Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual



M31-U Series High-Performance Distributed I/O Host

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Table of contents

Chapter 1 Product Overview 1
1.1 Product Introduction 1
1.2 Features 1
1.3 Product Model List 2
Chapter 2 Quick Use 3
2.1Device preparation 3
2.2Device connection 4
2.2.1 RS485 connection 4
2.2.2 DI connection 5
2.2.3 AI Connection 5
2.2.4 DO connection 6
2.2.5 AO connection 7
2.2.6 PT100 connection 7
2.2.7 Simple usage 8
2.3 Parameter configuration 8
2.4 Control Test 10
2.4.1 Modbus TCP control 10
2.4.2 Modbus RTU control 11
Chapter 3 Technical indicators 13
3.1Specifications 13
3.2 Device default parameters 14
3.3 Dimensions 15
3.4 Port, button and LED indicator description 15
3.4.1 M31-AFAX4440G-U 15
3.4.2 M31-AXAX8080G-U 17
3.4.3 M31-A XX X80 0 0G-U 19
3.4.4 M31-AXXXA000G-U 21
3.4.5 M31-AXEX8080G-U 23
3.4.6 M31-XXAX00A0G-U 25
3.4.7 M3 -XXEX00A0G-U 27
3.4.8 M31-AXAX4040G-U 29
3.4.9 M31-XFXX0800G-U 31
3.4.10 M31-XAXX0A00G-U 33
3.4.11 M31-XBXX0A00G-U 36
3.4.12 M31-XXXA0008G-U 39
3.4.13 M31-XXXB0008G-U 41
3.4.14 M31-XDXX0600G-U 43
3.5 DIP switch 45
Chapter 4 Product Function Introduction 46
4.1 Increase the number of I/O points 46
Note: The "M31-" designation for the expansion module will not be displayed in the host configuration software. 48

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4.2 Web Configuration 48
4.3 DI Input 50
4.3.1 Input filtering 50
4.3.2 DI counting function 50
4.4 DO output 50
4.4.1 DO working mode 50
4.4.2 DO pulse output quantity 51
4.4.3 Communication Fault DO Output Status Settings 51
4.5 AI input 51
4.5.1 AI scope 51
4.5.2 AI input integer values, floating-point values, and process quantities 52
4.5.3 AI filter parameters 53
4.6 AO output 53
4.6.1 AO range 53
4.6.2 AO fault output value, AO power-on output value 53
4.6.3 AO fault output switch 54
4.6.4 AO output integer and floating-point registers 54
4.7 PT100 input 55
4.7.1 Integer and floating-point values of quantities input into PT100 55
4.7.2 PT100 temperature compensation, unit conversion, filter parameters, and channel disabling 55
4.8 Online monitoring 56
4.9 Module Information 57
4.9.1 Basic parameters 57
4.9.2 Network parameters 58
4.10 Modbus parameter configuration 58
4.10.1 DI Register List 58
4.10.2 DO Register List 60
4.10.3 AI Register List 62
4.10.4 AO Register List 65
4.10.5 PT100 Register List 70
4.10.6 Basic parameters of equipment 75
4.10.7 Module-related registers 77
4.11 Firmware Upgrade Tutorial 80
(1) In the upper right corner of the host computer, click the Menu and select upgrade tool. 80
(2) In the dialog box that appears, choose the firmware you wish to upgrade (the firmware is available for download on the official website) 80
(3) After adding the firmware, search for the device (here you must first select the network card; if unsure, please refer to the "Host Computer" section). Once the device appears, click "Stop Searching" to finish. 80
(4) When you open the drop-down box, you will see that the host contains an expansion module. When upgrading, select the model listed above to perform the upgrade. The expansion module generally does not need to be upgraded. 80
(5) After selecting the model, click Upgrade. 81
(6) After a successful upgrade, a message will appear saying "Firmware downloaded successfully." Then, simply restart the device. 81

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Chapter 5 Host configuration software 82
5.1 Connection and Control 82
5.2 Parameter configuration 83
Chapter 6 Precautions 84
Revision History 85
About Us 85

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Chapter 1 Product Overview

1.1 Product Introduction



This high-performance distributed I/O host supports standard Modbus TCP and RTU protocols, making it suitable for data acquisition and control. The device is equipped with dual 10/100M adaptive Ethernet interfaces and supports switch functionality. The internal bus speed can reach up to 1ms. It features a reset function for both digital and analog outputs in case of network interruption, ensuring restoration to a preset state in the event of communication failure.

The device features a modular design, allowing users to flexibly expand it according to their actual needs. It supports multiple I/O types, and when the existing configuration is insufficient to meet specific application requirements, users can easily add matching I/O expansion modules without replacing the entire system, effectively saving costs and simplifying the on-site deployment process.

This product allows connection to up to 16 IO expansion modules (including the host itself) and is built in accordance with EMC Level 3 protection standards. IO input/output and power supply are fully isolated, providing excellent electromagnetic compatibility, outstanding performance and high reliability, and meets CE certification standards.

1.2 Features

- Supports standard Modbus RTU protocol and Modbus TCP protocol;
- Supports various configuration software/PLC/touch screens;
- RS485 data acquisition and control I/O;
- The network port is used for data acquisition and control I/O, supporting up to 5 host connections.
- Dual network ports with 10/100M auto-sensing capability, supporting switch functionality;
- Supports custom Modbus address settings;
- Supports differential analog input with 16-bit resolution and accuracy within 1‰;
- The internal bus speed can reach up to 1ms;
- Features I/O input/output, RS485 isolation, and power isolation.
- Supports 8 baud rate configurations;
- Supports DHCP and static IP;
- Supports mounting via positioning holes and guide rails;
- It can connect up to 16 I/O expansion modules (including the host itself) ;
- Supports multiple I/O types such as DI (NPN/PNP), AI (single-ended current), AI (differential current), AI

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(differential voltage), DO (PNP), DO (relay), AO (current), AO (voltage) , and PT100 RTD ;

- Digital input/output and analog input/output can be arbitrarily combined and spliced;
- It adopts industrial-grade hardware design and has multiple protections such as electrostatic discharge, lightning surge, fast pulse group , and reverse power connection protection ;
- The equipment is designed in accordance with EMC Level 3 protection standards ;

1.3 Product Model List

Product Model	Product Specifications	Digital input DI	Analog input AI	Switch output DO	Analog output AO
M31-AFAX4440G-U	4DI+4DO+4AI	4 (NPN, PNP)	4 (Differential Current)	4 (Relay)	—
M31-AXAX8080G-U	8DI+8DO	8 (NPN, PNP)	—	8 (Relay)	—
M31-AXXX8000G-U	8DI	8 (NPN, PNP)	—	—	—
M31-AXXXA000G-U	16 DI	16 (NPN, PNP)	—	—	—
M31- AXEX8080G-U	8DI+8DO	8 (NPN, PNP)	—	8 (PNP)	—
M31- XXAX00A0G-U	16 DO	—	—	16 (Relay)	—
M31- XXEX00A0G-U	16 DO	—	—	16 (PNP)	—
M31- AXAX4040G-U	4 DI+ 4 DO	4 (NPN, PNP)	—	4 (Relay)	—
M31- XFXX0800G-U	8AI	—	8 (Differential Current)	—	—
M31- XAXX0A00G-U	16AI	—	16 (Single-ended current)	—	—
M31- XBXX0A00G-U	16AI	—	16 (Single-ended voltage)	—	—
M31- XXXA0008G-U	8AO	—	—	—	8 (Current)
M31- XXXB0008G-U	8AO	—	—	—	8 (Voltage)
M31 -X D X X 0 6 0 0 GU	6PT100	—	PT100 RTD	—	—

Please consult the official website for details on expansion module models.

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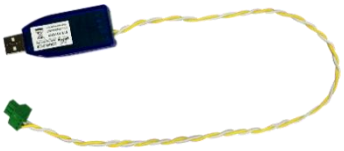
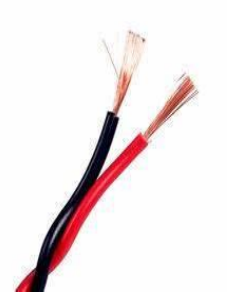
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Chapter 2 Quick Use

[Note] This experiment needs to be performed using the default factory settings.

2.1Device preparation

The following table lists are required for this test:

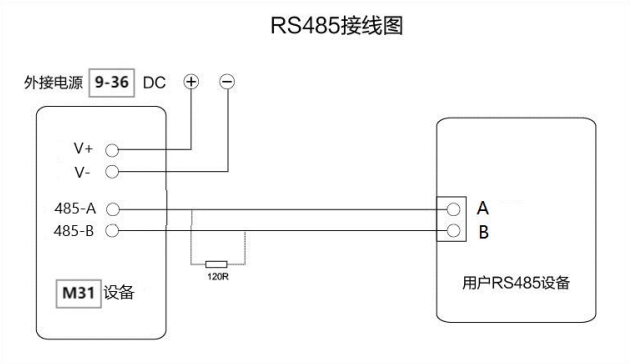
		
M31-AFAX4440G-U	12V switching power supply	USB to RS485
		
computer	One network cable	Several cables

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2.2Device connection

2.2.1 RS485 connection

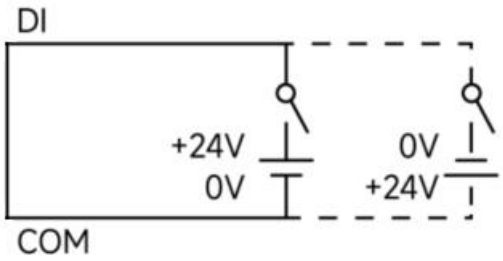


Note: When transmitting high-frequency signals on the 485 bus, the signal wavelength is relatively short compared to the transmission line. The signal will be reflected at the transmission line terminal, interfering with the original signal. Therefore, a terminating resistor needs to be added to the end of the transmission line to prevent signal reflection. The terminating resistor should have the same impedance as the communication cable, typically 120 ohms. Its function is to match the bus impedance, improving the anti-interference capability and reliability of data communication.

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2.2.2 DI connection

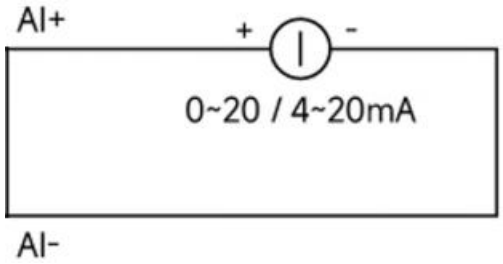


PNP input **NPN input**

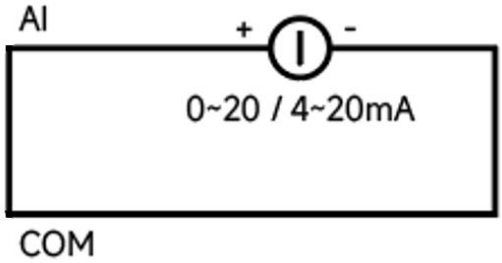
Note: DI is an NPN or PNP active input, and the voltage range supported is only 10 V to 28 V.

2.2.3 AI Connection

Differential analog current acquisition:



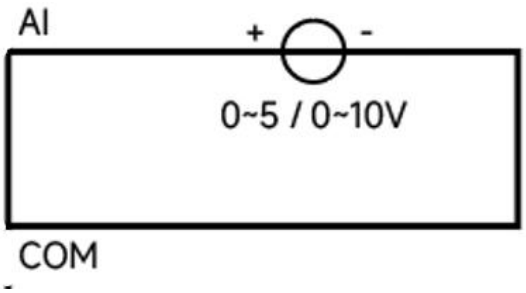
Single-ended analog current acquisition:



Single-ended analog voltage acquisition:

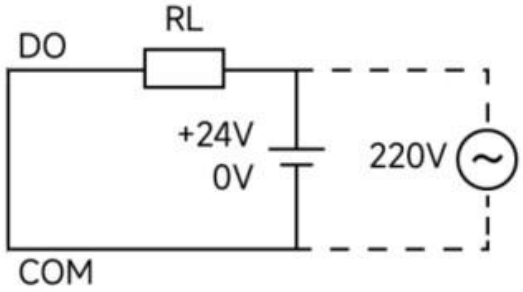
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2.2.4 DO connection

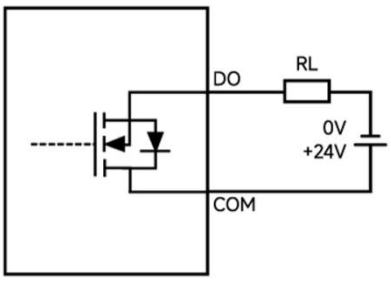
2.2.4.1 **Relay type**



Note: 1. A single relay can support a maximum of 5A.

2. The maximum total current supported for each group (same COM common terminal) is 8A.

2.2.4.2 **Transistor type**



Note: 1. A single channel can support a maximum of 0.5A .

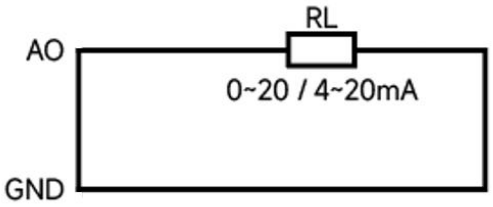
2. The maximum total current supported by each group (same COM common terminal) is 4 A , and the voltage range is 10 to 30 V.

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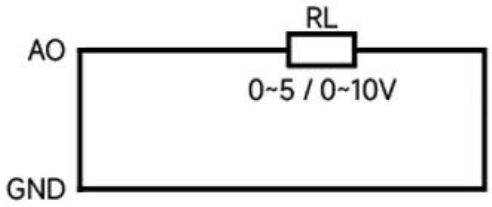
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2.2.5 AO connection

Analog current output :

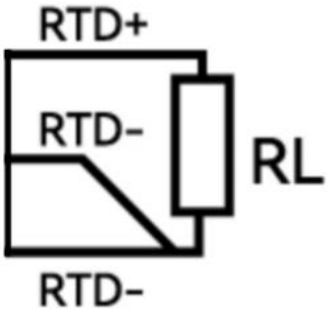


Analog voltage output :



2.2.6 PT100 connection

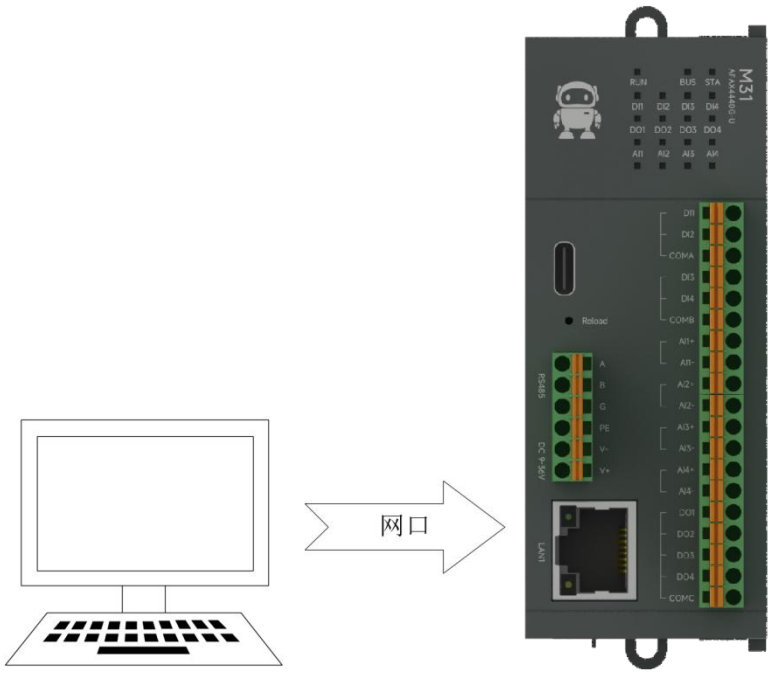
Three-wire PT100 RTD data acquisition:



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2.2.7 Simple usage



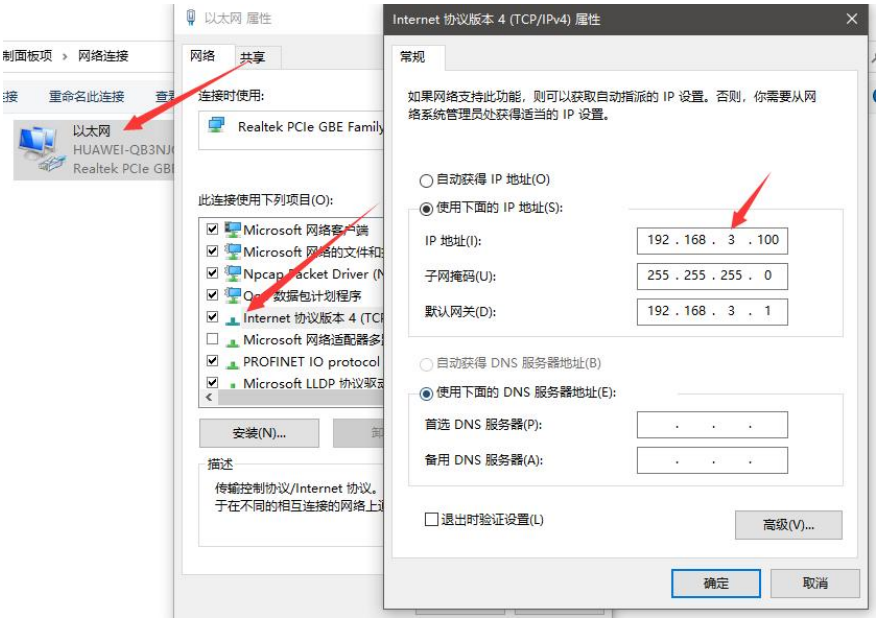
Wiring: Connect the computer to the RS485 interface of the M31-AFAX4440G-U via a USB to RS485 adapter, with A connected to A and B connected to B.
Connect the device to the PC by inserting a network cable into the RJ45 port (this device has dual network ports, both of which can be used for connection) .
The M31-AFAX4440G-U is powered by a DC-12V switching power supply (DC 9～36V) .

2.3 Parameter configuration

Step 1: Change your computer's IP address to match the device's. Here, I changed it to 192.168.3.100 to ensure that it is on the same network segment as the device and that the IP addresses are different. If you still cannot connect to the device after following the above steps, please turn off the firewall and try again.

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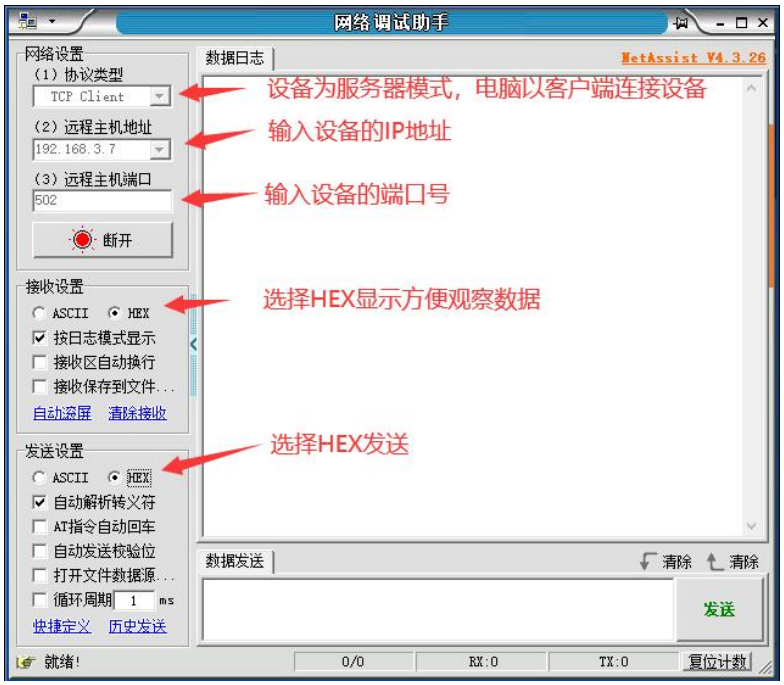
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Step 2: Open Network Assistant, select TCP Client, enter the remote host IP : 192.168.3.7 (default parameter), enter the port number 502 (default parameter), and select HEX to send.

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The device is in server mode, and the computer connects to the device as a client.

Enter the device's IP address.

Enter the device's port number.

Select HEX display for easier data observation.

Select HEX to send.

2.4 Control Test

2.4.1 Modbus TCP control

Use the network assistant to control the first DO output of the M31-AFAX4440G-U .

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1: Transaction processing identifier

2: Protocol identifier

3: Length

4: Modbus address

5: Function code

6: Starting address

7: Operation code

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

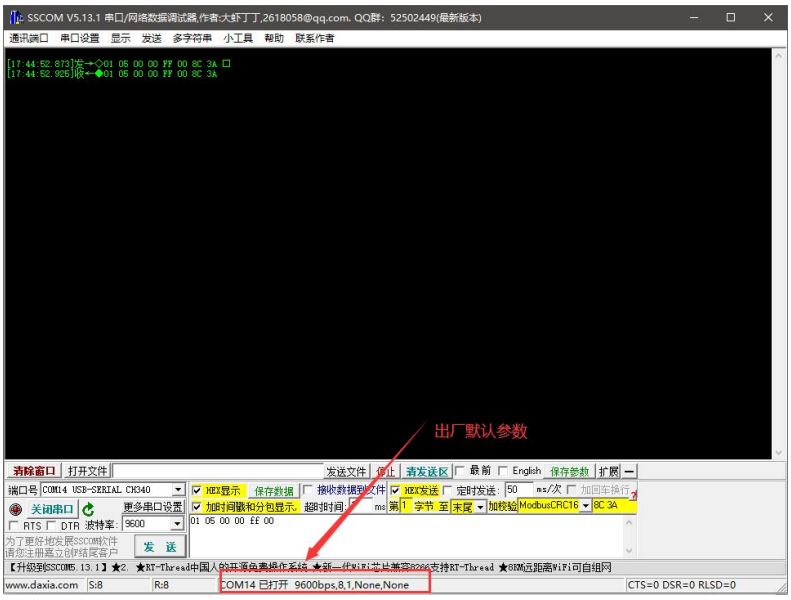
Function (function code)	Command
Engage the first coil (0x05)	01 00 00 00 00 06 01 05 00 00 FF 00
Control 4-channel DO to be fully enabled (0x0F)	02 00 00 00 00 08 01 0F 00 00 00 04 01 0F
Control 4-way DO to shut down (0x0F)	02 00 00 00 00 08 01 0F 00 00 00 04 01 00
Read the status of 4-channel DI (0x02)	01 00 00 00 00 06 01 02 00 00 00 04
Read the status of 4 DO channels (0x01)	01 00 00 00 00 06 01 01 00 00 00 04

2.4.2 Modbus RTU control

Use a serial port assistant to control the first DO output of the M31-AFAX4440G-U .

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

Function (function code)	Command
Engage the first coil (0x05)	01 05 00 00 FF 00 8C 3A
Control 4-channel DO to be fully enabled (0x0F)	01 0F 00 00 00 04 01 0F 7E 92
Control 4-way DO to shut down (0x0F)	01 0F 00 00 00 04 01 00 3E 96
Read the status of 4-channel DI (0x02)	01 02 00 00 00 04 79 C9
Read the status of 4 DO channels (0x01)	01 1 00 00 00 04 3D C9

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Chapter 3 Technical indicators

3.1Specifications

Modbus Distributed I/O Host		
Category	**Item**	**Parameter**
Power supply	Operating voltage	DC 9 ～ 36V ; with reverse connection protection
	Power indicator	RUN red LED indicator
	Power consumption	2-4W
Communication	Communication interface	RJ45 *2 (dual network ports) , RS485
	baud rate	9600bps (optional)
	Communication Protocol	Standard Modbus TCP, Modbus RTU protocols
	Internal bus	Up to 1ms
Modbus	Device address	can be achieved via Modbus commands, host configuration software, and hardware DIP switches.
DI Input	Input type	NPN, PNP
	Input range	DC 10 ~ 28V
	Isolation methods	Each channel is individually opto-isolated.
	Input impedance	7.2kΩ
	sampling frequency	1000 Hz
	Counting frequency	<500Hz
	Filtering time	Default time 6ms
	Input Instructions	DI green LED indicator
AI input	Acquisition characteristics	Single-ended input/differential input (model 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; Single-ended voltage: 0-5V, 0-10V
	AI resolution	16-bit (differential)
	AI accuracy	1‰ (differential) / 3‰ (single-ended)
	refresh rate	Maximum 70Hz
	Input Instructions	AI Green LED Indicator

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DO (relay) output	DO output type	Type A relay (normally open)
	DO output mode	Level output , pulse output
	Relay contact capacity	5A 30VDC, 5A 250VAC (maximum total current supported at the same COM common terminal is 8A)
	Output Indicator	DO green LED indicator
DO (PNP) output	DO output type	PNP type
	DO output mode	Level output , pulse output
	Output capability	Supports output up to 0.5A per channel and 4A per COM port at voltages from 10 to 30V.
	Output Indicator	DO green LED indicator
AO output	Output type	0-20mA, 4-20mA / 0-5V , 0-10V (Voltage and current models are optional)
	Output accuracy	1‰
	Output impedance	AOV: 40R AOI: 656kΩ
	Output Indicator	AO green LED indicator
PT100 input	Input type	2/3 wire PT100 RTD
	Temperature measurement range	-200～850℃
	Temperature resolution	0.1℃
	accuracy	±0.1%±1℃
	refresh rate	Maximum 70Hz
	Input Instructions	RTD Green LED Indicator
Other	Product Dimensions	110mm * 40mm * 100mm (Length * Width * Height)
	Operating temperature and humidity	-40 to +85℃, 5% to 95%RH (non-condensing)
	Storage temperature and humidity	-40 to +105℃, 5% to 95%RH (non-condensing)
	Installation method	Positioning holes and guide rail installation

3.2 Device default parameters

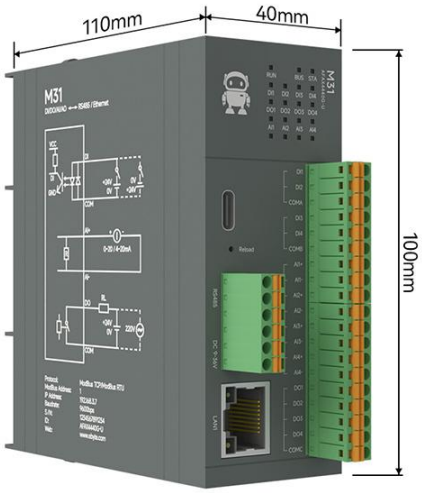
Category	Item	Parameter
Basic parameters	Modbus address	1
	Baud rate	9600bps
	Check bit	None

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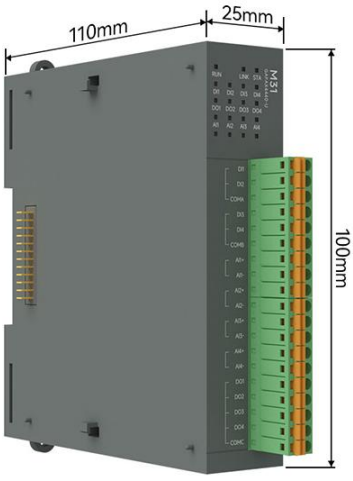
	Data bits	8
	Stop bit	1
	DI filter parameters	6
	AI filter parameters	0
Network parameters	Work mode	TCP server (maximum 5 client connections)
	DHCP	closure
	Gateway address	192.168.3.1
	Subnet mask	255.255.255.0
	Local IP	192.168.3.7
	Local port	502
	Target IP	192.168.3.3
	Target port	502
	DNS server	114.114.114.114
	Local MAC	Determined by the chip (fixed)

3.3 Dimensions



主机

Host



扩展模块

Expansion modules

3.4 Port, button and LED indicator description

3.4.1 M31-AFAX4440G-U

M31-AFAX4440G-U Port and Button Description:

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Silkscreen	Name	Description
DI1	DI1 digital input	DI1 digital input interface, used in conjunction with COMA
DI2	DI2 digital input	DI2 digital input interface, used in conjunction with COMA
COM A	DI digital input common terminal	DI1-DI2 share COMA common terminal
DI3	DI3 digital input	DI3 digital input interface, used in conjunction with COMB
DI4	DI4 digital input	DI4 digital input interface, used in conjunction with COMB
COM B	DI digital input common terminal	DI3-DI4 share a common COMB terminal
DO1	DO1 digital output	DO1 is a digital output interface used in conjunction with COMC.
DO2	DO2 digital output	DO2 digital output interface, used in conjunction with COMC
DO3	DO3 digital output	DO3 digital output interface, used in conjunction with COMC
DO4	DO4 digital output	DO4 is a digital output interface used in conjunction with COMC.
COM C	DO's COM port	DO1-DO4 share a common COMC for use.
AI1+	AI1 Analog Input +	AI1 analog input + interface, used in conjunction with AI1-
AI1-	AI1 Analog Input -	AI1 Analog Input Interface, for use with AI1+
AI2+	AI2 analog input +	AI2 analog input + interface, used in conjunction with AI2-
AI2-	AI2 Analog Input -	AI2 Analog Input Interface, for use with AI2+
AI3+	AI3 Analog Input +	AI3 analog input + interface, used in conjunction with AI3-
AI3-	AI3 Analog Input -	AI3 Analog Input Interface, for use with AI3+
AI4+	AI4 Analog Input +	AI4 analog input + interface, used in conjunction with AI4-
AI4-	AI4 Analog Input -	AI4 Analog Input Interface, for use with AI4+
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate I/O expansion modules.
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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	Network port	Standard RJ45 network cable interface
LAN 2	Network port	Standard RJ45 network cable interface

M 31-AFAX4440G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Equipment operating status indicator lights	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring

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		via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flashing: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI2	DI2 Input Indicator	Green LED light; On: DI2 input is valid; Off: DI2 input is invalid.
DI3	DI3 Input Indicator	Green LED light; On: DI3 input is valid; Off: DI3 input is invalid.
DI4	DI4 Input Indicator	Green LED light; On: DI4 input is valid; Off: DI4 input is invalid.
DO1	DO1 output indicator light	Green LED light; On: DO1 relay closed; Off: DO1 relay open.
DO2	DO2 output indicator light	Green LED light; On: DO2 relay closed; Off: DO2 relay open.
DO3	DO3 output indicator light	Green LED light; On: DO3 relay closed; Off: DO3 relay open.
DO4	DO4 output indicator light	Green LED light; On: DO4 relay closed; Off: DO4 relay open.
AI1	AI1 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI2	AI2 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI3	AI3 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI4	AI4 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.

3.4.2 M31-AXAX8080G-U

M31-AXAX8080G-U Port and Button Description:		
Silkscreen	Name	Description
DO1	DI1 digital input	DI1 digital input interface, used in conjunction with COMA
DI2	DI2 digital input	DI2 digital input interface, used in conjunction with COMA
DI3	DI3 digital input	DI3 digital input interface, used in conjunction with COMA
DI4	DI4 digital input	DI4 digital input interface, used in conjunction with COMA

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COMA	DI digital input common terminal	DI1-DI4 share the same COMA common terminal
DI5	DI5 digital input	DI5 digital input interface, used in conjunction with COMB.
DI6	DI6 digital input	The DI6 digital input interface is used in conjunction with the COMB module.
DI7	DI7 digital input	The DI7 digital input interface is used in conjunction with the COMB module.
DI8	DI8 digital input	The DI8 digital input interface is used in conjunction with the COMB module.
COMB	DI digital input common terminal	DI5-DI8 share a common COMP terminal
DO1	DO1 digital output	DO1 is a digital output interface used in conjunction with COMC.
DO2	DO2 digital output	DO2 digital output interface, used in conjunction with COMC
DO3	DO3 digital output	DO3 digital output interface, used in conjunction with COMC
DO4	DO4 digital output	DO4 is a digital output interface used in conjunction with COMC.
DO5	DO5 digital output	DO5 digital output interface, used in conjunction with COMC
DO6	DO6 digital output	DO6 digital output interface, used in conjunction with COMC
DO7	DO7 digital output	DO7 digital output interface, used in conjunction with COMC
DO8	DO8 digital output	DO8 digital output interface, used in conjunction with COMC
COMC	DO's COM port	DO1-DO8 share a common COMC for coordinated use
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M 31-AXAX8080G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Equipment operating status indicator lights	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status	Yellow LED light; On: Internal bus of the device is operating normally;

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	indicator	Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI2	DI2 Input Indicator	Green LED light; On: DI2 input is valid; Off: DI2 input is invalid.
DI3	DI3 Input Indicator	Green LED light; On: DI3 input is valid; Off: DI3 input is invalid.
DI4	DI4 Input Indicator	Green LED light; On: DI4 input is valid; Off: DI4 input is invalid.
DI5	DI5 Input Indicator	Green LED light; On: DI5 input is valid; Off: DI5 input is invalid.
DI6	DI6 Input Indicator	Green LED light; On: DI6 input is valid; Off: DI6 input is invalid.
DI7	DI7 Input Indicator	Green LED light; On: DI7 valid input; Off: DI7 invalid input.
DI8	DI8 Input Indicator	Green LED light; On: DI8 input is valid; Off: DI8 input is invalid.
DO1	DO1 output indicator light	Green LED light; On: DO1 relay closed; Off: DO1 relay open.
DO2	DO2 output indicator light	Green LED light; On: DO2 relay closed; Off: DO2 relay open.
DO3	DO3 output indicator light	Green LED light; On: DO3 relay closed; Off: DO3 relay open.
DO4	DO4 output indicator light	Green LED light; On: DO4 relay closed; Off: DO4 relay open.
DO5	DO5 output indicator light	Green LED light; On: DO5 relay closed; Off: DO5 relay open.
DO6	DO6 output indicator light	Green LED light; On: DO6 relay closed; Off: DO6 relay open.
DO7	DO7 output indicator light	Green LED light; On: DO7 relay closed; Off: DO7 relay open.
DO8	DO8 output indicator light	Green LED light; On: DO8 relay closed; Off: DO8 relay open.

3.4.3 M31-A XX X80 0 0G-U

M31-AXXX8000G-U Port and Button Description:		
Silkscreen	Name	Description
DI1	DI1 digital input	DI1 is a digital input interface used in conjunction with COM 1.
COM1	COM port of D I1	DI1 common terminal of digital input interface
DI 2	DI 2 digital input	DI 2 is a digital input interface used in conjunction with COM 2.
COM2	DI2 's COM port	The common terminal of the DI2 digital input interface
DI 3	DI 3 digital input	DI 3 is a digital input interface used in conjunction with COM

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		3 .
COM3	DI3 's COM port	The common terminal of the DI3 digital input interface
DI 4	DI 4 digital input	DI 4 is a digital input interface used in conjunction with COM 4 .
COM4	DI4 's COM port	The common terminal of the DI4 digital input interface
DI 5	DI 5 digital input	DI 5 is a digital input interface used in conjunction with COM 5 .
COM5	DI5 COM terminal	The common terminal of the DI5 digital input interface
DI 6	DI 6 digital input	DI 6 digital input interface, used in conjunction with COM 6
COM6	DI61 COM port	The common terminal of the DI6 digital input interface
DI 7	DI 7 digital input	DI 7 is a digital input interface used in conjunction with COM 7 .
COM7	DI7 's COM port	The common terminal of the DI7 digital input interface
DI 8	DI 8 digital input	DI 8 digital input interface, used in conjunction with COM 8
COM8	DI8 's COM port	The common terminal of the DI8 digital input interface
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate I/O expansion modules.
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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-AXXX8000G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication	Blue LED light; flashing: indicates data exchange between the host and

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	indicator	the expansion module; off: indicates no data exchange between the host and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI 2	DI 2 Input Indicator	Green LED light; On: DI 2 valid input; Off: DI 2 invalid input.
DI 3	DI 3 Input Indicator	Green LED light; On: DI 3 valid input; Off: DI 3 invalid input.
DI 4	DI 4 Input Indicator	Green LED light; On: DI 4 valid input; Off: DI 4 invalid input.
DI 5	DI 5 Input Indicator	Green LED light; On: DI 5 valid input; Off: DI 5 invalid input.
DI 6	DI 6 Input Indicator	Green LED light; On: DI 6 valid input; Off: DI 6 invalid input.
DI 7	DI 7 Input Indicator	Green LED light; On: DI 7 valid input; Off: DI 7 invalid input.
DI 8	DI 8 Input Indicator	Green LED light; On: DI 8 valid input; Off: DI 8 invalid input.

3.4.4 M31-AXXXA000G-U

M31-AXXXA000G-U Port and Button Description:		
Silkscreen	Name	Description
DI1	DI1 digital input	DI1 digital input interface, used in conjunction with COM A
DI 2	DI 2 digital input	DI 2 is a digital input interface used in conjunction with COM A.
DI 3	DI 3 digital input	DI 3 digital input interface, used in conjunction with COM A
DI 4	DI 4 digital input	DI 4 digital input interface, used in conjunction with COM A
DI 5	DI 5 digital input	DI 5 digital input interface, used in conjunction with COM A
DI 6	DI 6 digital input	DI 6 digital input interface, used in conjunction with COM A
DI 7	DI 7 digital input	DI 7 digital input interface, used in conjunction with COM A
DI 8	DI 8 digital input	DI 8 digital input interface, used in conjunction with COM A
COMA	DI digital input common terminal	DI1-DI8 share the same COMA common terminal
DI 9	DI 9 digital input	DI 9 digital input interface, used in conjunction with COM A
DI1 0	DI1 0 digital input	DI1 0 is a digital input interface used in conjunction with COM A.
DI1 1	DI1 1- digit input	DI1 is a digital input interface used in conjunction with COM A.
DI1 2	DI1 2 digital input	DI1 2 is a digital input interface used in conjunction with COM A.
DI1 3	DI1 3 digital input	DI1 3 digital input interface, used in conjunction with COM A
DI1 4	DI1 4- digit digital input	DI1 4 digital input interface, used in conjunction with COM A
DI1 5	DI1 5 digital input	DI1 5 digital input interface, used in conjunction with COM A
DI1 6	DI1 6- digit digital input	DI1 6 digital input interface, used in conjunction with COM A
COMB	DI digital input common terminal	DI 9 - DI 6 share a common COM B terminal
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate

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		the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-AXXXA000G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flashing: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI2	DI2 Input Indicator	Green LED light; On: DI2 input is valid; Off: DI2 input is invalid.
DI3	DI3 Input Indicator	Green LED light; On: DI3 input is valid; Off: DI3 input is invalid.
DI4	DI4 Input Indicator	Green LED light; On: DI4 input is valid; Off: DI4 input is invalid.
DI5	DI5 Input Indicator	Green LED light; On: DI5 input is valid; Off: DI5 input is invalid.
DI6	DI6 Input Indicator	Green LED light; On: DI6 input is valid; Off: DI6 input is invalid.
DI7	DI7 Input Indicator	Green LED light; On: DI7 valid input; Off: DI7 invalid input.
DI8	DI8 Input Indicator	Green LED light; On: DI8 input is valid; Off: DI8 input is invalid.
DI 9	DI 9 Input Indicator	Green LED light; On: DI 9 input is valid; Off: DI 9 input is invalid.
DI 10	DI 10 Input Indicator	Green LED light; On: DI 10 valid input; Off: DI 10 invalid input.
DI 11	DI 11 Input Indicator	Green LED light; On: DI 11 valid input; Off: DI 11 invalid input.
DI 12	DI 12 Input Indicator	Green LED light; On: DI 12 valid input; Off: DI 12 invalid input.
DI 13	DI 13 Input Indicator	Green LED light; On: DI 13 valid input; Off: DI 13 invalid input.
DI 14	DI 14 Input Indicator	Green LED light; On: DI 14 valid input; Off: DI 14 invalid input.
DI 15	DI 15 Input Indicator	Green LED light; On: DI 15 valid input; Off: DI 15 invalid input.
DI 16	DI 16 Input Indicator	Green LED light; On: D16 valid input; Off: D16 invalid input.

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3.4.5 M31-AXEX8080G-U

M31-AXEX8080G-U Port and Button Description:		
Silkscreen	Name	Description
DI 1	DI1 digital input	DI1 digital input interface, used in conjunction with COMA
DI2	DI2 digital input	DI2 digital input interface, used in conjunction with COMA
DI3	DI3 digital input	DI3 digital input interface, used in conjunction with COMA
DI4	DI4 digital input	DI4 digital input interface, used in conjunction with COMA
COMA	DI digital input common terminal	DI1-DI4 share the same COMA common terminal
DI5	DI5 digital input	The DI5 digital input interface is used in conjunction with the COMB module.
DI6	DI6 digital input	The DI6 digital input interface is used in conjunction with the COMB module.
DI7	DI7 digital input	The DI7 digital input interface is used in conjunction with the COMB module.
DI8	DI8 digital input	The DI8 digital input interface is used in conjunction with the COMB module.
COMB	DI digital input common terminal	DI5-DI8 share a common COMB terminal
DO1	DO1 digital output	DO1 is a digital output interface used in conjunction with COMC.
DO2	DO2 digital output	DO2 digital output interface, used in conjunction with COMC
DO3	DO3 digital output	DO3 digital output interface, used in conjunction with COMC
DO4	DO4 digital output	DO4 digital output interface, used in conjunction with COMC
DO5	DO5 digital output	DO5 digital output interface, used in conjunction with COMC
DO6	DO6 digital output	DO6 digital output interface, used in conjunction with COMC
DO7	DO7 digital output	DO7 digital output interface, used in conjunction with COMC
DO8	DO8 digital output	DO8 digital output interface, used in conjunction with COMC
COMC	DO's COM side	DO1-DO8 share a common COMC for coordinated use
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface

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LAN 2	network port	Standard RJ45 network cable interface

M31-AXEX8080G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI2	DI2 Input Indicator	Green LED light; On: DI2 input is valid; Off: DI2 input is invalid.
DI3	DI3 Input Indicator	Green LED light; On: DI3 input is valid; Off: DI3 input is invalid.
DI4	DI4 Input Indicator	Green LED light; On: DI4 input is valid; Off: DI4 input is invalid.
DI5	DI5 Input Indicator	Green LED light; On: DI5 input is valid; Off: DI5 input is invalid.
DI6	DI6 Input Indicator	Green LED light; On: DI6 input is valid; Off: DI6 input is invalid.
DI7	DI7 Input Indicator	Green LED light; On: DI7 valid input; Off: DI7 invalid input.
DI8	DI8 Input Indicator	Green LED light; On: DI8 input is valid; Off: DI8 input is invalid.
DO1	DO1 output indicator light	Green LED light; On: DO1 transistor is conducting; Off: DO1 transistor is cut off.
DO2	DO2 output indicator light	Green LED light; On: DO 2 transistor is conducting; Off: DO 2 transistor is cut off.
DO3	DO3 output indicator light	Green LED light; On: DO 3 transistor is conducting; Off: DO 3 transistor is cut off.
DO4	DO4 output indicator light	Green LED light; On: DO 4 transistor is conducting; Off: DO 4 transistor is cut off.
DO5	DO5 output indicator light	Green LED light; On: DO 5 transistor is conducting; Off: DO 5 transistor is cut off.
DO6	DO6 output indicator light	Green LED light; On: DO 6 transistor is conducting; Off: DO 6 transistor is cut off.
DO7	DO7 output indicator light	Green LED light; On: DO 7 transistor is conducting; Off: DO 7 transistor is cut off.
DO8	DO8 output indicator light	Green LED light; On: DO 8 transistor is conducting; Off: DO 8 transistor is cut off.

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3.4.6 M31-XXAX00A0G-U

M31-XXAX00A0G-U Port and Button Description:		
Silkscreen	Name	Description
DO1	DO1 digital output	DO1 digital output interface, used in conjunction with COMA
D O 2	DO 2 digital output	DO 2 is a digital output interface used in conjunction with COMA.
DO3	DO 3 digital output	DO 3 digital output interface, used in conjunction with COMA
DO4	DO 4 digital output	DO 4 digital output interface, used in conjunction with COMA
DO5	DO 5 digital output	DO 5 digital output interface, used in conjunction with COMA
DO 6	DO 6 digital output	DO 6 digital output interface, used in conjunction with COMA
DO7	DO 7 digital output	DO 7 digital output interface, used in conjunction with COMA
DO 8	DO 8 digital output	DO 8 digital output interface, used in conjunction with COMA
COM A	DO's COM port	DO1 - DO8 share COM A common terminal
DO 9	DO 9 digital output	DO 9 digital output interface, used in conjunction with COM 8
DO 10	DO 10 digital output	DO 10 digital output interface, used in conjunction with COM B
DO 11	DO1 1- way digital output	DO1 is a digital output interface for use with COM B.
DO 12	DO1 2 digital output	DO1 2 -bit digital output interface, used in conjunction with COM 8.
DO 13	DO1 3- way digital output	DO1 3 digital output interface, used in conjunction with COM B
DO 14	DO1 4- way digital output	DO1 4 -way digital output interface, used in conjunction with COM B
DO 15	DO1 5- way digital output	DO1 5 digital output interface, used in conjunction with COM B
DO 16	DO1 6- digit digital output	DO1 6 -bit digital output interface, used in conjunction with COM B
COM B	DO's COM side	DO 9 - DO 16 share a common COM B for use.
COM B	DO's COM port	DO 9 - DO 16 share a common COM B for use.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O expansion module ;
A(RS485)	RS485 A interface	RS485 A interface
B(RS485)	RS485 B interface	RS485 B interface

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G(RS485)	RS485 G interface	RS485 G interface
PE	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-X X A X 0 0 A 0G-U Indicator Light Description:		
silkscreen	name	illustrate
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DO1	DO1 output indicator light	Green LED light; On: DO1 relay closed; Off: DO1 relay open.
DO2	DO2 output indicator light	Green LED light; On: DO 2 relay closed; Off: DO 2 relay open.
DO3	DO3 output indicator light	Green LED light; On: DO 3 relay closed; Off: DO 3 relay open.
DO4	DO4 output indicator light	Green LED light; On: DO 4 relay closed; Off: DO 4 relay open.
DO5	DO5 output indicator light	Green LED light; On: DO 5 relay closed; Off: DO 5 relay open.
DO6	DO6 output indicator light	Green LED light; On: DO 6 relay closed; Off: DO 6 relay open.
DO7	DO7 output indicator light	Green LED light; On: DO 7 relay closed; Off: DO 7 relay open.
DO8	DO8 output indicator light	Green LED light; On: DO 8 relay closed; Off: DO 8 relay open.
DO 9	DO 9 output indicator light	Green LED light; On: DO 9 relay closed; Off: DO 9 relay open.
DO 10	DO 10 output indicator light	Green LED light; On: DO1 0 relay closed; Off: DO1 0 relay open.
DO 11	DO 11 output indicator	Green LED light; On: DO 1 1 relay closed; Off: DO 1 1 relay open.

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DO 12	DO 12 output indicator	Green LED light; On: DO12 relay closed; Off: DO12 relay open.
DO 13	DO 13 Output Indicator	Green LED light; On: DO1 3 relay closed; Off: DO1 3 relay open.
DO 14	DO 14 Output Indicator	Green LED light; On: DO1 4 relay closed; Off: DO1 4 relay open.
DO 15	DO 15 Output Indicator	Green LED light; On: DO15 relay closed; Off: DO15 relay open.
DO 16	DO 16 Output Indicator	Green LED light; On: DO1 6 relay closed; Off: DO1 6 relay open.

3.4.7 M3 -XXEX00A0G-U

M31-XXEX00A0G-U Port and Button Description :		
Silkscreen	Name	Description
DO1	DO1 digital output	DO1 digital output interface, used in conjunction with COMA
D O 2	DO 2 digital output	DO 2 is a digital output interface used in conjunction with COMA.
DO3	DO 3 digital output	DO 3 digital output interface, used in conjunction with COMA
DO4	DO 4 digital output	DO 4 digital output interface, used in conjunction with COMA
DO5	DO 5 digital output	DO 5 digital output interface, used in conjunction with COMA
DO 6	DO 6 digital output	DO 6 digital output interface, used in conjunction with COMA
DO7	DO 7 digital output	DO 7 digital output interface, used in conjunction with COMA
DO 8	DO 8 digital output	DO 8 digital output interface, used in conjunction with COMA
COM A	DO's COM port	DO1 - DO8 share COM A common terminal
DO 9	DO 9 digital output	DO 9 digital output interface, used in conjunction with COM 8.
DO 10	DO 10 digital output	DO 10 digital output interface, used in conjunction with COM B
DO 11	DO1 1- way digital output	DO1 is a digital output interface for use with COM B.
DO 12	DO1 2- way digital output	DO1 2 -bit digital output interface, used in conjunction with COM 8.
DO 13	DO1 3- way digital output	DO1 3 digital output interface, used in conjunction with COM B
DO 14	DO1 4- way digital output	DO1 4 -way digital output interface, used in conjunction with COM B
DO 15	DO1 5 digital output	DO1 5 digital output interface, used in conjunction with COM B
DO 16	DO1 6- digit digital output	DO1 6 -bit digital output interface, used in conjunction with COM B

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COM B	DO's COM side	DO 9 - DO 16 share a common COM B for use.
COM B	DO's COM side	DO 9 - DO 16 share a common COM B for use.
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-XXEX00A0G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
DO1	DO1 output indicator light	Green LED light; On: DO1 relay closed; Off: DO1 relay open.
DO2	DO2 output indicator light	Green LED light; On: DO 2 relay closed; Off: DO 2 relay open.
DO3	DO3 output indicator light	Green LED light; On: DO 3 relay closed; Off: DO 3 relay open.
DO4	DO4 output indicator light	Green LED light; On: DO 4 relay closed; Off: DO 4 relay open.
DO5	DO5 output indicator light	Green LED light; On: DO 5 relay closed; Off: DO 5 relay open.
DO6	DO6 output indicator light	Green LED light; On: DO 6 relay closed; Off: DO 6 relay open.
DO7	DO7 output indicator light	Green LED light; On: DO 7 relay closed; Off: DO 7 relay open.

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DO8	DO8 output indicator light	Green LED light; On: DO 8 relay closed; Off: DO 8 relay open.
DO 9	DO 9 output indicator light	Green LED light; On: DO 9 relay closed; Off: DO 9 relay open.
DO 10	DO 10 output indicator light	Green LED light; On: DO1 0 relay closed; Off: DO1 0 relay open.
DO 11	DO 11 Output Indicator	Green LED light; On: DO 1 1 relay closed; Off: DO 1 1 relay open.
DO 12	DO 12 output indicator	Green LED light; On: DO12 relay closed; Off: DO12 relay open.
DO 13	DO 13 Output Indicator	Green LED light; On: DO1 3 relay closed; Off: DO1 3 relay open.
DO 14	DO 14 Output Indicator	Green LED light; On: DO1 4 relay closed; Off: DO1 4 relay open.
DO 15	DO 15 Output Indicator	Green LED light; On: DO15 relay closed; Off: DO15 relay open.
DO 16	DO 16 Output Indicator	Green LED light; On: DO1 6 relay closed; Off: DO1 6 relay open.

3.4.8 M31-AXAX4040G-U

M31-AXAX4040G-U Port and Button Description:		
Silkscreen	Name	Description
DI1	DI1 digital input	DI 1 is a digital input interface used in conjunction with COM 1 .
COM 1	DI 1 Common terminal for digital input	the DI1 digital output interface
DI 2	DI 2 digital input	DI 2 is a digital input interface used in conjunction with COM 2.
COM 2	DI 2 Common Terminal for Digital Input	the DI2 digital output interface
DI 3	DI 3 digital input	DI 3 is a digital input interface used in conjunction with COM 3 .
COM 3	DI 3 digital input common terminal	the DI3 digital output interface
DI 4	DI 4 digital input	DI 4 is a digital input interface used in conjunction with COM 4 .
COM 4	DI 4 Common Terminal for Digital Inputs	the DI4 digital output interface
DO 1	DO 1 digital output	DO 1 is a digital output interface used in conjunction with COM 1 .
COM 1	COM port of DO 1	DO 1 common terminal of digital output interface

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DO 2	DO 2 digital output	DO 2 is a digital output interface used in conjunction with COM 2.
COM 2	COM port of DO 2	DO 2 common terminal of digital output interface
DO 3	DO 3 digital output	DO 3 is a digital output interface used in conjunction with COM 3 .
COM 3	DO 3 COM port	DO 3 digital output interface common terminal
DO 4	DO 4 digital output	DO 4 is a digital output interface used in conjunction with COM 4 .
COM 5	COM port of DO 4	DO 4 digital output interface common terminal
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-AXAX404 0G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flashing: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host

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		and the expansion module.
DI1	DI1 Input Indicator	Green LED light; On: DI1 valid input; Off: DI1 invalid input.
DI2	DI2 Input Indicator	Green LED light; On: DI2 input is valid; Off: DI2 input is invalid.
DI3	DI3 Input Indicator	Green LED light; On: DI3 input is valid; Off: DI3 input is invalid.
DI4	DI4 Input Indicator	Green LED light; On: DI4 input is valid; Off: DI4 input is invalid.
DO1	DO1 output indicator light	Green LED light; On: DO1 relay closed; Off: DO1 relay open.
DO2	DO2 output indicator light	Green LED light; On: DO2 relay closed; Off: DO2 relay open.
DO3	DO3 output indicator light	Green LED light; On: DO3 relay closed; Off: DO3 relay open.
DO4	DO4 output indicator light	Green LED light; On: DO4 relay closed; Off: DO4 relay open.

3.4.9 M31-XFXX0800G-U

M31-XFXX0800G-U Port and Button Description:		
Silkscreen	Name	Description
AI1+	AI1 Analog Current Input +	AI1 analog input + interface, used in conjunction with AI1-
AI1-	AI1 Analog Current Input -	AI1 Analog Input Interface, for use with AI1+
AI2+	AI 2 Analog Current Input +	AI 2 analog input + interface, used in conjunction with AI 2 -
AI2-	AI 2 Analog Current Input -	AI 2 Analog Input Interface, used in conjunction with AI 2+
AI3+	AI 3 Analog Current Input +	AI 3 analog input + interface, used in conjunction with AI 3 .
AI3-	AI 3 Analog Current Input -	AI 3 Analog Input Interface, for use with AI 3+
AI4+	AI 4 Analog Current Input +	AI 4 analog input + interface, used in conjunction with AI 4 .
AI4-	AI 4 Analog Current Input -	AI 4 Analog Input Interface, for use with AI 4+
AI5+	AI 5 Analog Current Input +	AI 5 analog input + interface, used in conjunction with AI 5 .
AI5-	AI 5 Analog Current Input -	AI 5 Analog Input Interface, for use with AI 5+
AI6+	AI 6 Analog Current Input +	AI 6 analog input + interface, used in conjunction with AI 6 .
AI6-	AI 6 Analog Current Input -	AI 6 Analog Input Interface, for use with AI 6+

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AI7+	AI 7 Analog Current Input +	AI 7 analog input + interface, used in conjunction with AI 7 .
AI7-	AI 7 Analog Current Input -	AI 7 Analog Input Interface, for use with AI 7+
AI8+	AI 8 Analog Current Input +	AI 8 analog input + interface, used in conjunction with AI 8 .
AI8-	AI 8 Analog Current Input -	AI 8 Analog Input Interface, for use with AI 8+
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-XFXX0800G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
AI 1	AI 1 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range;

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		Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 2	AI 2 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 3	AI 3 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 4	A I4 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI5	AI5 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI6	AI6 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI7	AI7 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI8	AI8 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.

3.4.10 M31-XAXX0A00G-U

M31- XAXX0A00G-U Port and Button Description:		
Silkscreen	Name	Description
AI1	AI1 Analog Current Input	AI1 analog input interface, used in conjunction with COM A
AI2	AI2 Analog Current Input	AI2 analog input interface, used in conjunction with COM A
AI3	AI3 Analog Current Input	AI3 analog input interface, used in conjunction with COM A
AI4	AI4 Analog Current Input	AI4 analog input interface, used in conjunction with COM A
AI5	AI5 Analog Current Input	AI5 analog input interface, used in conjunction with COM A
AI6	AI6 Analog Current Input	AI6 analog input interface, used in conjunction with COM A
AI7	AI7 Analog Current Input	AI7 analog input interface, used in conjunction with COM A

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AI8	AI8 Analog Current Input	AI8 analog input interface, used in conjunction with COM A
COMA	AI analog input public terminal	AI1 - AI 8 Shared COM A Common Terminal
AI9	AI9 Analog Current Input	AI9 analog input interface, used in conjunction with COM B
AI10	AI10 Analog Current Input	AI10 analog input interface, used in conjunction with COM B
AI11	AI11 Analog Current Input	AI11 analog input interface, used in conjunction with COM B
AI12	AI12 Analog Current Input	AI12 analog input interface, used in conjunction with COM B
AI13	AI13 Analog Current Input	AI13 analog input interface, used in conjunction with COM B
AI14	AI14 Analog Current Input	AI14 analog input interface, used in conjunction with COM B
AI15	AI15 Analog Current Input	AI15 analog input interface, used in conjunction with COM B
AI16	AI16 Analog Current Input	AI16 analog input interface, used in conjunction with COM B
COMB	AI analog input public terminal	AI9 - AI16 Shared COM B Common Terminal
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-XAXX0A00G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow

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		flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
AI 1	AI 1 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 2	AI 2 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 3	AI 3 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 4	A I4 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI5	AI5 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI6	AI6 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI7	AI7 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI8	AI8 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI9	AI9 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI10	AI10 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI11	AI11 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI12	AI 12 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by

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		10%.
AI13	AI13 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI14	AI14 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI15	AI15 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI16	AI16 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.

3.4.11 M31-XBXX0A00G-U

M31-XBXX0A00G-U Port and Button Description:		
Silkscreen	Name	Description
AI1	AI1 Analog Voltage Input	AI1 analog input interface, used in conjunction with COM A
AI2	AI2 analog voltage input	AI2 analog input interface, used in conjunction with COM A
AI3	AI3 Analog Voltage Input	AI3 analog input interface, used in conjunction with COM A
AI4	AI4 Analog Voltage Input	AI4 analog input interface, used in conjunction with COM A
AI5	AI5 Analog Voltage Input	AI5 analog input interface, used in conjunction with COM A
AI6	AI6 Analog Voltage Input	AI6 analog input interface, used in conjunction with COM A
AI7	AI7 Analog Voltage Input	AI7 analog input interface, used in conjunction with COM A
AI8	AI8 Analog Voltage Input	AI8 analog input interface, used in conjunction with COM A
COMA	AI analog input public terminal	AI1 - AI 8 Shared COM A Common Terminal
AI9	AI9 analog voltage input	AI9 analog input interface, used in conjunction with COM B
AI10	AI10 analog voltage input	AI10 analog input interface, used in conjunction with COM B
AI11	AI11 Analog Voltage Input	AI11 analog input interface, used in conjunction with COM B

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AI12	AI12 analog voltage input	AI12 analog input interface, used in conjunction with COM B
AI13	AI13 Analog Voltage Input	AI13 analog input interface, used in conjunction with COM B
AI14	AI14 Analog Voltage Input	AI14 analog input interface, used in conjunction with COM B
AI15	AI15 Analog Voltage Input	AI15 analog input interface, used in conjunction with COM B
AI16	AI16 Analog Voltage Input	AI16 analog input interface, used in conjunction with COM B
COMB	AI analog input public terminal	AI9 - AI16 Shared COM B Common Terminal
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-XBXX0A00G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
AI 1	AI 1 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range;

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		Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 2	AI 2 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 3	AI 3 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI 4	A I4 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI5	AI5 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI6	AI6 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI7	AI7 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI8	AI8 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI9	AI9 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI10	AI10 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI11	AI11 Input Indicator Light	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI12	AI 12 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI13	AI13 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI14	AI14 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.
AI15	AI15 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.

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AI16	AI16 Input Indicator	Green LED light; On: Normal input reaches 1% or more of the range; Off: Not effectively connected; Rapid flashing: Exceeds the range by 10%.

3.4.12 M31-XXXA0008G-U

M31-XXXA0008G-U Port and Button Description:		
Silkscreen	Name	Description
AO1	AO1 Analog Current Output (Positive)	AO1 analog output (positive) interface, used in conjunction with GND1.
GND1	AO1 Analog Current Output (Negative Terminal)	AO1 analog output (negative terminal) interface
AO2	AO 2 Analog Current Output (Positive)	AO 2 analog output (positive) interface, used in conjunction with GND 2.
GND2	AO 2 Analog Current Output (Negative Terminal)	AO 2 analog output (negative) interface
AO3	AO 3 Analog Current Output (Positive)	AO 3 analog output (positive) interface, used in conjunction with GND 3.
GND3	AO 3 Analog Current Output (Negative Terminal)	AO 3 analog output (negative) interface
AO4	AO 4 Analog Current Output (Positive)	AO 4 analog output (positive) interface, used in conjunction with GND 4.
GND4	AO 4 Analog Current Output (Negative)	AO 4 Analog Output (Negative) Interface
AO5	AO 5 Analog Current Output (Positive)	AO 5 analog output (positive) interface, used in conjunction with GND 5.
GND5	AO 5 Analog Current Output (Negative Terminal)	AO 5 Analog Output (Negative) Interface
AO6	AO 6 Analog Current Output (Positive)	AO 6 analog output (positive) interface, used in conjunction with GND 6.
GND6	AO 6 Analog Current Output (Negative)	AO 6 Analog Output (Negative) Interface
AO7	AO 7 Analog Current Output (Positive)	AO 7 analog output (positive) interface, used in conjunction with GND 7.
GND7	AO 7 Analog Current Output (Negative)	AO 7 Analog Output (Negative) Interface
AO8	AO 8 Analog Current Output (Positive)	AO 8 analog output (positive) interface, used in conjunction with GND 8.
GND8	AO 8 Analog Current Output (Negative)	AO 8 Analog Output (Negative) Interface
NC	Empty terminal (Not Care)	No actual circuit connection function

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NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

M31-XXXA0008G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
AO 1	AO 1 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 2	AO 2 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 3	AO 3 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 4	AO 4 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO5	AO5 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO6	AO6 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO7	AO7 output indicator	Green LED light; On: Normal output reaches 1% or more of the range;

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	light	Off: No effective output.
AO8	AO8 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.

3.4.13 M31-XXXB0008G-U

M31-XXXB0008G-U Port and Button Description:		
Silkscreen	Name	Description
AO1	AO1 Analog Voltage Output (Positive)	AO1 analog output (positive) interface, used in conjunction with GND1.
GND1	AO1 Analog Voltage Output (Negative Terminal)	AO1 analog output (negative terminal) interface
AO2	AO2 analog voltage output (positive terminal)	AO2 analog output (positive) interface, used in conjunction with GND2.
GND2	AO2 analog voltage output (negative terminal)	AO2 analog output (negative terminal) interface
AO3	AO3 analog voltage output (positive terminal)	AO3 analog output (positive) interface, used in conjunction with GND3.
GND3	AO3 analog voltage output (negative terminal)	AO3 analog output (negative terminal) interface
AO4	AO4 Analog Voltage Output (Positive)	AO4 analog output (positive) interface, used in conjunction with GND4.
GND4	AO4 analog voltage output (negative terminal)	AO4 analog output (negative terminal) interface
AO5	AO5 analog voltage output (positive terminal)	AO5 analog output (positive) interface, used in conjunction with GND5.
GND5	AO5 analog voltage output (negative terminal)	AO5 analog output (negative terminal) interface
AO6	AO6 Analog Voltage Output (Positive)	AO6 analog output (positive) interface, used in conjunction with GND6.
GND6	AO6 Analog Voltage Output (Negative Terminal)	AO6 analog output (negative) interface
AO7	AO7 Analog Voltage Output (Positive)	AO7 analog output (positive) interface, used in conjunction with GND7.
GND7	AO7 Analog Voltage Output (Negative Terminal)	AO7 Analog Output (Negative) Interface
AO8	AO8 analog voltage output (positive terminal)	AO8 analog output (positive) interface, used in conjunction with GND8.
GND8	AO8 analog voltage output (negative terminal)	AO8 analog output (negative terminal) interface
NC	Empty terminal (Not Care)	No actual circuit connection function
NC	Empty terminal (Not Care)	No actual circuit connection function

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NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN2	network port	Standard RJ45 network cable interface

M31-XXXB0008G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
AO 1	AO 1 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 2	AO 2 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 3	AO 3 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO 4	AO 4 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO5	AO5 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO6	AO6 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.
AO7	AO7 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.

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AO8	AO8 output indicator light	Green LED light; On: Normal output reaches 1% or more of the range; Off: No effective output.

3.4.14 M31-XDXX0600G-U

M31-XDXX0600G-U Port and Button Description :		
Silkscreen	Name	Description
RTD1+	1-channel PT100 input	1-channel PT100 input + interface
RTD1-	1-channel PT100 input	- channel PT100 input interface
RTD1-	1-channel PT100 input	- channel PT100 input interface
RTD2+	2-channel PT100 input	2-channel PT100 input + interface
RTD2-	2-channel PT100 input	- channel PT100 input interface
RTD2-	2-channel PT100 input	- channel PT100 input interface
RTD3+	3-channel PT100 input	3-channel PT100 input + interface
RTD3-	3-channel PT100 input	- channel PT100 input interface
RTD3-	3-channel PT100 input	- channel PT100 input interface
RTD4+	4-channel PT100 input	4-channel PT100 input + interface
RTD4-	4-channel PT100 input	- channel PT100 input interface
RTD4-	4-channel PT100 input	- channel PT100 input interface
RTD5+	5-channel PT100 input	5-channel PT100 input + interface
RTD5-	5-channel PT100 input	- channel PT100 input interface
RTD5-	5-channel PT100 input	- channel PT100 input interface
RTD6+	6-channel PT100 input	6-channel PT100 input + interface
RTD6-	6-channel PT100 input	- channel PT100 input interface
RTD6-	6-channel PT100 input	- channel PT100 input interface
NC	Empty terminal (Not Care)	No actual circuit connection function
Reload	Factory reset/auto-negotiation	Press and hold for 5-10 seconds to restore factory settings; Double-clicking within 2 seconds will automatically negotiate the I/O 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	Grounding	Grounding
V- (DC9-36V)	negative terminal of power supply	DC (9-36V) power supply negative terminal interface
V+ (DC9-36V)	Positive power supply	DC (9-36V) power supply positive terminal interface
LAN1	network port	Standard RJ45 network cable interface
LAN 2	network port	Standard RJ45 network cable interface

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M31-XDXX0600G-U Indicator Light Description:		
Silkscreen	Name	Description
RUN	Power indicator light	Red LED light; On/Slow flash/Fast flash: Device is operating normally; fast flash indicates data exchange; Off: Device is malfunctioning; Slow flash: Link connection is active; Fast flash: Data exchange is occurring via serial port/network port.
BUS	Device bus status indicator	Yellow LED light; On: Internal bus of the device is operating normally; Off: Internal bus of the device is completely malfunctioning. Flickering: There may be an abnormality in the operation of the device's internal bus.
STA	Bus communication indicator	Blue LED light; flashing: indicates data exchange between the host and the expansion module; off: indicates no data exchange between the host and the expansion module.
RTD1	RTD1 Input Indicator	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;
RTD2	RTD2 Input Indicator Light	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;
RTD3	RTD3 Input Indicator	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;
RTD4	RTD4 Input Indicator	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;
RTD5	RTD5 Input Indicator Light	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;
RTD6	RTD6 Input Indicator Light	Green LED light; On: Sensor is successfully connected; Off: Sensor is not successfully connected;

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3.5 DIP switch

DIP switch diagram:



Device address structure: 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, set by DIP switch (4 bits) (factory default is 0); for example, if DIP switches 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: The offset address is set by the configuration tool software (the factory default is 1).
For example: If the hardware address is set to 5 and the software address is set to 113, then the device address is 118 (the maximum value for the software address is 240; if it exceeds 240, the setting will not take effect).

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Chapter 4 Product Function Introduction

4.1 Increase the number of I/O points

Note: Do not operate the equipment while it is powered on during the assembly process, otherwise it may cause damage to the equipment!

The M31-U series distributed I/O host adopts an scalable architecture design, in which the I/O expansion module can be used to expand the M31-U series host. Simply connect the I/O expansion module to the host slot and then slide down the latch to firmly connect the host and the I/O expansion module together.

The specific steps are as follows:

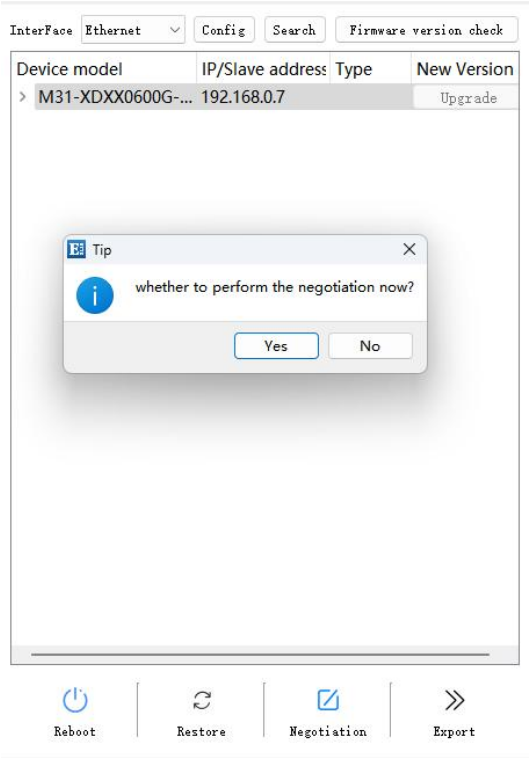
- First, ensure the host is not powered on and that the host's slider is in the UNLK position. Then, connect the IO expansion module to the host, as shown in the following figure:



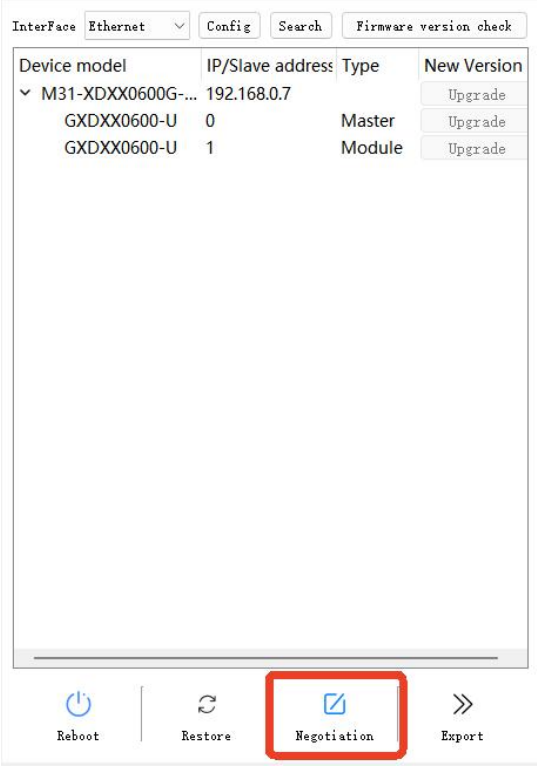
- After connecting the IO expansion module, slide the host switch to the LOCK position, power on the host, and then plug in the network cable. Use the auto-negotiation function via the host configuration software (or double-click the Reload button on the device within two seconds to auto-negotiate). Once negotiation is successful, the IO expansion module can be operated via the host's serial port or network port. (When searching via the host configuration software, clicking on the corresponding host will automatically trigger auto-negotiation to check if the module assembly order has changed . If so, the user will be prompted to negotiate; otherwise , no prompt will be given.)

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Note: When adding new IO expansion modules or removing negotiated IO expansion modules, the auto-negotiation function must be performed to ensure the overall device sequence and status self-check.



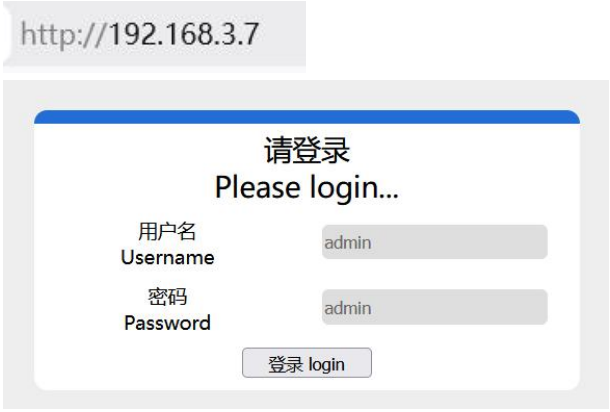
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Note: The "M31-" designation for the expansion module will not be displayed in the host configuration software.

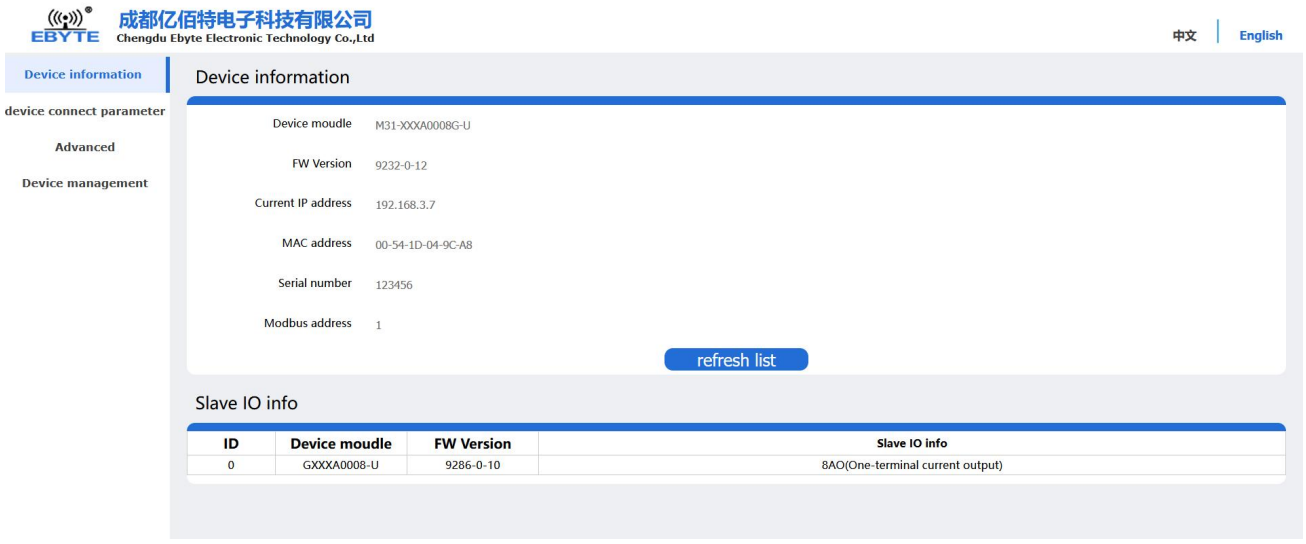
4.2 Web Configuration

(1) Open a browser, enter 192.168.3.7. The device will display a login interface. Enter the Username and Password, then click Login (default username: admin, default password: admin).



(2) Interface display.

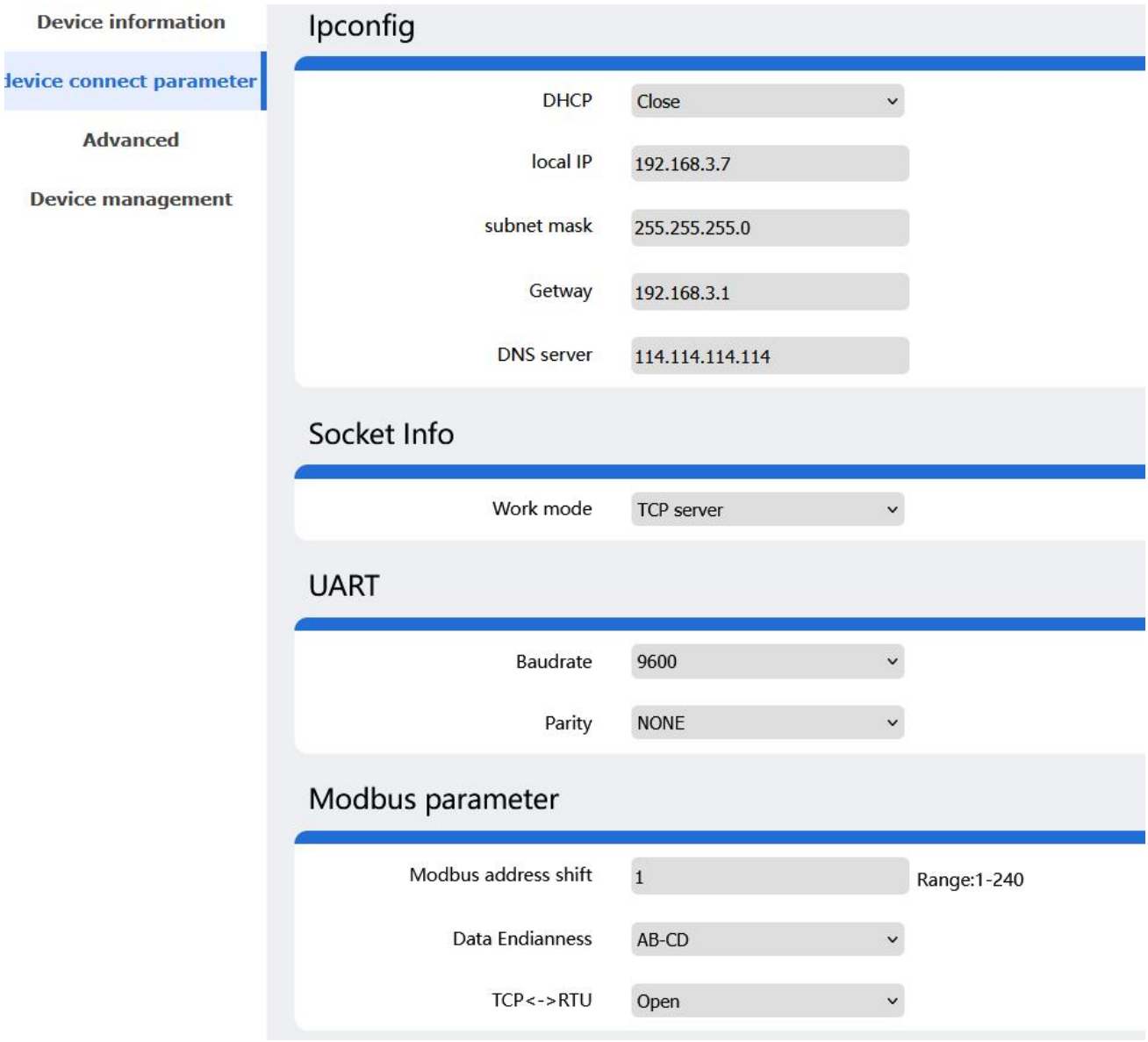
Device information:



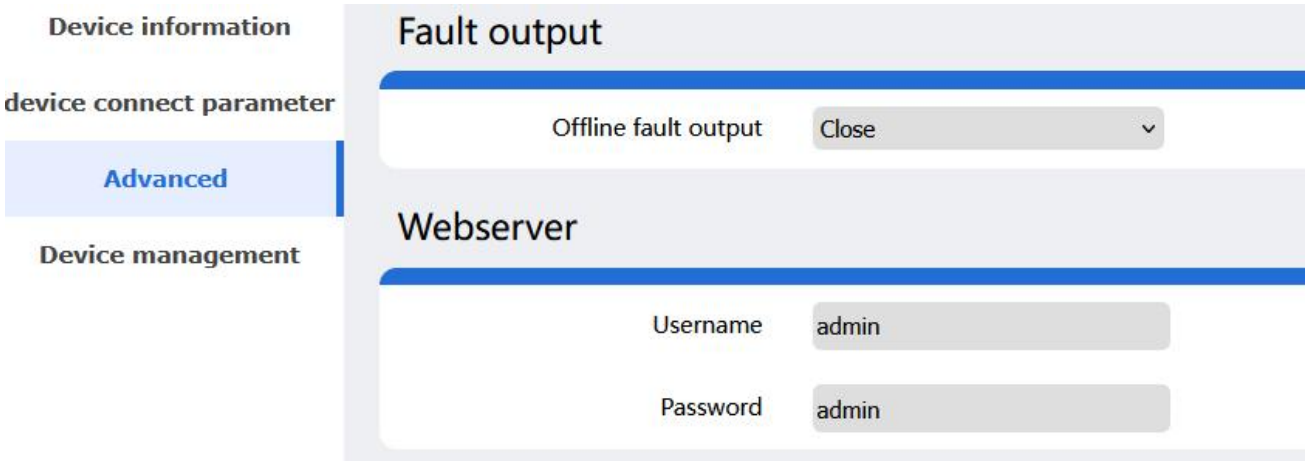
Device connection parameter:

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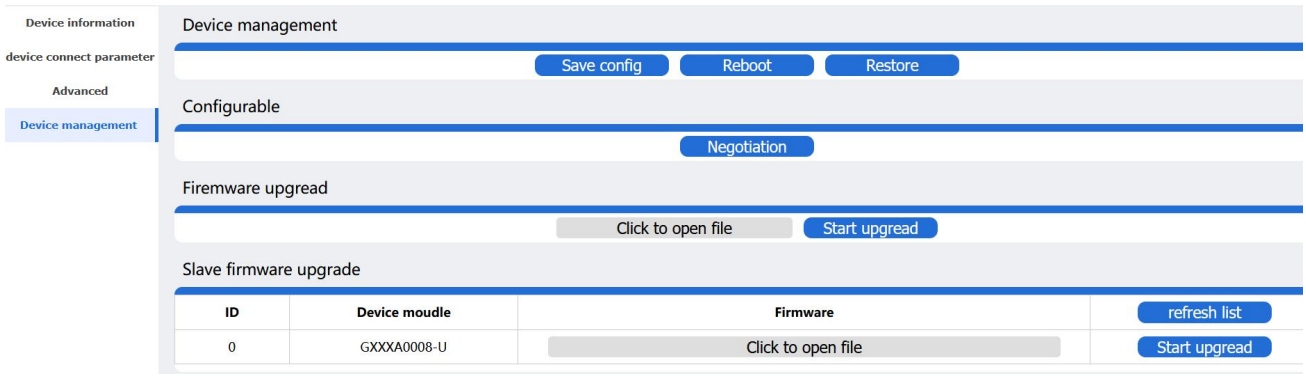
Advanced:



Device management:

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Note: After modifying parameters, please go to the device management interface to save config and restart the device.

4.3 DI Input

4.3.1 Input filtering

(1) Input filtering: When acquiring signals from the switch input DI, multiple sampling periods are required for confirmation. The filter parameters can be set from 1 to 65535 (default 6 sampling periods, 6*1kHz).

4.3.2 DI counting function

(1) count mode for switch input can be either a level signal or an edge pulse signal (default 0 - rising edge, 1 - falling edge, 2 - level) . The maximum count value is a 32-bit signed integer (after overflow, it becomes a negative maximum value and does not change further). Reset modes support automatic reset and manual reset (automatic reset is the default).

Byte transmission order of channel count values:
(Default value: 0)
0: AB-CD
1: BA-DC
2: CD-AB
3: DC-BA

(2) Reset the counter: 0 - automatic reset, 1 - manual reset.
Automatic Reset: After reading the count value, the current value will be automatically cleared.
Manual clear: Write 0 into this register to clear the count value.

4.4 DO output

4.4.1 DO working mode

The DO output has two selectable operating modes: level mode and pulse output mode (default: 0).

0: Level mode

1: Pulse Mode

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In pulse output mode, the pulse output width can be set: Relay type setting range: 50-65535ms (default 1000ms) .

4.4.2 DO pulse output quantity

When the DO output operating mode is set to pulse mode (i.e., mode selection 1 in 4.2.1), the number of pulses output by the DO can be set through this function.

Pulse quantity setting range: 1 - 65535; when the setting value is 0, DO will continuously output pulses (uninterrupted pulse output).

Default setting: 1 (i.e., default single pulse output).

4.4.3 Communication Fault DO Output Status Settings

When communication between devices fails, the status of the DO output can be configured.

Offline IO fault output function is enabled; the default is 0 (disabled) and 1 (enabled). The offline time setting range is 1 to 65535, in units of 0.1 seconds (default 300 * 0.1 seconds).

When the offline I/O fault output function is enabled, the I/O module will process the output data in this manner when it detects an internal bus anomaly and communication failure with the host reaches the offline time. (Default value: 0)

0: Maintain the output state during a fault.
1: Low-level output.
2: High-level output.

DO power-on state is selectable, default 0 - off.

0: Disconnect
1: Connect

4.5 AI input

4.5.1 AI scope

Current type sampling range: 0–20mA, 4–20mA, or ±20mA; differential accuracy: 1‰; single-ended accuracy: 3 ‰ ; resolution: 16 bits. RMS value: 0–2 (default 0). Refresh frequency : 70 Hz. Voltage type sampling range: 0–5V , ±5V , 0–10V, or ±10V; differential accuracy: 1‰; single-ended accuracy: 3 ‰ ; resolution : 16 bits. RMS value: 3–6 (default 5). Refresh frequency : 70 Hz.

Set the sampling range for all AI channels.

Configuration of 0: indicates 0~20mA

Configuration 1: indicates 4~20mA

Configuration 2: indicates ±20mA

Configuration 3 : indicates 0-5V

Configuration 4 : indicates ±5V

Configuration 5 : indicates 0-10V

Configuration 6 : indicates ±10V

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[Note] AI Configuration Instructions

（1） The AI sampling range for each channel can be set. When the AI channel sampling range is configured to 4-20mA, if the current signal is below 3.85mA , it will be displayed as 0.

（2） The starting address of the AI channel sampling range parameter is 0x0DAC, the register type is a holding register, and the function codes are 0x03 , 0x06, and 0x10. When writing the AI channel sampling range parameter, if the written parameter value is not within the specified range, it will not take effect, and Modbus will not return an error instruction.

4.5.2 AI input integer values, floating-point values, and process quantities

There are three ways to read the analog signals acquired by the device:

（1） Read the AI engineering quantity integer value and directly convert it to the input current or voltage. The AI engineering quantity integer value register starts at address 0x0000, is an input register, and has a read function code of 0x04. This method returns a value where one register represents one channel.

Single-ended current: The value read is 0 to 20000. The method for calculating the current is that 0 to 20000 corresponds to 0mA to 20mA.

That is: Current = Project quantity value / 1000 (mA)

Differential current: The reading ranges from -20000 to 20000. The current magnitude is calculated as -20000 to 20000 corresponds to -20mA to 20mA.

That is: Current = Project quantity value / 1000 (mA)

Single-ended voltage : The value read is 0 to 10000. The method for calculating the voltage magnitude is that 0 to 10000 corresponds to 0 V to 10 V.

That is: Voltage = Engineering quantity value / 1000 (V)

Differential voltage : The reading is -100000 to 10000. The voltage magnitude is calculated as -10000 to 10000 corresponds to -10V to 10V .

That is: Voltage = Engineering quantity value / 1000 (V)

current type engineering quantity and process quantity is: Engineering quantity = Process quantity × 25000 / 32768. The engineering quantity will be limited by the set engineering quantity range.

voltage type engineering quantity and process quantity is: Engineering quantity = Process quantity × 12000 / 32768. The engineering quantity will be limited by the set engineering quantity range.

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

（3） Read AI process quantities. The AI process quantity register starts at address 0x0BB8, is an input register, and has a read function code of 0x04. This method returns one register representing one channel. The process quantity acquisition range converts current signals from -25 mA to 25 mA into digital values of -32768 to 32767. The parameter range of the process quantity will vary depending on the set process quantity range.

When the quantity range is set to a positive range (i.e., 0 ~ 20mA, 4 ~ 20mA), the parameter range of the process

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quantity is 0 ~ 32767. When the quantity range is set to a negative range (i.e., -20mA ~ 20mA), the parameter range of the process quantity is the entire digital quantity range of -32768 ~ 32767.

4.5.3 AI filter parameters

The filtering parameters for the AI channel can be set, with valid values ranging from 0 to 4 and a default value of 0 .
Filtering parameter description:
(1) Filtering parameters: the higher the parameter value, the more stable the output value and the slower the response .
(2) The address of the AI channel filter parameter is 0x0DA2, and the register type is a holding register. Function codes are 0x06 and 0x10.

4.6 AO output

4.6.1 AO range

Analog current output:
Range 0～20mA or 4～20mA, accuracy 1‰.
Sets the output range of a single AO channel; valid values are 1 and 0 (default 0).
Configuration of 0: indicates 0~20mA
Configuration 1: indicates 4~20mA

Analog voltage output:
Range 0-5V or 0-10V, accuracy 1‰.
Sets the output range of a single AO channel; valid values are 1 and 0 (default 0).
Configuration of 0: indicates 0~10V
Configuration 1: indicates 0~5V

[Note] AO Configuration Instructions
(1) The AO output range of each channel can be set.
(2) The starting address of the AO channel output range parameter is 0x1194, the register type is a holding register, and the function codes are R : 0x03 and W : 0x06, 0x10. When writing the AO channel output range parameter, if the written parameter value is not within the specified range, it will not take effect, and Modbus will not return an error instruction .

4.6.2 AO fault output value, AO power-on output value

Data type: Integer. Value range definition: 0-20000 corresponds to 0-20mA, 0-10000 corresponds to 0-10V. The specific output range is determined by the actual device.

AO Fault Output Value: Used to set the output status of the AO channel when communication between devices is abnormal. This function is triggered under the following conditions: First, enable the offline IO fault

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output function enable register (device basic parameters, register 0x0C36), and then enable the AO fault output switch of the corresponding channel (register 0x36 B 0). If a fault trigger signal is received after these conditions are met, the channel will automatically output the preset fault value.

AO power-on output value: The output status of the AO channel when the device is powered on and internal communication has been established.

[Note] Configuration instructions for A /O fault output value and power-on output value

(1) AO fault output parameters: starting address 0x2328, register type is holding register , function code R: 0x03, W: 0x06, 0x10 ;

(2) AO power-on output parameters: starting address 0x251C, register type is holding register , function code R: 0x03, W: 0x06, 0x10 ;

(3) Each channel can be configured individually. The actual output of the AO fault output value and the AO power-on output value will be limited by the AO output range register (0x1194): if the AO output range register is set to 0-5V, even if the fault output value or the power-on output value is configured according to the value corresponding to 10V, the channel's final actual output can only reach the upper limit of 5V.

If the value exceeds the device's specified range when writing parameters, the write operation will not take effect, and Modbus communication will not return an error command.

4.6.3 AO fault output switch

Function Description: This function is used to individually control whether each AO channel executes a preset AO fault output value when a communication failure occurs.

Register information: The register starts at address 0x36b0. Each AO channel corresponds to an independent register. The register type is a holding register (function code R: 0x03, W: 0x06, 0x10).

Numerical definition:

0: In fault condition, this channel does not output the preset AO fault output value;

1: In the fault state, this channel outputs the preset AO fault output value.

Prerequisite for this switch to take effect: The "Offline IO Fault Output Function Enable Register" (Device Basic Parameters, Register 0X0C36) must be enabled first for this switch configuration to take effect.

4.6.4 AO output integer and floating-point registers

(1) The AO (Analog Component Object) engineered quantity integer values are read and controlled, and directly converted to obtain the output current or voltage. The starting address of the AO engineered quantity integer value register is 0x0000, the register type is a holding register, the read function code is 0x03, and the write function code is 0x10. This method returns a value where one register represents one channel. The current type value is 0–20000. The method for calculating the current is 0–20mA, where 0–20000 corresponds to 0–20mA. That is: Current = Engineered Quantity Value / 1000 (mA); the voltage type value is 0–10000. The method for calculating the voltage is 0–10000, where 0–10V corresponds to 0–10V. That is: Voltage = Engineered Quantity Value / 1000

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(V).

The floating-point values of the AO (Analog Array) engineering quantities are read and controlled. The IEE754 converter is used to convert the hexadecimal data to floating-point numbers to obtain the current. The starting address of the AO engineering quantity floating-point register is 0x03E8, the register type is a holding register, the read function code is 0x03, and the write function codes are 0x06 and 0x10. This method returns two registers representing one channel.

4.7 PT100 input

4.7.1 Integer and floating-point values of quantities input into PT100

There are two ways to read the PT100 temperature signal collected by the device:

（1） Read the PT100 engineering integer value and directly convert it to the actual temperature. The PT100 engineering integer value register starts at address 0x0DAC, is an input register, and has a read function code of 0x04. This method returns a value where one register represents one channel.

Temperature acquisition range: The read values are -2000 to 8500. The method for calculating the actual temperature is -2000 to 8500, which corresponds to -200℃ to 850℃.
That is: Actual temperature = Project quantity value / 10 (°C)

（2） Read the PT100 engineering floating-point value, and use the IEEE754 converter to convert the hexadecimal data to a floating-point number to obtain the actual temperature. The PT100 engineering floating-point value register starts at address 0x0EAC, is an input register, and has a read function code of 0x04. This method returns two registers representing one channel.

[Status Diagnostic Value Explanation] When the register reads the following special values, it represents the status of the corresponding channel, not the actual temperature:

32766: Sensor not connected or wired out (wired out when temperature exceeds 870℃)

-32766: Short circuit condition (when the temperature is below -220℃, it is determined to be a short circuit condition).

32765: Chip fault (indicates that the ADC acquisition unit to which this channel belongs is malfunctioning and cannot complete the temperature signal conversion).

32767: Temperature overflow (triggered when the temperature exceeds 850°C but does not reach 870°C)

-32768: Temperature overflow (triggered when the temperature is below -200°C but not below -220°C)

-32767: Channel is disabled

4.7.2 PT100 temperature compensation, unit conversion, filter parameters, and channel disabling

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（1） Temperature compensation: Value range -200 to 200 (unit: 0.1℃, default value 0), used to compensate and calibrate the measured temperature of the channel. The compensation value is directly added to the final temperature result.

（2） Unit conversion: Value range 0～2 (0: ℃; 1: °F; 2: K, default value 0). After the setting takes effect, the integer and floating-point values of the project quantity will be automatically converted according to the selected unit.

（3） Filtering parameters: Value range 1 to 16 (default value 6). The higher the level, the better the data smoothness, but the response speed will be reduced accordingly.

（4） Channel disabled: Value range 0 to 1 (0: not disabled; 1: disabled, default value 0). When a channel is disabled, the integer and floating-point registers of the channel's engineering quantity will return the diagnostic value -32767.

Function Description

PT100 Temperature Compensation: The measured temperature of the corresponding channel is compensated and calibrated, and the compensation value will be directly added to the final temperature result.

PT100 Unit Conversion: Set the output unit for temperature data. After the setting takes effect, the integer and floating-point values of the project quantity will be automatically converted according to the selected unit.

PT100 Filtering Parameters: Configure the temperature data filtering level for the corresponding channel to balance data smoothness and response speed.

PT100 Channel Disable: Disables/enables the temperature acquisition function of the corresponding channel. When a channel is disabled, the engineering integer and floating-point registers for that channel will return a diagnostic value of -32767.

[Note] PT100 Auxiliary Function Register Configuration Instructions

(1) PT100 temperature compensation parameters: starting address 0x38A4 (4-14500), register type is holding register, function code R: 0x03, W: 0x06, 0x10;

(2) PT100 unit conversion parameters: starting address 0x39A4 (4-14756), register type is holding register, function code R: 0x03, W: 0x06, 0x10;

(3) PT100 filter parameters: starting address 0x3AA4 (4-15012), register type is holding register, function code R: 0x03, W: 0x06, 0x10;

(4) PT100 channel disable parameters: starting address 0x3BA4 (4-15268), register type is holding register, function code R: 0x03, W: 0x06, 0x10;

(5) Each channel can be configured individually. The actual effective range of the temperature compensation value is subject to the temperature acquisition range of the equipment (-200.0℃～850.0℃).

(6) When writing parameters, if the value exceeds the range specified by the device, the writing operation will not take effect, and Modbus communication will not return an error command.

4.8 Online monitoring

The device can monitor for malfunctions through relevant registers:

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Device error code	0x7587	4-30087	Zone 4	1	Check the current device's error code. A value of 0 indicates no error, 1 indicates a slave device not responding, and 2 indicates an incorrect order of expansion modules (this error will directly cause the device to malfunction).	R: 0x03
Expansion module abnormality code	0x7588	4-30089	Zone 4	2	To check which expansion module is currently unresponsive, there are two registers totaling 32 bits, representing the expansion modules in sequence. If the bit corresponding to the sequence number is 1, it means that this expansion module has encountered an error.	R: 0x03

4.9 Module Information

4.9.1 Basic parameters

(1) Modbus address: The device address is 1 by default, and the address can be modified. The address range is 1-240 .
(2) Serial port baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400bps (8 options available).
(3) Serial port parity bit: NONE, ODD, EVEN are optional.
(4) Modbus32 response byte sequence: AB-CD (default), BA-DC, CD-AB, DC-AB optional.
(5) DI filter parameters: The filter parameters can be set from 1 to 16 (default 6 sampling periods, 6*1kHz).
(6) the AI channel. Valid values are 0-4 , with a default value of 0 .
(7)

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4.9.2 Network parameters

Unless otherwise specified: the following network-related parameters are IPv4 related parameters by default.

(1) Operating Mode: Switches the operating mode of the module. Server: The device acts as a server, waiting for user clients to connect, with a maximum of 5 connections. Clients: The device actively connects to the target IP and port set by the user.

(2) DHCP: Configures how a device obtains an IP address: static or dynamic.

(3) Gateway address: Gateway.

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

(5) Local IP: Device IP address, which can be read and written.

(6) Local port: The port number of the device, which can be read and written.

(7) Target IP: When the device is working in client mode, the target IP or domain name to which the device connects.

(8) Target port: The target port for the device to connect to when the device is operating in client mode.

(9) DNS server: When the device is in client mode, it resolves the server's domain name.

(10) Network Modbus protocol: Modbus TCP and Modbus RTU protocols can be selected on the network port .

4.10 Modbus parameter configuration

Note:

1. The DI, DO, AI, and AO registers are all continuous. For example, if an 8DI model host is connected to an 8DI model expansion module, then the DI status register of the expansion module will continue from the host's 0x0000-0x0007, that is, 0x0008-0x0010.

2.0x_ represents hexadecimal.

3. M31-AFAX4440G-U model as an example, DI, AI, and DO demonstrate the continuity of registers after splicing.

4.10.1 DI Register List

DI Status Register (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start 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	0x0004	1-0005	Zone 1	R: 0x02	0

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	expansion module					
.....	IO expansion module	.....	.....	Zone 1	R: 0x02	0

DI filter registers (each channel occupies a separate register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DI channel filter parameters	0x1388	4-500 1	Holding register	Filtering parameters for each DI channel, The filter parameters can be set from 1 to 65535 (default 6 sampling periods, 6*1kHz).	R: 0x03 W: 0x06, 0x10	6

DI clearing method (each channel occupies a separate register) :

name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DI clearing method	0x2710	4-10001	Holding register	0: Automatically clear (read count value cleared) 1: Manual reset	R: 0x03 W: 0x06, 0x10	0

DI Count Registers (each channel occupies two registers, the order of which depends on the byte order of the count; please refer to the counting function section) :

Name	Register address (hexadecimal)	Register address (decimal)	Register type	Data range/description	Related function codes	Default state
DI count value	0x 2CEC	4 - 11501	Holding register	The maximum count is a 32-bit signed integer (after overflow, it becomes a negative maximum value and does not change further).	R: 0x03 W: 0x06, 0x10	0

DI counting mode register (each channel occupies a separate register):

Name	Register start	Register start	Register	Data	Related	Default

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	address (hexadecimal)	address (decimal)	type	range/description	function codes	state
DI counting method	0x 1F40	4 - 8001	Holding register	0: Rising edge count 1: Falling edge counting 2: Level Counting (Dual Edges)	R: 0x03 W: 0x06, 0x10	0

4.10.2 DO Register List

DO status register (each channel occupies a separate register) :

Name	Access location	Register address (hexadecimal)	Register address (decimal)	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
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

DO Fault Output Status Register (each channel occupies a separate register):

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
D O Fault Output Status	0x1B58	4-7001	Holding register	0: Maintain state during fault 1: Fault DO output OFF 2: Fault DO output ON	R: 0x03 W: 0x06, 0x10	0

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DO power-on status (each channel occupies a separate register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DO power-on status	0x2904	4-10501	Holding register	DO power-on status 1 represents a closed loop. 0 represents disconnection	R: 0x03 W: 0x06, 0x10	0

DO operating mode (each channel occupies one register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DO working mode	0x32C8	4-13001	Holding register	0: Level mode 1: Pulse Mode	R: 0x03 W: 0x06, 0x10	0

DO pulse output width (each channel occupies one register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DO pulse output width	0x30D4	4-12501	Holding register	Transistor setting range: 1-65535ms Relay setting range: 50-65535ms	R: 0x03 W: 0x06, 0x10	0

Number of DO pulses (each channel occupies a separate register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DO pulse output quantity	0x2AF8	4-11001	Holding register	Setting range: 0 - 65535 Setting it to 0 indicates continuous pulse output.	R: 0x03 W: 0x06, 0x10	0

DO pulse output enable (each channel occupies a separate register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register type	Data range/description	Related function codes	Default state
DO pulse output enable	0x34BC	4-13501	Holding register	This only takes effect when the corresponding DO's operating	R: 0x03 W: 0x06, 0x10	0

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				mode is set to "Pulse Output": - 0: Turn off pulse output - 1: Enable pulse output		

4.10.3 AI Register List

AI Engineering Quantity Integer Value Register (one register per channel) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description (For differences, please refer to the AI input section)	Related function codes	Default state
AI1	host	0x0000	3-0001	Zone 3	Current type parameters 0-20000 represent 0-20mA; voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv	R: 0x04	0
AI2	host	0x0001	3-0002	Zone 3	Current type parameters 0-20000 represent 0-20mA; voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv	R: 0x04	0
AI3	host	0x0002	3-0003	Zone 3	Current type parameters 0-20000 represent 0-20mA; voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv	R: 0x04	0
AI4	host	0x0003	3-0004	Zone 3	Current type parameters 0-20000 represent 0-20mA; voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv	R: 0x04	0
AI5	IO expansion module	0x0004	3-0005	Zone 3	Current type parameters 0-20000 represent 0-20mA; voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv	R: 0x04	0
.....	IO expansion	.....	.....	Zone 3	Current type parameters 0-20000 represent 0-20mA;	R: 0x04	0

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	module				voltage type parameters 0-10000 represent 0-10V . 2-byte integer, unit uA /mv		

AI floating-point value registers (each channel occupies 2 registers) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AI1	host	0x03E8	3-1001	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI2	host	0x03EA	3-1003	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI3	host	0x03EC	3-1005	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI4	host	0x03EE	3-1007	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI5	IO expansion module	0x03F0	3-1009	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
.....	IO expansion module	.....	.....	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0

AI process variable registers (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/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

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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

AI filter registers (each channel occupies a separate register) :

Name	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AI channel filtering parameters	0xFA0	4-400 1	Zone 4	Filtering parameters for each AI channel Valid values 0-4	R: 0x03 W: 0x06, 0x10	0

AI sampling range registers (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AI1 sampling range	host	0x0DAC	4-3501	Zone 4	Valid values are 0-6 0 : Indicates 0-20mA 1 : Indicates 4-20mA 2: Indicates ± 20mA 3: Indicates 0-5V 4: Indicates ±5V 5: Indicates 0-10V 6: Indicates ±10V	R: 0x03 W: 0x06, 0x10	0
AI2 sampling range	host	0x0DAD	4-3502	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AI3 sampling range	host	0x0DAE	4-3503	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

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AI4 sampling range	host	0x0DAF	4-3504	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AI5 sampling range	IO expansion module	0x0DB0	4-3505	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

4.10.4 AO Register List

AO Engineering Quantity Integer Register : (One register per channel)

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
O1	host	0 x0000	4-0000	Zone 4	The current type engineering quantity 0-20000 represents 0-20mA , a 2-byte integer, unit (μA). Voltage type engineering quantity 0-1 00 0 0 represents 0-10V 2-byte integer, unit (mV).	R: 0x03 W: 0x06, 0x10	0
AO2	host	0x0 001	4-0001	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO3	host	0x0 002	4-0002	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO4	host	0x0 003	4-0003	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

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AO5	IO expansion module	0x0 004	4-0004	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

AO floating -point registers : (Each channel occupies 2 registers) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AO1	host	0x03E8	4 -1001	Zone 4	Analog signal floating-point value, 4-byte floating-point number	R: 0x03 W: 0x06, 0x10	0
AO2	host	0x03EA	4 -1003	Zone 4	Analog signal floating-point value, 4-byte floating-point number	R: 0x03 W: 0x06, 0x10	0
AO3	host	0x03EC	4 -1005	Zone 4	Analog signal floating-point value, 4-byte floating-point number	R: 0x03 W: 0x06, 0x10	0
AO4	host	0x03EE	4 -1007	Zone 4	Analog signal floating-point value, 4-byte floating-point number	R: 0x03 W: 0x06, 0x10	0
AO5	IO expansion module	0x03F0	4 -1009	Zone 4	Analog signal floating-point value, 4-byte floating-point number	R: 0x03 W: 0x06, 0x10	0
.....	IO expa	.....	.....	Zone 4	Analog signal floating-point	R: 0x03 W: 0x06,	0

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	nsion module				value, 4-byte floating-point number	0x10	

A O Output Range Register (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AO1 Output Range	host	0 x1194	4-4501	Zone 4	Voltage type: 0 represents 0-10V, 1 represents 0-5V. Current type: 0 indicates 0-20mA. 1 indicates 4-20mA	R: 0x03 W: 0x06, 0x10	0
AO2 output range	host	0 x119 5	4-4502	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO3 output range	host	0 x119 6	4-4503	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO4 output range	host	0 x119 7	4-4504	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO5 output range	IO expansion module	0 x119 8	4-4505	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

AO Fault Output Value Register (one register per channel) :

Name	Access locati	Register start address	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state

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	on	(hexadecimal)					
A O 1 Fault Output Value	host	0x2328	4-9000	Zone 4	The fault output value, an integer 0-20000, represents 0-20mA, with a range of 0-65535. The output range value should be determined according to the actual equipment.	R: 0x03 W: 0x06, 0x10	0
A O2 fault output value	host	0x232 9	4-9001	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO3 fault output value	host	0x232 A	4-9002	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO4 fault output value	host	0x232 B	4-9003	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO5 fault output value	IO expansion module	0x232 C	4-9004	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

AO power-on output values (each channel occupies a separate register) :

Nam e	Access location	Register start address (hexadec	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state

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		imal)					
AO1 power-on output value	host	0 x251C	4-9500	Zone 4	The fault output value, an integer 0-20000, represents 0-20mA, with a range of 0-65535. The output range value should be determined according to the actual equipment.	R: 0x03 W: 0x06, 0x10	0
AO2 power-on output value	host	0 x251 D	4-9501	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
A O3 power-on output value	host	0 x251 E	4-9502	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
A O4 power-on output value	host	0 x25 1F	4-9503	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
AO5 power-on output value	IO expansion module	0 x25 20	4-9504	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

AO fault output switch (each channel occupies a separate register) :

Name	Access	Register start	Register start address	Register area	Data range/description	Related function codes	Default state

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	location	address (hexadecimal)	(decimal)				
A O 1 Fault Output Switch	host	0 x 36b0	4- 14000	Zone 4	0: No output for faults; 1: Output for faults.	R: 0x03 W: 0x06, 0x10	0
A O2 fault output switch	host	0 x 36b 1	4-14001	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
A O3 fault output switch	host	0 x 36b 2	4-1400 2	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
A O4 fault output switch	host	0 x 36b 3	4-1400 3	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
A O5 fault output switch	IO expansion module	0 x 36b 4	4-1400 4	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

4.10.5 PT100 Register List

PT100 Engineering Quantity Integer Register (one register per channel) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range	Related function codes	Default state
PT100-1	host	0x0 DAC	3-3500	Zone 3	Range: -32768-32767 A 2-byte integer, in units of 0.1℃.	R: 0x04	0
PT100-2	host	0x0 DAD	3-3501	Zone	Same as above	R: 0x04	0

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				3			
PT100-3	host	0x DAE	3-3502	Zone 3	Same as above	R: 0x04	0
PT100-4	host	0x DAF	3-3503	Zone 3	Same as above	R: 0x04	0
PT100-5	host	0x 0DB0	3-3504	Zone 3	Same as above	R: 0x04	0
PT100-6	host	0x 0DB1	3-350	Zone 3	Same as above	R: 0x04	0
.....	IO expansion module	.....	.....	Zone 3	Same as above	R: 0x04	0
.....	IO expansion module	.....	.....	Zone 3	Same as above	R: 0x04	0

PT100 floating-point value registers (each channel occupies 2 registers) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
AI1	host	0x0 EAC	3-3756	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI2	host	0x0 EAE	3-3758	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI3	host	0x0 EB0	3-3760	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI4	host	0x0 EB2	3-3762	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0
AI5	IO expansion module	0x0 EB4	3-3764	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0

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.....	IO expansion module	.....	.....	Zone 3	Analog signal floating-point value, 4-byte floating-point number	R: 0x04	0

PT100 temperature compensation (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
PT100-1 Temperature Compensation	host	0 x 38A4	4-14 5 00	Zone 4	-200~+200 (unit: 0.1℃)	R: 0x03 W: 0x06, 0x10	0
PT100-2 Temperature Compensation	host	0 x 38A5	4-14 5 0 1	Zone 4	-200~+200 (unit: 0.1℃)	R: 0x03 W: 0x06, 0x10	0
PT100-3 Temperature Compensation	host	0 x 38A6	4-14 5 0 2	Zone 4	-200~+200 (unit: 0.1℃) (default: 0)	R: 0x03 W: 0x06, 0x10	0
PT100-4 Temperature Compensation	host	0 x 38A7	4-14 5 0 3	Zone 4	-200~+200 (unit: 0.1℃)	R: 0x03 W: 0x06, 0x10	0
PT100-5 Temperature Compensation	host	0 x 38A8	4-14 5 0 4	Zone 4	-200~+200 (unit: 0.1℃)	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

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	module						

PT100 unit conversion (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
PT100-1 Unit Conversion	host	0 x 39A4	4-14 756	Zone 4	0:℃. 1:℉; 2:K;	R: 0x03 W: 0x06, 0x10	0
PT100-2 Unit Conversion	host	0 x 39A5	4-1 4756	Zone 4	0:℃. 1:℉; 2: K; (Default: 0)	R: 0x03 W: 0x06, 0x10	0
PT100-3 Unit Conversion	host	0 x 39A6	4-14 757	Zone 4	0:℃. 1:℉; 2:K;	R: 0x03 W: 0x06, 0x10	0
PT100-4 Unit Conversion	host	0 x 39A7	4-14 758	Zone 4	0:℃. 1:℉; 2:K;	R: 0x03 W: 0x06, 0x10	0
PT100-5 unit conversion	host	0 x 39A8	4-14 759	Zone 4	0:℃. 1:℉; 2:K;	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

PT100 filter parameters (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
PT100-1 filter paramet	host	0 x 3AA4	4-1 5012	Zone 4	Filtering levels: Level 1 to Level 16 are selectable.	R: 0x03 W: 0x06, 0x10	6

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ers							
PT100-2 filter parameters	host	0 x 3AA5	4-1 5013	Zone 4	Filtering levels: Level 1 to Level 16 are selectable.	R: 0x03 W: 0x06, 0x10	6
PT100-3 filter parameters	host	0 x 3AA6	4-1 5014	Zone 4	Filtering levels: Level 1 to Level 16 are selectable.	R: 0x03 W: 0x06, 0x10	6
PT100-4 filter parameters	host	0 x 3AA7	4-1 5015	Zone 4	Filtering levels: Level 1 to Level 16 are selectable.	R: 0x03 W: 0x06, 0x10	6
PT100-5 filter parameters	host	0 x 3AA8	4-1 5016	Zone 4	Filtering levels: Level 1 to Level 16 are selectable.	R: 0x03 W: 0x06, 0x10	6
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	6

PT100 channel disabled (each channel occupies a separate register) :

Name	Access location	Register start address (hexadecimal)	Register start address (decimal)	Register area	Data range/description	Related function codes	Default state
PT100-1 channel disabled	host	0 x 3BA4	4-1 5268	Zone 4	0: Not disabled; 1: Disable	R: 0x03 W: 0x06, 0x10	0
PT100-2 channel disabled	host	0 x 3BA5	4-1 5269	Zone 4	0: Not disabled; 1: Disable	R: 0x03 W: 0x06, 0x10	0
PT100-3	host	0 x 3BA6	4-1 5270	Zone 4	0: Not disabled; 1: Disable	R: 0x03 W: 0x06, 0x10	0

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Channel Disabled							
PT100-4 Channel Disabled	host	0 x 3BA7	4-1 5271	Zone 4	0: Not disabled; 1: Disable	R: 0x03 W: 0x06, 0x10	0
PT100-5 channel disabled	host	0 x 3BA8	4-1 5272	Zone 4	0: Not disabled; 1: Disable	R: 0x03 W: 0x06, 0x10	0
.....	IO expansion module	.....	.....	Zone 4	Same as above	R: 0x03 W: 0x06, 0x10	0

4.10.6 Basic parameters of equipment

Register function	Register address (hexadecimal)	Register address (decimal)	Register area	Number	Data range/remarks	Related function codes
Modbus slave offset address	0X0C1C	4-3101	Zone 4	1	1-240	R: 0x03 W: 0x06, 0x10
Device restart	0X0C1D	4-3102	Zone 4	1	Write 0x5BB5 to restart	W: 0x06
Equipment restored to factory settings	0X0C1E	4-3103	Zone 4	1	Write 0x5BB5 to restore factory settings	W: 0x06
Host firmware version	0X0C1F	4-3104	Zone 4	1	The high byte represents the content before the decimal point in the version number. The low byte represents the version number after the decimal point.	R: 0x03

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					For example, in v1.5, the high byte is 0x01 and the low byte is 0x05.	
Main unit model	0X0C20	4-3105	Zone 4	12	Device model register, string type	R: 0x03
Full firmware number of the host	0X0C2 C	4-3117	Zone 4	8	Device firmware number , string type	R: 0x03
Modbus 32-bit register Reply byte order	0X0C 34	4-3125	Zone 4	1	0:AB-CD 1:BA-DC 2:CD-AB 3:DC-BA	R 0x03 W 0x06,0x10
Offline time	0X0C 35	4-3126	Zone 4	1	(1-65535)*0.1 seconds (default 100, i.e., 10 seconds) After the offline time expires, all IO outputs will show a fault status.	R 0x03 W 0x06,0x10
Offline IO fault output Function enable	0X0C 36	4-3127	Zone 4	1	0: Disable 1: Enable Default is 0, which disables offline fault output.	R 0x03 W 0x06,0x10
Fault output flag	0X0C 37	4-312 8	Zone 4	1	0: No IO fault status output 1: There is an IO fault status output.	R 0x03 W 0x06,0x10
Does slave device n support...? Storage function	0X0C 60	4-3169	Zone 4	16	0: Not supported 1: Support	R 0x03
Slave n storage function enabled	0X0C 70	4-3185	Zone 4	16	0: Disable 1: Enable The default value is 1, which enables the storage function.	R 0x03 W 0x06,0x10
Slave model n	0X0C 80	4-3201	Zone 4	8*32	The slave device model is stored in this register as a string according to the standard representation method. For example, the MF-AAAX4440 has a	R 0x03

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					maximum length of 16 bytes; non-existent slave devices are uniformly represented as "NONE".	
Slave firmware version n	0X0 D80	4-3457	Zone 4	1*32	The high byte represents the content before the decimal point in the version number. The low byte represents the version number after the decimal point. For example, in v1.5, the high byte is 0x01 and the low byte is 0x05.	R 0x03

4.10.7 Module-related registers

Register function	Register address (hexadecimal)	Register address (decimal)	Register area	Number	Data range/remarks	Related function codes
Serial port baud rate code	0X7530	4-30001	Zone 4	1	1:2400 2:4800 3:9600 4:19200 5:38400 6:57600 7:115200 8:230400	R: 0x03 W: 0x06, 0x10
Serial port check bit	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
Device MAC address	0X7534	4-30005	Zone 4	3	/	R: 0x03

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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
Local port	0X7541	4-30018	Zone 4	1	0-65535	R: 0x03 W: 0x06, 0x10
Target IP/domain	0X7542	4-30019	Zone 4	64	The maximum string size is 128 bytes, and the domain name is also represented as a string.	R: 0x03 W: 0x06, 0x10
Target server port	0X7582	4-30083	Zone 4	1	1-65535	R: 0x03 W: 0x06, 0x10
Network Modbus protocol	0X7583	4-30084	Zone 4	1	This item should be set to 1 when the network data is TCP data, and set to 0 when the network data is RTU data.	R: 0x03 W: 0x06, 0x10
Address negotiation write register protection	0X7584	4-30085	Zone 4	1	This write-protect register needs to be enabled before sending the address negotiation command. Writing 1: Enables write protection register	R: 0x03 W: 0x06
Address negotiation register	0X7585	4-30086	Zone 4	1	Write 1: This indicates the start of address negotiation.	R: 0x03 W: 0x06
Current negotiation status register	0X7586	4-30087	Zone 4	1	Check if the negotiation has been completed. 0: Indicates that negotiations have not yet been completed.	R: 0x03

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					1: Representatives complete consultation	
Device error code	0X7587	4-30088	Zone 4	1	Check the current device's error code. A value of 0 indicates no error, 1 indicates a slave device not responding, and 2 indicates an incorrect order of expansion modules (this error will directly cause the device to malfunction).	R: 0x03
Extension module exception label	0X7588	4-30089	Zone 4	2	To check which expansion module is currently unresponsive, there are two registers totaling 32 bits, representing the expansion modules in sequence. If the bit corresponding to the sequence number is 1, it means that this expansion module has encountered an error.	R: 0x03
Extension module pending negotiation status	0X758A	4-3009 1	Zone 4	1	0 indicates normal configuration sequence; 1 indicates abnormal configuration, requiring negotiation before use.	R 0x03
Web login username	0X758B	4-3009 2	Zone 4	5	String	R 0x03, W 0x06, 0x10
Website login password	0X7590	4-3009 7	Zone 4	3	String	R 0x03, W 0x06, 0x10

Note: According to usage requirements, some software (such as KingSCADA) requires adding 1 to convert hexadecimal to decimal before it can operate on registers (the decimal values in the table have all been added by 1).

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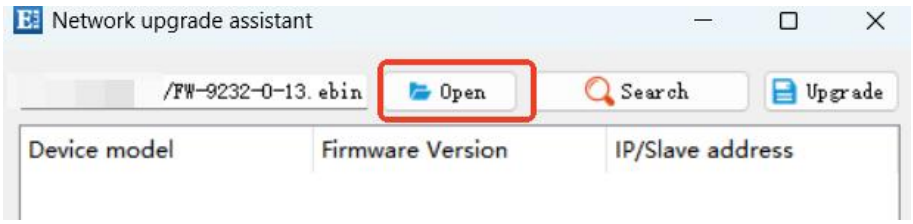
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4.11 Firmware Upgrade Tutorial

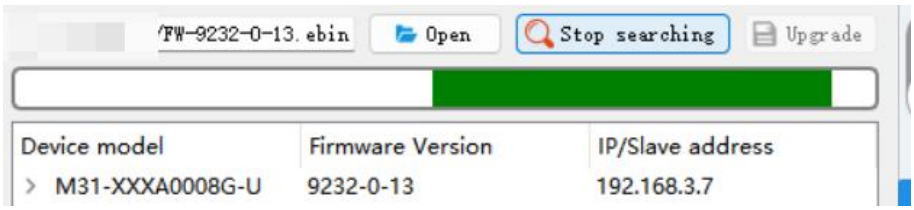
(1) In the upper right corner of the host computer, click the Menu and select upgrade tool.



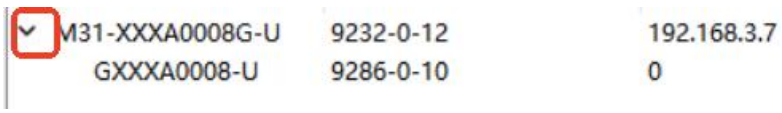
(2) In the dialog box that appears, choose the firmware you wish to upgrade (the firmware is available for download on the official website)



(3) After adding the firmware, search for the device (here you must first select the network card; if unsure, please refer to the "Host Computer" section). Once the device appears, click "Stop Searching" to finish.



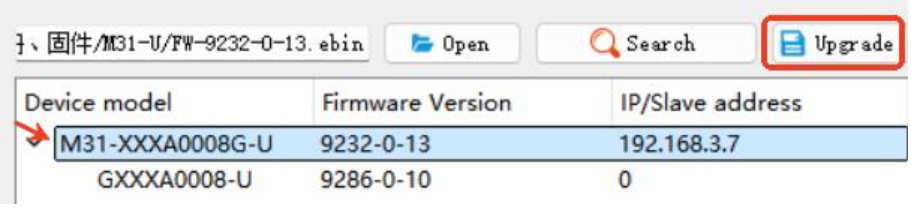
(4) When you open the drop-down box, you will see that the host contains an expansion module. When upgrading, select the model listed above to perform the upgrade. The expansion module generally does not need to be upgraded.



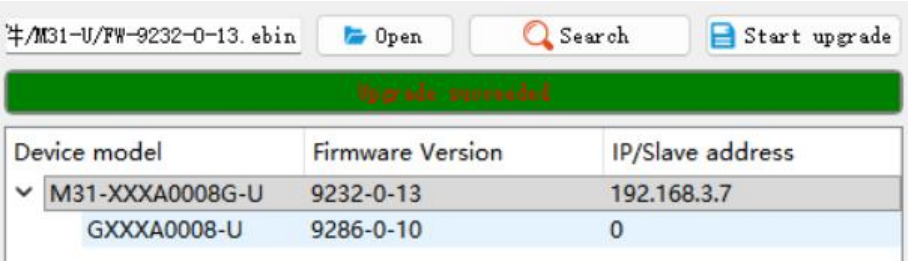
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(5) After selecting the model, click Upgrade.



(6) After a successful upgrade, a message will appear saying "Firmware downloaded successfully." Then, simply restart the device.



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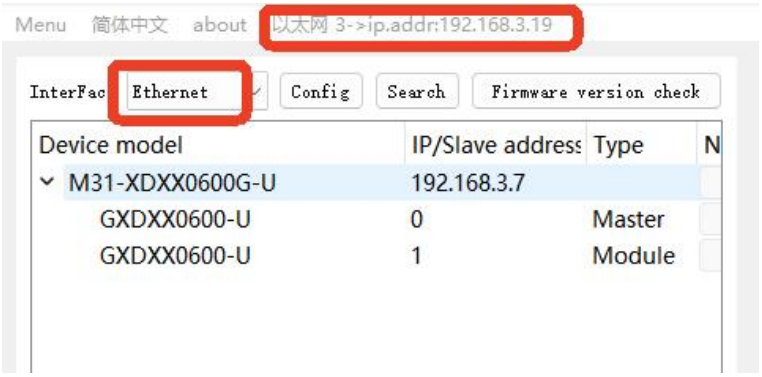
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Chapter 5 Host configuration software

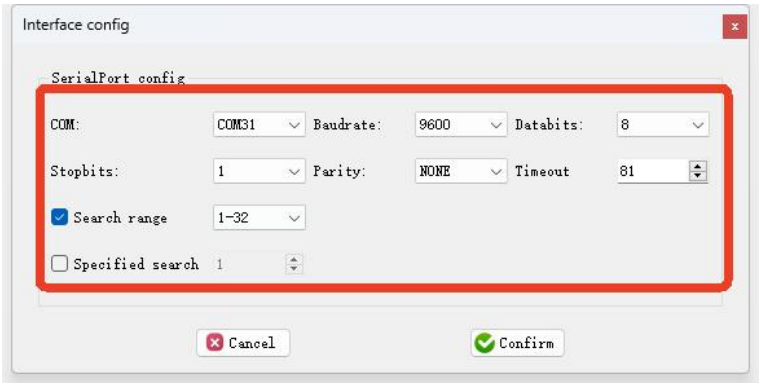
5.1 Connection and Control

Step 1 Host configuration software connection device

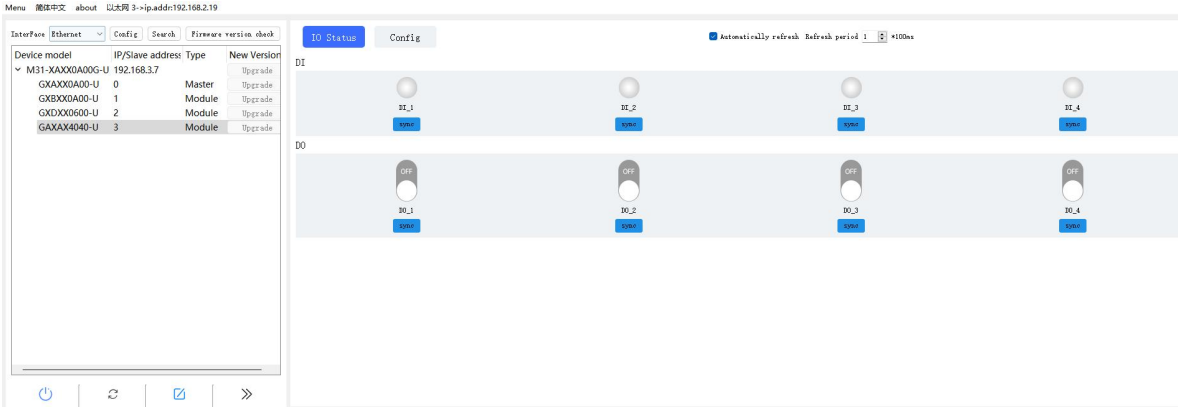
1) You can configure the device by selecting the interface (serial port/network port); if you select the network port, you must first select the network card and then search for the device.



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



Step 2 Select the corresponding device, you can operate on the corresponding I/O.



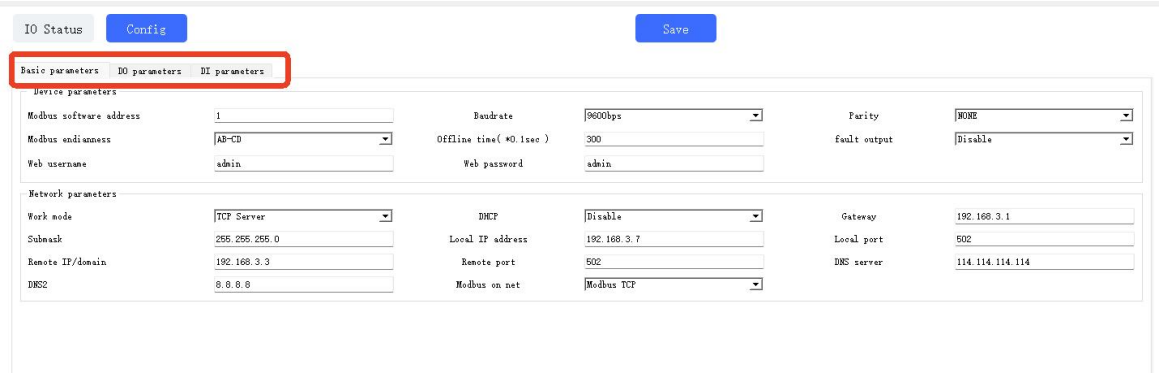
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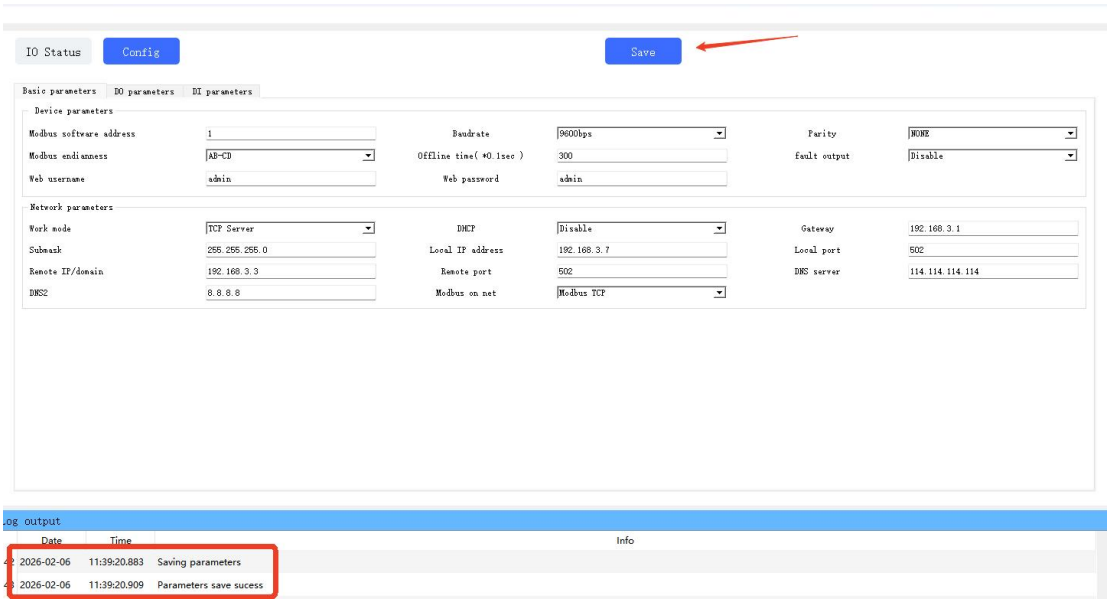
5.2Parameter configuration

Step 1 For connected devices, refer to "Connection and Control".

Step 2 You can configure the device's basic parameters and network parameters.



Step 3 After configuring the parameters, click "Save Parameters". Once you see a message in the log output indicating that the parameters have been saved successfully, restart the device. After restarting, the modified parameters will take effect.



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Chapter 6 Precautions

(1) Do not connect the equipment while it is powered on, otherwise there is a risk of damage to the equipment.

(2) The M31-U series host can only be used with U series expansion modules .

(3) Firmware version compatibility requirements between host and expansion modules

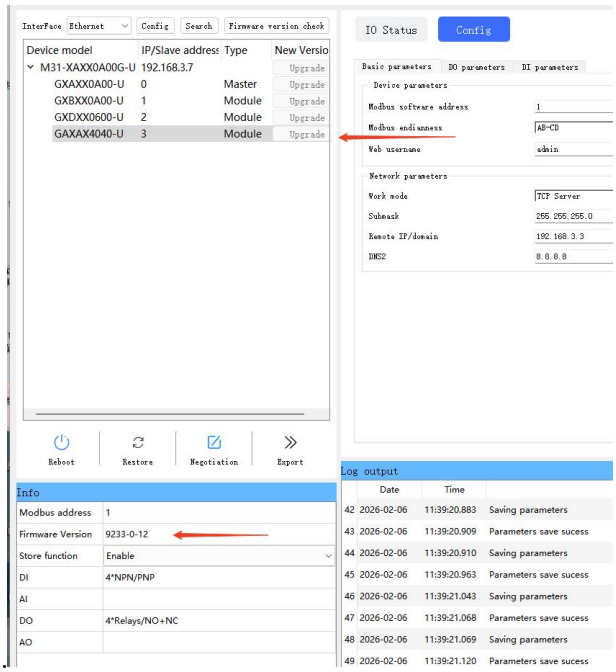
1. Compatibility principle: The firmware version number of the host device must be greater than or equal to the firmware version number of the expansion module it is paired with; otherwise, the device will not function properly.

2. Version compatibility example:

Host firmware version	Compatible expansion module firmware version
9232-0-10	9206-0-10, 9233-0-11
9232-0-11	9206-0-10, 9233-0-11, 9233-0-12
9232-0-12	9206-0-10, 9233-0-11, 9233-0-12, 9286-0-10
9232-0-13	9206-0-10, 9233-0-11, 9233-0-12, 9286-0-10, 9304-0-10

3. Troubleshooting: If incompatible firmware versions are used in combination, the entire device will fail to boot and operate. The host firmware must be upgraded to a version that meets compatibility requirements before normal use.

Firmware version check: You can view their firmware version by selecting the host or expansion module in the host configuration software



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Revision History

Version	Revision Date	Revision Notes	Maintained by
1.0	2025-5-6	Initial version	LT
1.1	2025-10-11	Newly added Model	LT
1. 2	2025-10-30	Port identifier corrected	LT
1.3	2026-1-30	Newly added Model Appearance modified	LT
1.4	2026-5-19	Added web configuration and firmware upgrade tutorial.	LT

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Web: www.cdebyte.com
Address: B5 Mould Park, 199# Xiqu Ave, High-tech District, Sichuan, China

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