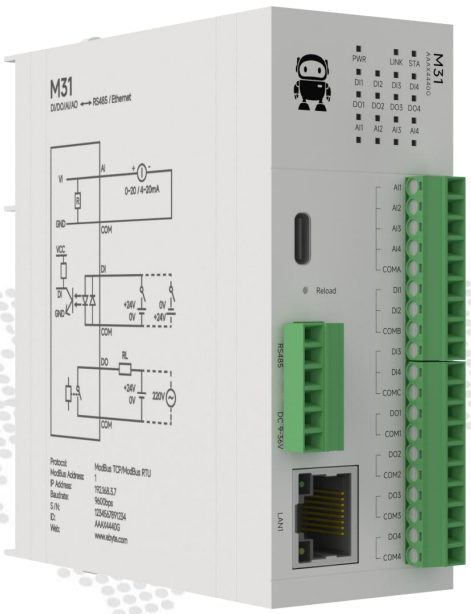
Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



M31 series
Distributed I/O Master

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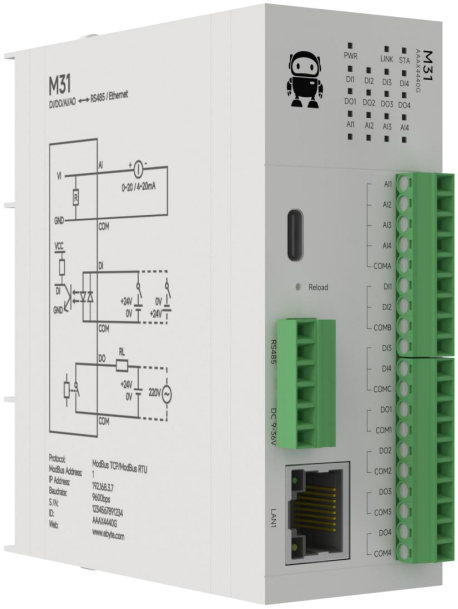
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Chapter 1. Product Overview

1.1 Product Introduction



The M31 series distributed IO host supports Modbus TCP protocol and Modbus RTU protocol for acquisition and control. The device supports 5 clients to access at the same time and supports function codes 01/02/03/04/05/06/15/16. The product adopts an expandable design in structure. During the user's use, if it is found that some functions of the current device cannot meet the needs, the user can choose to meet the corresponding IO expansion module according to the missing functions for splicing to achieve functional satisfaction. There is no need to purchase the whole machine, which saves costs and facilitates customers to access the current on-site environment; the module has its own status diagnosis function, which can monitor the communication status of the IO module in real time; the maximum number of IO expansion modules supported is 16.

1.2 Features

- Support standard Modbus RTU protocol and Modbus TCP protocol；
- Support various configuration software/PLC/touch screen；
- RS485 acquisition control I/O；
- Network port acquisition control I/O, support 5-way host access；
- Support custom Modbus address settings；
- Support differential analog input, 16-bit resolution, accuracy within 1‰, with power supply isolation；
- Support 8 baud rate configurations；
- Support DHCP and static IP；
- Support DNS function and domain name resolution；
- Support positioning hole and guide rail installation；
- Using distributed IO mode, up to 16 IO expansion modules can be connected；

1.3 Product Model List

Product Model	Product Specifications
M31-AAAX4440G	4DI+4AI(Single-ended current)+4DO

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M31-AXXX8000G	8DI
M31-XXAX0080G	8DO
M31-AXAX4040G	4DI+4DO
M31-AXXXA000G	16DI
M31-XXAX00A0G	16DO
M31-AXAX8080G	8DI+8DO
M31-XAXX0800G	8AI(Single-ended current)
M31-XXXA0008G	8AO(Current output)
M31-XAXA0404G	4AI(Single-ended current)+4AO(Current output)
M31-XFXX0800G	8AI(Differential Current)
M31-XGXX0800G	8AI(Differential Current)

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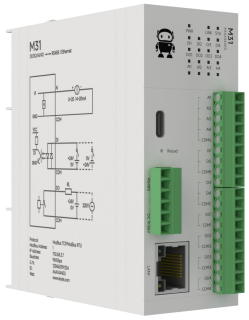
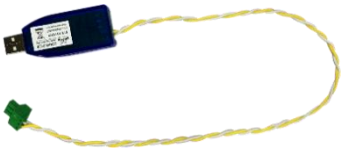
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Chapter 2. Quick Use

【Note】This experiment needs to be carried out with the default factory parameters.

2.1 Equipment Preparation

The following table shows the materials required for this test.：

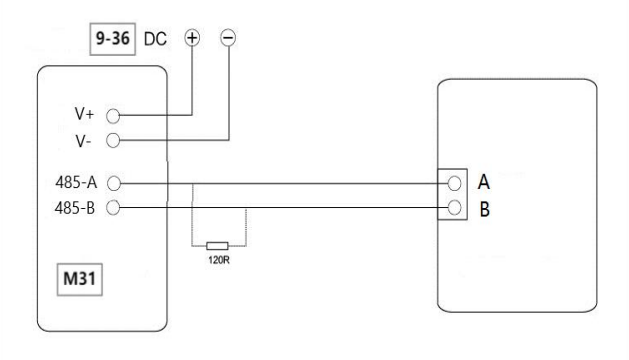
		
M31-AAAX4440G	12V Switching Power Supply	USB to RS485
		
PC	One network cable	Several cables

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2.2 Device Connection

2.2.1. RS485 connection

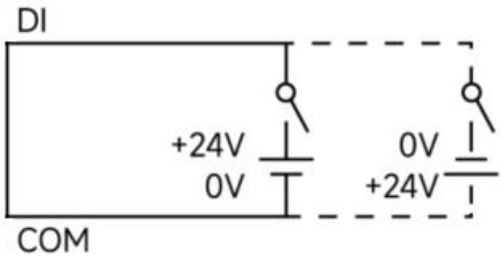


Note: When the 485 bus transmits high-frequency signals, the signal wavelength is shorter than the transmission line. The signal will form a reflected wave at the end of the transmission line, interfering with the original signal. Therefore, a terminal resistor needs to be added at the end of the transmission line to prevent the signal from being reflected after reaching the end of the transmission line. The terminal resistor should be the same as the impedance of the communication cable, with a typical value of 120 ohms. Its function is to match the bus impedance and improve the anti-interference and reliability of data communication.

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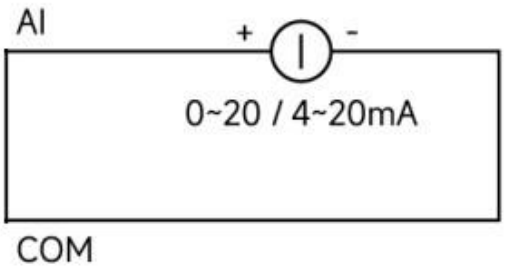
2.2.2. DI connection



Note: DI is NPN or PNP active input, and the voltage range only supports 12V~24V.

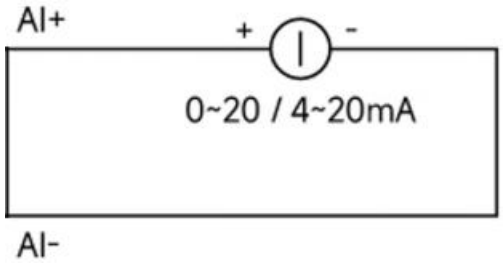
2.2.3. AI connection

Single-ended analog current acquisition：

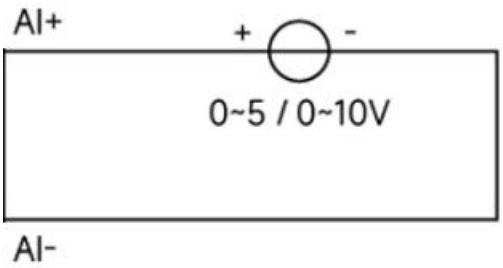


Note: AI is used together with the COM port selected by the adjacent wireframe.

Differential analog current acquisition：



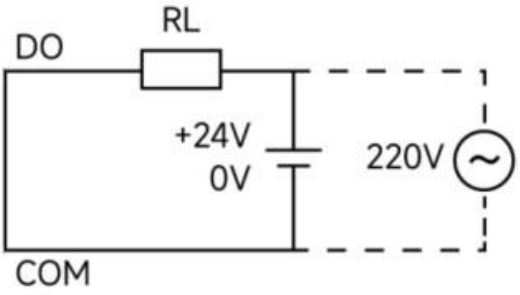
Differential analog voltage acquisition：



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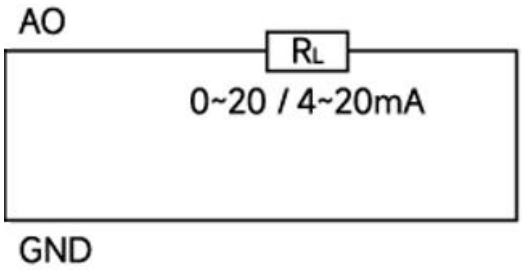
2.2.4. DO connection



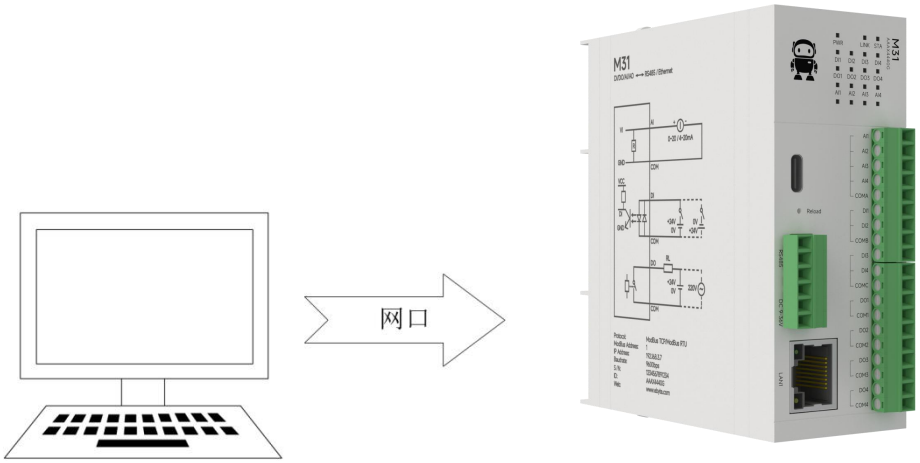
Notes:1. A single relay supports a maximum of 5A.

2. The maximum total current of each group (same COM common terminal) supports 8A.

2.2.5. AO connection



2.2.6. Simple use



Wiring: Connect the computer to the RS485 interface of M31-AAAX4440G via USB to RS485, A to A, B to B.

Network connection: Plug the network cable into the RJ45 port and connect it to the PC.

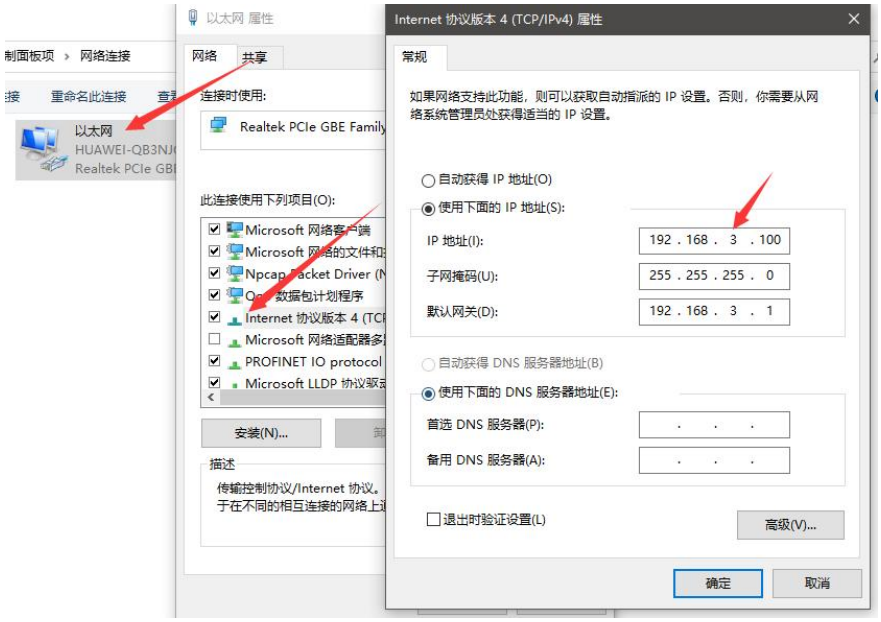
Power supply: Use a DC-12V switching power supply (DC 9~36V) to power the M31-AAAX4440G.

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2.3 Parameter Configuration

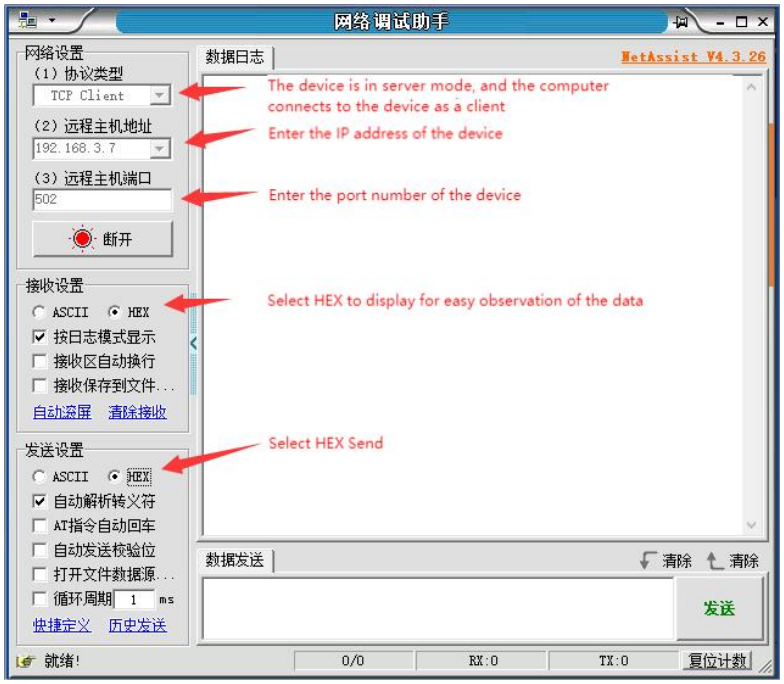
Step 1: Change the computer's IP address to be consistent with the device. Here I change it to 192.168.3.100 to ensure that it is in the same network segment as the device and the IP address is different. If you cannot connect to the device after the above steps, please turn off the firewall and try again.；



Step 2: Open the network assistant, select TCP client, enter the remote host IP 192.168.3.7 (default parameters), enter the port number 502 (default parameters), and select HEX to send.

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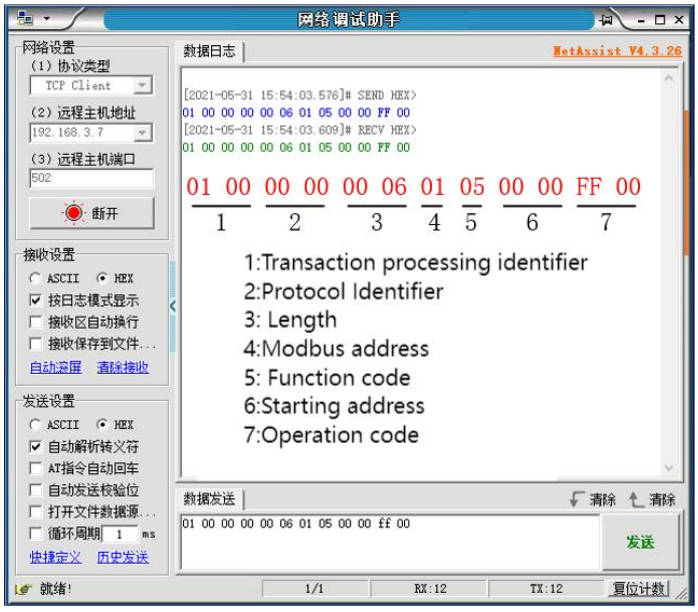
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2.4 Control Testing

2.4.1. Modbus TCP control

Use the network assistant to control the first DO output of M31-AAAX4440G.



Other functions can be tested by the following instructions.

Function (function code)	instruction

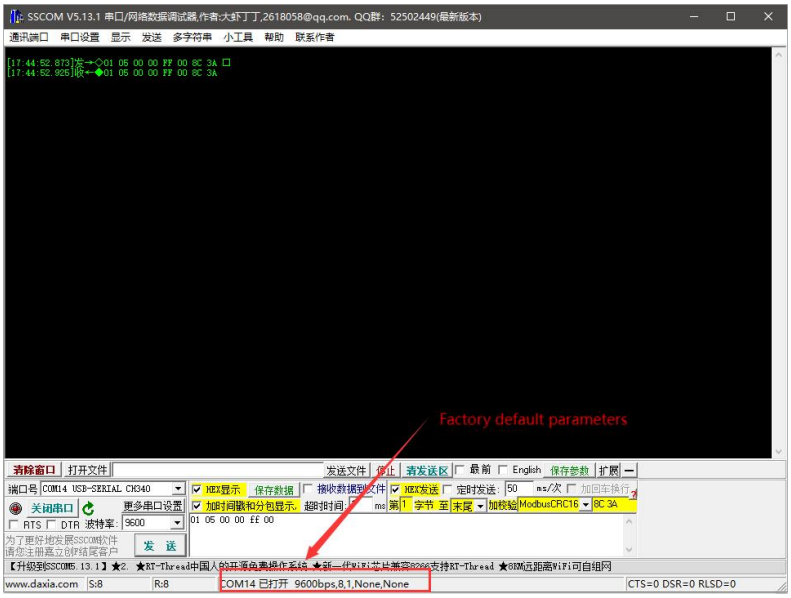
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The first coil is closed（0x05）	01 00 00 00 00 06 01 05 00 00 FF 00
Control 4-way DO full open instruction（0x0F）	02 00 00 00 00 08 01 0F 00 00 00 04 01 0F
Control 4-way DO full-off instruction（0x0F）	02 00 00 00 00 08 01 0F 00 00 00 04 01 00
Read 4-channel DI status（0x02）	01 00 00 00 00 06 01 02 00 00 00 04
Read 4-channel DO status（0x01）	01 00 00 00 00 06 01 01 00 00 00 04

2.4.2. Modbus RTU control

Use the serial port assistant to control the first DO output of M31-AAAX4440.



Other functions can be tested by the following instructions.

Function (function code)	instruction
The first coil is closed（0x05）	01 05 00 00 FF 00 8C 3A
Control 4-way DO full open instruction（0x0F）	01 0F 00 00 00 04 01 0F 7E 92
Control 4-way DO full-off instruction（0x0F）	01 0F 00 00 00 04 01 00 3E 96
Read 4-channel DI status（0x02）	01 02 00 00 00 04 79 C9
Read 4-channel DO status（0x01）	01 01 00 00 00 04 3D C9

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Chapter 3. Technical Indicators

3.1 Specifications

category	name	parameter
power supply	Operating voltage	DC 9～36V
	Power indicator	PWR red LED indicator
communication	Communication interface	RJ45、RS485
	Baud rate	9600bps（Optional）
	Communication Protocol	Standard Modbus TCP, Modbus RTU protocols
MODBUS	Device Address	Can be modified through Modbus command, host computer and hardware dial
DI Input	Input Type	NPN、PNP
	Input voltage	12~24V
	Input Impedance	7.2kΩ
	Collection frequency	Max 1K Hz
	Input Instructions	DI green LED indicator
AI Input	Acquisition characteristics	Single-ended input/differential input (optional)
	Input Type	Single-ended current：0-20mA、4-20mA Differential Current：0-20mA、4-20mA、±20mA Differential Voltage：0-5V、±5V、0-10V、±10V
	AI Resolution	16 bits (differential) / 12 bits (single-ended)
	AI Precision	1‰(differential)/3‰(single-ended)
	Collection frequency	Single-ended maximum 100Hz/differential maximum 40Hz
	Input Instructions	AI green LED indicator
DO Output	DO output type	Type A relay (normally open)
	DO output mode	Level output
	Relay contact capacity	5A 30VDC, 5A 250VAC (the total current of the same COM common terminal supports a maximum of 8A)
	Output indication	DO green LED indicator
AO Output	Output Type	0-20mA、4-20mA
	AO output accuracy	3‰

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	Input Instructions	AO green LED indicator
other	Product size	110mm * 40mm * 100mm (Length*Width*Height)
	Working temperature and humidity	-40 ～ +85℃、5% ～ 95%RH（No condensation）
	Storage temperature and humidity	-40 ～ +105℃、5% ～ 95%RH（No condensation）
	Installation	Positioning holes, guide rail installation

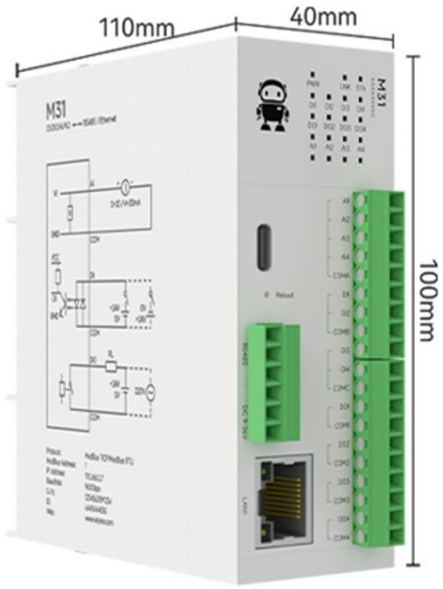
3.2 3.2 Device Default Parameters

category	name	parameter
Basic parameters	Modbus Address	1
	Baud rate	9600bps (8 options available)
	Check digit	None (default), Odd, Even
	Data bits	8
	Stop bits	1
	DI Filter parameters	6
	AI Filter parameters	6
Network parameters	Working Mode	TCP server (up to 5 client connections)
	DHCP	closure
	Gateway Address	192.168.3.1
	Subnet Mask	255.255.255.0
	Local IP	192.168.3.7
	Local port	502
	Target IP	192.168.3.3
	Destination Port	502
	DNS Server	114.114.114.114
	Local MAC	Determined by chip (fixed)

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3.3 Dimensional drawing



3.4 Ports, buttons and LED indicators

Note: Only the latest version (main unit V1.2, expansion module V2.0) has AI indicator light and engravin.

3.4.1. M31-AAAX4440G

M31-AAAX4440G Port and button description：		
Symbol	name	Function/Description
AI1	AI1 analog input	AI1 analog input interface, used in conjunction with COMA
AI2	AI2 analog input	AI2 analog input interface, used in conjunction with COMA
AI3	AI3 analog input	AI3 analog input interface, used in conjunction with COMA
AI4	AI4 analog input	AI4 analog input interface, used in conjunction with COMA
COMA	AI analog input common terminal	AI1-AI4 share the COMA public terminal
DI1	DI1 switch input	DI1 switch input interface, used in conjunction with COMB
DI2	DI2 switch input	DI2 switch input interface, used in conjunction with COMB
COMB	DI switch input common terminal	DI1-DI2 share the COMB common terminal
DI3	DI3 switch input	DI3 switch input interface, used in conjunction with COMC
DI4	DI4 switch input	DI4 switching input interface, used in conjunction with COMC
COMC	DI switch input common	DI3-DI4 share the COMC common port

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	terminal	
DO1	DO1 switch output	DO1 switching output interface, used in conjunction with COM1
COM1	COM terminal of DO1	COM terminal of DO1
DO2	DO2 switch output	DO2 switch output interface, used in conjunction with COM2
COM	COM terminal of DO2	COM terminal of DO2
DO3	DO3 switch output	DO3 switching output interface, used in conjunction with COM3
COM3	COM terminal of DO3	COM terminal of DO3
DO4	DO4 switch output	DO4 switching output interface, used in conjunction with COM4
COM4	COM terminal of DO4	COM terminal of DO4
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-AAAX4440G Indicator Light Description：		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DI1	DI1 input indicator light	Green LED light; on: DI1 valid input; off: DI1 invalid input
DI2	DI2 input indicator light	Green LED light; on: DI2 valid input; off: DI2 invalid input
DI3	DI3 input indicator light	Green LED light; on: DI3 valid input; off: DI3 invalid input
DI4	DI4 input indicator light	Green LED light; on: DI4 valid input; off: DI4 invalid input
DO1	DO1 output indicator	Green LED light; on: DO1 relay is closed; off: DO1 relay is open

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	light	
DO2	DO2 output indicator light	Green LED light; on: DO2 relay is closed; off: DO2 relay is open
DO3	DO3 output indicator light	Green LED light; on: DO3 relay is closed; off: DO3 relay is open
DO4	DO4 output indicator light	Green LED light; on: DO4 relay is closed; off: DO4 relay is off
AI1	AI1 input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI2	AI2 input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI3	AI3 input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI4	AI4 input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%

3.4.2. M31-AXXX8000G

M31-AXXX8000G Port and button description：		
Symbol	name	Function/Description
DI1	DI1 switch input	DI1 switch input interface, used in conjunction with COM1
COM1	COM terminal of DI1	COM side of DI1
DI2	DI2 switch input	DI2 switch input interface, used in conjunction with COM2
COM2	COM side of DI2	COM2 end of DI2
DI3	DI3 switch input	DI3 switch input interface, used in conjunction with COM3
COM3	COM side of DI3	COM side of DI3
DI4	DI4 switch input	DI4 switch input interface, used in conjunction with COM4
COM4	COM side of DI4	COM side of DI4
DI5	DI5 switch input	DI1 switch input interface, used in conjunction with COM5
COM5	COM side of DI5	COM side of DI5
DI6	DI6 switch input	DI6 switch input interface, used in conjunction with COM6
COM6	COM side of DI6	COM side of DI6
DI7	DI7 switch input	DI7 switch input interface, used in conjunction with COM7
COM7	COM side of DI7	COM side of DI7
DI8	DI8 switch input	DI8 switch input interface, used in conjunction with COM8
COM8	COM side of DI8	COM side of DI8
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO-	Power output negative pole	The negative pole of the power supply output is the same as

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		the power supply voltage of the device.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-AXXX8000G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DI1	DI1 input indicator light	Green LED light; on: DI1 valid input; off: DI1 invalid input
DI2	DI2 input indicator light	Green LED light; on: DI2 valid input; off: DI2 invalid input
DI3	DI3 input indicator light	Green LED light; on: DI3 valid input; off: DI3 invalid input
DI4	DI4 input indicator light	Green LED light; on: DI4 valid input; off: DI4 invalid input
DI5	DI5 input indicator light	Green LED light; on: DI5 valid input; off: DI5 invalid input
DI6	DI6 input indicator light	Green LED light; on: DI6 valid input; off: DI6 invalid input
DI7	DI7 input indicator light	Green LED light; on: DI7 valid input; off: DI7 invalid input
DI8	DI8 input indicator light	Green LED light; on: DI8 valid input; off: DI8 invalid input

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3.4.3. M31-XXAX0080G

M31-XXAX0080G Port & Key Description:		
Symbol	name	Function/Description
DO1	DO1 switch output	DO1 switching output interface, used in conjunction with COM1
COM1	COM terminal of DO1	COM terminal of DO1
DO2	DO2 switch output	DO2 switch output interface, used in conjunction with COM2
COM2	COM terminal of DO2	COM terminal of DO2
DO3	DO3 switch output	DO3 switching output interface, used in conjunction with COM3
COM3	COM terminal of DO3	COM terminal of DO3
DO4	DO4 switch output	DO4 switching output interface, used in conjunction with COM4
COM4	COM terminal of DO4	COM terminal of DO4
DO5	DO5 switch output	DO5 switching output interface, used in conjunction with COM5
COM5	COM terminal of DO5	COM terminal of DO5
DO6	DO6 switch output	DO6 switching output interface, used in conjunction with COM6
COM6	COM terminal of DO6	COM terminal of DO6
DO7	DO7 switch output	DO7 switching output interface, used in conjunction with COM7
COM7	COM terminal of DO7	COM terminal of DO7
DO8	DO8 switch output	DO8 switching output interface, used in conjunction with COM8
COM8	COM terminal of DO8	COM terminal of DO8
VO+	Power output positive pole	The positive pole of the power supply output is the same as the power supply voltage of the device.
VO+	Power output positive pole	The positive pole of the power supply output is the same as the power supply voltage of the device.
VO-	Power output negative pole	The negative pole of the power supply output is the same as the power supply voltage of the device.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface

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V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-XXAX0080G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DO1	DO1 output indicator light	Green LED light; on: DO1 relay is closed; off: DO1 relay is open
DO2	DO2 output indicator light	Green LED light; on: DO2 relay is closed; off: DO2 relay is open
DO3	DO3 output indicator light	Green LED light; on: DO3 relay is closed; off: DO3 relay is open
DO4	DO4 output indicator light	Green LED light; on: DO4 relay is closed; off: DO4 relay is off
DO5	DO5 output indicator light	Green LED light; on: DO5 relay is closed; off: DO5 relay is open
DO6	DO6 output indicator light	Green LED light; on: DO6 relay is closed; off: DO6 relay is open
DO7	DO7 output indicator light	Green LED light; on: DO7 relay is closed; off: DO7 relay is off
DO8	DO8 output indicator light	Green LED light; on: DO8 relay is closed; off: DO8 relay is open

3.4.4. M31-AXAX4040G

M31-AXAX4040G Port & Key Description:		
Symbol	name	Function/Description
DI1	DI1 switch input	DI1 switch input interface, used in conjunction with COM1
COM1	COM side of DI1	COM terminal of DI1
DI2	DI2 switch input	DI2 switch input interface, used in conjunction with COM2
COM2	COM side of DI2	COM2 end of DI2
DI3	DI3 switch input	DI3 switch input interface, used in conjunction with COM3
COM3	COM side of DI3	COM side of DI3
DI4	DI4 switch input	DI4 switch input interface, used in conjunction with COM4

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COM4	COM side of DI4	COM side of DI4
DO1	DO1 switch output	DO1 switching output interface, used in conjunction with COM1
COM1	COM terminal of DO1	COM terminal of DO1
DO2	DO2 switch output	DO2 switch output interface, used in conjunction with COM2
COM2	COM terminal of DO2	COM terminal of DO2
DO3	DO3 switch output	DO3 switching output interface, used in conjunction with COM3
COM3	COM terminal of DO3	COM terminal of DO3
DO4	DO4 switch output	DO4 switching output interface, used in conjunction with COM4
COM4	COM terminal of DO4	COM terminal of DO4
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO-	Power output negative pole	The negative pole of the power supply output is the same as the power supply voltage of the device.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-AXAX4040G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DI1	DI1 input indicator light	Green LED light; on: DI1 valid input; off: DI1 invalid input
DI2	DI2 input indicator	Green LED light; on: DI2 valid input; off: DI2 invalid input

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	light	
DI3	DI3 input indicator light	Green LED light; on: DI3 valid input; off: DI3 invalid input
DI4	DI4 input indicator light	Green LED light; on: DI4 valid input; off: DI4 invalid input
DO1	DO1 output indicator light	Green LED light; on: DO1 relay is closed; off: DO1 relay is open
DO2	DO2 output indicator light	Green LED light; on: DO2 relay is closed; off: DO2 relay is open
DO3	DO3 output indicator light	Green LED light; on: DO3 relay is closed; off: DO3 relay is open
DO4	DO4 output indicator light	Green LED light; on: DO4 relay is closed; off: DO4 relay is off

3.4.5. M31-AXXXA000G

M31-AXXXA000G Port & Key Description:		
Symbol	name	Function/Description
DI1	DI1 switch input	DI1 switch input interface, used in conjunction with COMA
DI2	DI2 switch input	DI2 switch input interface, used in conjunction with COMA
DI3	DI3 switch input	DI3 switch input interface, used in conjunction with COMA
DI4	DI4 switch input	DI4 switch input interface, used in conjunction with COMA
COMA	DI switch input common terminal	DI1-DI4 share the COMA common port
DI5	DI5 switch input	DI5 switch input interface, used in conjunction with COMB
DI6	DI6 switch input	DI6 switch input interface, used in conjunction with COMB
DI7	DI7 switch input	DI7 switch input interface, used in conjunction with COMB
DI8	DI8 switch input	DI8 switch input interface, used in conjunction with COMB
COMB	DI switch input common terminal	DI5-DI8 share the COMB common terminal
DI9	DI9 switch input	DI9 switch input interface, used in conjunction with COMC
DI10	DI10 switch input	DI10 switch input interface, used in conjunction with COMC
DI11	DI11 switch input	DI11 switching input interface, used in conjunction with COMC
DI12	DI12 switch input	DI12 switch input interface, used in conjunction with COMC
DI13	DI13 switch input	DI13 switch input interface, used in conjunction with COMC
DI14	DI14 switch input	DI14 switch input interface, used in conjunction with COMC
DI15	DI15 switch input	DI15 switch input interface, used in conjunction with COMC
DI16	DI16 switch input	DI16 switch input interface, used in conjunction with COMC
COMC	DI switch input common terminal	DI9-DI16 share the COMC common terminal

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Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-AXXXA000G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DI1	DI1 input indicator light	Green LED light; on: DI1 valid input; off: DI1 invalid input
DI2	DI2 input indicator light	Green LED light; on: DI2 valid input; off: DI2 invalid input
DI3	DI3 input indicator light	Green LED light; on: DI3 valid input; off: DI3 invalid input
DI4	DI4 input indicator light	Green LED light; on: DI4 valid input; off: DI4 invalid input
DI5	DI5 input indicator light	Green LED light; on: DI5 valid input; off: DI5 invalid input
DI6	DI6 input indicator light	Green LED light; on: DI6 valid input; off: DI6 invalid input
DI7	DI7 input indicator light	Green LED light; on: DI7 valid input; off: DI7 invalid input
DI8	DI8 input indicator light	Green LED light; on: DI8 valid input; off: DI8 invalid input
DI9	DI9 input indicator light	Green LED light; on: DI9 valid input; off: DI9 invalid input
DI10	DI10 input indicator light	Green LED light; on: DI10 valid input; off: DI10 invalid input
DI11	DI11 input indicator	Green LED light; on: DI11 valid input; off: DI11 invalid input

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	light	
DI12	DI12 input indicator light	Green LED light; on: DI12 valid input; off: DI12 invalid input
DI13	DI13 input indicator light	Green LED light; on: DI13 valid input; off: DI13 invalid input
DI14	DI14 input indicator light	Green LED light; on: DI14 valid input; off: DI14 invalid input
DI15	DI15 input indicator light	Green LED light; on: DI15 valid input; off: DI15 invalid input
DI16	DI16 input indicator light	Green LED light; on: DI16 valid input; off: DI16 invalid input

3.4.6. M31-XXAX00A0G

M31-XXAX00A0G Port & Key Description:		
Symbol	name	Function/Description
DO1	DO1 switch output	DO1 switching output interface, used in conjunction with COMA
DO2	DO2 switch output	DO2 switching output interface, used in conjunction with COMA
DO3	DO3 switch output	DO3 switching output interface, used in conjunction with COMA
DO4	DO4 switch output	DO4 switching output interface, used in conjunction with COMA
COMA	COM side of DO	DO1-DO4 share COMA for use together
DO5	DO5 switch output	DO5 switching output interface, used in conjunction with COMB
DO6	DO6 switch output	DO6 switching output interface, used in conjunction with COMB
DO7	DO7 switch output	DO7 switching output interface, used in conjunction with COMB
DO8	DO8 switch output	DO8 switching output interface, used in conjunction with COMB
COMB	COM side of DO	DO5-DO8 share COMB for use together
DO9	DO9 switch output	DO9 switching output interface, used in conjunction with COMC
DO10	DO10 switch output	DO10 switching output interface, used in conjunction with COMC
DO11	DO11 switch output	DO11 switching output interface, used in conjunction with COMC
DO12	DO12 switch output	DO12 switching output interface, used in conjunction with

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		COMC
DO13	DO13 switch output	DO13 switching output interface, used in conjunction with COMC
DO14	DO14 switch output	DO14 switching output interface, used in conjunction with COMC
DO15	DO15 switch output	DO15 switching output interface, used in conjunction with COMC
DO16	DO16 switch output	DO16 switching output interface, used in conjunction with COMC
COMC	COM side of DO	DO9-DO16 share COMC for use together
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-XXAX00A0G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DO1	DO1 output indicator light	Green LED light; on: DO1 relay is closed; off: DO1 relay is open
DO2	DO2 output indicator light	Green LED light; on: DO2 relay is closed; off: DO2 relay is open
DO3	DO3 output indicator light	Green LED light; on: DO3 relay is closed; off: DO3 relay is open
DO4	DO4 output indicator light	Green LED light; on: DO4 relay is closed; off: DO4 relay is off
DO5	DO5 output indicator light	Green LED light; on: DO5 relay is closed; off: DO5 relay is open
DO6	DO6 output indicator	Green LED light; on: DO6 relay is closed; off: DO6 relay is open

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	light	
DO7	DO7 output indicator light	Green LED light; on: DO7 relay is closed; off: DO7 relay is off
DO8	DO8 output indicator light	Green LED light; on: DO8 relay is closed; off: DO8 relay is open
DO9	DO9 output indicator light	Green LED light; on: DO9 relay is closed; off: DO9 relay is off
DO10	DO10 output indicator light	Green LED light; on: DO10 relay is closed; off: DO10 relay is off
DO11	DO11 output indicator light	Green LED light; on: DO11 relay is closed; off: DO11 relay is open
DO12	DO12 output indicator light	Green LED light; on: DO12 relay is closed; off: DO12 relay is off
DO13	DO13 output indicator light	Green LED light; on: DO13 relay is closed; off: DO13 relay is off
DO14	DO14 output indicator light	Green LED light; on: DO14 relay is closed; off: DO14 relay is off
DO15	DO15 output indicator light	Green LED light; on: DO15 relay is closed; off: DO15 relay is off
DO16	DO16 output indicator light	Green LED light; on: DO16 relay is closed; off: DO16 relay is off

3.4.7. M31-AXAX8080G

M31-AXAX8080G Port & Key Description:		
Symbol	name	Function/Description
DI1	DI1 switch input	DI1 switch input interface, used in conjunction with COMA
DI2	DI2 switch input	DI2 switch input interface, used in conjunction with COMA
DI3	DI3 switch input	DI3 switch input interface, used in conjunction with COMA
DI4	DI4 switch input	DI4 switch input interface, used in conjunction with COMA
COMA	DI switch input common terminal	DI1-DI4 share the COMA common port
DI5	DI5 switch input	DI5 switch input interface, used in conjunction with COMB
DI6	DI6 switch input	DI6 switch input interface, used in conjunction with COMB
DI7	DI7 switch input	DI7 switch input interface, used in conjunction with COMB
DI8	DI8 switch input	DI8 switch input interface, used in conjunction with COMB
COMB	DI switch input common terminal	DI5-DI8 share the COMB public terminal
DO1	DO1 switch output	DO1 switching output interface, used in conjunction with COMC
DO2	DO2 switch output	DO2 switching output interface, used in conjunction with

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		COMC
DO3	DO3 switch output	DO3 switching output interface, used in conjunction with COMC
DO4	DO4 switch output	DO4 switching output interface, used in conjunction with COMC
DO5	DO5 switch output	DO5 switching output interface, used in conjunction with COMC
DO6	DO6 switch output	DO6 switching output interface, used in conjunction with COMC
DO7	DO7 switch output	DO7 switching output interface, used in conjunction with COMC
DO8	DO8 switch output	DO8 switching output interface, used in conjunction with COMC
COMC	COM side of DO	DO1-DO8 share COMC and use together
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-AXAX8080G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
DI1	DI1 input indicator light	Green LED light; on: DI1 valid input; off: DI1 invalid input
DI2	DI2 input indicator light	Green LED light; on: DI2 valid input; off: DI2 invalid input
DI3	DI3 input indicator light	Green LED light; on: DI3 valid input; off: DI3 invalid input
DI4	DI4 input indicator	Green LED light; on: DI4 valid input; off: DI4 invalid input

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	light	
DI5	DI5 input indicator light	Green LED light; on: DI5 valid input; off: DI5 invalid input
DI6	DI6 input indicator light	Green LED light; on: DI6 valid input; off: DI6 invalid input
DI7	DI7 input indicator light	Green LED light; on: DI7 valid input; off: DI7 invalid input
DI8	DI8 input indicator light	Green LED light; on: DI8 valid input; off: DI8 invalid input
DO1	DO1 output indicator light	Green LED light; on: DO1 relay is closed; off: DO1 relay is open
DO2	DO2 output indicator light	Green LED light; on: DO2 relay is closed; off: DO2 relay is open
DO3	DO3 output indicator light	Green LED light; on: DO3 relay is closed; off: DO3 relay is open
DO4	DO4 output indicator light	Green LED light; on: DO4 relay is closed; off: DO4 relay is off
DO5	DO5 output indicator light	Green LED light; on: DO5 relay is closed; off: DO5 relay is open
DO6	DO6 output indicator light	Green LED light; on: DO6 relay is closed; off: DO6 relay is open
DO7	DO7 output indicator light	Green LED light; on: DO7 relay is closed; off: DO7 relay is off
DO8	DO8 output indicator light	Green LED light; on: DO8 relay is closed; off: DO8 relay is open

3.4.8. M31-XAXX0800G

M31-XAXX0800G Port & Key Description:		
Symbol	name	Function/Description
AI1	AI1 analog input	AI1 analog input interface, used in conjunction with COM1
COM1	COM terminal of AI1	COM terminal of AI1
AI2	AI2 analog input	AI2 analog input interface, used in conjunction with COM2
COM2	COM terminal of AI2	COM terminal of AI2
AI3	AI3 analog input	AI3 analog input interface, used in conjunction with COM3
COM3	COM terminal of AI3	COM terminal of AI3
AI4	AI4 analog input	AI4 analog input interface, used in conjunction with COM4
COM4	COM terminal of AI4	COM terminal of AI4
AI5	AI5 analog input	AI5 analog input interface, used in conjunction with COM5
COM5	AI5 COM terminal	COM terminal of AI5

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AI6	AI6 analog input	AI6 analog input interface, used in conjunction with COM6
COM6	COM terminal of AI6	COM terminal of AI6
AI7	AI7 analog input	AI7 analog input interface, used in conjunction with COM7
COM7	COM terminal of AI7	COM terminal of AI7
AI8	AI8 analog input	AI8 analog input interface, used in conjunction with COM8
COM8	AI8 COM terminal	COM terminal of AI8
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO+	Power output positive pole	The positive pole of the power supply output is consistent with the power supply voltage of the device.
VO-	Power output negative pole	The negative pole of the power supply output is the same as the power supply voltage of the device.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485G interface	RS485G interface
PE	ground	ground
V-(DC9-36V)	Negative pole of power supply	DC (9-36V) power supply negative interface
V+（DC9-36V）	Positive pole of power supply	DC (9-36V) power supply positive interface
LAN1	Network port	Standard RJ45 network cable interface

M31-XAXX0800G Indicator Description:		
Symbol	name	Function/Description
PWR	Power Indicator	Red LED light; on: the system power supply is normal; off: the system power supply is abnormal
LINK	Link indicator	Yellow LED light; on: there is a link; off: no link; flashing quickly when there is data interaction
STA	Status Indicator	Blue LED light; flashes alternately to indicate normal operation; always on or off indicates abnormal device status.
AI1	AI1 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI2	AI2 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI3	AI3 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI4	AI4 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%

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AI5	AI5 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI6	AI6 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI7	AI7 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%
AI8	AI8 Input indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: No effective access; Fast flashing: Exceeds the range by 10%

3.4.9. M31-XXXA0008G

M31-XXXA0008G Port & Key Description:		
Silk screen	name	illustrate
AO1	AO1 analogue output (positive)	AO1 analog output (positive) interface, used with GND1
GND1	AO1 analogue output (negative)	AO1's analogue output (negative) interface
AO2	AO2 analogue output (positive)	AO2 analogue output interface, used with GND2
GND2	AO2 analog output (negative)	AO2's analog output (negative) interface
AO3	AO3 analogue output (positive)	AO3 analog output interface, used with GND3
GND3	AO3 analogue output (negative)	AO3's analog output (negative) interface
AO4	AO4 analogue output (positive)	AO4 analog output interface, used with GND4
GND4	AO4 analogue output (negative)	AO4's analog output (negative) interface
AO5	AO5 analogue output (positive)	AO5 analogue output (positive) interface for use with GND5
GND5	AO5 analog output (negative)	AO5's analogue output (negative) interface
AO6	AO6 analogue output (positive)	AO6 analog output interface, used with GND6
GND6	AO6 analog output (negative)	AO6's analog output (negative) interface
AO7	AO7 analog output (positive)	AO7 analog output interface, used with GND7
GND7	AO7 analog output (negative)	AO7's analog output (negative) interface

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AO8	AO8 analogue output (positive)	AO8 analog output interface, used with GND8
GND8	AO8 analogue output (negative)	AO8's analog output (negative) interface
VO+	The power output is positive	The positive output of the power supply is the same as the power supply voltage of the equipment
VO+	The power output is positive	The positive output of the power supply is the same as the power supply voltage of the equipment
VO-	The power output is negative	The negative output of the power supply is the same as the power supply voltage of the equipment
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485 G interface	RS485 G interface
PE	earthing	earthing
V-（DC9-36V）	Power supply aside	DC (9-36V) power supply negative interface
V+（DC9-36V）	Power supply positive	DC (9-36V) power supply positive interface
LAN1	Ethernet port	Standard RJ45 network cable interface

M31-XXXA0008G Indicator Description:		
Silk screen	name	illustrate
PWR	Power indicator	Red LED light; Bright: The system power supply is normal; Off: The system power supply is abnormal
LINK	Link indicator	Yellow LED light; Bright: There is a link link; Extinguished: No link link; Flash when there is data interaction
STA	Status indicator	Blue LED light; Alternate flashing indicates normal operation; Solid on or off indicates that the device status is abnormal
AO1	AO1 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO2	AO2 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO3	AO3 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO4	AO4 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO5	AO5 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO6	AO6 output	Green LED: Bright: Normal input reaches 1% of the range and above;

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	indicator	Extinguish: less than 1% of the range;
AO7	AO7 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO8	AO8 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;

3.4.10. M31-XAXA0404G

M31-XAXA0404G Port & Key Description:		
Silk screen	name	illustrate
AI1	AI1 analog input	AI1 analog input interface, used in conjunction with GND1
GND1	AI1 analog input ground	Analog input ground interface for AI1
AI2	AI2 analog input	AI2 analog input interface, used in conjunction with GND2
GND2	AI2 analog input ground	Analog input ground interface for AI2
AI3	AI3 analog input	AI3 analog input interface, used in conjunction with GND3
GND3	AI3 analog input ground	Analog input ground interface for AI3
AI4	AI4 analog input	AI4 analog input interface, used in conjunction with GND4
GND4	AI4 analog input ground	Analog input ground interface for AI4
AO1	AO1 analogue output (positive)	AO1 analog output (positive) interface, used with GND1
GND1	AO1 analogue output (negative)	AO1's analogue output (negative) interface
AO2	AO2 analogue output (positive)	AO2 analogue output interface, used with GND2
GND2	AO2 analog output (negative)	AO2's analog output (negative) interface
AO3	AO3 analogue output (positive)	AO3 analog output interface, used with GND3
GND3	AO3 analogue output (negative)	AO3's analog output (negative) interface
AO4	AO4 analogue output (positive)	AO4 analog output interface, used with GND4
GND4	AO4 analogue output (negative)	AO4's analog output (negative) interface
VO+	The power output is positive	The positive output of the power supply is the same as the power supply voltage of the equipment
VO+	The power output is positive	The positive output of the power supply is the same as the power supply voltage of the equipment
VO-	The power output is negative	The negative output of the power supply is the same as the power supply voltage of the equipment
Reload	Factory reset/auto-	Press and hold for 5-10 seconds to restore factory settings;

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	negotiation	Double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485 G interface	RS485 G interface
PE	earthing	earthing
V-（DC9-36V）	Power supply aside	DC (9-36V) power supply negative interface
V+（DC9-36V）	Power supply positive	DC (9-36V) power supply positive interface
LAN1	Ethernet port	Standard RJ45 network cable interface

M31-XAXA0404G Indicator Description:		
Silk screen	name	illustrate
PWR	Power indicator	Red LED light; Bright: The system power supply is normal; Off: The system power supply is abnormal
LINK	Link indicator	Yellow LED light; Bright: There is a link link; Extinguished: No link link; Flash when there is data interaction
STA	Status indicator	Blue LED light; Alternate flashing indicates normal operation; Solid on or off indicates that the device status is abnormal
AI1	AI1 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI2	AI2 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI3	AI3 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI4	AI4 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AO1	AO1 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO2	AO2 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO3	AO3 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;
AO4	AO4 output indicator	Green LED: Bright: Normal input reaches 1% of the range and above; Extinguish: less than 1% of the range;

3.4.11. M31-XFXX0800G

M31-XFXX0800G Port & Key Description:

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Silk screen	name	illustrate
AI1+	AI1 analog input +	AI1 analogue input + interface, for use with AI1-
AI1-	AI1 Analog Input-	AI1 analogue input-interface, for use with AI1+
AI2+	AI2 analog input +	AI2 analogue input + interface, for use with AI2-
AI2-	AI2 Analog Input-	AI2 analogue input-interface, for use with AI2+
AI3+	AI3 analogue input +	AI3 analogue input + interface, which works with AI3-
AI3-	AI3 Analog Input-	AI3 analogue input-interface, for use with AI3+
AI4+	AI4 analogue input +	AI4 analogue input + interface, for use with AI4-
AI4-	AI4 Analog Input-	AI4 analogue input-interface for use with AI4+
AI5+	AI5 analogue input +	AI5 analogue input + interface, for use with AI5-
AI5-	AI5 Analog Input-	AI5 analogue input-interface, for use with AI5+
AI6+	AI6 analogue input +	AI6 analogue input + interface, which works with AI6-
AI6-	AI6 Analog Input-	AI6 analogue input-interface, for use with AI6+
AI7+	AI7 analogue input +	AI7 analogue input + interface, for use with AI7-
AI7-	AI7 Analog Input-	AI7 analogue input-interface, for use with AI7+
AI8+	AI8 analogue input +	AI8 analogue input + interface, for use with AI8-
AI8-	AI8 Analog Input-	AI8 analogue input-interface, for use with AI8+
VO+	dangling	No effect, access is not allowed
VO+	dangling	No effect, access is not allowed
VO-	dangling	No effect, access is not allowed
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485 G interface	RS485 G interface
PE	earthing	earthing
V-（DC9-36V）	Power supply aside	DC (9-36V) power supply negative interface
V+（DC9-36V）	Power supply positive	DC (9-36V) power supply positive interface
LAN1	Ethernet port	Standard RJ45 network cable interface

M31-XFXX0800G Indicator Description:		
Silk screen	name	illustrate
PWR	Power indicator	Red LED light; Bright: The system power supply is normal; Off: The system power supply is abnormal
LINK	Link indicator	Yellow LED light; Bright: There is a link link; Extinguished: No link link; Flash when there is data interaction
STA	Status indicator	Blue LED light; Alternate flashing indicates normal operation; Solid on or off indicates that the device status is abnormal

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AI1	AI1 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI2	AI2 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI3	AI3 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI4	AI4 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI5	AI5 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI6	AI6 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI7	AI7 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI8	AI8 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range

3.4.12. M31-XGXX0800G

M31-XGXX0800G Port & Key Description:		
Silk screen	name	illustrate
AI1+	AI1 analog input +	AI1 analogue input + interface, for use with AI1-
AI1-	AI1 Analog Input-	AI1 analogue input-interface, for use with AI1+
AI2+	AI2 analog input +	AI2 analogue input + interface, for use with AI2-
AI2-	AI2 Analog Input-	AI2 analogue input-interface, for use with AI2+
AI3+	AI3 analogue input +	AI3 analogue input + interface, which works with AI3-
AI3-	AI3 Analog Input-	AI3 analogue input-interface, for use with AI3+
AI4+	AI4 analogue input +	AI4 analogue input + interface, for use with AI4-
AI4-	AI4 Analog Input-	AI4 analogue input-interface for use with AI4+
AI5+	AI5 analogue input +	AI5 analogue input + interface, for use with AI5-
AI5-	AI5 Analog Input-	AI5 analogue input-interface, for use with AI5+
AI6+	AI6 analogue input +	AI6 analogue input + interface, which works with AI6-
AI6-	AI6 Analog Input-	AI6 analogue input-interface, for use with AI6+
AI7+	AI7 analogue input +	AI7 analogue input + interface, for use with AI7-
AI7-	AI7 Analog Input-	AI7 analogue input-interface, for use with AI7+
AI8+	AI8 analogue input +	AI8 analogue input + interface, for use with AI8-
AI8-	AI8 Analog Input-	AI8 analogue input-interface, for use with AI8+
VO+	dangling	No effect, access is not allowed
VO+	dangling	No effect, access is not allowed
VO-	dangling	No effect, access is not allowed
Reload	Factory reset/auto-	Press and hold for 5-10 seconds to restore factory settings;

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	negotiation	Double-click within 2 seconds to automatically negotiate the expansion module
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface
G(RS485)	RS485 G interface	RS485 G interface
PE	earthing	earthing
V-（DC9-36V）	Power supply aside	DC (9-36V) power supply negative interface
V+（DC9-36V）	Power supply positive	DC (9-36V) power supply positive interface
LAN1	Ethernet port	Standard RJ45 network cable interface

M31-XGXX0800G Indicator Description:		
Silk screen	name	illustrate
PWR	Power indicator	Red LED light; Bright: The system power supply is normal; Off: The system power supply is abnormal
LINK	Link indicator	Yellow LED light; Bright: There is a link link; Extinguished: No link link; Flash when there is data interaction
STA	Status indicator	Blue LED light; Alternate flashing indicates normal operation; Solid on or off indicates that the device status is abnormal
AI1	AI1 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI2	AI2 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI3	AI3 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI4	AI4 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI5	AI5 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI6	AI6 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI7	AI7 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range
AI8	AI8 input indicator	Green LED light; Bright: Normal input reaches 1% of the range and above; Off: Invalid access; Fast flashing: 10% out of range

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3.5 DIP switch

Schematic diagram of DIP switch:



Device address composition: hardware address + software offset address

The default device address is: 1 (hardware address 0 + software address 1 = device address 1).

Device address setting range: 1~255.

Hardware address: in binary form, implemented by the DIP switch (4-digit) DIP setting (factory default is 0); For example, if DIP codes 1, 2, and 3 are set to ON, the hardware address is 1+2+4=7, and the hardware address adjustment range is (0-15).

Software Address: This is achieved by the Offset Address set by the Configurator software (factory default is 1).

For example, if the hardware address is set to 5 and the software address is set to 113, the device address is 118 (the maximum value of the software address is 240, and the save will not take effect if the software address exceeds 240).

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Chapter 4. Product function introduction

4.1 IO Extensions

Note: During the splicing of the equipment, please do not operate with electricity, otherwise it is easy to cause damage to the equipment!

The M31 series distributed I/O host adopts an extensible structure design, in which the IO expansion module can be used for expansion with the M31 series host, only need to dock the IO expansion module with the host slot, and then slide down the lock to firmly connect the host and the IO expansion module together.

Here's how:

- First, ensure that the host is not powered on, ensure that the host slide buckle is dialed at UNLK, and then connect the IO expansion module to the host, as shown in the following figure:

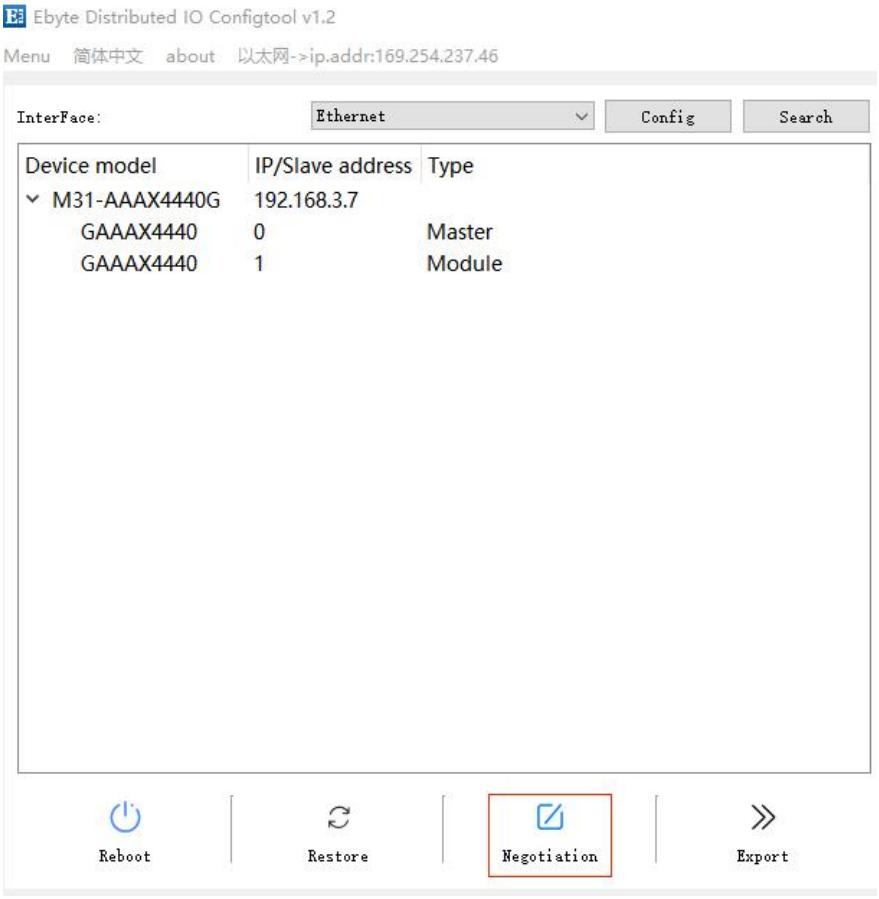


- After the IO expansion module is connected, dial the host slider to the LOCK, then power on the host, then plug in the network cable, and use the automatic negotiation function through the host computer (or double-click the Reload button on the device within two seconds, it can also be automatically negotiated), after the negotiation is successful, the IO expansion module can be operated through the serial port or network port on the host.

Note: Splicing a new I/O expansion module or removing an already negotiated I/O expansion module requires automatic negotiation to ensure the order and status self-test of the overall device.

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4.2 DI input

4.2.1. Input filtering

When switching the input DI to collect the signal, it is necessary to maintain multiple sampling cycles before confirmation. The filter parameters can be set in the range of 1~16 (6 sampling cycles by default, 6*1kHz).

It can be configured via command or host computer.

4.3 DO output

The output mode of the relay.

4.4 AI input

4.4.1. AI Scope

Single-Ended Analog Input AI Measurement Current Signal:

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The acquisition range is 0~20mA or 4~20mA, the accuracy is 3‰, and the resolution is 12 bits. It adopts a single-ended input, with a sampling frequency of 100Hz and an input impedance of 100Ω.
Set the sampling range for all AI channels, the valid value is 0~1 (default 0).
Set to 0: 0~20mA
Set to 1: 4~20mA

Differential Analog Input AI Measurement Current Signal:
The acquisition range is 0~20mA or 4~20mA or ±20mA, the accuracy is 1‰, and the resolution is 16 bits. Differential input with 40Hz sampling frequency.
Set the sampling range for all AI channels, the valid value is 0~2 (default 0).
Set to 0: 0~20mA
Set to 1: 4~20mA
Set to 2: indicates that the ± is 20 mA

Differential Analog Input AI Measurement Voltage Signal:
The acquisition range is 0~5V or 0~10V or ±5V or ±10V, the accuracy is 1‰, and the resolution is 16 bits. Differential input with 40Hz sampling frequency.
Set the sampling range for all AI channels, with valid values of 3~6 (default 5).
Set to 3: 0~5V
Set to 4: indicates that the ± is 5 V
Configured as 5: 0~10V
If this parameter is set to 6, the ± is 10 V

Note: AI configuration description

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

(2) The starting address of the AI channel sampling range parameter is 0x0DAC, the register type is the holding register, and the function code is 0x06 and 0x10. When an AI channel sampling range parameter is written, if the value of the parameter is not within the specified range, it will not take effect, and Modbus will not return an error command.

4.4.2. The shaping value, floating-point value, and process quantity input by AI

There are three ways to read the analog signal collected by the device:
Read the AI quantity shaping value and directly convert it to the input current or voltage. The start address of the AI quantity integer value register is 0x0000, the register type is the input register, and the read function code is 0x04. This method returns a value for one channel in one register.
Single-ended current: The value read is 0~20000. The method of calculating the current size is 0~20000, which corresponds to 0mA~20mA.
i.e. Current = Quantity Value / 1000 (mA)

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Differential Current: The read value is -20000~20000. The method of calculating the current size is -20000~20000, which corresponds to -20mA~20mA.
i.e. Current = Quantity Value / 1000 (mA)

Differential voltage: The value read is -10000~10000. The method of calculating the voltage size is -10000~10000, which corresponds to -10V~10V.
i.e. voltage = quantity value / 1000 (mV)

（2） Read the floating-point value of the AI engineering quantity, and use the IEE754 conversion tool to convert the hexadecimal data to a floating-point number to get the input current or voltage. The start address of the AI quantity integer value register is 0x03E8, the register type is the input register, and the read function code is 0x04. This method returns two registers representing 1 channel.

（3） Read the amount of AI process. The AI engineering register starts from 0x0BB8, the register type is the input register, and the read function code is 0x04. This method returns 1 register for 1 channel.
That is: -27648~27648 represents -10V~+10V/-20ma~20ma

Analog input (current: 0~20mA)			
Current (0-20mA)	decimal	hexadecimal	remark
>23.52	32767	7FFF	Overflow
23.52	32511	7EFF	Exceeding the limit
·	·	·	
>20	27649	6C01	
20	27648	6C00	Rated range
—	—		
10	13824	3600	
·	·	·	
0	0	0	
<0	0	0	Exceeding the lower limit
·	·	·	
-3.52	-4864	ED00	
<-3.52	-32768	8000	underflow

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Analog input (current-20~0mA)			
Current (-20-0mA)	decimal	hexadecimal	remark
>3.52	32767	7FFF	Overflow
3.52	4864	1300	Exceeding the limit
·	·	·	
>0	0	0	
0	0	0	Rated range
·	·	·	
-10	-13824	CA00	
·	·	·	
-20	-27648	9400	
<-20	-27949	93FF	Exceeding the lower limit
·	·	·	
-23.52	-32511	8101	
<-23.52	-32768	8000	underflow

Analog input (current-20-20mA)			
Current (-20-20mA)	decimal	hexadecimal	remark
>23.52	32767	7FFF	Overflow
23.52	32511	7EFF	Exceeding the limit
·	·	·	
>20	27649	6C01	
20	27648	6C00	Rated range

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.	.	.	
10	13824	3600	
.	.	.	
0	0	0	
.	.	.	
-10	-13824	CA00	
.	.	.	
-20	-27648	9400	
<-20	-27949	93FF	Exceeding the lower limit
.	.	.	
-23.52	-32511	8101	
<-23.52	-32768	8000	underflow

Analog input (voltage)						
Voltage (0-5V)	Voltage (0-10V)	Voltage(±5V)	Voltage(±10V)	decimal	hexadecimal	
>5.06	>10.12	>5.06	>10.12	32767	0x7FFF	Overflow
5.06	10.12	5.06	10.12	27979	0x6D4B	Exceeding the limit
5V+0.1808mv	10V+0.3617mv	5V+0.1808mv	10V+0.3617mv	27649	0x6C01	
5	10	5	10	27648	0x6C00	Rated range
.	.	.	.	.	.	
.	.	.	.	.	.	
2.5	5	2.5	5	13824	0x3600	
.	.	.	.	.	.	
.	.	.	.	.	.	
0	0	0	0	0	0x0000	
/	/	.	.	.	.	
/	/	.	.	.	.	
/	/	-2.5	-5	-13824	0XCA00	
/	/	.	.	.	.	
/	/	.	.	.	.	
/	/	-5	-10	-27648	0x9400	
/	/	-5V-0.1808mv	-10V-0.3617mv	-27649	0x93FF	Exceed

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/	/	-5.06	-10.12	-27979	0x92B5	ing the lower limit
/	/	-5.06<	-10.12<	-32768	0x8000	underflow

4.4.3. AI filtering parameters

You can set the filtering parameters of the AI channel, the effective value is 1-16, and the default value is 6.
Filter Parameters:
(1) All AI channels share a filtering parameter, and the higher the parameter value, the more stable the output value is, and the more sluggish the response.
(2) The AI channel filtering parameter address is 0x0DA2, and the register type is the holding register. Function code 0x06, 0x10.
(3) When the AI filter parameter is written, if the written parameter value is not within the range of 1~16, it will automatically take the nearest value and write it, if the write filter parameter is 0, the device will take 1 as the filter parameter, and Modbus will not return an error instruction.

4.5 AO output

4.5.1. AO range

Analog current output, range 0~20mA or 4~20mA, accuracy 3‰, resolution 16 bits, input impedance 500Ω.
Sets the output range for a single AO channel, with valid values of 1 and 0 (default 0).
Set to 0: 0~20mA
Set to 1: 4~20mA
Note: AO configuration description
(1) The AO output range of each channel can be set.
(2) The AO channel output range parameter starts from 0x0DAC, the register type is the holding register, and the function code 0x06 and 0x10. If the parameter of the AI channel sampling range is not within the range of 0~1, it will automatically take the nearest value and write it, if the parameter of the writing sampling range is 2, the device will take 1 as the parameter of the sampling range, and Modbus will not return an error command.

4.5.2. AO outputs the quantity shaping value, the quantity floating-point value, and the process quantity register

There are three ways to read the size of the current signal collected by the device:
(1) Read and control the AO engineering quantity shaping value, and directly convert the output current to obtain it. The AO value register starts from 0x0000, the register type is hold, the function code is read to 0x03, and the

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function code is written to 0x06, 0x10. The value returned by this method represents 1 channel in one register, and the value is 0~20000. The method of calculating the current size is 0~20000, which corresponds to 0~20mA. Namely:

Current = Engineering Value / 1000 (mA)

（2） Read and control the floating-point value of AO engineering quantity, and use the IEE754 conversion tool to convert the hexadecimal data into floating-point number to obtain the current. AO quantities floating-point registers start from 0x03E8, register type is hold register, read function code is 0x03, write function code 0x06, 0x10. This method returns two registers representing 1 channel.

（3） Read and control process quantity shaping values. The AO register starts from 0x01F4, the register type is hold, the function code is read to 0x03, and the function code is written to 0x06, 0x10. This method returns 1 register for 1 channel.

That is: 0~27648 represents 0ma~20ma

4.6 Online monitoring

The device can be monitored for abnormalities by means of relevant registers:

Device exception code	0X7587	4-30088	Zone 4	1	Check the exception code of the current device, if it is 0, it means that there is no abnormality, 1 means that the slave does not reply, and 2 means that the expansion module is in the wrong order (this error will directly cause the device to fail to work normally)	R：0x03
The extension module is incorrectly labeled	0X7588	4-30089	Zone 4	2	Check which extension module has not replied, a total of two registers 32 bits, representing the expansion modules in order, if the bit bit on the corresponding serial number is 1, it means that the extension module is abnormal.	R：0x03

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4.7 Module information

4.7.1. Basic parameters

(1) Modbus address: The device address is set to 1 by default, and the address can be modified, and the address range is 1-247.
(2) Serial baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400bps 8 kinds of options.
(3) Serial port check digit: NONE, ODD, EVEN optional.
(4) DI filter parameters: the filter parameters can be set in the range of 1~16 (default 6 sampling periods, 6*1kHz)
(5) AI Filtering Parameters: You can set the filtering parameters of the AI channel, the effective value is 1-16, and the default value is 6.

4.7.2. Network parameters

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

(1) Working Mode: Toggles 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 5 clients: The device actively connects to the destination IP address and port set by the user.
(2) DHCP: Configure the method for the device to obtain an IP address: static and dynamic.
(3) Gateway Address: Gateway.
(4) Subnet mask: The address mask, which can be read and written.
(5) Local IP: The IP address of the device, which can be read or written.
(6) Local Port: The port number of the device, which can be read and written.
(7) Destination IP: The destination IP address or domain name to which the device is connected when the device is working in client mode.
(8) Destination Port: The destination port to which the device is connected when the device is working in client mode.
(9) DNS server: The device is in client mode and resolves the domain name of the server.
(10) Network Modbus protocol: Modbus TCP and Modbus RTU protocols can be selected on the network port.

4.8 MODBUS parameter configuration

Concentrate:
1. DI, DO, AI, AO registers are continuous, such as an 8DI model host spliced with an 8DI model expansion module, then the DI status register of the expansion module is continued from the host 0x0000-0x0007, that is, 0x0008-0x0010.
2.0x_ denotes hexadecimal.
3. The M31-AAAX4440G model is used as an example to demonstrate the continuity of the registers after splicing.
4. AO uses the M31-XAXA0404G model as an example to show the continuity of the registers after splicing.

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4.8.1. List of DI registers

DI Status Registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Related function codes	Default state
DI1	host	0x0000	1-0001	Zone 1	R：0x02	0
DI2	host	0x0001	1-0002	Zone 1	R：0x02	0
DI3	host	0x0002	1-0003	Zone 1	R：0x02	0
DI4	host	0x0003	1-0004	Zone 1	R：0x02	0
DI5	IO expansion module	0x0004	1-0005	Zone 1	R：0x02	0
.....	IO expansion module	.....	.....	Zone 1	R：0x02	0

DI Filter Registers:

name	Register address (hexadecimal)	Register address (decimal)	Register type	Data Scope/Description	Related function codes	Default state
DI channel filtering parameters	0x0DA3	4-3492	Hold registers	filtering parameters for all DI channels, Valid values 1-16	R：0x03 W：0x06,0x10	6

4.8.2. List of DO registers

DI Status Registers:

name	Access location	Register address (hexadecimal)	Register address (base 10)	Register area	Related function codes	Default state
DO1	host	0x0000	0-0001	Zone 0	R：0x01 W：0x05,0x0F	0
DO2	host	0x0001	0-0002	Zone 0	R：0x01 W：0x05,0x0F	0
DO3	host	0x0002	0-0003	Zone 0	R：0x01 W：0x05,0x0F	0
DO4	host	0x0003	0-0004	Zone 0	R：0x01 W：0x05,0x0F	0

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DO5	IO expansion module	0x0004	0-0005	Zone 0	R：0x01 W：0x05,0x0F	0
.....	IO expansion module	.....	.....	Zone 0	R：0x01 W：0x05,0x0F	0

4.8.3. List of AI registers

AI Quantity Shaping Value Register:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Range/Description (Please refer to the AI Input section for differential)	Related function codes	Default state
AI1	host	0x0000	3-0001	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0
AI2	host	0x0001	3-0002	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0
AI3	host	0x0002	3-0003	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0
AI4	host	0x0003	3-0004	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0
AI5	IO expansion module	0x0004	3-0005	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0
.....	IO expansion module	.....	.....	Zone 3	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x04	0

AI floating-point value registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state

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AI1	host	0x03E8	3-1001	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x04	0
AI2	host	0x03EA	3-1003	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA))	R：0x04	0
AI3	host	0x03EC	3-1005	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x04	0
AI4	host	0x03EE	3-1007	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x04	0
AI5	IO expansion module	0x03F0	3-1009	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x04	0
.....	IO expansion module	.....	.....	Zone 3	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x04	0

AI Process Registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AI1	host	0x0BB8	3-3001	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0
AI2	host	0x0BB9	3-3002	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0
AI3	host	0x0BBA	3-3003	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0
AI4	host	0x0BBB	3-3004	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0
AI5	IO expansion module	0x0BBC	3-3005	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0
.....	IO expansion module	.....	.....	Zone 3	Analog signal integer value, 2 bytes	R：0x04	0

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AI Filter Registers:

name	Register address (hexadecimal).	Register address (decimal).	Register area	Data Scope/Description	Related function codes	Default state
AI channel filtering parameters	0x0DA2	4-3491	Zone 4	filtering parameters for all AI channels, Valid values 1-16	R：0x03 W：0x06,0x10	6

AI Sampling Range Registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AI1 sampling range	host	0x0DAC	4-3501	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AI2 sampling range	host	0x0DAD	4-3502	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AI3 sampling range	host	0x0DAE	4-3503	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AI4 sampling range	host	0x0DAF	4-3504	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AI5 sampling range	IO expansion module	0x0DB0	4-3505	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
.....	IO expansion module	.....	.....	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0

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4.8.4. List of AO registers

AO Integer Value Register:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AO1	host	0x0000	4-0001	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0
AO2	host	0x0001	4-0002	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0
AO3	host	0x0002	4-0003	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0
AO4	host	0x0003	4-0004	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0
AO5	IO expansion module	0x0004	4-0005	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0
.....	IO expansion module	.....	.....	Zone 4	Engineering quantity 0-20000 represents 0-20mA 2-byte integer number in (uA)	R：0x03 W：0x06,0x10	0

AO floating-point value registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AO1	host	0x03E8	4-1001	Zone 4	floating-point value of analog signal, 4-byte floating-point	R：0x03 W：0x06,0x10	0

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					number in (mA)		
AO2	host	0x03EA	4-1003	Zone 4	floating-point value of analog signal, 4-byte floating-point number in (mA))	R：0x03 W：0x06,0x10	0
AO3	host	0x03EC	4-1005	Zone 4	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x03 W：0x06,0x10	0
AO4	host	0x03EE	4-1007	Zone 4	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x03 W：0x06,0x10	0
AO5	IO expansion module	0x03F0	4-1009	Zone 4	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x03 W：0x06,0x10	0
.....	IO expansion module	.....	.....	Zone 4	floating-point value of analog signal, 4-byte floating-point number in (mA)	R：0x03 W：0x06,0x10	0

AO Process Quantity Registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AO1	host	0x01F4	3-0501	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：0x06,0x10	0
AO2	host	0x01F5	3-0502	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：0x06,0x10	0
AO3	host	0x01F6	3-0503	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：0x06,0x10	0
AO4	host	0x01F7	3-0504	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：0x06,0x10	0
AO5	IO expansion module	0x01F8	3-0505	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：0x06,0x10	0
.....	IO expansion	.....	.....	Zone 4	Analog signal integer value, 2 bytes	R：0x03 W：	0

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	module					0x06,0x10	

AO Output Range Registers:

name	Access location	Register address (hexadecimal)	Register address (decimal)	Register area	Data Scope/Description	Related function codes	Default state
AO1 output range	host	0x1194	4-4501	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AO2 output range	host	0x1195	4-4502	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AO3 output range	host	0x1196	4-4503	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AO4 output range	host	0x1197	4-4504	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
AO5 output range	IO expansion module	0x1198	4-4505	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0
.....	IO expansion module	.....	.....	Zone 4	Valid values are 0 and 1, 0 means 0-20mA, 1 means 4-20mA	R：0x03 W：0x06,0x10	0

4.8.5. Module-related registers

Register function	Register address (hexadecimal)	Register address (decimal)	Register area	Number	Data Range/Remarks	Related function codes
Serial baud rate code	0X7530	4-30001	Zone 4	1	1:2400 2：4800	R：0x03

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					3：9600 4：19200 5：38400 6：57600 7：115200 8：230400	W： 0x06,0x10
Serial port check digit	0X7531	4-30002	Zone 4	1	0：NONE 1：ODD 2：EVEN	R：0x03 W： 0x06,0x10
Network working mode	0X7532	4-30003	Zone 4	1	0：TCPS 1：TCPC 2：UDPS 3：UDPC	R：0x03 W： 0x06,0x10
DHCP	0X7533	4-30004	Zone 4	1	0: Off, 1: On	R：0x03 W： 0x06,0x10
The MAC address of the device	0X7534	4-30005	Zone 4	3		R：0x03
The local IP address	0X7537	4-30008	Zone 4	2		R：0x03 W： 0x06,0x10
Subnet mask	0X7539	4-30010	Zone 4	2		R：0x03 W： 0x06,0x10
Gateway address	0X753B	4-30012	Zone 4	2		R：0x03 W： 0x06,0x10
DNS server address	0X753D	4-30014	Zone 4	2		R：0x03 W： 0x06,0x10
Native port	0X7541	4-30018	Zone 4	1	0-65535	R：0x03 W： 0x06,0x10
Destination IP/domain name	0X7542	4-30019	Zone 4	64	A maximum 128-byte string, and the domain name is also represented as a string	R：0x03 W： 0x06,0x10
Destination server port	0X7582	4-30083	Zone 4	1	1-65535	R：0x03 W： 0x06,0x10
Network Modbus protocol	0X7583	4-30084	Zone 4	1	Set this parameter to 1 when the network data is TCP data and 0 when	R：0x03 W： 0x06,0x10

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					the network data is RTU data	
Address Negotiation Write Register Protection	0X7584	4-30085	Zone 4	1	This write-protected register needs to be turned on before sending the address negotiation instruction Write 1: Write protection registers are opened	R：0x03 W：0x06,0x10
Address negotiation registers	0X7585	4-30086	Zone 4	1	Write 1: indicates that the address negotiation begins	R：0x03 W：0x06,0x10
The current negotiation status register	0X7586	4-30087	Zone 4	1	Check whether the negotiation is complete. 0: The negotiation has not yet been completed 1: The negotiation is completed	R：0x03
Device exception code	0X7587	4-30088	Zone 4	1	Check the exception code of the current device, if it is 0, it means that there is no abnormality, 1 means that the slave does not reply, and 2 means that the expansion module is in the wrong order (this error will directly cause the device to fail to work normally)	R：0x03
The extension module is incorrectly labeled	0X7588	4-30089	Zone 4	2	Check which extension module has not replied, a total of two registers 32 bits, representing the expansion modules in order, if the bit bit on the corresponding serial number is 1, it means that the extension module is abnormal.	R：0x03

Note: According to the usage requirements, some software (such as Configurator) 16 to 10 needs +1 to operate the register (the 10 base in the table has been +1).

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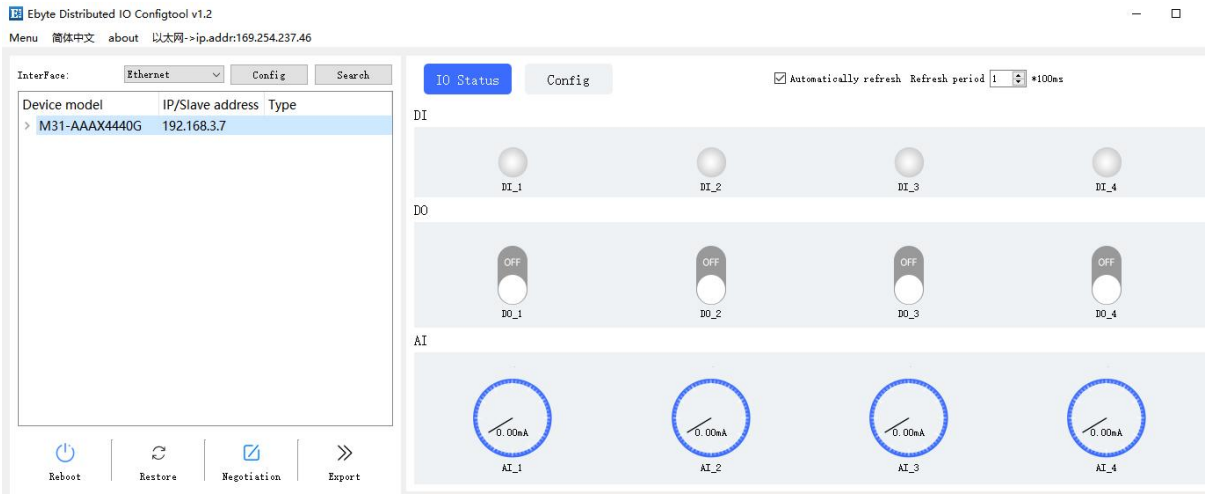
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Chapter 5. Upper computer

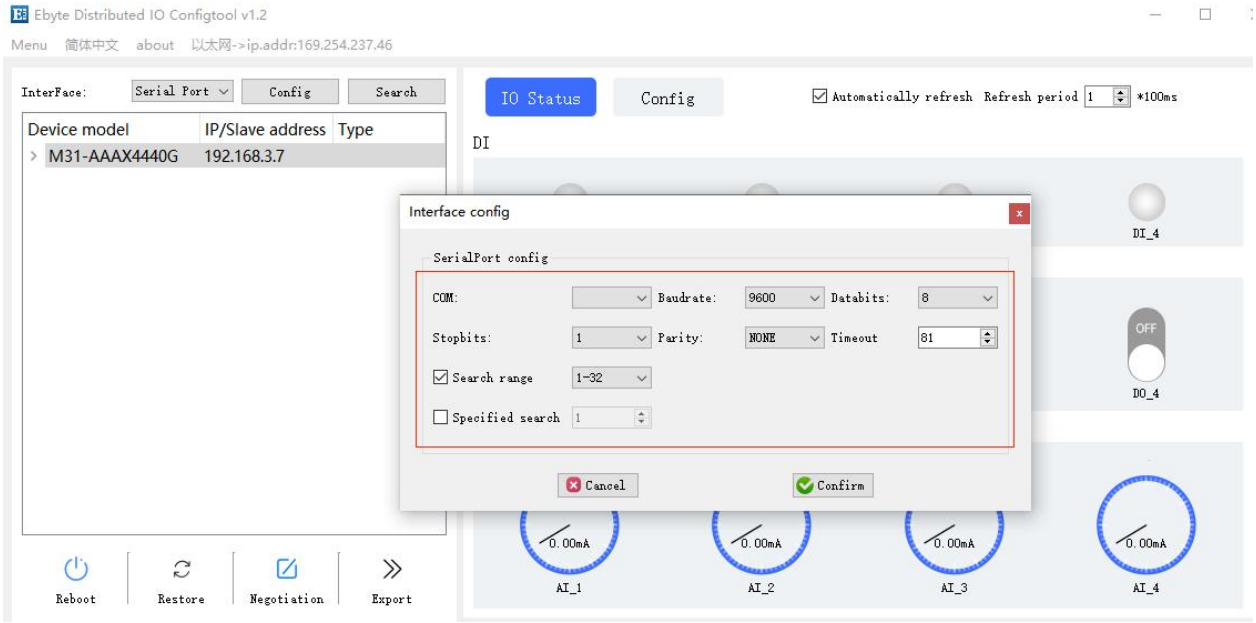
5.1 Connect & Control

The 1 step： Connect the device to the host computer

（1）The device can be configured by selecting the interface (serial/network port); If you select a network port, you need to select a network card before searching for a device.



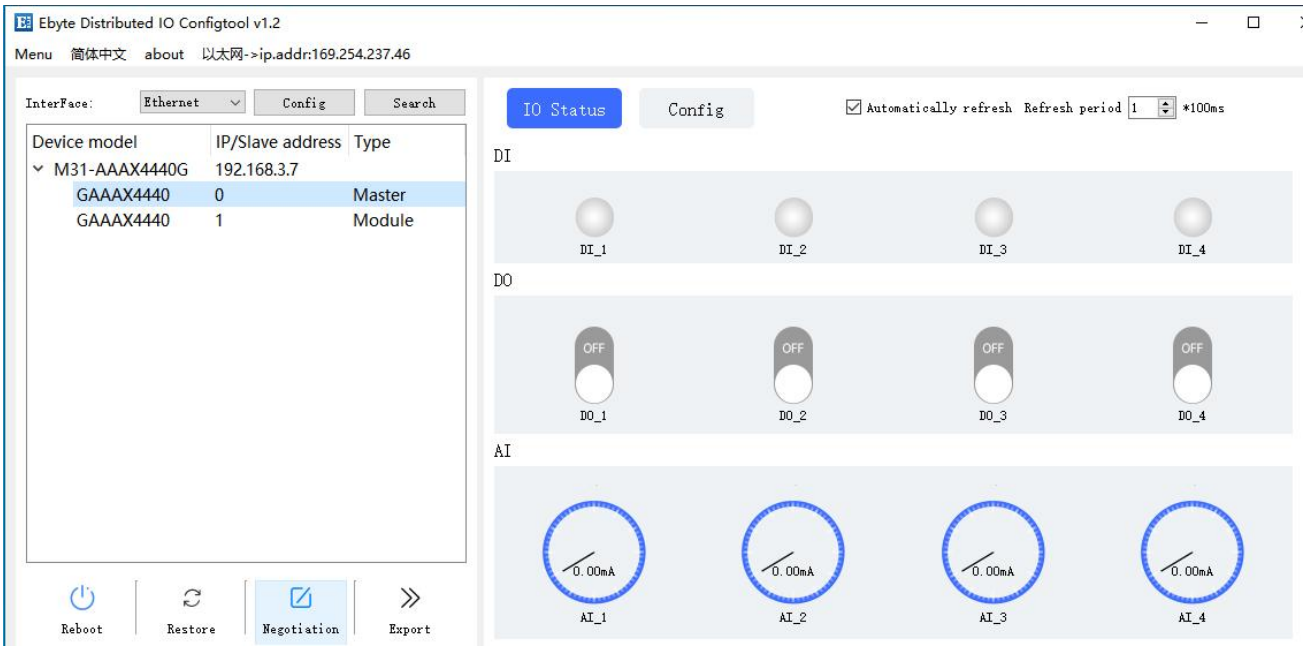
(2) If you select serial port, you need to select the corresponding serial number, as well as the same baud rate, data bit, stop bit, check digit and address range search range as the device, and then search.



The 2 step： Select the corresponding device to perform operations on the corresponding I/O.

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5.2 Parameter configuration

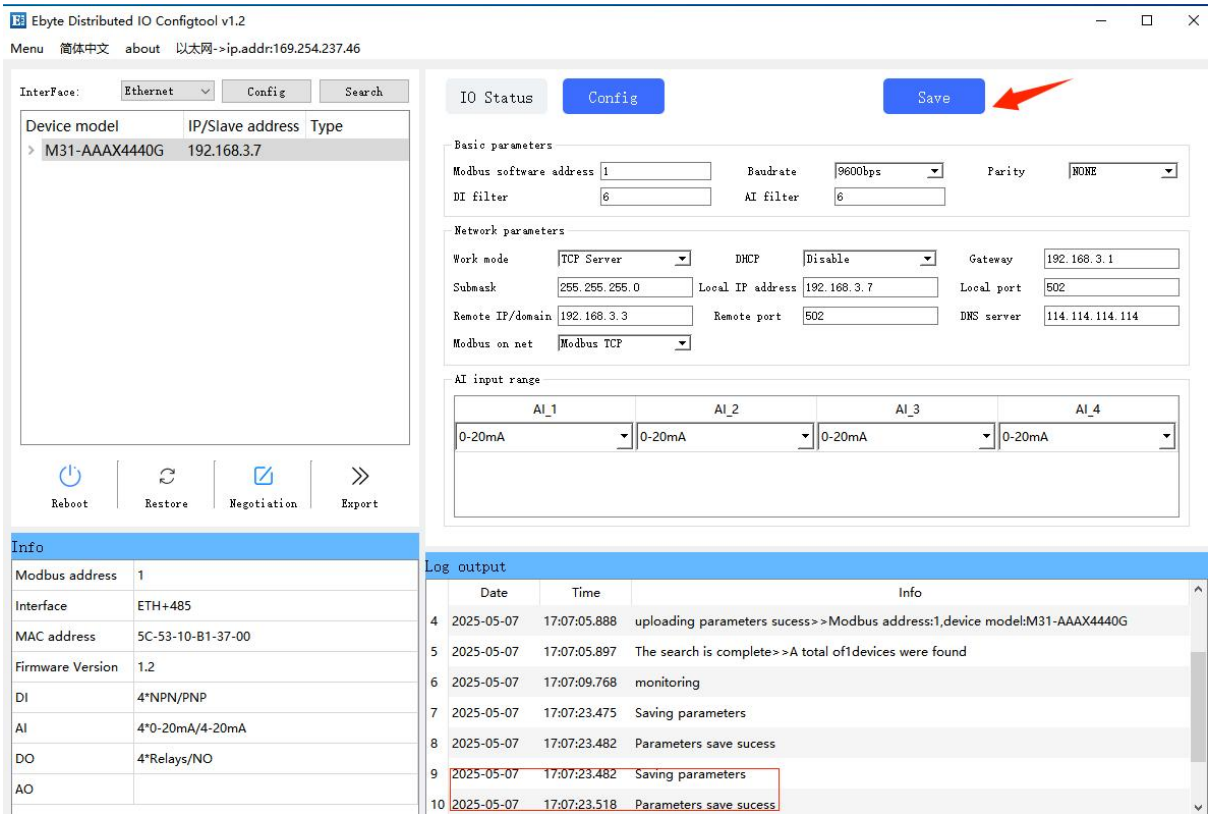
1. Connecting devices refer to "Connecting and Control"
2. You can configure the basic parameters and network parameters of the device



3. After the parameters are configured, click Save Parameters, and see a prompt message in the log output that the parameters are successfully saved, and then restart the device, and after the restart is completed, the modified parameters will take effect.

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Chapter 6. Precautions

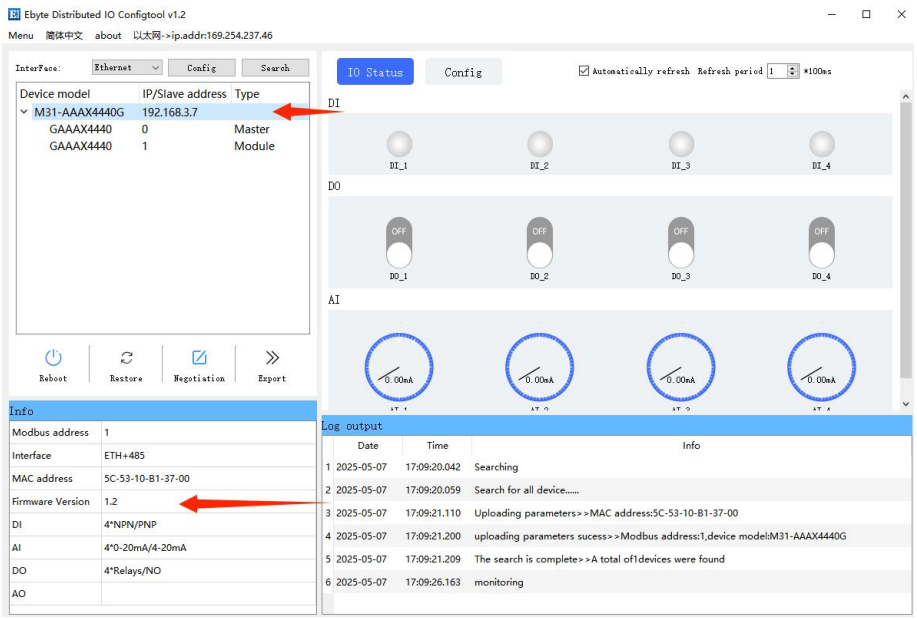
(1) Do not splice the device with electricity, otherwise the device is at risk of damage

(2) Host software V1.1, incompatible with some expansion modules (GXGXX0800, GXFXX0800, GXXXA0008, GXAXA0404, GXAXX0800 (V2.0), GAAAX4440 (V2.0))

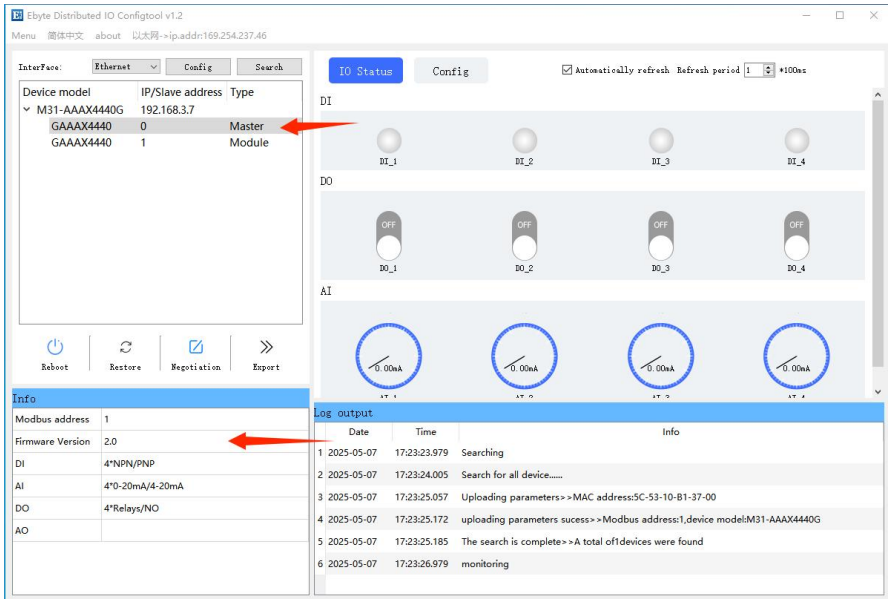
The host software V1.2 version is compatible with all expansion modules, if you need to upgrade, please download the upgrade operation process document www.es-ebyte.com the corresponding model on the official website.

A complete host contains the host firmware and the expansion module firmware version, how to check the version number, as shown in the figure:

Host:



Expansion Modules:



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Revision History

version	Date of revision	Revision Notes	Maintainers
1.0	2025.5.6	Initial release	LT
1.1	2026.1.29	Modify the appearance diagram	LT

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Technical support: service@cdebyte.com
Documents and RF Setting download link: www.es-ebyte.com
Thank you for using Ebyte products! Please contact us with any questions or suggestions: info@cdebyte.com
---
Phone: +86 4000-330-990
Web: www.es-ebyte.com
Address: B5 Mould Park, 199# Xiqu Ave, High-tech District, Sichuan, China

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