

GONGBEI Standard 200

Electrical equipment for industrial remote control operation in the electronics industry

User Manual 20250301



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1.Product Selection

CPU module	Digital quantity	Analog quantity	485 mouths	network port	powered by	Dimensions (mm)	Order number
CPU222-R	8DI 6DO relays	—	1	—	220VAC	90×80×62	GB212-1BB23-0XB0
CPU222-T	8DI 6DO transistors	—	1	—	24VDC	90×80×62	GB212-1AB23-0XB0
CPU222-R-ETH	8DI 6DO relays	—	1	1	220VAC	90×80×62	GB212-1BE23-0XB0
CPU222-T-ETH	8DI 6DO transistors	—	1	1	24VDC	90×80×62	GB212-1AE23-0XB0
CPU224-R	14DI 10DO Relays	—	2	—	220VAC	140×80×62	GB214-2BC23-0XB0
CPU224-T	14DI 10DO transistors	—	2	—	24VDC	140×80×62	GB214-2AC23-0XB0
CPU224XP-R	14DI 10DO Relays	2AI 1AO	2	—	220VAC	140×80×62	GB214-2BD23-0XB0
CPU224XP-T	14DI 10DO transistors	2AI 1AO	2	—	24VDC	140×80×62	GB214-2AD23-0XB0
CPU224XP-RT	14DI 4 transistors + 6 relays	2AI 1AO	2	—	24VDC	140×80×62	GB214-2CD23-0XB0
CPU224XP-R-ETH	14DI 10DO Relays	2AI 1AO	2	1	220VAC	140×80×62	GB214-2BE23-0XB0
CPU224XP-T-ETH	14DI 10DO transistors	2AI 1AO	2	1	24VDC	140×80×62	GB214-2AE23-0XB0
CPU225-R	14DI 10DO Relays	4AI 2AO	2	—	220VAC	140×80×62	GB215-2BD23-0XB0
CPU225-T	14DI 10DO transistors	4AI 2AO	2	—	24VDC	140×80×62	GB215-2AD23-0XB0
CPU226-R	24DI 16DO relays	—	2	—	220VAC	196×80×62	GB216-2BD23-0XB0
CPU226-T	24DI 16DO transistors	—	2	—	24VDC	196×80×62	GB216-2AD23-0XB0
CPU226-R-ETH	24DI 16DO relays	—	2	1	220VAC	196×80×62	GB216-2BE23-0XB0
CPU226-T-ETH	24DI 16DO transistors	—	2	1	24VDC	196×80×62	GB216-2AE23-0XB0
CPU228-R	16DI 14DO Relays	4AI 2AO	3	—	220VAC	196×80×62	GB218-3BD23-0XB0
CPU228-T	16DI 14DO transistors	4AI 2AO	3	—	24VDC	196×80×62	GB218-3AD23-0XB0

Digital input module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM221-I8	Digital input 8×24 VDC	unnecessary	46×80×62	2W	GB221-1BF22-0XA8
EM221-I16	Digital input 16×24 VDC	unnecessary	71.2×80×62	3W	GB221-1BH22-0XA8
EM221-I32	Digital input 32×24 VDC	unnecessary	137.3×80×62	3W	GB221-1BL22-0XA8
Digital output module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM222-TQ8	8x24VDC transistors	unnecessary	46×80×62	2W	GB222-1BF22-0XA8
EM222-RQ8	8x relays	need	46×80×62	2W	GB222-1HF22-0XA8

EM222-TQ16	16x24 VDC transistors	unnecessary	71.2×80×62	3W	GB222-1BH22-0XA8
EM222-RQ16	16x Relays	need	71.2×80×62	3W	GB222-1HH22-0XA8
EM222-TQ32	32x24 VDC transistors	unnecessary	137.3×80×62	6W	GB222-1BL22-0XA8
EM222-RQ32	32x Relays	need	137.3×80×62	6W	GB222-1HL22-0XA8
Digital Mixed Module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM223-I4TQ4	4 inputs, 4 transistor outputs	unnecessary	46×80×62	2W	GB223-1BF22-0XA8
EM223-I4RQ4	4 inputs, 4 relay outputs	need	46×80×62	2W	GB223-1HF22-0XA8
EM223-I8TQ8	8-input 8-transistor output	unnecessary	71.2×80×62	3W	GB223-1BH22-0XA8
EM223-I8RQ8	8 inputs, 8 relay outputs	need	71.2×80×62	3W	GB223-1PH22-0XA8
EM223-I16TQ16	16 inputs, 16 transistor outputs	unnecessary	137.3×80×62	6W	GB223-1BL22-0XA8
EM223-I16RQ16	16 inputs, 16 relay outputs	need	137.3×80×62	6W	GB223-1PL22-0XA8

Analog input module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM231-AI4	4 Input	need	71.2×80×62	2W	GB231-0HC22-0XA8
EM231-AI8	8. Input (Current Type)	need	71.2×80×62	2W	GB231-0HF22-0XA8
Analog output module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM232-AQ2	2 Output	need	46×80×62	2W	GB232-0HB22-0XA8
EM232-AQ4	4 Output	need	71.2×80×62	2W	GB232-0HD22-0XA8
Analog Mixed Module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM235-AI4AQ1	4 inputs, 1 output	need	71.2×80×62	2W	GB235-0KD22-0XA8

Temperature module	describe	24V power supply	Dimensions (mm)	Power consumption	Order number
EM231-RTD4	PT100 RTD with 4 inputs	need	71.2×80×62	1.8W	GB231-7PC22-0XA8
EM231-TC4	Thermocouple 4 input	need	71.2×80×62	1.8W	GB231-7PD22-0XA8
EM231-TC8	Thermocouple 8 input	need	71.2×80×62	1.8W	GB231-7PF22-0XA8

2.Host usage

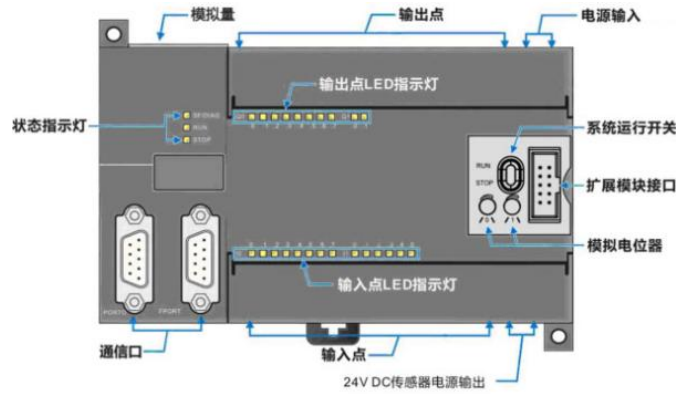
2.1Overview

- The GB 200 standard PLC supports S.7 software. It supports expansion
- modules, with a maximum of 7 modules that can be connected.
- Models with "-ETH" also have an independent Ethernet port for downloading, uploading, and monitoring programs. They support the S.7 Ethernet communication protocol and the MODBUS TCP communication protocol. For detailed settings and usage instructions, please refer to the "【Gongbei Electronics】Ethernet Interface User Manual" document.
- The host unit features an analog input channel with a built-in DIP switch, allowing for voltage or current input settings. It utilizes Flash
- technology, ensuring data is permanently saved even after power loss.
- Built-in clock battery supports one year of standby use for the perpetual calendar.

2.2Appearance and structure

Taking the CPU224XP as an example, the structure diagram of the digital interface, analog interface, and communication port is as follows.



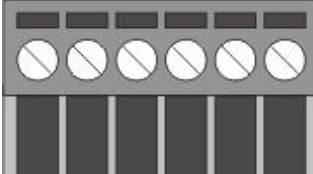


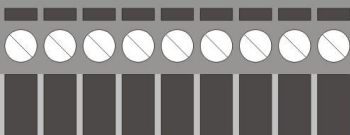
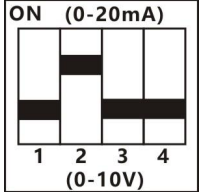
2.3The host has built-in analog signal usage

CPU224XP,CPU224XP-ETH,CPU225,CPU228The host unit has built-in analog input. The DIP switch positions are shown in the figure below.



Note: Analog input supports voltage or current input. (Please unplug the switch.) (ba)turn on the device, center left side conversion card slot "You can see inside" The DIP switches, when viewed on the circuit board, are marked with "I" to indicate current input. Each " V " Indicates voltage input. Each bit DIP switch corresponds to a channel. 1 expressThe first aisleAnd so on.

CPU224XP(-ETH)	Terminal Definition	register	illustrate
M I V M A+ B+  Analog input and output terminals	MAnalog output common terminal		The analog output channel supports simultaneous voltage and current output.
	I:0-20mACurrent output terminal	AQW0	Outputs are distinguished by the wiring terminals, and are subject to the same register. control.
	V:0-10VVoltage output terminal		
	MAnalog input common terminal		A I B  Analog input channels support voltage Or current input, via DIP switch setting Set, one digit of the dial code corresponds to one pass The current flows to the left, and the voltage flows to the right.
	A+Analog input1aisle	AIW0	
	B+Analog input2aisle	AIW2	

CPU225	Terminal Definition		register	illustrate	
 V0 I0 V1 I1 M A+ B+ C+ D+ Analog input and output terminals	lose out	V0:aisle1Voltage output terminal	AQW0	The analog output channel supports simultaneous voltage and current output. They are distinguished by the terminal blocks, but are controlled by the same register.	
		I0:aisle1Current output terminal			
		V1:aisle2Voltage output terminal	AQW2		
		I1:aisle2Current output terminal			
	MCommon terminal for analog input and output				
	lose enter	A+Analog input1aisle	AIW0		Analog input channels support voltage Or current input, via DIP switch setting Set, one digit of the dial code corresponds to one pass The path is like an upward current and a downward voltage.
		B+Analog input2aisle	AIW2		
		C+Analog input3aisle	AIW4		
		D+Analog input4aisle	AIW6		

CPU228Analog input terminals	Terminal Definition	register	illustrate	
AI0 M AI1 AI2 M AI3	AI0Analog input1aisle	AIW0	Analog input channels support voltage or electrical signals. Stream input, set via DIP switch, one digit dialed The code corresponds to a channel, with current flowing upwards and downwards. Lower voltage. ON (0-20mA) AI1 AI2 AI3 AI4 (0-10V)	
	M: Input public terminal.			
	AI1Analog input2aisle	AIW2		
	AI2Analog input3aisle	AIW4		
	M: Input public terminal.			
	AI3Analog input4aisle	AIW6		
CPU228Analog output terminals	Terminal Definition	register	illustrate	
V0 I0 M V1 I1 M	V0:aisle1Voltage output terminal	AQW0	The analog output channel supports simultaneous voltage and current output, via a connection... The wire terminals are distinguished, but controlled by the same register.	
	I0:aisle1Current output terminal			
	MAnalog output common terminal			
	V1:aisle2Voltage output terminal	AQW2		
	I1:aisle2Current output terminal			
	MAnalog output common terminal			

2.4Host technical parameters

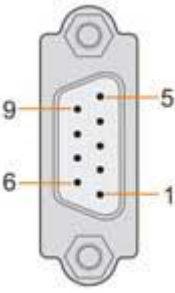
model		CPU222(-R/T) (-ETH)	CPU224 (XP) (-R/T/RT)(-ETH)	CPU225 (-R/T)	CPU226 (-R/T)(-ETH)	CPU228 (-R/T)
Power consumption		6W	7W	8W	10W	14W
Storage characteristics	Program area	16K				
	Data area	10K				
IO	Digital input	8	14	14	twenty four	16

characteristic	Digital output	6	10	10	16	14
	Analog input	-	With XP extension: 2-way	Route 4	-	Route 4
	Analog output	-	With XP suffix: 1-way	Route 2	-	Route 2
	Digital I/O mapping area	256 (128DI/128DO)				
	Simulated I/O mapping area	64 (32AI/32AO)				
	Maximum expansion module	7				
	High-speed pulse input	Single-phase 3 x 30K	Single-phase 4 x 30K			
		Dual-phase 3 x 30K	Dual-phase 4 x 30K			
High-speed pulse output	2 x 100K (transistor models only)					
internal properties	Total number of timers	256				
	Total number of counters	256				
	Analog Potentiometer	2 x 8-bit				
	Real-time clock	Supported, built-in battery				
	Real-time clock valid	1 year				
	Boolean instruction efficiency	0.28uS				
	Floating-point instruction efficiency	0.75uS				
485 Communication Function	interface	Route 1	Route 2			Route 3
	Support Protocol	PPI protocol, Modbus RTU protocol, freeport protocol				
	Maximum number of stations	32				
Power characteristics	Input voltage	- T suffix: DC24V 20.4-28.8VDC - R suffix: AC220V 160V-240V				
	Isolation (of the scene and the logic)	-T suffix: unisolated - R suffix: non-isolated				
	Sensor power supply voltage	24±1V				
	Current limit	0.5A				
	Isolation (sensor power and logic)	non-isolation				
Digital input Enter properties	Input type	PNP/NPN bidirectional				
	Rated voltage	24VDC, 4mA				
	Maximum continuous allowable voltage	30VDC				
	Surge voltage	35VDC, 0.5s				
	Logic 1 voltage range	15V-30VDC				
	Logic 0 voltage range	0-5VDC				
	Isolation (of the scene and the logic)	isolation				
	Opto-isolation	500VDC, 1 minute				
	Maximum cable length	500 meters (standard input)				
Digital input Features	Output type	- T suffix: Transistor source type 0.8A (can output 24V+ and disconnect 24V+) - R suffix: 5A (resistive) relay				
	Common terminal rated current	6A				
	Connecting the resistor (contact)	- R suffix: 0.2Ω typical value (0.6Ω maximum value)				
	Opto-isolation (from site to isolation)	isolation				

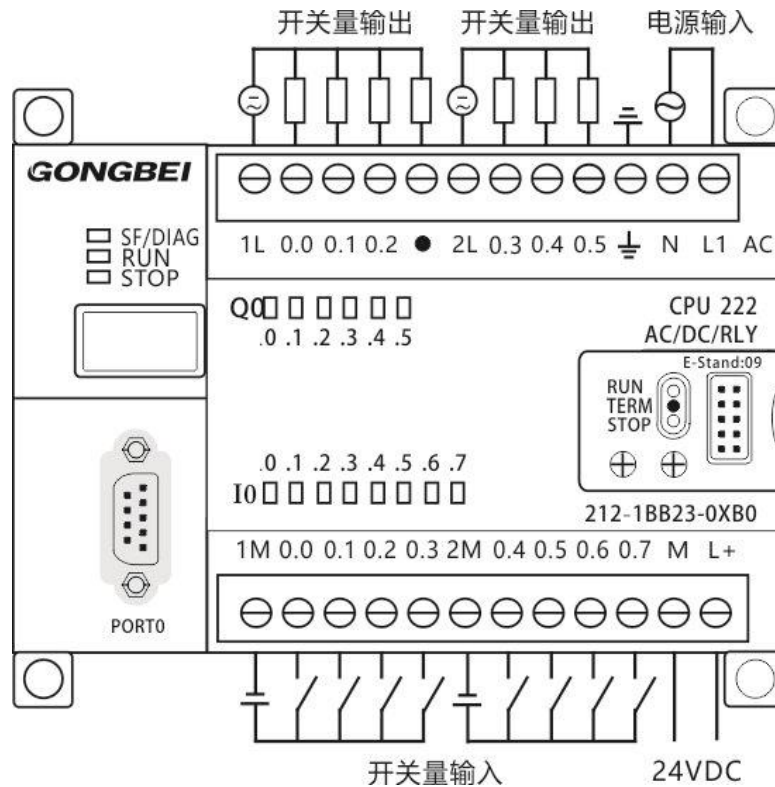
Analog input Enter properties	Input method	Single-ended input				
	Analog input characteristics	0~10V / 0~20mA				
	Input impedance	Voltage type 30KΩ, Current type 120Ω				
	Data format	0~32000				
	resolution	12-bit including sign bit				
	error	Worst case scenario: 0°C to 55°C		±2.5% of full scale		
		Typical, 25°C		±1.0% of full scale		
Repeatability		±0.05% of full scale				
Conversion time	200ms					
Analog input Features	Output voltage range	0~10V				
	Output current range	0~20mA				
	Data format	0~32000				
	error	Worst case scenario: 0°C to 55°C		±3% of full scale		
		typical,	25°C	±2.5% of full scale		
		Repeatability		±1% of full scale		
	Conversion time	50μs				
Load capacity	0~10V		> 5KΩ			
	0~20mA		<500Ω			
bottom right corner	Output voltage	24V DC				
Source characteristics	power	Relay type: 10W, with 1-2 expansion modules or temperature transmitters; Transistor type: 20W				
Dimensions (W x H x D) mm		90x80x62	140×80×62	140×80×62	196×80×62	196×80×62

2.5 485Communication interface

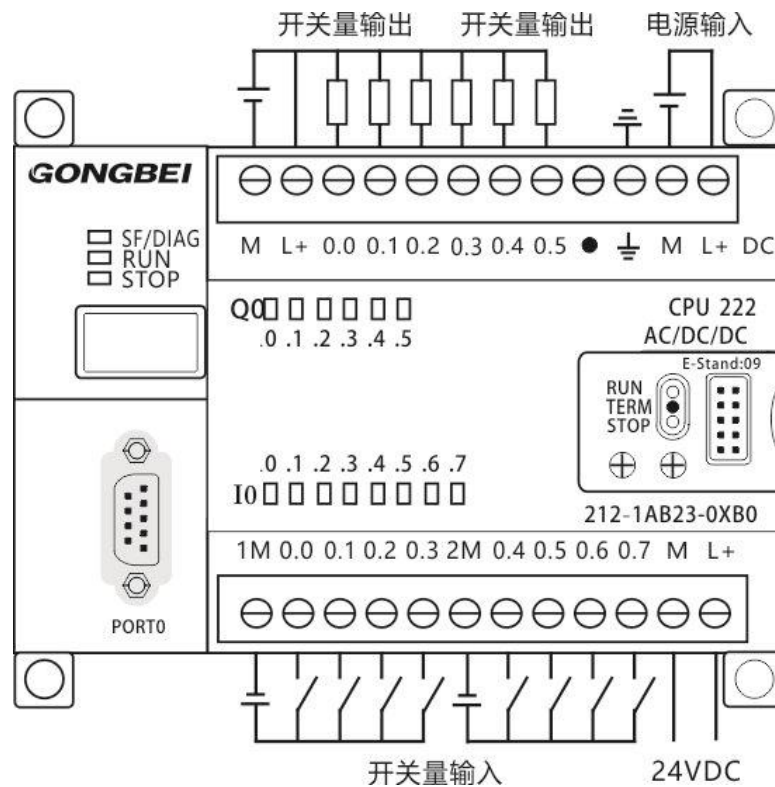
CPU222 only supports PORT0, CPU228 supports PORT0/1/2, and other models support PORT0/1, defined as follows:

connector	Pin number	PORT0	PORT1	PORT2
	1	chassis grounding	chassis grounding	Note: Only CPU228 version supported. Hold PORT2, PORT2 is a terminal block. Linear form, on the outer shell The definitions of labels A and B are the same as those in the 485 data... The standard definition is the opposite. If... Port2 cannot communicate The problem can be addressed by changing A. The B wiring solution is correct.
	2	+24Vland	+24Vland	
	3	RS485SignalA	RS485SignalA	
	4	Send applicationRTS	Send applicationRTS	
	5	+5Vland	+5Vland	
	6	+5V	+5V	
	7	+24V	+24V	
	8	RS485SignalB	RS485SignalB	
	9	NC	NC	
	shell	chassis grounding	chassis grounding	

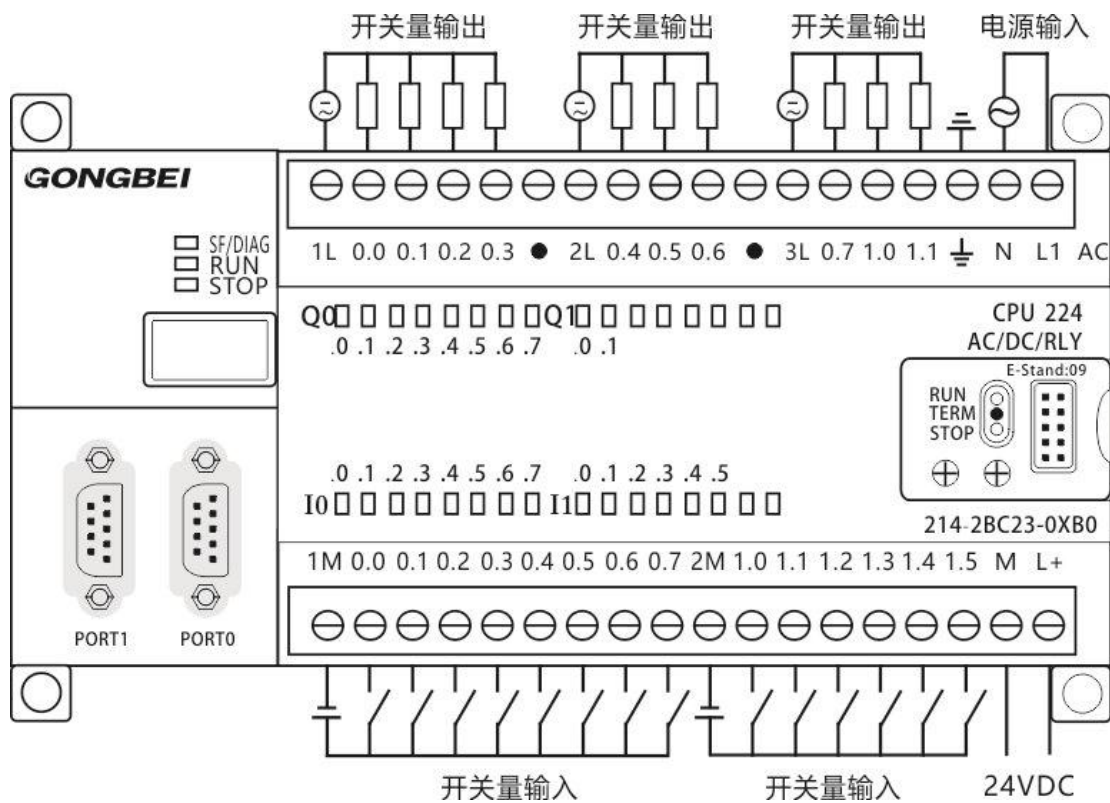
2.6Main unit wiring diagram



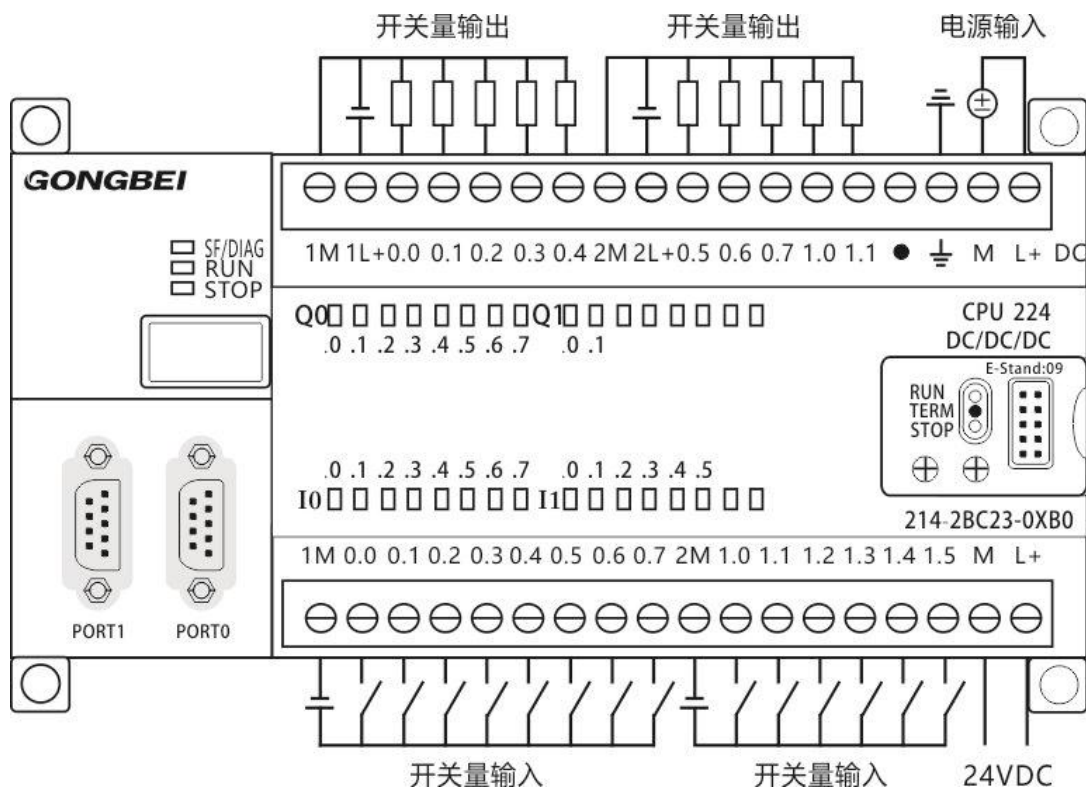
GB CPU222-R Relay, Non-Analog Type Wiring Diagram



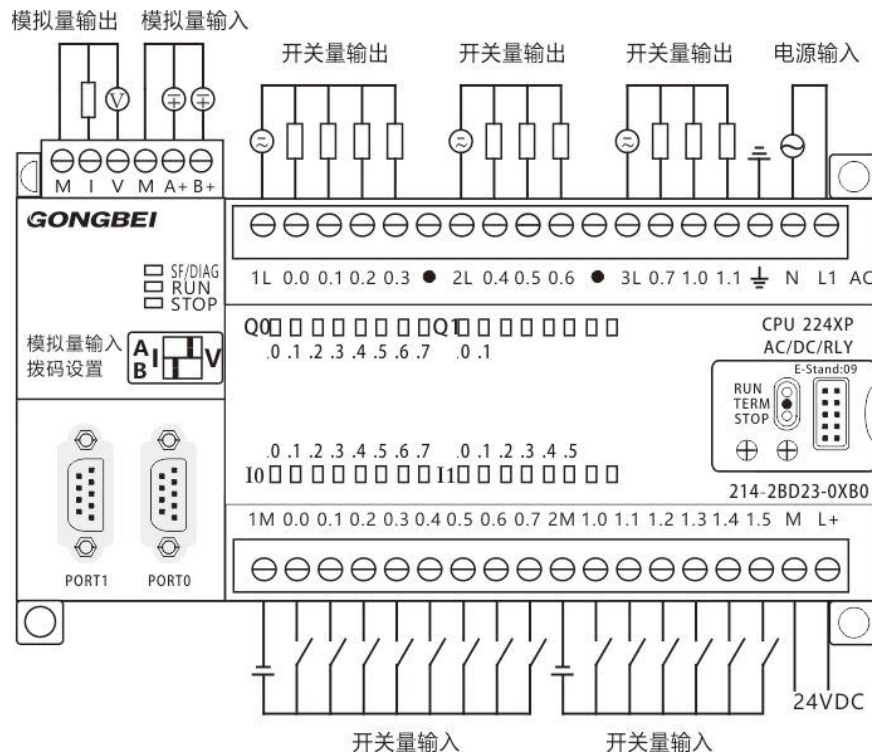
GB CPU222-T Transistor, Non-Analog Type Wiring Diagram



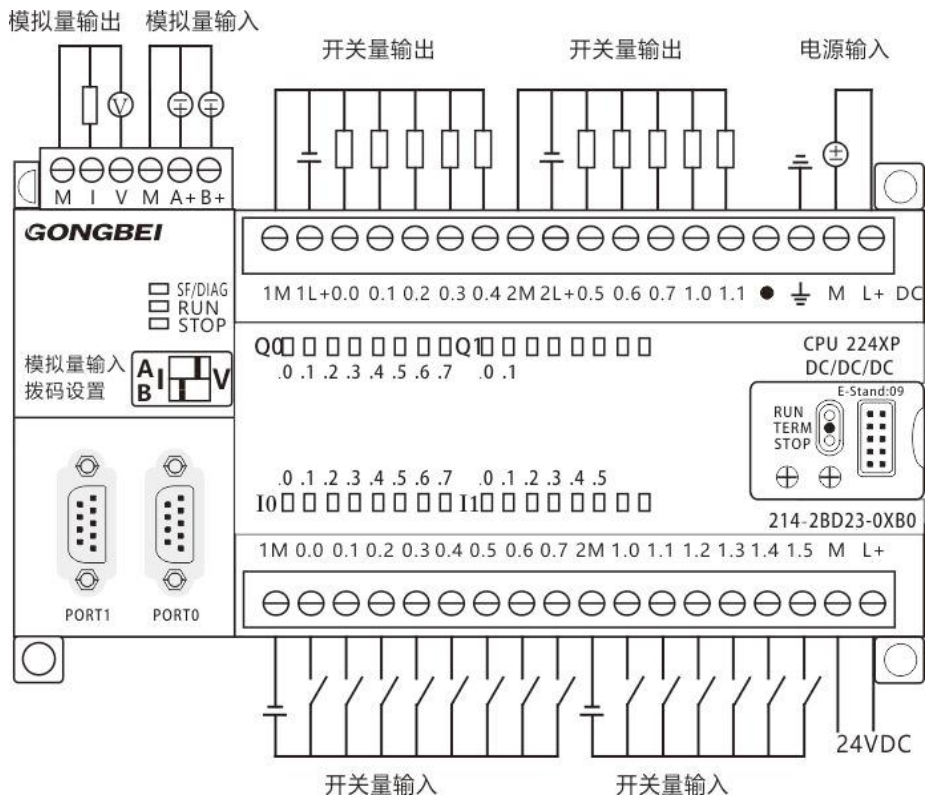
GB CPU224-R Relay, Non-Analog Type Wiring Diagram



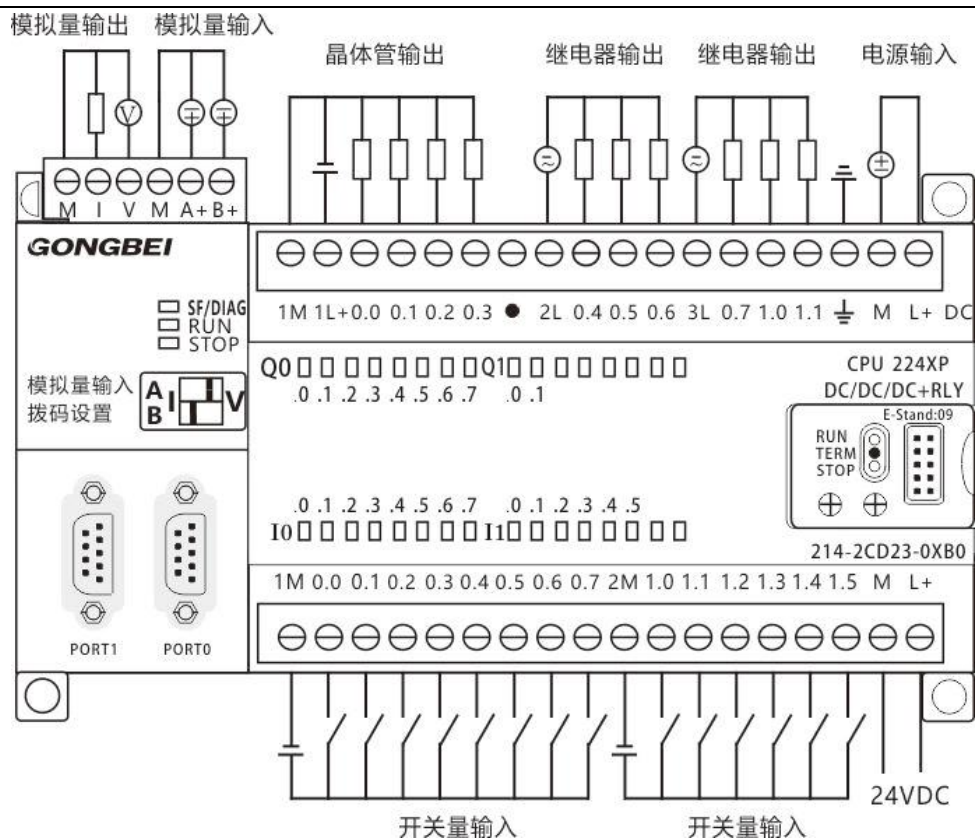
GB CPU224-T Transistor, Non-Analog Type Wiring Diagram



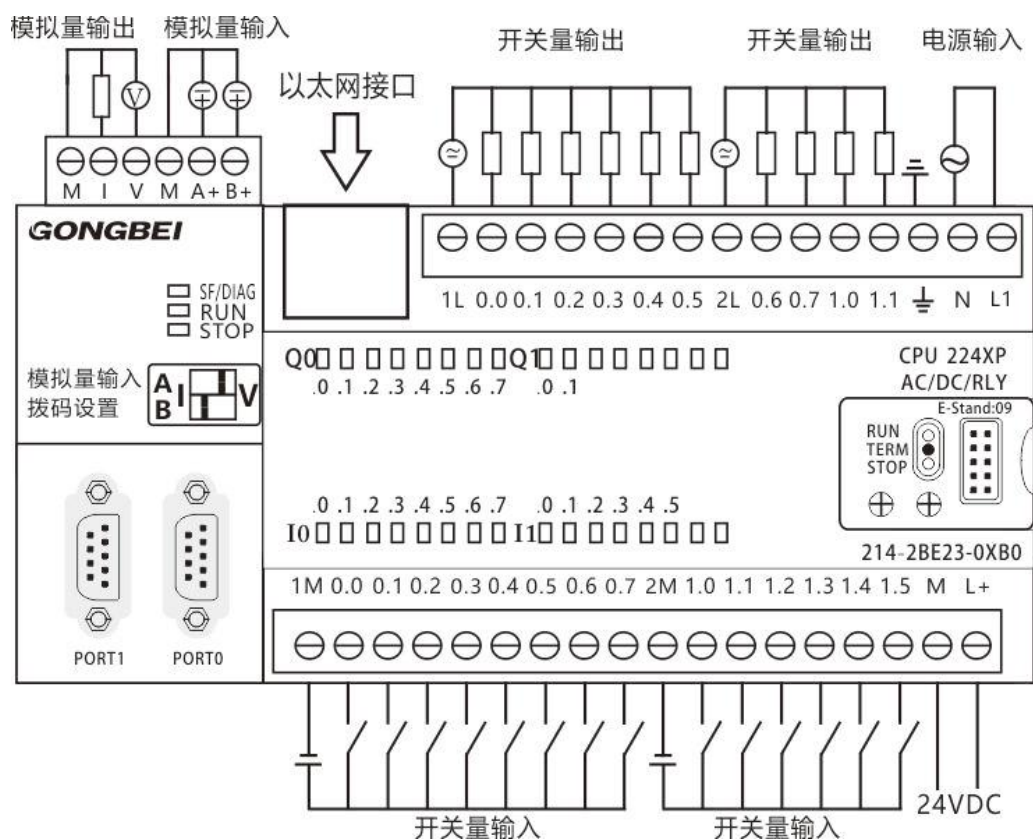
GB CPU224XP-R Relay with Analog Signal Wiring Diagram



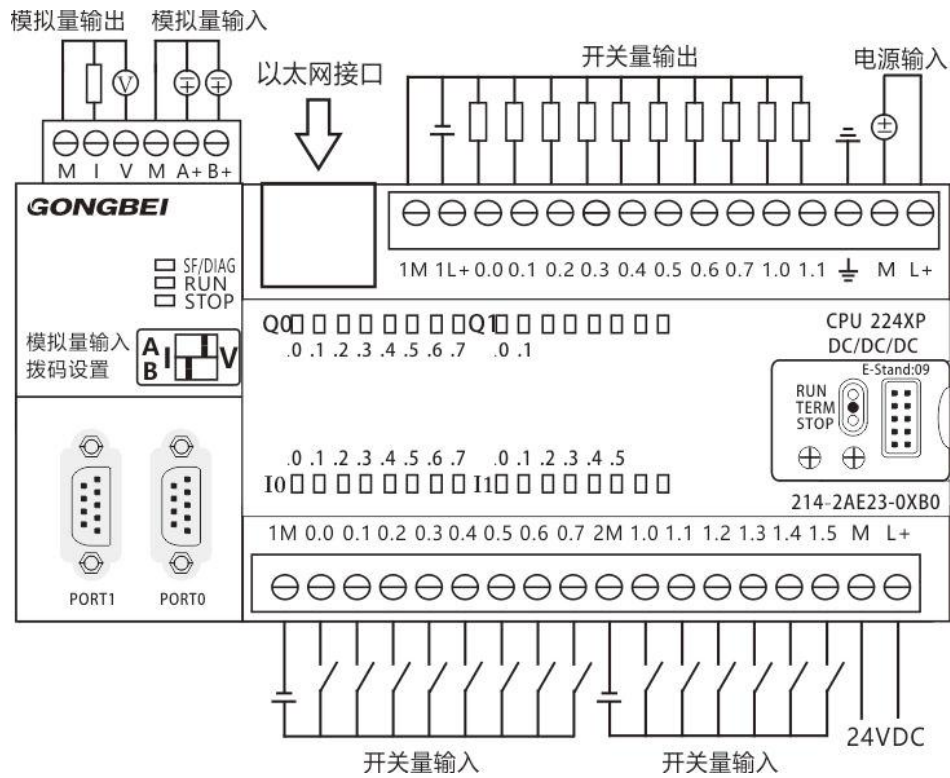
GB CPU224XP-T Transistor, Analog Type Wiring Diagram



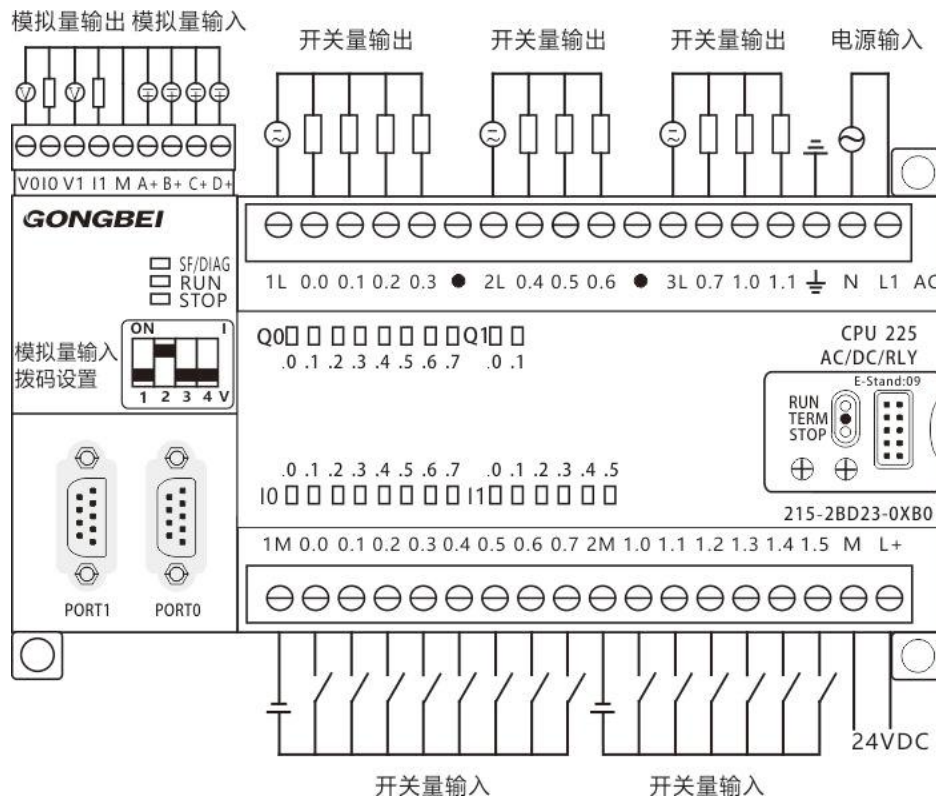
GB CPU224XP-RT Hybrid Wiring Diagram



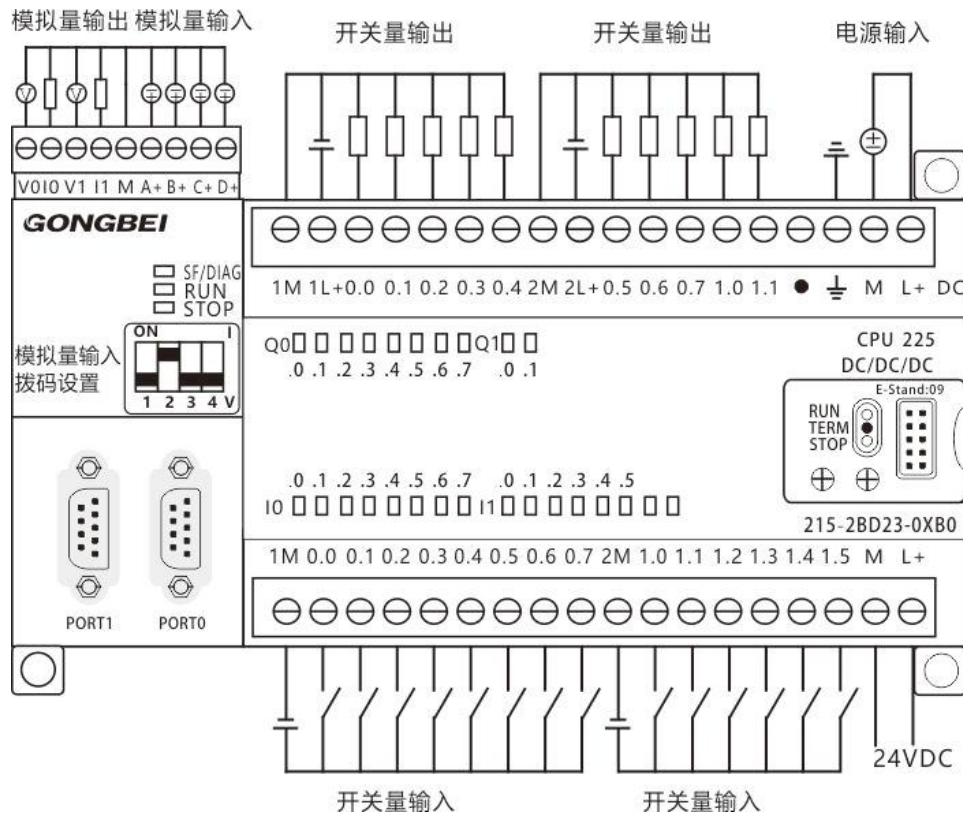
GB CPU224XP-R-ETH Relay and Ethernet Wiring Diagram



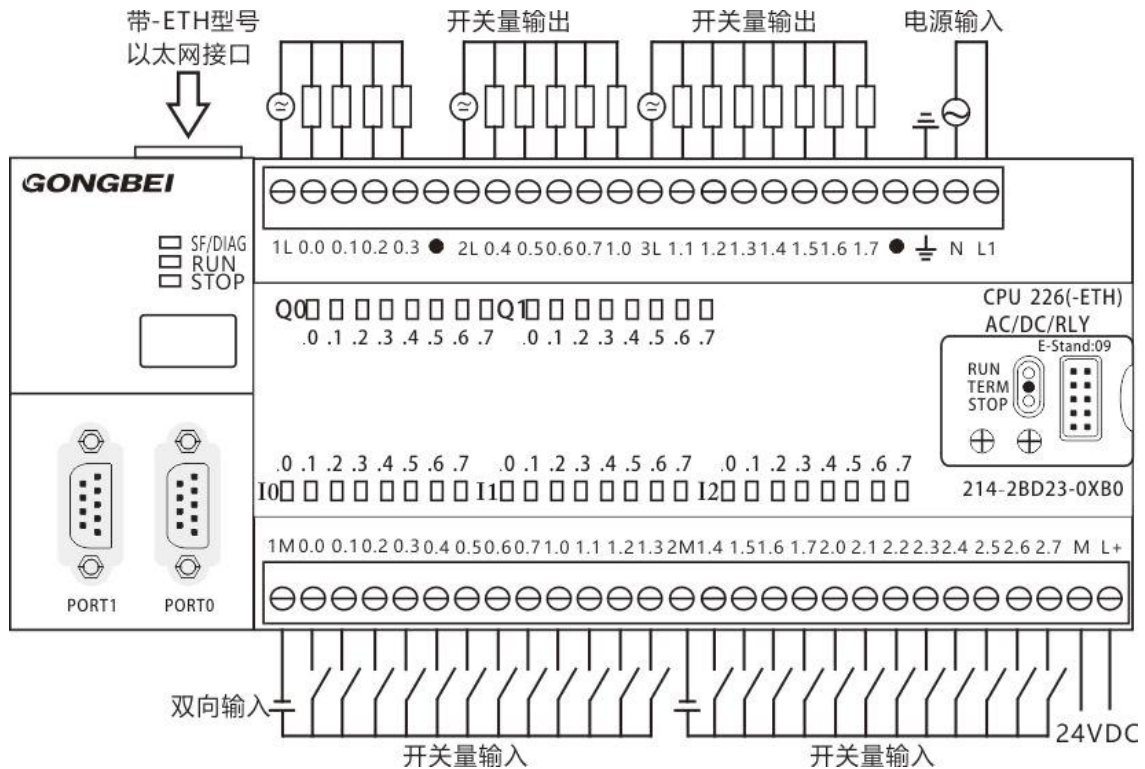
GB CPU224XP-T-ETH Transistor, Ethernet Wiring Diagram



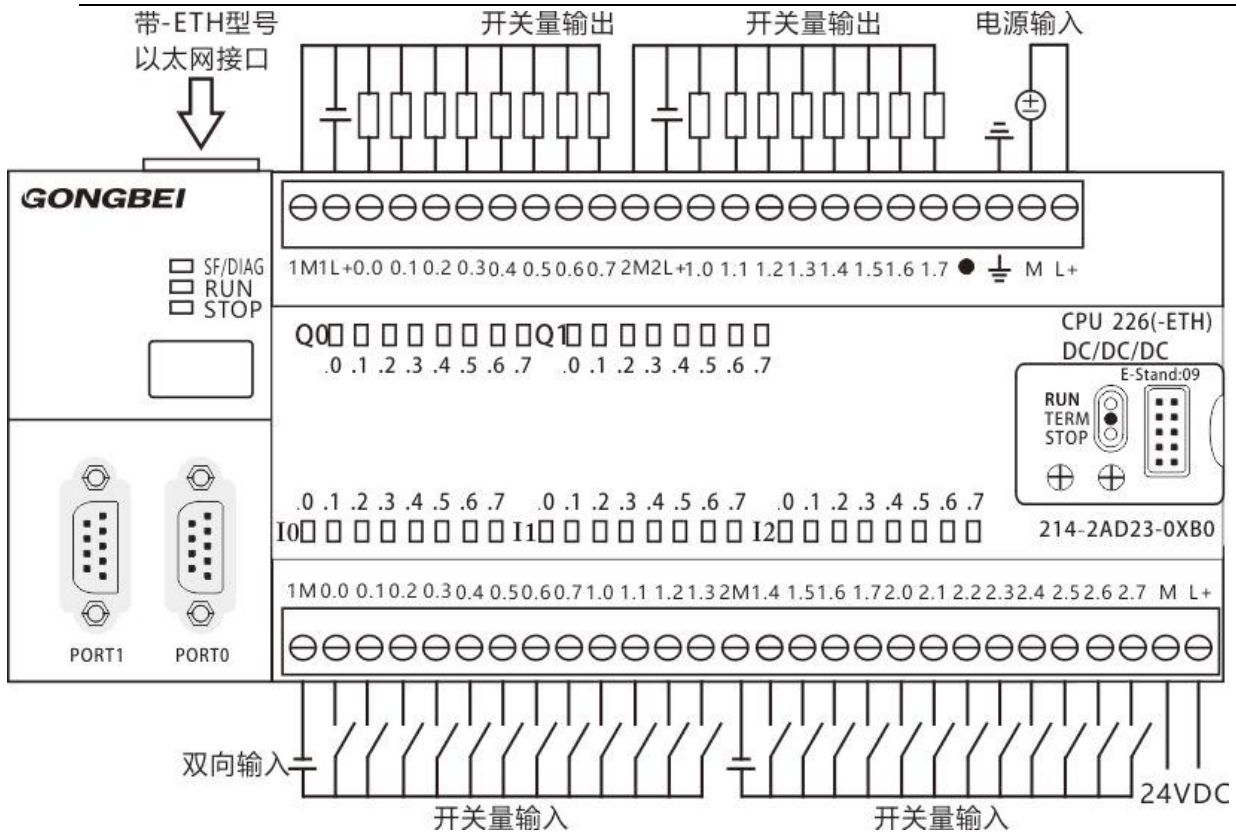
CPU225-R Relay Type Wiring Diagram



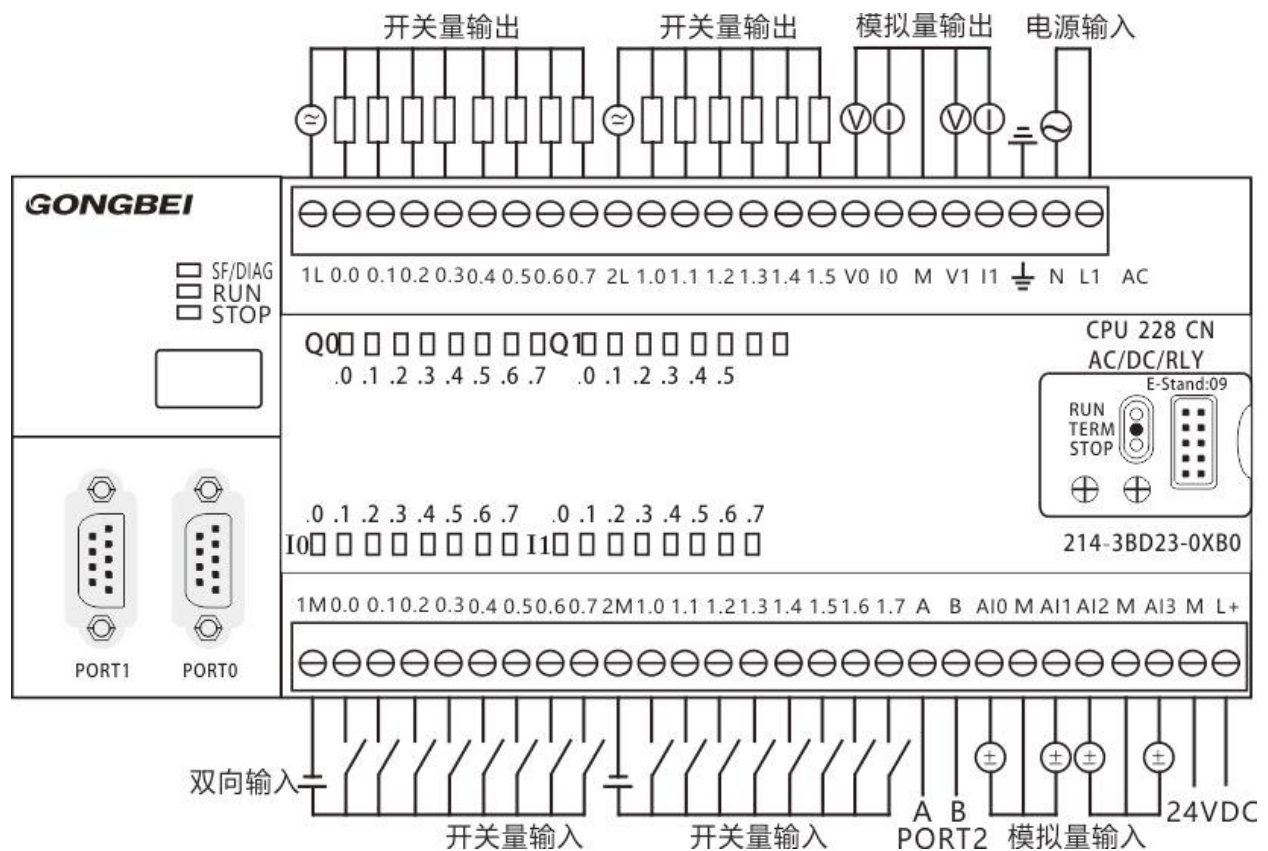
CPU225-T Transistor Type Wiring Diagram



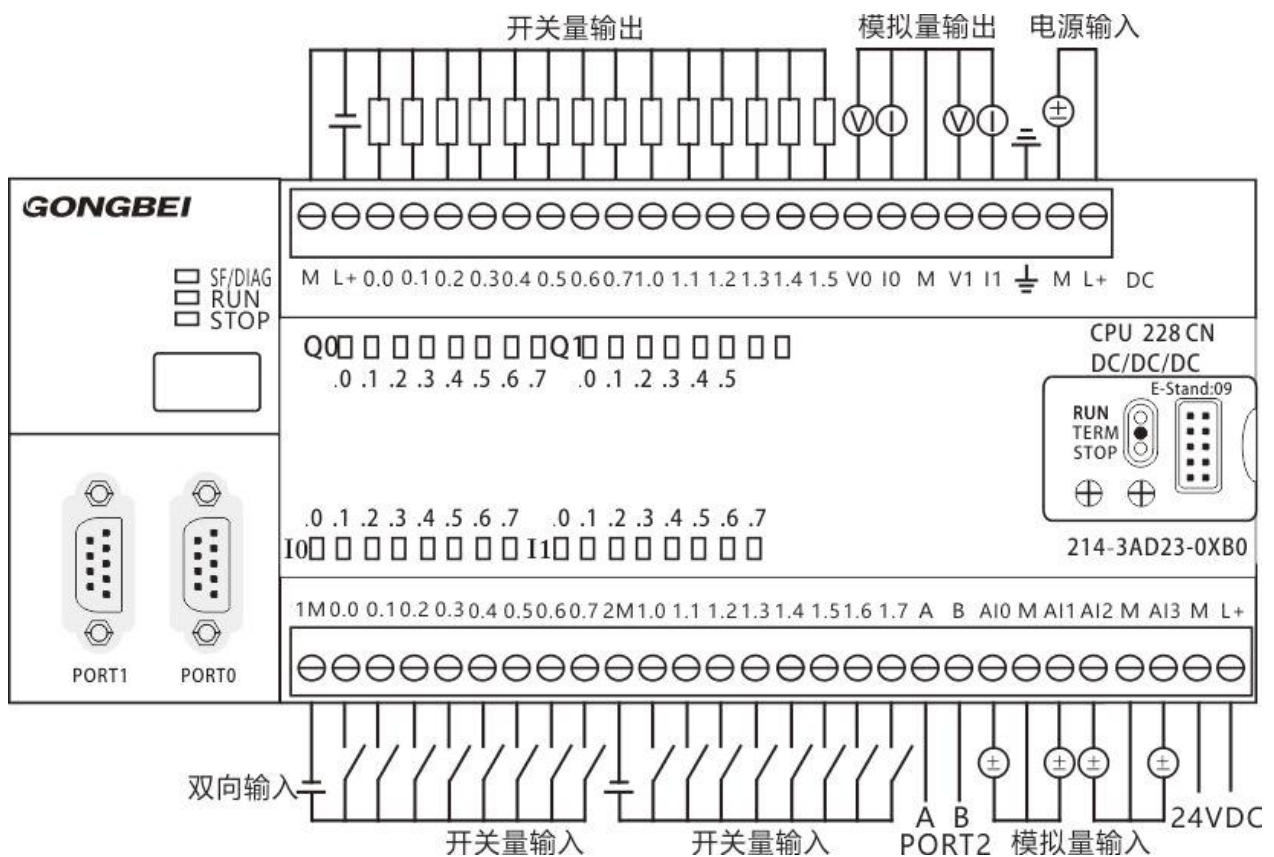
GB CPU226-R, CPU226-R-ETH (relay) type wiring diagram



GB CPU226-T, CPU226-T-ETH (transistor) type wiring diagram

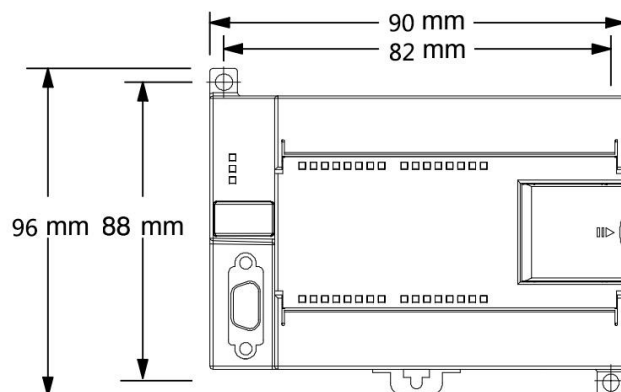


GB CPU228-R Relay Wiring Diagram with Analog Signal

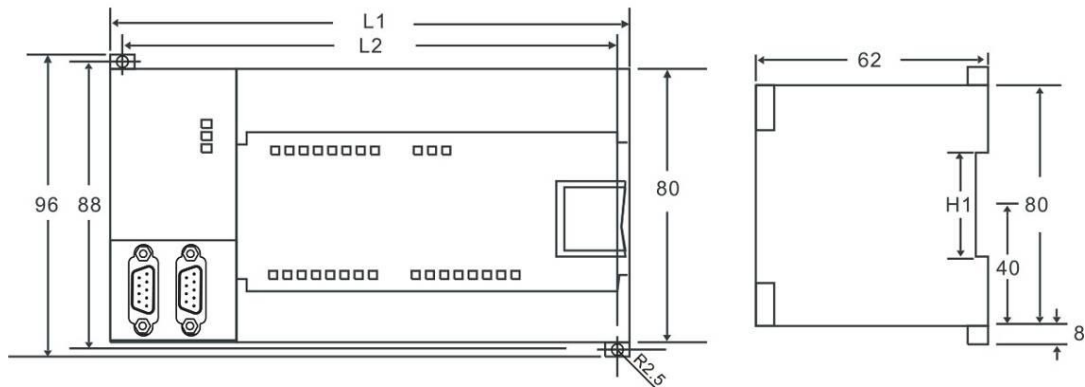


GB CPU228-T Transistor, Analog Type Wiring Diagram

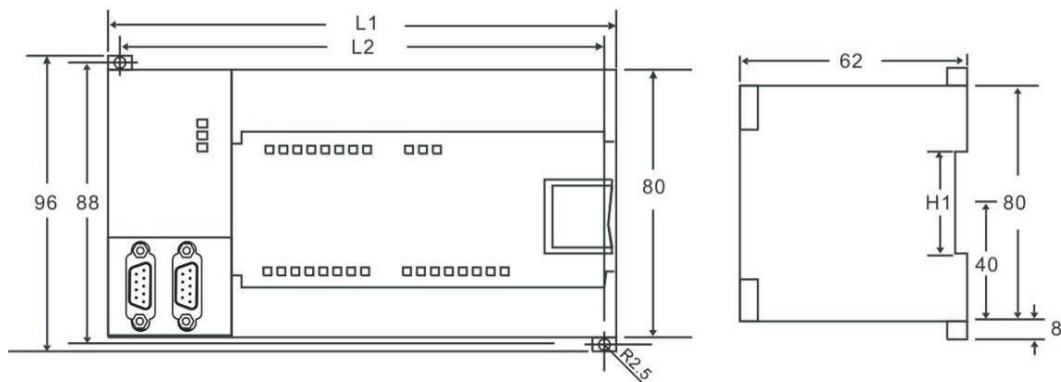
2.7Main unit dimensions



model	CPU222	
External dimensions	thickness	62mm



model	CPU224, CPU225	
External dimensions	L1	140
	L2	130



model	CPU226, CPU228	
External dimensions	L1	196
	L2	188

2.8 PLCCommon Hosting Issues

2.8.1Programming software andPLCCommunication is

unavailable. A: ① Turn on the operation switchSTOPUse it again.

② Check if other computer software that occupies the communication port is open at the same time, such as configuration software or multiple programming software.

③ Communication settings for the programming software: Different programming cables require different settings. Programming cables generally come in two types: one requires driver installation and is displayed in Device Manager.COMAnother type is a driverless cable, which appears in Device Manager. USBFor device setup instructions, please refer to the programming cable manual. If not, you can also refer to the programming cable manual on our website; the basic operations are the same.

④ It may be due to a compatibility issue with the programming software.200The programming software is a relatively old programmable software.64Bit windowThe system is prone to various problems. Frequently, it may fail to load drivers or display the error message "The specified access point could not be found." On our website...200 PLCThe downloaded materials contained "【工贝电子】".64"82.88-bit operating system compatibility patch", follow the instructions. When using the software, try right-clicking and selecting "Run as administrator". If that doesn't work, install...smart

software,smartThe software comes with its own driver; after installation,200The software might fix it. If that doesn't work, try reinstalling the operating system or installing a virtual machine.

3Ethernet Port Usage Instructions

PLCs with the "-ETH" suffix have one Ethernet interface, essentially integrating a CP243 Ethernet module. However, no configuration settings are required; simply set the IP address and it's ready to use, making it simpler and more reliable than the CP243 module. It boasts excellent Ethernet performance, supporting two protocols: S.7 Ethernet and Modbus TCP. Program uploads, downloads, and monitoring can be achieved with a single network cable, offering ultra-fast download speeds and eliminating the need for programming cables. It can also communicate with configuration panels and connect directly to WinCC. Multiple PLCs connected to a single switch can communicate with each other.

3.1 PLC IPModifying and viewing addresses 31.1

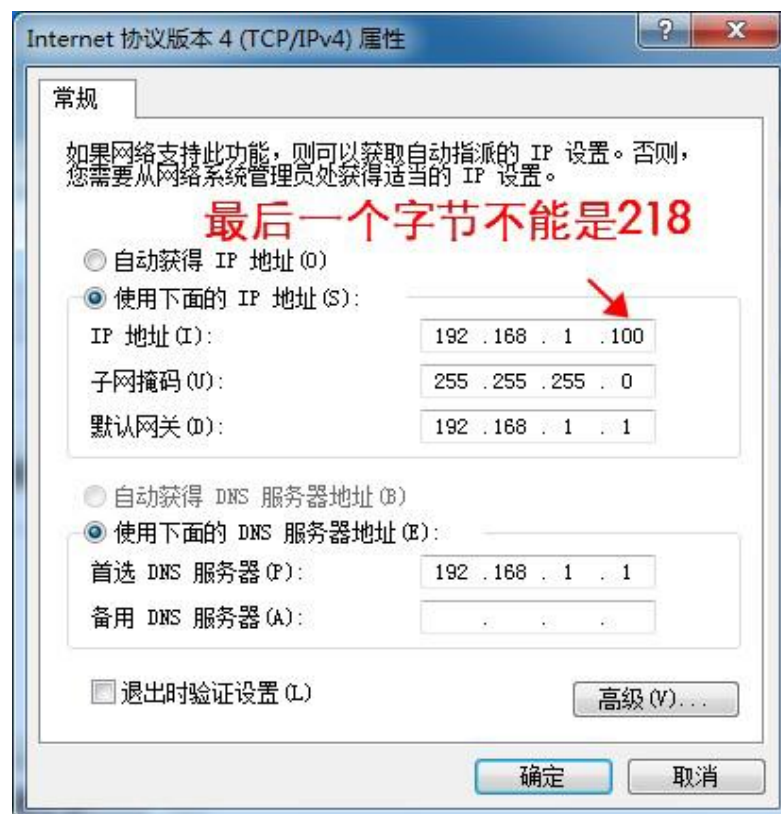
Beginner's Guide - Computer Settings

Connect the PLC using a network cable. The machine uses the factory default IP address, 192.168.1.218 The PLC can be directly connected to a computer, or...

It connects to routers and switches, and enables PLC access through router settings.

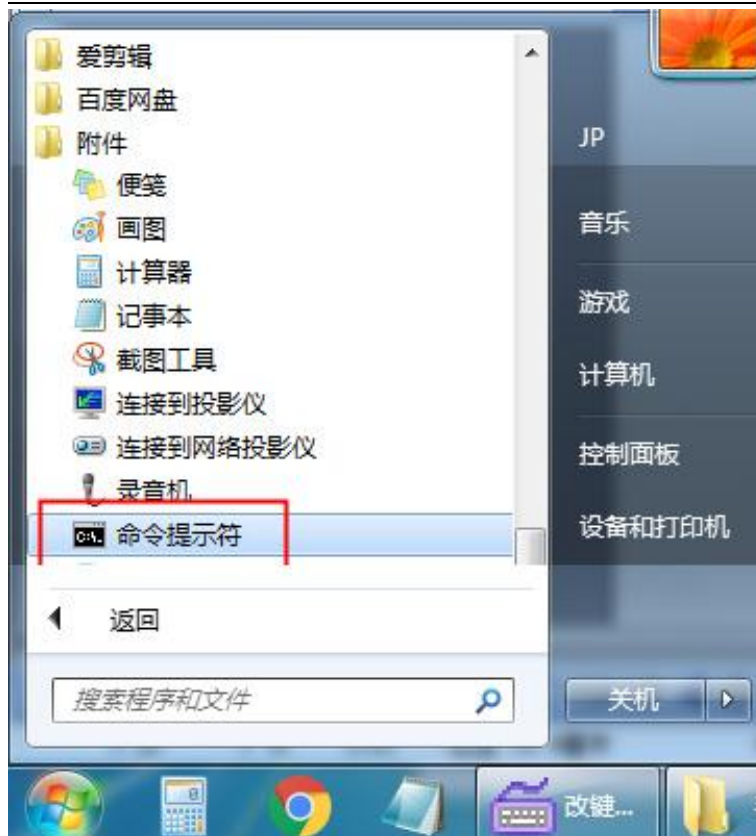
For a computer to access a PLC, both the computer and the PLC must be on the same local area network (LAN) segment, and a wired network adapter must be configured (note that this is not wireless).

The network card's IP address is within the 192.168.1.XXX network segment. Please fill in all the information as shown in the image below.



(Search on Baidu for instructions on setting IP addresses)

Fill in the computerIPAAfter the address, Test the computer andPLCIs the physical connection normal? Open the "Command Prompt" on your computer.



entering 192.168.1.218Press Enter. See the image below for an explanation.PLCexist1msThe data was returned within a short time, indicating that the physical connection was normal.PLCYou can continue with the following steps. If it fails, check your computer settings until...pingOnly after it is connected can the following applications be carried out.

```
C:\Users\MrJ>ping 192.168.1.218

正在 Ping 192.168.1.218 具有 32 字节的数据:
来自 192.168.1.218 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.1.218 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.1.218 的回复: 字节=32 时间<1ms TTL=128
来自 192.168.1.218 的回复: 字节=32 时间<1ms TTL=128

192.168.1.218 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间<以毫秒为单位>:
        最短 = 0ms, 最长 = 0ms, 平均 = 0ms
```

3.1.2View and modify via web pagePLCofIPaddress

Use a browser ([Internet Explorer is recommended](#)).Enter the URL, <http://192.168.1.218>. Note:

https is not allowed.



Click "Parameter Settings"

IP地址	192.168.001.218
网关地址	192.168.001.001
子网掩码	255.255.255.000
MAC地址	00.01.02.03.04.05
Config	

Click "After making the changes" ConfigConfirm with the button.

Note: Gateway address and IP The addresses must be on the same network segment simultaneously. If set to different network segments, It may lead to inability Reconnect the PLC.

3.1.3View via programming cableIPaddress

The IP address of the SMB395~398 device can be viewed in the registers via the PPI programming cable. See the diagram below.

	地址	格式	当前值
1	SMB395	无符号	192
2	SMB396	无符号	168
3	SMB397	无符号	1
4	SMB398	无符号	218

3.2Download and monitor the program via Ethernet

3.2.1Download steps:



Taking connecting the PLC to the computer via network cable as an example, click in the view window. Choose according to your computer's network card (below)

The image shows the network adapter on the demo machine. Users need to select the correct adapter for their own computer, which can be found in "Device Manager".

If the network card is not listed in the driver list, this is a software compatibility issue. It is recommended to install the 64-bit system patch.

Download from the official website and click "Diagnosis" to perform the test.



OK, this means the SR protocol test was successful, but it doesn't necessarily mean the PLC connection was successful, because even without a PLC connection, if...

If the SR protocol is working correctly, the test will still be successful; if it fails, please refer to the "SR Protocol Diagnosis and Troubleshooting" section.



Click on the viewing interface **通信** Button,



IP 地址浏览器

目前您的系统中没有已定义的IP地址。请单击‘新地址’，增加供使用的IP地址。

IP 地址	本地	远程	说明

地址和 TSAP 属性

IP 地址

192 . 168 . 1 . 218

本地

远程

输入PLC本机IP

此地址的说明

删除地址

保存

新地址

确认

取消

IP 地址浏览器

以下 IP 地址已经被输入您的系统。要选择需要使用的IP地址，双击下表中的IP地址条目。您还可以修改此列表中的条目、删除条目和增加新地址已供使用。

IP 地址	本地	远程	说明
192.168.1.218			

地址和 TSAP 属性

IP 地址

本地

远程

此地址的说明

删除地址

保存

新地址

确认

取消

Click OK, double-click to refresh the list, and the host column will be recognized. PLCThe model number indicates a successful connection.



Finally, be sure to click on the device that appears in the search results, and then click "Confirm".



The remaining steps are as follows. The same applies to cable downloads and monitoring.

3.3.5.7 Ethernet Protocol - Configuration Communication Examples

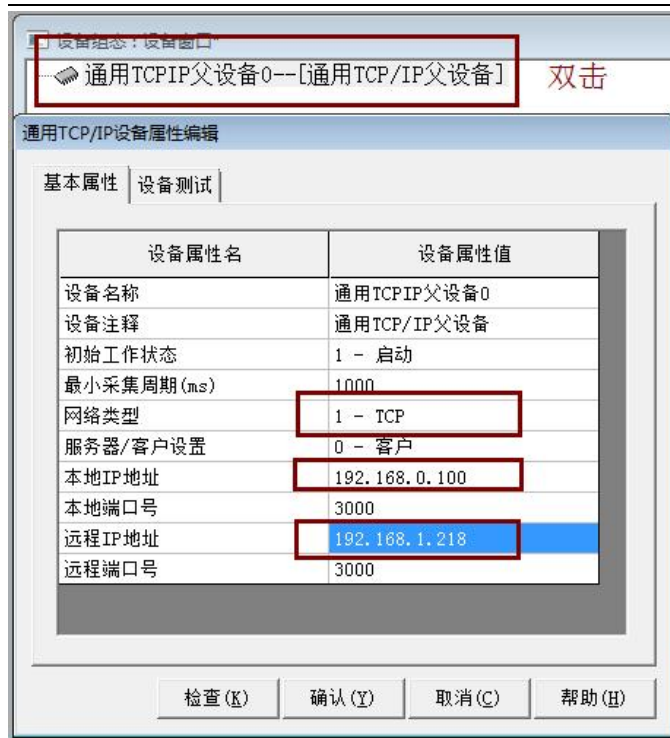
The Gongbei PLC's Ethernet port supports both S.7 Ethernet and Modbus TCP protocols. The advantage of using S.7 Ethernet is that no programming is required on the PLC side; the disadvantage is that S.7 Ethernet only supports server mode (for communication with touchscreens and computer configuration software, the PLC uses server mode, so S.7 Ethernet is suitable for most industrial scenarios). The following example demonstrates communication with an MCGS configuration panel.

3.3.1 Add parent device

In the Devices window, double-click "Generic TCP/IP Parent Device".



And set the parameters as shown in the figure below;



3.3.2Add device

Any driver that supports the S.7 Ethernet protocol will work; the Smart driver is recommended. See the image below for completion.



3.3.3Double-click the device to start configuration

设备属性名		设备属性值
[内部属性]		设置设备内部属性
采集优化	1-优化	
设备名称	设备0	
设备注释	西门子 Smart200	
初始工作状态	1 - 启动	
最小采集周期(ms)	100	
TCP/IP通讯延时	200	
重建TCP/IP连接等待时间[s]	10	
机架号[Rack]	0	
槽号[Slot]	2	
快速采集次数	0	
本地IP地址	192.168.1.100	
本地端口号	3000	
远端IP地址	192.168.1.218	
远端端口号	102	

索引	连接变量	通道名称	通道地址
0001	I0_0	只读I000.0	
0002	I0_1	只读I000.1	
0003	I0_2	只读I000.2	
0004	I0_3	只读I000.3	
0005	I0_4	只读I000.4	
0006	I0_5	只读I000.5	
0007	I0_6	只读I000.6	
0008	I0_7	只读I000.7	
0009	I1_0	只读I001.0	
0010	I1_1	只读I001.1	
0011	I1_2	只读I001.2	
0012	I1_3	只读I001.3	
0013	I1_4	只读I001.4	
0014	I1_5	只读I001.5	
0015	I1_6	只读I001.6	
0016	I1_7	只读I001.7	
0017	I2_0	只读I002.0	
0018	I2_1	只读I002.1	
0019	I2_2	只读I002.2	
0020	I2_3	只读I002.3	
0021	I2_4	只读I002.4	
0022	I2_5	只读I002.5	
0023	I2_6	只读I002.6	
0024	I2_7	只读I002.7	
0025	Q0_0	读写Q000.0	

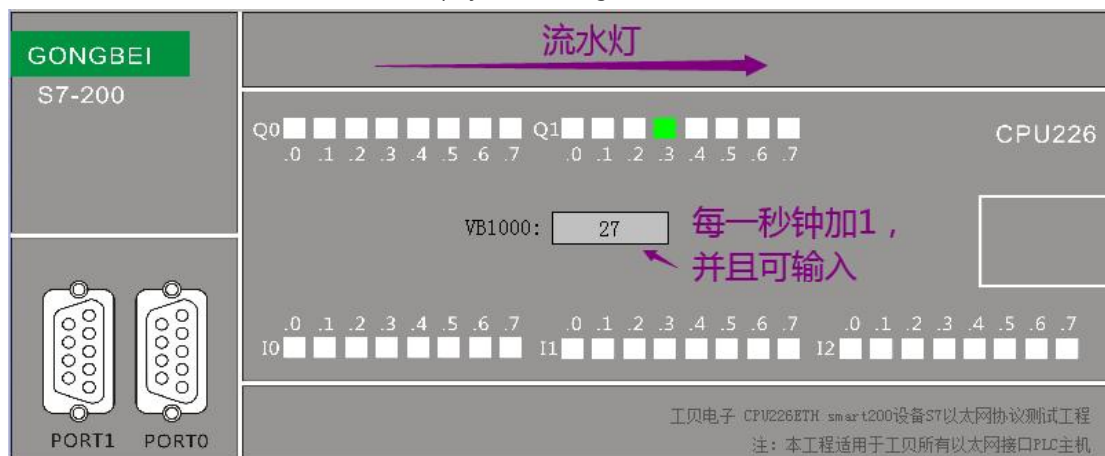
Enter the IP address of your local machine (computer or touchscreen);

Enter the remote (PLC) IP address;

Enter the remote port number. The PLC's server mode port number, which is S.7 Ethernet protocol, can only be 102. Finally, match

the variables with the screen to enable direct communication.

Download and extract the "GB PLC Ethernet Test Routine" file from the Gongbei website. Run the PLC routine "GB PLC Ethernet smart200 Ethernet Module Device Test Routine.mwp" and the MCGS routine "GB PLC Ethernet smart200 Ethernet Module Device Test Routine.MCE". The MCGS terminal will display the following.

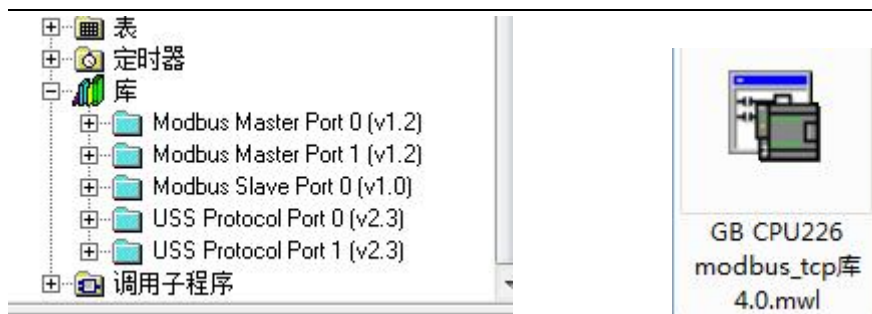


3.4 MODBUS TCPProtocol - Installation Library and Address Table

The Gongbei PLC has an Ethernet port that supports Modbus TCP server mode and client mode.

3.4.1InstallMODBUS TCPInstruction library When you open the programming software, the Modbus TCP library is not

found in the library list, as shown in the image below.



Download the latest Modbus TCP library "[Ethernet] Modbus TCP Installation Library 4.0.mwl" from the Gongbei Electronics official website.

Double-click. Then click "Yes".



This library file cannot be deleted after installation, otherwise the library will be lost. Therefore, it is recommended to copy it to a fixed location.

After restarting, the MODBUS_TCP library will be installed, as shown in the image below.



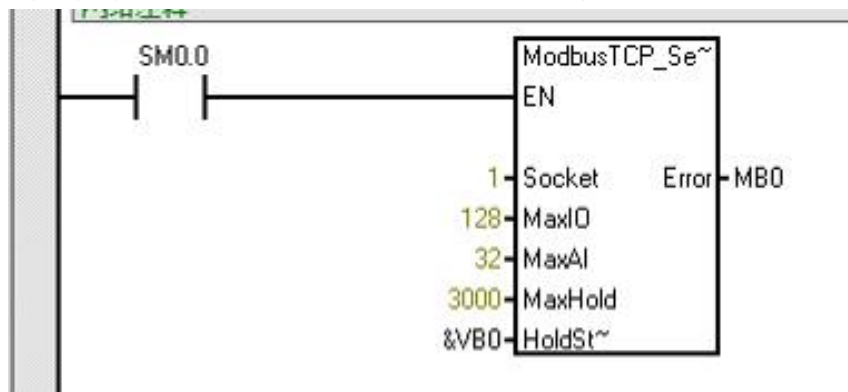
3.4.2 MODBUSAddress Mapping Table

Modbus address	Mapping to PLC address	Function code	describe
0000 to 00128	Q0.0 to Q15.7	Read coil: Function code 1; Write a single coil: Function code 5 Write multiple coils: Function code 15	Read/Write Digital Output Register
1000 to 10128	I0.0 to I15.7	Read input status bit: Function code 2	Read digital input register
30001 to 30128	AIW0 to AIW62	Read input register: Function code 4;	Read analog input register
4000 to 4XXXX	VW (HoldStart) to VW[HoldStart + 2 * (XXXX-1)]	Read holding register: Function code 3; Write to a single register: Function code 6; Write to multiple registers: Function code 16;	Holding register corresponding to zone V, HoldStart Fill in the program instructions. Example: Assigning a value to HoldStart in the instruction.

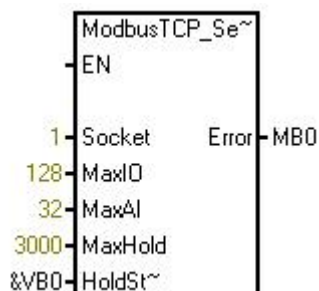
			&VB1000, then Address 40001 corresponds to VW1000. Address 40002 corresponds to VW1002. Address 40003 corresponds to VW1004. Address 40004 corresponds to VW1006.
--	--	--	--

3.5 PLCDoModbus TCPThe server and the computer (touchscreen) act as the client.

Using a PLC as the server and a touchscreen as the client is the most common connection method, and it's also the simplest way to program the PLC, requiring only one instruction. Modbus TCP is used as the server, with port 502.



3.5.1 PLC Server-Side Instructions (ModbusTCP_Server)



parameter	type	definition
EN	Bool	Enable
Socket	Byte	Interface numbers 1, 2, 3, 4, 5; note that these are interface numbers, not the number of interfaces. A maximum of 5 interface numbers are supported, indicating that a specific interface number can be opened. The server and client interface numbers can be different. If you want two clients to access the service simultaneously, you need to open two interface numbers, meaning you need to write two separate programs, differing only in the socket.
Error	Byte	Error code
MaxIO	Word	Maximum I/Q bits: The maximum number of I/O points involved in communication. The I/O map area is 128/128, with a default value of 128.
MaxAI	Word	Maximum AI word count, the maximum number of AI channels participating in communication, can be 16 or 32.
MaxHold	Word	The largest holding register area contains the V memory word (VW) used for communication.
Holdstart	Dword	In Modbus TCP, zone 40000 corresponds to the beginning of the PLC's holding register area.

Address, specified by &VBx (indirect addressing).

3.5.2 Setting up the client on a computer (touchscreen)

Taking MCGS as an example, select the general TCP/IP parent device and choose the Modicon ModbusTCP device:

通用TCP/IP设备属性编辑

基本属性 | 设备测试

设备属性名	设备属性值
设备名称	通用TCP/IP父设备0
设备注释	通用TCP/IP父设备
初始工作状态	1 - 启动
最小采集周期(ms)	100
网络类型	1 - TCP
服务器/客户设置	0 - 客户
本地IP地址	192.168.1.100
本地端口号	3000
远程IP地址	192.168.1.218
远程端口号	502

端口必须502 Modbus TCP规定

检查(K) 确认(Y) 取消(C) 帮助(H)

The Modicon ModbusTCP device is configured as follows:

设备树

通用TCP/IP父设备0--[通用TCP/IP父设备]
设备1--[莫迪康ModbusTCP]

设备编辑窗口

驱动构件信息:
驱动版本信息: 3.043000
驱动模板信息: 新驱动模板
驱动文件路径: D:\MCGSE\Program\drivers\通用设备\modbus\modbus_tcp\modbus_tcp.dll
驱动预留信息: 0.000000
通道处理页信息: 无

设备属性名	设备属性值
[内部属性]	设置设备内部属性
采集优化	1-优化
设备名称	设备1
设备注释	莫迪康ModbusTCP
初始工作状态	1 - 启动
最小采集周期(ms)	100
设备地址	1
通讯等待时间	500
快速采集次数	0
16位整数解码顺序	0 - 12
32位整数解码顺序	0 - 1234
32位浮点数解码顺序	0 - 1234
分块采集方式	0 - 按最大长度分块
4区16位写功能码选择	0 - 0x06

索引	连接变量	通道名称	通道处理
0000		通讯状态	
0001	I0_0	只读10001	
0002	I0_1	只读10002	
0003	I0_2	只读10003	
0004	I0_3	只读10004	
0005	I0_4	只读10005	
0006	I0_5	只读10006	
0007	I0_6	只读10007	
0008	I0_7	只读10008	
0009	I1_0	只读10009	
0010	I1_1	只读10010	
0011	I1_2	只读10011	
0012	I1_3	只读10012	
0013	I1_4	只读10013	
0014	I1_5	只读10014	
0015	I1_6	只读10015	
0016	I1_7	只读10016	
0017	I2_0	只读10017	
0018	I2_1	只读10018	
0019	I2_2	只读10019	
0020	I2_3	只读10020	
0021	I2_4	只读10021	
0022	I2_5	只读10022	
0023	I2_6	只读10023	
0024	I2_7	只读10024	

增加设备通道
删除设备通道
删除全部通道
快速连接变量
删除连接变量
删除全部连接
通道处理设置
通道处理删除
通道处理复制
通道处理粘贴
通道处理全删
启动设备调试
停止设备调试
设备信息导出
设备信息导入
打开设备帮助
设备组态检查

Finally, configure the screen, connect the variables, and connect with a network cable to enable communication.

We have created a sample program for using MCGS as a client PLC and a server for your reference. You can download it from the official website.

GB PLC Ethernet MODBUS-TCP Touchscreen Client Test Example.MCE

GB PLC Ethernet MODBUS TCP PLC Server-Side Test Program.mwp

Download the two programs separately. The PLC's scrolling LED display is mapped to the MCGS terminal, as shown in the image below.



Note: MCGS's connection policy is that if the connection is lost, it will reconnect after a period of time. Therefore, if MCGS is stopped on the computer,...

After clicking "Run," it takes about 2 minutes to reconnect. If you download MCGS to the touchscreen, it takes about 20 seconds according to my test.

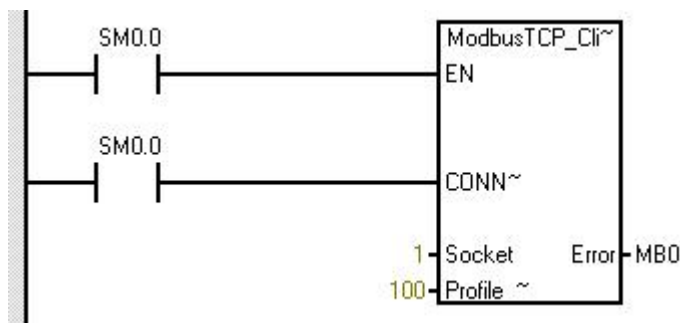
It will reconnect within seconds. If you are using the ModScan testing tool on your computer to connect to the PLC, reconnection after disconnection will be instantaneous and will not require waiting.

Ma Chonglian. So if the MCGS indicator on the computer isn't running, just wait a while.

3.6 PLCDoModbus TCPThe client uses a computer (touchscreen) as the server.

This type of use is mainly employed in...PLCConnection supportModbus TCPIn sensor applications using

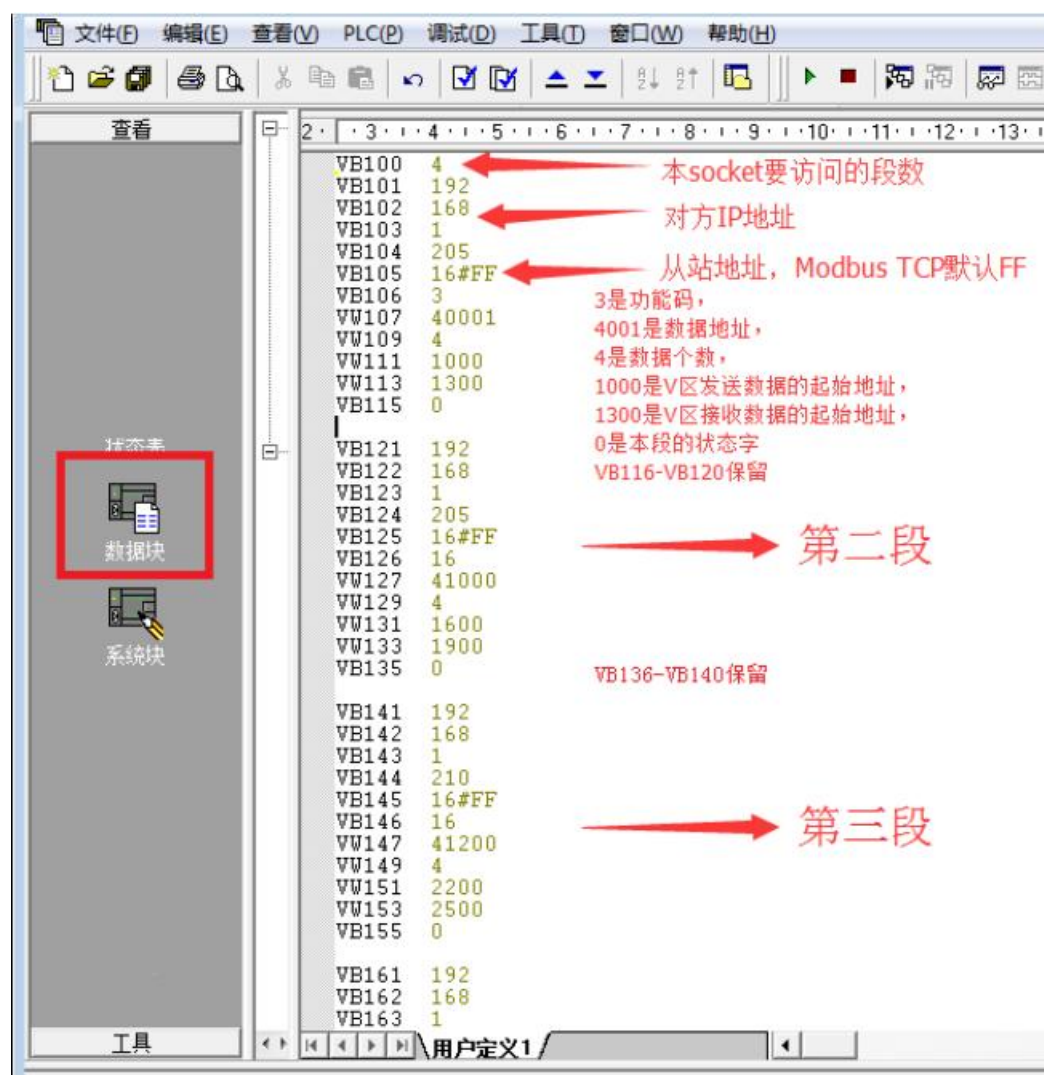
the protocol. Client commands (ModbusTCP_ClientIn the ladder diagram, set:



parameter	Parameter type	Data types	definition
EN	INPUT	Bool	Enable

CONNECT	INPUT	Bool	0: Disconnect 1: Establish and maintain the connection.
Socket	INPUT	Byte	Interface numbers 1, 2, 3, 4, 5; note that these are interface numbers, not the number of interfaces. A maximum of 5 interface numbers are supported, indicating which interface number is being used. The server and client interface numbers can be different. If you want to access multiple servers, you can open only one socket, but the access will be slower. Opening two sockets will allow parallel access, which is much faster.
Profile_Table	INPUT	Word	The starting address of the communication envelope is represented by byte offsets starting from V0. For example, VB99 corresponds to the value 99.
Error	INPUT	Byte	Error code

Add data to the data block according to access requirements:



The data transmission configuration format is as follows:

Send starting address	example		example
Offset address			

VBn	4	The number of segments accessed by this socket	4
VBn+1	First paragraph	The highest byte of the other party's IP address	192
VBn+2		The second byte of the other party's IP address	168
VBn+3		The third byte of the other party's IP address	1
VBn+4		The last byte of the other party's IP address	205
VBn+5		Slave ID (Slave Address)	16#FF
VBn+6		Function code	3
VWn+7		The data address to be read/written from the slave station	40001
VWn+9		Number of data read and written	4
VWn+11		V - Starting address for sending data from memory area	1000
VWn+13		V. Starting address for receiving data in the storage area	1300
VBn+15		Status bytes of this segment	
VBn+16 VBn+20		This section is reserved for future use.	
VBn+21	Second paragraph	The highest byte of the other party's IP address	192
VBn+22		The second byte of the other party's IP address	168
VBn+23		The third byte of the other party's IP address	1
VBn+24		The last byte of the other party's IP address	205
VBn+25		Slave ID (Slave Address)	16#FF
VBn+26		Function code	16
VWn+27		The data address to be read/written from the slave station	41000
VWn+29		Number of data read and written	4
VWn+31		V - Starting address for sending data from memory area	1600
VWn+33		V. Starting address for receiving data in the storage area	1900
VBn+35		Status bytes of this segment	
VBn+36 VBn+40		This section is reserved for future use.	
continuous		continuous	

The format of the received data is as follows:

answer	Receive starting address Offset address	describe	
The correct one should answer	VBn	Number of received data	
	VBn+1	Slave ID (Slave Address)	
	VBn+2	Function code	
	VBn+3	Number of data reads	

	VBn+4	Data area	
Error	VBn	Number of received data	
	VBn+1	Slave ID (Slave Address)	
	VBn+2	Function code + 0x80	Function code highest position 1
	VBn+3	Error code: 0 No error The value of Count is 0. 2. Invalid data address 4 Communication port is busy 6. Function code error	

In the example above, only [function name] is enabled.Socket1Communication port, segment1access192.168.1.205,part2access192.168.1.205,part 3 access192.168.1.210,part4access192.168.1.213,Accessing different devices via the same communication portIPAddress, this will reduce communication efficiency..Recommend the samesocketAccess only the sameIPAddress, to access anotherIPFor the address, open another one. socketConfigure it.

3.7 PLCCommon Ethernet Port Issues

3.7.1 PingIt doesn't work.

A: This indicates a failed physical layer connection. ① Check if the network cable is loose. ② Check the computer.IPWhether or notPLCofIPThey are on the same network segment. ③ Computer gateway address, subnet mask,DNS④ Try turning off your computer's wireless network adapter. ⑤ Connect your computer to... PLCTry connecting directly with an Ethernet cable, without the intermediate router.

3.7.2PingThe connection is established, but the webpage cannot be opened.

A: ① ChangeIETry your browser. ② The URL does not allow the use of...https, need to usehttp③ Try a different computer.

3.7.3Programming software settingsPC/PGThe network card driver cannot be found in the interface.

A: Download from the website64Apply the bit patch and try running it.

3.7.4TwoCPU226-ETHWhen devices are connected to the same switch, one of them will always experience lag.

answer:PLCAfter leaving the factoryMACThe addresses are all the same; check...MACIf the addresses are not the same, you can modify one of them.

3.7.5TwoPLCIt can't communicate when connected directly with a network cable, but it can communicate when both are plugged into a switch. A: Try

using a crossover network cable.

4.Extension module usage

The GB 200 standard PLC can be composed of a single CPU or a CPU plus up to 7 optional expansion modules, as follows.



Extended connection diagram

The GB 200 series main unit modules and expansion modules can be used in combination with the original main unit modules and expansion modules.

The main unit supports up to 7 expansion modules, with a maximum of 128 digital inputs and outputs and a maximum of 32 analog inputs and outputs.

How to view the starting address of digital and analog quantities:

In the software menu bar, select "PLC," then select "Information." An information table will pop up. The information table displays PLC information; the first row represents the main module, and each subsequent row represents an expansion module. The starting addresses for digital and analog signals are based on this table.

Note: If the address table is incorrect, the entire system will be powered off for 30 seconds and then restarted.

4.1Expansion Module Technical Specifications

Digital input/output module	EM221-I8/16/32	EM222-RQ8/16/32	EM222-TQ8/16/32	EM223-I4RQ4/ I8RQ8/I16RQ16	EM223-I4TQ4/ I8TQ8/I16TQ16
Number of channels	Entered on 8/16/32	8/16/32 Relay output	8/16/32 Transistor output	4 in, 4 out / 8 in, 8 out 16-input, 16-output relay	4 in, 4 out / 8 in, 8 out /16 input 16 output transistor
Digital input type	Sink or source input (supports bidirectional input; common terminal can be positive or negative).				
Input rated voltage	24 V DC at 4 mA (maximum 30 V DC, surge voltage)35VDC,0.5s)				
Logical input	Logic 1 requires a minimum of 2.5mA and operates at 15VDC; Logic 0 requires a maximum of 1mA and operates at 5VDC.				
Digital input isolation	Internal opto-isolation,500VAC,1minute				
Output rated voltage	transistor:24VDC;Relay:24VDCor250VAC				
Maximum output current	The transistor can withstand a maximum resistive load of 0.5A (16W) and an inductive load of 0.2A (5W). The relay can handle a maximum of 2A with a resistive load and 0.5A with an inductive load.				
Rated current at each point (maximum)	Transistor: Source type 0.8A (can output 24V+ and disconnect 24V+); Relay: 5A resistive; 0.5A DC inductive;				
Maximum current at common terminal	10A				
Digital output isolation	Internal opto-isolation; Transistor: Field to logic: 500VAC, 1 minute; Relay: Coil to contact: 1500VAC, 1 minute;				
Relay contact life	10,000,000 (No Load); 100,000 (Rated Load)				
24V power indicator light (green)	Light on: Power supply is normal, connection to host is normal; Off: Power supply is abnormal or connection to host is abnormal. Note: The expansion module is powered by a separate 24V power supply. The 24V power indicator will not light up if it is not connected to the host.				

Analog module	EM231-AI4/8	EM232-AQ2/4	EM235-AI4AQ1
Number of channels	4/8	Sold on 4/8	4 in, 1 out
Input signal range	Voltage: Selected according to the configuration switch; Current: 0-20mA		
Input data format	Bipolar, full scale: -32000 to 32000; Unipolar, full scale: 0 to 32000		
Input impedance	Voltage: >2MΩ; Current: 250Ω		
Input precision	Bipolar: 11 bits + 1 sign bit; Unipolar: 12 bits		
Output signal range	Voltage: ±10V; Current: 0-20mA		
Output data format	Voltage: -32000 to 32000; Current: 0 to 32000		
Output resolution	Voltage: 11 bits + 1 bit sign current: 11 bits		
Output accuracy	±0.5% of full scale		

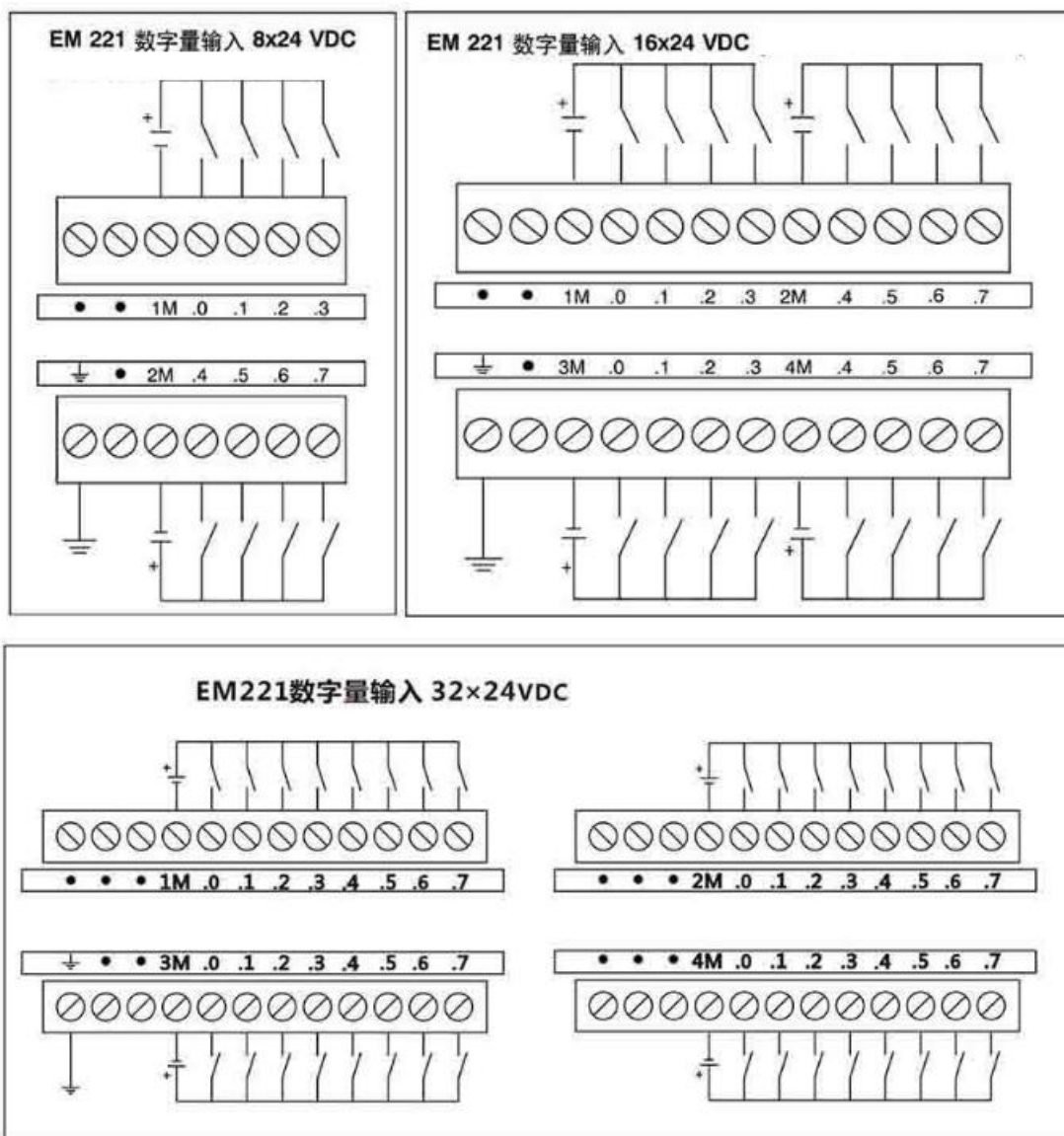
isolation	none
-----------	------

Temperature module	EM231-RTD4	EM231-TC4/8
Number of channels	4-channel RTD	4/8 Road TC
isolation	500VAC	
Common mode input range (Input channel to input channel)	0	
Common-mode suppression	> 120VdB@120VAC	
Input type	Module reference groundRTD(2,3or4wire connection)	Suspension thermocouple
Input range	platinum(Pt)or resistor	S,T,R,E,N,KJVoltage range: +/-80mV
Input resolution	temperature:0.1°C/0.1°F; Resistance:15The sign bit is resistive.	Temperature/Resistance:0.1°C/0.1°F
Module update time: All aisle	405ms	
Sensor wire length	Maximum 100 meters	
24V power indicator (green))	Solid light: Equipment is working properly;	
SF indicator light (red)	Solid light: Diagnostic error; Flashing light: Input range exceeded or SW disconnection detection.	

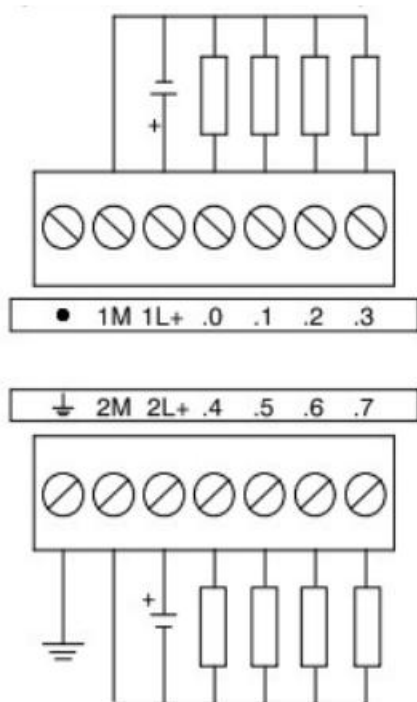
4.2Expansion module wiring diagram and configuration

Configuration notes: Some modules have configuration options in the lower right corner.DIPswitch,ONIt is closed.OFFIt can be disconnected, and this can be configured through different settings. The configuration affects all channels, and the module only reads the configuration when the power is on.

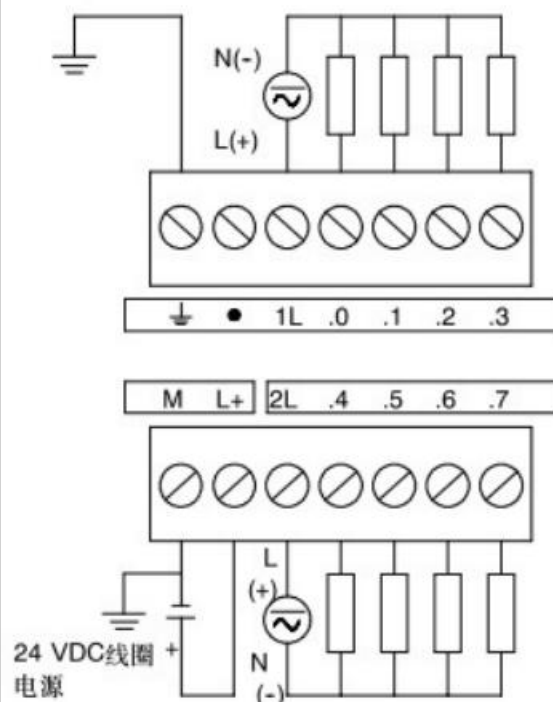
EM221 数字量扩展模块接线示意图



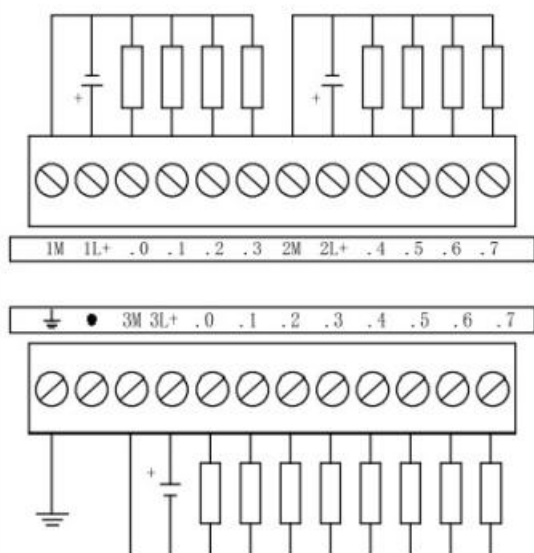
EM 222 数字量输出 8x24 VDC



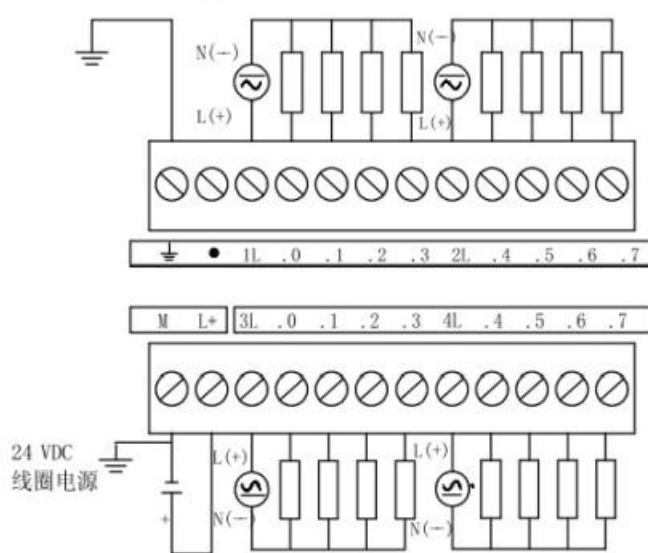
EM 222 数字量输出 8x继电器



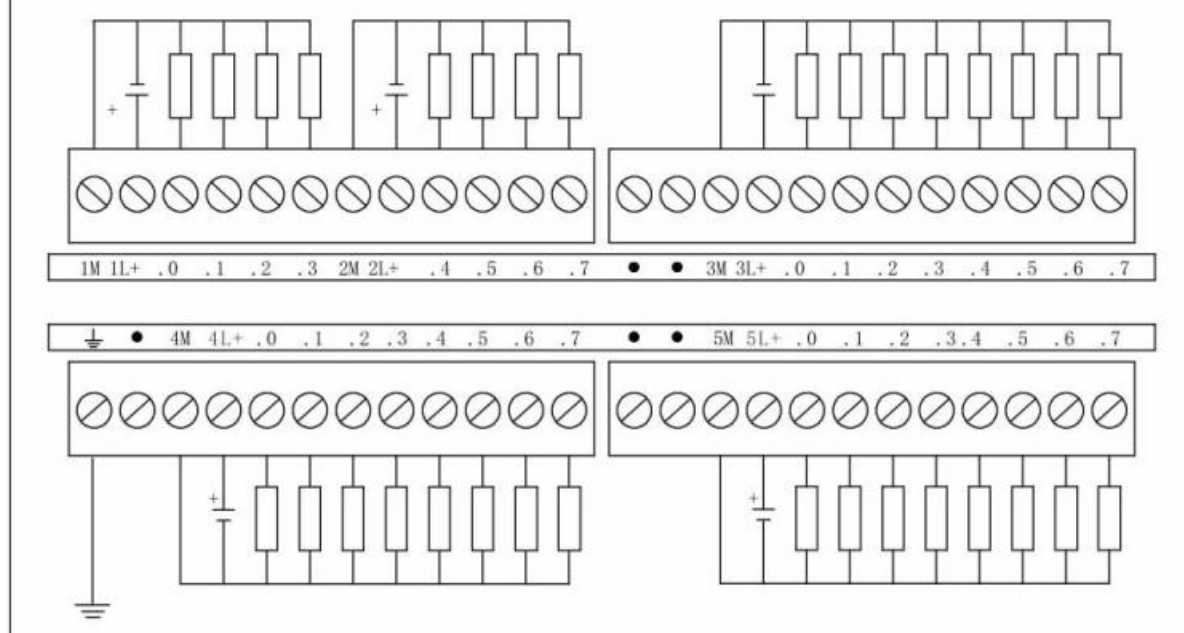
EM222 数字量输出 16x24 VDC



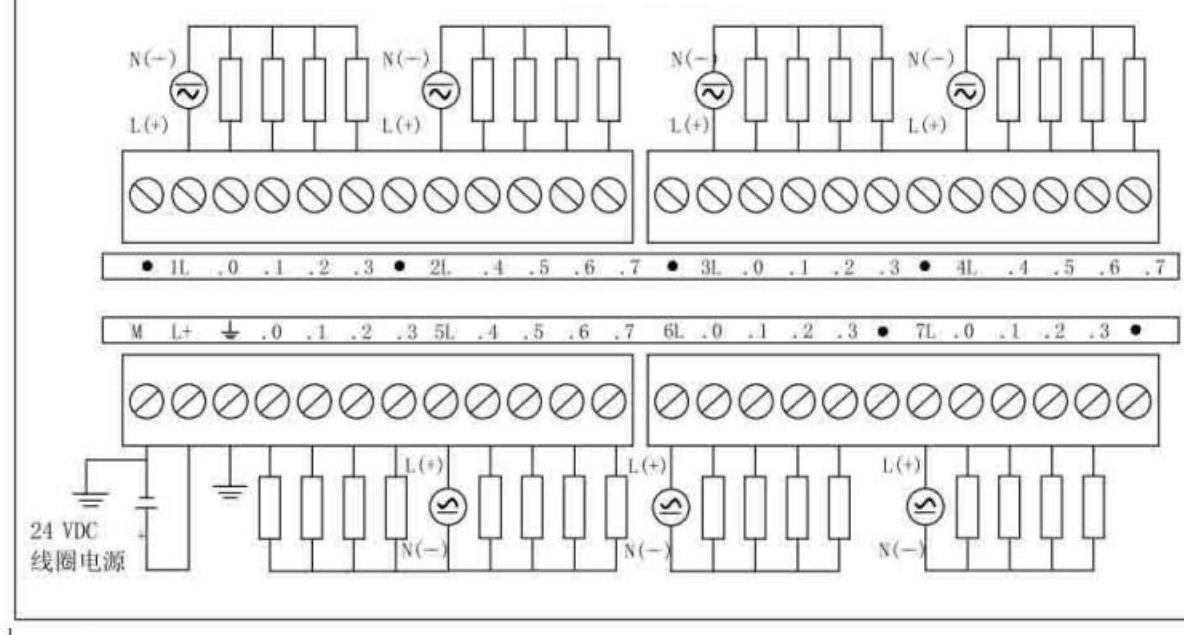
EM222 数字量输出 16x继电器

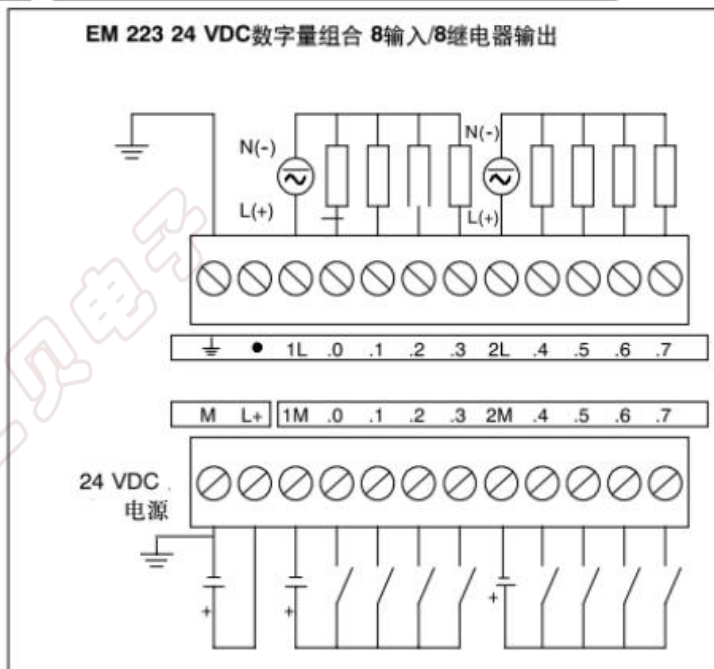
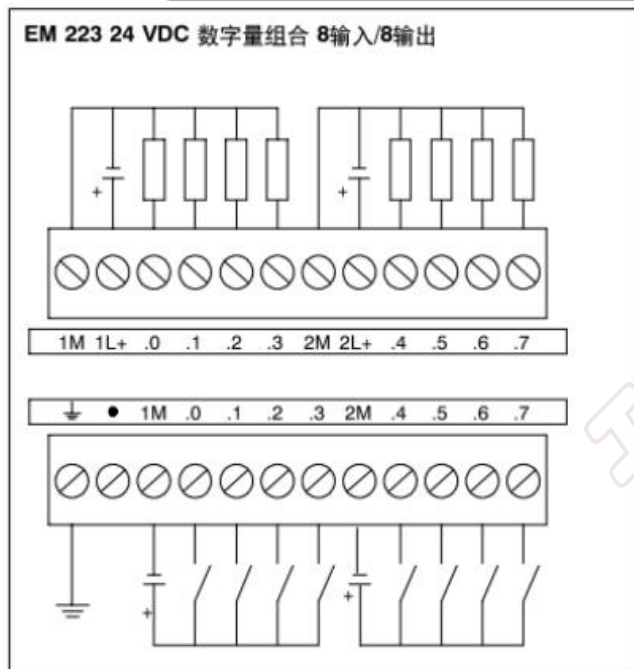
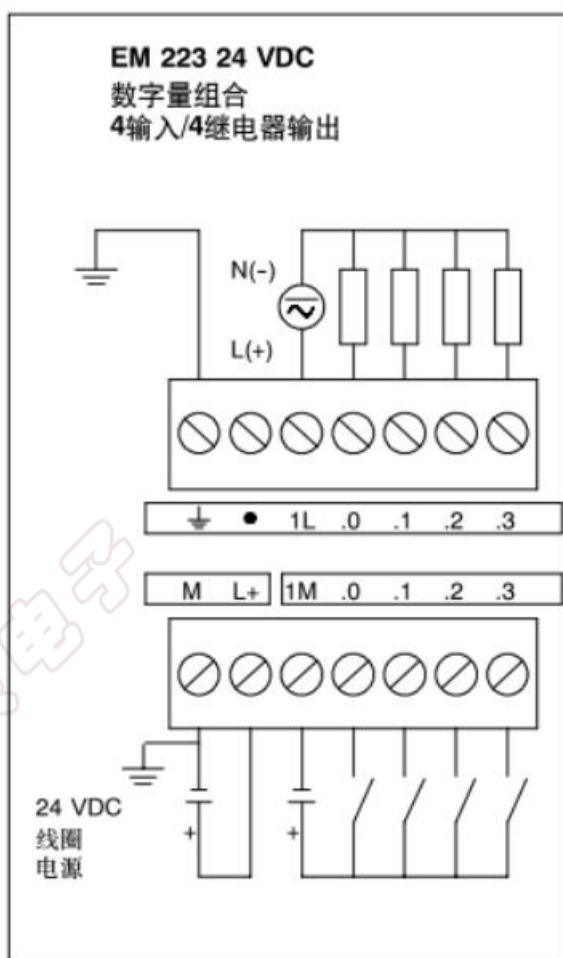
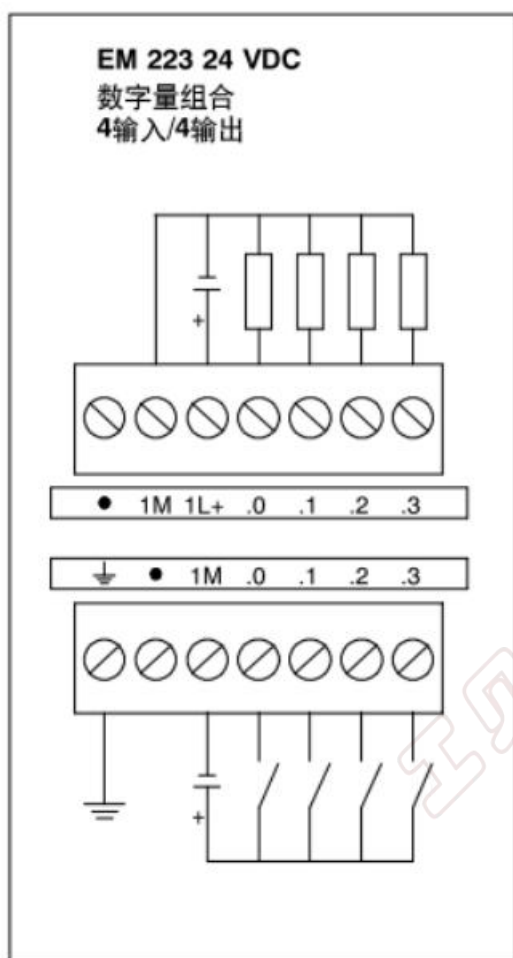


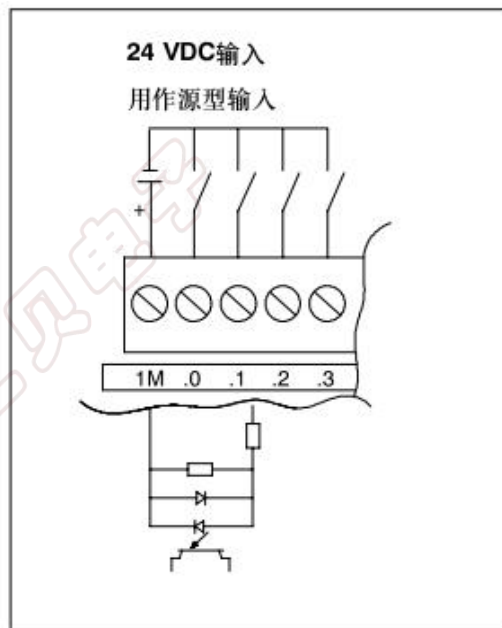
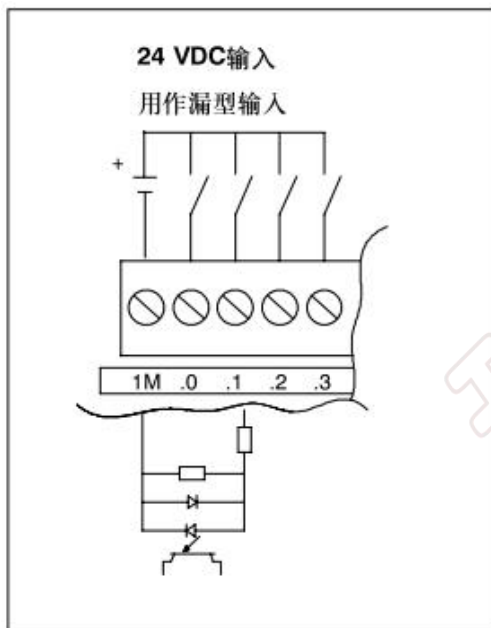
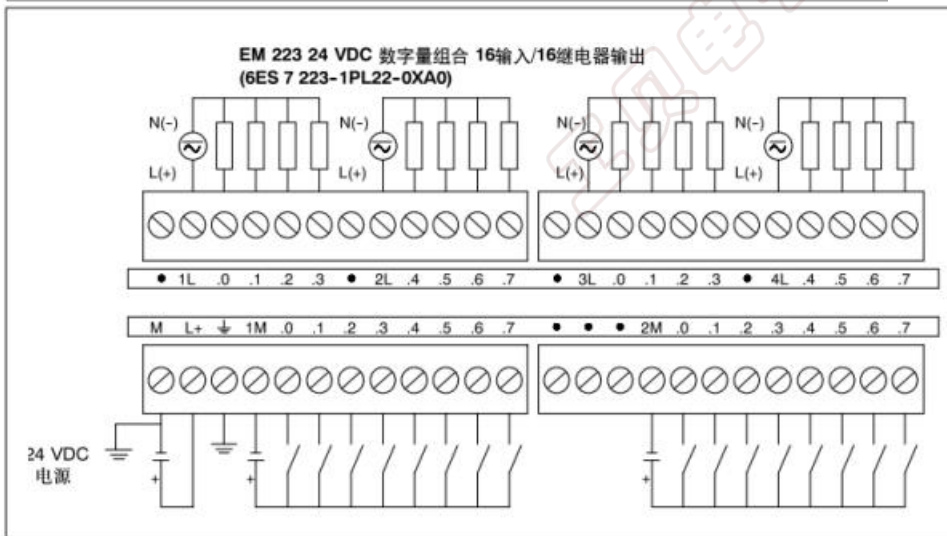
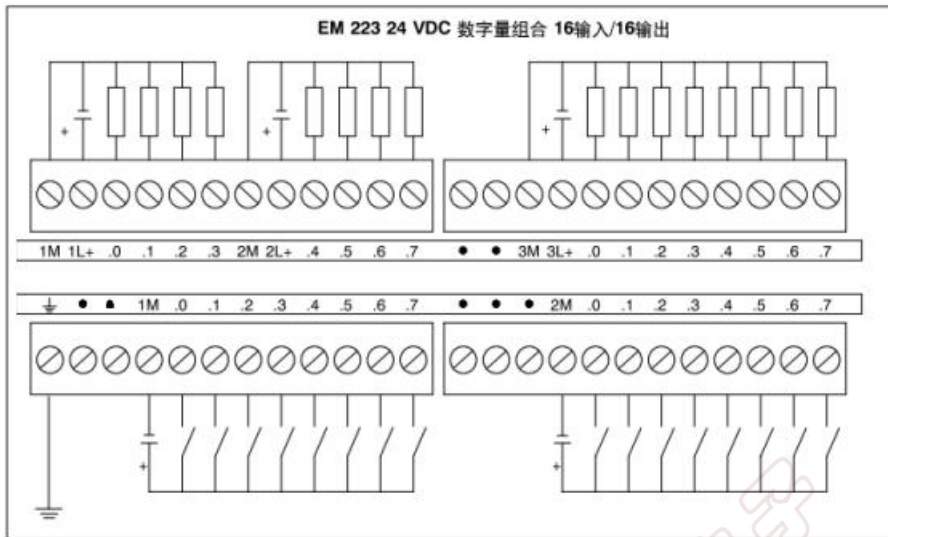
EM222 数字量输出 32x24 VDC



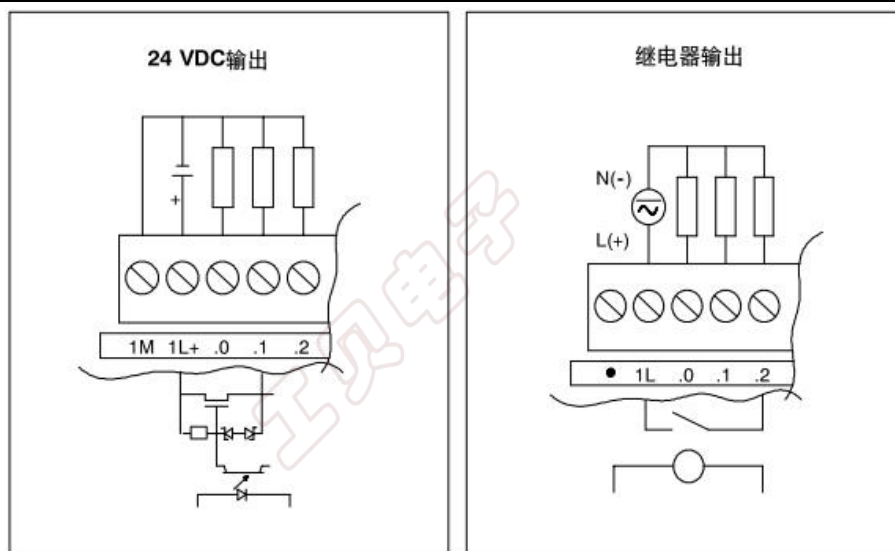
EM222 数字量输出 32x继电器







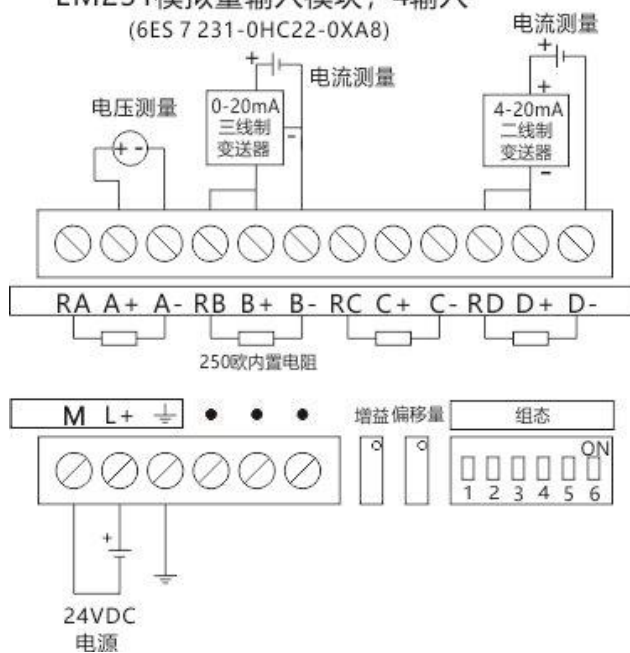
Internal structure diagram of digital input expansion module (Note: Internal bidirectional optocouplers are used to achieve sink or source connection).



Digital expansion module output structure diagram

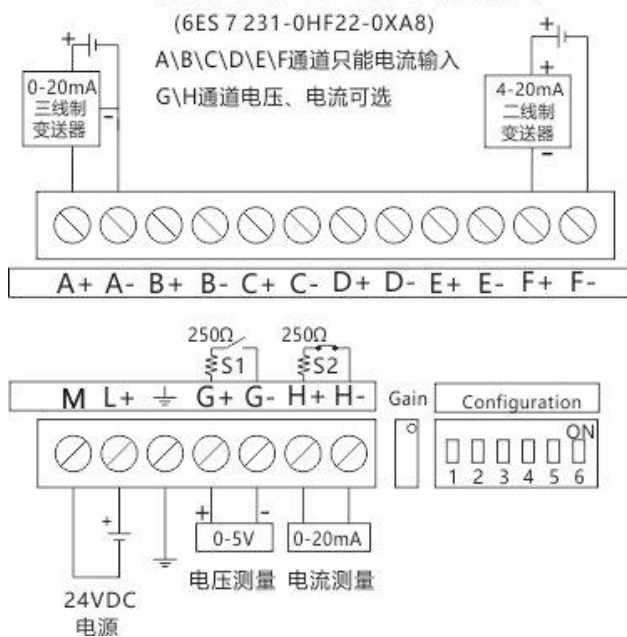
EM231模拟量输入模块, 4输入

(6ES 7 231-0HC22-0XA8)



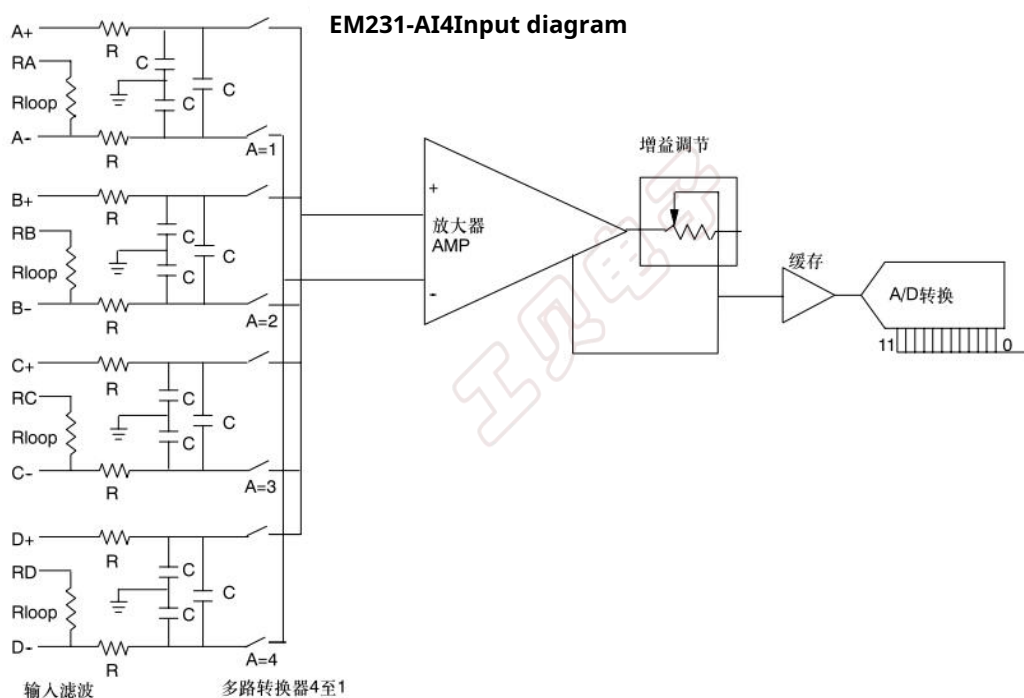
EM231模拟量输入, 8输入 (电流型)

(6ES 7 231-0HF22-0XA8)

A\B\C\D\E\F通道只能电流输入
G\H通道电压、电流可选

1. EM231-AI4 Analog quantity 4 Input module configuration:

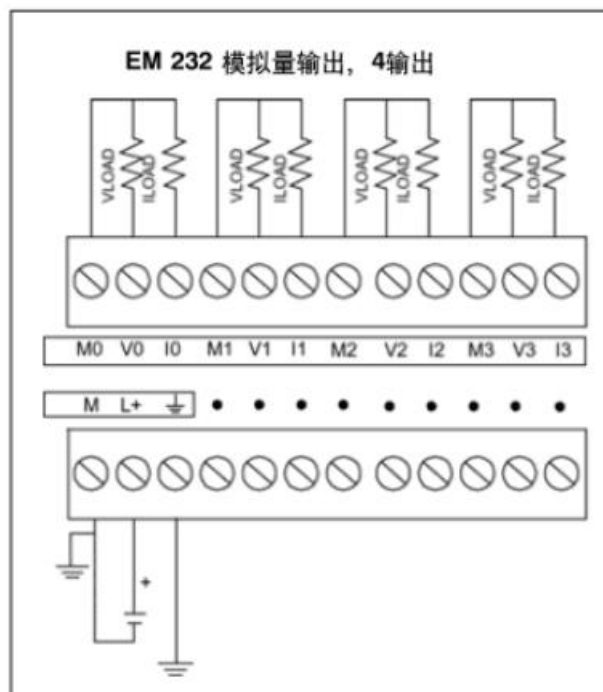
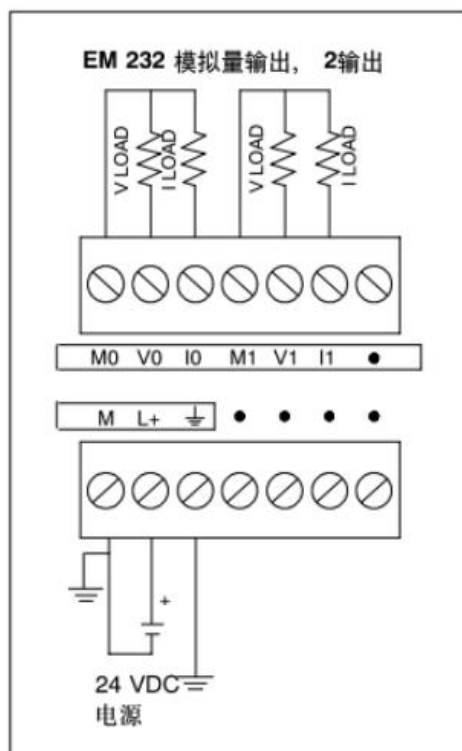
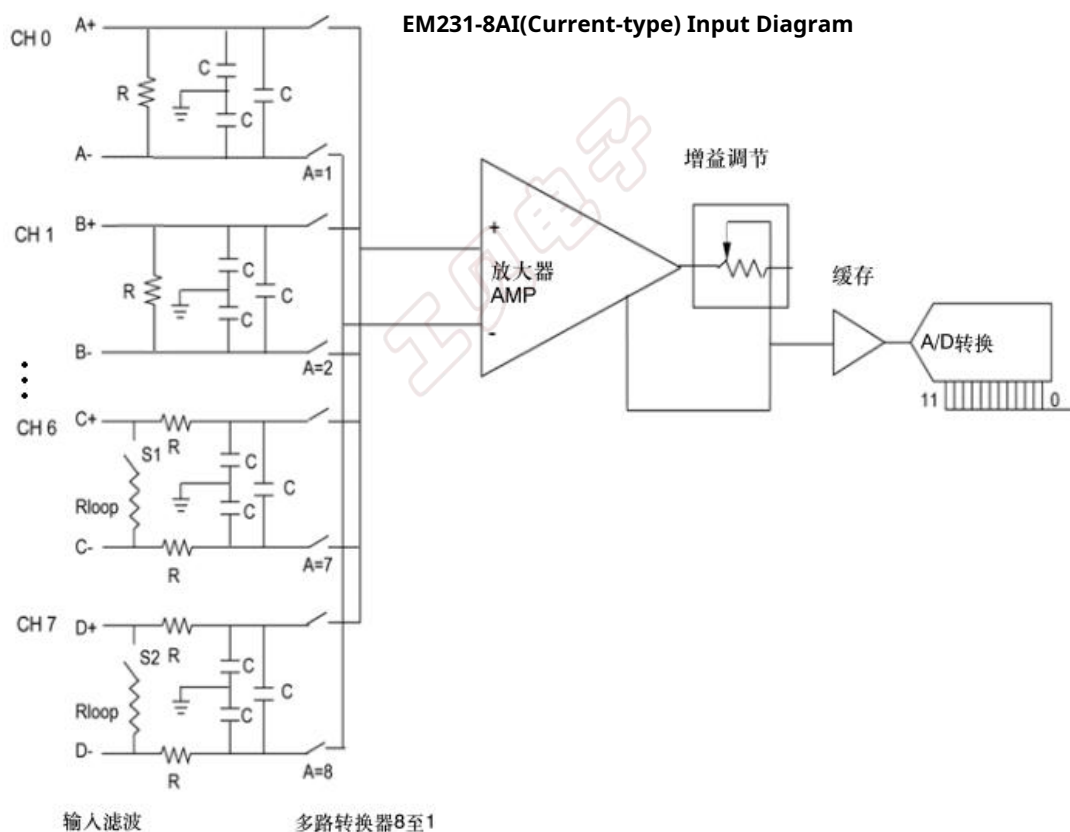
Unipolar			Full-scale input	resolution
SW1	SW2	SW3		
ON	OFF	ON	0to10V	2.5mV
	ON	OFF	0to5V	1.25mV
			0to20mA	5uA
Bipolar			Full-scale input	resolution
SW1	SW2	SW3		
OFF	OFF	ON	±5V	2.5mV
	ON	OFF	±2.5V	1.25mV



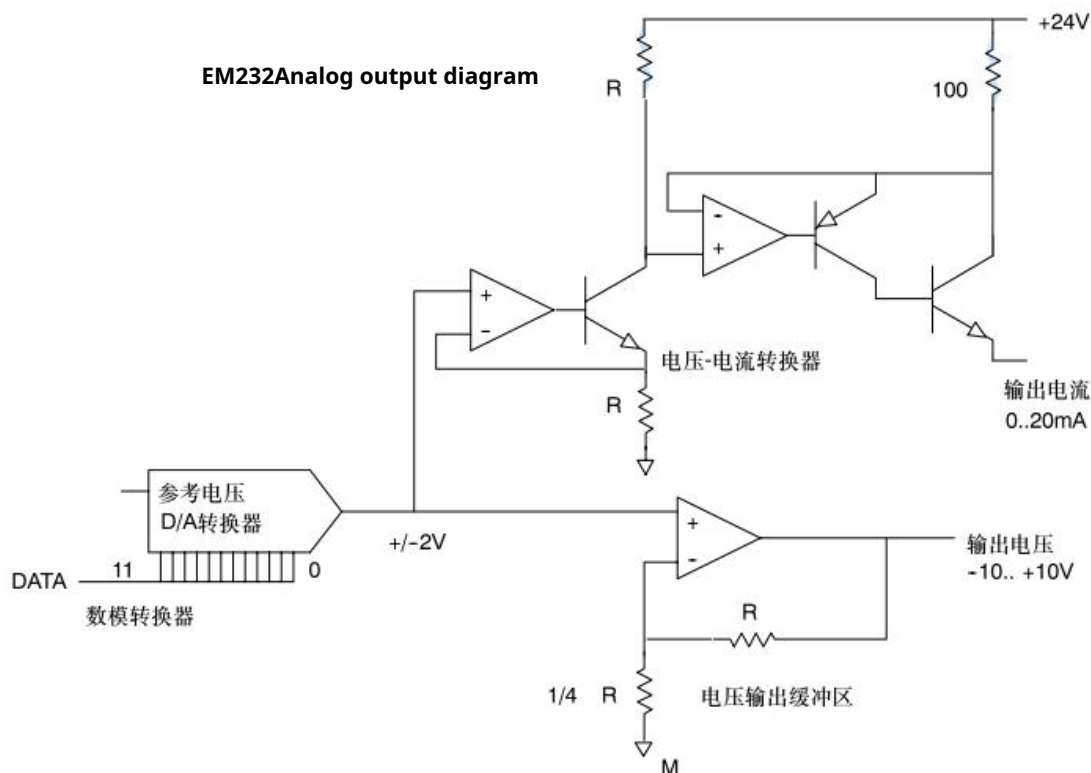
2. EM231-AI8 Analog quantity8Input (current-type) module configuration:

AFThe passage can only be 0-20mAEnter,GHBoth channels can be configured for voltage or current input.

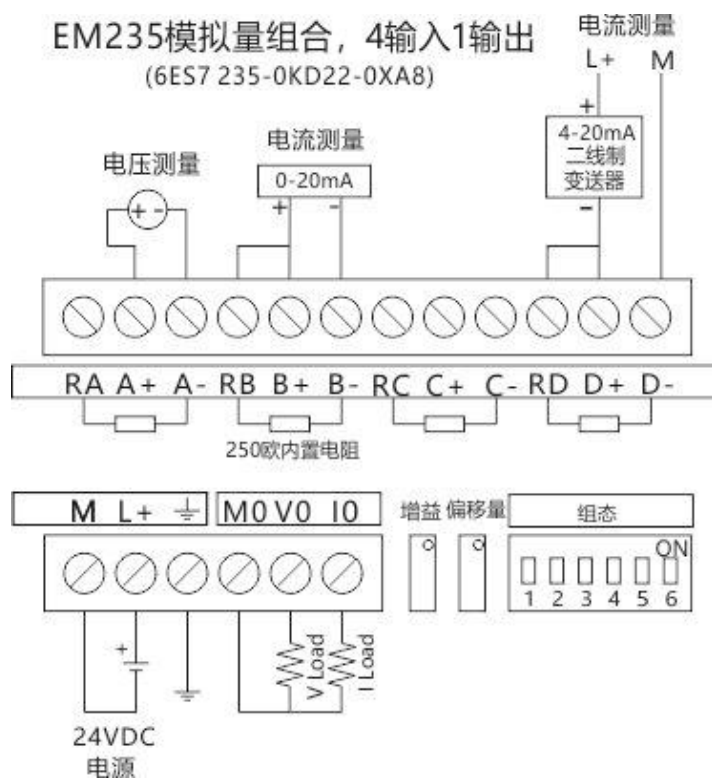
SW1	SW2	SW3	SW4	SW5	SW6	aisle	Full-scale input	resolution
ON	ON	ON	ON	OFF	—	AF	0to20mA	5uA
						G,H	0to20mA	5uA
OFF	OFF	ON	ON	OFF	—	AF	0to20mA	5uA
						G,H	0to5V	1.25mV
OFF	OFF	ON	OFF	ON	—	AF	Disable	—
						G,H	0to10V	2.5mV
OFF	OFF	OFF	OFF	ON	—	AF	Disable	—
						G,H	±5V	2.5mV
OFF	OFF	OFF	ON	OFF	—	AF	Disable	—
						G,H	±2.5V	1.25mV



EM232Analog output diagram



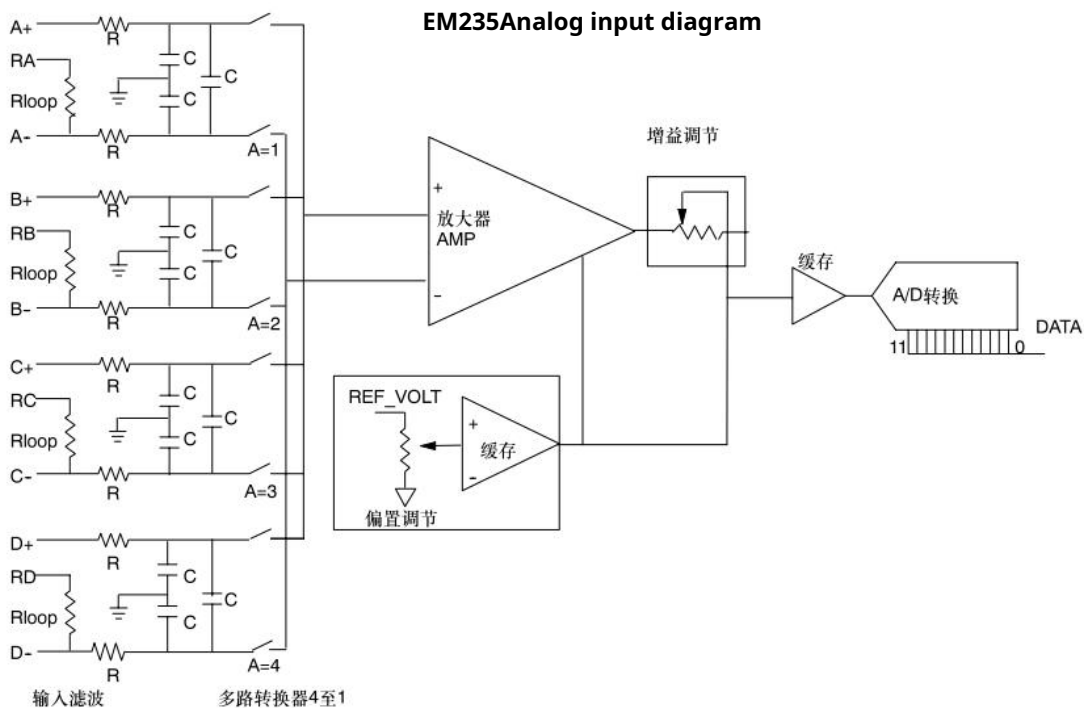
EM235模拟量组合, 4输入1输出
(6ES7 235-0KD22-0XA8)

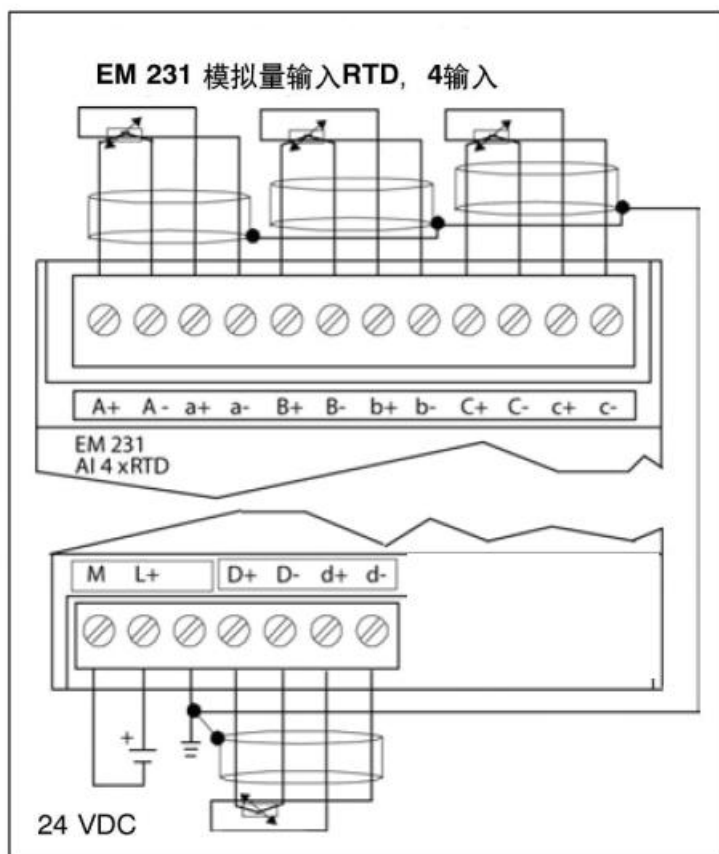


3. EM235-A4AQ1 Analog quantity 4 enter 1 Output module configuration:

Unipolar						Full-scale input	resolution
SW1	SW2	SW3	SW4	SW5	SW6		
ON	OFF	OFF	ON	OFF	ON	0to50mV	12.5μV

OFF	ON	OFF	ON	OFF	ON	0to100mV	25 μ V
ON	OFF	OFF	OFF	ON	ON	0to500mV	125 μ V
OFF	ON	OFF	OFF	ON	ON	0to1V	250 μ V
ON	OFF	OFF	OFF	OFF	ON	0to5V	1.25mV
ON	OFF	OFF	OFF	OFF	ON	0to20mA	5 μ A
OFF	ON	OFF	OFF	OFF	ON	0to10V	2.5mV
Bipolar						Full-scale input	resolution
SW1	SW2	SW3	SW4	SW5	SW6		
ON	OFF	OFF	ON	OFF	OFF	± 25 mV	12.5 μ V
OFF	ON	OFF	ON	OFF	OFF	± 50 mV	25 μ V
OFF	OFF	ON	ON	OFF	OFF	± 100 mV	50 μ V
ON	OFF	OFF	OFF	ON	OFF	± 250 mV	125 μ V
OFF	ON	OFF	OFF	ON	OFF	± 500 mV	250 μ V
OFF	OFF	ON	OFF	ON	OFF	± 1 V	500 μ V
ON	OFF	OFF	OFF	OFF	OFF	± 2.5 V	1.25mV
OFF	ON	OFF	OFF	OFF	OFF	± 5 V	2.5mV
OFF	OFF	ON	OFF	OFF	OFF	± 10 V	5mV





4. EM231-RTD4temperature4enterRTDModule configuration:

SW1	SW2	SW3	SW4	SW5	RTDtype	Measurement range	Reading range
0	0	0	0	0	PT1	600°C	- 2000~6000(0.1°C RP)
0	0	0	0	1	PT2	600°C	- 2000~6000(0.1°C RP)
0	0	0	1	0	PT5	600°C	- 2000~6000(0.1°C RP)
0	0	0	1	1	PT10	600°C	- 2000~6000(0.1°C RP)
1	0	1	0	0		000Ω	0-10000 (3Ω RP)
1	1	1	1	1	600Ω F.S.	0-600Ω	0-6000 (0.2Ω RP)

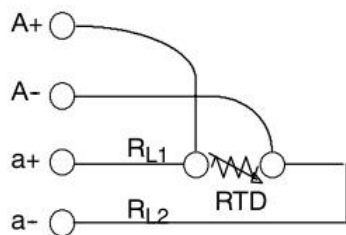
Note ① FS (full scale) Full scale

② RP (resolving power) resolution

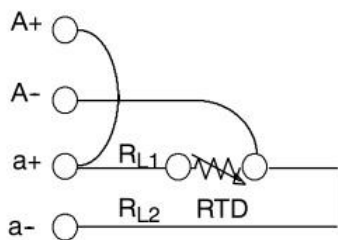
③ 3850 It is a temperature coefficient, and it is also the most commonly used one on the market.

SW6	0	Positive calibration (+) 3276.75 °C	When the line is disconnected or the value is outside the range, the indicator shows the positive maximum value.
	1	Negative calibration (-) 3276.85 °C	When the line is disconnected or the value is outside the range, the indicator shows the negative maximum value.
SW7	0	Celsius temperature °C	The conversion between Celsius and Fahrenheit temperatures takes place internally.
	1	Fahrenheit temperature °F	
SW8	0	3Wire	RTD The wiring between the module and the sensor is 3 This method (as shown in the image below) is precise.
	1	2Wire or 4Wire	The highest degree is 4 The lowest level is wired. 2Wire system.

RTD 4线制接法 (精度最高)

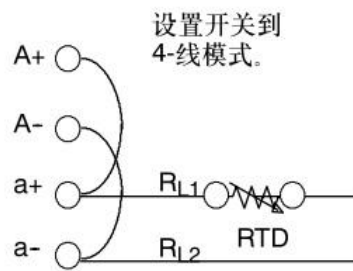


RTD 3线制接法



如果 $R_{L1}=R_{L2}$, 误差最小。

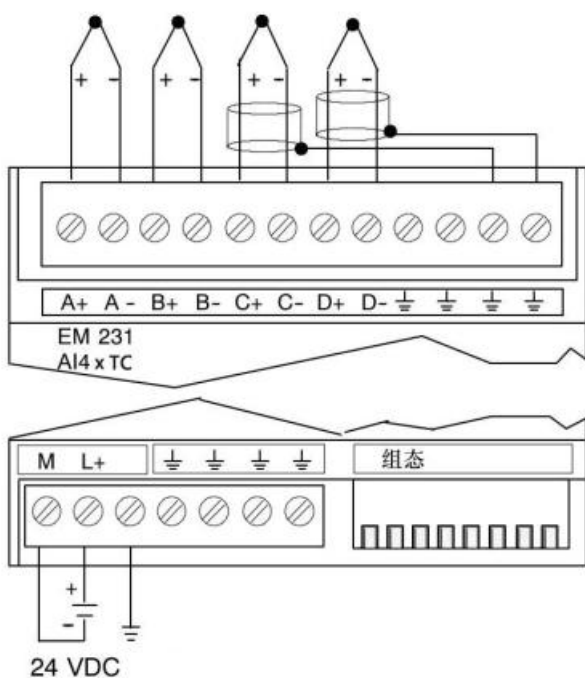
RTD 2线制接法



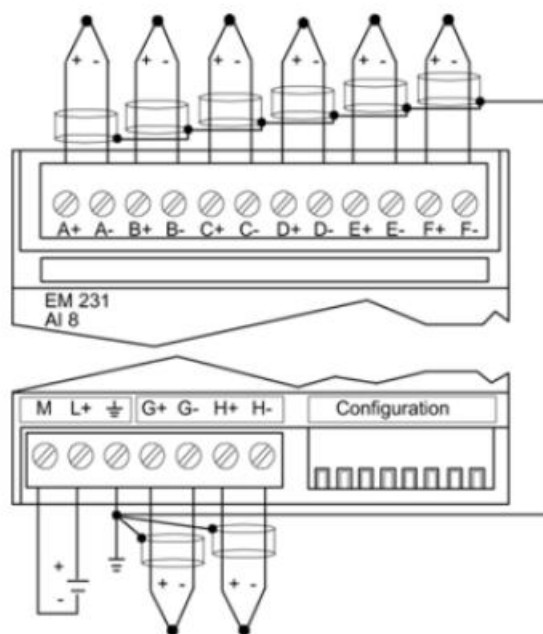
$R_{L1}+R_{L2}$ =误差

注意: R_{L1} = a+端子到RTD的引线电阻
 R_{L2} = a-端子到RTD的引线电阻

EM 231模拟输入热电偶, 4输入



EM 231 模拟量输入热电偶, 8输入



5. EM231-TC4/TC8temperature4/8enterTCModule configuration:

SW1	SW2	SW3	Resistance temperature detector (RTD) type	Measurement range	Reading range
0	0	0	J(default)	- 210℃~1200℃	- 2100~12000
0	0	1	K	- 270℃~1372℃	- 2700~13720
0	1	0	T	- 270℃~400℃	- 2700~4000
0	1	1	E	- 270℃~1000℃	- 2700~10000
1	0	0	R	- 50℃-1768℃	- 500-17680
1	0	1	S	- 50℃-1768℃	- 500-17680
1	1	0	N	- 270℃~1300℃	- 2700~13000

1	1	1	+/-80mV	- 80mV~80mV	- 800~800
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Note ①FS (full scale)Full scale

② RP (resolving power)resolution

② 3850It is a temperature coefficient, and it is also the most commonly used one on the market.

SW5	0	Positive calibration (+)3276.75pend)	When the line is disconnected or the value is outside the range, the indicator shows the positive maximum value.
	1	Negative calibration (-3276.85pend)	When the line is disconnected or the value is outside the range, the indicator shows the negative maximum value.
SW6	0	Enable	Enabling can25uACurrent injection into the input terminal can complete the wire breakage detection.
	1	Disable	Test.
SW7	0	Celsius temperature °C	The conversion between Celsius and Fahrenheit temperatures takes place internally.
	1	Fahrenheit temperature°F	
SW8	0	Cold end compensation enabled	Cold junction compensation is necessary when using thermocouples.
	1	Cold end compensation disabled	

4.4Analog input calibration

Note: Calibration adjustments will affect all user input channels.

Calibration steps:

1.Disconnect the module power supply and switch it off via configuration.

2.ConnectCPUand module power supply,

3.Read the measurement values from the input channel, and

Count until the reading is0.

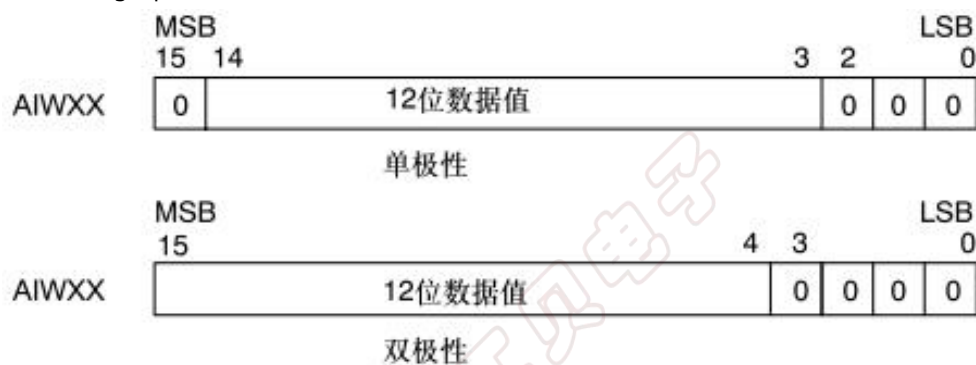
4.Apply the full-scale signal to the input terminal.

until the reading is32000.

5.Repeat the bias and gain as needed.

4.3Analog input/output data format

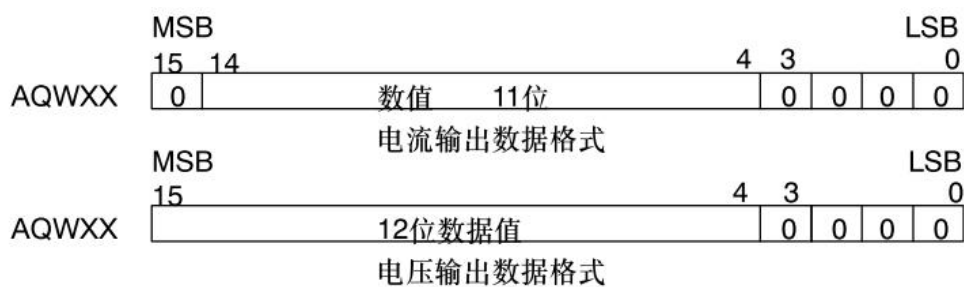
4.3.1Analog input data format



hint:

Analog-to-digital converter12The bit readings are left-aligned.MSBIt is the sign bit: zero indicates a positive data value. In unipolar format,3A continuous0MakeADCEach change in count value1The data word is in8The unit of variation is used. In the unipolar format,4A continuous0MakeADCEach change in count value1The data word is in16The change is in units.

4.3.2Analog input data format

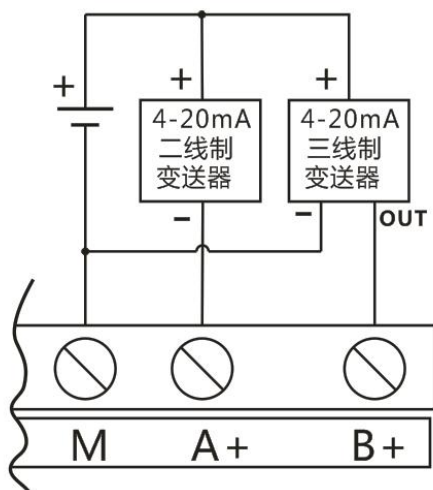


hint:

The number of bits in the analog output is 12. Left-aligned MSB is the sign bit. 0 represents positive numbers, 1 represents negative numbers.

The output voltage and output current are simultaneously affected by one AQWXX Controlled.

5.Transmitter wiring diagram



Note: Before connecting a current signal, you should set the input analog signal DIP switch Dial to Current input mode.

6.Transistor output internal diagram

