

Serial ⇌ Ethernet pin module

NE2-T1M

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Chapter One Product introduction

NE2-T1M implements serial port data ⇌ Ethernet data transmission module (also known as "super network port"). The product comes with an RJ45 interface and a full network port package. It can meet the networking functions of various TTL level serial devices and MCU.

Features

- RJ45 supports 10 /100M Ethernet interface , cross - connect direct adaptive ;
- The product supports 2-way Socket, each channel supports TCP Server, TCP Client, UDP Server, UDP Client, H TTPC , M QTTC
- Supports three configuration methods: configuration tool, web page, and AT command;
- Server mode supports 5- way Socket connection;
- Support DHCP function;
- Supports DNS (domain name resolution) and can customize the domain name resolution server;
- Supports a variety of Modbus gateways (simple protocol conversion, multi-host mode, storage gateway, configurable gateway , active upload mode);
- Supports quick access to Alibaba Cloud, Baidu Cloud, OneNET, Huawei Cloud, and version 3.1.1 standard M QTT servers;
- Support HTTP protocol (GET/POST request) ;
- Support virtual serial port;
- Supports disconnection reconnection and timeout restart functions;
- Supports Keep alive mechanism, which can quickly detect network abnormalities and quickly reconnect
- Supports short connection function and can customize short connection interval;
- All modes support heartbeat package and registration package functions;
- Support access to external network and local area network;
- Supports one-click restore to factory settings;
- Support online upgrade function.

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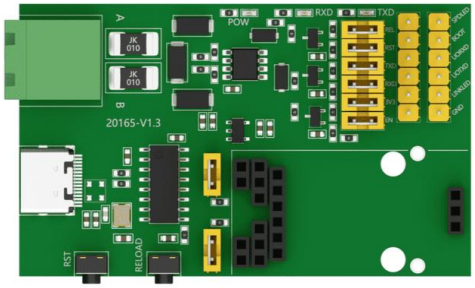
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Chapter Two Quick start

If any problem occurs during use, click on the official website link: https://www.ebyte.com/product-class.aspx

2.1 Preparation for use

the super network port NE2-T1M (hereinafter referred to as the "device"), you need to prepare network cables, computers, type-C adapter cables (or USB to RS485) and other related auxiliary materials. details as follows:

		
N E2- T1 M	NT1-M-TB test base plate	cable
		
computer	type-C adapter cable	

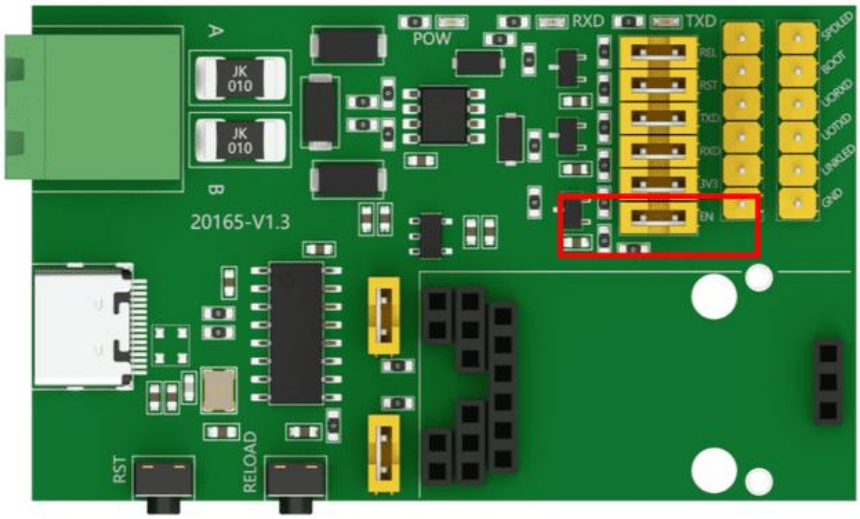
Note: The test baseboard has a USB interface and an RS485 interface. The USB interface is used for demonstration here.

Note: The RS485 interface is a half-duplex interface. When using it, you need to connect the jumper cap to the corresponding EN position, otherwise it will not be usable.

Note: If you use the USB interface to test full-duplex, please unplug the jumper cap of the EN interface on the test baseboard. After removal, the super network port works in full-duplex mode.

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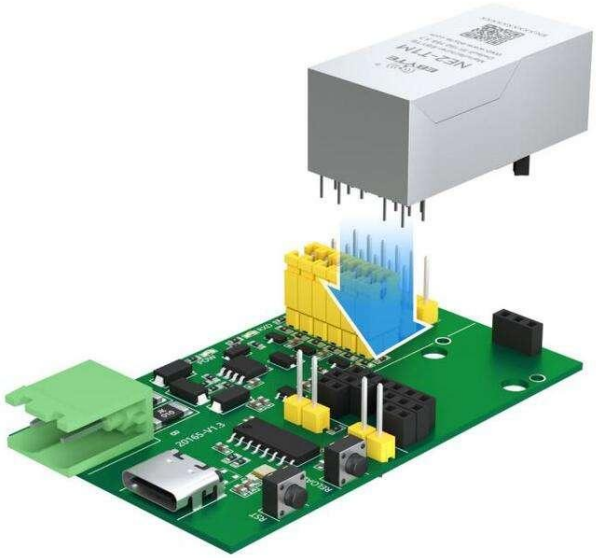
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2.2 Equipment wiring

2.2.1 Connect the test base board to the super network port

Connect the super network port to the test baseboard, taking care not to damage the pins.



2.2.2 Network cable connection

Use a standard RJ45 network cable, connect one end to the RJ45 interface of NE2-T1M, and the other end to the computer or switch/router interface.

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2.2.3 USB cable connection

Connect the USB to type-c cable to the computer USB interface and the test chassis interface respectively.
Note: If you use the RS485 interface for testing, you need to power the super network port.

2.3 Software settings

2.3.1 Network test environment

This prevents customers from experiencing server search failures, inability to open web pages and other related problems during actual applications. First check the relevant settings of the computer.

（1） Turn off your computer’s firewall and anti-virus software;

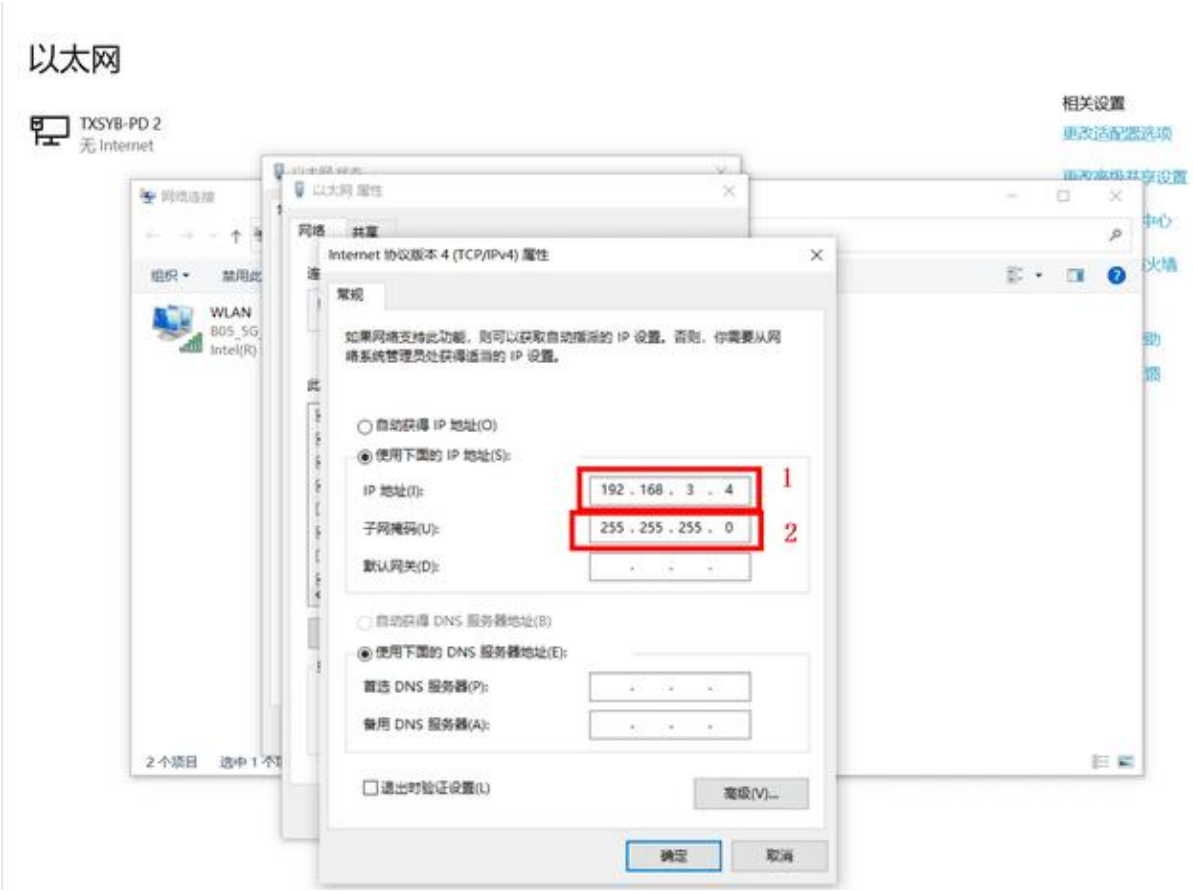
（2） Configure the network card connected to the device;

（3） This case is for the direct connection test of the device to the computer. The computer needs to be configured with a static IP (the computer is directly connected to the serial server, there is no router to allocate, and the computer cannot obtain the IP address). When using a switch or router, you need to ensure that the device and the computer are on the same network (For example: 1 92.168.3. xxx);

（4） Here, configure the static IP of the computer to 1 92.168.3. 4 (the same network segment as the serial port server), configure the subnet mask to 2 55.255.255.0 , and configure the default gateway to 1 92.168.3.1 ;

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2.3.2 Default parameters

project	Default parameters
IP address	192.168.3.7
Default local port	888 6
subnet mask	255.255.255.0
Default gateway	192.168.3.1
Default working mode	TCP Server
Serial port baud rate	115200
Serial port parameters	8/None/1

2.3.3 Data transmission test

After going through the above steps, use the device's factory default parameters and perform the following operations to achieve a transparent transmission test of data.

The steps are as follows:

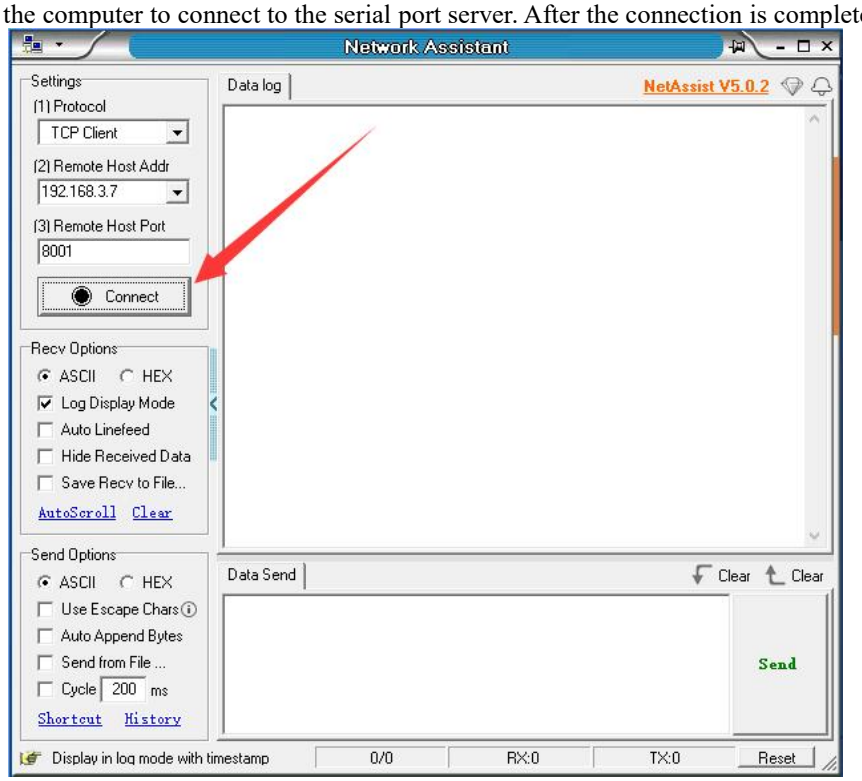
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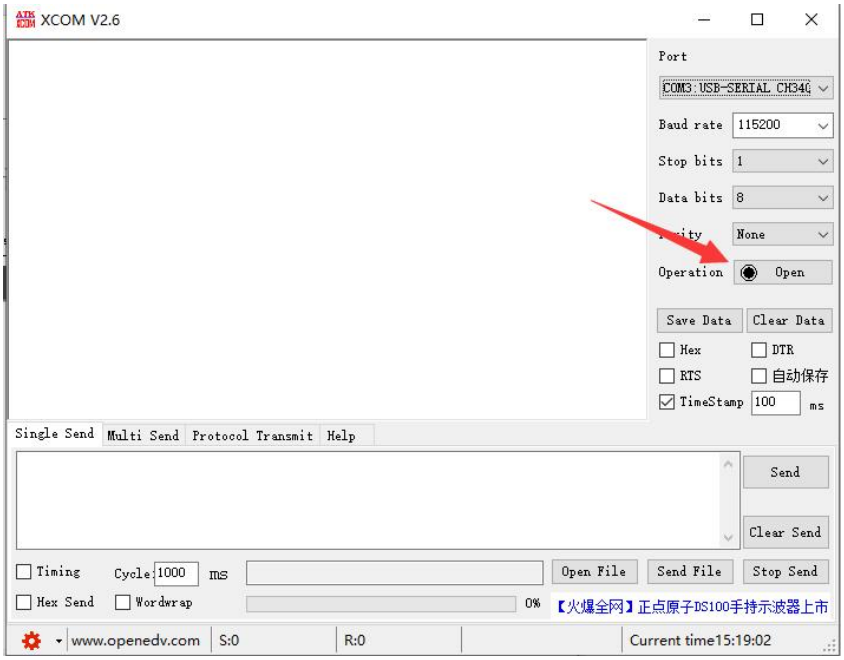
（1） Open the test TCP/IP debugging assistant software.

（2） In the "Network Settings" area, select the TCP client mode (TCP Client), the remote host address corresponds (the device's default local IP: 192.168.3.7) , the remote host port corresponds to the device's factory local port 888 6 , and click Connect.

（3） Wait for the computer to connect to the serial port server. After the connection is completed.



（4） Open the serial port assistant, set the serial port baud rate to 115200, and set the serial port parameters to 1/8/None. Click to open the serial port.

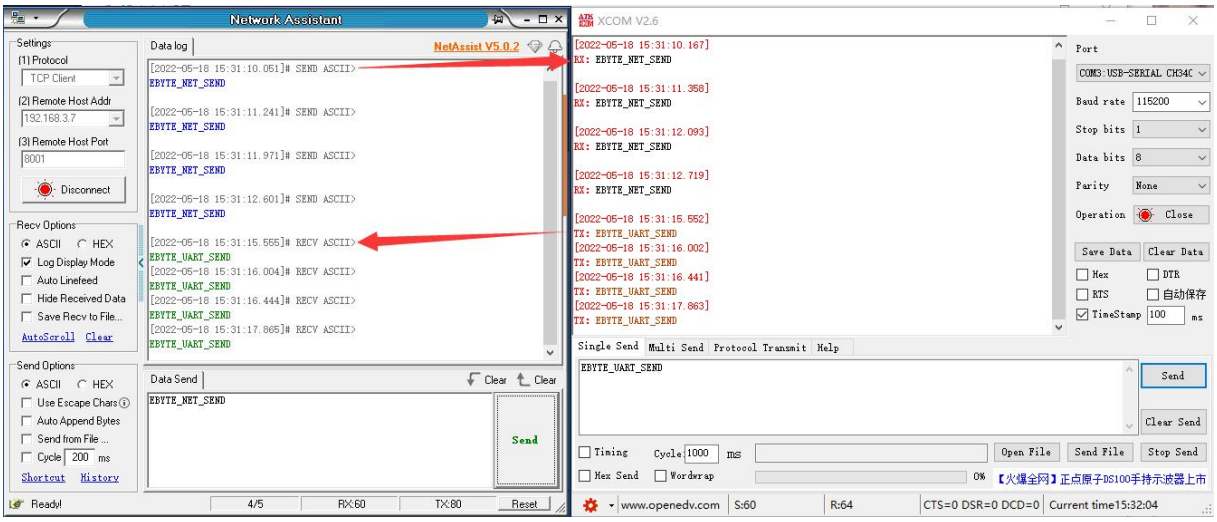


（5） Data transmission test, the serial port assistant (serial port side) sends test data, and the network debugging

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assistant (network side) receives the test data. The network debugging assistant (network side) sends test data, and the serial port assistant (serial port side) receives the test data. Realize duplex communication (that is, two-way data sending and receiving from local to network).



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Chapter Three Product Description

3.1 Series products

Product number	product type	Socket Number of connections	Operating mode	Working voltage (V)	Product Size (mm)
NE2-S1	SMD module	2×5 way	TCP Server TCP Client UDP Server UDP Client M QTT Client H TTP Client	DC 3. 1~6 or 3.0~3.6	17×19×4
NE2-T1	Direct plug module	2×5 way		DC 3. 1~6	35×22× 25
N E2-T1B					
NE2-T1M	Super network port	2×5 way		DC 2.9~3.6	32.5×16.5×17.5
NE2-D11	DTU	2×5 way		DC 8 ~ 28	80×28×27
NE2-D1 2				DC 8 ~ 28	

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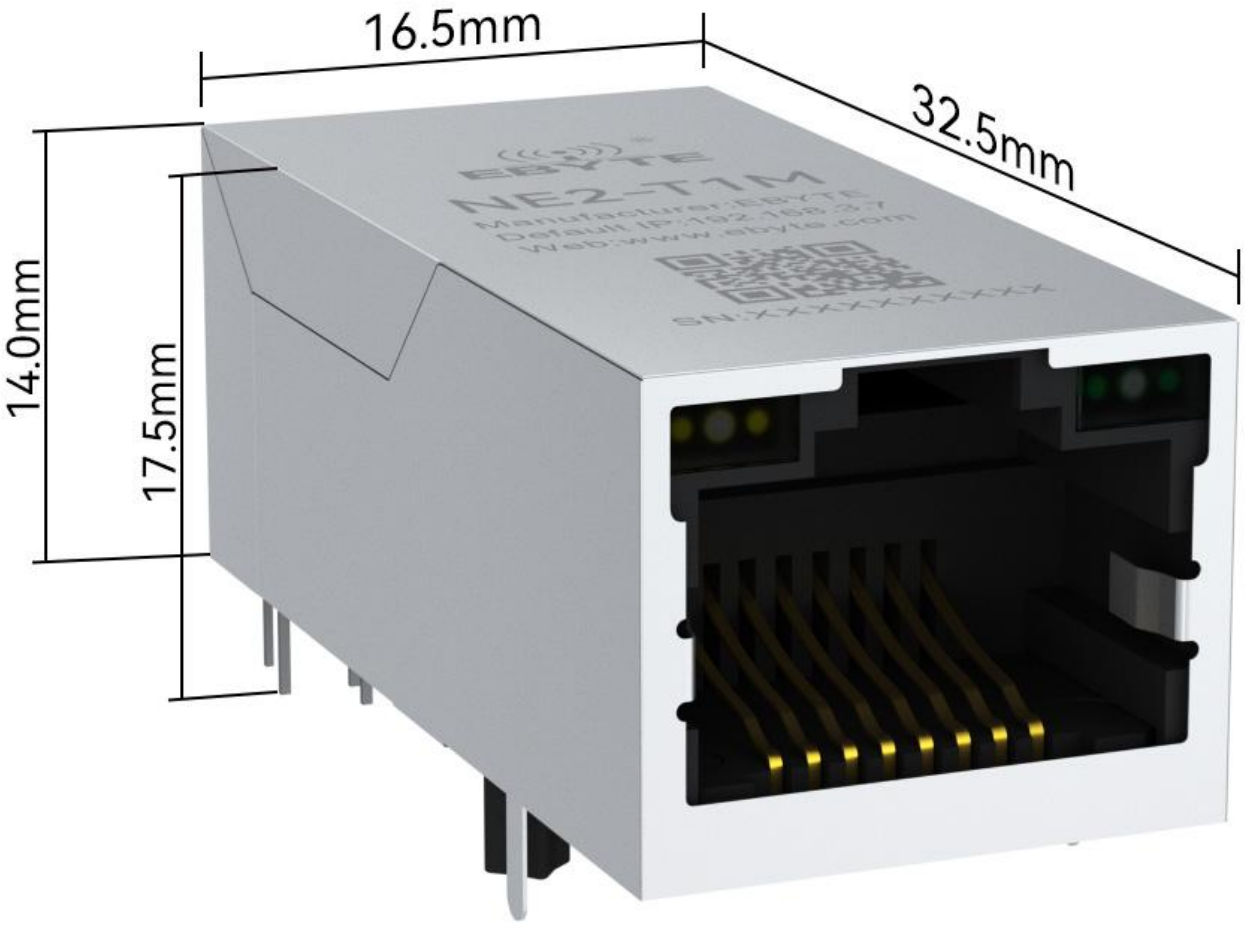
3.2 Technical Parameters

project	illustrate
Operating Voltage	DC 2.9~3.6 V It is recommended to use 3.3 V power supply, and the power supply load capacity is recommended to be above 400mA .
Working current	Peak: 180mA@3.3V Standby: 160mA@3.3V
Operating mode	TCP Server (default), TCP Client, UDP Server, UDP Client, H TTP Client, M QTT Client
Socket connection	The single link placed by the TCP server supports 5 client connections
Network protocol	TCP/UDP, M QTT , H TTP , IPv4, DHCP, DNS
IP acquisition method	Static IP (default) , DHCP
DNS domain name resolution	support
Domain name resolution server	1 14.114.114.114 (customizable)
Configuration method	Web page, parameter configuration tool, AT command
IP address	192.168.3.7 (customizable)
username	admin (customizable)
password	admin (customizable)
local port	888 6 (customizable)
subnet mask	255.255.255.0 (customizable)
gateway	192.168.3.1 (customizable)
Serial buffer	10k Byte or 1024 packets
Packaging mechanism	Maximum 1024 Byte , 1~80 bytes idle time
Serial baud rate	6 00 ~4608 00 bps (default 115200)
data bits	5, 6, 7, 8 (default)
Stop bit	1 (default), 1.5, 2
Check Digit	None (default), Odd, Even
Product Size	32.5×16.5×17.5mm
product weight	9±1g
Working temperature and humidity	-40 ~ +85℃, 5% ~ 95%RH (no condensation)
Storage temperature and humidity	-40 ~ +105℃, 5% ~ 95%RH (no condensation)

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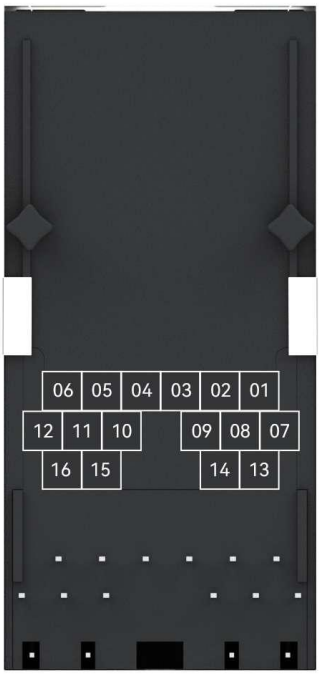
3.3 Mechanical Dimensions



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3.4 Pin definition



NE2-T1M		
serial number	pin	describe
1	RXD0	NC, programming interface, no need to leave it floating
2	TXD0	NC, programming interface, no need to leave it floating
3	BOOT	NC, programming interface, external pull-up recommended
4	RST	Connect the chip reset pin and pull it down for more than 100uS to take effect . It is recommended to pull it up externally.
5	EN	Enable control pin , pull it high for full-duplex mode, pull it low for half-duplex mode; For users with an external RS485 interface, the 485 chip enable pin can be connected to the external pull-down . After the module detects a low level when it is powered on, it will output the 485 enable control signal. For users using TTL interface, it is recommended to pull this pin up
6	RELOAD	Restore factory settings, pull down for 5 ~ 10S to take effect
7	STATE0	10M indicator pin , pulled high by default, pulled low after PHY negotiation is completed, and the level jumps when there is data
8	RXD	User serial port, 3.3V TTL level
9	TxD	User serial port, 3.3V TTL level
10	GND	Power supply + signal ground
11	VCC	Positive pole of power supply , recommended power supply capacity is 400mA@3.3V or above
12	STATE1	100M indicator pin , pulled high by default, pulled low after PHY negotiation is completed, and the level jumps when there is data

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13	LED0-	The negative pole of the LED0 indicator light can be connected to pin 7 to indicate the STATE0 signal
14	LED0+	Positive pole of LED0 indicator light, connect to 3.3 power supply+
15	LED1+	The positive pole of the LED1 indicator light can be connected to 12 pins to indicate the STATE1 signal.
16	LED1-	LED1 indicator light negative pole, connect to GND

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Chapter Four Product Features

4.1 Basic parameters of this machine

4.1.1 Basic parameters

The SN code is a traceability code written when the device leaves the factory, highlighting the batch number of the device. It can only be read, not written.

The device model is the full name of the current device model. You can use this model to obtain information from the official website.

The firmware version is the factory firmware model of the current device. You can download the latest firmware update from the official website.

The MAC address is the physical address of the chip and is a unique identification code.

4.1.2 IP address type

The IP address is the identification of the module in the LAN and is unique in the LAN. Therefore, it cannot be duplicated with other devices on the same LAN. There are two ways to obtain the module 's IP address: static IP and DHCP.

（1） Static IP : Static IP requires manual setting by the user. During the setting process, pay attention to writing the IP, subnet mask and gateway at the same time. Static IP is suitable for scenarios where IP and device statistics need to be collected and corresponded one-to-one.

Advantages: Access devices that cannot be assigned an IP address can be searched through the whole network segment broadcast mode , which facilitates unified management ;

Disadvantages: Different network segments in different LANs result in the inability to carry out normal TCP/UDP communication.

（2） Dynamic DHCP : The main function of DHCP is to dynamically obtain IP address, gateway address, DNS server address and other information from the gateway host, thereby eliminating the cumbersome steps of setting the IP address. It is suitable for scenarios where there are no requirements for IP and there is no one-to-one correspondence between IP and modules.

Advantages: Access routers and other devices with DHCP Server can communicate directly, reducing the trouble of setting IP address gateway and subnet mask.

Disadvantages: When connected to a network without DHCP Server, such as directly connected to a computer, the module will not work properly.

The subnet mask is mainly used to determine the network number and host number of the IP address, to indicate the

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number of subnets, and to determine whether the module is in the subnet.

The subnet mask must be set. Our commonly used Class C subnet mask is: 255.255.255.0. The network number is the first 24 digits, the host number is the last 8 digits, the number of subnets is 255, and the module IP is in the 255 range. within, the module IP is considered to be in this subnet.

The gateway refers to the network number of the network where the module's current IP address is located. If you connect to a device such as a router when connecting to the external network, the gateway is the route .

4.1.3 Domain Name Resolution (DNS)

Domain name resolution uses a domain name resolution (DNS) server to convert domain names into network-identifiable IP addresses. In this way, when the IP address of the server is a non-fixed IP address, you can try to use the domain name resolution function. In this way, no matter how the server IP address changes, as long as the corresponding domain name remains unchanged, the setting parameters of NE2-T1/NE2-T1B do not need to be changed. . The domain name resolution (DNS) server address of the serial port server supports user customization. Domain name resolution can be implemented through a custom domain name resolution server when the router's domain name server is abnormal. The device will report to the custom domain name resolution (DNS) server during domain name resolution. Parse the request and return the device connection parameters (usually IP address) after the parsing is completed.

When the target IP is a domain name, the maximum configurable domain name length is 256 bytes. When the target server cannot be connected, the module will continue to resolve the domain name periodically.

In DHCP mode, the domain name resolution (DNS) server address is automatically obtained (synchronizing the router's domain name resolution address) and cannot be modified.

In static IP mode, the default address of the domain name resolution (DNS) server is: 114.114.114.114 , or the domain name resolution server can be customized.

4.2 Network working mode

4.2.1 TCP server mode

TCP Server is the TCP server. In TCP Server mode, the device listens to the local port, accepts client connection requests and establishes connections for data communication. It is usually used for communication with TCP clients in the LAN . When in server mode, the device supports 5 client connections, such as two If all Sockets start server mode at the same time, it can support 10 client connections.

the Modbus gateway function is turned off , the device will send the data received by the serial port to all client devices that are connected to the device. It supports up to 5 client connections. After the Modbus gateway function is enabled, non -Modbus data will be cleared and will not be forwarded. .

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4.2.2 TCP client mode

TCP Client is the TCP client. When the device is working, it will actively initiate a connection request to the server and establish a connection to realize the interaction between serial port data and server data.

Using the client requires configuring the target IP address /domain name and target port accurately .

Note: The local port in client mode is recommended to be 0 (dynamic port).

4.2.3 UDP server mode

UDP Server means that the device does not verify the data source IP address when communicating using the UDP protocol. After receiving a UDP data packet, it saves the source IP address and source port of the data packet and sets it as the target IP and port. , so the data sent by the device only sends data packets to the source IP address and port where the device last received data .

This mode is usually used in scenarios where multiple network devices communicate with the device with high frequency and the TCP Server cannot meet the conditions.

Using UDP Server requires the remote UDP device to send data first, otherwise the data cannot be sent normally. [Note] In U DP mode, the data sent by the network to the device should be less than 1024 bytes per packet, and the excess data will be lost .

4.2.4 UDP client mode

UDP Client is a connectionless transmission protocol that provides simple and unreliable transaction-oriented information transmission services. There is no connection establishment and disconnection. You only need to configure the destination IP and destination port to send data to the other party. It is usually used in data transmission scenarios where there is no requirement for the packet loss rate, the data packets are small and the sending frequency is fast, and the data needs to be transmitted to the specified IP.

In UDP Client mode, the device will only communicate with the configured (destination IP and destination port) remote UDP device .

In this mode, the target address is set to 255.255.255.255, and the sent data will be broadcast on the entire network segment, but the sending and receiving devices need to ensure that the ports are consistent, and the device can also receive broadcast data .

Note: In UDP mode, the length of a single data packet cannot exceed 1024 bytes.

4.2.5 HTTP client mode

This mode can realize HTTP packet grouping function and provides two modes: GET and POST. Customers can

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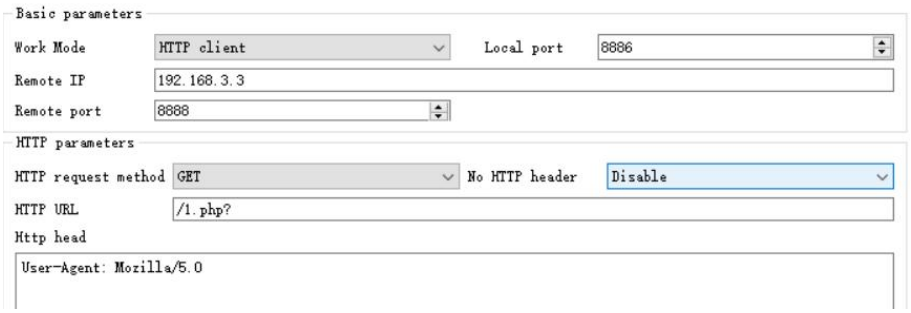
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configure parameters such as URL and Header by themselves, and the device (serial port server) will group and send the package to realize fast communication between the serial port device and the HTTP server. Use In HTTP client mode, it is recommended to use random ports and enable short connections to save HTTP server resources.

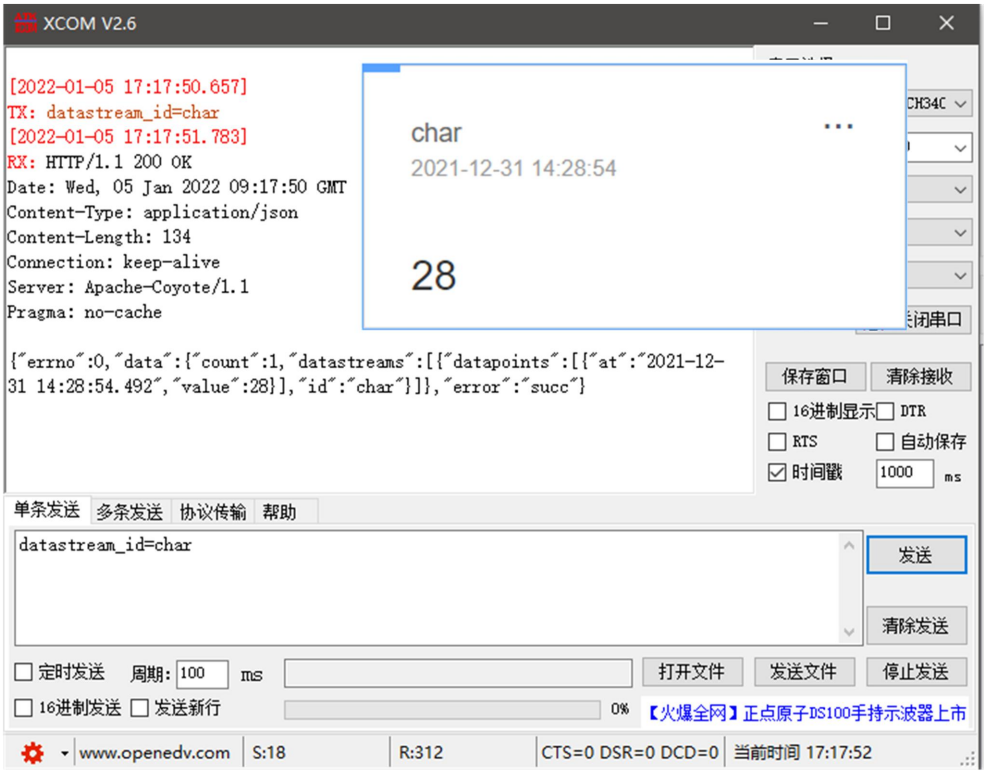
1. G ET

Use the HTTP mode of OneNET multi-protocol access to test the device HTTP-GET request, as shown in the figure below.

(1) Return data configuration with header:



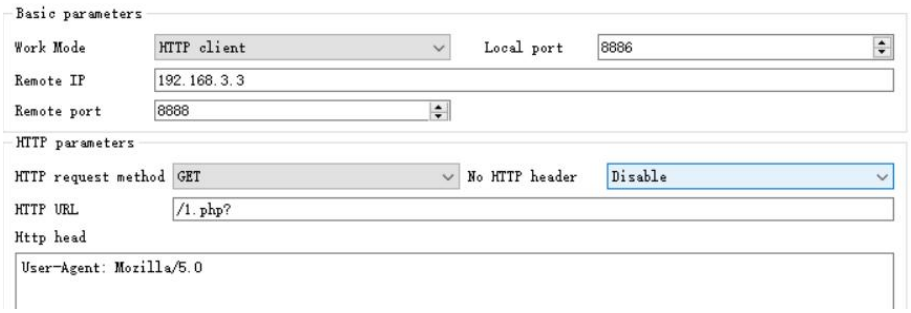
Data return test:



(2) Return data configuration without header:

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Data return test:



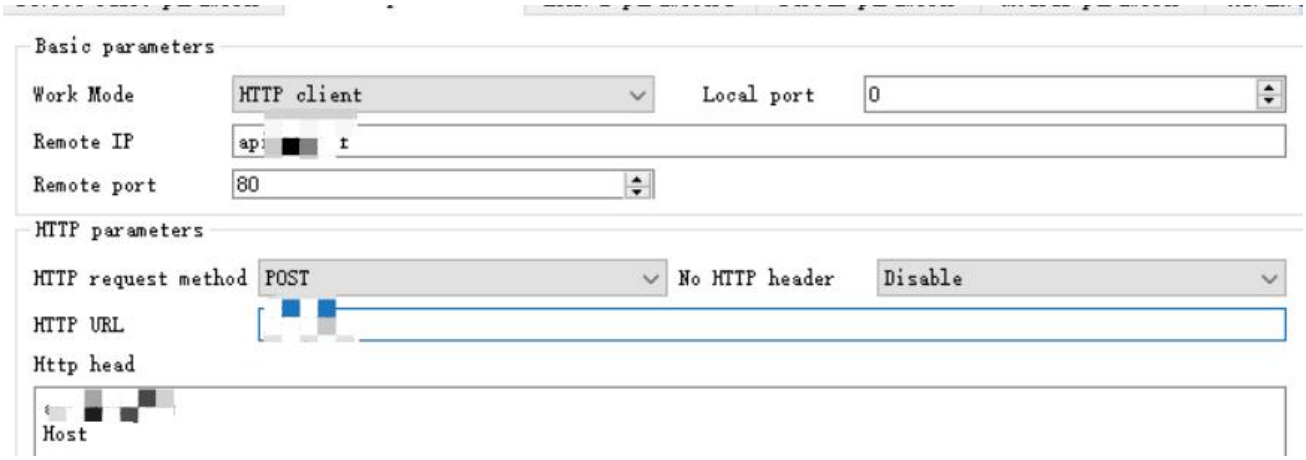
2. POST

HTTP mode of One NET multi-protocol access to test the device HTTP-POST request, as shown in the figure below.

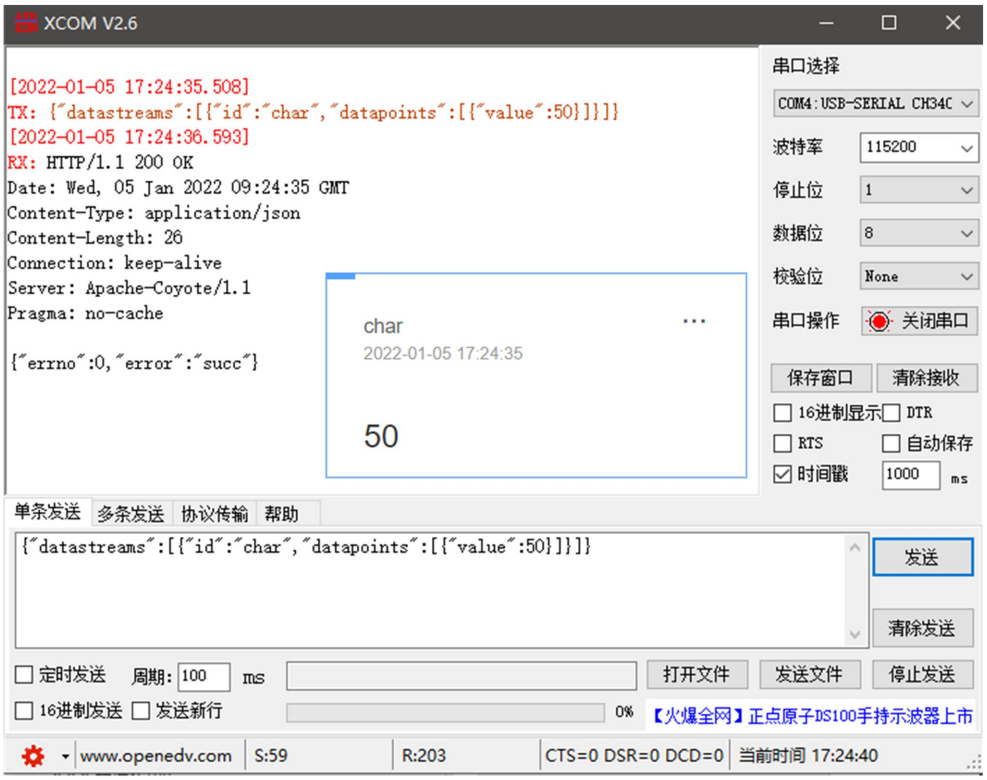
(1) Return data configuration with header:

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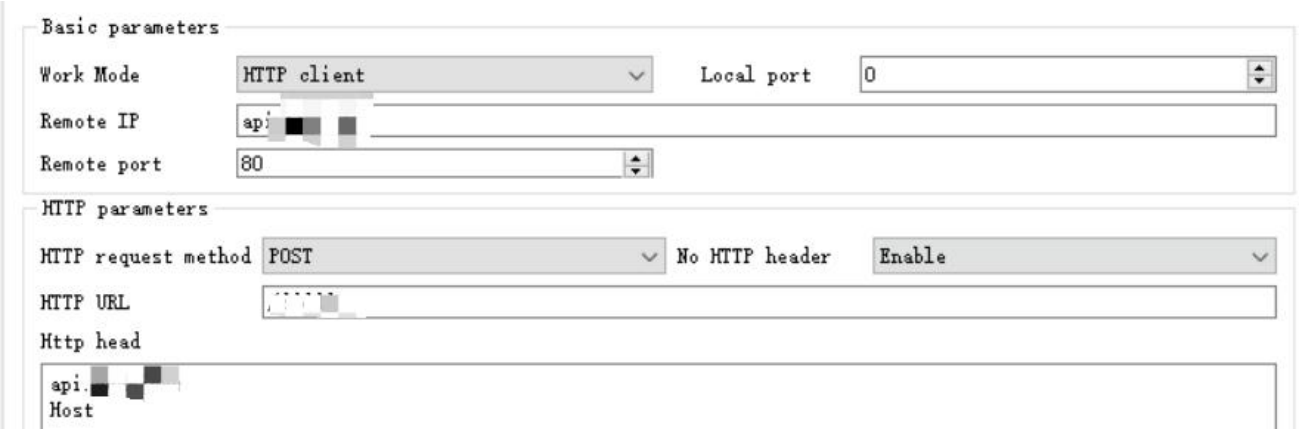
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Data return test:



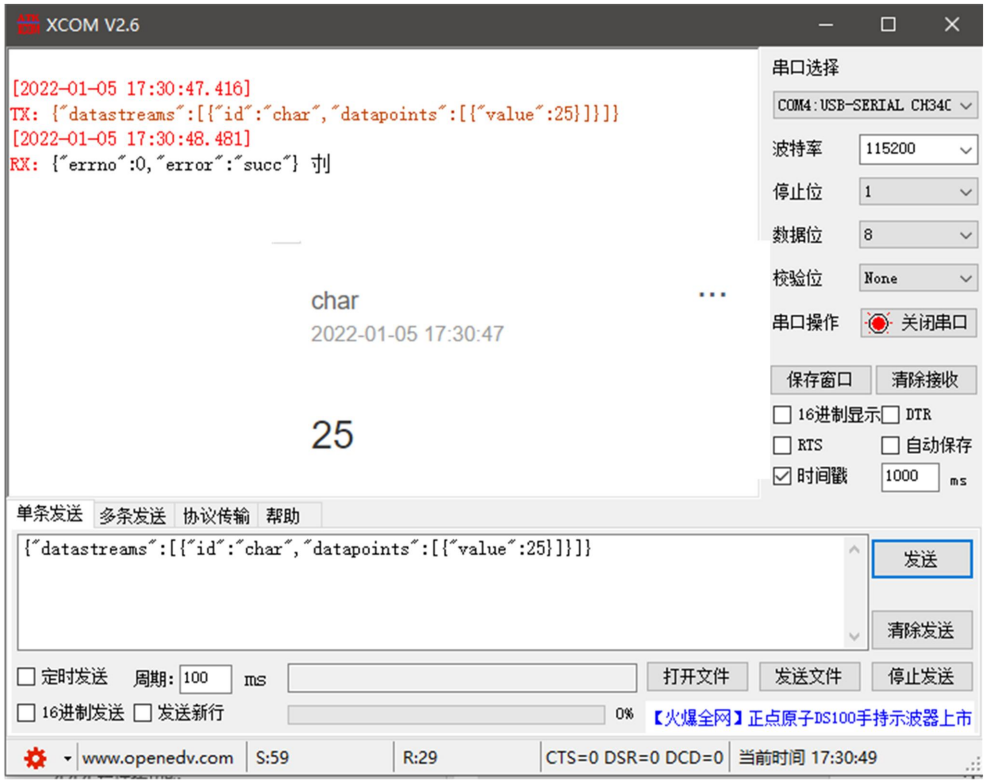
(2) Return data configuration without header:



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Data return test:



4.2.6 MQTT client mode

4.2.6.1 Standard MQTT3.1.1 connection

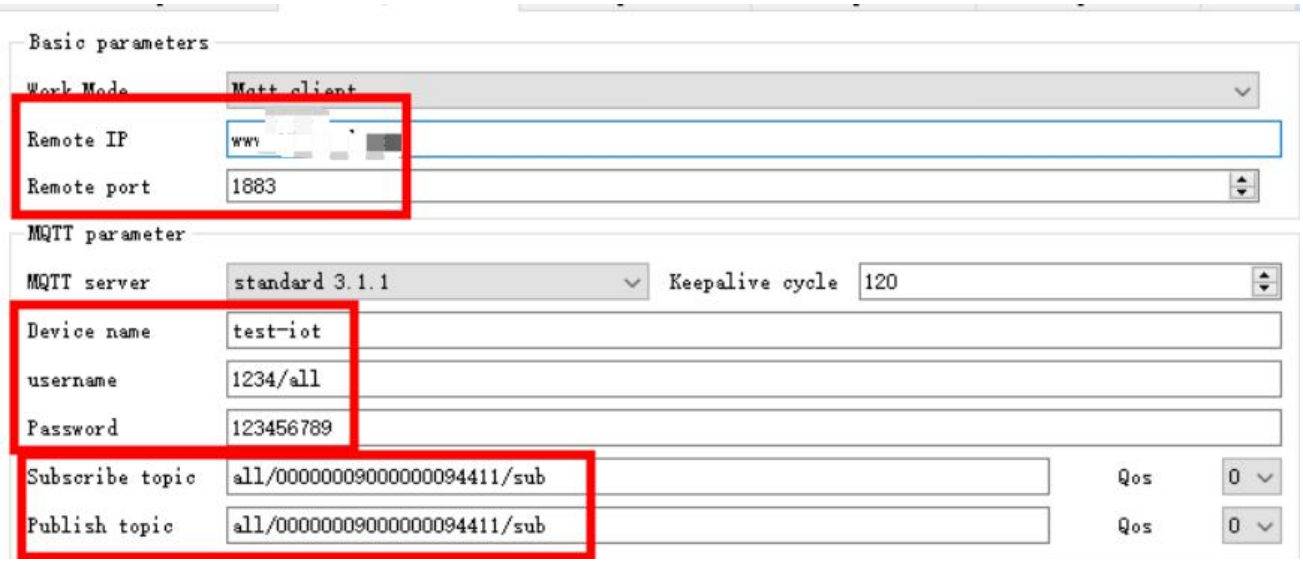
The standard MQTT3.1.1 connection here takes Tencent's standard M QTT 3.1.1 server as an example . The "three elements" of the standard description can be obtained from the Tencent server as shown in the figure below:



Parameter configuration description is shown in the figure below:

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Configure the corresponding subscription publishing address, and use the platform online debugging to send data for communication testing:



4.3 Serial port parameters

Serial port parameters include: baud rate, data bits, parity bits, and stop bits.

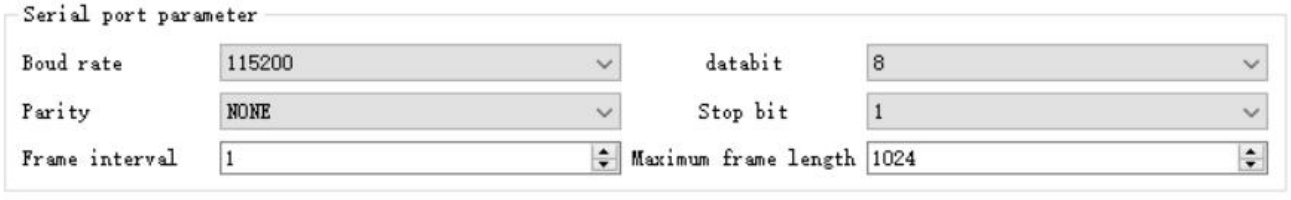
Baud rate: serial port communication rate, configurable 600, 1 200 , 2 400 , 4 800 , 9 600 , 1 4400 , 1 9200 , 3 8400 , 5 7600 , 1 15200 , 2 30400 , 460800 bps.

Data bits: The length of data bits, range 5 , 6, 7, 8.

Check digit: Check digit for data communication, supporting three check modes: None, Odd, and Even .

Stop bit: settable range 1, 1.5, 2.

By setting the serial port parameters and keeping them consistent with the serial port parameters of the serial port connection device, you can ensure normal communication.



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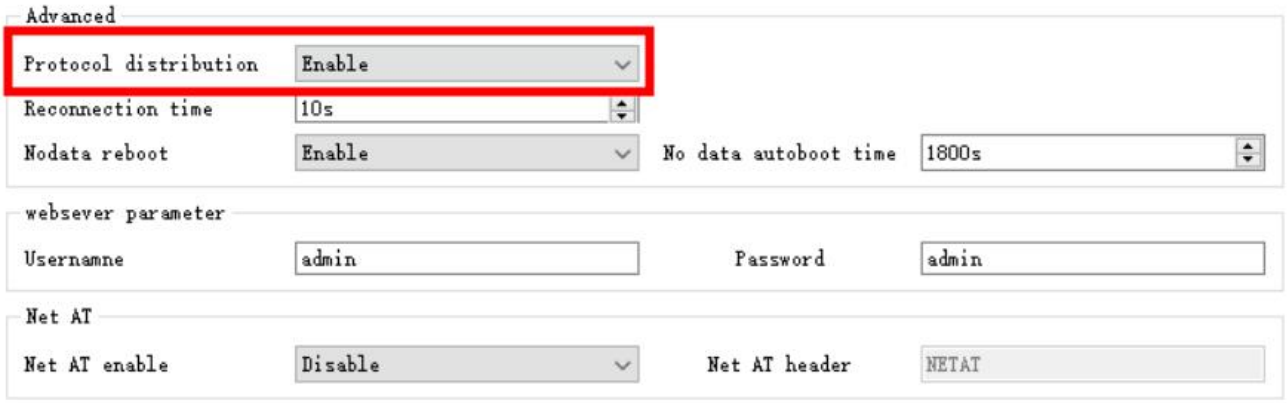
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4.4 Advanced parameters

4.4.1 link protocol distribution

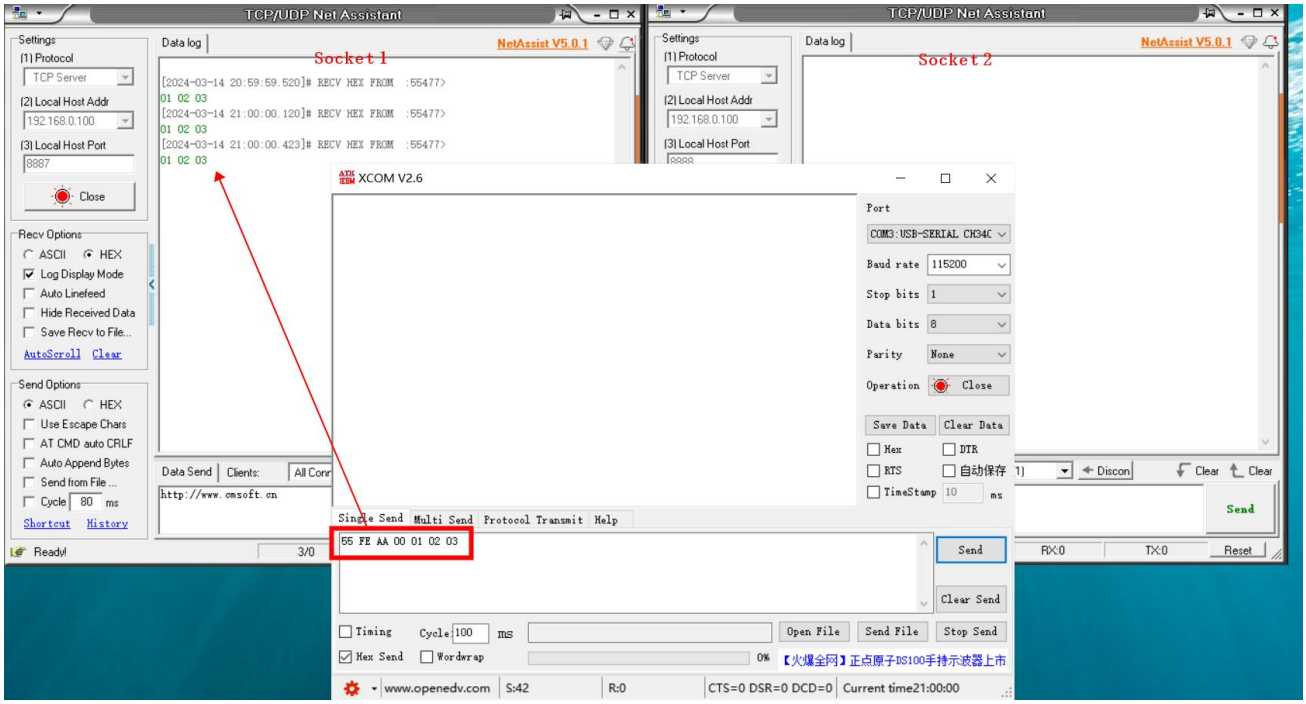
Supports socket distribution protocol. Data can be sent to different links through specific protocols , and data received by different links can also be distinguished by adding headers and tails.

PC software configuration steps:



After turning on the multi-link protocol distribution mode, the following possibilities will occur. Here, link 1 is connected to the server port 8887, and link 2 is connected to the server port 888 8 as an example:

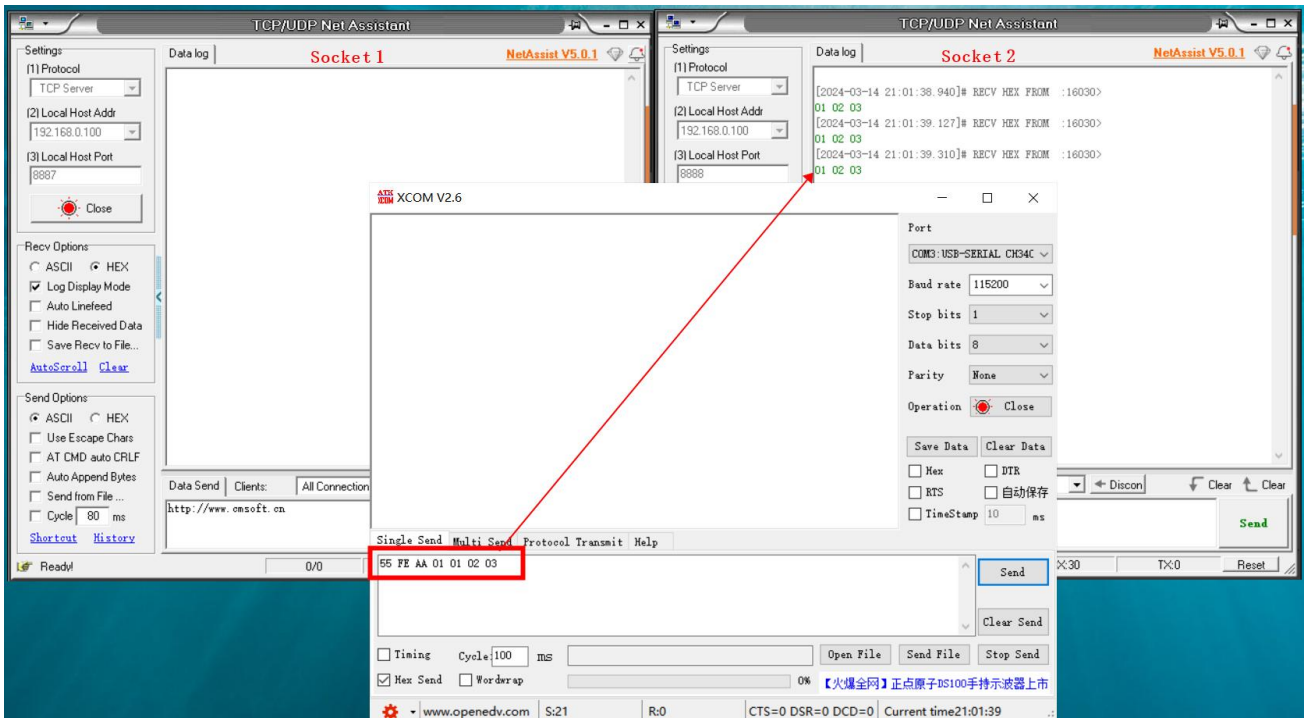
1. The serial port sends data if the data header is 55 FE AA 00, which means it meets the requirements, that is, 55 FE AA 00+data, then the data will only be transmitted to Socket 1 , and the received content only contains data, without the data header;



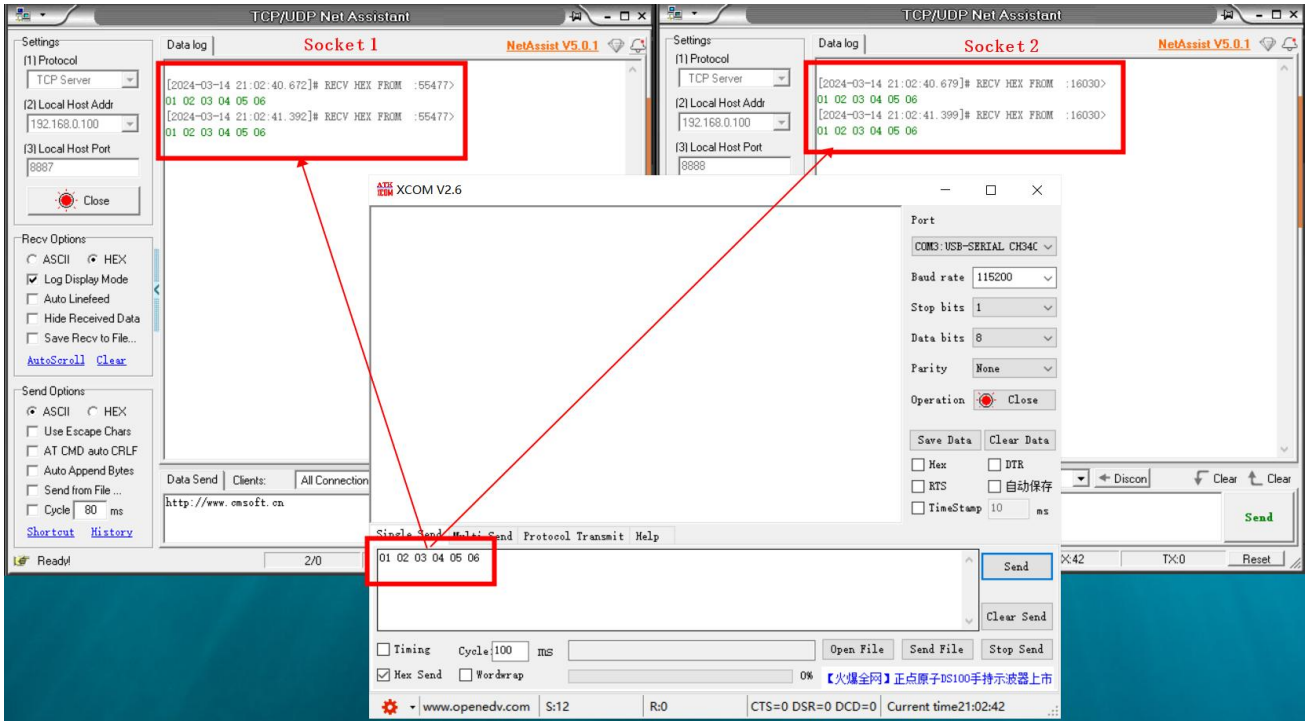
2. The serial port sends data if the data header is 55 FE AA 01, which means it meets the requirements, that is, 55 FE AA 01+data, then the data will only be transmitted to Socket 2 , and the received content only contains data, without the data header;

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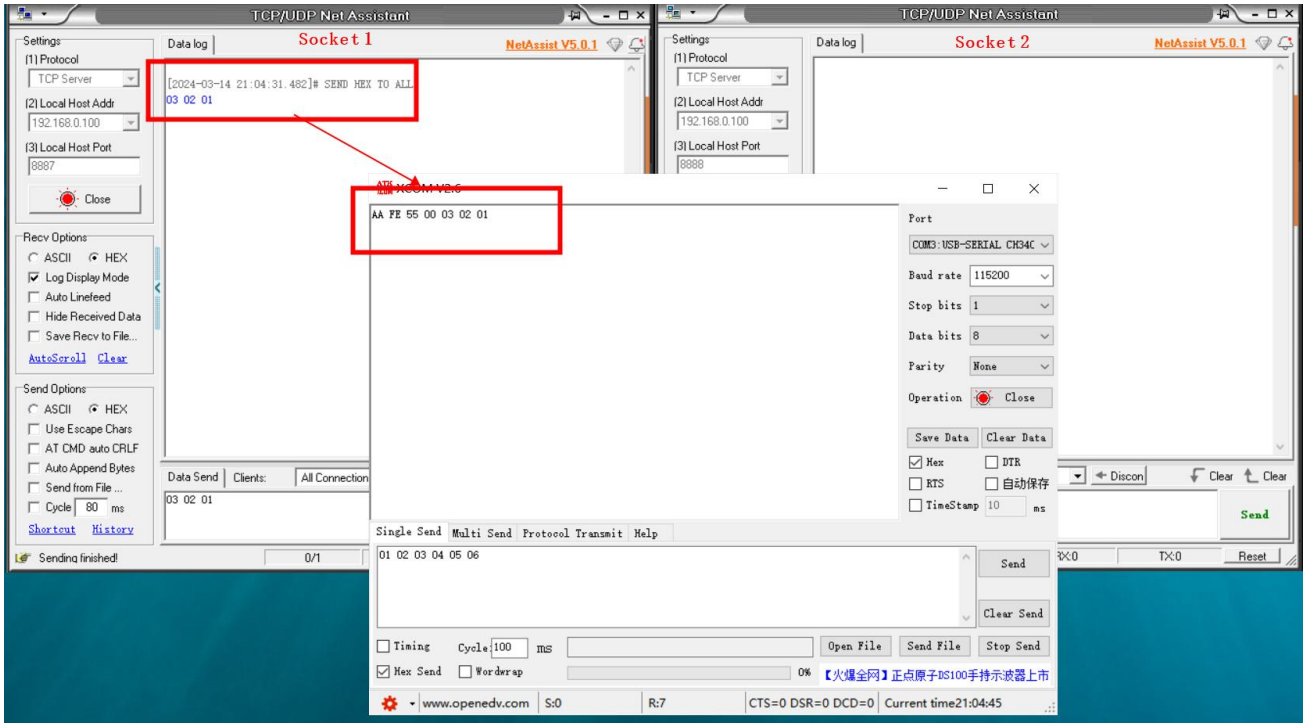
3. The data sent by the serial port is arbitrary data, and the data will be transmitted to two Sockets.



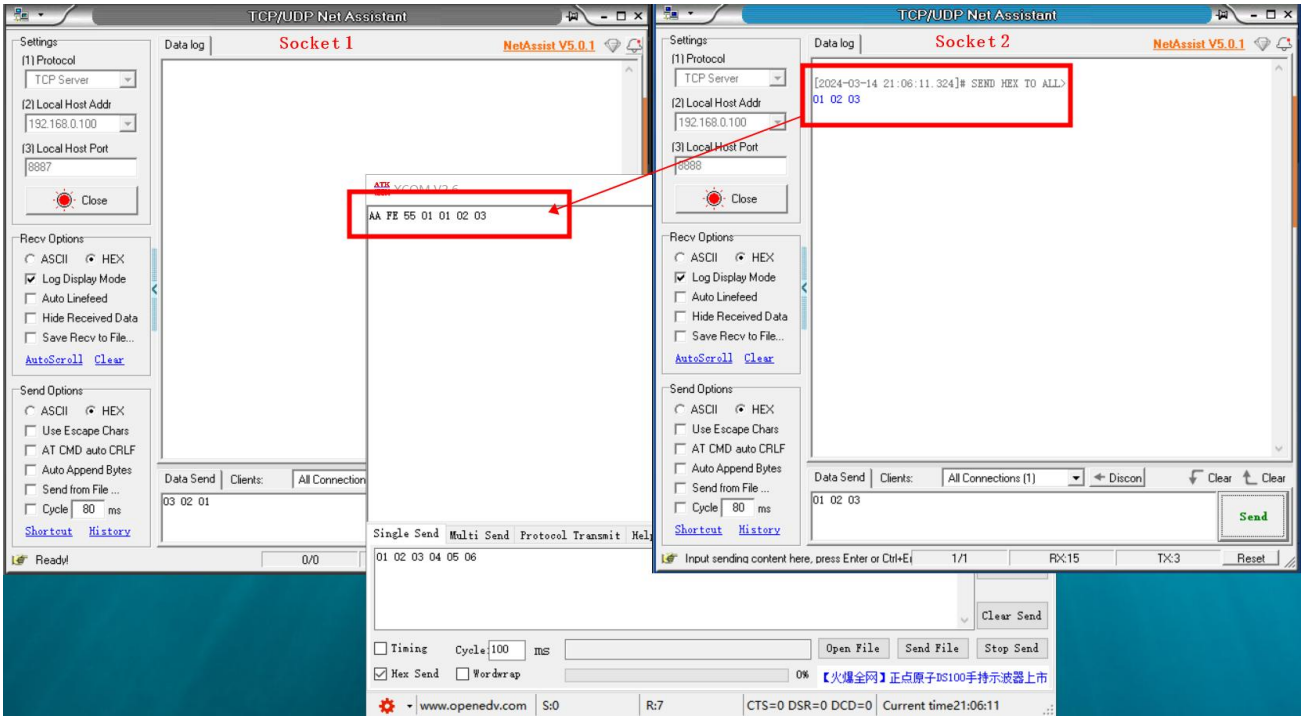
4. Socket 1 sends any data. After the serial port receives it, it will add the data header AA FE 55 00 before the data.

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5. Socket 2 sends arbitrary data. After the serial port receives it, it will add the data header AA FE 55 01 before the data.



4.4.2 Disconnection and reconnection function

In client mode, the device attempts to actively connect to the server at a specified time after the network is disconnected.

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Disconnection and reconnection time: The time interval between each time the device attempts to reconnect to the network. 0 means fast reconnection, and 0~65535 is configurable .

4.4.3 Timeout restart function

Supports the timeout restart function (default: 18 00 seconds). This function is mainly used to ensure the long-term stable operation of the device . If no data sent by the network is received within the set timeout restart time , the device will restart to avoid abnormal situations affecting communication. cause impact .

When the timeout restart function is turned on, the timeout restart time setting parameter range is (60-65535) seconds.

4.4.4 Short connection function

In TCP client and HTTP client modes, network short connections are supported (this function is turned off by default). TCP short connections are mainly used to save server resource overhead and are generally used in multi-point (multi-client) to one-point (server) scenarios. .

After the short connection function is turned on, it only requests a connection with the server when sending information. After the connection is successful, if the serial port does not receive data or the network port does not send and receive data within the set time, the device will automatically disconnect.

When the short connection function is turned on, the short connection time setting parameter range is (1 - 65535) seconds.

4.4.5 Connect to clear cache function

The device is in client mode. When the TCP connection is not established, the data received by the serial port will be placed in the buffer area. The serial port receiving buffer is 1024 packets or 10k . If it is larger than the buffer space , the earliest received data will be overwritten. After the network connection is successful, , you can choose to clear the serial port cache or send the cache through the network through configuration.

Enable: The device does not save the data received by the serial port before the connection is established.

Disabled: After the connection is established, the network will receive serial buffered data.

4.4.6 Heartbeat packet function

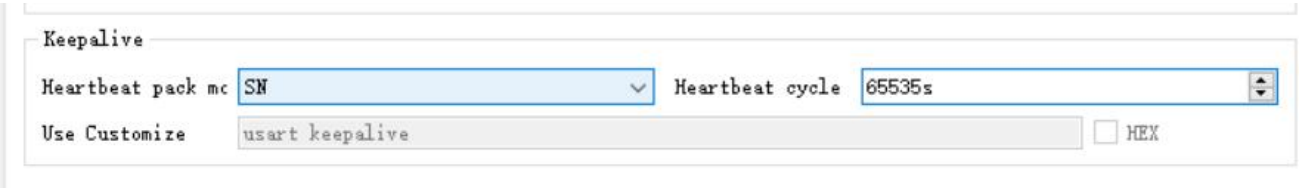
The device supports both serial heartbeat packets and network heartbeat packets. The serial heartbeat packet data points to the serial port, and the network heartbeat packet points to the network, which can be set separately.

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4.4.6.1 Serial heartbeat packet

The serial port heartbeat packet data points to the serial port and can be set in the serial port parameters. SN, MAC, and customized content can be selected, and can be set from 0 to 65535 seconds. The serial port heartbeat packet adopts the idle heartbeat packet, that is, it starts timing when the serial port is idle, and when the serial port heartbeat packet time arrives, the configured content is sent to the serial port. The configuration method is shown in the figure below:



If the content of the serial port heartbeat packet is configured as custom data, the heartbeat packet can be configured with a maximum length of 128 bytes. After hexadecimal selection is checked, the data sent will be hexadecimal data.

4.4.6.2 Network heartbeat packet

Network heartbeat packets are applicable to Ethernet links, are only effective in client mode, and support hexadecimal and ASCII code transmission . The network heartbeat packet is not M QTT heartbeat, it is data actively sent by the micro-controller according to the configuration. Network heartbeat packets run independently on the two links and do not affect each other. SN, MAC, and customized content can be selected, and can be set from 0 to 65535 seconds. The network heartbeat packet adopts the mandatory heartbeat packet, that is, the timing starts when the link connection is successful, and when the heartbeat packet cycle time is reached, the configured content is sent to the server. The configuration method is shown in the figure below:



If the content of the network heartbeat packet is configured as custom data, the heartbeat packet can be configured with a maximum length of 128 bytes. After hexadecimal selection is checked, the data sent will be hexadecimal data.

4.4.7 Registration package function

In client mode, users can choose to send registration packets to distinguish data or link sources . Registration packets run independently in the two links and do not affect each other. When using it, you need to select the registration package mode. You can choose the following modes:

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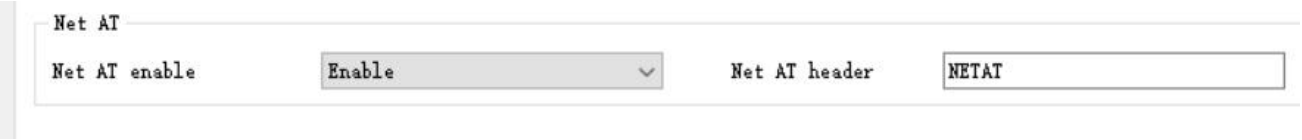
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1. Connect to send SN ;
2. Connect to send MAC ;
3. Connect to send custom data;
4. Connect to send custom content;
5. Send SN for each packet ;
6. Send MAC per packet ;
7. Send custom content per package;

Sending each packet means adding the registration packet content before each data packet. When setting up a custom registration package, you can check the hexadecimal option. When customizing the registration package content, the registration package can be configured with a maximum length of 128 bytes.

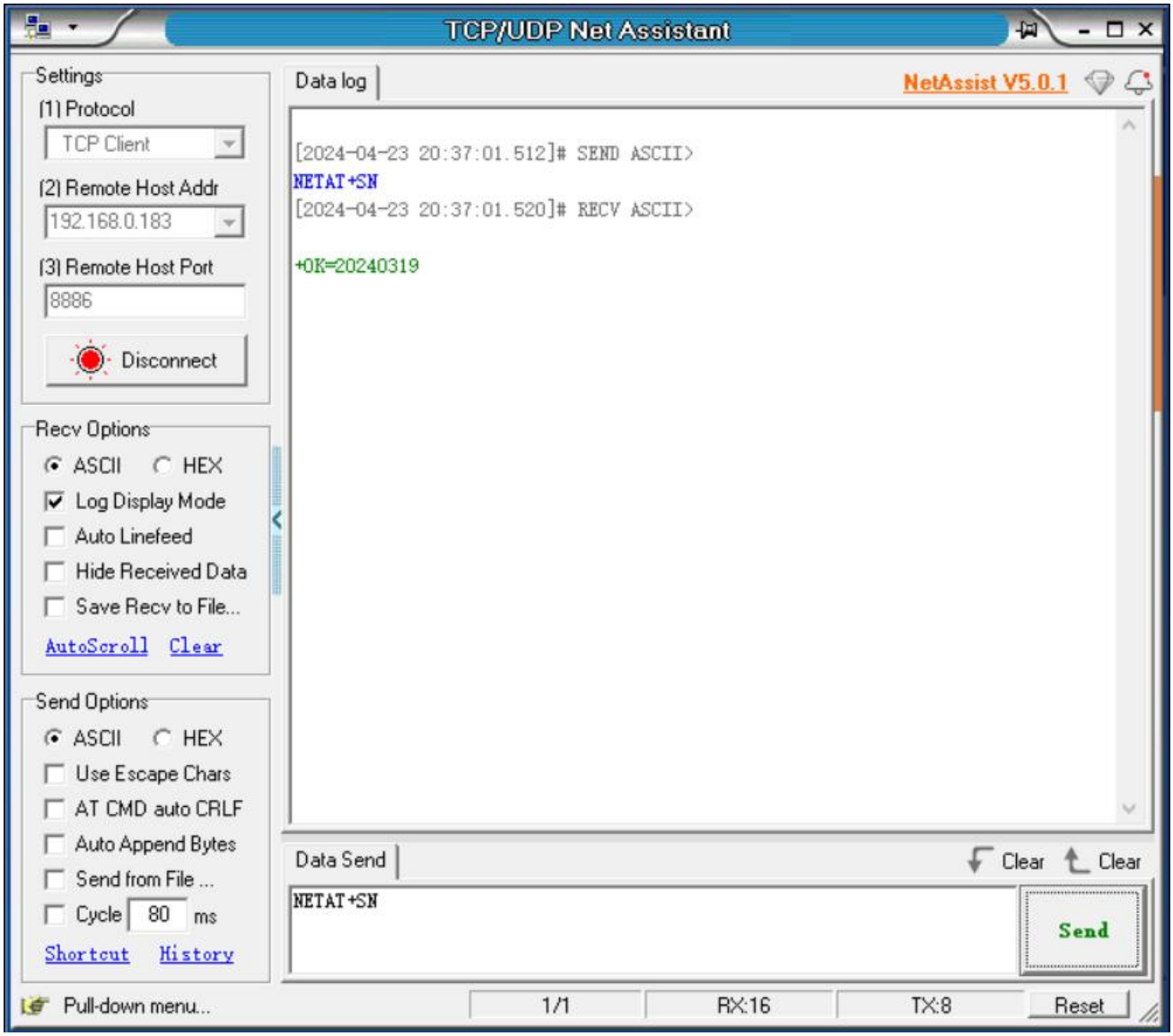
4.5 Network AT command

The device supports network AT commands and can be enabled by modifying parameters on the host computer. After turning it on, the command header can be customized.



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If the current AT command header is NETAT, after the link is successfully connected, you can send commands through the network to query and configure parameters. If you send NETAT+SN, you will receive a data reply of +OK=20231214test. After the network AT is enabled, the device will parse whether the data header is correct, such as "NETAT". If the data NETAT123 is sent, an error will be reported by the device. The reason is that the device will recognize that the command currently sent is an illegal command, so The data will not be sent, so please pay attention when using it.

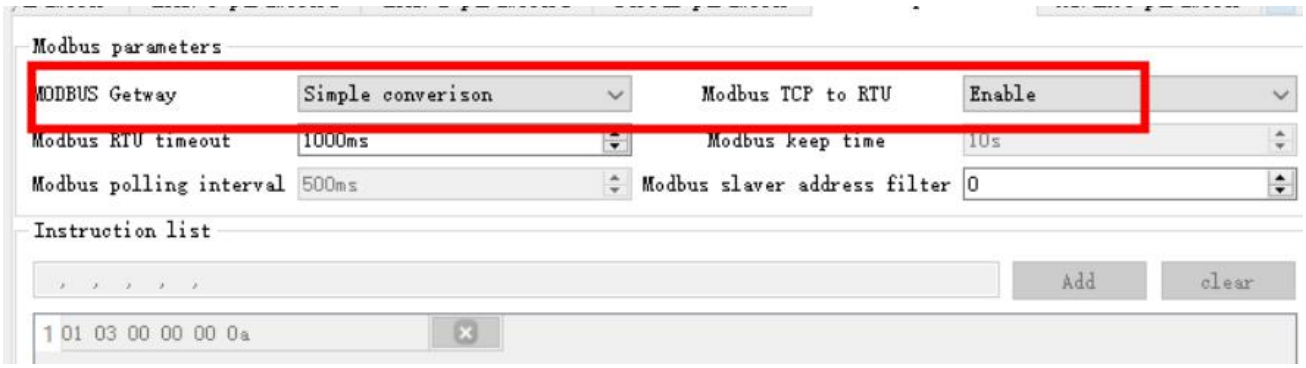
4.6 Modbus gateway

Note: The device supports two links. After the ModBus gateway is set, it is effective for both links.

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4.6.1 Simple protocol conversion mode



After turning on simple protocol conversion, TCP to RTU conversion is enabled: Modbus RTU protocol and Modbus TCP protocol are converted to each other, and non-Modbus data (RTU/TCP) is directly discarded.

TCP to RTU closed: protocol conversion is not performed but Modbus data is verified, and non-Modbus data (R TU/TCP) is discarded.

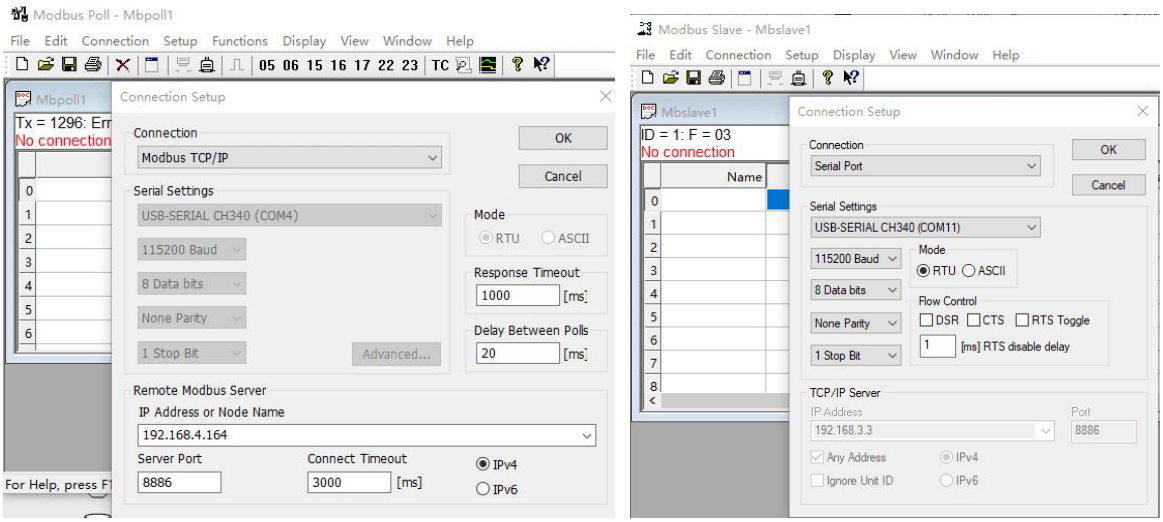
Simple protocol conversion can work in any mode (TCP client, TCP server, U DP client, UDP server, MQTT client, HTTP client). No matter what mode it works in, there can only be one Modbus master station.
Host computer configuration :



Modbus Poll and Modbus Slave software debugging:
Software connection settings:

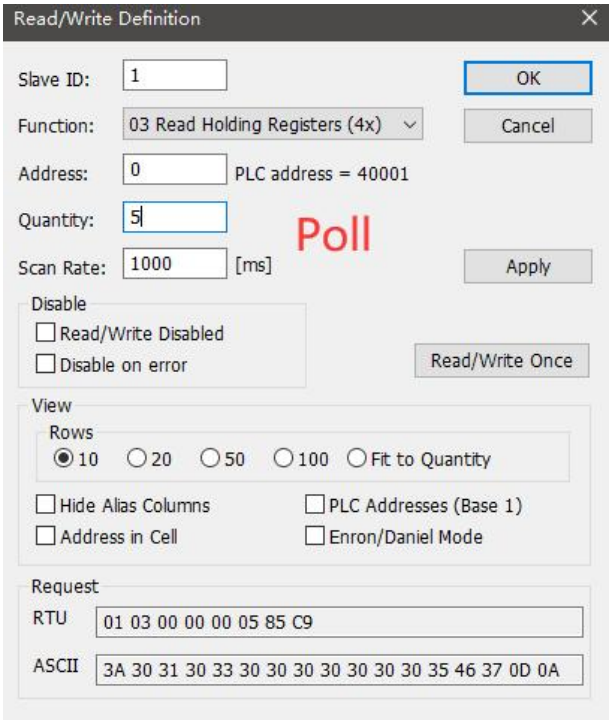
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Software register reading and simulation configuration:

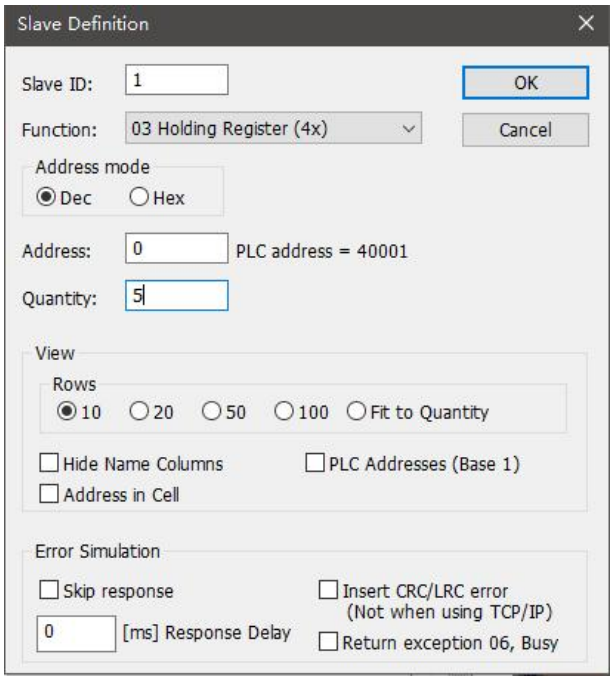
Poll menu select Set up →Read/Write Definition



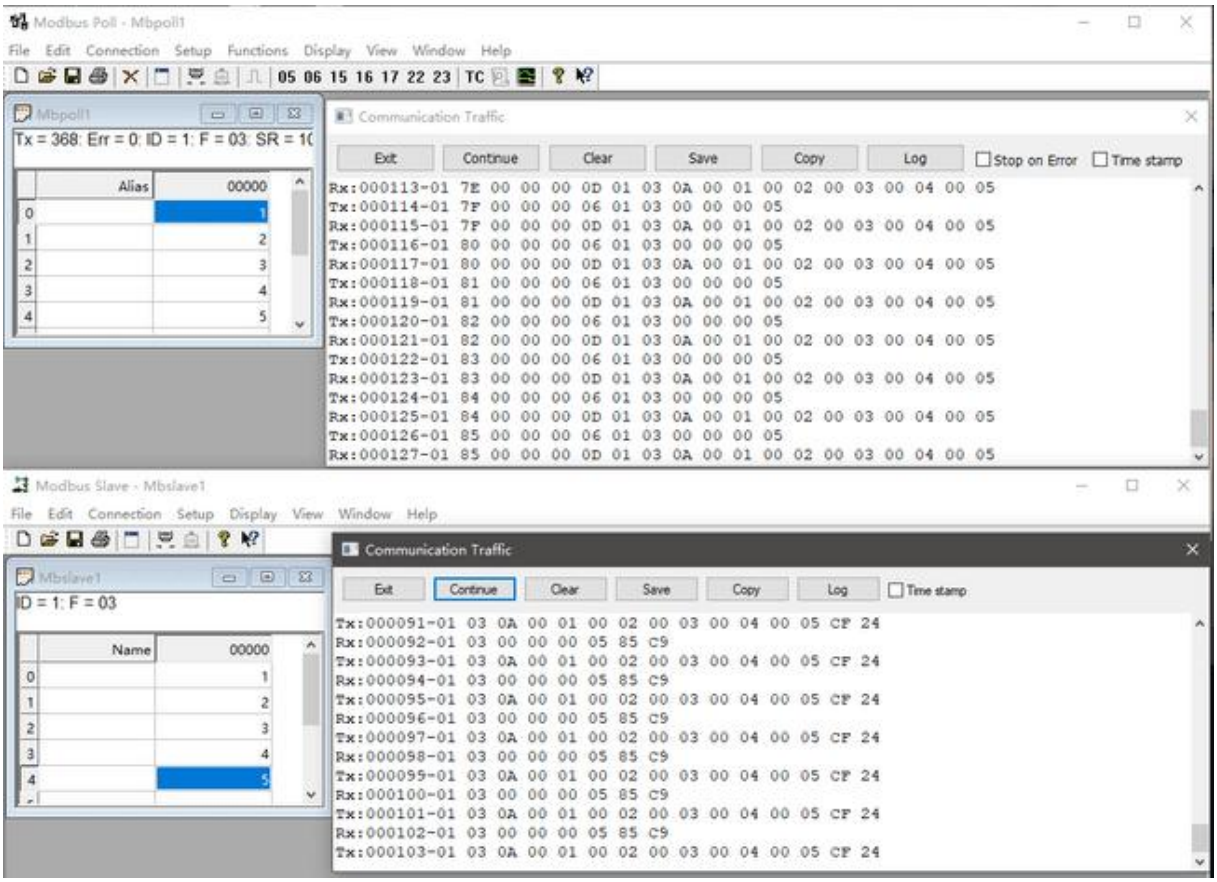
Slave menu select Setup →Slave Definition

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Communication demo:



4.6.2 Multi-host mode

The multi-host mode can handle up to 5 Modbus TCP hosts. When multiple Modbus hosts access at the same time,

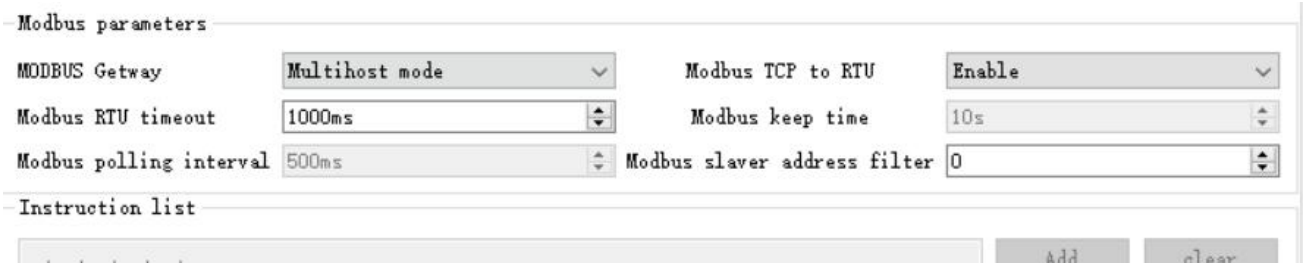
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the Modbus gateway will schedule the bus occupancy (RS -485 bus can only handle one request at a time, while the multi-host mode will TCP requests are sorted and processed one after another, and other links wait), thereby solving the bus conflict problem (currently only supports 6 host connections). It only supports working in TCP server mode, and the slave can only be in the serial port, otherwise it will not work properly.

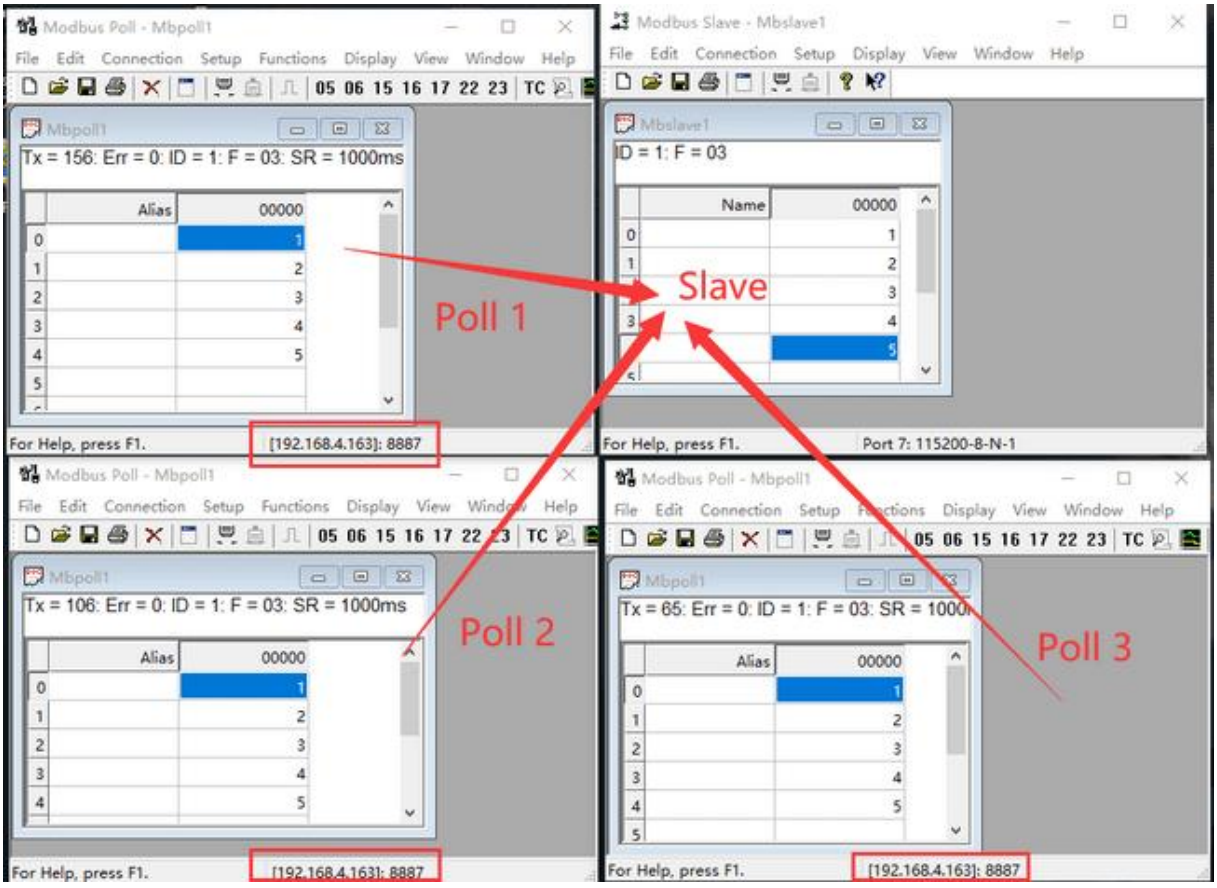
It is recommended to configure "simple protocol conversion" when there are no multiple hosts.

Host computer configuration:



Modbus Poll and Modbus Slave software debugging:

For software configuration and register configuration, refer to "Simple Protocol Conversion", and open multiple Modbus Poll software at the same time (3 channels are taken as an example, and up to 5 channels can be supported).



4.6.3 Storage gateway

The storage gateway not only arbitrates bus data but also stores repeated read instructions. When different hosts

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request the same data, the gateway does not need to query the RTU device register status multiple times , but directly returns the data cached in the storage area, which is very convenient. It greatly improves the gateway's multi-host request processing capabilities and also shortens the time consumed by the entire request process. Users can customize the storage area instruction polling interval and instruction storage time according to their needs.

As a storage gateway that optimizes multi-host request performance, it can only work in TCP server mode, improving the response speed on the network side.

Features:

（1） The gateway has a 10K cache for storing instructions and returned results (reading 10 holding registers as an example, can store 300 instructions and returned results);

（2） the RTU response times out or the last reply time exceeds the instruction storage time, the device automatically clears the cache to ensure the real-time and authenticity of the data;

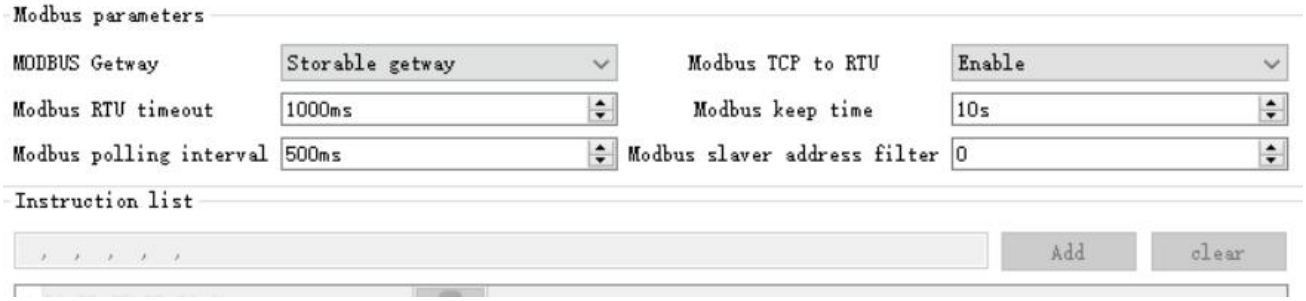
（3） The polling interval can be customized, 0 -65535 ms;

（4） RTU device according to the instruction storage time used for configuration . If the MODBUS host does not query the instruction again during the storage time, the gateway automatically deletes the storage instruction to release the cache;

（5） The first instruction and control instruction (05 , 06 , 0F , 10 function code) will directly access the RTU device ;

（6） Only supports 0 1 , 0 2 , 0 3 , 0 4Mod bus function code query result storage;

Storage gateway host computer configuration:



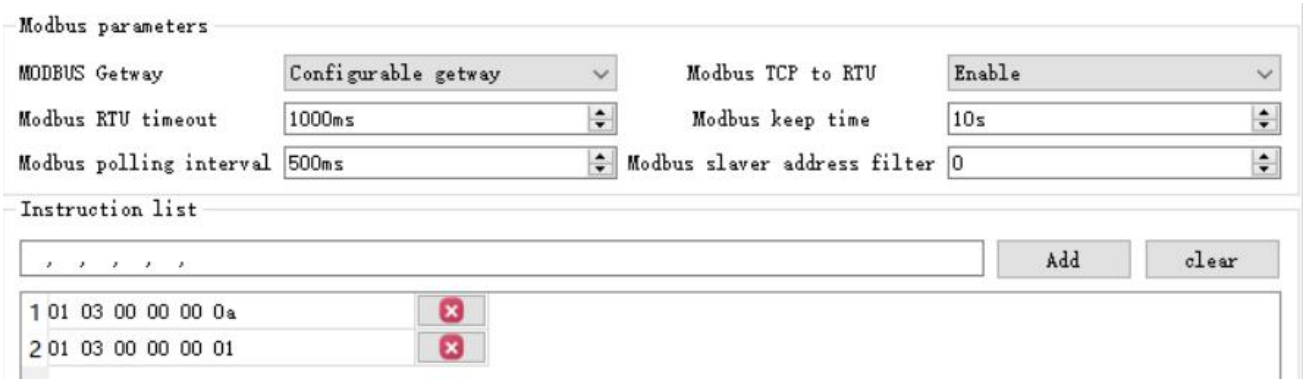
4.6.4 Configurable gateway

automatically polls the R TU device register according to the preconfigured MODBUS command (only supports the configuration of the M ODBUS read command). Non-storage table commands will directly operate the R TU device. Frequently read instructions can be stored in the gateway in advance, which can shorten the response time (query configured instructions). Due to the above characteristics, the serial port side of the configurable gateway can only be connected to Modbus slave stations.

Host computer configuration:

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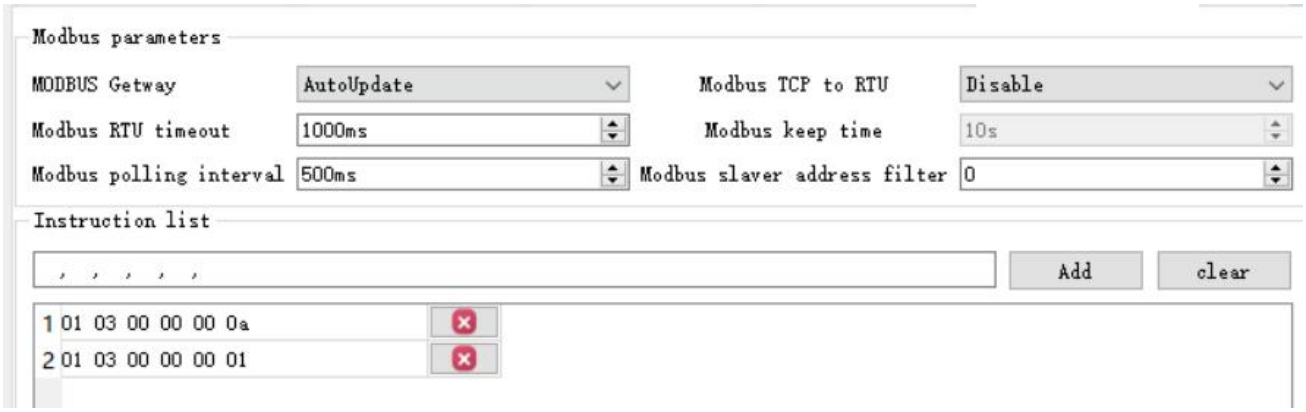


Instruction storage instructions (added, instruction errors and format errors cannot be added) . To delete an instruction, just click the cross on the right side of the instruction.

4.6.5 Automatic upload

In client mode (TCP client, UDP client, MQTT client, HTTP client) the gateway will automatically poll the instructions in the stored instruction table and upload them to the server. You can choose the feedback format (Modbus RTU format or Modbus TCP format) and command polling interval (0 -65535 ms).

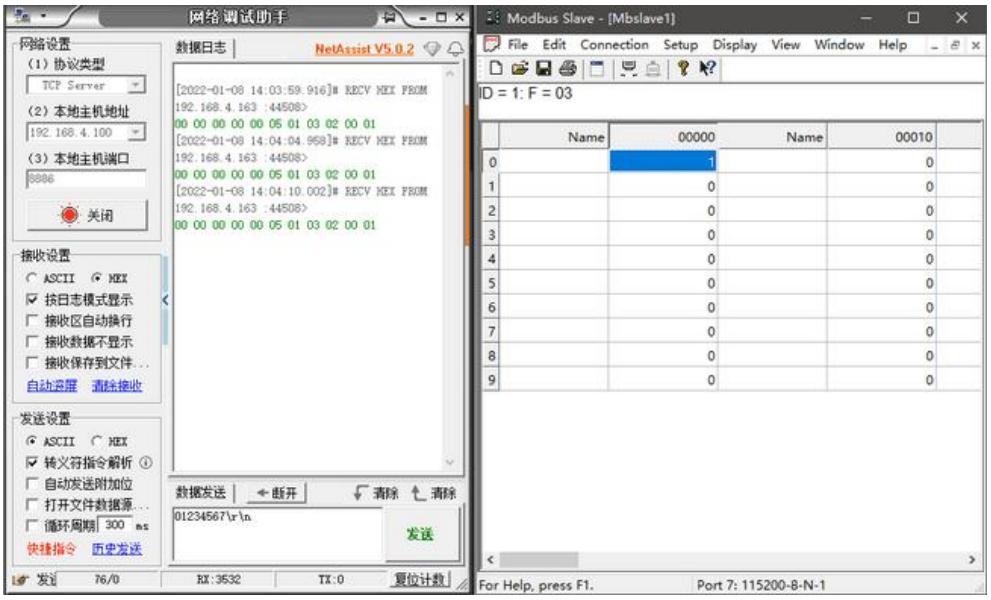
For command pre-storage, refer to "Configurable Gateway - Command Storage Instructions" and automatically upload the host computer configuration:



TCP client demo (Modbus TCP format) :

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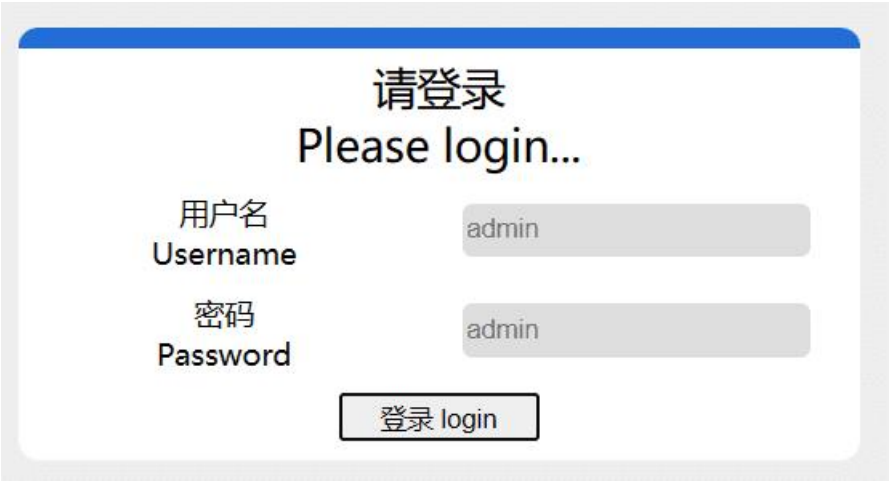
4.7 Introduction to basic functions

4.7.1 Web page configuration

The device has a built-in web server, which facilitates users to set and query parameters through the web page.

Operation method (Microsoft Edge version 94.0.992.50 is taken as an example. It is recommended to use the Google kernel browser, which only supports IE 10 or above kernel browsers):

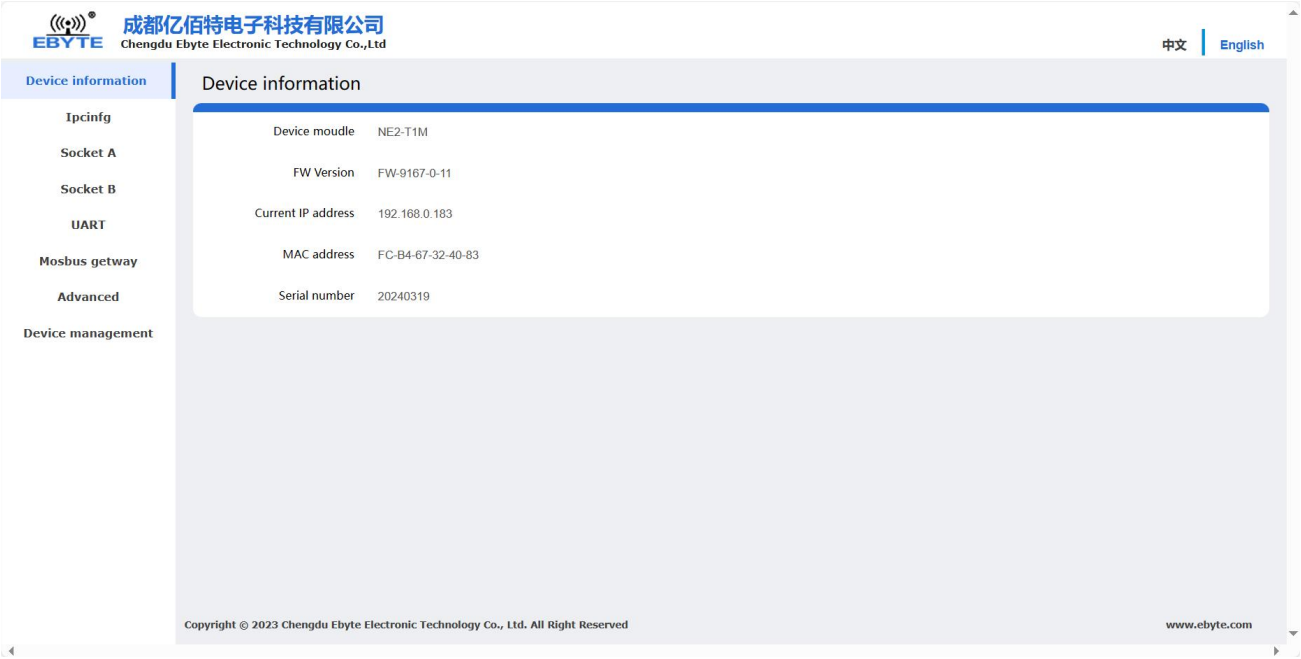
- Open the browser and enter the IP address of the device in the address bar. The default is 192.168.3.7 (the IP address and the computer must be in the same network segment). If you forget the IP of the machine, you can query it through AT commands and configuration software;



- Click to log in, the default account is admin, the default password is admin (already entered, you can click to log in directly)

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- The main interface pops up on the web page, and you can query and set relevant parameters;
- Click "Save Parameters" in device management to save the configuration parameters;

4.7.2 reset

Press and hold the R e load button on the test base for 5-10 seconds until all LED indicators light up and then release the button.

4.7.3 AT command configuration

Query and modify the relevant parameters of the device can be completed through AT command configuration. For specific AT commands, please refer to "AT Command Set".

4.7.4 Configuration tool software setting

Open the configuration tool software, search for the device, double-click the recognized device, and the parameter query configuration interface will pop up. You can customize relevant parameters according to your needs, then save the configuration, restart the device, and complete the parameter modification.

【Note】:

Do not use multiple host computers in the same LAN environment. Industrial computers with multiple network cards need to be temporarily disabled and do not use network cards, otherwise the host computer will experience abnormalities (the same device is displayed multiple times, the device cannot be found, etc.)

The host computer blocks the wireless network card, so the network cable must be connected to use the host

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computer. The wireless network card can be configured through the web page.

4.7.5 Random local port

TCP client, UDP client, HTTP client, MQTT client can configure the local port to 0 (use a random local port). Random ports cannot be used in server mode, otherwise the client cannot establish a connection correctly.

Using a random port connection can quickly re-establish the connection when the device accidentally disconnects from the server, preventing the server from rejecting the connection due to four incomplete waves. It is recommended to use a random port in client mode.

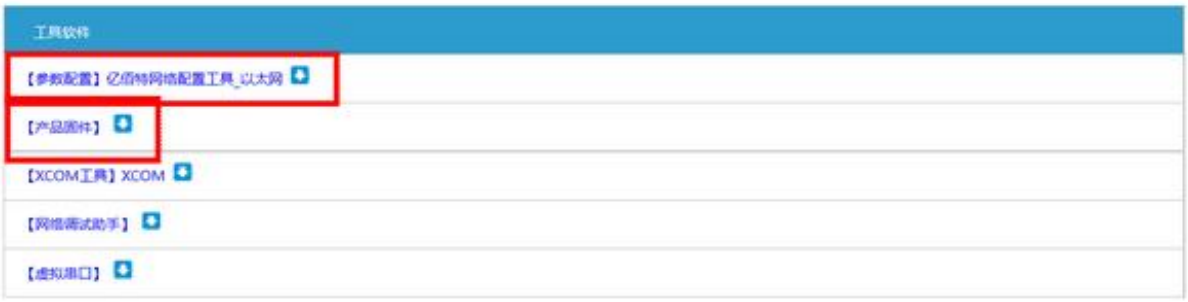
The device will automatically enable random ports when configuring HTTP client and M QTT client modes.

4.7.6 Remote upgrade

In order to facilitate later maintenance and upgrade functions and replace different firmware, the serial port server supports online upgrade. Through the upgraded firmware provided by our company, users can upgrade or replace the current firmware through the host computer.

Steps to upgrade firmware over the network:

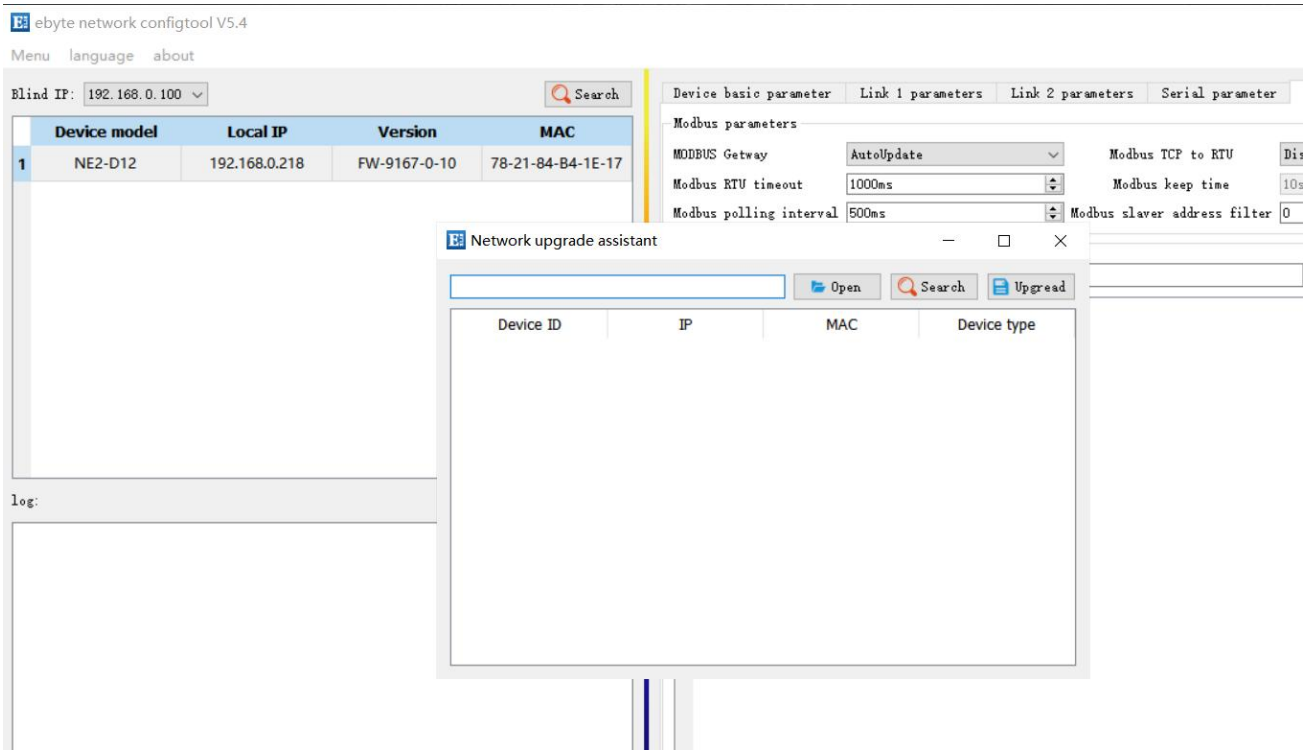
Step 1: Go to the corresponding location on the official website to download the host computer and "product firmware";



Step 2: Open the host computer, click "Menu" and select "Device Upgrade Assistant";

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Step 3: In the pop-up "Device Network Upgrade Assistant" dialog box, click "Search for Device" (the computer and the device should be in the same network segment), and click "Stop Search" after searching for the device;

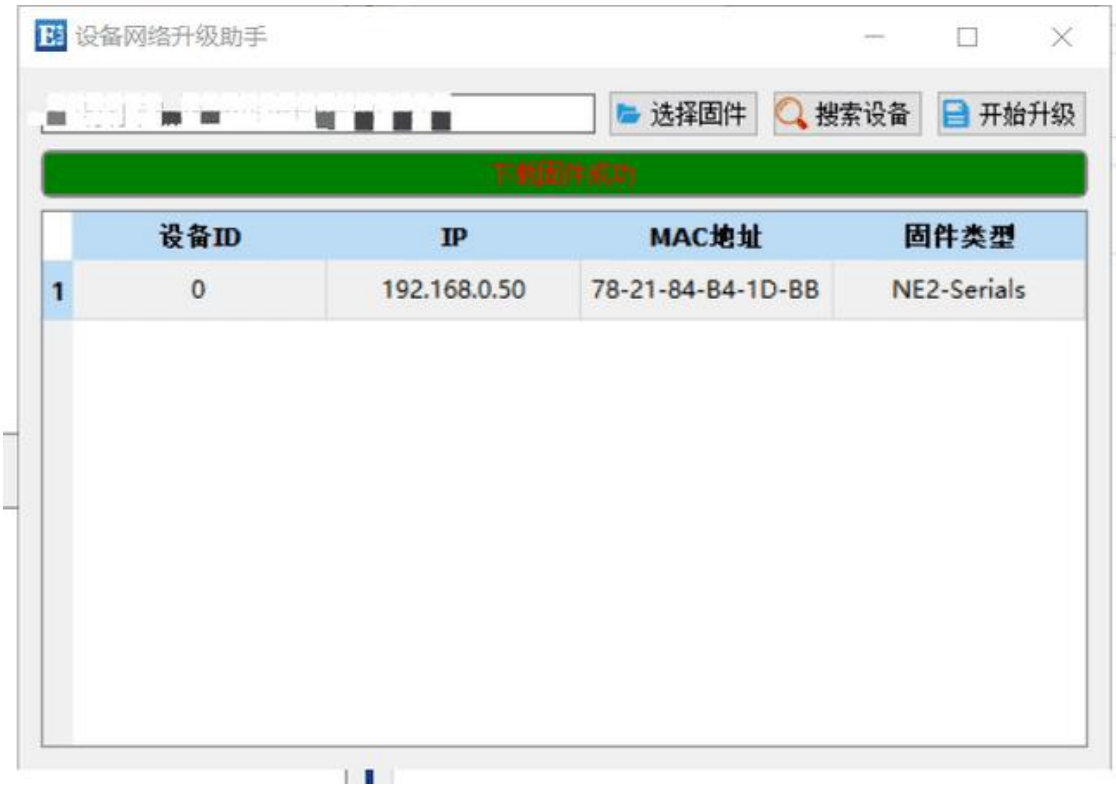


Step 4: Click "Select Firmware", select the corresponding firmware, and then click "Open";

Step 5: Select the device to be upgraded, click "Upgrade", the progress bar will start to change , and wait for the upgrade to be completed. (The device will not respond for about 7 seconds from clicking "Upgrade" to starting to transfer the firmware. This is normal. Please wait patiently for the upgrade)

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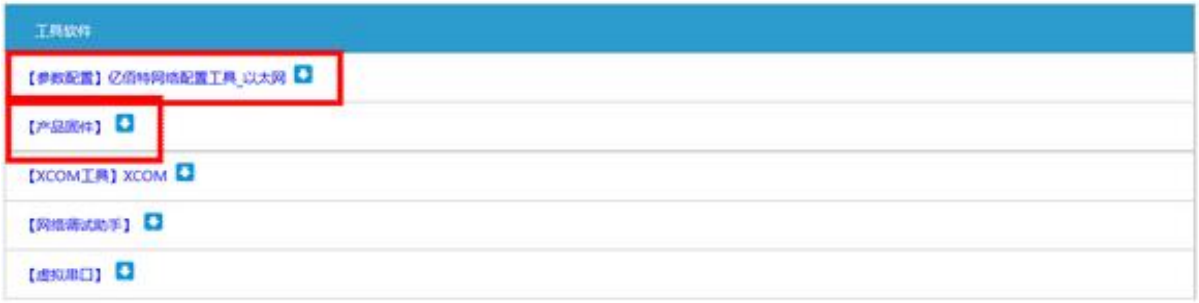
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Steps to upgrade firmware via web page :

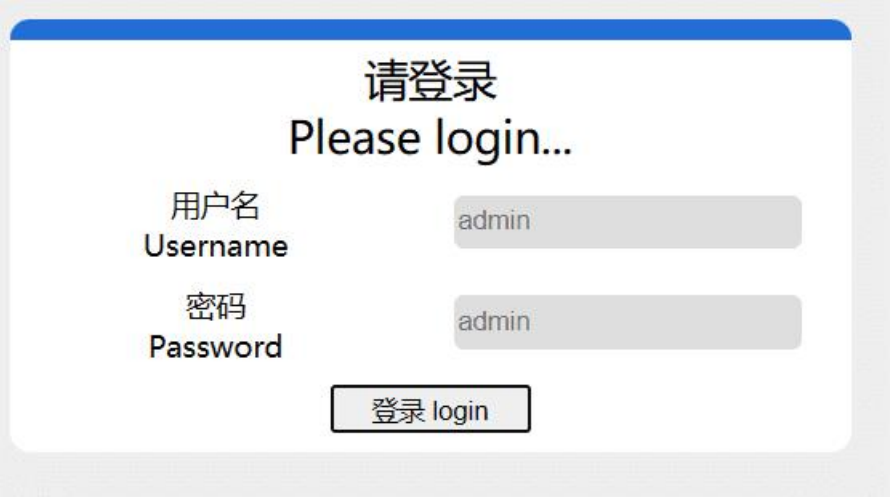
Step 1: Go to the corresponding location on the official website to download the host computer and "product firmware";



Step 2: Open the host computer, search for the current IP of the device, the default is 192.168.3.7, enter the current IP in the web page, and enter the web configuration ;

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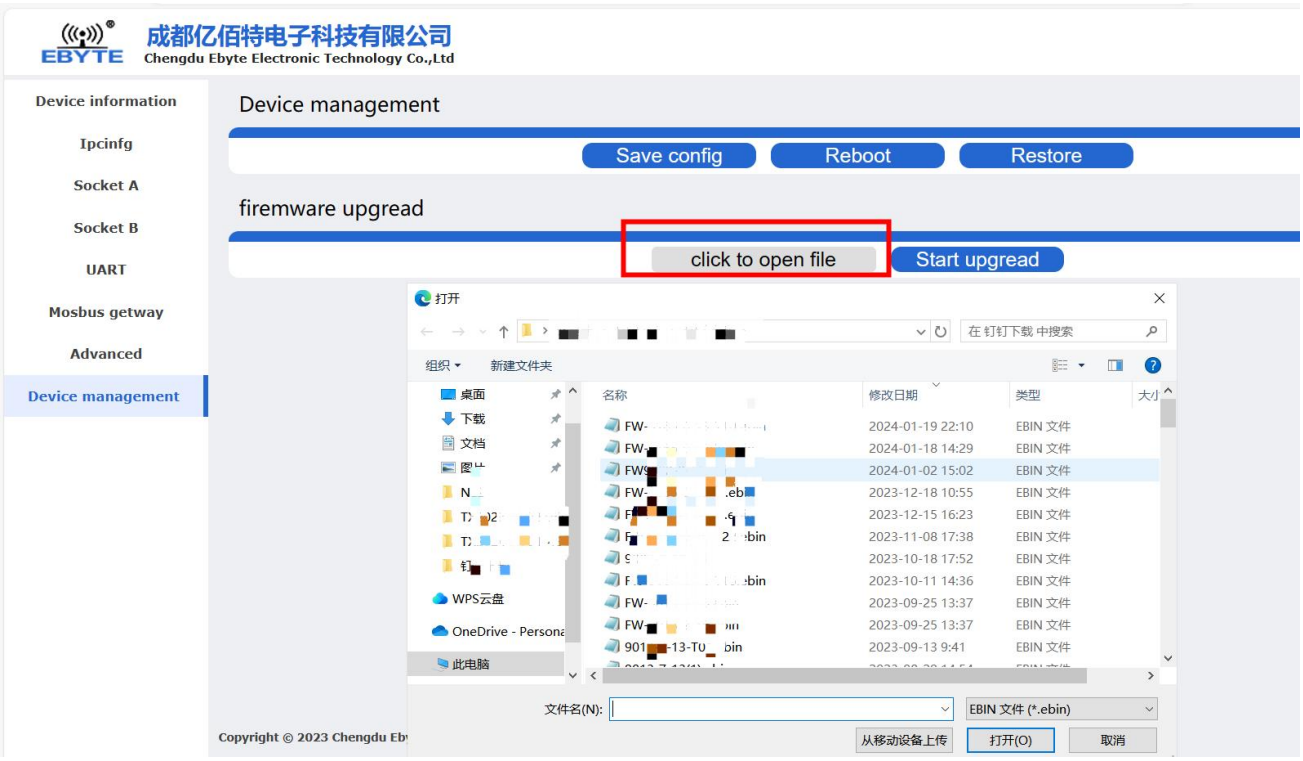
Step 3: Click Device Management ;



Step 4: Click " Click to select file ", select the corresponding firmware, then click "Open" , and then click to start the upgrade ;

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Step 5: Click "Start Upgrade", the progress bar will start to change , and wait for the upgrade to be completed.

[Note] If the upgrade fails, just upgrade again .

[Note] The device will not respond for about 7 seconds from clicking "Upgrade" to starting to transfer the firmware. This is normal. Please wait patiently for the upgrade.

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Revise History

Version	Revision date	Revision Notes	Maintenance man
1.0	2024-2-21	initial version	YL

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