Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



ME31-XAAX0440
I/O networking module

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Chapter 1Product Overview



1.1 Product introduction

ME31- XAAX0440 is equipped with 4-way A-type relay output and 4 -way analog (0-20 mA / 4-20mA) input, supports Modbus TCP protocol or Modbus RTU protocol for acquisition and control, and the device can also be used as a simple Modbus The network I/O networking module used by the gateway (automatically sends the commands of the non-local Modbus address through the serial port/network port) .

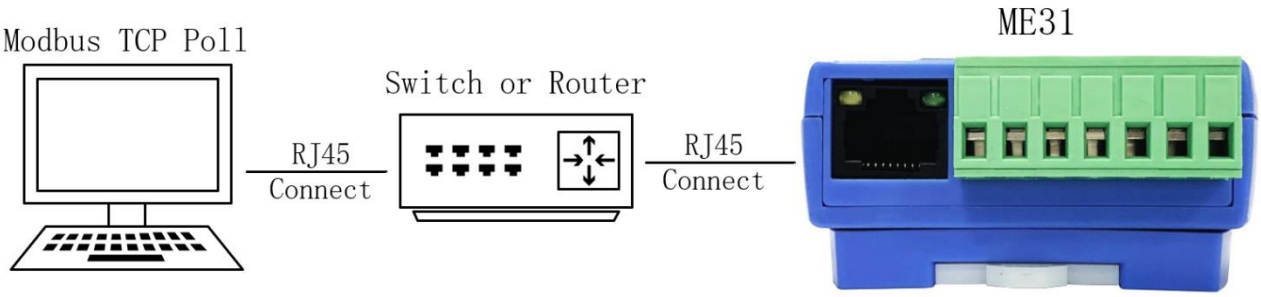
1.2 Features

- Support standard Mod b us RTU protocol and Mod b us TCP protocol ;
- Support various configuration software/PLC/touch screen;
- RS485 acquisition control I/O;
- R J45 acquisition and control I /O , support 4- way host access;
- Support OLED display to display status information, and configure device parameters through buttons;
- 4 analog inputs (0-20 mA / 4-20mA) ;
- 4-way switch output DO (Form A relay);
- Switch output (DO) supports level mode, pulse mode , follow mode, reverse follow mode, trigger flip mode ;
- Support custom Modbus address setting;
- Support 8 common baud rate configurations;
- Support DHCP and static IP ;
- Support DNS function, domain name resolution;
- Support Modbus gateway function;
- Support input and output linkage;

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1.3 Application topology diagram



Network port application topology



Serial port application topology diagram

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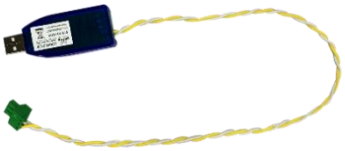
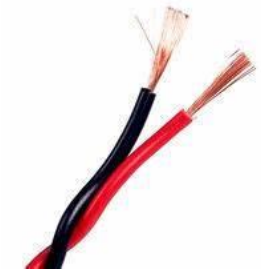
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Chapter 2 Quick Start

[Note] This experiment needs to be carried out with the default factory parameters.

2.1 Device required

The following table lists the materials required for this test:

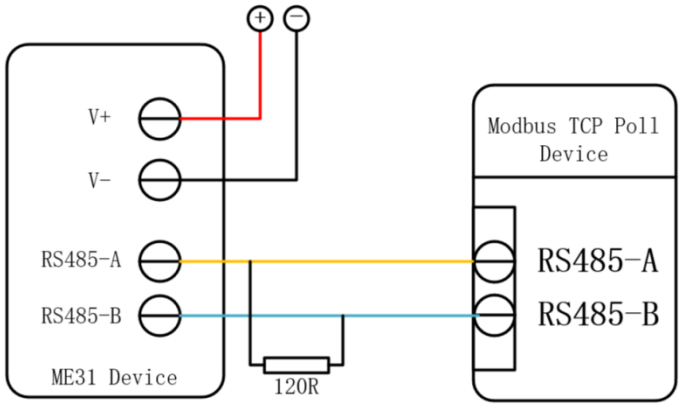
		
M E31- XAAX0440	1 2V switching power supply	USB to R S485
		
computer	a network cable	Several cables

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1.2 Device connection

2.2.1RS485 connection

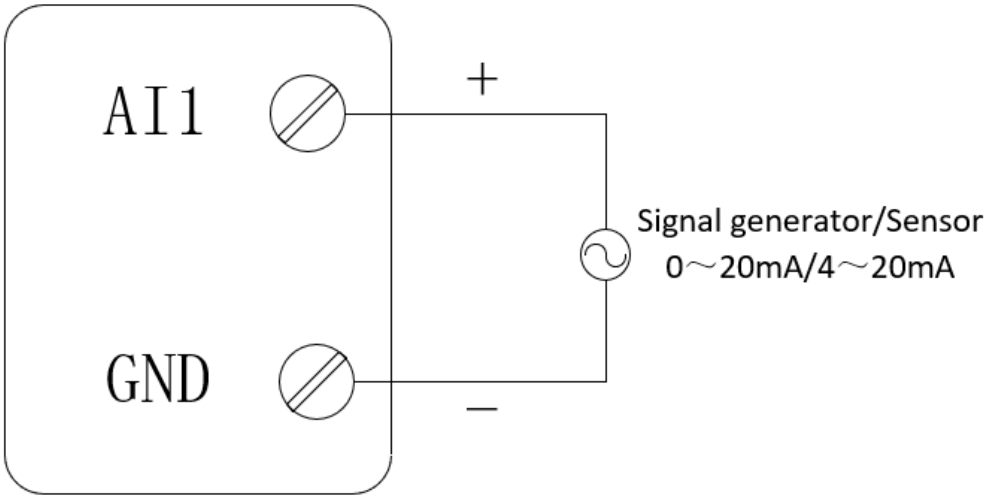


Note: When the 485 bus high-frequency signal is transmitted, the signal wavelength is shorter than the transmission line, and the signal will form a reflected wave at the end of the transmission line, which will interfere with the original signal. Therefore, it is necessary to add a terminal resistor at the end of the transmission line so that the signal does not reflect after reaching the end of the transmission line. The terminal resistance should be the same as the impedance of the communication cable, the typical value is 120 ohms. Its function is to match the bus impedance and improve the anti-interference and reliability of data communication.

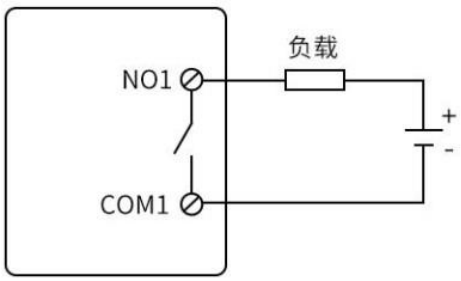
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2.2.2A I analog input connection



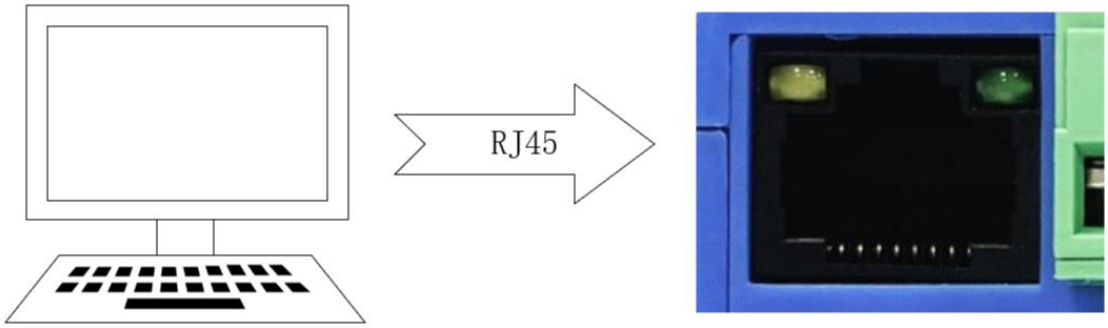
2.2.3 Relay output connection



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2.2.4 Easy to use



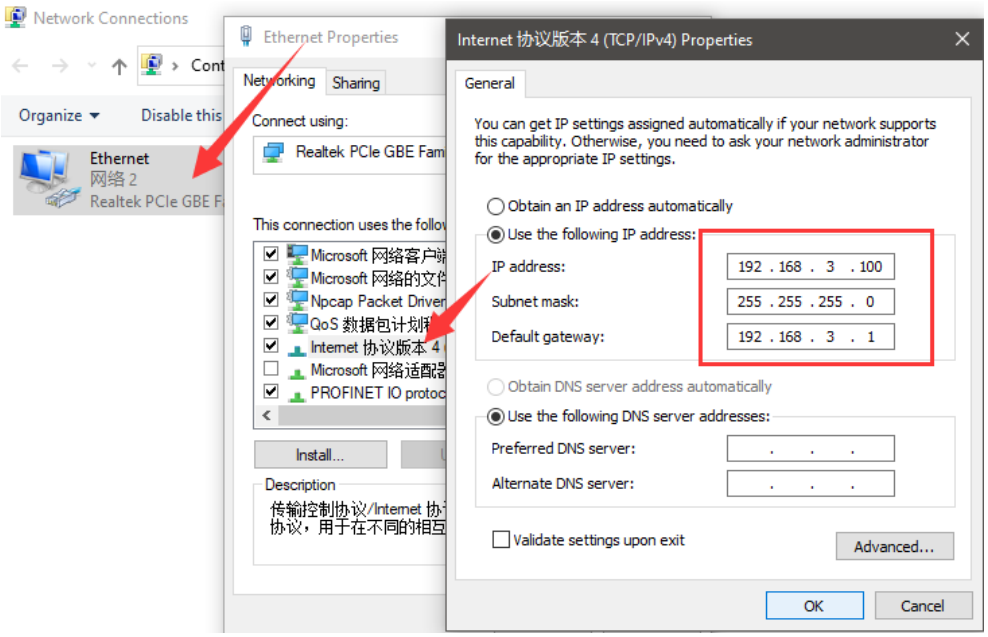
Wiring: The computer is connected to the RS485 interface of ME31 - XAAX0440 through USB to RS485 , A is connected to A, and B is connected to B.

Networking: the network cable is inserted into the R J45 port and connected to the PC .

Power supply: Use DC - 1 2V switching power supply (DC 8 ~ 28 V) to power ME31 - XAAX0440 .

2.3 Parameter configuration

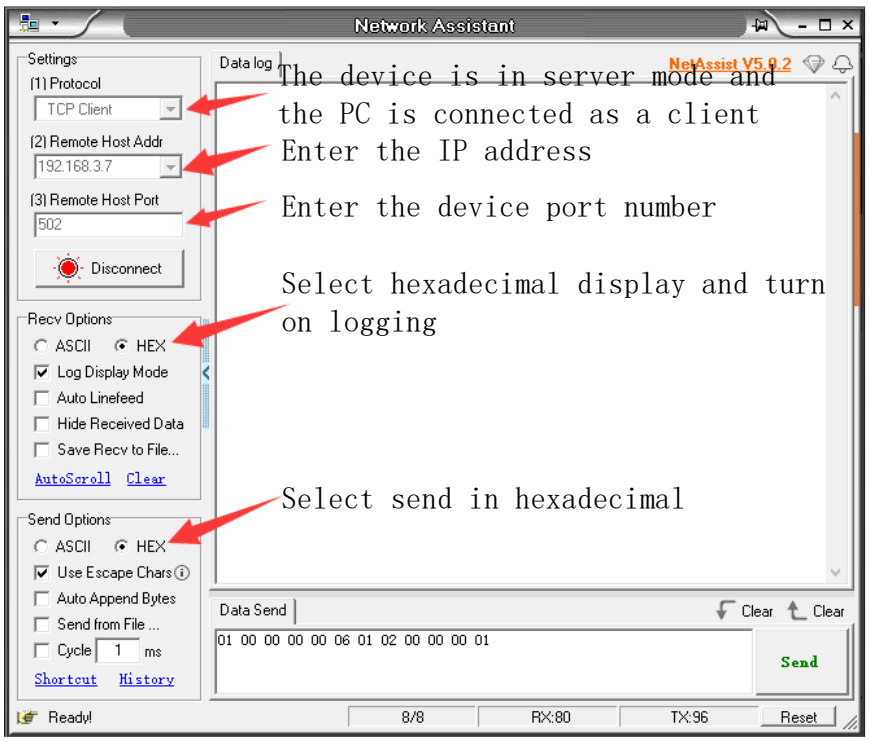
Step 1: Modify the IP address of the computer to be consistent with the device. Here I am modifying it to 1 92.168.3.100 to ensure that it is on the same network segment as the device and that the IP is different. If you cannot connect to the device after the above steps, please turn off the firewall and try again;



Step 2 : Open the network assistant, select the TCP client , enter the remote host IP 1 92.168.3.7 (default parameter), enter the port number 5 02 (default parameter), and select HEX to send.

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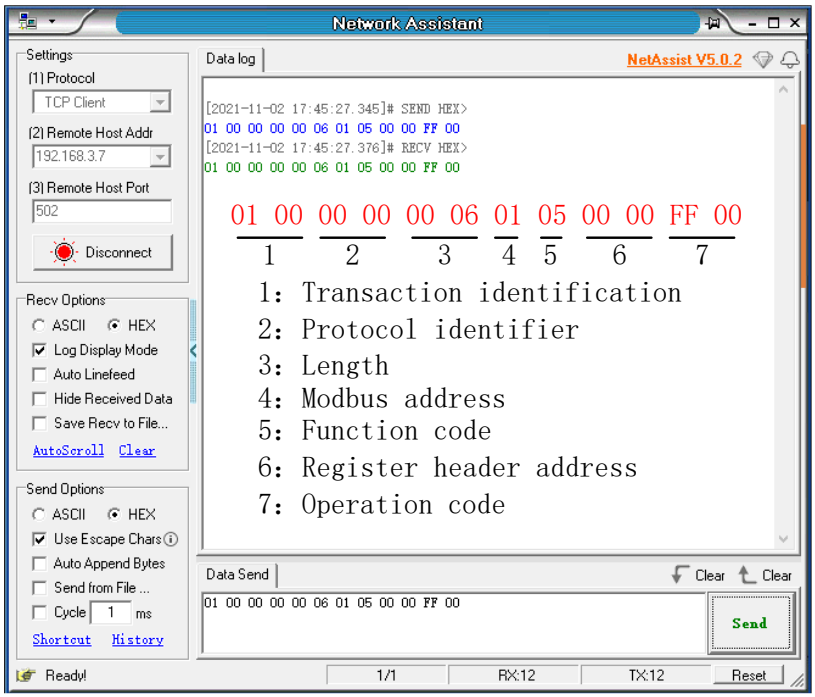
2.4 control test

2.4.1Modbus TCP control

the first D O output of M E31- XAAX0440 .

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Other functions can be tested through the commands in the table below.

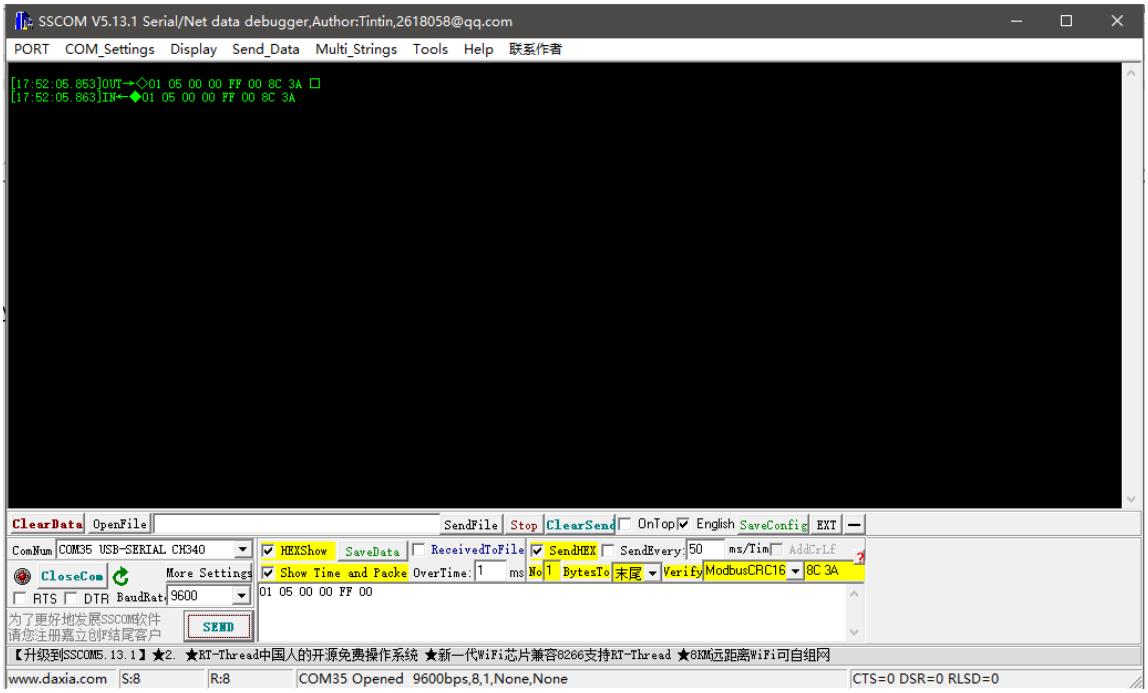
function (function code)	instruction
Pull in the first coil (0x 05)	01 00 00 00 00 06 01 05 00 00 FF 00
Full open command (0x 0F)	02 00 00 00 00 08 01 0F 00 00 00 04 01 0F
All close command (0x 0F)	02 00 00 00 00 08 01 0F 00 00 00 04 01 00
Read all D O status (0x 01)	0 1 00 00 00 00 06 01 01 00 00 00 04

2.4.2Modbus RTU control

the first D O output of M E31- XAAX0440 .

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Other functions can be tested through the commands in the table below.

function (function code)	instruction
Pull in the first coil (0x 05)	01 05 00 00 FF 00 8C 3A
Full open command (0x 0F)	01 0F 00 00 00 04 01 0F 7 E 92
All close command (0x 0F)	01 0F 00 00 00 04 01 00 3E 96
Read all D O status (0x 01)	01 1 00 00 00 04 3D C9

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Chapter 3 Technical indicators

3.1Specifications and parameters

category	name	parameter
power supply	Operating Voltage	D C8 ~ 2 8V
	Power indicator	Blue LED indication
serial port	Communication Interface	RJ45 , RS485
	baud rate	9600 bps (customizable)
	Protocol	Standard Modbus TCP , Modbus RTU protocol
MODBUS _	device address	Can be modified by Modbus command and host computer
AI input	Number of AI channels	4 way
	Acquisition Features	single-ended input
	input type	0-20mA , 4-20mA _ _ _
	AI Resolution _	3‰
	Acquisition frequency	1 0 Hz
	input instructions	OLED screen display
DO output	Number of DO channels	4 way
	DO output type	Form A relay
	DO output mode	Level output, pulse output
	Relay contact capacity	30V/ 5A , 250V/ 5A
	output indication	OL ED screen display, red LED indication
other	Product Size	121 mm * 72mm * 34mm (L*W*H)
	product weight	1 45 ± 5g _
	Working temperature and humidity	-40 ~ +85℃, 5% ~ 95%RH (no condensation)
	storage temperature and humidity	-40 ~ +105℃, 5% ~ 95%RH (no condensation)
	installation method	rail installation

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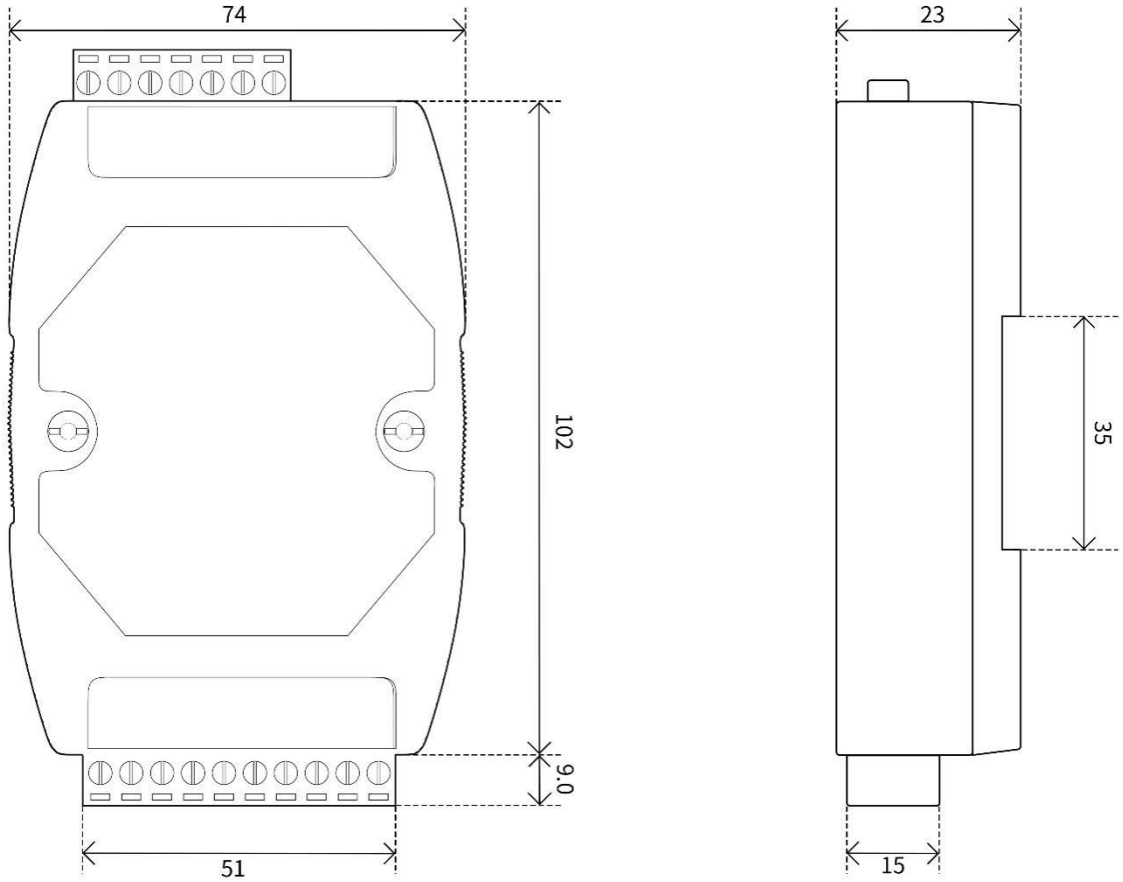
3.2Device default parameters

category	name	parameter
Ethernet parameters	Operating mode	T CP server (up to 4 clients access)
	Local IP	1 92.168.3.7
	local port	5 02
	subnet mask	2 55.255.255.0
	gateway address	192.168.3.1
	D HCP	closure
	Native MAC	Determined by the chip (fixed)
	Target IP	1 92.168.3.3
	target port	5 02
	DNS server _	114 . 114 . 114 . 114
	active upload	closure
Serial parameters	baud rate	9 600bps (8 types)
	Check method	None (default), Odd, Even
	data bit	8
	stop bit	1
MODBUS parameters _	M odbus master-slave	Slave
	address	1

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3.3 Dimensions



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3.4 Ports and Indicators



serial number	Label	illustrate
1	TX (LED)	Serial port send data indicator light
2	RX (LED)	Serial port receiving data indicator light
3	LINK (LED)	network connection light
4	NET (LED)	Network data sending and receiving indicator light
5	PWR (LED)	Power input indicator
6	DO1 (LED)	The first relay output indicator
7	DO2 (LED)	The second relay output indicator
8	DO3 (LED)	The third relay output indicator
9	DO4 (LED)	The fourth relay output indicator
1 0	GND	Negative pole of power input terminal, DC 8V~28V, 5.08mm Phoenix terminal.
1 1	VCC	Positive pole of power input terminal, DC 8V~28V, 5.08mm Phoenix terminal.
1 2	NO1	Relay 1 normally open pin, used with relay 1 common terminal, 5.08mm Phoenix terminal.
1 3	COM1	Common terminal of relay 1, used in conjunction with the normally open pin

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		of relay 1, 5.08mm Phoenix terminal.
1 4	NO2	Relay 2 normally open pin, used with relay 2 common terminal, 5.08mm Phoenix terminal.
1 5	COM2	Common terminal of relay 2, used in conjunction with the normally open pin of relay 2, 5.08mm Phoenix terminal.
1 6	NO3	Relay 3 normally open pin, used with relay 3 common terminal, 5.08mm Phoenix terminal.
1 7	COM3	Common terminal of relay 3, used in conjunction with the normally open pin of relay 3, 5.08mm Phoenix terminal.
1 8	NO4	Relay 4 normally open pin, used with relay 4 common terminal, 5.08mm Phoenix terminal.
1 9	COM4	Relay 4 common terminal, used with relay 4 normally open pin, 5.08mm Phoenix terminal.
2 0	Ethernet	Ethernet interface, standard RJ45 interface.
2 1	AI 4	Analog input channel 4 , supports 0 to 20mA current input, 5.08mm Phoenix terminal.
2 2	AI 3	Analog input channel 3 , supports 0 to 20mA current input, 5.08mm Phoenix terminal.
2 3	AI2	Analog input channel 2, supports 0 to 20mA current input, 5.08mm Phoenix terminal.
2 4	AI 1	Analog input channel 1 , supports 0 to 20mA current input, 5.08mm Phoenix terminal.
2 5	GND	Channel 1-4 analog input ground, 5.08mm Phoenix terminal.
2 6	485-A	The A of the serial port is connected to the A interface of the external device, and the 5.08mm Phoenix terminal.
2 7	485-B	The B of the serial port is connected to the B interface of the external device , and the 5.08mm Phoenix terminal.

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Chapter 4 Product function introduction

4.1AI input

4.1.1Analog range

The analog input AI measures the current signal, the acquisition range is 0-20mA or 4-20mA, the precision is 3 ‰, and the resolution is 12 bits. Single-ended input is adopted , the sampling frequency is 10Hz, and the input impedance is 100Ω .

Set the sampling range of all AI channels, valid values are 1 and 0 (default 0).

Configured as 0: means 0~20mA

Configured as 1: means 4~20mA

[Note] AI configuration instructions

(1) The AI sampling range of each channel can be set . When the AI channel sampling range is configured as 4-20mA sampling, if the current signal is lower than 3.5 mA is displayed as 0, and when it is higher than 3.5 mA and lower than 4mA, it is displayed as 4 . There is no conversion limit for signals greater than 20mA, but it cannot exceed 25mA (there will be equipment damage risk if it exceeds 25mA).

(2) The starting address of the AI channel sampling range parameter is 0x04B2, the register type is holding register, and the function code is 0x06, 0x10. When writing AI channel sampling range parameters, if the written parameter value is not within the range of 0 to 1, it will automatically take the closest value and write it in. If the sampling range parameter is 2, the device will take 1 as the sampling range parameter. And M odbus will not return wrong command.

4.1.2 Trigger mode

(1) Not trigger: mode off .

(2) Rising Trigger: When the AI input value becomes greater than the set AI trigger high value, a rising edge trigger occurs, changing the state of the DO. For the rising edge trigger to change the DO state again, the AI input value must be lower than the set AI trigger low value for the rising edge trigger to take effect again (the DO working mode needs to be set to trigger flip mode).

(3) Falling Trigger: When the AI input value becomes lower than the set AI trigger high value, a falling edge trigger occurs, changing the state of the DO. For the falling edge trigger to change the DO state again, the AI input value must be higher than the set AI trigger high value for the falling edge trigger to take effect again (the DO working mode needs to be set to trigger flip mode).

(4) Dual-Edge Trigger: When the AI input value becomes greater than the set AI trigger high value, the AI trigger becomes high (i.e., the DO output state changes once), generating a rising edge trigger. After triggering, as long as the AI value does not drop below the set AI trigger low value, the current DO output value remains unchanged. When the AI input value becomes lower than the set AI trigger low value, the AI trigger becomes low (i.e., the DO output state changes once), generating a falling edge trigger. After triggering, as long as the AI value does not exceed the set AI trigger high value, the current DO output value remains unchanged (the DO working mode needs to be set to trigger flip mode).

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4.1.3Engineering quantity integer value and engineering quantity floating point value of analog input

There are two ways to read the current signal collected by the device:

(1) Read the AI engineering volume shaping value, and directly convert to get the input current. The starting address of the register of AI engineering quantity shaping value is 0x0064, the register type is input register, and the read function code is 0x04. The value returned by this method represents one channel per register , and the value read is 0 to 25000. The method of calculating the current is 0~25000 corresponding to 0~25mA. That is :

Current = engineering value / 1000 (m A)

(2) Read the floating-point value of the AI engineering quantity , and use the IEE754 conversion tool to convert the hexadecimal data into a floating-point number to obtain the input current. The starting address of the register of AI engineering quantity shaping value is 0x00 C8 , the register type is input register, and the read function code is 0x04. This method returns two registers representing 1 channel.

4.1.4AI filter parameters

AI channel can be set , the effective value is 1-16 , and the default value is 6.

Description of filtering parameters:

(1) All AI channels share a filter parameter. The higher the parameter value, the more stable the output value and the slower the response.

(2) The AI channel filter parameter address is 0x04B0, and the register type is a holding register. Function code 0x06, 0x10.

(3) When writing AI filter parameters, if the written parameter value is not within the range of 1 to 16, it will automatically take the closest value and write it in. If the write filter parameter is 0, the device will take 1 as the filter parameter, and Modbus does not return error commands .

4.2DO output

The output mode of the relay can output different mode outputs according to the mode set by the user, and the level output is turned on by default.

4.2.1 Input count

Support counting DI input , users can configure rising edge acquisition, falling edge acquisition, and level acquisition according to their own needs. You can also change the clearing method according to your needs.

Trigger method:

Rising edge: When the rising edge is collected (it is not counted when it is turned on, it is counted when it is

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turned off), it will be counted once.

Falling edge: When the falling edge is collected (counting when it is turned on, and not counting when it is released), count once.

Level: Two edges are collected and counted once respectively.

Clearing method:

Automatic: The device will automatically clear the DI count value register (0x 09DF ~ 0x 09E6) every time it is read.

Manual: Manual mode needs to write 1 to the clear signal register (0x 0AA7 ~ 0x 0AAE), and each holding register controls one clear signal respectively.

4.2.2 level output

Output according to the level set by the user, the switch characteristic of the level mode is similar to the function of a self-locking switch.

4.2.3 Pulse output

After the switch output DO is turned on, the switch output DO is automatically turned off after maintaining the set pulse width time (in ms). The pulse width setting range is 50~65535ms (the default is 50 ms).

4.2.4 follow mode

According to the following source configured by the user (when the device has AI acquisition or DI detection function, both DI or AI can be used as the following source, otherwise this function is useless) to change the relay state, multiple outputs can follow the same follow source output, simply put DI detects the input, and automatically outputs the relay that takes it as the following source (for example: DI is 1, DO is closed). When the follow mode is turned on, the follow source should be configured at the same time, otherwise it will follow the first input by default.

4.2.5 reverse follow mode

According to the following source configured by the user (when the device has AI acquisition or DI detection function, both DI or AI can be used as the following source, otherwise this function is useless) to change the relay state, multiple outputs can follow the same follow source output, simply put DI detects the input, and automatically outputs the relay as the following source (for example: DI is 1 , DO is disconnected). When the follow mode is turned on, the follow source should be configured at the same time, otherwise it will follow the first input by default.

4.2.6 trigger flip mode

According to the following source configured by the user (when the device has AI acquisition or DI detection function, both DI or AI can be used as the following source, otherwise this function is useless) to change the relay state, multiple outputs can follow the same follow source output, simply put When DI generates a trigger signal

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(rising edge or falling edge) , DO will have a state change . When the trigger flip mode is turned on , the following source should be configured at the same time, otherwise it will follow the first input by default.

4.2.7 power-on state

According to the state set by the user. After the device is powered on, the output relay is turned on according to the state set by the user, and it is turned off by default.

4.3 Modbus gateway

The device can transparently transmit non-native Modbus commands from the network/serial port to the serial port/network, and the local Modbus commands are directly executed .

4.3.1 Modbus TCP/RTU protocol conversion

After opening, Modbus TCP data on the network side will be converted to Modbus RTU data .

4.3.2 Mod bus address filtering

This function can be used as the host to access the serial port of the device in some host software or configuration screen, and use the gateway function of the device, the slave is on the network end, and Modbus is turned on It is used when the function of TCP to RTU is converted. There are multiple slaves on the bus that may cause data confusion. At this time, enabling address filtering can ensure that only the specified address can pass through the device; when the parameter is 0, the data is transparently transmitted, and the parameter is 1-255 Only data from the set slave address is passed.

4.3.3 Mod bus TCP protocol data frame description

TCP frame format:

Transaction ID	Protocol ID	length	device address	function code	data segment
2 Bits	2 Bits	N+ 2 B it	1 Bit	1 B it	N B it

- Transaction ID: It can be understood as the serial number of the message. Generally, 1 is added after each communication to distinguish different communication data messages .
- Protocol identifier: 00 00 means Modbus TCP protocol.
- Length: Indicates the length of the next data in bytes.

Example: Get D I Status

0 1 00	0 0 00	0 0 06	0 1	0 2	0 0 00 00 04

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Transaction ID	Protocol ID	length	device address	function code	data segment

4.3.4 Mod bus RTU protocol data frame description

RTU frame format:

device address	function code	data segment	Check codeCRC
1 bit	1 B it	N B it	2 Bits

Example: Get D I Status Command

01	02	00 00 00 04	79 C9
Device Modbus address	function code	data segment	CRC check code

4.4 IO linkage function

The linkage function is divided into A I-DO linkage and DI-DO linkage
Generally speaking, the linkage function needs to be divided into two parts.
The first part is the trigger source : both A I/DI input, the second part is the trigger: both DO/AO output

1. When D I is used as the trigger source, the input state of D I and the change of D I can be used as signals, according to the corresponding configuration of D O
   a. In follow/reverse follow mode, the current state of DI will be used as a signal, and the state of D O is the same/opposite to that of DI
   b . Trigger inversion mode, DI state change is used as a signal, if the trigger signal is set to change on the rising edge of DI , then the current state of D O will change once
2. When AI is used as the trigger source, the AI signal is processed into a signal similar to D I through a process similar to Schmitt trigger (refer to chapter 4.1.2) , and then this signal is linked with D O to link The process can refer to D I/DO linkage

4.5 Active upload

The device supports the function of uploading analog input values at fixed time intervals. Setting the value of the corresponding register can control the interval time and whether to upload.

Devices with digital input will actively upload once after successfully connecting to the server, and then the digital input will be uploaded following the status change. Devices with analog input will report the analog input status according to the configured active upload time period (the configuration period is 1-65535).

When it is set to 0, the upload is disabled; if it is set to other positive integer value N, the upload will be performed at intervals of N seconds.

[Note] The device can only be valid if it is configured in client mode, and the register value is non-zero to enable active upload.

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4.6 Custom module information

4.6.1 Mod bus address

The device address is 1 by default, and the address can be modified, and the address range is 1-247.

4.6.2 Module name

Users can configure the device name according to their own needs to distinguish, support English, digital format, up to 20 bytes.

4.6.3 Network parameters

Unless otherwise specified: the following network-related parameters default to IPV4-related parameters.

(1) MAC of the device: the user can obtain it by reading the specified register, and this parameter cannot be written.

(2) IP address: device IP address, readable and writable.

(3) Mod bus TCP port : the port number of the device, readable and writable.

(4) Subnet mask : address mask, readable and writable.

(5) Gateway address: Gateway.

(6) DHCP : Set the way the device obtains IP : static (0), dynamic (1).

(7) Target IP: When the device works in client mode, the target IP or domain name of the device connection.

(8) Destination port: When the device is working in client mode, the destination port of the device connection.

(9) DNS server : The device is in the client mode and resolves the domain name of the server.

(10) Module working mode : switch the working mode of the module. Server: The device is equivalent to a server, waiting for the user's client to connect, and the maximum number of connections is 4 . Client: The device actively connects to the target IP and port set by the user.

(11) Active upload: When this parameter is not 0, and the device is in the client mode, the discrete input status of the device will be uploaded to the server when it is connected for the first time or the input changes, and the analog input will be uploaded according to the configured time period.

4.6.4 Serial parameters

Parameters for setting serial communication:

Default parameters:

Baud rate: 9600 (03);

Data bit: 8bit;

stop bit: 1bit;

Parity digit: N ONE (00);

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(1) Baud rate:

Baud rate code value table	
0x0000 _	1200
0x00 01	2400
0x00 02	4800
0x00 03 (default)	9600
0x00 04	19200
0x00 05	38400
0x00 06	57600
0x00 07	115200

(2) check digit:

check digit	
0x00 00 (default)	NONE
0x00 01	ODD
0x00 02	EVEN

4.7 OLED display and parameter configuration

The display interface includes an information display page (AI input value, DO status display page) and a parameter setting page (some parameters).

4.7.1 Information display interface

Including AI input value and DO status display page, short press the up and down buttons to switch the interface.

4.7.2 Device parameter display interface

Press the left button or right button to enter the password input interface. After completing the correct password input, the device parameter information interface will be displayed (password interface: default password: 0000; Bit value, the password has a total of 4 digits, and each input range is a number from 0 to 9):

The parameter setting interface from top to bottom is:

1. Modbus address ;
2. baud rate ;
3. data bits ;
4. check digit ;
5. stop bit ;
6. local port ;
7. local IP address ;
8. network mode;

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9. gateway ;
10. subnet mask ;
11. DNS;
12. MAC address;
13. DHCP;
14. target IP;
15. destination port;
16. Modbus TCP/RTU protocol conversion;
17. active upload;
18. Modbus address filtering;

4.7.3 Device parameter configuration interface

Press and hold the confirmation button to enter the password input interface, complete the correct password input, and enter the configuration interface (password interface: default password: 0000; short press the middle to verify the password, the left and right buttons switch the password bit, and the up and down buttons switch the value of the current bit , the password has a total of 4 digits, and each input ranges from 0 to 9).

Select the setting item, enter the parameter configuration page and short press the up and down keys to switch the setting item;

Select the setting item, short press to confirm or right click, the setting item gets the cursor to represent the selection and enter the setting item;

Adjust the parameter value: After selecting the setting item, the up and down keys can change the value or optional value; the left and right keys move the cursor in the parameter item;

Confirm the parameter value: After adjusting the parameter value, press the enter key to exit the current setting item.

Save parameter settings and restart: After setting the parameters, move the cursor to save and restart, then short press the confirmation button to enter the confirmation save and restart state, short press the confirmation button (press other buttons, it will exit the confirmation state) , that is The parameters can be saved and the device restarted.

Exit without saving parameters: move the cursor to exit, then short press the confirmation key to enter the confirmation exit state, short press the confirmation key (press other keys, it will exit the confirmation state) , and you can exit the parameter configuration interface without saving the parameters .

Among them, the data bit and stop bit cannot be set. After the DHCP mode is turned on, the local IP address, gateway, and subnet mask cannot be configured and are only assigned by the router;

4.7.4 Screen sleep

The device screen has a sleep function, which is off by default and can be set to on in the configuration interface.

In any interface, when there is no button operation for 180 seconds , the screen will enter the sleep mode. At this time, the interface will display Xiaoyi robot. Press any button to exit the sleep mode.

When the screen is in sleep mode, the running efficiency of device programs will be improved.

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4.8 MODBUS parameter configuration

Note: According to the usage requirements, some software (such as KingView) requires adding +1 when converting from hexadecimal to decimal in order to operate on registers (all decimal values in the table have already been adjusted by +1).

4.8.1 A I register list

Register function	register address (HEX)	register address (DEC)	register type	Number	operate	Data Range/Remarks	Related function code
Integer value of AI engineering quantity	0x00 64	3-0101	input register	4	R	1 6 -bit integer type , unit u A	R : 0x04
Floating point value of AI engineering quantity	0x00 C8	3-0201	input register	8	R	3 2 -bit floating point type, unit mA	R : 0x04
AI filter parameters	0x04B0 _	4-1201	holding register	1	R W	Analog input filter parameters, range 1-16 , the smaller the number, the more sensitive, the larger the more stable, default 6	R : 0x03 W : 0x06 , 0x10
AI sampling range	0x04B2 _	4-1203	holding register	4	R W	AI channel sampling range 0x0000 : 0 ～ 20mA _ _ 0x0001 : 4-20mA _ _ _ _	R : 0x03 W : 0x06 , 0x10
AI Trigger High Value	0x1F40	4-8001	holding register	4	R W	0-20000(uA)	R : 0x03 W : 0x06 , 0x10
AI Trigger Low Value	0x1F72	4-8051	holding register	4	R W	0-20000(uA)	R : 0x03 W : 0x06 , 0x10
AI trigger mode	0x1FA4	4-8101	holding register	4	R W	0, do not trigger 1, rising trigger 2. Fall trigger 3. Bilateral trigger	R : 0x03 W : 0x06 , 0x10

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4.8.2 DO register list

Register function	register address (HEX)	register address (DEC)	register type	Number	operate	Data Range/Remarks	Related function code
D O state	0x0000	0-0001	Coil	4	R W	Writing changes the current D O state, and reading obtains the current D O state	R : 0x01 W: 0x0F , 0x05
D O state at power-on	0x0064	4-0101	holding register	4	R W	The default state of the coil after power-on	R : 0x01 W: 0x0F , 0x05
DO work mode	0x0578 _	4-1401	holding register	4	R W	0x0000 level without following mode 0x0001 pulse without following mode 0x0002 follow mode 0x0003 reverse follow mode 0x0004 trigger toggle mode	R : 0x03 W : 0x06 , 0x10
DO pulse width	0x05DC _	4-1501	holding register	4	R W	Range: 5 0 ~ 6 5535 ms	R : 0x03 W : 0x06 , 0x10
D O follow source	DI:0x0000 AI:0x8000	DI:4-0001 AI:4-32769	holding register	4	R W	scope: 0x0000 : follow D I1 0x0001: follow D I2 0x8 000: Follow A I1 0x 8 001: Follow A I2	R : 0x03 W : 0x06 , 0x10

4.8.3 Module Related Registers

Register function	register address (HEX)	register address (DEC)	register type	Number	operate	Data Range/Remarks	Related function code
module address	0x 07E8	4-2025	holding register	1	R W	Modbus address, 1 ~ 247 configurable addresses	R : 0x03 W : 0x06
Module model	0x 07D0	4-2001	holding register	1 2	R	Get the current model	R : 0x03
Firmware version	0x07DC _	4-2013	holding register	1	R	Get firmware version number	R : 0x03
module name	0x 07DE	4-2015	holding register	1 0	R W	custom module name	R : 0x03 W : 0x10

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module restart	0x 07EA	4-2027	holding register	1	W	Write 0x5BB5 to reboot.	W : 0x06
Restore factory parameters	0x 07E9	4-2026	holding register	1	W	Write 0x5BB5 to restore factory settings.	W : 0x06
Serial baud rate	0x0834	4-2101	holding register	1	R W	See baud rate code table, Default is 9 600 (0x 0003)	R : 0x03 W : 0x06 , 0x10
serial check digit	0x0836	4-2103	holding register	1	R W	0x 0000 no checksum (default) 0x0001 odd parity 0x0002 even parity	R : 0x03 W : 0x06 , 0x10

4.8.4 Network related registers

Register function	register address (HEX)	register address (DEC)	register type	Number	operate	Data Range/Remarks	Related function code
Module MAC address	0x0898	4-2201	holding register	3	R	Device M AC parameters	R: 0x03
local IP address	0x089B	4-2204	holding register	2	R W	Default: 1 92.168.3.7	R : 0x03 W : 0x06 , 0x10
local port	0x089D	4-2206	holding register	1	R W	1 ~ 65535 , default: 5 02	R : 0x03 W : 0x06 , 0x10
subnet mask address	0x089E	4-2207	holding register	2	R W	Default: 2 55.255.255.0	R : 0x03 W : 0x06 , 0x10
gateway address	0x08A0	4-2209	holding register	2	RW	Default: 1 92.168.3.1	R : 0x03 W : 0x06 , 0x10
DHCP mode setting	0x08A2	4-2211	holding register	1	R W	0x 0000 static IP (default) 0x0001 Obtain IP automatically	R : 0x03 W : 0x06 , 0x10
Target IP/domain name	0x08A3	4-2212	holding register	6 4	R W	String format stored in IP /domain name Default IP : 1 92.168.3.3	R : 0x03 W : 0x06 , 0x10
server port	0x08E3	4-2276	holding register	1	R W	0 -65535 , default 5 02	R : 0x03 W : 0x06 , 0x10
DNS server IP address	0x08E4	4-2277	holding register	2	R W	Default 8.8.8.8	R : 0x03 W : 0x06 , 0x10
How the module works	0x08E6	4-2279	holding register	1	R W	0x 0000 server mode 0x0001 client mode	R : 0x03 W : 0x06 , 0x10

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active upload	0x08E7	4-2280	holding register	1	R W	0x0000 disabled, others: 1～6 5535 s periodic sending	R : 0x03 W : 0x06 , 0x10
MOSBUS TCP/RTU conversion enable	0x08E8	4-2281	holding register	1	R W	0, close, 1 open protocol conversion	R : 0x03 W : 0x06 , 0x10
MODBUS address filtering	0x08E9	4-2282	holding register	1	R W	0: transparent transmission, 1-255: when the data is not local, check the slave address of the command command, and it can be passed when it is the set value	R : 0x03 W : 0x06 , 0x10

4.8.5 M od bus instruction operation example

1. Read Coil (D O) Status

Use the read coil state (01) function code to read the output coil state, for example:

01	01	00 00	00 0 4	3D C9
Modbus address	function code	register first address	Number of output coils read	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	01	01	0 1	90 48
M odbus address	function code	bytes of data	returned status data	CRC check code

The above returned status data 0 1 indicates that the output DO 1 is turned on .

2. Control Coil (D O) Status

Support operation of single coil (0 5), operation of multiple coils (0F) function code operation.

Use the 0 5 command to write a single command, for example :

01	05	00 00	FF 00	8C 3A
Modbus address	function code	register first address	Conduction: F F 00 Off: 0 0 00	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	05	00 00	FF 00	8C 3A
M odbus address	function code	register first address	Operation method	CRC check code

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The DO1 coil is turned on.

Use 0 F function code as the command to write multiple coils, for example:

01	0F	00 00	00 0 4	01	0F	7E 92
M odbus address	function code	initial address	Number of coils	bytes of data	Control coil data	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	0F	00 00	OO O 4	54 08
Modbus address _	function code	register address	Number of coils	CRC check code

The coils are all on.

3. read holding register

Use 03 function code to read one or more register values, for example:

01	03	0 5 78	00 01	0 4 DF
Mod bus address	function code	register first address	Number of registers read	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	0 3	02	00 00	B8 44
Modbus address	function code	bytes of data	returned data	CRC check code

The above 00 00 means that DO1 is in level output mode .

4. Operation Holding Register

Support operation of single register (0 6), operation of multiple registers (10) function code operation.

Use 06 function code to write a single holding register, for example: set the working mode of DO1 to pulse mode

01	0 6	05 78	00 01	C 8 DF
Modbus address _	function code	register address	write value	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	0 6	05 78	00 01	C 8 DF
Modbus address	function code	register address	write value	CRC check code

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If the modification is successful, the data of the 0x0578 register is 0x0001, and the pulse output mode is turned on .

Use the 10 function code to write the command of multiple holding registers, for example: set the working mode of DO1 and DO2 at the same time.

01	10	05 78	00 0 2	0 4	00 01 00 0 1	5 A 7D
Mod bus address	function code	register first address	number of registers	The number of bytes of data written	written data	CRC check code

After sending the above command to the device through the 485 bus, the device will return the following values:

01	10	05 78	00 0 2	C 1 1D
Mod bus address	function code	register address	number of registers	CRC check code

If the modification is successful, the values of the two consecutive registers starting at 0x0578 are 0x0001 and 0x000 respectively. 1 marks DO1 and DO2 to enable pulse output .

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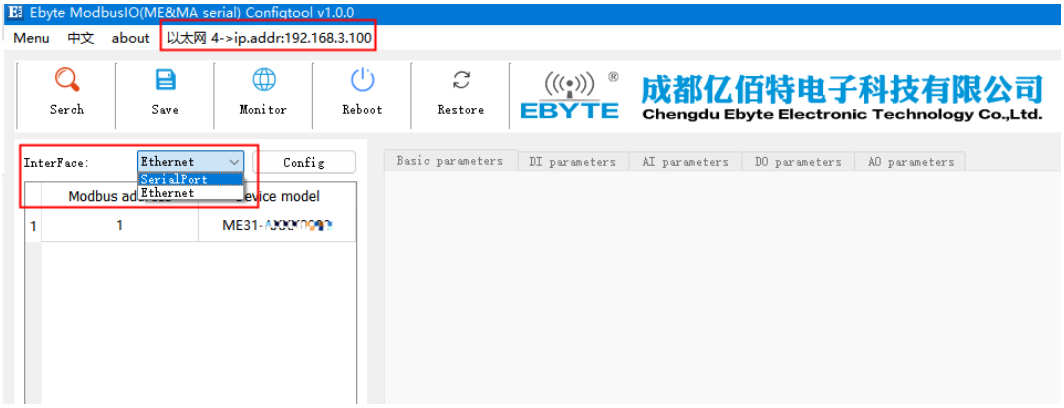
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Chapter 5 Configuration software

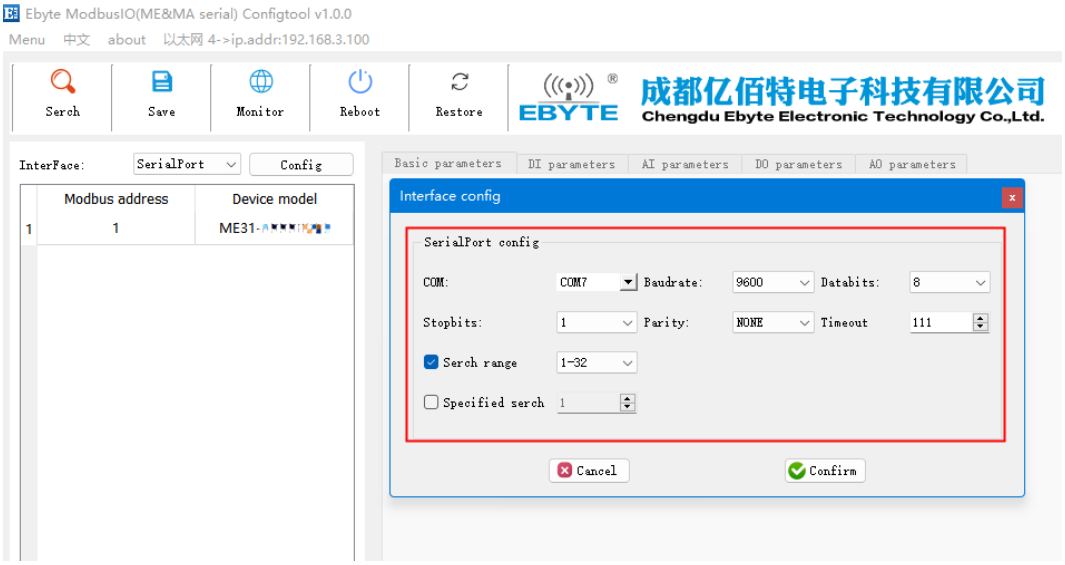
5.1Acquisition and Control

Step 1 Connect computer to the device

（1）User can configure the device by selecting the interface (serial port/network port); if you choose the network port, you must first select the network card and then search for the device.



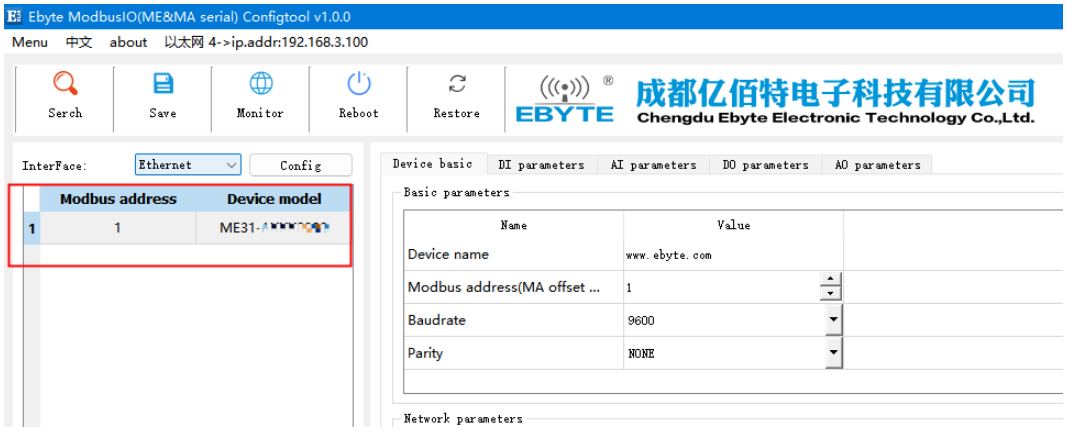
(2) If you choose a serial port, you need to select the corresponding serial port number, and the same baud rate, data bit, stop bit, parity bit and address segment search range as the device, and then search.



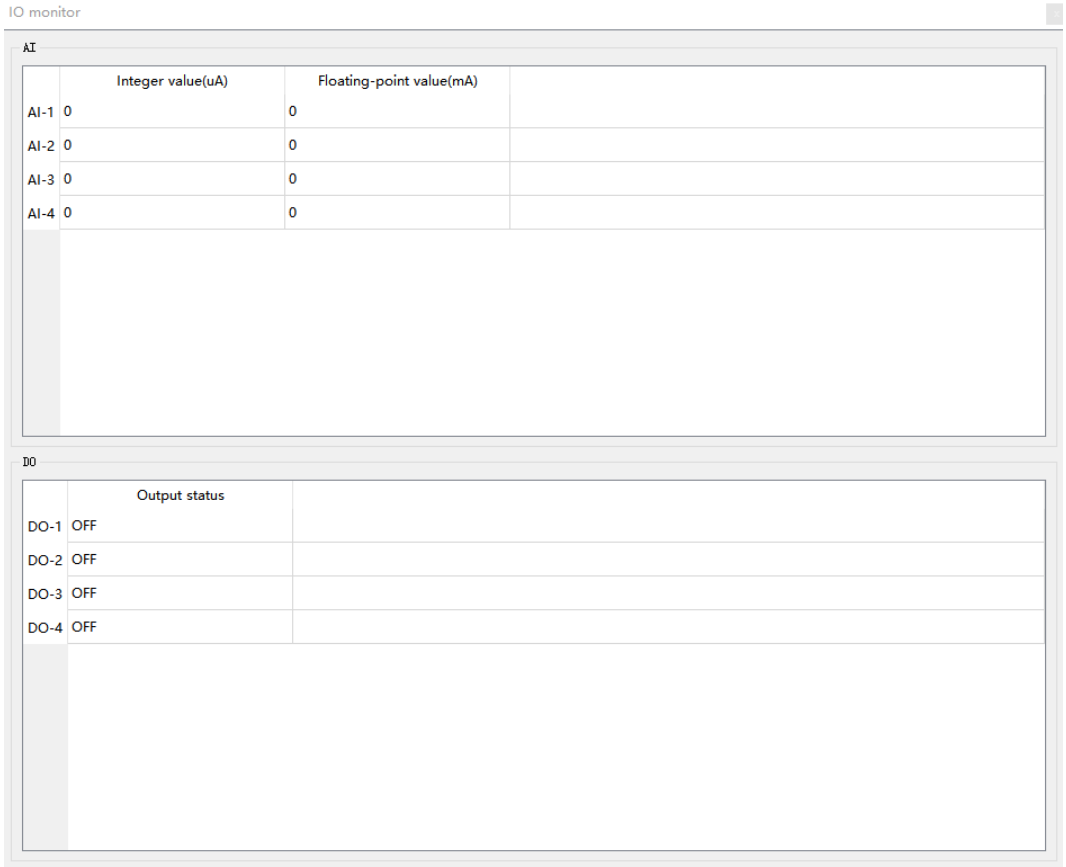
Step 2: Select the corresponding device

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Step3: Click the device online to enter the IO monitoring, the following is the IO monitoring screen display



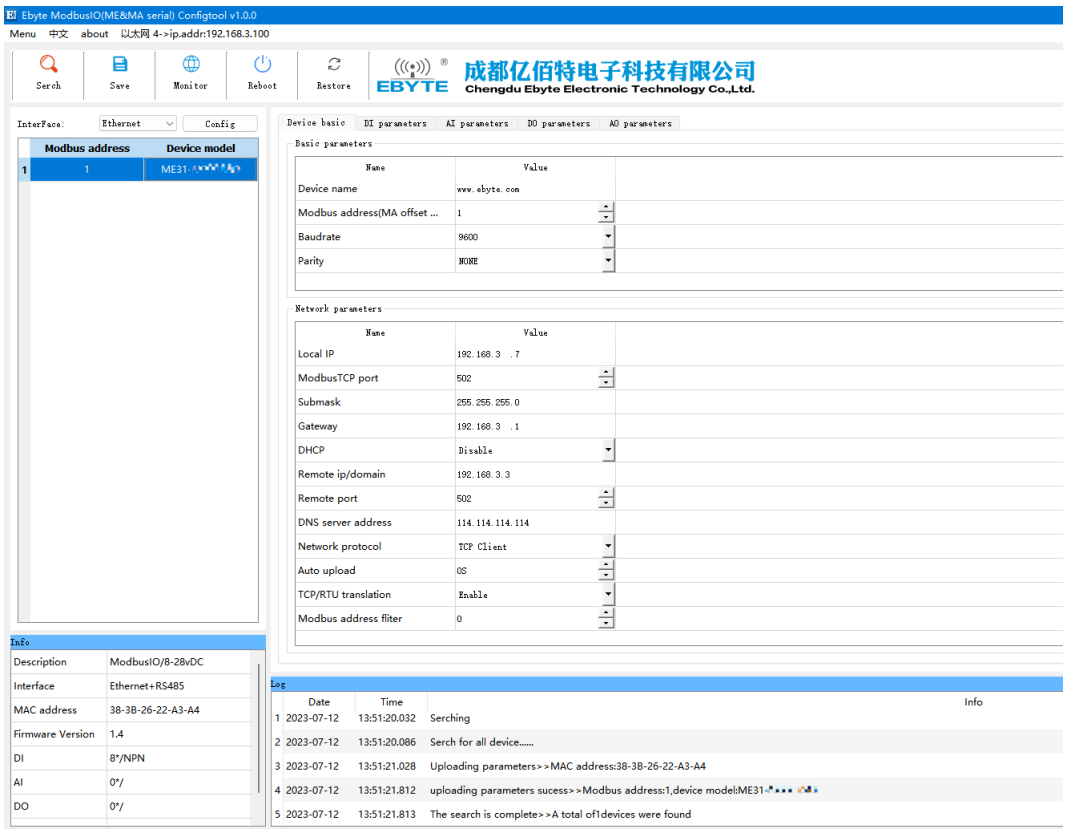
5.2Parameter setting

Step 1: For connecting devices, refer to "Acquisition and Control"

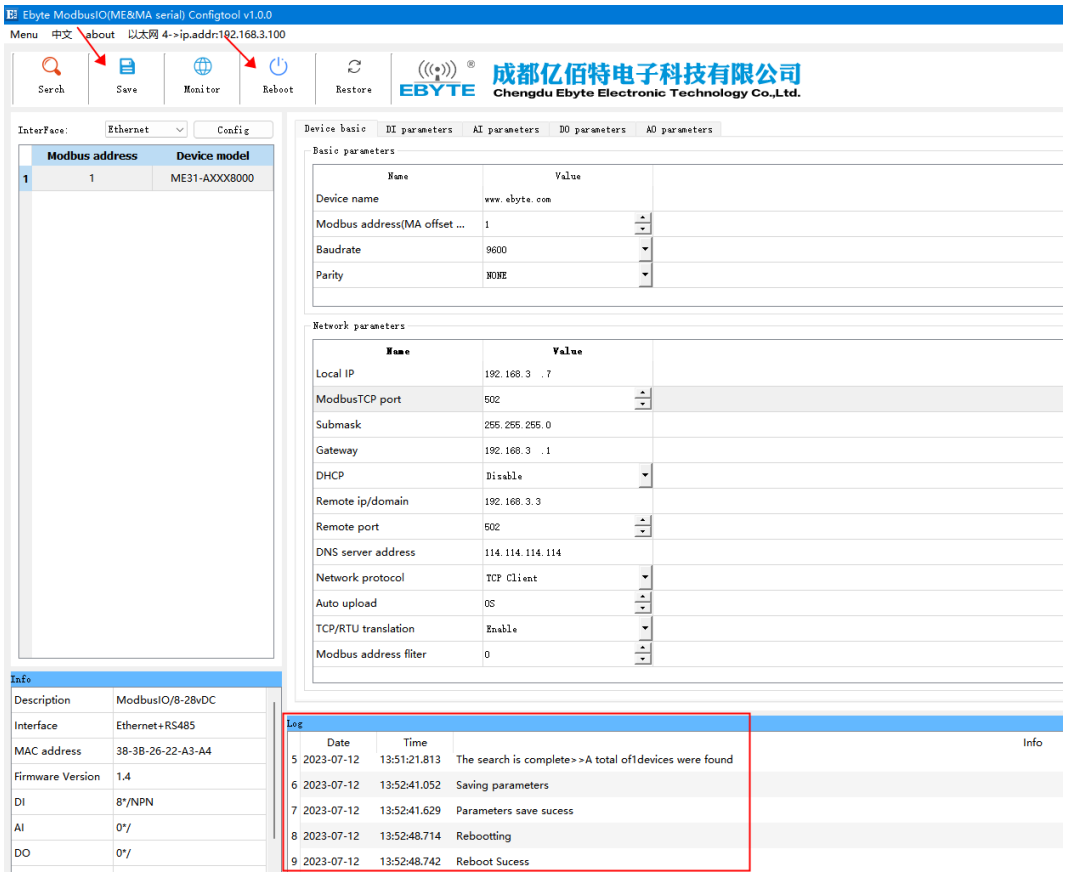
Step 2: You can configure device parameters, network parameters, DI parameters, AI parameters, DO parameters, and AO parameters (for example: if the device has no AO function, the AO parameters cannot be configured)

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Step 3: After configuring the parameters, click Download Parameters, and you will see a prompt message in the log output that the parameters are saved successfully, click Restart the device, and the modified parameters will take effect after the device restarts.



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Revision history

Version	revision date	Revision Notes	Maintenance man
1 .5	2 02 3-6-6	New version	LT
1.6	2024-10-18	Content revision	LT

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