

GONGBEI

Smart Card-type PLC

Electrical equipment for industrial remote control operation in the electronics industry

User Manual 260226



1.Product selection.....	2
2.Product installation.....	4
2.1Host structure.....	4
2.1Combining the host and expansion modules.....	4
2.2Combining the main unit and signal board.....	4
2.3Installing and removing the main unit module on the guide rail....	5
2.4Terminal installation and removal.....	5
2.5wiring.....	5
3.Host usage.....	5
3.1The host computer has built-in analog input....	5
3.2Dual network port usage.....	6
3.3Main unit indicator light status.....	6
3.3Host technical specifications.....	7
3.4Main unit wiring diagram.....	8
3.5Frequently Asked Questions.....	10
4.Extended module usage.....	10
4.1Large Points Extension Module.....	11
4.2Standard extension modules.....	12
4.3Technical parameters of the expansion module.....	14
4.4Expansion module wiring diagram.....	16
4.6Frequently Asked Questions.....	25
5. Signal board usage.....	26
5.2 Signal Board Configuration Selection.....	26
5.3The register mapping relationships are shown in the table below.....	26
5.4Signal board technical parameters.....	28
5.5Signal board wiring diagram and DIP switches.....	29
5.6Frequently Asked Questions.....	32
6.Analog input wiring diagram.....	34
7.Internal diagram of transistor output.....	34

1.Product Selection

This series of card types **PLC**Functional and standard type **smart** Basically the same, compatible **2.8** Programming software, the biggest feature

The key feature is its compact design, which saves 30% of the main unit's volume and 70% of the expansion module's volume.

host model	Digital quantity	Analog quantity	485 mouths	network port	Extended Module	signal board	Configuration selection	SD card	powered by	Size (mm) (Width x Height x Depth)
KR28	16 inputs, 12 outputs from relays	—	Route 1	Route 2	support	Route 1	SR30	support	24VDC	84 x 115 x 100
KT28	16 inputs, 12 outputs	—	Route 1	Route 2	support	Route 1	ST30	support	24VDC	84 x 115 x 100
KR28XP	16 inputs, 12 outputs from relays	4 In, 2 Out	Route 1	Route 2	support	Route 1	SR30	support	24VDC	84 x 115 x 100
KT28XP	16 inputs, 12 outputs	4 In, 2 Out	Route 1	Route 2	support	Route 1	ST30	support	24VDC	84 x 115 x 100

Digital input/output module	describe	Configuration selection	Power consumption	Size (mm) (Width x Height x Depth)
KM DE08	8 Digital Inputs	EM DE08	1.5W	16 x 115 x 85
KM DE16	16 Digital Inputs	EM DE16	2.3W	16 x 115 x 85
KM DT08	8 transistor output	EM DT08	3W	16 x 115 x 85
KM QT16	16 transistor output	EM QT16	4.5W	16 x 115 x 85
KM DR08	8 Relay Output	EM DR08	4.5W	16 x 115 x 85
KM DT16	8 digital inputs, 8 transistor outputs	EM DT16	5W	16 x 115 x 85
KM DT32	16 digital inputs, 16 transistor outputs	EM DT32	1.5W	30 x 115 x 85
KM DR16	8 digital inputs and 8 relay outputs	EM DR16	2.5W	16 x 115 x 85
KM DR32	16 digital inputs; 16 relay outputs	EM DR32	2W	30 x 115 x 85
Analog module	describe	Configuration selection	Power consumption	Size (mm) (Width x Height x Depth)
KM AE04	4. Input (supports voltage or current)	EM AE04	1.5W	16 x 115 x 85
KM AE08	8 Inputs (Supports voltage or current)	EM AE08	2W	16 x 115 x 85
KM AE16	16 Inputs (Supports voltage or current)	EM DP01	2.5W	30 x 115 x 85
KM AQ04	4. Output (supports voltage or current)	EM AQ04	2.1W	16 x 115 x 85
KM AQ08	8. Output (supports voltage or current)	EM DP01	3W	16 x 115 x 85
KM AM06	4 inputs, 2 outputs (supports voltage or current)	EM AM06	2W	16 x 115 x 85
KM AM12	8 inputs, 4 outputs (supports voltage or current)	EM DP01	3W	30 x 115 x 85
KM AM16	8 inputs and 8 outputs (supports voltage or current)	EM DP01	3.5W	30 x 115 x 85
Temperature module	describe	Configuration selection	Power consumption	Size (mm) (Width x Height x Depth)
KM AR04	Temperature acquisition 4-channel RTD	EM AR04	1.5W	16 x 115 x 85
KM AR08	Temperature acquisition 8-channel PT100	EM AE08	2W	16 x 115 x 85
KM AT04	Temperature acquisition 4-channel TC	EM AT04	1.5W	16 x 115 x 85
KM AT08	Temperature acquisition using 8 K-type thermocouples	EM AE08	2W	16 x 115 x 85
KM AN04	Temperature acquisition 4-channel NTC	EM AE04	1.5W	16 x 115 x 85
KM AN08	Temperature acquisition 8-channel NTC	EM AE08	2W	16 x 115 x 85
KM AN16	16-channel NTC temperature acquisition	EM DP01	3W	30 x 115 x 85

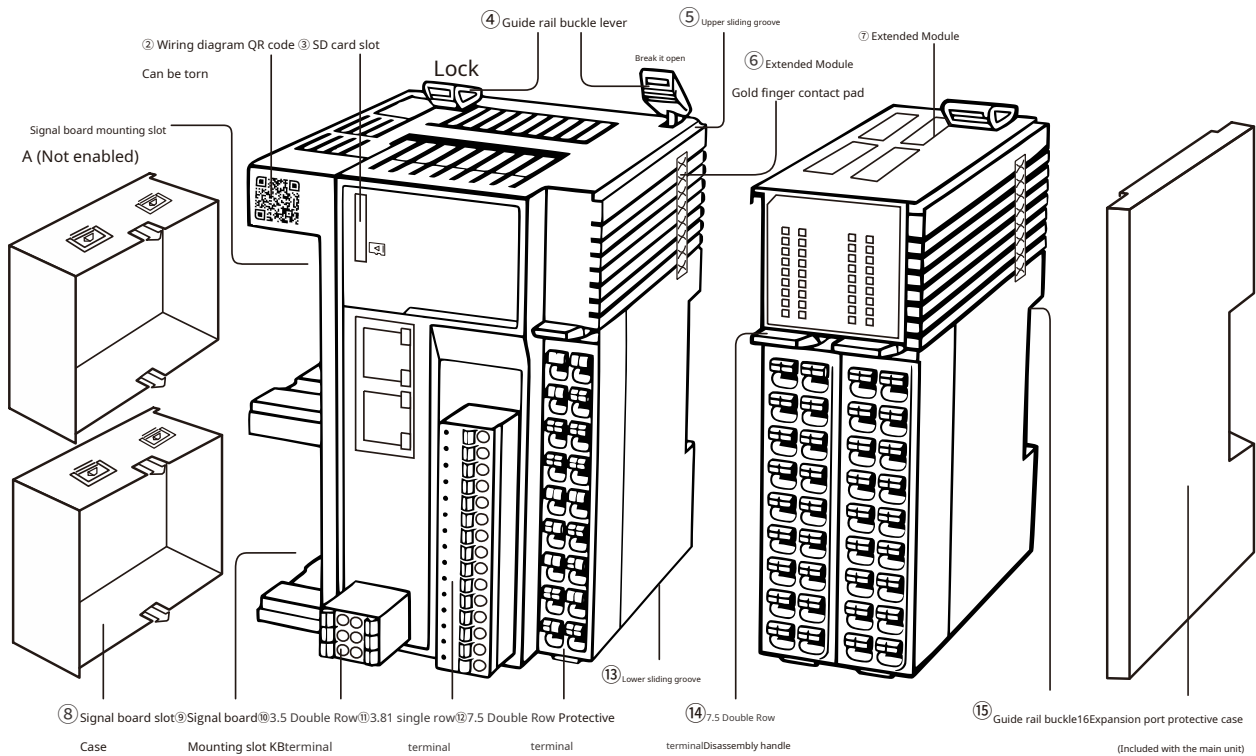
KM EN88①	8 analog inputs, 8-channel NTC temperature acquisition	EM DP01	3W	30 x 115 x 85
KM EN4C①	Analog input 4, temperature acquisition 12-channel NTC	EM DP01	3W	30 x 115 x 85

Note: ①KM EN88/EN4C Naming: Among them KM Represents a module, E Indicates analog input. N express NTCenter, 4 Indicates analog input is 4 One channel, C express 16 number system 16#Ç correspond 10 number system 12 express 12 individual NTCaisle.

Communication signal board	describe	configuration	Power consumption
KB CM02	1. 485 Communication Port	SB CM01	1W
Digital signal board	describe	configuration	Power consumption
KB DE04	4. Digital Input	SB CM01	0.8W
KB QT04	4 transistor outputs	SB CM01	0.8W
KB QR04	4. Relay output	SB CM01	1W
KB DT04	2 digital inputs, 2 transistor outputs	SB DT04	1W
Analog signal board	describe	configuration	Power consumption
KB AE01-1AI	Analog Input 1 (Supports voltage or current)	SB CM01	1.5W
KB AE02-2AI	Analog Input 2 (Supports voltage or current)	SB CM01	1.5W
KB AE04-4AI	Analog Input 4 (Supports voltage or current)	SB CM01	2W
KB AE06-6AI	Analog input 6 (supports voltage or current)	SB CM01	2W
KB AQ01-1AQ	Analog Output 1 (Supports voltage and current)	SB CM01	2W
KB AQ02-2AQ	Analog output 2 (supports voltage and current)	SB CM01	2W
KB AQ04-4AQ	Analog output 4 (supports voltage or current)	SB CM01	3W
KB AM03-2AI1AQ	Analog inputs: 2 (voltage or current) and 1 output (voltage and current).	SB CM01	1W
KB AM04-2AI2AQ	Analog inputs: 2 (voltage or current) 2 outputs (voltage and current)	SB CM01	1.5W
KB AM05-4AI1AQ	Analog inputs: 4 (voltage or current), 1 output (voltage and current)	SB CM01	1.5W
KB AM06-4AI2AQ	Analog inputs: 4 (voltage or current) 2 outputs (voltage or current)	SB CM01	2W
Temperature acquisition signal board	describe	configuration	Power consumption
KB AR02-2PT100	Temperature acquisition 2-channel PT100	SB CM01	2W
KB AR04-4PT100	Temperature acquisition via 4-channel PT100 (2-wire only)	SB CM01	2.5W
KB AN04-4NTC	Temperature acquisition via 4-channel NTC (10K, 3950)	SB CM01	2W
KB AN06-6NTC	Temperature acquisition using 6-channel NTC (10K, 3950)	SB CM01	2.5W
KB AT04-4TC	Temperature acquisition using 4-channel K-type thermocouples	SB CM01	2W

2.Product Installation

2.1Overall structure



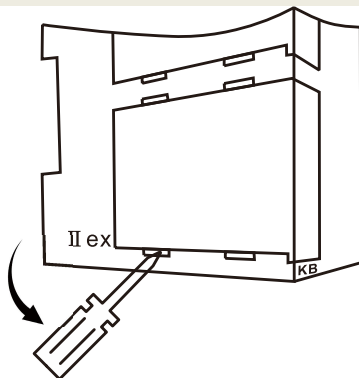
2.1Combining the host and expansion modules

first step: ⑯ The expansion port protective cover is installed on the main unit by default. Slide it forward or backward to remove it from the main unit. Second step: Install the main unit... ⑬ Sliding slot and ⑤ The upper sliding slot aligns with the sliding slot of the expansion module. The expansion module slides along the slot from front to back or from back to front until the front and rear ends are completely aligned.

Step 3: Remove the... ⑯ The expansion port protective cover is installed on the right side of expansion module ⑦.

2.2Combine the host and signal board

Note: The signal board does not support hot-swapping and must be disconnected from power before installation and removal.



Disassembly: Locate the left side of the main unit ⑨ Signal board mounting slot KB Insert the screwdrivers one by one ④ Gently pry up and remove it from the slot.

Installation: Align the signal board with all four sides. ⑨ Signal board mounting slot KB Place it in, and apply appropriate force to flatten and lock the signal board in place.

2.3 Installing and removing the main module on the guide rail

All of ④ Open the guide rail latch lever diagonally forward until it is in the open position. Place the host or module in the slot on the guide rail and align it. Then, put all the... ④ Use the lever to pull the guide rail latch back to the locked position.

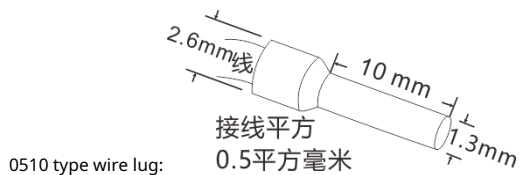
2.4 Terminal installation and removal

Disassembly: ⑦ To remove the double-row terminal block, press down firmly without releasing, then pull it outwards. For installation: First, place the lower semi-circular end of the terminal block into the cylindrical groove below it. Using the lower end of the terminal block as the center point, rotate it inwards until it is flat and locked in place.

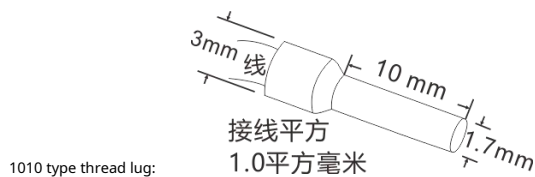
2.5 wiring

Press the orange locking switch on the terminal block with a flathead screwdriver, then insert the wire. Release the locking switch and tighten the wire. A tubular lug is recommended for the wire connector. Recommended lugs are as follows:

For ③ 3.5 double-row terminals and ① 3.81 Single row terminal, 0510 tubular wire terminal is recommended, as shown in the figure below.



for ⑦ 7.5 Double-row terminal blocks. 1010 tubular terminal blocks are recommended, as shown in the diagram below.



3. Host usage

3.1 The host has built-in analog signal

If the host model has "XP" as a suffix, it means that the host has a built-in analog channel. **Analog input start register address:** Starting from AIW0, for example, a KR28XP host with 4 analog inputs would have AIW0, AIW2, AIW4, and AIW6 as the starting addresses. **Register data range** 0~27648, corresponding to 0~10V or 0~20mA.

Analog output start register address: Starting from AQW0, **Register data range** 0~27648, corresponding to outputs of 0~10V and 0~20mA.

Analog filter coefficients: The host's built-in analog input allows for setting the filtering coefficient. For fast-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 measurement, the filtering coefficient can be increased. The filtering coefficient is stored in special registers SMB1850~SMB1853, with values ranging from 0 to 3. 0 corresponds to the minimum filtering, and 3 corresponds to the maximum filtering time. The default value after restarting is 2. Each register corresponds to one channel. For example, on the KR30XP, the third analog input channel can be configured with different filtering levels by assigning values from 0 to 3 to SMB1852. Note:

The registers are not saved when power is lost; they need to be reassigned every time power is restored.

KR28XP,KT28XPAnalog terminals	Terminal Definition	Corresponding register
The diagram illustrates the terminal block layout. On the left, terminals V0 through Vb are arranged vertically, with V0 at the top and Vb at the bottom. Above V0 is the label 'AI/O'. To the left of V0 is an arrow pointing up, and to the right of Vb is an arrow pointing down. A voltage symbol (V) is shown to the left of V2. Between V3 and AM is the label 'OUT'. On the right, terminals I0 through Ib are arranged vertically, with I0 at the top and Ib at the bottom. Above I0 is the label 'AI/O'. To the left of I0 is an arrow pointing up, and to the right of Ib is an arrow pointing down. A current symbol (A) is shown to the right of I2. Between I3 and AM is the label 'OUT'. The central column of terminals is labeled A1 B1 through A7 B7.	V0Analog input number1aisle0-10Venter	AIW0
	I0Analog input number1aisle0-20mAenter	
	V1Analog input number2aisle0-10Venter	AIW2
	I1Analog input number2aisle0-20mAenter	
	V2Analog input number3aisle0-10Venter	AIW4
	I2Analog input number3aisle0-20mAenter	
	V3Analog input number4aisle0-10Venter	AIW6
	I3Analog input number4aisle0-20mAenter	
	AMAnalog input and output common terminal, shared by both.	
	VaAnalog output0-10VOutput	AQW0
	IaAnalog output0-20mAOutput	
	VbAnalog output0-10VOutput	AQW2
	IbAnalog output0-20mAOutput	

3.2Dual network ports

- Gongbei card typePLCIt has a built-in three-port switch function, with one port permanently connected to the internal network.PLCThe other two are external. These two external network ports do not have a master/slave distinction and can be used simultaneously. For example, a touchscreen port...NET1port, computer plugNET2At this point, the computer can provide...PLCYou can download programs, including programs for touchscreens.PLCIt can also communicate with the touchscreen. Built-in.PLC
- Network port supportS7Ethernet protocol;Modbus TCPprotocol;TCPFreeport protocol. Not supported.pnThe protocol does not support it.ethcatProtocol. Supports a maximum of6One connection, all protocols shared.

3.3Main unit indicator light status

logo	color	Classification	meaning
RUN	green	PLC Operating status indicator	Constantly lit: Running
STOP	yellow		Solid: Stopped; Flashing: Forced position is active.
ERROR	red		Always on: Fault
NET	green	Built-in switch Status indicator light	Solid or flashing: Built-in switch function is normal.
KBa	green	KB slot signal Board indicator lights	Constant light indicates that the signal board of SB CM01 is configured normally and communicates normally with the host (except for KB DT04 and QT02, because they are not configured with SB CM01).
KBb	green		Flashing: Enabled only when the KB CM02 signal board is installed, indicating that data is being sent in 485 communication.
NET1	Yellow and green lights	Network Port 1 Indicator Light	Two lights flashing simultaneously or remaining constantly on: Data is being transmitted or received.
NET2	Yellow and green lights	Network Port 2 Indicator Light	Two lights flashing simultaneously or remaining constantly on: Data is being transmitted or received.

PLC running indicator status	Common State Analysis
------------------------------	-----------------------

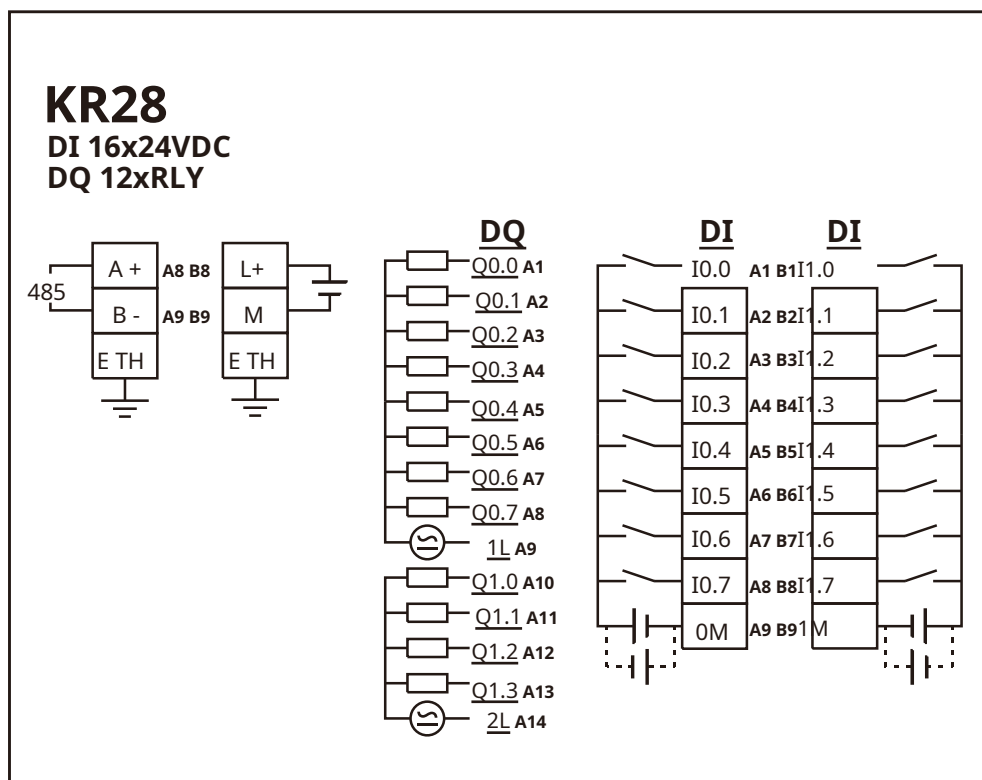
STOP light (yellow light always on)	① If the program does not run after downloading, click the RUN button in the software; ② If it does not run after power-on, check the system block, start it, and select RUN; ③ If the yellow light is on during operation, open the information table to check for fatal and non-fatal errors; ④ If the software does not run even after clicking the RUN button, check the system blocks, start the program, allow missing hardware, allow hardware configuration errors, check the boxes 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 "Flashing Indicator Light" button was clicked on the communication interface.

3.3Host technical parameters

Standard host	KR28/KT 28	KR28XP/KT28XP
Configuration selection	SR30/ST30	SR30/ST30
Power consumption	14W/12W	18W/15W
Program space	Maximum size 50KB; compilation warnings can be ignored.	
Data space	12KB	
Keep storage area	Maximum 12KB	
Power supply voltage	Rated 24VDC, power supply range 20~28VDC	
Process mapping	Zone I ranges from I0.0 to I1279.7; Zone Q ranges from Q0.0 to Q1279.7.	
Analog mapping	56-character AI/56-character AQ	
Dimensions (mm)	84 x 115 x 100	
IO digital quantity		
Onboard digital	16 in, 12 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 format	KR: Relay type, KT: Transistor type	
Output type	Transistor: Source type (can output 24V+ and disconnect 24V+, cannot output 0V); Relay: 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.	
High-speed counting	Single-phase: 4 channels 100kHz; 2 channels 30kHz	
	Phase A/B: 2 channels 100kHz; 2 channels 30kHz	
	I0.0~I0.3 are 100kHz high-speed ports, the rest are low-speed ports.	
Pulse output	2-channel (transistor only): Maximum 100kHz	
IO analog input		
Onboard analog quantity	—	4 In, 2 Out
Input method	—	Non-difference
Input signal	—	0~10V or 0~20mA
Input data format	—	0~27648
impedance	—	Voltage: 30KΩ, Current: 150Ω
Input resolution	—	12-bit

Input error	—	Maximum: ±1% of full scale
Input conversion time	—	100ms
Output signal	—	0~10V and 0~20mA
Output data format	—	The input voltage range is 0~27648, with a maximum assignable value of 28200, corresponding to 20.4mA and 10.2V.
Output load capacity	—	Voltage: >5KΩ, Current: <500Ω
Interfaces and functions		
Network port specifications	2-channel 10M/100M adaptive; See the section on dual network port usage for details.	
485 interface	It comes with 1 built-in port, supporting PPI protocol, Modbus RTU protocol, and 485 freeport protocol; it supports baud rates of 9.6K, 19.2k and 187.5kbps; by adding the KB CM02 signal board, another 485 interface can be added, which also supports the above protocols.	
Extended Module	Supports KM card-type extension modules from Gongbei Smart. A maximum of 16 modules are supported; refer to the extension module usage section.	
signal board	Supports Gongbei Smart card-type signal boards.	
memory card	Supports microSDHC cards (sold separately), can download programs to PLCs, restore PLCs to factory settings, and copy programs from PLCs to SD cards.	
Real-time clock and batteries	The clock continues to run after a power outage. It has a built-in, replaceable, non-rechargeable CR1220 button battery; the battery lasts approximately one year after a power outage; the device does not consume battery power when powered on; in case of battery failure, the clock will revert to 2000.01.01.	
encryption	It supports Level 4 encryption, using more complex encryption algorithms and storage depth, making it unbreakable and more secure.	
Operating temperature	- 20°C~50°C	
Installation method	35mm standard guide rail mounting	

3.4Main unit wiring diagram

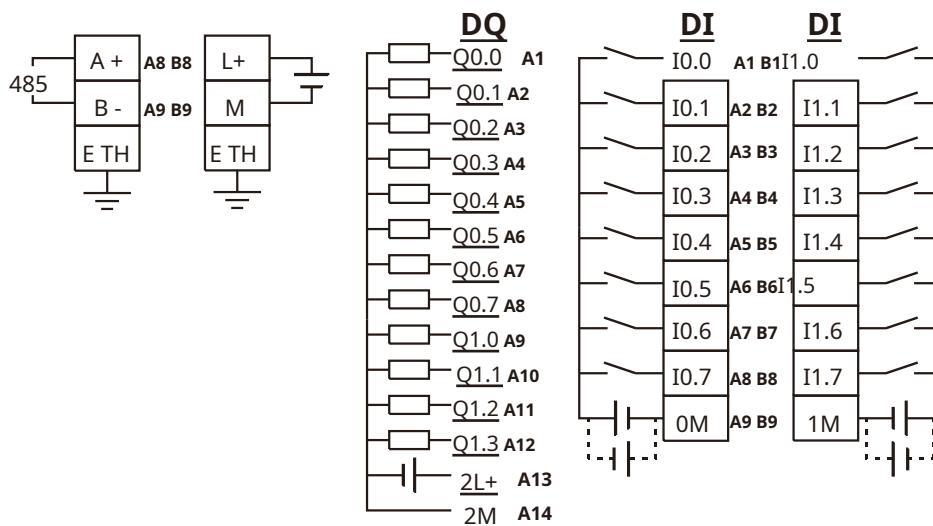


KR28 (Relay) Wiring Diagram

KT28

DI 16x24VDC

DQ 12x24VDC



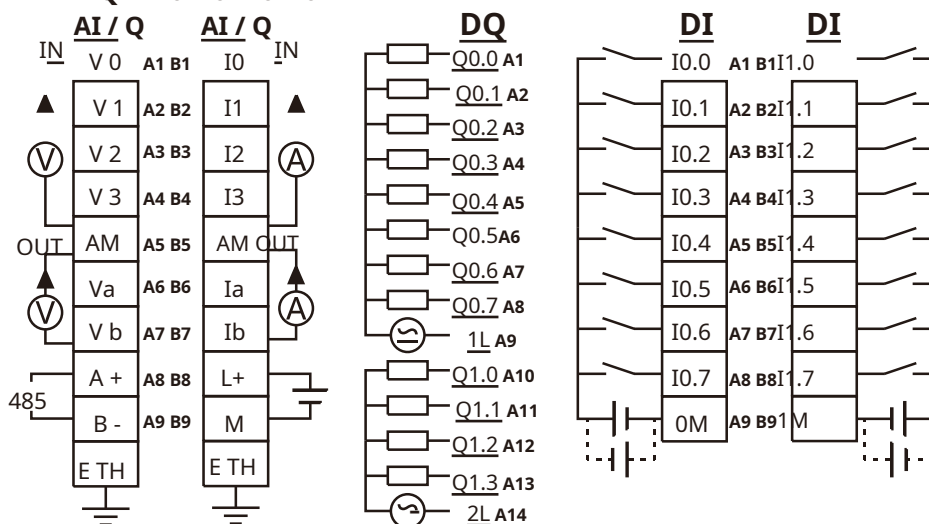
KT28 (Transistor) Wiring Diagram

KR28XP

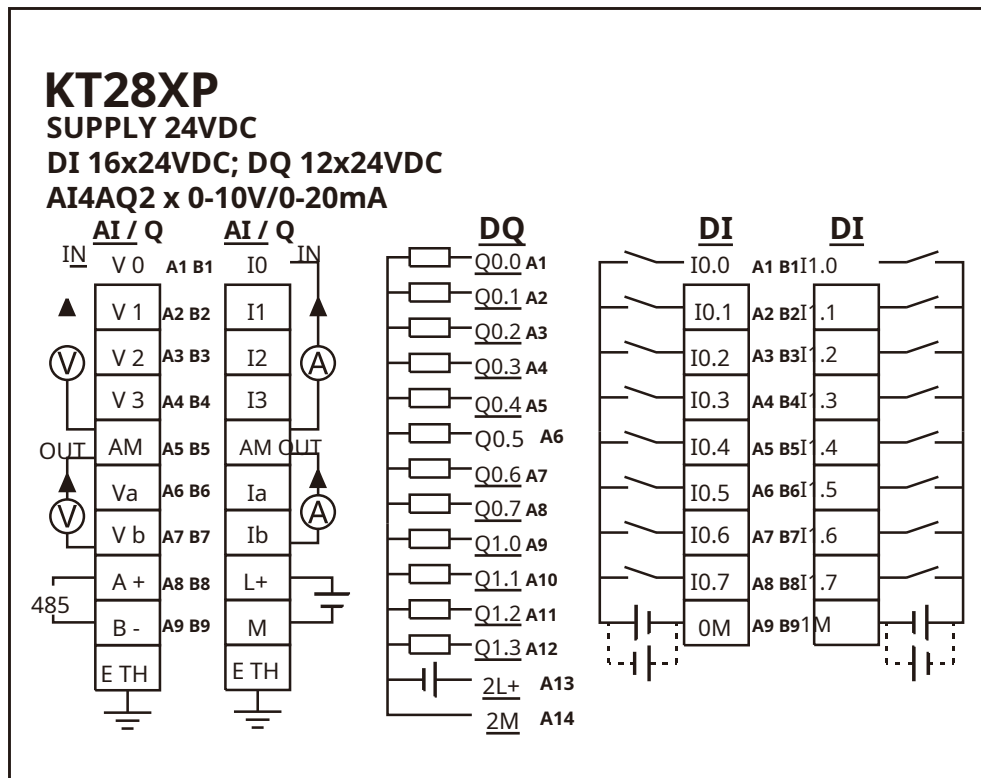
SUPPLY 24VDC

DI 16x24VDC; DQ 12xRLY

AI4AQ2 x 0-10V/0-20mA



KR28XP (Relay) Wiring Diagram



KT28XP (Transistor) Wiring Diagram

3.5 Frequently Asked Questions

2.5.1 Does it support data retention after power failure? How long is the data retained? What is the data retention range? A: Yes, permanent storage is supported.

The maximum storage size is 10240 (10KB) bytes. An error will occur if the configured value exceeds the range.

2.5.2 Is the STOP indicator light on the Smart host flashing? A: 1. There might be a forced activation; try

disabling all forced activations. 2. Check if the SD card is inserted.

2.5.3 The wiring diagram is on the right side of the equipment, which makes it inconvenient to view?

A: 1. There is a QR code in the upper left corner of the main unit. Scan the code to view it. You can also peel off the QR code.

4. Extension module usage

Gongbei offers a wide variety of card-type expansion modules, such as...KM AM16 (Analog quantity8enter8(Output module). Requires configuration as follows:

EM DP01This type of module is called a large-point module. Resources are automatically mapped after configuration, making it simple to use.

Digital input/output module	Configuration selection	Analog module	Configuration selection	Temperature and weighing	Configuration selection
KM DE08	EM DE08	KM AE04	EM AE04	KM AR04	EM AR04
KM DE16	EM DE16	KM AE08	EM AE08	KM AR08	EM AE08
KM DR08	EM DR08	KM AE16	EM DP01	KM AN04	EM AE04
KM DT08	EM DT08	KM AQ04	EM AQ04	KM AN08	EM AE08
KM QT16	EM QT16	KM AQ08	EM DP01	KM AN16	EM DP01
KM DR16	EM DR16	KM AM06	EM AM06	KM AT04	EM AT04
KM DR32	EM DR32	KM AM12	EM DP01	KM AT08	EM AE08
KM DT16	EM DT16	KM AM16	EM DP01	KM EN88	EM DP01

KM DT32

EM DT32

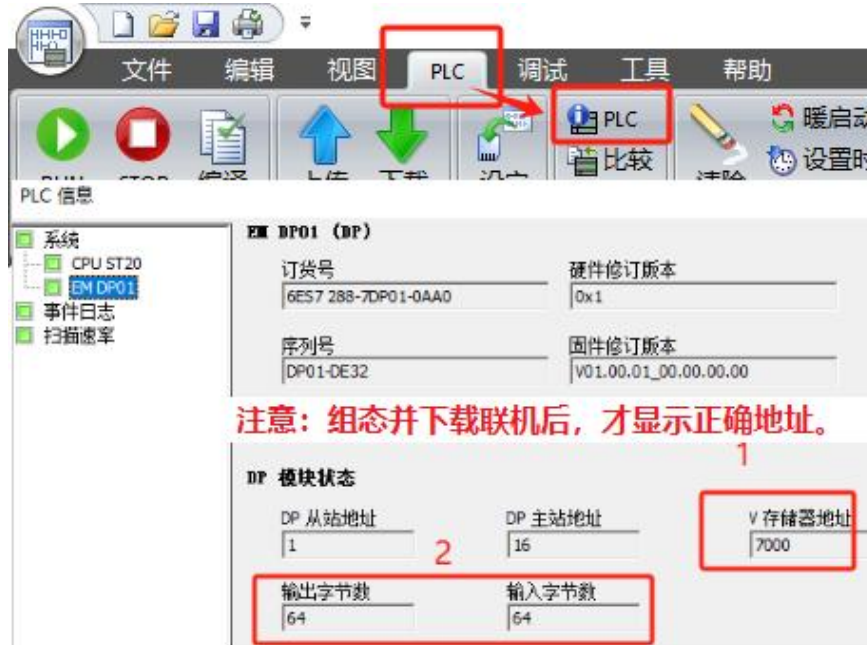
KM EN4C

EM DP01

4.1 Large Points Expansion Module

Gongbei Big Points module resource mapping to V-zone memory. The starting address of the zone is automatically assigned. (Attached to the front) Configuration for each slot EM

DP01 The starting address can be found at PLC Information form (menu bar click) PLC Tool bar Click PLC View it in (). See the following image as an example.



The above is marked 1. This is the starting address of the module's resources. (See the diagram above.) 2. This section specifies the number of bytes used for input and output resources, and... **The input resources are specified in order, followed by the output resources.** Therefore, input resource usage 64 bytes (V7000~V7063) and output resources consumed 64 bytes (V7064~V7127).

Assuming the above diagram is KM AM12 (8 enter 4). The analog input module has the following addresses in sequence: VW7000, VW7002, ..., VW7014. The output channel addresses are as follows: VW7064, ..., VW7070. The program contains... VW7064 Assignment 13824. Then the first analog output is half the range. 5V and 10mA. Use a signal generator to give KM AM12. Second analog input 20mA. Read register VW7002 for 27648.

Note: The Gongbei host can be expanded to a maximum extent. **16** Both standard modules and high-point modules are acceptable. Standard module slot

Set greater than the first 6 for single-slot usage, please refer to the next chapter. The starting address of the large-point module is fixed regardless of the slot, as shown in the table below.

slot Number	V-zone memory Starting address	Digital input/output module		Analog quantity, temperature, or weighing module	
		Input channel start address	Output channel start address	Input channel start address	Output channel start address
EM0	VB7000	V7000.0	V7064.0	VW7000	VW7064
EM1	VB7128	V7128.0	V7192.0	VW7128	VW7192
EM2	VB7256	V7256.0	V7320.0	VW7256	VW7320
EM3	VB7384	V7384.0	V7448.0	VW7384	VW7448
EM4	VB7512	V7512.0	V7576.0	VW7512	VW7576
EM5	VB7640	V7640.0	V7704.0	VW7640	VW7704
EM6	VB7768	V7768.0	V7832.0	VW7768	VW7832

EM7	VB7896	V7896.0	V7960.0	VW7896	VW7960
EM8	VB8024	V8024.0	V8088.0	VW8024	VW8088
EM9	VB8152	V8152.0	V8216.0	VW8152	VW8216
EM10	VB8280	V8280.0	V8344.0	VW8280	VW8344
EM11	VB8408	V8408.0	V8472.0	VW8408	VW8472
EM12	VB8536	V8536.0	V8600.0	VW8536	VW8600
EM13	VB8664	V8664.0	V8728	VW8664	VW8728
EM14	VB8792	V8792.0	V8856	VW8792	VW8856
EM15	VB8920	V8920.0	V8984	VW8920	VW8984

As shown in the table above, each large-point module occupies 128 bytes of the V area, and its address is fixed according to its slot number. For example, if EM0 is a regular module and slot EM1 is a large-point module, then the large-point module does not start from VB7000, but from VB7128, as shown in the figure below.

PLC 信息

系统

- 系统
- CPU ST20
- EM AQ02
- EM DP01
- 事件日志
- 扫描速率

EM DP01 (DP)

订货号: 6ES7 288-7DP01-0AA0

硬件修订版本: 0x1

序列号: DP01-DE32

固件修订版本: V01.00.01_00.00.00.00

错误

当前 I/O 错误: 无报警

DP 模块状态

DP 从站地址: 2

DP 主站地址: 16

V 存储器地址: 7128

输出字节数: 64

输入字节数: 64

状态: 当前处于数据交换模式

For example: KR20 + KM DE08 + KM EN88 + KM AM06 + KM DE32, a total of 4 extensions. KM EN88 is the EM1 slot number, occupying 128 bytes starting from VB7128. The analog input channels are VW7128, VW7130.....VW7142 in sequence, and the temperature input channels are VW7144, VW7146.....VW7158 in sequence. KM DE32 is the EM3 slot number, occupying the first 128 bytes of VB7384. The digital input channels are V7384.0, V7384.1...V7387.7.

illustrate 1: The starting address of the large point module is automatically assigned and cannot be modified. The starting address can be found in the table above. Slot number

in front 6 You can also quickly view the information table at any time.

illustrate 2: For modules with large point counts V District Address , It cannot be used for any other purpose in the program, Unoccupied ones can be used freely

Convenient to use.

4.2Standard extension module

When standard modules are connected to the first 6 slots, they can be configured directly in the status table. Channel type configuration and filter configuration are supported, which will not be elaborated upon here. (Note: KM AN04 is configured for use with EM AE04; KM AR08, KM AT08, and KM AN08 are configured for use with EM AE08, and are used according to the addresses in the system block.)

Note: The Gongbei host can be expanded to a maximum extent. **16** Both standard modules and high-point modules are acceptable. Large-point digital model

Block position greater than the first 6 When there are 6 slots, refer to the previous chapter. When the standard module location is greater than 6 slots, the resource addresses are arranged compactly according to

the table below.

Special registers		Digital input channel		Digital output channel	
IW630	Reserved	First passage	I700.0	First passage	Q700.0
IW632	Diagnostic alarm codes	Second passage	I700.1	Second passage	Q700.1
IB634	Diagnostic alarm device ID	...		...	
IB635	Disconnection error device ID	Channel 256	I731.7	Channel 256	Q731.7
ID636	Module 7 Model (Data) (Type ASCII)	Analog input or temperature channel		Analog output channel	
		First passage	IW800	First passage	QW800
ID640	Module 8 Model	Second passage	IW802	Second passage	QW802
ID644	Module 9	...		...	
ID648	Module 10	Channel 128	IW1054	Channel 128	QW1054
ID652	Module 11 Model	Special registers			
ID656	Module 12 Model	ID664	Module 14	ID672	Module 16
ID660	Module 13	ID668	Module 15		

Note 1, Q How big is the district? I Largest district IB1279, QB1279.

Note 2 For a partial explanation of special registers, please see the FAQ section at the end of this document.

Note 3 For slots 6 Future expansion modules, Maximum number of points for digital input 256 Digital output 256_{point}; mold

Analogous Input 128 Point; analog output 128 Points; because large point modules do not occupy space. I, Q District, so large areas are not considered.

Limitations of the points module.

For example: KR20+6 modules + KM DE08 (8 digital inputs) + KM AE16 (16 analog inputs) + KM AM06 (4 analog inputs, 2 analog outputs) +

KM DR16 (8 digital inputs, 8 analog outputs) + KM AQ02 (2 analog outputs), a total of 11 modules. The starting addresses of the first 6

modules are obtained by configuring in the configuration table, and will not be repeated here.

The digital input channel addresses of KM DE08 are I700.0, I700.1, ..., I700.7, respectively; KM AM16 is a large-

point module that does not occupy the I and Q areas, and its starting address is fixed at VW7896; the analog

input channel addresses of KM AM06 are IW800, IW802, ..., IW806, respectively.

The analog output channel addresses are QW800 and QW802, respectively.

The digital input channel addresses of the KM DR16 are I701.0, I701.1, ..., I701.7, respectively.

The digital output channel addresses are Q700.0, Q700.1, ..., Q700.7, respectively.

The analog output channel addresses of KM AQ02 are QW804 and QW806, respectively.

Note 1: When a standard module is installed after the 6th slot, the Channel configuration cannot be performed at the system block level, therefore analog signals...

input/output modules can only use the default channel settings. , The default is either a current input channel or a current output channel. Therefore...

For modules requiring voltage input or output, they should be placed in the front. 6 Each slot. However, for wiring, channels are distinguished.

Modules of this type are unaffected, such as KM AE16 All channels support voltage or current wiring differentiation, so...

In the slot 6 It will not be affected in the future.

4.3Expansion Module Technical Specifications

Digital input/output module	KM DE08/16	KM DR08	KM DT08/ QT16	KM DR16/DR32	KM DT16/DT32
Configuration model	EM DE08/16	EM DR08	EM DT08/ QT16	EM DR16/DR32	EM DT16/DT32
Number of channels	8/16	8. Relay output	8/16 Transistor output	8 in, 8 out / 16 in, 16 out relay	8 in, 8 out / 16 in, 16 out transistor
Digital input type	Sink or source input (supports bidirectional input; common terminal can be positive or negative).				
Digital input voltage	Logic 1 Minimum voltage: 15VDC at 2.5mA				
	Logic 0 Maximum voltage: 5VDC at 1mA				
Digital input isolation	Internal opto-isolation				
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.				
Output common terminal	Transistor 3A				
Rated current	8A relay				
Digital output isolation	Internal opto-isolation				
L+,M Rated Voltage	24 V DC at 4 mA (30 V DC maximum)				
PR indicator light	A solid green light indicates that the module is configured and there are no errors.				
	Flashing green light: The module is not configured.				
	Red flashing: Communication with the host is abnormal (disconnect the module and check if the connector pins are deformed or dented).				
ERR indicator light					
I/O channel indicator lights	A solid green light indicates that there is a signal input/output.				
	Extinguished: No signal input/output.				
Operating temperature	- 20°C~50°C				
Dimensions (width * height * depth)	32-point modules (e.g., KM DR32/DT32): 30 x 115 x 85; other modules: 16 x 115 x 85;				
Installation method	Guide rail installation				

Analog module	KM AE04	KM AQ04	KM AM06	KM AE08/16	KM AQ08	KM AM12/16
Configuration model	EM AE04	EM AQ04	EM AM06	EM AE08/DP01	EM DP01	EM DP01
Input number	Route 4	-	Route 2/4	Route 8/16	-	Route 8/8
Number of output channels	-	Route 2/4	Route 1/2	-	Route 8	Route 4/8
Input range	- 10V~10V or 0-20mA			0~10V or 0-20mA		
Input precision	0.3% of full scale					
Output range	- 10V~10V and 0-20mA			0~10V and 0-20mA		
Output resolution	Voltage: 11 bits + sign; Current: 11 bits					
Output impedance	Voltage: ≥1000Ω Current: ≤300Ω					
Full scale range	Voltage: -27648 to 27648; Current: 0 to 27648; Greater than 29200 Overrange			Voltage/Current: 0 to 27648; Over-range > 29200		
isolation	none					
PR indicator light	A solid green light indicates that the module is configured and there are no errors. Flashing green light: The module is not configured.			A solid green light indicates that the module is configured and there are no errors. Flashing green light: The module is not configured.		

	Red flashing: Module power supply malfunction, input channel overload, or output error. The channel is faulty or there is a communication problem with the host.	Red flashing: The module power supply is abnormal, or the analog input channel is out of range, or there is a communication problem with the host (disconnect the module and check if the connector pins are deformed or dented).
ERR indicator light		
Channel indicator lights	Extinguished: The module is not configured. A solid green light indicates that the module is configured and there are no errors. Red flashing: Module power supply malfunction; or input channel exceeds range. ; Or the output channel is malfunctioning, because the output has feedback detection, such as the input... The output is 10V but the actual output is only 5V. For example, if the output is 10mA but there is no connection, the actual output is 0mA.	Extinguished: The module is not configured. A solid green light indicates that the module is configured and there are no errors. Green flashing: Input channel exceeds range (Note: Output channel does not have feedback detection and cannot detect output channel abnormalities.)
Operating temperature	- 20°C~50°C	
Dimensions (width * height * depth)	KM AE16/AM12/AM16: 30 x 115 x 85; other modules: 16 x 115 x 85;	
Installation method	Guide rail installation	

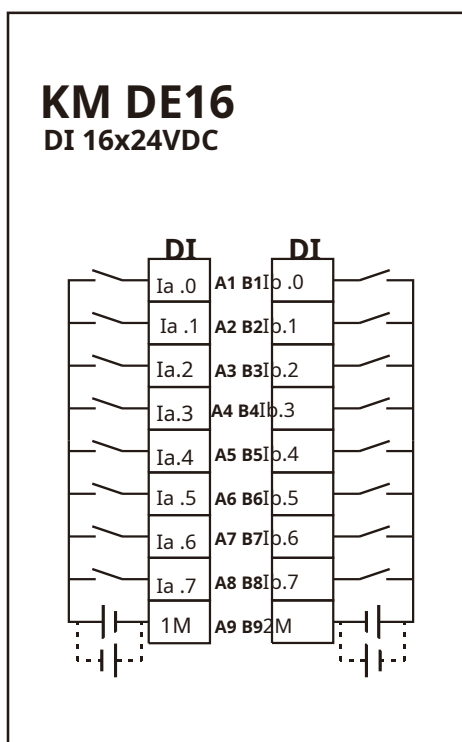
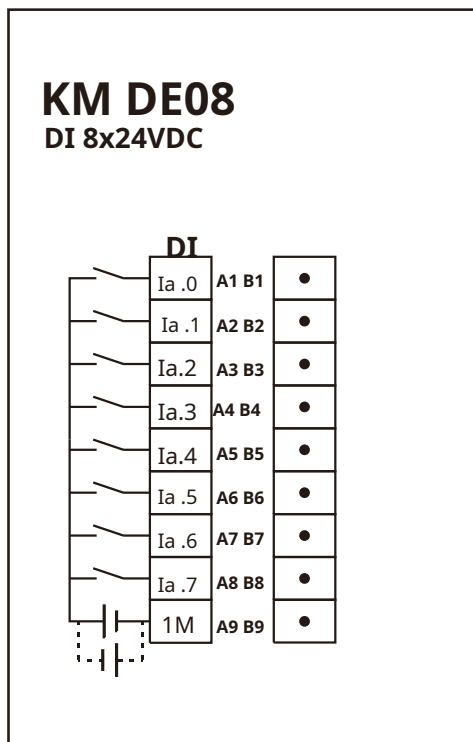
Temperature acquisition module	KM AR04	KM AR08	KM AT04	KM AT08	KM AN04/08/16	KM KN88/EN4C
Configuration model	EM AR04	EM AE08	EM AT04	EM AE08	EM AE04/AE08/DP01	EM DP01
Number of channels	Route 4	Route 8	Route 4	Route 8	Routes 4/8/16	8NTC+8AI / 12NTC+4AI
Sensor type	Type: 2/3/4 wires Resistors: All supported Thermistor: only PT100/PT200/PT500/PT1000 (temperature coefficient Pt) 0.003850)	Type: 2/3/4 wires Thermistors: Supported only PT100 (Temperature Coefficient) Pt 0.003850) Note: Channel configuration only Support filtering	J/K/T/E/B/N /C/R&S/TX K/XK(L) type thermocouple	Type K only thermocouple Note: Channel configuration Filtering is supported only.	NTC (10K, B value: 3950)	
Temperature measurement range	- 200.0°C~850.0°C		See Note 1 in the table below.		- 50.0°C~150.0°C	
Corresponding reading range	- 2000~8500(Magnified 10 times)		(Magnified 10 times)		- 500~1500 (10x magnification)	
Over-range reading	Below the minimum value: -32768; Above the maximum value: +32767					
Temperature channel resolution	0.1°C					
Temperature channel accuracy	0.1% of full scale		0.5% of full scale		0.1% of full scale	
Temperature acquisition time	500ms		800ms		800ms	
Sensor wire length	Maximum 100 meters		Maximum 100 meters		Maximum 30 meters	
Analog input range	-					- 0~10V or 0-20mA
Analog input accuracy	-					0.3% of full scale
Register value range	-					Voltage/Current: 0~27648
Is the passageway isolated?	isolation			none		
PR indicator light	Green light always on: The module is configured and powered normally, with no errors. Green light flashing: The module is not configured. Red flashing: The module power supply is abnormal (the user power alarm needs to be selected in the system block); or the channel is abnormal; or the communication with the host is abnormal (disconnect the module and check whether the connector pins are deformed or dented).					
ERR indicator light						
Temperature or analog input	Green light always on: Module configuration, power supply, and channel data are normal.					Green light always on: Module configuration, supply

Entry channel indicator light	Red flashing: Alarms may occur due to abnormal module power supply, disconnection of channel, or exceeding the limit (unchecking this option in the system block will prevent further alarms). Green light flashing: Module power supply failure , Temperature or analog input overrange	Electrical and channel data are normal.
Operating temperature	- 20°C~50°C	
Dimensions (width * height * depth)	KM AN16/EN88/EN4C: 30 x 115 x 85; Other modules: 16 x 115 x 85;	
Installation method	Guide rail installation	

Note 1: The KM AT04/8 supports thermocouples, and the measurement range and accuracy are listed below.

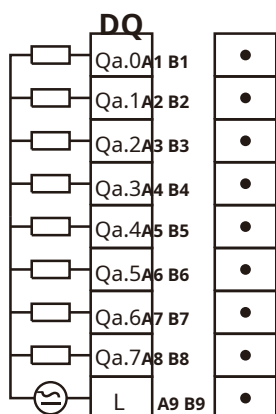
type	Below the minimum value of the range	Lower limit of rated range	upper limit of rated range	Exceeding the maximum range	Rated at 25°C Range accuracy	- Rated range accuracy from 20°C to 60°C
J	- 210.0 °C	- 150.0 °C	1200.0 °C	1450.0 °C	±0.3 °C	±0.6 °C
K	- 270.0 °C	- 200.0 °C	1372.0 °C	1622.0 °C	±0.4 °C	±1.0 °C
T	- 270.0 °C	- 200.0 °C	400.0 °C	540.0 °C	±0.5 °C	±1.0 °C
E	- 270.0 °C	- 200.0 °C	1000.0 °C	1200.0 °C	±0.3 °C	±0.6 °C
R & S	- 50.0 °C	100.0 °C	1768.0 °C	2019.0 °C	±1.0 °C	±2.5 °C
B	0.0 °C	200.0 °C	800.0 °C	--	±2.0 °C	±2.5 °C
	--	800.0 °C	1820.0 °C	1820 °C	±1.0 °C	±2.3 °C
N	- 270.0 °C	- 200.0 °C	1300.0 °C	1550.0 °C	±1.0 °C	±1.6 °C
C	0.0 °C	100.0 °C	2315.0 °C	2500.0 °C	±0.7 °C	±2.7 °C
TXK/XK(L)	- 200.0 °C	- 150.0 °C	800.0 °C	1050 °C	±0.6 °C	±1.2 °C
Voltage	- 32512	- 27648 -80mV	27648 80mV	32511	±0.05%	±0.1%

4.4Expansion module wiring diagram



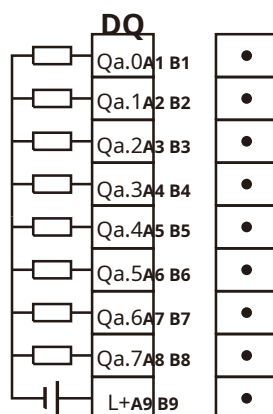
KM DR08

DQ 8xRLY



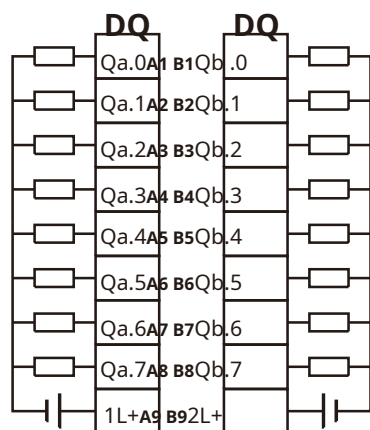
KM DT08

DQ 8x24VDC



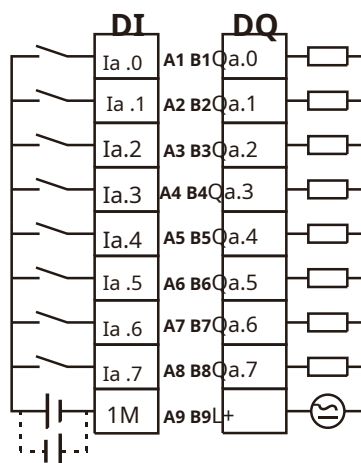
KM QT16

DQ 16x24VDC



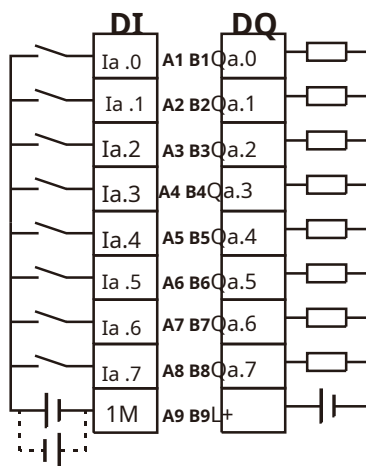
KM DR16

DI 8x24VDC
DQ 8xRLY



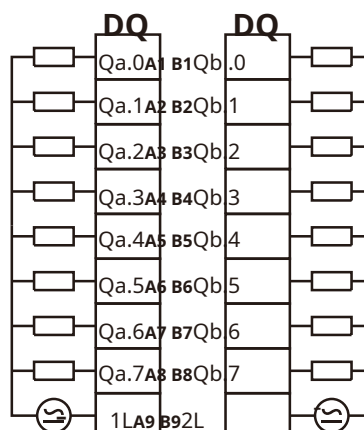
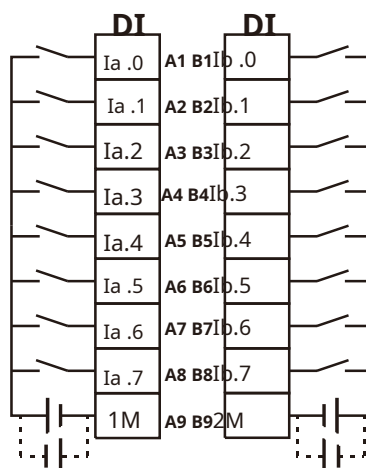
KM DT16

DI 8x24VDC
DQ 8x24VDC



KM DR32

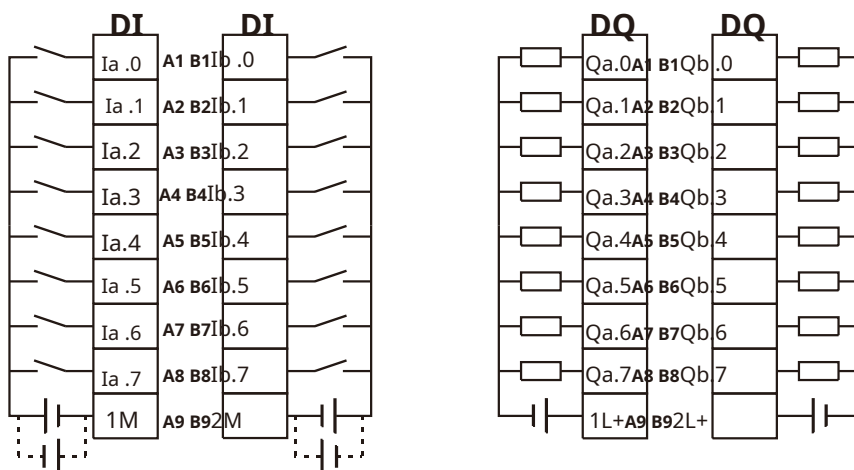
DI 16x24VDC
DQ 16xRLY



KM DT32

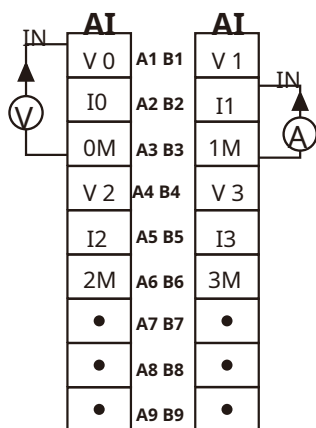
DI 16x24VDC

DQ 16x24VDC



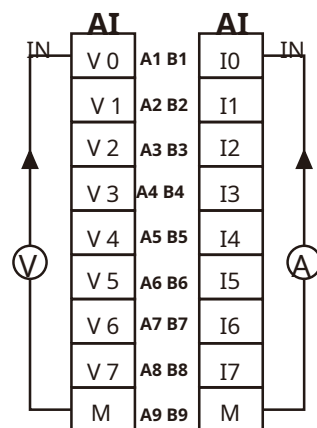
KM AE04

AI4 x $\pm 10V/0-20mA$



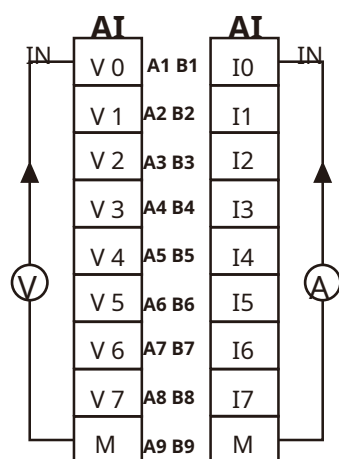
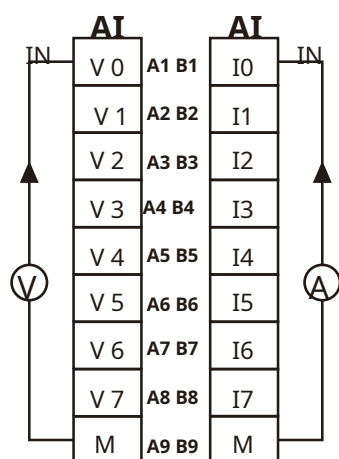
KM AE08

AI 8x0-10V/0-20mA



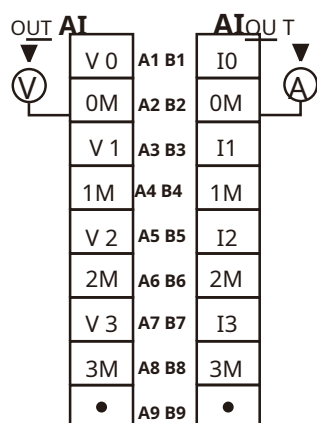
KM AE16

AI 16x0-10V/0-20mA



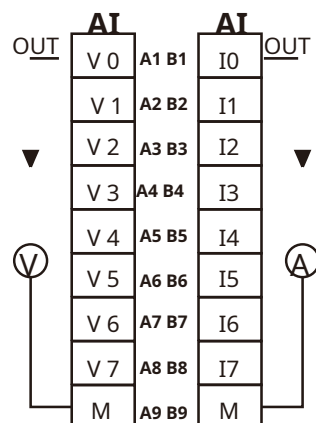
KM AQ04

AQ4 x $\pm 10V/0-20mA$



KM AQ08

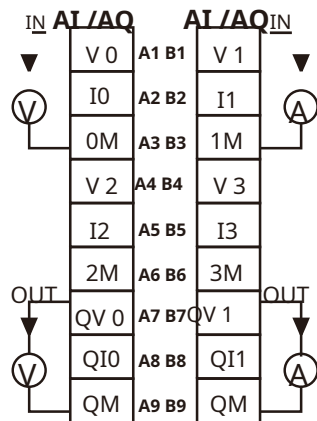
AQ8 x 0-10V/0-20mA



KM AM06

AI4 x 0-10V/0-20mA

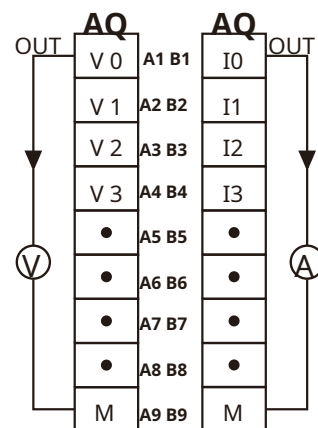
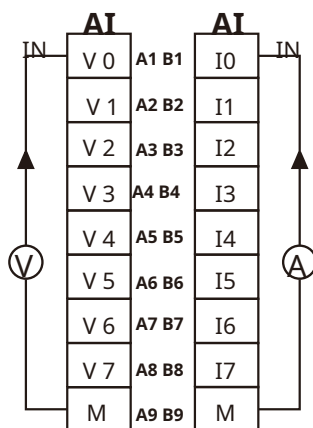
AQ2 x $\pm 10V/0-20mA$



KM AM12

AI 8x0-10V/0-20mA

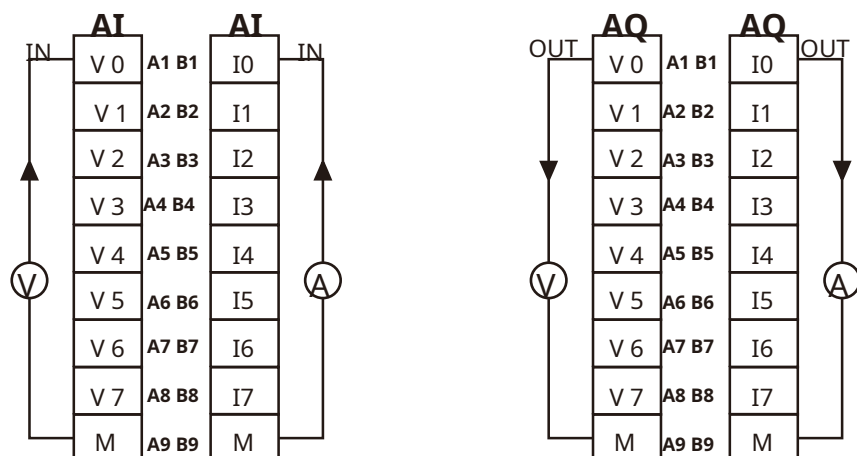
AQ 4x0-10V/0-20mA



KM AM16

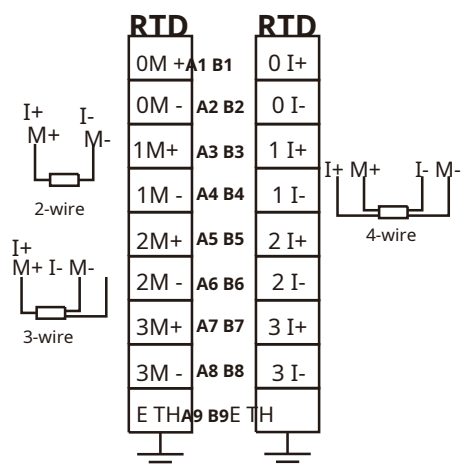
AI 8x0-10V/0-20mA

AQ 8x0-10V/0-20mA



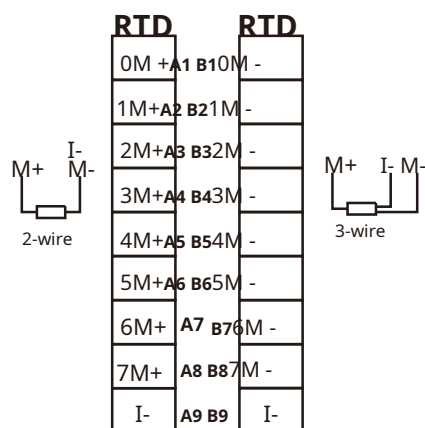
KM AR04

4xRTD



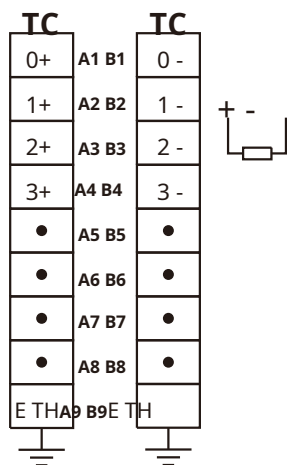
KM AR08

8xPT100



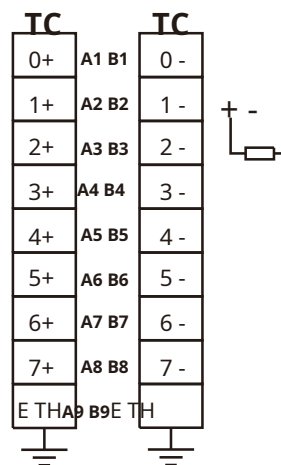
KM AT04

4xTC



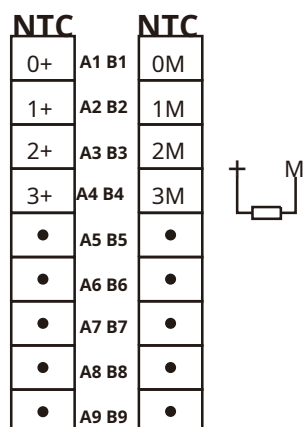
KM AT08

8xTC(Ktype)



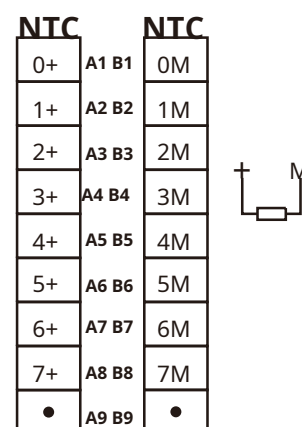
KM AN04

4xNTC



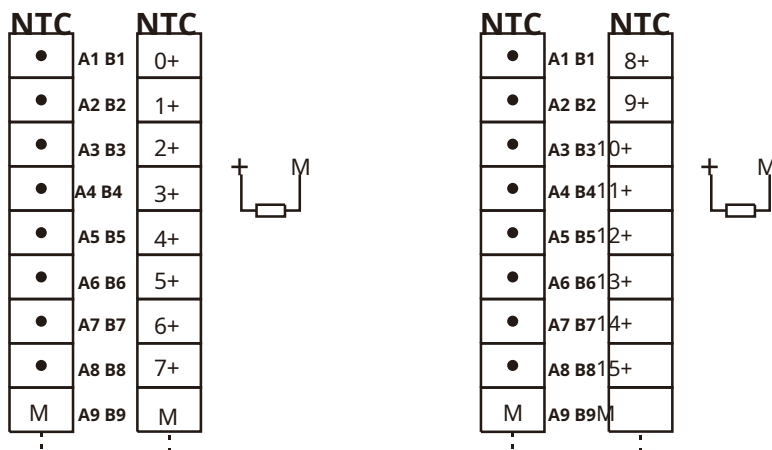
KM AN08

8xNTC



KM AN16

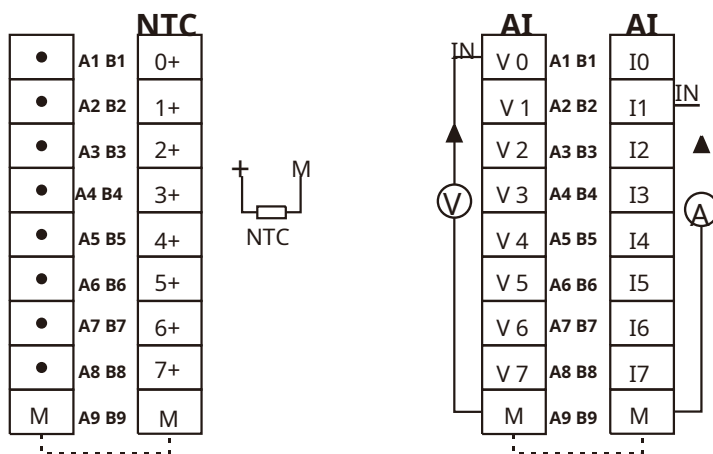
16xNTC



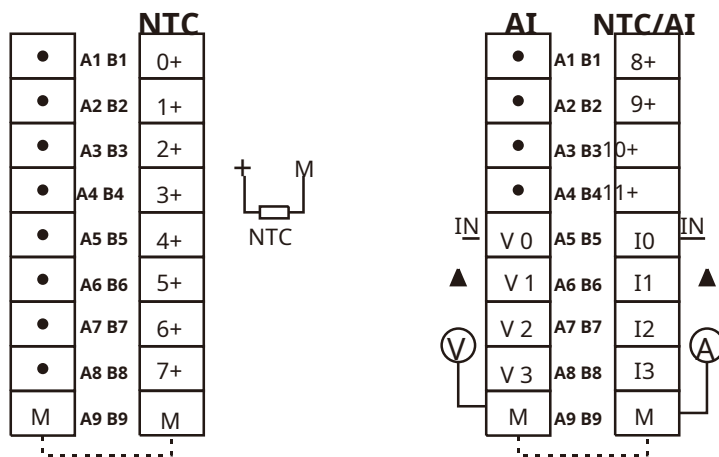
KM EN88

8xNTC

AI 8x0-10V/0-20mA



KM EN4C **12xNTC** **AI 4x0-10V/0-20mA**



4.6Frequently Asked Questions

3.6.1 What do the on/off statuses of the indicator lights on/off in analog modules represent? What about the temperature module? A:

Each model is different; please refer to section "3.3 Technical Parameters of Extension Modules" in this document.

3.6.2 Is the value read from the temperature extension module channel the temperature value?

A: Yes, it's a temperature value magnified 10 times, so no further conversion is needed. For example, reading 123 means 12.3 degrees Celsius.

3.6.3 In the information table, the V memory address of the Gongbei large-scale module is displayed as 0, and the status is "DP communication not started after power-on". A: EM

DP01 must be configured in the large-point module system block, and the system block must be downloaded for it to display correctly in the information table.

3.6.4 Explanation of Special Registers for Extension Modules

①: Diagnostic alarm code: To determine which device is triggering the alarm, check "Diagnostic Alarm Device ID"

16#FFFF // Default state upon power-on;

16#0000 // Normal operating status or communication is normal but not configured;

16#4023 // Configuration parameters do not match the device type;

16#4011 // Analog device lacks user power;

16#0007 //AI Channel x Upper Limit Alarm;

16#0008 //AI Channel x Lower Limit Alarm;

16#8x07 //AO Channel x Upper Limit Alarm;

16#8x08 //AO Channel x Lower Limit Alarm;

16#8x01 //AO Channel x Short Circuit Alarm;

16#8x06 //AO Channel x Open Circuit Alarm;

- ②: Diagnostic Alarm Device ID: The ID of the device that triggered the diagnostic alarm, ranging from 1 to 16. If multiple devices trigger diagnostic alarms, only the device ID with the smallest value will be displayed.
- ③: Disconnection Error Device ID: The ID of the device that experienced the communication error, ranging from 1 to 16. If multiple devices experience communication disconnection, only the device ID with the smallest value will be displayed.
- ④: Data type string, which can be monitored and viewed in the status table in "ASCII" format.

5. Signal board usage

The Gongbei card-type Smart signal board features plug-and-play functionality via its unique bus technology, requiring no library installation. Note: The Gongbei card-type Smart main unit only supports the Gongbei card-type Smart signal board, which should be installed in the Ilex slot of the main unit.

5.2 Signal Board Configuration Selection

- For the KB CM02 signal board, simply select SB CM01 in the configuration. Just note that KB CM02 can only be used for 485 communication.
- For the KB DT04 signal board, simply select SB DT04 in the configuration; the address can be found in the configuration
- table. For all other models, configure it as SB CM01 in the system block, as shown in the figure below.



Note: Installed in SB Slot, default address is 2baud rate 9.6Kbps Download the system block into plc And run.

-After configuration and download, the resources will be automatically mapped into the host machine and can be used directly.

5.3The register mapping relationship is shown in the table below.

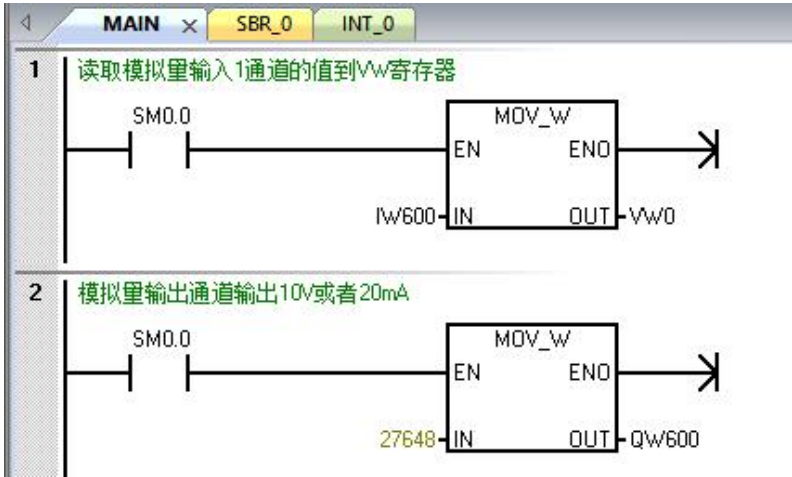
For the model configured as SB CM01, the input resource start address is I600 and the output resource start address is Q600, as shown in the table below:

Analog channel address	describe	For example
IW600	Input Channel0Collected values	For example, it is usedKB AM06The signal board stores analog input values sequentially in...IW600,IW602,IW604,IW606In the middle. If the collected value is27648, indicating that input was made10Vor20mA.
IW602	Input Channel1Collected values	
IW604	Input Channel2Collected values	
IW606	Input Channel3Collected values	GiveQW600Assignment27648Analog output1The channel can output10Vor20mA.GiveQW602Assignment13824Analog quantity
IW608	Input Channel4Collected values	
IW610	Input Channel5Collected values	

QW600	Output Channel0Setting value	Output2The channel can output5Vor10mA. For example, it is usedKB AR02The signal board stores the temperature data sequentially in...IW600,IW602In, for example, the collected value is123, indicating the current temperature12.3Degree, amplification of collected values10times.
QW602	Output Channel1Setting value	
QW604	Output Channel2Setting value	
QW606	Output Channel3Setting value	
Digital channel address	describe	For example
I600.0	Input Channel0	For example, it is usedKB DE02The input signals are sequentially mapped onto I600.0,I600.1In the middle. If the value is...1This indicates that there is a digital input signal.
I600.1	Input Channel1	
I600.2	Input Channel2	
I600.3	Input Channel3	
I600.4	Input Channel4	For example, it is usedKB QT04The output signal is mapped toQ600.0, Q600.1,Q600.2,Q600.3In the middle, giveQ600.2Assignment1Digital output3The channel will output24V.
I600.5	Input Channel5	
Q600.0	Output Channel0	
Q600.1	Output Channel1	
Q600.2	Output Channel2	
Q600.3	Output Channel3	
Q600.4	Output Channel4	
Q600.5	Output Channel5	
Special registers	describe	
IB620/I620.0	Signal version of heart rate value0and1Every0.55A single change can determine the communication status.	
QW610	Analog input filtering function (setting range 0-4, 4 levels in total): 1: Sampling period approximately 20ms, lightest filtering. 2 or 0 (default): Approximately 100ms. 3: Approximately 150ms filtering. 4: Approximately 200ms heavy filtering. Note: The analog input filtering function is not saved after power failure; the host computer must continuously assign values.	

Tip: The starting address of the mapped register is printed on the back of the circuit board, which can be viewed quickly.

Now you can directly read and write the mapped registers. Taking KB AM06 as an example, it is installed in slot SB, configured with address 2, and the read/write resources are shown in the following figure.



Network 1 indicates that the value of the first analog input channel is read into VW0;
 Network 2 indicates that the first analog output channel outputs 20mA or 10V. (27648 corresponds to full-scale 10V and 20mA)

5.4Signal board technical parameters

Communication signal board technical parameters	KB CM02
RS485 Function	Cable length: 1000 meters; Insulation: None

Digital signal board	KB DE04	KB QT04	KB QR04	KB DT04
Number of channels	4	4 transistors output	4. Relay output	2 inputs, 2 outputs
Digital input type	Sink or source input (supports bidirectional input; common terminal can be positive or negative).			
Digital input voltage	Logic 1 Minimum voltage: 15VDC at 2.5mA			
	Logic 0 Maximum voltage: 5VDC at 1mA			
Digital input isolation	Internal optical isolation			
Digital output types	Source type			
Maximum output current	0.5A			
Digital output isolation	Internal optical isolation			
L+,M Rated Voltage	24VDC (maximum 30VDC)			

Analog signal board		KB AE01/2/4/6	KB AQ01/2/4	KB AM03/4/5/6
Number of input/output channels		1/2/4/6 input channels voltage or current	1/2/4 output voltage or current	2 In 1 Out / 2 In 2 Out / 4 In 1 Out /4 Input 2 Output voltage or current
Analog quantity enter specification	Measurement range	0-10V, 0-20mA		
	Full scale range	0-27648		
	accuracy	0.3% of full scale		
	isolation	none		
Analog quantity Output specification	resolution	Voltage: 11 bits + sign; Current: 11 bits		
	Full scale range (Data words)	0 to 27,648 corresponds to 0-10V and 0-20mA.		
	accuracy	0.3% of full scale		
	Load impedance	Voltage: $\geq 1000\Omega$ Current: $\leq 600\Omega$		
	isolation	none		
	Maximum cable length	10m shielded twisted pair cable		

Temperature signal board	KB AR02	KB AR04	KB AN04	KB AN06	KB AT04
Number of channels	Route 2	Route 4	Route 4	Route 6	Route 4
Sensor type	2- and 3-wire PT100	PT100 with only 2 wires	NTC (10K, 3950)		K-type thermocouple
Temperature measurement range	- 200.0°C~600.0°C		- 50.0°C~150.0°C		- 270.0°C~1372.0°C
Reading range	- 2000~6000 (10x magnification)		- 500~1500 (10x magnification)		- 2700~13720 (10x magnification)
Open circuit and short circuit detection	± 32000		± 32000		± 32000

resolution	0.1℃		0.1℃		0.1℃
accuracy	0.1% of full scale		0.5% of full scale		0.1% of full scale
Collection time	300ms	800ms	200ms		800ms
Wire length	Maximum 100 meters		Maximum 30 meters		Maximum 20 meters
Whether to isolate	isolation	isolation	none	none	isolation

5.5Signal board wiring diagram and DIP switches

KB CM02Wiring diagram	KB DE04Wiring diagram		KB QT04Wiring diagram	KB QR04Wiring diagram	
Terminal Definition	Terminal Definition		Terminal Definition	Terminal Definition	
R+/R-:Internal when short-circuited120Ωohmic terminating resistor connected	DI: Digital quantity enter aisle	0: No.1aisle	DQ:transistor Output Channel	DQRelay Output Channel	0: No.1aisle
B-:485StandardB=		1: No.2aisle			1: No.2aisle
A+:485StandardA+		2: No.3aisle			2: No.3aisle
M: Signal ground		3: No.4aisle			3: No.4aisle
FG(Ground: Used to connect shielded wires)		M:24VCommon power supply terminal, supports It supports bidirectional input, which can be positive or negative.			MConnect to power.
●null	●null		●null		
Note1Direct configurationSB CM01use.	Register mapping:I600.0,I600.1, I600.2,I600.3 Note1Each passage has an indicator light.		Register mapping:Q600.0,Q600.1, Q600.2,Q600.3 Note Each passageway has an indicator light.		

KB DT04Wiring diagram	KB AE01Wiring diagram	KB AE02Wiring diagram	KB AE04Wiring diagram
Terminal Definition	Terminal Definition	Terminal Definition	Terminal Definition
DIInput channel	AI0simulation quantity1lose	AI0simulation quantity1lose	AI0simulation quantity1enter
DQ:transistor	M: No.1Public access point	M: No.1Public access point	V1:No.2Channel voltage input

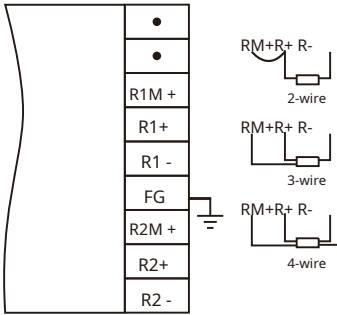
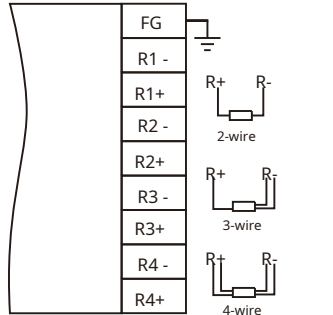
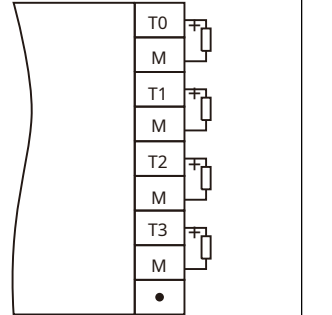
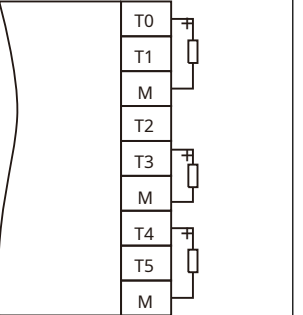
Output Channel	1: No.2aisle		 null	AI1simulation	V1: No.2Channel voltage input	quantity1enter	I1:No.2Channel current input		
L+	24VPower positive	Register mapping:IW600 Note: Supports voltage or current input, via connection Lines to distinguish, V0andI0Simultaneous input is not allowed.		Volume Channel	I1: No.2Channel current input	AI2simulation	V2:No.3Channel voltage input		
M	24VPower supply negative			2enter	M: No.2Public access point	quantity1enter	I2:No.3Channel current input		
Note1 Direct configurationSB DT04Use. Note2 Each passage has an indicator light.				Register mapping:IW600,IW602 Note: Each channel supports either voltage or current input. Distinguish by wiringVandISimultaneous input is not allowed.		AI3simulation	V3:No.4Channel voltage input		
						quantity1enter	I3:No.4Channel current input		
						M:AI0—AI3Public end of the channel			
						Register mapping:IW600,IW602, IW604,IW606 Note: Supports voltage or current input via connection. Lines to distinguish,V0andI0Simultaneous input is not allowed.			

KB AE06Wiring diagram		KB AQ01Wiring diagram		KB AQ02Wiring diagram	
Terminal Definition		Terminal Definition		Terminal Definition	
AI0: No.1Road input	AI4: No.5Road input	AQ0Analog input Exit Channel1	V0:aisle1Analog voltage output	AQ0Analog quantity Output Channel1	V0:aisle1Analog voltage output
AI1: No.2Road input	AI5: No.6Road input		I0:aisle1Analog current output		I0:aisle1Analog current output
AI2: No.3Road input	MPublic terminal		MAnalog output common terminal		MAnalog output common terminal
AI3: No.4Road input		Register mapping:QW600 Note: Analog output supports simultaneous voltage and current output. Distinguish by the terminal blocks.		AQ1Analog quantity	V1:aisle2Analog voltage output
DIP switch settings 				Output Channel2	I1:aisle2Analog current output
				Register mapping:QW600,QW602 Note: Analog output supports simultaneous voltage and current output. Distinguish by the terminal blocks.	
Register mapping:IW600,IW602,IW604,IW606, IW608,IW610					

KB AQ04Wiring diagram		Terminal Definition		KB AM06Wiring diagram		Terminal Definition	
		AQ0Analog output1aisle AQ1Analog output2aisle MAnalog output common terminal AQ2Analog output3aisle AQ3Analog output4aisle MAnalog output common terminal null L+:powered by24VPower positive				AI0: No.1road AI1: No.2road AI2: No.3road AI3: No.4road AQ0: No.1road AQ1: No.2road MPublic terminal	
Note:KB AQ04External connection required24V powered by; Register mapping:QW600,QW602, QW604,QW606		M:powered by24VPower supply negative		Register mapping:IW600,IW602,IW604,IW606,QW600,QW602			
KB AQ04DIP switch		DIP switch definition		KB AM06DIP switch		DIP switch definition	
		1:ON,2:OFFaisle1Output voltage 1:OFF,2:ONaisle1Output current 3:ON,4:OFFaisle2Output voltage 3:OFF,4:ONaisle2Output current 5:OFF,6:ONaisle3Output current 5:ON,6:OFFaisle3Output voltage 7:ON,8:OFFaisle4Output voltage 7:OFF,8:ONaisle4Output current				1:aisle1Analog input terminal,ON: Electric current;OFF:Voltage 2:aisle2Analog input terminal,ON: Electric current;OFF:Voltage 3:aisle3Analog input terminal,ON: Electric current;OFF:Voltage 4:aisle4Analog input terminal,ON: Electric current;OFF:Voltage aisle1Analog output terminal,5:ON,6:OFFOutput voltage aisle1Analog output terminal,5:OFF,6:ONOutput current aisle2Analog output terminal,7:ON,8:OFFOutput voltage aisle2Analog output terminal,7:OFF,8:ONOutput current	

KB AM03Wiring diagram		KB AM04Wiring diagram		KB AM05Wiring diagram		KB AT04Wiring diagram		
Terminal Definition		Terminal Definition		Terminal Definition		Terminal Definition		
AI mold virtual quantity enter	V0: No.1Circuit voltage input terminal	AI Analog quantity enter	V0: No.1Circuit voltage	AI Analog quantity enter	AI0: No.1road	FG(Ground: Used to connect shielded wires) Ch0: No.1 Thermocouple Ch1: No.2 Thermocouple Ch2: No.3 Thermocouple Ch3: No.4 Thermocouple	A+:positive electrode	
	I0: No.1Current input terminal		I0: No.1Circuit current		AI1: No.2road		A-:negative electrode	
	V1: No.2Circuit voltage input		V1: No.2Circuit voltage		AI2: No.3road		B+:positive electrode	
	I1: No.2Current input terminal		I1: No.2Circuit current		AI3: No.4road		B-:negative electrode	
AQ mold virtual quantity Output	Va: No.1Circuit voltage output terminal	AQ Analog quantity Output	Va: No.1Circuit voltage	AQ Analog quantity Output	VaVoltage output terminal	C+:positive electrode	C-:negative electrode	
	Ia: No.1Current output terminal		Ia: No.1Circuit current		IaCurrent output terminal			
MPublic terminal			Output	Vb: No.2Circuit voltage	MPublic terminal		D+:positive electrode	D-:negative electrode
Register mapping:IW600,IW602, QW600 Note: Analog input supports voltage or current. Distinguish by the wiring terminals; simultaneous input is not allowed. Input. Analog output supports voltage and current. Simultaneous output, distinguished by wiring terminals.				Ib: No.2Circuit current	Register mapping: IW600,IW602, IW604,IW606, QW600 DIP switch settings 			
Note: Analog input supports voltage or current.		Register mapping:IW600,IW602, QW600,QW602 Note: Analog input supports voltage or current.			Register mapping:IW600,IW602, IW604,IW606			

	Distinguish by the wiring terminals; simultaneous input is not allowed. Input. Analog output supports simultaneous voltage and current input. The output is timed and can be distinguished by the wiring terminals.	Note: Analog input supports voltage or current. Selectable via the DIP switch on the back of the signal board. One dial switch corresponds to one channel.ONFor electricity flow,OFFFor voltage. The analog output supports simultaneous voltage and current output via terminal blocks. distinguish.	
--	---	--	--

KB AR02Wiring diagram		KB AR04Wiring diagram		KB AN04Wiring diagram		KB AN06Wiring diagram	
							
Terminal Definition		Terminal Definition		Terminal Definition		Terminal Definition	
 null	FG(Ground: Used to connect shielded wires	FG(Ground: Used to connect shielded wires		T0: No.1road		NTC: temperature collection aisle	T0:1Road temperature acquisition
Ch0 No.1aisle	R1M+Line resistance compensation	Ch0No.1aisle	R1-:PT100end	T1: No.2road			T1:2Road temperature acquisition
	R1+:PT100end		R1+:PT100end	T2: No.3road			T2:3Road temperature acquisition
	R1-:PT100end	Ch1No.2aisle	R2-:PT100end	T3: No.4road			T3:4Road temperature acquisition
Ch1 No.2aisle	R2M+Line resistance compensation	Ch2No.3aisle	R2+:PT100end	MPublic terminal			T4:5Road temperature acquisition
	R2+:PT100end		R3-:PT100end	 null			T5:6Road temperature acquisition
	R2-:PT100end		R3+:PT100end	Register mapping:IW600,IW602, IW604,IW606		MPublic terminal Register mapping:IW600,IW602, IW604,IW606,IW608,IW610	
Register mapping:IW600,IW602		Ch3No.4aisle	R4-:PT100end				
			R4+:PT100end				
		Register mapping:IW600,IW602, IW604,IW606					

Special Note:The signal board DIP switch has a high-temperature film on its surface. You can puncture it with a sharp tool (such as tweezers) and then gently move it. During the pre-shipment debugging, the DIP switches may be switched, and it is normal for the high-temperature film to be punctured or lost.

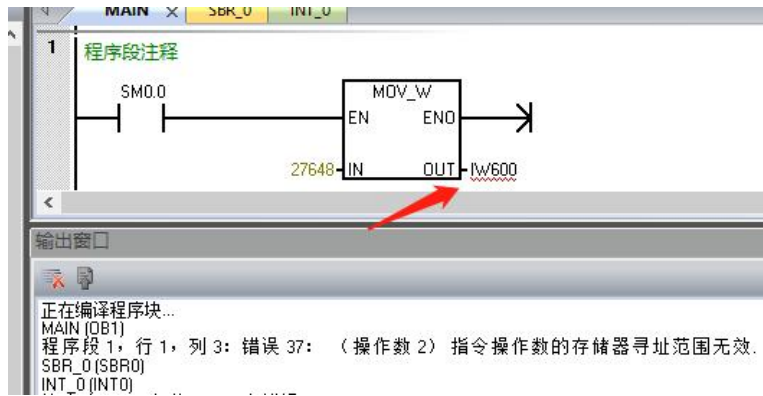
5.6Frequently Asked Questions

5.6.1 Why are some digital signal boards and analog signal boards configured as SB CM01? A:

This special configuration is used to achieve resource mapping.

5.6.2 Can the analog signal channels directly read the AIW and AQW registers? A: No, it's remapping to...IW,QWThe area is now accessible; you can read and write directly. For queries, please refer to section [number missing].4Section content.

5.6.3 The IW600 or QW600 programming interface registers have red underlines, and compilation will fail as shown in the figure below.

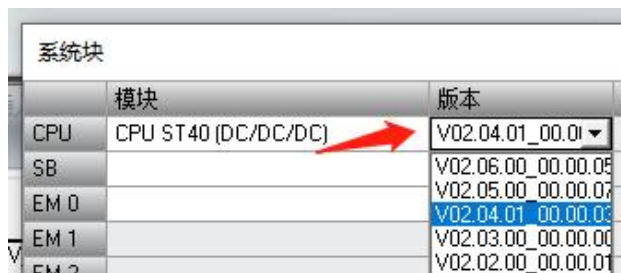


There are three possibilities. Possibility one: It's due to an outdated software version; it must be...2.04Or above. The method for viewing is as follows:



The picture shows 2.05 Version, meets requirements.

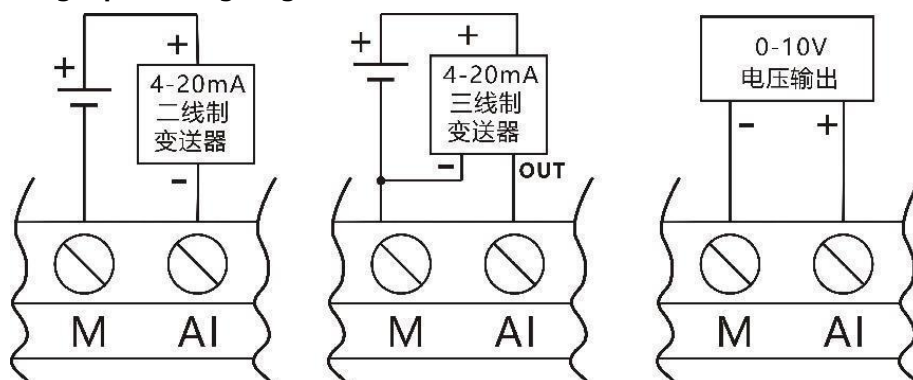
Possibility 2: Configuration interfacePLCThe selected host version is too low; it must be [version number].2.04Or above. The method for viewing is as follows:



Possibility 3:PLCThe firmware version is too low, it must also be 2.04For versions 1 and above, the method to check is as follows; the image below shows the firmware version number.V2.03Therefore, an upgrade is needed.PLCFirmware upgrade method consultationPLCMain unit manufacturer.



6. Analog input wiring diagram



Note: In the diagram above, AI represents the analog input channels, voltage input channels, and current input channels of the host, expansion module, or signal board. These are distinguished by the terminal blocks. Please refer to the relevant chapter for details.

7. Transistor output internal diagram

