





Serial *≑* Ethernet Super network port NE2-T1/NE2-T1B





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About Us错误!	未定义书签。

Chapter One Product introduction

The NE2-T1/NE2-T1B single serial port server module is used to realize bidirectional transparent transmission of data from the serial port to the Ethernet port. Users do not need to care about the specific details, and the protocol conversion is completed inside the server. It has a variety of Modbus gateway modes and M QTTC/HTTPC IoT gateway mode, which can meet the networking functions of various serial devices/PLC; it adopts industrial-grade design standards to ensure equipment reliability.



The product comes with an RJ45 interface, which is compact and easy to use (also known as the "super network port"). The product comes with RJ45 interface and pin packaging. It can meet the networking functions of various TTL level serial devices and MCUs . It adopts a small size design of 34.86×22×24mm, which is convenient for users to integrate into the system.

If problems arise during use, you can refer to our company's application cases on the official website.

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 Keepalive 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.

Chapter Two Quick Start

If any problem occurs during use, click on the official website link :

https://www.ebyte.com/product-class.aspx

Note: NE2-T1 is the formal version of the network port, and NE2-T1B is the reverse version of the network port. Except for the different wiring directions, everything else is exactly the same. This chapter uses NE2-T1 as the explanation.

2.1Preparation for use

Before using the serial port server (hereinafter referred to as the "device"), you need to prepare network cables, computers, USB to serial port converters and other related auxiliary materials.

details as follows:

EBYTE NE2-T1B Networksture EBYTE Sk: X0000000000		
NE2-T1	cable	computer
DC 5 V switching power supply	USB to TTL(E 15-USB-T2)	Some cables

2.2Equipment wiring

2.2.1Serial connection

The RXD of NE2-T1 is connected to the TXD of USB to TTL; The TXD of NE2-T1 is connected to the RXD of USB to TTL; NE2-T1 is connected to the GND of USB to TTL;



2.2.2Power connection

Use wires to connect the + of NE2-T1 to the DC 5 V switching power supply V+; Connect the - of NE2-T1 to the DC 5 V switching power supply V-;

2.2.3Network cable connection

Use a standard RJ45 network cable, connect one end to the RJ45 interface of NE2-T1, and the other end to the computer or switch/router interface.

2.3Software settings

2.3.1Network 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;

以太网		
		相关设置
門上 IXSYB-PD 2 无 Internet		更改适配器选项
		百改高级共享设置
🏆 网络连接		- 🗆 ×
$\leftarrow \rightarrow \sim \uparrow 4$	网络 共享 Internet 协议版本 4 (TCP/IPv4) 犀性 X	
组织 ▼ 禁用此	達	
WLAN BO5_5G Intel(R)	加果网络支持此功能、则可以获取自动指派的 IP 设置。否则,你需要从网 換系統管理员处获得适当的 IP 设置。 此 ● 自动获得 IP 地址(O) ● 使用下面的 IP 地址(S): IP 地址(I): 192.168.3.4 子网擁码(U): 255.255.255.0 2 默认网关(D): ・ ・ ● 使用下面的 DNS 服务器地址(B) ● 使用下面的 DNS 服务器地址(E): 首选 DNS 服务器地址(E): 首选 DNS 服务器地址(E): 1	助
	备用 DNS 服务器(A):	
2 个项目 选中 1 不	ī	877 📼
	确定 取消	

2.3.2Default parameters

project	Default parameters
IP address	192.168.3.7
Default local port	8886
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

2.3.3Data 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:

(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 8886, and click Connect.

(3) Wait for the computer to connect to the serial port server. After the connection is completed, the LINK light of the serial port server is always on.



(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.

XCOM V2.6						×
				Port		
				COM3: USB-S	SERIAL C	134Q ~
				Baud rate	115200	~
				Stop bits	1	~
			1	Data bits	8	v
				rity	None	~
				Operation	Op	en
				Save Data	Clear	Data
				Hex	DT	Ŕ
				RTS	自自	动保存
Single Send Multi Send Protocol Transmit	Help			✓ TimeSta	mp 100	ms
				^	Sei	nd
					Clear	Send
Timing Cycle 1000 ms			Open File	Send File	Stop	Send
Hex Send Wordwrap		0%	【火爆全网】	正点原子DS100	手持示波	器上市
🔆 🗸 www.openedv.com S:0	R:0		c	urrent time15	:19:02	

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

	Network Assistant	(名) - ロ×	SCOM V2.6	- 🗆 X
Settings (1) Protocol	Data log	NetAssist V5.0.2 🗇 🕀	[2022-05-18 15:31:10.167] RX: EBITE_NET_SEND	Port
TCP Client	EBYTE_NET_SEND		[2022-05-18 15:31:11.358]	COM3: USB-SERIAL CH34U ~
(2) Remote Host Addr	[2022-05-18 15:31:11.241]# SEND ASCII>		EX: EBYTE_NET_SEND	Baud rate 115200 ~
(2) Dereste Haut Dat	EBYTE_NET_SEND		[2022-05-18 15:31:12.093]	Stop bits 1 🗸 🗸
8001	[2022-05-18 15:31:11.971]# SEND ASCII>		RX: EBITE_NET_SEND	Data bits 8 🗸 🗸
, Alexandream (EBYTE_NET_SEND		[2022-05-18 15:31:12.719]	Parity None 🗸
Disconnect	[2022-05-18 15:31:12.601]# SEND ASCII>		KA: EBTIE_NEL_SERU	
Recv Options	EDTIE_REI_SEND		[2022-05-18 15:31:15.552] TX - REVIE LARE SEND	Uperation 🔶 Close
	[2022-05-18 15:31:15.555]# RECV ASCII>		[2022-05-18 15:31:16.002]	Save Data Clear Data
🔽 Log Display Mode	[2022-05-18 15:31:16 004]# RECV ASCIT:		TX: EBYTE_UART_SEND	
T Auto Linefeed	EBYTE VART SEND		[2022-05-18 15:31:16.441]	
Hide Received Data	[2022-05-18 15:31:16.444]# RECV ASCII>		[2022-05-18 15:31:17 863]	
Save Recy to File	EBYTE_UART_SEND		TX: EBYTE_UART_SEND	TimeStamp 100 ms
AutoScroll Clear	EBVTE_VART_SEND		Single Send Multi Send Protocol Transmit Help	
Send Options	1	*	EBYTE_VART_SEND	
@ ASCIL C HEX	Data Send	🖌 Clear 🛧 Clear		Send
Use Escape Chars (i)	EBYTE_NET_SEND	[]		
Auto Append Bytes				Clear Send
Send from File		Send		C
Cycle 200 ms			Her Send Vorderan	T-FE-Z net non-th-pitter
Sucrear history	<u> </u>			正只原于15100于符示波森工币
💇 Ready!	4/5 RX:60	TX:80 Reset	🔆 🔹 www.openedv.com S:60 R:64 CTS=0 DSR=0 DCD=0 C	urrent time15:32:04

Chapter Three Product Overview

3.1Series products

Product number	product type	Socket Number of connections	Operating mode	Working voltage(V)	Product Size (mm)
NE2-S1	SMD	2×5 way	TCP Server	DC 3.1~6 or	17×19×4
	module		ICP Client	3.0~3.0	
NE2-T1	Direct plug	2×5 were	UDP Server	DC 2 1.6	25×22×25
NE2-T1B	module	2~3 way	UDP Client	DC 3.1~0	33~22~23
NE2-D11		2×5	M QTT Client	DC 8~28	<u>00×20×27</u>
NE2-D12		2~3 way	H TTP Client _	DC 8~28	00^28*27

3.2Technical Parameters

Item	Description
	DC 3.1~6V
Operating Voltage	If the power supply is 5.0V, the power supply load capacity is
	recommended to be above 300mA.
Working current	Peak: 180mA@5 V; 190mA@3.3V
	Standby: 50mA@5 V; 60mA@3.3V
encapsulation	2.54mm pin header
Operating mode	TCP Server (default), TCP Client, UDP Server, UDP Client, H TTP Client, M OTT Client
Socket connection	TCP server supports 5 client connections
Network protocol	TCP/UDP, M OTT , HTTP , IPv4, DHCP, DNS
IP acquisition method	Static IP (default), DHCP
DNS domain name resolution	support
Domain name resolution server	1 14.114.114 (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	8886 (customizable)
subnet mask	255.255.255.0 (customizable)
gateway	192.168.3.1 (customizable)
Serial buffer	10kByte or 1024 packets
Packaging	Maximum 1024Byte, 1~80 bytes idle time
mechanism	
Serial port baud rate	600~460800 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	$34.86 \times 22 \times 25 \text{mm} (L \times W \times H)$
product weight	10g±1g
Working	
temperature and	-40~+85°C, 5%~95%RH (no condensation)
humidity	

Storage	
temperature and	-40~+105°C, 5%~95%RH (no condensation)
humidity	

3.3Mechanical Dimensions



3.4Pin definition



serial number	pin	Function
1	VCC	Positive power input, supports 3 ~ 6 V input;
2	GND	Common ground terminal, negative terminal input of power supply;
3-5	NC	Default is left floating;
6	IO_RST	Restore factory pin, internal weak pull-up, can be connected to an external reset button, low level lasts for about 5~10s to restore factory settings; Low level lasts for 200~800ms to restart the device
7	LINK	Off: The network cable is not connected; Flashing: The network cable is connected normally but the link is not connected; Steady on: The network link is connected successfully;
8	POWER	Off: The device is not powered on; Steady on: The device is powered on.
9	LED_TXD	The serial port data sending LED indicator light outputs high level by default and outputs a 10Hz square wave when sending data.
10	TxD	When sending data through the serial port, the

		TTL level communication voltage only supports
		3.3V. If it is connected to 5V, level conversion
		is required.
		The serial port receives data. The TTL level
11	RXD	communication voltage only supports 3.3V. If it
		is connected to 5V, level conversion is required.
		The serial port works in full-duplex mode by
	485_EN	default. If an external 485 chip is connected, the
12		pin is connected to a 1k pull-down resistor, and
12		the pin function becomes the RS485 enable
		control pin. When the serial port sends data, it is
		set high and the normal state is low.
		Serial port data receiving LED indicator light,
13	LED_RXD	outputs high level by default, and outputs 10Hz
		square wave when receiving data
14	DCT	External reset input, valid for low level for more
14	K51	than 100ns, internal weak pull-up ;

Chapter Four Product Features

4.1Basic parameters

4.1.1Basic 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, indicate the number of subnets, and 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 .

4.1.3Domain 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.

4.2Network working mode

4.2.1TCP 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.

When 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.

4.2.2TCP 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).

4.2.3UDP 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.

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 .

4.2.4UDP 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.

4.2.5HTTP client mode

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

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:

Work Mode	HTTP client	\sim	Local port	8886	\$
Remote IP	192. 168. 3. 3				
Remote port	8888	\$			
HTTP parameters HTTP request meth	od GET	~	No HTTP header	Disable	~
				Least sector secto	

## XCOM V2.6		-	
[2022-01-05 17:17:50.657]			CH34C V
TX: datastream_id=char [2022-01-05 17:17:51.783]	char		
RX: HTTP/1.1 200 OK Date: Wed, 05 Jan 2022 09:17:50 GMT	2021-12-31 14:28:54		~
Content-Type: application/json Content-Length: 134			~
Connection: keep-alive Server: Apache-Coyote/1.1	28		~
Pragma: no-cache			(闭串口
{"errno":0, "data": {"count":1, "datastr 31 14:28:54.492", "value":28}], "id":"c	eams":[{"datapoints":[{"at":"2021-1; har"}]}, "error":"succ"}	}- 保存窗口	清除接收
		□ 16进制显 □ RTS	示□ DTR □ 自动保存
		☑ 时间戳	1000 ms
单条发送 多条发送 协议传输 帮助			7
datastream_id=char		^	发送
		~	清除发送
□ 定时发送 周期: 100 ms	打开文	件发送文件	停止发送
□ 16进制友法 □ 友法新行	0% 【火爆全	网】正点原子DS100月	F持示波器上市
🔅 👻 www.openedv.com S:18	R:312 CTS=0 DSR=0 DCD=	0 当前时间 17:17:5	.:

(2) Return data configuration without header:

#ork Mode	HTTP client	\sim	Local port	8886	\$
Remote IP	192. 168. 3. 3				
Remote port	3888	\$			
HTTP parameters	-			-	
HTTP request metho	GET	~	No HTTP header	Disable	~
HTTP URL	/1. php?				
Http head					

XCOM V2.6	-		×
[2022-01-05 17:09:10.892]	串口选择	SERTAL CHS	ar v
TX: datastream_id=char [2022-01-05 17:09:11.970] RX: {"errno":0, "data":{"count":1, "datastreams":[{"datapoints": [{"at":"2021-12-31 14:28:54.492", "value":28}], "id":"char"}]}, "error":"succ"} char 2021-12-31 14:28:54 28	COM4: USB- 波特率 停止位 数据位 校验位 串口操作 保存窗口 16进制	SERIAL CH3 115200 1 8 None ④ 关闭 清除措 显示[] DTR	
20	□ kis ☑ 时间戳	1000	1禾1子] ms
单条发送 多条发送 协议传输 帮助			
datastream_id=char		发送	送
□ 定时发送 周期: 100 ms 打开文件 □ 16进制发送 □ 发送新行 0% 【火堤全网】 T	发送文件	停止发	送
☆ vwww.openedv.com S:18 R:136 CTS=0 DSR=0 DCD=0 当前	前时间 17:10	:42	ын

2. POST

Use the 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:

ork Mode	HTTP client	~	Local port	0	\$
lemote IP	api 🖬 İ				
lemote port	80	\$			
(TTP parameters					
CTTP request met	hod POST	~	No HTTP header	Disable	~
TTP VRL					
lttp head					

XCOM V2.6						×
[2022-01-05 17:24:35.508]		luc".5011111		串口选择 COM4:USB-	SERIAL CH	(340 ~
[2022-01-05 17:24:36.593] RX: HTTP/1.1 200 0K	r , datapoints :[[va.	Tue :30/1/1/		波特率	115200	
)ate: Wed, 05 Jan 2022 09:24:3	5 GMT			停止位	1	~
Content-Type: application/json Content-Length: 26				数据位	8	Ŷ
Connection: keep-alive	_			校验位	None	~
;erver: Apache-Coyote/1.1 ?ragma: no-cache	char			串口操作) 关问	引串口
"errno":0, "error": "succ"}	2022-01-05 17:24:3	35		保存窗口	清除	接收
	50			🗌 16进制	ē示□ DTI	8
	50			RTS	日自	动保存
				☑ 时间戳	1000	ms
单条发送 多条发送 协议传输 帮助						
{"datastreams":[{"id":"char",	"datapoints":[{"value	<i>":</i> 50}]}]}		/	发	ž
					清除	发送
□ 定时发送 周期: 100 ms			打开文件	发送文件	停止发	发送
🗌 16进制发送 🗌 发送新行		0%	【火爆全网	】正点原子DS100	手持示波	器上市
🔆 🔹 www.openedv.com S:59	R:203	CTS=0 DSR:	=0 DCD=0	当前时间 17:24	:40	

(2) Return data configuration without header:

Work Mode	HTTP client	~	Local port	0	\$
Remote IP	api 💼				
Remote port	80	-			
HTTP parameter	5				
HTTP request me	thod POST	~	No HTTP header	Enable	~
HTTP URL	and the second s				

			-		×
[2022-01-05 17:30:47.416] TX: {~datastreams~:[{~id~:~char~.~datapoints~:[{~value~:25}]}]}		串口选择 COM4:USB-:	SERIAL CH	(34C 🗸
[2022-01-05 17:30:48.481] RX: {~errno":0, ~error":"succ"} 引			波特率 停止位	115200	~
			数据位 校验位	8 None	~
cnar 2022-01-05 17:30):47		串口操作	· 关:	那日
25			 □ 16进制组 □ 16进制组 □ RTS ☑ 时间戳 	清休 2示[] DT] 自: 1000	ngux R 动保存 ms
单条发送 多条发送 协议传输 帮助					
{~datastreams":[{~id":"char","datapoints":[{"v:	alue":25}]}]}		~	发	关 发送
□ 定时发送 周期: 100 ms	0%	打开文件	发送文件	停止》 手持示波	发送
🔅 - www.openedv.com S:59 R:29	CTS=0 DSR=	0 DCD=0 当	前时间 17:30:	49	

4.2.6 MQTT client mode

4.2.6.1 Standard MQTT3.1.1 connection

The standard M QTT3.1.1 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:

Client ID	ELD0ERCUK	DDEV01 复	制			
MQTT Username	ELD0ERCUK	DDEV01;120	010126;B3GLI;16	667511713 复制		
MQTT Password	80ff56c		10.1		Sfca10b;hmacsha256	复制

Parameter configuration description is shown in the figure below:

Work Mode	Matt client					~
Remote IP Remote port	wwy 1883					•
MQTT parameter						
MQTT server	standard 3.	1.1	Keepalive cycle	120		E
Device name	test-iot					
username	1234/all					
Password	123456789					
a 1 11 1 1	.11/0000000	9000000094411/sub			Qos	0 \
Subscribe topic	arr/0000000					

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

) ieta	又在开发调试阶段使用此7	功能,若说备E	已正式投入使用,	下发消息时请评	估是否会影响	您的正常业务		
下发消息								
王帅厌恋	在國					实时日志		
Topic •	ELD0ERCUKD/DEV0	1/SUB			*	类型	时间	内容
	topic不能为空					云靖下发消息	2021-09-13 13 56 52	EBYTE-USERMQTT-TEST
loS •	00 01					KCDM V2.6		
前意内容。	EBYTE-USERMQTT-	TEST				(2021-09-13 13:56:52 83: 881TE-USESMQTT-T	205) 25T	
	消息内容不能为空。长8	章不大于16KB					收到服务器	下发数据

4.3Serial port parameters

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

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

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.

Boud rate115200databit8ParityNONEStop bit1					meter	-Serial port para
Parity NONE ~ Stop bit 1	\sim	8	databit	~	115200	Boud rate
	~	1	Stop bit	~	NONE	Parity
Frame interval 1 🗘 Maximum frame length 1024	-	1024	Maximum frame length	▲	1	Frame interval

4.4Advanced parameters

4.4.1Link 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:

Protocol distribution	Enable	~		
Reconnection time	10s	÷		
Nodata reboot	Enable	~	No data autoboot time	1800s
websever parameter				
Usernamne	admin		Password	admin
Net AT				

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 8888 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;

	M	结调试助于	¥ ×	<u>₹</u> •/(网络调证	.B) †		₩(-□×
阿絡设置 (1) 物欲度型 TCF Server → (2) 本地主机地址 152:1680.0100 → (3) 本地主机端口 19807 ● 矢闭	教練日志 [2023-10-09 19:40:41.60 01 02 03	Socket 1	NetAmit V5.0.1 🗇 🖨	阿給设置 (1) 协议类型 TCP Server (2) 本地主机対 192.168.0.100 (3) 本地主机対 0000	数据日志 予 101 10	Sock	et 2	<u>NetAssist V</u>	501 9 4
推动沿费		# XOM V2.6				o x			
← ASCII ← HEI	1	town on the second second			串口选择				
✓ 按日志模式显示 □ 接股区自动执行	<	TX: 65FEAAC 010203			COM5 : US	b-serial ch34C \sim			
厂 接收数据不显示					波特率	115200 ~			
□ 接收保存到文件					停止位	1 ~			
PLANE IN THE OWNER					對接向	8 ~			
·友法设置 ④ ASCII ○ NEX	1				标验的	None v			
厂 自动解析转义符					8094	A Mintern			
□ ▲T指令自动回车	1				401-1981F				Y
「打开文件數据源	数据发送 客户端:				保存面	口 清除接收	nections (1) 💌 一半街	₹] F ≇	脉之棘
□ 循环周期 2000 ms	123				☑ 16进制	N园示[] DTR			发送
使捕定义 历史发送						 自动保存 			
19 就绪!		AN INCOME. IN ADDRESS OF TAXABLE AND				R 1000 ms	RX:0	TX:0	夏位计数
		甲米友达 沙索友法 协议传输	R 107)						
		56 FE M 00 01 02 03				发送			
						。 清除发送			
		□ 宠时发送 風朝: 20000 ms			打开文件 发送文件	停止发送			
		☑ 16进制发送 □ 发送新行		0%	【火爆全网】正点原子051	00手持示波器上市			
		A - www.onenedy.com	8-0	CTS=0 DSR=	0 DCD=0 当前时间 19-	15:00			

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;

· /	[ee	给调试助于	4 ×	* · /		网络调试即	肺	₩ - □ ×
网络设置 (1) 协议类型 TCF Sarvar ▼ (2) 本地主机地址 192 168 0.100 ▼ (3) 本地主机端口 8087 ● 关闭	約据日志	Socket 1	NetAmint V5.0.1 🗇 🖓	PS協役置 (1) 协议类型 TCF Server (2) 本地主机地址 192 108 0.00 (3) 本地主映編ロ (3) 本地主映編ロ (4) 条 地	数据日志 2023-10-09 19 3 02 01	Socke	t 2	NetAnitt Y5.0.1 🧇 🗘
●決定置 「公訂」「「「」」」 「「」」」」「」」」」」 「」」」」」」 「」」」」」」」 「」」」」」」」」	く 新聞知道 (東戸頃) 123	₩ XCOM V2.5			串口选择 COM5:UGP 波特軍 停止位 鉄摺位 税验位 串口操作 【保存面口 【16通動】 1155		etian (1) • <u>•</u>	t
(F 就信)		● ● 单条发送 多条发送 协议传输 i	腐助			2.000	RI:3	TI:0 夏位计数
		 55 FE AA 01 03 02 01 □ 201 (次法 風朝: 20000 ms) ✓ 10法制发送 二 发送新行 	[打开文件 0% 【火爆全阿1	发送文件] 正占原子IS10	 发送 着除发送 停止发送 呼持示波器上市 		
		🔅 🔹 www.openedv.com S:	7 R:0	CTS=0 DSR=0 DCD=0	当前时间 19:44	\$17		

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

· · /	网络调试日	ከቻ	¥ ×	3 · /		网络调	试助于		₩ - E ×
网络设置 (1) 协议典型 TCF Server → (2) 本地主机地址 [192 108 0.100 → (3) 本地主机端口 0007 ●: 关闭	教授日本 Soc [2023-10-09 20:04:31:913]# 185(V 01:02:09:04:05:06 [2023-10-09:04:33:1913]# 185(V 01:02:03:04:05:06 01:02:03:04:05:06	Cket 1 Net MEX FROM (20023) 20023) MEX FROM (20023) 20023)	Aniit V5.0.1 🗇 🗘	- 网络设置 (1) 协议类型 TCP Server 了 (2) 本址主机地址 [192 168 0 100 了 (3) 本地主机端口 [2008	(2023-10-09 20: 01 02 03 04 05 (2023-10-09 20: 01 02 03 04 05	Soc 04.31.930]# B 06 04.33.205]# B 06	Ket 2 SCV HER FROM SCV HER FROM	Net :6117> :6117>	Amint V5.0.1 🧇 📿
● 掛次浸置 「 ACCII G MAT 何 長日忠境式显示 「 根皮に自动時行 「 根皮は耐不显示 「 根皮は有不显示 」 和此近面 基础地位 友送決置 「 白山炭道所加位 「 白山炭道所加位 「 日本支援防加位 「 日子文件創業層」 「 留子周期12000 mat 日 田安支済 1000 mat 1000		# XCOM V2.6				用口法择 COM5: VISB-53 波特案 停止位 供給位 用口操作 保存審口 ✓ 16进制団	□ × EXAL CR54C ↓ 15200 ↓	×_+877	- 「有除 上 有休 发送
13 款法:	2/1	01 02 03 04 05 06 □ 定時技送 周期: [1000 ☑ 16进敏技送 □ 发送新行) ms	0%	打开文件 【火爆全网】 3	发送文件 医点原子1051003	发送 素 除发送 停止发送 持示波器上市	12 TX	D 夏位计数

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.

8g •		网络副试图书	₩ - □×		· · /	网络制	试助于		4 - D ×
- 网络设置 (1) 协议类型 「UT Server 」 (2) 本地主机地址 「92 168 0 100 」 (3) 本地主机端口 10007	教護日志 [2023-10-09 20:01:51 03 02 01	Socket 1	NetAssist V5.0.1 @ Q		丙%給设置 (1) 协议类型 TCF Server ♪ (2) 本地主机地址 「92.160.0.100 ♪ (3) 本地主机端口 10000	教練日志 Soc	ket 2		NetAasist V5.0.1 🗇 🗘
 关闭 第次改革 休公工I @ 102 「 採わ志模式電示 「 探校型自动执行 「 探校型目动执行 「 探校型目示 「 探校型目示 日本提示 1 探索型目示 自动混算 31480 	<			XCOM V2.6 [2023-10-09 20.01-52.681] H1: AA FE 65 00 00 02 01			串口选择 COME:USB-SED 波特军 [停止位] 数据位 8	C ×	
发送设置 「ASCII FHEX 「自动解析時义符 「和指令自动图集 「自动发送时加位 「打开文件制振道。」	教課发送 春户端: 03 02 01	All Connections (1) 💌 🗮	<u>开 『</u> 和8 七和8	单杂发送 多杂发送 协议传输	和助		校址位 串口操作 保存部口 ☑ 16进制提和	●BAR ● 关闭电口 育珍掛收 R□ DTR	
etta:		0/1 EX:0	実送 11:3 夏位计批	55 FE AA 0001				发送	发送 172:0 夏位计数
				□ 16进制发送 □ 发送新行	.0 R:7	0% 【火爆会 CTS=0 DSR=0 DCD=0	* 30送又1年 引 正占原子15100手 当約时间 20:02:17	19正发送 持示波器上市	

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.

· · /	网络调试助手	×		网络调试助主	4 - D ×
网络设置 (1)协议类型 TCF Server <u>*</u>	教網日志 Socket 1	NetAmirt V5.0.1 🧇 🗘	网络设置 (1) 协议类型 TUT Sarver 一	###日本 Socket 2	NetAssist VS.0.1 @ Q
(2) 本地主机地址 [192.168.0.100 <u>*</u>]		XCOM V2.6	(2) 本地主机地址 [Her TGD 0.300] 一	01 02 03	
(3) 43811 60401		[2023-10-09 19 55 56 629]	(3) 本地王和641		
● 次時 ● ASCII ● REI ● XELI ● REI ● XEL■の執行 ● 排改回の執行 「 排改進杯目示 「 排改進杯目示 ■ 加設規構工 和設施設置 和設施設置 和設施設置	¢			¢	
发送设置 ○ ASCII ○ MEI □ 自动解析狭义符 □ AT描令自动田车		单条发送 多条发送 协议传输 帮助	★送後置 ○ ASCII @ MEI □ 自动解析转义符 □ XT描令自动回车		
□ 自动发送附加位 □ 打开文件数据源 □ 循环周期 2000 es <u>快速定义 历史发送</u>	教課校送 客户端: All Connections (1) _ 03 02 01	00 F8 AA 0001	「 自动发送附加位 「 打开文件数据第…」 「 循环周期 2000 ms 使進行文 仍史发送	教護友送 暮戶端: 「All Cennections (1) 」 01 02 03	<u>◆ 16日</u> 「 第18 七 第18 发送
15 数绪:	0/0 82:0	□ 宠时拨进 周期: 1000 ms	18 就論: 08 (八儒聖阿子王書書	0/1 KI:0	TI 3 <u>Roita</u>
		🔅 - www.openedv.com S:0 R:7	7 CTS=0 DSR=0 DCD=0 当前时	II) 20:00:46	

4.4.2Disconnection and reconnection function

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

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.

4.4.3Timeout restart function

Supports timeout restart function (default: 18 00 seconds). This function is mainly used to ensure 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. Communication is affected.

the timeout restart function is turned on, the timeout restart time setting parameter range is

(60-65535) seconds.

4.4.4Short 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.

4.4.5Connection 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.

4.4.6Heartbeat 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.

4.4.6.1Serial 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:

Keepalive						
Heartbeat pack mc	SN	×	Heartbeat cycle	65535 s		-
Vse Customize	usart keepalive				HEX	

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.

4.4.6.2Network 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 microcontroller 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:

Short connection	Disable	~	Short connection time	0	
NET connected clear cache	Enable	~			
Keepalive mode	Send SN	~	Keepalive cycle	3	E
Vse Customize	net sockA keepalive message			HEX .	
Registration mode	Disable	~			
Use Customize	net sockA register message			HEX	

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.

4.4.7Registration 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:

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 for each 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.

4.5Network AT command

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

Al enable	Enable	~	Net AT header	NETAT
		网络调试助手		₩ - □ ×
─网络设置 (1)协议类型 「TCP Client (2)远程主机」	数据日志 [2023-12-18 16: 也址 [2023-12-18 16:	:59:05.467]# The server i :59:09.819]# SEND ASCII>	NetA s connected.	ssist ¥5.0.1 🗇 🚑
(3) 远程主机。 (3) 远程主机。 [8886	× NETAT+SN はの にの に	:59:09.830]# RECV ASCII>		
接收设置 ● ASCII ○ 「按日志模式	HEX 显示			
 一接收送自幼 一接收数据へ 一接收保存到 自动流展 通い 	∰1 显示 文件 余 <u>接收</u>			
发送设置 ・ ASCII ・ 「 自动解析转」 「 AT指令自动	HEX 义符 回车			~
□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	加位 撒源 50 ms 和BTAT+SN			√ 清除 ~ 清除 发送

If the current AT command header is NETAT, you can send commands through the network to query and configure parameters after the link is successfully connected. If you send NETAT+SN, you will receive a data reply of +OK=20241214test. 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. Therefore, the data will not be sent, so you need to pay attention when using it.

4.6Modbus gateway

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

4.6.1Simple protocol conversion mode

MODBUS Getway	Simple converison	\sim	Modbus TCP to RTU	Enable		
Modbus RTV timeout	1000ms		Modbus keep time	10s		
Modbus polling interval	500m s	*	Modbus slaver address filter	0		
Instruction list						
					Add	clear

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 (R TU/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, U DP server, M QTT client, HTTP client). No matter what mode it works in, there can only be one Modbus master station. .



DHCP 1)isable		~			
Local IP 1	92.168.4 .164		Getway	192.16	8.4.1	
Mask 2	255, 255, 255, 0		DNS	114.11	4. 114. 114	
DNS2	61 . 139. 2 . 69					
Seriel nort neromet	or					
Boud rate	15200	~	databit	8		~
Parity 1	IONE	~	Stop bit	1		~
Frame interval [1		4] Maximum frame length	1024		\$
lodbus parameters —						
ODBUS Getway	Simple converison	~	Modbus TCP to RTU	13	Enable	~
odbus RTV timeout	1000ms	-	Modbus keep time		10s	4 T
adhur nalling inter			Wadhur elawar addrare :	6:1+am	0	

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

File Edit Conner	Connection Setup	9 5] 📓 💡 😵	File Edit Connection	Setup Display View Window Help
La McDoll Tx = 1296: Err No connection 0 1 2 3 4 5 6	Connection Modbus TCP/IP Serial Settings USB-SERIAL CH340 (COM4) 115200 Baud 8 Data bits None Party 1 Stop Bit Advanced	OK Cancel Mode © RTU O ASCII Response Timeout 1000 [ms] Delay Between Pols 20 [ms]	Mbslave1 D = 1: F = 03 No connection 1 2 3 4 5 6 7	Connection Setup Connection Setal Port Setial Settings USB-SERIAL CH340 (COM11) 115200 Baud B Data bits None Party I Stop Bit I fma] RTS disable delay
or Help, press F	Remote Modbus Server IP Address or Node Name 192.168.4.164 Server Port Connect Timeout 8886 3000 [ms]	 ✓ /ul>	8	TCP/IP Server Port IP Address Port 192.168.3.3 8886 Any Address 0 IPv4 Ignore Unit ID IPv6

Software register reading and simulation configuration: P oll menu select Set up \rightarrow Read/Write Definition

Read/Write	Definition				×
Slave ID:	1			[ОК
Function:	03 Read I	Holding Regi	sters (4x)	~	Cancel
Address:	0	PLC addr	ess = 4000)1	
Quantity:	5				
Scan Rate:	1000	[ms]	-011	Γ	Apply
Disable Read/\ Disable	Write Disable on error	ed		Read	/Write Once
View Rows 10	O 20 (⊃ 50 ◯1	00 O Fit	to Quant	ity
Hide A	lias Columns ss <mark>in Cell</mark>	i	PLC Add	resses (B aniel Mod	ase 1) e
Request					
RTU 0	1 03 00 00	00 05 85 C	9		
ASCII 3	A 30 31 30	33 30 30 3	0 30 30 30	30 35 46	5 37 0D 0A

S lave menu select Se tup \rightarrow Slave Definition

Slave Definition			×
Slave ID: 1			ОК
Function: 03 Hold	ling Register (4	łx) v	Cancel
Address mode			
Address: 0	PLC addr	ess = 40001	
Quantity: 5			
View Rows 10 0 20	○50 ○1	00 O Fit to Qua	antity
Hide Name Colu	mns	PLC Addresses	(Base 1)
Error Simulation			
Skip response		Insert CRC/LF	RC error
0 [ms] Res	ponse Delay	Return excep	tion 06, Busy

Communication demo:

Nodbus Poll - Mbpoll1		×
File Edit Connection Setup Functions Dir	splay View Window Help	
🗅 🗃 🖨 🗙 🗂 🗏 🚊 л. 105 06	6 15 16 17 22 23 TC 🕅 🔄 🧣 🎗	
Mbpoll1	Communication Traffic	×
Tx = 368: Err = 0: ID = 1: F = 03: SR = 10		
	Exit Continue Clear Save Copy Log Stop on Error I lime stamp	
Alias 00000	Rx:000113-01 7E 00 00 00 0D 01 03 0A 00 01 00 02 00 03 00 04 00 05	^
01	Tx:000114-01 7F 00 00 00 00 01 03 00 00 00 00 02 00 03 00 04 00 05	
1 2	Tx:000116-01 /F 00 00 00 00 01 03 04 00 01 00 02 00 03 00 04 00 03	
2 3	Rx:000117-01 80 00 00 00 0D 01 03 0A 00 01 00 02 00 03 00 04 00 05	
3 4	Tx:000118-01 81 00 00 00 06 01 03 00 00 00 05	
	Rx:000119-01 81 00 00 00 0D 01 03 0A 00 01 00 02 00 03 00 04 00 05	
4 ~	Tx:000120-01 82 00 00 00 06 01 03 00 00 00 00 02 00 02 00 04 00 05	
	Rx:000121-01 82 00 00 00 00 01 03 0A 00 01 00 02 00 03 00 04 00 05	
	Rx:000123-01 83 00 00 00 00 01 03 0A 00 01 00 02 00 03 00 04 00 05	
	Tx:000124-01 84 00 00 00 06 01 03 00 00 00 05	
	Rx:000125-01 84 00 00 00 0D 01 03 0A 00 01 00 02 00 03 00 04 00 05	
	Tx:000126-01 85 00 00 00 06 01 03 00 00 00 05	
464 202 M. C. N	RX:000127-01 85 00 00 00 0D 01 03 0A 00 01 00 02 00 03 00 04 00 05	~
🔀 Modbus Slave - Mbslave1		×
File Edit Connection Setup Display View	v Window Help	
D 🚅 🖬 🎒 🛅 🗏 🚊 💡 📢		
	Communication Traffic	~
Mbslave1	Exit Continue Clear Save Copy Log Time stamp	
ID = 1: F = 03		
	Tx:000091-01 03 0A 00 01 00 02 00 03 00 04 00 05 CF 24	^
Name 00000 ^		
0 1	Rx:000094-01 03 00 00 00 05 85 C9	
1 2	Tx:000095-01 03 0A 00 01 00 02 00 03 00 04 00 05 CF 24	
2 3	Rx:000096-01 03 00 00 00 05 85 C9	
	Tx:000097-01 03 0A 00 01 00 02 00 03 00 04 00 05 CF 24	
	Rx:000098-01 03 00 00 00 05 85 C9	
	Rx:000100-01 03 00 00 00 05 85 C9	
	Tx:000101-01 03 0A 00 01 00 02 00 03 00 04 00 05 CF 24	
	Rx:000102-01 03 00 00 05 85 C9	
	Tx:000103-01 03 0A 00 01 00 02 00 03 00 04 00 05 CF 24	~

4.6.2Multi-host mode

The multi-host mode can handle up to 5 Modbus TCP hosts. When multiple Modbus hosts access at the same time, the Modbus gateway will schedule the bus occupancy (the R S-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.



【注】此处以三路主机为例实际使用时最多可以连接6路主机

Configuration software setting:

MODBUS Getway	Multihost mode	~	Modbus TCP to RTU	Enable	~
Modbus RTV timeout	1000ms	\$	Modbus keep time	10s	*
Modbus polling interval	500m s	\$	Modbus slaver address filter	0	÷
Instruction list					

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).



4.6.3Storage gateway

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



【注】此处以三路主机为例实际使用时最多可以连接6路主机

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 10 K cache for storing instructions and returned results (reading 10 holding registers as an example, can store 300 instructions and returned results);
- (2) 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 01, 02, 03, 04M od bus function code query result storage;

Storage gateway configuration tool configuration:

MODBUS Getway	Storable getway	~	Modbus TCP to RTU	Enabl	e	~
Modbus RTV timeout	1000m s		Modbus keep time	10s		+
Modbus polling interval	500ms	\$	Modbus slaver address filter	0		4
Instruction list						
					Add	clear

4.6.4Configurable gateway

automatically polls the R TU device register according to the preconfigured M ODBUS 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.

			甲口服务器 使能可配置网络	百元枯竭万禄也太 心生脉症	时北方体长人	」 返回Ma	odbus从机 odbus RTU指令
Modbus主机 发送Modbus TCP请求				01 01 00 00 00 04 :	ID C9		
	01 00 00 00 00 06 01 01 00 00 00 04 01 00 00 00 04 01 01 01 00 01 00 00 00 00 06 01 05 00 00 FF 00 01 00 00 00 00 06 01 05 00 00 FF 00			01 01 01 00 51 88 01 02 00 00 00 01 01 02 01 00 A1 01 05 00 00 FF 00 3 01 05 00 00 FF 00 3	79 C9 38 9C 3A	! 」 単	1口设备
以太网设备 【注】此处仅存储二条指令说明,设备; Configuration softwa	^{最多可以存储50条指令} re setting:		存储以下指令: 21 01 00 00 00 04 21 02 06 00 00 04				
Modbus parameters							
MODBUS Getway	Configurable getway	~	Modbus	TCP to RTU	Enable	e	~
Modbus RTV timeout	1000ms	\$	Modbus	: keep time	10s		•
We draw and line internel	500mm		Modbus slave	r address filter	0		
modulus polling interval	000015	herein	mouras saure	a datess tittet	-		
Instruction list	000005	Linea			-		
Instruction list	000015					Add	clear
Instruction list	COOM'S					Add	clear

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

4.6.5Automatic upload

In client mode (TCP client, U DP client, M QTT 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 configuration tool configuration:

MUDBUS Getway	AutoUpdate	\sim	Modbus TCP to RTU	Disabl	.e	
Modbus RTV timeout	1000ms	-	Modbus keep time	10s		
Modbus polling interval	1 500m s 😫		Modbus slaver address filter	r 0		
Instruction list						
						1
					Add	clear
, , , , , , 1 01 03 00 00 00 0a	8				Add	clear

TCP client demo (Modbus TCP format) :

	网络调试助手	(A)	× :	1 Modbu	is Slave - [Mbs	slave1]		- 0	×
──网络设置 (1)协议类型	数据日志	NetAssist V5.0	1.2 ↔ ↔ [FROM	File E ■ File E ■ ■ ■	dit Connection	on Setup Displ . 🏥 🔋 📢	ay View Win	dow Help _	e x
(2)本地主机地址 192.168.4.100 V	192.168.4.163 :446 00 00 00 00 00 00 05 [2022-01-08 14:04:	01 03 02 00 01 04.958]# RECV HEX	FROM		Name	00000	Name	00010	
(3)本地主机端山	192.168.4.163 :446 00 00 00 00 00 05 [2022-01-08 14:04:	01 03 02 00 01 10.002]# RECV HEX	FROM 1			1 0		0	
· 关闭	192.168.4.163 :445 00 00 00 00 00 00 05	08> 01 03 02 00 01	3	3		0		0	
CASCII ● HEX			4	5		0		0	
□ 接收区自动换行 □ 接收数据不显示			7	7		0		0	
□ 接收保存到文件 自动滚屏			g)		0		0	
- 发送设置	数据发送)_◆断 01234567\r\n	<u>开</u> 」 ↓ 清除	▲ 清除 发送						>
☞ 发过 76/0	RX:3532	TX:0	夏位计数 / Fo	r Help, pr	ress F1.	Port 7:	115200-8-N-1		

4.7Introduction to basic functions

4.7.1Web 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)

((())) [®] 成都亿 EBYTE Chengdu E	佰特电子科技有限公 byte Electronic Technology Co.,	司 Ltd	中文 English
Device information	Device information		
Ipcinfg	Device moudle	NE2-D12	
Socket A	FW Version	FW-9167-0-10	
Socket B UART	Current IP address	192.168.0.218	
Mosbus getway	MAC address	78-21-84-B4-1E-17	
Advanced	Serial number	test-d12-231114	
Device management			
	Copyright © 2023 Chengdu Ebyte	Jectronic Technology Co., Ltd. All Right Reserved	www.ebyte.com

- 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;

4.7.2Restore factory setting

Press and hold the Reload button of the device for 5-10 seconds until all LED indicators light up and release the button.

4.7.3AT 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".

4.7.4Configuration tool software settings

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

The configuration tool blocks the wireless network card, so the network cable must be connected to use the configuration tool. The wireless network card can be configured through the web page.

4.7.5Random local port

T CP client, U DP client, HTTP client, M QTT 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.

4.7.6Remote 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 configuration tool. **Steps to upgrade firmware over the network:**

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

工具软件
【参数配置】亿佰特网络配置工具_以太网
【产品固件】 🚨
[XCOM工具] XCOM
【网络调试助手】 🎦
【虚拟串口】 ●

Step 2: Open the configuration tool, click "Menu" and select "Device Upgrade Assistant";

E e	byte network config	tool V5.4			
Blin	d IP: 192.168.0.100	~		Q Search	Device basic parameter Link 1 parameters Link 2 parameters Serial parameter
	Device model	Local IP	Version	мас	Modbus parameters
1	NE2-D12	192.168.0.218	FW-9167-0-10	78-21-84-B4-1E-17	MODBUS Getway AutoUpdate \checkmark Modbus TCP to RTU Di
					Modbus RTU timeout 1000ms 🚖 Modbus keep time 10
			E	Network upgrade assista	Modbus polling interval 500ms 💠 Modbus slaver address filter 0 nt ×
					🐚 Open 🔍 Search 📄 Upgread
				Device ID	IP MAC Device type
log:					

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)

1] - ja - ini		📂 选择固件 🔍 搜索	電设备 📄 开始升级
		TAU	94 <i>i</i> C.0	
	设备ID	IP	MAC地址	固件类型
	0	192.168.0.50	78-21-84-B4-1D-BB	NE2-Serials



Steps to upgrade firmware via web page:

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

工具软件						
【参数配置】亿佰特网络配置工具_以太网 🚨						
【产品固件】 🛃						
[ХСОМ工具] ХСОМ 3						
【网络调试助手】 🚨						
【虚拟串口】						

Step 2: Open the configuration tool, 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;

Plea	ase login
用户名 Username	admin
密码 Password	admin

Step 3: Click Device Management;

(((小)) [®] 成都亿 EBYTE Chengdu	乙佰特电子科技有限公司 Ebyte Electronic Technology Co.,Ltd	中文 English
Device information	Device management	
Ipcinfg	Save config Reboot Restore	
Socket A	firemware upgread	
Socket B		
UART	click to open file Start upgread	
Mosbus getway		
Advanced		
Device management		
	Copyright © 2023 Chengdu Ebyte Electronic Technology Co., Ltd. All Right Reserved	www.ebyte.com

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

(((•))) [®] 成都亿 EBYTE Chengdu	Z佰特电子科技有限2 Ebyte Electronic Technology(公司 So.,Ltd				
Device information	Device manageme	ent				
Ipcinfg	_					_
			Save config Re	eboot	Restore	
Socket A		a				
Socket P	firemware upgrea	d				
SUCKET D						
UART			click to open file	Start	upgread	
Marken and Street		💽 打开				×
Mosbus getway		← → ~ ↑ 🚺 > 📷 †		v Ü	在 钉钉下载 中搜索	م
Advanced		组织▼ 新建文件夹			800 -	
Device management		📃 桌面 🛛 🖈 ^	名称	修改日期	类型	大小 ^
		👆 下载 🛛 🖈	FW-	2024-01-19 22:10	D EBIN 文件	
		🖹 文档 🛷	FW-	2024-01-18 14:2	9 EBIN 文件	
		N 2014 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FWS	2024-01-02 15:0	2 EBIN 文件	
		<mark>↓</mark> N	🤍 FW- 📕 🚬 📕 .eb	2023-12-18 10:5	5 EBIN 文件	
		1 T) 🔐 2 💼 👘 💼	🥥 F 📕 🖕 . 6	2023-12-15 16:2	B EBIN 文件	
		D	🤍 F 💼 💼 🗧 2 🖓 bin	2023-11-08 17:3	B EBIN 文件	
		41- · · ·	🥥 s	2023-10-18 17:5	2 EBIN 文件	
			🦏 F 📕 🥼 🤚	2023-10-11 14:3	5 EBIN 文件	
		◇ WPS云盘	🦏 FW- 💻	2023-09-25 13:3	7 EBIN 文件	
		OneDrive - Persona	🤍 FW-📷 🧧 💼 эп	2023-09-25 13:3	7 EBIN 文件	
			901 - 13-TU bin	2023-09-13 9:41	EBIN 文件	
		■ 此电脑	·	2022 00 20 44 5	· · · · · · · · · · · · · · · · · · ·	>
		文件名(N	n.	~	FBIN 文件 (* ebin)	~
	Convright @ 2022 Chongdy Eby		a. [i			-
	copyright @ 2023 Chengdu Eb			从移动设备上传	打开(O)	取消

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.

The final right of interpretation belongs to Chengdu Yibaite Electronic Technology Co., Ltd.

Revision history

Version	Revision date	Revision Notes	Maintenance man
1.0	2024-12-18	Initial version	YL_

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