



Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



1/2/3/4 Channel Modbus IO Digital Input/Output

MA01-AXCX X0X0-V2(P)

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1 Introduction

MA01-AXCX1010-V2/MA01-AXCX1010-V2P/MA01-AXCX2020-V2/MA01-AXCX2020-V2P/MA01-AXCX3030-V2/MA01-AXCX3030-V2P/MA01-AXCX4040-V2/MA01-AXCX4040-V2P is a serial I/O networking module (also known as “Remote IO”) that supports the acquisition of 1/2/3/4-way sensor switch input (DI), conversion to serial data for transmission to configuration software or PLC, and the sending of commands through the serial port for control of 1/2/3/4-way relay switch output (DO) to realize remote acquisition and control functions. (also known as “Remote IO”).

Features

- Support for Modbus RTU protocol;
- Support for various types of configuration software/PLC/touch screen;
- RS485 acquisition control IO;
- DC 8-28V power supply;
- 1/2/3/4-way switch input DI (dry node);
- 1/2/3/4-way switching output DO (relay);
- Switch input (DI) supports counting function;
- Switch input (DI) supports rising edge, falling edge, and level triggering methods;
- Switching output (DO) supports level mode, pulse mode, following mode, switching cycle working mode;
- Support communication detection function
- Communication baud rate 1200bps~115200bps (default 9600bps), support customized setting;
- Support 0~255 slaves.
- Supports DIN-rail and locating hole mounting;
- Using Hongfa relays, more reliable and longer life;
- Industrial grade products with stable and reliable performance;
- Power supply isolation, digital signal isolation, strong anti-interference ability;
- With key function, it is convenient for customers to use the key to reset or reset operation.

2 Quick Start

2.1 Preparation for use

Before using the serial I/O networking device (hereinafter referred to as “IO device”), you need to prepare the computer, converter, power supply, screwdriver and other related accessories. The details are as follows:

Table 2-1-1 Preparation List

Serial Number	Products	Quantity
1	IO device	1
2	USB to Serial Converter	1
3	Configuration Tool Software	1
4	Computer	1
5	Power adapter (12V/1A)	1
6	Screwdrivers (one SL 2)	1
7	Signal generator (or sensor)	1

2.2 Equipment Wiring

Note: When carrying out equipment wiring operations, do not work with electricity, so as not to cause equipment damage or even safety accidents.

2.2.1 Power Wiring

Power supply, using DC 8-28V power supply, can also use DC 12V or 24V power supply.

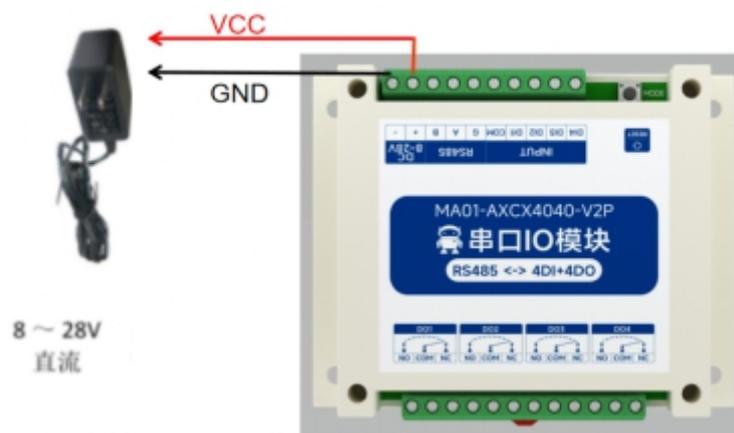
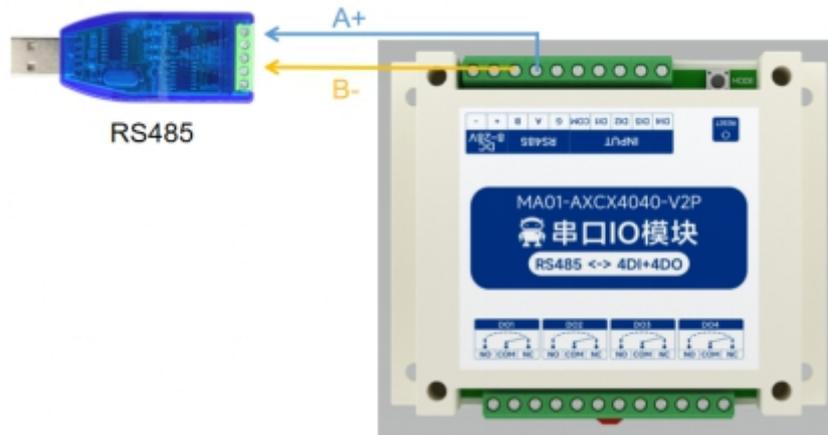


Figure 2-2-1 Power Supply Wiring Diagram

2.2.2 Communication wiring

RS485(MA01):



2.2.3 Overall wiring diagram

- (1) When the device is powered on, the power indicator (POWER) is always on and the device is powered normally.
- (2) Switch input DI wiring, connect the control button to the switch input DI port as shown in the figure.
- (3) Switch output DO wiring, connect the load to the switch output DO port as shown in the figure.

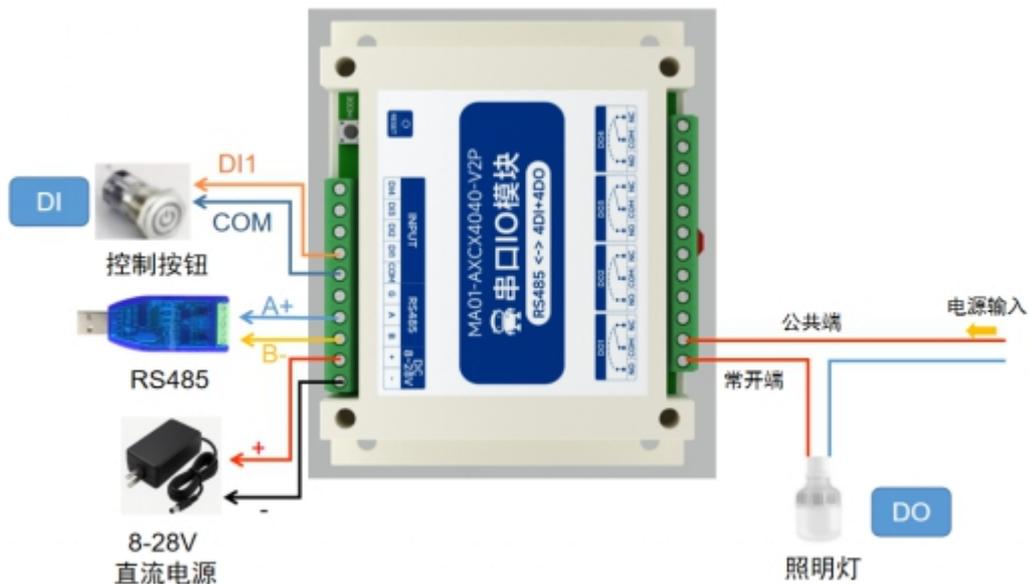


Figure 2-2-3 Overall Wiring Schematic Diagram

2.3 Software Settings

2.3.1 Device Connection

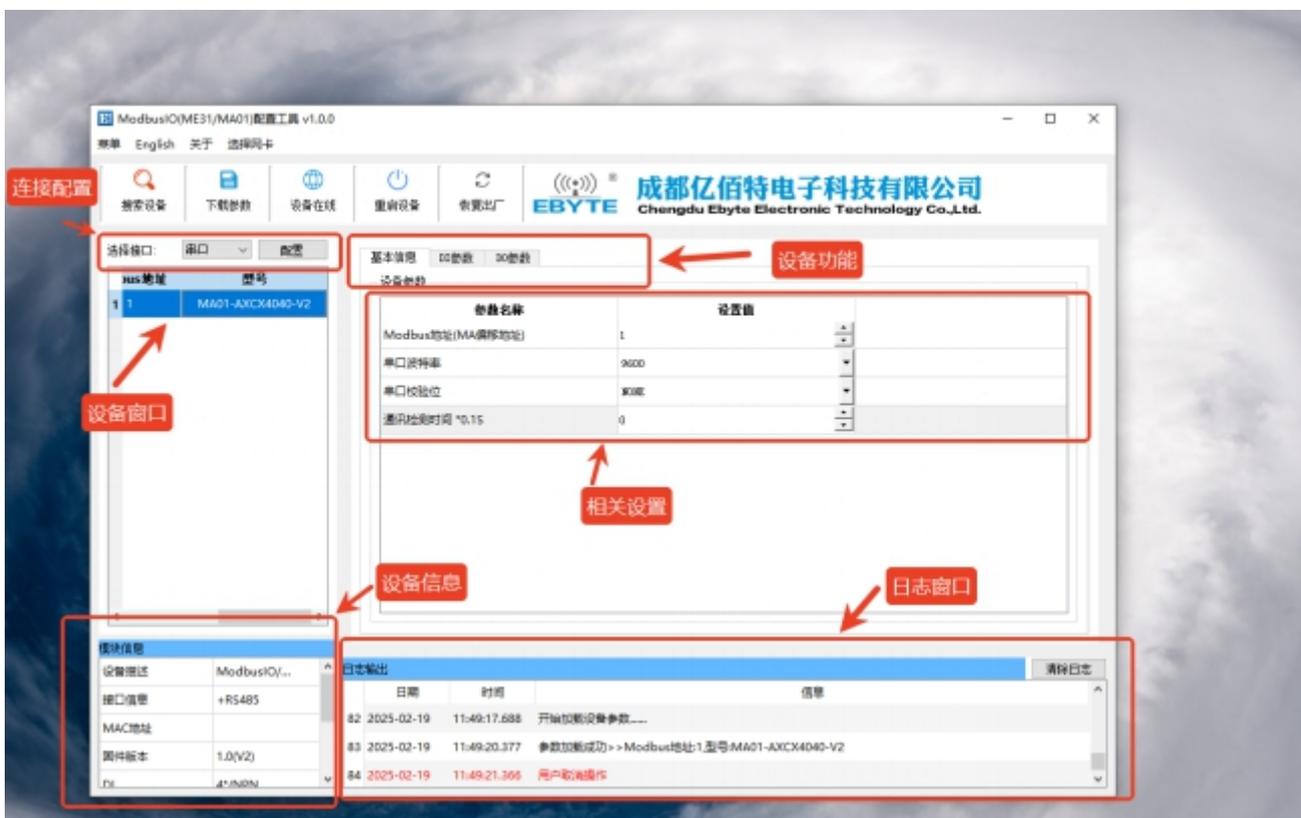


Figure 2-3-1 Software Interface

Operation steps:

- (1) Select the serial port, find the corresponding device port number, click “Configuration”, the default settings of the device are as follows (if the user has made changes, set up in accordance with the user's changes), click to confirm.

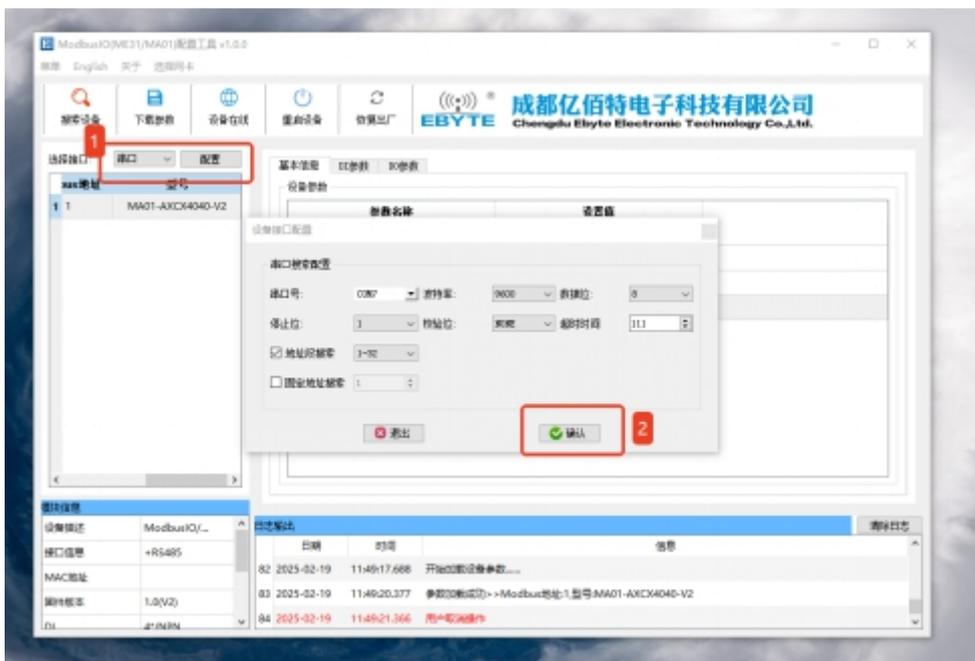


Figure 2-3-2 Select the serial port to open the configuration interface

(2) In the device window, click “Search for devices”, and the log output below will start refreshing the search information. Click “Stop Searching” menu when the connected device is displayed in the Device column of the Device window. Click on the selected device again, and the connection is successful.

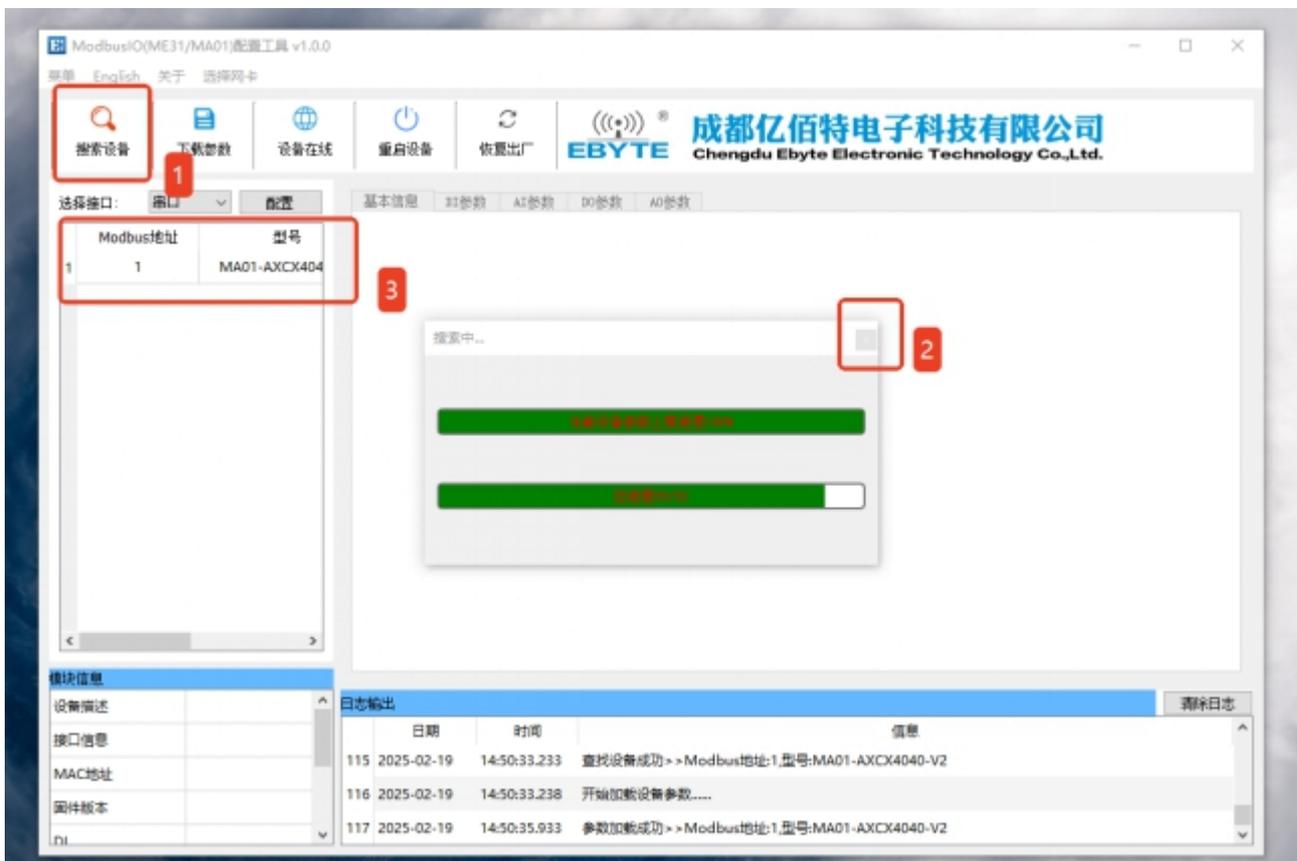


Figure 2-3-3 Connecting Devices

2.3.2 Equipment Testing



Figure 2-3-4 Device Testing



Figure 2-3-5 Actual Test Effect

3 Product Overview

3.1 Product Specification

Table 3-1-1 Product Specifications

Product Model	Specification	Switching input DI	Switching Output DO	RS485	Isolated type
MA01-AXCX1010-V2	1DI+1DO	1	1	●	×
MA01-AXCX1010-V2P		1	1	●	●
MA01-AXCX2020-V2	2DI+2DO	2	2	●	×
MA01-AXCX2020-V2P		2	2	●	●
MA01-AXCX3030-V2	3DI+3DO	3	3	●	×
MA01-AXCX3030-V2P		3	3	●	●
MA01-AXCX4040-V2	4DI+4DO	4	4	●	×
MA01-AXCX4040-V2P		4	4	●	●

3.2 Technical Parameters

Table 3-2-1 Technical parameters

Type	Name	Parameter
Power supply	Operating voltage	DC 8 ~ 28V
	Operating current	50mA @12V
	Power indicator	Green LED indication
Serial port	Communication interface	RS485
	Baud rate	1200bps ~ 115200 bps (default 9600 bps)
	Data bit	8 (fixed)
	Parity bit	No parity, odd parity, even parity (default no parity)
	Stop bit	1 (fixed)
	Communication protocols	Modbus RTU Protocol
	Device address	0 ~ 255 (Default address 1, 0 is the broadcast address)
Indicator light	Normal light after power on, red LED blinks during communication, 60ms period	
DI Input	Number of DI channels	1/2/3/4
	Interface Type	Dry node
	Trigger mode	Rising edge, falling edge, level (default rising edge trigger)

	Filtering parameter	1 ~ 16 (default 6)	
	Acquisition frequency	1 kHz	
DO Output	Number of DO channel	1/2/3/4	
	DO output type	Relay type C (normally open + normally closed)	
	DO output mode	Level Mode, Pulse Mode, Follow Mode, Cycle Mode	
	Relay contact capacity	30V/10A、250V/10A	
	Output indicator	Red LED indication	
Others	Product Size	MA01-AXCX1010-V2(P)	54*90*32(mm)
		MA01-AXCX2020-V2(P)	90*90*40(mm)
		MA01-AXCX3030-V2(P)	90*90*40(mm)
		MA01-AXCX4040-V2(P)	115*90*40(mm)
	Product Weight	MA01-AXCX1010-V2	74±5g
		MA01-AXCX1010-V2P	75±5g
		MA01-AXCX2020-V2	121±5g
		MA01-AXCX2020-V2P	123±5g
MA01-AXCX3030-V2		133±5g	
MA01-AXCX3030-V2P		134±5g	
Working temperature and humidity	-40 ~ +85°C、5% ~ 95%RH (condensationless)		
	Storage temperature and humidity		
Installation	-60 ~ +125°C、5% ~ 95%RH (condensationless)		
	Guide rail, positioning hole mounting		

3.3 Port Description

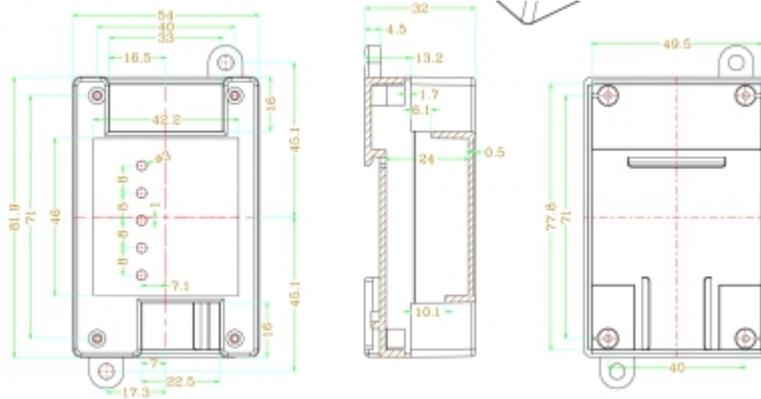


Figure 3-3-1 Interface Diagram

Table 3-3-1 Port Function Table (common to all models)

Serial number	Pins	Description	Remarks
1	DC8-28V “-”	Power ground “-”	Recommended RVV 2*0.75 wire
2	DC8-28V “+”	Power supply “+”	
3	B	RS485 corresponds to B	Recommended RVV 2*0.75 wire
4	A	RS485 corresponds to A	
5	G	RS485 corresponding ground, GND	
6	COM	Switch input channel COM terminal	Recommended RVV 2*0.75 wire
7	DI1	Switch input channel 1	
8	DI2	Switch input channel 2	
9	DI3	Switch input channel 3	
10	DI4	Switch input channel 4	
11	RESET Button	Short press (50ms-1.5S) to restart, long press button 5s-10s to restore factory settings, greater than 10s invalid	Reset button, long press and short press have different functions
12	SYS 灯	Display of communication status	Normally on after power-up, LED blinks during communication, 60ms cycle, alternating on and off.

13	DO1	Switching output channel 1	Relays have normally open and normally closed terminals.
14	DO2	Switching output channel 2	
15	DO3	Switching output channel 3	
16	DO4	Switching output channel 4	



3.4 Dimension Drawing

Figure 3-4-1 MA01-AXCX1010-V2/MA01-AXCX1010-V2P Dimensional Drawing



Figure 3-4-2 MA01-AXCX2020-V2/MA01-AXCX2020-V2P/MA01-AXCX3030-V2/MA01-AXCX3030-V2P Dimensional Drawing

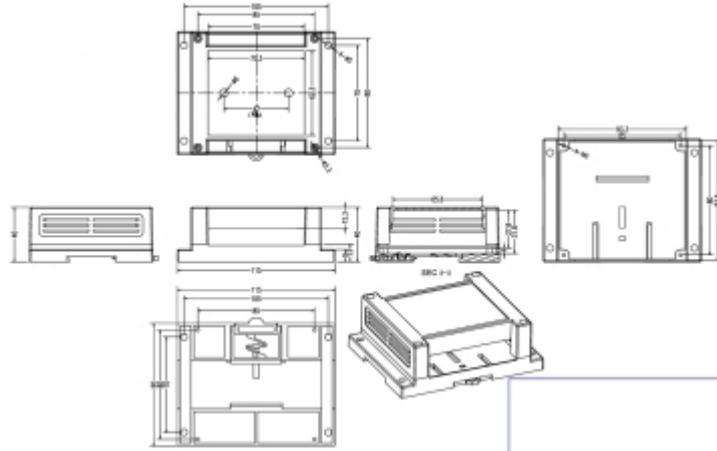


Figure 3-4-3 MA01-AXCX4040-V2/MA01-AXCX4040-V2P Dimensional Drawing

3.5 Installation Method

The equipment is mounted with guide rails and positioning holes.

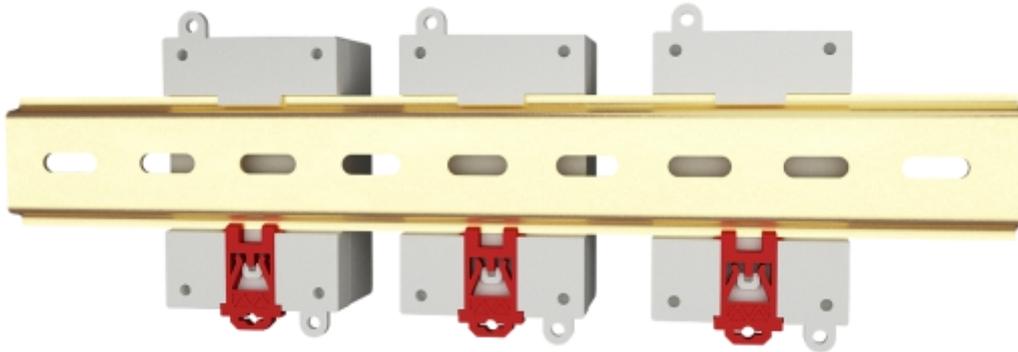


Figure 3-5-1 Rail Mounting

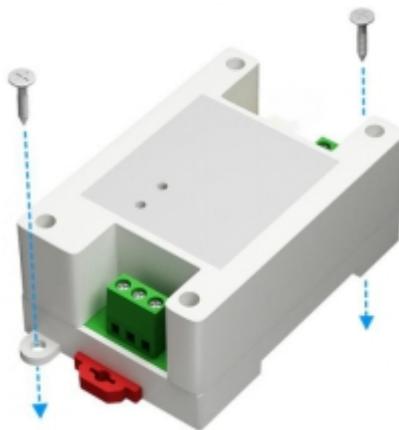


Figure 3-5-2 Positioning Hole Installation

4 Product Features

4.1 Switch Input DI

4.1.1 Switch Input DI Acquisition

Switch input DI measurement level signal or edge pulse signal (rising edge, falling edge). Support dry node acquisition, support DI counting function, counting the maximum value of 65535 (beyond 65535 will stop counting).

Switch input DI support rising edge, falling edge, level (rising edge + falling edge) three kinds of triggering mode (default rising edge triggering mode).

Zeroing mode supports automatic zeroing and manual zeroing (default manual zeroing).

Note:

- a. When DI is set to auto zero, the DI pulse count value register is read, and the value of this register will be cleared after modbus returns normally; when it is set to manual zero, it is cleared directly by writing 0 to the count value register.
- b. In auto zero mode, you can also write 0 to the count value register to achieve the zero effect, according to the user's needs.



Figure 4-1-1 Setting DI Counts

4.1.2 Switching Input DI Filter Parameters

The switch input DI needs to hold the signal for multiple sampling cycles before confirming. The filter parameter can be set in the range of 1 to 16 (default 6 sampling cycles). DI filtering parameters can be set through the configuration software. (6*1KHz)

Definition of filtering parameter: the device detects DI level every 1ms, such as setting the filtering parameter as 5, then the device must detect the on level continuously for 5ms before it is considered to be on, otherwise it is considered to be disconnected, setting 1 means that the high level detected for 1ms is directly considered to be on, setting 16 means that the high level detected continuously for 16ms before it is considered to be on.

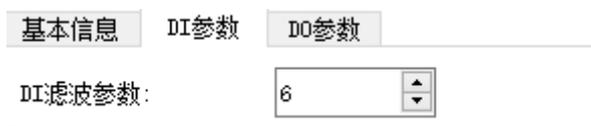


Figure 4-1-2 Setting DI Filter Parameters

4.2 Switching output DO

4.2.1 Switching Output DO Description

Switching output DO, with level mode, pulse mode, follow mode (follow DI only), switching cycle mode. It adopts C type macrofaucet relay output (normally open + normally closed), and the maximum load (contact capacity) supported by a single output is or 250V/10A.

Each DO output is designed with an output indicator (red LED) to indicate that the output port is on or off; when the LED is on, it indicates that the relay is engaged (normally open, normally closed); when the LED is off, it indicates that the relay is not engaged (normally open, normally closed).

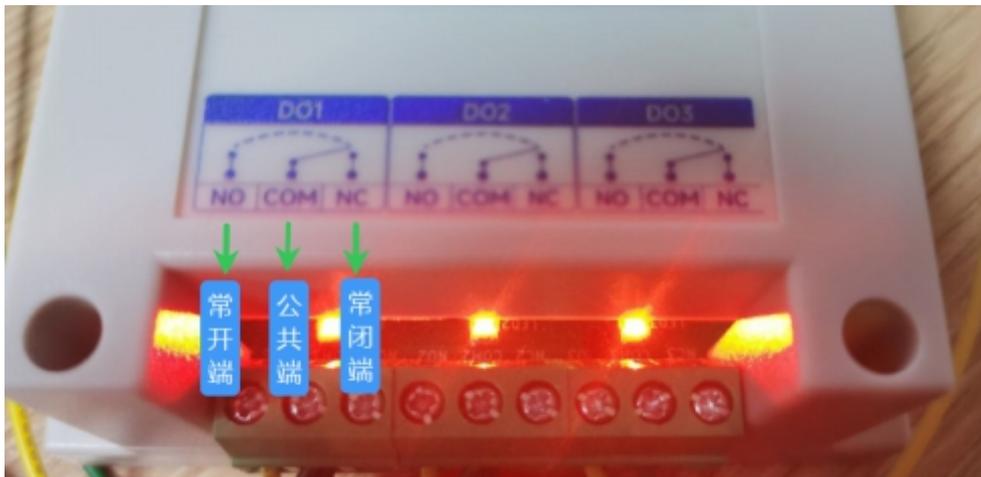


Figure 4-2-1 Switching Output DO Interface

4.2.2 Switching output DO mode setting

(1) Level Mode

Output according to the level set by the user. The switching characteristics of the level mode are similar to the function of a self-locking switch.

(2) Pulse mode

After the switch output DO is turned on and the set pulse width is maintained for the time (in ms), the switch output DO is automatically turned off. Pulse width setting range 50 to 65535 (default 50).

(3) Follow mode

After the user sets the following mode, after setting the input terminal to follow. The switch output DO terminal is the same as the DI input terminal.

Note: Multiple switch output DO terminals can be set to follow one DI input, and one switch output DO terminal cannot be set to follow multiple DI inputs.

When set to follow mode, each DO defaults to a follow source

DO 1--DI1 DO1 follow source register write value: 0x00

DO 2--DI2 DO2 follow source register write value: 0x01

DO 3--DI3 DO3 follow source register write value: 0x02

DO 4--DI4 DO4 follow source register write value: 0x03

And so on.

(4) Switching cycle mode

After users set the switching cycle mode, they can realize the function of how many times to turn off after how many hours to turn on, turn on after how many hours to turn off, and how many times to cycle according to their needs. The switching time can be set separately, for example: open 5000ms, close 3000ms for infinite switching cycle.

Configure the unit of time as ms, the range of time is 50-65535, default is 1000, the range is 0-65535, when set to 65535, it means unlimited switching cycle, the default value is 65535.

Notes:

After setting the switch to cycle mode, it will close the switch directly, the default calculation starts from closing the switch, and opening the switch action is regarded as executing a cycle cycle, if you need to limit the number of times to be executed, after setting it to cycle mode, set the cycle count register (the cycle count defaults to 65535 for infinite cycles, for example, if you need to limit the execution to 50 times, you need to write 50 to this register).

Set to loop mode, if the loop count is 50 times, after it has been executed 20 times, switch to other DO working mode, and then switch back to this mode, the loop count will be executed the remaining 30 times.

Setting to loop mode, if the loop count is 50, after it has been executed 20 times, the device is powered off and then powered back on, the loop count will be reset to 65535 directly, that is to say, the action of reboot will reset all the loop counts to infinite loops, which needs to be reset by the user himself.

4.3 Device address

4.3.1 Device address

Device address default: 1

Device address setting range: 0 to 255 (0 is the broadcast address)

5 Port Wiring

5.1 Switch input DI port wiring

5.1.1 2-wire switch wiring

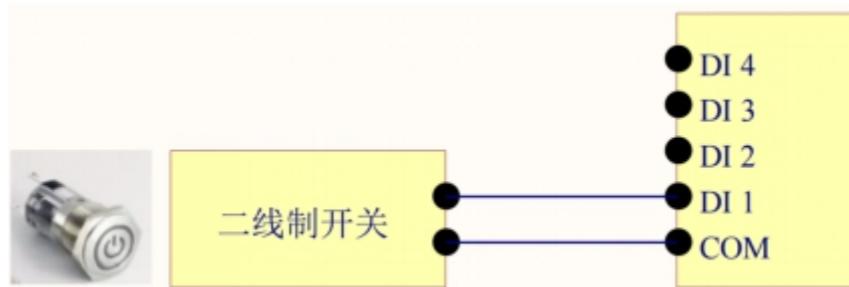


Figure 5-1-1 2-wire switch wiring diagram

5.1.2 3-wire switch wiring

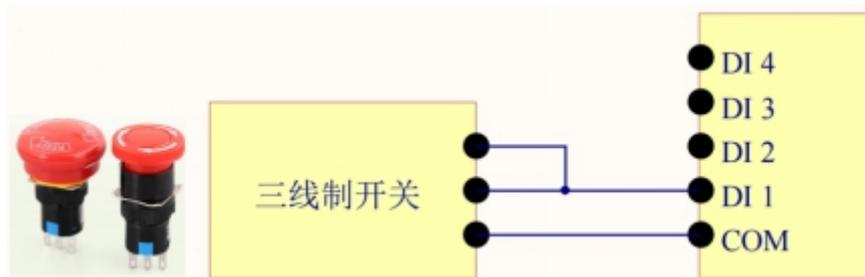


Figure 5-1-2 3-Wire Switch Wiring Diagram

5.1.3 3-wire sensor wiring

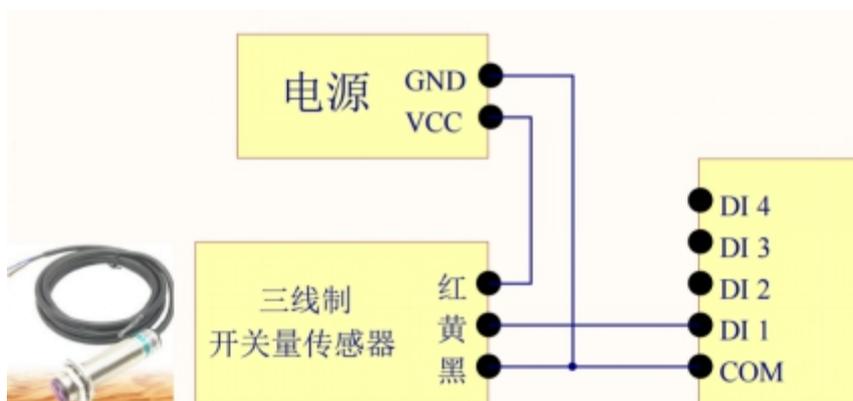


Figure 5-1-3 3-Wire Sensor Wiring Diagram

5.2 Switching output port wiring

5.2.1 Direct control of loads at the output (low power devices within 1kW)

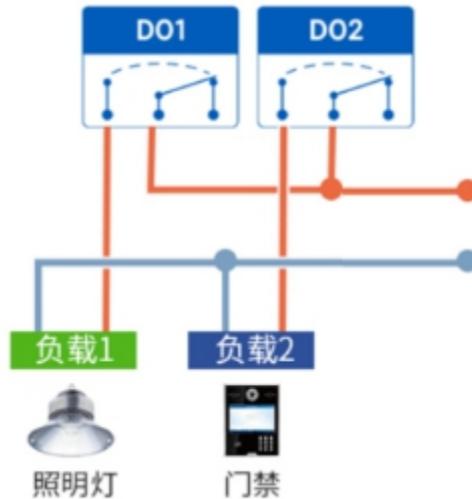


Figure 5-2-1 Direct Load Control Wiring Diagram for Outputs

5.2.2 Outputs to control contactors (contactors to control high power 220V devices)



Figure 5-2-2 Wiring Diagram of Output End Control Contactor

Note: The above diagram takes the contactor coil voltage AC 220V as an example, **the coil voltage of different contactors may be different.**

5.2.3 Outputs to control contactors (contactors to control high power 380V equipment)

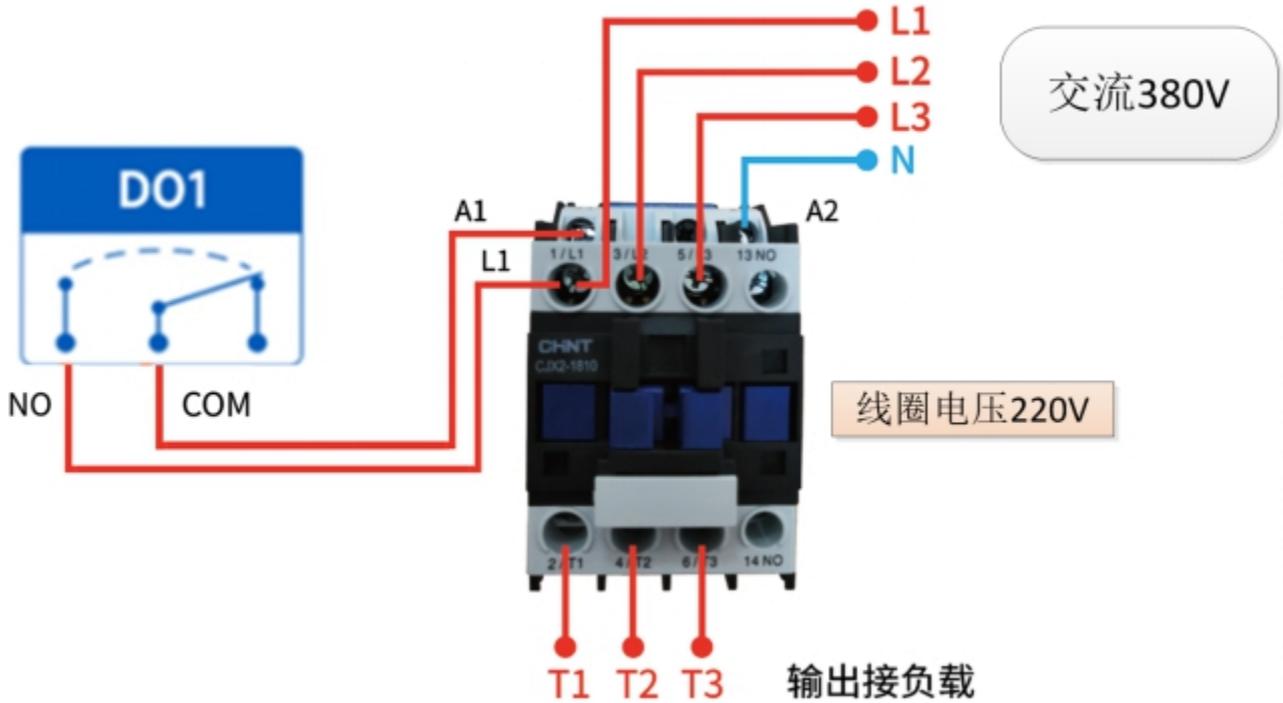


Figure 5-2-3 Control Contactor Wiring Diagram for Outputs

Note: The above diagram takes the contactor coil voltage AC 220V as an example, **the coil voltage of different contactors may be different.**

6 Software Usage

6.1 Software installation

Configuration tool software is driver-free installation, directly double-click the .exe file to open that is used (before using the configuration tool is recommended to close the antivirus software).

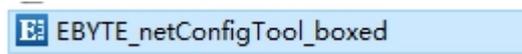


Figure 6-1-1 Software Installation File

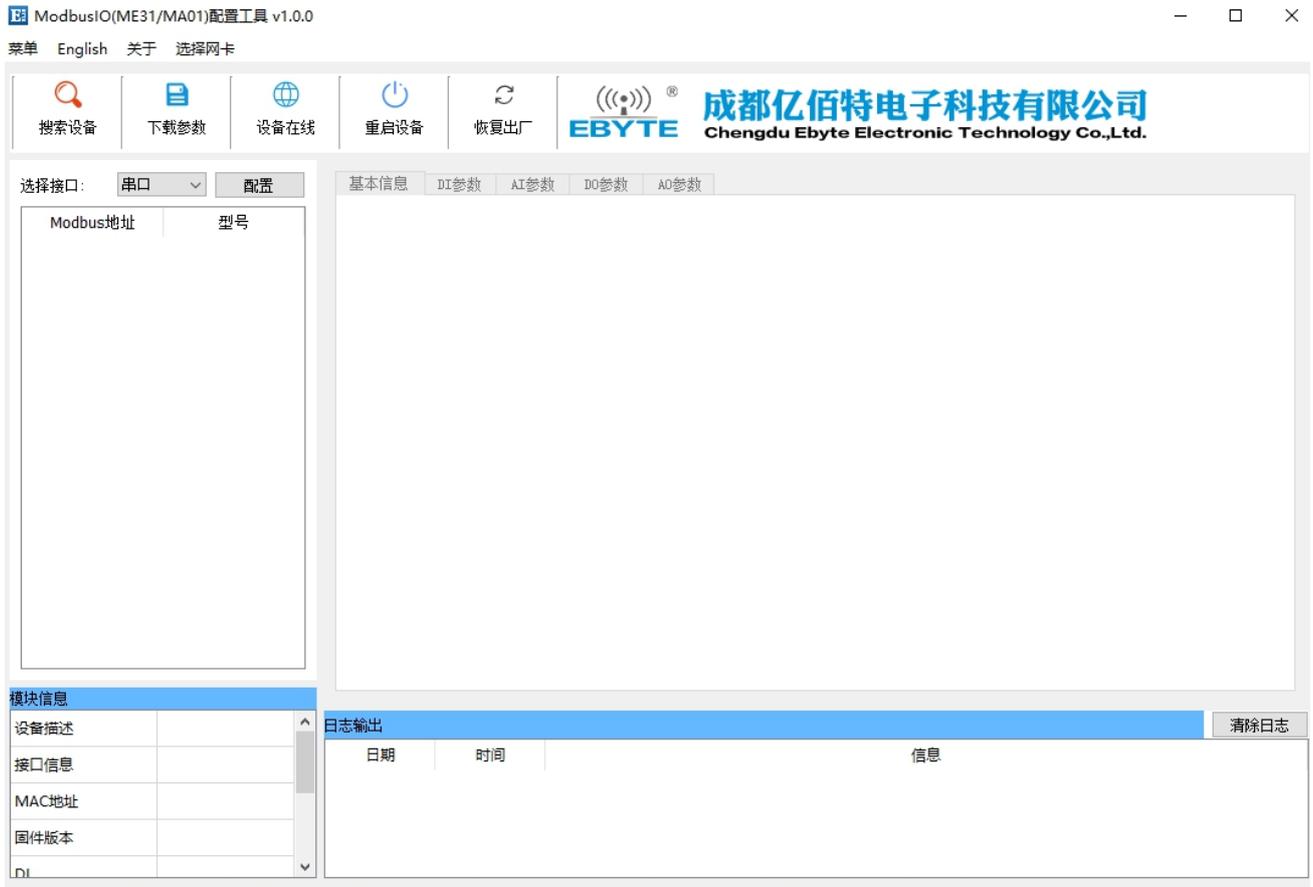


Figure 6-1-2 Successful installation of the software to open the interface

6.2 Software Features

6.2.1 IO Demo Interface

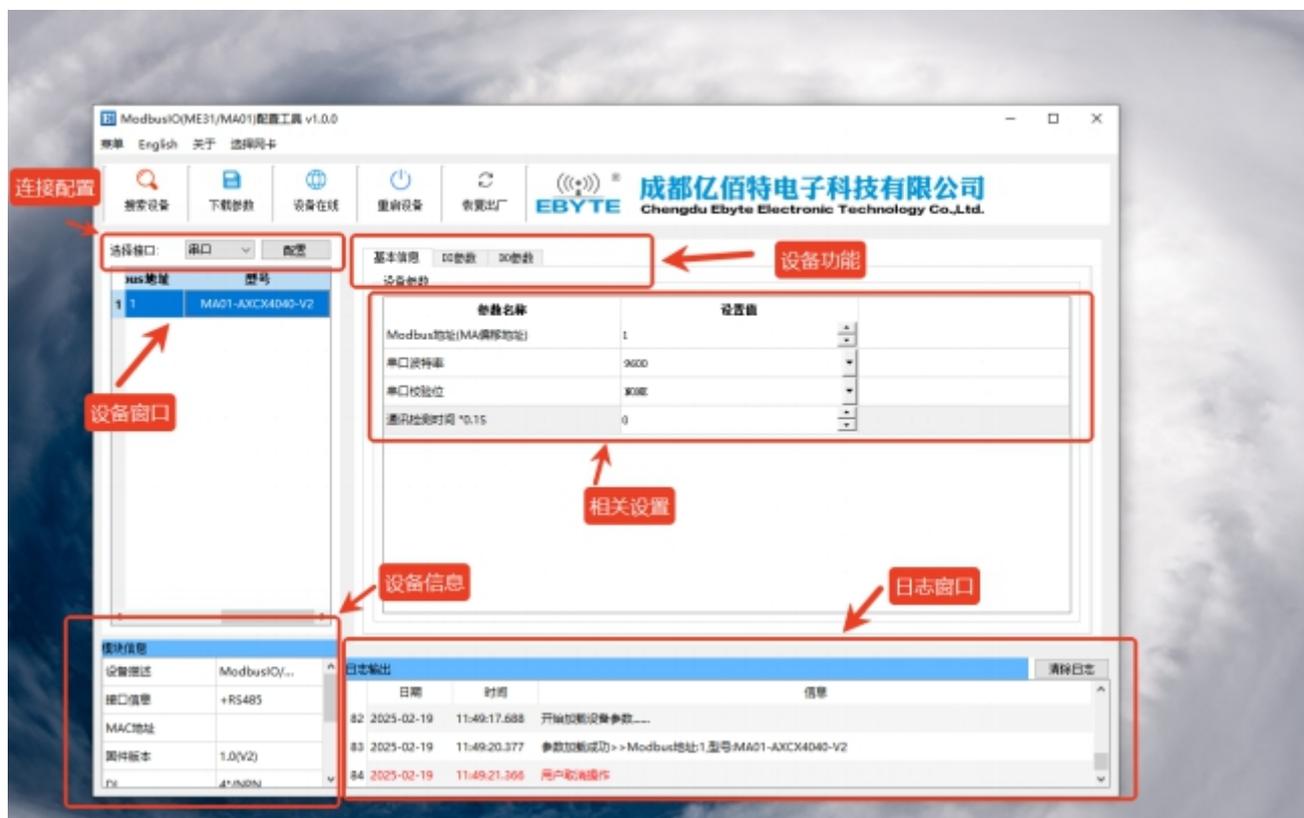


Figure 6-2-1 Software IO Demonstration Interface

(1) Device window

Displays information about the currently connected device (device model, device address).



Figure 6-2-2 Device Window Interface

(2) Serial port configuration parameters window

Select the interface as serial port, select the parameter configuration information (serial port number, baud rate, data bit, parity bit, stop bit, etc.), open the serial port.



Figure 6-2-3 Serial Port Parameters Window Interface

(3) Log window

Displays running log information during device configuration and use.



Figure 6-2-4 Log Window Interface

(4) Switching input DI [This function is limited to devices that support DI]

Set the digital input DI port status.



Figure 6-2-4 Switch Input DI Screen

(5) Switching Output DO

Sets the status of the switching output DO port.

DO通道序号	工作模式	脉冲宽度(ms)	DO跟随源	DO上电状态	DO通讯超时输出状态	循环-打开时间	循环-关闭时间	循环执行次数
DO-1	电平模式	50ms	DI-1	开	开	1000ms	1000ms	65535次
DO-2	电平模式	50ms	DI-2	开	开	1000ms	1000ms	65535次
DO-3	电平模式	50ms	DI-3	开	开	1000ms	1000ms	65535次

Figure 6-2-5 Switch Output DO Interface

6.2.2 Basic Settings Screen

(1) Counting Demonstration

Displays DI input status, count value, and clear setting. [This function is limited to devices that support DI].

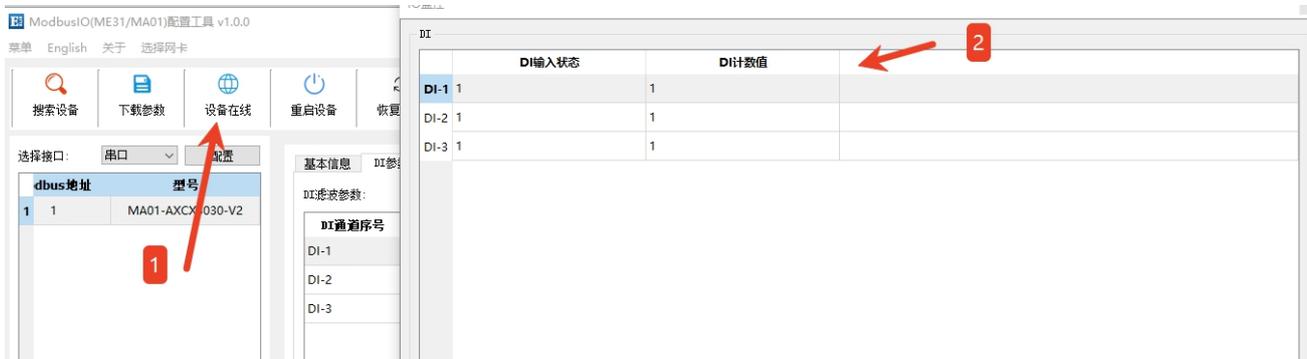


Figure 6-2-9 Counting Demonstration Interface

(2) DI-related

Set DI function. Setting filter parameters (1 to 16), trigger mode (rising edge, falling edge, level), clear mode (auto, manual). This function is limited to devices that support DI.



Figure 6-2-10 "DI Related" Screen

(3) DO-related

Set DO function, set working mode (level mode, pulse mode, follow mode, cycle mode), set pulse width (pulse mode only), DO power-up state (on, off), follow source (follow set DIx), cycle time (switch cycle time) cycle times (0-65535, default is 65535 infinite cycle).

Note: Multiple switch output DO terminals can be set to follow one DI input, one switch output DO terminal cannot be set to follow multiple DI inputs. Follow mode is only available for devices that support DI. For other details, please refer to 4.2.2 Switching Output DO Mode Setting, and we will not repeat the details here.

DO通道序号	工作模式	脉冲宽度(ms)	DO跟随源	DO上电状态	DO通讯超时输出状态	循环-打开时间	循环-关闭时间	循环执行次数
DO-1	电平模式	50ms	DI-1	开	开	1000ms	1000ms	65535次
DO-2	脉冲模式	50ms	DI-2	开	开	1000ms	1000ms	65535次
DO-3	脉冲模式	50ms	DI-3	开	开	1000ms	1000ms	65535次

Figure 6-2-11 "DO Related" Screen

6.2.3 Basic Information Screen

参数名称	设置值
Modbus地址(MA偏移地址)	1
串口波特率	9600
串口校验位	NONE
通讯检测时间 *0.1S	0

Figure 6-2-12 Basic Information Interface

(1) Device Settings

Basic information setting interface, search for the device, check the online status of the device, read the parameters, restart the device, save the parameters (download settings), restore factory settings.



Figure 6-2-13 Basic Device Setting Interface

(2) Device serial port settings

Support setting baud rate, can set baud rate (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200), default 9600.

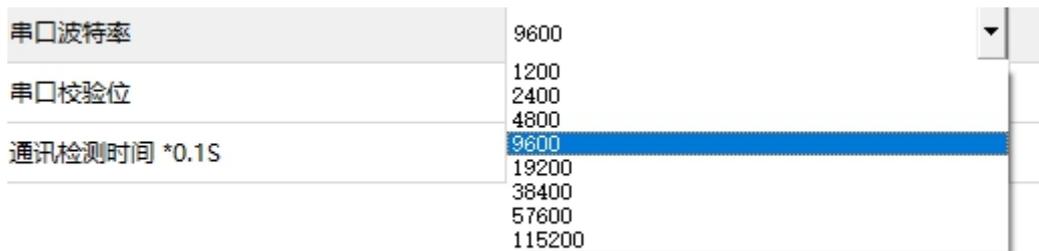


Figure 6-2-14 Baud Rate Setting Interface

Support setting parity bit, can set parity bit (none, odd parity, even parity), default no parity.

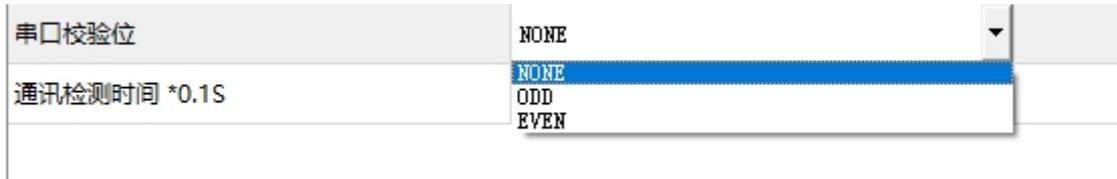


Figure 6-2-16 Checksum Setting Interface

6.3 Communication time detection

The Basic Information Setting screen allows you to set the communication detection time with a setting value of N x 0.1s and a setting range of (0-65535). This setting needs to be tested in combination with DO parameters. The setting values are referenced as follows:

0: No communication status detection

>0: Detect communication status, after setting, if communication data is not transmitted within N x 0.1s, you can select the output status (output off status or output on status, default is 0), and the output status defaults to on status.

For example, if the setting value of communication detection time*0.1s is 50, and all DOs are set to communication timeout output status off, it means that all DO outputs will be closed when no data is detected for communication after 5s.



Figure 6-3-1 Communication Detection Time Setting in Basic Information Setting Interface

DO通道序号	工作模式	脉冲宽度(ms)	DO跟随源	DO上电状态	DO通讯超时输出状态
DO-1	电平模式	50ms	DI-1	开	关
DO-2	电平模式	50ms	DI-2	开	关
DO-3	电平模式	50ms	DI-3	开	关

Figure 6-3-2 DO Setting Interface Communication Timeout Output Status Setting

7 Modbus use

Note: Some manufacturers specify that +1 is required for decimal register addresses.

7.1 Register list

寄存器地址		个数	寄存器内容	状态	数据范围	功能码
10进制	16进制					
00000	0x0000	100	DO状态 对应DO1-DO100	RW	0x05功能码 0x0000/0xFF00 0x01、0x0F功能码 0x0000/0x0001	R 0x01 W 0x05,0x0F
00100	0x0064	100	DO上电时的状态 对应DO1-DO100	RW	0x0000/0x0001 写入后,设备重启 后DO的状态	R 0x01 W 0x05,0x0F
0200	0x00C8	100	通讯检测异常-DO输出	RW	0-输出关闭状态,1-输出开状态,默认为0	R 0x01 W 0x05,0x0F
10000	0x0000	100	DI状态 对应DI1-DI100	R	0x0000/0x0001 代表读当前DI状态	R 0x02
41201	0x04B1	1	DI滤波参数	RW	所有DI通道滤波参数, 有效值1-16,默认6	R 0x03 W 0x06,0x10
41400	0x0578	100	DO工作模式 DO1-DO100	RW	0x0000:电平无跟随模式(默认), 0x0001:脉冲无跟随模式, 0x0002:跟随模式 0x0003:循环开关模式	R 0x03 W 0x06,0x10
41500	0x05DC	100	DO脉冲宽度(仅在脉冲 无跟随和脉冲跟随模式 下有效) DO1-DO100	RW	最小为50(默认值),即输出50ms的脉冲, 最大宽度为65535ms的脉冲	R 0x03 W 0x06,0x10
41600	0x0640	100	DO跟随源(仅在电平跟 随模式和脉冲跟随模式 下有效) DO1-DO100	RW	最高位(bit:15)代表AI/DI AI:0x8000; DI:0x0000 低15位(bit 0-14)为源编号	R 0x03 W 0x06,0x10
42000	0x07D0	12	模块型号	R	见型号表	R 0x03
42012	0x07DC	1	模块固件版本	R	高字节为版本小数点前内容, 低字节为版本小数点后内容, 如v1.5,高字节为0x01,低字节为0x05	R 0x03
42024	0x07E8	1	模块地址	RW	地址范围0-255, 默认为1, 0为广播地址	R 0x03 W 0x06,0x10
42025	0x07E9	1	所有恢复出厂设置	W	写入 0x5BB5,模块重启	W 0x06,0x10
42026	0x07EA	1	设备重启	W	写入 0x5BB5,模块重启	W 0x06,0x10
42055	0x0807	1	通讯检测时间 (通常用于485的通讯 连续性检测)	RW	0-65535(单位*0.1S) 数字为0代表关闭 默认为0	R 0x03 W 0x06,0x10
42100	0x0834	1	串口1波特率代码	RW	见附录1, 默认为3	R 0x03 W 0x06,0x10
42102	0x0836	1	串口1奇偶校验	RW	0,无校验(默认), 1,奇校验, 2,偶校验	R 0x03 W 0x06,0x10
42527	0x09DF	100	DI脉冲计数值	RW	计数范围0x000-0xFFFF 可以写入该范围的任何值, 写入后从写入值开始计数	R 0x03 W 0x06,0x10
42627	0x0A43	100	DI自动/手动清零	RW	默认为1,0为自动清零,1为手动清零 自动清零为:读取脉冲值后自动清零 手动清零为:向脉冲值寄存器直接写零	R 0x03 W 0x06,0x10
42827	0x0B0B	100	计数方式	RW	00上升沿计数(默认) 01下降沿计数 02电平计数(上升沿+下降沿)	R 0x03 W 0x06,0x10

寄存器地址		个数	寄存器内容	状态	数据范围	功能码
10进制	16进制					
46150	0x1806	100	DO循环开关-打开时间	RW	当处于循环开关模式下 循环打开的时间 50-65535ms 默认值为1000ms	R 0x03 W 0x06,0x10
46250	0x186A	100	DO循环开关-关闭时间	RW	当处于循环开关模式下 循环关闭的时间 50-65535ms 默认值为1000ms	R 0x03 W 0x06,0x10
46350	0x18CE	100	DO循环执行次数	RW	循环次数，设置后循环开关执行设置的次数，读取寄存器则是剩余未执行次数。范围为0-65535,设置为65535时，表示无限进行开关循环，默认值为65535，断电后再上电时，此参数会恢复默认值，即65535	R 0x03 W 0x06,0x10

Table 7-1-1 Register List

十进制数	波特率 bps
0	1200
1	2400
2	4800
03 (默认)	9600
4	19200
5	38400
6	57600
7	115200

Table 7-1-2 Baud Rate Table Appendix 1

7.2 Instruction format (partial)

Note: The following Modbus commands are all hexadecimal data

7.2.1 Read DO output coil status

Use the 01 function code to read the status of the output coils, e.g., to read the status of two output coils

20	01	00 00	00 02	XX XX
Device Modbus Address	Function code	Register start address	Number of output coils read	CRC check digit

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

20	01	01	02	XX XX
Device Modbus Address	Function code	Number of bytes of data	Returned status data	CRC check digit

The status data 02 returned above indicates that output DO2 conducts.

7.2.2 Read Holding Register

Use function code 03 to read one or more register values, e.g., read DO1 operating mode.

20	03	05 78	00 01	XX XX
Device Modbus Address	Function code	Register Starting Address	Number of registers read	CRC check digit

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

20	03	02	00 00	XX XX
Device Modbus Address	Function code	Number of bytes of data	Returned status data	CRC check digit

The above 00 00 indicates that DO1 is in level mode.

7.2.3 Write Single Holding Register

Use 06 function code to write a single holding register, e.g., to set the operating mode of DO1 to pulse mode.

20	06	05 78	00 01	XX XX
Device Modbus Address	Function code	Register address	Write value	CRC check digit

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

20	06	05 78	00 01	XX XX
Device Modbus Address	Function code	Register address	Write value	CRC check digit

If the modification is successful, the 0x0578 register data is 0x0001.

7.2.4 Write Multiple Holding Registers

Commands to write multiple holding registers using 10 function codes, e.g., to set the operating modes of DO1-DO4 at the same time.

20	10	05 78	00 04	08	0001 0002	XX XX
----	----	-------	-------	----	-----------	-------

Device Modbus Address	Function code	Register Starting Address	Number of registers	Number of bytes of data written	Write value	CRC check digit
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After sending the above command to the device via the 485 bus the device will return the following values:

20	10	05 78	00 04		XX XX
Device Modbus Address	Function code	Register address	Number of registers		CRC check digit

If the modification is successful, the values of the four consecutive registers with 0x0578 as the starting address will be 0x0001, 0x0002, 0x0003 and 0x0000 respectively.

7.2.5 Write Single DO Coil Status

Use command 05 to write a single command, e.g., to set the operating mode of DO1 to pulse mode.

20	05	00 00	FF 00	XX XX
Device Modbus Address	Function code	Register address	Write value Coil action: On	CRC check digit

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

20	05	00 00	FF 00	XX XX
Device Modbus Address	Function code	Register address	Write value	CRC check digit

DO1 coil conduction.

7.2.6 Write multiple DO coil states

Use the 0F function code to write a single command, e.g., to set the operating mode of DO1 to pulse mode.

20	0F	00 00	00 04	01	06	XX XX
Device Modbus Address	Function code	Starting address	Number of coils	Number of bytes of data	Control coil data (bit operation)	CRC check digit

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

20	0F	00 00	00 04	XX XX
Device Modbus Address	Function code	Register address	Number of coils	CRC check digit

DO2,DO3 coils conduct.

8 Serial port upgrade

1. First, power off the device (connected to RS-485)
2. Open the IAP upgrade function on the upper computer, select the following model and perform firmware import and open the serial port:
3. Before starting the upgrade, press and hold the button on the device to power up, and then click to start the upgrade.



点击菜单栏里面的固件升级工具

这里选择对应串口

这里选择提供的固件

在点开始时升级之前，先按住按键再上电，然后点开始升级

日期	时间	信息	
2025-02-14	15:26:41.982	串口打开成功>>COM13-9600-8-1	
2025-02-14	15:26:42.306	查找设备成功>>Modbus地址:1,型号:MA01-AXCX3030-V2	
4	2025-02-14	15:26:42.306	开始加载设备参数.....
5	2025-02-14	15:26:44.994	参数加载成功>>Modbus地址:1,型号:MA01-AXCX3030-V2
6	2025-02-14	15:26:44.994	搜索结束>>共搜索到1个设备

- The final explanation right belongs to Chengdu Ebyte Electronic Technology Co.,Ltd.

Revision history

Version	Date	Description	Issued by
1.0	2025-06-03	Initial version	LYJ

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