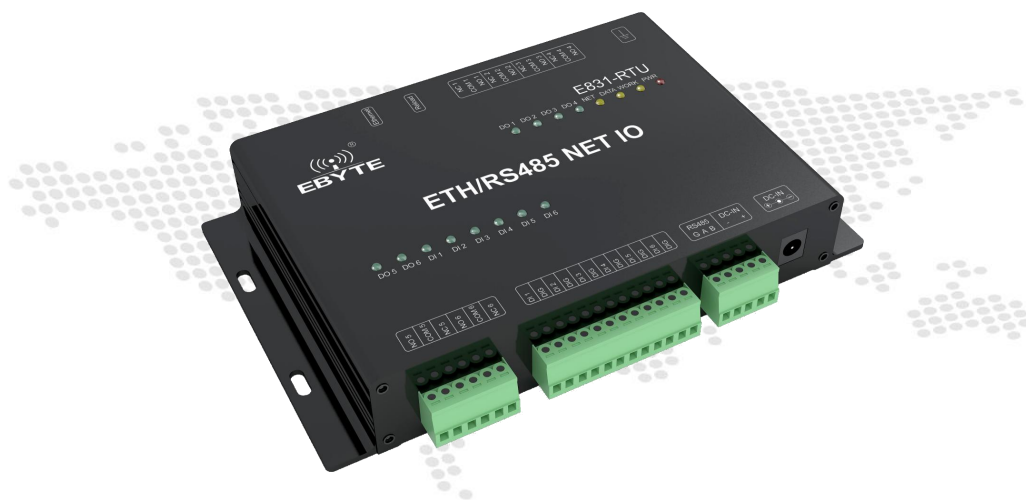




Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



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Features

Support 6 digital inputs, default dry contacts;
Support 6 relay outputs;
Support socket connection, support TCP/UDP;
Data processing using Modbus TCP/RTU protocol;
Support connection to Yitite cloud, command control;
Support two working modes, host mode, slave mode, slave can cascade multiple devices through RS485;
Support Reload touch button, long press 5s, Modbus device address, RS485 serial baud rate and check digit to restore factory settings;
Hardware watchdog with high reliability;
Multiple indicators indicate the working status;
The power supply has good functions such as overcurrent, overvoltage and anti-reverse connection.

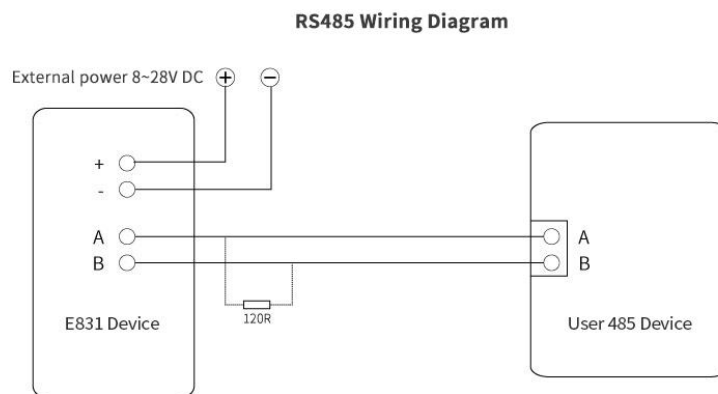
Note: Customer-customizable features such as conditional control (determined based on input status)

1. Quick start

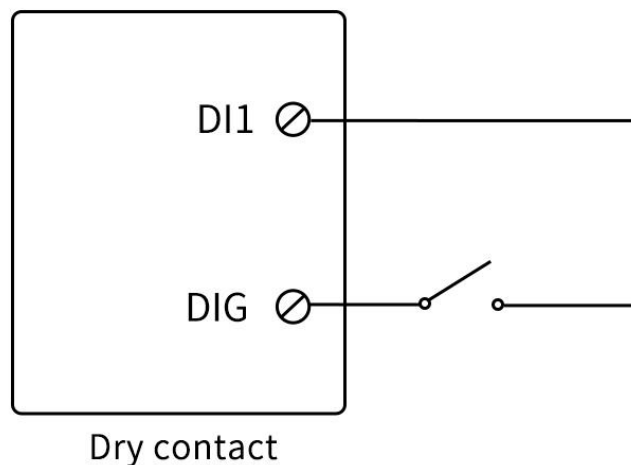
This chapter is a quick introduction to the E831-RTU (6060-ETH) series. It is recommended that the user system read this chapter and follow the instructions. It will have a systematic understanding of the module products. Users can also choose the ones you are interested in according to your needs. Chapter reading. For specific details and instructions, please refer to the following sections.

1.1 Port connection

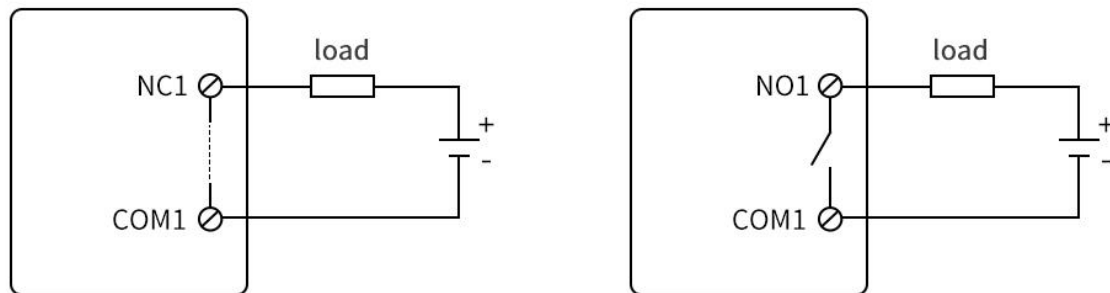
1.1.1 RS485 connection



1.1.2 Digital input connection



1.1.3 Relay output connection



1.2 Simple use

Wiring: The computer connects to the E831-RTU (6060-ETH) via USB to RS485; the computer is connected to the E831-RTU (6060-ETH) via a network cable.

Power supply: E831-RTU (6060-ETH) working voltage is DC 8~28V.

1.2.1 RS485 bus control

Select the appropriate port and click Search to search for the device.



After searching for the device, click "Stop"



At this time, you can see the device address of the current device, check the "automatic refresh" to control the output of the switch and read the input of the switch.

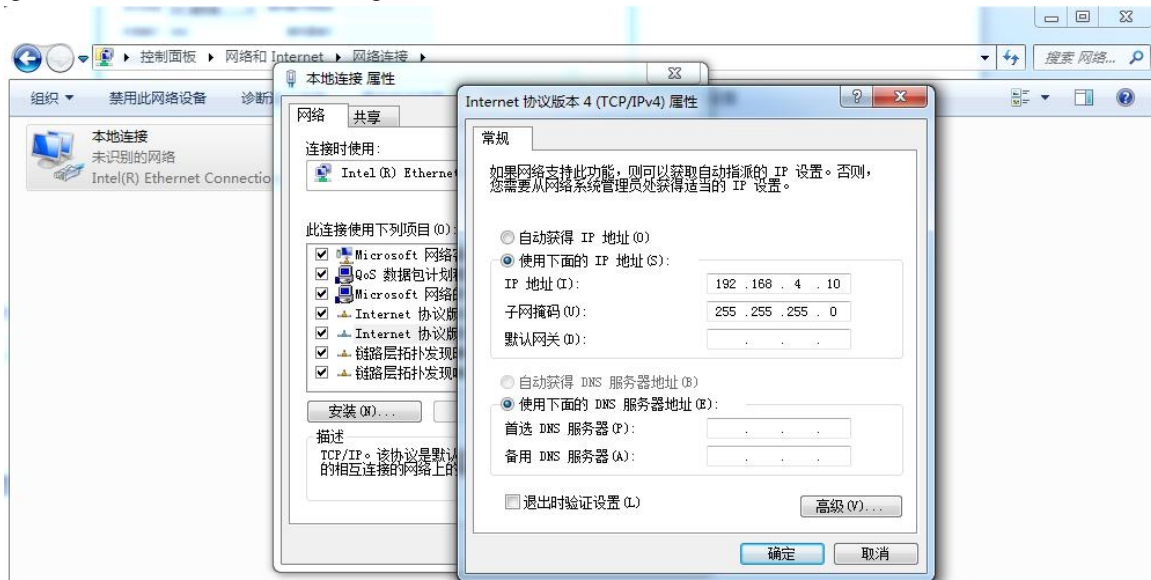


1.2.2 Ethernet Control

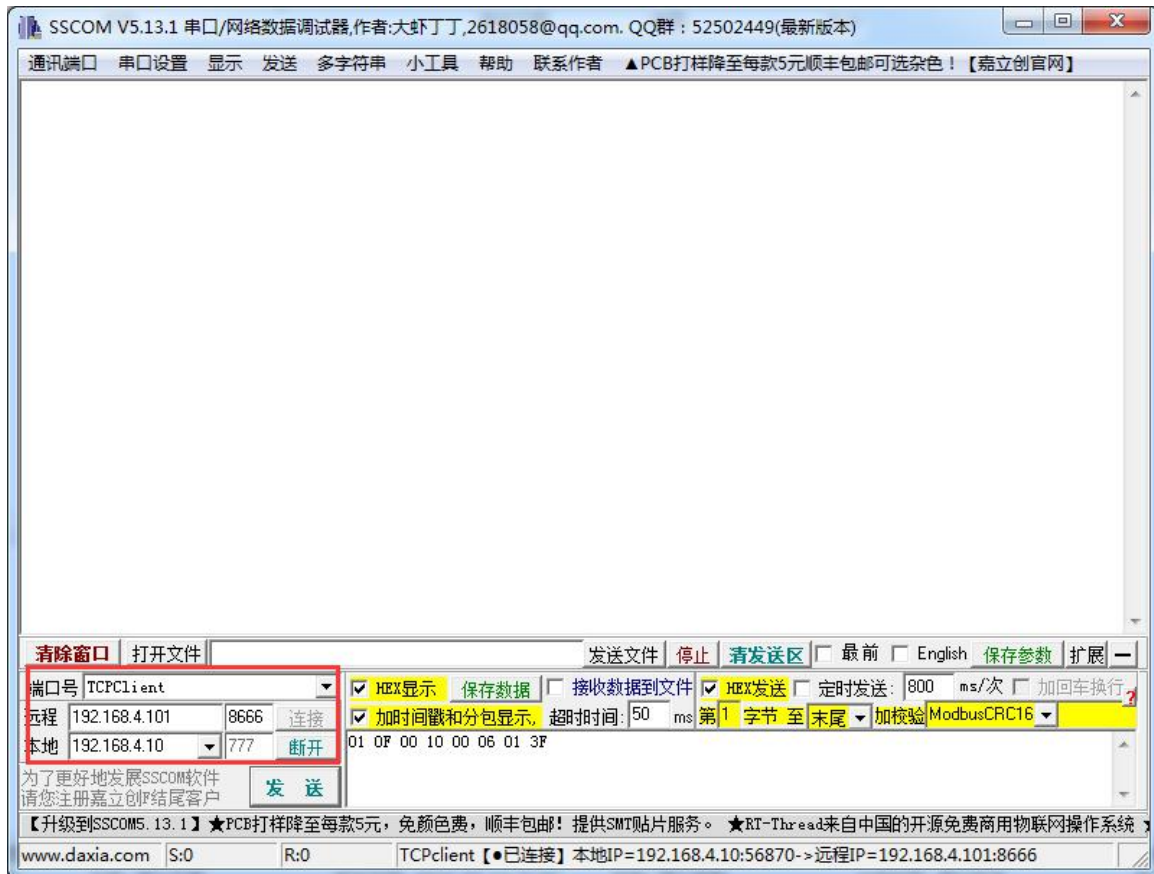
At this point, the device address is "1", in "slave mode", local IP "192.168.4.101", subnet mask "255.255.255.0" "TCP server", port number is 8666;



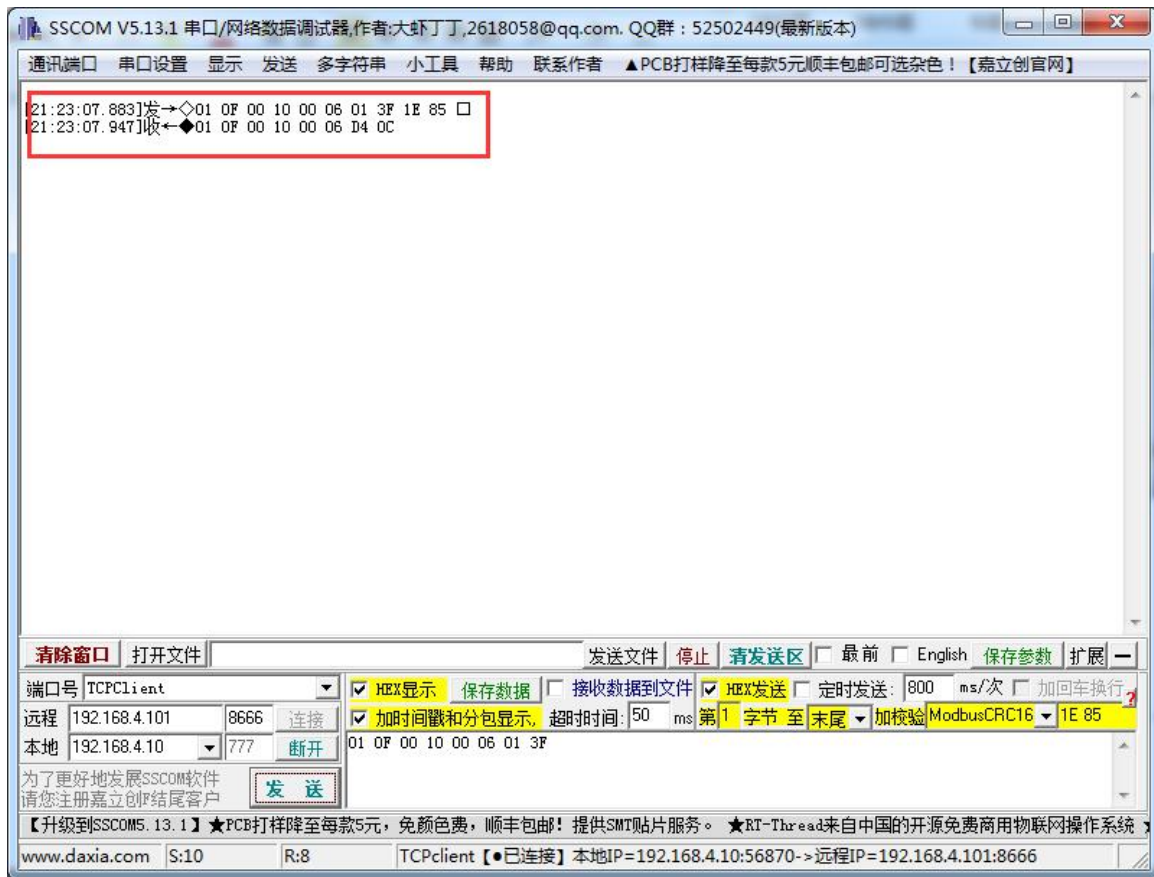
Right-click Local Connection Settings, PC IP,'192.168.4.10', Subnet Mask,'255.255.255.0';



Open the network port PC, set the port number and other parameters, click on the connection, you can find the device LINK lights on.



Controls DO1, DO2, DO3, DO4, DO5, DO6 are closed by the Modbus command "01 0F 00 10 00 06 01 3F 1E 85".



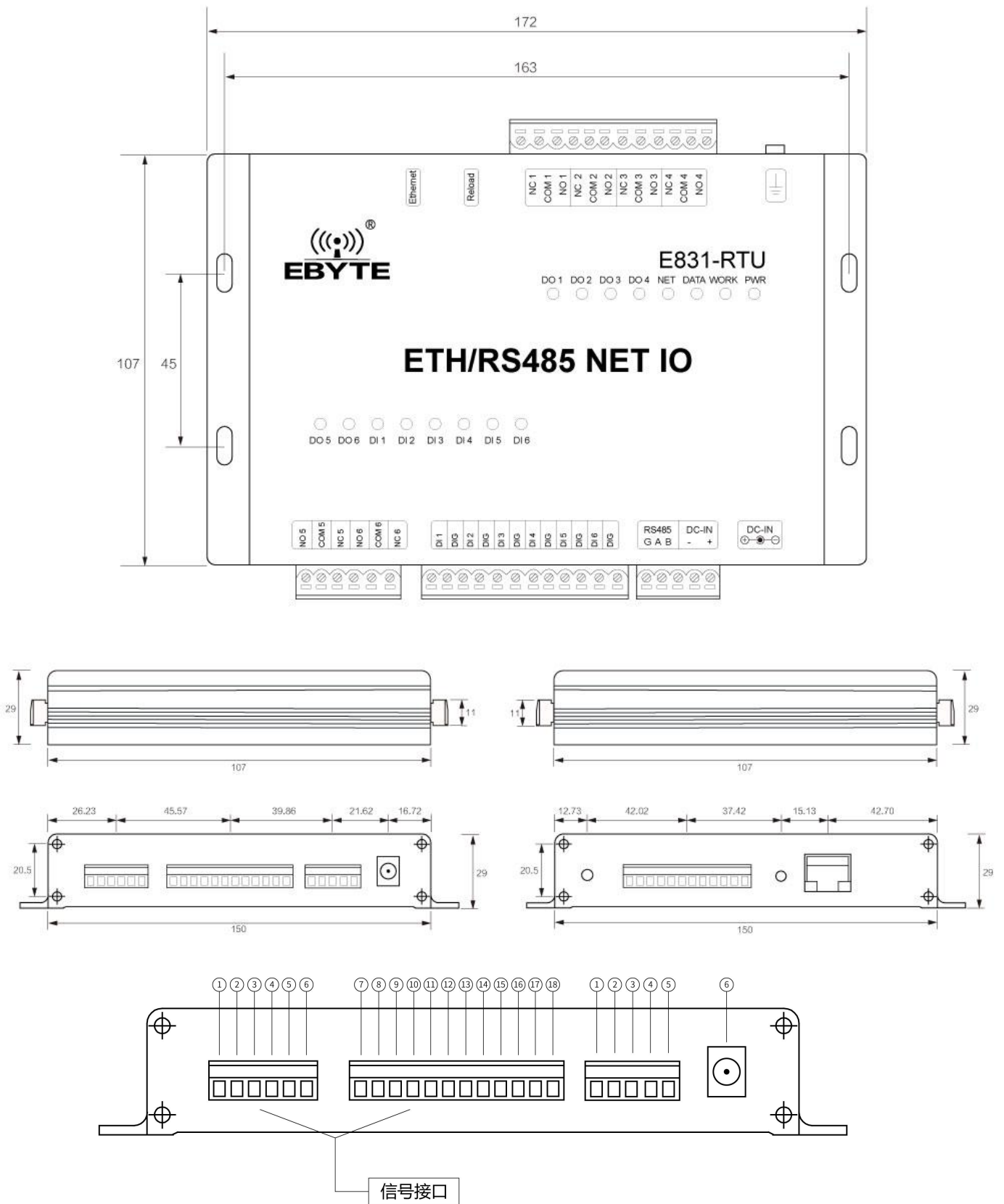
2. Product Introduction

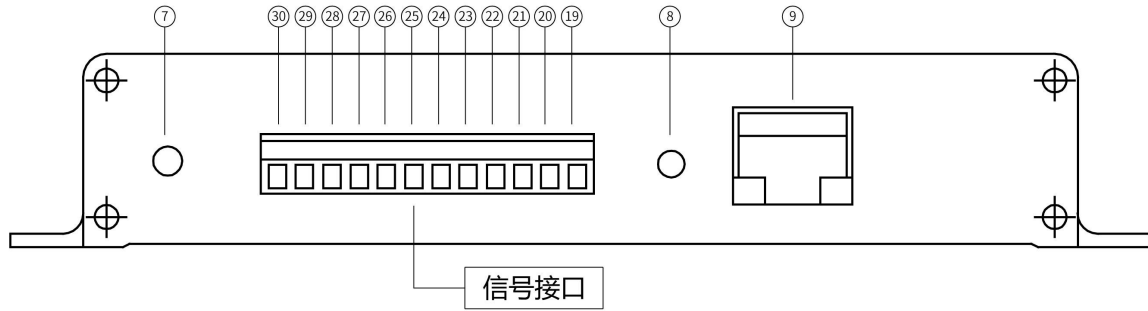
E831-RTU (6060-ETH) is a network IO product that supports 6-way digital input (default trunk contacts) and 6-way relay output. Support Modbus TCP/RTU protocol. The product is highly user-friendly, and users can easily and quickly integrate into their own systems to achieve remote control based on ethernet.

2.1 Basic parameters

	project	index
Network parameters	Network port specifications	RJ45, 10/100Mbps
	Network protocol	IP、TCP/UDP、ARP、ICMP、IPV4
	IP acquisition method	Static IP、DHCP
	Domain name resolution	Support
Hardware parameters	Size(H*W*D)	172*107*29mm
	Weight	473.1±5g
	working temperature	-20℃~+70℃
	Storage temperature	-40℃~+85℃
	Working humidity	5%~95%
	Storage humidity	1%~95%
	Operating Voltage	8V~28V
	Data interface	RS485: 1200~115200bps
Software parameters	Network Type	Ethernet
	Configuration command	Modbus TCP/RTU
	Network protocol	Modbus TCP/RTU
	Operating mode	Master mode, slave mode
	Data transmission method	TCP/UDP

2.2 Size, Interface description





No.	Port and other definitions	function	Description
1	RS485 G	Signal reference ground	Signal reference ground,you can choose not connected
2	RS485 A	RS485 interface A	RS485 interface A is connected to device A interface.
3	RS485 B	RS485 interface B	RS485 interface B is connected to device B interface.
4	DC-IN -	Crimp line power input negative	Power reference ground
5	DC-IN +	Pressurized power input positive	Power input, DC 8V~28V, recommended 12V@500mA/24V@250mA
6	DC-IN Seat	DC socket 5.5*2.1mm	Power input, DC 8V~28V, recommended 12V@500mA/24V@250mA
7	Ground screw	Connected to the earth	Connected to the earth
8	Reload	Reset button	Long press 5s to work,
9	Ethernet	Network port	Connect to the host computer, computer
Signal interface			
1	NO 5	Relay 5 normally open pin	Cooperate with Relay 5 Common Terminal
2	COM 5	Relay 5 common	Use in conjunction with relay 5 normally open pin/normally closed pin
3	NC 5	Relay 5 normally closed pin	Cooperate with Relay 5 Common Terminal
4	NO 6	Relay 6 normally open pin	Cooperate with Relay 6 Common Terminal
5	COM 6	Relay 6 Common End	Used with relay 6 normally open pin / normally closed pin
6	NC 6	Relay 6 Normally Closed Pin	Used in conjunction with relay 6 common
7	DI 1	Switch Input Channel 1	Form dry contact with DIG
8	DIG	Switching input	Can be used in pair with DI 1
9	DI 2	Switch Input	Form dry contact with DIG

		Channel 2	
10	DIG	Switching input	Can be used in pairs with DI 2
11	DI 3	Digital input channel 3	Form dry contact with DIG
12	DIG	Switch input ground	Used in pairs with DI 3
13	DI 4	Switch input channel 4	Form dry contact with DIG
14	DIG	Switch input ground	Can be used in pairs with DI 4
15	DI 5	Switch input channel 5	Form dry contact with DIG
16	DIG	Switch input ground	Can be used in pairs with DI 5
17	DI 6	Switch input channel6	Form dry contact with DIG
18	DIG	Switch input ground	Can be used in pairs with DI 6
19	NC 1	Relay 1 normally closed pin	Used in conjunction with relay 1 common
20	COM 1	Relay 1 common end	Used in conjunction with relay 1 normally open pin/normally closed pin
21	NO 1	Relay 1 normally open pin	Cooperate with common end of relay 1
22	NC 2	Relay 2 normally closed pin	Cooperate with Relay 2 Common Terminal
23	COM 2	Relay 2 common end	Use in conjunction with Relay 2 Normally Open/Normally Closed Pins
24	NO 2	Relay 2 normally open pin	Cooperate with Relay 2 Common Terminal
25	NC 3	Relay 3 normally closed pin	Used in conjunction with relay 3 common
26	COM 3	Relay 3 common end	Used in conjunction with relay 3 normally open pin / normally closed pin
27	NO 3	Relay 3 normally open pin	Used in conjunction with relay 3 common
28	NC 4	Relay 4 normally closed pin	Used in conjunction with relay 4 common
29	COM 4	Relay 4 common end	Used with relay 4 normally open pin / normally closed pin
30	NO 4	Relay 4 Normal Open Pin	Used in conjunction with relay 4 common
LED light			

1	DO 5	Relay 5 output indication	Green LED, NO 5, COM 5 are closed
2	DO 6	Relay 6 output indication	Green LED, NO 6, COM 6 is on and off
3	DI 1	Digital input channel 1 indication	Green LED, DI 1, DIG shorted up
4	DI 2	Digital input channel 2 indication	Green LED, DI 2, DIG shorted up
5	DI 3	Digital input channel 3 indication	Green LED, DI 3, DIG shorted up
6	DI 4	Digital input channel 4 indication	Green LED, DI 4, DIG short-circuited
7	DI 5	Digital input channel 5 indication	Green LED, DI 5, DIG short-circuited
8	DI 6	Digital input channel 6 indication	Green LED, DI 6, DIG shorted up
9	DO 1	Relay 1 output indication	Green LED, NO 1 and COM 1 are on and off
10	DO 2	Relay 2 output indication	Green LED, NO 2, COM 2 is on and off
11	DO 3	Relay 3 output indication	Green LED, NO 3, COM 3 are closed
12	DO 4	Relay 4 output indication	Green LED, NO 4, COM 4 are closed
13	NET	Network indication	Yellow LED, long after entering the network
14	DATA	Serial data indication	Yellow LED, RS485 interface lights up when data is transmitted (expressively flashes)
15	WORK	Work/reset indication	Yellow LED, flashing regularly / flashing after successful reset
16	PWR	Power indicator	Red LED, long bright

Note: Grounding: It is recommended to connect the housing to the ground

2.3 Reload touch button description

Long press 5S is valid, after the reset is successful, the WORK lamp flashes quickly, and the Modbus device address, RS485 serial port baud rate and check digit are restored to the factory settings.

3. Modbus

3.1 Register address table

Register address table (function code: 0x01H、0x05H、0x0FH、0x03H、0x06H、0x10H)						
Register address	Number of registers	Register attribute	Register type	Register value range	Defaults	Support function code
00017 (0x0010)	1	DO1 switching output	Read/write	0x0000 or 0xFF00 (0x05 function code) 0-1 (0x01, 0x0F function code)	--	0x01 0x05 0x0F
00018 (0x0011)	1	DO2 switching output	Read/write		--	
00019 (0x0012)	1	DO3 switching output	Read/write		--	
00020 (0x0013)	1	DO4 switching output	Read/write		--	
00021 (0x0014)	1	DO5 switching output	Read/write		--	
00022 (0x0015)	1	DO6 switching output	Read/write		--	
		Reserved				
10017 (0x0010)	1	DI1 digital input	Read only	0-1	--	0x02
10018 (0x0011)	1	DI2 digital input	Read only		--	
10019 (0x0012)	1	DI3 digital input	Read only		--	
10020 (0x0013)	1	DI4 digital input	Read only		--	
10021 (0x0014)	1	DI5 digital input	Read only		--	
10022 (0x0015)	1	DI6 digital input	Read only		--	
		Reserved				
40049 (0x0030)	1	DI1 pulse count value	Read only	0-65535	--	0x03
40050 (0x0031)	1	DI2 pulse count value	Read only	0-65535	--	
40051 (0x0032)	1	DI3 pulse count value	Read only	0-65535	--	
40052 (0x0033)	1	DI4 pulse count value	Read only	0-65535	--	
40053 (0x0034)	1	DI5 pulse count value	Read only	0-65535	--	
40054 (0x0035)	1	DI6 pulse count value	Read only	0-65535	--	
		Reserved				
40065 (0x0040)	1	DI1-DI6 pulse count clear	Write only	0x00 - 0x3F	--	0x06
		Reserved				
40078 (0x004D)	1	Device address	Read/write	1 - 247	0x01	0x03 0x06 0x10
40079 (0x004E)	1	Baud rate	Read/write	0 - 7	0x03	
40080 (0x004F)	1	Check Digit	Read/write	0 - 2	0x00	

40081(0x0050)	1	Master mode or slave mode	Read/write	0 - 1	0x01	
40082(0x0051)	1	Automatic switching of the switch	Read/write	0 - 2	0x00	
40083(0x0052)	1	Switch output time setting (milliseconds)	Read/write	300-65535	--	
		Reserved				
40085(0x0054)	1	Switch restart output status setting	Read/write	0x00 - 0x40	0x40	0x03 0x06 0x10
		Reserved				0x03 0x06 0x10
40098(0x0061)	6	Device MAC address	Read only	--	--	
40104(0x0067)	1	Ethernet restart	Read/write	--	--	
40108(0x006B)	14	WAN port IP information	Read/write	--	Static IP 192.168.4.101 255.255.255.0 192.168.4.1	
40122(0x0079)	8	Set DNS information	Read/write	--	61.139.2.69 192.168.4.1	
40130(0x0081)	8	Set network protocol parameters	Read/write	--	TCPS,192.168.4.10, 8886	
40146(0x0091)	2	Set the registration package mode	Read/write	0-4	Close the registration package (0x00)	
40150(0x0095)	42	Set the contents of the registration package	Read/write	--	regist msg	
40234(0x00E9)	42	Set heartbeat package content	Read/write	--	heartbeat msg	
40318(0x013D)	2	Set heartbeat packet mode	Read/write	0-1	Network heartbeat package (0x00)	
40322(0x0141)	2	Set heartbeat time	Read/write	0、2-65535	0x00	
40330(0x0149)	2	Set empty cache	Read/write	0-1	Does not clear the cache data of the SOCKET A1 link	
40336(0x014F)	6	Set the keep-alive parameter	Read/write	--	Detection time 10s Detection interval 5s 30 times of detection	
40350(0x015D)	2	Set the local port number	Read/write	0-65535	8886	
40354(0x0161)	2	Set cloud passthrough function	Read/write	0-1	shut down	
40356(0x0163)	2	Set timeout restart time	Read/write	60-65535	3600	
40358(0x0165)	8	SN code	read	--	--	

3.2 Modbus Address table

Modbus Address table	
1 (default)	1
2	2
3	3
...	...
245	245
246	246
247	247

3.3 RS485 Serial port baud rate code value table

Serial port baud rate code value table	
0	1200
1	2400
2	4800
3 (default)	9600
4	19200
5	38400
6	57600
7	115200

3.4 RS485 Serial check digit code value table

Check digit code value table	
0 (default)	No parity
1	Even parity
2	Odd parity

3.5 Configuration parameters through the master computer

Select the “Parameter Setting” column to read the parameters, write the parameters, and implement the functions.

See the product function description below.

E831-RTU(6060-ETH)

成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co., Ltd.

Version: 1.0

型号选择 语言(Language) 退出

端口 COM3 波特率 9600 校验位 None 设备地址 1

采集控制 参数设置 搜索 搜索到的设备数量: 1

Modbus地址 1 DO维持时间 20 RS485校验位 None RS485波特率 9600

模式选择 从机模式 DI自动上报 关闭自动上报功能 DO重启状态 ☒ 隐藏

MAC地址 b2:fa:e9:f2:e1:d ip地址获取方式 静态IP

本地IP 192.168.1.120 子网掩码 255.255.255.0

首选DNS 61.139.2.69 备用DNS 192.168.4.1 网关 192.168.1.1

协议类型 TCP 客户端 服务器IP或域名 116.62.42.192

本地端口 服务器端口 31687

心跳包时间 0 心跳包模式 网络心跳包

心跳包 heartbeat msg

注册包机制 0x0000, 关闭注册包机制 超时重启时间 3600 云透传 关闭

注册包内容 regist msg

保活连接 ☒ 探测时间: 10 (2-7200)S 探测间隔: 5 (2-7200)S

按测次数: 30 (2-255)

SN 25534194819113167

读取参数 写入参数

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4. Product Features

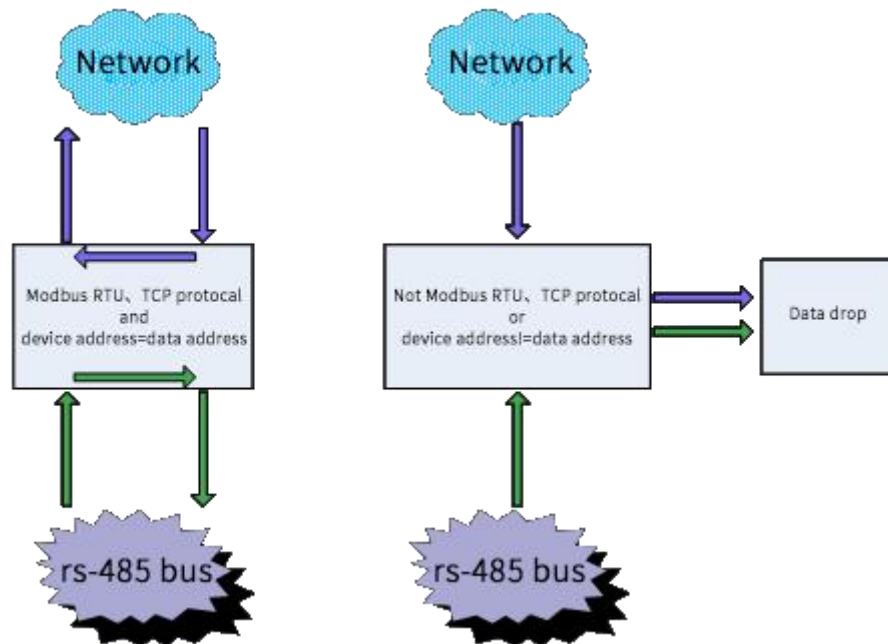
4.1 Operating mode

The working mode is divided into master mode and slave mode, which are configured by Modbus register 40081 (0x0050). When the register value is 0, it is the master mode; when the register value is 1, it is the slave mode, the default slave mode.

4.1.1 Slave mode

In slave mode (register value 0x01), the data sent to the device by the network or 485 terminal (sender) satisfies the Modbus RTU, Modbus TCP protocol, and the address in the data is the device address, and the device will reply with the same protocol. If the data sent by the network or 485 bus to the device does not satisfy the Modbus RTU, Modbus TCP protocol, or the Modbus RTU or Modbus TCP protocol is met but the data address is not the device address, the data of the sender will be discarded.

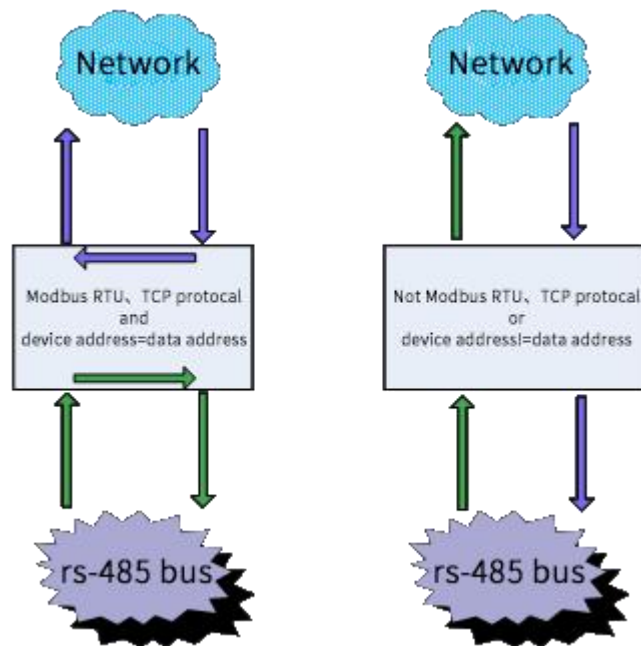
In the slave mode, the device can directly connect to the device in the host mode through the 485 bus. When the slave is not connected to the network, the network can also access the data of the slave through the host.



4.1.2 Master mode

In master mode (register value is 0x00), the data sent by the network or 485 bus (transmitter) to the device satisfies the Modbus RTU, Modbus TCP protocol, and the address in the data is the device address, and the device responds to the sender with the same protocol. If the data sent by the network or 485 bus to the device does not satisfy the Modbus RTU, Modbus TCP protocol, or the Modbus RTU, Modbus TCP protocol but the data address is not the device address, the data from the 485 bus will be transmitted to the network. On the network, the data from the network will be transmitted to the 485 bus.

This function of the master mode enables device cascading functions and data transfer between the 485 bus and the network.



4.2 IO Basic function

4.2.1 Switch quantity DO Output

DO Output of Read Switch quantity

Function code: 01, read coil status

Address range: 00017 (0x0010) ~00022 (0x0015)

Explanation: When equipment relay passive output and coil is not powered on, relay NC port and COM port are usually closed, NO port and COM port are often open, with a value of 0; when coil is energized, the phenomenon is opposite, relay NC port and COM port are disconnected, NO port and COM port are closed, with a value of 1. Query relay status by instruction.

Example:

Read the output state of six switches, assuming that the return value is 03, corresponding to the binary bit 0000 0011, low six bits represent the output state of the switch quantity, in turn, DO6, DO5, DO4, DO3, DO2, DO1.

Modbus RTU Protocol Reads Switch quantity Output:

Send	01	01	00 10	00 06	BD CD
	Device ModBus address	function code	Switch switch quantity start address	Read switch switch quantity number	CRC check code
Receive	01	01	01	03	11 89

	Device ModBus address	function code	Return bytes Number	Switch quantity output value	CRC check code
--	-----------------------	---------------	---------------------	------------------------------	----------------

Modbus TCP Protocol Reads Switch quantity Output:

	00 01	00 00	00 06	01	01	00 10	00 06
Send	Transmission identifier	Protocol identifier	length	Unit identification	Function code	Switch quantity start address	Read switch quantity number

	00 01	00 00	00 04	01	01	01	03
Receive	Transmission identifier	Protocol identifier	length	Unit identification	Function code	Return bytes Number	Switch quantity output value

Control switch quantity DO output

Function code: 05, write a single coil state; 0F, write multiple coil states

Address range: 00017 (0x0010) ~ 00022 (0x0015)

Description: The passive relay of the equipment relay, the coil is not energized, the NC port of the relay is closed with the COM port, the NO port is disconnected from the COM port; the coil is energized, the NC port of the relay is disconnected from the COM port, and the NO port and the COM port are closed. The relay status is controlled by commands.

example:

Function code 0x05 write DO2 switch quantity output, make NC2, COM2 open, NO2, COM2 close, write value is FF 00; make NC2, COM2 close, NO2, COM2 open, write value 00 00.

Modbus RTU protocol write switch quantity output:

	01	05	00 11	FF 00	DC 3F
Send	Device ModBus address	Function code	Switch quantity address	Write value	CRC check code

	01	05	00 11	FF 00	DC 3F
Receive	Device ModBus address	Function code	Switch quantity address	Write value	CRC check code

Modbus TCP protocol write switch quantity output:

	00 01	00 00	00 06	01	05	00 11	FF 00
Send	Transmission identifier	Protocol identifier	length	Unit identification	Function code	Switch quantity address	Write value

Receive	00 01	00 00	00 06	01	05	00 11	FF 00
---------	-------	-------	-------	----	----	-------	-------

	Transmission identifier	Protocol identifier	length	Unit identification	Function code	Switch quantity address	Write value
--	-------------------------	---------------------	--------	---------------------	---------------	-------------------------	-------------

Function code 0x0F writes DO2, DO3 switch quantity output, making NC2, COM2 disconnected, NO2, COM2 closed; NC3, COM3 disconnected, NO3, COM3 closed. Write value should be 0x03, corresponding to binary bit 0000 0011

Modbus RTU protocol write switch quantity output:

	01	0F	00 11	00 02	01	03	62 95
Send	Device ModBus address	Function code	Switch quantity address	Write switch quantity number	byte count	Write value	CRC check code

	01	0F	00 11	00 02	84 0F
Receive	Device ModBus address	Function code	Switch quantity address	Write value	CRC check code

Modbus TCP protocol write switch quantity output:

	00 01	00 00	00 08	01	0F	00 11	00 02	01	03
Send	Transmission identifier	Protocol identifier	length	Unit identification	Function code	Switch quantity address	Write switch quantity number	byte count	Write value

	00 01	00 00	00 06	01	0F	00 11	00 02
Receive	Transmission identifier	Protocol identification	length	Unit identification	Function code	Switch quantity address	Write switch quantity number

4.2.2 Read switch quantity DI input

Function code: 02, read (switch quantity) input state

Address range: 10017(0x0010)~10022(0x0015)

Note: the device default dry contact input, DI and COM short, read value should be 1; When DI and COM are not short, the read value should be 0.

Example:

Read the input value of 6 switch quantity, DI input terminal DI1, COM1 short, DI2, COM2 short, DI3, COM3 short, DI4, COM4 short, DI5, COM5 short, DI6, COM6 short. The input value of the read switch value is 0x05, corresponding to binary bit 0000 0101. The lower six bits represent the input value of the switch quantity , which is DI6, DI5, DI4, DI3, DI2 and DI1.

Modbus RTU protocol Read Switch quantity Input:

Send	01	02	00 10	00 06	F9 CD
	Device ModBus address	Function code	Switch quantity start address	Number of read switch quantity	CRC check code
Receive	01	02	01	05	61 8B
	Device ModBus address	Function code	Number of bytes returned	Switch quantity input value	CRC check code

Modbus TCP protocol Read Switch quantity Input:

Send	00 01	00 00	00 06	01	02	00 10	00 06
	Transmission identifier	Protocol identification	length	Unit identification	Function code	Switch quantity start address	Read switch quantity number

Receive	00 01	00 00	00 04	01	02	01	05
	Transmission identifier	Protocol identification	length	Unit identification	Function code	Number of bytes returned	Switch quantity input value

4.3 IO Special function

4.3.1 Pulse counting and counting zero

The pulse counting will not be saved after power off. The maintenance time of the pulse level must be longer than 10ms before it is valid. Switch input changes from open state to closed state and maintains a close time of more than 10 ms, then to open state, completing a pulse count.

- Read pulse count value

Function code: 03, read hold register

Address range: 40049 (0x0030)~40054 (0x0035)

Description: The maximum pulse count is 65535

example:

DI1 has detected 16 pulses at present, DI2 has detected 3 pulses at present, and reads DI1 and DI2 switch input count values.

Modbus RTU protocol read pulse count value:

Send	01	03	00 30	00 02	C4 04
	Device ModBus address	Function code	start address	Read quantity	CRC check code

Receive	01	03	04	00 10	00 03	BB F7
	Device ModBus	Function	Number of	DI1 count	DI2 count	CRC check

	address	code	bytes returned	value	value	code
--	---------	------	----------------	-------	-------	------

Modbus TCP protocol Read Pulse Count Value:

	00 01	00 00	00 06	01	03	00 30	00 02
Send	Transmission identifier	Protocol identification	length	Unit identification	Function code	start address	Read the number

	00 01	00 00	00 07	01	03	04	00 10	00 03
Receive	Transmission identifier	Protocol identification	length	Unit identification	Function code	Number of bytes returned	DI1 count value	DI2count value

- Clear pulse count value

Function code: 06, write hold register

Address range: 40065 (0x0040)

Description: the register value of six bits lower represents the counting of DI6, DI5, DI4, DI3, DI2 and DI1 respectively.

Example:

Clear the values of DI2 and DI4 pulse meter, and keep the values of DI1, DI3, D5 and D6 pulse meter. The write value should be 0x0a, and the corresponding binary value should be 0000 1010.

Modbus RTU Protocol clear pulse count value

	01	06	00 40	00 0a	08 19
Send	Device ModBus address	Function code	address	Write value	CRC check code

	01	06	00 40	00 0a	08 19
Receive	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP Protocol clear pulse count value

	00 01	00 00	00 06	01	06	00 40	00 0a
Send	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

	00 01	00 00	00 06	01	06	00 40	00 0a
Receive	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

4.3.2 DI automatic reporting of Switch quantity input

The automatic reporting function of Switch quantity input is to transmit the change value when the Switch quantity input changes. You can choose to transfer through RS485 or ETH, or you can turn off the automatic reporting function.

The corresponding Modbus register is set to 40082 (0x0051) for automatic Switch quantity amount reporting. The value corresponding function is:

Turn off switch automatic reporting function 0x00

Switch quantity Automatic Reporting Transfer 0x01 Through RS485

Switch quantity Automatic Reporting Transfer 0x02 Through ETH Network

Switch quantity change upload protocol is entered into the following table, in which frame headers 0xAA and 0xBB are fixed and the values of DI1, DI2, DI3, DI4, DI5 and DI6 are in the range of 0x00, 0x01 and 0xFF.

0x00 represents the switch quantity input disconnection.

0x01 represents the switch quantity input closed.

0xFF represents that the switch quantity input has not changed.

The values of DI1, DI2, DI3, DI4, DI5 and DI6 in the table represent that the state of DI1 and DI2 is updated to be disconnected, the state of DI3 is updated to be closed, and the state of DI4, DI5 and DI6 is unchanged. The last two bytes are Modbus CRC16 calculated values.

Frame head	DI1	DI2	DI3	DI4	DI5	DI6	Modbus CRC
AA BB	00	00	01	FF	FF	FF	F1 7B

4.3.3 DO Time Settings for Switch quantity Output

The setting of switch quantity output time is to set the switch quantity output time (relay NO, COM closing time). The corresponding Modbus register is 40083 (0x0052). Its value range is 300-65535 Ms. If the value is less than 300 ms, the default switch quantity output is closed to hold state, that is, the switch quantity output is kept after closing. If it is set to 300 ms or more, such as 500 ms, after sending the closing command, the closing of the switch quantity will be maintained 500 ms, and then it will be automatically disconnected after 500 ms.

4.3.4 Restart Switch quantity Output State Settings

Whether the device is powered off and restarted to maintain the state before the power is turned off or restarted to maintain the setting of the specific output state. This function is valid only when the device switch quantity output time setting register value is less than 300ms.

The Modbus register corresponding to the switch quantity restart output status setting is 40085 (0x0054), and its value range is 0x00-0x40. When the value of this register is 0x40, the last switch quantity output state is maintained after power-off restart; when the value of this register is 0x00-0x3F, the device determines the device to restart the switch quantity output state by the lower six bits, bit6 corresponds to DO6, bit5 corresponds DO5, bit4 corresponds to DO4, bit3 corresponds to DO3, bit2 corresponds to DO2, bit1 corresponds to DO1. For example, when power is on, DO6, DO5, DO4, DO2 are in closed state (relay NO, COM is closed) DO3, DO1 are in the off state (relay) NO, COM disconnected), the corresponding register value is 0011 1010, that is, 0x3A, "1" is closed state, and "0" is off state.

4.4 Network-related functions

4.4.1 Device MAC address reading

Modbus RTU Protocol write register:

Send	01	03	00 61	00 03	54 15
	Device ModBus address	Function code	Start address	read number of registers	CRC check code

Receive	01	03	06	1A 00 1C C0 BB FF	16 53
	Device ModBus address	Function code	byte count	Read value	CRC check code

Modbus TCP Protocol write register:

Send	00 01	00 00	00 06	01	03	00 61	00 03
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 09	01	03	06	1A 00 1C C0 BB FF
	Transmission identifier	Protocol identification	length	Unit identification	Function code	byte count	Write value

Description: 1A001C 0BB FF is the MAC address of the device. The device has a unique MAC address, which is different from other devices.

4.4.2 Device SN Code Reading

Modbus RTU Protocol Read Register:

Send	01	03	01 65	00 04	55 EA
	Device ModBus address	Function code	Start address	read number of registers	CRC check code

Receive	01	03	08	19 05 21 14 00 13 55 50	F9 AA
	Device ModBus address	Function code	byte count	Read value	CRC check code

Modbus TCP protocol read register:

Send	00 01	00 00	00 06	01	03	01 65	00 04
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Number of reads

Receive	00 01	00 00	00 0B	01	03	08	19 05 21 14 00 13 55 50
	Transmission identifier	Protocol identification	length	Unit identification	Function code	byte count	Read value

Description: 19 05 21 14 00 13 55 50 The SN code of the device, the SN code of the device is not the same.

4.4.3 Network related function parameter validation command (Ethernet restart command)

Modbus RTU protocol write register:

Send	01	06	00 67	00 01	F9 D5
	Device ModBus address	Function code	address	Read value	CRC check code

Receive	01	06	00 67	00 01	F9 D5
	Device ModBus address	Function code	address	Read value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	00 67	00 01
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	00 67	00 01
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Special note: The Ethernet component can be restarted by writing the value 0x00 01 to the address 0x00 67. After the Ethernet related parameters have been configured, the restart command must be executed. Otherwise, the configured parameters will not take effect.

4.4.4 WAN port ip information configuration

Modbus RTU protocol write WAN port IP register:

Send	01	10	00 6B	00 07	0E	00 00 C0 A8 04 65 FF FF FF 00 C0 A8 04 01	BE 17
	Device ModBus address	Function code	address	Register length	byte count	Write value	CRC check code

Receive	01	10	00 6B	00 07	F0 17
	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 15	01	10	00 6B	00 07	0E	00 00 C0 A8 04 65 FF FF FF 00 C0 A8 04 01
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length	byte count	Write value

Receive	00 01	00 00	00 15	01	10	00 6B	00 07
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length

Note: 00 00 indicates static mode. If 00 01 indicates dynamic mode. C0 A8 04 65 (192.168.4.101) indicates the IP address. FF FF FF 00 (255.255.255.0) Subnet mask. C0 A8 04 01 (192.168.4.1) Gateway address. When set to dynamic mode, the IP address, subnet mask, and gateway address are required for the format. The IP address of the device needs to be obtained through the query command.

4.4.5 Set DNS information

Modbus RTU protocol write DNS register:

Send	01	10	00 79	00 04	08	3D 8B 02 45 C0 A8 04 02	E0 50
	Device ModBus address	Function code	address	Register length	byte count	Write value	CRC check code

Receive	01	10	00 79	00 04	10 13
	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP protocol write register:

	00 01	00 00	00 0F	01	10	00 79	00 04	08	3D 8B 02 45 C0 A8 04 02
Send	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length	byte count	Write value

	00 01	00 00	00 0F	01	10	00 79	00 04
Receive	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length

Description: **3D 8B 02 45** indicates the preferred DNS server address. **C0 A8 04 02** indicates the alternate DNS server address.

4.4.6 Set network protocol parameters

Modbus RTU protocol write DNS register:

	01	10	00 81	00 04	08	00 00 C0 A8 04 0A 22 B6	81 3B
Send	Device ModBus address	Function code	address	Register length	byte count	Write value	CRC check code

	01	10	00 81	00 04	91 E2
Receive	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP Protocol Write Register:

	00 01	00 00	00 0F	01	10	00 81	00 04	08	00 00 C0 A8 04 0A 22 B6
Send	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length	byte count	Write value

	00 01	00 00	00 0F	01	10	00 81	00 04
Receive	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length

Description: **00 00** means TCP server, the value can be: 00 01 means TCP client, 00 02 means UDP server, 00 03 means UDP client. **C0 A8 04 0A** represents the IP address or domain name of the target server, **22 B6** port number, local port number in server mode and remote port number in client mode when set to "client".

4.4.7 Setting up the registration package mode

Modbus RTU protocol write register:

Send	01	06	00 91	00 00	D8 27
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	00 91	00 00	D8 27
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	00 91	00 00
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	00 91	00 00
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Description: **00 00** means to disable the registration package mechanism, the value can be: 00 01 means that only one user-defined registration package is sent when the first link to the server, 00 02 means that only a 6-byte MAC is sent when the first time is linked to the server. The registration package, 00 03 indicates that the custom registration packet data is added before the packet sent to the server for each packet, and 00 04 indicates that the 6-byte MAC is added as the registration packet data before the packet sent to the server for each packet.

4.4.8 Set the contents of the registration package

Modbus RTU protocol write register:

Send	01	10	00 95	00 15	2A	00 28 41 42 43 68 23 67 AA 00 2A 00 30 00 00 00 00 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C BB AA	1C 91
	Device ModBus address	Function code	addresses	Register length	byte count	Write value	CRC check code

Receive	01	10	00 95	00 15	11 EA
	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 31	01	10	00 95	00 15	2A	00 28 41 42 43 68 23 67 AA 00 2A 00 30 00 00 00 00 00 00 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C BB AA
	Transmission identifier	Protocol identification	length	Unit identification	Function code	addresses	Register length	byte count	Write value

Recei ve	00 01	00 00	00 31	01	10	00 95	00 15
	Transmis sion identifier	Protocol identifica tion	length	Unit identifica tion	Function code	address	Register length

[illegible]

4.4.9 Set heartbeat packet mode

Modbus RTU protocol write register:

Send	01	06	01 3D	00 00	19 FA
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 3D	00 00	19 FA
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 3D	00 00
	Transmissio n identifier	Protocol identificat	length	Unit identificat	Function code	address	Write value

		ion		ion			
--	--	-----	--	-----	--	--	--

Receive	00 01	00 00	00 06	01	06	01 3D	00 00
	Transmissi on identifier	Protocol identificati on	length	Unit identificat ion	Function code	address	Write value

Description: 00 00 represents network heartbeat packet, the value can be: 00 01 represents serial heartbeat packet.

4.4.10 Set heartbeat package content

Modbus RTU protocol write register:

Send	01	10	00 E9	00 15	2A	00 28 41 42 43 68 23 67 AA 00 2A 00 30 00 00 00 00 00 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C 1B 1A	9D 8C
	Device ModBus address	Function code	address	Register length	byte count	Write value	CRC check code

Receive	01	10	00 E9	00 15	D0 32
	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 31	01	10	00 E9	00 15	2A	00 28 41 42 43 68 23 67 AA 00 2A 00 30 00 00 00 00 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C 1B 1A
	Trans mission identif ier	Proto col identi fication	length	Unit ident ificat ion	Fun ctio n cod e	addres s	Registe r length	byte cou nt	Write value

Receive	00 01	00 00	00 31	01	10	00 E9	00 15
	Transmis sion identifier	Protocol identifica tion	length	Unit identification	Function code	address	Register length

Description: 00 means HEX, 01 means ASCII. 28 indicates the content length of the heartbeat packet. 41 42 43 68 23 67 AA 00 2A 00 30 00 00 00 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C 1B 1A

[illegible]

4.4.11 Set heartbeat time

Modbus RTU protocol write register:

Send	01	06	01 41	01 AA	59 CD
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 41	01 AA	59 CD
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 41	01 AA
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	01 41	01 AA
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Description: 00 00 indicates the heartbeat packet time, and 00 00 indicates that the heartbeat packet is closed. The value cannot be 1, and the range is 2-65535.

4.4.12 Empty the cache

Modbus RTU protocol write register:

Send	01	06	01 49	00 00	59 E0
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 49	00 00	59 E0
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 49	00 00
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	01 49	00 00
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Description: 00 00 means that the cache data of the SOCKET A1 link is not cleared, and 00 01 means that the cache data of the SOCKET A1 link is cleared, but the serial cache data is not cleared.

4.4.13 Set keep-alive parameters

Modbus RTU protocol write register:

Send	01	10	01 4F	00 03	06	02 D1 02 D1 00 31	BD 3D
	Device ModBus address	Function code	address	Register length	byte count	Write value	CRC check code

Receive	01	10	01 4F	00 03	B0 23
	Device ModBus address	Function code	address	Register length	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 0D	01	10	01 4F	00 03	06	02 D1 02 D1 00 31
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length	byte count	Write value

Receive	00 01	00 00	00 0D	01	10	01 4F	00 03
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Register length

Description: **02 D1** means how many seconds after TCP link no data packet transmission starts probe packet, 00 00 means turn off KeepAlive function, the value is 2-7200 seconds. **02 D1** the time interval between the previous detection message and the later detection message is 2-7200 seconds. **00 31** represents the maximum number of probe failures to which the TCP connection will disconnect, with a value of 2-255 times.

4.4.14 Set the local port number

Modbus RTU protocol write register:

Send	01	06	01 5D	11 A1	D4 0C
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 5D	11 A1	D4 0C
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 5D	11 A1
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	01 5D	11 A1
	Transmission identifier	Protocol identification	length	Unit identification	Function code	address	Write value

Description: **11 A1** indicates the A1 local port. When it is 00 00, it indicates a random port with a value of 1-65535.

4.4.15 Set cloud transparent transmission

Modbus RTU protocol write register:

Send	01	06	01 61	00 01	18 28
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 61	00 01	18 28
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 61	00 01
	Transmissio n identifier	Protocol identificati on	length	Unit identificat ion	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	01 61	00 01
	Transmissi on identifier	Protocol identificati on	length	Unit identificat ion	Function code	address	Write value

Description: **00 00** means cloud transparent transmission off, the value of 00 01 means on.

4.4.16 Set timeout restart time

Modbus RTU protocol write register:

Send	01	06	01 63	FF A0	39 A0
	Device ModBus address	Function code	address	Write value	CRC check code

Receive	01	06	01 63	FF A0	39 A0
	Device ModBus address	Function code	address	Write value	CRC check code

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 63	FF A0
	Transmissio n identifier	Protocol identificat ion	length	Unit identificat ion	Function code	address	Write value

Receive	00 01	00 00	00 06	01	06	01 63	FF A0
	Transmissi on identifier	Protocol identificati on	length	Unit identificat ion	Function code	address	Write value

Description: **FF A0** indicates the restart time, the value is 60-65535. This function is used to reset the Ethernet if Ethernet does not receive any data for a long time.

Important statement

1. EBYTE reserves the right of final interpretation and modification of all contents in this manual.
2. As the hardware and software of the product continue to improve, this manual may be subject to change without further notice, and the final version of the manual shall prevail.
3. To protect the environment, everyone is responsible: in order to reduce the use of paper, this manual only prints the Chinese part, the English manual only provides electronic documents, if necessary, please go to our official website to download; in addition, if the user does not require special, when the user orders in bulk, We only provide product specifications according to a certain percentage of the order quantity. Not every digital radio station is equipped with one by one, please understand.

Revision history

Version	Date	Description	Issued by
1.0	-	Initial version	-
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