

# CX-WIFI-2NET Module user manual

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CX-WIFI-2NET module is an all-in-one 802.11 b/g/n Wi-Fi and Ethernet module that provides a way to connect a user's physical device to a Wi-Fi wireless network or Ethernet. Provides a solution for the UART data transfer interface. The module comes with an RS485 port, a standard RS232 communication port and two RJ45 standard network ports. Through this module, the traditional low-end serial device or MCU-controlled device can easily access Wi-Fi wireless network or Ethernet. Transparent transmission is realized to realize the control and management of the Internet of Things.

As a hotspot, CX-WIFI-2NET module can accommodate 32 wifi clients simultaneously,

and can also accommodate 32 TCP clients at the same time. At the same time, the module can be used as a secondary router and can be connected hand-in-hand.

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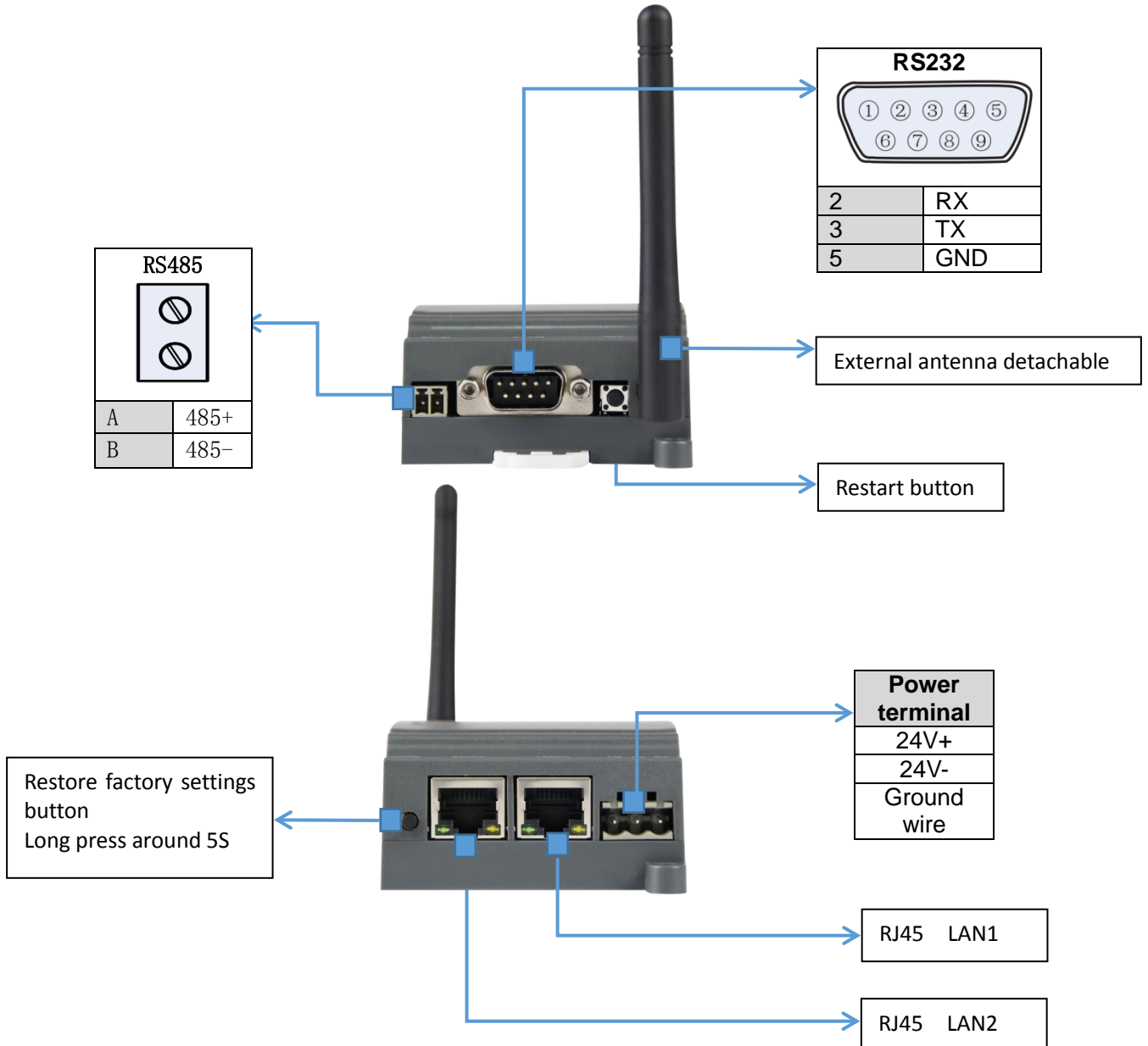
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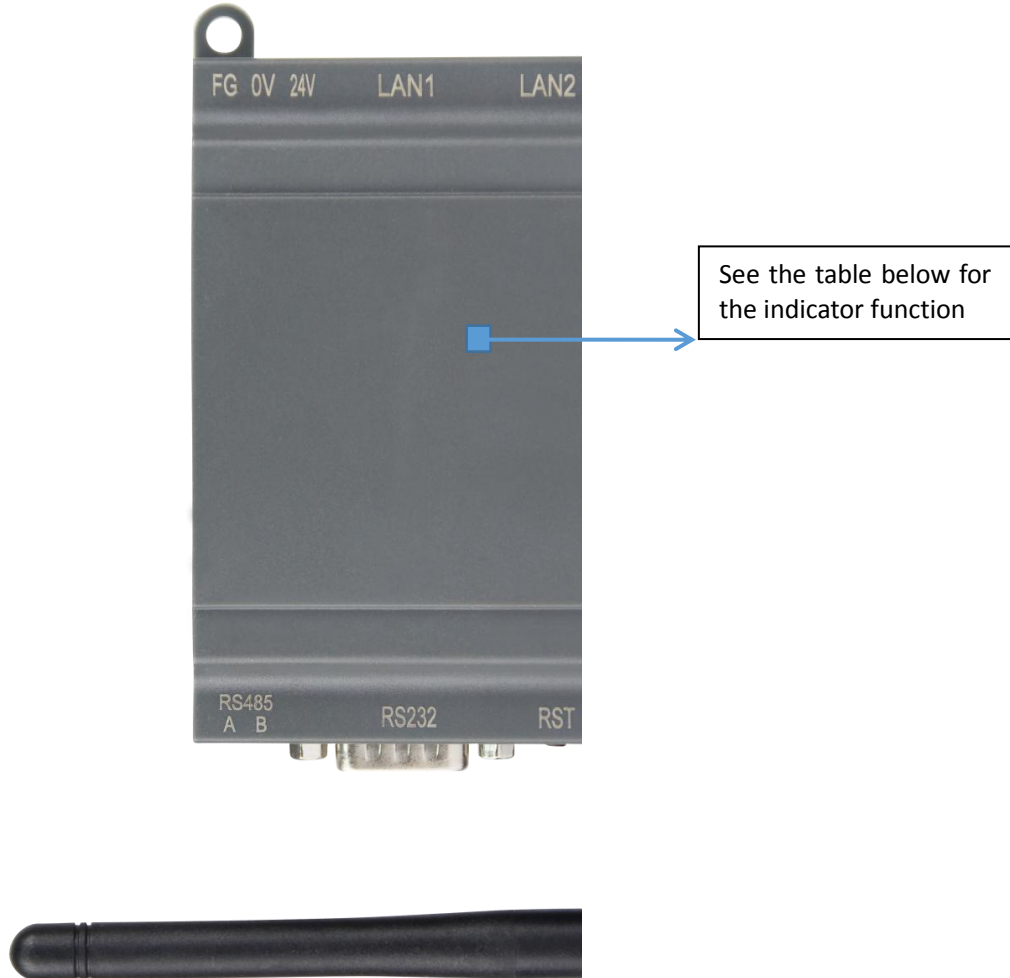
## Chapter 1 Hardware description

### 1.1. Module model and appearance



## 1.2. Indicator function

There are eight indicators on CX-WIFI-2NET module, which are POWER, CHAR, READY, LINK, NET1, NET2, RX, TX. The status of the indicator light is as follows:



Indicator	Indication function	Status
<b>POWER</b>	Power Indicator	Power supply works normally.
<b>CHAR</b>	Lithium battery charging indicator (optional)	It is equipped with a lithium battery and is always on when the rechargeable battery is charging. It automatically turns off when the battery is fully charged.
<b>READY</b>	System operation work indicator	Always bright after the system is
<b>LINK</b>	Module WIFI connection status indication	Connection is established with data constantly lit
<b>NET1</b>	LAN1 port connection status indicator	Connection establishment has data
<b>NET2</b>	LAN2 port connection status indicator	Connection establishment has data
<b>RX</b>	Data transmission indication	Serial network RX has data flashing

TX

Data transmission indication

Serial network TX has data flashing

### 1.3 Features

- Support 802.11b/g/n wireless standard
- Support TCP/IP/UDP network protocol stack
- Support UART/Ethernet data communication interface
- Support wireless work in STA/AP/AP+STA mode
- Support routing / bridging / switch mode network architecture
- Support transparent / protocol data transmission mode
- Provide web configuration page
- Support heartbeat signal, WIFI connection indication
- Support serial free/auto framing function
- Flexible software platform to provide customized services

### 1.4 Main application areas

- ◆ Intelligent lighting
- ◆ Smart socket
- ◆ Industrial control
- ◆ Remote device monitoring
- ◆ Internet of Things applications



## 1.5 Module basic parameters

	Item	Index
<b>Wireless parameter</b>	Wireless standard	802.11 b/g/n
	Frequency range	2.412GHz-2.484GHz
	Transmit power	802.11b: +20dBm(Max.)
		802.11g: +18dBm(Max.)
		802.11n: +15dBm(Max.)
		User can configure power
	Receiving sensitivity	802.11b: -89dBm
		802.11g: -81dBm
802.11n: -71dBm		
Antenna option	External I-PEX connector	
<b>Hardware parameter</b>	Data interface	UART: 300bps-460800bps Ethernet: 100Mbps
	Operating Voltage	5-30V
	Working current	50mA~350mA
	Operating temperature	-40°C-85°C
	Storage temperature	-40°C-125°C
	Size	65x90x36mm
	<b>Software parameter</b>	Wireless network type
Security Mechanism		WEP/WPA-PSK/WPA2-PSK
Encryption type		WEP64/WEP128/TKIP/AES
Operating mode		Transparent transmission mode, serial command mode
AT command		AT+ command structure
Network protocol		TCP/UDP/ARP/ICMP/DHCP/DNS/HTTP
Maximum number of TCP connections		32
User configuration		Web server + AT command configuration

## Chapter 2 Product function description

### 2.1 User configuration process

After CX-WIFI-2NET module is powered on, it will automatically connect to the wireless network and server according to the parameters set by the user, and enter the set working mode, and open the serial port according to the preset serial port parameters.

The parameters that the user needs to preset are:

Operating mode

Transparent transmission / serial command mode / HTTPD Client mode

Wireless network parameters

Network name (SSID)

Safe mode

Key

Default TCP/UDP connection parameters

Protocol type

Connection type (server or client)

Destination port

Destination IP address

Serial port parameter

Baud rate

Data bit

Check position

Stop bit

Hardware flow control

After the user has configured all the parameters and restarted, the module can work according to the set parameters. Each section will be described in detail in the following sections.

### 2.2 Operating mode

The module has three working modes: transparent transmission, serial command mode, and HTTPD client mode.

#### 2.2.1 Transparent transmission mode

CX-WIFI-2NET module supports serial port transparent transmission mode, which can realize serial port plug and play, thus minimizing the complexity of user use. In this mode, all data that needs to be sent and received is transparently transmitted between the serial port and the WiFi or Ethernet interface, enabling data transfer between the universal serial device and the network device without any analysis.

In transparent transmission mode, it can be fully compatible with the user's original software platform. User equipment can support wireless data transmission without any software changes.

<Description>:

Transparent transmission mode is the least complex data transmission. The user turns on the hardware flow control (CTS/RTS) function of the serial port, which can minimize the bit error rate.

### 2.2.2 Serial command mode

In this mode, users can send serial port data to different server addresses according to our protocol, and send data to different servers without restarting. This mode can send data to the server using UDP or TCP client.

The client MCU sends the packet in the following format. After the module is parsed, only n bytes of data are sent to the destination address. When there is data return, the data is directly output from the serial port without parsing.

Serial command mode protocol table:

Baotou	Length	Functional word	Alternate parameter area	Target port	Target address	Data	Sum check
2	2 (n+m+5)	1	2	2	m	n	1

Baotou:

Constant for 0x55 0xaa

Length:

The sum of all the number of bytes from the start of the function word to the check (without the checksum). High byte first function word:

Bit0: (UDP: 0 ; TCP: 1)

Bit1: (Short connection: 0; long connection:1)

Bit2: (IP: 0; Domain name: 1)

Bit7: (Streamlined protocol: 0; Full protocol: 1) Note: Currently only the streamlined protocol is supported.

Note:

- For Bit1, if it is a short connection, the data will be disconnected after sending the data; if it is a long connection, after the data is sent, the connection will remain until the target address is changed again.

- For Bit2, it indicates whether the destination address is IP or domain name. If it is IP, the destination address is 4 bytes. If it is a domain name, the target address length is the length of the entire domain name string (where the last byte of the destination address is 0x00). , that is, the end of the string, the length of the domain name is not fixed).

- For Bit7, in the thin protocol, the reply frame contains only data. Under the full protocol, the reply frame will have a frame failure such as sending failure, waiting for timeout, and responding to the device IP under UDP broadcast.

Alternate parameter area:

The first byte: If it is a short connection, this location is the TCP wait timeout period (1-255). If the response is not received after the send command is completed, wait for the corresponding number of seconds. If it is 5, it means the maximum wait. 5s disconnected; if the return data is received immediately after sending the command, the connection is immediately disconnected; if it is a long connection, it is 0x00 here.

Second byte: reserved

Target port:

Little endian format, low byte first, such as port 23, here the order is 17 00

Target address:

If it is IP, it is 4 bytes, for example, 192.168.0.7 is represented as 07 00 A8 C0; if it is a domain name, the address length is not fixed, ending with '\0'

Data:

Variable length, up to 1000 bytes

Calibration:

From the beginning of the function word, before the check byte, add the checksum.

The following are specific application examples:

Send data: 55 aa 00 0a 00 00 00 21 00 85 00 A8 C0 01 0f

Length byte 00 0a: length is n+m+5, here is 10

Function word 00: UDP mode

Target ip address 85 00 A8 C0:192.168.0.133

Data area 00: length is 1

Check

calculation:

$0x00+0x00+0x00+0x21+0x00+0x85+0x00+0xA8+0xC0+0x01=0x0f$

### 2.2.3 HTTPD Client mode

This mode is used to request data from an HTTP server or to submit data to a server.

After the user sets the specific content of the HTTP protocol header with the AT command or the web page. Each time data is sent, the module automatically encapsulates the sent data into HTTP protocol data and sends it to the specified HTTP server. It is convenient for users to read or submit data directly from the HTTP server. In this mode, the user can send the data to the specified http server, and the module will automatically add the http protocol header in front of the sent data. The content of the specific protocol header can be set by the AT command or the web page.

The following are specific application examples:

First set the HTTP related parameters with the AT command.

AT+HTTPURL=192.168.1.1,80

Set the server's address and port

AT+HTTPTP=POST

Set the HTTP type, GET, PUT,

or POST

AT+HTTPPH=/set

Set the path in the protocol

header, up to 50 bytes

AT+HTTPCN=keep-alive

Set Connection in the protocol

header, up to 20 bytes

AT+HTTPUA=lwip13.2

Set the User-Agent in the protocol

header, up to 20 bytes.

If the data sent is 1234.

Then on the 192.168.1.1 port 80 will receive the following data

POST/set HTTP/1.1

Connection:keep-alive

User-Agent:lwip1.3.2

Content-Length:4

Host:192.168.1.1:80

1234

If the HTTP type is GET, the data received on port 80 of 192.168.1.1 is

POST/set1234 HTTP/1.1

Connection:keep-alive

User-Agent:lwip1.3.2

Content-Length:0

Host:192.168.1.1:80

If the module receives data from the server, it will print directly to the serial port without any processing.

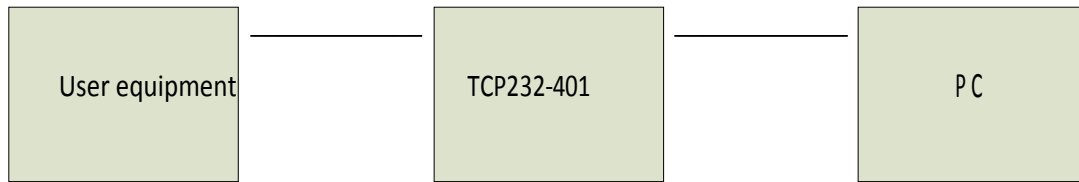
Users can customize the content of the HTTP header in the new definition mode. You can add, delete, and modify the content of each HTTP header according to your needs. (If the HTTP request type is POST/PUT, the module will automatically add Content-Length. ). The set commands include AT+HTPMODE, AT+HTPSV, AT+HTPTP, AT+HTPURL, AT+HTPHEAD. For the specific command setting procedure, please refer to the AT command section. Similarly, there are corresponding settings pages in the web page.

Note: In the new setting mode, if you use the AT command to set the protocol header, please use "<<CRLF>>" instead of the carriage return. You don't need to consider the carriage return when setting the built-in webpage.

#### **2.2.4 Modbus TCP and Modbus RTU mutual conversion**

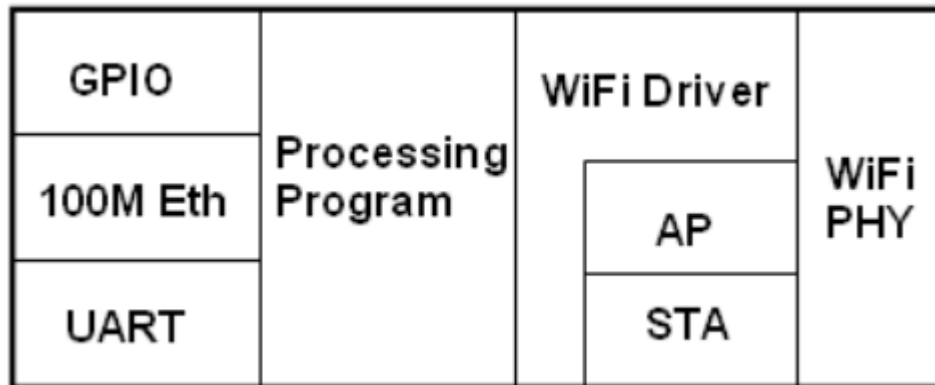
This module supports Modbus TCP to Modbus RTU (Modbus ASCII is not supported); the network parameters of the module should correspond to the network parameters of the application software. The TCP server corresponds to the TCP client, and the port should also be configured to be the same. The working mode is Modbus TCP<=>Modbus RTU (AT command: AT+TMODE=modbus).

## ModbusRTU to ModbusTCP



## 2.3 Wireless networking

The wireless module of the CX-WIFI-2NET module can be configured as a wireless STA or as an AP. Therefore, the CX-WIFI-2NET module logically supports two wireless interfaces, one as a STA and the other as an AP. Other STAs can connect to the wireless network through the AP interface of this module. Therefore, the CX-WIFI-2NET module can provide a very flexible networking mode and network topology. The functional modules of the CX-WIFI-2NET module are shown below:



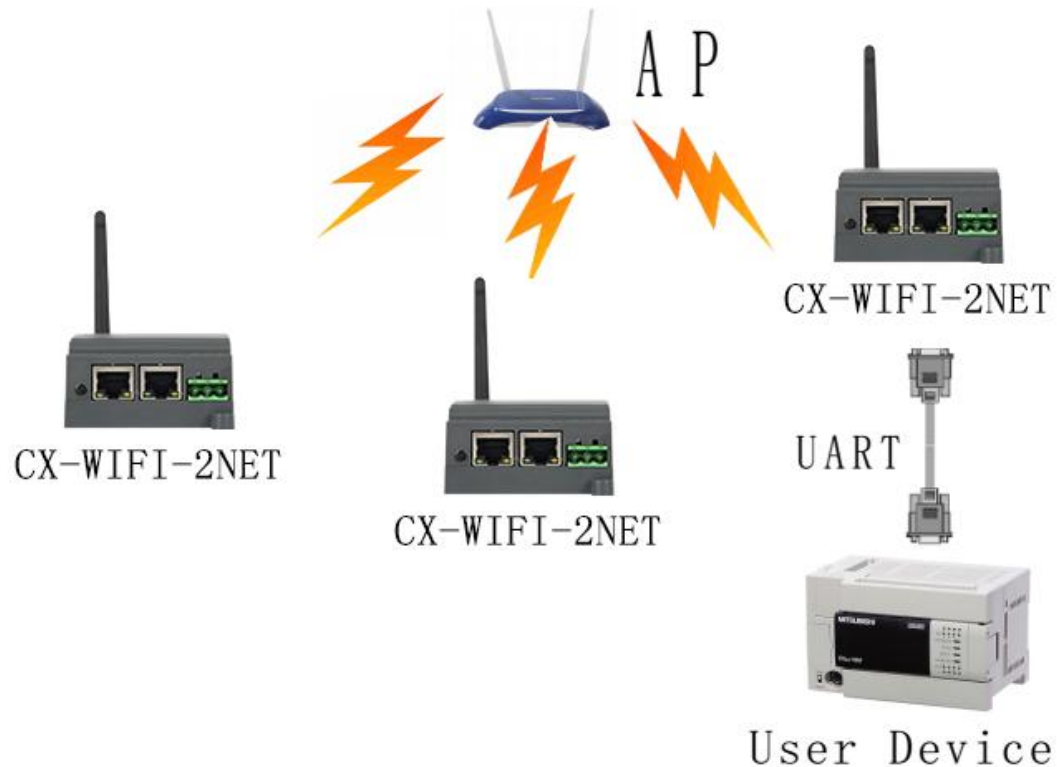
< Description >:

AP: The wireless access point is the central node of a wireless network. A commonly used wireless router is an AP, and other wireless terminals can be connected to each other through an AP.

STA: A wireless station is a terminal of a wireless network. Such as laptops, PDAs, etc.

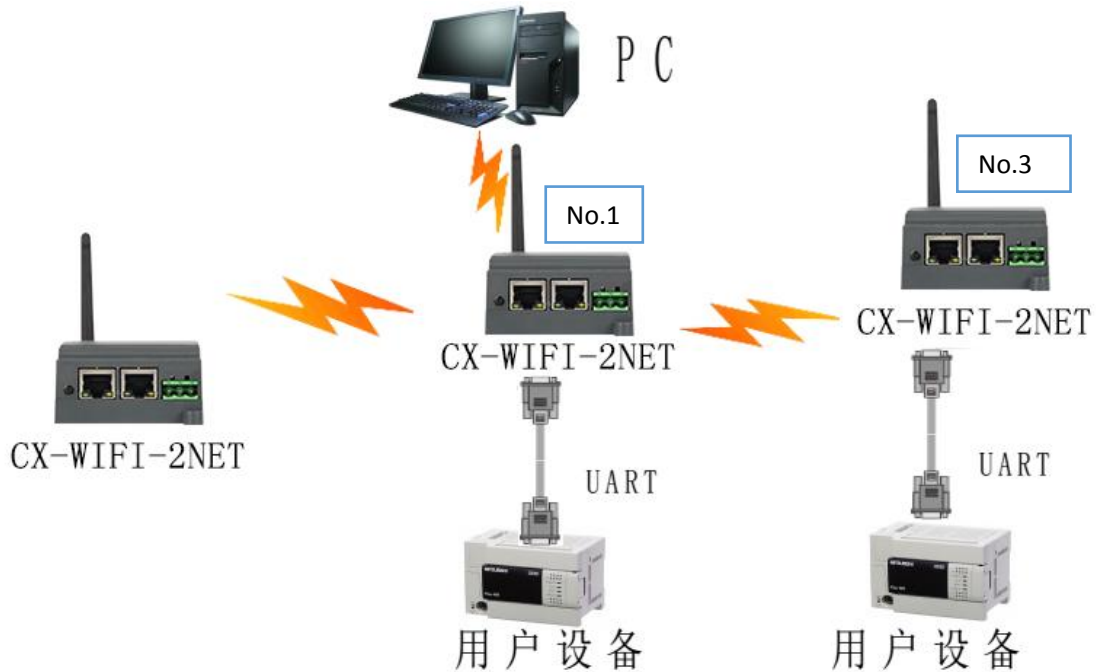
### 2.3.1 STA-based wireless network

The CX-WIFI-2NET module is connected to other APs as STAs (using the AP CLI interface) to form a wireless network. All STAs use the AP as the center of the wireless network, and the mutual communication between the STAs is completed by the AP. As shown below:



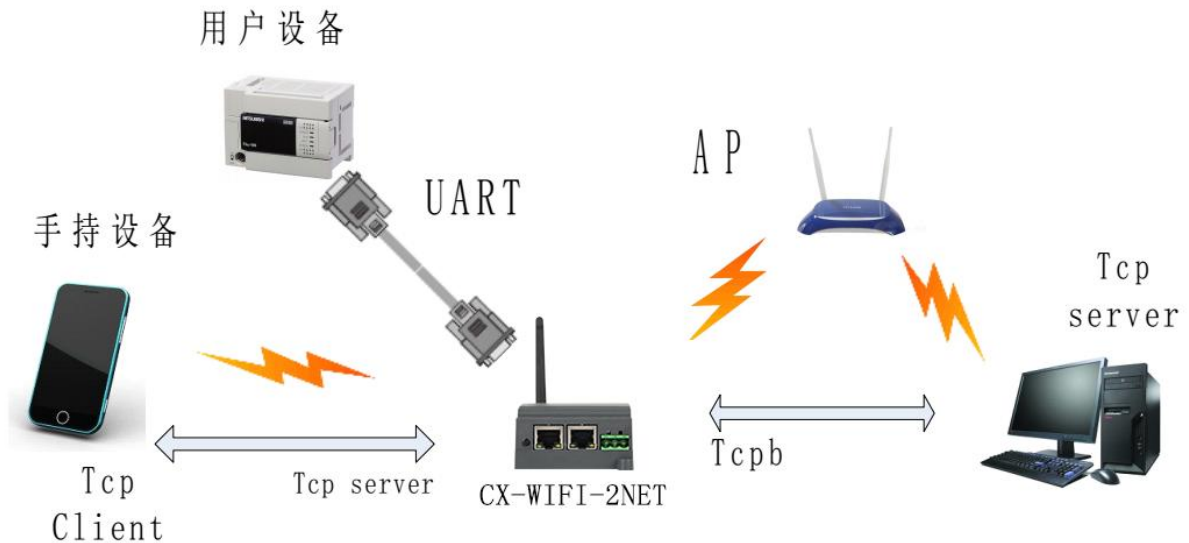
### 2.3.2 AP-based wireless network

Because the CX-WIFI-2NET module can be set to either AP or STA, the CX-WIFI-2NET module can easily implement the wireless network of the ad hoc network. As shown below. The CX-WIFI-2NET module No. 1 is used as an AP. Other modules and computers can be connected to this module as STAs. It can also be connected to user equipment through the UART interface; CX-WIFI- 2 and 3 The 2NET module is connected to the No. 1 module as a STA, so that all CX-WIFI-2NET modules can be managed by a computer. The self-organizing network mode can facilitate the unified management of all CX-WIFI-2NET modules, and the self-organizing network can easily expand the coverage of the entire wireless network.



### 2.3.3 AP+STA wireless network

The CX-WIFI-2NET module can support AP+STA. That is, the module supports one AP interface and one STA interface at the same time.



In the figure, the module activates the function of AP+STA. The STA interface of the module can be connected to the router and connected to the server in the network through TCP connection. At the same time, the AP interface on the module is also available. The mobile phone/PAD can be connected to this AP interface (via TCPB connection) to control the serial device or set the module.

☆ With the AP+STA function, it is convenient to use the mobile phone/PAD and other hand-held devices to monitor the user device without changing its original network settings.



☆ The module can be easily set by the AP+STA function, which solves the problem that the previous module can only be set through the serial port when it is in the STA.

AP+STA Function setting:

The AP+STA function needs to be set through the serial port command (F-logarithmic setting).

AT+FAPSTA=on Sets the AP+STA function (the factory settings are in effect).

Then when the module is set to STA mode, the AP interface is still valid.

Note on AT+STA mode:

When the AP+STA function is enabled, the STA port needs to be connected to other routers. Otherwise, the STA port will continuously scan the router. When scanning, it will affect the AP port, such as data loss.

If the user determines that the STA cannot connect to the AP at this time, you can use the command to stop scanning the STA port.

AT+STTC=on/off, on means scanning the router, off is not scanning, and the command is not saved after restarting.

AT+FSTTC=on/off, this command can be saved, and the original settings will be maintained after restarting.

## 2.4 Ethernet interface networking mode

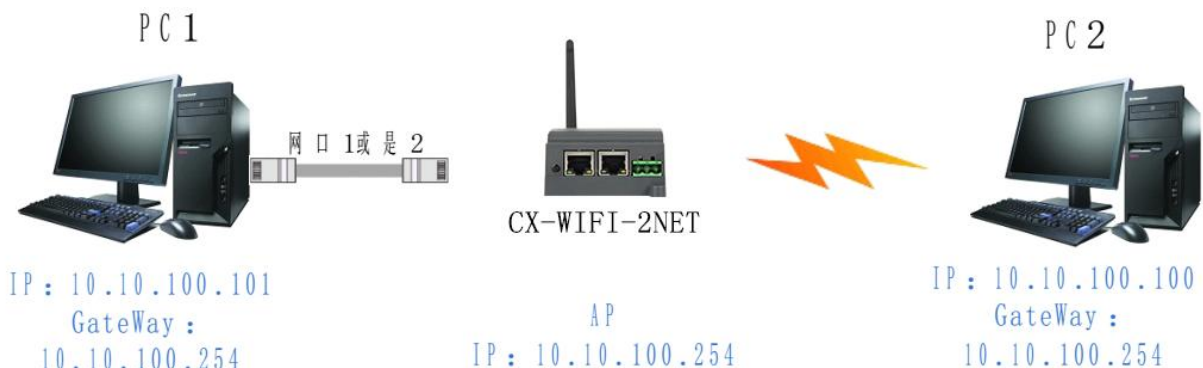
The CX-WIFI-2NET module provides a 100M Ethernet interface. Through this 100M Ethernet interface, users can implement WIFI port, serial port, Ethernet port, and three interfaces to communicate with each other. In terms of networking, the CX-WIFI-2NET module supports bridging mode, routing mode and switch mode to correspond to different specific applications.

<Description>:

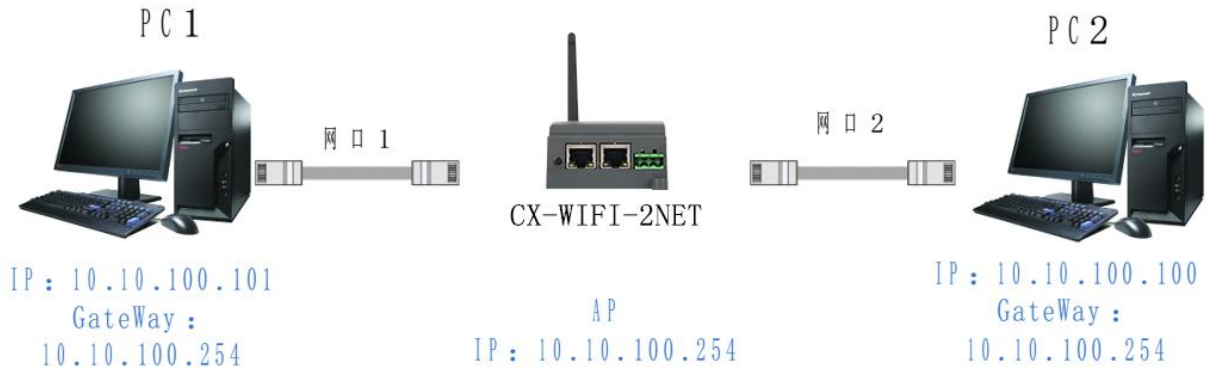
The Ethernet function has two network ports. The second network port can be used as either a LAN port or a WAN port. The first network port can only be used as a LAN. The bridge mode described below uses only the network port 2. The route mode can use either network port 1 or network port 2. The switch mode uses two network ports at the same time.

For different networking modes, the CX-WIFI-2NET module needs to be version-switched through commands. Use the command AT+FVER=n to switch to the (2.4.2) routing mode, and AT+FVER=z to switch to the (2.4.3) bridge mode.

### 2.4.1 CX-WIFI-2NET module Ethernet interface function (AP)



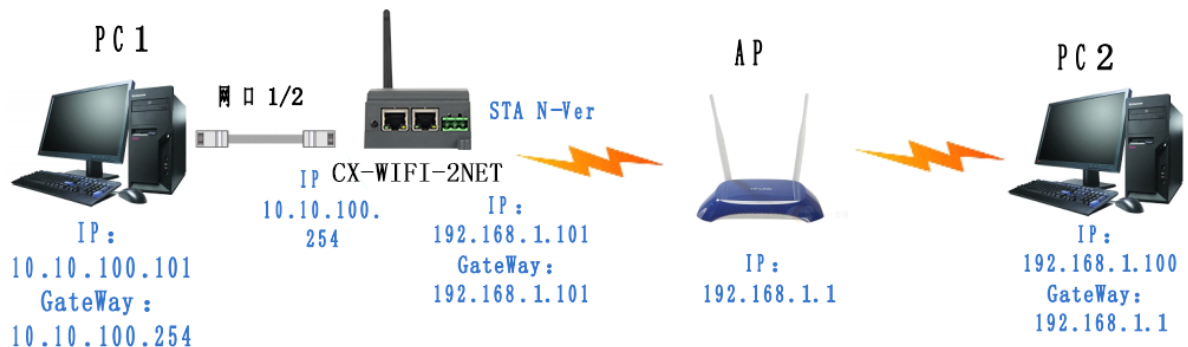
Ethernet interface function (AP)



CX-WIFI-2NET module Ethernet interface function (AP+ dual network port)

The CX-WIFI-2NET module functions as an AP and forms a network centered on the module. The IP addresses of all devices on the network work in the same network segment as the modules.

2.4.2 CX-WIFI-2NET module Ethernet interface function (STA routing mode)



CX-WIFI-2NETModule Ethernet interface function (STA)

The CX-WIFI-2NET block acts as a STA and the module works in routing mode. After the module is connected to the AP, obtain the IP address from the AP (as shown in Figure 192.168.1.100). The modules themselves form a subnet (default 10.10.100.254), and the devices on the Ethernet interface are assigned addresses by the module (see Figure 10.10.100.101). Thus, as PC1 is in the subnet (NAT), the connection from PC1 can be connected to PC2 (because CX-WIFI-2NET works in routing mode), but PC2 cannot actively connect to PC1.

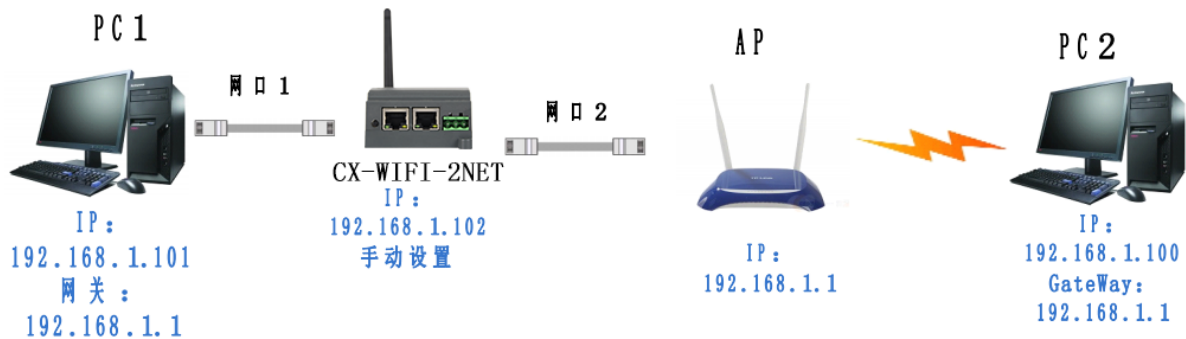
2.4.3 CX-WIFI-2NET module Ethernet interface function (STA bridge mode)



## CX-WIFI-2NET Module Ethernet interface function (STA)

The CX-WIFI-2NET module acts as a STA and the module works in bridge mode. After the module is connected to the AP, the device on the Ethernet interface obtains the IP address from the AP (as shown in Figure 192.168.1.101). At this time, the entire network, the module is like a transparent device, and PC1 and PC2 can communicate with each other without any constraint. However, if the CX-WIFI-2NET module is to communicate with other devices, you need to statically set the LAN IP address (as shown in Figure 192.168.1.10).

### 2.4.4 CX-WIFI-2NET Ethernet interface function (switch)



CX-WIFI-2NET module Ethernet interface function (switch)

The CX-WIFI-2NET module acts as an AP and the module works in switch mode. The module is connected to the AP through the network cable 2, and is connected to the PC1 through the network port 1, so that the PC1 obtains an IP (192.168.1.101) from the AP. In this way, PC1 and PC2 can communicate directly under a LAN. Multiple D2 modules can be added between PC1 and AP (both work in switch mode), so that the modules can be extended by hand, so that the coverage of the AP network can be extended.

Note: In this mode, the module DHCP should be turned off with AT+DHCPDEN=off, otherwise the network will be abnormal. To access the module, you need to manually change the LAN port address of D2 to the same network segment (192.168 above). 1.102).

## 2.5 WI-FI parameter settings

### 2.5.1 Automatic frequency selection

When the module works in STA mode, the module adjusts itself to the same channel as the AP according to the wireless channel of the AP and accesses it.

When the module works in AP mode, it can be set to automatic frequency selection mode, so when the module starts, it will choose a better wireless channel according to the surrounding environment.

### 2.5.2 Security Mechanism

The CX-WIFI-2NET module supports multiple wireless network encryption methods to fully guarantee the secure transmission of data, including:

- WEP
- WPA-PSK/TKIP

WPA-PSK/AES  
WPA2-PSK/TKIP  
WPA2-PSK/AES

Note: When WEP is encrypted, the HEX mode is a 10-bit or a 26-digit password, the ASCII mode is a 5-digit or a 13-digit password, and the WPA-PSK and WPA2-PSK passwords are at least 8 bits.

### 2.5.3 Add router function when STA

A "Search" button has been added to the module "Wireless Terminal Settings" page. After clicking this button, a window will pop up showing the information of the surrounding APs and select. As shown below:

无线终端参数设置	
模块要接入的网络名称(SSID1)	USR-WIFI232-AP_81E0 <input type="button" value="搜索"/>
MAC 地址1 (可选)	<input type="text"/>
加密模式1	OPEN ▾
加密算法1	NONE ▾
模块要接入的网络名称(SSID2)	USR-WIFI232-AP2 <input type="button" value="搜索"/>
MAC 地址2 (可选)	<input type="text"/>
加密模式2	OPEN ▾
加密算法2	NONE ▾
模块要接入的网络名称(SSID3)	USR-WIFI232-AP3 <input type="button" value="搜索"/>
MAC 地址3 (可选)	<input type="text"/>
加密模式3	OPEN ▾
加密算法3	NONE ▾
信号临界值	100 % 注: 低于此信号强度即切换网络,如果是100则不切换网络
智能sta模式	off ▾ 注: 如果模块五分钟一直没有连上路由器, 将自动切换成ap+sta模式

There are three STA settings on this page. You can fill in one or fill in three. If all three are filled in, the module will automatically switch to the next STA network if the current network signal is less than the signal threshold (if the threshold is Filling in 100 will not automatically switch the network).

Site Survey							
	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type
<input type="radio"/>	SZ-GMplc	8a:25:93:80:cc:8a	55%	6	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	xuedaiba	42:53:49:d6:8c:46	34%	11	AES	WPA2PSK	Infrastructure
<input type="radio"/>	TP-LINK_CA936A	1c:fa:68:ca:93:6a	29%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	TP-LINK_DC25	b0:95:8e:46:dc:25	15%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	yukaka	60:6d:c7:f0:9d:37	15%	11	AES	WPA2PSK	Infrastructure
<input type="radio"/>	703A	fe:83:cd:c6:1d:7a	0%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>		f4:83:cd:c6:1d:7a	0%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	zzzs	b0:d5:9d:33:55:b5	0%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	ZTE V5S	d0:5b:a8:1d:1b:2a	0%	11	AES	WPA2PSK	Infrastructure
<input type="radio"/>	7daysplc	3c:46:d8:5b:1e:29	0%	11	AES	WPA2PSK	Infrastructure
<input type="radio"/>	TP-SAIJZ-2.4G	f4:83:cd:aa:30:61	0%	11	AES	WPA2PSK	Infrastructure

After selecting the router, it will return to the original page. At this time, the encryption mode and encryption algorithm have been filled in. You only need to follow the prompts to write your password.

#### 2.5.4 STA address binding function

CX-WIFI-2NET module supports the function of binding the BSSID of the destination network during the networking process (as the STA, to connect to the AP). According to the 802.11 protocol, different wireless networks may have the same network name (ie, SSID/ESSID), but must correspond to a unique BSSID address (ie, MAC address). Because the illegal intruder can connect the STAs in the network to the illegal AP by establishing a wireless network with the same SSID/ESSID, the network is leaked. Therefore, by binding the BSSID address, the STA can be prevented from accessing the illegal network, thereby improving the security of the wireless network.

## 2.6 Network parameter setting

CX-WIFI-2NET module has two TCP Sockets: Socket A and Socket B. The data written to the serial port of the module will be sent to the Socket A and B simultaneously; the data received by the module through Socket A or B will be sent out through the serial port.

Through the different settings of the dual Socket, a variety of network interconnection methods can be realized. Currently Sock B only supports tcp client.

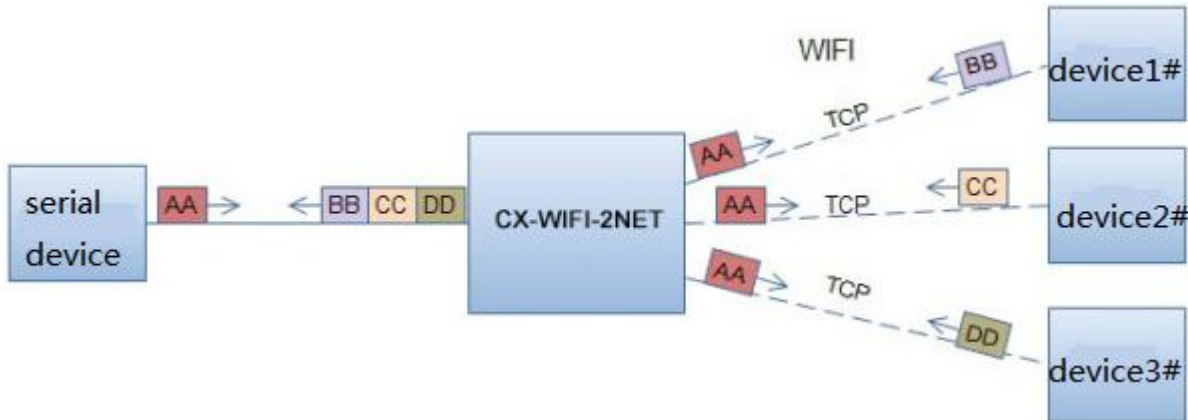
### 2.6.1 Socket A

Socket A works in the following ways: TCP Server, TCP Client, UDP Server,



UDP Client. For the setting method, please refer to the AT+NETP command in the AT command.

When Socket A is set to TCP Server, it can support TCP link connections of up to 32 TCP Clients. In the multi-TCP link connection mode, data transmitted from TCP is forwarded one by one to the serial port. The data coming from the serial port will be copied into multiple copies and forwarded on each TCP link. The specific data flow chart shows:



## 2.6.2 Socket B

The working mode of Socket B is currently only TCP Client. For the setting method, please refer to the AT+TCPB/AT+TCPPTB/TCPADDB/TCPTOB/TCPLKB command in the AT command.

## 2.7 New feature settings

### 2.7.1 Tcp password authentication when establishing connection

This function is only applicable when the module is used as the tcp server. When the tcp client is connected to the module, the module will authenticate each connected tcp.

The first data sent after tcp clien is connected should be the module's webpage password plus carriage return. By default, the password of the module is admin, so the first data sent by the tcp client should be "0x61 0x64 0x6D 0x69 0x6E 0x0D 0x0A" (hexadecimal). If the password is correct, the module returns "OK" and vice versa returns "NO" and disconnects.

This feature can be turned on or disabled in "TCP Connection Password Authentication" on the web page. Please refer to the "Web Management Page" section for details.

### 2.7.2 Register ID/MAC function

This function is only applicable when the module is used as the tcp client. When the module is connected to the server, it will have a two-byte ID number in front of the data (the ID range is 0~65535, the high byte is first, the low byte is at After) add two bytes of ID inversion or upload a 6-byte MAC address. For example, if the default ID of the module is 1111 (MAC address: D8B04CF20000), the first four bytes are sent to the server as "0x04 0x57 0xFB 0xA8" (or 0xD8 0xB0 0x4C 0xF2 0x00

0x00).

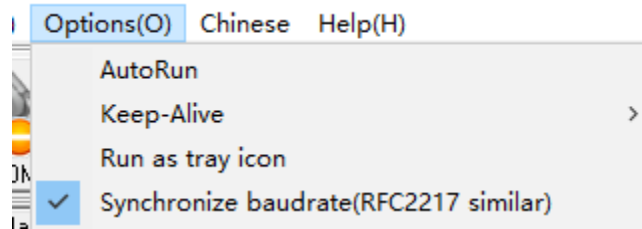
There are two ways to register: one is to register your own ID/MAC when connecting to the server for the first time; the other is to add ID/MAC in front of each sent data.

The parameters related to this function are set on the “Serial Port and Other Settings” section of the webpage. The ID/MAC function is built for the first time and the ID/MAC function is disabled by default.

### **2.7.3 Adaptive baud rate function**

Please use this function with our company's virtual serial port software.

In the virtual serial port software, select "synchronous baud rate (class RFC2217)", and use the at command "AT+AABR=on" to open the module's adaptive baud rate function and restart. As shown below:



In the virtual serial port software, select "synchronous baud rate (class RFC2217)", and use the at command "AT+AABR=on" to open the module's adaptive baud rate function and restart. As shown below:

In the picture, the virtual serial port synchronizes the baud rate. The baud rate of the module changes with the baud rate of the virtual serial port at any time, and the module does not need to be restarted. If the module is restarted, the baud rate will return to the previous baud rate.

#### 2.7.4 KeepAlive Function

When the TCP connected, the keep-alive mechanism is added. Therefore, when the network of the module is abnormal, the network abnormality can be judged and disconnected in time. When the network is restored, the network can also be connected to the server in time.

#### 2.7.5 Multi-STA Function

Added multiple SAT network setting function. In STA mode, if the connected network has a low signal, it will automatically switch to other AP networks (it will automatically restart when switching networks).

This function provides a signal threshold that automatically switches to the network and restarts when the current network signal is below the signal threshold. If the signal value is set to 100, the module will not switch to networks. Even if the current network signal is not available, it will always search the current network and will not reconnect to other networks.

The specific settings page of this function, Please refer to section 2.5.3 chapter.

This function can also be set by the AT command, refer to section 3.2.2.2.49-3.2.2.2.55 chapters.

#### 2.7.6 Domain name backup and smart STA

After the domain name backup function is enabled, the IP address of the domain name will be automatically saved when the module is connected to the server of the domain name. If the server can't be connected over five minutes (Including the IP address cannot be resolved or the resolved IP address cannot be connected.) it will automatically enable the alternate IP to connect.

This function can be turned on/off in the web page or AT command (AT+IPBUP).

Smart STA function. If the module is in STA mode and has not been connected to the router for five minutes, the module will automatically start its own AP function and connect the router every 80 seconds at a later time. This function allows the user to continue to control the module or set the parameters of the module wireless.

This feature is always off.

## 2.8 Parameter setting



CX-WIFI-2NET module support web parameter settings, which can be easily set by user using IE browser. If the module is connected to a wireless network, the PC can be set up only if it is connected to the same wireless network. In addition, since the CX-WIFI-2NET module is also an AP, PC can be set by being connected to the module which needs to be set .

## **2.9 Firmware upgrade**

The CX-WIFI-2NET module supports web online firmware upgrading.

## Chapter 3 Module parameter setting

### 3.1 Web Management page

When using the CX-WIFI-2NET module for the first time, needs to do some configuration of this module. You can connect AP interface of the CX-WIFI-2NET module via PC and manage page configuration via web.

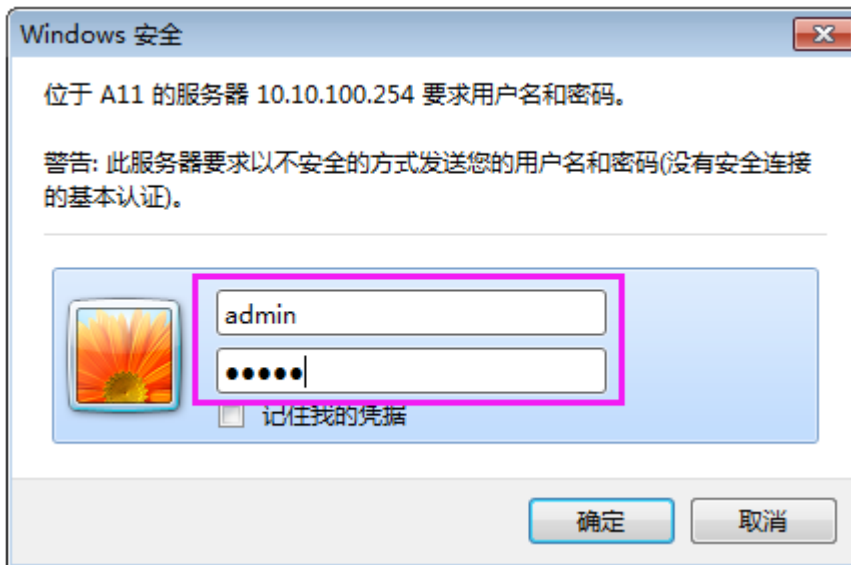
By default, the SSID of the AP interface of the CX-WIFI-2NET module is USR-WIFI232-AP\_xxxx, and the IP address and user name and password are as follows:

CX-WIFI-2NET Module network default settings table:

Parameter	Default setting
SSID	USR-WIFI232-AP_xxxx
IP Address	10.10.100.254
Subnet Mask	255.255.255.0
User Name	admin
Password	admin

#### 3.1.1 Open management page

First connect the CX-WIFI-2NET module with the PC's wireless network card. The SSID is USR-WIFI232-AP\_xxxx. After connecting, open IE, enter web page: http://10.10.100.254, Fill in the username and password in the pop-up dialog box, then "confirm".



Then the web page will display the management page of the CX-WIFI-2NET module. It supports Chinese and English language which can be selected in the upper right corner. There are 10 pages, namely "Quick Configuration", "Wireless Mode Selection", "Wireless Access Point Settings", "Wireless Terminal Settings", "Serial Port and Network Settings", "Ethernet Function Settings", "HTTPD Client Mode"., "IO Control" mode, "advanced setting" and "module management".

### 3.1.2 Quick Configuration

- [Quick Configure](#)
- [Mode Selection](#)
- [AP Interface Setting](#)
- [STA Interface Setting](#)
- [Application Setting](#)
- [Ethernet Setting](#)
- [HTTPD Client Mode](#)
- [WEB IO](#)
- [Advanced](#)
- [Device Management](#)

#### Quick Configure

**1F** [WI-FI Setting](#) [【Modify】](#)

Wifi Mode	
Mode	AP Mode ▾
Wireless configuration	
Network Name(SSID)	USR-WIFI232-AP_5250 <input type="checkbox"/> Hidden
BSSID	F0:FE:6B:30:52:50
Security Mode	Disable ▾

**2F** [Ethernet Ports Setting](#) [【Modify】](#)

---

**3F** [Uart Setting](#) [【Modify】](#)

---

**4F** [Network Setting](#) [【Modify】](#)

---

**5F** [Device Management](#)

Restart Module	
Restart Module	<input type="button" value="Restart"/>

Quick Configuration page provides users with a quick way to configure modules. After configuring the parameters according to the page steps and restarting the startup module, the module can work normally, reducing the configuration steps and time. Of course, there are fewer options on this page. If you have some detailed configuration, needs to visit corresponding page configuration.

This page has four options to configure and a restart item. Below corresponding instructions:

Wireless configuration: configure the wifi working mode of the module, which can be either AP mode or STA mode;

Ethernet function configuration: open/close the Ethernet port and set the corresponding working mode;

Serial port configuration: configure the serial port parameters of the module, including serial port baud rate, parity bit, 485 function, etc.

Network configuration: configure the network parameters of the module, only TCPA relevant parameters;

Restart module: After all the above parameters are configured, click Restart Module.

### 3.1.3 Wireless Mode Selection

This page can be set to select the module to work in AP mode or STA mode. The working modes of the "Data Transfer Mode" selection module are "Transparent Transfer Mode", "Serial Command Mode", and "HTTPD Client Mode".

The screenshot displays the web interface for the CX-WIFI-2NET module. On the left is a vertical navigation menu with the following items: Quick Configure, Mode Selection, AP Interface Setting, STA Interface Setting, Application Setting, Ethernet Setting, HTTPD Client Mode, WEB IO, Advanced, and Device Management. The main content area is titled "Working Mode Configuration" and contains the following text: "You may configure the Uart-WIFI module wifi mode and data transfer mode." Below this text are two radio button options: "AP Mode: Access Point" (which is selected) and "STA Mode: Station Mode". To the right of these options is a dropdown menu labeled "Data Transfer Mode" with "Transparent Mode" selected. At the bottom of the configuration area are two buttons: "Apply" and "Cancel".

### 3.1.4 Wireless Access Point Settings

The CX-WIFI-2NET module supports the AP interface, which could be used to manage the module conveniently, and realize self-organizing network. The management page is as shown below. Including: SSID settings, wireless network mode settings and wireless security settings, and the setting of the LAN composed of APs.

中文 English

**AP Interface Setting**

AP Interface Setting such as SSID, Security...

Wireless Network	
Network Mode	11b/g/n mixed mode ▾
Network Name(SSID)	USR-WIFI232-AP_5250 <input type="checkbox"/> Hidden
BSSID	F0:FE:6B:30:52:50
Frequency (Channel)	AutoSelect ▾

USR-WIFI232-AP_5250	
Security Mode	Disable ▾

LAN Setup	
IP Address(Default DHCP Gateway)	10.10.100.254
Subnet Mask	255.255.255.0
DHCP Type	Server ▾

### 3.1.5 Wireless Terminal Settings

The wireless terminal interface, namely STA interface. The CX-WIFI-2NET module can be connected to other wireless networks through the STA interface, and settings as follows:

The page setup includes two tables, the first one is the STA's wireless settings, including the SSID of the AP to be connected, security settings, and so on. The next table shows the network connection mode settings, including DHCP and static connection mode.

- ➔ [Quick Configure](#)
- ➔ [Mode Selection](#)
- ➔ [AP Interface Setting](#)
- ➔ [STA Interface Setting](#)
- ➔ [Application Setting](#)
- ➔ [Ethernet Setting](#)
- ➔ [HTTPD Client Mode](#)
- ➔ [WEB IO](#)
- ➔ [Advanced](#)
- ➔ [Device Management](#)

You could configure STA interface parameters here.

STA Interface Parameters	
AP1's SSID	USR-WIFI232-AP_5250 <input type="button" value="Search..."/>
MAC Address1 (Optional)	<input type="text"/>
Security Mode1	OPEN ▾
Encryption Type1	NONE ▾
AP2's SSID	USR-WIFI232-AP2 <input type="button" value="Search..."/>
MAC Address2 (Optional)	<input type="text"/>
Security Mode2	OPEN ▾
Encryption Type2	NONE ▾
AP3's SSID	USR-WIFI232-AP3 <input type="button" value="Search..."/>
MAC Address3 (Optional)	<input type="text"/>
Security Mode3	OPEN ▾
Encryption Type3	NONE ▾
Signal threshold	100 % <small>Note: The signal is less than this value, Switching network,If the value is 100,it's not switching network!</small>
Smart Station	off ▾ <small>Note: If five minutes without connected to a router, it will automatically switch into ap+sta!</small>

WAN Connection Type:

DHCP Mode	
Hostname(Optional)	USR-WIFI232-AP_5250

### 3.1.6 Serial Port and Network Settings

Application settings are settings for the wifi to uart application parameters, including: serial port parameter settings, automatic framing settings, device id settings, and network protocol settings.

中文 English

- [Quick Configure](#)
- [Mode Selection](#)
- [AP Interface Setting](#)
- [STA Interface Setting](#)
- [Application Setting](#)
- [Ethernet Setting](#)
- [HTTPD Client Mode](#)
- [WEB IO](#)
- [Advanced](#)
- [Device Management](#)

#### Wifi-Uart Setting

You could configure the Uart parameters and network parameters of the wifi-uart application.

Uart Setting	
Baudrate	57600 ▾
Data Bits	8 ▾
Parity	None ▾
Stop	1 ▾
Flow control	Disable ▾
485 mode	Disable ▾
Baudrate adaptive (RFC2117)	Enable ▾

#### UART AutoFrame Setting

UART AutoFrame	Disable ▾
----------------	-----------

#### Registered Package Setting

Registered Package Type	off ▾
-------------------------	-------

Note: With "Device ID" opened, the module send ID to the server, this function is used to identify the equipment.  
 Upload Manner: first: Module send registration packet when connection established;  
 every: Send registration packet every time when module send data

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Apply Cancel	
<b>Registered Package Setting</b>	
Registered Package Type	off ▼
<p>Note: With "Device ID" opened, the module send ID to the server, this function is used to identify the equipment.</p> <p>Upload Manner: first: Module send registration packet when connection established; every: Send registration packet every time when module send data</p>	
Apply Cancel	
<b>Network A Setting</b>	
Mode	Server ▼
Protocol	TCP ▼
Port	8899
Server Address	10.10.100.100
Backup domain IP address	OFF ▼
MAX TCP Num. (1-32)	32
TCP Time out (MAX 600 s)	0
TCP connection password authentication	Disable ▼
<b>Socket B Setting</b>	
Open the SocketB function	on ▼
Port	18899
Server Address	10.10.100.100
Backup domain IP address	OFF ▼
TCPB Time out (MAX 600 s)	0
Apply Cancel	

<Description>:

There are four modes on the network side: TCP Server, TCP Client, UDP server, and UDP client.

When the module is configured as UDP server, the module remembers the last communicated UDP client and communicates with it. While the UDP client mode only communicates with the target IP and address. When set to TCP Server, you do not need to enter IP address. For other settings, you need to fill in the opponent's IP address that needs to be connected. Fill in the protocol port number at the port, and the port numbers on both ends of the communication must be the same.

Socket B can only be TCP client to communicate with the server.

TCP connection password verification: When the module works in tcp server mode, password verification is performed on the connected tcp client.

Note: This verification only works when the module is acting as a TCP server. When the TCP client is connected to the TCP server of the module when it is turned on, the first data sent to the module is the password and enter key. Password is the one when log in to the webpage, default is "admin". For example, the first data sent by default should be "0x61 0x64 0x6D 0x69 0x6E 0x0D 0x0A" (hexadecimal)

### 3.1.7 Ethernet Function Settings

This page is used to set two Ethernet network ports of the module. Both network



ports can be opened or closed. Moreover, the second network port can be set to be used as a WAN port, so that the module can be used as a secondary router to facilitate user networking. The specific settings page is as follows:

- ➔ [Quick Configure](#)
- ➔ [Mode Selection](#)
- ➔ [AP Interface Setting](#)
- ➔ [STA Interface Setting](#)
- ➔ [Application Setting](#)
- ➔ [Ethernet Setting](#)
- ➔ [HTTPD Client Mode](#)
- ➔ [WEB IO](#)
- ➔ [Advanced](#)
- ➔ [Device Management](#)

### Ethernet Ports Setting

Open or closed modules Ethernet Ports

Ethernet function	
Open the Ethernet1	Enable ▾
Open the Ethernet2	Enable ▾
Set the Ethernet2 work mode	LAN port ▾

### 3.1.8 HTTPD Client Mode

This page sets the content of the HTTP protocol header in HTTPD Client mode, including: server address, server port, request type, protocol header path, protocol header Connection, and protocol header User-Agent.

The HTTPD Client mode supports three HTTP request methods: POST, PUT, and GET. When the request mode is POST or PUT, the serial port data will be added to the location behind the HTTP protocol header; when the request mode is GET, the serial port data will be added to the protocol header path. For the specific data transmission method, refer to section 2.2.3.

中文 English

- ➔ Quick Configure
- ➔ Mode Selection
- ➔ AP Interface Setting
- ➔ STA Interface Setting
- ➔ Application Setting
- ➔ Ethernet Setting
- ➔ HTTPD Client Mode
- ➔ WEB IO
- ➔ Advanced
- ➔ Device Management

### HTTPD-Client Mode

In HTTPD\_Client mode, set the relevant parameters of HTTP

Note: HTTPD Client mode is used to communicate with HTTP Server. It encapsulate the serial data to be HTTP protocol data, then send to HTTP Server.

HTTPD Header Set Mode	new ▼
HTTPD Server address	10.10.100.200
HTTPD Server port	80
HTTPD Request Type	GET ▼
HTTPD Header path	/abcd
Custom HTTP Header	Content-type: text/html; charset=utf-8

when HTTPD header set to be "old", use old setting method, that is to fill each header. When set to be "new", use new setting method, the header can be user-defined(There can't have "enter" at the end).

### 3.1.9 Advanced setting

Under the advanced settings page, users can set the port mapping and DDNS functions instead of router with less complexity. Port mapping and DDNS can be matched to be used, In the public network environment, you can enter the peanut shell domain name and port to find the module quickly and easily .

中文 English

- ➔ Quick Configure
- ➔ Mode Selection
- ➔ AP Interface Setting
- ➔ STA Interface Setting
- ➔ Application Setting
- ➔ Ethernet Setting
- ➔ HTTPD Client Mode
- ➔ WEB IO
- ➔ Advanced
- ➔ Device Management

### Advanced Setting

Set the module of some advanced features

**Port mapping set**

Port mapping function	Disable ▼
-----------------------	-----------

Note: this is used to get port forwarding from router, then to mapping the port to module

**Dynamic DNS (Oray.com)**

DDNS	Disable ▼
------	-----------

### 3.1.10 Module Management

Module management includes username/password settings, factory reset and

software upgrades.

Device Management

5.01D.24

You may configure administrator account and password, load default setting or update firmware.

Administrator Settings	
Account	admin
Password	admin

Apply Cancel

Restart Module	
Restart Module	Restart

Load Factory Defaults	
Load Default Button	Load Default

Update Firmware	
Location:	选择文件 未选择文件

Apply

<Description>:

“Restart Module” button: When the user sets the parameters on different pages, click “OK” to confirm.

However, these settings must take effect after the user clicks "Restart" on the module management page. After clicking "Restart", the module will reset and restart, and refresh the original configuration information in the memory.

## 3.2 Serial Port Configuration

### 3.2.1 Module operation mode

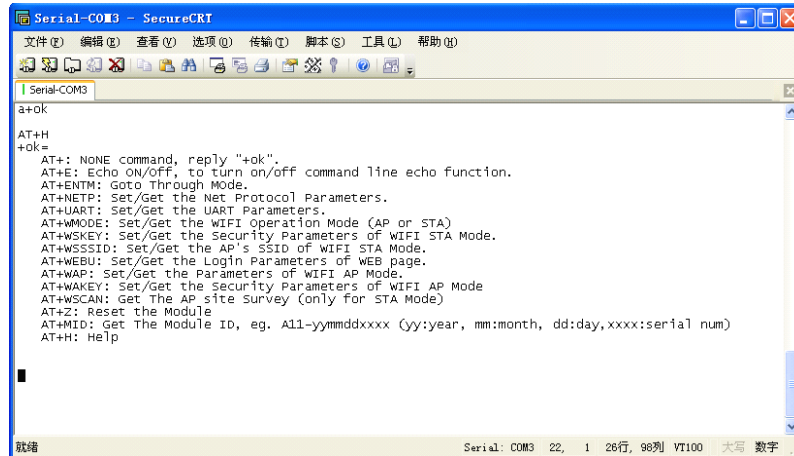
CX-WIFI-2NET module has two working modes, Default(start) mode actively enters the transparent transmission mode, users can switch the module to the command line mode via the serial port command.

The mode default UART port parameters are configured as follows: (The HyperTerminal of the PC needs to be set accordingly)

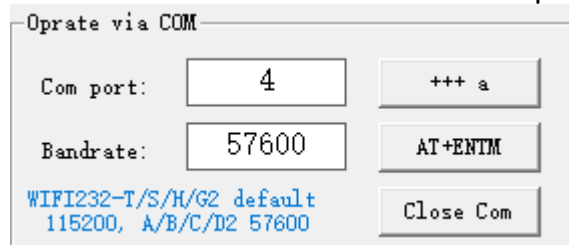
Uart Setting	
Baudrate	57600 ▼
Data Bits	8 ▼
Parity	None ▼
Stop	1 ▼
Flow control	Disable ▼

In the command line mode, the user can use the UART port to set the module via AT+ command. Its function can completely cover the settings of the web page.

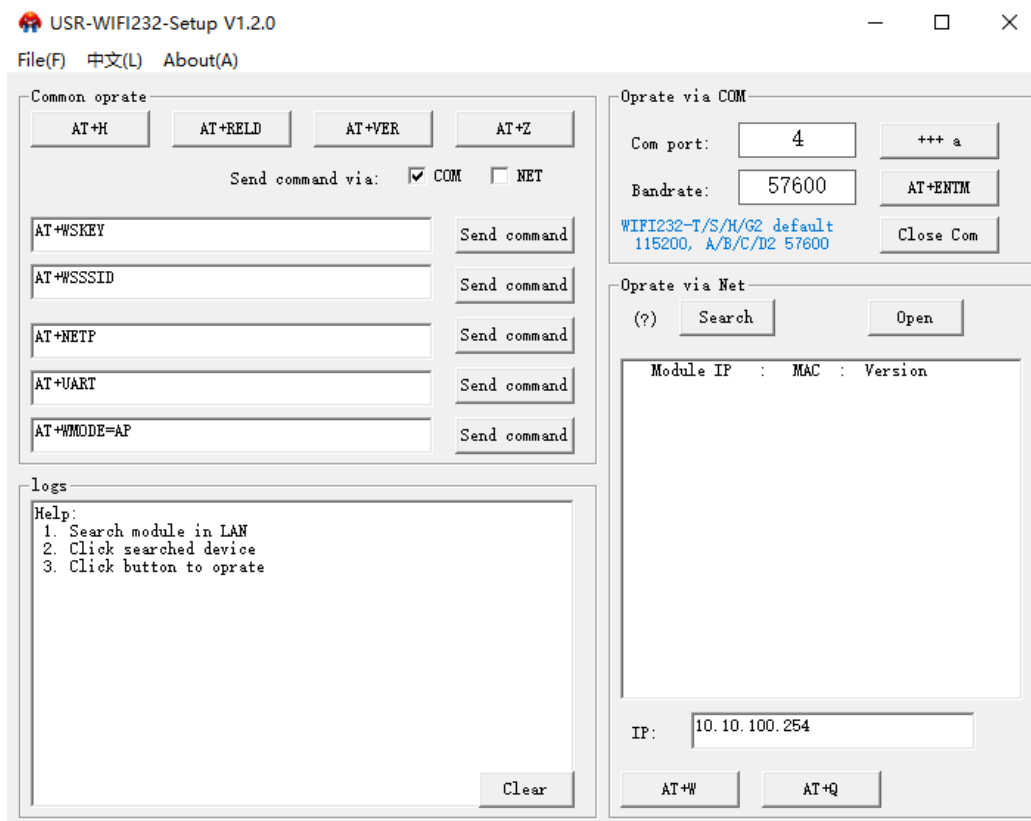




The AT+ command can also be set via the USR-WIFI232-Setup software (in CD):

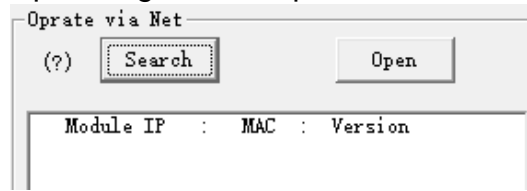


Click “Open Serial Port”, send “+++ a” to the left display box to reply “+OK”, then input the AT command needs to be sent in the left operation area. After setting well click “AT+RELD” to restart the module. The module setup is completed.

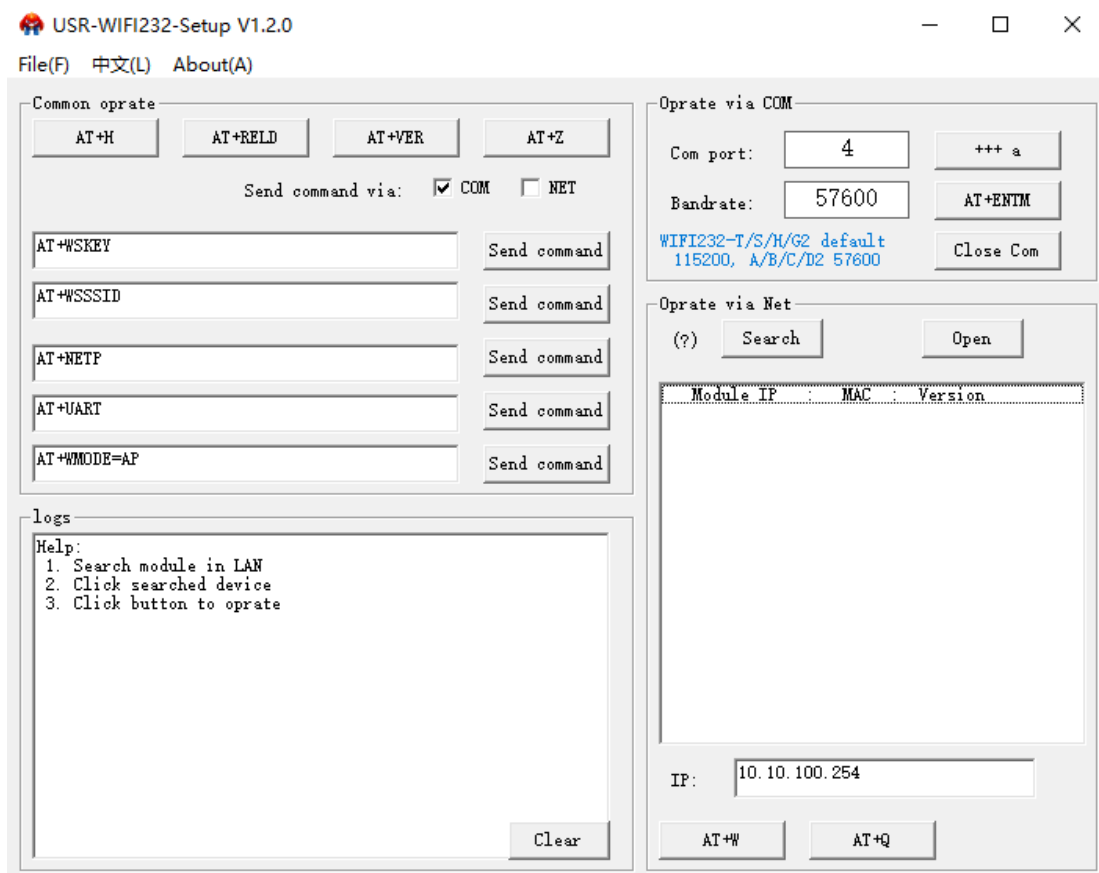


Above is the AT command setting through the serial port, and the AT command can also be set through WIFI.

First, the computer establishes a network connection with the module, using the USR-WIFI232-Setup setting software provided on the CD.



Through the network operation, click "Search", the searched module will be displayed, click it and set AT command on the left operation area. (same way as the serial port setting).



### 3.2.2.1 Command format

AT+ command adopt ASCII-based command line, command format as below:

#### Format description

- < >: indicates the part that must be included
- [ ]: indicates an optional part

#### Command message

AT+<CMD>[op][para-1,para-2,para-3,para-4...]<CR>

- AT+: Command message prefix
- CMD: Command string

[op]: Command operator, specified as parameter setting or query

“=”: parameter setting

“null”: query

[para-n]: Input when parameter setting, no need when query

<CR>: Terminator, Enter, ASCII code 0x0a or 0x0d

<Description>:

When echoing, the terminator is automatically converted to 0x0a0d. When you enter a command, the "AT+<CMD>" character is automatically echoed to uppercase and the parameter portion remains unchanged.

Response message

+<RSP>[op] [para-1,para-2,para-3,para-4...]<CR><LF><CR><LF>



+: Response message prefix

RSP: response string, including:

ok: success

ERR: failure

[op]: =

[para-n]: Return parameters when querying,error when error occurs.

<CR>: ASCII code 0x0d

<LF>: ASCII code 0x0a

#### Error code

Error code	description
-1	Invalid command format
-2	Invalid command
-3	Invalid operator
-4	Invalid parameter
-5	Operation not allowed

### 3.2.2.2 Instruction Set

Instruction	description
(Null)	Empty instruction
E	Turn on/off echo function
ENTM	Enter transparent mode
NETP	Set / query network protocol parameters
UART	Set / query serial port parameters
UARTF	Turn on/off auto framing
UARTFT	Set/query automatic framing trigger time
UARTFL	Set/query automatic framing trigger length
TMODE	Set/Query Data Transfer Mode (Transparent Mode or Protocol Mode)
WMODE	Set/Query WIFI operation mode (AP or STA)
WSKEY	Set/Query Encryption Parameters in WIFI STA Mode
WSSID	Set/Query AP SSID in WIFI STA Mode
WSLK	Query the link status in wireless STA mode
WEBU	Set/Query the login parameters of the WEB page (username, password)
WAP	Set/Query parameters in

	WIFI AP mode
WAKEY	Set/Query Encryption Parameters in WIFI AP Mode
MSLP	Set the module to enter low power mode, turn off WIFI
WSCAN	Search AP in STA mode
TCPLK	Query whether the TCP link has been chained
TCPDIS	Connect/disconnect TCP (valid only in TCP Client)
WANN	Set/query WAN settings, only valid in STA mode
LANN	Set/Query LAN settings, only valid in AP mode
DHCPGW	Set/Query DHCP Gateway Address
TCPTO	Set/Query TCP Timeout
MAXSK	Set/Query Maximum TCP Connections
TCPB	Enable/disable TCPB function
TCPTB	Set / query the TCPB port number
TCPADB	Set / query the TCPB server address
TCPTOB	Set/query TCPB timeout
TCPLKB	Query whether the TCPB connection is built
RELD	Back to factory setting
FUDLX	Turn on/off 485 function
MMID	Set module ID
IDFIR	Turn on/off the first built-in ID function
IDEVE	Turn on/off each data band ID function
AABR	Turn on/off the adaptive baud rate function
DHCPDEN	Enable/disable the DHCP server function of the LAN port
HIDESSID	Set/Query whether to hide the SSID of the module AP
DOMAIN	Set/query the domain name of the login module web page
Z	Restart module
MID	Query module MID
VER	Query software version
H	Help instruction
HTTPURL	Set/Query the IP and Port of the HTTP Server
HTTPTP	Set/Query HTTP Request Type

HTTTPH	Set/Query HTTP Protocol Header Path
HTTPCN	Set/Query HTTP Protocol Header Connection
HTTPIUA	Set/Query HTTP Protocol Header User-Agent
EPHYA	Turn on/off ETH interface 1
EPHYB	Turn on/off ETH interface 2
WSSSIDA	Set/Query the SSID of 1st STA of the three STA parameter sets
WSSSIDB	Set/Query the SSID of 2nd STA of the three STA parameter sets
WSSSIDC	Set/Query the SSID of 3rd STA of the three STA parameter sets
WSKEYA	Set/Query the encryption of 1st STA of the three STA parameter sets
WSKEYB	Set/Query the encryption of 2nd STA of the three STA parameter sets
WSKEYC	Set/Query the encryption of 3rd STA of the three STA parameter sets
WSQY	Set/Query the signal switching threshold of three STA parameter sets
HTPMODE	New and old HTTP header setting mode switching (HTTPD Client)
HTPSV	Under the new version, set/query server address and IP (HTTPD Client)
HTPTP	Under the new version, set/query request method (HTTPD Client)
HTPURL	Under the new version, set/query request path (HTTPD Client)
HTPHEAD	Under the new version, set/query HTTP header (HTTPD Client)
REGEN	Set/Query Registration Type
REGTCP	Set up and query the registration package method
REGID	Set and query the registration package ID
IPBUP	Set up and query domain name IP backup function
STAPRO	Set up and query smart STA

<Description>:

The CX-WIFI-2NET module can work in AP or STA mode and set WIFI parameters with different commands.

**3.2.2.2.1 AT+E**

Function: Turn on/off the echo function

Format:

AT+E<CR>

+ok<CR>< LF ><CR>< LF >

When the module switches from transparent mode to command mode, the default echo function is turned on. After inputting AT+E for the first time, the echo function is turned off. After inputting again, the echo function is turned on.

**3.2.2.2.2 AT+ENTM**

Function: Enter the transparent transmission mode:

Format:

AT+ENTM<CR>

+ok<CR>< LF ><CR>< LF >

After the command is executed correctly, the module switches from command mode to transparent mode. If you want to enter the command mode again, you can enter "+++" and confirm code to the command mode.

**3.2.2.2.3 T+NETP**

Function: Set / query network protocol parameters

Format:

Inquire:AT+NETP<CR>

+ok=<protocol,CS,port,IP><CR>< LF ><CR>< LF >

Set: AT+NETP=<protocol,CS,port,IP><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

protocol:   TCP  
              UDP

CS: including

SERVER: server side

CLIENT: Client

Port: Protocol port, in decimal, less than 65535

Note: When it is tcp server or udp server, the port can't be set to 80 (HTTP port), 8000 (websocket port), 49000 (usr-link)

IP: The address of the server when the module is TCP client or UDP (you can enter the IP address of the server or the domain name of the server).

After the module is restarted, the set parameters take effect.

**3.2.2.2.4 AT+UART**

Function: Set / query serial port parameters

Format:

Inquire:AT+UART<CR>

+ok=<baudrate,data\_bits,stop\_bit,parity,flowctrl><CR>< LF ><CR>< LF >

Set: AT+UART=<baudrate,data\_bits,stop\_bit,parity,flowctrl><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

baudrate: baud rate,yes

300 , 600 , 1200 , 1800 , 2400 , 4800 , 9600 , 19200 , 38400 , 57600 ,  
115200 ,

230400, 345600, 460800

data\_bits: data bit,yes

5, 6, 7, 8

stop\_bits: stop bit,yes

1, 2

parity: check bit, can

NONE: no check digit

EVEN: Even check

ODD: Odd check

MARK: Positive check

SPACE: Negative check

Flowctrl: Hardware Flow Control (CTSRTS)

NFC: No Hardware Flow Control

FC:Hardware flow control After the module is restarted, the  
set parameters take effect.

### 3.2.2.2.5 AT+UARTF

Function: Turn on/off the automatic framing function

Format:

Inquire:AT+UARTF<CR>

+ok=<para><CR>< LF ><CR>< LF >

Set: AT+ UARTF=<para ><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

para: Can take the value disable or enable,Indicates that the automatic  
framing function is turned off or on.

### 3.2.2.2.6 AT+UARTFT

Function: set / query automatic framing trigger time

Format:

Query:AT+UARTFT<CR>

+ok=<time><CR>< LF ><CR>< LF >

Set: AT+UARTFT=<time><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

time: Automatic framing trigger time. Unit: ms; Value range: 100~10000.

### 3.2.2.2.7 AT+UARTFL

Function: set / query automatic framing trigger length

Format:

Query: AT+UARTFL<CR>

+ok=<len><CR>< LF ><CR>< LF >

Set: AT+UARTFL=<len><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

Len: Automatic framing trigger length in bytes. Value range: 16~4096.

### 3.2.2.2.8 AT+TMODE

Function: Set / query data transmission mode (transparent mode or protocol mode)

Format:

Query: AT+TMODE<CR>

+ok=<tmode><CR>< LF ><CR>< LF >

Set: AT+TMODE=<tmode><CR>

+ok<CR>< LF ><CR>< LF >

Parameter:

tmode: Data transfer mode, including  
Through: Transparent transmission mode

Agreement: Serial Command Mode

Httpdclient: HTTPD Client mode

Modbus: Modbus TCP <=> Modbus RTU mode After the module is restarted, the set parameters take effect.

Note: No CMD, it will not work in AT command mode by default after power-on.

### 3.2.2.2.9 AT+WMODE

Function: Set/Query WIFI operation mode (AP or STA)

Format:

Query: AT+WMODE<CR>

+ok=<mode><CR>< LF ><CR>< LF >

Settings: AT+WMODE=<mode><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Mode: WIFI mode of operation, including

AP: Wireless access point mode

STA: Wireless terminal mode After the module is restarted, the set parameters take effect.

### 3.2.2.2.10 AT+WSKEY

Function: Set/Query Encryption Parameters in WIFI STA Mode

Format:

Query: AT+WSKEY<CR>

+ok=<auth, encry, key><CR>< LF ><CR>< LF >

Settings: AT+ WSKEY=< auth, encry, key><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Auth: authentication mode, including

OPEN

SHARED

WPAPSK

WPA2PSK

Encry: encryption algorithm, including

Valid when NONE:auth=OPEN

WEP-H: valid when auth=OPEN or SHARED (WEP, HEX)

WEP-A: valid when auth=OPEN or SHARED (WEP, ASCII)

TKIP: valid when auth= WPAPSK/WPA2PSK

Valid when AES:auth= WPAPSK/WPA2PSK

Key: password, when encry=WEP-H, the password is hexadecimal, 10 or 26 digits; when encry=WEP-A, the password is ASCII code, 5 digits or 13 digits; otherwise it is ASCII code, less than 64 bits, greater than 8 bits. This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in AP mode.

### 3.2.2.2.11 AT+WSSSID

Function: Set/Query AP SSID in WIFI STA Mode

Format:

Query: AT+WSSSID<CR>

+ok=<ap's ssid><CR>< LF ><CR>< LF >

Settings: AT+ WSSSID=<ap's ssid ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Ap's ssid: SSID of the AP

This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. And these parameters can also be set in AP mode.

### 3.2.2.2.12 AT+WSLK

Function: Query the link status in wireless STA mode (only for STA mode)

Format:

Query: AT+ WSLK<CR>

+ok=<ret><CR>< LF ><CR>< LF >

parameter:

ret:

If not connected: return "Disconnected"

If there is a connection: return "AP's SSID (AP's MAC)"

If the wireless is not turned on: Return to "RF Off" This parameter is valid only in STA mode.

### 3.2.2.2.13 AT+WEBU

Function: Set/Query the login parameters (user name, password) of the WEB page

Format:

Query: AT+WEBU<CR>

+ok=<usr,password><CR>< LF ><CR>< LF >



Settings: AT+ WEBU=< usr,password ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Usr: username when WEB page is accessed

Password: password for WEB page access

### 3.2.2.2.14 AT+WAP

Function: Set/Query parameters in WIFI AP mode Format:

Query: AT+WAP<CR>

+ok=<wifi\_mode,ssid,channel><C

R>< LF ><CR>< LF >

Settings: AT+WAP=<wifi\_mode, ssid,  
channel><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

wifi\_mode: WIFI mode, including

11BG

11B

11G

11BGN

11N

ssid: SSID in AP modeD

channel: WIFI channel selection, AUTO or CH1~CH11

This parameter is valid only in AP mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in STA mode.

### 3.2.2.2.15 AT+WKEY

Function: Set/Query Encryption Parameters in WIFI AP Mode Format:

Query: AT+WKEY<CR>

+ok=<auth,ency,key><CR>< LF ><CR>< LF >

Settings: AT+ WAKKEY=< auth, encry, key><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Auth: authentication mode, including

OPEN

SHARED

WPAPSK

WPA2PSK

Encry: encryption algorithm, including

Valid when NONE:auth=OPEN

WEP-H: valid when auth=OPEN or SHARED (WEP, HEX)

WEP-A: valid when auth=OPEN or SHARED (WEP, ASCII)

TKIP: valid when auth= WPAPSK/WPA2PSK

Valid when AES:auth= WPAPSK/WPA2PSK

Valid when TKIPAES:auth= WPAPSK/WPA2PSK

Key: password, when encry=WEP-H, the password is hexadecimal, 10 or 26 digits; when encry=WEP-A, the password is ASCII, 5 digits or 13 digits; otherwise it is ASCII code, less than 64-bit, greater than 8 bits. This parameter is valid only in AP mode. After the module is restarted, the set parameters take effect. But it can also be set in STA mode.

### 3.2.2.2.16 AT+MSLP

Function: The module enters sleep mode (when the module works in AP or STA mode, WIFI is not available)

Format:

Query: AT+ MSLP <CR>

+ok=<sta.><CR>< LF ><CR>< LF >

Settings: AT+MSLP=<on/off><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

When querying, sta.: returns whether the module sleeps, such as

On, indicating no sleep

Off, indicating sleep

While setting, off puts the module into sleep mode, on allows the module to exit sleep mode. When the module enters sleep mode, enter AT+MSLP=on and the module exits sleep mode. Mode is still command mode.

### **3.2.2.2.17 AT+WSCAN**

Function: Search AP

Format:

AT+ WSCAN<CR>

+ok=<ap\_site><CR>< LF ><CR>< LF >

parameter:

Ap\_site: searched AP site

The first line of the return value is "RSSI, SSID, BSSID, Channel, Encryption, Authentication", which are strong signals.

Degree, network name, MAC address, channel, authentication mode, encryption algorithm.

### **3.2.2.2.18 AT+TCPLK**

Function: Query whether the TCP connection has been chained Format:

AT+ TCPLK<CR>

+ok=<sta><CR>< LF ><CR>< LF >

Parameters:

sta.: Returns whether TCP builds a chain, such as

on, indicating that the chain has been built

off, indicating that there is no chain built.

### **3.2.2.2.19 AT+TCPDIS**

Function: Link/Disconnect TCP (valid only in TCP Client)

Format:

Query: AT+ TCPDIS <CR>

+ok=<sta.><CR>< LF ><CR>< LF >

Settings: AT+TCPDIS=<on/off><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

When querying, sta.: Returns whether the TCP Client is linkable, such as

On, expressed as linkable status

Off, indicating that it is not linkable

While setting, the off setting module is unlinkable, that is, after the command is finished, the module immediately disconnects and no longer reconnects.

On: Sets the module to be linkable, that is, after the command is completed, the module immediately begins to reconnect to the server.

### 3.2.2.2.20 AT+WANN

Function: Set/query WAN settings, only valid in STA mode

Format:

Query: AT+WANN<CR>

+ok=<mode,address,mask,gateway><CR>< LF ><CR>< LF >

Settings: AT+ WANN=< mode,address,mask,gateway ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

☒ mode: WAN port IP mode, such as

Static, static IP

DHCP, dynamicIP

☒ address.: WAN IP address

☒ mask: WAN port subnet mask

☒ gateway: WAN port gateway address

**3.2.2.2.21 AT+LANN**

Function: Set / query LAN settings, only valid in AP mode

Format:

Query: AT+LANN<CR>

+ok=<address,mask ><CR>< LF ><CR>< LF >

Settings: AT+ LANN=<address,mask ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Address.:LAN port IP address

Mask: LAN port subnet mask

Note: The wan port address of the module viewed by WANN and the lan port address of the module viewed by LANN cannot be set to be as the same network segment. Otherwise, the module does not work properly.

**3.2.2.2.22 AT+DHCPGW**

Function: Set/Query DHCP

Gateway Address

Format:

Query: AT+DHCPGW<CR>

+ok=<address><CR><

LF ><CR>< LF >

Settings: AT+

DHCPGW=<address ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Address.:DHCP gateway

address

**3.2.2.2.23 AT+TCPTO**

Function: Set/Query TCP Timeout

Format:

Query: AT+TCPTO<CR>

+ok=<time><CR>< LF ><CR>< LF >

Settings: AT+ TCPTO=<time ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Time.: TCP timeout, <= 600 (600 seconds), >=0 (0 means no timeout), default is 0

TCP timeout: The module TCP channel does not receive any data to start counting, and clears the count when it receives data. If the timing is longer than the TCPTO time, disconnect. When the module works in the TCP Client, it will reconnect to the TCP Server. When the module is a TCP server, the TCP client needs to reconnect actively.

**3.2.2.2.24 AT+MAXSK**

Function: Set/Query Maximum TCP Connections Format:

Query: AT+MAXSK<CR>

+ok=<num><CR>< LF ><CR>< LF >

Settings: AT+ MAXSK =<num ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Num: Maximum number of TCP connections, which can support 1 to 32. The default is 32.

When set to TCP Server, the module can support up to 32 TCP connections. If users do not need so many connections, you can set this parameter to be appropriately reduced.

**3.2.2.2.25 AT+TCPB**

Function: Enable/disable TCPB function Format:

Query: AT+TCPB <CR>

+ok=<sta.><CR>< LF ><CR>< LF >

Settings: AT+TCPB=<on/off><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

When querying, sta.: Returns whether the TCPB function is enabled, such as

On, indicating TCPB enable

Off, indicating that TCPB is not enabled. After the module is restarted, the set parameters take effect.

### 3.2.2.2.26 AT+TCPPTB

Function: Set/Query the port number of TCPB Format:

Query: AT+TCPPTB <CR>

+ok=<port><CR>< LF ><CR>< LF >

Settings: AT+TCPPTB=<port><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Port: Protocol port, in decimal, less than 65535

After the module is restarted, the set parameters take effect.

### 3.2.2.2.27 AT+TCPADDB

Function: Set/Query TCPB Server Format:

Query: AT+TCPADDB <CR>

+ok=<add><CR>< LF ><CR>< LF >

Settings: AT+TCPADDB=<add><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Add: TCPB server address (you can enter the server's IP address, or the server domain name). After the module is restarted, the set parameters take effect.

**3.2.2.2.28 AT+TCPTOB**

Function: Set/Query TCPB Timeout Time

Format:

Query: AT+TCPTOB<CR>

+ok=<time><CR>< LF ><CR>< LF >

Settings: AT+ TCPTOB=<time ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Time.: TCPB timeout, <= 600 (600 seconds), >=0 (0 means no timeout), default is 0

**3.2.2.2.29 AT+TCPLKB**

Function: Query whether the TCPB link has been built. Format:

AT+ TCPLKB<CR>

+ok=<sta><CR>< LF ><CR>< LF >

parameter:

Sta.: Returns whether TCPB builds a chain, such as

On, indicating that the chain has been built

Off, indicating that there is no chain

**3.2.2.2.30 AT+FUDLX**

Function: RS485 open and close command

Format:

AT+FUDLX=on/off<CR>

+ok<CR>< LF ><CR>< LF >

This command enables or disables the 485 control function. The default RS485 is off and the 485 control pin is RTS. The factory settings are valid after this command is set.



### 3.2.2.2.31 AT+MMID

Function: Set module ID command

Format:

```
AT+MMID=<ID><CR>
```

```
+ok=<ID><CR>< LF ><CR>< LF >
```

parameter:

ID: The value of the ID, ranging from 0 to 65535.

### 3.2.2.2.32 AT+IDFIR

Function: First built with ID function to turn off the command format:

```
AT+IDFIR=on/off<CR>
```

```
+ok<CR>< LF ><CR>< LF >
```

This command enables or disables the first built-in ID function. The default is off.

### 3.2.2.2.33 AT+IDEVE

Function: Each data with ID function turns on the off command format:

```
AT+IDEVE=on/off<CR>
```

```
+ok<CR>< LF ><CR>< LF >
```

This command enables or disables the data ID function each time. The default is off.

Note: The function of the ID requires the server to handle it accordingly. When the module is connected to the server, it will have a two-byte ID number in front of the data (ID range is 0~65535, high byte first, low byte later) plus two bytes of ID inverse. For example, if the default ID of the module is 1111, the first four bytes are sent to the server as "0x04 0x57 0xFB 0xA8".

### 3.2.2.2.34 AT+AABR

Function: adaptive baud rate function on and off command

Format:

AT+AABR=on/off<CR>

+ok<CR>< LF ><CR>< LF >

This command enables or disables the adaptive baud rate function, which is enabled by default.

### 3.2.2.2.35 AT+DHCPDEN

Function: Enable/disable DHCP server function of LAN port

Format:

AT+DHCPDEN=on/off<ID><CR>

+ok=<ID><CR>< LF ><CR>< LF >

parameter:

This command enables or disables the DHCP server function of the LAN port. The default is enabled.

### 3.2.2.2.36 AT+HIDESSID

Function: Turn on/off to hide the SSID of the module AP

Format:

AT+HIDESSID=on/off<CR>

+ok<CR>< LF ><CR>< LF >

This command enables or disables the hiding of the SSID of the module AP. The default is off.

### 3.2.2.2.37 AT+DOMAIN

Function: Set/Query the domain name of the login module webpage Format:

Query: AT+DOMAIN<CR>

+ok=<name><CR>< LF ><CR>< LF >

Settings: AT+ DOMAIN=<name ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Name: The domain name of the login module web page.

**3.2.2.2.38 AT+RELD**

Function: Restore factory settings

Format:

AT+ RELD<CR>

+ok=rebooting...<CR>< LF ><CR>< LF >

This command restores the factory settings of the module and then automatically restarts.

**3.2.2.2.39 AT+Z**

Function: restart the module

Format:

AT+ Z<CR>

Module restart

**3.2.2.2.40 AT+MID**

Function: Query module MID

Format:

Query: AT+MID<CR>

+ok=<module\_id><CR>< LF ><CR>< LF >

parameter:

Module\_id: module MID, format

A11-yymmddnnnn

yymmdd: indicates the date of manufacture, year, month and day respectively

nnnn: indicates the production serial number

**3.2.2.2.41 AT+VER**

Function: Query software version

format:

Query: AT+VER<CR>

+ok=<ver><CR>< LF ><CR>< LF >

parameter:

Ver: return module software version

### 3.2.2.2.42 AT+H

Function: help instructions

format:

Query: AT+H<CR>

+ok=<commod help><CR>< LF ><CR>< LF >

Parameters: commod help: command line description

### 3.2.2.2.43 AT+HTTPURL

Function: Set/Query IP and Port Format of HTTP Server:

Query: AT+HTTPURL<CR>

+ok=<ip>,<port><CR>< LF ><CR>< LF >

Settings: AT+HTTPURL=<ip>,<port><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

☒ Ip: ip of the HTTP server.

☒ port: Port of the HTTP server.

### 3.2.2.2.44 AT+HTTPTP

Function: Set/Query HTTP

Request Type Format:

Query: AT+ HTTPTP<CR>

+ok=<Type><CR><

LF ><CR>< LF >

Settings:

AT+HTTPTP=<Type><CR>

+ok<CR>< LF ><CR><

LF >

parameter:

Type: HTTP request type,

such as

GET

PUT

**3.2.2.2.45 AT+HTTTPH**

Function: Set/Query HTTP

Protocol Header Path Format:

Query: AT+HTTTPH<CR>

+ok=<path><CR>< LF ><CR>< LF >

Settings: AT+HTTTPH=<path><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Path: The protocol header path of HTTP.

**3.2.2.2.46 AT+HTTTPCN**

Function: Set/Query Connection of HTTP Protocol Header  
format:

Query: AT+HTTTPCN<CR>

+ok=<Connection><CR>< LF ><CR>< LF >

Settings: AT+HTTTPCN=<Connection><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Connection: The Connection of the HTTP protocol header.

**3.2.2.2.47 AT+HTTTPUA**

Function: Set/Query User-Agent of HTTP Protocol Header

Format:

Query: AT+HTTTPUA<CR>

+ok=<User-Agent><CR>< LF ><CR>< LF >

Settings: AT+HTTTPUA=<User-Agent><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

User-Agent: User-Agent of the HTTP protocol header.

#### **3.2.2.2.48 AT+EPHYA**

Function: Turn on/off Ethernet 1 function Format:

AT+EPHYA=on/off<ID><CR>

+ok=<ID><CR>< LF ><CR>< LF >

parameter:

This command enables or disables the Ethernet 1 function, which is enabled by default.

#### **3.2.2.2.49 AT+EPHYB**

Function: Enable/disable Ethernet 2 function

Format:

AT+EPHYB=on/off<ID><CR>

+ok=<ID><CR>< LF ><CR>< LF >

parameter:

This command enables or disables the Ethernet 2 function, which is enabled by default.

With AT+FVEW=disable/enable, you can set the module network port to work in lan (disable) or wan.

(enable), the instruction restores the factory settings to take effect.

#### **3.2.2.2.50 AT+WSSSIDA**

Function: Set/Query the first AP SSID under the three STA parameter sets of WIFI

Format:

Query: AT+WSSSIDA<CR>

+ok=<ap's ssid><CR>< LF ><CR>< LF >

Settings: AT+ WSSSIDA=<ap's ssid ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Ap's ssid: SSID of the AP

This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in AP mode.

### 3.2.2.2.51 AT+WSSSIDB

Function: Set/Query the second AP SSID under the WIF three STA parameter sets.

Format:

Query: AT+WSSSIDB<CR>

+ok=<ap's ssid><CR>< LF ><CR>< LF >

Settings: AT+ WSSSIDB=<ap's ssid ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Ap's ssid: SSID of the AP

This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in AP mode.

### 3.2.2.2.52 AT+WSSSIDC

Function: Set/Query the third AP SSID under the three STA parameter sets of WIFI

Format:

Query: AT+WSSSIDC<CR>

+ok=<ap's ssid><CR>< LF ><CR>< LF >

Settings: AT+ WSSSIDC=<ap's ssid ><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Ap's ssid: SSID of the AP

This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in AP mode.

### 3.2.2.2.53 AT+WSKEYA

Function: Set/Query the first AP encryption under the three STA parameter sets of WIFI

Format:

Query: AT+WSKEYA<CR>

+ok=<auth, encry, key><CR>< LF ><CR>< LF >

Settings: AT+ WSKEYA=< auth, encry, key><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Auth: authentication mode, including

OPEN

SHARED

WPAPSK

WPA2PSK

Encry: encryption algorithm, including

Valid when NONE:auth=OPEN

WEP-H: valid when auth=OPEN or SHARED (WEP, HEX)

WEP-A: valid when auth=OPEN or SHARED (WEP, ASCII)

TKIP: valid when auth= WPAPSK/WPA2PSK

Valid when AES:auth= WPAPSK/WPA2PSK

Key: password, when encry=WEP-H, the password is hexadecimal, 10 or 26 digits; when encry=WEP-A, the password is ASCII, 5 digits or 13 digits; otherwise it is ASCII code, less than 64-bit, greater than 8 bits. This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. But it can also be set in AP mode.



### 3.2.2.2.54 AT+WSKEYB

Function: Set/Query WIFI Three AP encryption under three STA parameter sets

format:

Query: AT+WSKEYB<CR>

+ok=<auth, encry, key><CR>< LF ><CR>< LF >

Settings: AT+ WSKEYB=< auth, encry, key><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Auth: authentication mode, including

OPEN

SHARED

WPAPSK

WPA2PSK

Encry: encryption algorithm, including

Valid when NONE:auth=OPEN

WEP-H: valid when auth=OPEN or SHARED (WEP, HEX)

WEP-A: valid when auth=OPEN or SHARED (WEP, ASCII)

TKIP: valid when auth= WPAPSK/WPA2PSK

Valid when AES:auth= WPAPSK/WPA2PSK

Key: password, when encry=WEP-H, the password is hexadecimal, 10 or 26 digits; when encry=WEP-A, the password is ASCII, 5 digits or 13 digits; otherwise it is ASCII code, less than 64-bit, greater than 8 bits. This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. But it can also be set in AP mode.

### 3.2.2.2.55 AT+WSKEYC

Function: Set/Query WIFI Three AP encryption under three STA parameter sets

Format:

Query: AT+WSKEYC<CR>

+ok=<auth, encry, key><CR>< LF ><CR>< LF >

Settings: AT+ WSKEYC=< auth, encry, key><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Auth: authentication mode, including

OPEN

SHARED

WPAPSK

WPA2PSK

Encry: encryption algorithm, including

Valid when NONE:auth=OPEN

WEP-H: valid when auth=OPEN or SHARED (WEP, HEX)

WEP-A: valid when auth=OPEN or SHARED (WEP, ASCII)

TKIP: valid when auth= WPAPSK/WPA2PSK

Valid when AES:auth= WPAPSK/WPA2PSK

Key: password, when encry=WEP-H, the password is hexadecimal, 10 or 26 digits; when encry=WEP-A, the password is ASCII, 5 digits or 13 digits; otherwise it is ASCII code, less than 64-bit, greater than 8 bits. This parameter is valid only in STA mode. After the module is restarted, the set parameters take effect. But it can also be set in AP mode.

These parameters.

### 3.2.2.2.56 AT+WSQY

Function: Set/Query the signal threshold (percentage) of the three STA parameter sets

format:

Query: AT+WSQY<CR>

+ok=<ret><CR>< LF ><CR>< LF >

Settings: AT+ WSQY=< ret><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

ret:

The percentage of signal strength, such as the signal strength is 50%, should be set to AT+WSQY=50<CR>

Note: If set to 100, the module will not automatically switch the WIFI network. If the customer uses only one STA parameter, be sure to set this parameter to 100.

### 3.2.2.2.57 AT+HTPMODE

Function: New and old HTTP header setting mode switching (HTTPD Client)

Format:

Query: AT+HTPMODE<CR>

+ok=<type><CR>< LF ><CR>< LF >

Settings: AT+HTPMODE=<type><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Type: authentication mode, including

New : new HTTP header settings

Old: Older HTTP header settings

This parameter is valid only in HTTPD Client mode. After the module is restarted, the set parameters take effect. However, this parameter can also be set in other modes.

### 3.2.2.2.58 AT+HTPSV

Function: Set/Query IP and Port of HTTP Server

format:

Query: AT+ HTPSV<CR>

+ok=<ip>,<port><CR>< LF ><CR>< LF >

Settings: AT+ HTPSV=<ip>,<port><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Ip: ip of the HTTP server.

Port: The port of the HTTP server.

This parameter is valid only in HTTPD Client mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in other modes.

### 3.2.2.2.59 AT+HTPTP

Function: Set/Query HTTP Request Type

Format:

Query: AT+HTPTP<CR>

+ok=<Type><CR>< LF ><CR>< LF >

Settings: AT+HTPTP=<Type><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Type: HTTP request type, such as

GET

PUT

POST

This parameter is valid only in HTTPD Client mode. After the module is restarted, the set parameters take effect. However, these parameters can also be set in other modes.

### 3.2.2.2.60 AT+HTPURL

Function: Set/Query HTTP Protocol Header Path Format:

Query: AT+HTPURL<CR>

+ok=<path><CR>< LF ><CR>< LF >

Settings: AT+HTPURL=<path><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Path: The request path for HTTP.

### 3.2.2.2.61 AT+HTPHEAD

Function: Set/Query HTTP Header Content Format:

Query: AT+HTPHEAD<CR>

+ok=<head><CR>< LF ><CR>< LF >

Settings: AT+HTPHEAD=<head><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Head: The header content of HTTP. The carriage return line feed in the header content should be replaced with the string "<<CRLF>>", the longest 200 bytes.

Note: AT commands such as AT+HTPMODE, AT+HTPSV, AT+HTPTP, AT+HTPURL, and AT+HTPHEAD are supported in V5.01D.14 and above.

### 3.2.2.2.62 AT+REGEN

Function: Set/Query Registration Package Type Format:

Query: AT+REGEN<CR>

+ok=<mode><CR>< LF ><CR>< LF >

Settings: AT+REGEN=<mode><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Mode: the type of the registration package, such as

Id: the registration package is an ID

Mac: The registration package is a MAC address.

Off: Do not open the registration package function

### 3.2.2.2.63 AT+REGTCP

Function: Set/Query Registration Method Format:

Query: AT+REGTCP<CR>

+ok=<type><CR>< LF ><CR>< LF >

Settings: AT+REGTCP=<type><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Type: the type of registration package, such as

First: the registration package is sent when the module establishes a connection.

Every: send a registration package each time data is sent

#### **3.2.2.2.64 AT+REGID**

Function: Set/Query Registration Package ID

Format:

Query: AT+REGID<CR>

+ok=<ID><CR>< LF ><CR>< LF >

Settings: AT+REGID=<ID><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

ID: The value of the ID, ranging from 0 to 65535.

#### **3.2.2.2.65 AT+IPBUP**

Function: Enable/disable domain name resolution IP backup function Format:

Query: AT+IPBUP<CR>

+ok=<backup-a,backup-b><CR>< LF ><CR>< LF >

Settings: AT+ IPBUP=< backup-a, backup-b><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Backup-a: authentication mode, including

On: Open TCPA domain name resolution IP backup function

Off: Disable TCPA domain name resolution IP backup function

Backup-b: encryption algorithm, including

On: Open TCPB domain name resolution IP backup function

Off: Disable TCPB domain name resolution IP backup function This command

enables or disables the on/off domain name resolution IP backup function. The default is off.

**3.2.2.2.66 AT+STAPRO**

Function: Turn on/off the smart STA function Format:

Query: AT+STAPRO<CR>

+ok=<mode><CR>< LF ><CR>< LF >

Settings: AT+ STAPRO=< mode><CR>

+ok<CR>< LF ><CR>< LF >

parameter:

Mode: Included

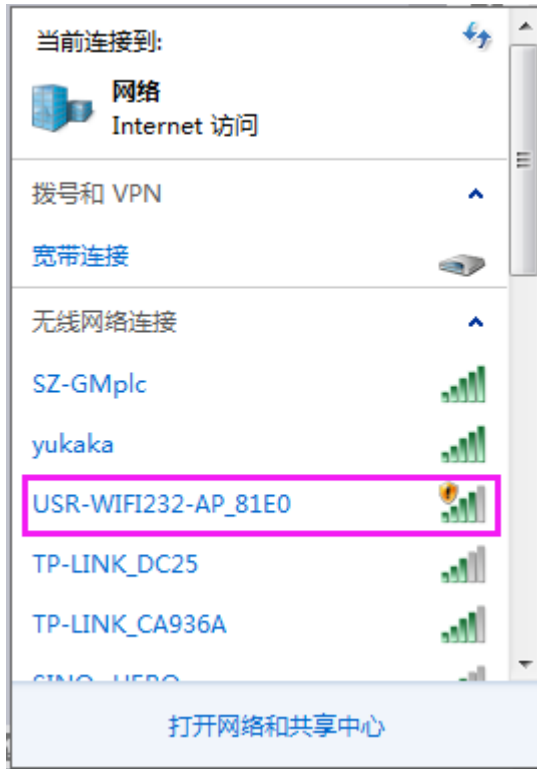
On: Turn on the smart sta function

Off: Turn off the smart sta function This command is off by default.

### 3.3 AP Mode Setting Procedure

#### Step 1: Configure CX-WIFI-2NET module communication

① Turn on your computer's wireless network and search for the wireless signal USR-WIFI232-AP\_\*\*\*\* to connect to the wireless network.



② Open a browser, enter the URL "http://10.10.100.254" and press Enter. Fill in the user name and password in the pop-up dialog box. The default username is admin, the password defaults to admin, and then click OK.

③ Enter the quick configuration, the working mode in the wireless mode is selected as the AP mode, the network name (SSID) user can change it by itself, that is, the WiFi name, the encryption mode can set the password of the WiFi, the Disable means no password, the wireless access point security setting as WPA2-PSK, select the AES for the WPA encryption algorithm, set the password by yourself, and click OK:



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### Quick Configure

**1F** [WI-FI Setting](#) [【Modify】](#)

Wifi Mode	
Mode	AP Mode ▾
Wireless configuration	
Network Name(SSID)	USR-WIFI232-AP_5250 <input type="checkbox"/> Hidden
BSSID	F0:FE:6B:30:52:50
Security Mode	Disable ▾

**2F** [Ethernet Ports Setting](#) [【Modify】](#)

---

**3F** [Uart Setting](#) [【Modify】](#)

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**4F** [Network Setting](#) [【Modify】](#)

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**5F** [Device Management](#)

Restart Module	
Restart Module	<input type="button" value="Restart"/>

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### Quick Configure

**1F** [WI-FI Setting](#) [【Modify】](#)

---

**2F** [Ethernet Ports Setting](#) [【Modify】](#)

Ethernet function	
Open the Ethernet1	Enable ▾
Open the Ethernet2	Enable ▾
Set the Ethernet2 work mode	LAN Port ▾

**3F** [Uart Setting](#) [【Modify】](#)

---

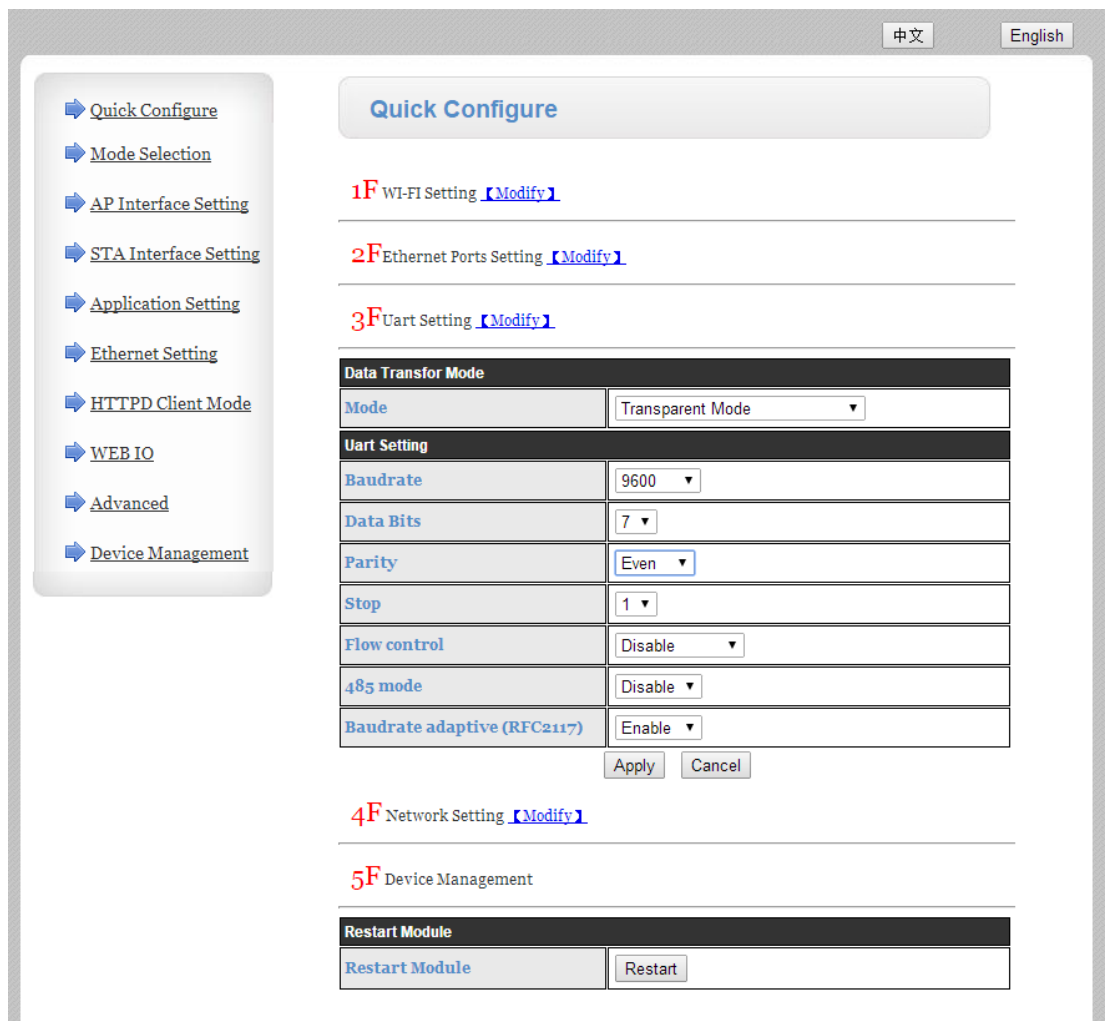
**4F** [Network Setting](#) [【Modify】](#)

---

**5F** [Device Management](#)

Restart Module	
Restart Module	<input type="button" value="Restart"/>

④ In the serial port configuration, the working mode uses the default transparent transmission mode. In the serial port parameter configuration, the baud rate: 9600, data bit: 7, check digit: EVEN, stop bit: 1, (Note: 9600 7 EVEN 1 is Coolmay PLC Or compatible with the Mitsubishi protocol PLC parameters, the specific baud rate, data bits, check bits, stop bits are based on the default parameters of the connected PLC or serial device), other parameters as default, and then click OK:



⑤ In the network mode, the network mode is set as Server, the protocol is set as TCP, the port is set as 8899, other parameters are as default, and then click OK. After all the above steps are set, click Restart in the restart module:

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### Quick Configure

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**4F** [Network Setting](#) [【Modify】](#)

---

Network A Setting	
Mode	Server ▼
Protocol	TCP ▼
Port	<input type="text" value="8899"/>
Server Address	<input type="text" value="10.10.100.100"/>
MAX TCP Num.(1-32)	<input type="text" value="32"/>
TCP Time out (小于600秒)	<input type="text" value="0"/>
TCP connection password authentication	Disable ▼

**5F** [Device Management](#)

---

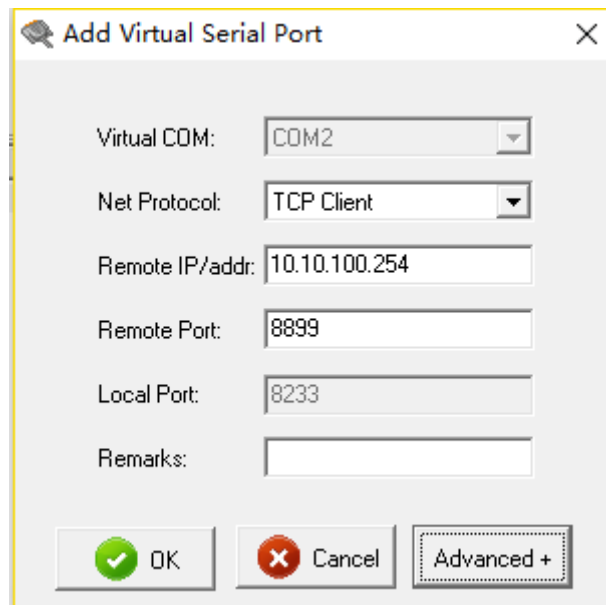
Restart Module	
Restart Module	<input type="button" value="Restart"/>

**Step 2: Configure the virtual serial port software**

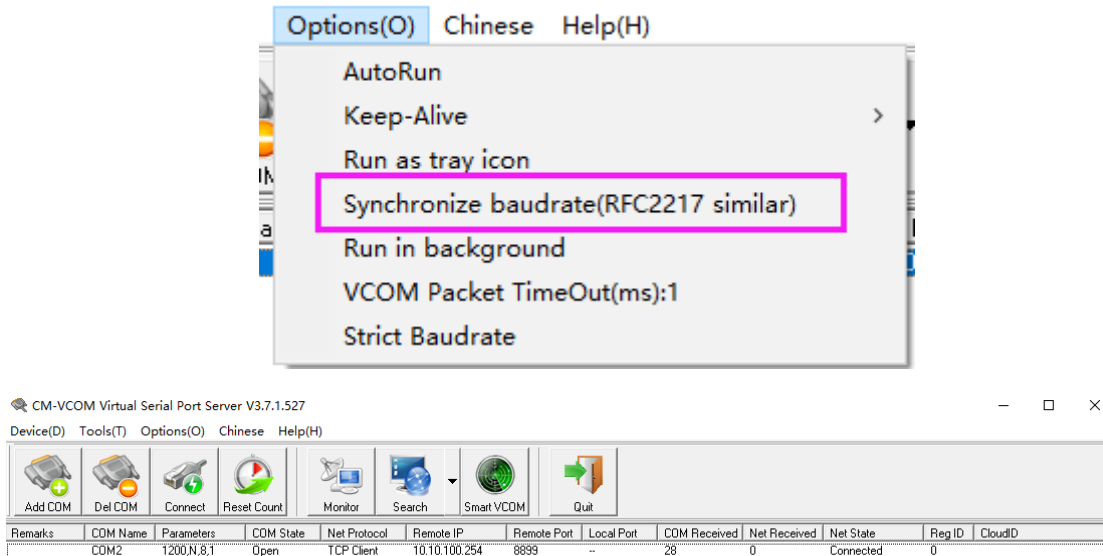
① Open the computer's wireless network and search for the wireless signal USR-WIFI232-AP\_\*\*\*\* to connect to the wireless network:



② Add a virtual serial port:



③ Connect the virtual serial port and change the sync baud rate option in the option to unchecked:



④ The virtual serial port has been established, and the serial port number is the virtual serial port COM2. At this time, the PLC programming software can be connected by COM2, and the PLC download program and wireless monitoring can be performed. Note: The PLC software version must be GX 8.52 or WORKS 2.

### 3.4 STA mode setting procedure

#### The first step: configure CX-WIFI-2NET module communication

① Open the computer's wireless network and search for the wireless signal USR-WIFI232-AP\_\*\*\*\* to connect to the wireless network:



② Open a browser, enter the URL "http://10.10.100.254" and press Enter. Fill in the user name and password in the pop-up dialog box. The default username is admin, the password defaults to admin, and then determine:

③ Enter the quick configuration, select the STA mode in the wireless mode, click Search, and search for the network name (SSID) to be accessed by the module.

Quick Configure

1F WI-FI Setting [【Modify】](#)

Wifi Mode	
Mode	STA Mode ▾

STA Interface Parameters	
AP's SSID	USR-WIFI232-AP_5250 <input type="button" value="Search"/>
MAC Address (Optional)	<input type="text"/>
Security Mode	OPEN ▾
Encryption Type	NONE ▾

2F Ethernet Ports Setting [【Modify】](#)

3F Uart Setting [【Modify】](#)

4F Network Setting [【Modify】](#)

5F Device Management

Restart Module	
Restart Module	<input type="button" value="Restart"/>

Site Survey							
	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type
<input checked="" type="radio"/>	DESKTOP-PFT963B 7111	46:1c:a8:ef:e2:c1	91%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	MERCURY_29C796	ec:88:8f:29:c7:96	34%	6	NONE	OPEN	Infrastructure
<input type="radio"/>	7008	8c:a6:df:eb:f8:07	39%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-zmkf	e8:68:19:04:a4:38	29%	3	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	TP-ZJ_2.4	f4:83:cd:aa:30:61	20%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>		d4:5f:25:c1:10:dd	20%	1	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>		ec:8c:9a:bf:80:39	15%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	lianketong	30:fc:68:37:57:50	15%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	AISTOR706	78:44:fd:53:aa:91	20%	7	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	vk712	78:11:dc:04:04:fe	20%	8	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>		ec:8c:9a:bf:80:35	10%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	528	ec:8c:9a:bf:80:34	10%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-iTmS	34:1e:6b:ea:71:08	10%	2	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-QACC	7c:76:30:06:0a:40	5%	4	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-MtLj	c4:b8:b5:a2:b5:ed	0%	1	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	iy0325	dc:fe:18:82:41:06	0%	1	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	RT	a8:57:4e:2e:2e:62	0%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	SB-K1	b8:76:3f:9b:bb:d6	0%	1	AES	WPA2PSK	Infrastructure
<input type="radio"/>	GuangHe	bc:46:99:21:36:af	0%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	MERCURY_FAE6	c8:e7:d8:0d:fa:e6	0%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	529	dc:fe:18:58:da:d5	0%	6	AES	WPA2PSK	Infrastructure
<input type="radio"/>	wfy	c8:3a:35:3b:1c:08	0%	7	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-ZzTN	b0:ac:d2:ae:77:d8	0%	8	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-nE7Z	54:66:6c:8d:8e:60	0%	8	TKIP	WPA2PSK	Infrastructure
<input type="radio"/>	ChinaNet-bujr	a4:29:40:0c:62:99	0%	9	TKIP	WPA2PSK	Infrastructure

In this screenshot, the xi777 wireless network is connected and the correct password is entered. (Note that the specific network and password to be connected need to be set on site, this screenshot is for reference only), other parameters are default, then click to confirm:

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### Quick Configure

**1F** [WI-FI Setting](#) [【Modify】](#)

Wifi Mode	
Mode	STA Mode ▾
STA Interface Parameters	
AP's SSID	DESKTOP-PFT963B 711 <input type="text" value="Search"/>
MAC Address (Optional)	<input type="text"/>
Security Mode	WPA2PSK ▾
Encryption Type	AES ▾
Key	oK6526(7)

**2F** [Ethernet Ports Setting](#) [【Modify】](#)

---

**3F** [Uart Setting](#) [【Modify】](#)

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**4F** [Network Setting](#) [【Modify】](#)

---

**5F** [Device Management](#)

Restart Module	
Restart Module	<input type="button" value="Restart"/>

④ In the serial port configuration, the working mode uses the default transparent transmission mode. In the serial port parameter configuration, the baud rate: 9600, data bit: 7, check digit: EVEN, stop bit: 1, (note: 9600 7 EVEN 1 is Gu Mei PLC or PLC parameters compatible with Mitsubishi protocol, the specific baud rate, data bit, check digit, stop bit are set according to the default parameters of the connected PLC or serial device), other parameters are default, then click OK:



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**Quick Configure**

**1F** [WI-FI Setting](#) [【Modify】](#)

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**2F** [Ethernet Ports Setting](#) [【Modify】](#)

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**3F** [Uart Setting](#) [【Modify】](#)

Data Transfor Mode	
Mode	Transparent Mode ▾

Uart Setting	
Baudrate	9600 ▾
Data Bits	7 ▾
Parity	Even ▾
Stop	1 ▾
Flow control	Disable ▾
485 mode	Disable ▾
Baudrate adaptive (RFC2117)	Enable ▾

**4F** [Network Setting](#) [【Modify】](#)

---

**5F** [Device Management](#)

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Restart Module	
Restart Module	<input type="button" value="Restart"/>

⑤ In network mode, the network mode is set to Client, the protocol is set to TCP, the port is set to 25565, the server address is set to 120.76.116.193, other parameters are default, and then click OK:

The screenshot displays the 'Quick Configure' page of the Coolmay web interface. On the left is a navigation menu with options: Quick Configure, Mode Selection, AP Interface Setting, STA Interface Setting, Application Setting, Ethernet Setting, HTTPD Client Mode, WEB IO, Advanced, and Device Management. The main content area is titled 'Quick Configure' and contains five numbered sections:

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- 5F Device Management

The '4F Network Setting' section is highlighted with a pink border and contains a table titled 'Network A Setting':

Network A Setting	
Mode	Client ▼
Protocol	TCP ▼
Port	25565
Server Address	120.76.116.193
MAX TCP Num.(1-32)	32
TCP Time out (小于600秒)	0

Below the table are 'Apply' and 'Cancel' buttons. The '5F Device Management' section contains a table titled 'Restart Module':

Restart Module	
Restart Module	Restart

⑥ Enter the serial port and network settings, device registration package settings, the registration package type is changed to upload ID, the registration package mode is selected First, the device ID is set to 64847 in this screenshot, (Note: each CX-WIFI-2NET module needs to use STA Mode, need device ID, you need to consult Gumei technical customer service to request and then set), then click OK:

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- ➔ [Advanced](#)
- ➔ [Device Management](#)

### Wifi-Uart Setting

You could configure the Uart parameters and network parameters of the wifi-uart application.

Uart Setting	
Baudrate	9600 ▾
Data Bits	7 ▾
Parity	Even ▾
Stop	1 ▾
Flow control	Disable ▾
485 mode	Disable ▾
Baudrate adaptive (RFC2117)	Enable ▾

Apply Cancel

UART AutoFrame Setting	
UART AutoFrame	Disable ▾

Apply Cancel

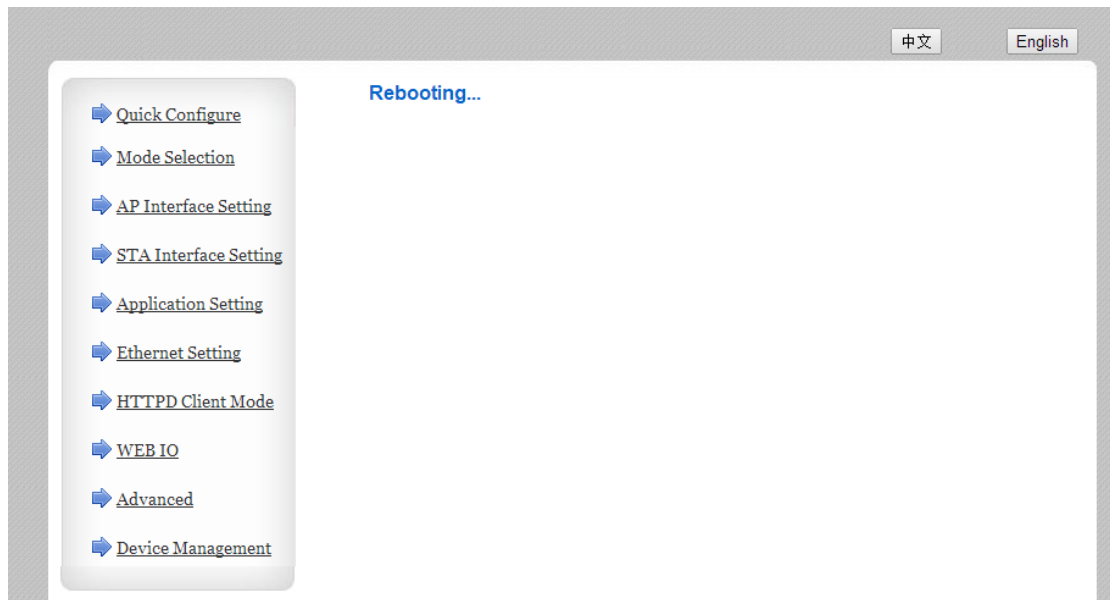
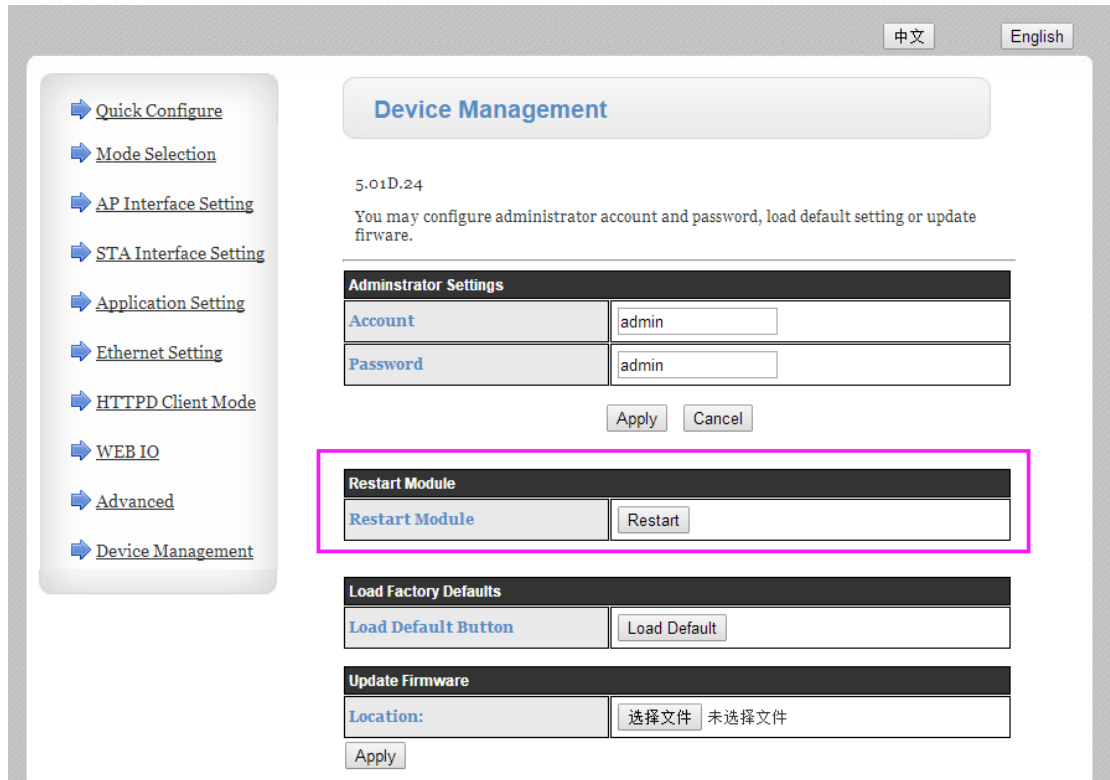
Registered Package Setting	
Registered Package Type	ID ▾
Upload Manner	first ▾
Device ID (0~65535)	64847

Note: With "Device ID" opened, the module send ID to the server, this function is used to identify the equipment.

Upload Manner: first: Module send registration packet when connection established;  
every: Send registration packet every time when module send data

Apply Cancel

⑦ After all the above steps are set, enter the module management and click Restart in the restart module:



**Step 2: Configure the virtual serial port software**

① Add virtual serial port:

Virtual COM: COM2

Net Protocol: TCP Client

Remote IP/addr: 120.76.116.193

Remote Port: 25565

Local Port: 8233

Remarks:

OK Cancel Advanced -

Use D2D

Register ID 43589 (?)

Use USB CLOUD

Cloud ID

Communication Code

**Note:**

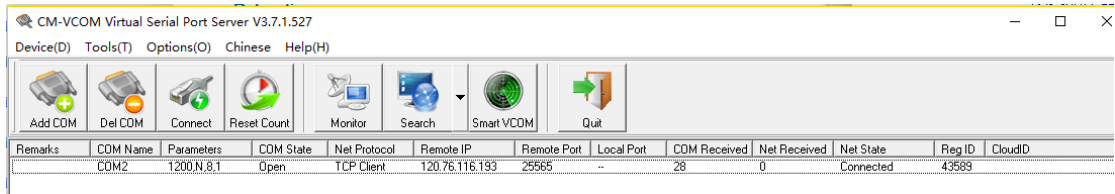
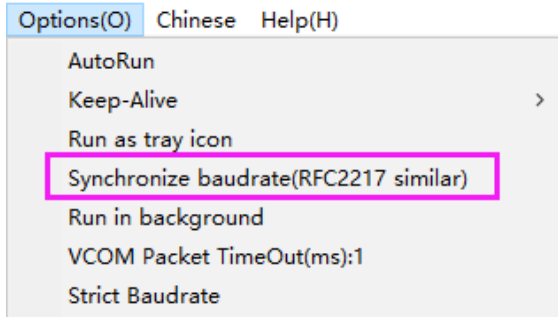
The virtual serial port is set to an unoccupied COM port on the computer;  
Network protocol selects TCP Client;

Target IP/domain name setting 120.76.116.193 (Note: The target IP/domain name is Shenzhen Coolmay Technology domain name, which must be connected with Coolmay server);

Target port setting 25565;

Registration ID setting in Advanced 43589 (Note: Each CX-WIFI-2NET module has a unique pair of registration IDs. Please specify the registration ID according to the factory parameters. The registration ID number corresponding to each module will be indicated on the product label. If you forget or not save, please ask Coolmay for help.)

After the creation is successful, as shown in the figure below, and change the sync baud rate option in the option to unchecked:



②In this routine, the virtual serial port number is COM2, and the PLC programming software needs to use COM2 connection to download the program and remotely monitor the PLC..

Note: The PLC software version must be GX 8.52 or WORKS 2 to connect successfully.

## Appendix A: FAQ and Answers

**Question 1: Two CX-WIFI-2NET modules are interconnected, and the TCP protocol is used as a transparent serial port. How to set it?**

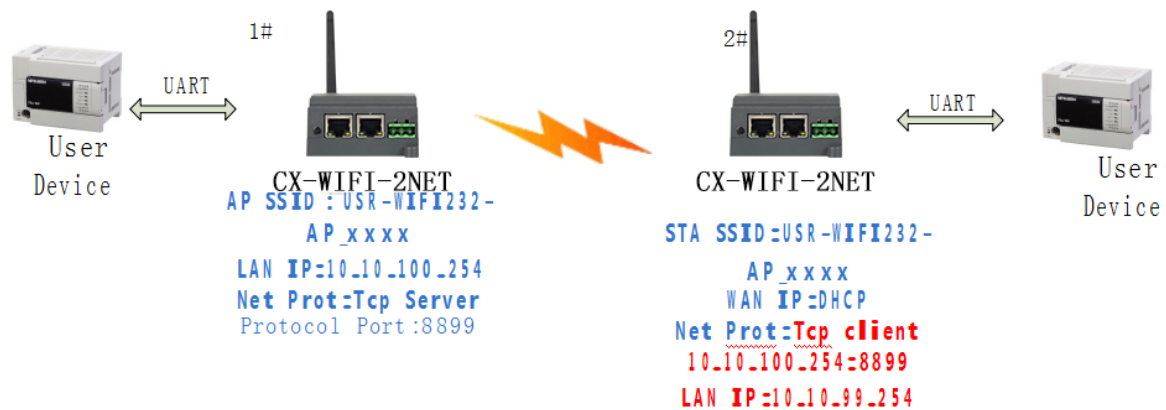
As belowing picture shown,

1# module as AP, the default setting can be.

The 2# module is used as the STA, the WAN port address is dynamically obtained, or statically set, such as set to 10.10.100.100.

The TCP protocol of the 2# module is set as follows: TCP Client, port 8899 is unchanged, and the IP address is the LAN IP address of the 1# module (ie AP): 10.10.100.254.

When the module is set to STA, its WIFI port is the WAN port, and the WAN address must not be on the same network segment as the LAN address, so the LAN IP of the 2# module needs to be changed, as shown in Figure 10.10.99.254.



**Question 2: CX-WIFI-2NET module LAN IP settings, WAN IP settings Where are they set?**

The LAN IP is set in the “Wireless Access Point Settings” page as shown below: The WAN IP is set in the “Wireless Terminal Interface Settings” page as follows:



LAN Setup	
IP Address(Default DHCP Gateway)	10.10.100.254
Subnet Mask	255.255.255.0
DHCP Type	Server ▼

LAN IP setting

WAN Connection Type:

DHCP Mode	
Hostname(Optional)	USR-WIFI232-AP_5250

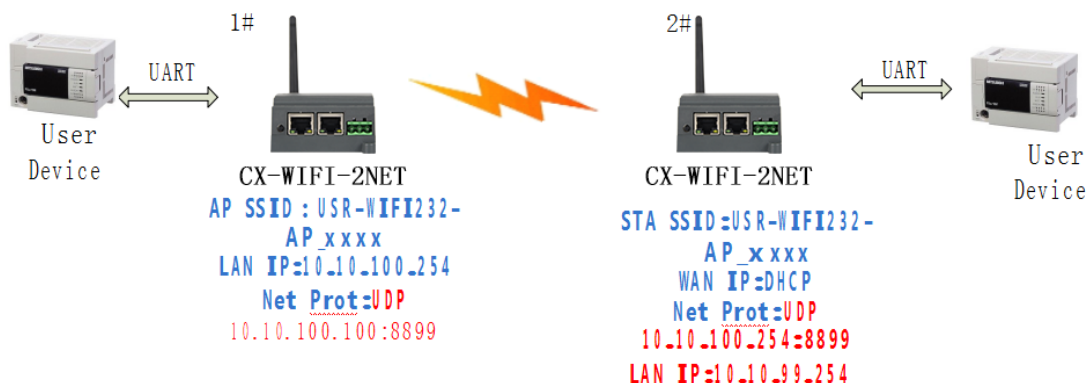
### Question 3: Two WIFI modules are interconnected, and the transparent serial port is made by UDP protocol. How to set it?

As belowing picture shown,

The 1# module is used as the AP, the protocol is changed to UDP, and the IP address is 2# module WAN IP: 10.10.100.100. 2# module as STA, WAN port address or dynamic acquisition, or static setting (recommended static address), such as set to 10.10.100.100.

The TCP protocol of the 2# module is set as follows: UDP, port 8899 is unchanged, and the IP address is the LAN IP address of the 1# module (ie AP): 10.10.100.254.

The LAN IP of the 2# module should be changed to another network segment. (10.10.99.254)



**Question 4: Where is the TCP/UDP protocol of the CX-WIFI-2NET module?**

The TCP/UDP protocol is set in the "Application Settings" page, as shown in the figure.

The module defaults to TCP Server and the port number is 8899.

When set to TCP Client, the IP address must be set (the IP address of the server to be connected)

If UDP is set, there is no choice between Server and Client. The port number must be set. The IP address must be filled in with the IP address of the peer device.

Network A Setting	
Mode	Server ▼
Protocol	TCP ▼
Port	8899
Server Address	10.10.100.100
MAX TCP Num.(1~32)	32
TCP Time out (小于600秒)	0
TCP connection password authentication	Disable ▼

**Question 5: Two WIFI modules are set as STAs, which are interconnected by APs and do transparent serial ports. How to set them?**

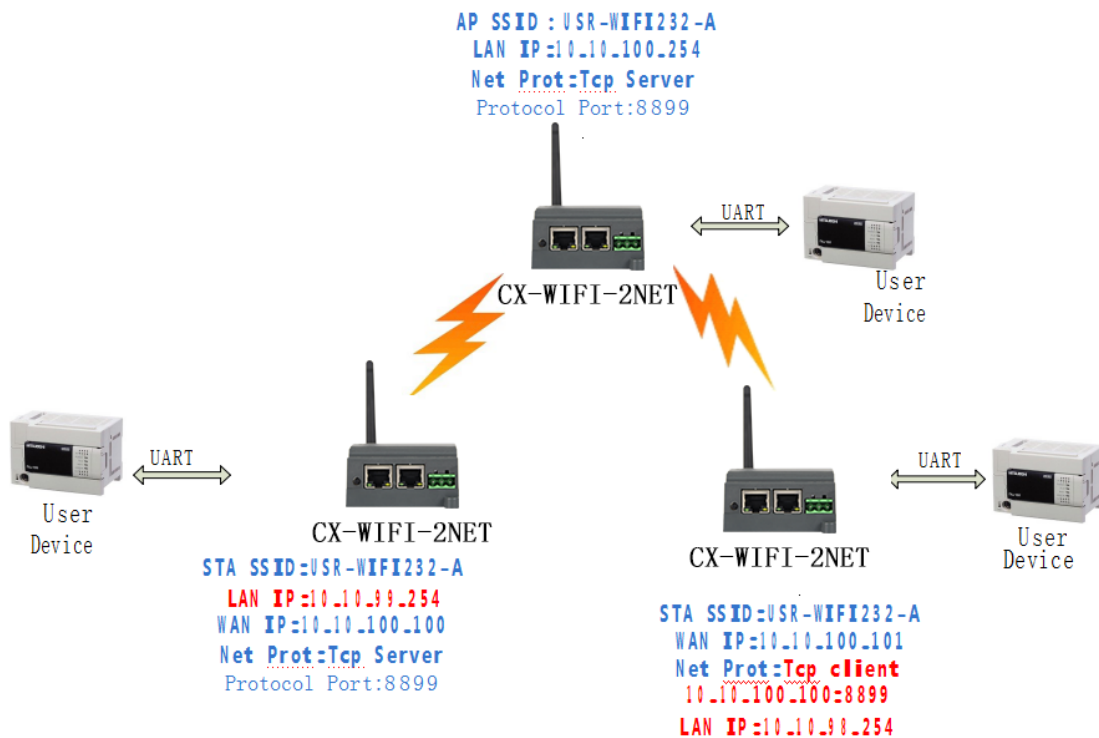
As shown in the figure, because the CX-WIFI-2NET module can also be used as an AP, the AP here uses the CX-WIFI-2NET module as an example:

1# module is AP, the default setting can be

2# module is STA, WAN IP is 10.10.100.100, TCP Server

The 3# module is STA, the WAN IP is 10.10.100.101, TCP Client, and the protocol address is WAN IP of the 2# module: 10.10.100.100. The ports of the 2# and 3# modules are the same, which is 8899.

The 2# module LAN IP is changed to 10.10.99.254, and the 3# module LAN IP is changed to 10.10.98.254 to avoid conflict.



**Question 6: How to avoid IP address conflict when using CX-WIFI-2NET module?**

The range of dynamically assigned IP addresses of the CX-WIFI-2NET module can be defined as between .100 and .200.

For example, the default address is 10.10.100.254. When the module is used as an AP, the address assigned to the STA is from 10.10.100.100.

Start, up to 10.10.100.200.

Therefore, if the address needs to be statically assigned in the network, the address that can be allocated is 10.10.100.1~10.10.100.99, so as to avoid

conflict between dynamic allocation and statically assigned addresses.

### Question 7: The WIFI module is connected to the PC (Server) as a data acquisition card. How to set it?

As shown in the following figure, three modules establish three TCP connections with the PC:

All three modules are used as data cards, the 1# module is used as the AP, and the other two modules are connected to the 1# module WIFI.

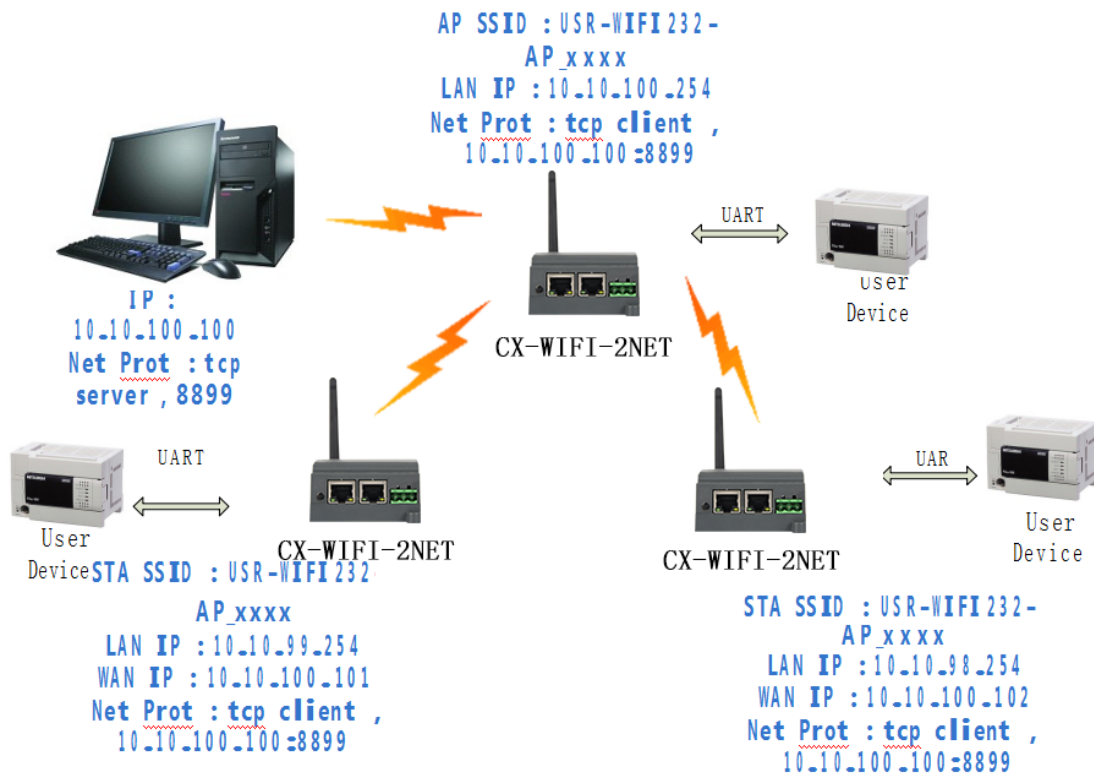
The IP address of the PC is 10.10.100.100, which is TCP Server and port 8899.

1# module protocol setting: TCP Client, 10.10.100.100: 8899

2# module WAN IP is 10.10.100.101, protocol setting: TCP Client, 10.10.100.100:8899

3# module WAN IP is 10.10.100.102, protocol setting: TCP Client, 10.10.100.100: 8899

The 2# module LAN IP is changed to 10.10.99.254, and the 3# module LAN IP is changed to 10.10.98.254 to avoid conflict.



**Question 8: Does the WIFI module TCP support UDP multicast?**

At present, all WIFI modules do not support UDP multicast. The IP multicast address range is 224.0.0.0~239.255.255.255. Do not set the above IP segment when setting the module. If it is set, the module may not start properly.

**Question 9: The WIFI module works in STA mode. How does the host computer obtain the IP of the module?**

All wifi modules support UDP search, and will return their own IP, MAC, and MID accordingly. The specific search process is as follows:

1. Send a password via UDP broadcast (broadcast address: xx.xx.xx.255, port: 48899). The default password is: "HF-A11ASSISTHREAD". This password can be set with AT command (AT+FASWD), up to 100. byte.

2. After the module receives the password, if the password is correct, send the local IP address to the address (unicast, port: 48899) and

MAC address and module name. (IP, MAC, MID such as 10.10.100.254, 888B5D0000E2, guxin).

In this way, the host computer APP can obtain the IP address of the module.