Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

Content

Functional characteristics

- Support 6 digital inputs, default dry contact;
- Support 6 relay outputs;
- Support socket connection, support TCP/UDP;
- Data processing using Modbus TCP/RTU protocol;
- Support connect to EBIT cloud, command control;
- Supports 2 operating modes, master mode, slave mode, slave can cascade multiple devices via RS485;
- Support Reload touch button, long press 5s, Modbus device address, RS485 serial port baud rate and check bit to restore factory settings;
- Hardware watchdog with high reliability;
- Multiple indicators show the working status;
- The power supply has good overcurrent, overvoltage, anti-reverse and other functions.

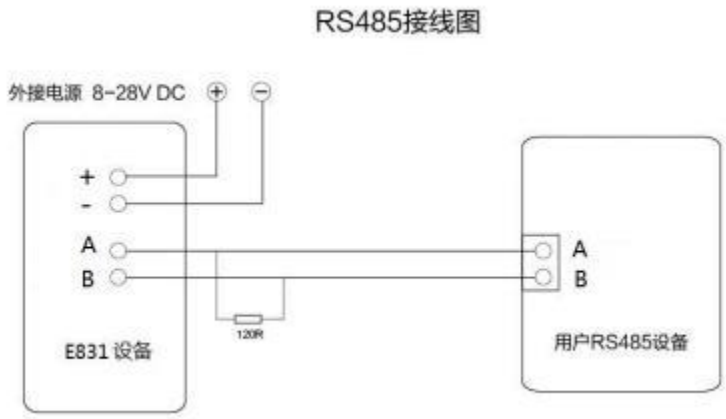
Note: Customers can customize features such as condition control (how to output based on input status).

Chapter 1 Quick Entry

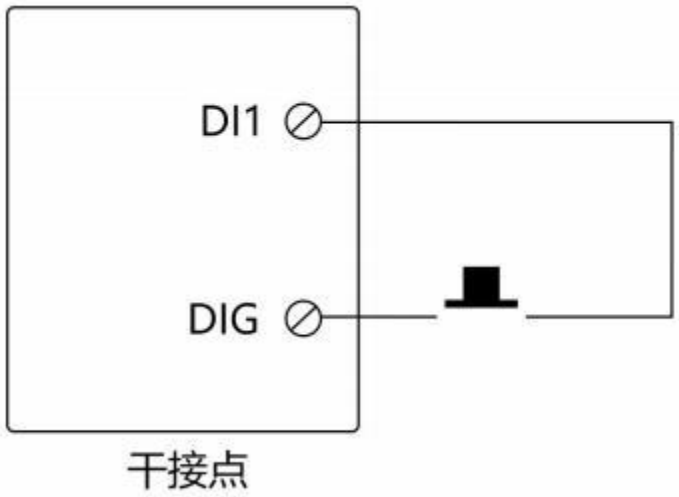
This chapter is a quick start introduction for the E831-RTU (6060-ETH) series products, it is recommended that the user systematically read this chapter and follow the instructions to operate again, will have a systematic understanding of the module product , users can also choose the chapters you are interested in reading according to their needs. For specific details and instructions, please refer to the following sections.

1.1 Port connection

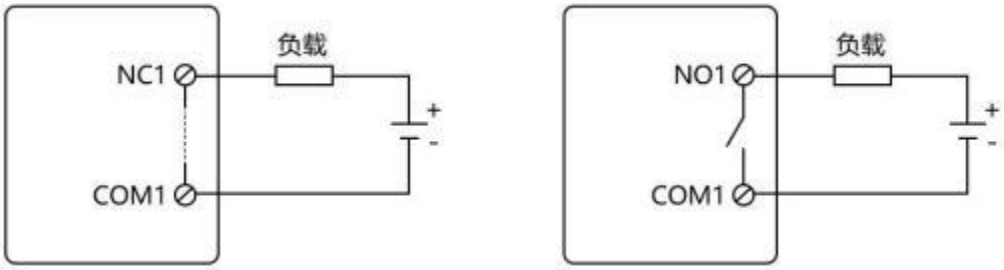
1.1.1 RS485 connection



1.1.2 Switch input connection



1.1.3 Relay output connection



1.2 Simple to use

Wiring: The computer connects to 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) operates from DC 8 to 28V 。

1.2.1 RS485 Bus Control

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

When you have searched for the device, click Stop

At this time, you can see the device address of the current device, √ processing of the "auto refresh", and you can control the switching output and read the switching input.

1.2.2 Ethernet control

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

Right-click the local connection settings, THE IP of the computer, "192.168.4.10", the subnet mask, "255.255.255.." 0";

Open the network port host computer, set the port number and other parameters, click Connect, you can find that the device LINK light is lit;

Control DO 1 via the Modbus command "01 0 F 00 10 00 06 01 3F 1E 85", DO2、DO3、DO4、DO5、DO 6 Closed.

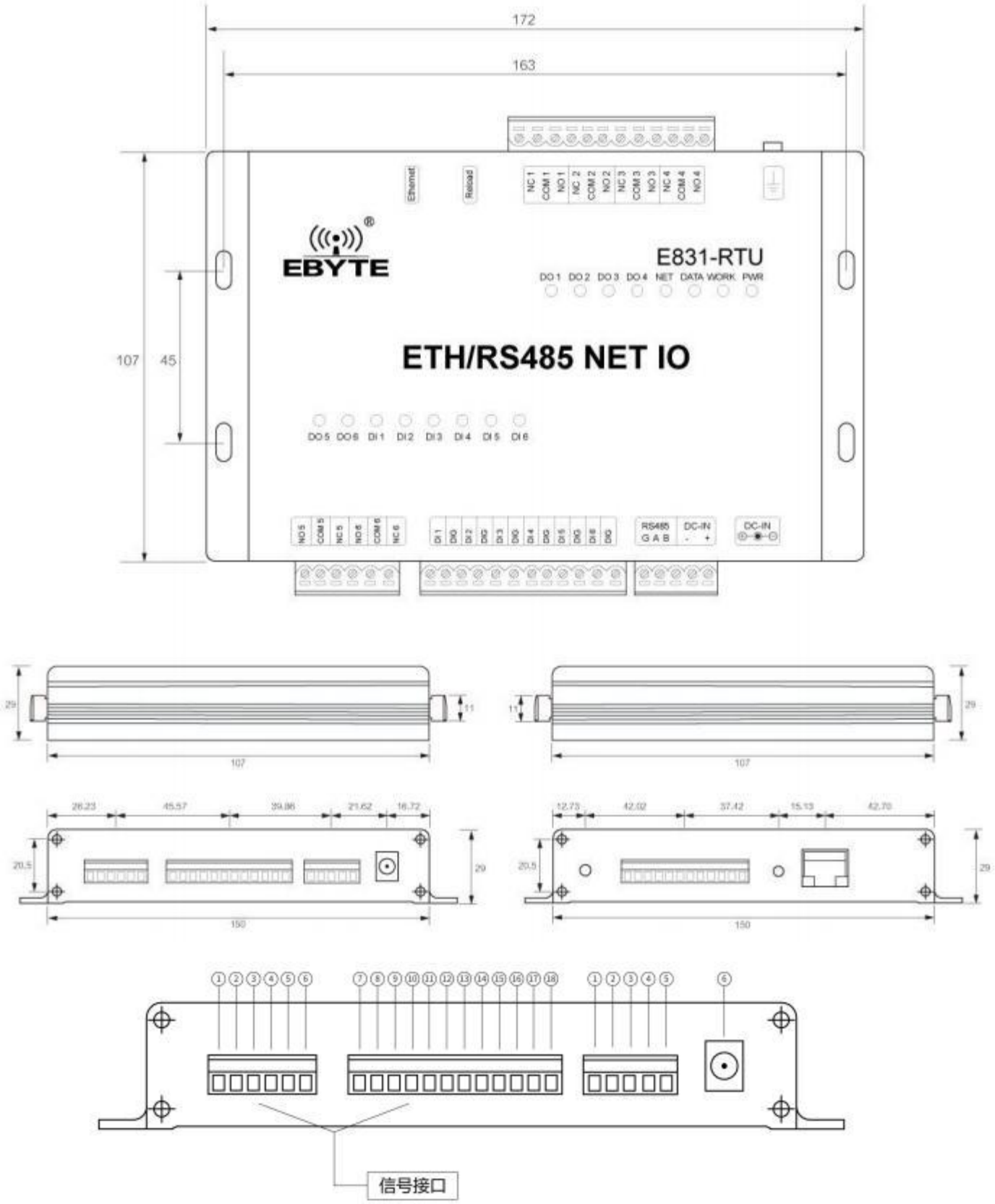
Chapter 2 Product Introduction

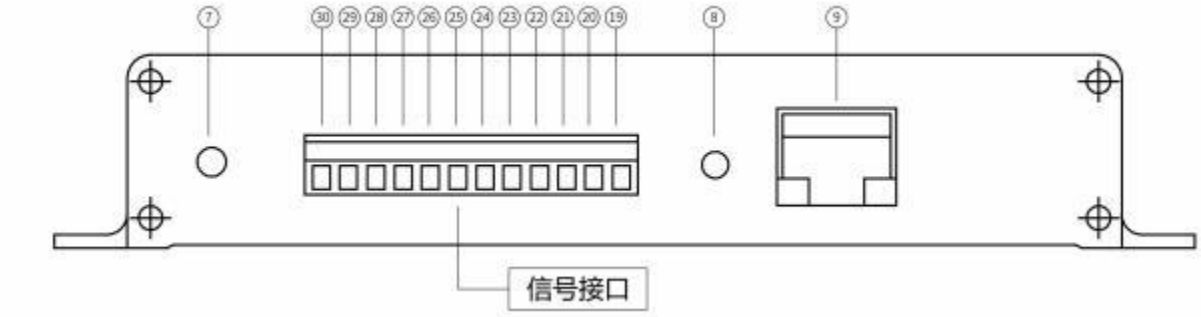
The E831-RTU (6060-ETH) is a model that supports 6 digital inputs (default dry contacts), Network IO product with 6 relay outputs. Support for the Modbus TCP/RTU protocol. The product is highly easy to use and users can easily and quickly integrate into their own systems for Ethernet-based remote control.

2.1 Basic Parameters

	project	index
Network parameters	Ethernet port specifications	RJ45, 10/100Mbps
	Network Protocol	IP、 TCP/UDP、 ARP、 ICMP、 IPV4
	IP acquisition equation	Static IP, DHCP
	Domain name resolution	backing
Hardware parameters	Product size (H*W*D).	172*107*29mm
	Product weight	473.1±5g
	Working temperature	-20℃~+70℃
	Storage temperature	-40℃~+85℃
	Humidity at work	5%~95%
	Storage humidity	1%~95%
	Working voltage	8V~28V
	Data connector	RS485：1200~115200bps
	DO relay contact load current	≤10A（@220VAC）；≤10A（@30VDC）
Software parameters	The network type	Ethernet
	Configuration commands	Modbus TCP/ RTU
	Network Protocol	Modbus TCP/ RTU
	Work mode	Master mode, slave mode
	Data transmission method	TCP/ UDP

2. 2 Dimensions, interface description





Ordinal number	End ports and other definitions	function	illustrate
1	RS485 G	The reference place of the signal	The letter number is referenced, but it can not be 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 -	The crimped power supply inputs the negative electrode	Power source reference ground
5	DC-IN +	The voltage-type power supply input is positive	Power input, DC 8V to 28V, recommended 12V @ 500mA/24V @250mA
6	DC-IN seat	DC socket 5.5*2 1mm	Power input, DC 8V to 28V, recommended 12V @ 500mA / 24V @ 250 mA
7	Grounding screws	Connected to the earth	Connected to the earth
8	Reload	Reset button	Press and hold for 5s to work
9	Ethernet	Network port	Connect to the computer, the computer side
Signal connector			
1	NO 5	Relay 5 normally open pins	Works with relay 5 common ends
2	COM 5	Relay 5 common end	Uses with relay 5 NO/NO pins
3	NC 5	Relay 5 normally closed pins	Works with relay 5 common ends
4	NO 6	Relay 6 normally open pins	Works with relay 6 common end
5	COM 6	Relay 6 common end	Uses with relay 6 NO/NO pins
6	NC 6	Relay 6 normally closed pins	Works with relay 6 common end
7	DI 1	Switch input channel 1	Forms a dry junction with DIG
8	DIG	The amount of on-off is entered into the locality	Can be used in pairs with DI 1
9	DI 2	The on-off amount is entered into channel 2	Forms a dry junction with DIG
10	DIG	The amount of on-off is entered into the locality	Can be used in pairs with DI 2
11	DI 3	Switch input channel 3	Forms a dry junction with DIG
12	DIG	The amount of on-off is entered into the locality	Use in pairs with DI 3
13	DI 4	The on-off quantity is entered into channel 4	Forms a dry junction with DIG

14	DIG	The amount of on-off is entered into the locality	Can be used in pairs with DI 4
15	DI 5	Switch input channel 5	Forms a dry junction with DIG
16	DIG	The amount of on-off is entered into the locality	Can be used in pairs with DI 5
17	DI 6	The on-off quantity is input channel 6	Forms a dry junction with DIG
18	DIG	The amount of on-off is entered into the locality	Can be used in pairs with DI 6
19	NC 1	Relay 1 normally closed pin	Works with Relay 1 Common Terminal
20	COM 1	Relay 1 common end	Uses with relay 1 NORMAL/NORMALLY CLOSED pin
21	NO 1	Relay 1 normally open pin	Works with Relay 1 Common Terminal
22	NC 2	Relay 2 normally closed pins	Works with Relay 2 Common End
23	COM 2	Relay 2 common end	Uses with relay 2 NO/NO pins

24	NO 2	Relay 2 normally open pins	Works with Relay 2 Common End
25	NC 3	Relay 3 normally closed pins	Works with relay 3 common ends
26	COM 3	Relay 3 common end	Use in conjunction with relay 3 NO/NO pins
27	NO 3	Relay 3 normally open pins	Works with relay 3 common ends
28	NC 4	Relay 4 normally closed pins	Works with Relay 4 Common End
29	COM 4	Relay 4 common end	Uses with relay 4 NO/NO pins
30	NO 4	Relay 4 normally open pins	Works with Relay 4 Common End
LED lights			
1	DO 5	Relay 5 output indication	Green LED, NO 5, COM 5 closed lit
2	DO 6	Relay 6 output indication	Green LED, NO 6, COM 6 closed lit
3	DI 1	Switch input channel 1 is indicated	Green LED, DI 1, DIG shorter lit
4	DI 2	Switch input channel 2 is indicated	Green LED, DI 2, DIG shorts lit up
5	DI 3	Switch input channel 3 is indicated	Green LED, DI 3, DIG shorts lit up
6	DI 4	Switch input channel 4 is indicated	Green LED, DI 4, DIG shorts lit up
7	DI 5	Switch input channel 5 is indicated	Green LEDs, DI 5, DIG shorts lit up
8	DI 6	Switch input channel 6 is indicated	Green LED, DI 6, DIG shorts lit up
9	DO 1	Relay 1 output indication	Green LEDs, NO 1, COM 1 closed lit
10	DO 2	Relay 2 output indication	Green LED, NO 2, COM 2 closed lit
11	DO 3	Relay 3 output indication	Green LED, NO 3, COM 3 closed lit
12	DO 4	Relay 4 output indication	Green LED, NO 4, COM 4 closed and lit
13	NET	Network indication	Yellow LED, long bright after entering the net
14	DATA	Serial port data indication	Yellow LED, RS485 interface has data transmission when lit (appears to be flashing).
15	WORK	Work/reset indication	Yellow LED, regular blinking/flashing after successful reset
16	PWR	Power indication	Red LED, long and bright

Note:

Grounding: It is recommended to connect the shell to the earth

2.3 Reload tap key description

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

Chapter Three: Modbus

3.1 Register Address Table

Register address table (function code: 0x01H, 0x05H, 0 x0FH、0x03H、0x06H 、0x10H)						
Register address	Number of registers	Register properties	Register type	Register value range	The default value	Support function code
00017 (0x0010)	1	DO1 switch 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 switch output	Read/write		--	
00020 (0x0013)	1	DO4 switch output	Read/write		--	
00021 (0x0014)	1	DO5 switching output	Read/write		--	
00022 (0x0015)	1	DO6 switch output	Read/write		--	
retain						
10017 (0x0010)	1	DI1 switch input	read only	0-1	--	0x02
10018 (0x0011)	1	DI2 switch input	read only		--	
10019 (0x0012)	1	DI3 switch input	read only		--	
10020 (0x0013)	1	DI4 switch input	read only		--	
10021 (0x0014)	1	DI5 switch input	read only		--	
10022 (0x0015)	1	DI6 switch input	read only		--	
retain						
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	--	
retain						
40065 (0x0040)	1	DI 1-DI 6 pulse count clears to zero	Write only	0x00 - 0x3F	--	0x06
retain						
40078 (0x004D)	1	The device address	Read/write	1 - 247	0x01	0x03 0x06 0x10
40079 (0x004E)	1	Potrate rate	Read/write	0 - 7	0x03	

40080 (0x004F)	1	Check digits	Read/write	0 - 2	0x00	
40081(0x0050)	1	Master mode or slave mode	Read/write	0 - 1	0x01	
40082 (0x0051)	1	The switch is automatically reported	Read/write	0 - 2	0x00	
40083 (0x0052)	1	On-off output time setting (ms).	Read/write	300-65535	--	
		retain				
40085 (0x0054)	1	The on-off amount restart output status setting	Read/write	0x00 - 0x40	0x40	0x03 0x06 0x10
		retain				
40098 (0x0061)	6	Device MAC address	read only	--	--	0x03 0x06 0x10
40104 (0x0067)	1	Ethernet reboots	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 the DNS information	Read/write	--	61.139.2.69 192.168.4.1	
40130 (0x0081)	8	Set the network protocol parameters	Read/write	--	TCPS,192.168.4.10, 8886	
40146 (0x0091)	2	Set up a registration package mode	Read/write	0-4	Close the enrollment package (0x00)	
40150 (0x0095)	42	Set up the registration package content	Read/write	--	regist msg	
40234 (0x00E9)	42	Set the heartbeat pack contents	Read/write	--	heartbeat msg	
40318 (0x013D)	2	Set the heartbeat packet mode	Read/write	0-1	Mesh heartbeat packet (0x00)	
40322 (0x0141)	2	Set the heartbeat package time	Read/write	0、2-65535	0x00	
40330 (0x0149)	2	Set up a cache clear	Read/write	0-1	Cached data for socket A1 links is not cleared	
40336 (0x014F)	6	Set the kee p-alive parameter	Read/write	--	Detection time 10s Probe interval 5s The number of probes is 30	
40350 (0x015D)	2	Set the local port number	Read/write	0-65535	8886	
40354 (0x0161)	2	Set up a cloud transmission function	Read/write	0-1	Shut down	
40356 (0x0163)	2	Sets a 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

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 Port Check Digit Value Table

Check digit value table	
0 (default).	No validation
1	Parity
2	Odd check

3.5 Configure parameters via host computer

Select the "Parameter Settings" column to read parameters, write parameters, and implement specific functions, see the product function introduction below.


E831-RTU(6060-ETH)
成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co.,Ltd.
型号选择
语言(Language)
退出
Version: 1.0
端 口
COM3
波特率
9600
校验位
None
设备地址
搜索
采集控制
参数设置
搜索到的设备数量:
Modbus地址
DO维持时间
RS485校验位
RS485波特率
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
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
31667
心跳包时间
心跳包模式
网络心跳包
Hex
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:
(2~7200)S
探测间隔:
(2~7200)S
探测次数:
(2~255)
SN
读取参数
写入参数
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官方网站：www.ebyte.com

Chapter 4 Product Function

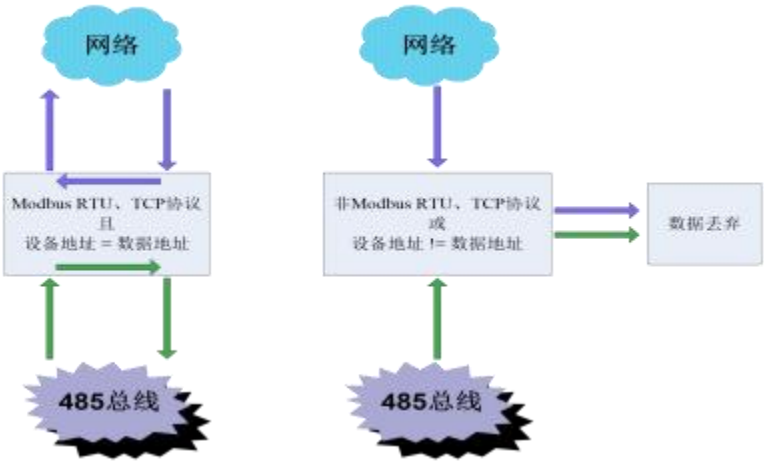
4.1 Working Mode

The operating modes are divided into master mode and slave mode, configured via Modbus register 40081 (0x0050). Host mode when the register value is 0; When the register value is 1, slave mode is the default slave mode.

4.1.1 Slave Mode

In the slave mode (register value is 0x01), the network side or the 485 bus side (sender side). The data sent to the device satisfies the Modbus RTU, Modbus TCP agreement, and the address in the data is the device address, and the device will reply to the sender in the same protocol; If the data sent to the device by the network side or the 485 bus side does not meet the Modbus RTU, Modbus TCP protocol, or the Modbus RTU If the Data Address is not the device address of the Modbus TCP Protocol, the data on the sending end will be discarded .

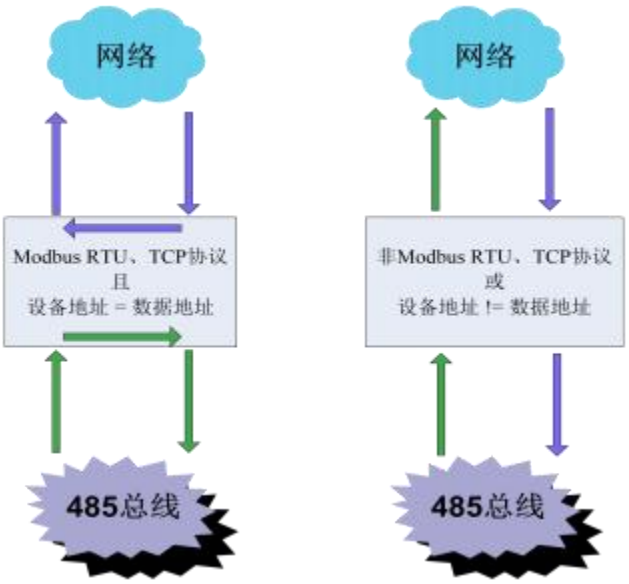
In slave mode, the device can directly connect to the device in master mode through the 485 bus, so that if the slave is not networked, the network side can also access the slave data through the host.



4.1.2 Host Mode

In host mode (register value is 0x00), network side, or 485 bus side (send side). The data sent to the device meets the Modbus RTU, Modbus TCP protocol, and the address in the data is the device address, and the device will reply to the sender in the same protocol; If the data sent to the device by the network side or the 485 bus side does not meet the Modbus RTU, Modbus TCP protocol, or modbus RTU, Modbus TCP protocol, but in the case that the data address is not the device address, the data from the 485 bus will be transmitted to the network, and the data from the network will be transmitted to the 485 on the bus.

This feature of the host mode enables device cascading and data transfer on the 485 bus and network.



4.2 IO Basic Functions

4.2.1 Switching DO output

- Read the switch DO output

Function code: 01, read the coil status

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

Description: The passive output of the device relay, the coil is not energized, the relay NC port and the COM port are normally closed, the NO port and the COM port are always open, and the value is 0; When the coil is energized, the phenomenon is reversed, the relay NC port is disconnected from the COM port, and the NO port is closed with the COM port, and the value is 1. Query the relay status by command.

Example:

Reads the output state of the 6 switches, assuming that the return value is 03, corresponding to the binary bit 0000 0011, and the six bits in the lower six bits represent the switching output state, in order of DO6 、DO5、DO4、DO3、DO2、DO 1。

Modbus RTU protocol reads the switching output:

Send	01	01	00 10	00 06	BD CD
	Provision the ModBus address	Functional codes	The address where the switch starts	The number of read switches	CRC check digits

Receiving	01	01	01	03	11 89
	Provision the ModBus address	Functional codes	The number of bytes returned	The output value of the on-off quantity	CRC check digits

The Modbus TCP protocol reads the switch output:

Send	00 01	00 00	00 06	01	01	00 10	00 06
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The address where the switch starts	The number of read switches

Receiving	00 01	00 00	00 04	01	01	01	03
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The number of bytes returned	The output value of the on-off quantity

- Control the switch amount DO output

Power code: 05, write a single coil status; 0F, write multiple coil states

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

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

Example:

Function code 0x05 Write DO2 switching output to disconnect NC2, COM2, NO2, COM2 is closed with a write value of FF 00; Close NC2, COM2, NO2, COM2, and write values 00 00.

Modbus RTU protocol write switch output:

Send	01	05	00 11	FF 00	DC 3F
	Provision the ModBus address	Functional codes	The on/off volume address	Write a value	CRC check digits

Receiving	01	05	00 11	FF 00	DC 3F
	Provision the ModBus address	Functional codes	The on/off volume address	Write a value	CRC check digits

Modbus TCP protocol write switch output:

Send	00 01	00 00	00 06	01	05	00 11	FF 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The on/off volume address	Write a value

Receiving	00 01	00 00	00 06	01	05	00 11	FF 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The on/off volume address	Write a value

Function code 0x0F Write DO2, DO3 switch output, make NC2, COM2 Disconnected, NO2, COM2 closed; Disconnect NC3, COM3, NO3, COM3 close. The write value should be 0x03, corresponding to the binary bit 0000 0011

Modbus RTU protocol write switch output:

Send	01	0F	00 11	00 02	01	03	62 95
	Provision the ModBus address	Functional codes	The on/off volume address	Number of write switches	The number of word sections	Write a value	CRC check digits

Receiving	01	0F	00 11	00 02	84 0F
	Provision the ModBus address	Functional codes	The on/off volume address	Write a value	CRC check digits

Modbus TCP protocol write switch output:

Send	00 01	00 00	00 08	01	0F	00 11	00 02	01	03
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The on/off volume address	Number of write switches	The number of word sections	Write a value

Receiving	00 01	00 00	00 06	01	0F	00 11	00 02
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The on/off volume address	Number of write switches

4.2.2 Read the switch DI input

Function code: 02, read (switch) input state

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

Description: When the device defaults to dry contact input, DI and COM shorts, the read value should be 1;

When DI and COM are not shorted, the read value should be 0. Example:

Reads 6 switch input values, DI input DI1, COM1 short, DI2, COM2 Not shorted, DI3, COM3 shorted, DI4, COM4 not shorted, DI5, COM5 is not shorted, DI6, COM6 are not shorted. The read switch input value is 0x05, corresponding to the binary bit 0000 0101, and the low six bits represent the switch input value, depending on the order DI 6, DI5, DI4, DI3 DI2、DI1。

Modbus RTU protocol reads the switch input:

Send	01	02	00 10	00 06	F9 CD
	Provision the ModBus address	Functional codes	The address where the switch starts	The number of read switches	CRC check digits
Receiving	01	02	01	05	61 8B
	Provision the ModBus address	Functional codes	The number of bytes returned	Enter a value for the on-off quantity	CRC check digits

The Modbus TCP protocol reads the switch input:

Send	00 01	00 00	00 06	01	02	00 10	00 06
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The address where the switch starts	The number of read switches

Receiving	00 01	00 00	00 04	01	02	01	05
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The number of bytes returned	Enter a value for the on-off quantity

4.3 IO Features

4.3.1 Pulse counting and counting zeroing

Pulse counts are not saved after a power outage and the pulse level hold time must be greater than 10ms to be valid. The switching input changes from the off state to the closed state and maintains a closing time of 10ms or more, and then to the off state, completing a pulse count.

- Reads the pulse count value

Function code: 03, read hold register

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

Description: The maximum value of the pulse count is 65535

Example:

DI1 has currently detected 16 pulses, DI2 has detected 3 pulses, reading DI1, DI2 Switch input count value

Modbus RTU protocol read pulse count value:

Send	01	03	00 30	00 02	C4 04
	Provision the ModBus address	Functional codes	The start address	The number of reads	CRC check digits

Receiving	01	03	04	00 10	00 03	BB F7
	Provision the ModBus address	Functional codes	The number of bytes returned	DI1 count value	DI2 count value	CRC check digits

Modbus TCP protocol read pulse count value:

Send	00 01	00 00	00 06	01	03	00 30	00 02
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The start address	The number of reads

Receiving	00 01	00 00	00 07	01	03	04	00 10	00 03

	Transmit the logo	Protocol identity	length	Unit identificatio n	Functional codes	The number of bytes returned	DI1 counts numeric values	DI2 counts numeric values

- Zero pulse count value

Function code: 06, write-hold register

Site range: 40065 (0x0040).

Note: The low six bits of the register value represent DI6, DI5, DI4, DI3, respectively DI2, DI1 count, write "1" to represent the count to zero, restart the pulse count. Example:

Clears the DI2, DI4 pulse count values and retains DI1, DI3, D5 , D6 pulse count value. The write value should be 0x0a, corresponding to a binary value of 0000 1010, the Modbus RTU protocol clear pulse count value

Send	01	06	00 40	00 0a	08 19
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	00 40	00 0a	08 19
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

The Modbus TCP protocol clears the pulse count value

Send	00 01	00 00	00 06	01	06	00 40	00 0a
	Transmit the logo	Protocol identity	length	Unit identificatio n	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	00 40	00 0a
	Transmit the logo	Protocol identity	length	Unit identificatio n	Functional codes	address	Write a value

4.3.2 Automatic reporting of switch input DI

The automatic reporting function of the switching input is to transmit the changed value when the switching volume changes. You can choose to transfer via RS485 or ETH, also

You can turn off the automatic escalation feature.

The modbus register corresponding to the automatic reporting setting of the on-off amount is 40082 (0x0051), and the value corresponding function is:

The shutdown switch is automatically escalated 0x00

The switch automatic report is transmitted 0 x 01 via RS485

The switch is automatically reported over the ETH network for transmission 0x02

The switching change upload protocol is listed in the following table, where the frame header 0xAA, 0xBB is fixed, DI 1, DI 2、DI3、DI4、DI5、DI6 The range of values is 0x00, 0x01, 0xFF, where

0x00 means that the switching input is disconnected

0x01 means that the switching input is closed

0xFF indicates that the switching input has not changed

Table DI1, DI2, DI3, DI4, DI5, The value of DI6 represents DI1, DI2 status is updated to broken, DI 3 state is updated to closed, DI4, DI5, DI6 states have not changed. The last two bytes are calculated for modbus CRC16.

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

4.3.3 Switching output DO time setting

Switching pulse punch output time setting is to set the switching output time (relay NO, COM closing time), corresponding to the Modbus register 40083 (0x0052) with a value range of 300-65535ms if the value is lower than 300ms , the default switching output is closed to a hold state, that is, the switching output remains held after it is closed.

If set to 300ms and above, such as 500ms, after sending the switch output closure command, the switch closure will remain 500ms, and then automatically disconnect after 500ms.

4. 3.4 Restart the switching output status setting

Settings to maintain the pre-power failure or restart to maintain a specific output state are only valid if the device switch output time setting register value is less than 300ms.

The switch restart output status setting corresponds to a Modbus register of 40085 (0x0054) with values ranging from 0x00-0x40. When this register value is 0x 40

Wait, after the power failure restart, maintain the previous switching output state; When this register value is 0x00-0x3F, the device restarts the switching output state by the lower six bits, and bit6 corresponds to DO6. bit5 corresponds to DO5, bit 4 corresponds to DO4, bit 3 corresponds to DO3, bit2 corresponds to DO2, and bit1 corresponds to DO1, such as when powered on, DO6, DO5, DO4, DO2 In a closed state (relay NO, COM closed) DO3, DO1 In the disconnected state (relay NO, COM disconnected), the corresponding register value is 0011 1010, which is 0 x3A, "1" is closed and "0" is disconnected.

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
	Provision the ModBus address	Functional codes	The start address	The number of read registers	CRC check digits

Receiving	01	03	06	1A 00 1C C0 BB FF	16 53
	Provision the ModBus address	Functional codes	The number of word sections	Read the value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	03	00 61	00 03
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 09	01	03	06	1A 00 1C C0 BB FF
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The number of word sections	Read the value

Description: 1A 00 1C C0 BB FF is the MAC address of the device, the device has a unique, The MAC address is different from that of other devices .

4.4.2 Device S-N code reading

Modbus RTU protocol read register:

Send	01	03	01 65	00 04	55 EA
	Provision the ModBus address	Functional codes	The start address	The number of read registers	CRC check digits

Receiving	01	03	08	19 05 21 14 00 13 55 50	F9 AA
	Provision the ModBus address	Functional codes	The number of word sections	Read the value	CRC check digits

Modbus TCP protocol read register:

Send	00 01	00 00	00 06	01	03	01 65	00 04
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	The number of reads

				n			

Receiving	00 01	00 00	00 0B	01	03	08	19 05 21 14 00 13 55 50
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	The number of word sections	Read the value

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

4.4.3 Network-related functional parameters take effect command (Ethernet restart command).

Modbus RTU protocol write register:

Send	01	06	00 67	00 01	F9 D5
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	00 67	00 01	F9 D5
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	00 67	00 01
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	00 67	00 01
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

In particular, the Ethernet component can be restarted by writing a value of ox00 01 to the address ox 00 67, and the restart must be performed after configuring the Ethernet-related parameters order, otherwise the configured parameters do 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
	Provision a ModBus address	Function code	address	Register length	The number of word sections	Write a value	CRC Checksum code

Receiving	01	10	00 6B	00 07	F0 17
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

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
	transmit logotype	agreement logotype	Length	Unit logotype	Functional code	address	register length	The number of by	Write a value

								tes	

Receiving	00 01	00 00	00 15	01	10	00 6B	00 07
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

Description: 00 00 indicates static mode, and 00 01 indicates dynamic mode. C0 A8 04 65 (192.168.4.101) represents 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 to be lattice, and the IP address of the device needs to be obtained through query instructions.

4.4.5 Set up DNS information

Modbus RTU protocol writes DNS registers:

Send	01	10	00 79	00 04	08	3 8 02 45 C0 A8 04 02	E0 50
	Provision the ModBus address	Functional codes	address	Register length	The number of word sections	Write a value	CRC Checksum code

Receiving	01	10	00 79	00 04	10 13
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 0F	01	10	00 79	00 04	08	3D 8B 02 45 C0 A8 04 02
	transmit logotype	agreement logotype	length	Unit identification	function yard	address	Register length	The number of word sections	Write a value

Receiving	00 01	00 00	00 0F	01	10	00 79	00 04
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

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

4.4.6 Set the network protocol parameters

Modbus RTU protocol writes DNS registers:

Send	01	10	00 81	00 04	08	00 00 C0 A8 04 0A 22 B6	81 3B
	Provision the ModBus address	Functional codes	address	Register length	The number of word sections	Write a value	CRC check digits

Receiving	01	10	00 81	00 04	91 E2
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

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	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length	The number of word sections	Write a value

Receiving	00 01	00 00	00 0F	01	10	00 81	00 04
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

Description: 00 00 represents a TCP server, and the value can be: 00 01 for TCP client and 00 02 for a TCP client UDP server, 00 03 represents UDP client. C0 A8 04 0A indicates that the target server is set to "client" IP address or domain name, 22 B6 port number, local port number in server mode, client mode The remote port number is under the equation.

4. 4.7 Set the enrollment package mode

Modbus RTU protocol write register:

Send	01	06	00 91	00 00	D8 27
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	00 91	00 00	D8 27
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	00 91	00 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	00 91	00 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Description: 00 00 disables the enrollment package mechanism, and a value of 00 01 indicates that only one user-defined enrollment package is sent the first time the server is linked, 00 02

Indicates that there is only a 6-byte MAC registration packet sent when first linked to the server, and 00 03 indicates that each packet sent to the server is preceded by a custom annotation packet data 00 04 indicates that each packet sent to the server is preceded by a 6-byte MAC as registration packet data.

4. 4.8 Set the registration package content

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
	Provision a ModBus address	function yard	Address	Register length	The number of word sections	Write a value	CRC Checksum code

Receiving	01	10	00 95	00 15	11 EA
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

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 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C BB AA

	transmit logotype	agreement logotype	length	Unit logotype	Functional code	address	Register length	The number of bytes	Write a value

Receiving	00 01	00 00	00 31	01	10	00 95	00 15
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

Description: 00 for HEX and 01 for ASCII. 28 indicates the content length of the registration package. 30 00 00 00 00 00 00 41 42 43 68 23 67 AA 00 2A 00 00 00 00 00 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C BB AA represents the registration package content.

For example: The contents of the send registration package are: ebyte, the write value is 01 05 65 62 79 74 65 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

4.4.9 Set the heartbeat packet mode

Modbus RTU protocol write register:

Send	01	06	01 3D	00 00	19 FA
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	01 3D	00 00	19 FA
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 3D	00 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 3D	00 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

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

4.4.10 Set the 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
	equipment ModBus address	function yard	address	Register length	byte number	Write a value	CRC Checksum code

				h			

Receiving	01	10	00 E9	00 15	D0 32
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

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 00 11 00 22 00 33

									00 44 00 12 33 23 11 10 1D 1C 1B 1A
	transmit logotype	agreement logotype	length	Unit logotype	Functional code	address	Register length	The number of bytes	Write a value

Receiving	00 01	00 00	00 31	01	10	00 E9	00 15
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

Description ：00 for HEX and 0for ASCII. 28 represents 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 00 00 11 00 22 00 33 00 44 00 12 33 23 11 10 1D 1C 1B 1A Represents the heartbeat packet contents. For example: Send a heartbeat packet with the contents: ebyte, write value is 01 05 65 62 79 74 65 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00

4. 4.11 Set the heartbeat packet time

Modbus RTU protocol write register:

Send	01	06	01 41	01 AA	59 CD
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	01 41	01 AA	59 CD
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 41	01 AA
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 41	01 AA
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Description: 00 0 0 indicates heartbeat packet time, 00 00 indicates closing heartbeat packets, the value cannot be 1, and the range is 2-65535.

4.4.12 Emptying Hold

Modbus RTU protocol write register:

Send	01	06	01 49	00 00	59 E0
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	01 49	00 00	59 E0
	Provision the	Functional	address	Write a value	CRC check digits

	ModBus address	codes			

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 49	00 00
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 49	00 00

	Transmit the logo	Protocol identity	length	Unit identificati on	Function al codes	address	Write a value

Description: 00 00 indicates that the cache data for the SOCKET A1 link is not cleared, and 00 01 means that socket A1 is cleared The cache data for the link, but does not empty the serial port slowly

Save data.

4.4.13 Set the keep-alive parameter

Modbus RTU protocol write register:

Send	01	10	01 4F	00 03	06	02 D1 02 D1 00 31	BD 3D
	Provision the ModBus address	Functio nal codes	addres s	Register length	The number of word sections	Write a value	CRC check digits

Receivi ng	01	10	01 4F	00 03	B0 23
	Provision the ModBus address	Functional codes	address	Register length	CRC check digits

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
	Transmit the logo	Protocol identity	length	Unit identificati on	Function al codes	addres s	Register length	The number of word sections	Write a value

Receiv ing	00 01	00 00	00 0D	01	10	01 4F	00 03
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Register length

Description: 02 D1 indicates how many seconds after the TCP link has no data packet transmission initiated probe packets, and 00 00 indicates that the KeepAlive feature is turned off , with a value of 2-7200 seconds. 02 D1 The time interval between the previous probe message and the next probe packet, with a value of 2-7200 seconds. 00 31 indicates the maximum number of probe failures when sniffing

When the probe fails to that number of times, the TCP connection is dropped 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
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receivin g	01	06	01 5D	11 A1	D4 0C
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 5D	11 A1
	Transmit the logo	Protocol identity	length	Unit identificati on	Function al codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 5D	11 A1
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Description: 11 Represents A1 local port, 00 00 for the standby port, and values 1-65535.

4. 4.15 Set up the cloud transmission function

Modbus RTU protocol write register:

Send	01	06	01 61	00 01	18 28
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	01 61	00 01	18 28
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 61	00 01
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 61	00 01
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Description: 00 00 Indicates cloud pass-through off, and a value of 00 01 indicates on.

4.4.16 Set a timeout during the restart

Modbus RTU protocol write register:

Send	01	06	01 63	FF A0	39 A0
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Receiving	01	06	01 63	FF A0	39 A0
	Provision the ModBus address	Functional codes	address	Write a value	CRC check digits

Modbus TCP protocol write register:

Send	00 01	00 00	00 06	01	06	01 63	FF A0
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Receiving	00 01	00 00	00 06	01	06	01 63	FF A0
	Transmit the logo	Protocol identity	length	Unit identification	Functional codes	address	Write a value

Description: FF A0 represents the restart time and the value is 60-65535. This feature is used to reset ethernet when no data is received for a long time.

Repeat the declaration

- Ebit reserves the right of final interpretation and modification of all contents of this specification.
- Due to the continuous improvement of the hardware and software of the product, this manual may be changed without notice, and the latest version of the manual shall prevail.
- Protect the environment, everyone has the responsibility: in order to reduce the use of paper, this manual only prints Chinese part, the English manual only provides electronic documents, if necessary, please come to download from our company official website; I addition, if it is not a special request of the user, when the user orders in batches, we only provide product manuals according to a certain propo nrtion of the order quantity, and not every digital transmission station is equipped one by one, please understand.

Revision of the history

version	Revision date	Amendment Description	Guardians
1.0	-	Initial version	-
1.1	2019/8/14	Format revision	lyl

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