PCS1200 Programmable Logic Controller

user's manual

Version: V1.0

Zhejiang Chitic Engineering Co., Ltd.

table of Contents

1 Overview

PCS1200 Programmable Logic Controller (hereinafter referred to as PCS1200) is based on more than ten years of automation product design, development and application experience by Zhejiang Zhengtai Zhongzhi Control Engineering Co., Ltd., and integrates advanced and practical signal processing technology, communication technology, computer technology and automation technology. A programmable logic controller introduced by control technology. The product's performance, quality, reliability, stability, openness and ease of use have reached the international advanced level.

PCS1200 is a modular structure, including CPU module, switch module, analog module, power monitoring module and communication module. The CPU module has superior performance, a single command processing time of 0.1uS, comes with RS232 and RS485 interfaces, a single CPU can expand 10 modules, has good environmental adaptability, good electromagnetic compatibility, and strong anti-interference ability. The product's programming software complies with the IEC61131-3 international standard, supports ST, LD, IL, FBD and SFC and other programming languages. The software has a view simulation function to improve the efficiency of programming and system maintenance. The connection terminals are pluggable, which is convenient for signal connection and system maintenance. Supports various standard software and hardware interfaces, supports Modbus, Profibus, Ethernet, GPRS and other communication protocols, can be interconnected with various devices, can be widely used in various industrial and civil fields, and is the preferred control product for equipment matching and small automation projects .

2 CPU module

2.1 The main **body** comes with 16-point **digital** CPU **module SC1105**

The 16-point CPU module SC1105 has a rated working voltage of 220VAC and has 8 24VDC input channels and 8 relay output channels.

➢Technical **specificationss**

CPU performance		Power parameters	
Body I/O	8 24VDC inputs and 8 relays Output	voltage	220VAC @50Hz
Extended energy force	Up to 10 modules can be expanded	Allowable range	187～264VAC @50Hz
Storage capacity the amount	Program area 120K bytes	Maximum current	120mA
	Data N area 8K bytes, M area 5K words Section	Output voltage (terminal VO+ VO-)	Rated 24VDC, allowable range 22.8～25.2VDC
	Retentive area 2K bytes	Output current (terminal VO+ VO-)	400mA (isolated from the internal power supply withstand voltage 1000VDC)
Timer	1 hardware timing, 0.1ms～500ms	Short circuit protection	800mA, 24VDC output
	Software timing unlimited points (minimum unit	**Communication characteristics**	

	1ms)		
counter	16 bits, unlimited points	Communication Interface	1 RS232
Computing speed degree	0.06 μ s (Boolean operation instruction)		1 RS485
Interrupt Enter	4 o'clock	Protocol	MODBUS RTU protocol
Analog electricity Positioner	2, 0～255		Free agreement
Input channel		**Output channel**	
Input class type	Sink/source	Output type	Relay
Input letter number	Rated voltage 24VDC	The output voltage	24VDC or 24～230VAC
	Allowable range 0～30VDC	Allowable range	5～30VDC or 5～250VAC
Input ON signal	15～30VDC, allowable minimum current 3mA	Common output current sum	<5A
Input OFF signal	0～5VDC, allowable maximum current 1mA	Output contact capacity	2A, resistive load
Input extension Time	<0.6ms (rated input voltage)	Switch delay	<10ms
Quarantine party formula	Optical isolation	Coil and contact spacing Isolation voltage	3000VAC, 1 minute, leakage current 1mA
Isolation resistance Pressure	1000VDC	Isolation voltage between contacts	750VAC, 1 minute, leakage current 1mA
Shape and installation		Relay mechanical life	Up to 10,000,000 under no load More than When rated resistive 2A load, it can reach more than 100,000 times
Size gauge grid	120mm(L)×80mm(W)×63mm(H)	**working environment**	
weight	380g	Operating temperature	0～+55℃
Installer formula	Rail installation, standard 35mm DIN rail	storage temperature	−40～+70℃
	Panel mounting	Relative humidity	5～95% (no condensation)

➢ **Main interface and terminal definition**

① Indicator lights: RUN, COM, ERR are used to display module operation, communication, and fault conditions, I and Q are used to indicate the input and output status of each channel;

② Module output terminal: It is composed of power drive terminals 1L, 2L and output point Q, "*" means that this channel has no physical connection, and the terminal is a relay output;

③ Module input terminal: It is composed of common terminals 1M, 2M and input point I, and can adopt source/sink connection;

④ RS232 communication interface: this interface can be used for program download, communication with touch screen, upper computer, etc., supports MODBUS RTU/free protocol;

⑤ RS485 communication interface: This interface can be used to communicate with touch screens, host computers, third-party instruments, etc., and supports MODBUS RTU/free protocol;

⑥ Module power supply: L, N, are the live wire, neutral wire, and protective ground terminal of AC220V power supply;

⑦ The module provides external 24VDC power supply: VO+ and VO− are the positive and negative wiring terminals of 24VDC respectively. Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1105 module diagram

➢Terminal **al mark definition description**

Upper row terminal	Terminal description	Lower terminal	Terminal description
485+	485 signal positive end	1M	External input common
485−	485 signal negative terminal	I0.0	Normal input
*	Undefined	I0.1	Normal input
1L	Output common	I0.2	Normal input
Q0.0	Normal output	I0.3	Normal input
Q0.1	Normal output	I0.4	Normal input/external interrupt input end
Q0.2	Normal output	I0.5	Normal input/external interrupt input

|			
			end
Q0.3	Normal output	I0.6	Normal input/external interrupt input end
Q0.4	Normal output	I0.7	Normal input/external interrupt input end
2L	Output common	*	Undefined
Q0.5	Normal output	*	Undefined
Q0.6	Normal output	*	Undefined
Q0.7	Normal output	*	Undefined
*	Undefined	*	Undefined
*	Undefined	*	Undefined
⏚	Protected area	*	Undefined
N	Zero line	VO−	External 24VDC negative terminal
L	FireWire	VO+	External 24VDC positive terminal

➢ Input **ut and output channel wiring mode**
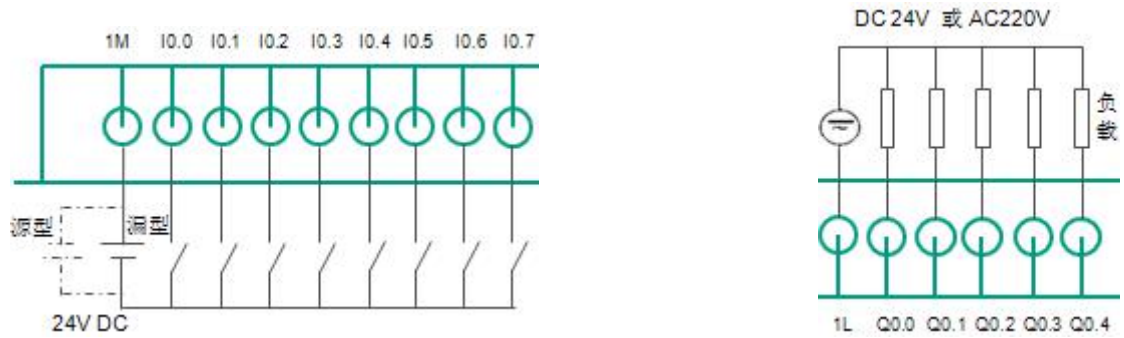
Figure 2 Input channel wiring method (sink or source wiring can be used) Figure 3 Output channel wiring method

➢ RS232 **232 communication port definition**

Pin	1	2	3	4	5	6	7	8	9
definition	——	RXD	TXD	——	GND	——	Keep	Keep	——

2.2 The CPU module **SC1106** with 24-point digital **quantity** on **the main body**

The 24-point CPU module SC1106 has a rated working voltage of 24VDC, and has 14 24VDC input channels and 10 transistor output channels.

➤Technical **specificationss**

CPU performance		Power parameters	
Body I/O	14 channels 24VDC input and 10 channels transistor output Out	voltage	24VDC
Extended energy force	Up to 10 modules can be expanded	Allowable range	20.4～28.8VDC
Storage capacity the amount	Program area 120K bytes	Maximum current	1300mA
	Data N area 8K bytes, M area 5K bytes	Output voltage (terminal VO+ VO-)	Rated 24VDC, allowable range 22.8～25.2VDC
	Retentive area 2K bytes	Output current (terminal VO+ VO-)	400mA
Timer	1 hardware timing, 0.1ms～500ms Unlimited software timing (minimum unit 1ms)	Short circuit protection	400mA, 24VDC output
		Communication characteristics	
counter	16 bits, unlimited points	Communication Interface	1 RS232
Computing speed degree	0.06μ**s** (Boolean operation instruction)		1 RS485
Interrupt Enter	4 o'clock	Protocol	MODBUS RTU protocol
Analog electricity Positioner	2, 0～255		Free agreement
Input channel		**Output channel**	
Input class type	Sink/source	Output type	Transistor
Input letter number	Rated voltage 24VDC	The output voltage	24VDC
	Allowable range 0～30VDC	On-state contact impedance	<0.2Ω
Input ON signal	15～30VDC, allowable minimum current 3mA	Single point maximum output power flow	0.5A
Input OFF signal	0～5VDC, allowable maximum current 1mA	Maximum leakage current	1mA

Input extension Time	<0.6ms (rated input voltage)	Common output current sum	<5A
Quarantine party formula	Optical isolation	Switch delay	<1ms
Isolation resistance Pressure	1000VDC	Isolation method	Optical isolation
Shape and installation		Isolation withstand voltage	1000VDC
Size gauge grid	120mm(L) × 80mm(W) × 63mm(H)	working environment	
weight	310g	Operating temperature	0～+55℃
Installer formula	Rail installation, standard 35mm DIN rail	storage temperature	−40～+70℃
	Panel mounting	Relative humidity	5～95% (no condensation)

➢ **Main interface and terminal definition**

① Indicator lights: RUN, COM, ERR are used to display module operation, communication, and fault conditions, I and Q are used to indicate the input and output status of each channel;

② Module output terminal: It is composed of power drive terminals L-, L+ and output point Q, "*" means that this channel has no physical connection, and the terminal is a transistor output;

③ Module input terminal: It is composed of common terminals 1M, 2M and input point I, and can adopt source/sink connection;

④ RS232 communication interface: this interface can be used for program download, communication with touch screen, upper computer, etc., supports MODBUS RTU/free protocol;

⑤ RS485 communication interface: This interface can be used to communicate with touch screens, host computers, third-party instruments, etc., and supports MODBUS RTU/free protocol;

⑥ Module power supply: 24V+, 24V-, which are the positive, negative, and protective ground terminals of the 24VDC power supply;

⑦ The module provides external 24VDC power supply: VO＋ and VO－ are the positive and negative wiring terminals of 24VDC respectively. Note: PCS1200 programmable logic controller terminals are all pluggable.
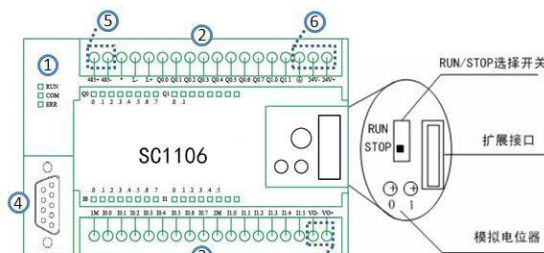

Figure 1 SC1106 module diagram

➢Terminal al mark definition description

Upper row terminal	Terminal description	Lower terminal	Terminal description
485+	485 signal positive end	1M	External input common
485-	485 signal negative terminal	I0.0	Normal input
*	Undefined	I0.1	Normal input
L-	Load drive power 24VDC negative terminal	I0.2	Normal input
L+	Load drive power 24VDC positive terminal	I0.3	Normal input
Q0.0	Normal output	I0.4	Normal input/external interrupt input terminal
Q0.1	Normal output	I0.5	Normal input/external interrupt input terminal
Q0.2	Normal output	I0.6	Normal input/external interrupt input terminal
Q0.3	Normal output	I0.7	Normal input/external interrupt input terminal
Q0.4	Normal output	2M	External input common
Q0.5	Normal output	I1.0	Normal input
Q0.6	Normal output	I1.1	Normal input
Q0.7	Normal output	I1.2	Normal input
Q1.0	Normal output	I1.3	Normal input
Q1.1	Normal output	I1.4	Normal input
⏚	Protected area	I1.5	Normal input
24V-	24VDC power negative terminal	VO-	External 24VDC negative terminal
24V+	24VDC power positive terminal	VO+	External 24VDC positive terminal

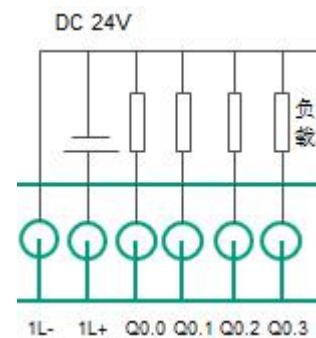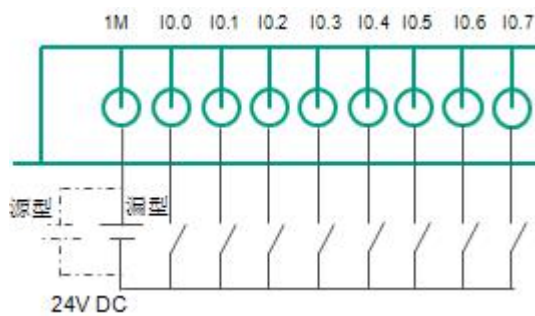➢Input ut and output channel wiring mode

Figure 2 Input channel wiring method (sink or source wiring can be used) Figure 3 Output channel wiring method

➢RS232 232 communication port definition

Pin	1	2	3	4	5	6	7	8	9
definition	——	RXD	TXD	——	GND	——	Keep	Keep	——

2.3 The CPU module **SC1107** with 24-point digital **quantity** on **the main body**

The 24-point CPU module SC1107 has a rated working voltage of 220VAC and has 14 channels of 24VDC input and 10 channels of relay output.

➤Technical specificationss

CPU performance		Power parameters	
Body I/O	14 24VDC inputs and 10 relay outputs Out	voltage	220VAC @50Hz
Expansion capacity force	Up to 10 modules can be expanded	Allowable range	187～264VAC @50Hz
Storage capacity the amount	Program area 120K bytes	Maximum current	120mA
	Data N area 8K bytes, M area 5K bytes	Output voltage (terminal VO+ VO-)	Rated 24VDC, allowable range 22.8～25.2VDC
	Retentive area 2K bytes	Output current (terminal VO+ VO-)	400mA (isolated from the internal power supply Voltage 1000VDC)
Timer	1 hardware timing, 0.1ms～500ms	Short circuit protection	800mA, 24VDC output
	Unlimited software timing (minimum unit 1ms)	Communication characteristics	
counter	16 bits, unlimited points	Communication Interface	1 RS232
Operation speed degree	0.06μS (Boolean operation instruction)		1 RS485
Interrupt Enter	4 o'clock	Protocol	MODBUS RTU protocol
Analog electricity Positioner	2, 0～255		Free agreement
Input channel		Output channel	
Input class type	Sink/source	Output type	Relay
Input letter number	Rated voltage 24VDC	The output voltage	24VDC or 24～230VAC
	Allowable range 0～30VDC	Allowable range	5～30VDC or 5～250VAC
Input ON signal	15～30VDC, allowable minimum current 3mA	Public terminal output power Flow sum	<5A
Input OFF signal	0～5VDC, allowable maximum current 1mA	Output contact capacity	2A, resistive load

Input extension Time	<0.6ms (rated input voltage)	Switch delay	<10ms
Isolated party formula	Optical isolation	Between coil and contact Isolation voltage	3000VAC, 1 minute, leakage current 1mA
Isolation resistance Pressure	1000VDC	Isolate electricity between contacts Pressure	750VAC, 1 minute, leakage current 1mA
Shape and installation		Mechanical life of relay	When there is no load, it can reach 10,000,000 times or more When rated resistive 2A load, it can reach more than 100,000 times
Dimensions grid	120mm(L) × 80mm(W) × 63mm(H)	working environment	
weight	380g	Operating temperature	0～+55℃
Installation party formula	Rail installation, standard 35mm DIN rail	storage temperature	−40～+70℃
	Panel mounting	Relative humidity	5～95% (no condensation)

➢ **Main interface and terminal definition**

① Indicator lights: RUN, COM, ERR are used to display module operation, communication, and fault conditions, I and Q are used to indicate the input and output status of each channel;

② Module output terminal: It is composed of power drive terminals 1L, 2L and output point Q, "*" means that this channel has no physical connection, and the terminal is a relay output;

③ Module input terminal: It is composed of common terminals 1M, 2M and input point I, and can adopt source/sink connection;

④ RS232 communication interface: this interface can be used for program download, communication with touch screen, upper computer, etc., supports MODBUS RTU/free protocol;

⑤ RS485 communication interface: This interface can be used to communicate with touch screens, host computers, third-party instruments, etc., and supports MODBUS RTU/free protocol;

⑥ Module power supply: L, N, are the live wire, neutral wire, and protective ground terminal of AC220V power supply;

⑦ The module provides external 24VDC power supply: VO＋ and VO− are the positive and

negative wiring terminals of 24VDC respectively. Note: PCS1200 programmable logic
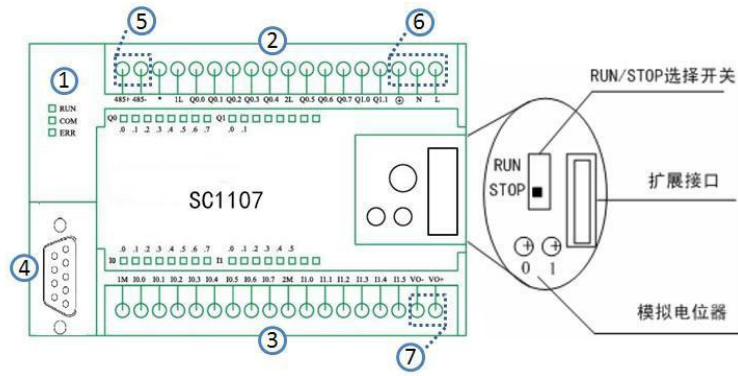
controller terminals are all pluggable.

Figure 1 SC1107 module diagram

➢Terminal **al mark definition description**

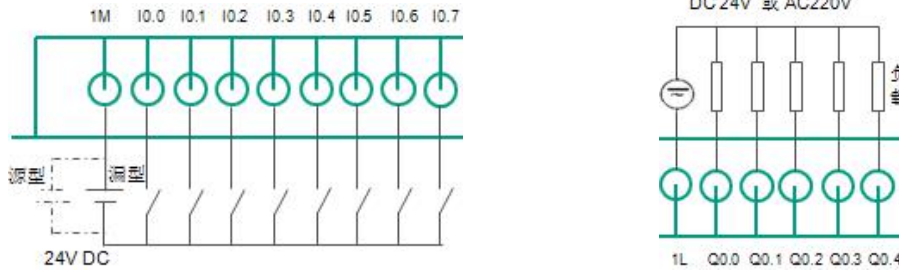| Upper row terminal	Terminal description	Lower terminal	Terminal description
485+	485 signal positive end	1M	External input common
485-	485 signal negative terminal	I0.0	Normal input
*	Undefined	I0.1	Normal input
1L	Output common	I0.2	Normal input
Q0.0	Normal output	I0.3	Normal input
Q0.1	Normal output	I0.4	Normal input/external interrupt input end
Q0.2	Normal output	I0.5	Normal input/external interrupt input end
Q0.3	Normal output	I0.6	Normal input/external interrupt input end
Q0.4	Normal output	I0.7	Normal input/external interrupt input end
2L	Output common	2M	External input common
Q0.5	Normal output	I1.0	Normal input
Q0.6	Normal output	I1.1	Normal input
Q0.7	Normal output	I1.2	Normal input
Q1.0	Normal output	I1.3	Normal input
Q1.1	Normal output	I1.4	Normal input
⏚	Protected area	I1.5	Normal input
N	Zero line	VO-	External 24VDC negative terminal
L	FireWire	VO+	External 24VDC positive terminal

➢Input ut and output channel wiring mode

Figure 2 Input channel wiring method (sink or source wiring can be used) Figure 3 Output channel wiring method

➢RS232 232 communication port definition

Pin	1	2	3	4	5	6	7	8	9
definition	——	RXD	TXD	——	GND	——	Keep	Keep	——

2.4 The main body comes with a CPU module SC1107A with 18 points of digital and 3 points of analog

The 21-point CPU module SC1107A has a rated working voltage of 220VAC and has 10 24VDC input channels, 8 relay output channels, 2 analog input channels and 1 analog output channel.

➢Technical specificationss

CPU performance		Power parameters	
Body I/O	10 24VDC inputs, 8 relays Output 2 analog inputs and 1 analog output	voltage	220VAC @50Hz
Expansion	Up to 10 modules can be expanded	Allowable range	187～264VAC @50Hz
storage capacity	Program area 120K bytes	Maximum current	120mA
	Data N area 8K bytes, M area 5K words Section	Output voltage (terminal VO+ VO-)	Rated 24VDC, allowable range 22.8～25.2VDC
	Retentive area 2K bytes	Output current (terminal VO+ VO-)	400mA (isolated from internal power supply With standvoltage 1000VDC)
Timer	1 hardware timing, 0.1ms～500ms	Short circuit protection	800mA, 24VDC output
	Software timing unlimited points (minimum unit 1ms)	**Communication characteristics**	
counter	16 bits, unlimited points	Communication Interface	1 RS232
calculating	0.06μs (Boolean operation		1 RS485
Interrupt input	4 o'clock	Protocol	MODBUS RTU protocol
Analog potential Device	2, 0～255		Free agreement
Analog input channel		**Analog output channel**	
Input range range	Voltage: 0～10V Current: 0～20mA	Output range	Voltage: 0～10V Current: 0～20mA

Input data range	0～65535	Output data range	0～4095
Input accuracy (Unipolar)	1%FS@25℃	Output accuracy	1%FS@25℃
input resistance	720KΩ (voltage), 249Ω (current)	Drive capability	Voltage: MIN 2000Ω; current: MAX 600Ω
Maximum input Voltage	30V	Set time	Voltage output: <=2ms; current output
Isolation	Not isolated	Isolation method	Not isolated
Step response time	<20ms (without filtering and without scanning between)	Output refresh time	1 scan cycle
24VDC input channel		**Relay output channel**	
Input type	Sink/source	Output type	Relay
input signal	Rated voltage 24VDC	The output voltage	24VDC or 24～230VAC
	Allowable range 0～30VDC	Allowable range	5～30VDC or 5～250VAC
Input ON letter number	15～30VDC, allowable minimum current 3mA	Common output current sum	<5A
Input OFF letter number	0～5VDC, allowable maximum current 1mA	Output contact capacity	2A, resistive load
Input delay	<0.6ms (rated input voltage)	Switch delay	<10ms
Isolation method	Optical isolation	Coil and contact spacing Isolation voltage	3000VAC, 1 minute, leakage current 1mA
Isolation withstand	1000VDC	Isolation voltage between contacts	750VAC, 1 minute, leakage current 1mA
Shape and installation		Relay mechanical life	When there is no load, it can reach 10,000,000 times or more When rated resistive 2A load, it can reach more than 100,000
Dimensions	120mm(L)×80mm(W)×63mm(H)	**working environment**	
weight	380g	Operating temperature	0～+55℃
Installation method	Rail installation, standard 35mm DIN	storage temperature	−40～+70℃
	Panel mounting	Relative humidity	5～95% (no condensation)

➢ **Main interface and terminal definition**

① Indicator lights: RUN, COM, ERR are used to display module operation, communication, and fault conditions, I and Q are used to indicate the input and output status of each channel;

② Module output terminal: Relay output is composed of power drive terminals 1L, 2L and output point Q; analog output is composed of VO, I0 and M0;

③ Module input terminal: 24VDC input is composed of common terminal 1M and input point I, and can adopt source/sinking connection; analog input is composed of common terminals M, RA and A+, RB and B+;

④ RS232 communication interface: This interface can be used to download programs, communicate with touch screens, upper computers, etc., and support MODBUS RTU/

Free agreement

⑤ RS485 communication interface: This interface can be used to communicate with touch screens, host

   computers, third-party instruments, etc., and supports MODBUS RTU/free protocol;

⑥ Module power supply: L, N, are the live wire, neutral wire, and protective ground terminal of AC220V power
supply;

⑦ The module provides external 24VDC power supply: VO + and VO − are the positive and

negative wiring terminals of 24VDC respectively. Note: PCS1200 programmable logic
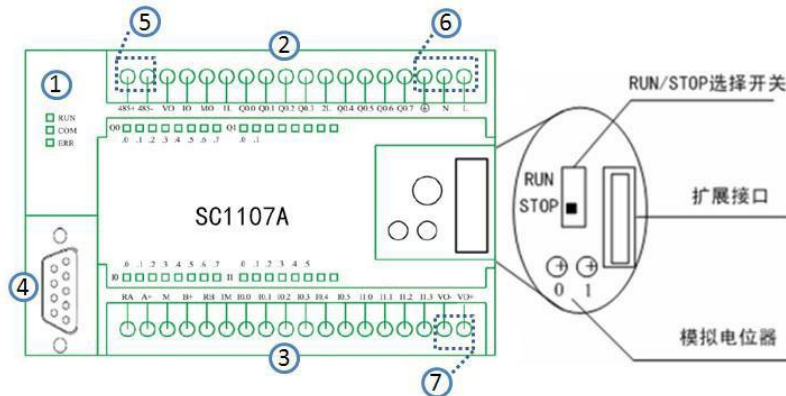
controller terminals are all pluggable.

Figure 1 SC1107A module diagram

➢ Terminal **al mark definition description**

Upper row	Terminal description	Lower terminal	Terminal description
485+	485 signal positive end	RA	A channel current input terminal
485-	485 signal negative	A+	A channel voltage input terminal
V0	Voltage output terminal	M	Analog input common terminal
I0	Current output	B+	B channel voltage input terminal
M0	Analog output common	RB	Channel B current input terminal
1L	Output common	1M	External input common
Q0.0	Normal output	I0.0	Normal input
Q0.1	Normal output	I0.1	Normal input
Q0.2	Normal output	I0.2	Normal input
Q0.3	Normal output	I0.3	Normal input
2L	Output common	I0.4	Normal input/external interrupt input
Q0.4	Normal output	I0.5	Normal input/external interrupt input
Q0.5	Normal output	I1.0	Normal input
Q0.6	Normal output	I1.1	Normal input
Q0.7	Normal output	I1.2	Normal input
⏚	Protected area	I1.3	Normal input
N	Zero line	VO-	External 24VDC negative terminal
L	FireWire	VO+	External 24VDC positive terminal

➢Input ut and output channel wiring mode
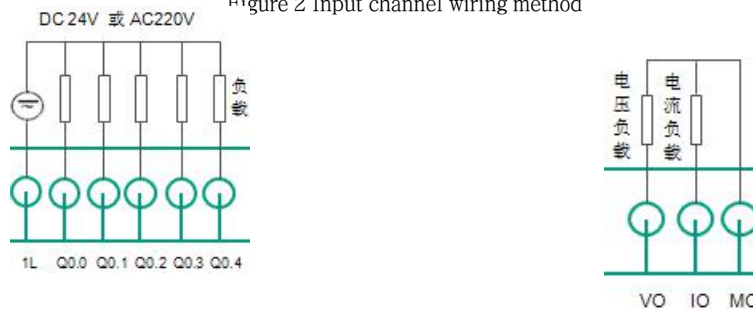

Figure 2 Input channel wiring method

Figure 3 Wiring mode of output channel

➢RS232 232 communication port definition

Pin	1	2	3	4	5	6	7	8	9
definition	——	RXD	TXD	——	GND	——	Keep	Keep	——

2.5 The main body comes with a 16-point digital CPU module SC1107N

The 16-point CPU module SC1107N has a rated working voltage of 220VAC and has 10 24VDC input channels and 6 relay output channels.

➢Technical specificationss

CPU performance		Power parameters	
Body I/O	10 24VDC inputs and 6 relay outputs	voltage	220VAC @50Hz
Extended energy force	Up to 20 modules can be expanded (relay module required Piece)	Allowable range	187～264VAC @50Hz
Storage capacity the amount	Program area 400K bytes	Maximum current	120mA
	Data N area 8K bytes, M area 5K bytes	Output voltage (terminal VO+ VO-)	Rated 24VDC, allowable range 22.8～25.2VDC
	Retentive area 2K bytes	Output current (terminal VO+ VO-)	400mA (isolated from the internal power supply Voltage 1000VDC)
Timer	1 hardware timing, 0.1ms～500ms	Short circuit protection	800mA, 24VDC output

		Communication characteristics	
	Unlimited software timing (minimum unit 1ms)		
counter	16 bits, unlimited points	Communication Interface	1 RS232, 2 RS485
Computing speed degree	0.06μs (Boolean operation instruction)		1 RJ45 Ethernet
Interrupt Enter	4 o'clock	Protocol	Serial MODBUS RTU protocol, self By agreement
Analog electricity Positioner	2, 0～255		Ethernet port MODBUS TCP protocol, 4 Server links
Input channel		**Output channel**	
Input class type	Sink/source	Output type	Relay
Input letter number	Rated voltage 24VDC	The output voltage	24VDC or 24～230VAC
	Allowable range 0～30VDC	Allowable range	5～30VDC or 5～250VAC
Input ON signal	15～30VDC, allowable minimum current 3mA	Public terminal output power Flow sum	<5A
Input OFF letter number	0～5VDC, allowable maximum current 1mA	Output contact capacity	2A, resistive load
Input extension Time	<0.6ms (rated input voltage)	Switch delay	<10ms
Quarantine party formula	Optical isolation	Between coil and contact Isolation voltage	3000VAC, 1 minute, leakage current 1mA
Isolation resistance Pressure	1000VDC	Isolate electricity between contacts Pressure	750VAC, 1 minute, leakage current 1mA
Shape and installation		Mechanical life of relay	When there is no load, it can reach 10,000,000 times or more When rated resistive 2A load, it can reach more than 100,000
Size gauge grid	120mm(L)×80mm(W)×63mm(H)	**working environment**	
weight	380g	Operating temperature	0～+55℃
Installer formula	Rail installation, standard 35mm DIN rail	storage temperature	−40～+70℃
	Panel mounting	Relative humidity	5～95% (no condensation)

➢ **Main interface and terminal definition**

① Dip switches: RUN and STOP are used to control the running and stopping of the 2107N program respectively. If you modify the RS232 interface communication parameters of the PCS1200 programmable logic controller, you need to dial to STOP to download the program;

② Ethernet communication interface: RJ45 interface, this interface can be used to communicate with touch screen, host computer, cloud server, etc., supports MODBUS TCP protocol, and 4 clients are connected at the same time;

③ Indicator lights: RUN, COM, ERR are used to display module operation, communication, and fault conditions respectively. I and Q are used to indicate the input and output status of each channel respectively. ETH, C1 and C2 are used to indicate A1B1, A2B2, and Ethernet respectively. Interface communication status (flashing indicates that the corresponding interface has data transmission and reception);

④ RS232 communication interface: this interface is a terminal connection, which can be used to download 2107N programs, communicate with touch screens, upper computers, etc., supports MODBUS RTU/free protocol, and the command library is RS232.lib;

⑤ RS485 communication interface: 2 interfaces can be used to communicate with the touch screen, host computer, third-party instruments, etc., support MODBUS RTU/free protocol, the command library is RS485.lib and RS4853.lib respectively;

⑥ Module input terminal: It is composed of common terminal 1M and input point I, and can adopt source/sink connection;

⑦ The module provides 24VDC power supply: VO + and VO − are the positive and negative terminals of 24VDC respectively;

⑧ Expansion interface: This interface is a pin base, which can be used to expand RPC2000 series expansion modules;

⑨ Module power supply: L, N, are the live wire, neutral wire, and protective ground terminal of AC220V power supply;

⑩ Module output terminal: It is composed of power drive terminal 1L and output point Q, the terminal is relay output; Note: PCS1200 programmable logic controller terminals are all pluggable.
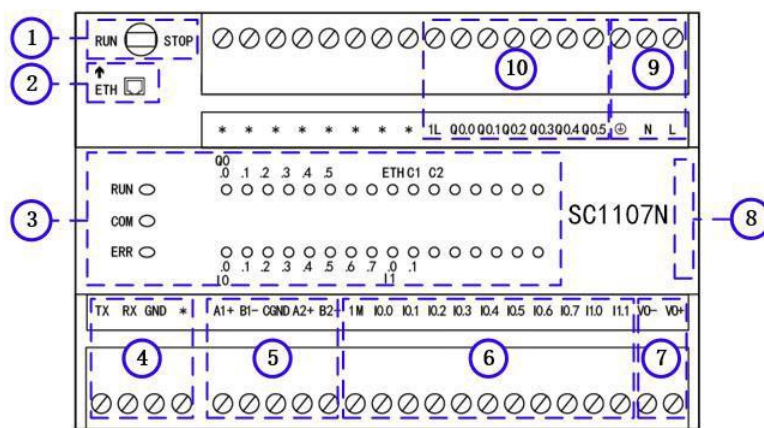

Figure 1 SC1107N module diagram

➢Terminal **al mark definition description**

Upper row terminal	Terminal description	Lower terminal	Terminal description
*	Undefined	A1+	Positive end of the first RS485 interface
1L	Output common	B1-	Negative end of the first RS485 interface

Q0.0	Normal output	A2+	Positive end of the second RS485 interface
Q0.1	Normal output	B2-	Negative end of the second RS485 interface
Q0.2	Normal output	1M	External input common

Q0.3	Normal output	I0.0	Normal input
Q0.4	Normal output	I0.1	Normal input
Q0.5	Normal output	I0.2	Normal input
⏚	Protected area	I0.3	Normal input
N	Zero line	I0.4	Normal input/external interrupt input end
L	FireWire	I0.5	Normal input/external interrupt input end
Lower terminal	Terminal description	I0.6	Normal input/external interrupt input end
TX	RS232 data transmitter	I0.7	Normal input/external interrupt input end
RX	RS232 data receiver	I1.0	Normal input
GND	RS232 ground terminal	I1.1	Normal input
*	Undefined	VO−	External 24VDC negative terminal
CGND	RS485 interface shield grounding	VO+	External 24VDC positive terminal

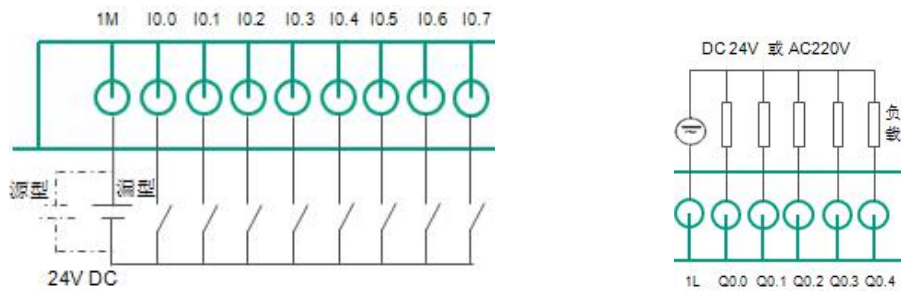➢Input ut and output channel wiring mode

Figure 2 Input channel wiring method (sink or source wiring can be used) Figure 3 Output channel wiring method

2.6 Software configuration and project download

The 5 types of CPU modules use the following methods for software configuration and project download
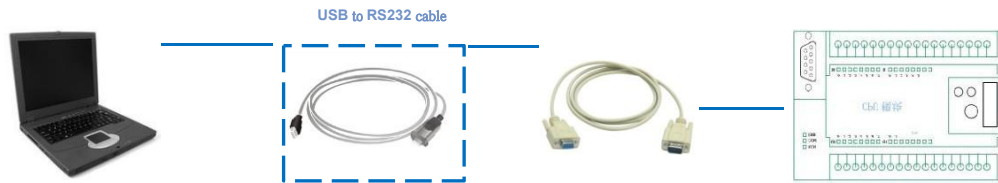

Figure 4 Project download wiring diagram

1. Connect the RS232 of the PCS1200 programmable logic controller to the PC through the programming cable. When the PC does not have RS232

When connecting, you need to use the USB to RS232 cable in the dashed box, and then connect, as shown in Figure 4;

2. Before supplying power to the PCS1200 programmable logic controller, make sure that the programming cable is properly connected. To avoid equipment damage, please do not plug or unplug the communication cable when the module is powered on;

3. If the PC uses a USB to RS232 cable, you need to check the cable COM port number in the device manager of the PC, and configure the PCS1200 communication parameter serial port number to be consistent with it;

4. When downloading, please click the "Login" option in the PCS1200 software online menu, and follow the prompts to download;

5. When RS232 is set to free port, please turn the DIP switch of PCS1200 programmable logic controller to STOP state before downloading.

note

1. When connecting or removing the power supply of the PCS1200 programmable logic controller, make sure that the power supply is turned off.

2. After the power cord is connected, make sure that the terminal cover is covered and place the power cord in a place that is not easy to touch.

3. After making sure that the communication cable and the wiring terminals are connected correctly, power on the PCS1200 programmable logic controller. Do not pull the power cable after powering on to avoid unnecessary personal injury or equipment damage!

3. DI/DO Expansion Module

3.1 16-channel digital input module SC1211

SC1211 integrates 16 digital input channels, the rated voltage of the digital input signal is 24VDC.

➤Technical specificationss

Input channel		Module power consumption	
Number of channels	16 channels	Check power source (24VDC)	80mA
Input type	Sink/source	Expansion bus power supply (5VDC)	90mA
input signal	Rated voltage 24VDC	**Shape and installation**	
	Allowable range 0～30VDC	Dimensions	72mm(L)×80mm(W)×63mm(H)
Input ON signal	15～30VDC, allowable minimum current 3mA	weight	160g
		Installation method	Rail installation, standard 35mm DIN guide rail
Input OFF signal	0～5VDC, maximum allowable current 1mA		Panel mounting
		working environment	
Input delay	<1ms (at rated input voltage)	Operating temperature	0～+55℃
Isolation method	Optical isolation	storage temperature	−40～+70℃
Isolation withstand voltage	1000VDC	Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminal: It is composed of common terminals 1M, 2M, 3M, 4M and input point I. 1M is the common terminal of I0.0~I0.3, 2M is the common terminal of I0.4~I0.7, and 3M is I1. The common end of 0~I1.3, 4M is the common end of I1.4~I1.7, and the source/sink connection can be used. "*" means that the channel has no actual physical connection;

② Indicator light: On, the corresponding channel input signal is 1; off, the corresponding channel input signal is 0. Note: PCS1200 programmable logic controller terminals are all pluggable.
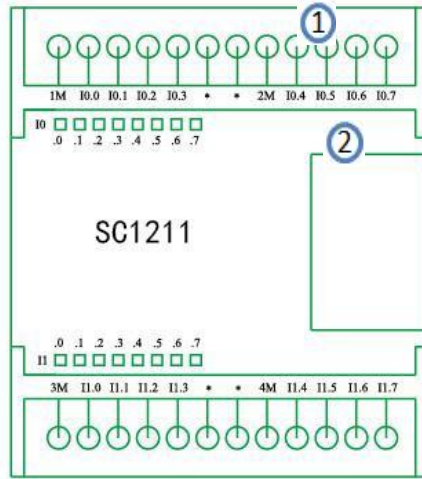
Figure 1 SC1211 module diagram

➢ Terminal mark definition description

| Upper row terminal	Terminal description	Lower terminal	Terminal description
1M	External input common	3M	External input common
I0.0	Normal input	I1.0	Normal input
I0.1	Normal input	I1.1	Normal input
I0.2	Normal input	I1.2	Normal input
I0.3	Normal input	I1.3	Normal input
*	Undefined	*	Undefined
*	Undefined	*	Undefined
2M	External input common	4M	External input common
I0.4	Normal input	I1.4	Normal input
I0.5	Normal input	I1.5	Normal input
I0.6	Normal input	I1.6	Normal input
I0.7	Normal input	I1.7	Normal input

➢ Input channel wiring method
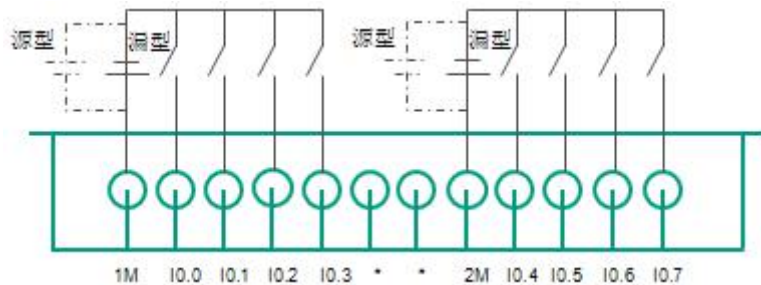
Figure 2 SC1211 input channel wiring mode

3.2 16-channel transistor output module **SC1221**

SC1221 integrates 16 transistor output channels, and the rated voltage of the digital output signal is 24VDC.

➢Technical **specificationss**

Output channel		Module power consumption	
Number of channels	16 channels	External power supply (24VDC)	Need to be calculated according to the load
Output type	Transistor	Expansion bus power (5VDC)	180mA
output signal	Rated voltage 24VDC	Shape and installation	
	Allowable range 20.4VDC ~ 28.8VDC	Dimensions	72mm(L)×80mm(W)×63mm (H)
Single point maximum output Current	1A	weight	170g
Maximum leakage current	1mA	Installation method	Rail installation, standard 35mm DIN
Common terminal output power Flow sum	<4A		Panel mounting
Inrush current	<8A, 100ms	working environment	
On-state contact	<0.2Ω	Operating temperature	0~+55℃
Short circuit	Externally provided	storage temperature	-40~+70℃
Switch delay	<1ms		
Isolation method	Optical isolation	Relative humidity	5%~95%, non-condensing
Isolation withstand voltage	1000VDC		

➢   **Main interface and terminal definition**

① Module terminal: It is composed of power drive terminals 1L-, 1L+, 2L-, 2L+, 3L-, 3L+, 4L-, 4L+ and output point Q. 1L-, 1L+ are the power drive terminals of Q0.0~Q0.3, 2L-, 2L+ are the power drive terminals of Q0.4~Q0.7, 3L-, 3L+ are the power drive terminals of Q1.0~Q1.3, 4L-, 4L+ are the power drive terminals of Q1.4~Q1.7 ;

② Indicator light: On, the output signal of the corresponding channel is 1, and off, the output signal of the corresponding channel is 0. Note: PCS1200 programmable logic controller terminals are all pluggable.
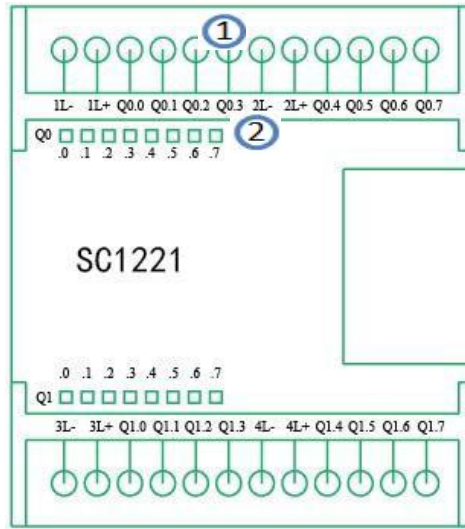
Figure 1 SC1221 module diagram

➤ Terminal mark definition description

| Upper row terminal	Terminal description	Lower terminal	Terminal description
1L-	Load drive power GND	3L-	Load drive power GND
1L+	Load drive power +24VDC	3L+	Load drive power +24VDC
Q0.0	Normal output	Q1.0	Normal output
Q0.1	Normal output	Q1.1	Normal output
Q0.2	Normal output	Q1.2	Normal output
Q0.3	Normal output	Q1.3	Normal output
2L-	Load drive power GND	4L-	Load drive power GND
2L+	Load drive power +24VDC	4L+	Load drive power +24VDC
Q0.4	Normal output	Q1.4	Normal output
Q0.5	Normal output	Q1.5	Normal output
Q0.6	Normal output	Q1.6	Normal output
Q0.7	Normal output	Q1.7	Normal output

➤ Output channel wiring mode
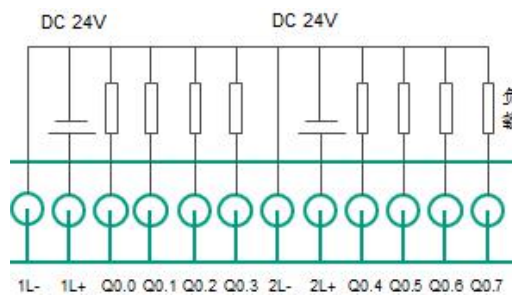
Figure 2 SC1221 output channel wiring mode

3.3 16-channel relay output module SC1223

SC1223 integrates 16 relay output channels, and the rated voltage of the digital output signal is 24VDC or 220VAC.

➤Technical specificationss

Output channel		Module power consumption	
Number of channels	16 channels	External power supply (24VDC)	Need to be calculated according to the load
Output type	Relay	Expansion bus power supply (5VDC)	120mA
output signal	Rated voltage 24VDC or 24 ～ 230VAC	Expansion bus power supply (24VDC)	80mA
	Allowable range 5～30VDC or 5～250VAC	Shape and installation	
Common output Sum of current	<5A	Dimensions	72mm(L)×80mm(W)×63mm (H)
Output contact capacity the amount	2A, resistive load	weight	200g
On-state contact resistance	<0.2Ω	Installation method	Rail installation, standard 35mm DIN guide
Isolation method	Relay isolation		Panel mounting
Coils and contacts Isolation voltage	3000VAC, 1 minute, leakage current 1mA	working environment	
Isolation between contacts	750VAC, 1 minute, leakage current 1mA	Operating temperature	0～+55℃
Isolation resistance (Minimum)	Between contacts or between coils and contacts 100MΩ (at 500VDC)		
Switch delay	<10ms	storage temperature	−40～+70℃
Contact switching frequency	Max 1Hz		
Relay mechanical life	Up to 10,000,000 under no load More than When rated resistive 2A load, it can reach more than 100,000 times	Relative humidity	5%～95%, non-condensing

➢ **Main interface and terminal definition**

① Module terminal: It consists of power drive terminals 1L, 2L, 3L, 4L and output point Q, 1L is the power drive terminal of Q0.0~Q0.3, 2L is the power drive terminal of Q0.4~Q0.7, 3L It is the power drive terminal of Q1.0~Q1.3, 4L is the power drive terminal of Q1.4~Q1.7, "*" means that this channel has no actual physical connection;

② Indicator light: On, the output signal of the corresponding channel is 1, and off, the output signal of the corresponding channel is 0. Note: PCS1200 programmable logic controller terminals are all pluggable.
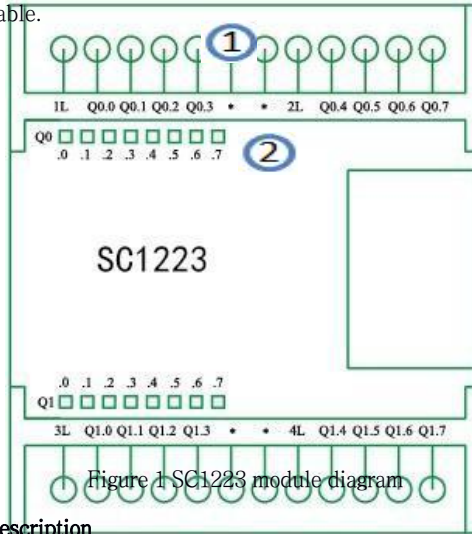

Figure 1 SC1223 module diagram

➢ **Terminal mark definition description**

| Upper row terminal	Terminal description	Lower terminal	Terminal description
1L	Output common	3L	Output common
Q0.0	Normal output	Q1.0	Normal output
Q0.1	Normal output	Q1.1	Normal output
Q0.2	Normal output	Q1.2	Normal output
Q0.3	Normal output	Q1.3	Normal output
*	Undefined	*	Undefined
*	Undefined	*	Undefined
2L	Output common	4L	Output common
Q0.4	Normal output	Q1.4	Normal output
Q0.5	Normal output	Q1.5	Normal output
Q0.6	Normal output	Q1.6	Normal output
Q0.7	Normal output	Q1.7	Normal output

➢ Output channel wiring mode
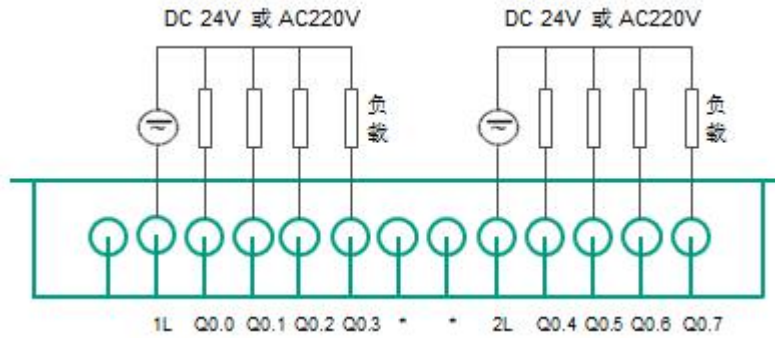
Figure 2 SC1223 output channel wiring mode

3.4 8-channel digital input/8-channel relay output module SC1231

SC1231 integrates 8 digital inputs and 8 relay output channels. The rated voltage of the digital input signal is 24VDC, and the rated voltage of the digital output signal is 24VDC or 220VAC.

➢Technical specificationss

Input channel		Output channel	
Number of channels	8-way	Number of channels	8-way
Input type	Sink/source	Output type	Relay
input signal	Rated voltage 24VDC	output signal	Rated voltage 24VDC or 24～230VAC
	Allowable range 0～30VDC		Allowable range 5～30VDC or 5～250VAC
Input ON signal	15 ～ 30VDC, allowable minimum current 3mA	Public terminal output power Flow sum	<5A
		Output contact capacity	2A, resistive load
Input OFF signal	0～5VDC, allowable maximum current 1mA	On-state contact impedance	<0.2Ω
		Isolation method	Relay isolation
Input delay	<1ms (at rated input voltage)	Between coil and contact Isolation voltage	3000VAC, 1 minute, leakage current 1mA
Isolation method	Optical isolation	Isolate electricity between contacts Pressure	750VAC, 1 minute, leakage current 1mA
Isolation withstand voltage	1000VDC	Isolation resistance (max small)	Between contacts or between coils and contacts 100MΩ (at 500VDC)
Module power consumption		Switch delay	<10ms

External power supply Source (24VDC)	Input 20mA; output needs to be based on load Calculation	Contact switching frequency	Max 1Hz
Expansion bus line Source (5VDC)	90mA		
Expansion bus power supply (24VDC)	20mA	Mechanical life of relay	When there is no load, it can reach 10,000,000 times or more When rated resistive 2A load, it can reach more than 100,000 times
Shape and installation		**working environment**	
Dimensions	72mm(L) × 80mm(W) × 63mm(H)	Operating temperature	0 ~ +55℃
weight	120g	storage temperature	-40 ~ +70℃
Installation method	Rail installation, standard 35mm DIN guide rail Panel mounting	Relative humidity	5% ~ 95%, non-condensing

➢ **Main interface and terminal definition**

① Module input terminal: It is composed of common terminals 1M, 2M and input point I. 1M is the common terminal of I0.0~I0.3, and 2M is the common terminal of I0.4~I0.7. Source/sink type can be used Connection method, "*" means that this channel has no actual physical connection;

② Module output terminal: It is composed of power drive terminal 1L, 2L and output point Q, 1L is the power drive terminal of Q0.0~Q0.3, 2L is the power drive terminal of Q0.4~Q0.7, "*" means There is no actual physical connection for this channel;

③ Indicator light: in the input channel, the input signal of the corresponding channel is 1 when on, and the input signal of the channel is 0 when off; in the output channels, the output signal of the corresponding channel is 1 when on, and the output signal of the corresponding channel is 0 when off.

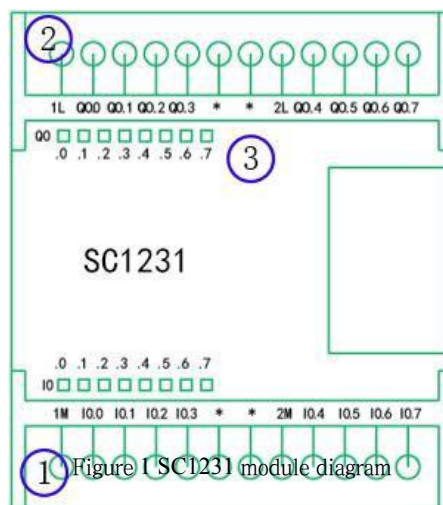Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1231 module diagram

➢ Terminal mark definition description

| Upper row terminal	Terminal description	Lower terminal	Terminal description
1L	Output common	1M	External input common
Q0.0	Normal output	I0.0	Normal input
Q0.1	Normal output	I0.1	Normal input
Q0.2	Normal output	I0.2	Normal input
Q0.3	Normal output	I0.3	Normal input
*	Undefined	*	Undefined
*	Undefined	*	Undefined
2L	Output common	2M	External input common
Q0.4	Normal output	I0.4	Normal input
Q0.5	Normal output	I0.5	Normal input
Q0.6	Normal output	I0.6	Normal input
Q0.7	Normal output	I0.7	Normal input

➢ Input and output channel wiring mode
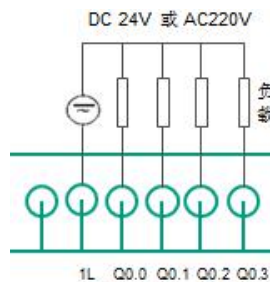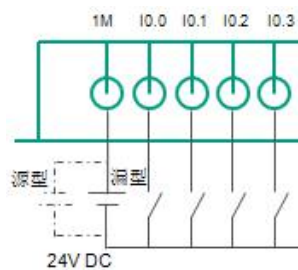
Figure 2 SC1231 input channel wiring mode Figure 3 SC1231 output channel wiring mode

4. AI/AO extension module

4.1 4-channel analog input module SC1310

SC1310 integrates 4 differential analog input channels, each channel is isolated, used to detect analog input signal 4-20mA, 0-20mA or 0-10V.

➤Technical specificationss

Input channel			Module power consumption	
Number of channels and Types of	4 differential inputs		Expansion bus power Source (5VDC)	100mA
input signal	Current	4～20mA	Expansion bus power Source (24VDC)	20mA
		0～20mA	Shape and installation	
	Voltage	0～10V	Dimensions	72mm(L)×80mm(W)×63mm(H)
Input accuracy	0.5%FS@25℃ (FS means full scale, @25℃ means at 25℃)		weight	200g
During A/D conversion between	<200us		Installation method	Rail installation, standard 35mm DIN guide rail
When sampling refresh between	10ms (full channel)			Panel mounting
Differential Mode	Better than 70dB@50Hz		working environment	
input resistance	720KΩ (voltage); 249Ω (current)		Operating temperature	0～+55℃
Temperature drift	±100ppm/℃		storage temperature	−40～+70℃
Maximum allowable electricity	<30mA			
Maximum allowable electricity	<30V		Relative humidity	5%～95%, non-condensing
Isolation withstand voltage	Field and system 500VDC; between channels 100VDC			

➤ **Main interface and terminal definition**

① Module terminals: RA, A+, A- are a set of analog input terminals. When inputting voltage signal, A+ and A- are used to connect the positive and negative terminals of voltage signal respectively; when inputting current signal, it is necessary to short-circuit RA and A+ , And as the inflow end of the current signal, A- as the outflow end of the current signal, and the other groups are the same as above;

Indicator light: The channel indicator is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally.

RUN and ERR are respectively used to display the running and
fault conditions of the module. The corresponding
relationship of input signal A/D is as follows:

input signal	Measuring range	Numerical range corresponding to the range	
		Decimal value	Hexadecimal value
Current signal	4～20mA	0～65535	0x00～0xFFFF
Current signal	0～20mA	0～65535	0x00～0xFFFF
Voltage signal	0～10V	0～65535	0x00～0xFFFF

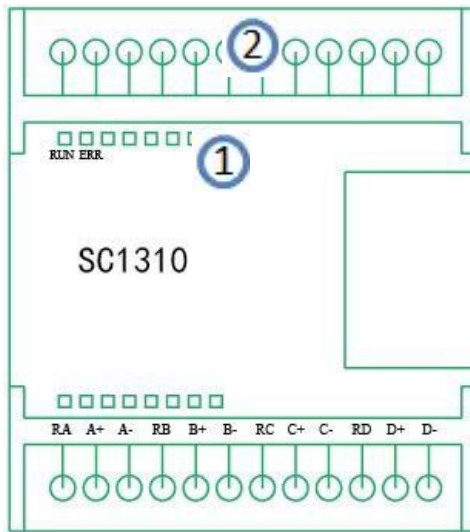Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1310 module diagram

➢   Terminal mark definition description

| Upper row terminal	Terminal description	Lower terminal	Terminal description
Unmarked	No wiring required	RA	Current input terminal (need to be shorted with A+)
		A+	Voltage input terminal+
		A−	Voltage input terminal
		RB	Current input terminal (need to be shorted with B+)
		B+	Voltage input terminal+
		B−	Voltage input terminal
		RC	Current input terminal (need to be shorted with C+)
		C+	Voltage input terminal+
		C−	Voltage input terminal
		RD	Current input terminal (need to be shorted with D+)
		D+	Voltage input terminal+
		D−	Voltage input terminal

➢ Input channel wiring method
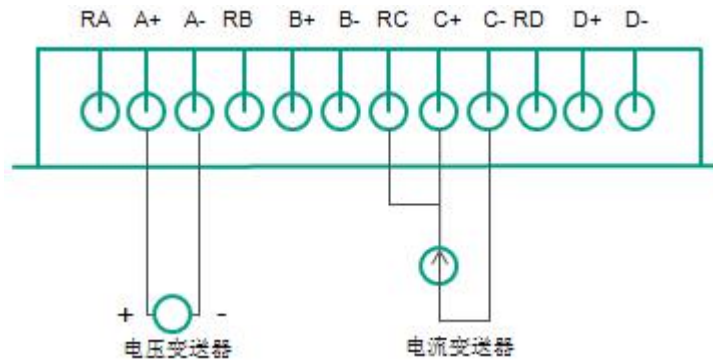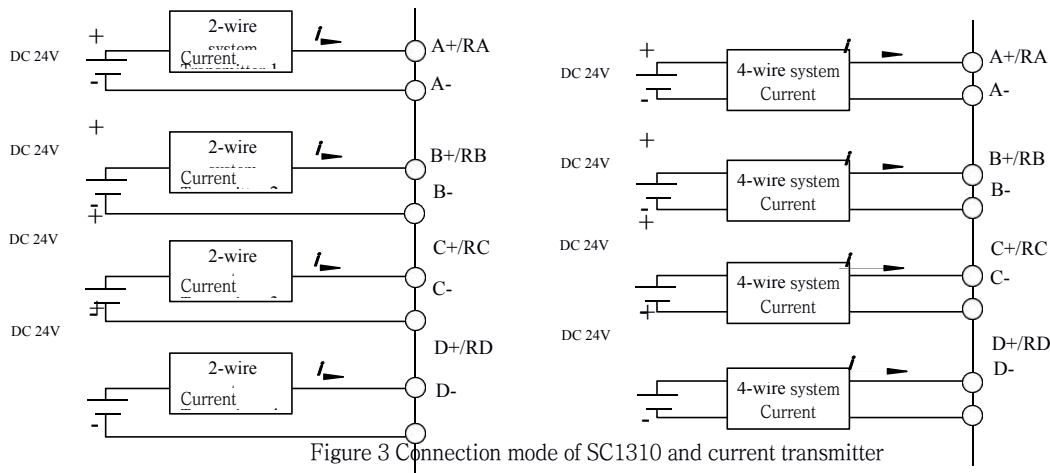

Figure 2 SC1310 input channel wiring mode

Figure 3 Connection mode of SC1310 and current transmitter

4.2 4-channel thermocouple input module **SC1311**

SC1311 integrates 4 thermocouple input channels for detecting floating thermocouple signals or −80～80mV voltage signals.

➢Technical specificationss

Input channel		Module power consumption	
Number of channels	4 way	Expansion bus power Source (5VDC)	100mA
Input type	J, K, T, N, E, R, S, B type floating ground Thermocouple, −80～80mV	Expansion bus power Source (24VDC)	0mA
Input accuracy	0.2%FS@25℃ (voltage) (FS means full Range, @25℃ means at 25℃)	Shape and installation	
Temperature resolution rate	0.5℃	Dimensions	72mm(L)×80mm(W)×63mm(H)
Sample refresh	20ms (full channel)	weight	160g

time				
Differential Mode Suppression	Better than 70dB@50Hz	Installation method	Rail installation, standard 35mm DIN guide rail	
Temperature drift	± 50ppm/℃		Panel mounting	
Cold end error	± 2℃	**working environment**		
Cold junction compensation	Support (need to consider the internal temperature of the module and the cabinet Degree difference, and then corrected by	Operating temperature	0～+55℃	
Wire break detection	stand by	storage temperature	-40～+70℃	
		Relative humidity	5%～95%, non-condensing	

➢ **Main interface and terminal definition**

① Module terminal: A+ and A- are a set of thermocouple input terminals. Both ends of the thermocouple are connected to A+ and A- respectively. The other groups are the same as above. "*" means that this channel has no actual physical connection;

② Indicator light: The channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally. RUN and ERR are used to display module operation and fault conditions respectively.

The corresponding relationship of input signal A/D is as follows:

Input type	Measuring range (℃)	Numerical range corresponding to the range
J	-210～1200	-2100～12000
K	-270～1370	-2700～13700
E	-270～1000	-2700～10000
N	-270～1300	-2700～13000
T	-270～400	-2700～4000
R	-50～1768	-500～17680
S	-50～1768	-500～17680
B	0～1820	0～18200
- 80～80mV	-	-8000～8000

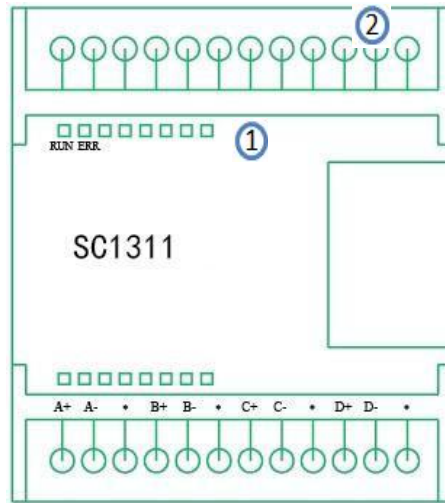Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1311 module diagram

➢ Terminal mark definition description

| Upper row terminals	Terminal description	Lower terminal	Terminal description
Unmarked	No wiring required	A+	Thermocouple input terminal+
		A-	Thermocouple input terminal-
		*	Undefined
		B+	Thermocouple input terminal+
		B-	Thermocouple input terminal-
		*	Undefined
		C+	Thermocouple input terminal+
		C-	Thermocouple input terminal-
		*	Undefined
		D+	Thermocouple input terminal+
		D-	Thermocouple input terminal-
		*	Undefined

➢ Input channel wiring method
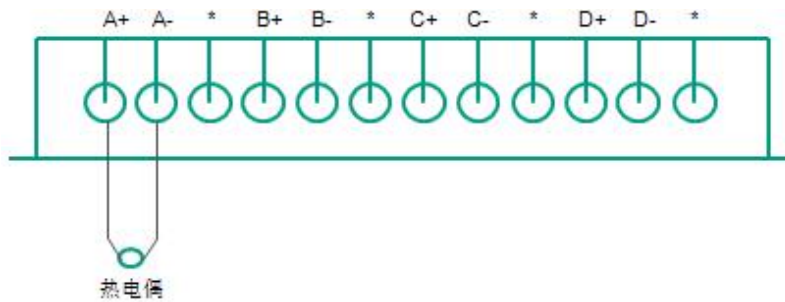
Figure 2 SC1311 input channel wiring mode

4.3 4-channel thermal resistance input **module SC1312**

SC1312 integrates 4 thermal resistance input channels, used to detect Cu50 and Pt100 thermal resistance resistance signals.

➤Technical **specificationss**

Input channel		Module power consumption	
Number of channels	4 way	Expansion bus power Source (5VDC)	120mA
Input type	Cu50, Pt100	Expansion bus power Source (24VDC)	0mA
Signal range	Cu50 (-50-150℃)	Shape and installation	
	Pt100(-150-619.6℃)	Dimensions	72mm(L) × 80mm(W) × 63mm(H)
Input accuracy	0.2%FS@25℃ (voltage) (FS means full Range, @25℃ means at 25℃)	weight	160g
Temperature resolution rate	0.1℃	Installation method	Rail installation, standard 35mm DIN guide rail
Sample refresh time	20ms (full channel)		Panel mounting
Differential Mode Suppression	Better than 70dB@50HZ	working environment	
Temperature	± 50ppm/℃	Operating	0 ~ +55℃
Short circuit and disconnectio	stand by	storage	-40 ~ +70℃
		Relative humidity	5% ~ 95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminal: The connection mode can be two-wire system or three-wire system. Take the A channel as an example. If it is a two-wire system, please short-circuit A+ and A-, and connect a thermal resistance between RA and A+. If it is a three-wire system, one end of the thermal resistor is connected to RA, and the other two wires are connected to A+ and A- respectively. The other groups are the same as above;

② Indicator light: The channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally. RUN and ERR are used to display module operation and fault conditions respectively.

The corresponding relationship of input signal A/D is as follows:

Measuring range	Numerical range corresponding to the range
Cu50 (-50-150℃)	-500 ~ 1500
Pt100(-150-619.6℃)	-1500 ~ 6196

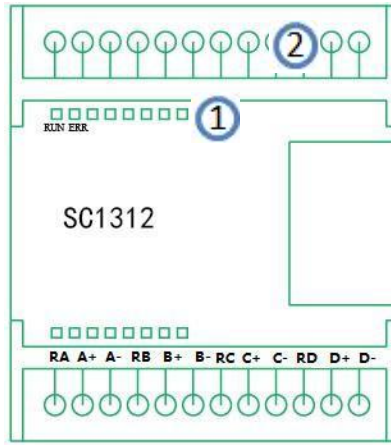Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1312 module diagram

➤ **Terminal mark definition description**

Upper row terminal	Terminal description	Lower terminal	Terminal description
Unmarked	No wiring required	RA	Thermal resistance input excitation terminal
		A+	Thermal resistance input measuring terminal
		A−	Thermal resistance input common terminal
		RB	Thermal resistance input excitation terminal
		B+	Thermal resistance input measuring terminal
		B−	Thermal resistance input common terminal
		RC	Thermal resistance input excitation terminal
		C+	Thermal resistance input
		C−	Thermal resistance input common terminal
		RD	Thermal resistance input excitation terminal
		D+	Thermal resistance input measuring terminal
		D−	Thermal resistance input common terminal

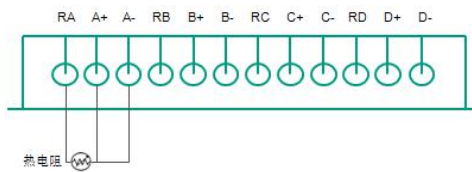➤ **Input channel wiring method**

Figure 2 SC1312 input channel wiring mode

Figure 3 Wiring methods of different wire resistances

4.4 8-channel analog input module SC1313

SC1313 integrates 8 single-ended analog input channels for detecting analog input signals of 4-20mA, 0-20mA or 0-10V.

➤Technical specificationss

Input channel		Module power consumption	
Number of channels and Types of	8 single-ended inputs	Expansion bus power Source (5VDC)	100mA
input signal	Current	4～20mA	Expansion bus power Source (24VDC)	20mA
		0～20mA	Shape and installation	
	Voltage	0～10V	Dimensions	72mm(L)×80mm(W)×63mm(H)
Input accuracy	0.5%FS@25℃ (FS means full scale, @25℃ means at 25℃)	weight	200g
When sampling refresh between	<20ms (full channel)	Installation method	Rail installation, standard 35mm DIN guide rail
input resistance	720KΩ (voltage); 249Ω (current)		Panel mounting
Temperature drift	±100ppm/℃	working environment	
Maximum allowable electricity	<30mA	Operating temperature	0～+55℃
Maximum allowable electricity	<30V	storage temperature	-40～+70℃
		Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminals: RA, A+, A- are a set of analog input terminals. When inputting voltage signal, A+ and A- are used to connect the positive and negative terminals of voltage signal respectively; when inputting current signal, it is necessary to short-circuit RA and A+ , And as the inflow end of the current signal, A- as the outflow end of the current signal, and the other groups are the same as above;

② Indicator light: The channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally. RUN and ERR are used to display module operation and fault conditions respectively.

The corresponding relationship of input signal A/D is as follows:

input signal	Measuring range	Numerical range corresponding to the range	
		Decimal value	Hexadecimal value
Current signal	4～20mA	0～65535	0x00～0xFFFF
Current signal	0～20mA	0～65535	0x00～0xFFFF

| Voltage signal | 0～10V | 0～65535 | 0x00～0xFFFF |

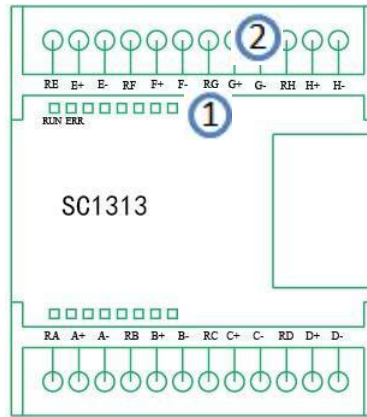Note: **PCS1200** programmable logic controller terminals are all pluggable.

Figure 1 SC1313 module diagram

➢ **Terminal mark definition description**

| Upper row terminal	Terminal description	Lower terminal	Terminal description
RE	Current input terminal (need to be shorted with E+)	RA	Current input terminal (need to be shorted with A+)
E+	Voltage input terminal+	A+	Voltage input terminal+
E–	Voltage input terminal	A–	Voltage input terminal
RF	Current input terminal (need to be shorted with F+)	RB	Current input terminal (need to be shorted with B+)
F+	Voltage input terminal+	B+	Voltage input terminal+
F–	Voltage input terminal	B–	Voltage input terminal
RG	Current input terminal (need to be shorted with G+)	RC	Current input terminal (need to be shorted with C+)
G+	Voltage input terminal+	C+	Voltage input terminal+
G–	Voltage input terminal	C–	Voltage input terminal
RH	Current input terminal (need to be shorted with H+)	RD	Current input terminal (need to be shorted with D+)
H+	Voltage input terminal+	D+	Voltage input terminal+
H–	Voltage input terminal	D–	Voltage input terminal

➢ **Input channel wiring method**
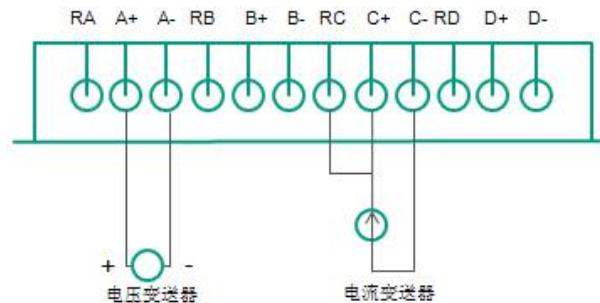
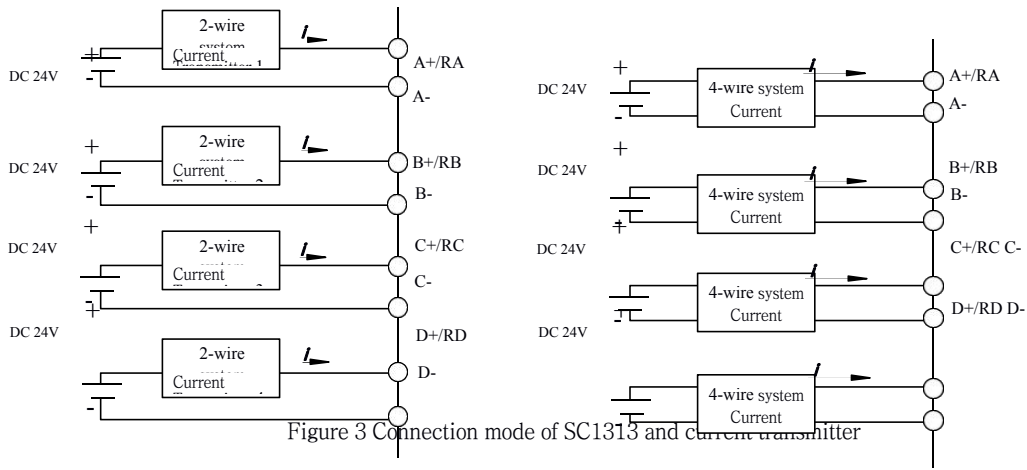Figure 2 SC1313 input channel wiring mode

Figure 3 Connection mode of SC1313 and current transmitter

4.5 8-channel thermistor input module **SC1314**

SC1314 integrates 8 thermistor input channels to detect the thermistor resistance signal. To ensure measurement accuracy, the thermistor (NTC) R25 ° C is required to be 10K.

➢Technical **specificationss**

Input channel		Module power consumption	
Number of channels	8-way	Expansion bus power Source (5VDC)	100mA
Input type	Thermistor (NTC), R25℃ is 10K, B value is optional	Expansion bus power Source (24VDC)	40mA
Input accuracy	0.2%FS@25℃(Voltage) (FS means Full scale, @25℃ means at 25℃)	Shape and installation	
Temperature resolution	0.1℃	Dimensions	72mm(L)×80mm(W)×63mm(H)
When sampling refresh between	100ms (full channel)	weight	160g
Differential Mode Rejection Ratio	Better than 60dB@50HZ	Installation method	Rail installation, standard 35mm DIN guide rail
			Panel mounting
Temperature drift	±100ppm/℃	working environment	
		Operating temperature	0～+55℃
Isolation withstand voltage	Field and system 500VDC;	storage temperature	-40～+70℃
		Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminals: A+ and A− are a set of thermistor (NTC) input terminals. Connect one end of NTC to A+ and the other end to A−. The other groups are the same as above;

② Indicator light: The channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally. RUN and ERR are used to display module operation and fault conditions respectively.

The corresponding relationship of input signal A/D is as follows:

Measuring range	Numerical range corresponding to the range
−20℃ ~ 100℃	−200 ~ 1000

Note: PCS1200 programmable logic controller terminals are all pluggable.
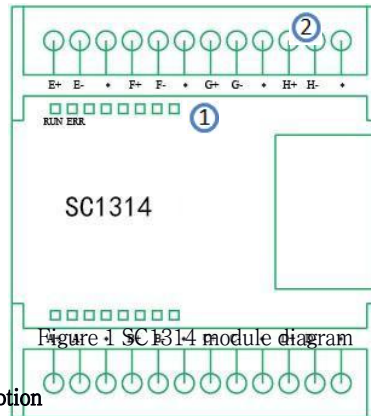

Figure 1 SC1314 module diagram

➤ **Terminal mark definition description**

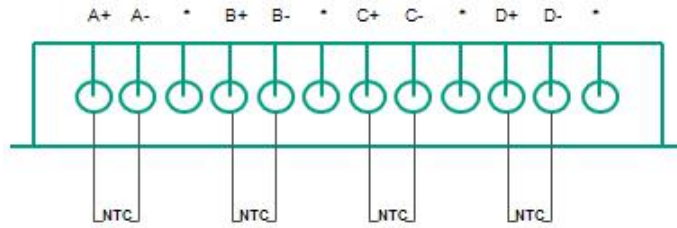| Upper row terminal	Terminal description	Lower terminal	Terminal description
E+	Thermistor input terminal+	A+	Thermistor input terminal+
E−	Thermistor input terminal−	A−	Thermistor input terminal−
*	Undefined	*	Undefined
F+	Thermistor input terminal+	B+	Thermistor input terminal+
F−	Thermistor input terminal−	B−	Thermistor input terminal−
*	Undefined	*	Undefined
G+	Thermistor input terminal+	C+	Thermistor input terminal+
G−	Thermistor input terminal−	C−	Thermistor input terminal−
*	Undefined	*	Undefined
H+	Thermistor input terminal+	D+	Thermistor input terminal+
H−	Thermistor input terminal−	D−	Thermistor input terminal−
*	Undefined	*	Undefined

➢ **Input channel wiring method**

Figure 2 SC1314 input channel wiring mode

4.6 8-channel thermistor input module **SC1314**

SC1314 integrates 8 thermistor input channels to detect the thermistor resistance signal. To ensure measurement accuracy, the thermistor (NTC) R25 ˚C is required to be 10K.

➢Technical **specificationss**

Input channel		Module power consumption	
Number of channels	8-way	Expansion bus power Source (5VDC)	100mA
Input type	Thermistor (NTC), R25℃ is 10K, B value is optional	Expansion bus power Source (24VDC)	40mA
Input accuracy	0.2%FS@25℃(Voltage) (FS means Full scale, @25℃ means at 25℃)	Shape and installation	
Temperature resolution	0.1℃	Dimensions	72mm(L)×80mm(W)×63mm(H)
When sampling refresh between	100ms (full channel)	weight	160g
Differential Mode Rejection Ratio	Better than 60dB@50HZ	Installation method	Rail installation, standard 35mm DIN guide rail
			Panel mounting
Temperature drift	±100ppm/℃	working environment	
		Operating temperature	0～+55℃
Isolation withstand voltage	Field and system 500VDC;	storage temperature	-40～+70℃
		Relative humidity	5%～95%, non-condensing

➢ **Main interface and terminal definition**

① Module terminals: A+ and A- are a set of thermistor (NTC) input terminals. Connect one end of NTC to A+ and the other end to A-. The other groups are the same as above;

② Indicator light: the channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not

If it is abnormal, RUN and ERR are respectively used to display the

running and fault conditions of the module. The corresponding relationship of

Measuring range	Numerical range corresponding to the range
-20℃ ~ 100℃	-200 ~ 1000

Note: PCS1200 programmable logic controller terminals are all pluggable.
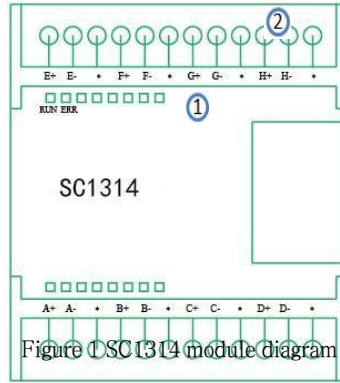

Figure 1 SC1314 module diagram

➢ Terminal mark definition description

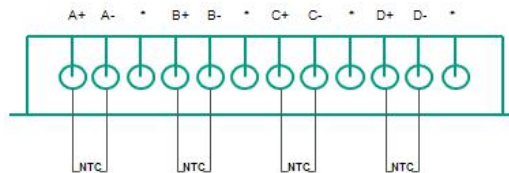| Upper row terminal	Terminal description	Lower terminal	Terminal description
E+	Thermistor input terminal+	A+	Thermistor input terminal+
E-	Thermistor input terminal-	A-	Thermistor input terminal-
*	Undefined	*	Undefined
F+	Thermistor input terminal+	B+	Thermistor input terminal+
F-	Thermistor input terminal-	B-	Thermistor input terminal-
*	Undefined	*	Undefined
G+	Thermistor input terminal+	C+	Thermistor input terminal+
G-	Thermistor input terminal-	C-	Thermistor input terminal-
*	Undefined	*	Undefined
H+	Thermistor input terminal+	D+	Thermistor input terminal+
H-	Thermistor input terminal-	D-	Thermistor input terminal-
*	Undefined	*	Undefined

➢ Input channel wiring method

Figure 2 SC1314 input channel wiring mode

4.7 4-channel analog output module **SC1321**

SC1321 integrates 4 analog output channels, which are used to output analog signals 0-20mA.

➤Technical specificationss

Output channel			Module power consumption	
Number of channels	4 way		External power supply Source (24VDC)	80mA
output signal	Current	0～20mA	Expansion bus power Source (5VDC)	100mA
			Shape and installation	
Output resolution	0.01mA		Dimensions	72mm(L)×80mm(W)×63mm(H)
Output accuracy	1%FS@25℃ (FS means full scale, @25℃ means at 25℃)		weight	160g
stable schedule	Voltage Output	<=3ms	Installation method	Rail installation, standard 35mm DIN guide rail
	Current Output	<=3ms		Panel mounting
Drive capability	Voltage	2000Ω minimum	working environment	
	Current	Maximum 600Ω	Operating temperature	0～+55℃
Isolation withstand voltage	Field and system 500VDC		storage temperature	-40～+70℃
			Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminals: I0 and M0 are a group of analog output terminals, M0 is the common terminal, when outputting current signal, through I0 and M0, I0 is the current flow out, and the other group is the same as above; "*" means this channel has no actual physical connection;

② Module power supply: 24V+ and 24V- are the positive and negative terminals of 24VDC power supply;

③ Indicator light: The channel indicator light is on to indicate that the corresponding channel is working normally, and off indicates that the module is not powered on or the corresponding channel is working abnormally. RUN and ERR are used to display module operation and fault conditions respectively.

The corresponding relationship of input signal A/D is as follows:

output signal	Measuring range	➤Numerical range corresponding to the rangee	
		➤Decimal valuee	➤Hexadecimal valuee
➤Current signall	➤0～20mAA	➤ 0～4095	➤0x000～0xFFFF

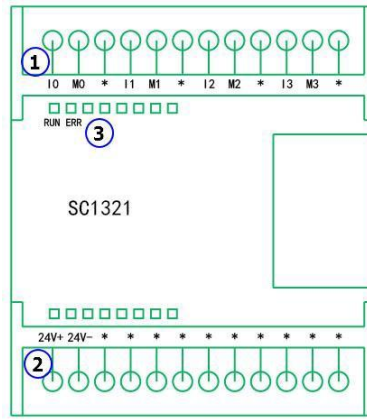Note: PCS1200 programmable logic controller terminals are all pluggable.

Figure 1 SC1321 module diagram

➢ Terminal mark definition description

Upper row terminal	Terminal description	Lower terminal	Terminal description
I0	Current output 0	24V+	External 24VDC power supply positive terminal
M0	Output common 0	24V−	External 24VDC power supply negative terminal
*	Undefined	*	Undefined
I1	Current output 1	*	Undefined
M1	Output common 1	*	Undefined
*	Undefined	*	Undefined
I2	Current output 2	*	Undefined
M2	Output common 2	*	Undefined
*	Output common	*	Undefined
I3	Current output 3	*	Undefined
M3	Output common 3	*	Undefined
*	Undefined	*	Undefined

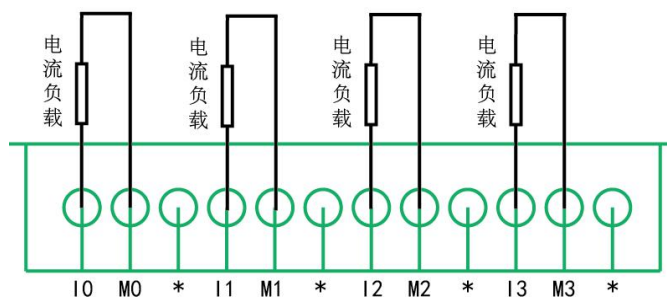➢ Input channel wiring method

Figure 2 SC1321 input channel wiring mode

5. Communication expansion module

5.1 Programmable communication converter **SC1400**

The functions of SC1400 programmable communication converter are as follows:

1. Three RS485 ports COM0, COM1 and COM2, of which COM0 is RS232 and RS485 multiplexed, and the communication ports are all isolated from the inside;

2. 1 Ethernet port, support MODBUS/TCP slave station protocol, maximum support 4 links;

3. The communication converter can write programs in all standard languages of IEC61131-3 and download them from the RS232 port for data exchange between communication ports;

4. All RS485 supports MODBUS slave station and free port communication, among which COM1 and COM2 have MODBUS master communication function block commands;

➤Technical **specificationss**

Module characteristics		Communication function		Physical properties	
Power supply and power consumption	5V-24V 50mA@24VDC	Conversion method	Multi-communication Sharing memory, programming,	Dimensions (W × H × D)	103mm(L)×103mm(W)×28mm (H) (including mounting holes)
CPU speed	60MHz	Number of serial ports	3 RS485 (its (COM0 can be reused as RS232)	weight	150g
Program storage space	400K bytes	Ethernet type	1 10M/100M Adaptive Ethernet	Installation method	Screw positioning hole installation or guide rail installation
Data storage space	N area 12K words Section, M area 5K bytes	RS485 up to Number of stations	32		
Retention area	2K bytes	Ethernet max link	4	Operating temperature	-20～+55℃
Software timer	Unlimited points (most The small unit is 1ms)	Protocol	MODBUS, MODBUS/TCP, Free mouth	storage temperature	-40～+70℃
counter	Unlimited points (most Large count range: 16	Isolation withstand voltage	Communication port and inside Partial isolation, 500VAC	Relative humidity	5%～95%, non-condensing
RS485 baud rate	1200/2400/4800/9600/19200/38400/57600/115200 bps				

➤Indicator **statuss**

Table **1** SC1400 Status Indicator

Lamp name	Light status	meaning
POWER	bright	The power supply is normal
	Extinction	Not powered on or the module is broken
COM0, COM1, COM2	Flashing or bright	Corresponding COM port has data exchange
	Extinction	Corresponding COM port has no data exchange
ETH	Flashing or bright	Ethernet port has data exchange
	Extinction	Ethernet port has data exchange

➤Wiring **instructionss**

Figure 1 Appearance of SC1400

Table **2** DB9 connector signal definition

Pin number	definition	Pin number	definition	Pin	definition
1	-	4	-	7	Keep
2	RXD	5	GND	8	Keep
3	TXD	6	-	9	-

Table **3** Terminal signal definition

Upper terminal	Terminal description
24V+	24V power supply positive terminal
24V-	24V power negative terminal
A0	COM0 485 positive
B0	COM0 485 negative
A1	COM1 485 positive
B1	COM1 485 negative
A2	COM2 485 positive
B2	COM2 485 negative

➤Support **programming and communicationn**

SC1400 is a programmable gateway, which needs to be programmed through PCS1200 software. The corresponding relationship between interfaces and instructions is as follows: 1. The Ethernet port supports ETH.lib library commands to set and read Ethernet parameters;

2. COM0 supports RS232.lib library commands to set and read COM0 parameters, modbus protocol slave operation, etc.;

3. COM1 supports RS485.lib library commands to set and read COM1 parameters, modbus protocol master-slave operation, etc.;

4. COM2 supports RS4853.lib library instructions to set and read COM2 parameters, modbus protocol master-slave operation, etc.;

5. When assigning addresses, M area %MB300 to %MB811 are addressable and retentive after power-off;

Modbus (Modbus/TCP) protocol address mapping relationship is shown in the following table:

Table 4 SC1400 data area Modbus (Modbus/TCP) protocol address mapping relationship

Data area	Types of		Address range	Modbus address	Mapping formula	Modbus type of data
M area (5K)	%MX	BOOL	%MX0.0~%MX5119.7	3000~43959	MXm.n: m*8+n+3000	0x
	%MW	WORD	%MW0~%MW5118	3000~5559	MWm: m/2+3000	4x

Note: When SC1400's 3 serial ports and 1 Ethernet port are used as slave stations, the data area address mapping relationship is the same.

For example:

The bit address is %MX200.6 in the M area, and the Modbus (Modbus/TCP) protocol address is mapped to 3606 (200*8+6+3000=3606), the upper computer needs to offset 1 bit when reading, that is, 0x3607; the word address is M area %MW422, and the Modbus (Modbus/TCP) protocol address mapping is 3211 (422÷2+) 3000=3211), the upper computer needs to offset 1 bit when reading, that is, 4x3212; the double word address mapping relationship is consistent with the first word address of the double word, that is, the corresponding address of %MD422 mapping is 4x3212.

➢SC1400 400 installation positioning hole size:
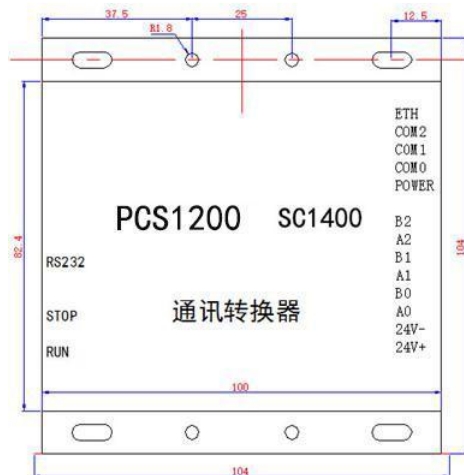
5.2 PROFIBUS-DP slave extension module SC1401

SC1401 provides extended functions of PROFIBUS-DP slave station. By using this module, PCS1200 programmable logic controller can be used as a PROFIBUS-DP slave station to connect to the PROFIBUS-DP network.

➤Technical specificationss

Communication parameters		Module power consumption	
Communication port Quantity	1 piece	Expansion bus power supply (5VDC)	120mA
Interface category type	Terminal wiring A+, B-	Expansion bus power supply (24VDC)	20mA
Communications Association	PROFIBUS-DP (slave station)	Shape and installation	
Station address	1～125 (set by dial switch)	Dimensions	72mm(L)×80mm(W)×63mm(H)
Baud rate	9.6/19.2/45.45/93.75/187.5/500kb 1/1.5/3/6/12Mbps, adaptive	weight	160g
Data transmission	64 bytes in output area	Installation method	Rail installation, standard 35mm DIN guide rail
Losing	64 bytes in the input area		Panel mounting
Each segment Maximum number of	32	working environment	
Every net Maximum number of stations	126	Operating temperature	0～+55℃
Isolation resistance Pressure	Field and system 500VDC;	storage temperature	-40～+70℃
		Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① Module terminal: A+ is the positive incoming and outgoing terminal of DP slave communication, B- is the negative incoming and outgoing terminal of DP slave communication, "*" means that this channel has no actual physical connection;

② Indicator light: COM indicator light is on to indicate that there is communication data interaction between the SC1401 and the DP master station, and off indicates that there is no communication data interaction between the DP, and RUN is used to display the running status of the module;

③ DP dip switch: 8-bit dip switch is used to set the DP slave address.

Note: PCS1200 programmable logic controller terminals are all
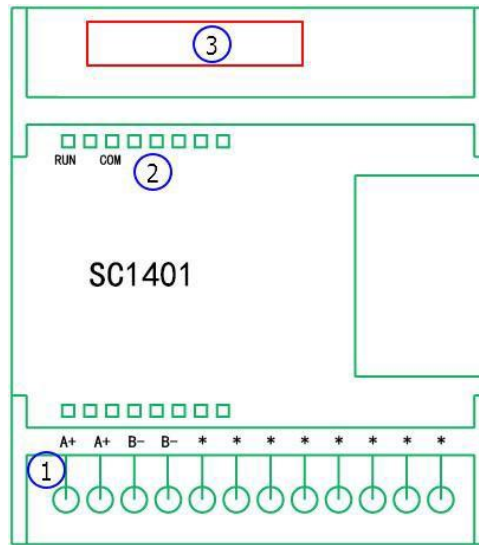
pluggable.

Figure 1 SC1401 module diagram

➤ **DP slave wiring and address setting**

① PROFIBUS-DP communication connection mode: SC1401 is connected to the master station through the connection terminals A+ and B-;

② DP slave address setting: 8-digit DIP switch is used to set the DP slave address. The switch state of each bit

of the DIP refers to different binary values　　　(ON means 1, OFF means 0), composed of 1~8 digits. The

decimal value corresponding to the 8-bit binary number is the DP slave address of SC1401, and the address
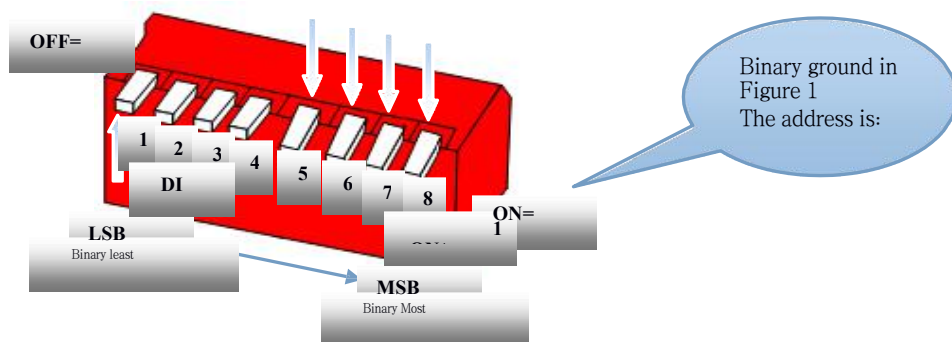
setting is shown in Figure 2;

Figure 2 Correspondence between switch status and station address Note: The

factory default settings of DIP switches are all set to **"OFF"** state, that is, all are "0".

➤The **way to obtain the GSD file of the master** station is under

the installation directory \chitic\PCS1200\PCBASEDIO.

5.3 Ethernet module **SC1403**

SC1403 is an Ethernet RJ45 interface module that supports internal and external network connections. As a server, it supports up to 6 sockets at the same time. Use this module to connect the PCS1200 programmable logic controller to the Ethernet for remote data transmission and operation.

➤Technical **specificationss**

Communication parameters		Shape and installation	
Number of communication ports	1 (can be connected with 6 MODBUS TCP at the same time Master station communication)	Dimensions	72mm(L)×80mm(W)×63mm(H)
Interface Type	Ethernet (RJ45)		
Protocol	MODBUS TCP slave, port number 502	weight	160g
Configuration content	IP address, subnet mask, gateway IP, MAC address	Installation method	Rail installation, standard 35mm DIN guide rail
Communication rate	10/100Mbps, adaptive		Panel mounting
Input and output area	200 bytes respectively	working environment	
Maximum number of stations per	Depends on configuration software	Operating temperature	0～+55℃
Module power consumption		storage temperature	−40～+70℃
Expansion bus power Source (5VDC)	120mA	Relative humidity	5%～95%, non-condensing
Expansion bus power Source (24VDC)	20mA		

➤ **Main interface and terminal definition**

① Ethernet interface: The Ethernet interface is an RJ45 interface, which is used to connect the network cable;

② Indicator light: COM indicator light is on to indicate that there is communication data interaction between the SC1403 and the MODBUS TCP master station, and off indicates that there is no communication data interaction on the Ethernet, and RUN is used to display the running status of the module.
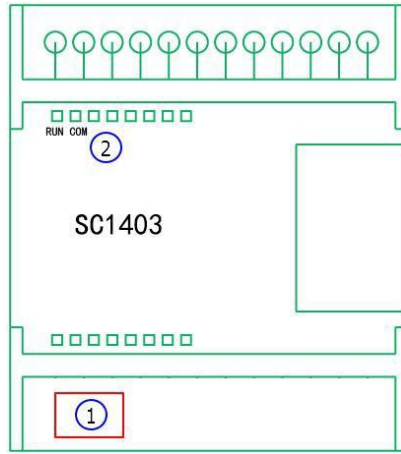
Figure 1 SC1403 module diagram

➢ **MODBUS TCP function description**

function code	name	Function (for the master station)
01	Read out status	Get the current state of a group of switch output
02	Read the input status	Get the current state of a group of digital inputs
03	Read mold state	Get the current state of a group of analog output
04	Read the state of the module	Get the current state of a group of analog inputs
05	Mandatory single-out	Mandatory setting of the value of a certain switch output
06	Mandatory single-channel mode out	Mandatory setting of a certain analog output value
15	Force multiple out	Mandatory setting of multiple switch output values
16	Mandatory multiple mode out	Mandatory setting of multiple analog output values

➢Software **configurationn**

➢ The SC1403 software configuration is shown in Figure 1. Among them, IP_Address, Subnet_Mask and Gateway_Address are used to set the IP address, subnet mask and gateway respectively. See Figure 2 for the setting. The format is a number plus a decimal point. MAC_address is used to set the MAC address. See Figure 1 for the setting. The format is letters, numbers and "-". The default read and write data length of SC1403 is 200 bytes, and the port number is 502.

Figure 2 SC1403 configuration diagram

➢MODBUS TCP address mapping table (take the module's first word starting address as

%IW2 and %QW2 for example) Table 1 SC1403 data area Modbus

TCP protocol address mapping relationshipp

Data area		Types of	Address range	Modbus address s	Mapping formula	Modbus type of data
I Area	%IX	BOOL	%IX2.0~%IX201.7	0~1599	IXm.n: (m-input first word address) *8+n	0x
	%IW	WORD	%IW2~%IW200	0~99	IWm: (m-input first word address)/2	4x
Q area	%QX	BOOL	%QX2.0~%QX201.7	0~1599	QXm.n: (m-output first word address) *8+n	1x
	%QW	WORD	%QW2~%QW200	0~99	QWm: (m-output first word address)/2	3x

Tips: The I area is the PCS1200 programmable logic controller read-only register, which is also the upper-level client read-write register; the Q area is the PCS1200 programmable logic controller read-write register, which is also the upper-level client read-only register. The upper client address generally needs to be offset by 1 bit, that is, the starting mapping address is 1.

5.3 RS485 interface slave station Modbus protocol expansion module SC1404

SC1404 is an RS485 expansion module, which realizes the communication between the CPU module and the host computer through the expansion interface.

➢Technical specificationss

Communication parameters		Shape and installation	
Number of communication ports	1	Dimensions	72mm(L) × 80mm(W) × 63mm(H)
Interface Type	Terminals		
Protocol	MODBUS RTU slave	weight	160g
Communication data area	I and Q area	Installation method	Rail installation, standard 35mm DIN guide rail
			Panel mounting
Communication rate	9600, 19200, 38400 bps	working environment	
		Operating temperature	0～+55℃
Module power consumption		storage temperature	-40～+70℃
5VDC (CPU expansion Bus provided)	50mA	Relative humidity	5%～95%, non-condensing

➤ **Main interface and terminal definition**

① RS485 interface: RS485 interface is terminal wiring, "*" means this channel is not defined;

② Indicator light: the COM indicator light is on to indicate that there is communication data interaction between the SC1404 and the RS485 master station, and off indicates that there is no communication data interaction on the Ethernet, and RUN is used to display the running status of the module.
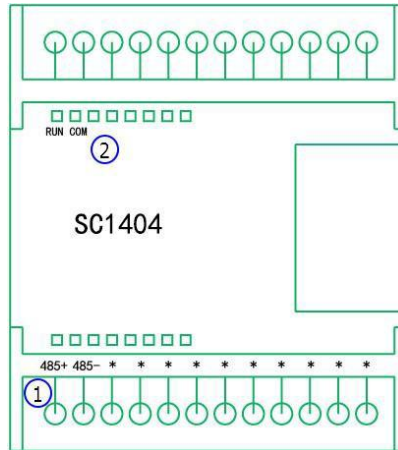

Figure 1 SC1404 module diagram

➤ **MODBUS RTU function description**

function code	name	Function (for the master station)
01	Read out status	Get the current state of a group of switch output
02	Read the input status	Get the current state of a group of digital inputs
03	Read mold state	Get the current state of a group of analog output
04	Read the state of the module	Get the current state of a group of analog inputs
05	Mandatory single-out	Mandatory setting of the value of a certain switch output
06	Mandatory single-channel mode out	Mandatory setting of a certain analog output value
15	Force multiple out	Mandatory setting of multiple switch output values
16	Mandatory multiple mode out	Mandatory setting of multiple analog output values

➤Software **configurationn**

The SC1404 software configuration is shown in Figure 2. Among them, you only need to configure the baud rate. There are three baud rates to choose from, 9600, 19200, and 38400. The other parameters are 8 data bits, 1 stop bit, and no parity. The address of the slave station can be modified according to the needs of the site, ranging from 1 to 125.
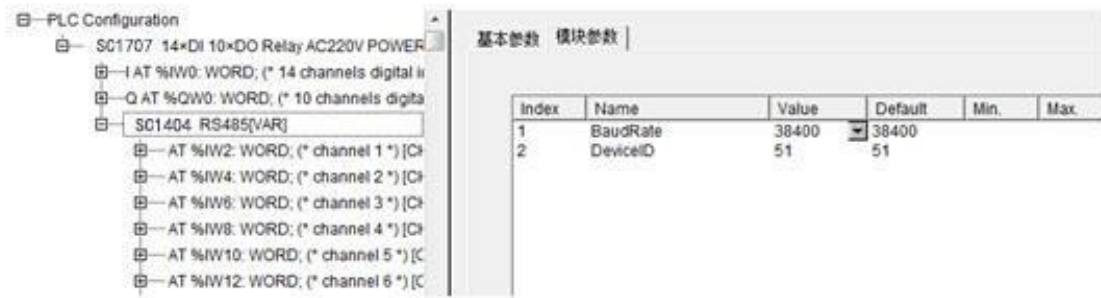
Figure 2 SC1404 configuration diagram

➤MODBUS RTU address mapping table (take the module's first word starting address as

%IW2 and %QW2 for example) Table 1 SC1404 data area Modbus

RTU protocol address mapping relationshipp

Data area		Types of	Address range	Modbus address s	Mapping formula	Modbus type of data
I Area	%IX	BOOL	%IX2.0~%IX201.7	0~1599	IXm.n: (m−input first word address) *8+n	0x
	%IW	WORD	%IW2~%IW200	0~99	IWm: (m−input first word address)/2	4x
Q area	%QX	BOOL	%QX2.0~%QX201.7	0~1599	QXm.n: (m−output first word address) *8+n	1x
	%QW	WORD	%QW2~%QW200	0~99	QWm: (m−output first word address)/2	3x

Tips: The I area is the PCS1200 programmable logic controller read−only register, which is also the upper−level client read−write register; the Q area is the PCS1200 programmable logic controller read−write register, which is also the upper−level client read−only register. The upper client address generally needs to be offset by 1 bit, that is, the starting mapping address is 1.

6. Expansion module connection

The expansion modules are all connected in this way, and the left side of the expansion module is equipped with an expansion cable, which is connected to the previous module through this expansion cable, as shown in the figure. The specific operation steps are as follows:

1) Ensure that the PCS1200 programmable logic controller power supply is cut off;

2) Place the expansion module on the right side of the previous module and fix it;

3) According to the anti-reverse pin on the extension cable, insert the extension cable into the extension port on the right side of the previous module in the correct cable connection direction;

4) It is recommended that this module be connected to the last of all expansion modules. Note: Extension cables cannot be plugged or unplugged under power.
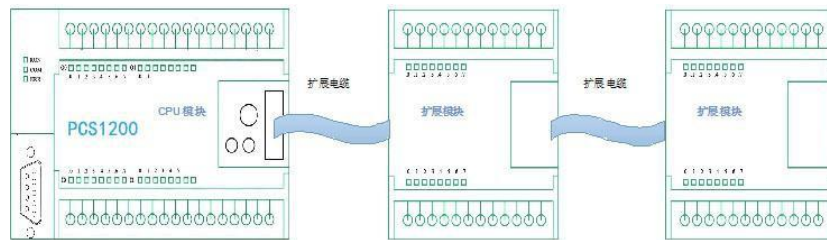

Figure 2 Expansion module connection method

note

1. When connecting or removing the power supply of the PCS1200 programmable logic controller, make sure that the power supply is turned off.

2. After the power cord is connected, make sure that the terminal cover is covered and place the power cord in a place that is not easy to touch.

3. Do not plug or unplug the extension cable when the PCS1200 programmable logic controller is powered on to avoid damage to the module!

7. Other

### 7.1 Three-phase AC parameter acquisition module SC1731

The SC1731 module has three voltage input channels and three current input channels. It can collect electrical parameters including: A, B, C three-phase current, three-phase voltage, frequency, three-phase power factor, active power and reactive power.

➢Technical l specifications

Input characteristics			System power	
Three-phase power Stream IA, IB, IC	Data fetch value	3 channels; code value range: 0-6000; quantity	Power consumption	Single module power consumption<2W
	Precision	1%F.S (measured at 10%~100% rated)		

Three-phase voltage UA, UB, UC	Data value	3 channels; code value range: 0-3000; quantity Range 0-300VAC Or code value range: 0-10000; measuring range 0-10VAC		Obtain 5V voltage from the backplane bus: current <200mA
	Precision	1%F.S (measured at 10%~100% rated)		
Power factor CosfiA, CosfiB, CosfiC	Data value	3 channels; code value range 0-1000; power	isolation	
	Precision	1%F.S	Isolation method	Current channel, isolated by transformer
Frequency F	Data fetch value	1 channel; code range: 0-650; quantity Range: 45-65Hz	Isolation resistance	Current channel: 1000V 50Hz/min leakage current <1mA
	Precision	1%F.S	Physical properties	
Active power	2% accuracy		Operating	0℃~55℃
Reactive power	2% accuracy		Storage temperature	-40℃~70℃
More data New cycle	100mS-1000mS		Relative humidity	5%~80%, no condensation

➢Terminal definitionn
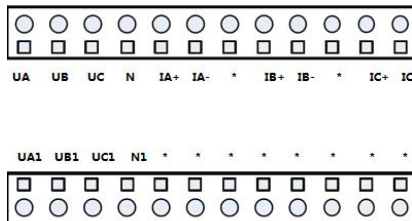
Note: When the rated phase voltage of the system is 220V, the voltage can be directly connected to the corresponding terminal on the upper row. When the rated phase voltage of the system is higher than 220V, the voltage signal needs to be converted to within 0-10V through a transformer

Upper row	Terminal description	Lower	Terminal description
UA	Phase A voltage signal input	UA1	Phase A voltage signal input
UB	Phase B voltage signal input	UB1	Phase B voltage signal input
UC	C-phase voltage signal input	UC1	C-phase voltage signal input
N	Voltage neutral point (300V range)	N1	Voltage neutral point (10V range)-
IA+	A-phase current signal inflow	*	Undefined
IA-	A-phase current signal outflow	*	Undefined
*	Undefined	*	Undefined
IB+	B-phase current signal inflow	*	Undefined
IB-	B-phase current signal outflow	*	Undefined
*	Undefined	*	Undefined
IC+	C-phase current signal inflow	*	Undefined
IC-	C-phase current signal outflow	*	Undefined

➢ Data format 1.

Range

description

The SC1731 module collects the corresponding relationship between the AC current (effective value) and the code value

| AC power	Data Format	AC power	Data Format
Voltage (UA UB UC)	300V range: 1 volt effective value corresponds to decimal 10 10V range: the effective value of 1V voltage corresponds to the decimal number 1000	Current (IA IB IC)	The effective value of 1 ampere current on the secondary side corresponds to the decimal number 1000, and the primary side needs
Power factor (CosfiA CosfiB CosfiC)	1 corresponds to decimal 1000	Frequency (F)	1HZ corresponds to decimal 10
Electricity (W)	300V range: 1Kwh electric energy on the secondary side corresponds to a decimal number of 1000, and the primary side needs to be derived from the transformer ratio 10V range: 1Kwh electric energy on the secondary side corresponds to 100,000 in	power	Can be calculated based on voltage, current and power factor

note

The input must ensure the phase sequence and direction, and do not connect the wrong terminal to avoid damage to the module.

➢Parameter
configurationn

Module parameters	Parameter meaning
Filter_Factor	Module filter parameter selection: 1 (default, no filter), 2, 4, 8, 16, 32. Indicates the number of sample points collected when the module calculates the effective value of the AC current in the channel. The larger the value, the higher the accuracy of the current effective value, the slower the change, and the longer the sampling period.
UParam	Voltage channel selection: 0-300V or 0-10V range, note that the wiring of different ranges is different

➤Input and output dataa

The data area is composed of 2 parts of data: the effective value data of the AC quantity, and the data of the electric energy clearing, as shown in the figure below.
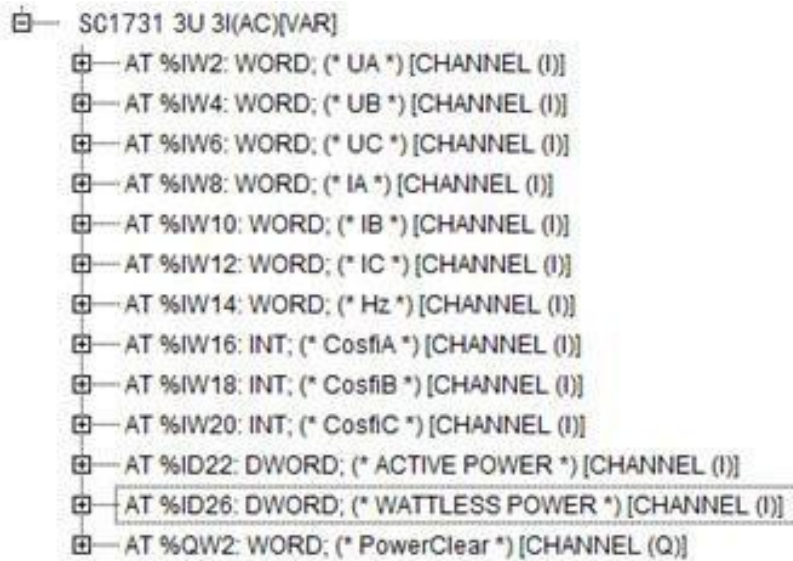
Channels 1-3 are three-phase voltage RMS data UA UB UC; channels 4-6 are three-phase current RMS data IA IB IC; channel 7 is input frequency; channels 8-10 are three-phase power factor; Channels 11~12 are active power and reactive power.

When the output channel is assigned a value of 255, the electric energy data will be cleared, and the electric energy will be accumulated again after the assignment is 0.

7.2 PCS1200 Programmable Logic Controller Program Downloader SC010

The program downloader SC010 can store the PCS1200 programmable logic controller program developed with PCS1200 software, which is convenient for offline download of the program for the PCS1200 programmable logic controller.

➤Technical specificationss

Downloader performance		Downloader interface	
storage capacity	Program area 400K bytes	Interface Type	Micro-USB female interface
Status indication	Flashing: program download in progress	voltage	5V DC
	Steady light: The program download has been completed	Maximum current	100mA
working environment		Isolation method	Not isolated
Operating temperature	0～+55℃	Downloader appearance	
storage	−40～+70℃	size	78mm(L)×34mm(W)×17mm(H)
Relative humidity	5～95% (no condensation)	weight	24g

➢Description of main componentss

① Module dial code: the dial code switch is the working state selection switch of the program downloader SC010; the dial code switch is located on the PC side, and the program downloader is in the state of being accessed by the PC. At this time, the downloader can be downloaded through the PCS1200 software on the PC side; The DIP switch is located at the PCS1200 programmable logic controller, and the program downloader is to access the status of the PCS1200 programmable logic controller. At this time, the PCS1200 programmable logic controller can be downloaded through the serial port;

② Micro-USB interface: The program downloader SC010 uses a Micro-USB hole-type interface for power supply, and the power supply is 5V DC, which can be powered by mobile phone charger, computer USB, mobile power supply, etc.;

③ Indicator light: if the indicator light is on, it means that the program downloader has finished working and is in the state of program downloading; if the indicator light flashes, it means that the program downloader is working and the program download is in progress;

④ RS232 programming interface: The RS232 programming interface is a program download interface. The PC can download the program to the program downloader through the RS232 interface. Similarly, the program downloader can download the program to the PCS1200 programmable logic controller through the RS232 interface.

The corresponding relationship between module interfaces and terminals is shown in Figure 1.

Figure 1 Appearance of program
downloader SC010

➢Module use connectionn

The program downloader is equipped with an adapter board when it leaves the factory, which can facilitate the PC to download the program, as shown in Figure 2.

Figure 2 The connection mode of the program downloader SC010 connected

to the PC The program downloader can directly download the program to the PCS1200 programmable

logic controller, as shown in Figure 3.

Figure 3 The connection mode of the program downloader SC010 to PCS1200 programmable logic controller

> **note**
>
> 1. When the program downloader is in the process of program downloading, try to avoid power-off operations.
>
> 2. After the power cord is connected, please check whether the DIP switch is in the corresponding working state to avoid affecting the use.