



C2S/C2P Series

Single Solenoid Bottom-Ported Valve

Terminal

User Manual



Nanjing Solidot Electronic Technology Co., Ltd.

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1 Product Overview

1.1 Bottom-ported bus valve terminal

1.1.1 Product Introduction

The C2S/C2P series bottom-ported valve terminal is a control module integrating valve terminal technology and various bus technologies. This product enables distributed control and centralized management in industrial settings, optimizes system design, facilitates rapid installation, and simplifies debugging, performance testing, diagnostics, and maintenance of complex systems. The product features a modular structure, a small footprint, quick wiring, simple configuration, and supports major mainstream EtherCAT, EtherNet/IP, and PROFINET standards. CC Link and CC-Link IE Field Basic master stations can be widely used in industrial control systems.



C2S-EC-24A-A12 (M12 bus interface)

**C2P-EC-24A-A12 (RJ45 bus interface)**

1.1.2 Product Features

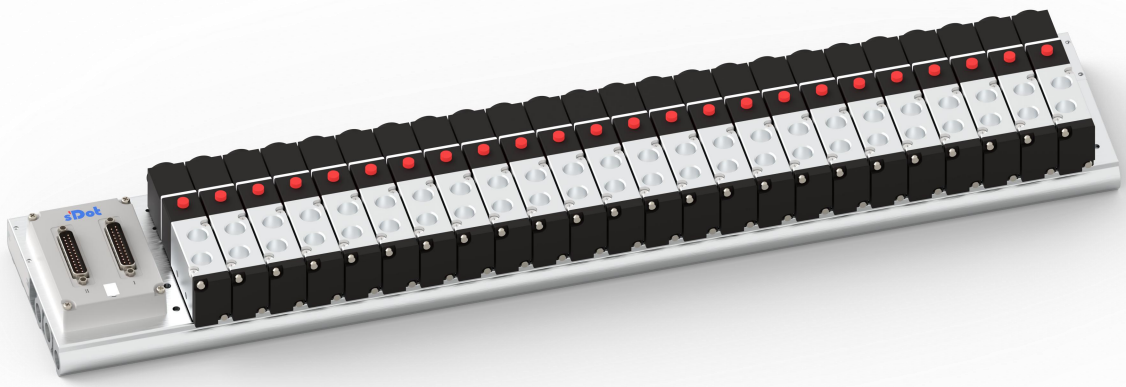
- Supports customization of various industrial Ethernet protocols, including EtherCAT, EtherNet/IP, PROFINET, and CC-Link IE Field Basic.
- Optional M12/RJ45 bus interface, supports cascade communication
- Customization is supported, with a maximum of 24-position single solenoid valve.
- Modular structure, small footprint
- Simple wiring, quick installation, and convenient maintenance
- Supports remote diagnostics, reducing the difficulty of investigation.

1.2 Bottom-ported multi-pin interface valve terminal

1.2.1 Product Introduction

The C2S-OO series bottom-ported valve terminal is a valve terminal with a multi-pin interface. The output control signal is connected to the valve terminal through a multi-strand cable with a multi-pin plug. The interface between the valve terminal and the signal is simplified to a multi-pin plug and a multi-strand cable.

The product adopts a modular structure, occupies little space, can be quickly wired, is easy to configure, and can process all electrical signals, making it widely applicable to industrial control systems.

**C2S-OO-24A-A12 (Multi-pin interface)**

1.2.2 Product Features

- It uses a DB25 interface, making wiring simple.
- Customization is supported, with a maximum of 24-position single solenoid valve.
- Modular structure, small footprint
- Simple wiring, quick installation, and convenient maintenance

2 Naming Rules

2.1 Naming Rules

C2S - **EC** - **24** **A** - **A12**
(1) **(2)** **(3)** **(4)** **(5)**

Serial Number	Meaning	Value Description				
(1)	Product Type	C2S: M12 bus interface				
		C2P: RJ45 bus interface				
(2)	Bus Protocol	EC: Abbreviation for EtherCAT protocol				
		EI: Abbreviation for EtherNet/IP protocol				
		PN: Abbreviation for PROFINET protocol				
		CL: Abbreviation for CC Link protocol				
		CB: Short for CC-Link IE Field Basic protocol				
(3)	Number of valves	OO: Multi-pin interface				
		08: 8	12: 12	16: 16	20: 20	24: 24
(4)	Electric control type	A: Single				
(5)	Solenoid valve model code	A12 (represents AirTAC brand 4V210 model bottom-ported solenoid valve)				

2.2 Model List

Model	Product Description
C2S-EC-()A-A12	M12 interface EC series bus single solenoid bottom-ported valve terminal
C2S-EI-()A-A12	M12 interface EI series bus single solenoid bottom-ported valve terminal
C2S-PN-()A-A12	M12 interface PN series bus single solenoid bottom-ported valve terminal
C2S-CL-()A-A12	M12 interface CL series bus single solenoid bottom-ported valve terminal
C2S-CB-()A-A12	M12 interface CB series bus single solenoid bottom-ported valve terminal
C2S-OO-()A-A12	Multi-pin interface single solenoid bottom-ported valve terminal
C2P-EC-()A-A12	RJ45 interface EC series bus single solenoid bottom-ported valve terminal
C2P-EI-()A-A12	RJ45 interface EI series bus single solenoid bottom-ported valve terminal
C2P-PN-()A-A12	RJ45 interface PN series bus single solenoid bottom-ported valve terminal
C2P-CB-()A-A12	RJ45 interface CB series bus single solenoid bottom-ported valve terminal

Note: () indicates the number of solenoid valve, which can be customized.

3 Product Parameters

3.1 General parameters

3.1.1 C2S-EC-()A-A12

Interface parameters	
Bus Protocol	EtherCAT
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × M12,4Pin,D-code, female
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	M12,5Pin,A-code, male
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit	support

protection	
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.1 M12 Bus Interface Valve Terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.2 C2S-PN-()A-A12

Interface parameters	
Bus Protocol	PROFINET
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Bus interface	2 × M12,4Pin,D-code, female
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	M12,5Pin,A-code, male
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.1 M12 Bus Interface Valve Terminal)

Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.3 C2S-EI-()A-A12

Interface parameters	
Bus Protocol	EtherNet/IP
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × M12,4Pin,D-code, female
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	M12,5Pin,A-code, male
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.1 M12 Bus Interface Valve Terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.4 C2S-CL-()A-A12

Interface parameters					
Bus Protocol	CC-Link				
Bus interface	IN: M12, 4-pin, A-codemale				
	OUT: M12, 5-pin, A-codeHole end				
Station Type	Remote device station				
Number of stations occupied	2 stations				
Data transmission medium	CC-Link dedicated cable (three-core shielded cable)				
Transmission rate	Five speed settings are available: 10 Mbps / 5 Mbps / 2.5 Mbps / 625 kbps / 156 kbps				
Transmission distance	10 Mbps	5 Mbps	2.5 Mbps	625 kbps	156 kbps
	≤100 m	≤160 m	≤400 m	≤900 m	≤1200 m
Technical parameters					
System power supply	24 VDC (18V~30V)				
Rated current consumption	30 mA				
Electrical isolation	500 VAC				
Load power supply	24 VDC (18V~30V)				
Output points	4~24				
Single-channel current	Max: 250 mA				
Power connection method	M12,5Pin,A-code, male				
Power interface surge protection	support				
Power interface reverse connection protection	support				
Channel short circuit protection	support				
Channel short circuit diagnosis	support				
Weight	Different product models have different differences.				
Size	There are differences depending on the product model (see details in 5.1.1 M12 Bus Interface Valve Terminal)				
Operating temperature	-5°C to +50°C				
Storage	-20°C~+75°C				

temperature	
Relative humidity	95%, no condensation
Protection level	IP20

3.1.5 C2S-CB-()A-A12

Interface parameters	
Bus Protocol	CC-Link IE Field Basic
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × M12,4Pin,D-code, female
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	M12,5Pin,A-code, male
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.1 M12 Bus Interface Valve Terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.6 C2S-OO-()A-A12

Technical parameters	
Multi-pin interface	2 DB25 male sockets
Number of solenoid valve	4~24
Weight	Different product models have different differences.
size	There are differences depending on the product model (see details in 5.1.3 Multi-pin interface valve terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.7 C2P-EC-()A-A12

Interface parameters	
Bus Protocol	EtherCAT
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × RJ45
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	5-pin spring-loaded terminal block
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.2 RJ45 bus interface valve terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.8 C2P-EI-()A-A12

Interface parameters	
Bus Protocol	EtherNet/IP
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × RJ45
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	5Pin-type spring-loaded terminal block
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.2 RJ45 bus interface valve terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.9 C2P-PN-()A-A12

Interface parameters	
Bus Protocol	PROFINET
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Bus interface	2 × RJ45
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	5-pin spring-loaded terminal block
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.2 RJ45 bus interface valve terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

3.1.10 C2P-CB-()A-A12

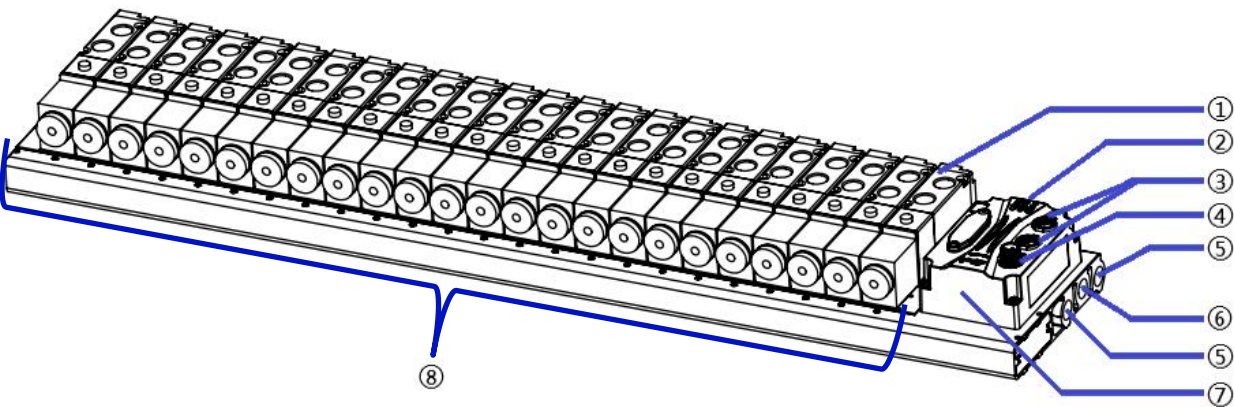
Interface parameters	
Bus Protocol	CC-Link IE Field Basic
Data transmission medium	UTP or STP of Category 5 or higher (STP recommended)
Transmission distance	≤100 m (station-to-station distance)
Transmission rate	100 Mbps
Bus interface	2 × RJ45
Technical parameters	
System power supply	24 VDC (18V~30V)
Rated current consumption	30 mA
Electrical isolation	500 VAC
Load power supply	24 VDC (18V~30V)
Output points	4~24
Single-channel current	Max: 250 mA
Power connection method	5-pin spring-loaded terminal block
Power interface surge protection	support
Power interface reverse connection protection	support
Channel short circuit protection	support
Channel short circuit diagnosis	support
Weight	Different product models have different differences.
Size	There are differences depending on the product model (see details in 5.1.2 RJ45 bus interface valve terminal)
Operating temperature	-5°C to +50°C
Storage temperature	-20°C~+75°C
Relative humidity	95%, no condensation
Protection level	IP20

4 Panel

4.1 Product Structure

4.1.1 M12 interface bus valve terminal

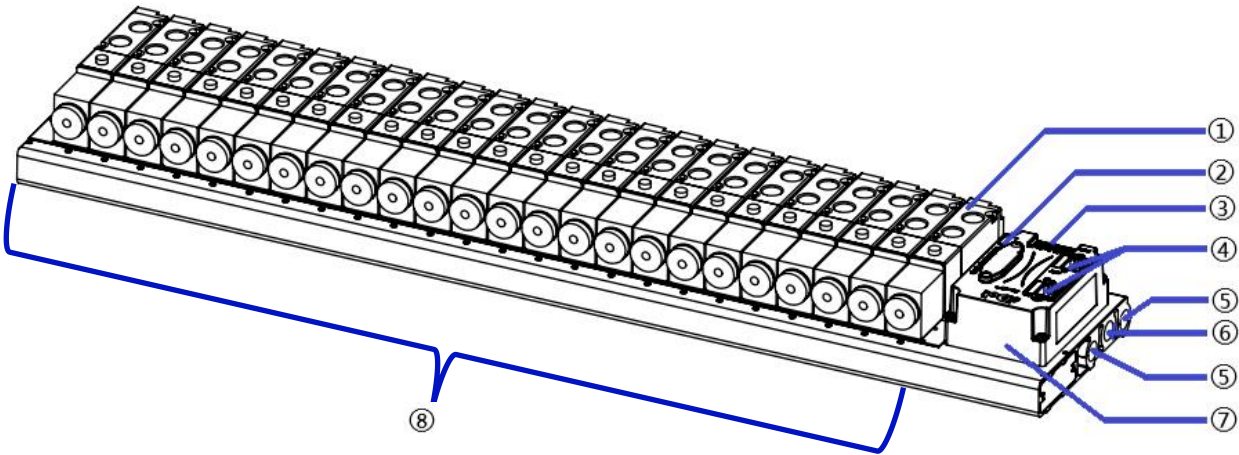
Taking the 24-position M12 interface EC series bus single solenoid bottom-port valve terminal C2S-EC-24A-A12 as an example, the names and functional descriptions of each part of the structure diagram are shown in the following figure.



Serial Number	Name	Description
①	Solenoid valve	Model: 4V210
②	LED indicator light	Indicates power supply, operation, and bus status.
③	Bus interface	2×M12, 4Pin, D-code, female
④	Power interface	1×M12,5Pin,A-code, male
⑤	Exhaust port	G1/4
⑥	Air inlet port	G1/4
⑦	Communication unit	Valve terminal communication and control unit
⑧	Manifold	Valve terminal module

4.1.2 RJ45 interface bus valve terminal

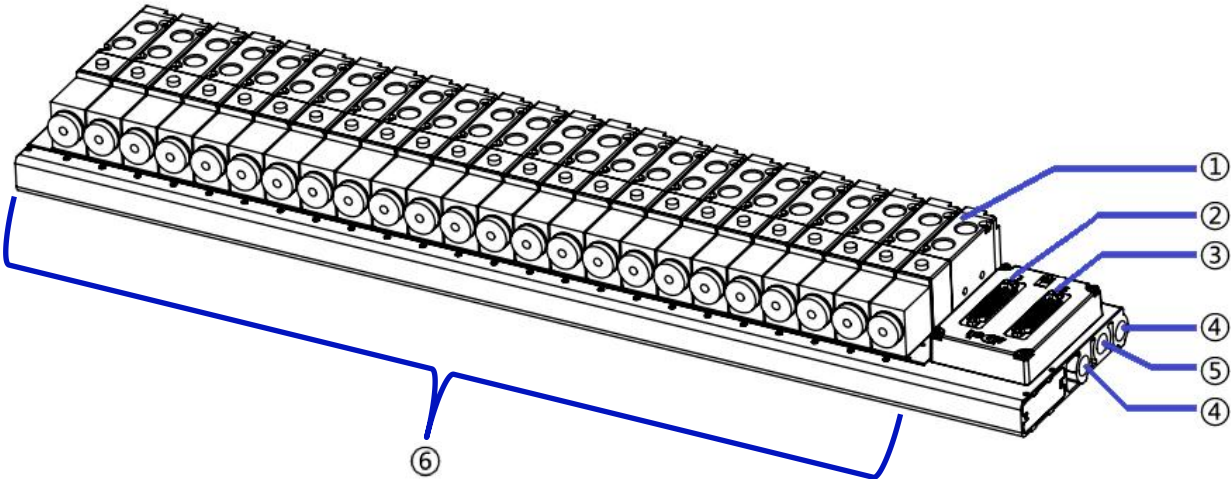
Taking the 24-position RJ45 interface EC series bus single solenoid bottom-ported valve terminal C2P-EC-24A-A12 as an example, the names and functional descriptions of each part of the structure diagram are shown in the following figure.



Serial Number	Name	Description
①	Solenoid valve	Model: 4V210
②	LED indicator light	Indicates power supply, operation, and bus status.
③	Power interface	5-pin spring-loaded terminal block
④	Bus interface	RJ45, bus IN&OUT interface
⑤	Exhaust port	G1/4
⑥	Air inlet port	G1/4
⑦	Communication unit	Valve terminal communication and control unit
⑧	Manifold	Valve terminal module

4.1.3 Multi-pin interface valve terminal

Taking the 24-pin multi-pin interface single solenoid down-plug valve terminal C2S-OO-24A-A12 as an example, the names and functional descriptions of each part of the structure diagram are shown in the following figure.



Serial Number	Name	Description
①	Solenoid valve	Model: 4V210
②	Multi-pin interface	DB25 male socket #1
③	Multi-pin interface	DB25 male socket #2
④	Exhaust port	G1/4
⑤	Air inlet port	G1/4
⑥	Manifold	Valve terminal module

4.2 Indicator light function

4.2.1 EtherCAT bus valve terminal

Name	Logo	Color	State	Status Description
System power indicator	US	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Load power indicator	UL	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Network indicator IN	L/A0	Green	ON	Establish network connection
			Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Network indicator light OUT	L/A1	Green	ON	Establish network connection
			Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Operating status indicator	RUN	Green	ON	The system is running normally.
			Flashing	3Hz: The device is in Pre-OP state. 0.8Hz: The device is in Safe-OP state.
			OFF	The device is in Init or not powered.
Alarm indicator	ERR	Red	ON	There is a short circuit in the channel (the channel must be open for monitoring).
			OFF	There are no short circuits in any of the channels (channels must be open for monitoring).

4.2.2 PROFINET bus valve terminal

Name	Logo	Color	Status	Status Description
System power indicator	US	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Load power indicator	UL	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Network indicator IN	L/A0	Green	ON	Establish network connection
			Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Network indicator light OUT	L/A1	Green	ON	Establish network connection
			Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Network alarm indicator	BF	Red	ON	Neither network port was connected.
			Flashing	1Hz: Network connection error

			OFF	Network connection is normal
System alarm indicator	SF	Red	ON	The system is malfunctioning.
			OFF	The system is running normally or not powered on.

4.2.3 Ethernet/IP bus valve terminal

Name	Logo	Color	Status	Status Description
System power indicator	US	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Load power indicator	UL	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Network indicator IN	L/A0	Green	Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Network indicator light OUT	L/A1	Green	Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Operating status indicator	RUN	Green	ON	The device has established a connection.
			Flashing	1Hz: The device has not established a connection, but has obtained an IP address; the IP address is duplicated; the device is performing a power-on test.
			OFF	The device has not obtained an IP address; the device is not powered.
Alarm indicator	ERR	Red	ON	Valve short circuit/overheating or equipment is undergoing factory reset
			OFF	The system is running normally or not powered on.

4.2.4 CC-Link bus valve terminal

Name	Logo	Color	Status	Status Description
System power indicator	US	Green	ON	Control unit power on
			OFF	Control unit power off
Load power indicator	UL	Green	ON	Control unit power on
			OFF	Control unit power off
Operating status indicator	RUN	Green	ON	Communication is normal
			OFF	Communication disconnected
Alarm indicator	ERR	Red	ON	Communication error
			Flashing	The station number setting and baud rate were changed during power-on.
			OFF	Communication is normal
Data transmission indicator light	SD	Green	ON	Data transmission is normal
			OFF	No data interaction or anomaly
Data Receiver Indicator	RD	Green	ON	Data reception is normal
			OFF	No data interaction or anomaly

4.2.5 CC-Link IE Field Basic bus valve terminal

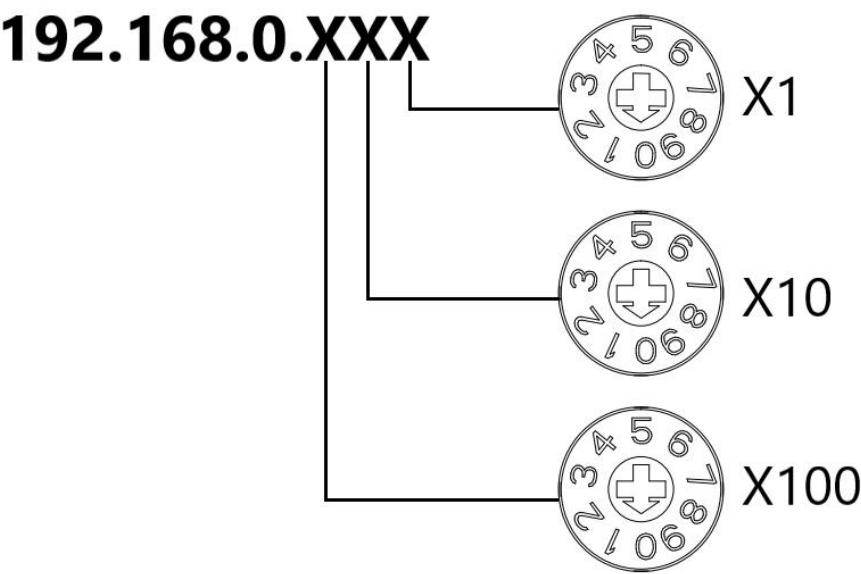
Name	Logo	Color	State	Status Description
System power indicator	US	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Load power indicator	UL	Green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Network indicator IN	L/A0	Green	Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Network indicator light OUT	L/A1	Green	Flashing	Network connection and data exchange
			OFF	No data interaction or anomaly
Operating status indicator	RUN	Green	ON	During module operation, cyclic transmission is performed.
			Flashing at 2.5Hz	Module running, loop transmission stopped
			Flashing at 10Hz	Module not configured
			OFF	Module disconnected
Alarm indicator	ERR	Red	ON	Valve short circuit/overheating or equipment is performing a factory reset; communication error.
			OFF	The system is running normally or not powered on.

4.3 Rotary switch

4.3.1 Ethernet/IP bus valve terminal

IP address settings

A rotary switch can be used to specify the method for setting the module's IP address.



Setting value (decimal)	IP address setting method
001 ~ 254	Set the lower 1 byte of the IP address. Use "×100" for the hundreds place, "×10" for the tens place, and "×1" for the ones place, configuring within the range of 1 to 254. The upper 3 bytes of the IP address retain the value previously set via the host computer. When the IP address is set to a value other than 000 using the rotary switch in factory default state, the upper 3 bytes are 192.168.0.
000, 255 ~ 998	When the rotary switch is set to 255 or higher...After the module is powered on, it starts using the same startup method and parameters as the previous startup.
999	Reset settings.

The rotary switch is set to "000" at the factory.

Remark:

- 1、 Tool Selection
Screwdriver Specification: Slotted, 2 mm blade width.
- 2、 The IP address of the rotary switch must be configured with the power disconnected. If the IP address needs to be modified during communication, the new settings will only take effect after the power is cycled.

Reset function

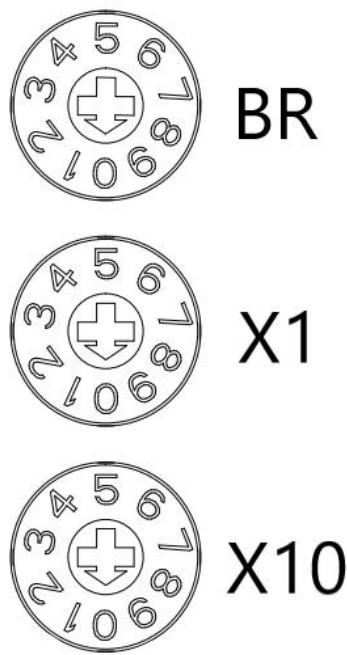
A factory reset can be performed by rotating the switch.

For detailed instructions, please refer to [7.3.5 Restore factory settings](#).

4.3.2 CC-Link bus valve terminal

Rotary DIP switch instructions

When the CL valve terminal is used as a remote device station in a CC-Link network, its transmission rate and station number in the network must be configured first.
The transmission rate and station number are set using a 10-digit rotary DIP switch, as shown in the figure below:



logo	Description	Setting Range	
BR	Transmission rate	Set via a 10- position rotary switch: 0, 1, 2, 3, 4 correspond to 156 kbps, 625 kbps, 2.5 Mbps, 5 Mbps, 10 Mbps respectively.	
X1	Units Digit of Station No.	The setting value is: 0~9	Station number is set with two 10- position rotary switches, allowing a range of 1- 63. X1 represents the low- order (units) digit, and X10 represents the high- order (tens) digit. The station number is calculated as: high- order digit × 10 + low- order digit.
X10	Tens Digit of Station No.	The setting value is: 0~6	

Transmission rate rotary DIP switch setting diagram

Transmission rate	DIP switch settings	Setting value	Transmission rate
BR		0	156 kbps
		1	625 kbps

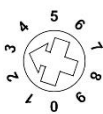
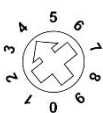
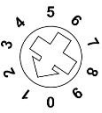
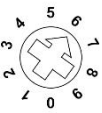
		2	2.5 Mbps
		3	5 Mbps
		4	10 Mbps

Diagram for Setting Station Number via Rotary Switches

Station number settings	DIP switch settings	Setting value	Station number value
X1	Single digit dial code	0~9	× 1
		0	0
		1	1
	...	⋮	⋮
		8	8
		9	9
X10	Ten-digit dial code	0~6	× 10
		0	0
		1	10
	...	⋮	⋮
		5	50
		6	60

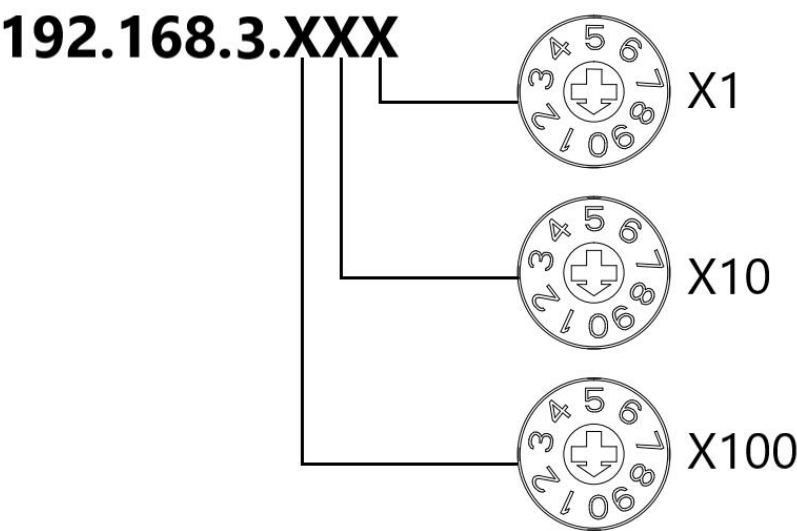
Remark:

- 1、 Use a slotted or Phillips screwdriver with a 2 mm blade width to operate the rotary switch.**
- 2、 If you need to change the station number and transmission rate during communication, you must power on again after setting the new station number and transmission rate for the new settings to take effect.**
- 3、 If the transmission rate and station number settings are outside the specified range, the module will experience communication errors or be unable to connect to the main station.**

4.3.3 CC-Link IE Field Basic bus valve terminal

IP address settings

A rotary switch can be used to specify the method for setting the module's IP address.



Setting value (decimal)	IP address setting method
001 ~ 254	Set the lowest 1 Byte of the IP address within the range 1- 254 using the rotary switches: set the hundreds digit via the "×100" switch, the tens digit via the "×10" switch, and the units digit via the "×1" switch. The upper 3 Bytes of the IP address retain the values previously configured via the host computer. When a value other than 100 is set with the rotary switches in the factory default state, the upper 3 Bytes are fixed as 192.168.3.
000, 255 ~ 998	If the rotary switch is set to 255 or above, the module will start up using the previous startup configuration and parameters upon power- on.
999	Reset settings.

The rotary switch is set to "100" at the factory.

Remark:

- 1、 Tool Selection
Screwdriver Specification: Slotted, 2 mm blade width.
- 2、 When setting the IP address via the rotary switches, the device must be powered off. If you need to change the IP address during communication, the new settings will only take effect after you restart the module.

Reset function

A factory reset can be performed by rotating the switch.

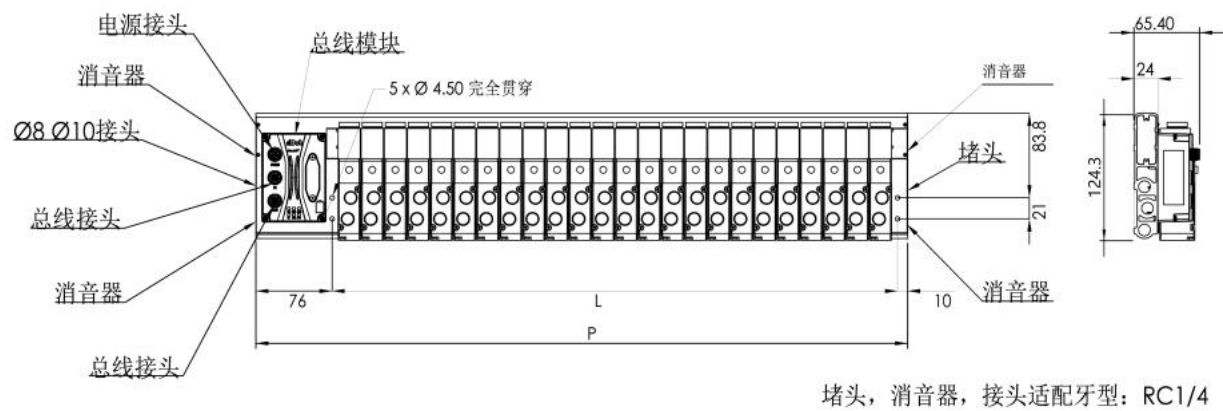
For detailed instructions, please refer to [7.5.2 Restore factory settings](#).

5 Install

5.1 Outline dimension drawing

5.1.1 M12 interface bus valve terminal

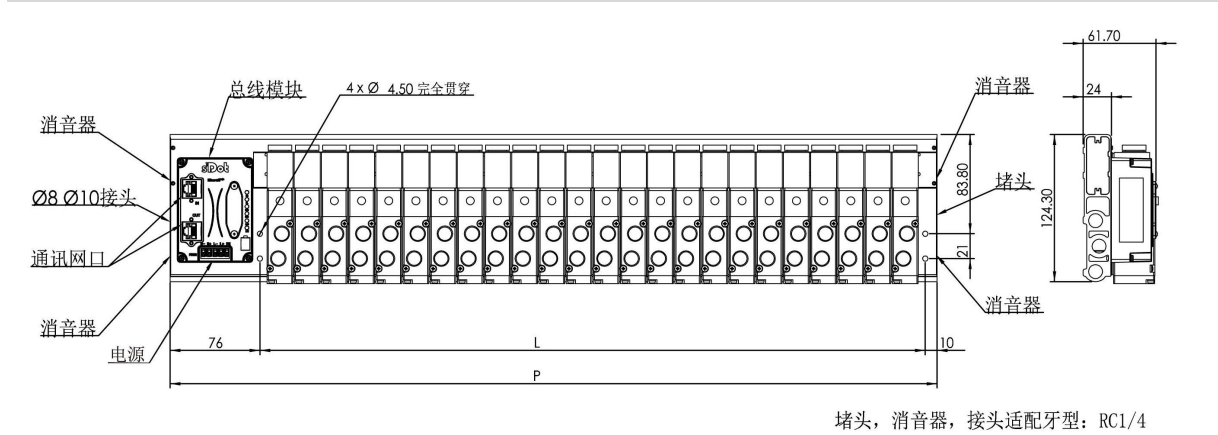
External dimensions (unit: mm)



Number of positions	4	6	8	10	12	14	16	18	20	22	24
L size	103	149	195	241	287	333	379	425	471	517	563
P size	189	235	281	327	373	419	465	511	557	603	649

5.1.2 RJ45 interface bus valve terminal

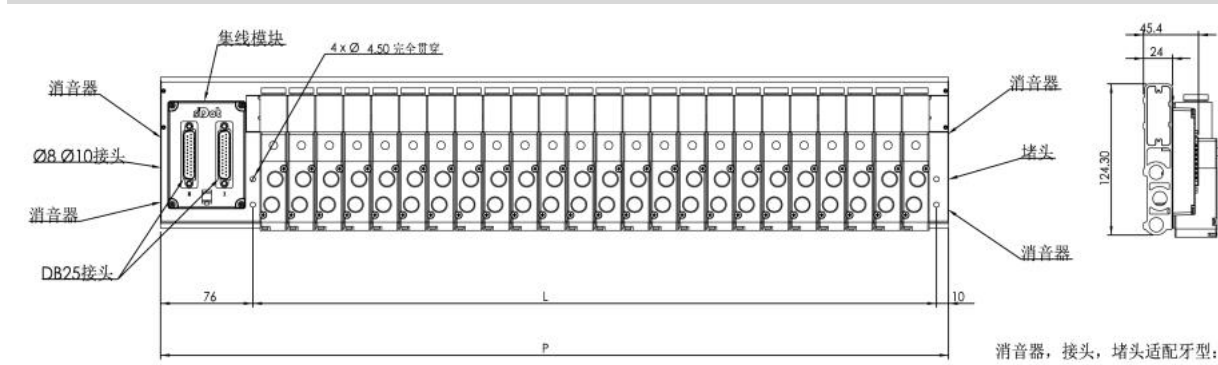
External dimensions (unit: mm)



Number of positions	4	6	8	10	12	14	16	18	20	22	24
L size	103	149	195	241	287	333	379	425	471	517	563
P size	189	235	281	327	373	419	465	511	557	603	649

5.1.3 Multi-pin interface valve terminal

External dimensions (unit: mm)



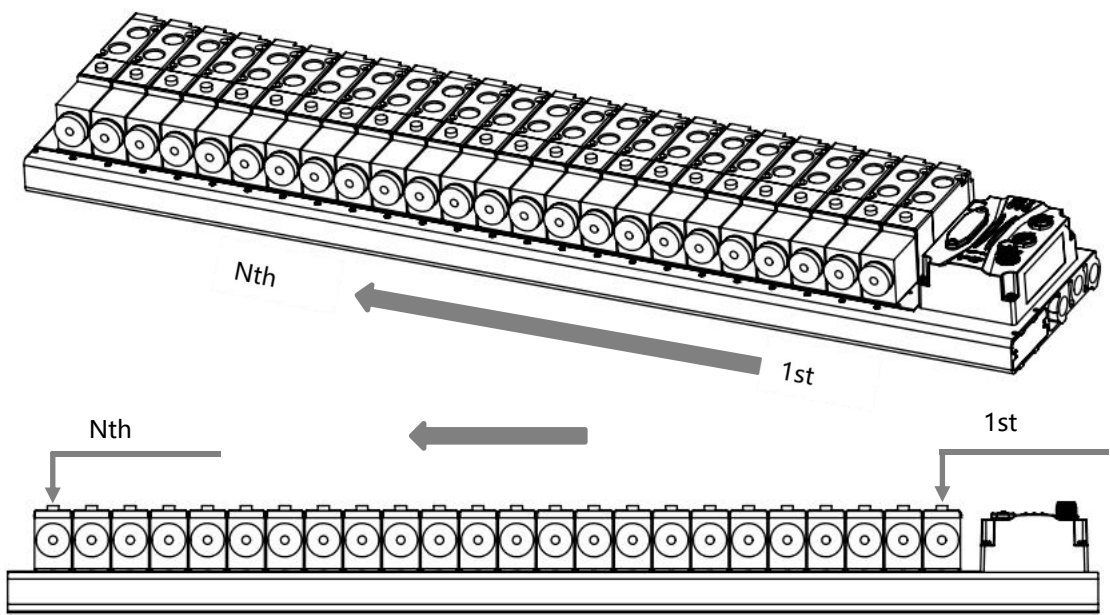
Number of positions	4	6	8	10	12	14	16	18	20	22	24
L size	103	149	195	241	287	333	379	425	471	517	563
P size	189	235	281	327	373	419	465	511	557	603	649

5.2 Solenoid valve assembly sequence

● **Solenoid valve installation sequence**

The solenoid valve are installed starting from the communication unit end, and then installed sequentially.

The installation sequence for single solenoid valve is as follows: starting from the communication unit end, install the single solenoid valve sequentially from position 1 to position N. Taking the C2S-EC-24A-A12 valve terminal as an example, the assembly sequence is shown in the figure below.

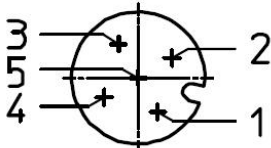


Single solenoid valve								
Manifold positions	1	2	3	4		22	23	24
Solenoid valve No.	1	2	3	4		22	23	24

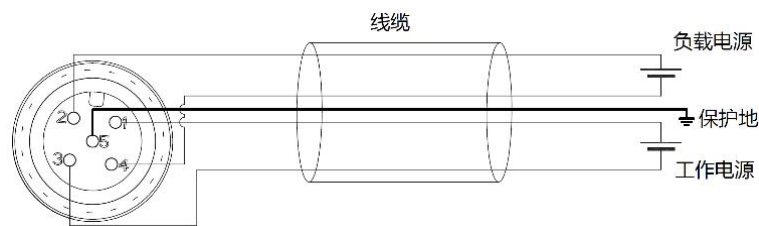
6 Wiring

6.1 M12 interface bus valve terminal

6.1.1 Power supply wiring

Power connector, M12, A-code			
	Pin	Function	Wire core color
	1	24 VDC, operating power supply	Brown
	2	24 VDC, load power supply	White
	3	GND, operating power supply	Blue
	4	0 V, load power supply	Black
	5	PE, Protective Earth	Gray

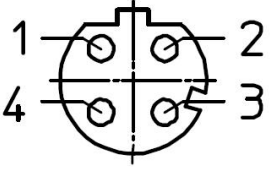
The power supply wiring diagram is shown below:



⚠ Precautions

- The power supply for the module system side and the power supply for the field side should be configured and used separately. Do not mix them.
- The PE element must be reliably grounded.

6.1.2 Bus wiring

Fieldbus interface, M12, D-code		
	Pin	Function
	1	TD+, Transmit data+
	2	RD+, receive data+
	3	TD-, Transmit data-
	4	RD-, Receive Data-
	-	Housing, shield/protective earth

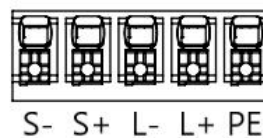
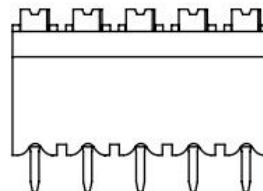
Precautions

- Category 5 or higher double-shielded (braided mesh + aluminum foil) STP cables are recommended for use as communication cables.
- The length of cables between devices must not exceed 100 m.

6.2 RJ45 interface bus valve terminal

6.2.1 Power wiring

The power supply terminals S represent system power and L represent load power. Refer to the silkscreen markings and power supply parameters for wiring. The 5-pin power supply terminal block is shown in the diagram below.

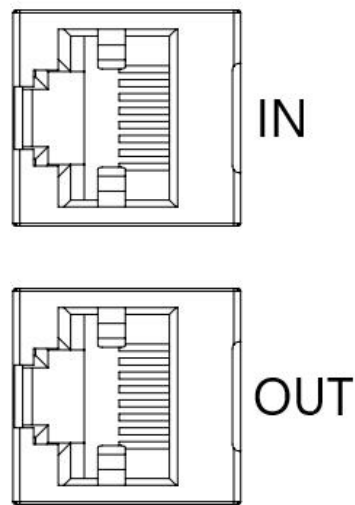


Precautions

- The power supply for the module system side and the power supply for the field side should be configured and used separately. Do not mix them.
- The PE element must be reliably grounded.

6.2.2 Bus wiring

The bus interface uses RJ45 as shown in the following figure:



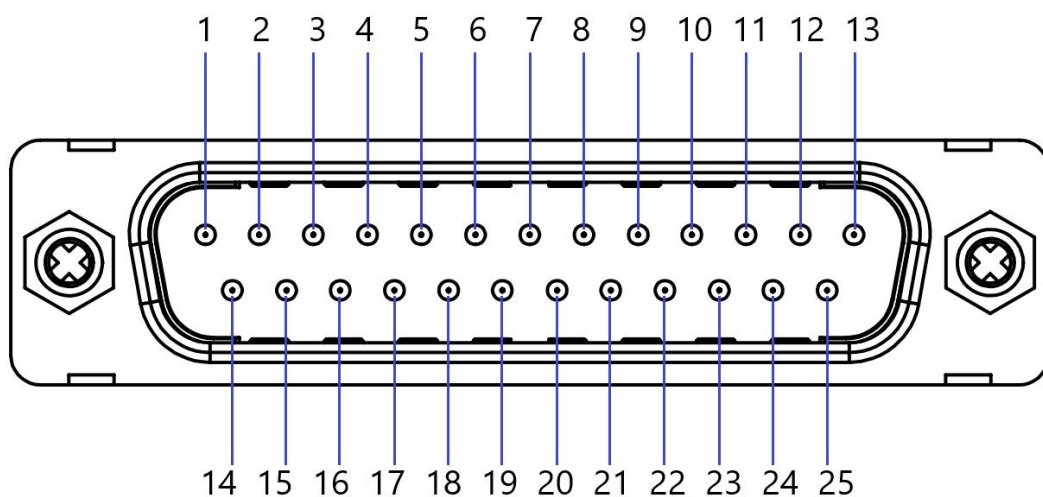
⚠ Precautions

- Features a standard RJ45 Ethernet port and connector.
- The length of cables between devices must not exceed 100 m.

6.3 Multi-pin interface valve terminal

6.3.1 Multi-pin interface wiring

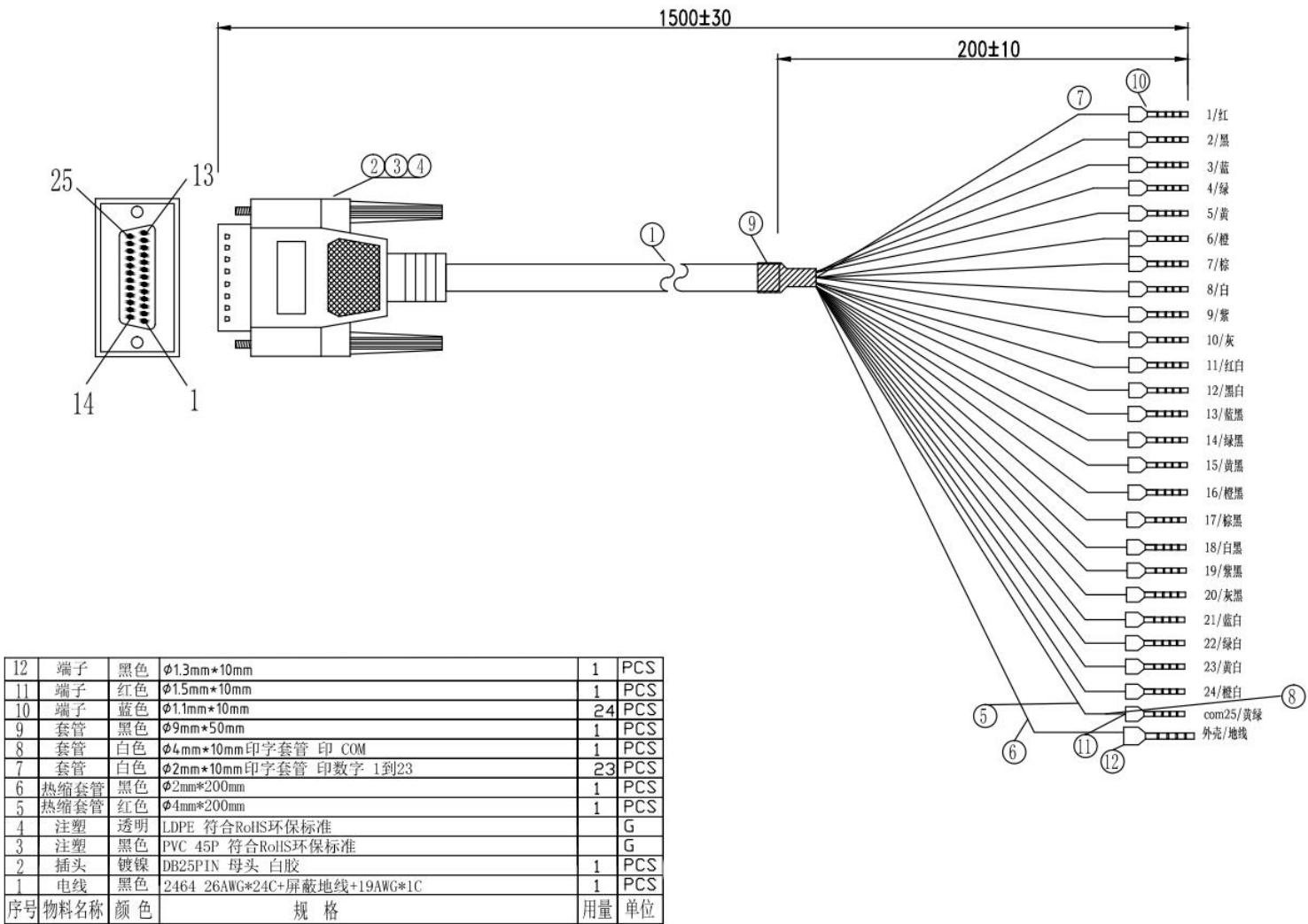
The wiring diagram for the DB25 multi-pin connector is shown below.



⚠ Precautions

- We recommend using our company's matching DB25 plug and cable.

The color distribution of DB25 cables is shown in the figure below.



7 Use

7.1 EtherCAT bus valve terminal

7.1.1 Control method

The valve terminal solenoid valve are controlled in byte mode, with one byte controlling four valve; they can also be controlled in bit mode, with an 8-position group controlling channels 1 through 8. A channel value of 1 opens the corresponding solenoid valve, and a channel value of 0 closes it. A 24-position single solenoid valve has six control bits, controlling a total of 48 channels. Taking a 24-position single solenoid valve as an example, the output control functions of the valve terminal are described in the table below.

Control method	valve[1..4]							
Channel address	valve[1..4] [0]	valve[1..4] [1]	valve[1..4] [2]	valve[1..4] [3]	valve[1..4] [4]	valve[1..4] [5]	valve[1..4] [6]	valve[1..4] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Control method	valve[5..8]							
Channel address	valve[5..8] [0]	valve[5..8] [1]	valve[5..8] [2]	valve[5..8] [3]	valve[5..8] [4]	valve[5..8] [5]	valve[5..8] [6]	valve[5..8] [7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Control method	valve[9..12]							
Channel address	valve[9..12] [0]	valve[9..12] [1]	valve[9..12] [2]	valve[9..12] [3]	valve[9..12] [4]	valve[9..12] [5]	valve[9..12] [6]	valve[9..12] [7]
Solenoid	9	/	10	/	11	/	12	/

valve No.								
-----------	--	--	--	--	--	--	--	--

Control method	valve[13..16]							
Channel address	valve[13..16] [0]	valve[13..16] [1]	valve[13..16] [2]	valve[13..16] [3]	valve[13..16] [4]	valve[13..16] [5]	valve[13..16] [6]	valve[13..16] [7]
Solenoid valve No.	13	/	14	/	15	/	16	/

Control method	valve[17..20]							
Channel address	valve[17..20] [0]	valve[17..20] [1]	valve[17..20] [2]	valve[17..20] [3]	valve[17..20] [4]	valve[17..20] [5]	valve[17..20] [6]	valve[17..20] [7]
Solenoid valve No.	17	/	18	/	19	/	20	/

Control method	valve[21..24]							
Channel address	valve[21..24] [0]	valve[21..24] [1]	valve[21..24] [2]	valve[21..24] [3]	valve[21..24] [4]	valve[21..24] [5]	valve[21..24] [6]	valve[21..24] [7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.1.2 Diagnostic function

The C2S-EC valve terminal has a short circuit/overtemperature diagnostic function; a short circuit can only be detected when the valve is open.

The diagnostic function and control method are consistent, also sending diagnostic information in byte or bit format. With the valve open, a short circuit or overtemperature diagnostic information value of 0 indicates normal operation, while 1 indicates a short circuit or overtemperature condition in the corresponding valve.

The diagnostic information for short circuit or overtemperature is consistent with the corresponding information for solenoid valve, as shown in the table below.

Diagnostic function	Short circuit or overtemperature[0..7]							
Channel address	Short[0..7] [0]	Short[0..7] [1]	Short[0..7] [2]	Short[0..7] [3]	Short[0..7] [4]	Short[0..7] [5]	Short[0..7] [6]	Short[0..7] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Note: In the table, "Short circuit or overtemperature" is abbreviated as "Short" and the same applies below.

Diagnostic function	Short circuit or overtemperature[8..15]							
Channel address	Short[8..15][0]	Short[8..15][1]	Short[8..15][2]	Short[8..15][3]	Short[8..15][4]	Short[8..15][5]	Short[8..15][6]	Short[8..15][7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Diagnostic function	Short circuit or overtemperature[16..23]							
Channel address	Short[16..23][0]	Short[16..23][1]	Short[16..23][2]	Short[16..23][3]	Short[16..23][4]	Short[16..23][5]	Short[16..23][6]	Short[16..23][7]
Solenoid valve No.	9	/	10	/	11	/	12	/

Diagnostic function	Short circuit or overtemperature[24..31]							
Channel address	Short[24..31][0]	Short[24..31][1]	Short[24..31][2]	Short[24..31][3]	Short[24..31][4]	Short[24..31][5]	Short[24..31][6]	Short[24..31][7]
Solenoid valve No.	13	/	14	/	15	/	16	//

Diagnostic function	Short circuit or overtemperature[32..39]							
Channel address	Short[32..39]][0]	Short[32..39] [1]	Short[32..39] [2]	Short[32..39] [3]	Short[32..39] [4]	Short[32..39] [5]	Short[32..39] [6]	Short[32..39] [7]
Solenoid valve No.	17	/	18	/	19	/	20	/

Diagnostic function	Short circuit or overtemperature[40..47]							
Channel address	Short[40..47]][0]	Short[40..47] [1]	Short[40..47] [2]	Short[40..47] [3]	Short[40..47] [4]	Short[40..47] [5]	Short[40..47] [6]	Short[40..47] [7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.1.3 Output signal clear/hold function

The clear/hold function targets the valve terminal's output signal. This function can be configured to control the valve terminal's output action in case of bus malfunction.

Clear output: When communication is disconnected, the valve terminal output channel will automatically clear the output.

Maintain output: When communication is disconnected, the valve terminal output channel continues to output.

The function supports full-channel settings, single-channel settings, and batch settings of 8 channels grouped according to driver chips, which can better meet the actual use needs.

7.1.4 Configuration application

For configuration and application details, please refer to the "C2S-EC Series Bus Valve Terminal User Manual_Vx.xx.pdf" and "C2P-EC Series Bus Valve Terminal User Manual_Vx.xx.pdf" on the Solidot Technology website.

7.2 PROFINET bus valve terminal

7.2.1 Control method

The solenoid valves on the valve terminal can be controlled either in byte mode or bit mode. In byte mode, one byte controls 4 valves. In bit mode, a group of 8 bits (one control byte) controls channels 1 through 8, where a channel value of 1 opens the corresponding solenoid valve, and a value of 0 closes it. A 24-position single solenoid valve terminal has a total of 6 such control groups (6 bytes), controlling 48 channels. Using the 24-position single solenoid valve terminal as an example, the output control function and its methods are described in the table below.

Control method	valve[1..4]							
Channel address	valve[1..4] [0]	valve[1..4] [1]	valve[1..4] [2]	valve[1..4] [3]	valve[1..4] [4]	valve[1..4] [5]	valve[1..4] [6]	valve[1..4] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Control method	valve[5..8]							
Channel address	valve[5..8] [0]	valve[5..8] [1]	valve[5..8] [2]	valve[5..8] [3]	valve[5..8] [4]	valve[5..8] [5]	valve[5..8] [6]	valve[5..8] [7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Control method	valve[9..12]							
Channel address	valve[9..12] [0]	valve[9..12] [1]	valve[9..12] [2]	valve[9..12] [3]	valve[9..12] [4]	valve[9..12] [5]	valve[9..12] [6]	valve[9..12] [7]
Solenoid valve No.	9	/	10	/	11	/	12	/

Control method	valve[13..16]							
Channel address	valve[13..16] [0]	valve[13..16] [1]	valve[13..16] [2]	valve[13..16] [3]	valve[13..16] [4]	valve[13..16] [5]	valve[13..16] [6]	valve[13..16] [7]
Solenoid valve No.	13	/	14	/	15	/	16	/
Control method	valve[17..20]							
Channel address	valve[17..20] [0]	valve[17..20] [1]	valve[17..20] [2]	valve[17..20] [3]	valve[17..20] [4]	valve[17..20] [5]	valve[17..20] [6]	valve[17..20] [7]
Solenoid valve No.	17	/	18	/	19	/	20	/

valve No.								
-----------	--	--	--	--	--	--	--	--

Control method	valve[21..24]							
Channel address	valve[21..24] [0]	valve[21..24] [1]	valve[21..24] [2]	valve[21..24] [3]	valve[21..24] [4]	valve[21..24] [5]	valve[21..24] [6]	valve[21..24] [7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.2.2 Diagnostic function

The C2S-EC valve terminal has a short circuit/overtemperature diagnostic function; a short circuit can only be detected when the valve is open.

The diagnostic function and control method are consistent, also sending diagnostic information in byte or bit format. With the valve open, a short circuit or overtemperature diagnostic information value of 0 indicates normal operation, while 1 indicates a short circuit or overtemperature condition in the corresponding valve.

The diagnostic information for short circuit or overtemperature is consistent with the corresponding information for solenoid valve, as shown in the table below.

Diagnostic function	Short circuit or overtemperature[0..7]							
Channel address	Short[0..7] [0]	Short[0..7] [1]	Short[0..7] [2]	Short[0..7] [3]	Short[0..7] [4]	Short[0..7] [5]	Short[0..7] [6]	Short[0..7] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Note: In the table, "Short circuit or overtemperature" is abbreviated as "Short" and the same applies below.

Diagnostic function	Short circuit or overtemperature[8..15]							
Channel address	Short[8..15] [0]	Short[8..15] [1]	Short[8..15] [2]	Short[8..15] [3]	Short[8..15] [4]	Short[8..15] [5]	Short[8..15] [6]	Short[8..15] [7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Diagnostic function	Short circuit or overtemperature[16..23]							
Channel address	Short[16..23] [0]	Short[16..23] [1]	Short[16..23] [2]	Short[16..23] [3]	Short[16..23] [4]	Short[16..23] [5]	Short[16..23] [6]	Short[16..23] [7]
Solenoid valve No.	9	/	10	/	11	/	12	/

Diagnostic function	Short circuit or overtemperature[24..31]							
Channel address	Short[24..31] [0]	Short[24..31] [1]	Short[24..31] [2]	Short[24..31] [3]	Short[24..31] [4]	Short[24..31] [5]	Short[24..31] [6]	Short[24..31] [7]
Solenoid valve No.	13	/	14	/	15	/	16	//

Diagnostic function	Short circuit or overtemperature[32..39]							
Channel address	Short[32..39] [0]	Short[32..39] [1]	Short[32..39] [2]	Short[32..39] [3]	Short[32..39] [4]	Short[32..39] [5]	Short[32..39] [6]	Short[32..39] [7]

Solenoid valve No.	17	/	18	/	19	/	20	/
Diagnostic function	Short circuit or overtemperature[40..47]							
Channel address	Short[40..47][0]	Short[40..47][1]	Short[40..47][2]	Short[40..47][3]	Short[40..47][4]	Short[40..47][5]	Short[40..47][6]	Short[40..47][7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.2.3 Output signal clear/hold function

The clear/hold function targets the valve terminal's output signal. This function can be configured to control the valve terminal's output action in case of bus malfunction.

Clear output: When communication is disconnected, the valve terminal output channel will automatically clear the output.

Maintain output: When communication is disconnected, the valve terminal output channel continues to output.

The function supports full-channel settings, single-channel settings, and batch settings of 8 channels grouped according to driver chips, which can better meet the actual use needs.

7.2.4 Configuration application

For configuration and application details, please refer to the "C2S-PN Series Bus Valve Terminal User Manual_Vx.xx.pdf" and "C2P-PN Series Bus Valve Terminal User Manual_Vx.xx.pdf" on the Solidot Technology website.

7.3 EtherNet/IP bus island

7.3.1 Control method

The valve terminal solenoid valve are controlled in byte mode, with one byte controlling four valve; they can also be controlled in bit mode, with an 8-position group controlling channels 1 through 8. A channel value of 1 opens the corresponding solenoid valve, and a channel value of 0 closes it. A 24-position single solenoid valve has six control bits, controlling a total of 48 channels. Taking a 24-position single solenoid valve as an example, the output control functions of the valve terminal are described in the table below.

Control method	valve[1..4]							
Channel address	valve[1..4] [0]	valve[1..4] [1]	valve[1..4] [2]	valve[1..4] [3]	valve[1..4] [4]	valve[1..4] [5]	valve[1..4] [6]	valve[1..4] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Control method	valve[5..8]							
Channel address	valve[5..8] [0]	valve[5..8] [1]	valve[5..8] [2]	valve[5..8] [3]	valve[5..8] [4]	valve[5..8] [5]	valve[5..8] [6]	valve[5..8] [7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Control method	valve[9..12]							
Channel address	valve[9..12] [0]	valve[9..12] [1]	valve[9..12] [2]	valve[9..12] [3]	valve[9..12] [4]	valve[9..12] [5]	valve[9..12] [6]	valve[9..12] [7]
Solenoid valve No.	9	/	10	/	11	/	12	/

Control method	valve[13..16]							
Channel address	valve[13..16] [0]	valve[13..16] [1]	valve[13..16] [2]	valve[13..16] [3]	valve[13..16] [4]	valve[13..16] [5]	valve[13..16] [6]	valve[13..16] [7]
Solenoid valve No.	13	/	14	/	15	/	16	/

Control method	valve[17..20]							
Channel address	valve[17..20] [0]	valve[17..20] [1]	valve[17..20] [2]	valve[17..20] [3]	valve[17..20] [4]	valve[17..20] [5]	valve[17..20] [6]	valve[17..20] [7]

Solenoid valve No.	17	/	18	/	19	/	20	/
--------------------	-----------	---	-----------	---	-----------	---	-----------	---

Control method	valve[21..24]							
Channel address	valve[21..24] [0]	valve[21..24] [1]	valve[21..24] [2]	valve[21..24] [3]	valve[21..24] [4]	valve[21..24] [5]	valve[21..24] [6]	valve[21..24] [7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.3.2 Diagnostic function

The C2S-EC valve terminal has a short circuit/overtemperature diagnostic function; a short circuit can only be detected when the valve is open.

The diagnostic function and control method are consistent, also sending diagnostic information in byte or bit format. With the valve open, a short circuit or overtemperature diagnostic information value of 0 indicates normal operation, while 1 indicates a short circuit or overtemperature condition in the corresponding valve.

The diagnostic information for short circuit or overtemperature is consistent with the corresponding information for solenoid valve, as shown in the table below.

Diagnostic function	Short circuit or overtemperature[0..7]							
Channel address	Short[0..7] [0]	Short[0..7] [1]	Short[0..7] [2]	Short[0..7] [3]	Short[0..7] [4]	Short[0..7] [5]	Short[0..7] [6]	Short[0..7] [7]
Solenoid valve No.	1	/	2	/	3	/	4	/

Note: In the table, "Short circuit or overtemperature" is abbreviated as "Short" and the same applies below.

Diagnostic function	Short circuit or overtemperature[8..15]							
Channel address	Short[8..15] [0]	Short[8..15] [1]	Short[8..15] [2]	Short[8..15] [3]	Short[8..15] [4]	Short[8..15] [5]	Short[8..15] [6]	Short[8..15] [7]
Solenoid valve No.	5	/	6	/	7	/	8	/

Diagnostic function	Short circuit or overtemperature[16..23]							
Channel address	Short[16..23] [0]	Short[16..23] [1]	Short[16..23] [2]	Short[16..23] [3]	Short[16..23] [4]	Short[16..23] [5]	Short[16..23] [6]	Short[16..23] [7]
Solenoid valve No.	9	/	10	/	11	/	12	/

Diagnostic function	Short circuit or overtemperature[24..31]							
Channel address	Short[24..31] [0]	Short[24..31] [1]	Short[24..31] [2]	Short[24..31] [3]	Short[24..31] [4]	Short[24..31] [5]	Short[24..31] [6]	Short[24..31] [7]
Solenoid valve No.	13	/	14	/	15	/	16	//

Diagnostic function	Short circuit or overtemperature[32..39]							
Channel address	Short[32..39] [0]	Short[32..39] [1]	Short[32..39] [2]	Short[32..39] [3]	Short[32..39] [4]	Short[32..39] [5]	Short[32..39] [6]	Short[32..39] [7]

Solenoid valve No.	17	/	18	/	19	/	20	/
--------------------	-----------	---	-----------	---	-----------	---	-----------	---

Diagnostic function	Short circuit or overtemperature[40..47]							
Channel address	Short[40..47][0]	Short[40..47][1]	Short[40..47][2]	Short[40..47][3]	Short[40..47][4]	Short[40..47][5]	Short[40..47][6]	Short[40..47][7]
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.3.3 IP settings and modifications

7.3.3.1 Set the IP address using the rotary switch.

➤ **When setting the IP address via the rotary switch in the factory default state...**

The IP address is 192.168.0.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).

➤ **If the IP address has already been set via the host computer, then setting the IP address via the rotary switch...**

The IP address retains the upper 3 bytes set via the host computer, while the lowest 1 byte is the value set on the rotary switches.

For example, if the IP address was initially set to 172.10.0.12 via the host computer and the rotary switch setting is later changed, the IP address becomes 172.10.0.XXX (where XXX is the value set on the rotary switches, ranging from 1 to 254).

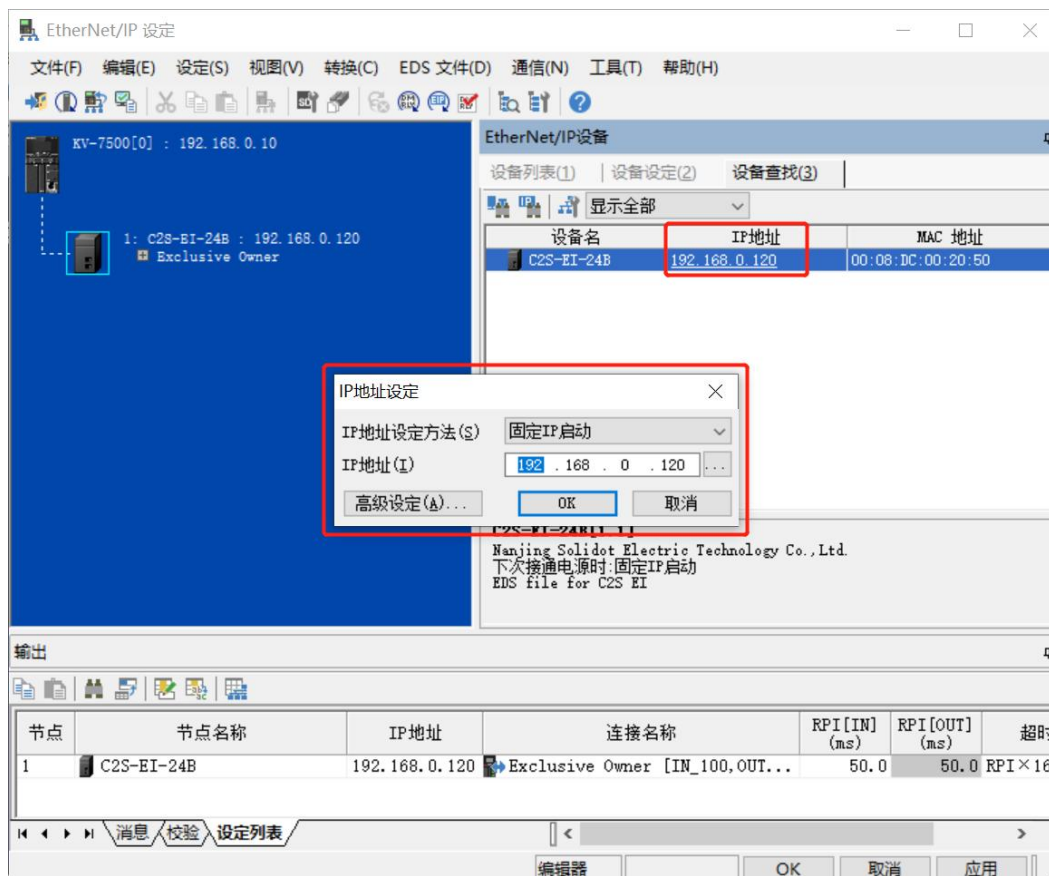
Precautions

- For a detailed description and operating method of the rotary switch, please refer to [4.3.1 EtherNet/IP Bus Valve Terminal Rotary Switch](#).
- When the module leaves the factory, the rotary switch is set to "000" and the default IP address is 192.168.0.120.
- After the host computer modifications are completed, the module will change its startup method to fixed IP startup and automatic restart. The module will start with an IP address composed of the rotary switch setting and the assigned network segment.
- Abnormal rotary switch setting: When the rotary switch is set to 255 or higher, the module will start with the previous startup method and parameters after power-on.

7.3.3.2 Configure the IP address via host computer software.

Taking the Keyence KV-8000 and the KV STUDIO Ver.10G host computer as examples, this article introduces how to modify the IP address.

- a. After locating the device, click on the corresponding IP address to modify it. Select "Static IP Startup" as the IP address setting method. Click the "OK" button after modification. As shown in the figure below.



Precautions

- If you want to modify the IP address using BOOTP, you need to set the request acceptance time during scanning and the timeout time when setting the IP address to 60 seconds or more. After the modification is completed, you need to set the module to start with a fixed IP address. Otherwise, the assigned IP address will be lost after power failure.

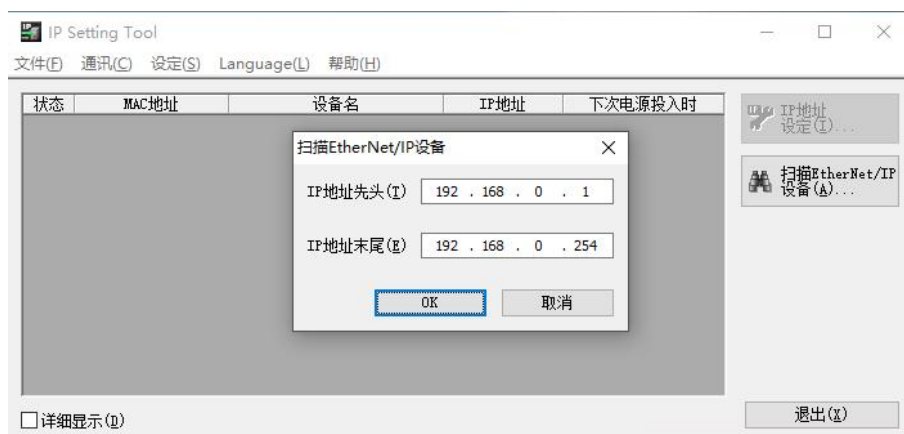
7.3.3.3 Set the IP address using the IP Setting Tool

After powering on the device, wait 15 seconds for the device to complete the network service startup. Then, use the IP Setting Tool to perform the first scan and set the IP address.

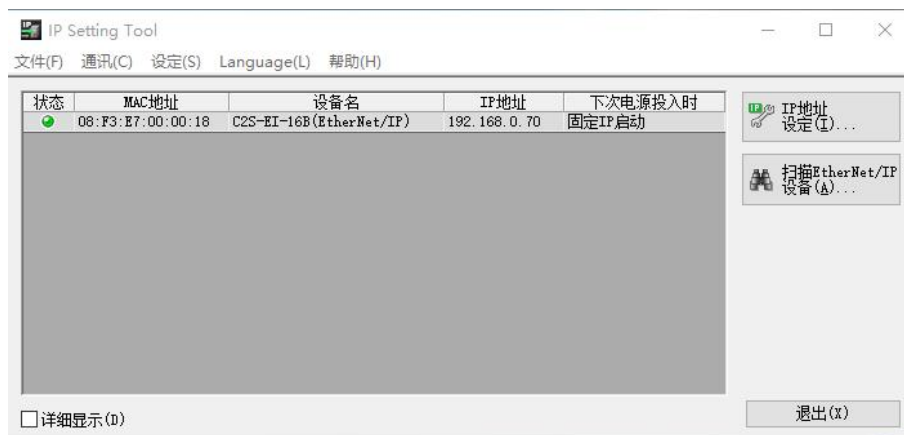
1. Open the IP Setting Tool and click the "Scan EtherNet/IP Devices" button.



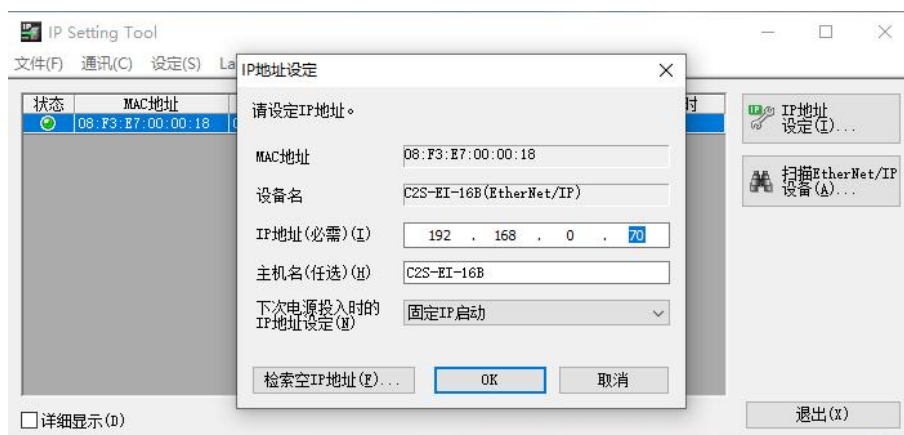
2. Configure the IP address range and click "OK".



The scanned devices are shown in the image below.



3. Double-click the device, and set the IP address in the pop-up "IP Settings" window, as shown in the figure below.



7.3.4 Output signalClear/Hold function

The clear/hold function targets the valve terminal's output signal. This function can be configured to control the valve terminal's output action in case of bus malfunction.

Clear output: When communication is disconnected, the valve terminal output channel will automatically clear the output.

Maintain output: When communication is disconnected, the valve terminal output channel continues to output.

The function supports full-channel settings, single-channel settings, and batch settings of 8 channels grouped according to driver chips, which can better meet the actual use needs.

7.3.5 Factory reset

If the IP address is forgotten, lost, or other abnormalities occur during use, the module can be reset using the IP address reset function. The module can also be restored to factory settings via a special operation using a rotary switch, as detailed below:

- Scenario 1: The device is powered on and a factory reset is performed during use.
 - 1) Turn the rotary switch to 999 and wait 2 seconds. At this time, the ERR indicator light will light up, and the module will automatically perform a factory reset.
 - 2) After the module is restored to factory settings, the IP address parameter is cleared, and the boot method is BOOTP;
 - 3) ① Set the rotary switch to 000 or 255. Or 255 or higher (excluding 999). After power is restored, the IP address has been restored to the factory default address, i.e., 192.168.0.120.
 ② After turning the rotary switch to 001-254 and powering on again, the IP address will be 192.168.0.XXX (XXX is the setting value for the rotary switch, ranging from 1 to 254).
- Scenario 2: Perform a factory reset when the device is powered off.
 - 1) Turn the rotary switch to 999, then power on the module. The module will automatically perform a factory reset.

2) After the module is restored to factory settings, the IP address parameter is cleared, and the boot method is BOOTP;

3) ① Set the rotary switch to 000, 255 or higher (except 999). After powering on again, the IP address will be restored to the factory default address, i.e., 192.168.0.120.

② Set the rotary switch to 001~254, and after powering on again, the IP address will be 192.168.0.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).

7.3.6 Configuration application

For configuration and application details, please refer to the "C2S-EI Series Bus Valve Terminal User Manual_Vx.xx.pdf" and "C2P-EI Series Bus Valve Terminal User Manual_Vx.xx.pdf" on the Solidot Technology website.

7.4 CC-Link bus valve terminal

7.4.1 Parameter Description

7.4.1.1 Output signalClear/Hold function

The clear/hold function targets the valve terminal's output signal. This function can be configured to control the valve terminal's output action in case of bus malfunction.

Clear outputWhen communication is lost, the valve terminal output channel will automatically clear its output.

Maintain outputWhen communication is interrupted, the valve terminal output channel continues to output.

The function supports both full-channel and single-channel settings, which can better meet actual usage needs.

The output signal clear and hold function area defaults to 0, indicating that the overall valve terminal channel output signal is held. Setting it to 1 indicates that the overall valve terminal channel output signal is cleared. Setting it to 2 indicates that the valve terminal channel output signal parameters are determined by the single channel clear and hold configuration item. The single channel clear and hold defaults to 0, indicating that the output signal is held; setting it to 1 clears the output signal.

7.4.1.2 Counting feedback function

The counting function includes a count limit setting function, a count limit feedback function, and a count value clearing and retention function.

Count limit feedback function:Each time the output of the solenoid valve channel opens or closes, the counter value of the solenoid valve is incremented by 1. When the upper limit of the count is reached, the counter feedback bit of the solenoid valve is 1; otherwise, it is 0.

Count limit setting function:The default count limit is 20 million. This limit can be configured, and the latest configured limit will be used for feedback. If the device experiences a power outage and restart during configuration, the last effective configuration value will be used for feedback.

Count value clear and hold function:Supports clearing and retaining the overall count value of the solenoid valve and clearing and retaining the count value of a single solenoid valve.

Clear counter value: The counter value is directly reset to zero.

Count value retention: The count value is not cleared and the counting continues.

The default value for the count value clear and hold function area is 00, which holds the count value; setting it to 01 clears the count value. When the overall count value clear and hold function is set to 00, the count value for a single solenoid valve can be cleared and held. When the count value clear and hold function for a single solenoid valve is configured to 1, the count value for that solenoid valve is cleared. Note: After setting the count value clear and hold function to 1, it needs to be reset to 0 before the count upper limit feedback function can continue.

7.4.2 Soft component description

7.4.2.1 Soft component allocation

Station type	Number of stations occupied	soft components	Description
Remote equipment station	2	RX	64-bit (8 bytes) Used to read the upper limit of the count.
		RY	64-bit (8 bytes) Used for output control of solenoid valve in valve terminals.
		RWr	128 bits (16 bytes) Used for diagnostic and counting feedback functions.
		RWw	128 bits (16 bytes) Used for setting the output signal clear and hold function, the count value clear and hold function, and the count upper limit value.

Note: When cascading valve terminals, the address of the soft component for each valve terminal needs to be calculated according to the fixed number of occupied stations (theoretical number of bytes) in the table.

The following example uses a 24-position single solenoid valve as an example. The parameters of the remote input (RX), remote output (RY), remote register (RWr), and remote register (RWw) of the soft element are set to "X100", "Y100", "D100", and "D200" respectively. The functions corresponding to the soft element addresses are shown in the table below.

Note: The actual number of bytes occupied in the table is based on a 24-position single solenoid valve as an example. For other models, the effective bits need to be determined according to the actual model, and the solenoid valve is represented by the bits from low to high.

Component name	soft element start address	Soft device address range	Function Description
RX	X100	X100~X110	It actually occupies 4 bytes and is used to read the upper limit of the count. The maximum count limit is $2^{32}-1$. It consists of two 16-bit components forming a 32-bit array, with X110 being the high 16 bits and X100 being the low 16 bits.
RY	Y100	Y100~Y120	It actually occupies 6 bytes, a total of 48 bits, and is used for the output control of the solenoid valve in the valve terminal. The solenoid valve are corresponding to the bits from low to high.
RWr	D100	D100~D102	Prohibited
		D103~D105	It actually occupies 6 bytes, a total of 48 bits, and is used for the short circuit/over-temperature diagnosis

RWw			function of the solenoid valve in the valve terminal. The solenoid valve are corresponding to each other from low to high bits.
		D106~D107	It actually occupies 3 bytes (of which only D107 0~7 are actually valid), a total of 24 bits, and is used for the counting feedback function of the 24 solenoid valve in the valve terminal. It is 1 when the upper limit of the count is reached, and 0 when the upper limit of the count is not reached.
	D200	D200 (0~7)	The lower two bits are actually used for setting the solenoid valve output signal clear and hold function. A configuration of 00 holds the output signal for the entire valve terminal channel, a configuration of 01 clears the output signal for the entire valve terminal channel, and a configuration of 10 is determined by the single-channel output signal clear and hold configuration item.
		D200 (8~F)	The lower two bits are actually used for setting the overall solenoid valve count value clearing and retention function. A configuration of 00 retains the count values of all solenoid valve, while a configuration of 01 clears the count values of all solenoid valve. A configuration of 00 allows setting the count value of a single solenoid valve to be cleared and retained.
		D201~D203	It actually occupies 6 bytes, a total of 48 bits, and is used for the single-channel output signal clear and hold configuration. The bits correspond to the solenoid valve from low to high. It is only effective when the overall valve terminal output signal clear and hold configuration is 10. If the single-channel configuration is 0, the output signal of that channel is held; if the single-channel configuration is 1, the output signal of that channel is cleared.
		D204~D205	It actually occupies 3 bytes (of which only D205 0~7 are actually valid), a total of 24 bits, and is used for configuring the count value clearing and holding function of the 24 solenoid valve in the valve terminal. The bits correspond to each solenoid valve in order from low to high. It is only valid when the overall count value clearing and holding configuration of the valve terminal is 00. If a single solenoid valve is configured to 0, the count value of that solenoid valve is held; if a single solenoid valve is configured to 1, the count value

			of that solenoid valve is cleared.
		D206~D207	It actually occupies 4 bytes and is used to set the upper limit of the count. The maximum count limit is $2^{32}-1$. It consists of two 16-bit components making up a 32-bit array, with D207 being the high 16 bits and D206 being the low 16 bits.

7.4.2.2 A list of control methods and their corresponding software components

The valve terminal solenoid valve are controlled in byte mode, with one byte controlling four valve; they can also be controlled in bit mode, with an 8-position group controlling channels 1 through 8. A channel value of 1 opens the corresponding solenoid valve, and a channel value of 0 closes it. A 24-position single solenoid valve has six control bits, controlling a total of 48 channels. Taking a 24-position single solenoid valve as an example, the output control functions of the valve terminal are described in the table below.

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y100-0	Y100-1	Y100-2	Y100-3	Y100-4	Y100-5	Y100-6	Y100-7
Solenoid valve No.	1	/	2	/	3	/	4	/

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y100-8	Y100-9	Y100-A	Y100-B	Y100-C	Y100-D	Y100-E	Y100-F
Solenoid valve No.	5	/	6	/	7	/	8	/

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y110-0	Y110-1	Y110-2	Y110-3	Y110-4	Y110-5	Y110-6	Y110-7
Solenoid valve No.	9	/	10	/	11	/	12	/

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y110-8	Y110-9	Y110-A	Y110-B	Y110-C	Y110-D	Y110-E	Y110-F
Solenoid valve No.	13	/	14	/	15	/	16	/

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component	Y120-0	Y120-1	Y120-2	Y120-3	Y120-4	Y120-5	Y120-6	Y120-7

address								
Solenoid valve No.	17	/	18	/	19	/	20	/

Control method	Remote Output (RY) ----- Component Name Y100							
Soft component address	Y120-8	Y120-9	Y120-A	Y120-B	Y120-C	Y120-D	Y120-E	Y120-F
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.4.2.3 Diagnostic Functions and Software Component Correspondence Table

The C2S-CL valve terminal has a short circuit/overtemperature diagnostic function; a short circuit can only be detected when the valve is open.

The diagnostic function and control method are consistent, also sending diagnostic information in byte or bit format. With the valve open, a short circuit or overtemperature diagnostic information value of 0 indicates normal operation, while 1 indicates a short circuit or overtemperature condition in the corresponding valve.

Taking a 24-position single solenoid valve as an example, the diagnostic functions of the valve terminal are introduced. The correspondence between the soft component address of the short circuit/overtemperature diagnosis channel and the solenoid valve is shown in the table below.

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D103-0	D103-1	D103-2	D103-3	D103-4	D103-5	D103-6	D103-7
Solenoid valve No.	1	/	2	/	3	/	4	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D103-8	D103-9	D103-A	D103-B	D103-C	D103-D	D103-E	D103-F
Solenoid valve No.	5	/	6	/	7	/	8	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D104-0	D104-1	D104-2	D104-3	D104-4	D104-5	D104-6	D104-7
Solenoid valve No.	9	/	10	/	11	/	12	/

Short circuit/over-temperature	Remote Register (RWr) ---- Soft Device Name D100							
--------------------------------	--	--	--	--	--	--	--	--

diagnosis								
Soft component address	D104-8	D104-9	D104-A	D104-B	D104-C	D104-D	D104-E	D104-F
Solenoid valve No.	13	/	14	/	15	/	16	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D105-0	D105-1	D105-2	D105-3	D105-4	D105-5	D105-6	D105-7
Solenoid valve No.	17	/	18	/	19	/	20	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D105-8	D105-9	D105-A	D105-B	D105-C	D105-D	D105-E	D105-F
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.4.2.4 A list of corresponding software components for the counting feedback function.

The C2S-CL valve terminal features a count upper limit feedback function. Each time the solenoid valve channel output opens or closes, the count value of the solenoid valve increments by 1. When the count upper limit is reached, the count feedback function bit of the solenoid valve is 1; otherwise, it is 0.

Taking a 24-position single solenoid valve as an example, the counting feedback function of the valve terminal is introduced. The correspondence between the counting feedback of the solenoid valve and the soft components is shown in the table below.

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D106-0		D106-1		D106-2		D106-3	
Solenoid valve No.	1	/	2	/	3	/	4	/

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D106-4		D106-5		D106-6		D106-7	
Solenoid valve No.	5	/	6	/	7	/	8	/

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D106-8		D106-9		D106-A		D106-B	
Solenoid valve No.	9	/	10	/	11	/	12	/

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D106-C		D106-D		D106-E		D106-F	
Solenoid valve No.	13	/	14	/	15	/	16	/

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component	D107-0		D107-1		D107-2		D107-3	

address								
Solenoid valve No.	17	/	18	/	19	/	20	/

Counting feedback	Remote Register (RWr) ---- Soft Device Name D100							
Soft component address	D107-4		D107-5		D107-6		D107-7	
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.4.3 Configuration application

For configuration and application details, please refer to the "C2S-CL Series Bus Valve Terminal User Manual_Vx.xx.pdf" on the Solidot Technology website.

7.5 CC-Link IE Field Basic bus valve terminal

7.5.1 IP settings and modifications

7.5.1.1 Set the IP address using the rotary switch.

➤ **When setting the IP address via the rotary switch in the factory default state...**

The IP address is 192.168.3.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).

➤ **If the IP address has already been set via the host computer, then setting the IP address via the rotary switch...**

The IP address is derived from the high 3 bytes of the IP address set by the host computer, and the low 1 byte is the setting value of the rotary switch.

For example, when changing the settings of the rotary switch after setting the IP address to 172.10.0.12 via the host computer, the IP address becomes 172.10.0.XXX (XXX is the set value of the rotary switch.(1-254).

Precautions

- **For a detailed description and operating method of the rotary switch, please refer to [link/reference].[4.3.3 CC-Link IE Field Basic Bus Valve Terminal Rotary Switch](#)".**
- **When the module leaves the factory, the rotary switch is set to "000" and the default IP address is 192.168.3.100.**
- **Only the host portion of the IP address can be modified; the network segment cannot be modified. If a network segment has been assigned, the module will use the assigned network segment to construct the IP address; otherwise, it will use the 192.168.3 network segment to construct the IP address.**
- **Abnormal rotary switch setting: When the rotary switch is not set to 1~254, the module will start up with the IP address modified by the host computer last time after power-on.**

7.5.1.2 Set the IP address using the Conf_TestTool_ToMaster.exe tool.

1. After the hardware connection is complete, power on the device and turn the rotary switch to the IP host position to be assigned. Set the IP address of the computer installing the tool to the same network segment as the module's IP address. (For example, if the module's default factory IP address is 192.168.3.100, the computer's IP address can be changed to 192.168.3.88.)
2. Open Conf_TestTool_ToMaster.exe, select "Step2.Test executed", select the network device used in "IP address (master station ID)", click "Detect Connected Device", and record the MAC address in "serverMACAddr".
3. Click "IP address setting of connected devices", enter the recorded MAC address in "Slave station MAC address", enter the IP address to be changed in "IP address to be set for the slave station", and click "Execute" to complete the IP address modification.

Precautions

- When the rotary switch is set to 1~254, only the network segment is modified, and the host bit is set to the rotary switch value.
- When the rotary switch is set to a value other than 1~254, the network segment and IP host bits can be modified.

7.5.2 Factory reset

If the IP address is forgotten, lost, or other abnormalities occur during use, the module can be reset using the IP address reset function. The module can also be restored to factory settings via a special operation using a rotary switch, as detailed below:

- Scenario 1: The device is powered on and a factory reset is performed during use.
 - 4) Turn the rotary switch to 999 and wait 2 seconds. At this time, the ERR indicator light will light up, and the module will automatically perform a factory reset.
 - 5) After the module is restored to factory settings, the IP address parameter is cleared.
 - 6) ① Set the rotary switch to 000 or 255. Or 255 or higher (excluding 999). After power is restored, the IP address has been restored to the factory default address, i.e., 192.168.3.100.
 - ② After turning the rotary switch to 001-254 and powering on again, the IP address will be 192.168.3.XXX (XXX is the setting value for the rotary switch, ranging from 1 to 254).
- Scenario 2: Perform a factory reset when the device is powered off.
 - 1) Turn the rotary switch to 999, then power on the module. The module will automatically perform a factory reset.
 - 2) After the module is restored to factory settings, the IP address parameter is cleared;
 - 3) ① Set the rotary switch to 000, 255 or higher (except 999). After powering on again, the IP address will be restored to the factory default address, i.e., 192.168.3.100.
 - ② Set the rotary switch to 001~254, and after powering on again, the IP address will be 192.168.3.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).

7.5.3 Parameter Description

7.5.3.1 Output signal Clear/Hold function

The clear/hold function targets the valve terminal's output signal. This function can be configured to control the valve terminal's output action in case of bus malfunction.

Clear output: When communication is disconnected, the valve terminal output channel will automatically clear the output.

Maintain output: When communication is disconnected, the valve terminal output channel continues to output.

The function supports full-channel settings, single-channel settings, and batch settings of 8 channels grouped according to driver chips, which can better meet the actual use needs.

7.5.4 Soft component description

7.5.4.1 Soft component allocation

Module soft component allocation table:

Station type	Number of stations occupied	soft components	Description
From the station	1	RX	64 bits Prohibited
		RY	64 bits Used for valve terminal output control function
		RWr	32 bits Used for valve terminal diagnostic functions
		RWw	32 bits Setting the output signal clear and hold function

The following example uses a 24-position single solenoid valve as an example. The parameters of the remote output (RY), remote register (RWr), and remote register (RWw) of the soft element are set to "Y100", "D1000", and "D2000" respectively. The functions corresponding to the soft element addresses are shown in the table below.

Note: The actual number of bytes occupied in the table is based on a 24-position single solenoid valve as an example. For other models, the effective bits need to be determined according to the actual model, and the solenoid valve is represented by the bits from low to high.

Component name	soft element start address	Soft device address range	Function Description
RX	X100	X100~X120	Prohibited
RY	Y100	Y100~Y120	It actually occupies 6 bytes, a total of 48 bits, and is used for the output control of the solenoid valve in the valve terminal. The solenoid valve are corresponding to the bits from low to high.
RWr	D1000	D1000~D1002	Prohibited
		D1003~D1005	It actually occupies 6 bytes, a total of 48 bits, and is used for the short circuit/over-temperature diagnosis function of the solenoid valve in the valve terminal. The solenoid valve are corresponding to each other from low to high bits.
RWw	D2000	D2000 (0~F)	The lower two bits are actually used for setting the solenoid valve output signal clear and hold function. A configuration of 00 holds the output signal for the entire valve terminal channel, a configuration of 01 clears the output signal for the entire valve terminal channel, and a configuration of 10 is determined by the

			single-channel output signal clear and hold configuration item.
		D2001~D2003	It actually occupies 6 bytes, a total of 48 bits, and is used for the single-channel output signal clear and hold configuration. The bits correspond to the solenoid valve from low to high. It is only effective when the overall valve terminal output signal clear and hold configuration is 10. If the single-channel configuration is 0, the output signal of that channel is held; if the single-channel configuration is 1, the output signal of that channel is cleared.

7.5.4.2 A list of control methods and their corresponding software components

The valve terminal solenoid valve are controlled in byte mode, with one byte controlling four valve; they can also be controlled in bit mode, with an 8-position group controlling channels 1 through 8. A channel value of 1 opens the corresponding solenoid valve, and a channel value of 0 closes it. A 24-position single solenoid valve has six control bits, controlling a total of 48 channels. Taking a 24-position single solenoid valve as an example, the output control functions of the valve terminal are described in the table below.

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y100	Y101	Y102	Y103	Y104	Y105	Y106	Y107
Solenoid valve No.	1	/	2	/	3	/	4	/

Control method	Remote Output (RY) ---- Component Name Y100							
Soft component address	Y108	Y109	Y10A	Y10B	Y10C	Y10D	Y10E	Y10F
Solenoid valve No.	5	/	6	/	7	/	8	/

Control method	Remote Output (RY) ---- Component Name Y110							
Soft component address	Y110	Y111	Y112	Y113	Y114	Y115	Y116	Y117
Solenoid valve No.	9	/	10	/	11	/	12	/

Control method	Remote Output (RY) ---- Component Name Y110							
Soft component address	Y118	Y119	Y11A	Y11B	Y11C	Y11D	Y11E	Y11F
Solenoid valve No.	13	/	14	/	15	/	16	/

Control method	Remote Output (RY) ---- Component Name Y120							
Soft component	Y120	Y121	Y122	Y123	Y124	Y125	Y126	Y127

address								
Solenoid valve No.	17	/	18	/	19	/	20	/

Control method	Remote Output (RY) ----- Component Name Y120							
Soft component address	Y128	Y129	Y12A	Y12B	Y12C	Y12D	Y12E	Y12F
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.5.4.3 Diagnostic Functions and Software Component Correspondence Table

The C2S-CB valve terminal has a short circuit/overtemperature diagnostic function; a short circuit can only be detected when the valve is open.

The diagnostic function and control method are consistent, also sending diagnostic information in byte or bit format. With the valve open, a short circuit or overtemperature diagnostic information value of 0 indicates normal operation, while 1 indicates a short circuit or overtemperature condition in the corresponding valve.

Taking a 24-position single solenoid valve as an example, the diagnostic functions of the valve terminal are introduced. The correspondence between the soft component address of the short circuit/overtemperature diagnosis channel and the solenoid valve is shown in the table below.

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Component Name D1003							
Soft component address	D1003-0	D1003-1	D1003-2	D1003-3	D1003-4	D1003-5	D1003-6	D1003-7
Solenoid valve No.	1	/	2	/	3	/	4	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Component Name D1003							
Soft component address	D1003-8	D1003-9	D1003-A	D1003-B	D1003-C	D1003-D	D1003-E	D1003-F
Solenoid valve No.	5	/	6	/	7	/	8	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D1004							
Soft component address	D1004-0	D1004-1	D1004-2	D1004-3	D1004-4	D1004-5	D1004-6	D1004-7
Solenoid valve No.	9	/	10	/	11	/	12	/

Short circuit/over-temperature	Remote Register (RWr) ---- Soft Device Name D1004							
--------------------------------	---	--	--	--	--	--	--	--

diagnosis								
Soft component address	D1004-8	D1004-9	D1004-A	D1004-B	D1004-C	D1004-D	D1004-E	D1004-F
Solenoid valve No.	13	/	14	/	15	/	16	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D1005							
Soft component address	D1005-0	D1005-1	D1005-2	D1005-3	D1005-4	D1005-5	D1005-6	D1005-7
Solenoid valve No.	17	/	18	/	19	/	20	/

Short circuit/over-temperature diagnosis	Remote Register (RWr) ---- Soft Device Name D1005							
Soft component address	D1005-8	D1005-9	D1005-A	D1005-B	D1005-C	D1005-D	D1005-E	D1005-F
Solenoid valve No.	twenty one	/	22	/	23	/	24	/

7.5.5 Configuration application

For configuration applications, please refer to the "C2S-CB Series Bus Valve Terminal User Manual_Vx.xx.pdf" and "C2P-CB Series Bus Valve Terminal User Manual_Vx.xx.pdf" on the official website of Solidot Technology.

7.6 Multi-pin interface valve terminal usage method

The C2S-OO series valve terminal's multi-pin interface can connect to other modules, enabling the opening and closing of the solenoid valve channel through the module's output control function. The wiring sequence of the C2S-OO series valve terminal and the corresponding solenoid valve when connected to a single solenoid valve are shown in the table below.

DB25 male socket #1		
Hub sequence	Corresponding channel order	Solenoid valve number
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
twenty one	twenty one	twenty one
22	22	22
23	23	23
24	24	24
25	com terminal	-