

Smart economical PLC and

Smart Economical Remote IO

User Manual 251210



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1.Product Selection

The Smart Economy series products are divided into three types: PLC main unit, IO head unit, and expansion modules. A PLC main unit plus expansion modules can form a Smart PLC system.

An I/O head unit plus an expansion module can be used to form a remote I/O system.

PLC main unit	Digital quantity	Analog quantity	485 mouths	network port	Extended Module	signal board	SD card	Configuration selection	size								
GR10XP	6 inputs, 4 outputs (relay)	2 in, 1 out	Route 1	Route 1	support	Not supported	support	SR20	95×108×35								
GT10XP	6 inputs, 4 outputs	2 in, 1 out						ST20									
GR14XP	8 inputs, 6 outputs (relay)	2 in, 1 out						SR20									
GT14XP	8 inputs, 6 outputs	2 in, 1 out						ST20									
GR20	12 inputs, 8 outputs from relays	-	Route 2					Route 1	support	Not supported	support	SR20	125×108×35				
GT20	12 inputs, 8 outputs	-										ST20					
GR20XP	12 inputs, 8 outputs from relays	2 in, 1 out										SR20					
GT20XP	12 inputs, 8 outputs	2 in, 1 out										ST20					
GR24XP	14 inputs, 10 outputs	2 in, 1 out	Route 2									Route 1	support	Not supported	support	SR30	150×108×35
GT24XP	14 inputs, 10 outputs	2 in, 1 out														ST30	
GR30	18 inputs, 12 outputs from relays	-														SR30	
GT30	18 inputs, 12 outputs	-														ST30	
GR30XP	18 inputs, 12 outputs from relays	4 in, 2 out														SR30	180×116×35
GT30XP	18 inputs, 12 outputs	4 in, 2 out														ST30	

GR40	24 inputs, 16 outputs (relay)	-						SR40	
GT40	24 inputs, 16 outputs	-						ST40	

IO head	describe	size
Gnet IO	Ethernet communication, supporting S7 Ethernet protocol and Modbus TCP protocol;	35x108x35
G485 IO	485 port communication, supporting Modbus RTU slave protocol;	35x108x35

Digital expansion module	describe	Configuration selection	size
GM DE08-8DI	8 Digital Inputs	EM DE08	75x108x35
GM DE16-16DI	16 Digital Inputs	EM DE16	95x108x35
GM DR08-8DQ	8 Relay Output	EM DR08	75x108x35
GM QR16-16DQ	16 Relay Output	EM QR16	95x108x35
GM QT16-16DQ	16 transistor output	EM QT16	95x108x35
GM DR16-8DI8DR	8 digital inputs and 8 relay outputs	EM DR16	95x108x35
GM DR32-16DI16DR	16 digital inputs; 16 relay outputs	EM DR32	150x108x35
GM DT16-8DI8DT	8 digital inputs, 8 transistor outputs	EM DT16	95x108x35
Analog expansion module	describe	Configuration selection	size
GM AE04-4AI	4. Input (supports voltage or current)	EM AE04	75x108x35
GM AE08-8AI	8 Inputs (Supports voltage or current)	EM AE08	95x108x35
GM AQ04-4AQ	4. Output (supports voltage or current)	EM AQ04	75x108x35
GM AQ08-8AQ	8. Output (supports voltage or current)	EM AQ04	150x108x35
GM AM06-4AI2AQ	4 inputs, 2 outputs (supports voltage or current)	EM AM06	95x108x35
GM AM12-8AI4AQ	8 inputs, 4 outputs (supports voltage or current)	EM AM06	150x108x35
GM AM16-8AI8AQ	8 inputs and 8 outputs (supports voltage or current)	EM AM06	150x108x35
Temperature acquisition expansion module	describe	Configuration selection	size
GM AN04-4NTC	Temperature acquisition via 4-channel NTC (10K, 3950)	EM AR04	75x108x35
GM AN08-8NTC	Temperature acquisition via 8-channel NTC (10K, 3950)	EM AR04	95x108x35
GM AR04-4PT100	Temperature acquisition 4-channel PT100	EM AR04	75x108x35
GM AR08-8PT100	Temperature acquisition 8-channel PT100	EM AR04	95x108x35

2. PLCThe host has built-in analog signal

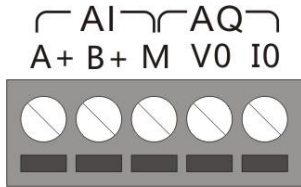
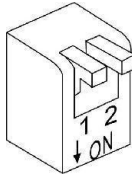
Host models ending in "XP" indicate that the host has built-in analog input channels. The analog input starting register address begins at AIW0.

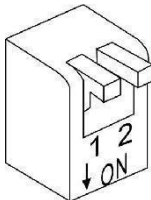
For example, a GR30XP host with 4 analog inputs would have starting addresses AIW0, AIW2, AIW4, and AIW6, which can be used directly without configuration. The register data range is 0~27648, corresponding to 0~10V or 0~20mA.

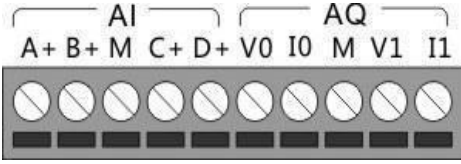
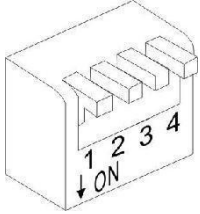
The analog output starting register address begins at AQW0. For example, if the GR30XP host has two analog outputs, the starting addresses would be AQW0 and AQW2. The register data range is 0~27648, corresponding to outputs of 0~10V and 0~20mA. The maximum register value is 28200, corresponding to 20.4mA and 10.2V.

Analog filter coefficients:The host computer's built-in analog signal processing unit allows for setting the filtering coefficient. For rapidly responding analog signals, such as instantaneous pressure changes, the filtering coefficient can be reduced. For signals requiring stable acquisition and strong anti-interference capabilities, such as temperature measurements, the filtering coefficient can be increased. The filtering coefficient is stored in special registers SMB1850~SMB1853, with a value range of 0~3. 0 corresponds to minimum filtering, and 3 corresponds to maximum filtering time.

The default value after restarting is 2. Each register corresponds to one channel. For example, the third analog input of the GR30XP uses SMB1852 with values from 0 to 3 to achieve different levels of filtering. Note: Registers are not saved after power loss and need to be reassigned each time power is restored.

GR/T10XP Analog Terminals	Terminal Definition		DIP switch settings
	AI	A+: Analog input channel 1.	 Analog input DIP switch, one A DIP switch corresponds to a pass The path leads downwards to the current input. Switch to voltage input enter.
		B+: Analog input channel 2.	
		M: Common terminal for analog input.	
	AQ	V0: Analog output 0-10V output.	
		I0: Analog output 0-20mA.	
Note: Analog inputs correspond to AIW0 and AIW2. The analog output corresponds to AQW0, with voltage and current being the same. The output is controlled by a register.			

GR/T20XP, GR/T24XP Analog Terminals	Terminal Definition		DIP switch settings
AI AQ A+ M B+ V0 I0 M	AI	A+: Analog input channel 1.	 Analog input DIP switch, one bit The code corresponds to a channel, and so on. Current input, switch to electric input. Input pressure.
		M: Common terminal for analog input.	
		B+: Analog input channel 2.	
	AQ	V0: Analog output 0-10V output.	
		I0: Analog output 0-20mA.	
M: Common terminal for analog output.			
Note: Analog inputs correspond to AIW0 and AIW2. Analog output corresponds to AQW0, voltage and current. The simultaneous output of the stream is controlled by a single register.			

GR/T30XP Analog Terminals	Terminal Definition		DIP switch settings
	AI	A+: Analog input channel 1.	
		B+: Analog input channel 2.	
		M: Common terminal for analog input.	
		C+: Analog input channel 3.	
		D+: Analog input channel 4.	
	AQ	V0: Analog output 1 channel voltage output.	Analog input DIP switch One DIP switch corresponds to one The channel, with current flowing downwards. Input, switch upwards to
		I0: Analog output 1 channel current output.	
		M: Common terminal for analog input/output.	
		V1: Analog output 2-channel voltage output.	
		I1: Analog output 2-channel current output.	

	Note: Analog inputs correspond to AIW0 and AIW2. The analog output corresponds to AQW0, where voltage and current are simultaneously... The output is controlled by a register.	Voltage input.
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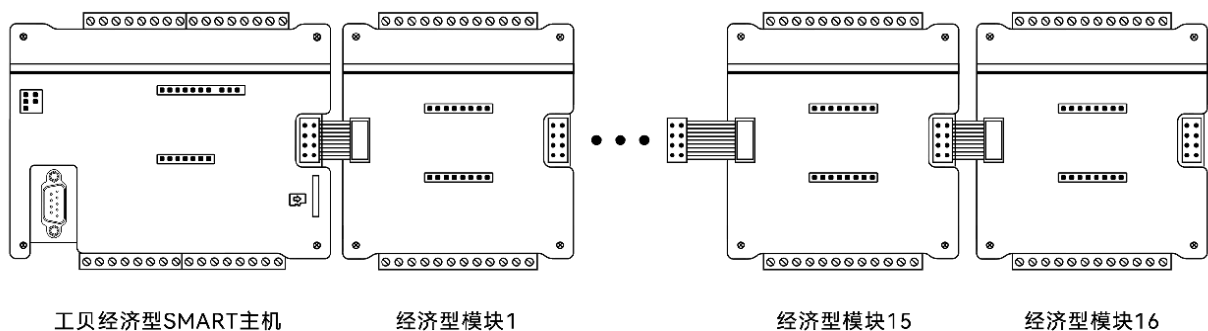
3. PLCMain unit indicator light status

Classification	logo	color	meaning
PLC Running status indicator lights	RUN	green	Constantly lit: Running
	STOP	yellow	Solid: Stopped; Flashing: Forced position is active.
	ERROR	red	Always on: Fault
Network port status indicator lights	LINK	green	Changliang: Connection established successfully
	Rx/Tx	yellow	Blinking: Data is being sent and received.

Indicator light status	Common State Analysis
STOP light (yellow light always on)	① If the downloaded program does not run, click the RUN button in the S7 software; ② If it does not run after power-on, check the system block, start it, and select RUN; ③ If the yellow light illuminates during operation, open the information table to check for fatal and non-fatal errors. ; ④ If the S7 software does not run even after clicking the RUN button, check the system blocks, , enable missing hardware and enable hardware configuration errors, and try again.
STOP light flashing yellow	① If there are forced points, click "Debug" in the menu bar, then click "Cancel All Forced Points"; ② The SD card was not removed.
Three indicator lights flashing	① If the power supply voltage is below 18V, check the power supply. ② The "Flash Indicator Light" button was clicked on the communication interface.

4. PLCSystem extension modules use

GB Smart Economy Expansion Modules plug directly into GB Smart Economy Mainframes and can expand up to 16 modules.



4.1 For the first six expansion modules, they can be configured directly in the system block of the S7 software. When selecting, simply treat GM in the product model as EM, and allocate the starting address according to the configuration list. For models not listed in the configuration list, select the corresponding one below.

GM AM04 directly selects EM AM03; GM AM08 directly selects EM AM06;
 GM AM12 directly selects EM AM06; GM AM16 directly selects EM AM06;
 GM AQ08 directly selects EM AQ04; GM AR08 directly selects EM AR04; GM
 AN04 directly selects EM AR04; GM AN08 directly selects EM AR04; GM AT04
 directly selects EM AT04.

4.2 After that, expansion modules 7-16 do not need to be configured in the software; their addresses are automatically mapped into the CPU

host: the starting address of digital inputs starts from I700.0;

Digital output addresses start from Q700.0;

Analog input addresses start from IW800;

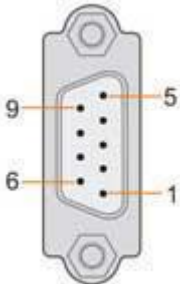
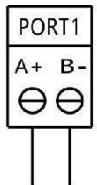
Analog output addresses start from QW800;

All addresses are arranged compactly. You can also quickly search by scanning the QR code below.



Special registers							
IW630	Reserved	ID640	Module 2 Model	ID660	Module 7 Model	ID680	Module 12 Model
IW632	Diagnostic alarm codes	ID644	Module 3 Model	ID664	Module 8 Model	ID684	Module 13
IB634	Diagnostic alarm device ID	ID648	Module 4 Model	ID668	Module 9	ID688	Module 14
IB635	Disconnection error device ID	ID652	Module 5 Model	ID672	Module 10	ID692	Module 15
ID636	Module 1 Model	ID656	Module 6 Model	ID676	Module 11 Model	ID696	Module 16

5. PLCof485Communication interface definition

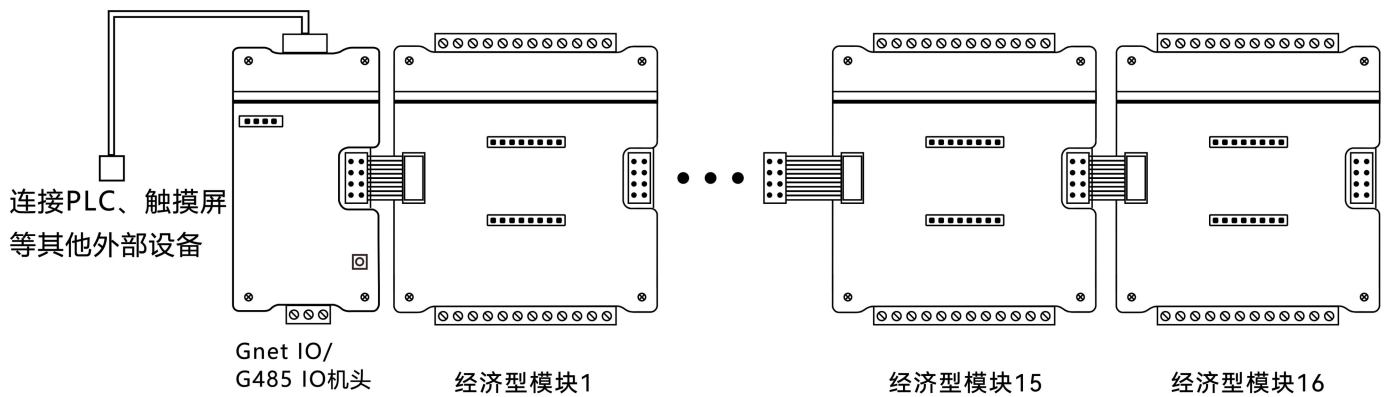
PORT0interface		PORT1interface											
	1: Chassis grounding		PORT1only Support section Model, only supports hold485achievement Yes. When using... Need to be in the department Block configuration SB CM01 Use as shown on the right picture										
	2:+24Vland												
	3:RS485SignalA												
	4Send applicationRTS												
	5:+5Vland												
	6:+5V												
	7:+24V												
	8:RS485SignalB												
9:NC(No answer)													
Housing: Grounded		A+:RS485 SignalA	系统块 <table><tr><th>模块</th><th>版本</th></tr><tr><td>CPU</td><td>CPU ST20 (DC/DC/DC)</td></tr><tr><td>SB</td><td>SB CM01 (RS485/RS232)</td></tr><tr><td>EM 0</td><td></td></tr><tr><td>EM 5</td><td></td></tr></table> 注意：仅支持 RS485 端口 RS485 此设备可组态为 RS232 或 RS485 类型 RS485 地址 2 波特率 9.6 Kbps	模块	版本	CPU	CPU ST20 (DC/DC/DC)	SB	SB CM01 (RS485/RS232)	EM 0		EM 5	
模块	版本												
CPU	CPU ST20 (DC/DC/DC)												
SB	SB CM01 (RS485/RS232)												
EM 0													
EM 5													
		B-:RS485 SignalB											

Note: In the table 485 Interface definition A, B Is according to 485 Standard definition .

Note: In the table 485 Interface definition A, B Is according to 485 Standard definition .

6.remoteIOsystem

IOThe head unit can be connected to an expansion module to form a remote control system.IOThe system, with a single head unit, can be expanded to a maximum of16One extension module. See the image below;



- IOThe system requires no programming; it only needs configuration to be used. Gnet IO Configure via the built-in webpage in the nose cone. G485 IO The head unit requires configuration software settings.
- Gnet IO The unit has a network port, allowing connection to devices with network ports. For example... Smart host, 1200 host, 1500 The main unit, a touchscreen with a network port, and other components with network ports. PLC Wait. Support 3 Protocol:

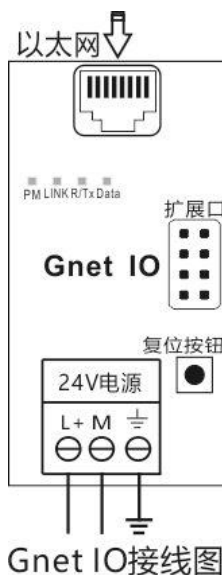
protocol1: SmartClient protocol (default protocol): Connect one end of the network cable Smart The host, the other end connected Gnet IO Machine head, Smart The host computer requires no programming. GM Module resources can be automatically mapped to Smart internal.

protocol2: 1200/1500 Client protocol: Connect one end of the network cable 1200 or 1500 The host, the other end connected Gnet IO Machine head, 1200 or 1500 The host computer requires no programming. GM Module resources can be automatically mapped to 1200 or 1500 PLC internal. **protocol3: Modbus**

TCP Server-side protocol: Connectivity Support Modbus TCP Client-side protocol devices, such as those from other brands PLC A configuration panel with a network port, configuration software for an industrial control computer or PC, or a self-written host computer software. G485 IO support Modbus RTU

- Slave protocol, specifically designed for 485 Distributed remote IO Scene design, all supported 485 Modbus RTU Devices using the master protocol can be directly connected, such as PLC Touch screens, industrial PCs, computers, etc.

6.1 Gnet IO head appearance and indicator lights



Indicator light status description		
indicator lights	describe	state
PM	Indicator Mounting Module status	Always on: Power supply is normal and the device is connected. GM Module communication is normal. blinking: and GM Module communication error.
LINK	Network port status	Flashing or constantly lit: Data exchange is taking place. Extinction: No data exchange or failure.
R/Tx	Internal (switch core) (Piece) Communication Status	Flashing or solid light: Communication is normal. Extinction: Communication failed.
Data	Instructions and remote settings Backup communication status	Flashing: Failed to connect to remote device. Always lit: Connection to remote device successful.
Reset button		
Press and hold for 12 seconds, the PM indicator light will flash rapidly, and all parameters will be restored to factory default settings. This function is useful when you forget your IP address.		

6.2 Gnet IO Headboard login page and modification IP Address

Gnet IO The device has a built-in web browser. Connect your computer to the device using a network cable and enter the browser... IP Address (factory default)

IP:192.168.2.2)This will open the login page, as shown in the image on the right. The default username and password are both...admin.



Click to log in and enter the information overview interface, as shown in the image below.



使用本产品前, 请先阅读产品使用手册:

https://jngbdz.com/file/PLC_SMART/【工贝电子】PLINK机头用户手册.pdf

远端PLC通信信息

远端PLC型号	SMART200
远端PLC地址	192.168.2.1 : 102
当前通信状态	通信断开

在线扩展模块信息

设备编号	设备类型	起始地址映射
PM01	QT16	输入: - 输出: Q700.0
PM02	AM06	输入: IW800 输出: QW800
PM03	DR16	输入: I700.0 输出: Q702.0
PM04	AM12	输入: IW808 输出: QW804

ReviseGnet IOThe noseIPAddress method, as shown in the figure below.

The screenshot shows the 'Net IO' device management platform interface. On the left, a sidebar contains the following menu items: '信息总览' (Information Overview), '参数配置' (Parameter Configuration), '系统配置' (System Configuration), '扩展模块' (Expansion Module), and '退出登录' (Logout). The '系统配置' (System Configuration) item is highlighted with a red box, and a red arrow points from it to the '设备网络配置' (Device Network Configuration) page on the right.

The '设备网络配置' (Device Network Configuration) page contains the following fields:

- Net IO机头IP地址: 192.168.2.2
- 子网掩码: 255.255.255.0
- 网关地址: 192.168.2.1
- 保存&应用 (Save & Apply) button

6.3 Gnet IO and SmartHost communication

Support connection SmartStandard main unit, supports KISmartThis is an economical desktop computer with a very simple configuration. **first step**

Modify in system configuration Gnet IO of PandSmartThe host is on the same network segment. **Step 2** In the communication configuration, select

the options shown in the image below. The image below also shows the default configuration parameters.

The screenshot shows the 'Net IO' device management platform interface. On the left, a sidebar contains the following menu items: '信息总览' (Information Overview), '参数配置' (Parameter Configuration), '系统配置' (System Configuration), '通信配置' (Communication Configuration), '扩展模块' (Expansion Module), and '退出登录' (Logout). The '通信配置' (Communication Configuration) item is highlighted with a red box.

The '通信配置' (Communication Configuration) page contains the following fields:

- 通信模式: 远程PLC通信 (Remote PLC Communication)
- 远端PLC地址: 192.168.2.1
- 远端PLC型号: SMART200
- 开关量输入区地址: I区 (Digital Input Area Address: I Zone) 700
- 开关量输出区地址: Q区 (Digital Output Area Address: Q Zone) 700
- 模拟量输入区地址: I区 (Analog Input Area Address: I Zone) 800
- 模拟量输出区地址: Q区 (Analog Output Area Address: Q Zone) 800
- 扩展设备信息区地址: I区 (Expansion Device Information Area Address: I Zone) 530
- 断线输出状态: 保持 (Break Output Status: Keep)
- 通信看门狗使能: ☒ (Communication Watchdog Enable: ☒) 60 (秒) (60 seconds)
- 输入模拟量滤波等级: 2级 (Input Analog Filter Level: 2 Level)
- 保存&应用 (Save & Apply) button

Note 1: Remote PLC address, referring to the Smart host IP address.

Note 2Zone Address:**** This refers to the starting address within the Smart host where the GM expansion module resources connected to the Gnet IO head unit are mapped. For example, if a GM DR16 (8 inputs, 8 outputs digital mixed-signal module) and a GM AM06 (4 inputs, 2 outputs analog mixed-signal module) are connected, and configured as shown in the diagram, the digital input resources of the GM DR16 are mapped to I700.0~I700.7 on the Smart host. The digital output resources are mapped to Q700.0~Q700.7. The analog input resources of the GM AM06 are mapped to IW800~IW806. The analog output resources...

The source is mapped to QW800~Q802. The Smart Master requires no programming and can directly use the mapped registers. For multiple expansion modules, the addresses are arranged in a compact manner. This mapping information can also be viewed in the "Information Overview".

Explanation 3 For Smart PLCs with firmware versions 2.4 and below, the maximum address in the I zone is IB1152, and the maximum address in the Q zone is QB1152; for firmware versions 2.5 and above, the maximum address in the I zone is IB1279, and the maximum address in the Q zone is QB1279. Do not use addresses exceeding these limits. For details, refer to the Smart PLC manual "PROFINET Process Image".

Note 4 Extended device information area address refers to the starting address where some special registers are located. Taking area I, 530, as an example in the above diagram:

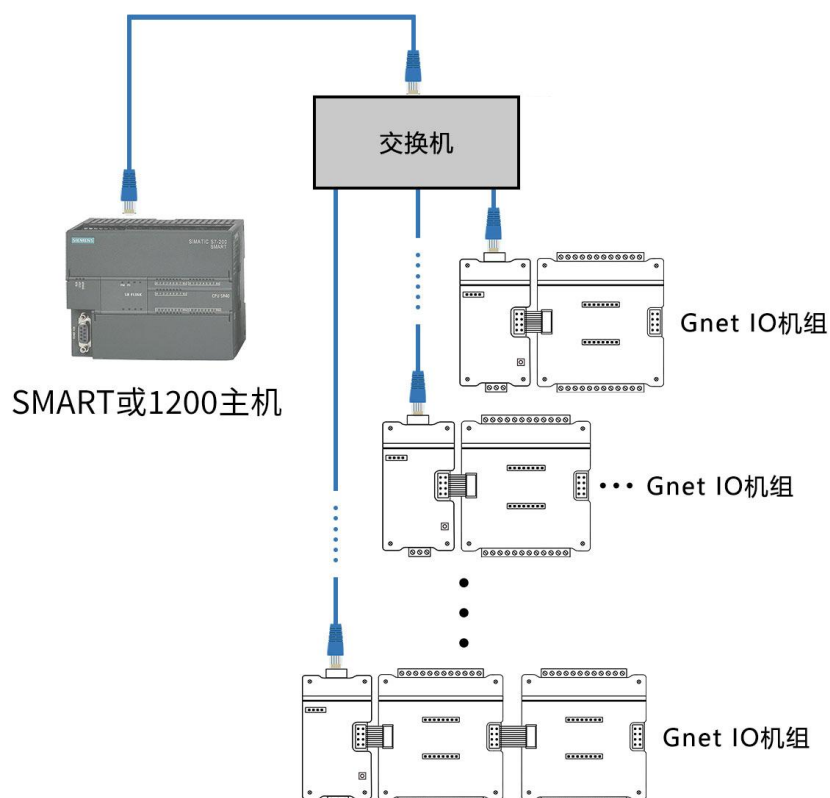
Register address	describe	Register address	describe
IW530	The heartbeat of the aircraft head, every second0,1Reversal	ID564	8Model number of extension bit module
IW532	The online status of the extension module is represented bitwise, with the most significant bit indicating the first module.For example... rear of the nose2Each module, at this timeIW602=2#1100 0000 0000 0000	ID568	9Model number of extension bit module
IW534	Number of online extension modules	ID572	10Model number of extension bit module
ID536	1The extension bit module model number is indicated by a character or...ASCIIshow	ID576	11Model number of extension bit module
ID540	2Model number of extension bit module	ID580	12Model number of extension bit module
ID544	3Model number of extension bit module	ID584	13Model number of extension bit module
ID548	4Model number of extension bit module	ID588	14Model number of extension bit module
ID552	5Model number of extension bit module	ID592	15Model number of extension bit module
ID556	6Model number of extension bit module	ID596	16Model number of extension bit module
ID560	7Model number of extension bit module		

Note 5: Disconnection output status. If communication between the Gnet IO head unit and the remote device fails, will the GM resource point maintain its previous state or reset? Note that the remote device does not include web-based debugging of the Gnet IO head unit; direct web-based manipulation of resource points is not subject to this status control.

Note 6: Communication watchdog enabled. If the Gnet IO head fails to communicate with the remote device within a set time, the Gnet IO device will automatically reconnect.

Note 7 A single Smart host can connect to multiple Gnet IO remote IO systems, as shown in the diagram below.

分布式远程IO-使用S7以太网协议



Setting up this use case is also very simple:

Step 1: Set the IP address of each Gnet IO host to be different and on the same network segment as the remote device.

Step 2: In the "Communication Configuration" interface, set the zone addresses to be different and non-overlapping.

Note: One Gnet Smart Standard or Economy host can support a maximum of 6 Gnet IO groups.

6.4 Gnet IO and 1200/1500 Host communication

Because the 1200 and 1500 use the same communication protocol, Gnet IO can communicate with either the 1200 or 1500 PLC. Usage and Gnet IO

Similar to the Smart communication method. Configuration method:

first step In the system configuration interface, change the IP address of Gnet IO and the IP address of host 1200 to be in the same network segment.

Step 2 In the communication configuration interface, simply select "1200" for "Remote PLC Model" in the "Communication Configuration" interface. Set the remote PLC address to the IP address of 1200 or 1500. For the meaning of other parameters, refer to the "Gnet IO and Smart Host Communication" section.

通信模式	远程PLC通信	
远端PLC地址	192.168.2.1	
远端PLC型号	1200/1500	
开关量输入区地址	I区	700
开关量输出区地址	Q区	700
模拟量输入区地址	I区	800
模拟量输出区地址	Q区	800
扩展设备信息区地址	I区	630
断线输出状态	保持	
通信看门狗使能	☒	60 (秒)
输入模拟量滤波等级	2级	
保存&应用		

Step 3 For multiple Gnet IO groups used simultaneously, the IP address of each Gnet IO group and the IP address of 1200 or 1500 must be in the same network segment and none of them can be the same. In the communication configuration interface, the area address of each group must also be set to be different and cannot overlap. **illustrate**

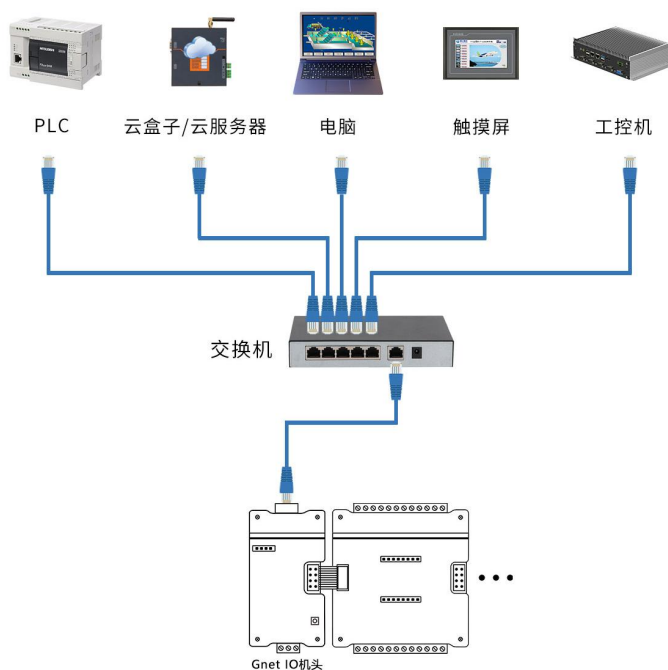
The maximum address in the I zone of the 1200 PLC is I1024, and the maximum address in the Q zone is Q1024. Do not exceed these limits. For details, please refer to the "Process Image Size" section of the 1200 PLC manual.

Note: If communication fails, please refer to the frequently asked questions at the end of this chapter, or download the programming case study for testing.

6.5 Gnet IO and Modbus TCP Device communication

To enable interconnection with a wider range of devices, the Gnet IO head unit also supports the Modbus TCP standard protocol. In this mode, the Gnet IO head unit operates as a server, and the remote device acts as a client. It can be accessed by up to five clients simultaneously. See the diagram below:

分布式远程IO-使用ModBus TCP协议



The usage is very simple, and the settings are shown in the image below:



通信配置

通信模式: ModbusTCP通信-服务器模式

ModbusTCP端口: 502

通信看门狗使能: ☒ 60 (秒)

输入模拟量滤波等级: 2级

保存&应用

Note 1: The configuration above does not include a device ID (equivalent to a device address in the Modbus RTU protocol). This is because it is replaced by an IP address in the Modbus TCP protocol, so Gnet IO ignores this parameter. When accessing the client, any device ID can be entered. Note 2: During

Modbus TCP communication, the Modbus address corresponding to the GM extension module resource point is:

Digital input resources	The starting address corresponds to address 0 in zone 1 of the Modbus protocol. (Address 0 in zone 1 is also written as address 10000 in SMART, where 1 represents zone 1), and the remaining resources are arranged compactly in sequence.
Digital output resources	The starting address corresponds to address 0 in zone 0 of the Modbus protocol. (Address 0 in zone 0 is also written as address 00000 in SMART, where the first 0 indicates zone 0), and the remaining resources are arranged compactly in sequence.
Analog input or Temperature acquisition channel	The starting address corresponds to address 0 in zone 3 of the Modbus protocol. (Address 0 in zone 3 is also written as address 30000 in SMART, where 3 represents zone 3), and the remaining resources are arranged compactly in sequence.

Analog output channel

The starting address corresponds to address 0 in zone 4 of the Modbus protocol. (Address 0 in zone 4 is also written as address 40000 in SMART, where 4 represents zone 4), and the remaining resources are arranged compactly in sequence.

You can also view it in the information overview, as shown in the image below.



使用本产品前，请先阅读产品使用手册：

https://jngbdz.com/file/PLC_SMART/【工贝电子】PLINK机头用户手册.pdf

远端PLC通信信息

远端PLC型号	SMART200
远端PLC地址	192.168.2.1 : 102
当前通信状态	通信断开

在线扩展模块信息

设备编号	设备类型	起始地址映射
PM01	QT16	输入：- 输出：Q700.0
PM02	AM06	输入：IW800 输出：QW800
PM03	DR16	输入：I700.0 输出：Q702.0
PM04	AM12	输入：IW808 输出：QW804

Note 3: Communication watchdog enabled. If checked, the Gnet IO unit will restart if there is no valid Modbus TCP communication within the set time.

Note that it cannot maintain the previous state.

Note: If communication fails, download the programming examples to test.

6.6 Gnet IO Common problems in machine head usage

1. Gnet IO The built-in webpage on the device cannot be opened.

A: Method1: Gnet IO default IP is 192.168.2.2. The computer must be on the same network segment as the computer. Check the computer IP.

Method2: Please refer to the next question for instructions on restoring factory settings.
3: First PING Step on the machine head and check if the hardware is working.
Method4: Restart your computer. Gnet IO or try a different browser.

2. Gnet IO machine head IP forgot the address, how do I restore it to factory settings?

A: In Gnet IO, there is a reset button on the right side of the terminal below the machine head. Press and hold it for 12 seconds. The indicator light flashes rapidly, and all parameters are restored to factory default settings.

3. Smart When using the client protocol, smart How many groups can be connected at most? Gnet IO unit?

A: If using the original smart as a server, it can support 8 Group Gnet IO unit.
If using a machine... smart as a server, it can support 6 Group Gnet IO unit.

4. 1200 When using the client protocol, 1200 How many groups can be connected at most? Gnet IO unit?

A: If using 1200 as a server, it can support 8 Group Gnet IO unit.

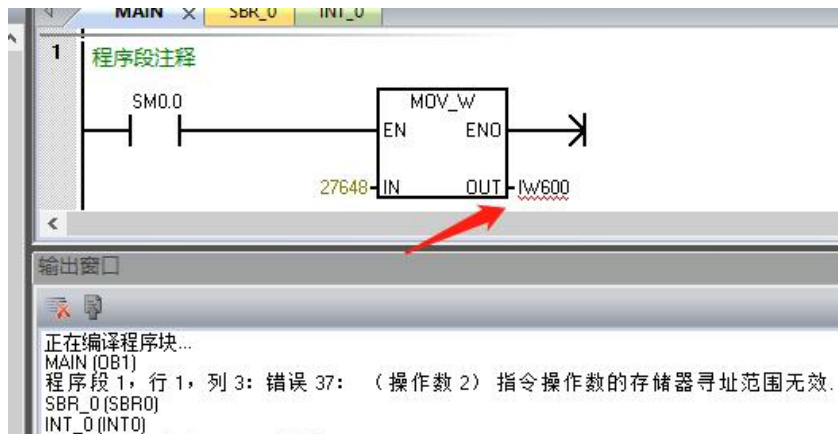
5. 1500 When using the client protocol, 1500 How many groups can be connected at most? Gnet IO unit?

A: It depends. 1500 simultaneously supports PUT/GET. The quantity varies depending on the model.

6. Modbus TCP When a server protocol is used, a Gnet IO What is the maximum number of clients (e.g., configuration screens) that a generator can connect to simultaneously?

answer: 5 individual.

7. References in programming IW600 or QW600 The register has a red underline, and compilation will fail as shown in the image below.



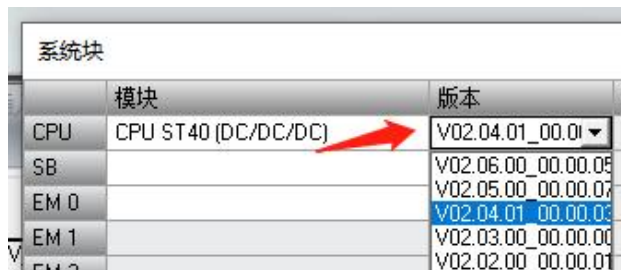
A: Yes3One possibility.

possible1. SMARTThis is caused by an outdated software version; it must be...2.04Or above. The method for viewing is as follows:



The picture is2.05Version, meets requirements.

possible2.Configuration interfacePLCThe selected host version is too low; it must be [version number]2.04Or above. The method for viewing is as follows:



possible3. PLCthe firmware version is too low, it must also be2.03For versions 1 and above, the method for checking is as follows. If your version is lower, you need to upgrade.PLCFirmware upgrade method

consultationPLCMain unit manufacturer.



8. Gnet IOand1200or1500 PLCCommunication failed.

answer:8.1examineGnet IOofIPWhether or not1200or1500 PLCofIPThey are on the same network segment, but different.

8.2examineGnet IOIs it set in the communication configuration interface?1200The pattern was entered.1200or1500 PLCofIPaddress.

8.3examineGnet IOThe noseDataIf the indicator light is constantly on, it indicates that...1200or1500 PLCA connection has been established, but that does not mean

The communication is established; let's check the next message.

8.4In the TIA Portal programming software, go to Device View -> "Properties" tab -> under General -> "Protection and Security" -> "Connectivity Mechanism" ->

Make sure to check "Allow from remote objects"PUT/GET(This operation is for enabling Ethernet communication; do not select it,)Data The indicator light is constantly on, but communication is unsuccessful.

8.5In the TIA Portal programming software, it is essential to compile and download the hardware.

In the project treePLCRight-click on the project, select "Compile" -> "Hardware and Software (Change Only)" in the project tree.PLCRight-click on the screen, select "Download to Device" -> click "Hardware and Software (Change Only)"

8.6Try using the test cases on our website.

9. Gnet IOMachine heads7The special register is malfunctioning during protocol communication. A: Try

changing the starting address of the special register in the head unit configuration interface.

10.Use multipleGnet IOSometimes, the data is garbled or flickering. A: The address mappings overlap. Open...Gnet IOIn the address

mapping table, web pages should have their addresses spaced further apart.

11. Gnet IOThe machine head failed to control the output resources via a web page. A: Try disconnecting the network cable from the remote device.

The issue might be caused by the remote device itself, preventing successful output.

12. Gnet IOHead unit connection and useSmartWhen using the client protocol,GMResponse speed of extended modules. A: For digital points, the response speed is approximately...

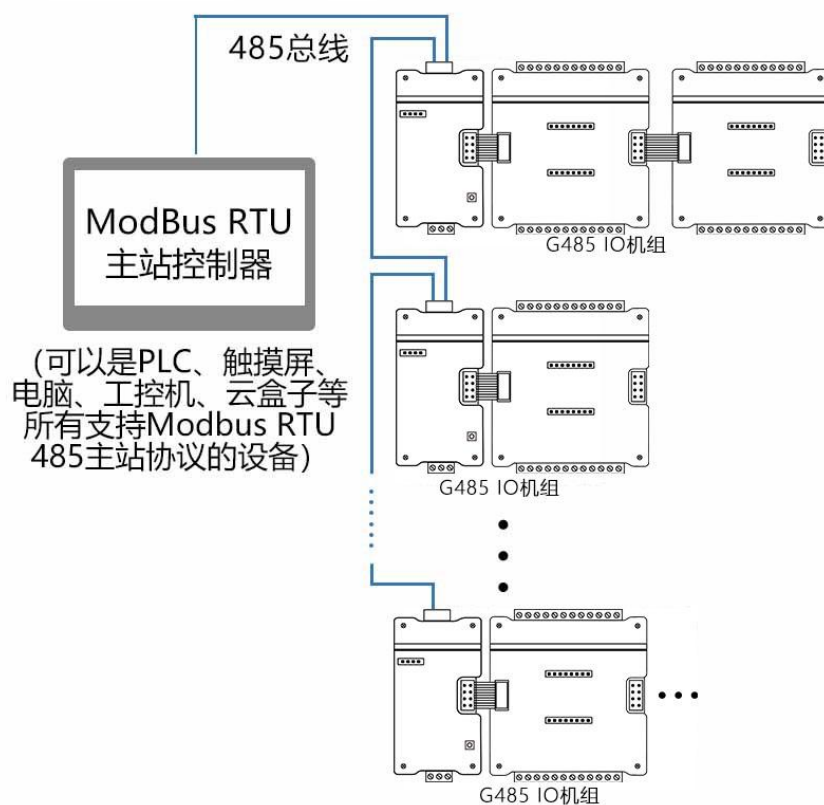
100msFor analog signal points, modify the filter coefficients to achieve the fastest response, approximately...200ms.

6.7 G485 IO Head Unit Appearance and Indicator Lights



Interface definition		
A+ terminal, 485 communication A terminal.	B-terminal, 485 communication B-terminal.	The grounding terminal is connected to the earth.
L+ terminal, 24V power supply positive.	M terminal, 24V power supply negative.	The grounding terminal is connected to the earth.
Indicator light status description		
indicator lights	describe	state
PM	Connect expansion modules	The light is always on, indicating normal power supply and connection.GMModule communication is normal.
	status	Flashing, andGMModule communication error.
Rx	485Communication status	Flashing or constantly lit: Bus data received.
	instruct	Extinction: No bus data received.
Tx	485Communication status	Flashing or solid: Sending data to485bus.
	instruct	Extinction: No data was sent.
Reset button		
There is a reset button on the right side of the lower terminal. Press and hold it for 12 seconds, and the PM indicator light will flash rapidly. All parameters will be restored to the factory default parameters. This function is used when you forget the Modbus communication parameters.		

G485 IO 机头挂GM扩展模块实现分布式远程IO

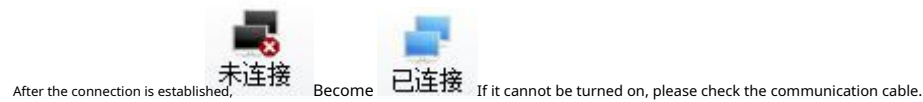


6.8 G485 IO Head Unit Parameter Configuration and Debugging

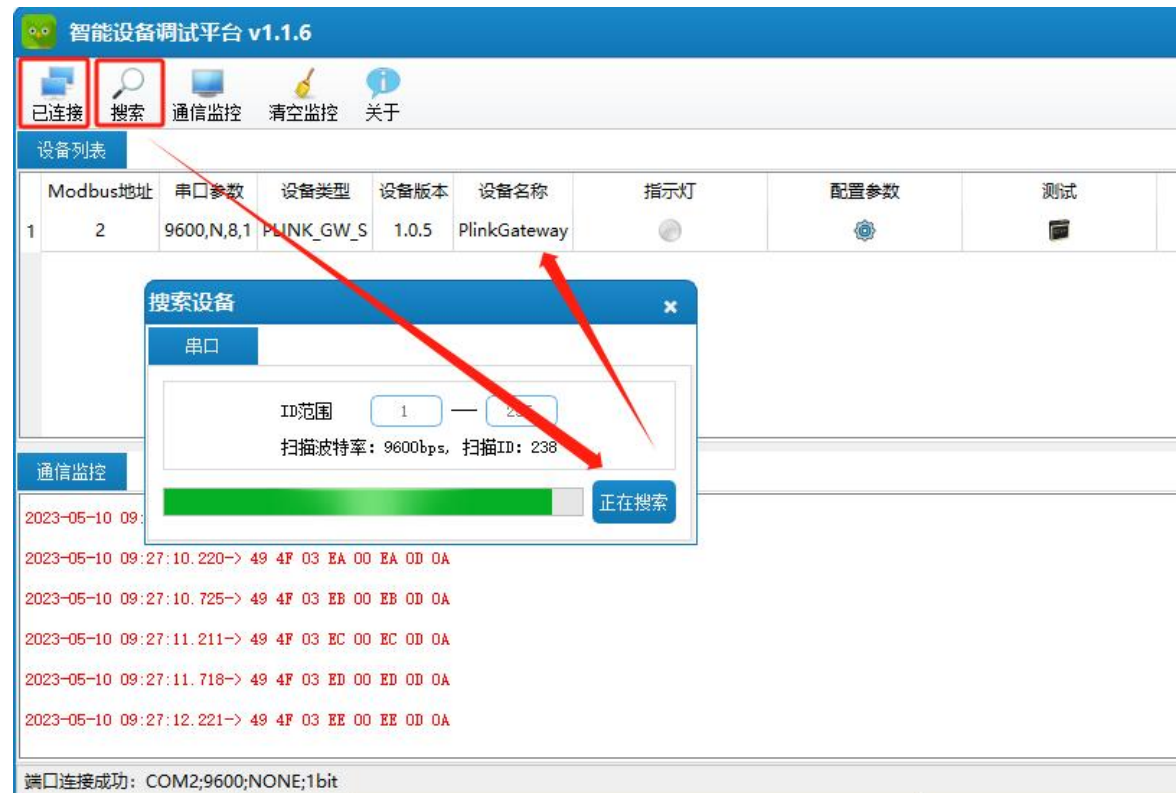
G485 IOThe head unit uses computer software for debugging and parameter setting, which can be done on the official website.jngbdz.comDownload, extract, and run. "SmartPlatform.exe"Use the computer and head unit.485If the computer does not have a communication cable connection...485Serial port, can be usedUSBchange485Communication cable (Note: You must purchase a non-driver-free cable)USBchange485The cable must be present in Device Manager. COM(Eloquence is required). Click the "Not Connected" icon, then click "Serial Port", select the parameters, and click "Start Connection".



The "serial port number" is used to connect the computer and...G485 IOThe nose485Communication linesCOMThe slogan can be viewed in Device Manager.



Click the search icon, then click the "Start Search" button to search based on the serial port information you just configured. If no results are found, change the serial port connection settings and search again. If the device is online, the found devices will appear, as shown in the image below.



Clicking the "Configure Parameters" button allows you to modify communication parameters; clicking "Test" will display...G485 IOAll connected to the headGMMModules, and each module can be controlled independently. See the diagram below.

测试设备 ID:2

Plink子设备列表

- PM-QT16
- PM-AM06
- PM-DR16
- PM-AM12**

模拟量输入 0~20mA对应0~27648 [AI: 30004-30011]

☐ 切换实际值

AI0	10	AI1	13
AI2	8	AI3	13
AI4	10	AI5	13
AI6	14	AI7	14

AQ输出值 [AQ: 40002-40005]

AQ0	0	AQ1	0
AQ2	0	AQ3	0

6.9 G485 IOmachine headModbusRegister mapping relationship

Digital input resources	The starting address corresponds to address 0 in zone 1 of the Modbus protocol. (Address 0 in zone 1 is also written as address 10000 in SMART, where 1 represents zone 1), and the remaining resources are arranged compactly in sequence.
Digital output resources	The starting address corresponds to address 0 in zone 0 of the Modbus protocol. (Address 0 in zone 0 is also written as address 00000 in SMART, where the first 0 indicates zone 0), and the remaining resources are arranged compactly in sequence.
Analog input or Temperature acquisition channel	The starting address corresponds to address 0 in zone 3 of the Modbus protocol. (Address 0 in zone 3 is also written as address 30000 in SMART, where 3 represents zone 3), and the remaining resources are arranged compactly in sequence.
Analog output channel	The starting address corresponds to address 0 in zone 4 of the Modbus protocol. (Address 0 in zone 4 is also written as address 40000 in SMART, where 4 represents zone 4), and the remaining resources are arranged compactly in sequence.

You can also view it in the test interface of the configuration software, as shown in the red box in the image above.

Special registers	describe	Special registers	describe
District 40256	Head baud rate	District 40259	Head unit ID
District 40257	Head unit verification position	District 40260	Analog filter coefficient of the nose
District 40258	Machine head stop position		

6.10 G485 IOCommon problems in machine head usage

1. G485 IOI forgot the communication address of the head unit. How can I restore it to factory settings?

A: InG485 IO There is a reset button on the right side of the terminal below the machine head. Press and hold it. 12seconds, PM The indicator light flashes rapidly, and all parameters are restored to factory default settings.

7. Technical parameters

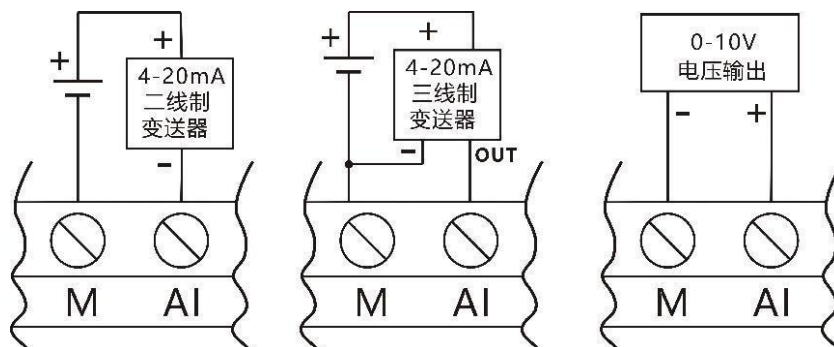
model	GT/R10XP	GT/R14XP	GT/R20	GT/R20XP	GT/R24XP	GT/R30	GT/R30XP	GT/R40
Software configuration	ST/R20	ST/R20	ST/R20	ST/R20	ST/R30	ST/R30	ST/R30	ST/R40
Power supply voltage	Power supply range: 20~28VDC							
Power consumption	9W/10W	10W/11W	10W/12W	12W/14W	13W/15W	14W/16W	15W/18W	18W/23W
Program space	Maximum size 50KB; compilation warnings can be ignored.							
Data space	12KB				16KB			20KB
Power-off retention	Maximum 12KB							
Process mapping	256-bit input (I) / 256-bit output (Q)							
Analog mapping	56-character AI/56-character AQ							
Size (mm)	95×108×35		125×108×35		150×108×35		180×116×35	
IO digital quantity								
Onboard digital	6 in, 4 out	8 in, 6 out	12 in, 8 out		14 in, 10 out	18 in, 12 out		24 in, 16 out
Input type	Drain/source bipolar; Rated voltage 24VDC, 4mA; Maximum continuous allowable voltage 30VDC							
Logical input	Logic 1: Minimum 16V. Logic 0: Maximum 5V.							
Output type	Transistor (T): Source type (can output 24V+ and disconnect 24V+, cannot output 0V); Relay (R): Dry contact.							
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 withstand a maximum resistive load of 2A and an inductive load of 0.5A.							
Mechanical life	Transistor type has no lifespan limit; relay type has a lifespan of 100,000 cycles.							
Pulse output	Transistor type only, 100kHz; GT10XP/GT14XP: 2 channels when using PWM, 1 channel when using PTO. GT20/GT20XP: 2 channels. GT24XP/GT30/GT30XP/GT40: 3 channels.							
High-speed counting	Single phase: 4 channels 30K	Single phase: 5 channels 30K	Single phase: 6 channels 30kHz					
	Phase A/B2-way 30K	A/B phase: 3 channels 30K	A/B phases: 4 channels 30kHz					
Interfaces and functions								
Network port specification	1-channel 10M/100M adaptive							
Network interface protocol	S7 Ethernet protocol; Modbus TCP protocol; TCP freeport protocol;							
Number of network ports	It supports a maximum of 6 connections, and all protocol connections share these 6 connections.							
485 interface	Route 1				Channel 2: Channel 2 requires SB CM01 to be configured before use.			
Extended Module	Standard configuration: 6 modules; maximum: 16 modules. Note: Original modules are not supported; only the Gongbei Economy Smart expansion module is supported.							
signal board	Not supported							
memory card	microSDHC card (sold separately)							
Real-time clock	Built-in, replaceable, button battery, non-rechargeable; the device does not consume battery power when powered on; the failure clock is restored to 2000.01.01; 1-year power outage period.							
encryption	It supports Level 4 encryption because the password storage location is different from the original, making it impossible to crack using the original cracking methods, thus providing greater security.							

Analog inputs built into the host computer (Note: Only models with the XP suffix have built-in analog inputs).					
host	GT/R10XP	GT/R14XP	GT/R20XP	GT/R24XP	GT/R30XP
Analog input channel	2 inputs				4 inputs
Analog input method	Non-difference				
Analog input signal	0~10V or 0~20mA				
Analog input data format	0~27648				

Input precision	0.3% of full scale						
Output range	0-10V and 0-20mA						
Output resolution	Voltage: 11 bits + sign; Current: 11 bits						
Output impedance	Voltage: ≥1000Ω Current: ≤500Ω						
Full scale range	0 to 27,648 corresponds to 0-10V and 0-20mA.						
isolation	none						
Power consumption	3W	3W	3W	5W	4W	6W	7W
Dimensions (mm)	75x90x35	95x108x35	75x90x35	150x108x35	95x108x35	150×108×35	
aisle indicator lights	Constant off: 0V or 0mA (open circuit or no signal indication) Solid on: Normal signal, corresponding register value greater than 100 and less than 28400 Flashing: Signal > 10V or signal > 20mA (over-range alarm)						
DIGI indicator lights	Solid light: The module's 24V power supply is normal, and communication with the host is normal. Flashing light: The field-side power supply is abnormal, i.e., the expansion module's 24V power supply is abnormal. Solid black light: The bus power supply or communication is abnormal.						

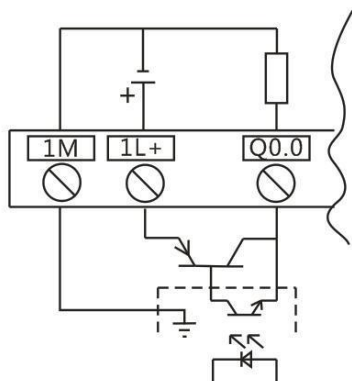
Temperature acquisition module	GM AR04	GM AR08	GM AN04	GM AN08	GM AT04
Number of channels	Route 4	Route 8	Route 4	Route 8	Route 4
Sensor type	2, 3, and 4-wire PT100		NTC (10K, 3950)		K-type thermocouple
Temperature measurement range	- 200.0℃~600.0℃		- 50.0℃~150.0℃		- 270.0℃~1372.0℃
Corresponding reading range	- 2000~6000 (Magnified 10 times)		- 500~1500 (Magnified 10 times)		- 2700~13720 (Magnified 10 times)
Open circuit and short circuit readings	+32000 or -32000		+32000 or -32000		+32000 or -32000
resolution	0.1℃		0.1℃		0.1℃
accuracy	0.1% of full scale		0.5% of full scale		0.1% of full scale
Whether to isolate	isolation		none		isolation
Channel indicator lights	Constant light indicates the temperature is within the normal measurement range. Changmie: not accepting. Flashing: Open circuit (M+ and I+ are connected, I- is not connected) Or a short circuit (M+, I+, I- connected together).		Constant light indicates normal temperature. Changmie: not accepting. Flashing: Short circuit.		Constant light indicates normal temperature. Constantly extinguished: Temperature exceeded the limit. Flashing: Not connected or disconnected.
DIGI indicator lights	Solid light: The module's 24V power supply is normal, and communication with the host is normal. Flashing light: The field-side power supply is abnormal, i.e., the expansion module's 24V power supply is abnormal. Solid black light: The bus power supply or communication is abnormal.				
Power consumption	3W	4W	3W	4W	3W
size(mm)	75x90x35	95x90x35	75x90x35	95x108x35	75x90x35

8. Analog input channel wiring diagram



Note: In the diagram above, AI represents the analog input channel of the host, expansion module, or signal board. Whether it is a voltage input channel or a current input channel varies from product to product. Some products require configuration selection in the system block, some are switched by DIP switches, and some are distinguished by terminal blocks. Please refer to the relevant section for details.

9. Transistor output internal diagram



10. PLC System stacking installation method

SMARTEconomyPLCMainframes and modules categorized by length:

95Long host:GR10XP,GT10XP,GR14XP,GT14XP;
125Long host:GR20,GT20,GR20XP,GT20XP;
150Long host:GR24XP,GT24XP,GR30,GT30;
180Long host:GR30XP,GT30XP,GR40,GT40
75Long extension module:GM DE08/DR08/AE04/AQ04/AR04/AN04/AT04;
95Long extension module:GM DE16/QR16/QT16/DR16/DT16/AE08/AM06/AR08/AN08;
150Long extension module:GM DR32/AQ08/AM12/AM16;

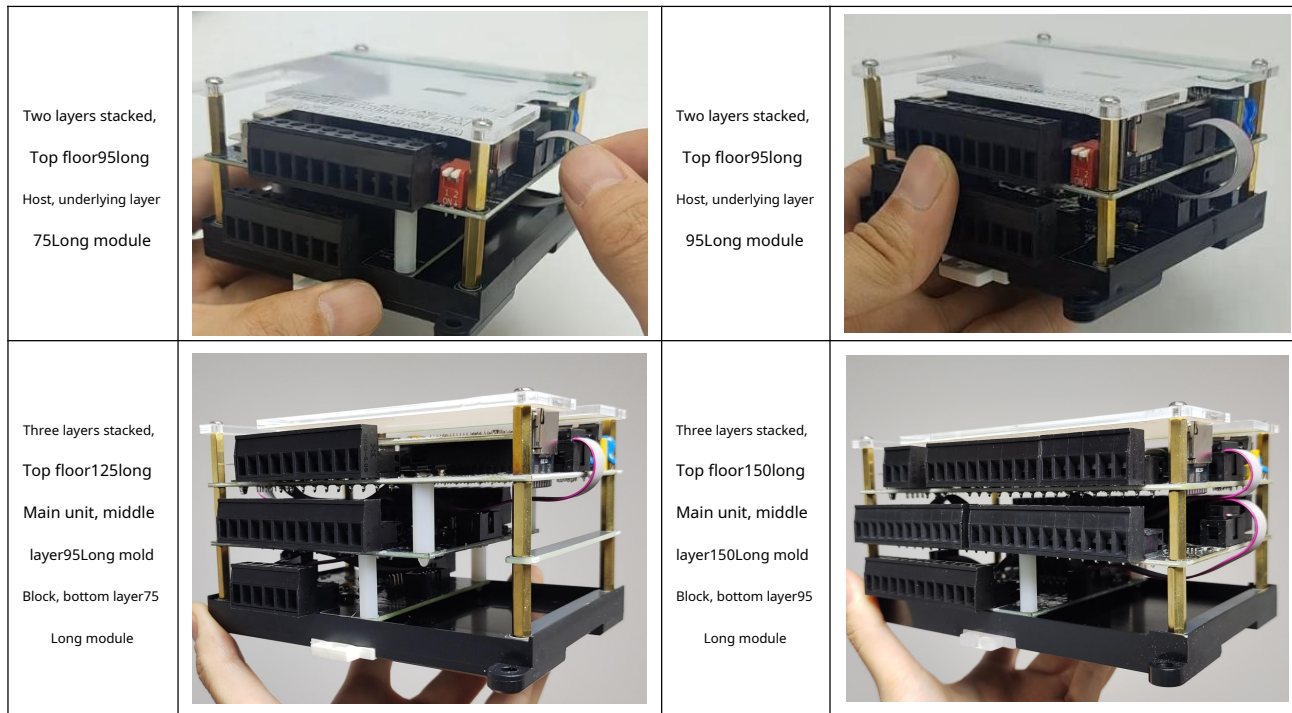
SMARTThis table only shows the largest selection of economy series stacking kits.3Layer stacking method:

Top-level host	95Long host		125Long host		150Long host			180Long host
Top middle layer	95type	95type	95type	95type	95type	95type	150type	Not supported
Stacking kits	95type	95type	95type	95type	95type	95type	150type	Not supported
Intermediate layer module	75long	95long	75long	95long	75long	95long	150long	Not supported
Middle and bottom layers	95type	95type	95type	95type	95type	95type	150type	Not supported

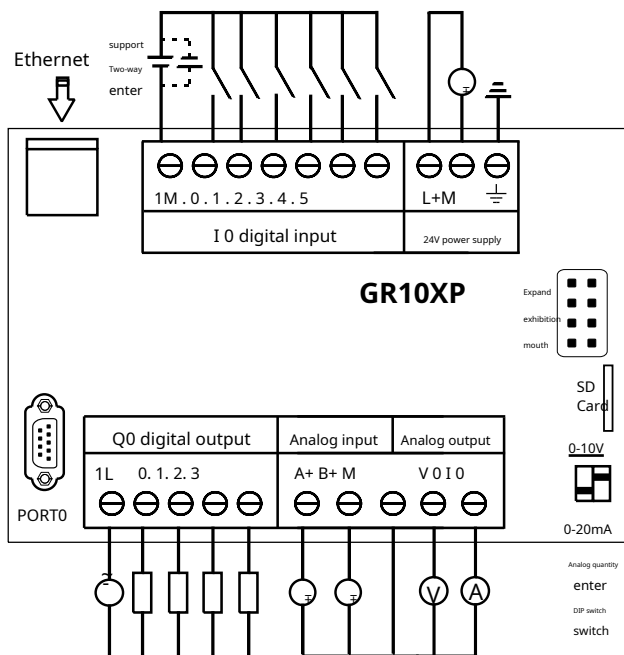
Stacking kits								
underlying module	75long	75or95long	75long	75or95long	75long	75or95long	75or95 or150long	Not supported

Note:95 TypeGR14XP Stacking is not supported at the moment.

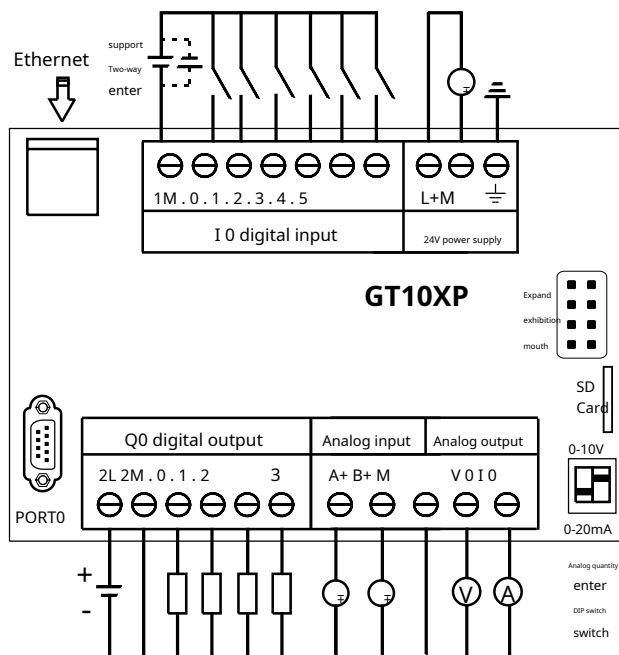
Stacking effect illustration:



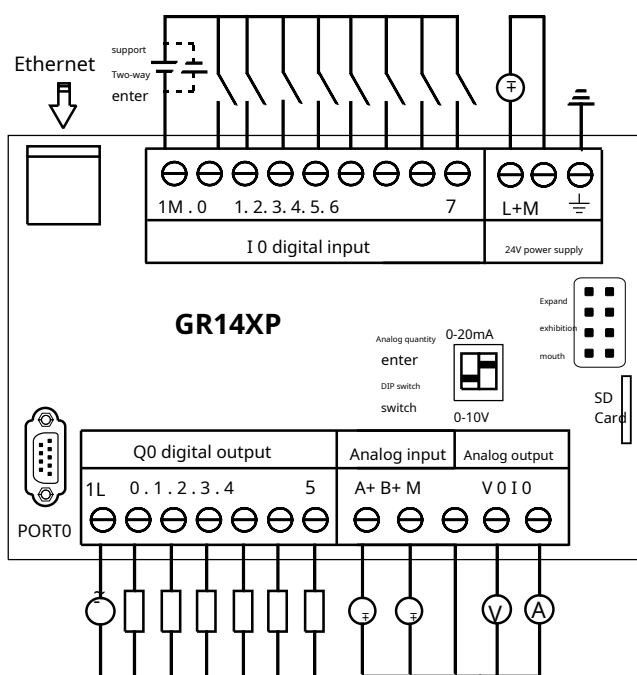
11.Wiring diagram



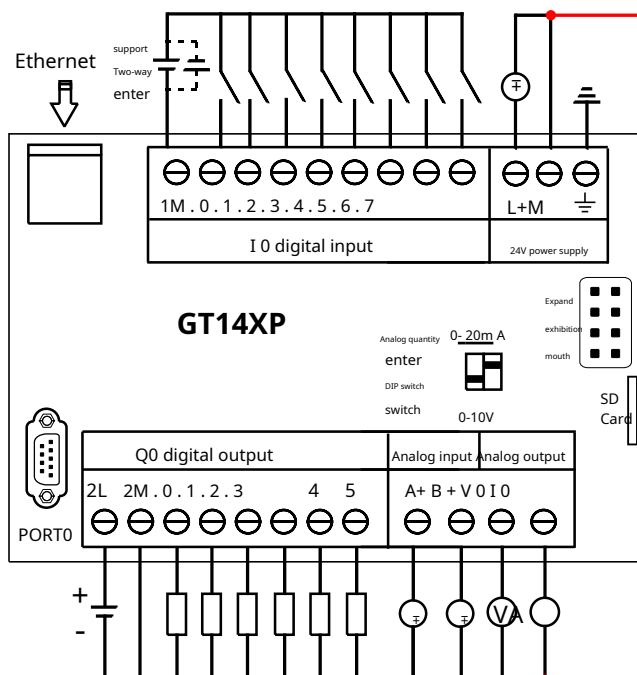
GR10XP (Relay Type) Wiring Diagram



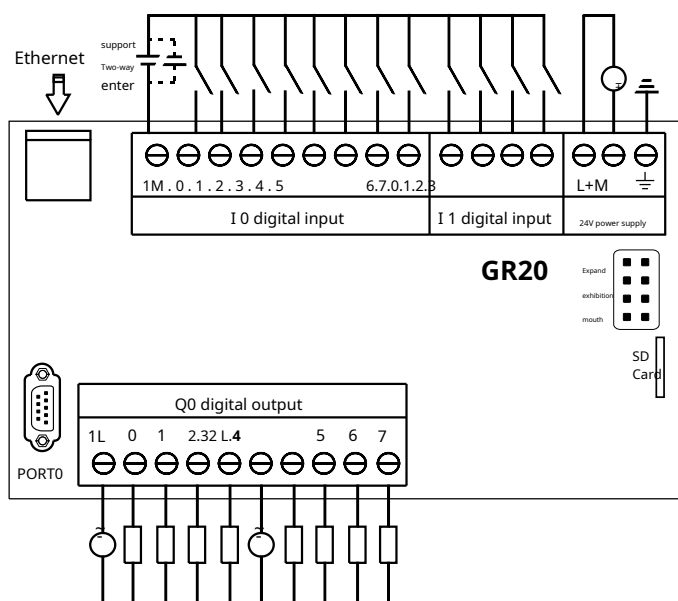
GT10XP (Transistor Type) Wiring Diagram



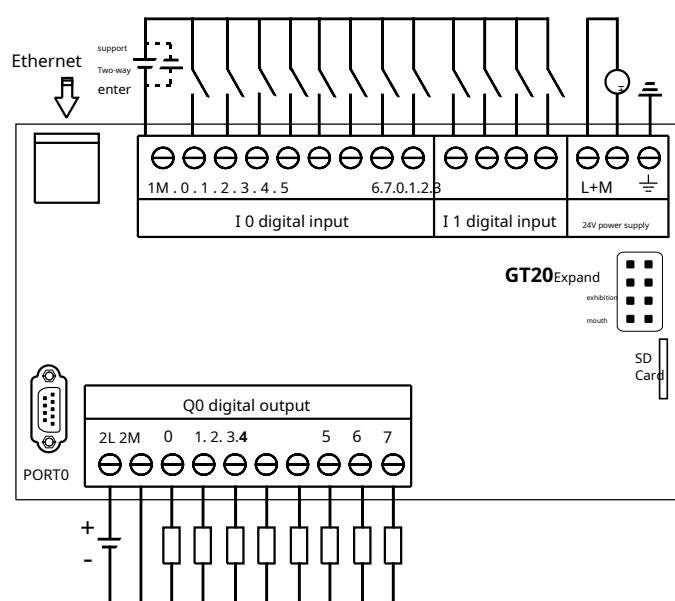
GR14XP (Relay Type) Wiring Diagram



GT14XP (Transistor Type) Wiring Diagram



GR20 (Relay Type) Wiring Diagram



GT20 (Transistor Type) Wiring Diagram

mold

Proposed

quantity

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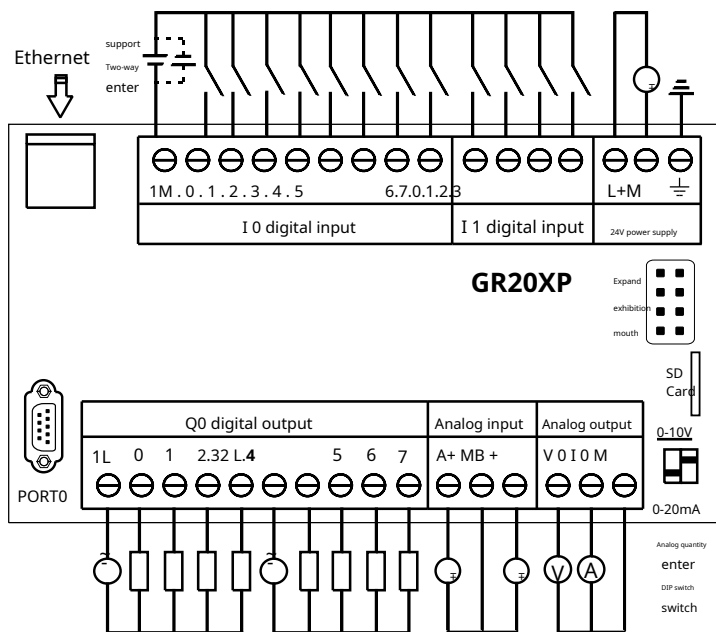
not

electricity

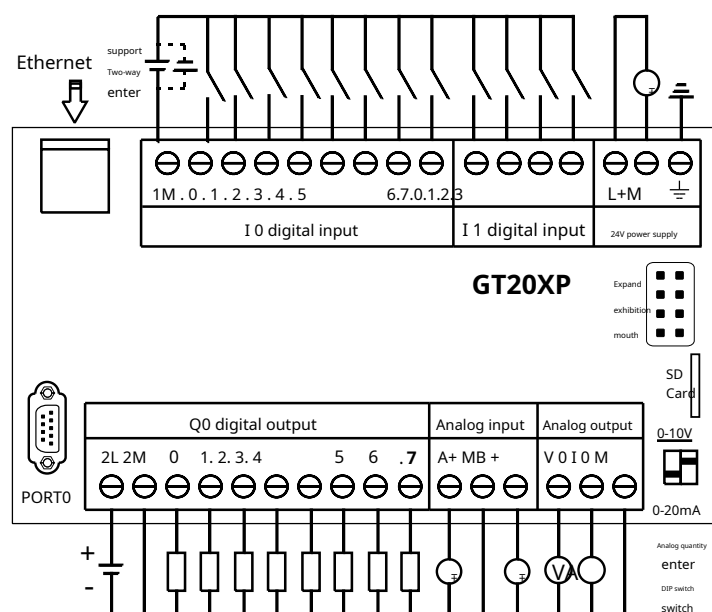
source

burden

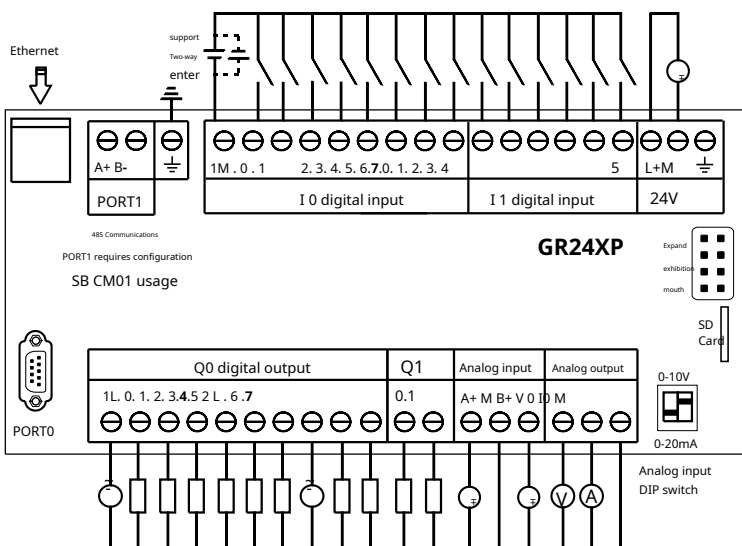
pole



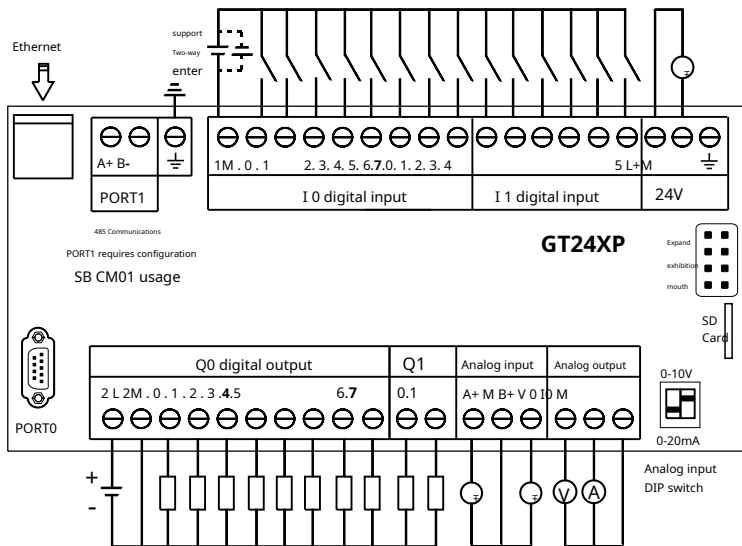
GR20XP (Relay Type) Wiring Diagram



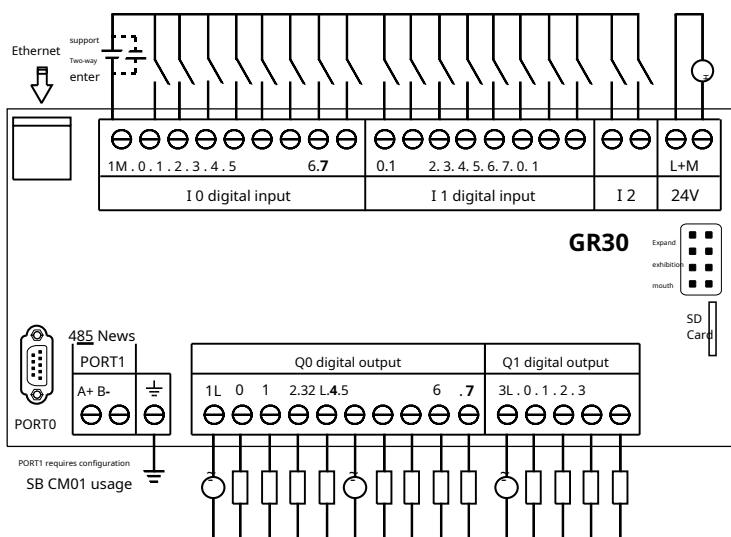
GT20XP (Transistor Type) Wiring Diagram



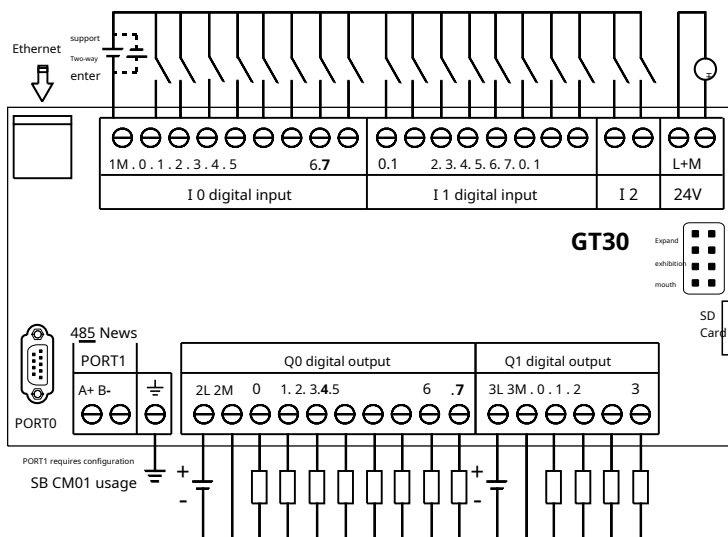
GR24XP (Relay Type) Wiring Diagram



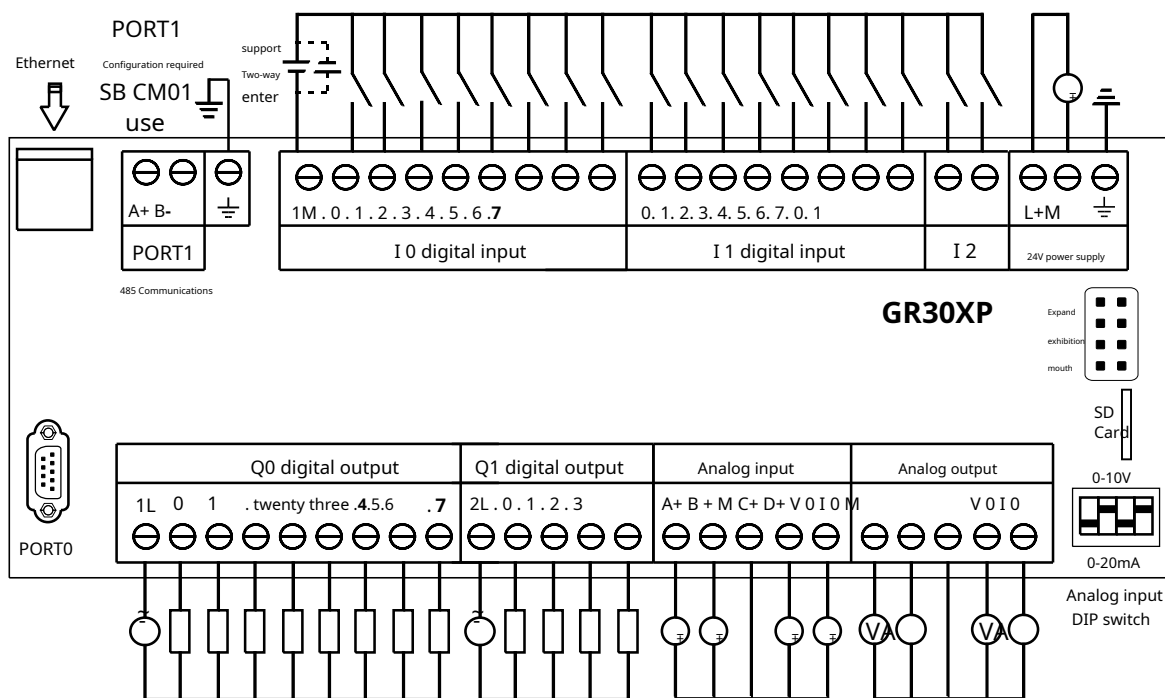
GT24XP (Transistor Type) Wiring Diagram



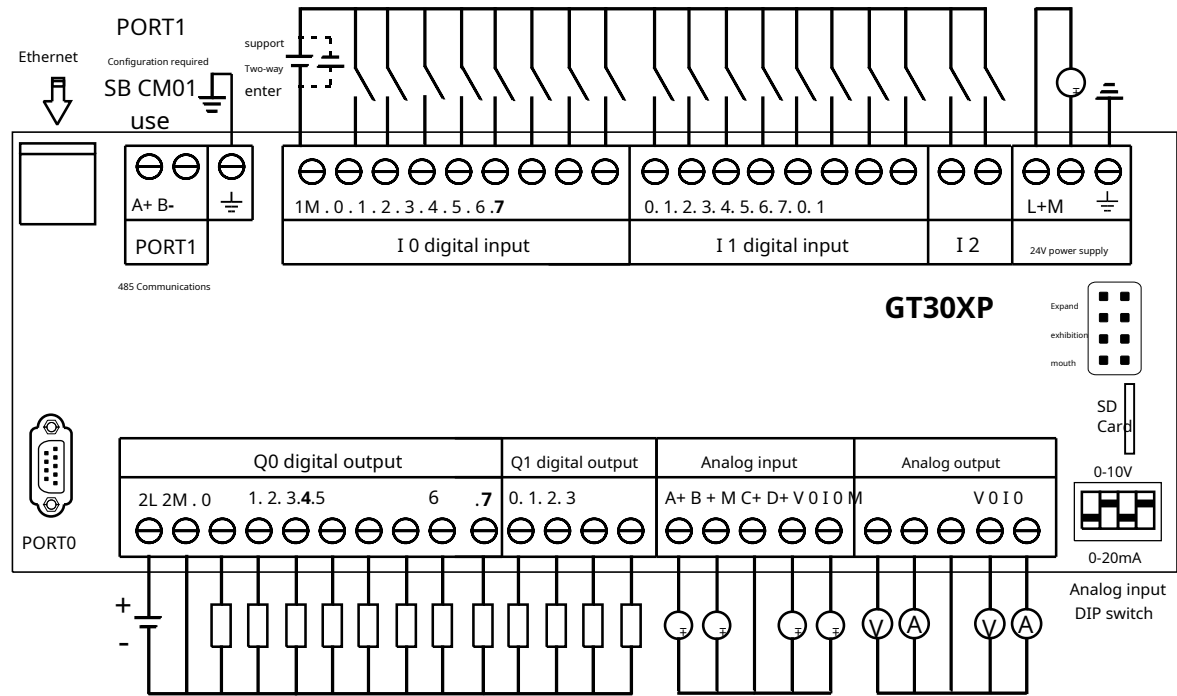
GR30 (Relay Type) Wiring Diagram



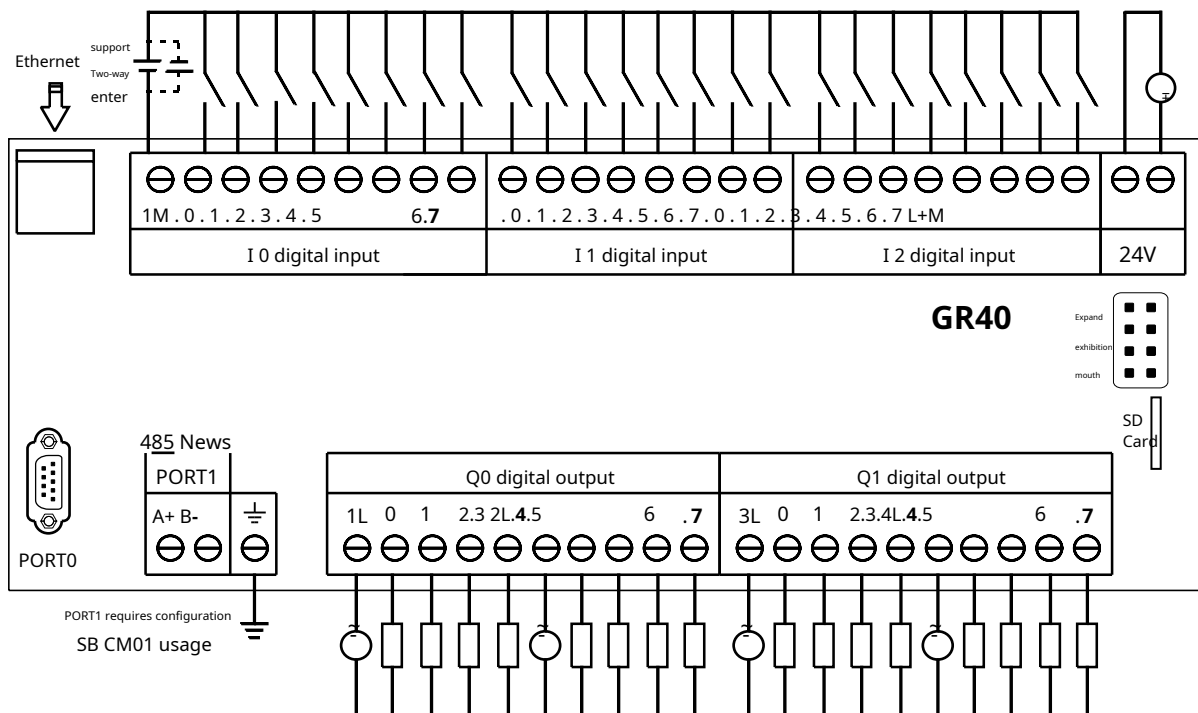
GT30 (Transistor Type) Wiring Diagram



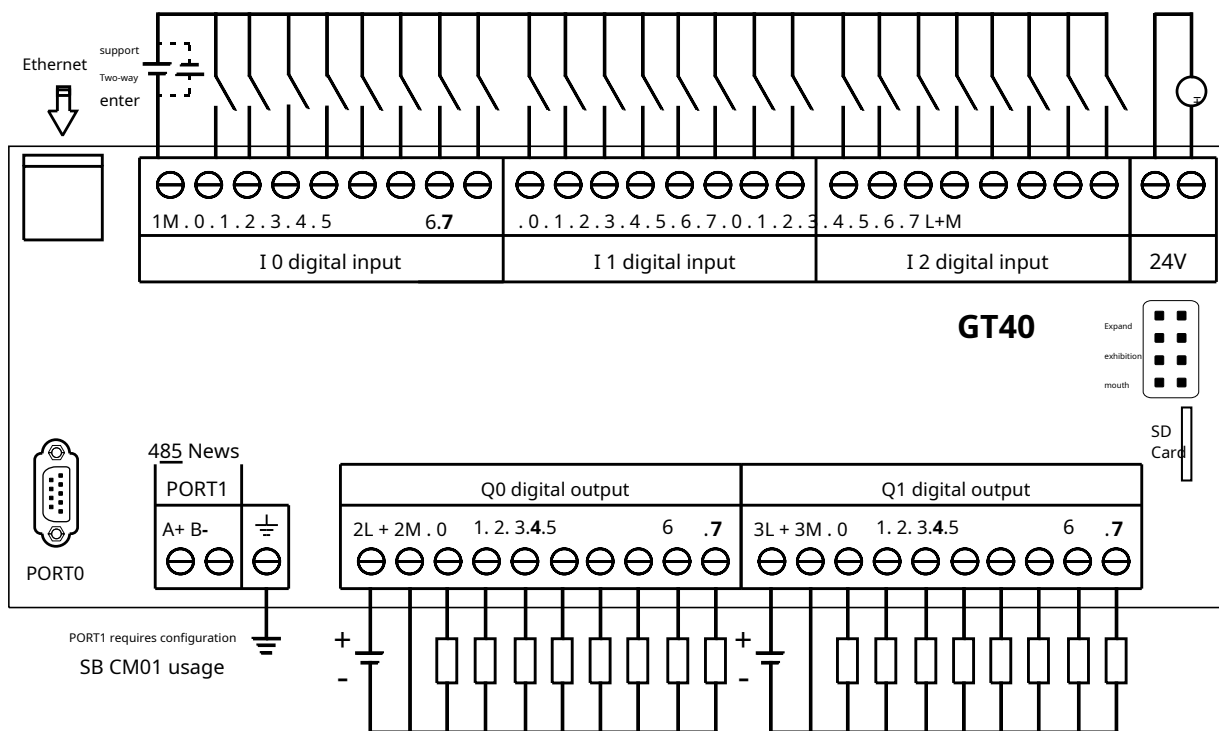
GR30XP (Relay Type) Wiring Diagram



GT30XP (Transistor Type) Wiring Diagram

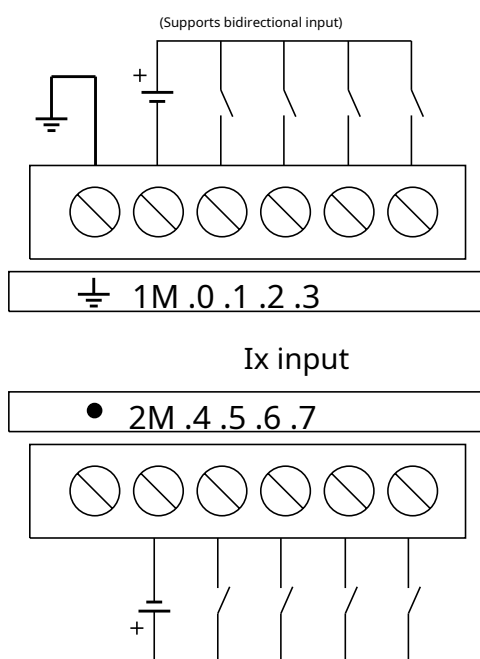


GR40 (Relay Type) Wiring Diagram

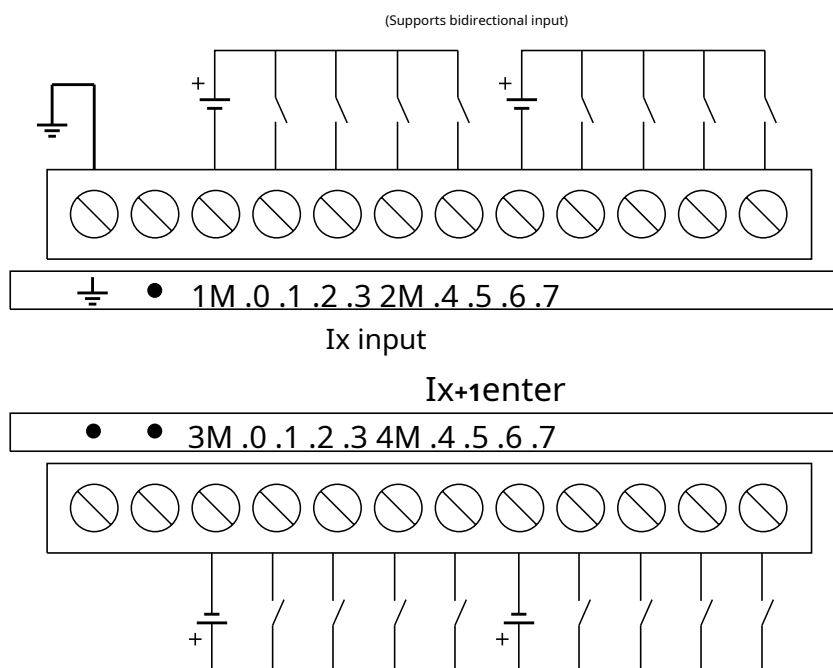


GT40 (Transistor Type) Wiring Diagram

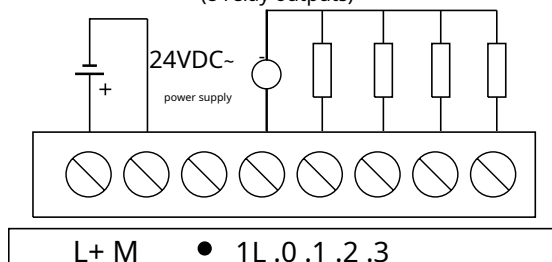
GM DE08 Digital Input 8×24VDC



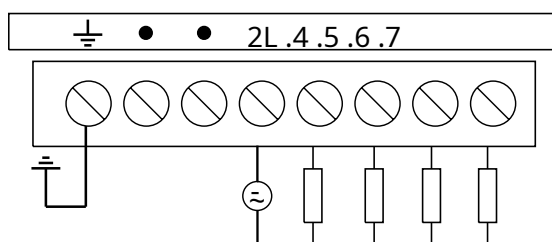
GM DE16 Digital Input 16 × 24VDC



GM DR08 Digital Output Module
(8 relay outputs)



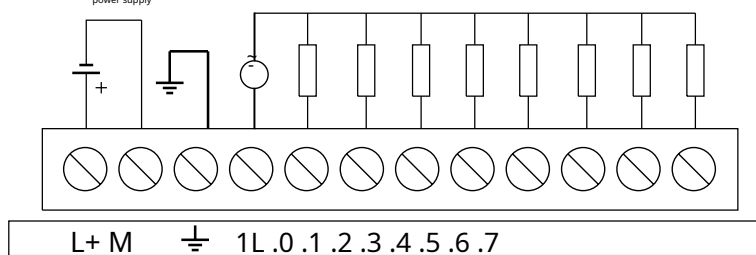
Qx output



GM QR16 Digital Output Module

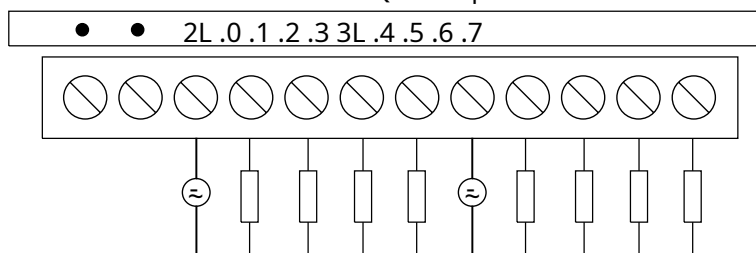
24VDC

(16-channel relay output)



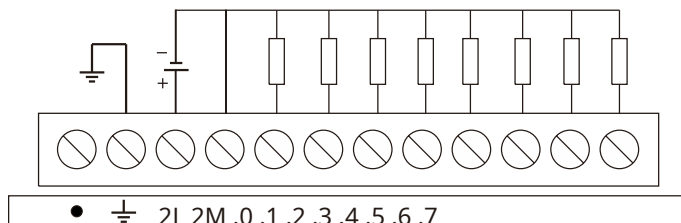
Qx output

Qx+1Output



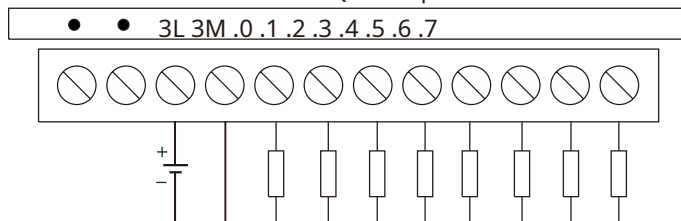
GM QT16 Digital Output Module

(16-channel transistor output)



Qx output

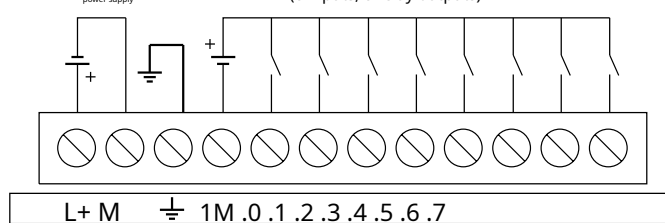
Qx+1Output



24VDC

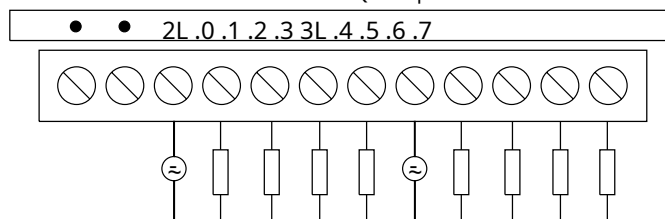
GM DR16 Digital Mixed Module

(8 inputs, 8 relay outputs)



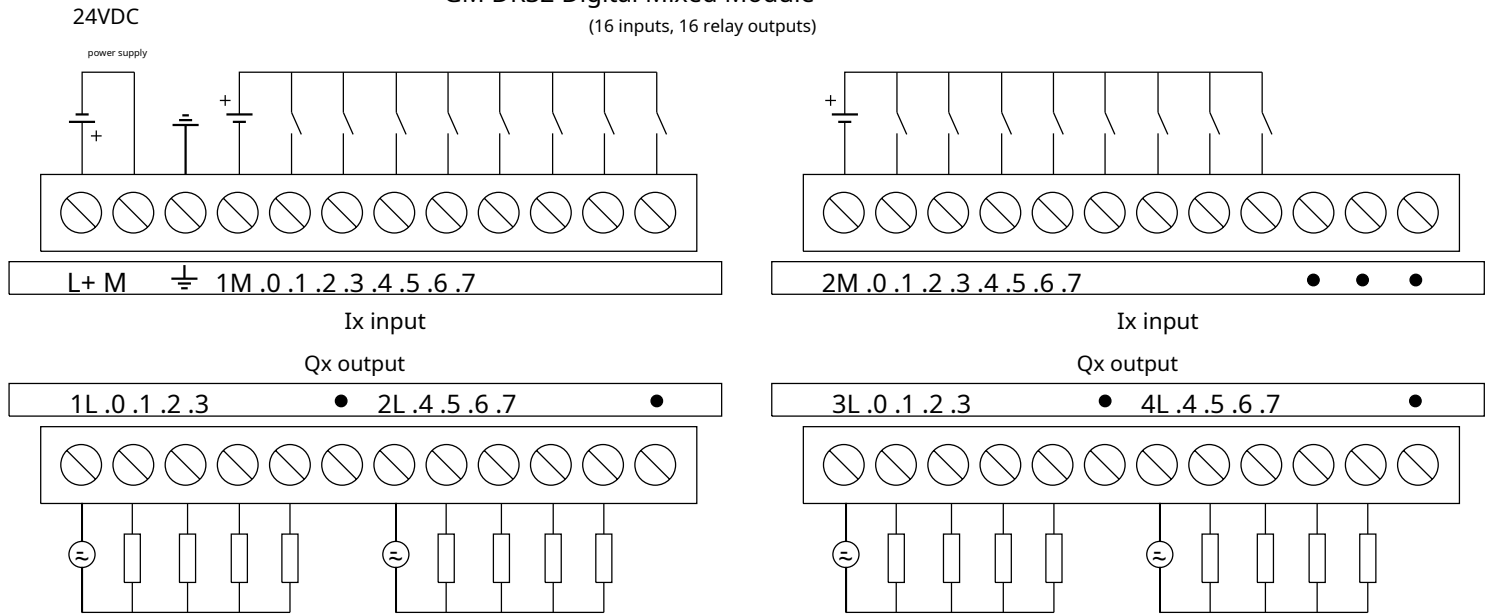
Ix input

Qx output



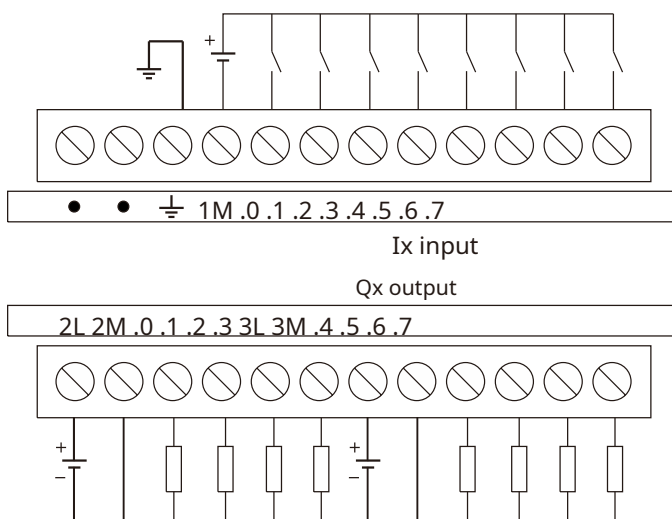
GM DR32 Digital Mixed Module

(16 inputs, 16 relay outputs)

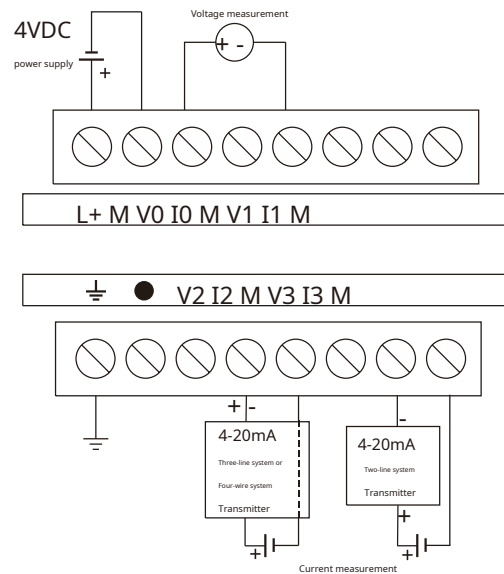


GM DT16 Digital Mixed Module

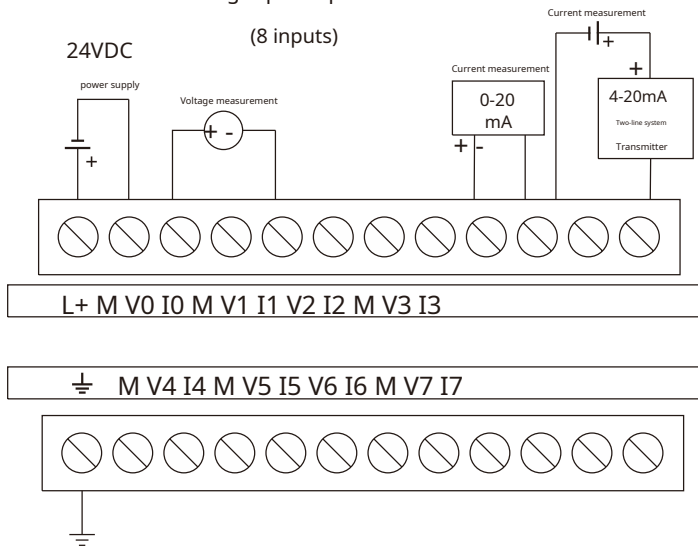
(8 inputs, 8 transistor outputs)



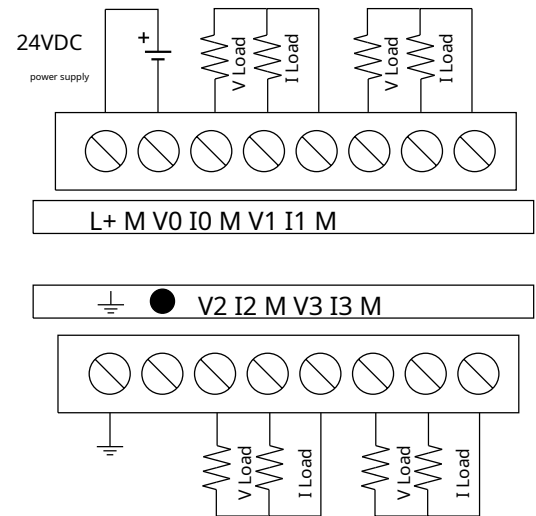
GM AE04 Analog Input Expansion Module



GM AE08 Analog Input Expansion Module

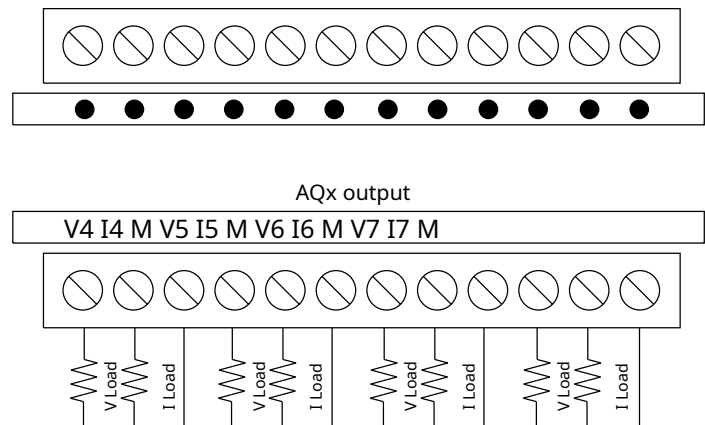
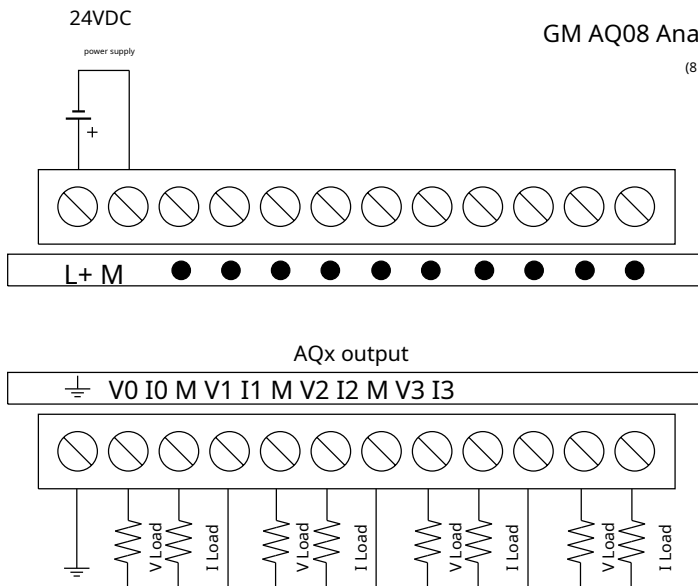


GM AQ04 Analog Output Expansion Module

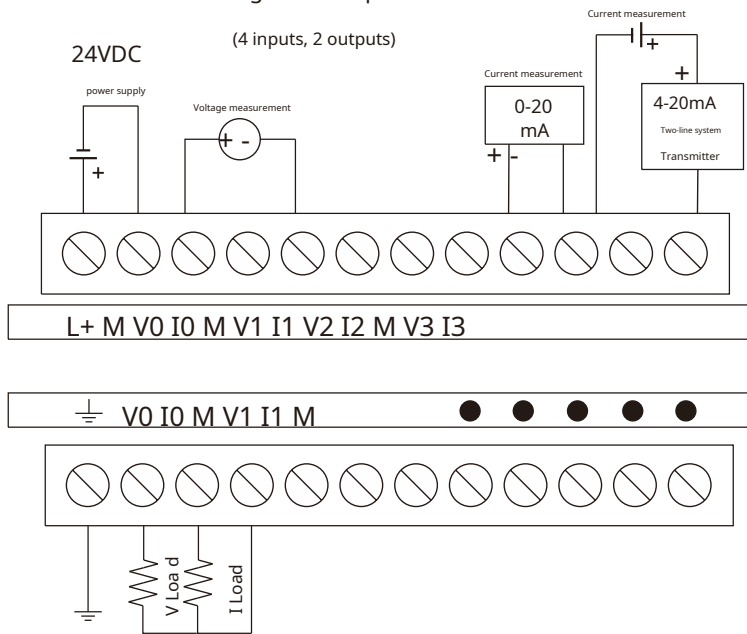


GM AQ08 Analog Output Module

(8 outputs)

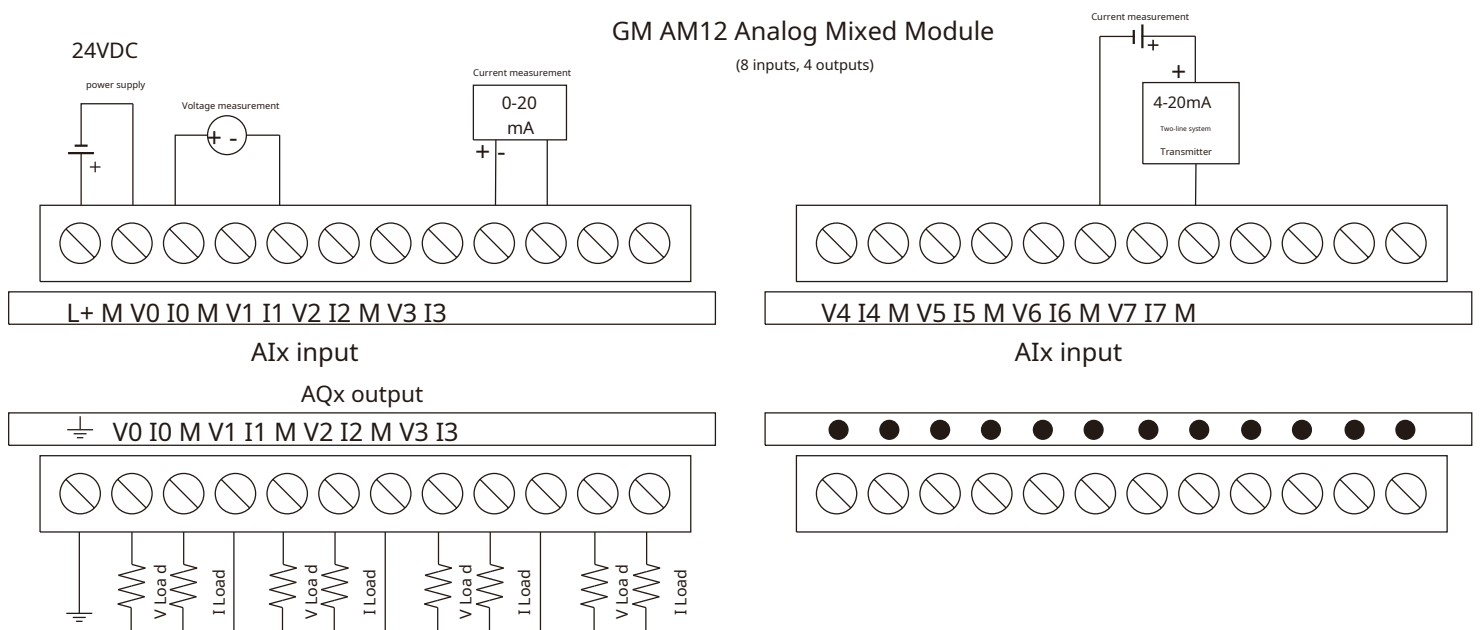


GM AM06 Analog Mixed Expansion Module



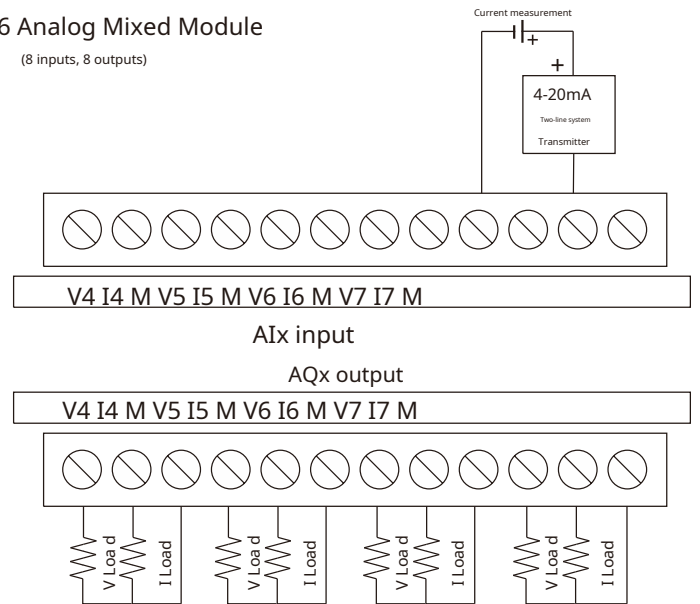
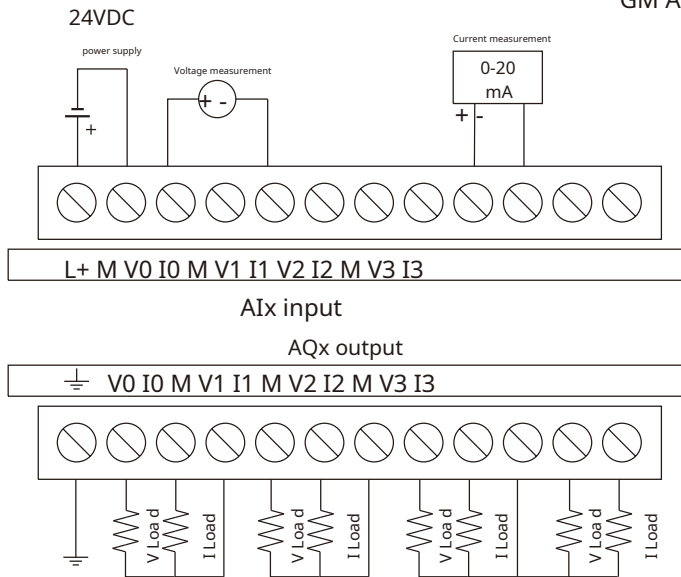
GM AM12 Analog Mixed Module

(8 inputs, 4 outputs)

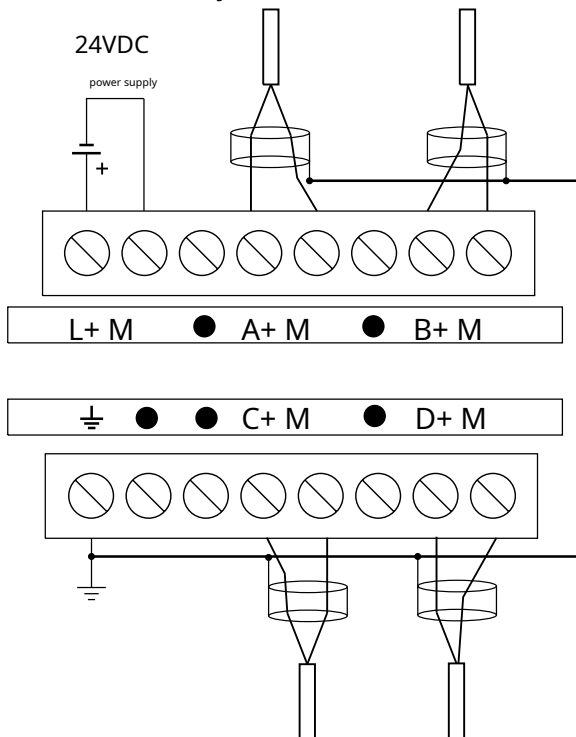


GM AM16 Analog Mixed Module

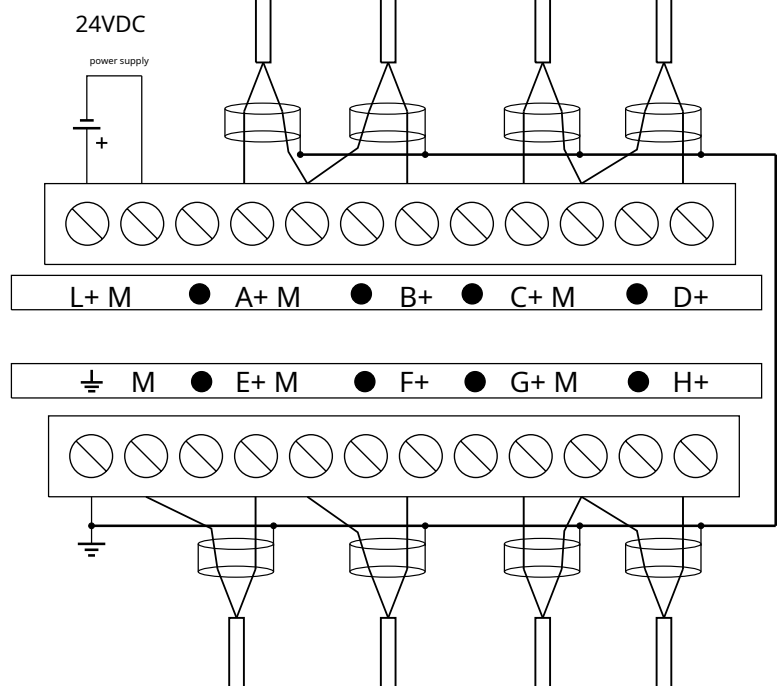
(8 inputs, 8 outputs)



GM AN04 Temperature Extension Module (4-way NTC 10K 3950)



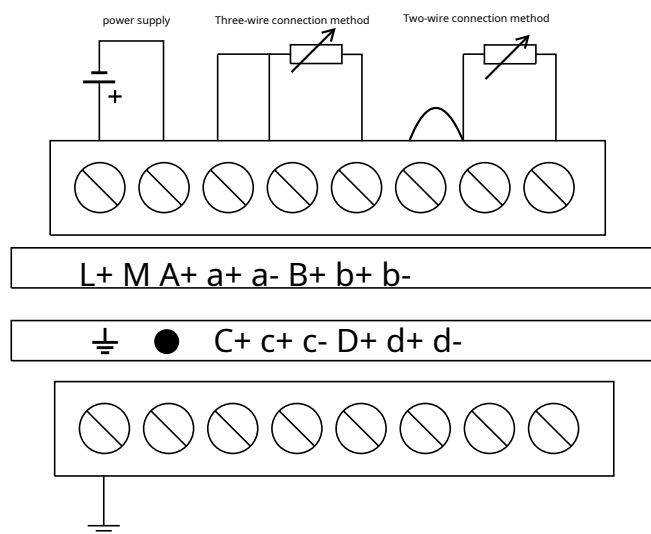
GM AN08 Temperature Expansion Module (Route 8 NTC 10K 3950)



GM AR04 Temperature Extension Module

(4-way PT 100)

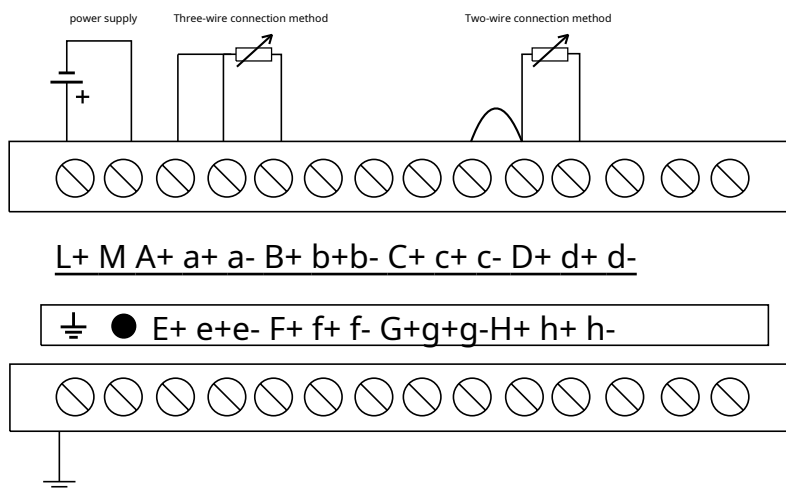
24VDC



GM AR08 Temperature Extension Module

(8th Route PT 100)

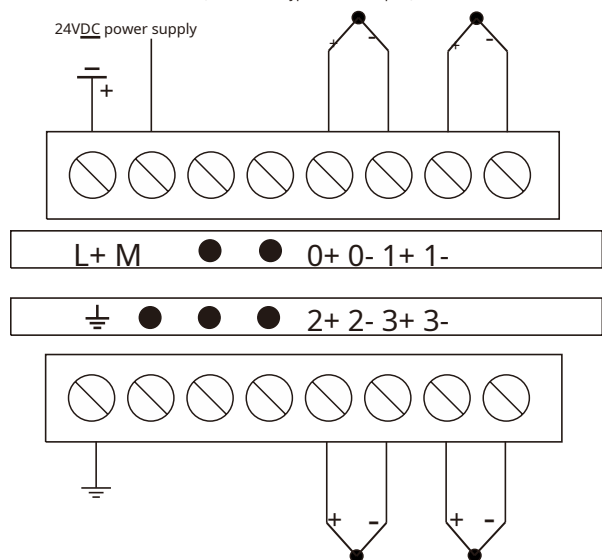
24VDC



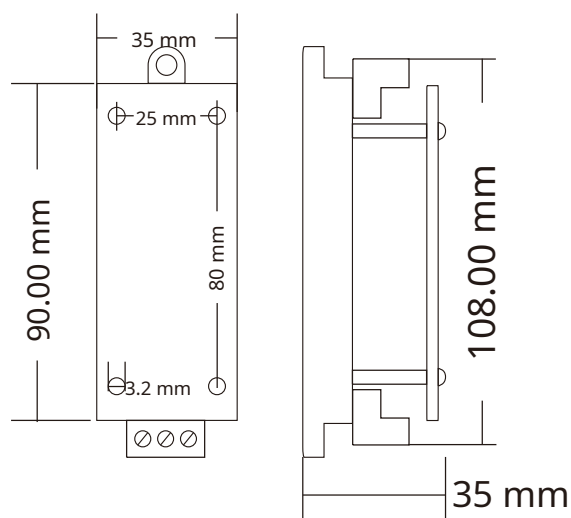
GM AT04 Temperature Expansion Module

(4-channel K-type thermocouples)

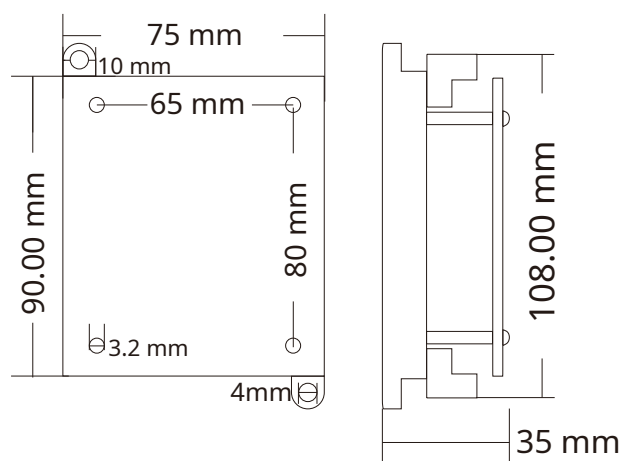
24VDC power supply



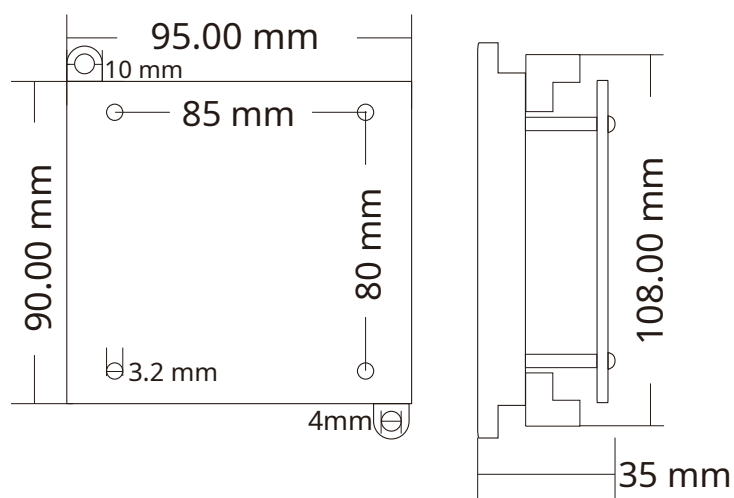
12.External dimensions and installation



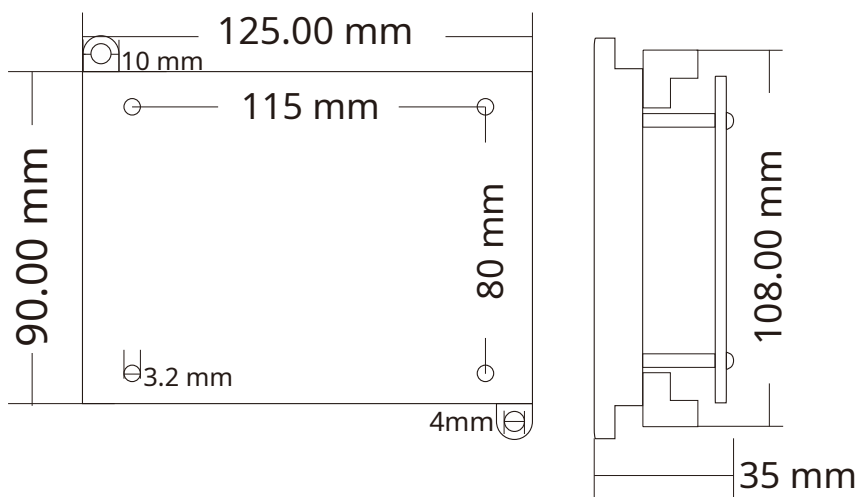
ApplicableGent IOandG485 IOHead Model



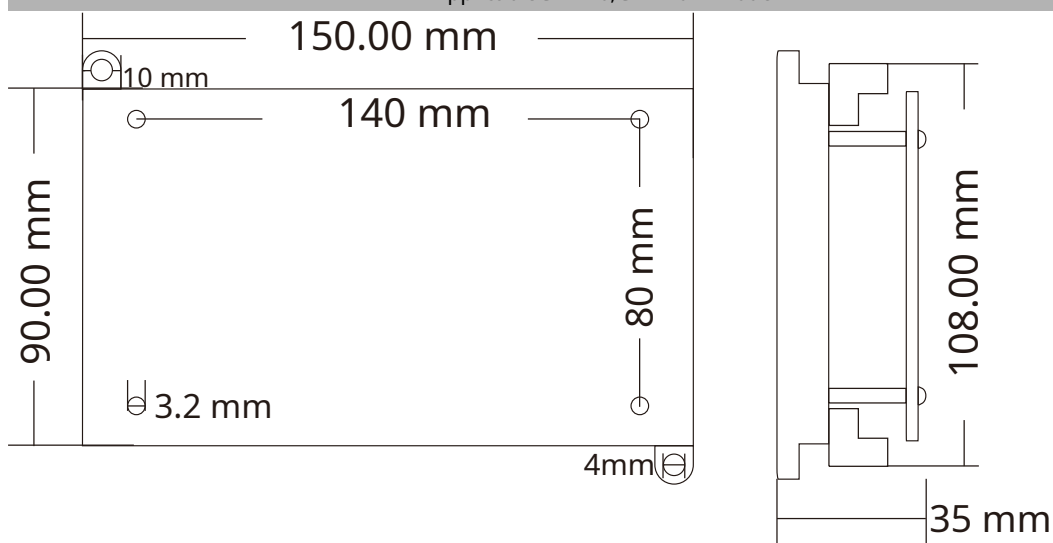
ApplicableGM DE08/DR08/AE04/AQ04/AR04/AN04/AT04model



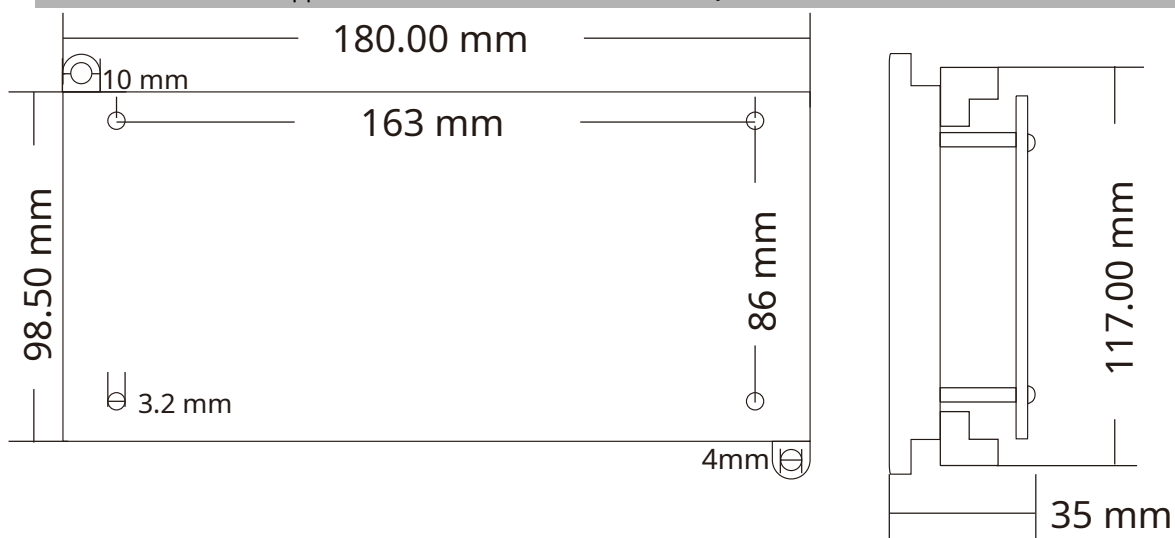
ApplicableG10XP,GR14XP,GM DE16/QR16/DR16/AE08/AM06/AR08/AN08model



Applicable GR/T20, GR/T20XP model



Applicable GR/T24XP, GR/T30, GM DR32/AQ08/AM12/AM16 model



Applicable GR/T30XP, GR/T40 model

Note: There is a clip on the back of the black base for mounting on a rail.