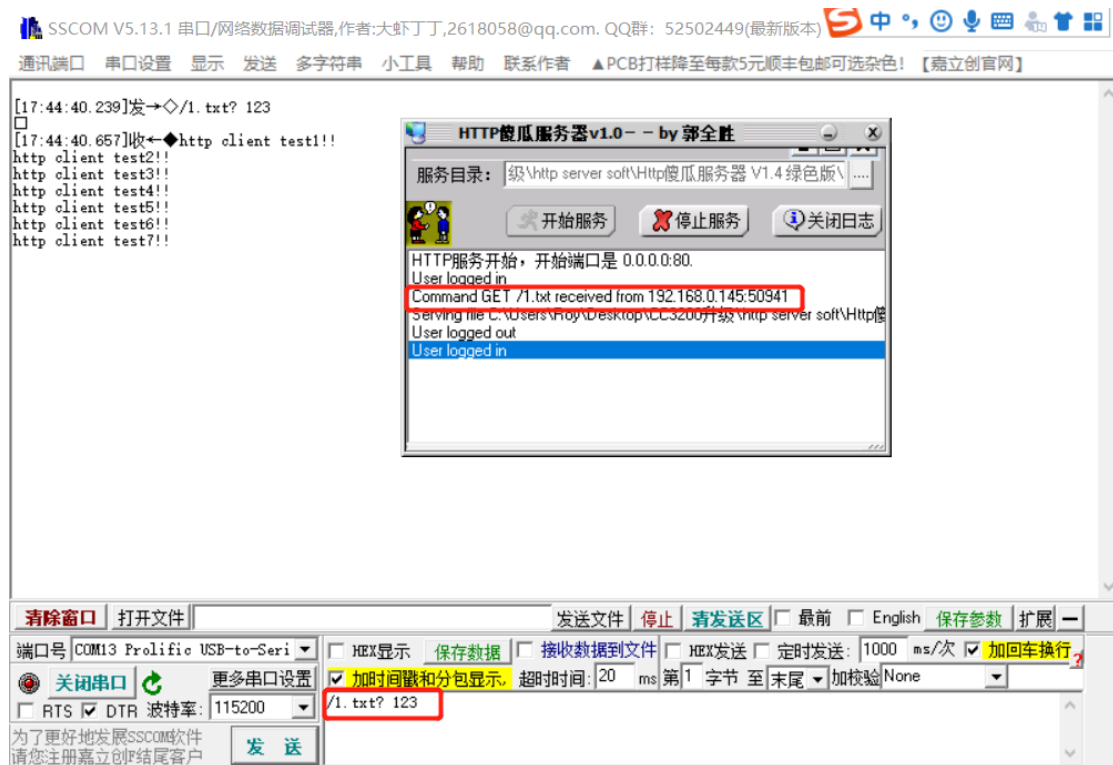
The POST method is generally recommended for customers when uploading large data to the server. If you only request data from the server, you can choose the GET method.

3.3.3 Use of GET request method

The AT command of AT + HCMODE = URL, GET allows the module to request data by GET. The URL is the specified access path. It only works when the access data is POST. The GET access path needs to be specified in the serial data. Based on the POST, reset the request method, as shown in the picture below:



When you need to request data, you need to specify the HTTP Client access path before sending serial data, as shown in the picture below



In the above picture, you can see the request method and path resolved by the server, and when using the GET method, the access path in the serial data needs to be specified (remember to add "?" and a space)

The GET method is more flexible and suitable for small data uploads, but the request path often becomes the case.

3.3.4 HTTP Client precautions

The access path set by the AT command is only valid for the POST request method. The GET method requires the data header in the serial port data to specify the access path.

The HTTP client's default request header attributes are:

Host: xxx.xxx.xxx.xxx

Accept: * / *

Content-Length: xx

This can ensure that customers can request data without setting the header.

Customers can set the header information through the data format of AT + HCHEAD = XX: XX, XXX: XXX. If customers want to add after the default request header

Connection: keep-alive

Content-Type: application / json

They need to use the following AT format, the total length cannot exceed 180 bytes:

AT + HCHEAD = Connection: keep-alive, Content-Type: application / json

3.4 Server multi-Link mode (MULTIS)

When the module works in MULTIS mode, other modes or sub-functions will not be used. MULTIS means that the module as a server can support the connection mode of multiple clients. At present, this mode supports the connection of 4 clients at the same time. The modules are listed under the role of AP below, realizing multi-client communication.

3.4.1 Setting process

1. Enter AT mode and put the current network role in AP mode

+++

AT + ROLE = AP

2. Switch the mode and set the operating mode to MULTIS mode

AT + MODE = MULTIS

3. Set the local monitoring port number of MULTIS (default 5001)

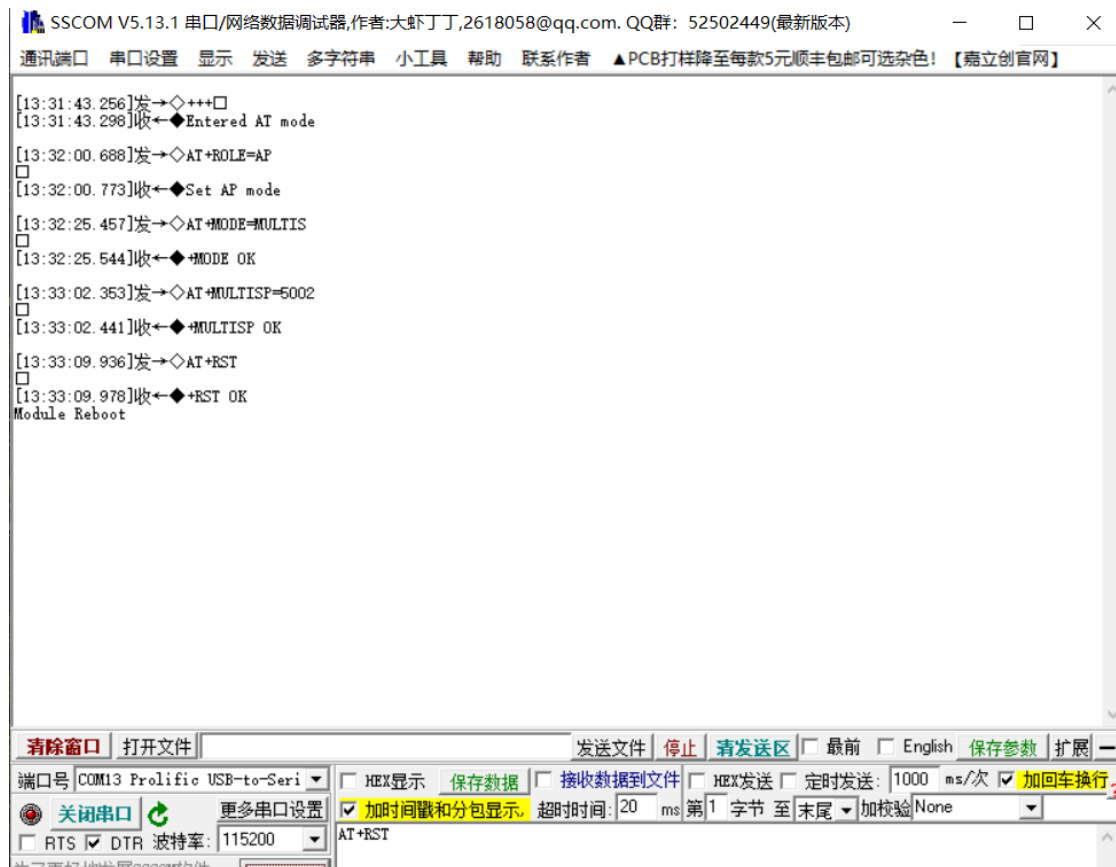
AT + MULTISP = 5002

- 4, restart to take effect

AT + RST

3.4.2 Multi-Client access demo

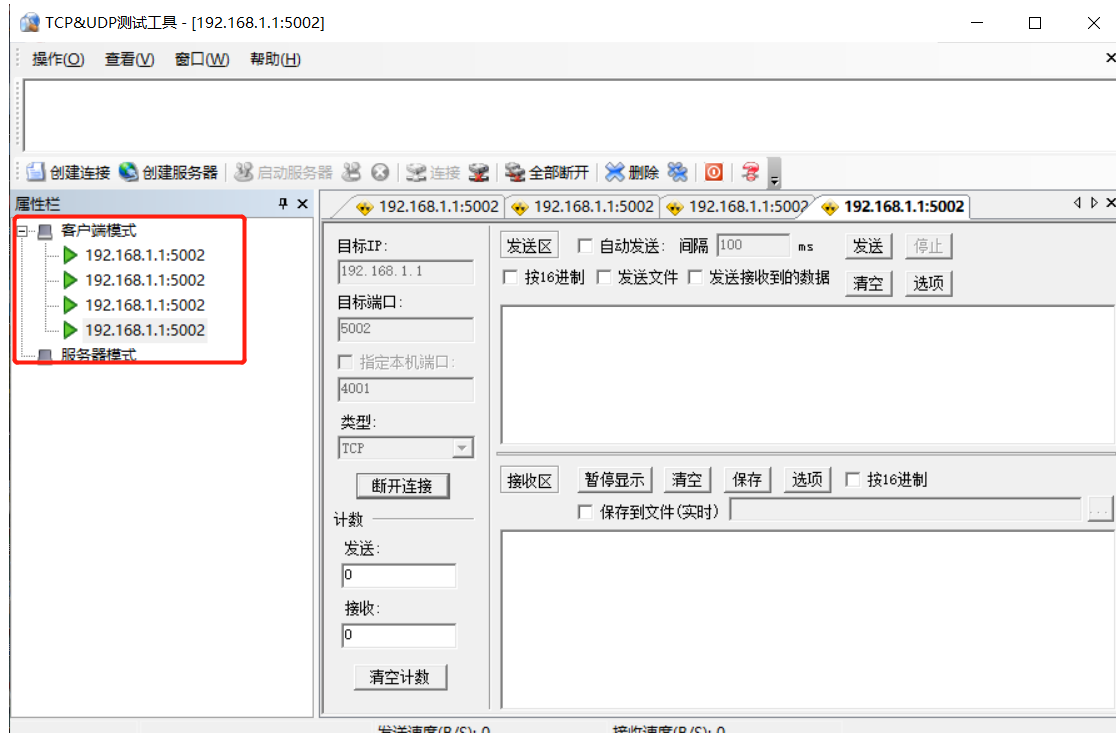
The operation of A complete set of AT commands operation in MULTIS mode is shown below:



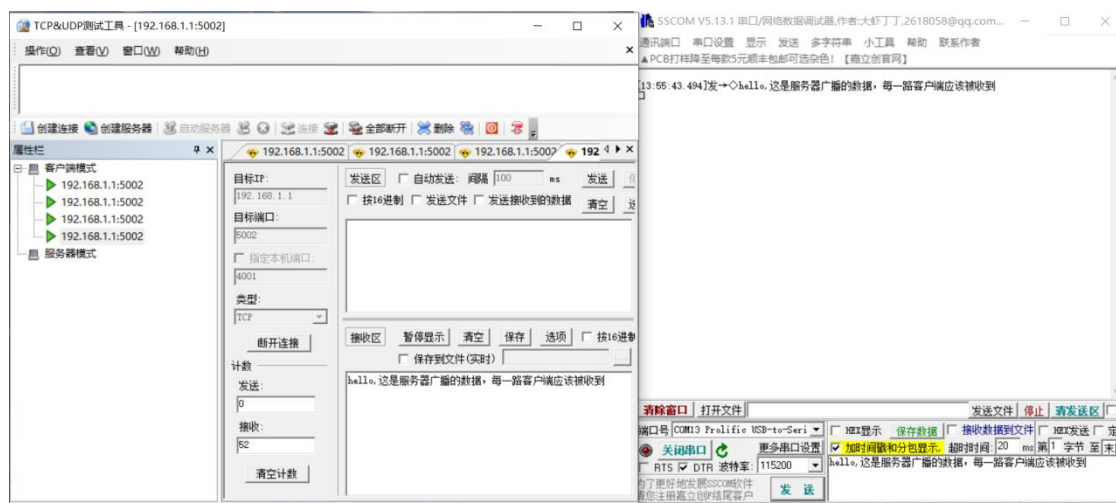
After restarting, at this time, the module works in MULTIS mode. It has been established after the server is turned on. The port number and local IP are set by users. The SSID of the module connected by the computer is that the computer and the module are in the same LAN. After the computer successfully connects to the module, the GPIO9 pin is pulled low.

After successfully connecting, we create 4 clients on the computer and fill in the IP and port the module server (Module IP: 192.168.1.1 port number is 5002)

As shown in the picture below:



The data received by the module's serial port will be broadcast to each client connection.



3.4.3 MULTIS precautions

When there is a client access, the GPIO10 pin will be pulled low at this time to indicate the client's access. When there is no client connection in the module server link, GPIO10 will be pulled high to indicate that there is no client access.

Any message sent by the TCP client will be printed out by the module's serial port, and the message input by the module's serial port will be broadcast by the server to each client link.

Each client can choose to go online and offline at any time without restarting the configuration server.

When the server already has four client links, if there is another access, the server will automatically kick off the oldest client link to the server.

3.5 Client Multi-link Mode (MULTIC)

When the module works in MULTIC mode, other modes or sub-functions will not be used. MULTIC means that the module as a client can support the connection mode of multiple servers. At present, this mode supports the connection of 3 servers simultaneously. Among them, A and B are general TCP / UDP link, and the other is a dedicated client, which only supports the exclusive services of access to the Ebyte cloud server, making it easy for users to access our cloud server. In this example, the module will be made to work in the network role of STA, to demonstrate the setting process of A and B and the use of the Ebyte dedicated link.

3.5.1 Setting process

1. Enter AT mode and put the current network role in STA mode

+++

AT + ROLE = STA

2. Connect to WIFI (AP) and connect to the network

AT + STA = EBYTE, 2, JSZXE880

3. Switch the mode and set the operating mode to MULTIC mode

AT + MODE = MULTIC

4. Set the connection information of SOCKET A, connect to the destination server, and the connection type is TCP

AT + SOCKA = ON, TCP, 192.168.0.136,7788,7789

5. Set the connection information of SOCKET B, connect to the destination server, and the connection type is UDP

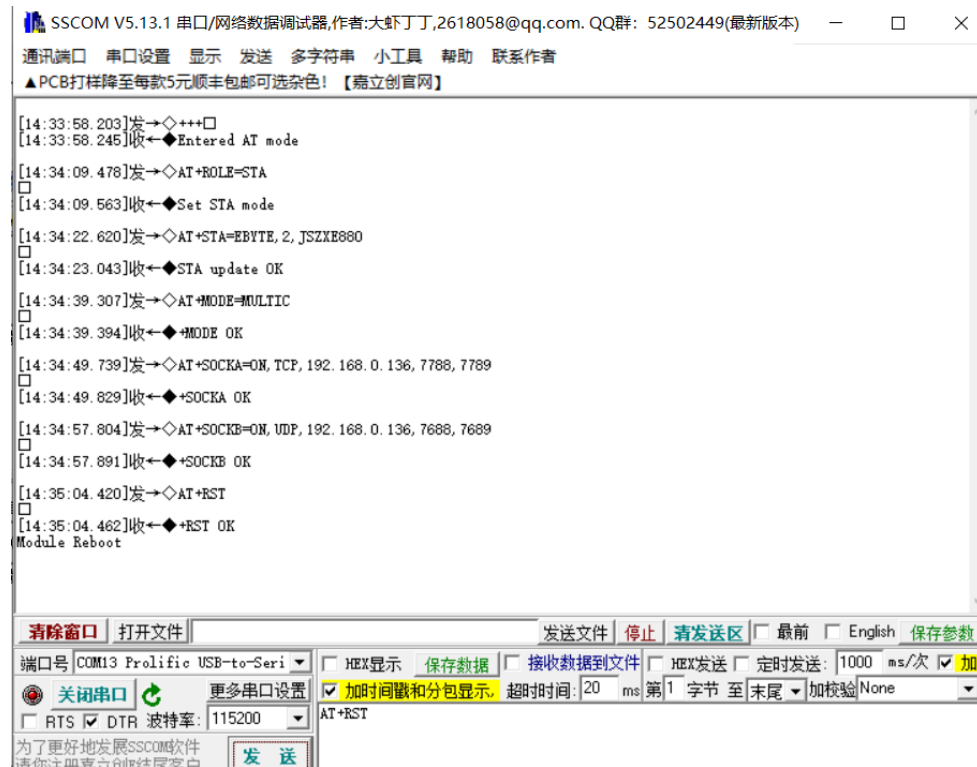
AT + SOCKB = ON, UDP, 192.168.0.136,7688,7689

- 6, restart to take effect

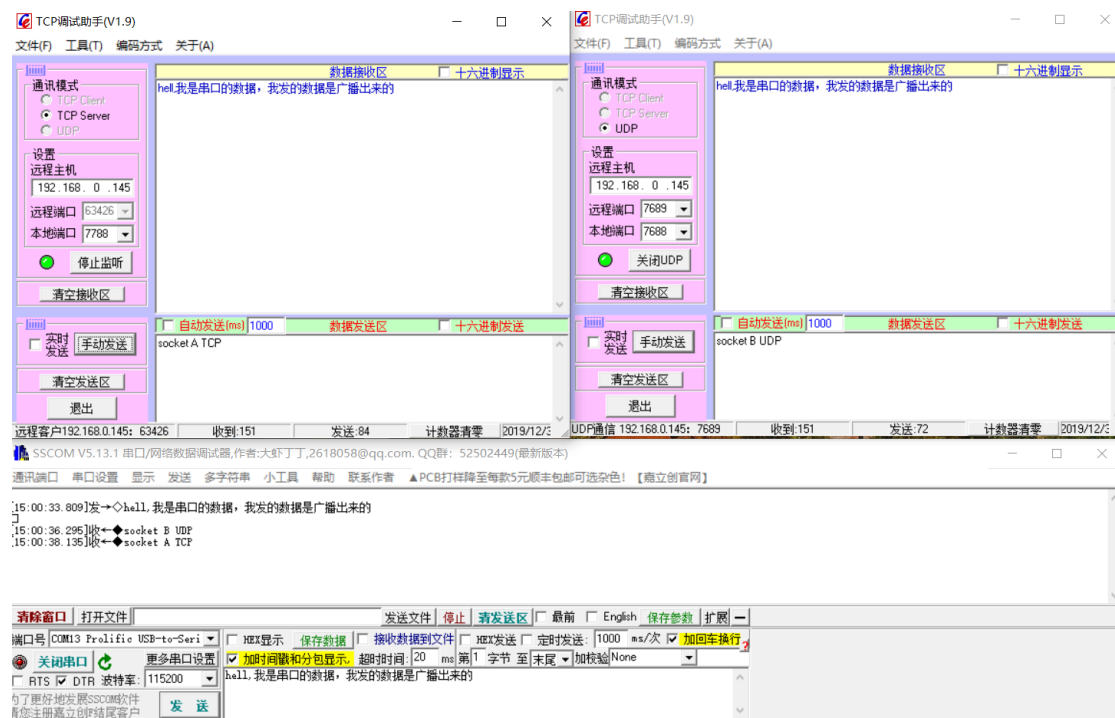
AT + RST

3.5.2 Demo of A B general client access server

A complete set of AT command operation in MULTIC mode is shown below:



If more than two links are established and the link has a TCP type link, the server (TCP) needs to be established before the module is restarted. The reason will be explained in the following notes. Under normal circumstances, the local TCP server and the The UDP server is connected by the A B client of the module, as shown in the picture below:



When the serial port sends data, it is sent to each server connected to the module client by broadcast, and the data sent by each server is printed to the module serial port.

3.5.3 EBT Private Network Access Demo

Based on the above chapters, we need to know the MAC address and SN code of our module. The MAC address can be queried by command:

AT + MAC =?

and the SN code is authorized by us to users, and users can query through AT + DEVSN = ?.

1. Remain the MULTIC mode unchanged, set the socket Ebyte server information:

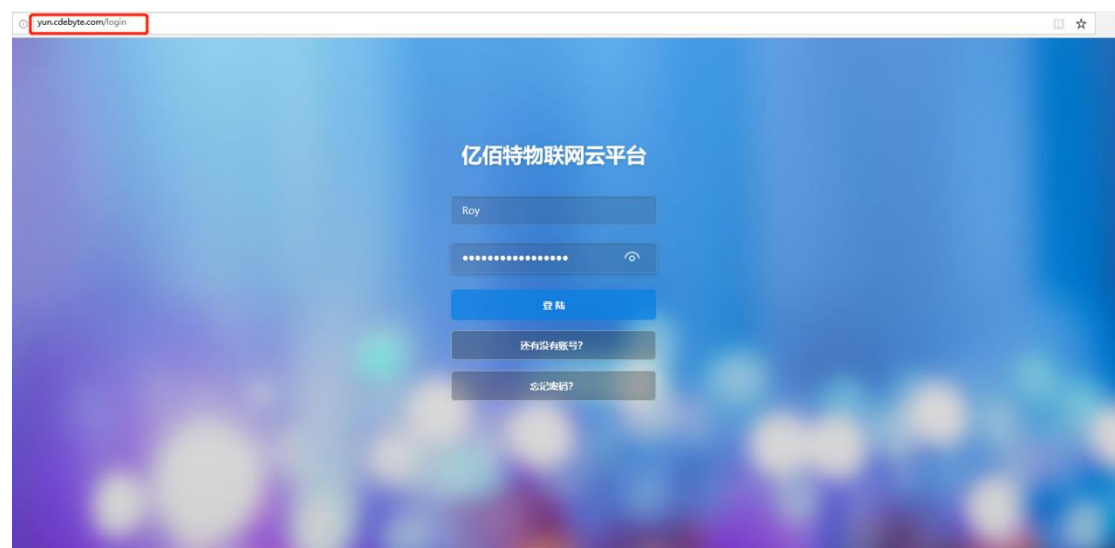
AT + SOCKEBT = ON

2. After getting the SN code provided by us, through the AT command:

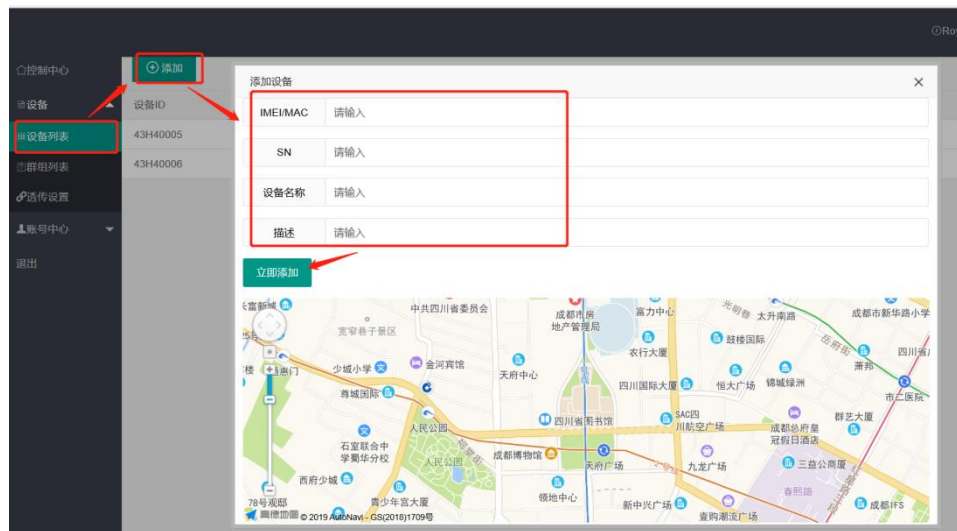
AT + DEVSN =? (16-bit SN code)

to query the SN code, so that when the cloud platform is authenticated later, it can be correctly authenticated.

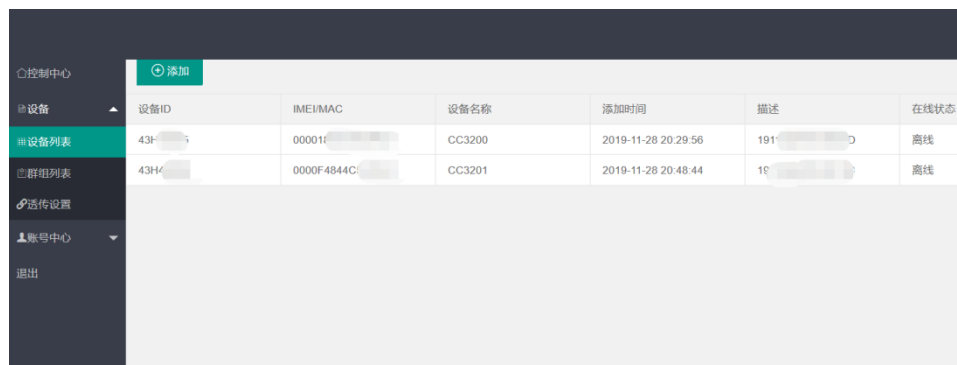
3. Log in URL <http://yun.cdebyte.com/login>, enter the Ebyte cloud login interface to log in. If users has not registered yet, they can register first and then log in, as shown in the picture below.



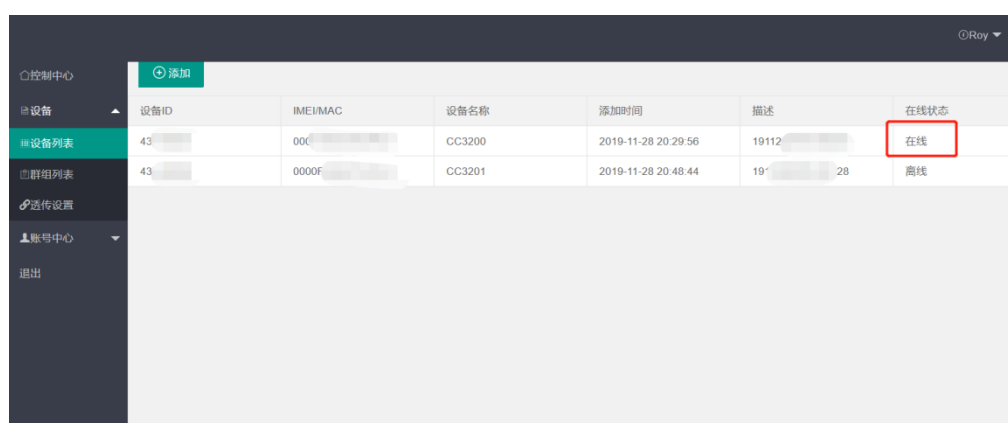
3. After entering the login interface, add a device in the device list and enter the module's MAC address and SN code correctly, as shown in the picture below:



4. After adding correctly, as shown in the picture below, in this way, multiple modules can be established on the cloud platform to correspond to the device.



5. Restart the module to access the Ebyte cloud platform server. At this time, check the information related to cloud platform device, the device is already online, as shown in the picture below:



If users want to achieve remote forwarding between multiple devices, or data forwarding with other products of our company through W02, they can set it in the relevant setting column. We will not repeat them here.

3.5.4 MULTIC precautions

In MULTIC mode, it supports the connection of three client access servers, two general socket links, one dedicated Ebyte socket link, and three links can be used simultaneously, or one or more of them can be used. There are no restrictions on matching.

When the module is started, it will try to connect to the server pointed by the client for the first time. When all the clients of the module are not correctly connected to the specified server, the module will re-establish the connection. When there is a client connected to the server correctly, the module It will not retry to connect again. User need to know that if the they have enabled two or more clients, if one of them fails to access the server, it will not be used in subsequent work.

When the server accessed by the client kicks off the client actively, if two or more clients are currently enabled, it will not be used in subsequent work.

When one or more clients successfully access the server, GPIO10 will be pulled low at this time to indicate the status of at least one server successfully connected. When no client successfully accesses the server, GPIO10 will be pulled high to indicate that no server is currently connected.

3.6 Change UART baud rate

No.	Remark
1	E103-W02 Wi-Fi module supports 300 ~ 3000000bps UART baud rate.
2	By sending AT+UART command, the user can modify the UART parameters. For example: AT+UART=115200, 8, 0,1
3	Please refer to AT command set for detailed command.
Baud rate	300-3000000bps（default115200）
Parity bit support	NONE（default）
	EVEN
	ODD
Data bit	5 bits
	6 bits
	7 bits
	8 bits
Stop bit	1 bit
	2bits

3.7 Low power consumption configuration description

E103-W02 can be configured to four power consumption modes: **Active, Sleep, LPDS, Hibernate**. By sending AT+PM command, the user can configure the module to corresponding low power consumption mode. For example: AT+PM=1, 5

$\sqrt{(\text{Active})/\times(\text{OFF})}$	MCU					NET	WAKEUP		REF CURRENT	
	RTC	RAM	UART	GPIO	CPU		NET	RXD	AP	STATION
Active	√	√	√	√	√	√	-	-	71mA	18mA

Sleep	√	√	√	√	×	√	√	√	68mA	16mA
Lpds	√	√	×	×	×	√	√	√	63mA	2.5mA
Hibernate	√	×	×	×	×	×	×	√	4.6uA	4.5uA

Mode 0: Active mode

All external devices of the module work normally. It is normal working normal, at this time, the module works with best performance and quickest response.

Mode 1: Sleep mode

It can be woken up by UART or network data packet, GPIO keeps output, the module will continue to operate from the point of entering sleep mode, the response time of wake up is shorter than in deepsleep model. Wake up method: UART RXD, network.

Mode 2: LPDS mode

The module enters LPDS mode, and the network part keeps operating, the GPIO output of the module is in high resistance state. It can be woken up by UART or network data packet, the wake up data packet is transparently transmitted normally. At this time, a short data will be sent to wake up the module before normally sending the data packet. The network data as received will be output through UART. Wake up method: UART RXD, network.

Mode 3: Hibernate mode

The module enters hibernate mode, the network and MCU are all in sleep mode, GPIO output high resistance state, it can only be woken up by UART data. The module will restart and operate. The power consumption could be lower than 5uA. Wake up method: UART RXD.

Tips:

1. Set low-power mode in AP mode. The module will not enter low-power mode immediately after startup. Only when connected to the network (as AP mode, there are devices connected to the module) will enter low-power mode.
2. After receiving the network data and the serial port data, the delay time for entering the low power consumption mode will be refreshed. For example: in hibernate mode, after sending serial port data to wake up the module and wait for connection to the server, you can continuously send data for a long time without worrying that the module will re-enter hibernate mode. When the serial port or network data reception is completed, the timing of the delay entry into the low-power mode starts immediately, and the module re-enters the hibernate mode after the delay time is reached.
3. In low power mode, all IO are in a high-impedance state, so the status indicator is invalid, and it will not reflect the current actual connection status.

4.Specification for networking

Networking role

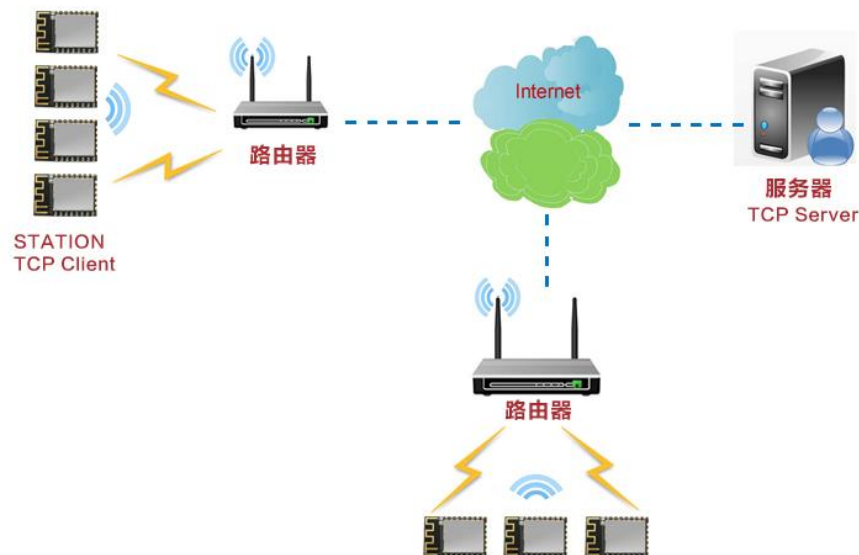
No	Remark
1	As physical connection, E103-W02 supports AP mode (router) and STATION (Wi-Fi)

	device). At most 1 Wi-Fi device can be supported when module works at AP mode.
2	As Socket, E103-W02 includes TCP Server, TCP Client and UDP. Based on TCP connection mechanism, if long time connection is needed, please use TCP heartbeat packet.

Networking model

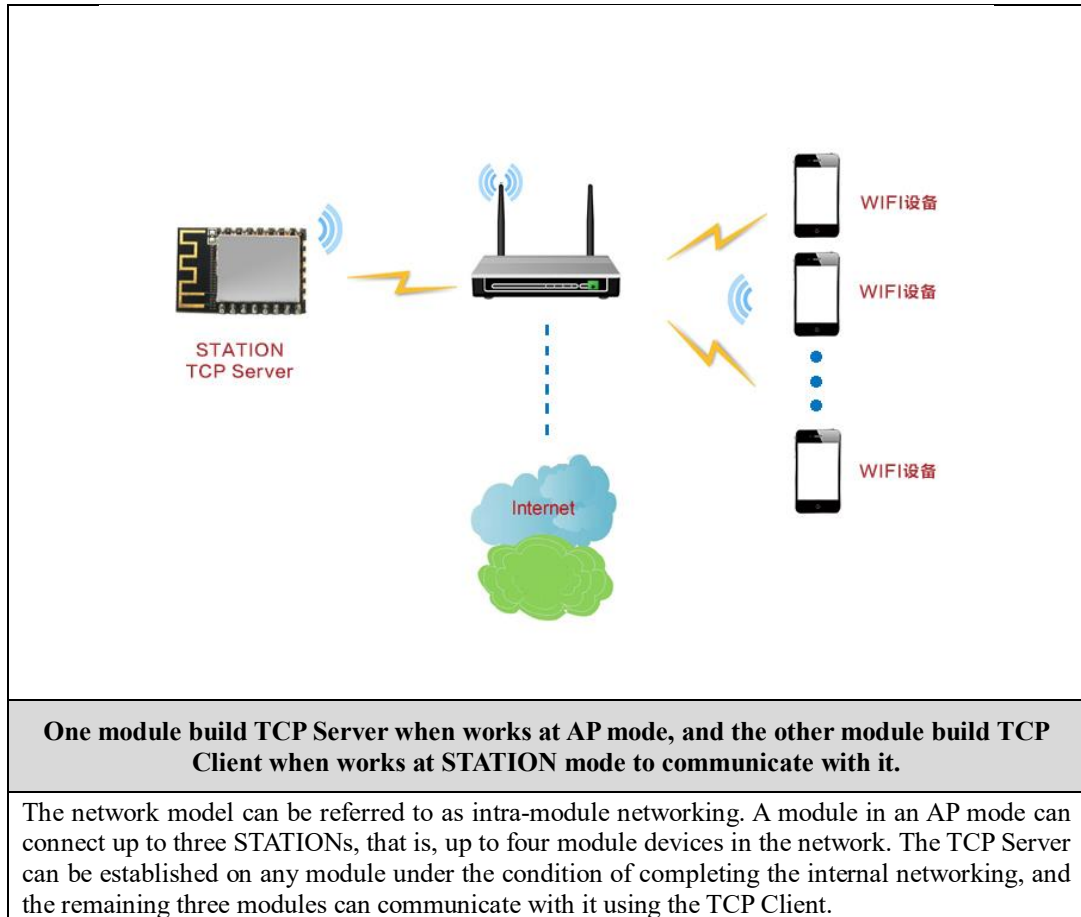
Module builds TCP Client to connect with remote server when working at STATION mode (classic)

Can be used for home IoT, meter-reading, real-time monitoring etc.
Module can communicate with network server for real-time data.
Users can operate module by real-time communication.



Module builds TCP Server to connect with Wi-Fi device when working at STATION mode

This module is similar to type one, the only difference is module builds TCP Server instead of TCP Client when working at STATION mode.
At most 4 remote devices can be connected when module connects with network.



5. AT Command

No.	Command	Test method: (Remember to add Enter and a line feed. The query command is AT + XXX = ?, the following only describes how to use it)	Function description	Test example	Example AT command response
0	+++	Parameter specification: No parameter Response: Entered AT mode			Entered AT mode

1	AT+ALLSTATE E	AT+ALLSTATE Parameter specification: No parameter Response: All parameter information	Execute all query commands, for example: AT+AP=? AT+MAC=?	AT+ALLSTATE	Returns the results of the executed query
2	AT+AIRKISS	AT+AIRKISS Parameter specification: No parameter Response: Enter into AirKiss	Enter AIRKISS mode and wait for AP access	AT+AIRKISS	Enter into AirKiss
3	AT+APIP	AT+APIP=<APIP>,<Mask>,<Gateway>,<DNS> Parameter specification: APIP: IP address in the AP mode Mask: Subnet mask Gateway: Address DNS: DNS server address Response: APIP Update OK	Set / Query AP IP Related Parameters	AT+APIP=?	APIP:192.168.1.1 Mask:255.255.255.0 Gateway:192.168.1.1 DNS:192.168.1.1
			Set AP IP related parameters	AT+APIP=192.168.1.2,255.255.255.0,192.168.1.1,192.168.1.1	APIP update OK
4	AT+AP	AT+AP=<SSID>,<SecType>,<Password> Parameter specification: SSID: Service set identifier <1~32Byte> SecType: Encryption type(0: no password, 1: WEP encryption, 2: WPA2 encryption) Password: <8~63Byte> Response: AP Update OK	Query AP	AT+AP=?	SSID:EBT_65C60F SecType:0 Password:
			Set AP	AT+AP=EByte, 2,12345678	AP update OK
5	AT+CHAN	AT+CHAN=<Channel> Parameter	Query AP channel	AT+CHAN=?	AP Channel:11
				AT+CHAN=1	AP channel update OK

		specification: Channel: Number of channels (1~11) Response: AP Channel Update OK	Set AP channel	AT+CHAN	AP channel update OK
6	AT+DEVS	AT+DEVS=? Parameter specification: No parameter Response: +DEVS OK	Query SN code	AT+DEVS=?	+DEVS SN: 191126173603FF1D
7	AT+EXIT	AT+EXIT Parameter specification: No parameter Response: Exited AT Command mode	Exit AT mode	AT+EXIT	Exited AT mode
8	AT+HELP	AT+HELP Parameter specification: No parameter Response: Functional description of all commands	View help command for each AT command	AT+HELP	Show usage of all AT commands
9	AT+HTTP	AT+HTTP=<Switch> Parameter specification: Switch: 0 (Off) or 1 (On) Response: Http status set OK	Query the enable status of the HTTP server	AT+HTTP=?	Http status: 1
			Set the enable status of the HTTP SERVER	AT+HTTP=1	Http status set OK
10	AT+HCADDR	AT+HCADDR=<Ser ver Addr>,<Server Port> Parameter specification: Server Addr: HTTP Server IP Server Port: HTTP Server Port Response: +HCADDR OK	Query related parameters of the HTTP CLIENT address	AT+HCADDR=?	+HCADDR State:OFF,Addr:192.168.1.1, Port:80
			Set related parameters of the HTTP CLIENT address	AT+HCADDR=1 92.168.1.1,80	+HCADDR OK

11	AT+HCMODE	AT+HCMODE=<URL>,<Request> Parameter specification: URL:Request server path (1 ~ 64 bytes) Request: Request method GET / POST (1 ~ 10 bytes) Response: +HCMODE OK	Query related parameters of HTTP CLIENT mode	AT+HCMODE=?	+HCMODE URL:/post,Request:POST
			Set related parameters of HTTP CLIENT mode	AT+HCMODE=/k.txt,POST	+HCMODE OK
12	AT+HCHEAD	AT+HCHEAD=<head1>,<head2>,...<headn> Parameter specification: head1~headn:Header information, with "," as a sentence, no more than 128 bytes Response: +HCHEAD OK	Query the header information of HTTP CLIENT	AT+HCHEAD=?	+HCHEAD Header:Accept: */*
			Set the header information of HTTP CLIENT	AT+HCHEAD=,	+HCHEAD OK
13	AT+KEEPA L I V E	AT+KEEPA L I V E=<ON/OFF>,<Period>,<len><Info> Parameter specification: <ON/OFF>:ON/OFF If OFF, the following parameters are invalid (Factory default is OFF) <Period>:Heartbeat cycle in seconds (1 ~ 300) <Len>: Set the heartbeat packet length (1 ~ 31) <Info>: Heartbeat packet content (Less than 32 hexadecimal digits) Response: Keepalive set OK	Query related parameters of heartbeat packet	AT+KEEPA L I V E=?	Keepalive status: OFF Period:50 Len:5 InfoPkt:0102030405
			Set related parameters of the heartbeat packet	AT+KEEPA L I V E=ON,10,5,0102030405	Keepalive set OK

14	AT+MULTISP	AT+MULTISP=<Port> Parameter specification: <Port>: Multi-client server port number (1~65536) Response: +MULTISP OK	Query the port number of the server	AT+MULTISP=?	+MULTISP Port:5001
			Set the port number of the server	AT+MULTISP=5002	+MULTISP OK
15	AT+MADDR	AT+MADDR=<Server IP/URL>,<Port> Parameter specification: Server IP/URL: MQTT server address URL or ip Port:MQTT server port Response: +MADDR OK	Query related parameters of MQTT address	AT+MADDR=?	+MADDR State:OFF,Addr:www.ebyte.com,Port:1883
			Set related parameters of MQTT address	AT+MADDR=183.230.40.39,6002	+MADDR OK
16	AT+MUSER	AT+MUSER=<"ClientID">,<"UserName">,<"UserPWD"> Note that this parameter needs to be quoted Parameter specification: Customer ID (up to 64 bytes) UserName: user name (up to 64 bytes) UserPWD: user secret (up to 64 bytes) Response: +MUSER OK	Query Related Parameters of MQTT user information	AT+MUSER=?	+MUSER ClientID:Roy,UserName:ebyte,UserPwd:123456
			Set related parameters of MQTT user information	AT+MUSER="555656353","280773","02"	+MUSER OK
17	AT+MSUB	AT+MSUB=<Topic>,<Qos> Parameter specification: Topic:Set the subscribed Topic Path (up to 64 bytes) Qos: Set the subscribed Qos message level 0,1,2	Query related parameters of MQTT Sub topic	AT+MSUB=?	+MSUB Topic:subtopic,Qos:0
			Set related parameters of MQTT Sub topic	AT+MSUB=subtopic,0	+MSUB OK

		Response: +MSUB OK			
18	AT+MPUB	AT+MPUB=<Topic>,<Qos>,<retain> Parameter specification: Topic: Set the reported Topic path (up to 64 bytes) Qos: Set the reported Qos message level 0,1,2 retain:Set the reported will parameter 0,1 Response: +MSUB OK	Query related parameters of MQTT Pub topic	AT+MPUB=?	+MPUB Topic:pubtopic,Qos:0,Retatin:0
			Set related parameters of MQTT Pub topic	AT+MPUB=pubtopic,0,0	+MPUB OK
19	AT+MODE	AT+MODE=<RunMode> Parameter specification: <RunMode>: Module operation mode. The values are: NORMAL: Traditional mode, original function mode MQTT: MQTT mode HTTP: HTTP CLIENT mode MULTIS: Multi-client access mode MULTIC: Multi-server connection mode Response: +MODE OK	Query the current communication mode	AT+MODE=?	+MODE Run Mode:NORMAL
			Set the current communication mode	AT+MODE=MQTT	+MODE OK
20	AT+MAC	AT+MAC=? Parameter specification: No parameter Response: MAC address	Query mac address	AT+MAC=?	1893D7429AA7
21	AT+ONENETIPPORT	AT+ONENETIPPORT=<RemoteIP>,<Remote	Query related parameters	AT+ONENETIPPORT=?	OneNET RemoteIP:183.230.40.33 RemotePort:80

		Port > Parameter specification: RemoteIP: IP address RemotePort: Communication server port Response: OneNET RemoteIpPort set OK	of ONENET IP and port		
			Set related parameters of ONENET IP and port	AT+ONENETIPP ORT=183.230.40. 33,80	OneNET RemoteIpPort set OK
22	AT+ONENETU NI	AT+ONENETUNI=< ON/OFF>,P_ID,A_In fo,S_name Parameter specification: ON/OFF: ON/OFF If OFF, the following parameters are invalid (default OFF) P_ID: OneNET product ID A_Info: OneNET Device authentication information S_name:OneNET Product script file name Response: OneNET Uni Set OK	Query user related parameters of ONENET	AT+ONENETUN I=?	OneNET status:OFF P_ID:95205 AU_Info:ebyte1 S_Name:Smart
			Set user related parameters of ONENET	AT+ONENETUN I=ON,278656,02 , EbyteScr	OneNET Uni Set OK
23	AT+ONENETA DD	AT+ONENETADD= <index>,<deviceID>, <Apikey> Parameter specification: Index: Add device to group index number (less than 20) deviceID: OneNET Device ID of the receiving device Apikey: OneNET APIkey of the receiving device Response: Add Success	Add ONENET device ID	AT+ONENETAD D=1,548806592, K0ITQw7RcARC Hdou22fjSEz3sQ U=	Add Success

24	AT+ONENETDEL EL	AT+ONENETDEL=<index> Parameter specification: Index: Add device to group index number (less than 20) Response: Delete Success	Delete ONENET device ID	AT+ONENETDEL	Delete Success
25	AT+ONENETSEL EL	AT+ONENETSEL=<index> Parameter specification: Index: Add device to group index number (less than 20) Response: Device ID: 17502768 APIKey: pyZVOnnBGhT=7X0Bl6oqoaEdh2 (Device exist) or Device ID: - APIKey: - (The index has no information)	Select ONENET device	AT+ONENETSEL=1	Device ID: 548806592 APIKey: BFizARKT6LyQCIPaT7QefXOKUrE=
26	AT+STATUS=? ?	AT+STATUS=? Parameter specification: No parameter Response: WiFi Status: IP=192.168.1.1 , Gateway=0.0.0.0	View link status	AT+STATUS=?	WiFi Status: IP=192.168.0.161 , Gateway=192.168.0.1
27	AT+PM	AT+PM=<Power Mode>,<Delay> Parameter specification: Power Mode: Power consumption mode: (0,1,2,3) Delay: Delay time to enter low power status after waking up (2~240S) Response: Power mode set OK	Query related parameters of power management	AT+PM=?	Power Mode:0 Set Delay:5
			Set related parameters of power management	AT+PM=0,240	Power mode set OK

28	AT+RESTORE	AT+RESTORE Parameter specification: No parameter Response: Restore OK	Factory reset operation	AT+RESTORE	Restore OK
29	AT+REGPKT	AT+REGPKT=<ON/OFF>,<len>,<Info> Parameter specification: <ON/OFF>: ON/OFF If OFF, the following parameters are invalid(factory default is OFF) <len>: The length of the set registration packet (1 ~ 31) <Info>: Registration packet content (less than 32 hexadecimal numbers) response: RegPkt info set OK	Query related parameters of the registration packet	AT+REGPKT=?	RegPkt status: OFF Len:5 RegPkt:0A0B0C0D0E
			Set related parameters of the registration packet	AT+REGPKT=ON,10,0102030405060708090A	RegPkt info set OK
30	AT+ROLE	AT+ROLE=<mode> Parameter specification: mode: Set to AP means Access Point, providing wireless access service Set to STA means Station, similar to a wireless terminal Response: Set AP mode or Set STA mode	Query network role of the module	AT+ROLE=?	Role=AP
			Set network role of the module	AT+ROLE=STA	Set STA mode
31	AT+RST	AT+RST Parameter specification: No parameter Response: Module rebooting	Restart	AT+RST	+RST OK
32	AT+STAIP	AT+STAIP=<IPMode>,<STAIP>,<Mask>,<Gateway>,<DNS> Parameter	Query related Information	AT+STAIP=?	STAIP:192.168.0.161 Mask:255.255.255.0 Gateway:192.168.0.1

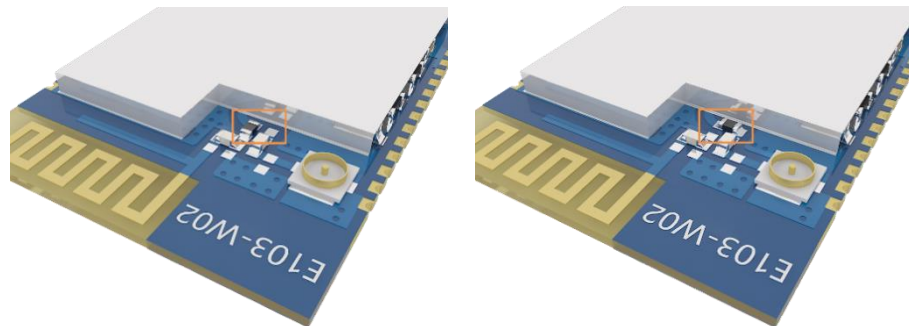
		specification: IPMode: IP mode (DHCP or STATIC) STAIP: IP address in STA mode Mask: Subnet mask Gateway: gateway address DNS: DNS server address Response: STAIP Update OK	of the STA IP		DNS:192.168.0.1 IPMode:DHCP
			Set related Information of the STA IP	AT+STAIP=DHC P,192.168.0.161,2 55.255.255.0,192. 168.0.1,192.168.0 .1	STAIP update OK
33	AT+SOCKA	AT+SOCKA=<ON/O FF>,<Protocol>,<Re moteIP>,<RemotePor t>,< LocalPort > Remark: SOCKA SOCKB is the secondary SOCK and only supports clients Parameter Description: <ON / OFF>: enable switch, default is off, OFF is invalid for subsequent parameter setting Protocol: UDP / TCP: the communication protocol used Remote IP: remote IP Remote Port: remote port Local Port: local port response: + SOCKA OK	Query related parameters of the secondary socket A	AT+SOCKA=?	+SOCKA State:OFF,Proto:TCP,RIP:19 2.168.1.1,RPort:7789,LPort:7 788
			Set related parameters of the secondary socket A	AT+SOCKA=ON ,TCP,183.221.116 .120,8886,8889	+SOCKA OK
34	AT+SOCKB	AT+SOCKB=<ON/O FF>,<Protocol>,<Re moteIP>,<RemotePor t>,< LocalPort > Remark:	Query related parameters of the secondary socketB	AT+SOCKB=?	+SOCKB State:OFF,Proto:TCP,RIP:19 2.168.1.1,RPort:7689,LPort:7 688

		<p>SOCKA SOCKB is the secondary SOCK and only supports clients</p> <p>Parameter</p> <p>Description:</p> <p><ON / OFF>: enable switch, default is off, OFF is invalid for subsequent parameter setting</p> <p>Protocol: UDP / TCP: the communication protocol used</p> <p>RemoteIP: remote IP</p> <p>RemotePort: remote port</p> <p>LocalPort: local port</p> <p>response:</p> <p>+ SOCKB OK</p>	Set related parameters of the secondary socketB	AT+SOCKB=ON ,TCP,183.221.116 .120,8886,8889	+SOCKB OK
35	AT+SOCKEBT	<p>AT+SOCKEBT=<ON /OFF></p> <p>Parameter specification:</p> <p><ON/OFF>: Enable switch,default is off. When it is off, the following parameter settings are invalid.</p> <p>Response:</p> <p>+SOCKEBT OK</p>	Query the access status of EBYTE	AT+SOCKEBT=?	+SOCKEBT State:OFF
			Set the access status of EBYTE	AT+SOCKEBT=ON	+SOCKEBT
36	AT+SOCK	<p>AT+SOCK=<Protocol>,<CS>,<RemoteIP>,<RemotePort>,<LocalPort></p> <p>Parameter specification:</p> <p>Protocol: protocol (TCP or UDP)</p> <p>CS: (CLIENT or SERVER)</p> <p>RemoteIP: Remote IP address</p> <p>RemotePort: Remote port number</p>	Query related parameters of the main socket	AT+SOCK=?	Protocol:TCP CS:CLIENT RemoteIP:183.230.40.40 RemotePort:1811 LocalPort:8887
			Set related parameters of the main socket	AT+SOCK=TCP, CLIENT ,183.230 .40.40,1811,8887	Socket update OK

		LocalPort: Local port number Response: Socket Update OK			
37	AT+SMT	AT+SMT=<Timeout> Parameter specification: Timeout: Exit this mode when timeout (available 0 ~ 255; 0: never exit, 1 ~ 255: (Exit after 1 ~ 255 seconds) Response: Enter into Smartconfig	Enter SmartConfig mode	AT+SMT=60	Enter into Smartconfig
38	AT+STA	AT+STA=<SSID>,<SecType>,< Password> Parameter specification: SSID: Service set identifier <1~32Byte> SecType: Encryption type Password: <8~63Byte> Response: STA Update OK	Query related parameters of STA	AT+STA=?	SSID:E880-IR01 TYPE:2
			Set related parameters of STA	AT+STA=E880-IR01,2,JSZXE880	STA update OK
39	AT+UBEAT	AT+UBEAT=<ON/OFF>,<heard words>,<Type>,<period> Parameter specification: <ON/OFF>: Whether the serial heartbeat function is enabled. It is not enabled by default. heard words: Heartbeat content (up to 64 bytes) Type: Heartbeat type: 0: ascll 1:HEX period: Heartbeat	Query related parameters of the serial heartbeat packet	AT+UBEAT=?	+UBEAT State:OFF,Heart words:hello,Type:Asc,Peri:5
			Set related parameters of the serial heartbeat packet	AT+UBEAT=ON,EBYTE,0,5	+UBEAT OK

		cycle (0~255) Response: +UBEAT OK			
40	AT+UART	AT+UART=<Baud>,<Databit>,<Parbit>,<Stopbit> Parameter specification: Baud: Baud rate (available 300-3000000bps) Databit: Data bit Parbit: Parity bit Stopbit: Stop bit Response: Uart Update OK	Query related parameters of the serial port	AT+UART=?	Baud:115200 Databit:8 Parbit:0 Stopbit:1
			Set related parameters of the serial port	AT+UART=115200,8,0,1	Uart update OK
41	AT+VER=?	Parameter specification: No parameter Response: Print the current version information	Query version information	AT+VER=?	E103-W02 V3.0

6. Antenna selection



The default 0R resistor is soldered as shown above (left), and the antenna interface is PCB. If you need to change the antenna interface mode to IPEX, please change the 0R resistor to the above (right).

7. Customized cooperation

- If customers need to customize products, please contact us.
- Ebyte has reached in-depth cooperation with many well-known enterprises.



8. Revision history

Version	Date	Description	Issued by
1.0	2017-10-16	Initial version	huaa
1.1	2018-5-23	Content addition	huaa
1.2	2018-9-18	Manual split	huaa
1.3	2019-2-17	Error correction	Ray
1.4	2019-8-9	Content addition	All
3.0	2019-12-18	version update	Blue

9. About us

Technical support: support@cdebyte.com

Documents and RF Setting download link: www.ebyte.com

Thank you for using Ebyte products! Please contact us with any questions or suggestions:
info@cdebyte.com

Office hotline: 028-64146160 ext. 821

Web: www.ebyte.com

Address: Innovation Center D347, 4# XI-XIN Road, Chengdu, Sichuan, China



Chengdu Ebyte Electronic Technology Co.,Ltd.