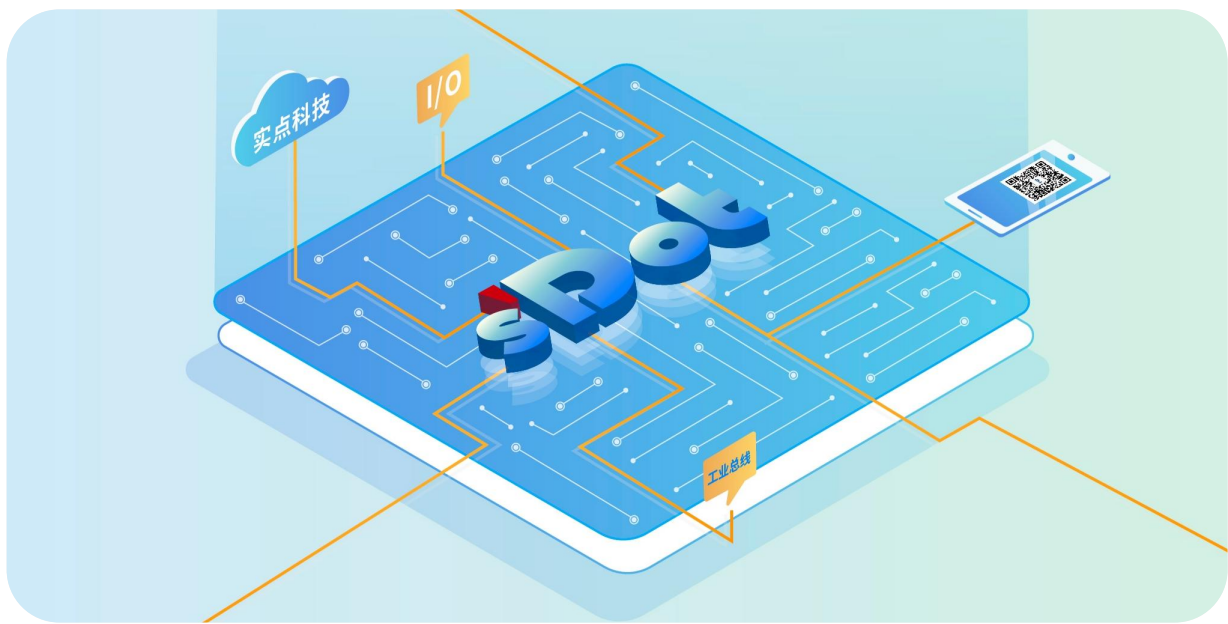




CC-Link IE Field Basic

XB6S Series Slice I/O

User Manual



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Nanjing Solidot Electronic Technology Co., Ltd.

Address: 11th Floor, Angying Building, No. 91 Shengli Road, Jiangning District, Nanjing City, Jiangsu Province

Postal code: 211106

Telephone: 4007788929

Website: <http://www.solidotech.com>

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1 Product Overview

1.1 Product Introduction

The XB6S series Slice I/O modules employ a combination of couplers and I/O modules. The coupler connects the expandable I/O modules to a real-time industrial Ethernet system. The backplane uses an X-bus bus, and the coupler module handles fieldbus communication, thus enabling various I/O modules to exchange data with the coupler/controller in real time.

The XB6S series of Slice I/O modules offers a wide variety and high real-time performance, providing users with support for high-speed data acquisition, optimized system configuration, simplified field wiring, and improved system reliability.

1.2 Product Features

- **Low node usage**
A node consists of a bus coupler, 1 to 32 XB6S series I/O modules, 1 to 32 XBF series expansion I/O modules, and a terminal cover.
- **Rich functionality**
It supports flexible expansion and has a complete range of I/O types; it can integrate various digital modules, analog modules and temperature modules, etc., to meet the needs of different applications.
- **Flexible configuration**
Various types of Slice I/O modules can be combined arbitrarily.
- **High compatibility**
The coupler communication interface conforms to communication standards and supports mainstream CC-Link IE Field Basic master stations.
- **Small size**
It has a compact structure and occupies little space.
- **Easy to diagnose**
The indicator lights are complete, making the module status clear at a glance and facilitating testing and maintenance.
- **Fast**

The backplane uses the X-bus bus: the minimum scan cycle is 200us, and the typical value is 1ms.

- **Easy to install**

Mounted on DIN 35 mm standard rails.

It adopts spring-loaded terminal blocks, making wiring convenient and quick.

1.3 Application methods

The coupler module connects to the controller at the application site, while the I/O module connects to the input and output sensors at the application site. The typical data acquisition, processing, and control flow is as follows:

- a. The input I/O module collects various field signals and sends them to the coupler via the internal bus;
- b. The controller reads and processes data from the coupler via fieldbus or industrial Ethernet, and then writes the output data back to the coupler.
- c. The coupler then writes the output data to the output I/O module via the internal bus, thereby enabling device control.

Expandable I/O modules include digital input modules, digital output modules, digital input/output modules, analog input modules, analog output modules, temperature modules, etc.

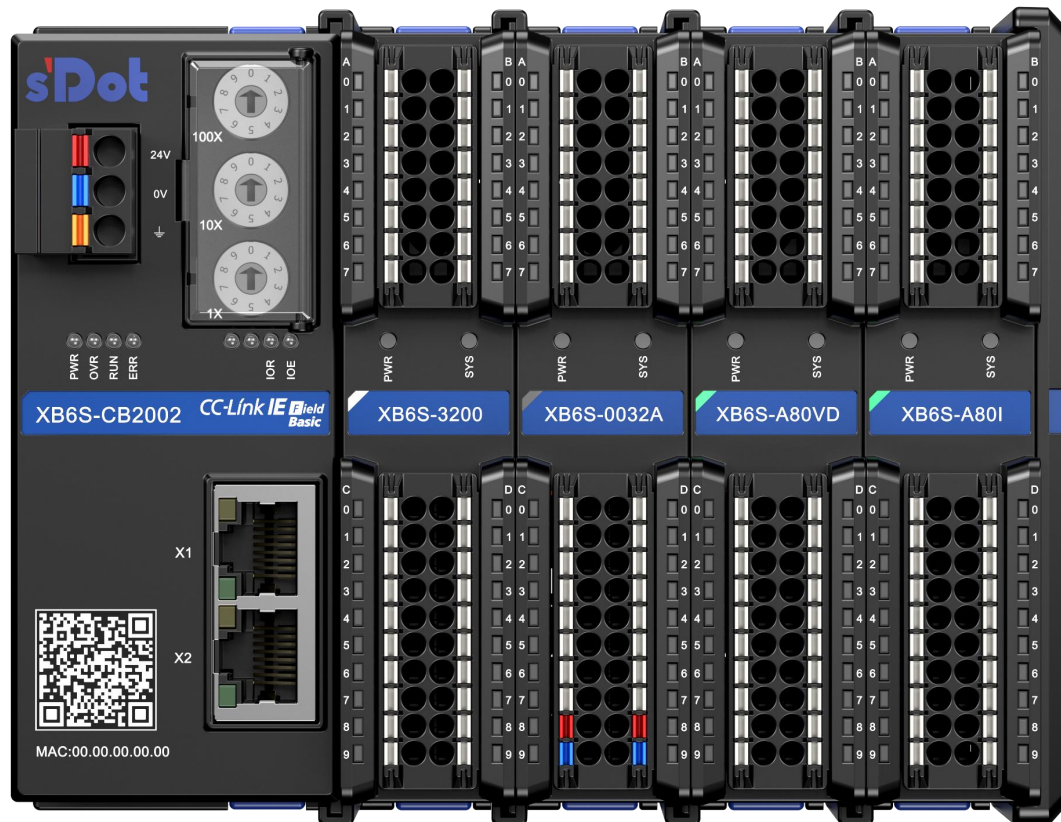
Application method: Applications employ a combination of modules such as couplers, digital signals, analog signals, temperature sensors, and extended power supplies.

Application configuration: Depending on the requirements of the main station's access capabilities, number of stations, number of I/O points, and function types, it can adapt to different models of I/O module combinations and configurations.

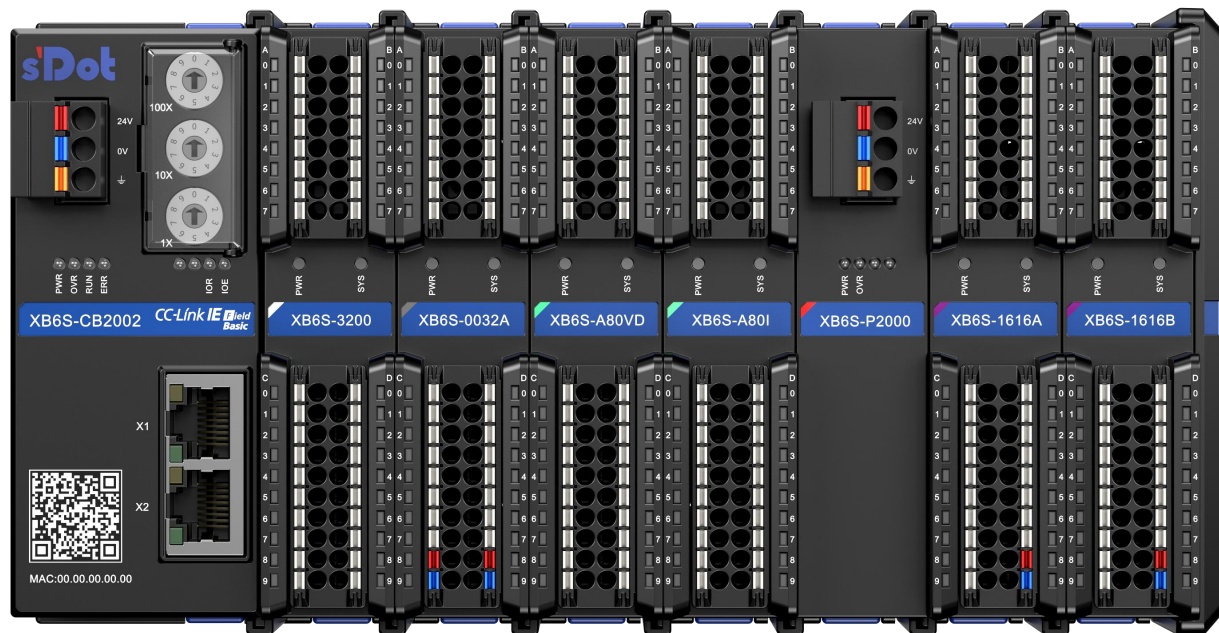
Configuration rules: The modules, from left to right, consist of a coupler module, a power module, an I/O module, and a terminal cover (which must be configured).

The product uses a combination of coupler, I/O module, and terminal cover, and there are two possible combinations.

Product combination option 1 (coupler module, I/O module, terminal cover)



Product combination option two (coupler module, I/O module, extended power supply module, I/O module, terminal cover)



2 Naming Rules

2.1 Naming Rules

2.1.1 Coupler naming rules

XB 6 S - CB 20 02
(1) (2)(3) (4) (5) (6)

serial number	meaning	Value description
(1)	Bus type	XB: X-bus
(2)	Product Series	6: Insert type
(3)	Product Version	S: Strengthen, upgraded version
(4)	bus protocol	CB: CC-Link IE Field Basic EC: EtherCAT PN: PROFINET EI: EtherNet/IP MT: Modbus TCP
(5)	Power supply	20:2A
(6)	Number of network ports	02: Dual network ports

2.1.2 I/O module naming rules

XB 6 S - A 8 0 V
(1) (2)(3) (4) (5)(6)(7)

2.2 Module list

Model	Product Description	
XB6S-CB2002	CC-Link IE Field Basic bus Coupler module	
XB6S-3200	32-channel digital input module, NPN/PNP compatible input, input filtering default 3ms	
XB6S-1600	16-channel digital input module, NPN/PNP compatible input, input filtering default 3ms	
XB6S-0800	8-channel digital input module, NPN/PNP compatible input, input filtering default 3ms	
XB6S-1616A	16-channel digital input/16-channel digital output module Input is NPN/PNP compatible, input filter default 3ms, output is NPN type.	
XB6S-1616B	16-channel digital input/16-channel digital output module Input is NPN/PNP compatible, input filtering default is 3ms, output is PNP type.	
XB6S-0032A	32-channel digital output module, outputting NPN type	
XB6S-0032B	32-channel digital output module, PNP type output	
XB6S-0016A	16-channel digital output module, outputting NPN type	
XB6S-0016B	16-channel digital output module, outputting PNP type	
XB6S-0008A	8-channel digital output module, outputting NPN type	
XB6S-0008B	8-channel digital output module, PNP type output	
XB6S-3200N	32-channel digital input module, NPN/PNP compatible input, input filtering default 3ms, MIL connector type.	
XB6S-0032AN	32-channel digital output module, NPN type output, MIL connector type	
XB6S-0032BN	32-channel digital output module, PNP type, MIL connector type	
XB6S-0012J/6	12-channel relay output module (Note: The "/" in the model number can be omitted, meaning XB6S-0012J/6 and XB6S-0012J6 are the same module)	
XB6S-A80VD	8-channel analog voltage input module	Differential signal, adjustable range: Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A80V	8-channel analog voltage input module	Single-ended signal, adjustable range: Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A40VD	4-channel analog voltage input module	Differential signal, adjustable range: Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A40V	4-channel analog voltage input module	Single-ended signal, adjustable range: Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A80ID	8-channel analog current input module	Differential signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA, -20mA~+20mA
XB6S-A80I	8-channel analog current input module	Single-ended signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA
XB6S-A40ID	4-channel analog current input module	Differential signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA, -20mA~+20mA
XB6S-A40I	4-channel analog current input module	Single-ended signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA
XB6S-A08V	8-channel analog voltage	Single-ended signal, adjustable range: Disable,

	output module	-10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A04V	4-channel analog voltage output module	Single-ended signal, adjustable range: Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V
XB6S-A08I	8-channel analog current output module	Single-ended signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA
XB6S-A04I	4-channel analog current output module	Single-ended signal, adjustable range: Disable, 4mA~20mA, 0mA~20mA
XB6S-A80TM	8-channel RTD/thermocouple temperature acquisition module (for module details, please refer to the module user manual on the official website).	
XB6S-A40TM	4-channel RTD/thermocouple temperature acquisition module (for module details, please refer to the module user manual on the official website).	
XB6S-PL20	2-channel single-ended incremental encoder counting module (for module details, please refer to the module user manual on the official website).	
XB6S-PS20D	2-channel SSI absolute encoder counting module (for module details, please refer to the module user manual on the official website).	
XB6S-PL20D	2-channel differential incremental encoder counting module (for module details, please refer to the module user manual on the official website).	
XB6S-PC80	8-channel pulse counting module (for module details, please refer to the module user manual on the official website).	
XB6S-PT04A	4-channel PTO pulse output module (for module details, please refer to the module user manual on the official website).	
XB6S-C01SP	1-channel serial communication module (see the module user manual on the official website for module details).	
XB6S-P2000	Extended power module	
XB6S-C18_2	Public End Extension Module	
XB6S-CVR00	Terminal cover	

3 Module Introduction

3.1 CC-Link IE Field Basic Coupler

3.1.1 Panel structure



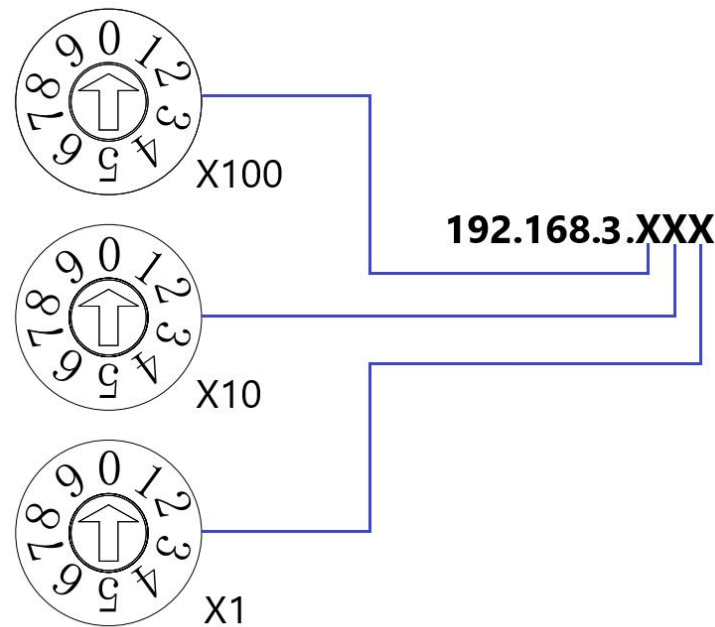
Serial number	Name	Illustrate
①	Rotary switch	Set IP address
②	Power terminal	3P spring-loaded terminal block
③	Module indicator lights and indicator light labels	Indicates coupler power status and system operating status

④	Module QR code	Scan the QR code to access module-related information.
⑤	Reset button	Reset IP information and configuration parameters
⑥	Power supply+	5V
⑦	Power supply-	0V
⑧	X-bus communication signals	Communication signals
9	Bus Interface X1	RJ45 interface
⑩	Bus Interface X2	RJ45 interface

3.1.2 Rotary switch

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 up the least significant byte of the IP address. (Through...) "×100" For hundreds, pass "×10" For tens, through "×1" For the individual digits, in"Set within the range of 1 to 254.
000, 255~	When the rotary switch is set to 0, 255, or 255 or higher, the IP address currently used by the module is the IP address that was last changed by the host computer or the factory default IP address.

The rotary switch is set to "000" at the factory, and the IP address is set to the factory default IP: 192.168.3.100.

Precautions

- 1、 Tool Selection

Screwdriver specifications: opening $\leq 3\text{mm}$.

- The rotary switch IP address must be set with the power off. If the IP address needs to be changed during communication, the new IP setting will only take effect after power is restored.

3.1.3 Indicator light function

CC-Link IE Field Basic Coupler Indicator Definition				
ID	Name		State	Status Description
PWR	Power indicator light	green	ON	The module power supply is working normally.
			OFF	Module not powered or power supply abnormal
OVR	Overload indicator light	red	OFF	Not overloaded
			ON	The load reaches 90% ($\pm 5\%$) or more.
RUN	Operating status indicator	green	ON	The equipment is operating normally, and the transmission is carried out in a loop.
			Flashing at 2.5Hz	The equipment is running normally, and the cyclic transmission has stopped.
			10Hz Flashing	The module is not configured.
			OFF	Module disconnected
ERR	Bus error indicator	red	ON	The equipment has encountered a critical, unrecoverable error.
			Flashing	Data interaction error
			OFF	The equipment is operating normally.
IOR	IO communication indicator	green	ON	I/O Process data has been established
			Flashing 1Hz	No business data interaction
			10Hz Flashing	Coupler firmware upgrade
IOE	IO error indicator	red	ON	Communication error
			OFF	No communication issues

Network status indicator definition				
ID	name		state	Status Description
X1	Network status indicator	orange	Flashing	Connection established and data exchanged
			OFF	No data interaction or anomaly
		green	ON	Establish network connection
			OFF	No network connection established or abnormal
X2	Network status indicator	orange	Flashing	Connection established and data exchanged
			OFF	No data interaction or anomaly
		green	ON	Establish network connection
			OFF	No network connection established or abnormal

3.1.4 Product Parameters

3.1.4.1 Interface parameters

CC-Link IE Field Basic Interface Parameters		
Bus protocol	CC-Link IE Field Basic	
Port number	61450 (periodic data), 61451 (search node)	
Logical station count	[1,4]	
Maximum data volume	RX, RY	64×4 bits
	RWr, RWw	32×4 words
Number of stations	It depends on the number of slave stations supported by the master station.	
Data transmission medium	Ethernet CAT5 cable	
Transmission rate	100Mbps	
Minimum loop time [1]	1ms	
Transmission distance	≤100m (distance between stations)	
Bus interface	2×RJ45	
Maximum number of modules connected in series	32	
Input/output process data volume	1024 Bytes[2]	

Note [1]: Cycle time (scan cycle) between PLC and coupler.

Note [2]: The total length of uplink and downlink data does not exceed 1024 bytes.

3.1.4.2 Power parameters

Power parameters	
Input voltage	SELV Input 24VDC (18V~36V)
Input current	Max: 600mA (24VDC)
Backplane power supply current	Max: 2A
Backplane power supply voltage	5VDC

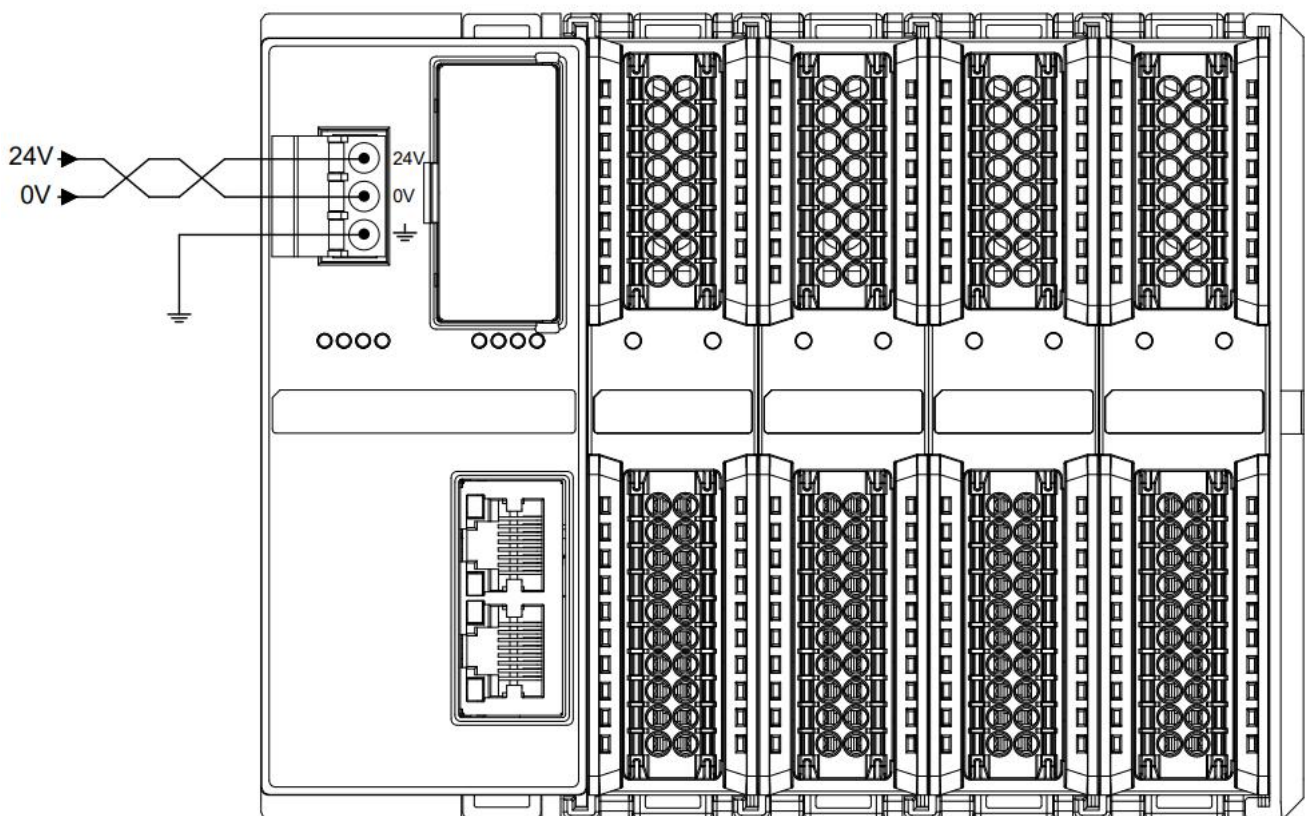
3.1.4.3 General parameters

General technical parameters		
Specifications and dimensions		106.4 × 43 × 61mm
Weight		160g
Usage Environment	Operating temperature	-20°C~+60°C
	Storage temperature	-40°C~+80°C
	Relative humidity	95%, no condensation
	Altitude	≤2000m
	Protection level	IP20
	Overvoltage category	I
	Pollution level	Level 2

Module error self-recovery	Support
Short circuit protection	Supports (automatic recovery mechanism)
Reverse connection protection	Supports (automatic recovery mechanism)
Surge protection	Support
CE certification	EMC EN 61131-2 EN IEC 61000-6-4 EN IEC 61000-6-2
	LVD EN 61010-1:2010/A1 EN IEC 61010-2-201
RoHS certification	EU Directive 2011/65/EU Annex II

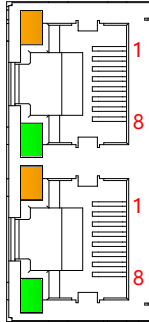
3.1.5 Power wiring diagram

Using a 24VDC power module, refer to the wiring method and connect the power supply according to the circuit shown in the diagram below, while ensuring reliable grounding (twisted pair cable is recommended for the power supply).



3.1.6 Bus wiring

It uses a standard RJ45 network interface and a standard crystal connector. The pin assignments are shown in the table below.



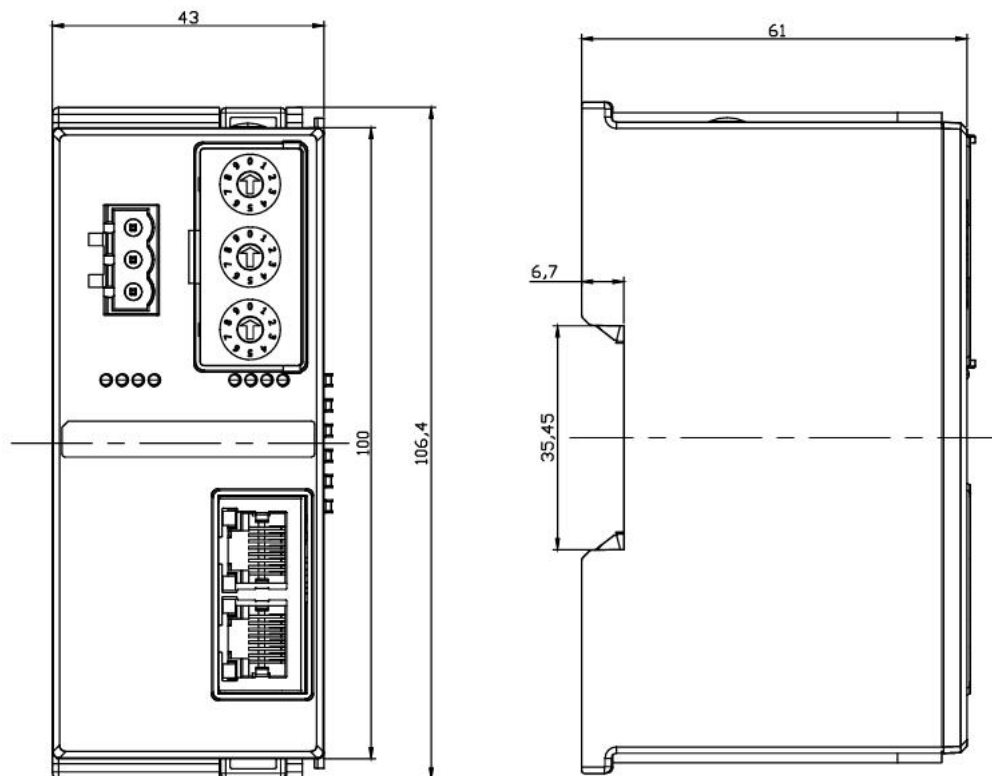
pin number	Signal
1	TD+
2	TD-
3	RD+
4	one
5	one
6	RD-
7	one
8	one

Precautions

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

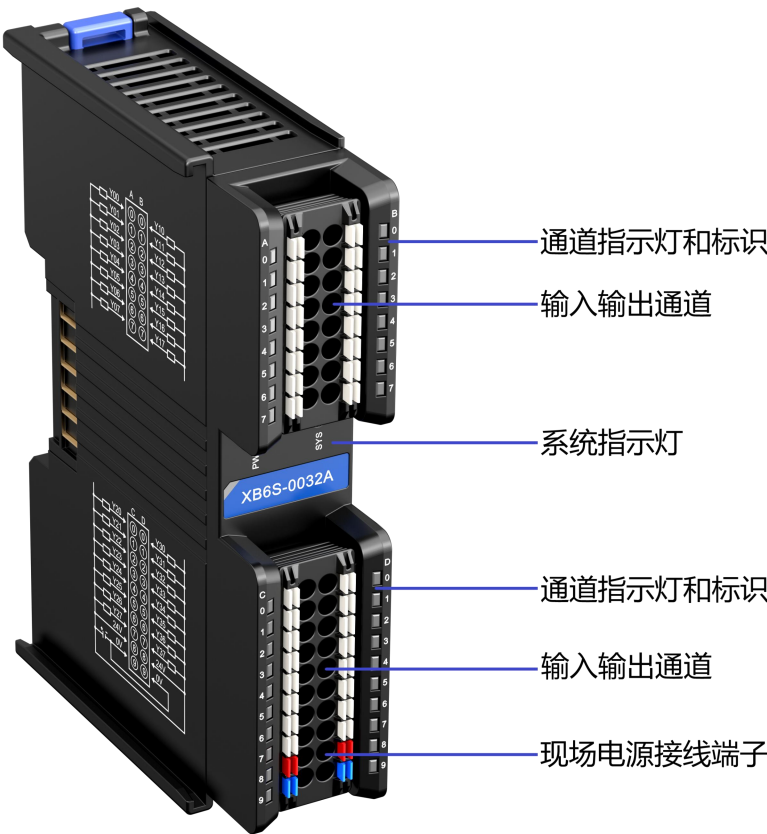
3.1.7 Outline dimension drawing

Coupler dimensions (unit: mm)



3.2 Digital I/O modules

3.2.1 Panel structure



3.2.2 Indicator light function

Digital I/O module indicator light definitions				
ID	Name		State	Status Description
PWR	Power indicator light	green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
SYS	Operating status indicator	green	ON	The system is running normally.
			Flashing 1Hz	No business data interaction; waiting to establish business data interaction.
			10Hz Flashing	Firmware upgrade
			OFF	The system is not working.
0~7	Input channel indicator	green	ON	The module channel has a signal input.
			OFF	The module channel has no signal input or the signal input is abnormal.
0~7	Output channel indicator	green	ON	The module channel has signal output.
			OFF	The module channel has no signal output or the signal output is abnormal.

3.2.3 Technical parameters

3.2.3.1 Digital input module parameters

Digital input				
Product Model	XB6S-3200	XB6S-3200N	XB6S-1600	XB6S-0800
Bus input power supply rated voltage	5VDC (4.5V~5.5V)			
Bus input power supply rated current	≤100mA	≤70mA	≤80mA	≤60mA
Input rated voltage	24VDC (20.4V~28.8V)			
Typical input current	5mA/ch (24VDC)			
Number of input signal points	32	32	16	8
Input signal type	NPN/PNP compatible			
Input signal form	direct voltage input form Sink input: NPN open-collector input form Source type input: PNP open collector input form			
OFF voltage/OFF current	-3V to +5V / less than 0.9mA			
ON voltage/ON current	11V~30V/2.1mA or more			
Reaction time	<50us			
Input filtering	No filtering, 0.1ms, 0.2ms, 0.5ms, 1ms, 2ms, 3ms (factory setting), 4ms...18ms, 19ms, 20ms			
Maximum input frequency	150Hz (Filtering time: 3ms)			
Input impedance	5.4KΩ			
Isolation methods	Optical isolation			
Isolation and withstand voltage	500VAC			
Rated current consumption	100mA	70mA	80mA	60mA
Power consumption	0.5W	0.35W	0.4W	0.3W
Numeric input type	Type1/Type3			
Channel indicator lights	Green LED lights			

3.2.3.2 Digital Input/Output Module Parameters

Digital input		
Product Model	XB6S-1616A	XB6S-1616B
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	≤130mA	≤100mA
Input rated voltage	24VDC (20.4V~28.8V)	
Typical input current	5mA/ch (24VDC)	
Number of input signal points	16	16
Input signal type	NPN/PNP compatible	
Input signal form	direct voltage input form Sink input: NPN open-collector input form Source type input: PNP open collector input form	
OFF voltage/OFF current	-3V to +5V / less than 0.9mA	
ON voltage/ON current	11V~30V/2.1mA or more	
Reaction time	<50us	
Input filtering	No filtering, 0.1ms, 0.2ms, 0.5ms, 1ms, 2ms, 3ms (factory setting), 4ms...18ms, 19ms, 20ms	
Maximum input frequency	150Hz (Filtering time: 3ms)	
Input impedance	5.4KΩ	
Isolation methods	Optical isolation	
Isolation and withstand voltage	500VAC	
Rated current consumption	130mA	100mA
Power consumption	0.65W	0.5W
Numeric input type	Type1/Type3	
Channel indicator lights	Green LED lights	
Digital output		
Number of output signal points	16	16
Output signal type	NPN	PNP
Field-side input voltage range	24VDC (20.4V~28.8V)	
Output voltage drop	<1V	
Output load type	Resistive load, inductive load, lamp load	
Single-channel rated current	Max: 0.5A (see details) Figure 1	
Leakage current	<10uA	
Reaction time	<150us	
Output channel protection	Short circuit protection (automatic recovery mechanism)	
Module protection	Reverse connection protection (automatic recovery mechanism), field-side surge protection	
Isolation methods	Optical isolation	
Isolation and withstand voltage	500VAC	
Channel indicator lights	Green LED lights	

3.2.3.3 Digital output module parameters

Digital output				
Product Model	XB6S-0032A	XB6S-0032B	XB6S-0032AN	XB6S-0032BN
Bus input power supply rated voltage	5VDC (4.5V~5.5V)			
Bus input power supply rated current	≤150mA	≤110mA	≤130mA	≤80mA
Field-side input voltage range	24VDC (20.4V~28.8V)			
Number of output signal points	32	32	32	32
Output signal type	NPN	PNP	NPN	PNP
Output voltage drop	<1V			
Output load type	Resistive load, inductive load, lamp load			
Single-channel rated current	Max: 0.5A (see details) Figure 1		Max: 0.1A	
Leakage current	<10uA			
Reaction time	<150us			
Output channel protection	Short circuit protection (automatic recovery mechanism)			
Module protection	Reverse connection protection (automatic recovery mechanism), field-side surge protection			
Isolation methods	Optical isolation			
Isolation and withstand voltage	500VAC			
Rated current consumption	150mA	110mA	130mA	80mA
Power consumption	0.75W	0.55W	0.65W	0.4W
Channel indicator lights	Green LED lights			

Digital output				
Product Model	XB6S-0008A	XB6S-0008B	XB6S-0016A	XB6S-0016B
Bus input power supply rated voltage	5VDC (4.5V~5.5V)			
Bus input power supply rated current	≤70mA	≤60mA	≤110mA	≤90mA
Field-side input voltage range	24VDC (20.4V~28.8V)			
Number of output signal points	8	8	16	16
Output signal type	NPN	PNP	NPN	PNP
Output voltage drop	<1V			

Output load type	Resistive load, inductive load, lamp load			
Single-channel rated current	Max: 0.5A (see details) Figure 1			
Leakage current	<10uA			
Reaction time	<150us			
Output channel protection	Short circuit protection (automatic recovery mechanism)			
Module protection	Reverse connection protection (automatic recovery mechanism), field-side surge protection			
Isolation methods	Optical isolation			
Isolation and withstand voltage	500VAC			
Rated current consumption	70mA	60mA	110mA	90mA
Power consumption	0.35W	0.3W	0.55W	0.45W
Channel indicator lights	Green LED lights			

3.2.3.4 Relay output module parameters

Relay output				
Product Model	XB6S-0012J/6			
Bus input power supply rated voltage	5VDC (4.5V~5.5V)			
Bus input power supply rated current	≤100mA			
Field-side input voltage range	24VDC (20.4V~28.8V)			
Number of output signal points	12			
Output format	Relay			
Output load type	Resistive load, inductive load, lamp load			
Minimum load current	10mA			
Minimum load voltage	5V			
Single channel rated voltage	24VDC			
Single-channel rated current	Max: 2A (see details) Figure 2			
Hardware output response time	10ms/10ms			
Module protection	Field-side reverse connection protection (automatic recovery mechanism),			

	field-side surge protection
Isolation methods	Optical isolation + relay isolation
Isolation and withstand voltage	1500VAC
Rated current consumption	100mA
Power consumption	0.5W
Mechanical life	Minimum 20 million operations (18,000 operations/hour)
Electrical life	Minimum 100,000 operations (2A, 24VDC, inductive load)
Channel indicator lights	Green LED lights

3.2.3.5 General technical parameters

General technical parameters	
Specifications and dimensions	106.4 × 25.7 × 72.3mm
Weight	32-channel DIO: 110g
	16-channel DIO: 90g
	8-channel DIO: 90g
	XB6S-0012J/6: 135g
Operating temperature	-20°C~+60°C
Storage temperature	-40°C~+80°C
relative humidity	95%, no condensation
Altitude	≤2000m
Pollution level	Level 2
Protection level	IP20
Safety certification	UL certification, CE certification
Green certification	RoHS certification, REACH certification

Figure 1:

数字量输出模块单通道最大额定电流与温度的关系图

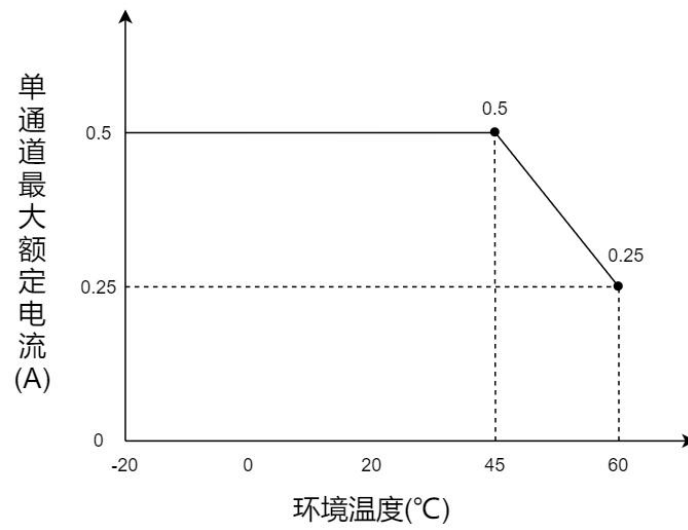
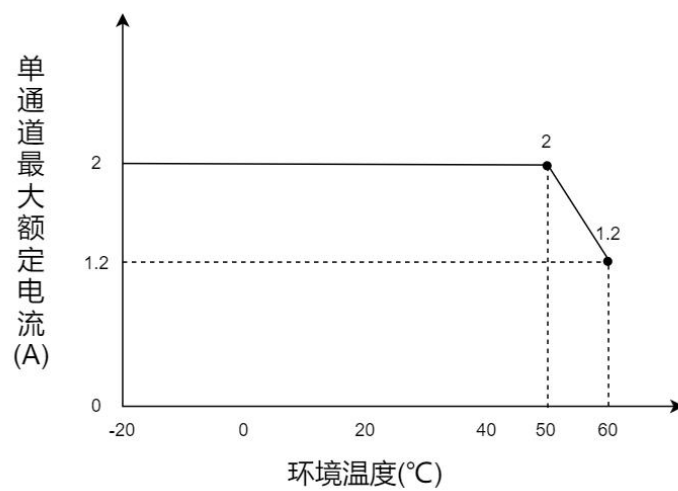


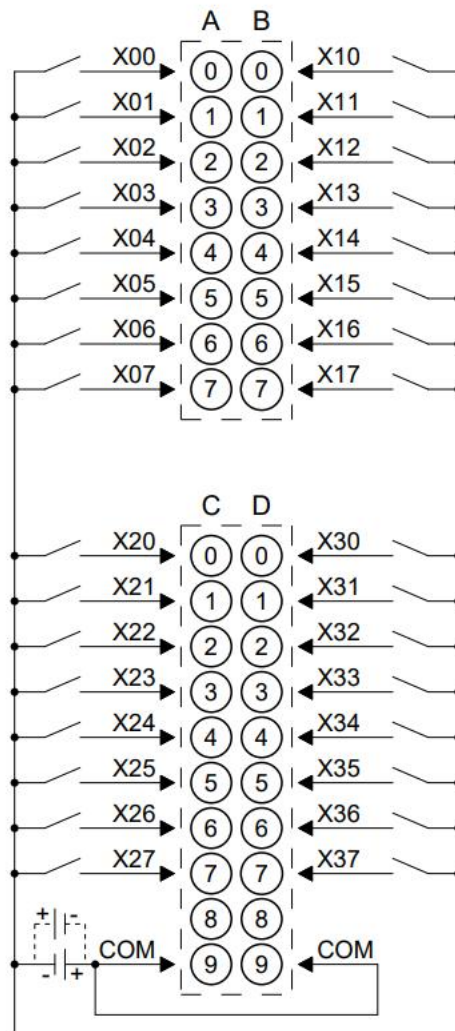
Figure 2:

继电器输出模块单通道最大额定电流与温度的关系图

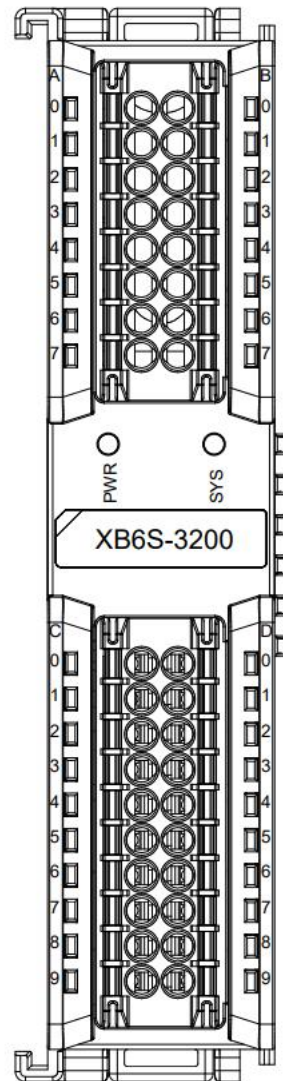


3.2.4 Wiring diagram

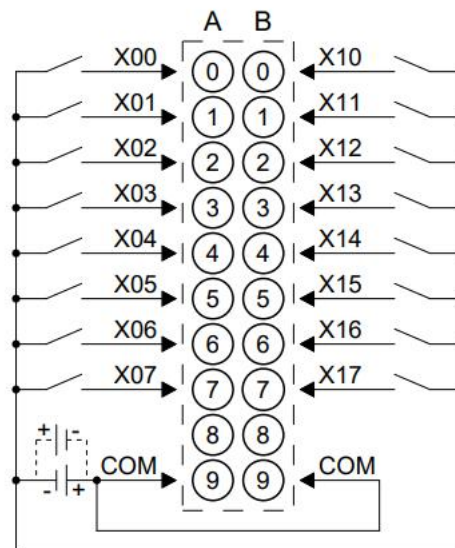
3.2.4.1 XB6S-3200



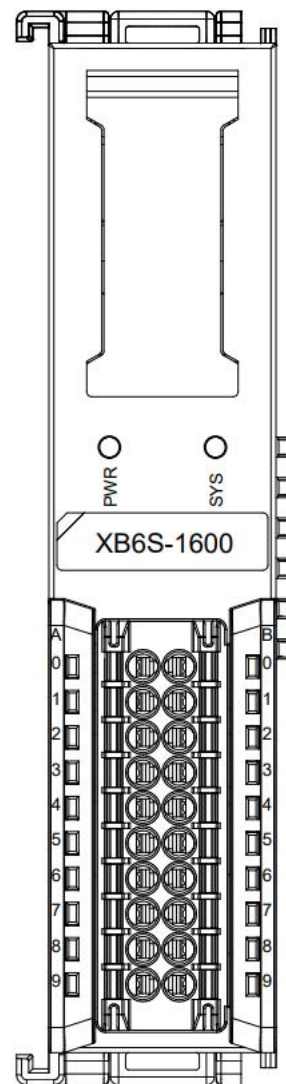
*COM internal conduction; NPN/PNP compatible



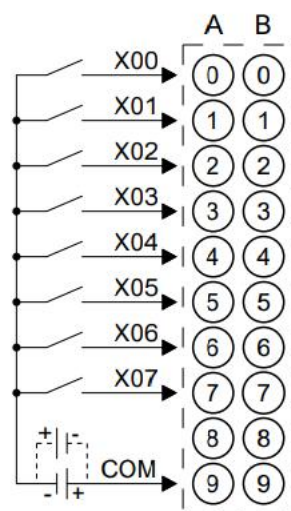
3.2.4.2 XB6S-1600



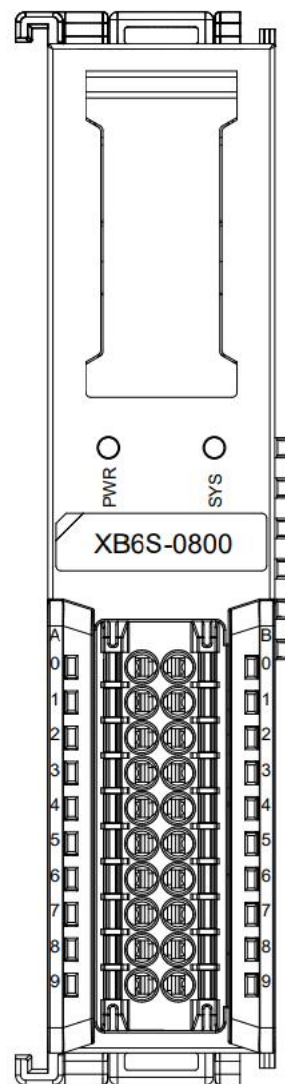
*COM internal conduction; NPN/PNP compatible



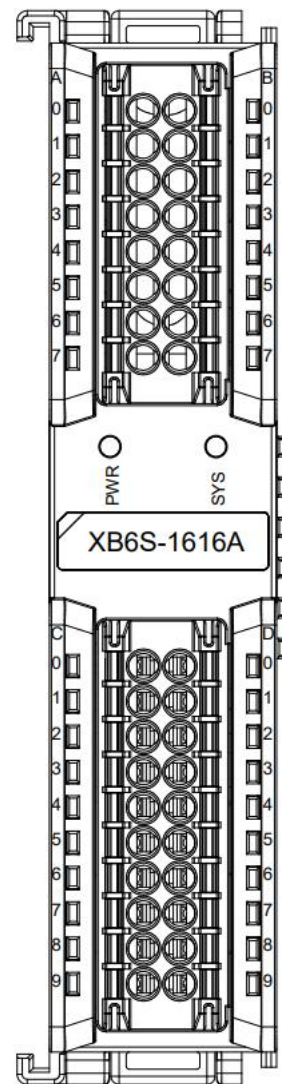
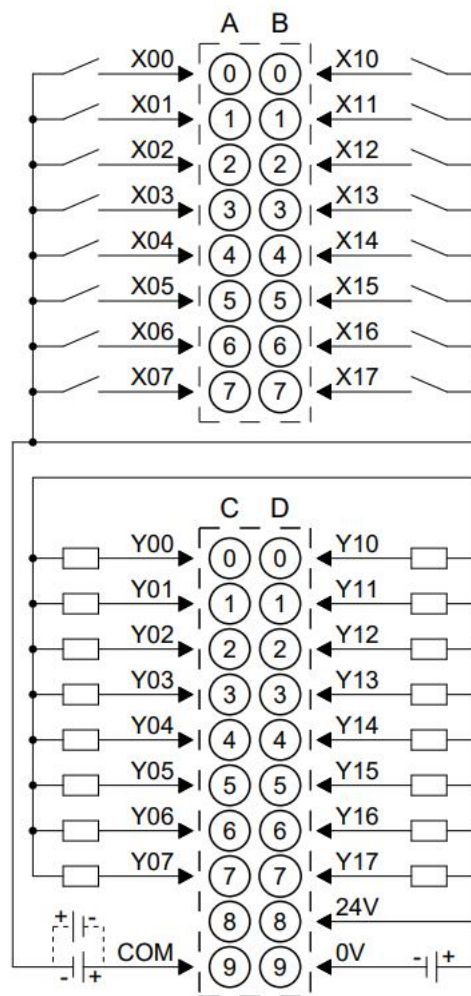
3.2.4.3 XB6S-0800



*NPN/PNP compatible

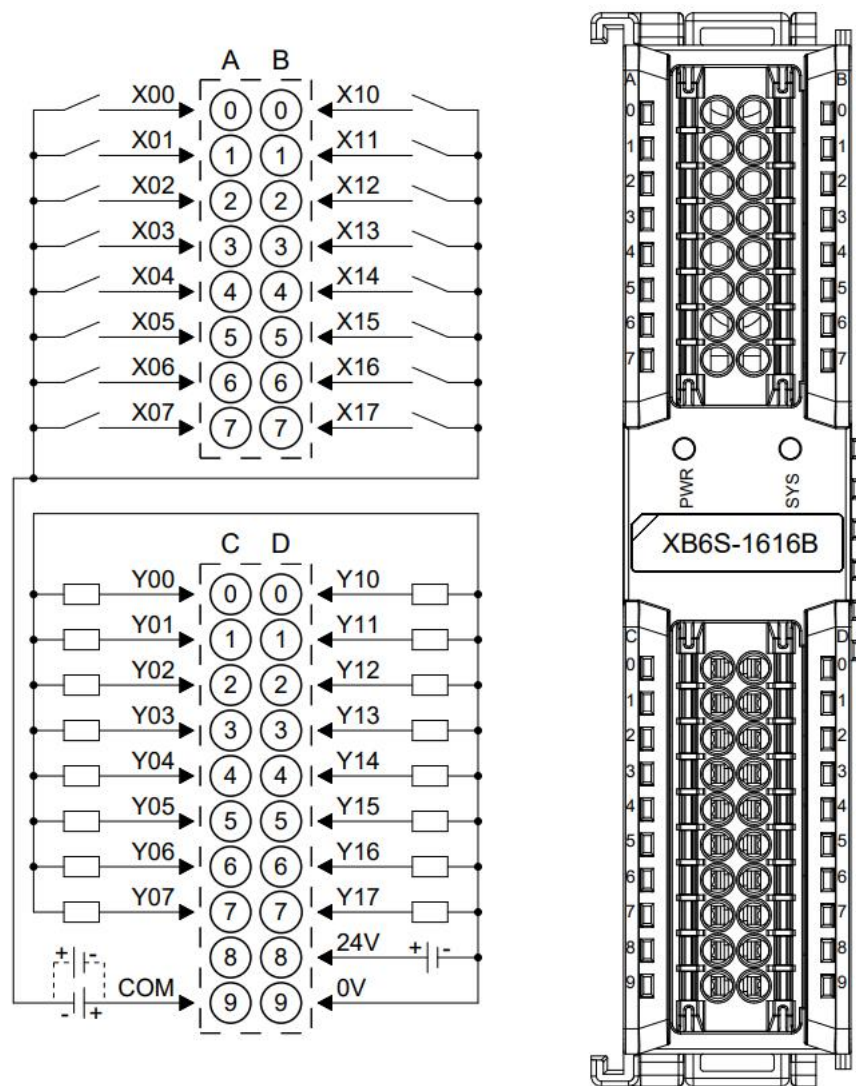


3.2.4.4 XB6S-1616A



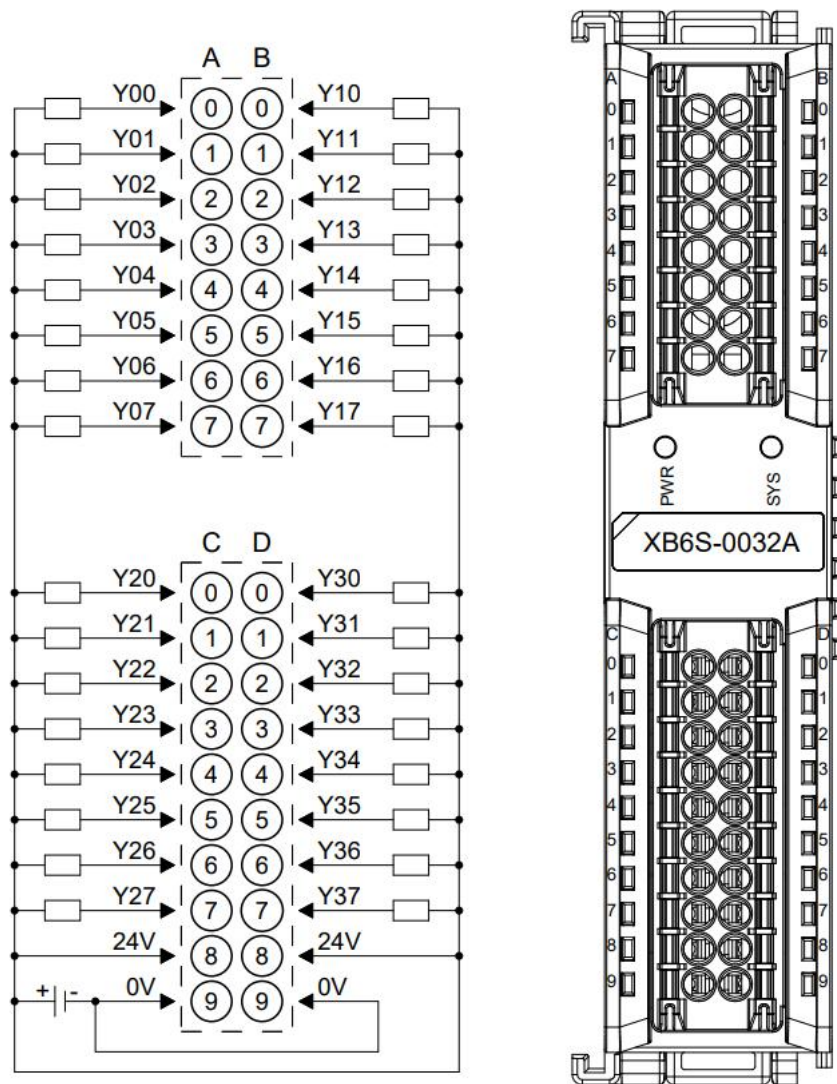
*COM is the common terminal for DI, DI is NPN/PNP compatible, and DO is NPN.

3.2.4.5 XB6S-1616B



*COM is the common terminal for DI, DI is NPN/PNP compatible, and DO is PNP.

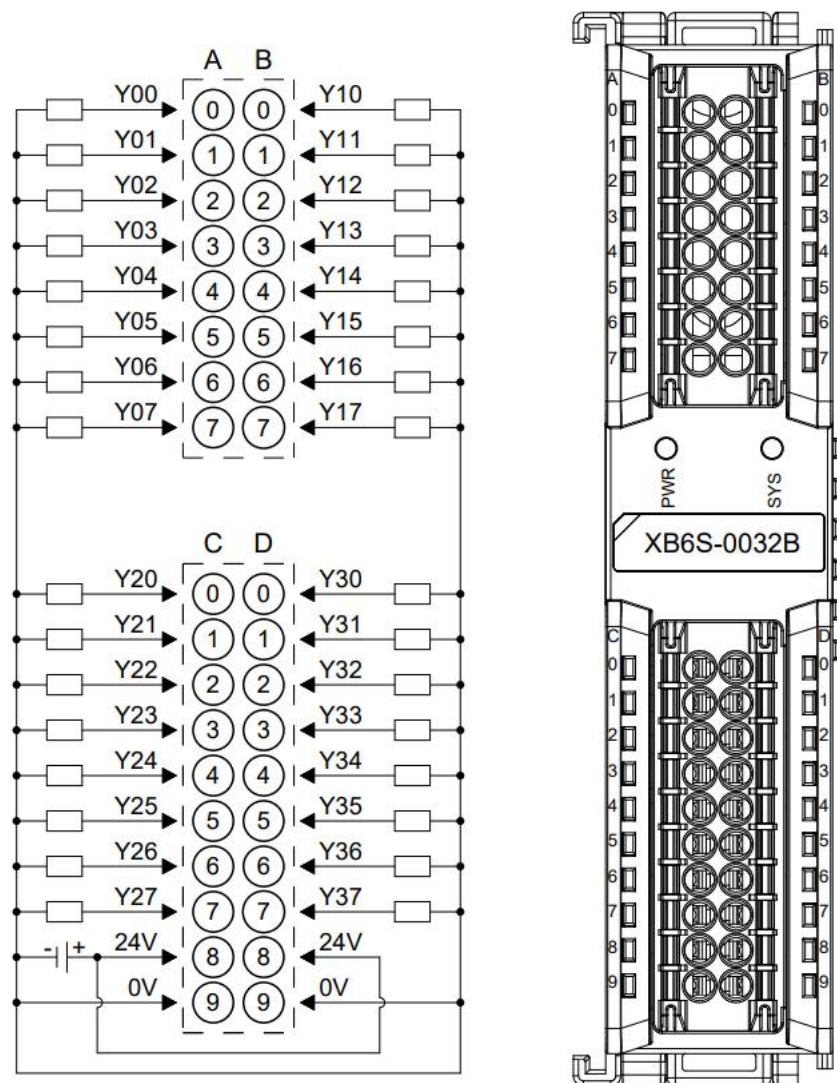
3.2.4.6 XB6S-0032A



*24V internal conduction; 0V internal conduction

*The load's common power supply must share the same power supply as the module.

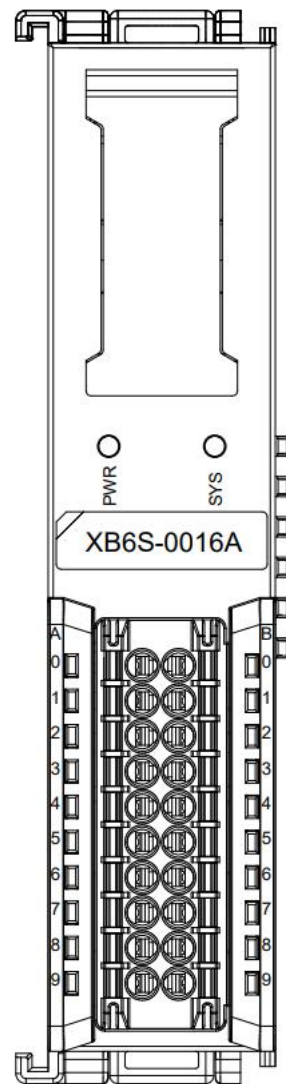
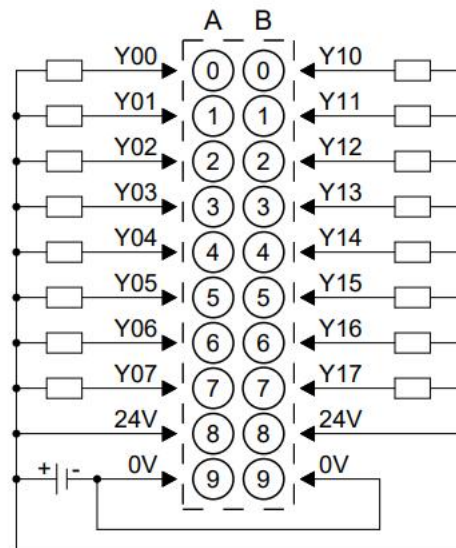
3.2.4.7 XB6S-0032B



*24V internal conduction; 0V internal conduction

*The load's common power supply must share the same power supply as the module.

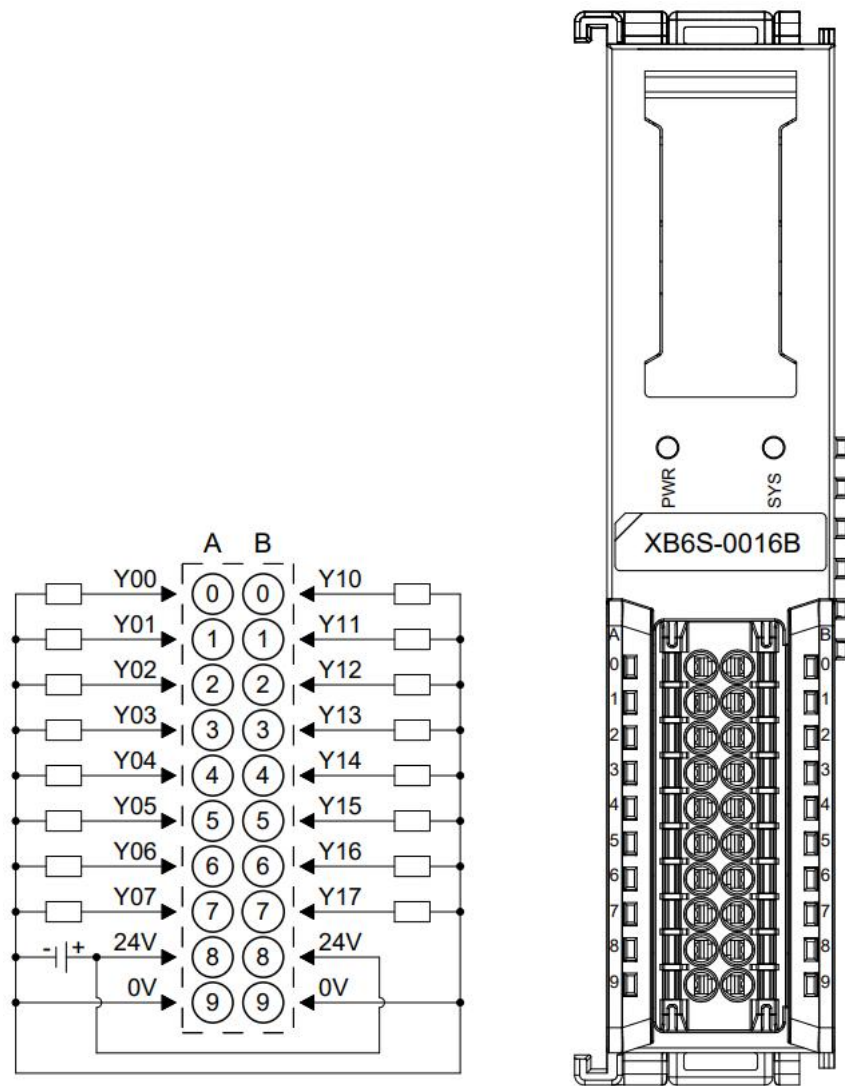
3.2.4.8 XB6S-0016A



*24V internal conduction; 0V internal conduction

*The load's common power supply must share the same power supply as the module.

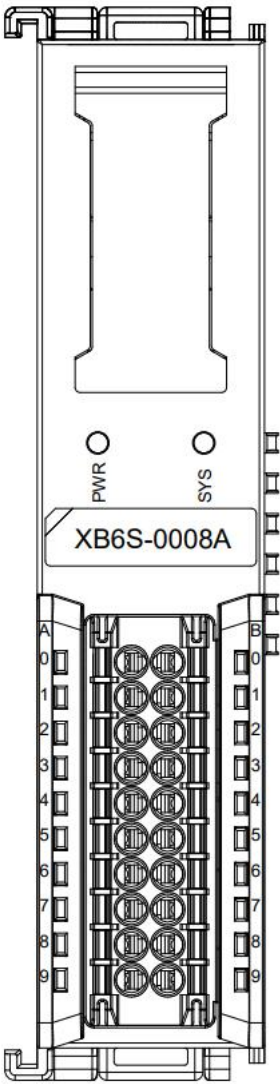
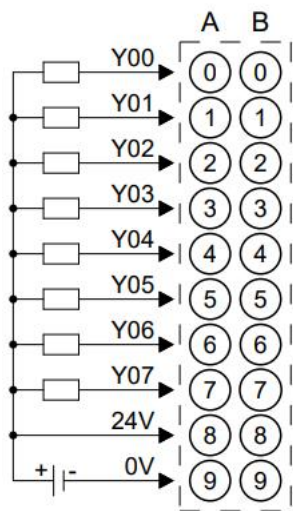
3.2.4.9 XB6S-0016B



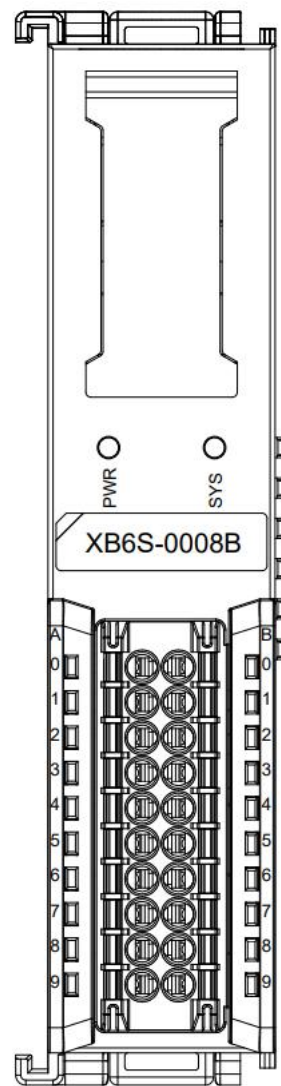
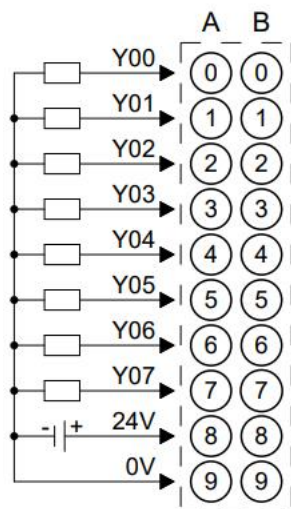
*24V internal conduction; 0V internal conduction

*The load's common power supply must share the same power supply as the module.

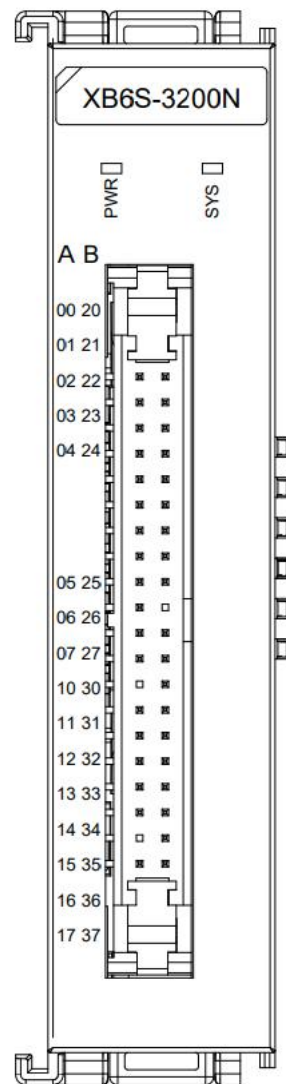
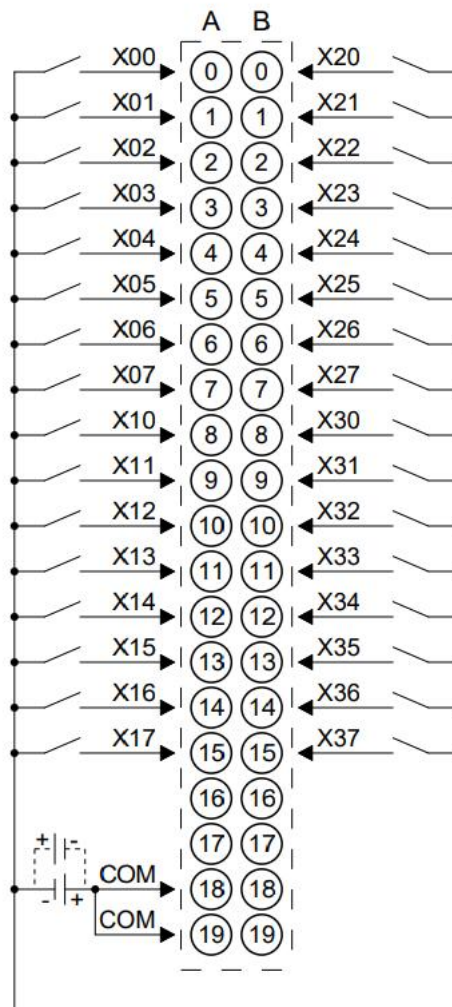
3.2.4.10 XB6S-0008A



3.2.4.11 XB6S-0008B

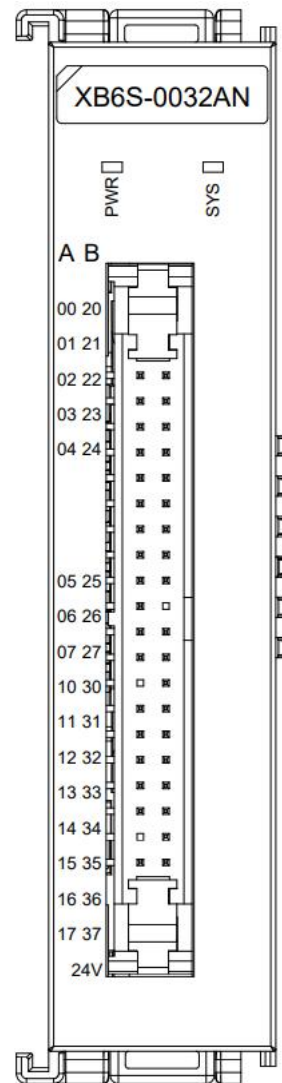
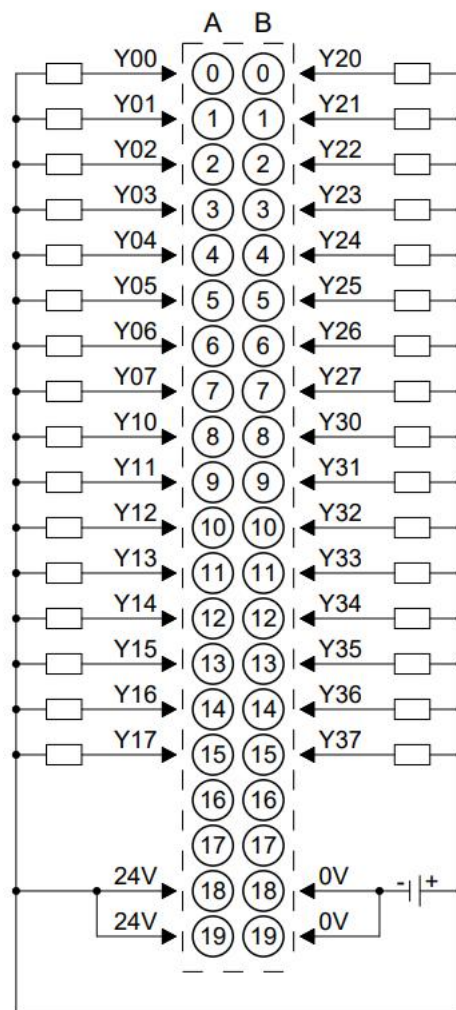


3.2.4.12 XB6S-3200N



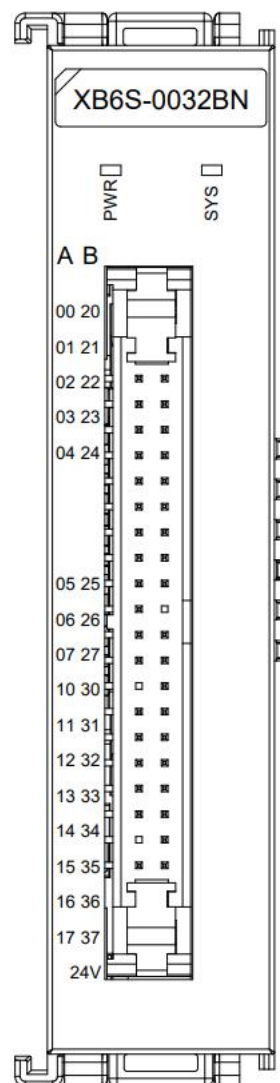
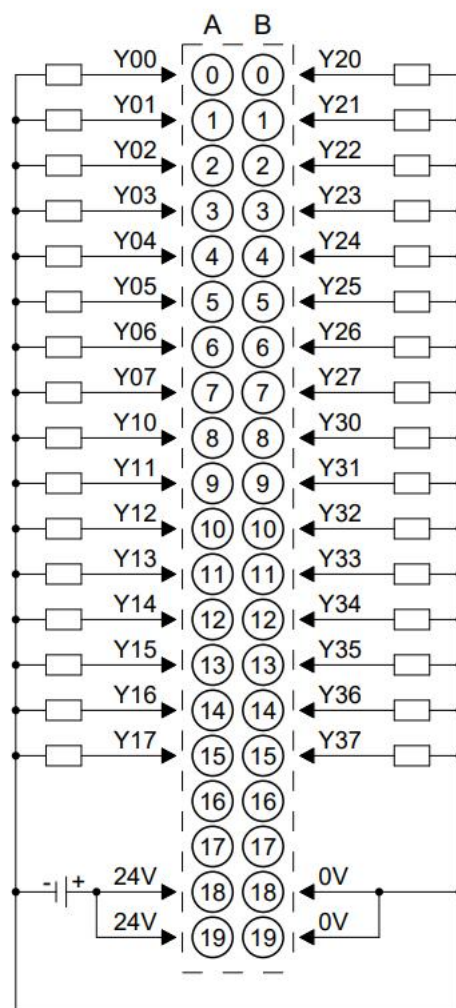
*COM internal conduction; NPN/PNP compatible

3.2.4.13 XB6S-0032AN



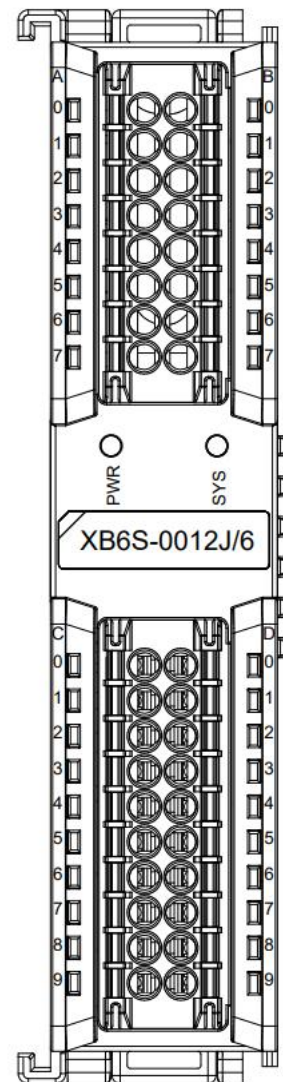
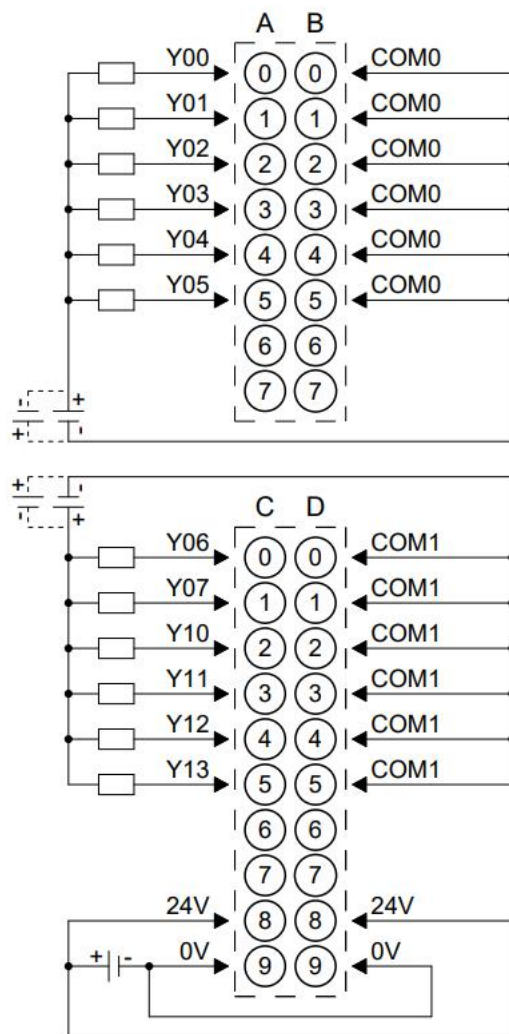
*24V internal conduction; 0V internal conduction

3.2.4.14 XB6S-0032BN



*24V internal conduction; 0V internal conduction

3.2.4.15 XB6S-0012J/6

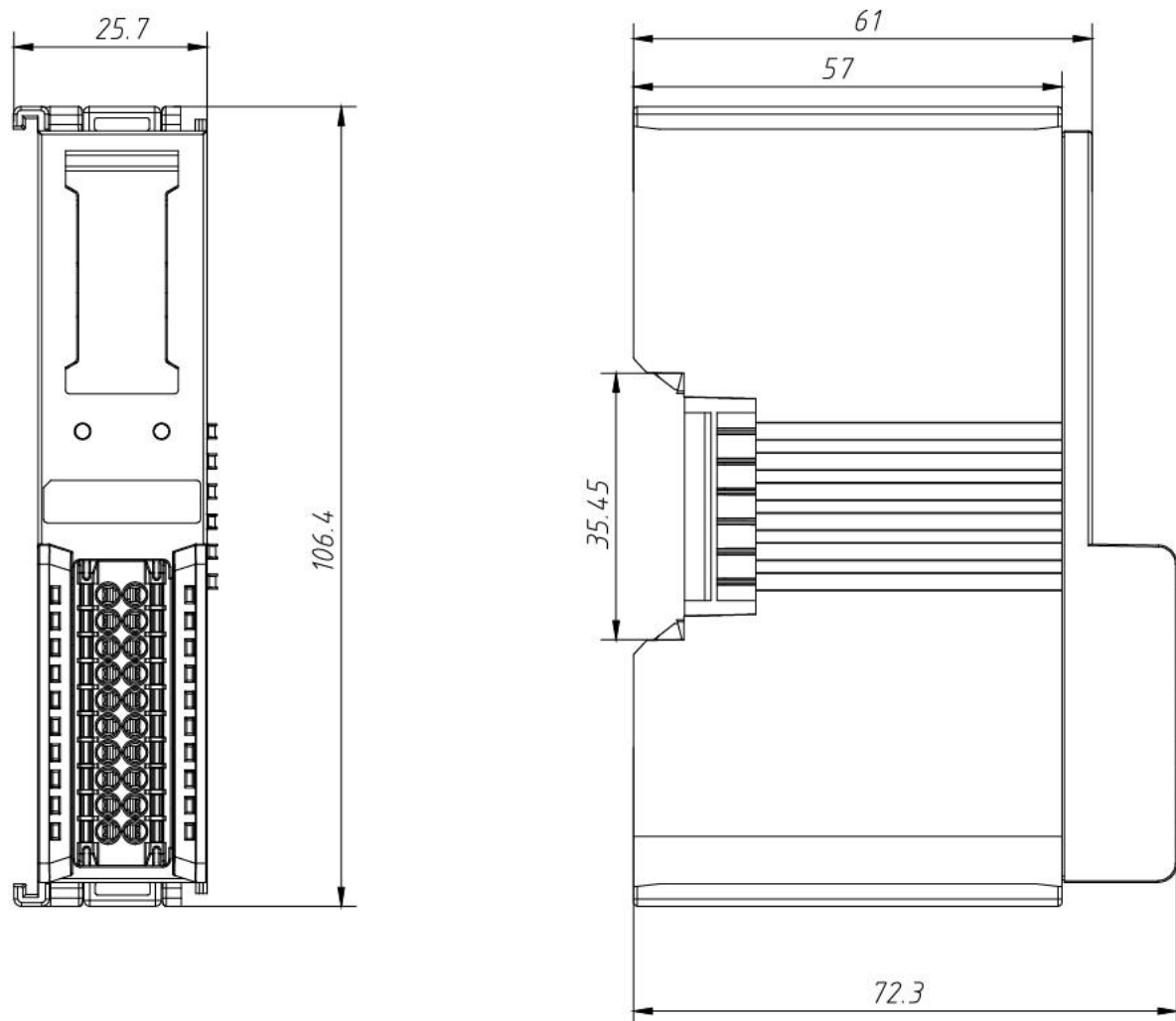


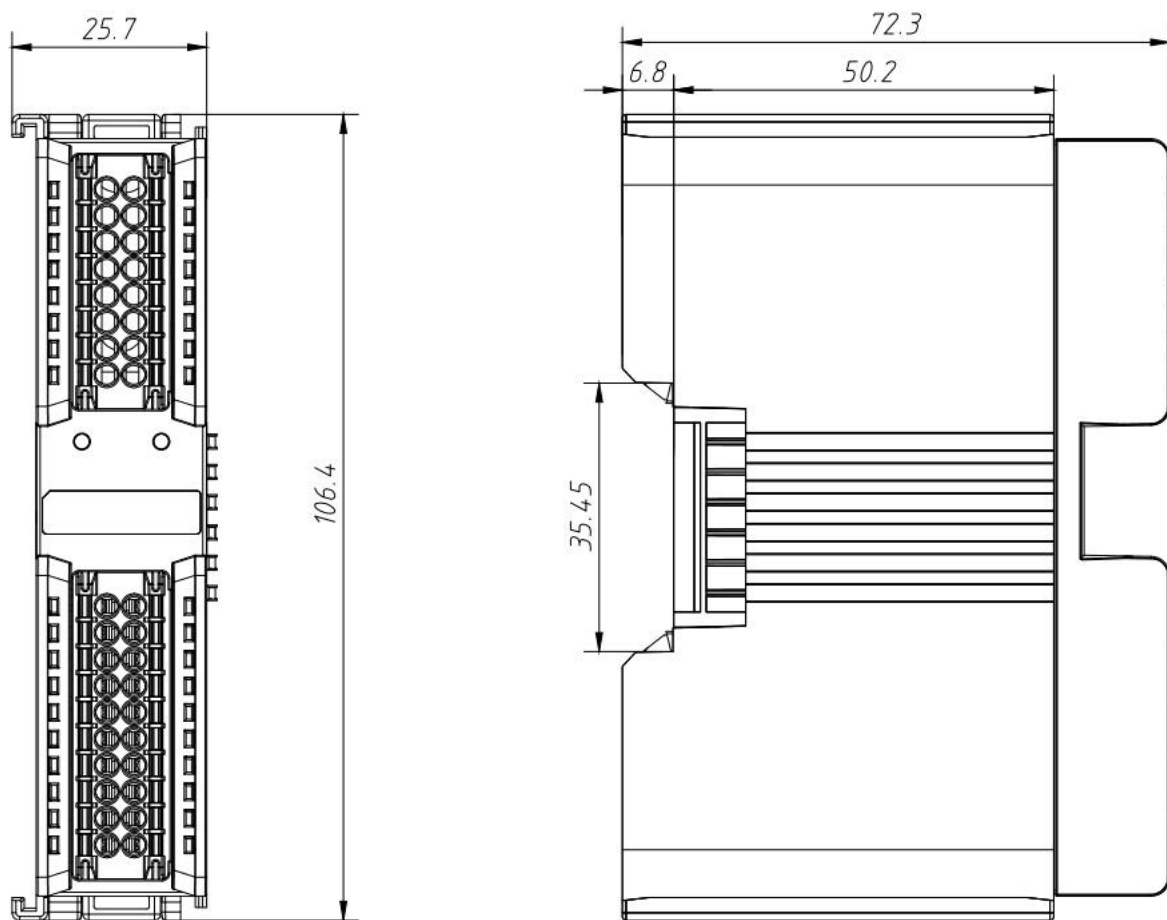
*24V internal conduction; 0V internal conduction

*COM0 is internally powered; COM1 is internally powered.

3.2.5 Outline dimension drawing

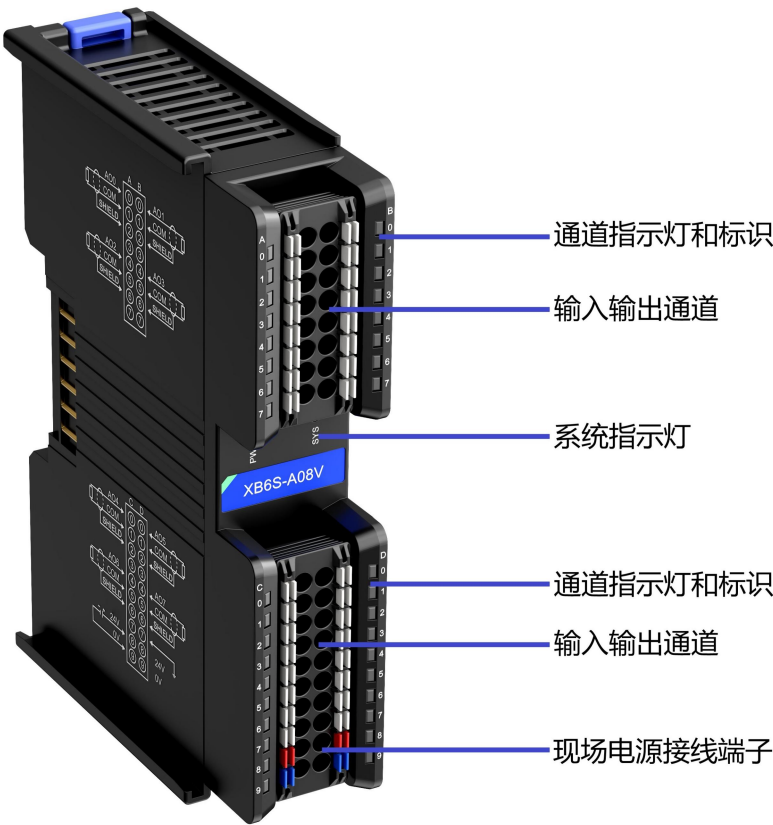
8/16 channel digital I/O module dimensions (unit: mm)



32-channel digital I/O module dimensions (unit: mm)

3.3 Analog I/O module

3.3.1 Panel structure



3.3.2 Indicator light function

Analog I/O module indicator light definitions				
ID	Name		State	Status Description
PWR	Power indicator light	green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
SYS	Operating status indicator	green	ON	The system is running normally.
			Flashing 1Hz	No business data interaction; waiting to establish business data interaction.
			10Hz Flashing	Firmware upgrade
			OFF	The system is not working.
0~7	Input channel indicator	green	ON	The module channel has a signal input.
			OFF	The module channel has no signal input or the signal input is abnormal.
0~7	Output channel indicator	green	ON	The module channel has signal output.
			OFF	The module channel has no signal output or the signal output is abnormal.

3.3.3 Technical parameters

3.3.3.1 Analog input module parameters

Analog input		
Product Model	XB6S-A80VD	XB6S-A80ID
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	$\leq 210\text{mA}$	
Input points	8	8
Input type	Voltage type	Current type
Input signal	Disable、-10V~+10V、 0V~10V、 -5V~+5V, 0V~5V, 1V~5V (range adjustable, default is -10V~+10V)	Disable, 4mA~20mA, 0mA~20mA, -20mA~+20mA (The measurement range is adjustable, with the default value being 0mA~20mA)
Input signal type	Differential signaling	
Channel reaction time	550us / ch 850us / 8ch	
Resolution	16 bits	
Sampling rate (full channel)	$\leq 1\text{ksps}$	
Accuracy	$\pm 0.1\%$ at 25°C, $\pm 0.3\%$ over the entire temperature range.	
Input filtering	Support	
Smooth series	1~200	
Input impedance (voltage type)	$\geq 1\text{M}\Omega$	-
Input impedance (current type)	-	$\leq 250\Omega$
Common mode voltage range	12VAC	-
Maximum allowable voltage for the channel (voltage type)	30V	-
Maximum allowable current for the channel (current type)	-	30mA
The system must not be affected	In the event of a short circuit due to a fault in the $\pm 15\text{V}$ power supply, the system's +5V power supply must not be affected.	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Input overload protection	Support clamp protection	Supports rate limiting protection
Input protection	$\pm 30\text{V}$	$\pm 30\text{mA}$
Isolation and withstand voltage	500VDC	
Rated current consumption	210mA	
Power consumption	1.05W	
Channel indicator lights	Green LED lights	

Analog input		
Product Model	XB6S-A80V	XB6S-A80I
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	$\leq 260\text{mA}$	$\leq 110\text{mA}$
Input points	8	8
Input type	Voltage type	Current type
Input signal	Disable、-10V~+10V、0V~10V、-5V~+5V、0V~5V、1V~5V (range adjustable, default is -10V~+10V)	Disable, 4mA~20mA, 0mA~20mA (The measurement range is adjustable, with the default value being 0mA~20mA)
Input signal type	single-ended signal	
Channel reaction time	560us / ch 770us / 8ch	
Resolution	16 bits	
Sampling rate (full channel)	$\leq 1\text{ksps}$	
Accuracy	$\pm 0.1\%$ at 25°C, $\pm 0.3\%$ over the entire temperature range.	
Input filtering	support	
Smooth series	1~200	
Input impedance (voltage type)	$\geq 400\text{k}\Omega$	-
Input impedance (current type)	-	$\leq 100\Omega$
Maximum allowable voltage for the channel (voltage type)	30V	-
Maximum allowable current for the channel (current type)	-	30mA
The system must not be affected	In the event of a short circuit due to a fault in the $\pm 15\text{V}$ power supply, the system's +5V power supply must not be affected.	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Input overload protection	Support clamp protection	Supports rate limiting protection
Input protection	$\pm 30\text{V}$	$\pm 30\text{mA}$
Isolation and withstand voltage	500VDC	
Rated current consumption	260mA	110mA
Power consumption	1.35W	0.55W
Channel indicator lights	Green LED lights	

Analog input		
Product Model	XB6S-A40VD	XB6S-A40ID
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	$\leq 150\text{mA}$	
Input points	4	4
Input type	Voltage type	Current type
Input signal	Disable, $-10\text{V}\sim+10\text{V}$, $0\text{V}\sim10\text{V}$, $-5\text{V}\sim+5\text{V}$, $0\text{V}\sim5\text{V}$, $1\text{V}\sim5\text{V}$ (range adjustable, default is $-10\text{V}\sim+10\text{V}$)	Disable, $4\text{mA}\sim20\text{mA}$, $0\text{mA}\sim20\text{mA}$, $-20\text{mA}\sim+20\text{mA}$ (The measurement range is adjustable, with the default value being $0\text{mA}\sim20\text{mA}$)
Input signal type	Differential signaling	
Channel reaction time	$300\mu\text{s}$ / ch $600\mu\text{s}$ / 4ch	
Resolution	16 bits	
Sampling rate (full channel)	$\leq 1\text{ksps}$	
Accuracy	$\pm 0.1\%$ at 25°C , $\pm 0.3\%$ over the entire temperature range.	
Input filtering	support	
Smooth series	1~200	
Input impedance (voltage type)	$\geq 1\text{M}\Omega$	-
Input impedance (current type)	-	$\leq 250\Omega$
Common mode voltage range	12VAC	-
Maximum allowable voltage for the channel (voltage type)	30V	-
Maximum allowable current for the channel (current type)	-	30mA
The system must not be affected	In the event of a short circuit due to a fault in the $\pm 15\text{V}$ power supply, the system's $+5\text{V}$ power supply must not be affected.	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Input overload protection	Support clamp protection	Supports rate limiting protection
Input protection	$\pm 30\text{V}$	$\pm 30\text{mA}$
Isolation and withstand voltage	500VDC	
Rated current consumption	150mA	
Power consumption	0.75W	
Channel indicator lights	Green LED lights	

Analog input		
Product Model	XB6S-A40V	XB6S-A40I
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	$\leq 180\text{mA}$	$\leq 100\text{mA}$
Enter points	4	4
Input type	Voltage type	Current type
Input signal	Disable、-10V~+10V、0V~10V、-5V~+5V、0V~5V、1V~5V (range adjustable, default is -10V~+10V)	Disable, 4mA~20mA, 0mA~20mA (The measurement range is adjustable, with the default value being 0mA~20mA)
Input signal type	single-ended signal	
Channel reaction time	400us / ch 700us / 4ch	300us / ch 600us / 4ch
Resolution	16 bits	
Sampling rate (full channel)	$\leq 1\text{ksps}$	
Accuracy	$\pm 0.1\%$ at 25°C, $\pm 0.3\%$ over the entire temperature range.	
Input filtering	support	
Smooth series	1~200	
Input impedance (voltage type)	$\geq 400\text{k}\Omega$	-
Input impedance (current type)	-	$\leq 100\Omega$
Maximum allowable voltage for the channel (voltage type)	30V	-
Maximum allowable current for the channel (current type)	-	30mA
The system must not be affected	In the event of a short circuit due to a fault in the $\pm 15\text{V}$ power supply, the system's +5V power supply must not be affected.	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Input overload protection	Support clamp protection	Supports rate limiting protection
Input protection	$\pm 30\text{V}$	$\pm 30\text{mA}$
Isolation and withstand voltage	500VDC	
Rated current consumption	180mA	100mA
Power consumption	0.95W	0.5W
Channel indicator lights	Green LED lights	

3.3.3.2 Analog output module parameters

Analog output		
Product Model	XB6S-A08V	XB6S-A08I
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	$\leq 100\text{mA}$	
Field-side input voltage range	24VDC (20.4V~28.8V)	
Output points	8	8
Output type	Voltage type	Current type
Output signal	Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V (range adjustable, default is -10V~+10V)	Disable, 4mA~20mA, 0mA~20mA (The measurement range is adjustable, with the default value being 0mA~20mA)
Channel reaction time	400us / ch 400us / 8ch	
Resolution	16 bits	
Accuracy	$\pm 0.1\%$ at 25°C, $\pm 0.3\%$ over the entire temperature range.	
Load impedance (voltage type)	$\geq 2\text{k}\Omega$ (1k Ω accuracy: $\pm 3\%$ at 25°C, $\pm 5\%$ at full temperature)	-
Load impedance (current type)	-	$\leq 500\Omega$
The system must not be affected	In the event of a short circuit due to a fault in the $\pm 15\text{V}$ power supply, the system's +5V power supply must not be affected.	
Output protection	Overload protection, open circuit protection, and short circuit protection (all with automatic recovery mechanisms).	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Isolation and withstand voltage	500VDC	
Rated current consumption	100mA	
Power consumption	0.5W	
Clearing and retaining optional functions in non-OP state	Support	
Channel indicator lights	Green LED lights	

Analog output		
Product Model	XB6S-A04V	XB6S-A04I
Bus input power supply rated voltage	5VDC (4.5V~5.5V)	
Bus input power supply rated current	≤80mA	
Field-side input voltage range	24VDC (20.4V~28.8V)	
Output points	4	4
Output type	Voltage type	Current type
Output signal	Disable, -10V~+10V, 0V~10V, -5V~+5V, 0V~5V, 1V~5V (range adjustable, default is -10V~+10V)	Disable, 4mA~20mA, 0mA~20mA (The measurement range is adjustable, with the default value being 0mA~20mA)
Channel reaction time	200us / ch 200us / 4ch	
Resolution	16 bits	
Accuracy	±0.1% at 25°C, ±0.3% over the entire temperature range.	
Load impedance (voltage type)	≥2kΩ (1kΩ accuracy: ±3‰ at 25°C, ±5‰ at full temperature)	-
Load impedance (current type)	-	≤500Ω
The system must not be affected	In the event of a short circuit due to a fault in the ±15V power supply, the system's +5V power supply must not be affected.	
Output protection	Overload protection, open circuit protection, and short circuit protection (all with automatic recovery mechanisms).	
Potential isolation	There is no isolation between channels, isolation between channels and the backplane bus, and isolation between channels and the power supply voltage.	
Isolation and withstand voltage	500VDC	
Rated current consumption	80mA	
Power consumption	0.4W	
Clearing and retaining optional functions in non-OP state	Support	
Channel indicator lights	Green LED lights	

3.3.3.3 General technical parameters

General technical parameters		
Specifications and dimensions	106.4 × 25.7 × 72.3mm	

Weight	8-channel AIO: 125g
	4-channel AIO: 105g
Operating temperature	-20°C~+60°C
Storage temperature	-40°C~+80°C
relative humidity	95%, no condensation
Altitude	≤2000m
Pollution level	Level 2
Protection level	IP20
Safety certification	UL certification, CE certification
Green certification	RoHS certification, REACH certification

3.3.4 Analog voltage parameters

3.3.4.1 Voltage Input Range Selection Table

Voltage input range selection and code value range					
Range selection	Measuring range	Code value range	Voltage input calculation formula	Voltage output calculation formula	Code value mapping table
0	Disable indicates that the channel is not enabled.				
1 (default)	-10V~+10V	-32768~32767	$D=(65535/20)*U$	$U=(D*20)/65535$	See 3.3.4.3 Voltage Input Code Value Table
2	0V~10V	0~32767	$D=(32767/10)*U$	$U=(D*10)/32767$	
3	-10V~+10V	-27648~27648	$D=(55296/20)*U$	$U=(D*20)/55296$	
4	0V~10V	0~27648	$D=(27648/10)*U$	$U=(D*10)/27648$	
5	-5V~+5V	-27648~27648	$D=(55296/10)*U$	$U=(D*10)/55296$	
6	0V~5V	0~27648	$D=(27648/5)*U$	$U=(D*5)/27648$	
7	1V~5V	0~27648	$D=(27648/4)*U-6912$	$U=(D+6912)*4/27648$	

Note: D represents code value, U represents voltage, and the default range of the analog voltage input module is 1: -10V~+10V (-32768~32767).

3.3.4.2 Voltage Output Range Selection Table

Voltage output range selection and code value range					
Range selection	Measuring range	Code value range	Voltage input calculation formula	Voltage output calculation formula	Code value mapping table
0	Disable indicates that the channel is not enabled.				
1 (default)	-10V~+10V	-32768~32767	$D=(65535/20)*U$	$U=(D*20)/65535$	See 3.3.4.4 Voltage Output Code Value Table
2	0V~10V	0~32767	$D=(32767/10)*U$	$U=(D*10)/32767$	
3	-10V~+10V	-27648~27648	$D=(55296/20)*U$	$U=(D*20)/55296$	
4	0V~10V	0~27648	$D=(27648/10)*U$	$U=(D*10)/27648$	
5	-5V~+5V	-27648~27648	$D=(55296/10)*U$	$U=(D*10)/55296$	
6	0V~5V	0~27648	$D=(27648/5)*U$	$U=(D*5)/27648$	
7	1V~5V	0~27648	$D=(27648/4)*U-6912$	$U=(D+6912)*4/27648$	

Note: D represents the code value, U represents the voltage, and the default range of the analog voltage output module is 1: -10V~+10V (-32768~32767).

3.3.4.3 Voltage Input Code Value Table

range Voltage	-10V~+10V	0V~10V	-10V~+10V	0V~10V
	-32768~32767	0~32767	-27648~27648	0~27648
	code value	code value	code value	code value
-10.13	-	-	-27980	-
-10	-32768	-	-27648	-
-9	-29491	-	-24883	-
-8	-26214	-	-22118	-
-7	-22937	-	-19354	-
-6	-19661	-	-16589	-
-5	-16384	-	-13824	-
-4	-13107	-	-11059	-
-3	-9830	-	-8294	-
-2	-6554	-	-5530	-
-1	-3277	-	-2765	-
-0.13	-426	-384	-359	-332
-0.06	-197	-197	-166	-156
0	0	0	0	0
1	3277	3277	2765	2765
2	6554	6554	5530	5530
3	9830	9830	8294	8294
4	13107	13107	11059	11059
5	16384	16384	13824	13824
6	19661	19661	16589	16589
7	22937	22937	19354	19354
8	26214	26214	22118	22118
9	29491	29491	24883	24883
10	32767	32767	27648	27648
10.12	-	-	27980	27980
Code value formula	Code value = $(65535/20) \times \text{Voltage}$	Code value = $(32767/10) \times \text{Voltage}$	Code value = $(55296/20) \times \text{Voltage}$	Code value = $(27648/10) \times \text{Voltage}$
Voltage formula	Voltage = $(\text{Code value} \times 20) / 65535$	Voltage = $(\text{Code value} \times 10) / 32767$	Voltage = $(\text{Code value} \times 20) / 55296$	Voltage = $(\text{Code value} \times 10) / 27648$

Note: ① When the voltage input module range is selected as -10V~+10V (-32768~32767), overflow function is supported. That is, when the channel input voltage is greater than 10V, the maximum code value of 32767 will be displayed; when the input voltage is less than -10V, the minimum code value will be displayed.-32768.

②When the voltage input module's range is selected from 0V to 10V (0~32767), it supports underflow, overflow, and underflow alarm functions. Overflow occurs when the channel input range exceeds the range; within -0.13V to +10V, the calculated code value is displayed. Overflow occurs when the channel input voltage is greater than 10V; the maximum code value of 32767 is displayed. When the

input voltage is less than -0.13V, the minimum overflow code value is displayed.-384,Simultaneously issue an alarm..

③ Voltage input module range selection: -10V to +10V (-27648~27648It supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the range, and the calculated code value is displayed within the range of -10.13V to +10.12V. Overflow occurs when the channel input voltage is greater than 10.12V, and the maximum overshoot code value of 27980 is displayed, along with an alarm; when the input voltage is less than -10.13V, the minimum overshoot code value is displayed.-27980, alarm triggered simultaneously..

④Voltage input module range selection 0V~10V (0~27648It supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the measurement range, and the calculated code value is displayed within the range of -0.13V to +10.12V. Overflow occurs when the channel input voltage is greater than 10.12V, and the maximum overshoot code value of 27980 is displayed, along with an alarm; when the input voltage is less than -0.13V, the minimum overshoot code value is displayed.-332, alarm triggered simultaneously.

range Voltage	-5V~+5V	0V~5V	1V~5V
	-27648~27648	0~27648	0~27648
	code value	code value	code value
-5.07	-27980	-	-
-5	-27648	-	-
-4	-22118	-	-
-3	-16588	-	-
-2	-11060	-	-
-1	-5530	-	-
-0.07	-332	-332	-
0	0	0	-
0.94	5198	5198	-345
1	5530	5530	0
2	11060	11060	6912
3	16588	16588	13824
4	22118	22118	20736
5	27648	27648	27648
5.06	27980	27980	27933
Code value formula	code value=(55296/10)*Voltage e	code value=(27648/5)*Voltage	code value=(27648/4)*Voltage- 6912
Voltage formula	Voltage=(code value*10)/55296	Voltage=(code value*5)/27648	Voltage=(code value+6912)*4/27648

Note:①When the voltage input module's range is selected as -5V to +5V (-27648 to 27648), it supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the range; within -5.07V to +5.06V, a normal calculated code value is displayed. Overflow occurs when the channel input voltage is greater than 5.06V; the maximum overshoot code value of 27980 is displayed, and an alarm is triggered. When the input voltage is less than -5.07V, the minimum overshoot code value of -27980 is displayed, and an alarm is triggered.

② Voltage input module range selection: 0V~5V (0~27648It supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the measurement range, and the calculated code value is displayed within the range of -0.07V to +5.06V. Overflow occurs when the channel input voltage is greater than 5.06V, and the maximum overshoot code value of 27980 is displayed, along with an alarm; when the input voltage is less than -0.07V, the minimum overshoot code value is displayed.-332, alarm triggered simultaneously.

③ Voltage input module range selection: 1V~5V (0~27648It supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the measurement range; within the range of 0.94V to 5.06V, the normal calculated code value is displayed. Overflow occurs when the channel input voltage is greater than 5.06V; the maximum overshoot code value of 27933 is displayed, and an alarm is triggered. When the input voltage is less than 0.94V, the minimum overshoot code value is displayed.-345, alarm triggered simultaneously.

3.3.4.4 Voltage output code value table

Range Voltage	-10V~+10V	0V~10V	-10V~+10V	0V~10V
	-32768~32767	0~32767	-27648~27648	0~27648
	code value	code value	code value	code value
-10	-32768	-	-27648	-
-9	-29491	-	-24883	-
-8	-26214	-	-22118	-
-7	-22937	-	-19354	-
-6	-19661	-	-16589	-
-5	-16384	-	-13824	-
-4	-13107	-	-11059	-
-3	-9830	-	-8294	-
-2	-6554	-	-5530	-
-1	-3277	-	-2765	-
0	0	0	0	0
1	3277	3277	2765	2765
2	6554	6554	5530	5530
3	9830	9830	8294	8294
4	13107	13107	11059	11059
5	16384	16384	13824	13824
6	19661	19661	16589	16589
7	22937	22937	19354	19354
8	26214	26214	22118	22118
9	29491	29491	24883	24883
10	32767	32767	27648	27648
Code value formula	Code value = $(65535/20) \times \text{Voltage}$	Code value = $(32767/10) \times \text{Voltage}$	Code value = $(55296/20) \times \text{Voltage}$	Code value = $(27648/10) \times \text{Voltage}$
Voltage formula	Voltage = (Code value * 20) / 65535	Voltage = (Code value * 10) / 32767	Voltage = (Code value * 20) / 55296	Voltage = (Code value * 10) / 27648

Note: ①The voltage output module supports overflow and overflow functions. When the voltage output module range is selected as -10V~+10V or 0V~10V, and the code value is set to be greater than the maximum code value corresponding to the range, the channel outputs 10V voltage.

When the voltage output module range is selected as -10V to +10V and the code value is set to be less than the minimum code value corresponding to the range, all channels output -10V voltage.

When the voltage output module range is selected as 0V~10V and the code value is set to be less than the minimum code value corresponding to the range, the channel outputs 0V voltage.

range Voltage	-5V~+5V	0V~5V	1V~5V
	-27648~27648	0~27648	0~27648
	code value	code value	code value
-5	-27648	-	-
-4	-22118	-	-
-3	-16588	-	-
-2	-11060	-	-
-1	-5530	-	-
0	0	0	-
1	5530	5530	0
2	11060	11060	6912
3	16588	16588	13824
4	22118	22118	20736
5	27648	27648	27648
Code value formula	code value=(55296/10)*Voltage e	code value=(27648/5)*Voltage	code value=(27648/4)*Voltage- 6912
Voltage formula	Voltage=(code value*10)/55296	Voltage=(code value*5)/27648	Voltage=(code value+6912)*4/27648

Note:① The voltage output module supports overflow and overflow functions. When the voltage output module range is selected as -5V~+5V/0V~5V/1V~5V and the code value is set to be greater than the maximum code value corresponding to the range, the channel outputs 5V voltage.

When the voltage output module range is selected as -5V to +5V and the code value is set to be less than the minimum code value corresponding to the range, all channels output -5V voltage.

When the voltage output module range is selected as 0V~5V and the code value is set to be less than the minimum code value corresponding to the range, all channels output 0V voltage.

When the voltage output module range is selected as 1V~5V and the code value is set to be less than the minimum code value corresponding to the range, the channel outputs 1V voltage.

3.3.5 Analog current parameters

3.3.5.1 Current input range selection table

Current input range selection and code value range					
Range selection	Measuring range	Code value range	Current input calculation formula	Current output calculation formula	Code value mapping table
0	Disable indicates that the channel is not enabled.				
1	4mA~20mA	0~65535	$D = (65535/16) * I - 16384$	$I = (D + 16384) * 16 / 65535$	See 3.3.5.3 Current Input Code Value Table
2 (default)	0mA~20mA	0~65535	$D = (65535/20) * I$	$I = (D * 20) / 65535$	
3	4mA~20mA	0~27648	$D = (27648/16) * I - 6912$	$I = ((D + 6912) * 16) / 27648$	
4	0mA~20mA	0~27648	$D = (27648/20) * I$	$I = (D * 20) / 27648$	
5	-20mA~+20mA	0~65535	$D = (65535/40) * (I + 20)$	$I = (D * 40) / 65535 - 20$	

Note: D represents code value, I represents current, and the default range of the analog current input module is 2: 0mA~20mA (0~65535).

Range 5: -20mA~+20mA (0~65535) is unique to the current input differential signal module.

3.3.5.2 Current output range selection table

Current output range selection and code value range					
Range selection	Measuring range	Code value range	Current input calculation formula	Current output calculation formula	Code value mapping table
0	Disable indicates that the channel is not enabled.				
1	4mA~20mA	0~65535	$D = (65535/16) * I - 16384$	$I = (D + 16384) * 16 / 65535$	See 3.3.5.4 Current Output Code Value Table
2 (default)	0mA~20mA	0~65535	$D = (65535/20) * I$	$I = (D * 20) / 65535$	
3	4mA~20mA	0~27648	$D = (27648/16) * I - 6912$	$I = ((D + 6912) * 16) / 27648$	
4	0mA~20mA	0~27648	$D = (27648/20) * I$	$I = (D * 20) / 27648$	

Note: D represents code value, I represents current, and the default range of the analog current output module is 2: 0mA~20mA (0~65535).

3.3.5.3 Current Input Code Value Table

range Current	4mA~20mA	0mA~20mA	4mA~20mA	0mA~20mA	-20mA~+20mA
	0~65535	0~65535	0~27648	0~27648	0~65535
	code value	code value	code value	code value	code value
-20	-	-	-	-	0
-15	-	-	-	-	8192
-10	-	-	-	-	16384
-9	-	-	-	-	18022
-8	-	-	-	-	19661
-7	-	-	-	-	21299
-6	-	-	-	-	22937
-5	-	-	-	-	24576
-4	-	-	-	-	26214
-3	-	-	-	-	27852
-2	-	-	-	-	29491
-1	-	-	-	-	31129
0	-	0	-	0	32768
1	-	3277	-	1382	34406
2	-	6554	-	2765	36044
3	-	9830	-	4147	37683
4	0	13107	0	5530	39321
5	4096	16384	1728	6912	40959
6	8192	19661	3456	8294	42598
7	12288	22937	5184	9677	44236
8	16384	26214	6912	11059	45875
9	20479	29491	8640	12442	47513
10	24575	32768	10368	13824	49151
11	28671	36044	12096	15206	50790
12	32767	39321	13824	16589	52428
13	36863	42598	15552	17971	54066
14	40959	45875	17280	19354	55705
15	45055	49151	19008	20736	57343
16	49151	52428	20736	22118	58982
17	53247	55705	22464	23501	60620
18	57343	58982	24192	24883	62258
19	61439	62258	25920	26266	63897
20	65535	65535	27648	27648	65535
20.19	-	-	28034	27917	-
20.24	-	-	28085	27986	-
Code value formula	Code value = $65535/16 * \text{current} - 16384$	Code value = $(65535/20) * \text{current}$	Code value = $(27648/16) * \text{current} - 6912$	Code value = $(27648/20) * \text{current}$	Code value = $(65535/40) * (\text{current} + 20)$

Note: Range 5: -20mA~+20mA (0~65535) is unique to the current input differential signal module.

① When the current input module range is selected from 4mA to 20mA (0 to 65535), it supports overflow and overflow alarm functions. That is, when the channel input current is greater than 20.03mA, the maximum code value 65535 will be displayed and an alarm will be triggered. When the input channel input current is less than 4mA, the minimum code value will be displayed.0.

②When the current input module's range is selected from 0mA to 20mA (0 to 65535), it supports overflow and overflow alarm functions. That is, when the channel input current is greater than 20.03mA, the maximum code value 65535 will be displayed, and an alarm will be triggered simultaneously.When the input current is less than 0mA, the minimum code value 0 is displayed.

③When the current input module's range is selected from 4mA to 20mA (0 to 27648), it supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the range; within the range of 4mA to 20.24mA, the normal calculated code value is displayed. Overflow occurs when the channel input current exceeds 20.24mA, and the maximum overshoot code value is displayed.28085Simultaneously, an alarm is triggered. Underflow occurs when the input current to the input channel is less than 4mA, and the minimum overshoot code value of 0 is displayed.

④When the current input module's range is selected from 0mA to 20mA (0~27648), it supports overshoot, overflow, and overflow alarm functions. Overshoot occurs when the channel input range exceeds the range; within the range of 0mA to 20.24mA, the normal calculated code value is displayed. Overflow occurs when the channel input current exceeds 20.24mA, and the maximum overshoot code value is displayed.27986Simultaneously, an alarm is triggered. Underflow occurs when the input current to the input channel is less than 0mA, and the minimum overshoot code value of 0 is displayed.

⑤When the current input module's range is selected from -20mA to +20mA (0 to 65535), it supports overflow and overflow alarm functions. That is, when the channel input current is greater than 20mA, the maximum code value 65535 will be displayed, and an alarm will be triggered simultaneously.Input channel input less than -20mAWhen the current is applied, the minimum code value of 0 is always displayed.

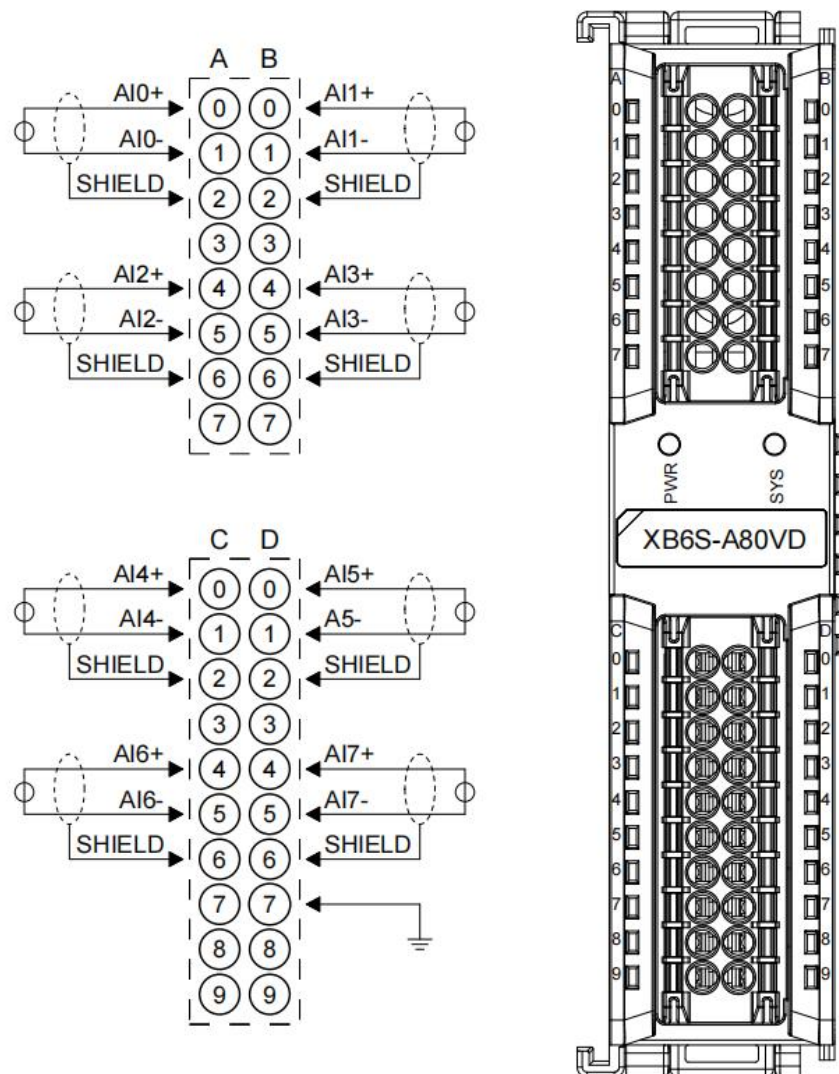
3.3.5.4 Current output code value table

Range Current	4mA~20mA	0mA~20mA	4mA~20mA	0mA~20mA
	0~65535	0~65535	0~27648	0~27648
	code value	code value	code value	code value
0	-	0	-	0
1	-	3277	-	1382
2	-	6554	-	2765
3	-	9830	-	4147
4	0	13107	0	5530
5	4096	16384	1728	6912
6	8192	19661	3456	8294
7	12288	22937	5184	9677
8	16384	26214	6912	11059
9	20479	29491	8640	12442
10	24575	32768	10368	13824
11	28671	36044	12096	15206
12	32767	39321	13824	16589
13	36863	42598	15552	17971
14	40959	45875	17280	19354
15	45055	49151	19008	20736
16	49151	52428	20736	22118
17	53247	55705	22464	23501
18	57343	58982	24192	24883
19	61439	62258	25920	26266
20	65535	65535	27648	27648
22.81	-	-	32511	31538
23.52	-	-	-	32511
Code value formula	Code value = $65535/16 * \text{current} - 16384$	Code value = $(65535/20) * \text{current}$	Code value = $(27648/16) * \text{current} - 6912$	Code value = $(27648/20) * \text{current}$

Note: ① When the current output module range is selected as 4mA~20mA (0~27648) or 0mA~20mA (0~27648), it supports overflow, overshoot, and overflow alarm functions. That is, when the current output module range is selected as 4mA~20mA (0~27648) and the code value is set to greater than...32511At the same time, all channels output 22.81mA current and trigger an alarm. The current output module range is 0mA~20mA (0~27648), and the code value is set to be greater than...32511At that time, all channels output 23.52mA current and simultaneously trigger an alarm.

3.3.6 Wiring diagram

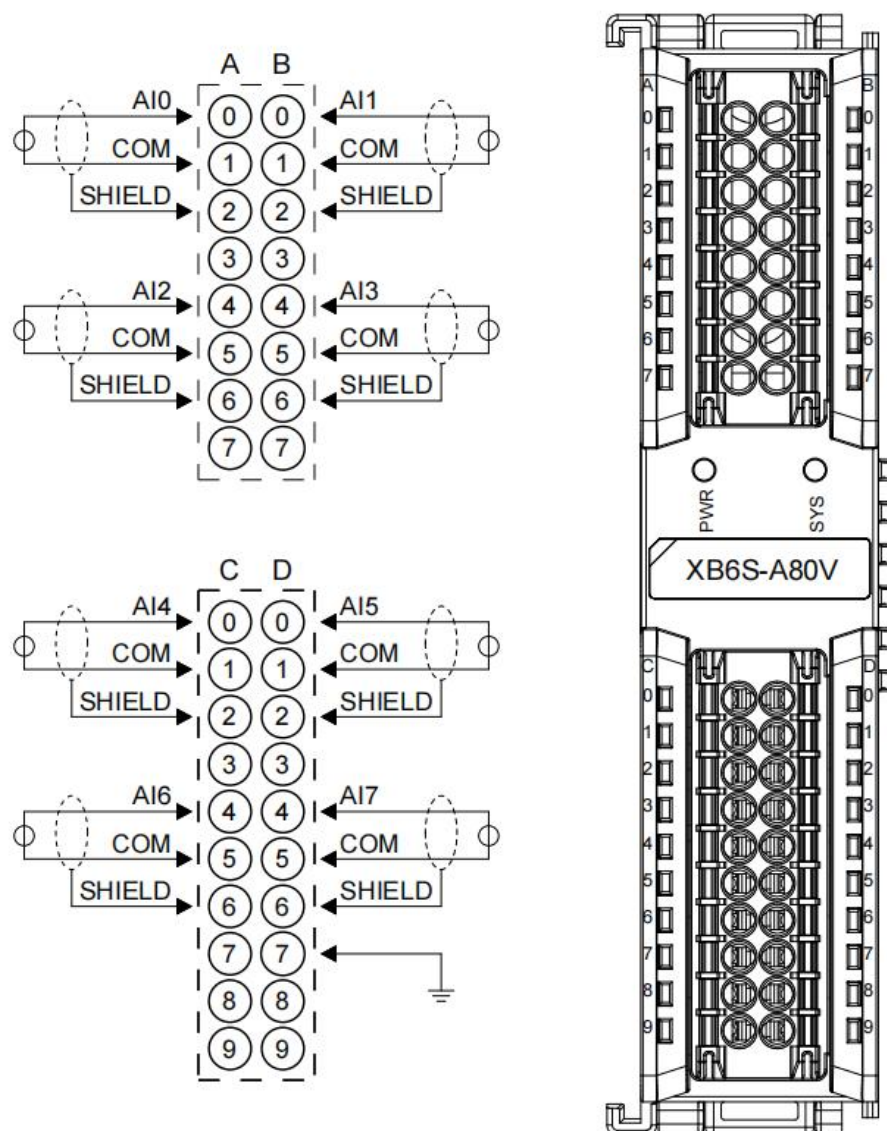
3.3.6.1 XB6S-A80VD



*All SHIELD internal conduction

*It is recommended to use shielded twisted-pair cable, connect the shield to the SHIELD port, and ground it reliably.

3.3.6.2 XB6S-A80V

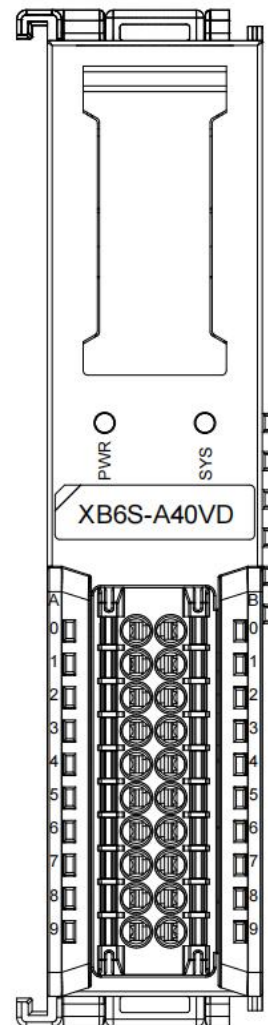
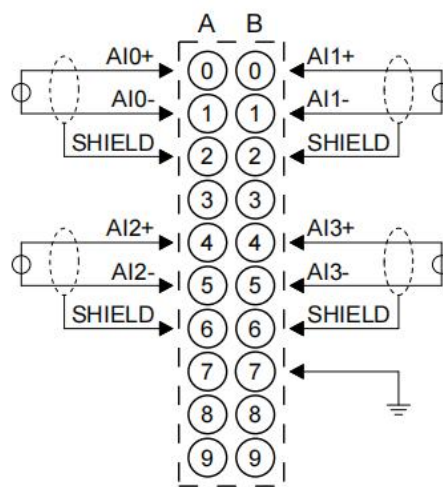


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

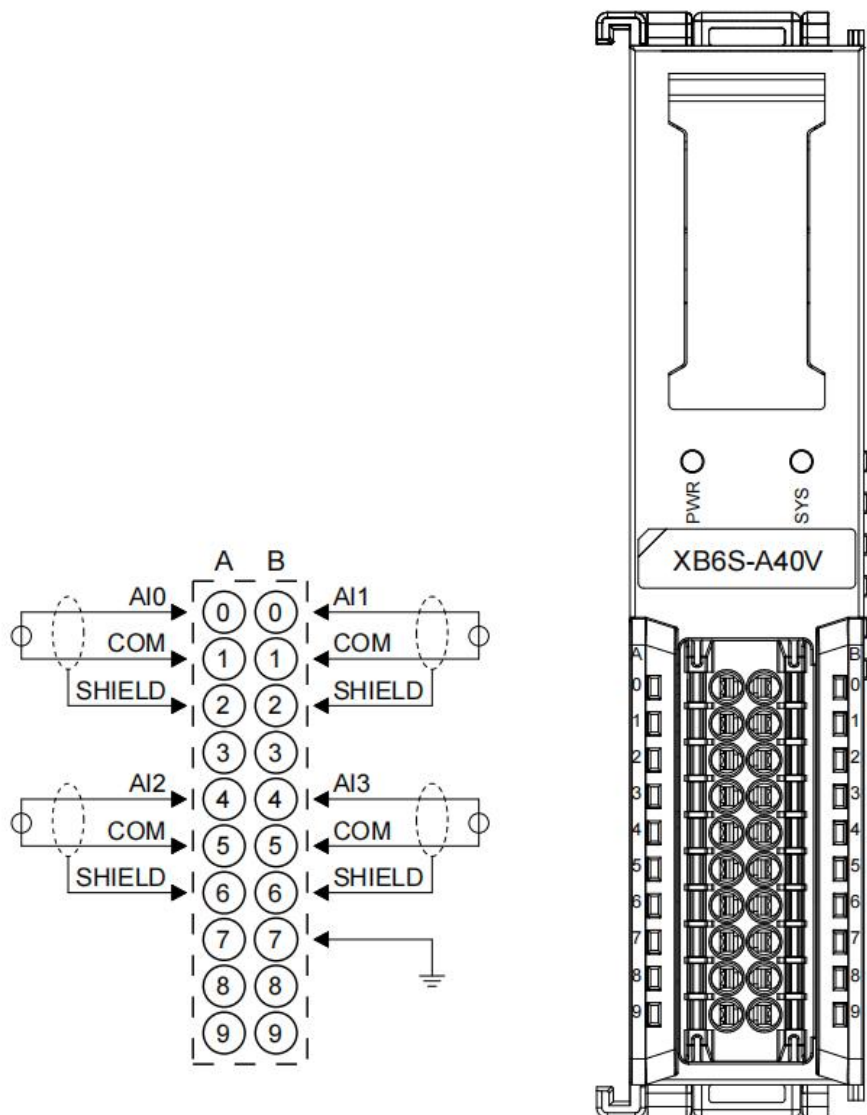
3.3.6.3 XB6S-A40VD



*All SHIELD internal conduction

*It is recommended to use shielded twisted-pair cable, connect the shield to the SHIELD port, and ground it reliably.

3.3.6.4 XB6S-A40V

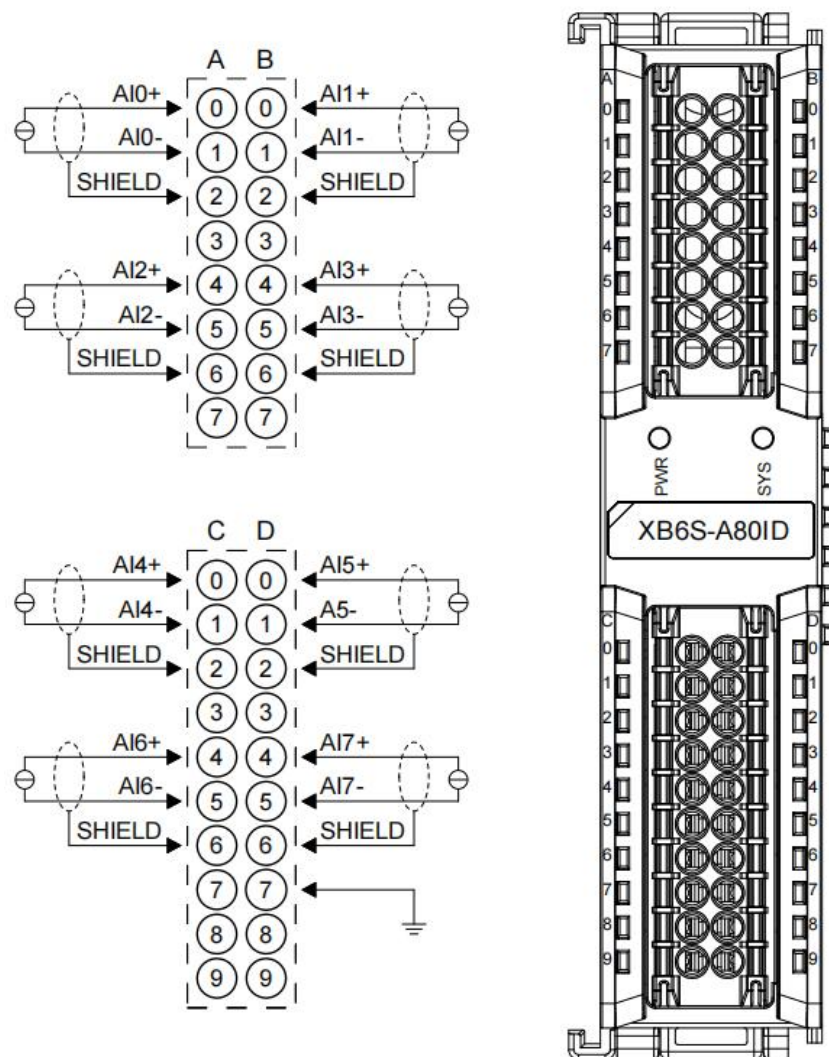


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

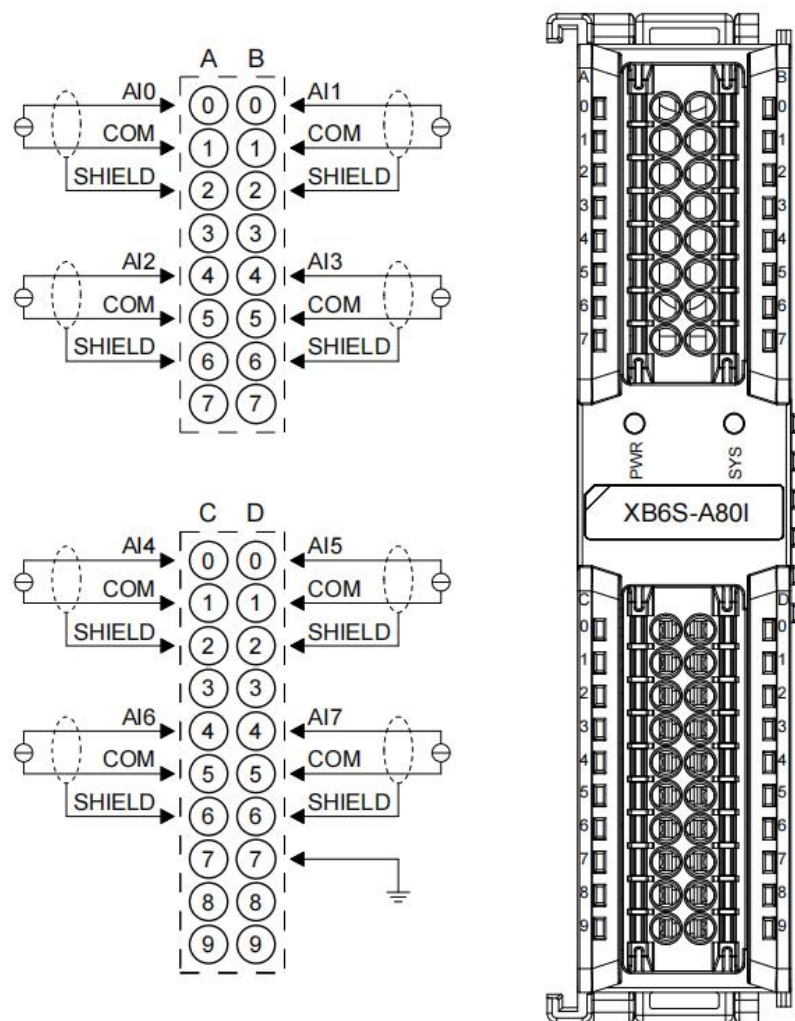
3.3.6.5 XB6S-A80ID



*All SHIELD internal conduction

*It is recommended to use shielded twisted-pair cable, connect the shield to the SHIELD port, and ground it reliably.

3.3.6.6 XB6S-A80I

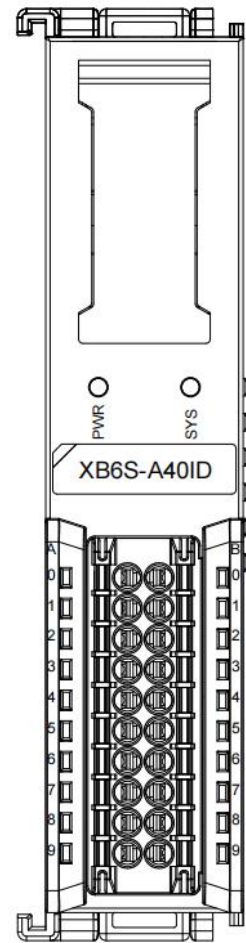
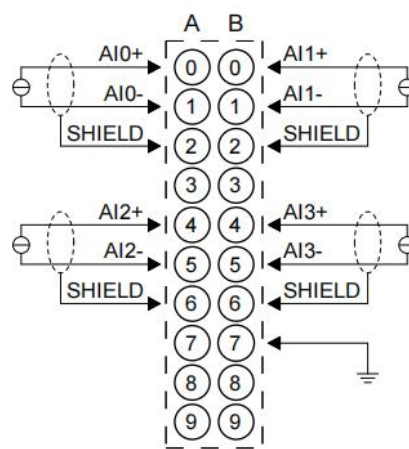


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

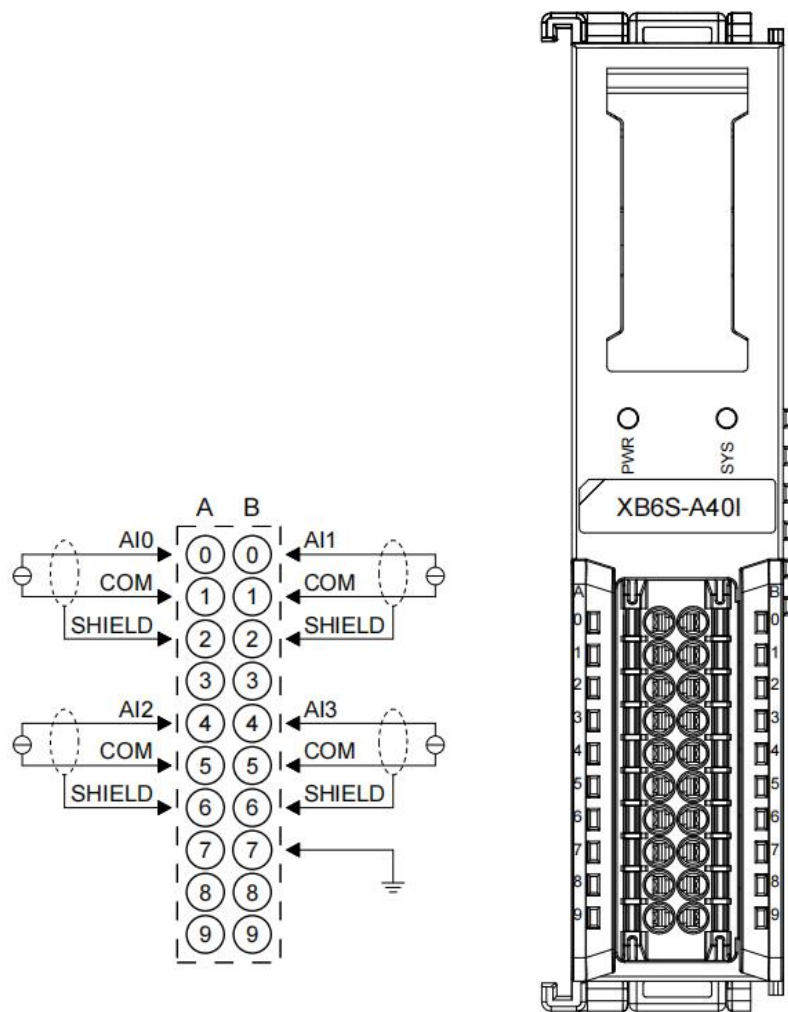
3.3.6.7 XB6S-A40ID



*All SHIELD internal conduction

*It is recommended to use shielded twisted-pair cable, connect the shield to the SHIELD port, and ground it reliably.

3.3.6.8 XB6S-A40I

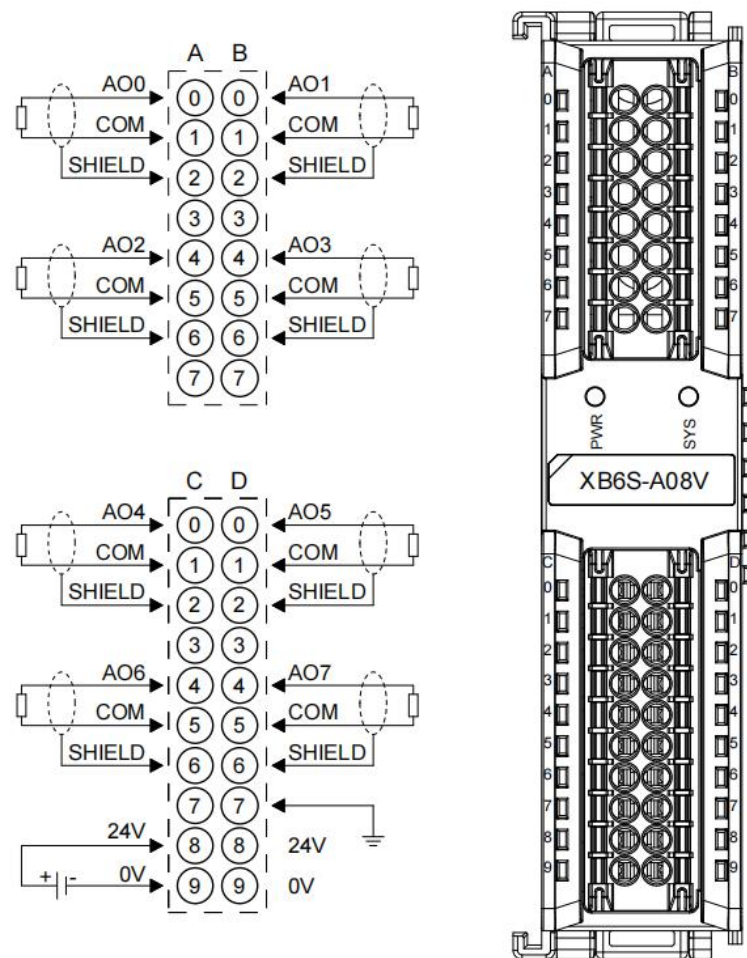


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

3.3.6.9 XB6S-A08V

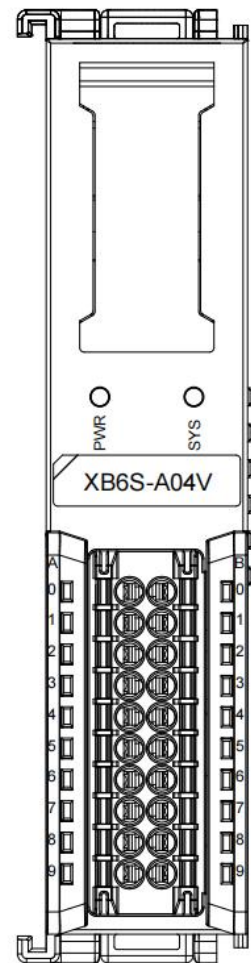
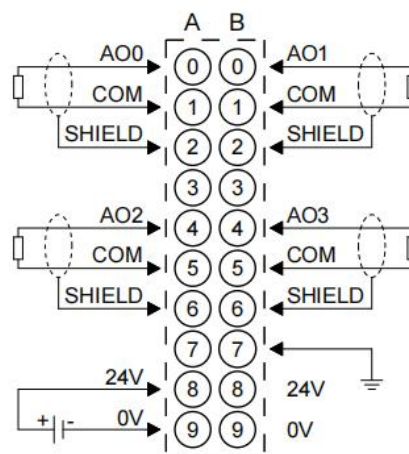


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

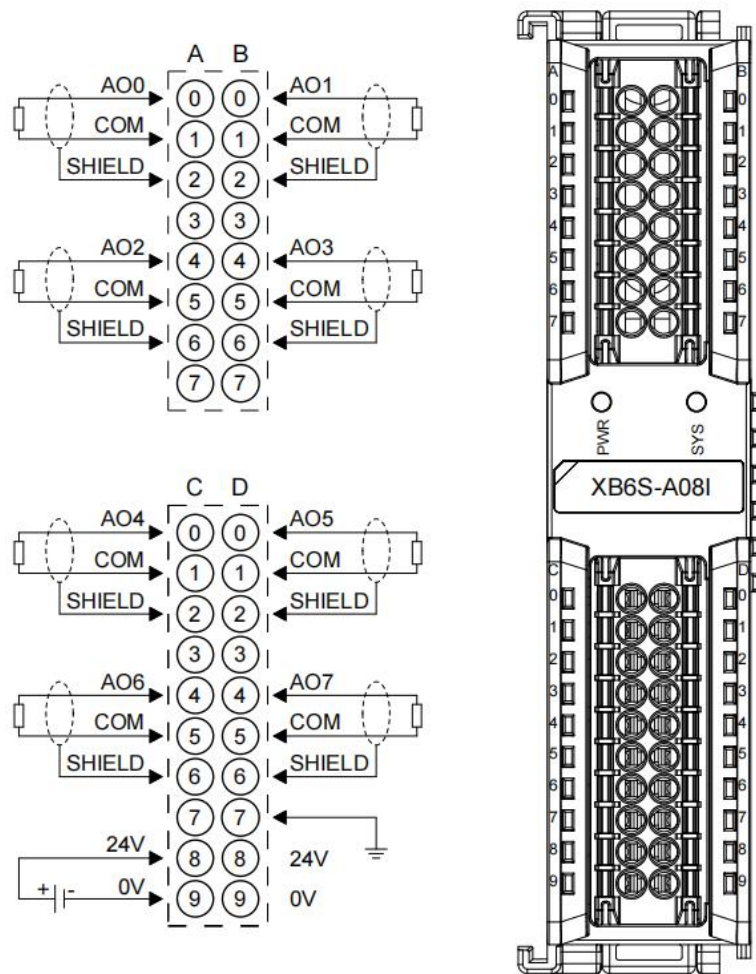
*Shielded twisted-pair cables are recommended for signal cables.

3.3.6.10 XB6S-A04V



- *COM internal conduction, SHIELD internal conduction
- *All channel loads must originate from the same source.
- *Shielded twisted-pair cables are recommended for signal cables.

3.3.6.11 XB6S-A08I

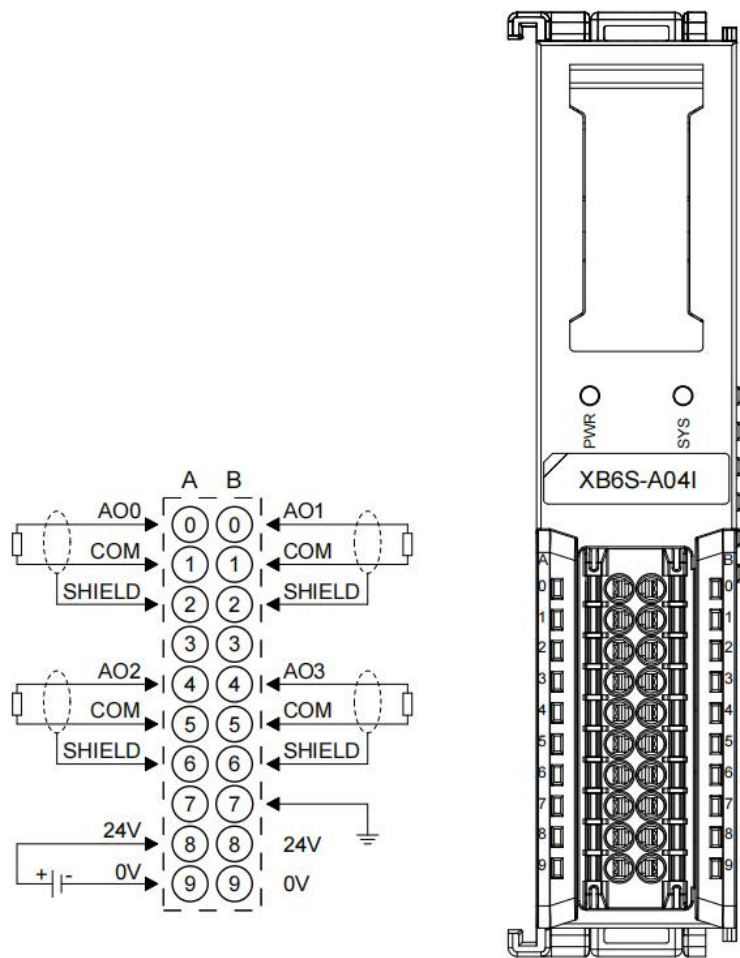


*COM internal conduction, SHIELD internal conduction

*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

3.3.6.12 XB6S-A04I



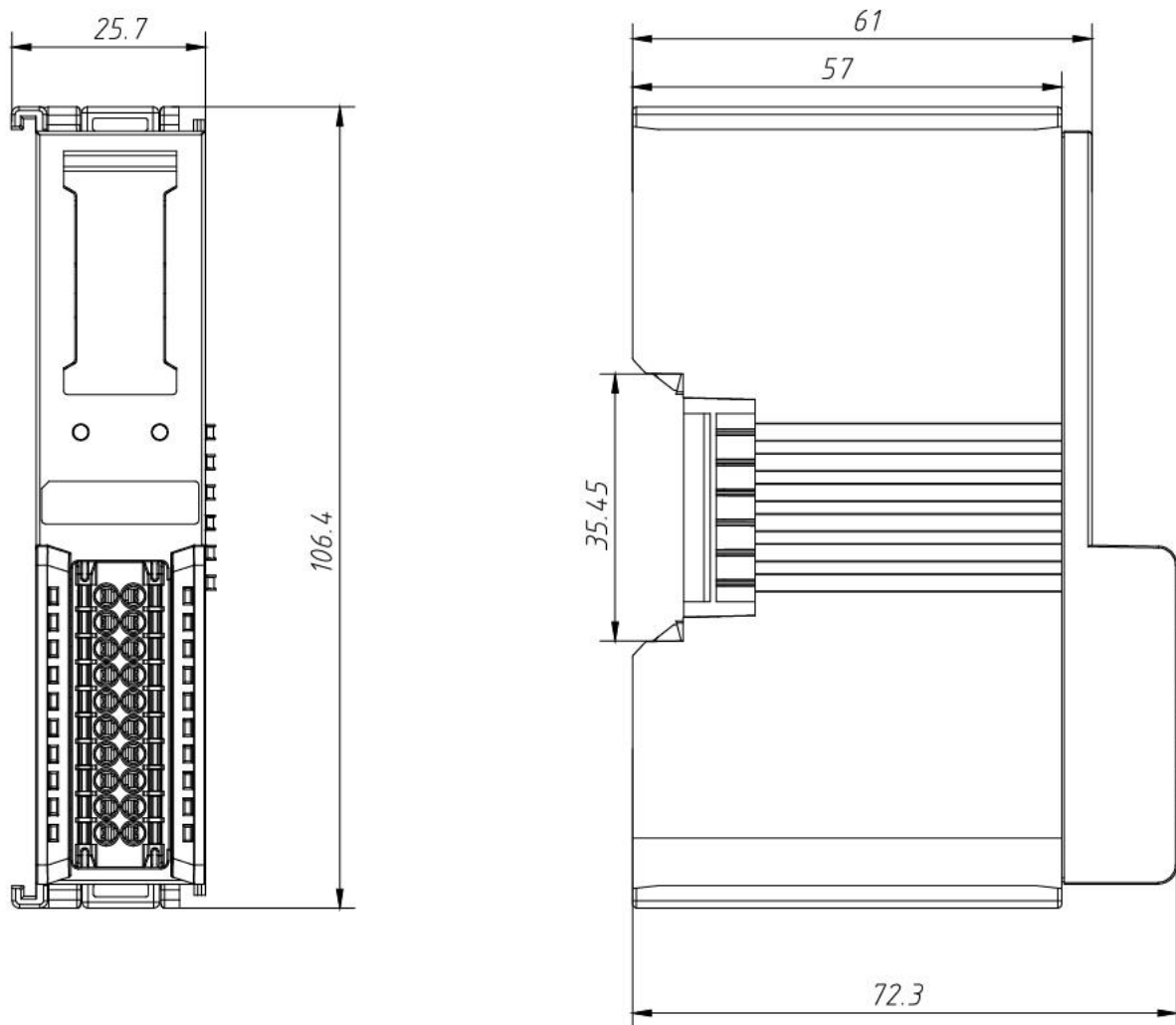
*COM internal conduction, SHIELD internal conduction

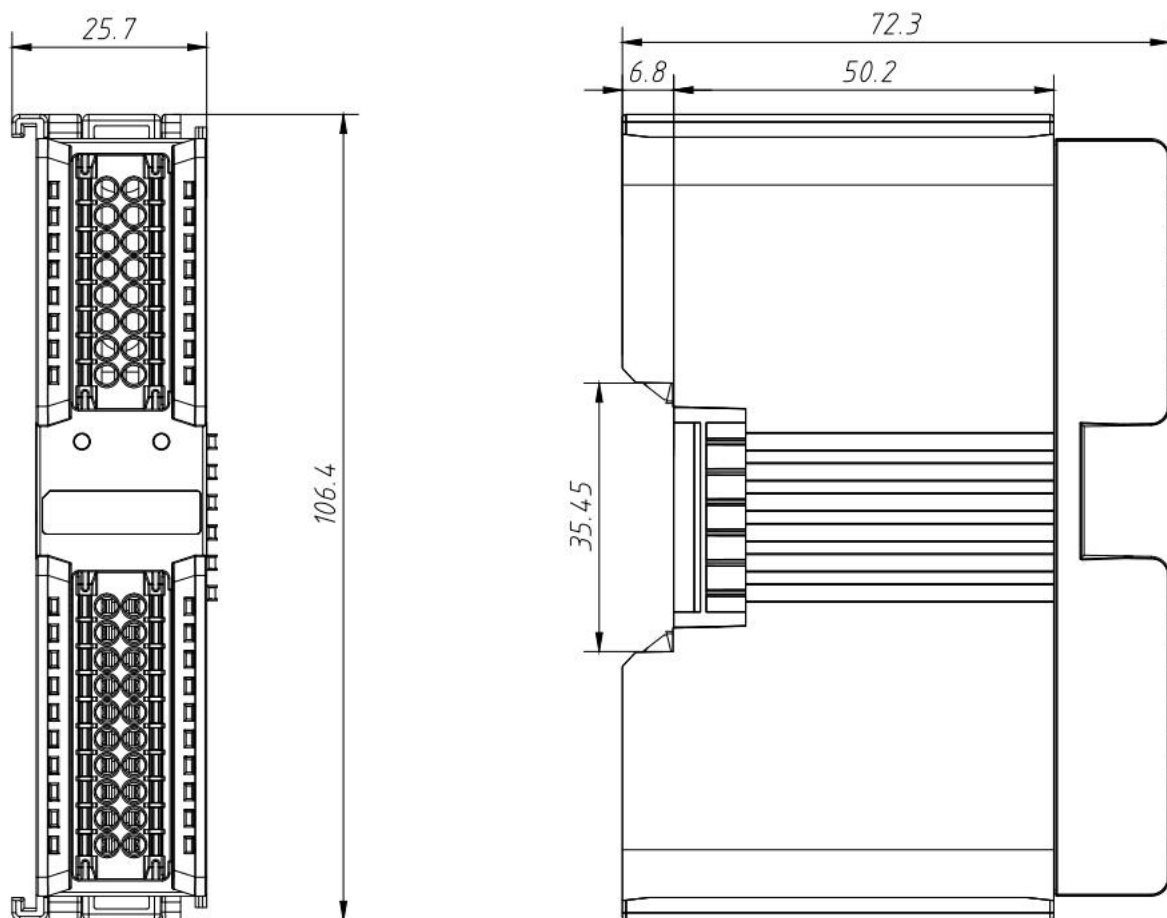
*All channel loads must originate from the same source.

*Shielded twisted-pair cables are recommended for signal cables.

3.3.7 Outline dimension drawing

4-channel analog I/O module dimensions (unit: mm)



Dimensions of an 8-channel analog I/O module (in mm)

3.4 Extended power module

3.4.1 Panel structure



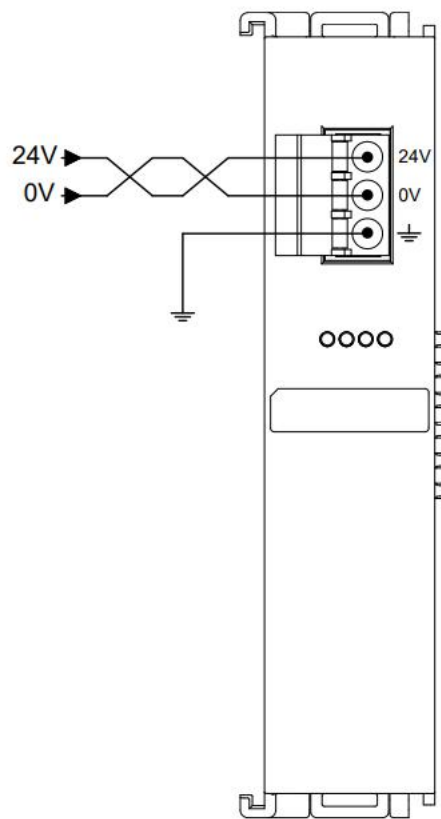
3.4.2 Indicator light function

Extended power module indicator light definition				
ID	Name		State	Status Description
PWR	Power indicator light	green	ON	The module power supply is working normally.
			OFF	Module not powered or power supply abnormal
OVR	Overload indicator light	red	OFF	Not overloaded
			ON	The load reaches 90% ($\pm 5\%$) or more.

3.4.3 Technical parameters

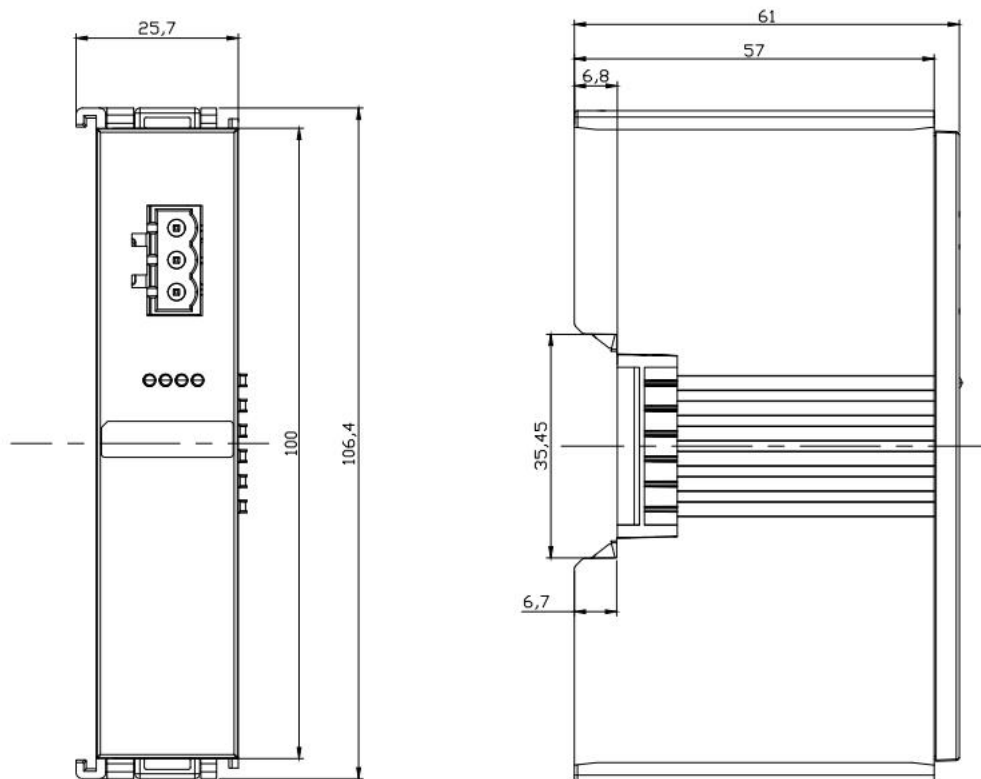
Power parameters	
Input voltage	SELV Input 24VDC (18V~36V)
Input current	600mA (24VDC)
Output voltage	5VDC
Output current	2A
General technical parameters	
Specifications and dimensions	106.4 × 25.7 × 61mm
Weight	110g
Operating temperature	-20°C ~ +60°C
Storage temperature	-40°C ~ +80°C
Relative humidity	95%, no condensation
Altitude	≤2000m
Pollution level	Level 2
Short circuit protection	Supports (automatic recovery mechanism)
Reverse connection protection	Supports (automatic recovery mechanism)
Surge protection	Support
Protection level	IP20
Safety certification	UL certification, CE certification
Green certification	RoHS certification, REACH certification

3.4.4 Wiring diagram



3.4.5 Outline dimension drawing

Extended power supply dimensions (unit: mm)

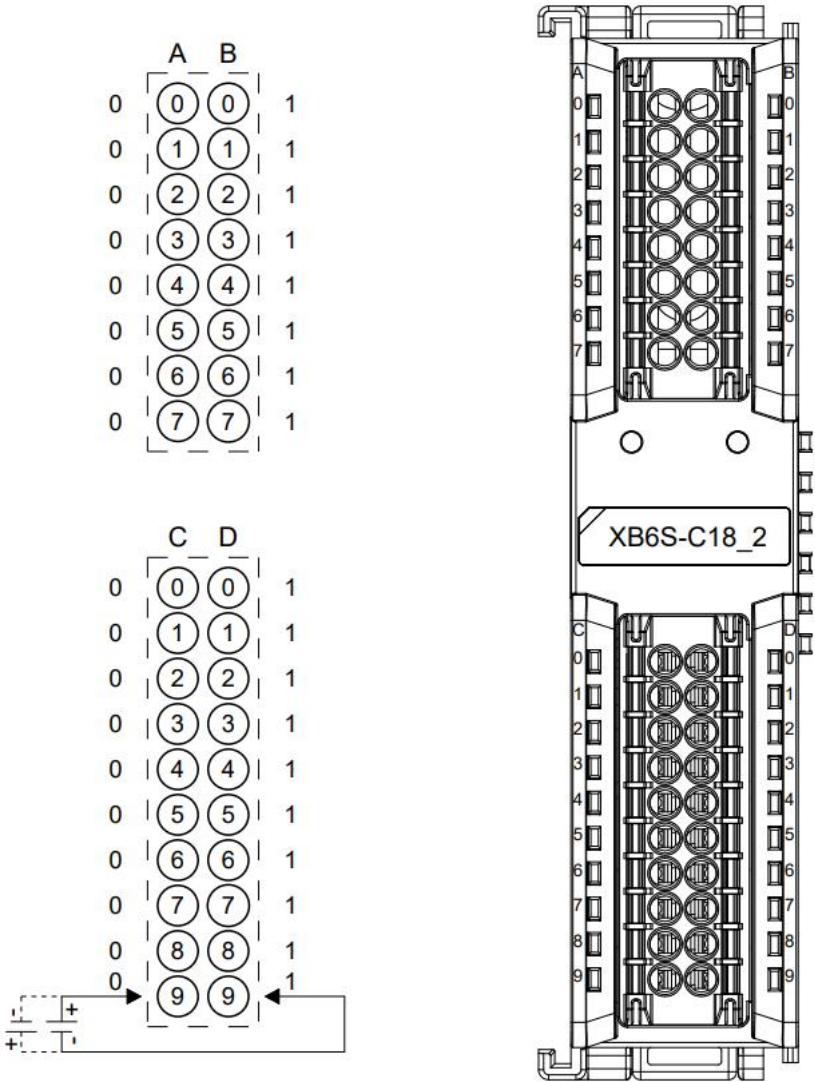


3.5 Public End Extension Module

3.5.1 Technical parameters

Common terminal parameters	
Rated voltage	24VDC (18V~36V)
Rated current	8A
Number of public terminals	2 groups
General technical parameters	
Specifications and dimensions	106.4 × 25.7 × 72.3mm
Weight	95g
Operating temperature	-20°C~+60°C
Storage temperature	-40°C~+80°C
Relative humidity	95%, no condensation
Altitude	≤2000m
Pollution level	Level 2
Protection level	IP20
Safety certification	UL certification, CE certification
Green certification	RoHS certification, REACH certification

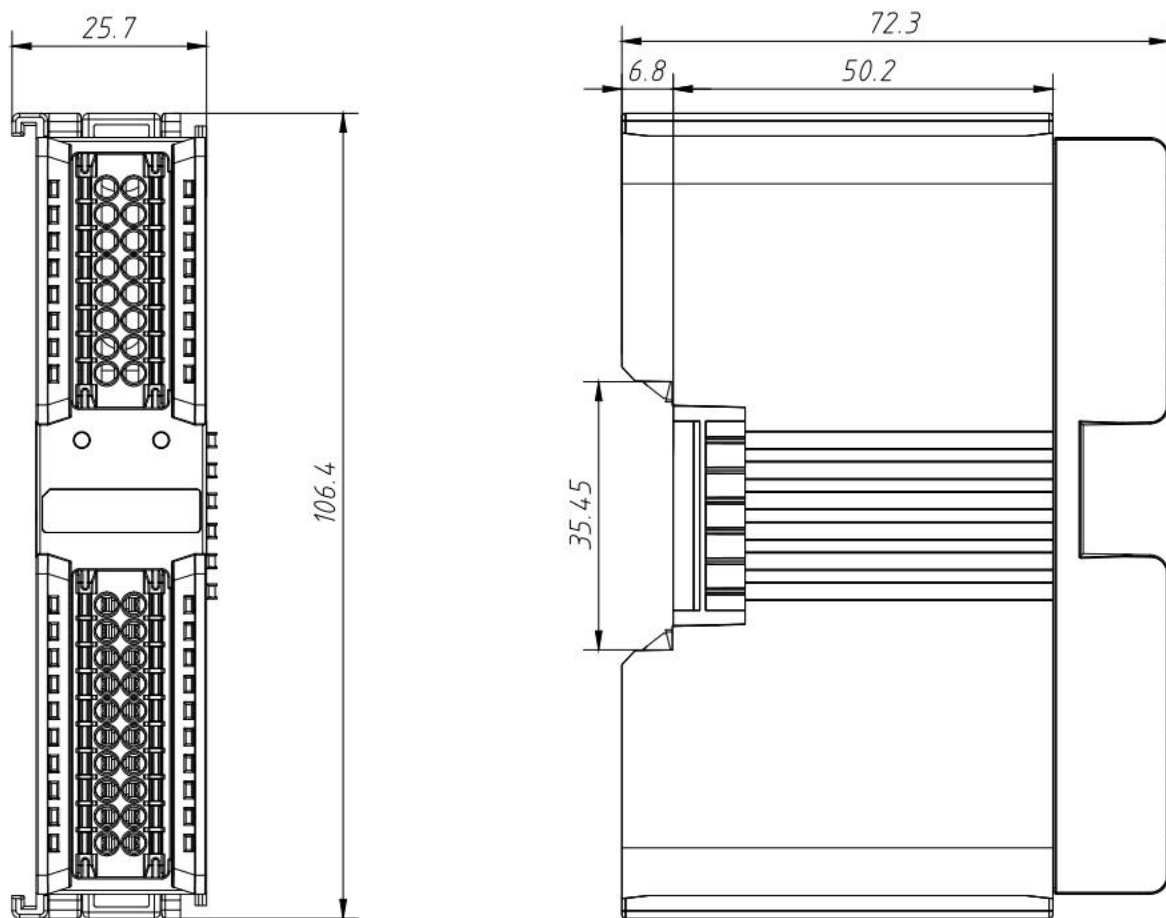
3.5.2 Wiring diagram



*Channel identifier 0 indicates internal conduction.
*Channel Identifier 1 is an internally connected channel.

3.5.3 Outline dimension drawing

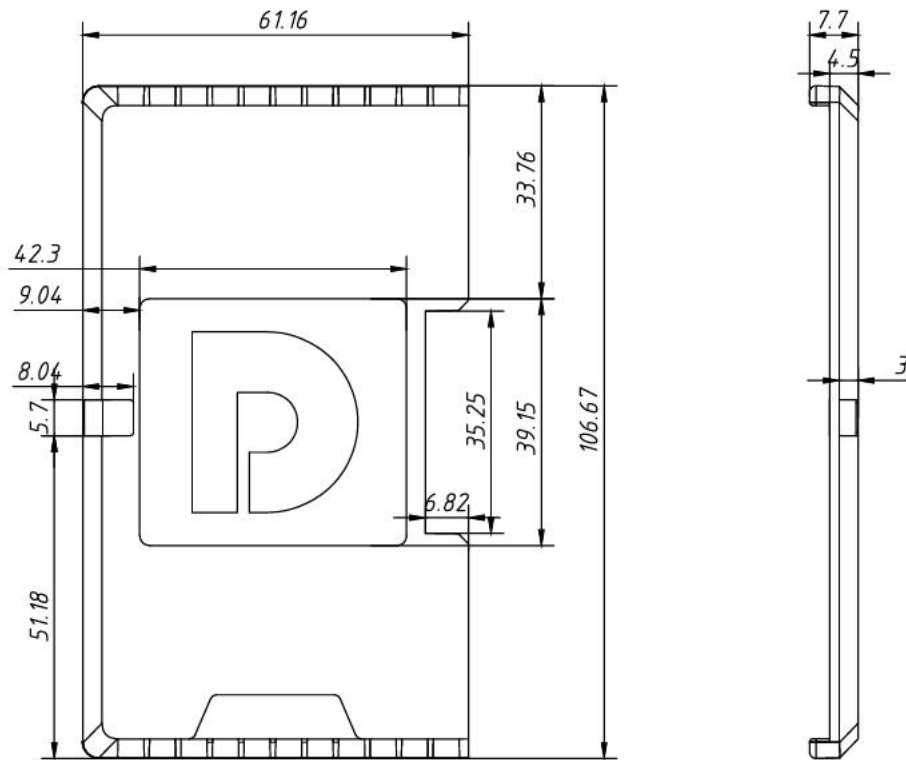
External dimensions (unit: mm)



3.6 Terminal cover

3.6.1 Outline dimension drawing

Terminal cover dimensions (unit: mm)



Note: All installations use DIN 35 mm standard rails. DIN rail specifications are 35*7.5*1.0 and 35*15*1.0 (unit: mm).

4 Installation and removal

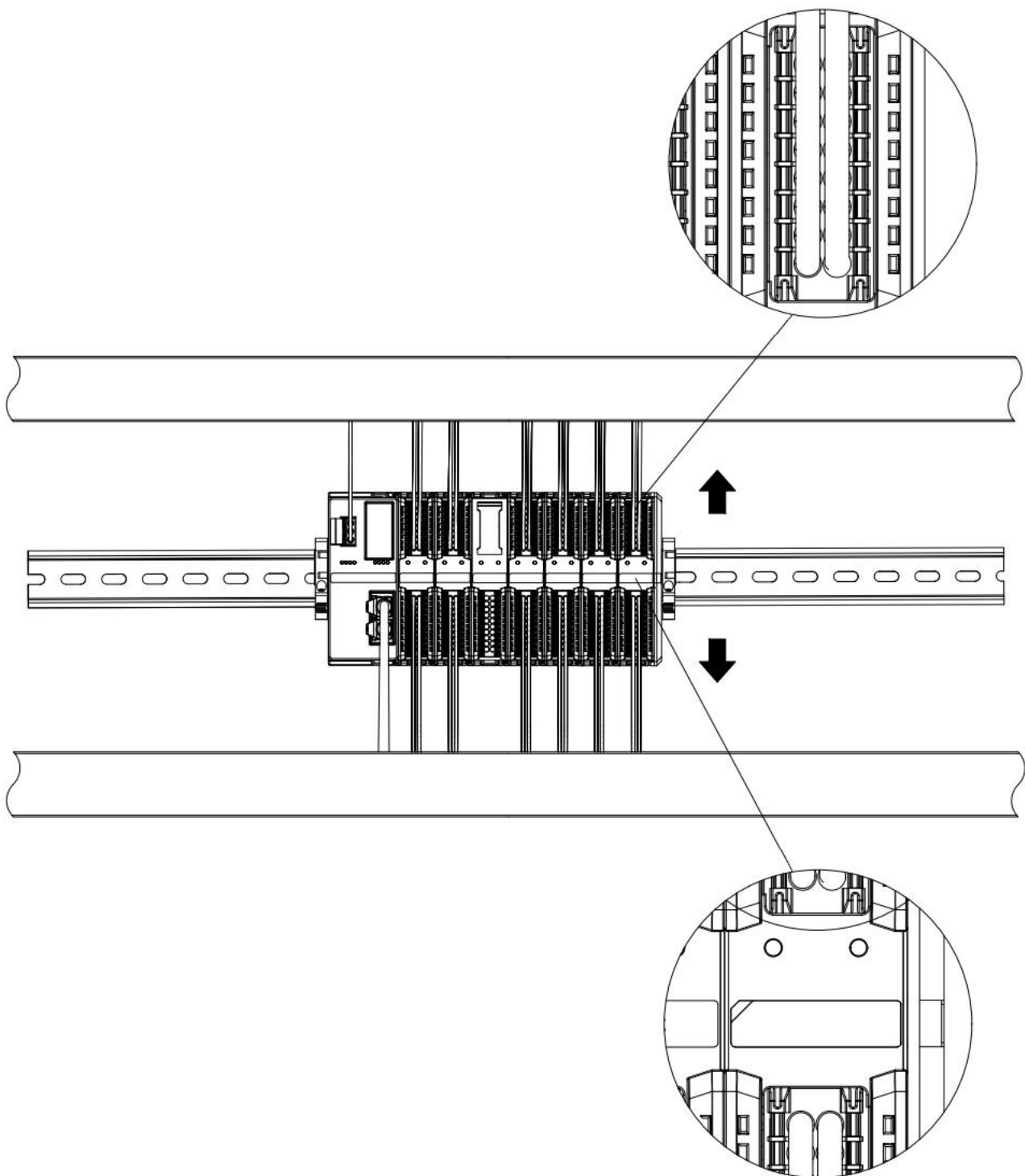
4.1 Installation Guide

Installation/Removal Precautions

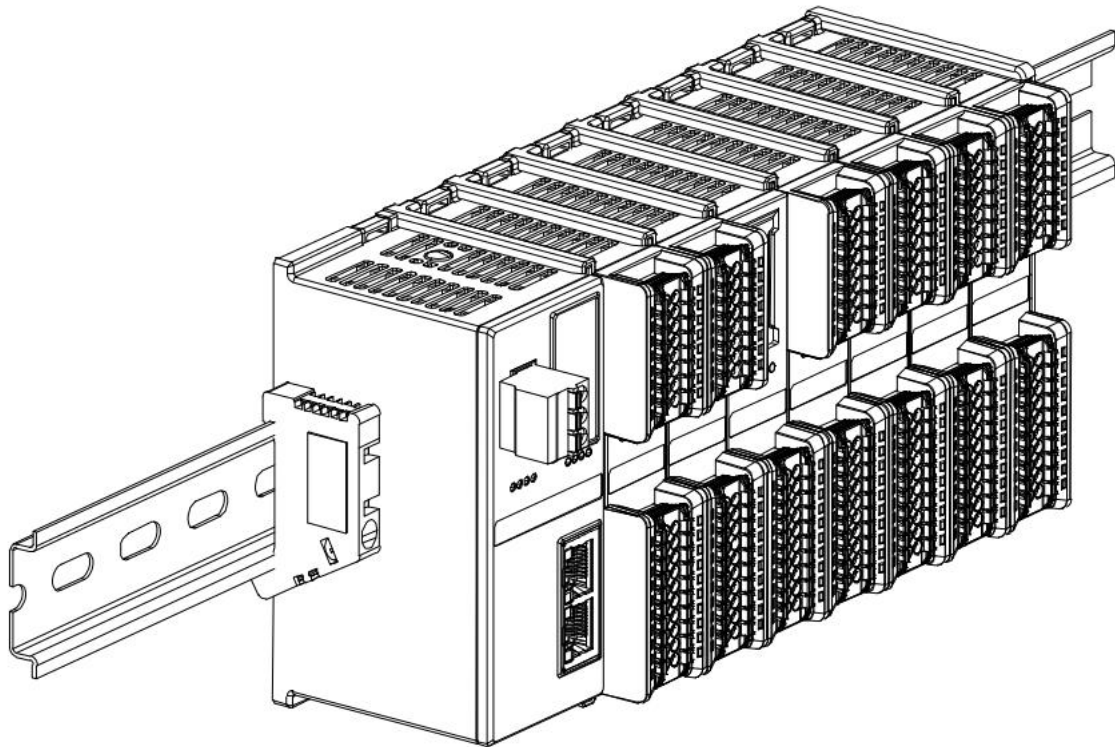
- The module has an IP20 protection rating and must be installed in a cabinet for indoor use.
- Ensure that the server rack has good ventilation (such as installing exhaust fans in the server rack).
- Do not install this device next to or above equipment that may cause overheating.
- Make sure to install the module vertically on the fixed guide rail and ensure that there is air circulation around it (there should be at least 50mm of air circulation space above and below the module).
- After the module is installed, be sure to install guide rail fasteners at both ends to secure the module.
- Installation/removal must be performed with the power off.
- After the module is installed, it is recommended to connect and wire the cables using a top-to-bottom wiring method.

Warning

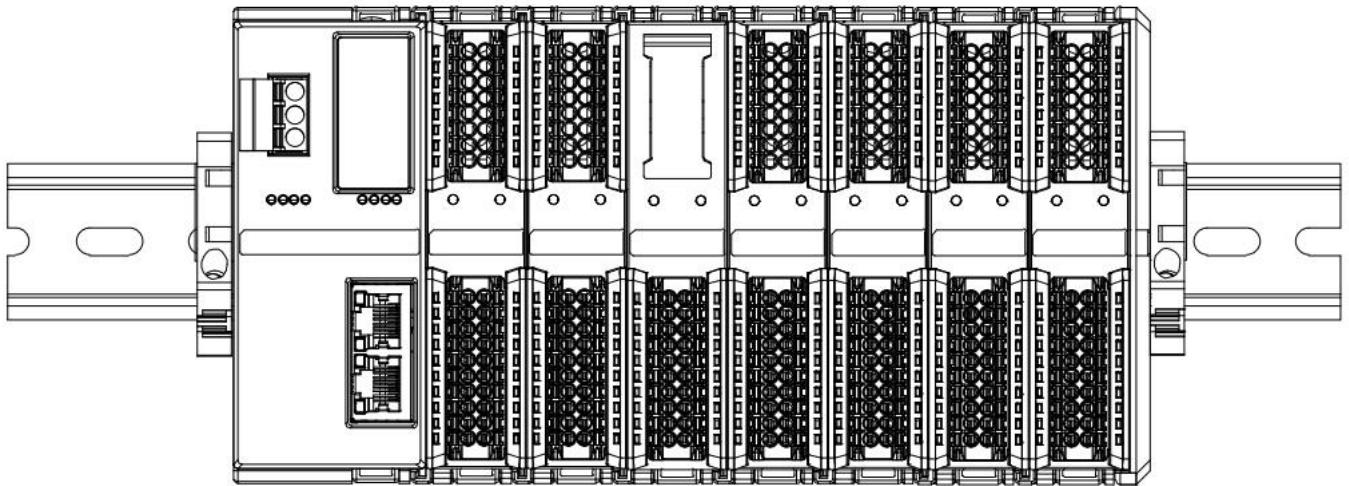
- If the device is not used in accordance with the product user manual, the protection it provides may be compromised.
-

Module installation diagram, minimum vertical clearance ($\geq 50\text{mm}$)

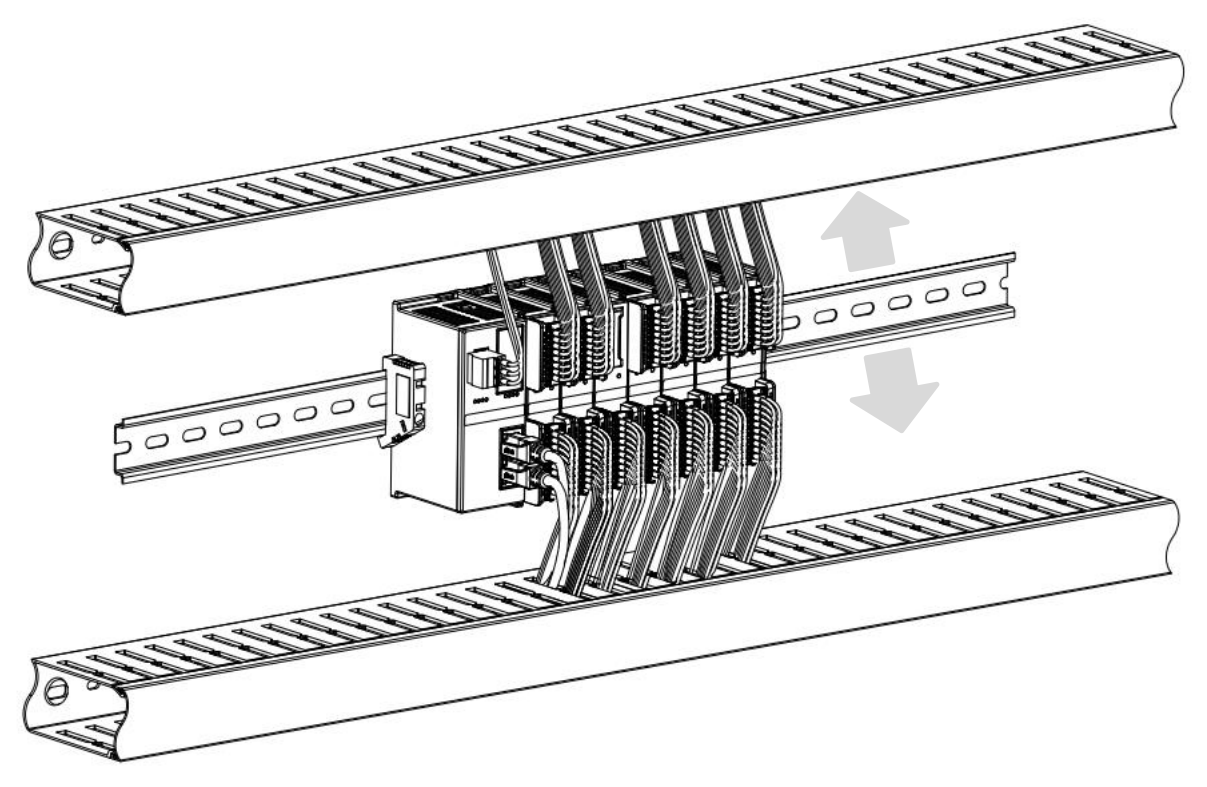
Ensure the module is installed vertically on the fixed guide rail.



Be sure to install the guide rail fasteners.



Module top and bottom wiring diagram



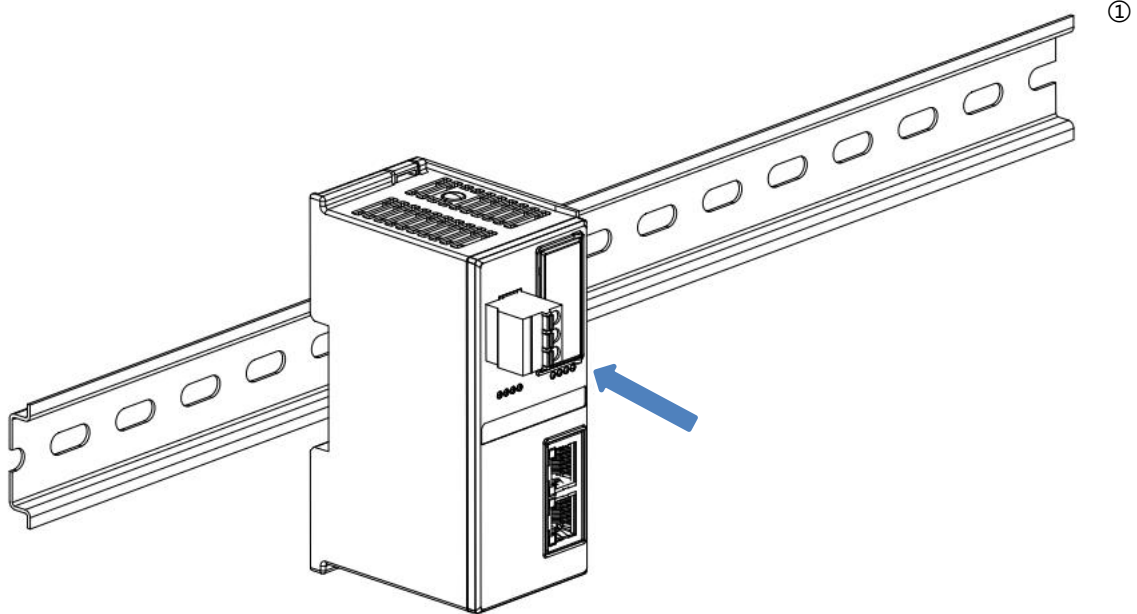
4.2 Installation and disassembly steps

Module installation and removal	
Module installation steps	1. First, install the coupler module on the fixed guide rail.
	2. Install the required I/O modules or functional modules sequentially on the right side of the coupler module.
	3. After installing all the necessary modules, install the terminal cover to complete the module assembly.
	4. Install guide rail fasteners at both ends of the coupler module and the terminal cover to fix the module.
Module disassembly steps	1. Loosen the guide rail fasteners at both ends of the module.
	2. Use a flathead screwdriver to pry open the module clips.
	3. Remove the disassembled module.

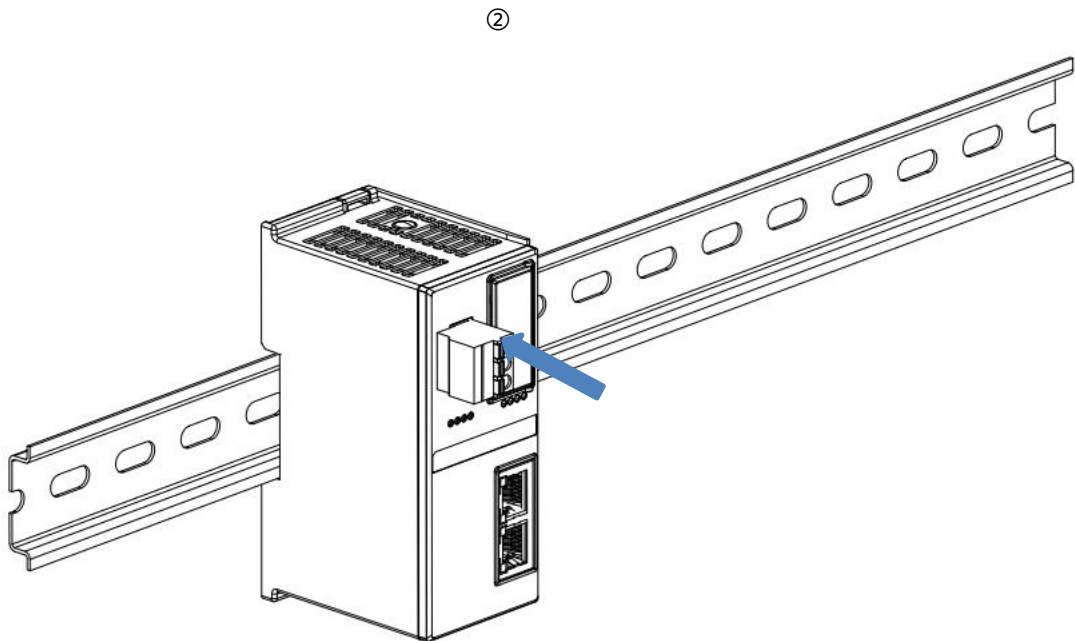
4.3 Installation and disassembly diagram

Coupler module installation

- Align the coupler module vertically with the guide rail slot, as shown in Figure ① below.

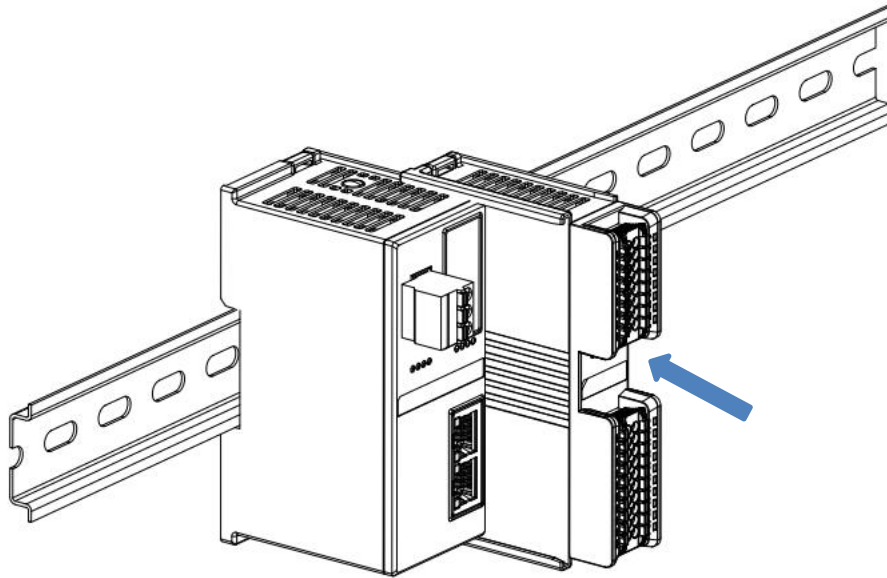


- Press the coupler module firmly into the guide rail direction until you hear a "click" sound, indicating that the module is installed in place, as shown in Figure ② below.

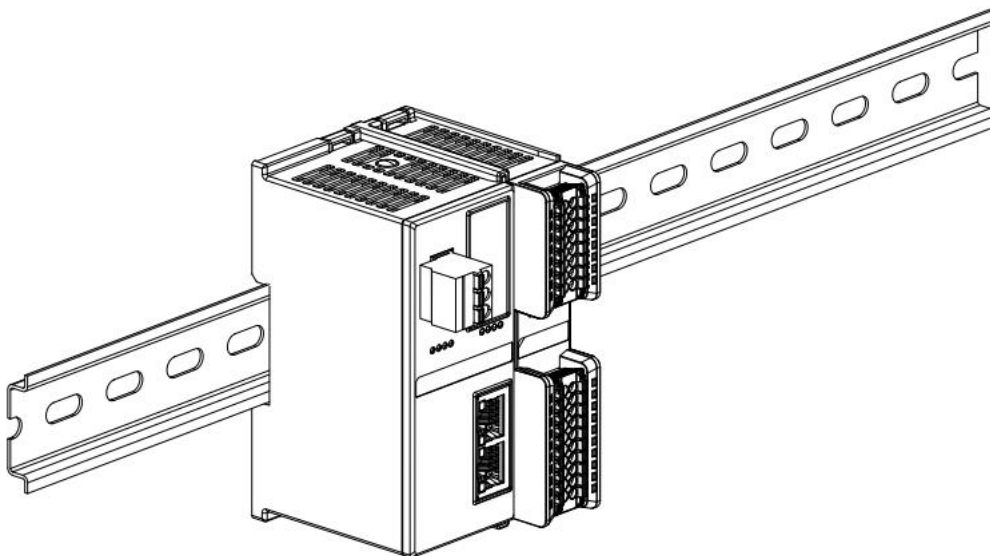


I/O module installation

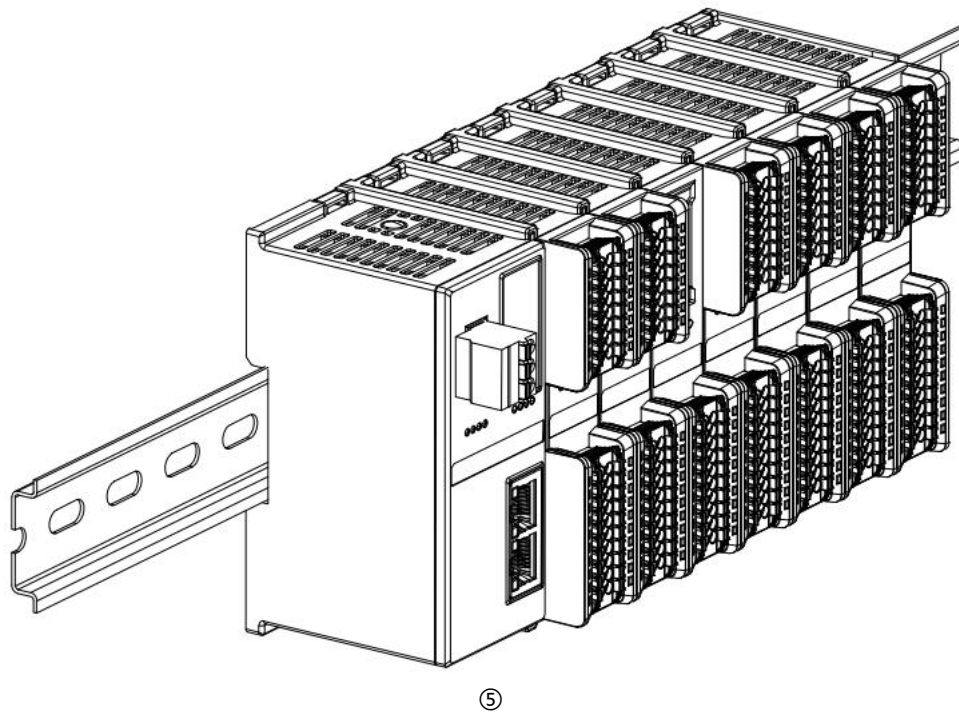
- Following the steps described above for installing the coupler module, install the required I/O modules or functional modules one by one, as shown in Figures ③, ④, and ⑤. Push them in until you hear a "click" sound, indicating that the module is installed in place.



③

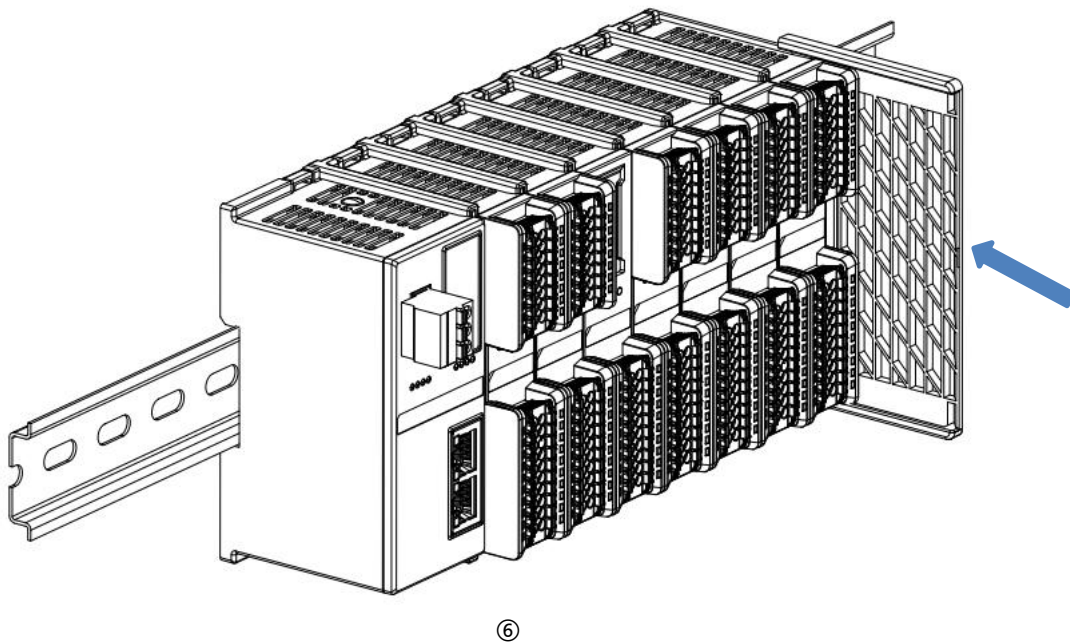


④

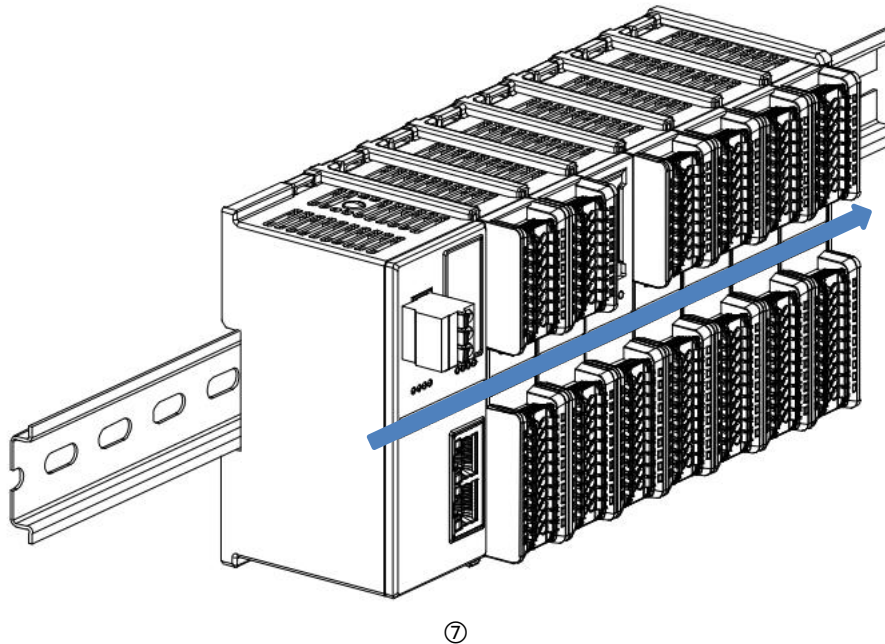


Terminal cover installation

- Install the terminal cover on the right side of the last module. Align the groove side of the terminal cover with the guide rail. For the installation method, please refer to the installation method of the I/O module. Push the terminal cover inward into place, as shown in Figure 6 below.

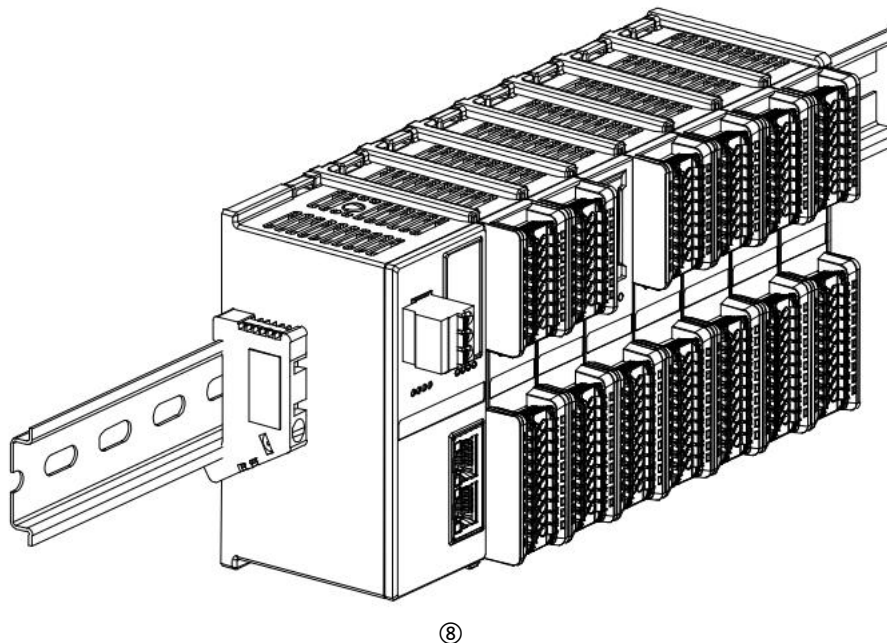


- After the terminal cover is installed, check whether the front of the entire module is flat, and ensure that all modules and end covers are installed in place and the front is flush, as shown in Figure 7 below.

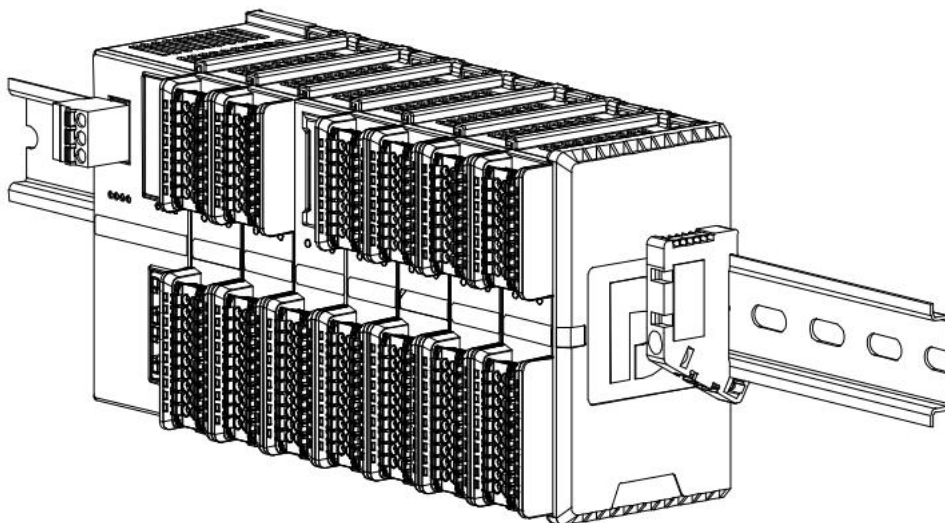


Guide rail fastener installation

- Install and tighten the guide rail fastener close to the left side of the coupler, as shown in Figure 8 below.



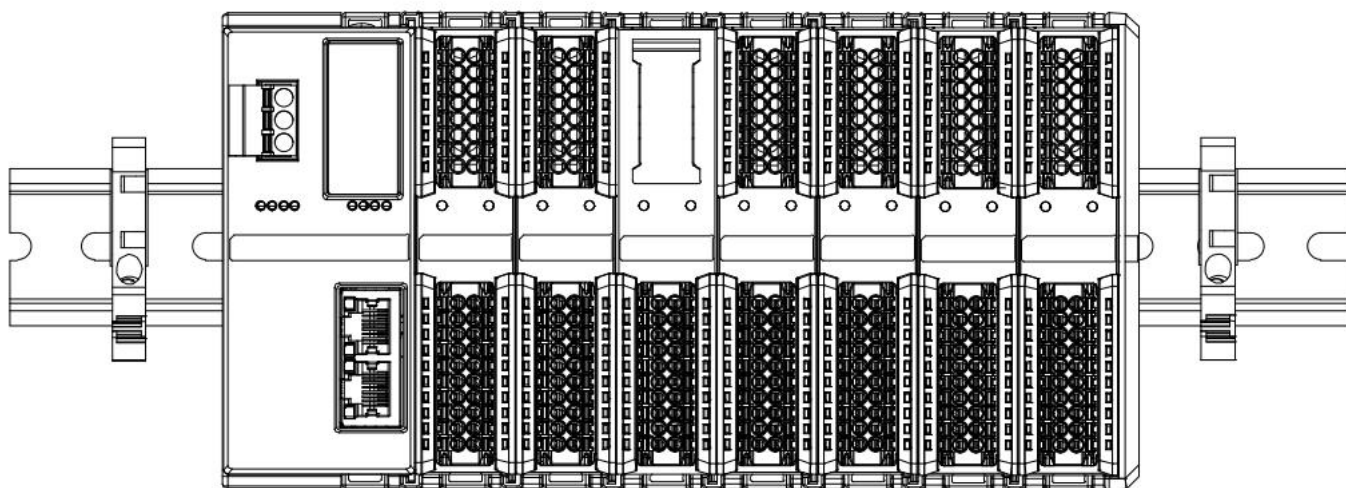
- Install the guide rail fastener on the right side of the terminal cover. First, push the guide rail fastener towards the coupler to ensure that the module is installed securely, and then tighten the guide rail fastener with a screwdriver, as shown in Figure 9 below.



9

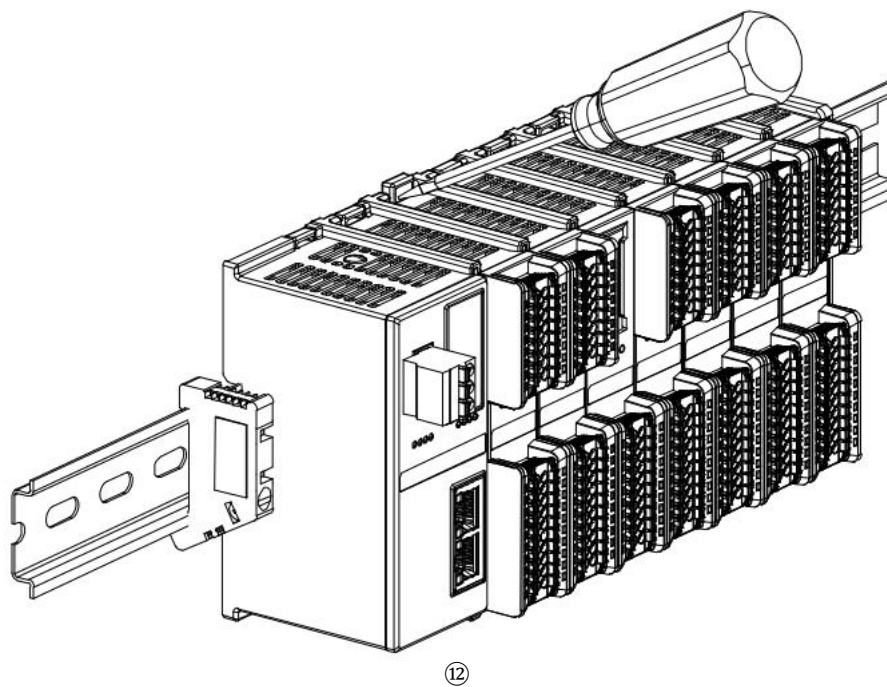
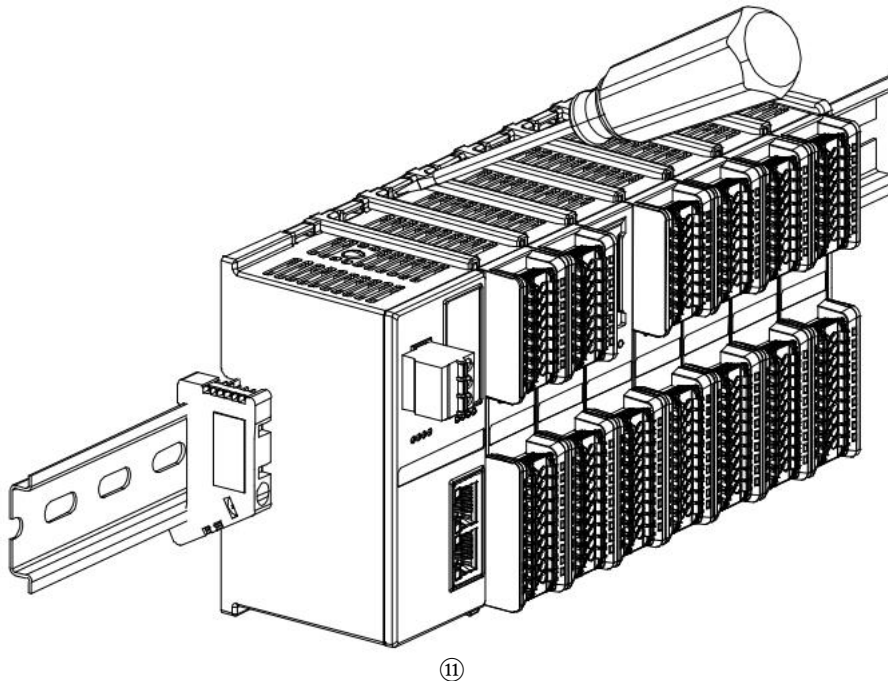
Disassembly

- Loosen the guide rail fastener at one end of the module with a screwdriver and move it to one side, ensuring there is a gap between the module and the guide rail fastener, as shown in Figure 10 below.

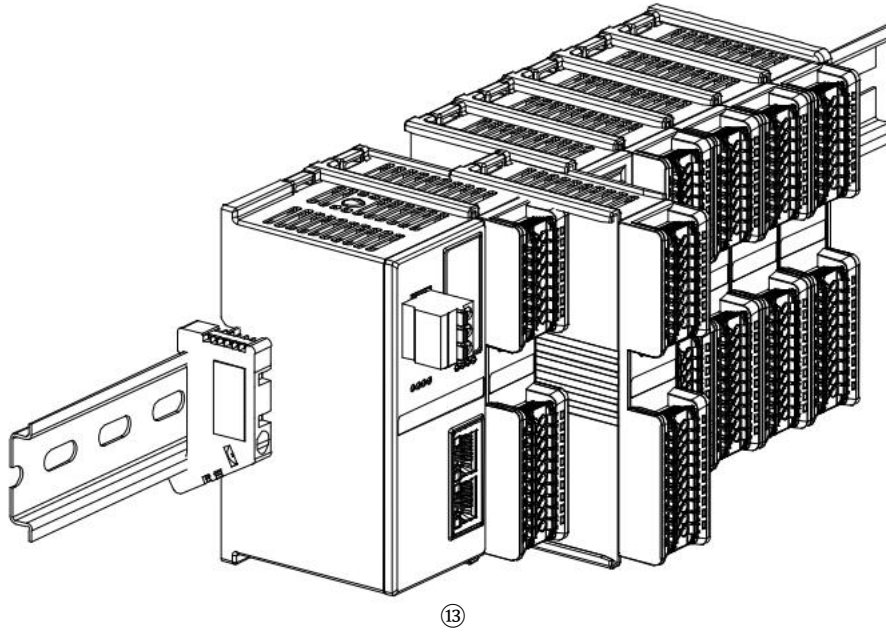


10

- Insert the flathead screwdriver into the clips of the module to be removed, and apply force from the side towards the module (you will hear a click), as shown in the picture below.⑪and⑫As shown.
Note: Each module has a latch at the top and bottom; operate in the same way for all of them.



- Disassemble the module following the reverse procedure of installing the module, as shown in the following figure.⑬As shown.



5 Wiring

5.1 Terminal blocks

 Warning

Terminal blocks		
Power terminals	Rated voltage	320V
	Rated current	20A
	Extreme number	3P
	Wire diameter	22~16 AWG 0.3~1.5 mm ²
Signal line terminals (i.e., input/output terminals)	Rated voltage	200V
	Rated current	9.5A
	Extreme number	16P+20P
	Wire diameter	22~17 AWG 0.3~1.0 mm ²
Bus interface	2×RJ45	UTP or STP of Category 5 or higher (STP recommended)

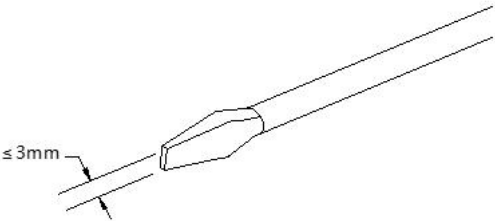
5.2 Wiring instructions and requirements

Power connection 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.
- Reliable grounding is required.

Wiring tool requirements

The power terminals and signal terminals feature a screwless design, allowing for cable installation and removal using a flathead screwdriver (size: ≤3mm).



Stripping length requirements

For power and signal line terminals, a cable stripping length of 10 mm is recommended.



Wiring method

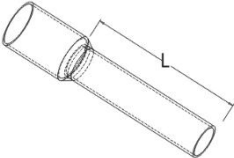
For a single-strand rigid wire, after stripping the wire to the corresponding length, press the button and insert the single-strand wire directly into the corresponding end hole.



After stripping the wire to the corresponding length, the multi-strand flexible wire can be directly connected or used with the corresponding standard cold-pressed terminals (tubular insulated terminals, see the table below for reference specifications). Pressing down the button will insert the insulated terminal directly into the corresponding end hole.



The specifications for power supply terminals and signal line terminals are shown in the table below:

Specifications of tubular insulated ends		
Specifications	model	conductor cross-sectional area (mm²)
 Tubular insulated terminalsLThe length is10mm	E0310	0.3
	E0510	0.5
	E7510	0.75
	E1010	1.0
	E1510	1.5

Warning

- Only copper wires can be used for wiring.

Warning

- Cable temperature: 80°C.

5.3 MIL Connector Type Module Wiring Instructions

5.3.1 Compatible Product List

MIL connector type I/O modules require connection to a terminal block via a cable with a connector for use.

Model	Describe	Adapter terminal block	Adapter Cable
XB6S-3200N	32-channel digital input, NPN/PNP compatible	TM40-32AE	TM40-XXXX-1 TM40-XXXX-1S
		TM40-32BE	TM40-XXXX-2 TM40-XXXX-2S
XB6S-0032AN	32-channel digital output, NPN type	TM40-32AE	TM40-XXXX-1 TM40-XXXX-1S
XB6S-0032BN	32-channel digital output, PNP type	TM40-32BE	

Note: The TM40-XXXX-2/TM40-XXXX-2S model cable is a PNP type input cable and cannot be used with other types of input/output.

5.3.2 Terminal block naming rules

The terminal blocks for this product include TM40-32AE and TM40-32BE, and the naming rules are as follows.

TM40-32

E

(1)

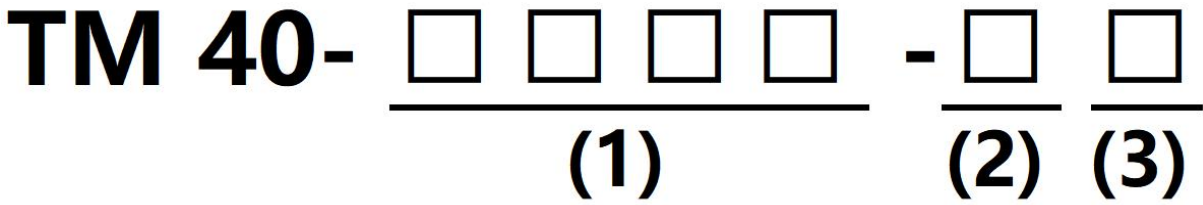
(2)

(3)

serial number	meaning	Options	illustrate
(1)	Number of terminal blocks	32	32 points
(2)	Input/Output Types	A	NPN type input/output
		B	PNP type input/output
(3)	Terminal block type	E	European-style terminal block

5.3.3 Cable naming rules

The terminal blocks and I/O connection cables for this product include TM40-XXXX-1, TM40-XXXX-1S, TM40-XXXX-2, and TM40-XXXX-2S, and the naming rules are as follows.



serial number	meaning	Options	illustrate
(1)	Cable length	0500~1500	Cable length range, unit mm
(2)	Cable function	1	adaptation: NPN type input PNP type output NPN type output
		2	PNP type input dedicated
(3)	Cable shielding	S	Shielded cables
		default	Unshielded cable

Note: The TM40-XXXX-2/TM40-XXXX-2S model cable is a PNP type input cable and cannot be used with other types of input/output.

5.3.4 Terminal block parameters

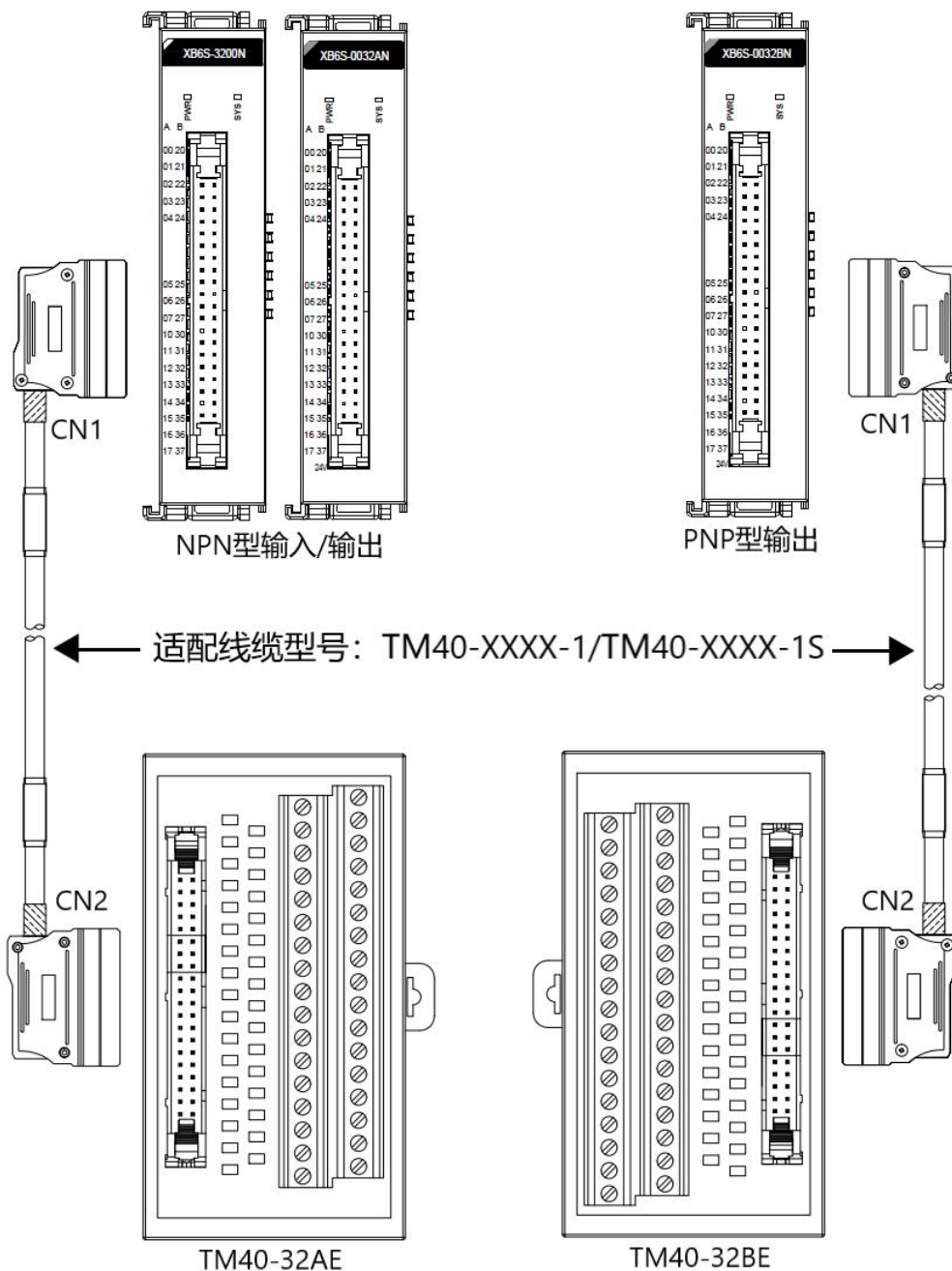
Technical Specifications	
Rated current	1A
Rated voltage	DC24V
Suitable for wires	1.5mm²/AWG16 and below

5.3.5 Cable parameters

Technical Specifications	
Line gauge	AWG28
Conductor composition	7/0.127
Conductor materials	soft copper wire
Insulating materials	PE
Core wire twisting	Stuffing, cotton thread, straps, paper bags
Exterior covered	PVC
Conductor impedance (20°C)	Below 239Ω/Kn
Withstand voltage (in the air)	AC500V/min
Insulation resistance (20°C)	50MΩ/Kn or higher

5.3.6 Configuration rules

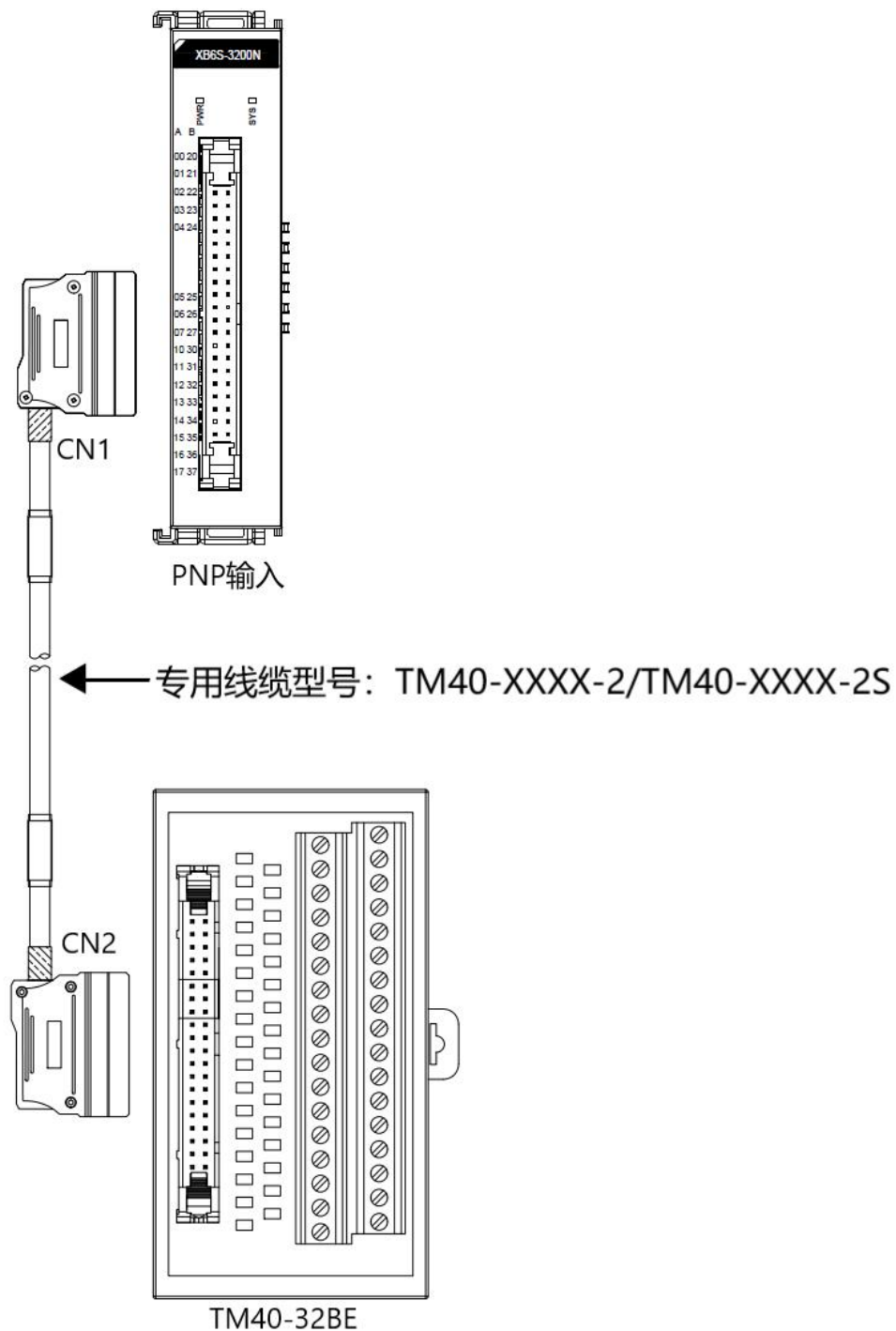
- Configuration examples for NPN type input, NPN type output, and PNP type output



The cable is marked CN1 and CN2 at both ends. The I/O side is connected to the CN1 end, and the terminal block side is connected to the CN2 end.

- Configuration example for PNP type input

When using the XB6S-3200N PNP type input, it must be used with a cable of type TM40-XXXX-2/TM40-XXXX-2S.



The cable is marked CN1 and CN2 at both ends. The I/O side is connected to the CN1 end, and the terminal block side is connected to the CN2 end.

6 Use

6.1 IP settings and modifications

6.1.1 Set the IP address using the rotary switch.

- **When setting the IP address from the factory default state via the rotary switch**
The IP address is 192.168.3.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).
- **When setting the IP address via a rotary switch from a state where the IP address has already been configured via the host computer.**
The IP address uses 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 it to 172.10.0.12 via the host computer, the IP address is 172.10.0.XXX (XXX is the setting value of the rotary switch, ranging from 1 to 254).

Precautions

- For a detailed description and operating instructions of the rotary switch, please refer to [link/reference]. [3.1.2 Rotary Switch](#).
- When the module leaves the factory, the rotary switch is set to "000" and the 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.
- abnormalRotationSwitch setting: WhenRotationWhen the switch is set to a value other than 1~254, the module will start up using the IP address modified by the host computer last time after power-on.

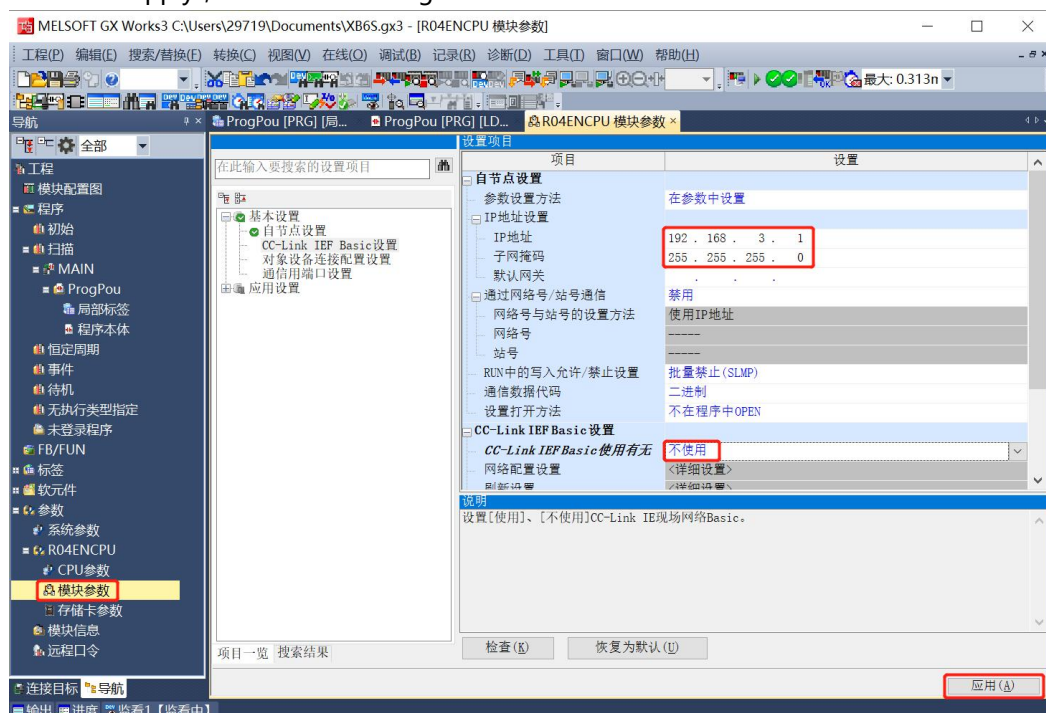
6.1.2 Modify the IP address using the Conf_TestTool_ToMaster.exe tool.

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.

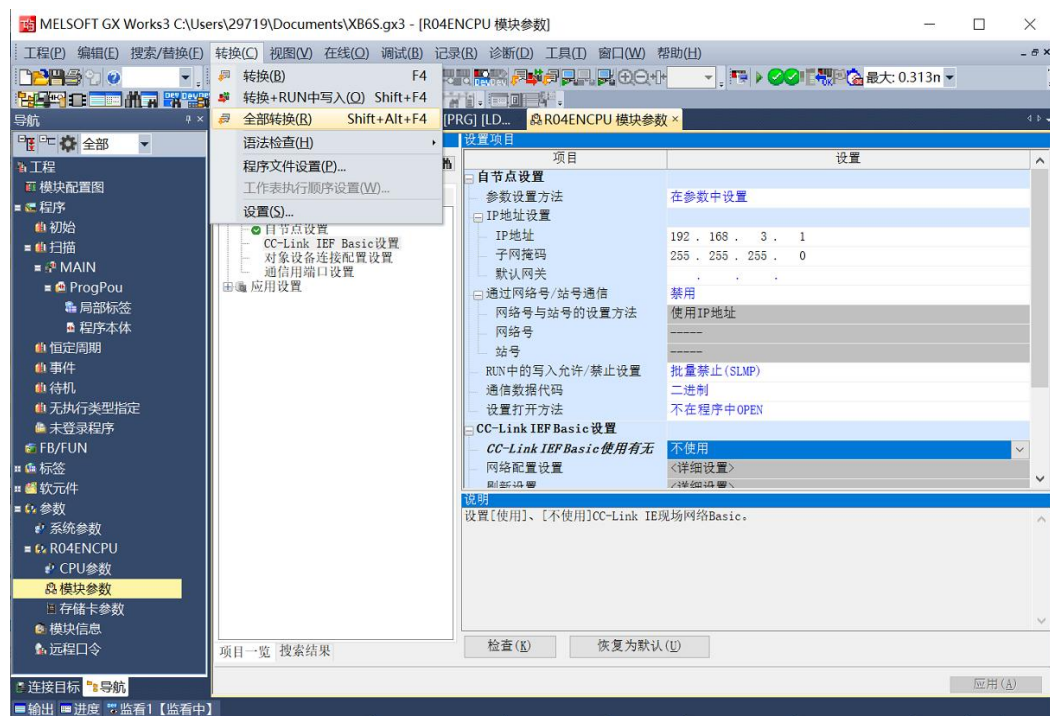
6.1.3 Configure the IP address via host computer software.

➤ **Taking the Mitsubishi R04EN CPU and the host computer GX Works3 as examples, this article introduces how to modify the IP address.**

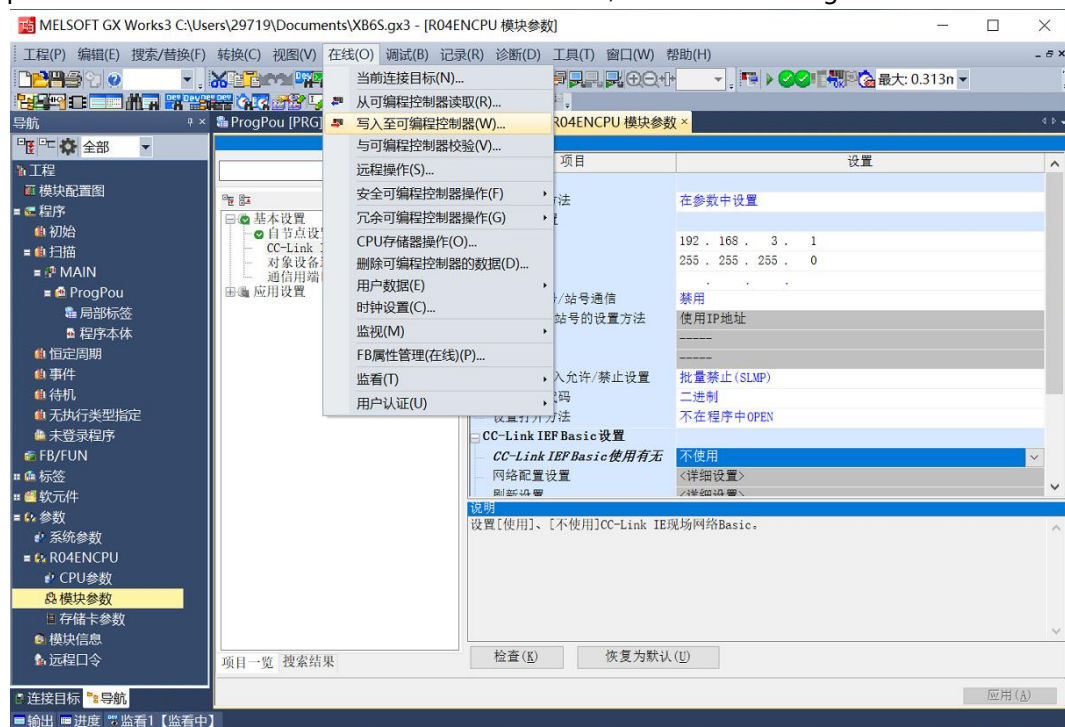
- a. Since the default IP address of the module is 192.168.3.100 when it is shipped from the factory, the IP addresses of the PLC and the module must be on the same network segment when connecting the module for the first time; otherwise, the scanning will not be successful. If the PLC is not in network segment 3, in the left navigation interface, double-click "Parameters -> CPU Module Model -> Module Parameters", set the PLC to network segment 3 under IP address settings, select "Not Used" in the CC-Link IEF Basic use drop-down box, and click "Apply", as shown in the figure below.



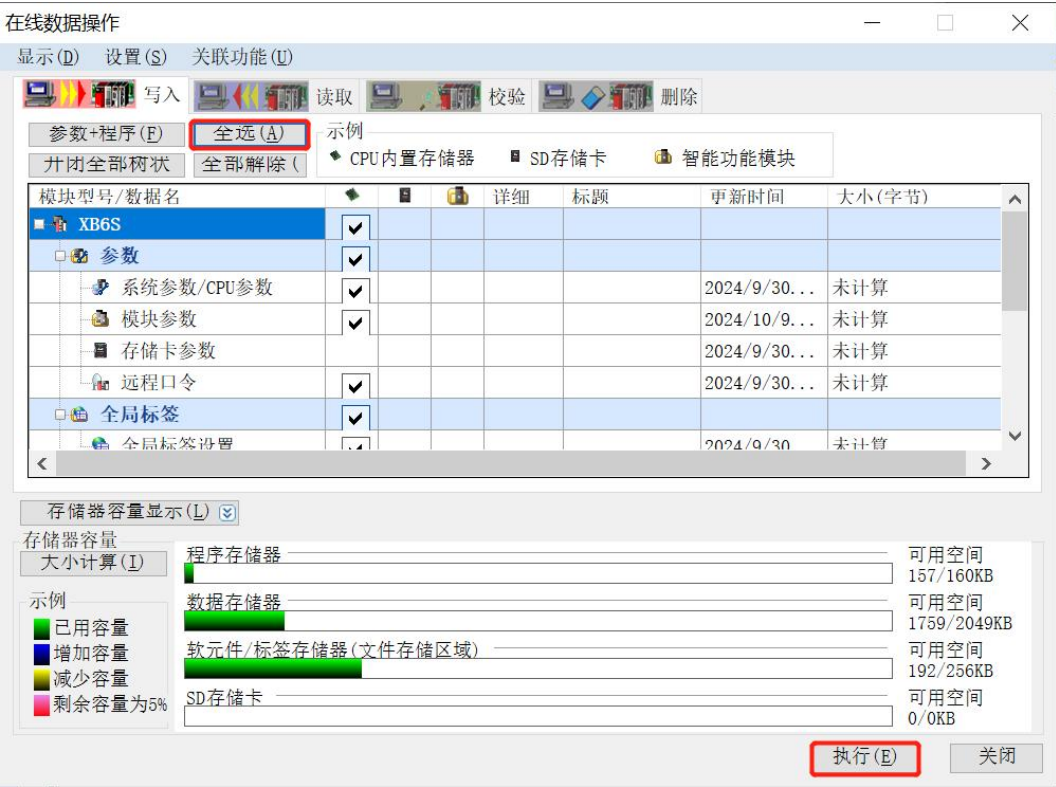
- b. Click "Convert" in the menu bar, then click "Convert All", as shown in the image below.



- c. Click "Online" in the menu bar, then click "Write to Programmable Controller" to write the set parameters into the CPU module of the main station, as shown in the figure below.



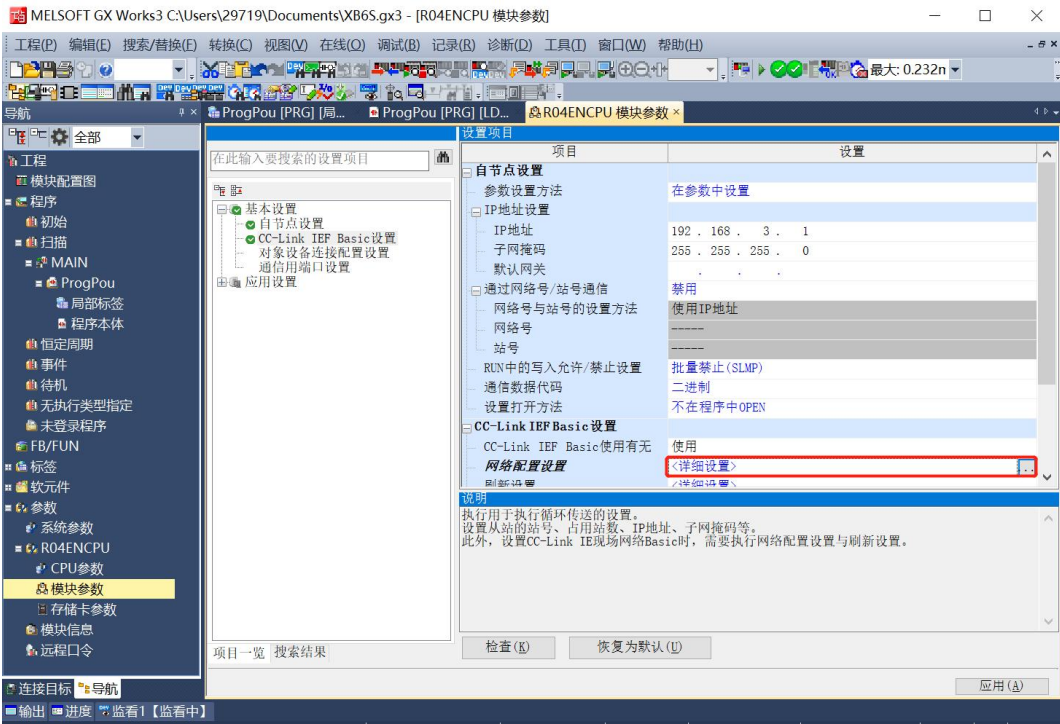
- d. A "Online Data Operation" dialog box will pop up. Select "Select All" and click "Execute", as shown in the figure below.



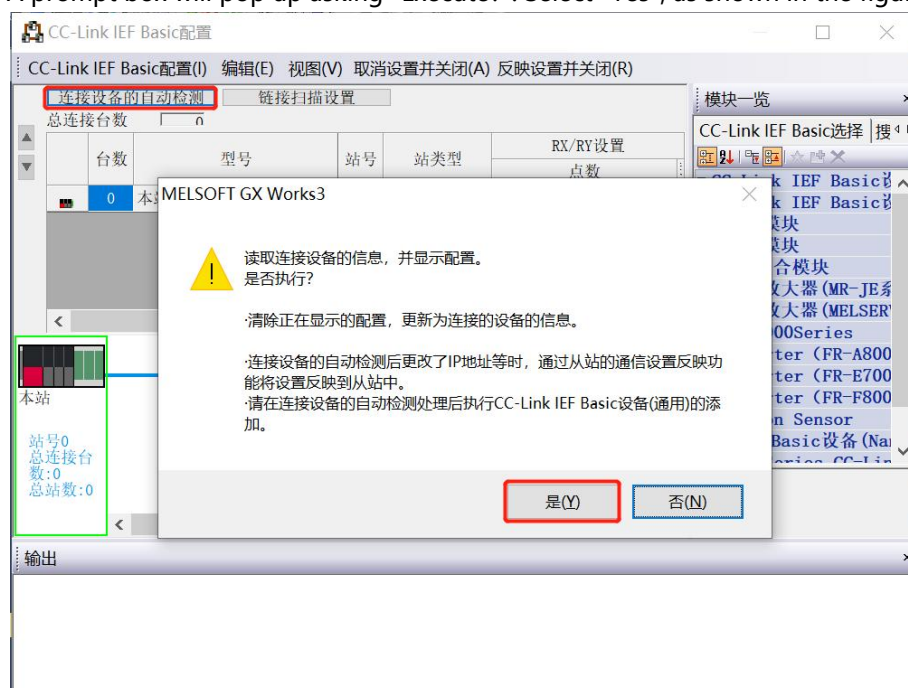
- e. A pop-up prompt box appears: "Parameters already exist, do you want to overwrite?" Select "Yes to all", as shown in the image below.



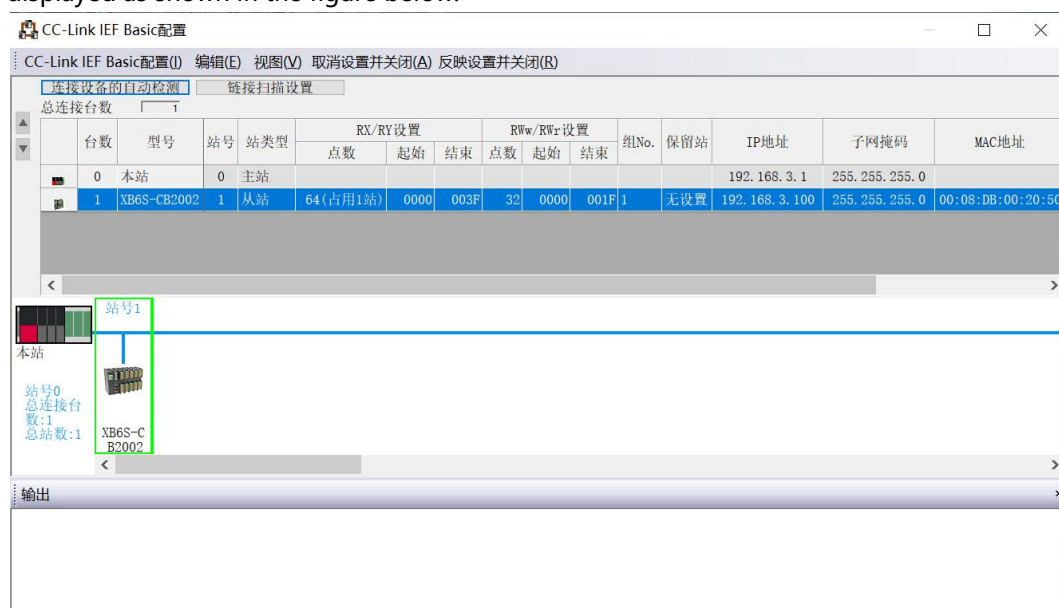
- f. The download and parameter settings process is now complete. Click "Close".
- g. Power off the module and PLC and then power them back on.
- h. After the PLC is powered on again, it is now set to network segment 3. In the settings interface, select "Use" in the drop-down box for "CC-Link IEF Basic Use or Not", and double-click "Network Configuration Settings -> Detailed Settings", as shown in the figure below.



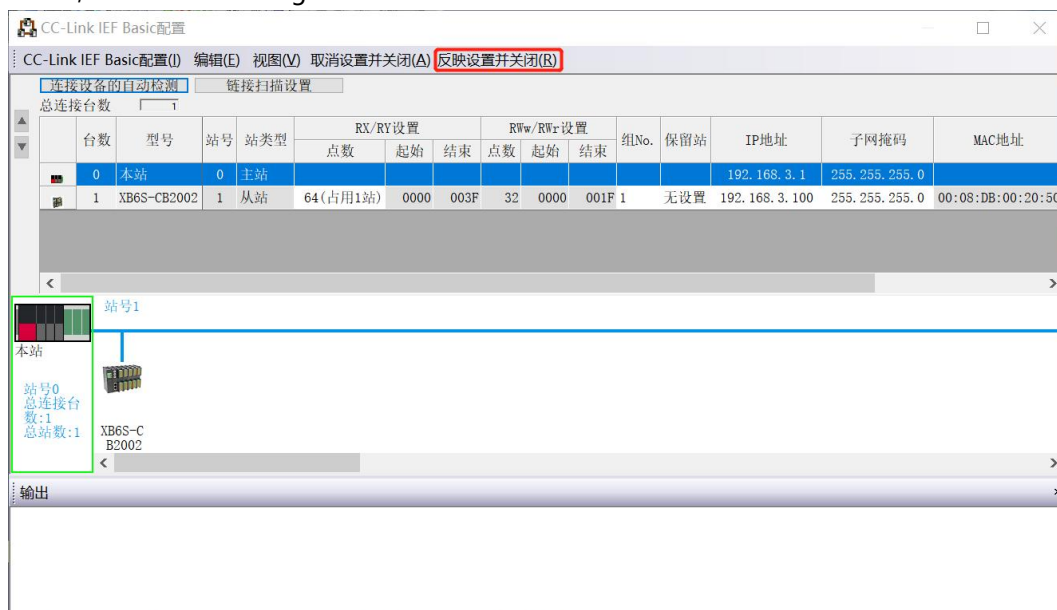
- i. In the CC-Link IEF Basic configuration pop-up window, click "Auto-detect connected devices". A prompt box will pop up asking "Execute?". Select "Yes", as shown in the figure below.



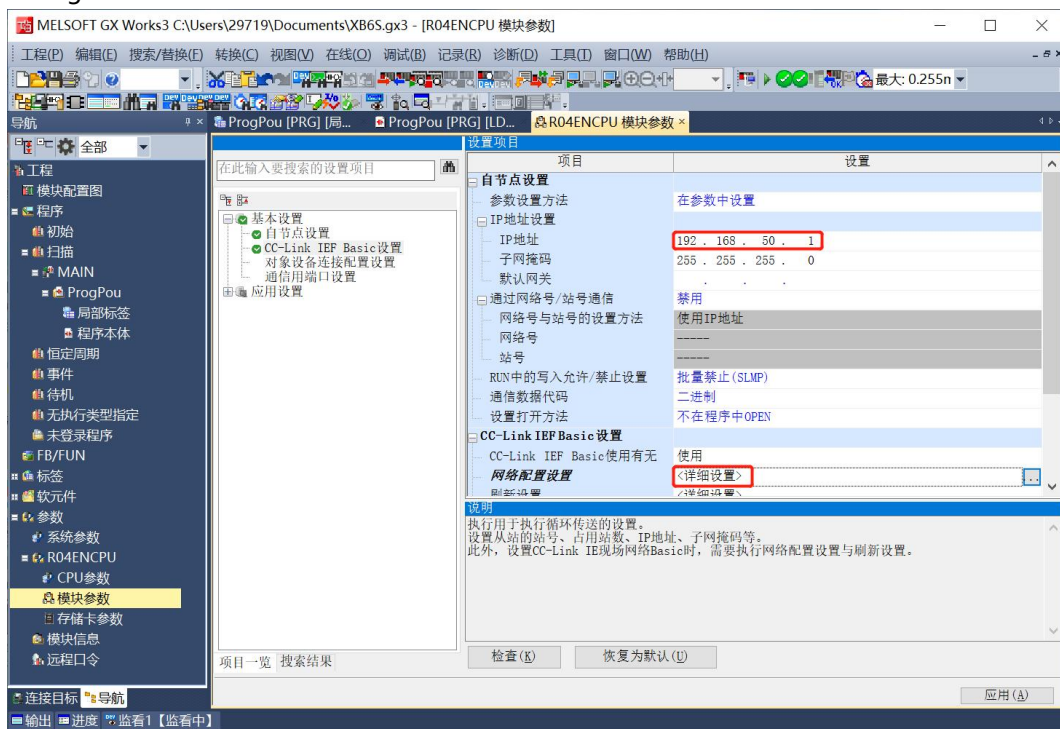
- j. After the scan is complete, the information of the connected coupler modules will be displayed as shown in the figure below.



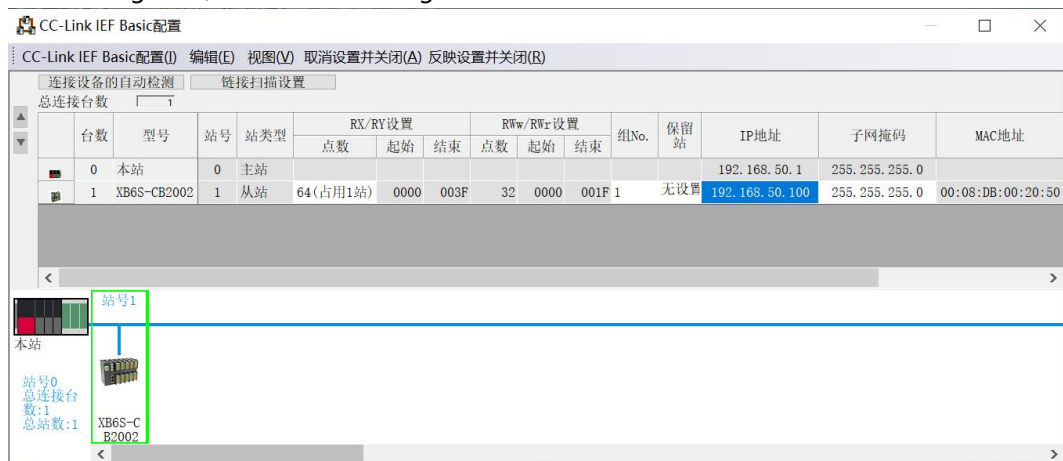
- k. If you want to change the PLC to use the 50 network segment, click "Reflect Settings and Close", as shown in the figure below.



- l. In the project settings interface, under IP address settings, set the PLC to the 50 network segment. Double-click "Network Configuration Settings -> Advanced Settings", as shown in the figure below.



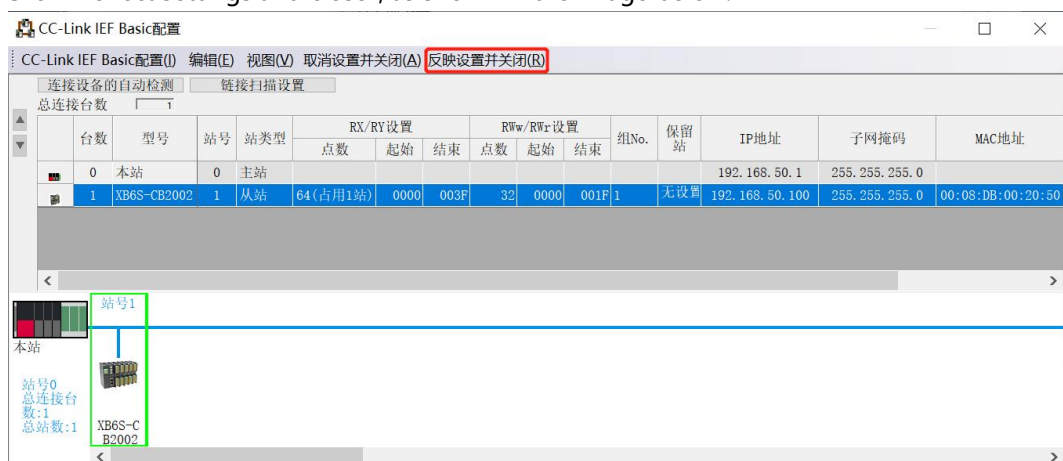
- m. In the CC-Link IEF Basic configuration window, change the module's IP address to the 50 network segment, as shown in the figure below.



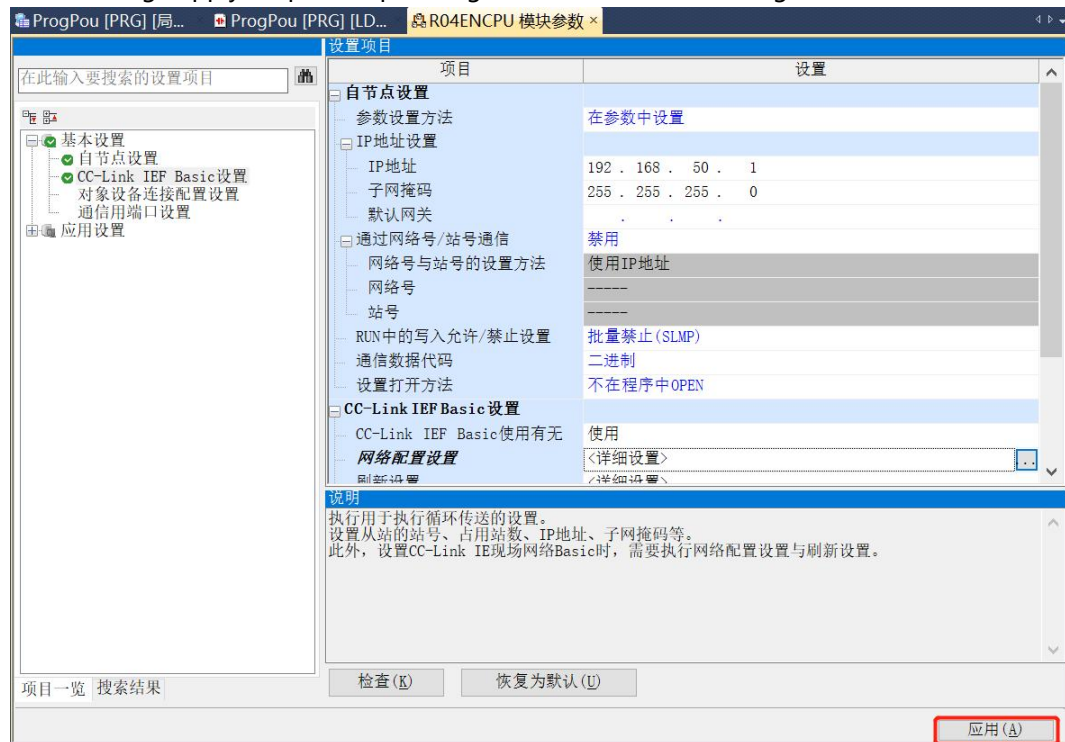
- n. Right-click the slave device, select "Online -> Reflect Slave Communication Settings", a pop-up prompt box will ask "Execute?", click "OK", as shown in the figure below.



- o. Click "Reflect settings and close", as shown in the image below.



- p. After clicking "Apply", repeat steps b to g above, as shown in the figure below.



- q. After the PLC is powered on again, the PLC and coupler are on the same network segment, and the IP address change is successful. If the PLC and coupler are already communicating successfully in the field, you only need to perform steps k~q to modify the IP address.

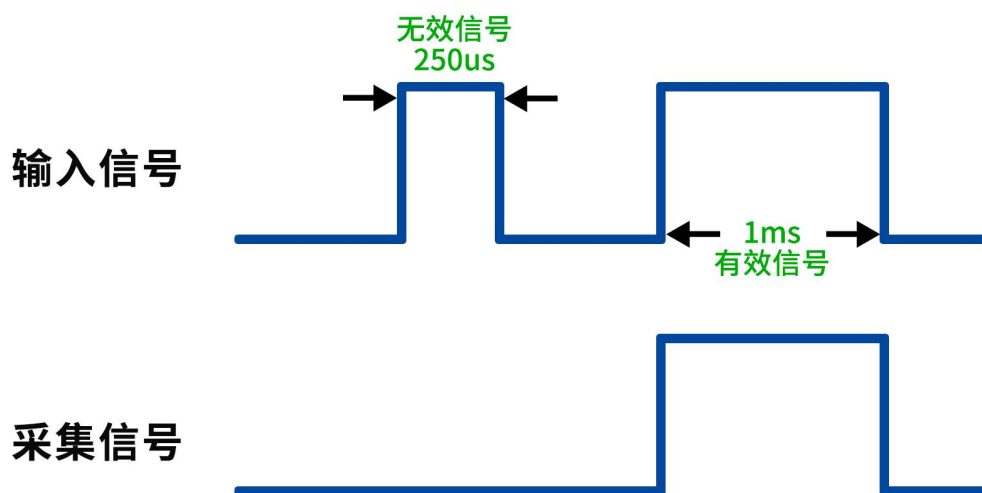
6.2 Parameter Description

6.2.1 Digital input filtering

Digital input filtering prevents unexpected rapid changes in input signals from causing switch contact skipping or electrical noise. Digital input filtering supports single-module settings; each module can be configured independently, but individual channels cannot.

The default setting for the digital input filter FilterTime is 3ms, with supported settings of no filtering, 0.1ms, 0.2ms, 0.5ms, 1ms, 2ms, 3ms (factory setting), 4ms...18ms, 19ms, and 20ms. When configured to 3ms, noise within 3ms can be filtered out. A 3ms input filter time means that a single signal transitioning from "0" to "1" or from "1" to "0" must take 3ms to be detected; single high or low pulses shorter than 3ms will not be detected.

Function Description: When the input filter is configured to 1ms, noise within 1ms can be filtered out. As shown in the figure below, a signal input of 250us will be considered an invalid signal; single high or low pulses shorter than 1ms will not be detected; signals of 1ms and longer can be acquired.



6.2.2 Clear/Hold digital output signal

The Clear/Hold function is for modules with output channels. This function configures the output mode of the output channels when the module is not in an OP state (stopped running/coupler network cable disconnected/X-bus offline). This parameter supports the following output states:

Output Disabling: When communication is lost, the module's output channel will automatically clear the output.

Output Enable: When communication is disconnected, the module's output channel continues to output valid values.

Output hold: When communication is disconnected, the module's output channel retains the previous output value.

6.2.3 Analog range settings

The Range Select setting is used to set the range of analog signals. Each channel can be configured individually (see details for range settings).[3.3.4](#) and [3.3.5 Analog Parameters](#)).

6.2.4 Analog input filtering

- **Analog input filtering function**

The analog input filtering function can internally average the data after A/D conversion to reduce the impact of fluctuations in the input signal due to noise and other factors.

The analog input is processed by moving average with a specified number of A/D conversions.

- **Filtering function configuration**

Each channel can be configured individually, with a configuration range of 1 to 200, and a default of 10 times.

6.2.5 Analog output signal clear/hold

The Clear/Hold function is for modules with output channels. This function configures the output mode of the output channels when the module is not in an OP state (stopped running/coupler network cable disconnected/X-bus offline). This parameter supports the following output states:

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

Maintain output: The module's output channel continues to output even when communication is interrupted.

Output preset value: When communication is disconnected, the module output channel outputs a preset value.

The analog output clear and hold function supports both module-wide settings (template mode) and single-channel settings (single-channel mode). Any channel can be configured using either single-channel mode or template mode, with single-channel mode having higher priority than template mode. Specific configuration methods are shown in the table below; the default is module-wide output clear.

Analog output module clear hold parameters				
Parameter name	Parameter meaning	Parameter values	Parameter value meaning	default value
TemplateMode	Template mode	0	Clear all channels and output.	0
		1	Hold all channels to maintain output.	
		2	Preset all channel output preset values	
TemplateValue Chx	Single channel clear/keep configuration	0	TemplateValue is the template mode value, meaning single-channel mode is not enabled.	0
		1	Clear single-channel output.	
		2	Hold single channel to maintain output.	
		3	Preset Single Channel Output Preset Value	
Preset Value Chx	Single channel preset value	Code value range	Output code value corresponding to current/voltage value (Corresponding range code value table)	0

Note: When the overall module setting (template mode) is configured to 2, that is, when the full channel output preset value is effective, the preset value is based on the preset code value of channel 0 in the single channel preset value, and the full channel output is performed.

6.2.6 Analog signal power-off retention

The analog parameters support the function of saving all configuration parameters of the module when communication is interrupted due to abnormal power failure. Analog modules all support power failure saving by default.

6.2.7 Coupler parameters

6.2.7.1 IO communication exception configuration function

IO communication exception configuration parametersThe X-bus interaction state can be configured when a communication failure occurs in a certain IO module during operation. The parameter can be configured to the following three states:

Abnormal and not interactive(Default state): When a module encounters an error, X-bus will no longer exchange process data. The original interaction can be resumed after the module error disappears.

stop communicationWhen a module malfunctions, X-bus stops interacting. Even after the malfunction disappears, communication will not resume. A power cycle is required to restore the original interaction.

Interactive exceptionsWhen a module malfunctions, all modules following the malfunctioning module are considered offline. Normal modules preceding the malfunctioning module can interact normally with X-bus, and X-bus can monitor these modules normally. Once the malfunctioning module recovers, the original interaction (soft hot-swap function) can be restored.

This manual uses GX Works3 as an example to introduce the parameter configuration method of the XB6S-CB2002 coupler + I/O module combination. For detailed steps, please refer to [link/reference needed].[Parameter settings in section 6.6.1](#)After making the modifications, it is recommended to power on again.

6.3 Soft component description

6.3.1 Coupler soft element

The coupler soft component allocation is shown in the table below:

Station type	Number of stations occupied	soft components	illustrate
From the station	[1,4]	RX	64X bits Data used for digital input process
		RY	64X bits Data used for digital output process
		RWr	32◇X words Data used for analog input process
		RWw	32◇X words Data used for analog output process

Note: X represents the number of stations occupied.

6.3.2 IO module channels and soft components

IO Module Data Allocation Instructions

Digital I/O module:

Each channel of the module occupies 1 bit, and the actual data length used varies depending on the number of channels in the module.

Analog I/O module:

Each channel of the module occupies 2 bytes, and the actual data length used varies depending on the number of channels in the module.

Data length allocation is as follows:

Module model	Uplink data length (Bytes)		Downlink data length (Bytes)	
	Assignment value	Actual usage value	Assignment value	Actual usage value
XB6S-3200(N)	4	4	-	-
XB6S-1600	2	2	-	-
XB6S-0800	1	1	-	-
XB6S-1616A/B	2	2	2	2
XB6S-0032A/B(N)	-	-	4	4
XB6S-0016A/B	-	-	2	2
XB6S-0008A/B	-	-	1	1
XB6S-0012J/6	-	-	2	2
XB6S-A80VD	16	16	-	-
XB6S-A80V	16	16	-	-
XB6S-A40VD	8	8	-	-
XB6S-A40V	8	8	-	-
XB6S-A80ID	16	16	-	-
XB6S-A80I	16	16	-	-
XB6S-A40ID	8	8	-	-
XB6S-A40I	8	8	-	-
XB6S-A08V	-	-	16	16
XB6S-A04V	-	-	8	8
XB6S-A08I	-	-	16	16
XB6S-A04I	-	-	8	8
XB6S-A80TM	16	16	-	-
XB6S-A40TM	8	8	-	-
XB6S-PL20	34	34	20	20
XB6S-PS20D	26	26	2	2
XB6S-PL20D	34	34	20	20
XB6S-PC80	64	64	2	2
XB6S-PT04A	48	48	56	56
XB6S-C01SP-32Bytes	32	32	32	32
XB6S-C01SP-64Bytes	64	64	64	64

XB6S-C01SP-128Bytes	128	128	128	128
XB6S-C01SP-255Bytes	255	255	255	255

IO module channel and soft component correspondence table

XB6S-3200(N)		
Signal transmission direction: Input module -> Master station		
Soft component No.	Corresponding input channel	Input signal
DIA Digital Input		
RX0~RXF	Channels 0~F	Input signals X0~XF
DIb Digital Input		
RX10~RX1F	Channels 0~F	Input signals X10~X1F
XB6S-1600		
Signal transmission direction: Input module -> Master station		
Soft component No.	Corresponding input channel	Input signal
DI (Digital Input)		
RX0~RXF	Channels 0~F	Input signals X0~XF
XB6S-0800		
Signal transmission direction: Input module -> Master station		
Soft component No.	Corresponding input channel	Input signal
DI (Digital Input)		
RX0~RX7	Channels 0~7	Input signals X0~X7
XB6S-1616A/B		
Signal transmission direction: Master station -> Input/output module -> Master station		
Soft component No.	Corresponding output channel	Input/output signals
DI (Digital Input)		
RX0~RXF	Channels 0~F	Input signals X0~XF
RX10~RX1F	none	Prohibited
DO Digital Output		
RY0~RYF	Channels 0~F	Output signals Y0~YF
RY10~RY1F	none	Prohibited
XB6S-0032A/B(N)		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
DOa Digital Output		
RY0~RYF	Channels 0~F	Output signals Y0~YF
DOb digital output		
RY10~RY1F	Channels 0~F	Output signals Y10~Y1F
XB6S-0016A/B		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
DO Digital Output		
RY0~RYF	Channels 0~F	Output signals Y0~YF

XB6S-0008A/B		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
DO Digital Output		
RY0~RY7	Channels 0~7	Output signals Y0~Y7
XB6S-0012J/6		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
RY0~RYB	0~B	Output signals Y0~YB
XB6S-A80VD/XB6S-A80V/XB6S-A80ID/XB6S-A80I/XB6S-A80TM		
Signal transmission direction: Input module -> Master station		
Soft component No.	Corresponding input channel	Input signal
AI analog input		
RWr0~7	Channels 0~7	Input signals D0~D7
XB6S-A40VD/XB6S-A40V/XB6S-A40ID/XB6S-A40I/XB6S-A40TM		
Signal transmission direction: Input module -> Master station		
Soft component No.	Corresponding input channel	Input signal
AI analog input		
RWr0~3	Channels 0~3	Input signals D0~D3
XB6S-A08V/XB6S-A08I		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
AO analog output		
RWw0~7	Channels 0~7	Output signals D0~D7
XB6S-A04V/XB6S-A04I		
Signal transmission direction: Master station -> Output module		
Soft component No.	Corresponding output channel	Output signal
AO analog output		
RWw0~3	Channels 0~3	Output signals D0~D3

6.4 Mitsubishi PLC STOP mode stop output function

The RUN/STOP switch of the Mitsubishi PLC can be used to control the PLC's operating status. When the XB6S-CB2002 coupler is used in the configuration of the Mitsubishi PLC, the Mitsubishi PLC usually communicates in the RUN operating mode.

When the RUN/STOP switch of the Mitsubishi PLC is set to the STOP state (stop mode), all output modules in the XB6S-CB2002 configuration will output 0.

6.5 Alarm function

6.5.1 Coupler general fault codes

category	serial number	Error Type	Error code	Event Name	Event Code (2#)	Event code (10#)	Event code (16#)	processing method
General Error	2	Online upgrade error	1	Firmware upgrade error	000000010000001	129	0x0081	Try upgrading again, check for environmental interference, and check if the firmware is too large, etc.
			2	Firmware is incompatible with the current module model	0000000010000010	130	0x0082	Check if the files are correct, and whether there are any abnormalities or interferences in the modules.
	3	Voltage error	5	Load-side voltage not connected	0000000011000101	197	0x00C5	Check if the on-site power supply is connected.
	6	Channel error	4	overflowing from the channel	0000000110000100	388	0x0184	Check whether the input signal of the corresponding channel exceeds the measurement range and whether the output signal exceeds the configurable range.
	7	Parameter error	0	Parameter setting error	0000000111000000	448	0x01C0	Check module parameter settings
	63	X-bus communication error	1	X-bus initialization failed.	0000111111000001	4033	0x0FC1	Check if the module connection is normal.
			2	X-bus token timed out	0000111111000010	4034	0x0FC2	Check if the module has any abnormalities or interference.
			3	X-bus module disconnected	0000111111000011	4035	0x0FC3	Check if the module is online or experiencing

								interference, etc.
			4	CRC error in parsing data	0000111111000100	4036	0x0FC4	Check if the module has any abnormalities or interference.
			5	The X-bus module does not support abnormal interactive functionality.	0000111111000101	4037	0x0FC5	Upgrade module software version or disable abnormal interactive functions
Analog quantity	1	XB6S-A 80TM	0	Disconnection	0010000001000000	8256	0x2040	Check if the wiring of the corresponding channel is normal.
gateway	0	XB6S-C01SP	0	General parameter error	0101000000000000	20480	0x5000	Check if any general parameters exceed parameter limits.
			1	Communication node parameter error	0101000000000001	20481	0x5001	Check whether the communication node format and node settings are consistent with the communication mode and control mode.
			2	Process data error	0101000000000010	20482	0x5002	After parameter configuration is complete and no other alarms are detected, the module will rescan after power-off and power-on.
			3	Modbus register mapping conflict	0101000000000011	20483	0x5003	Compare the start address and length settings of each Modbus write command for communication node parameter 1 to see if they overlap.
			4	Modbus node ID	0101000000000100	20484	0x5004	Check if the slave ID

				setting error				range of communication node parameter 2 is between 1 and 247.
--	--	--	--	---------------	--	--	--	---

6.6 CC-Link IE Field Basic Coupler Configuration Application

6.6.1 Applications in the GX Works3 software environment

1、Preparation

- **Hardware environment**

- **Module preparation:** This guide uses the XB6S-CB2002+XB6S-1616B+XB6S-A80VD+XB6S-A08I topology as an example.
- **One computer, pre-installed with GX Works3 software.**
- **One Mitsubishi PLC**
This instruction uses the R04EN CPU model as an example.
- **CC-Link IE Field Basic Dedicated Shielded Cable**
- **One switching power supply**
- **Device configuration file**
Configuration file retrieval
address: <https://www.solidotech.com/cn/resources/configuration-files>

- **Hardware configuration and wiring**

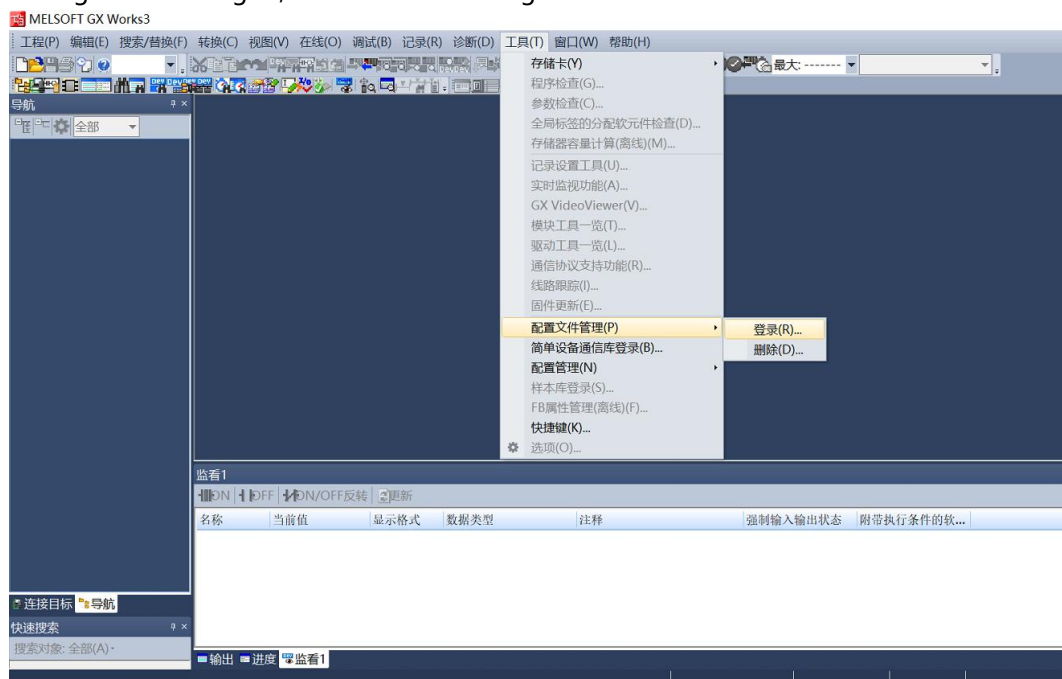
Please follow the instructions [4 Installation and Removal](#) and [5. Wiring](#) "Required Operation"

- **Computer IP Requirements**

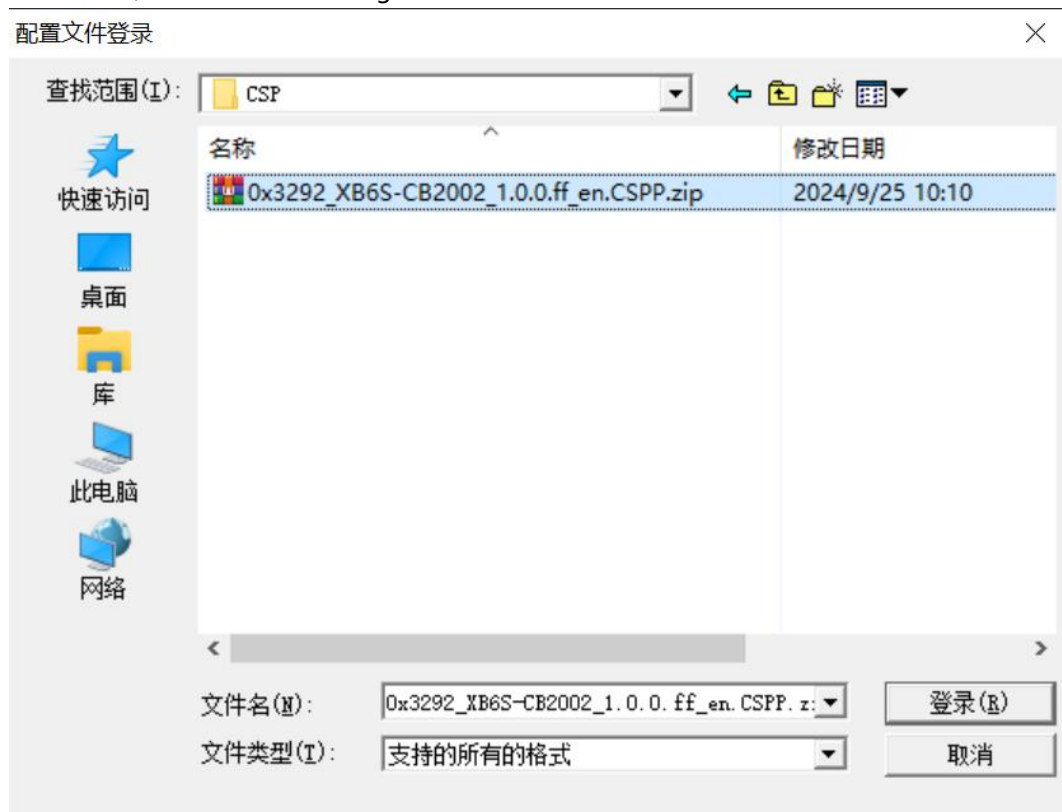
Configure the computer's IP address and the PLC's IP address to ensure they are on the same network segment.

2、Install CSP file

- Open the GX Work3 software, click "Tools" in the menu bar, then click "Configuration File Management -> Login", as shown in the image below.



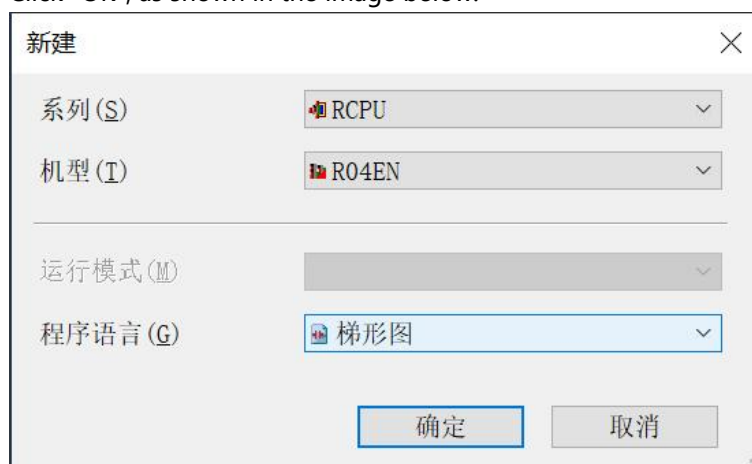
- b. In the pop-up window, select the CSP file you want to add and click "Login" to complete the installation, as shown in the image below.



Note: The configuration file does not need to be unzipped, and the project needs to be closed during installation; if the configuration file needs to be replaced, be sure to uninstall it first before adding it.

3. Create a project

- a. Click "Project" in the menu bar, then click "New Project".
- b. A dialog box for creating a new project will pop up. Select "RCPU" for PLC series, "R04EN" for PLC type, and ladder diagram as the default programming language.
- c. Click "OK", as shown in the image below.

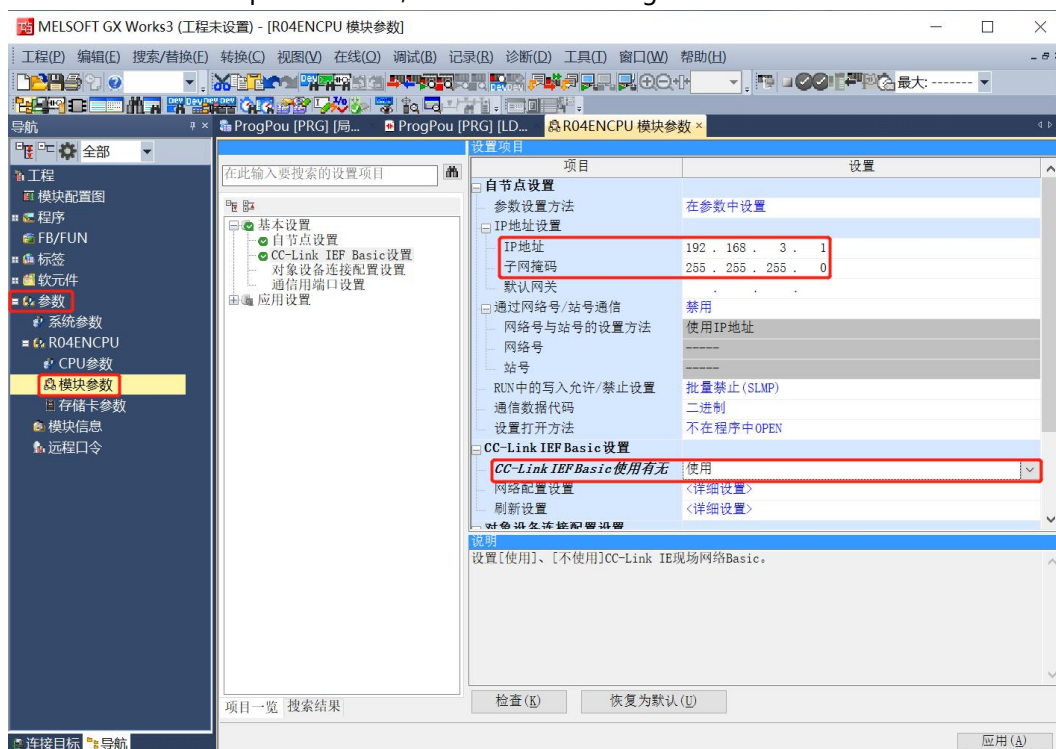


List of master stations supported by the XB6S-CB2002 coupler:

MELSEC iQ-R	
name	model
Programmable Logic Controller	CPUR00CPU, R01CPU, R02CPU, R04CPU, R04ENCPU, R08CPU, R08ENCPU, R16CPU, R16ENCPU, R32CPU, R32ENCPU, R120CPU, R120ENCPU
C language controller module	R12CCPU-V
MELSEC iQ-L	
CPU module	L04HCPU, L08HCPU, L16HCPU
MELSEC iQ-F	
FX5UJ CPU Module	FX5UJ-24MR/ES, FX5UJ-24MT/ES, FX5UJ-24MT/ESS, FX5UJ-40MR/ES, FX5UJ-40MT/ES, FX5UJ-40MT/ESS, FX5UJ-60MR/ES, FX5UJ-60MT/ES, FX5UJ-60MT/ESS
FX5U CPU Module	FX5U-32MR/ES, FX5U-32MT/ES, FX5U-32MT/ESS, FX5U-64MR/ES, FX5U-64MT/ES, FX5U-64MT/ESS, FX5U-80MR/ES, FX5U-80MT/ES, FX5U-80MT/ESS, FX5U-32MR/DS, FX5U-32MT/DS, FX5U-32MT/DSS, FX5U-64MR/DS, FX5U-64MT/DS, FX5U-64MT/DSS, FX5U-80MR/DS, FX5U-80MT/DS, FX5U-80MT/DSS
FX5UC CPU Module	FX5UC-32MT/D, FX5UC-32MT/DSS, FX5UC-64MT/D, FX5UC-64MT/DSS, FX5UC-96MT/D, FX5UC-96MT/DSS, FX5UC-32MT/DS-TS, FX5UC-32MT/DSS-TS, FX5UC-32MR/DS-TS
FX5 Smart Function Module	FX5-ENET
MELSEC-Q	
General-purpose high-speed QCPU	Q03UDVCP, Q04UDVCP, Q06UDVCP, Q13UDVCP, Q26UDVCP
MELSEC-L	
Ethernet port with built-in LCP	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT
MELIPC	
MELIPC MI5000 series	MI5122-VW

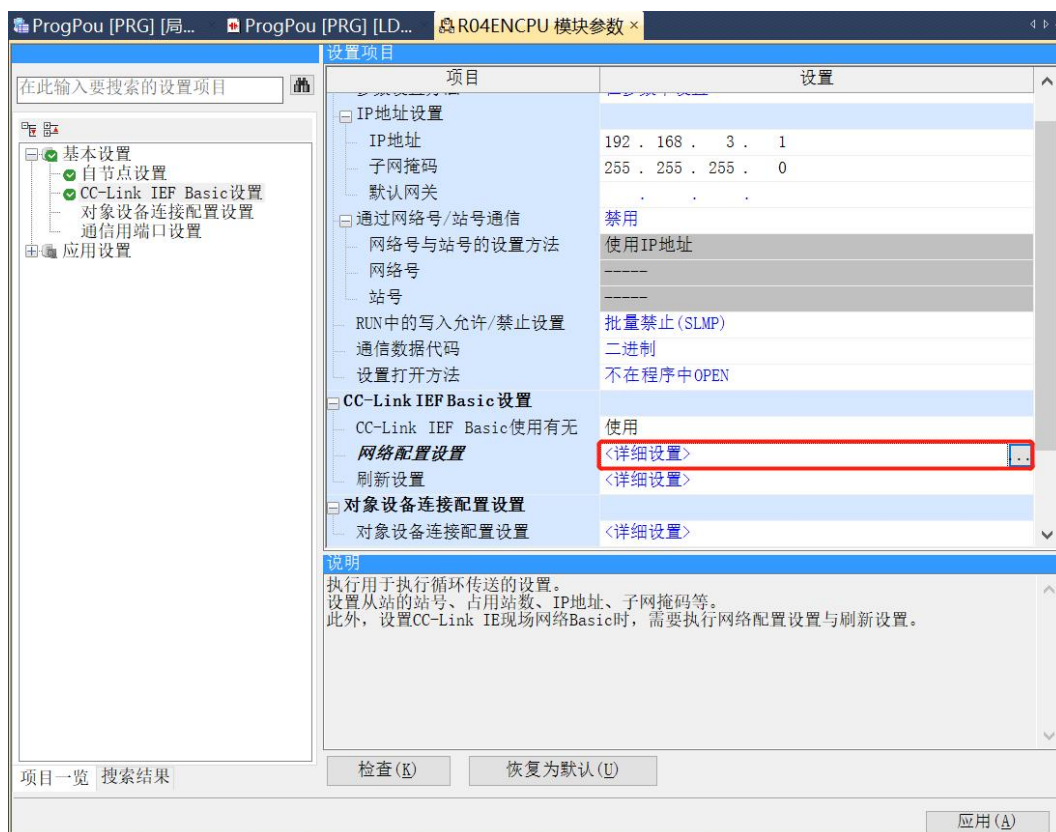
4. Configure CC-Link IE field network Basic

- a. On the left navigation screen, select "Parameters -> CPU Module Model", double-click "Module Parameters", set the CPU's IP address under IP Address Settings, and select "Use" from the CC-Link IEF Basic dropdown menu, as shown in the image below.

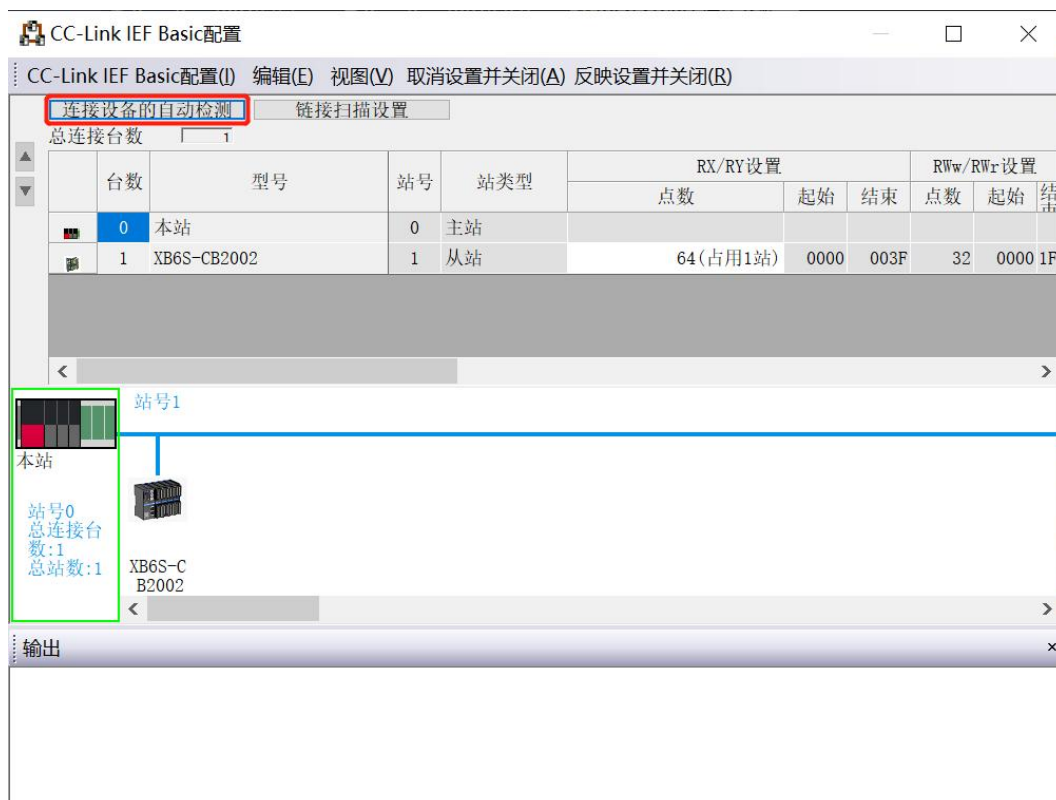


Note: The CPU and XB6S-CB2002 need to be set to the same network segment.

- b. In the settings interface, select "Network Configuration Settings", then double-click "Detailed Settings", as shown in the image below.

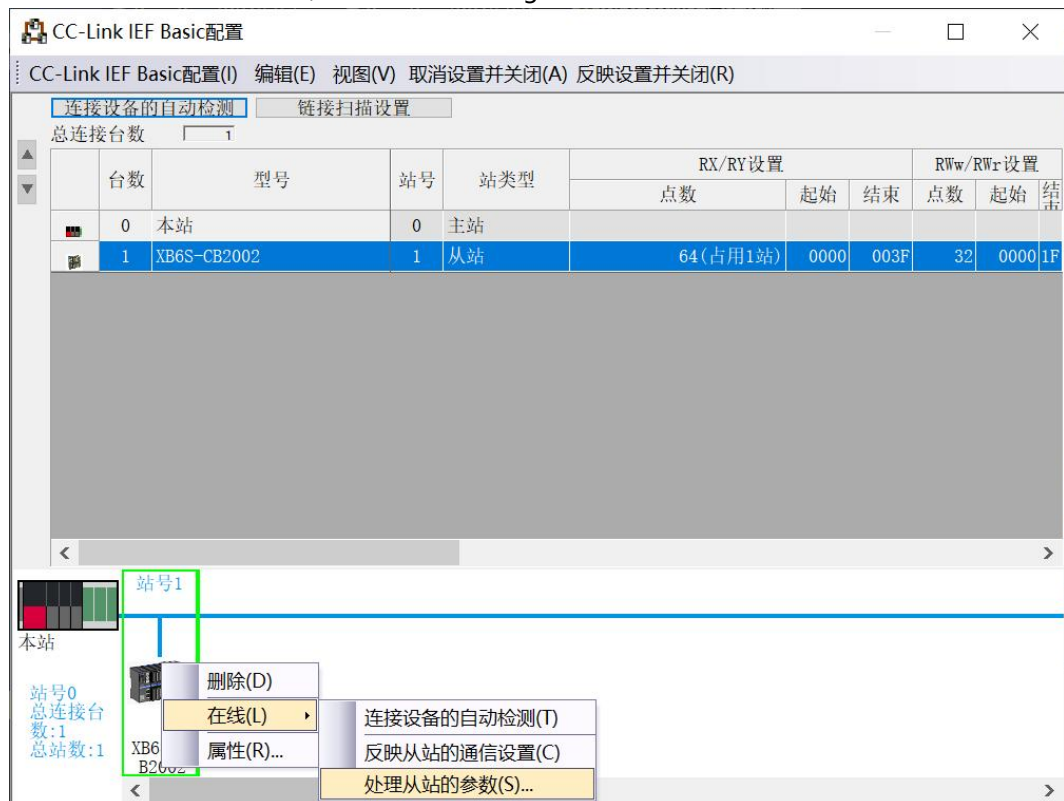


- c. In the CC-Link IEF Basic configuration pop-up window, clicking "Auto Detection of Connected Devices" will automatically add the connected modules to the network, as shown in the figure below.



5. Read parameters

- a. In the CC-Link IEF Basic configuration window, right-click the slave device and select "Online -> Process Slave Parameters", as shown in the figure below.



- b. In the parameter pop-up window for processing slave stations, set the execution process to "Parameter Reading" and click "Execute" to complete the reading of relevant parameters, as shown in the figure below.

处理从站的参数

对象设备信息: XB6S-CB2002
站号: 1

执行处理(M): 参数读取 从对象设备执行参数的读取。

参数信息
选中的参数为选择的处理对象。

全选(A) 全部解除(L)

名称	初始值	单位	读取值	单位	写入值	单位	设置范围	说明
Module Information								
☒ Module Information								Module Information
--- Manufacturer ID	0x3292							Manufacturer ID of the
--- Product Name	XB6S-CB20...							Product name of the sl
--- Product ID	0x00000604							Product ID of the slave
--- Hardware Version	5052.1-1							Hardware version of th
--- Software Version	1.0.0.ff							Software version of the
Occupied Station								
☒ Occupied Station	1						1~4	Occupied Station

清除全部[读取值](R) 清除全部[写入值](C)

处理选项

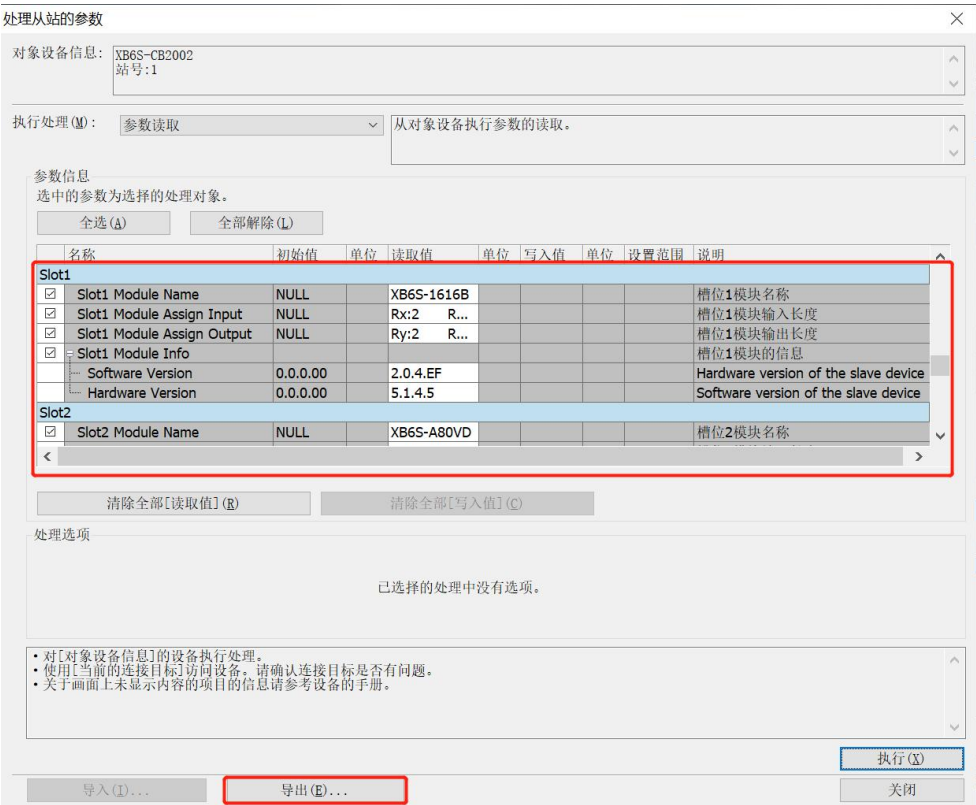
已选择的处理中没有选项。

• 对[对象设备信息]的设备执行处理。
• 使用[当前的连接目标]访问设备。请确认连接目标是否有问题。
• 关于画面上未显示内容的项目的信息请参考设备的手册。

执行(X) 导入(I)... 导出(E)... 关闭

6、IO Information Query

- a. In the parameter pop-up window for processing slave stations, you can...View the corresponding I/O information in [Slots 1-32]. You can view the module name, input/output length, hardware version number, and software version number. Click [Export (E)] to generate an Excel file for later viewing, as shown in the image below.



7、Number of write modules

- a. In the parameter pop-up window for processing slave stations, set the execution processing to "Parameter Write", click "Uncheck All", check the "IO Module Numbers" function option, and write the total number of IOs for the actual topology connection in "Write Value". After setting, click "Execute" to complete the configuration distribution, as shown in the figure below.

处理从站的参数

对象设备信息:XB6S-CB2002
站号:1

执行处理(M):参数写入执行对象设备的参数写入。

参数信息

选中的参数为选择的处理对象。

全选(A)全部解除(L)

	名称	初始值	单位	读取值	单位	写入值	单位	设置范围	说明
☐	Slot32 Module Assign Input	NULL							槽位32模块输入长度
☐	Slot32 Module Assign Output	NULL							槽位32模块输出长度
☐	Slot32 Module Info								槽位32模块的信息
	Software Version	0.0.0.00							Hardware version of th
	Hardware Version	0.0.0.00							Software version of the
Parameter State									
☐	Parameter State	ParameterC...		ParameterC...					参数状态
☐	IO Module Numbers								
☒	IO Module Numbers	0		3		3		0~32	IO Module Numbers

清除全部[读取值](R)

清除全部[写入值](C)

处理选项

已选择的处理中没有选项。

对[对象设备信息]的设备执行处理。
使用[当前的连接目标]访问设备，请确认连接目标是否有问题。
关于画面上未显示内容的项目的信息请参考设备的手册。

执行(E)

导入(I)...导出(E)...

关闭

Note: Writing to the module count is a necessary step for communication and must be performed.

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8、Number of stations to occupy

- a. In the parameter pop-up window for processing slave stations, the "Read Value" is recorded as "1", as shown in the figure below.

处理从站的参数

对象设备信息: XB6S-CB2002
站号: 1

执行处理 (M): 参数读取 从对象设备执行参数的读取。

参数信息
选中的参数为选择的处理对象。

全选 (A) 全部解除 (L)

名称	初始值	单位	读取值	单位	写入值	单位	设置范围	说明
Module Information								
☐ Module Information								Module Information
Manufacturer ID	0x3292		0x3292					Manufacturer ID of the
Product Name	XB6S-CB20...		XB6S-CB20...					Product name of the sl
Product ID	0x00000604		0x00000604					Product ID of the slave
Hardware Version	5052.1-1		5052.1-1					Hardware version of th
Software Version	1.0.0.ff		1.0.0.fe					Software version of the
Occupied Station								
☐ Occupied Station	1		1				1~4	Occupied Station

清除全部[读取值] (R) 清除全部[写入值] (C)

处理选项

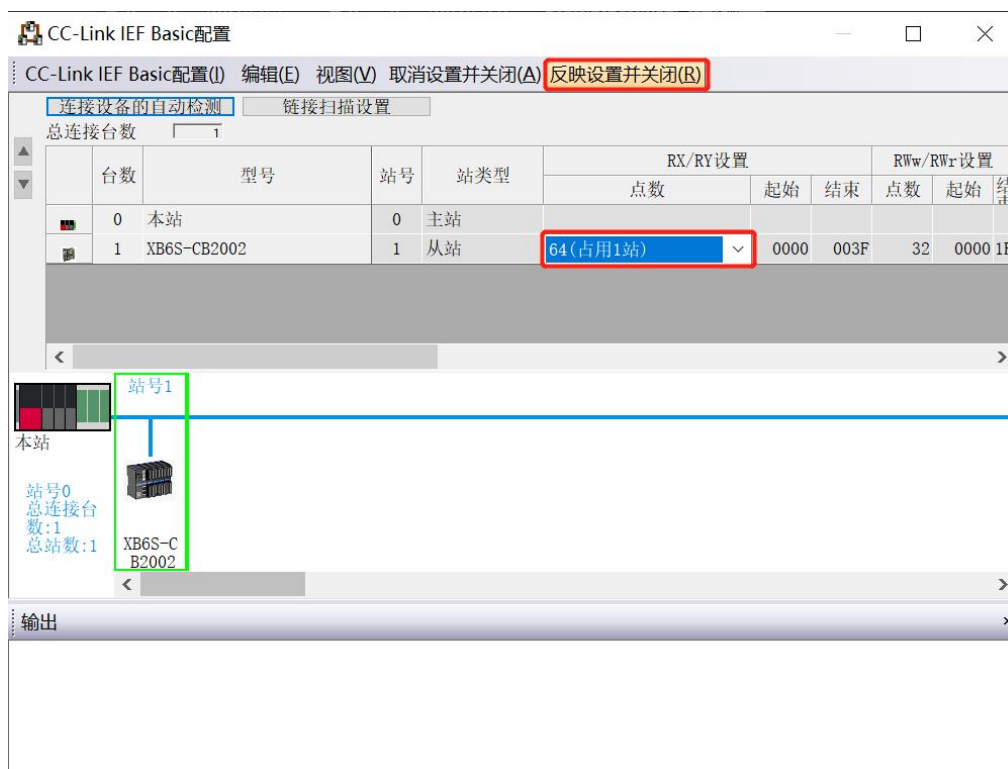
已选择的处理中没有选项。

• 对[对象设备信息]的设备执行处理。
• 使用[当前的连接目标]访问设备。请确认连接目标是否有问题。
• 关于画面上未显示内容的项目的信息请参考设备的手册。

导入 (I)... 导出 (E)... 执行 (X) 关闭

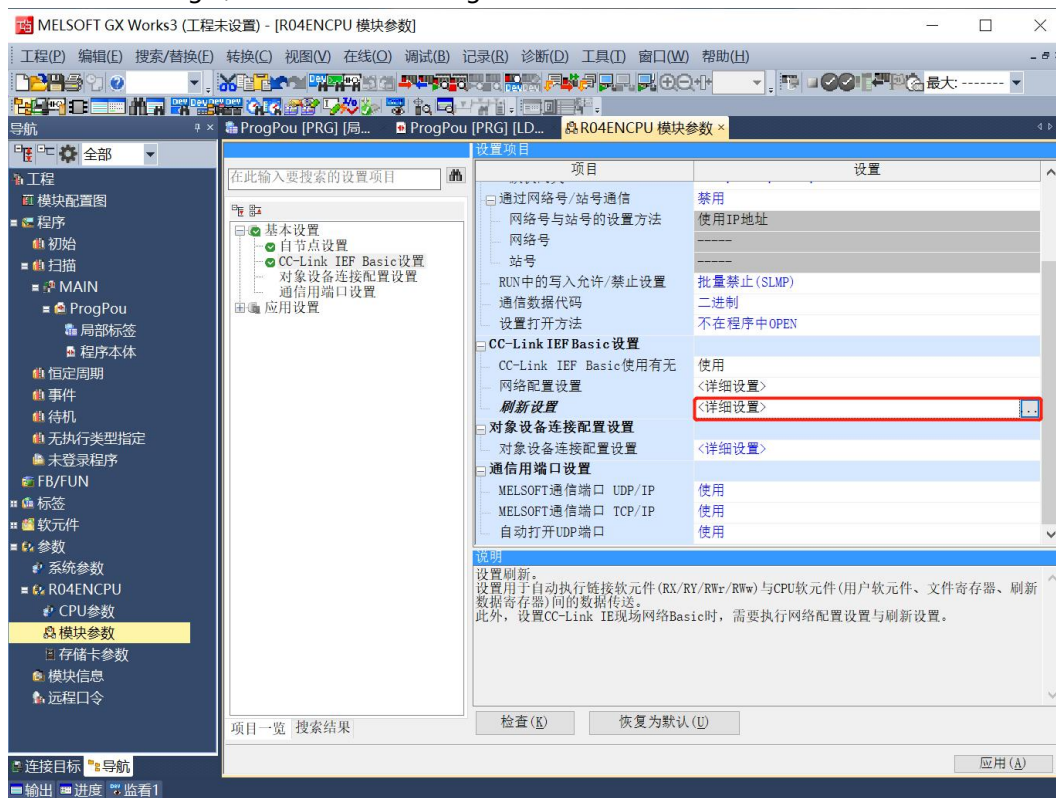
Note: Occupied Station is the number of stations occupied by the coupler. You need to read the current position and return to the configuration page to manually select it.

- b. The number of stations to occupy is selected based on the read value. Here, we select to occupy 1 station. Click "Reflect Settings and Close" to complete the configuration, as shown in the figure below.

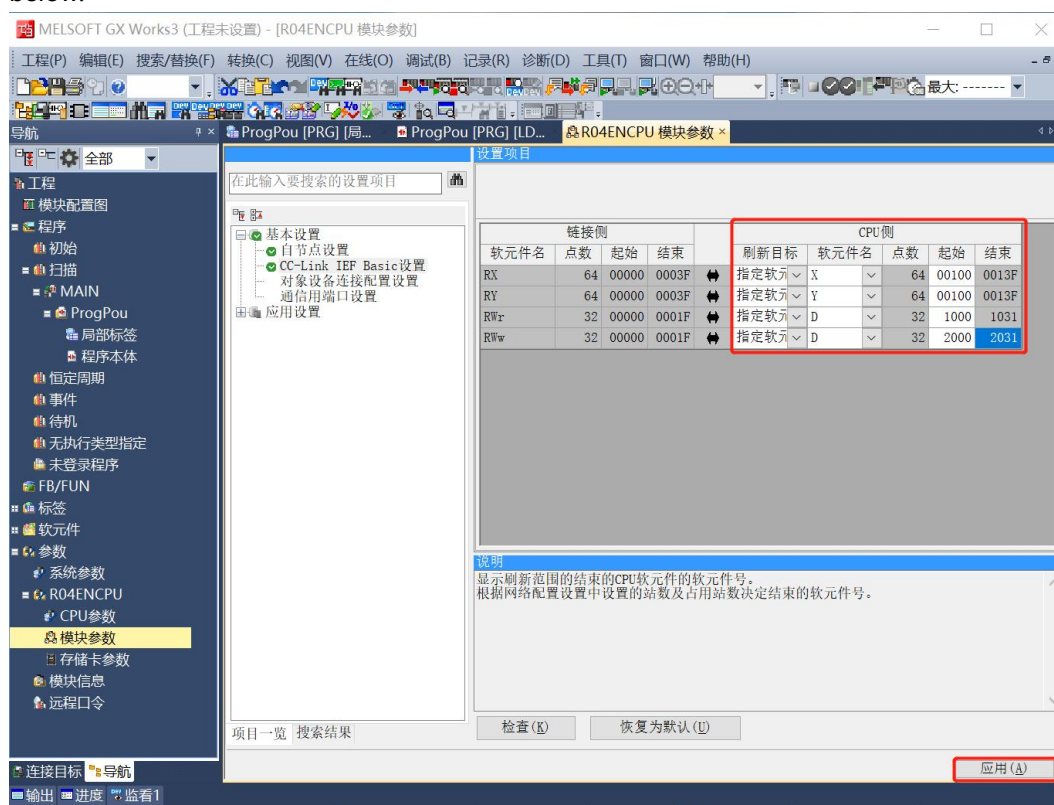


9、Refresh side settings

- In the left navigation interface, select "Parameters -> CPU Module Model", and double-click "Module Parameters".
- In the settings interface, select "CC-Link IEF Basic Settings -> Refresh Settings", then double-click "Detailed Settings", as shown in the image below.

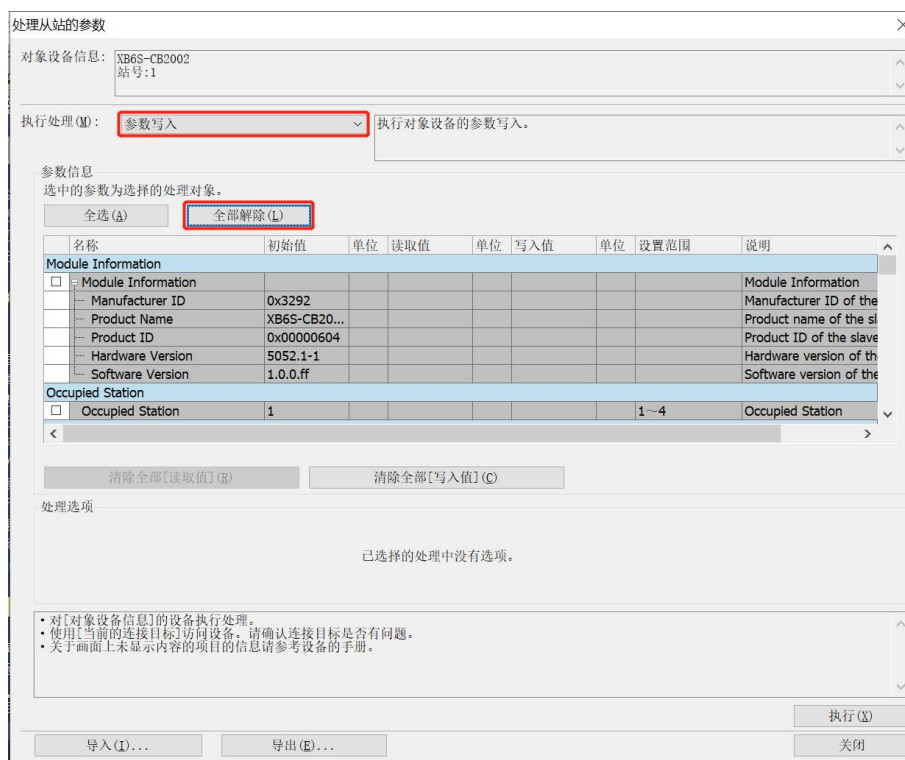


- c. Configure the relevant parameters. After configuration, click "Apply", as shown in the figure below.

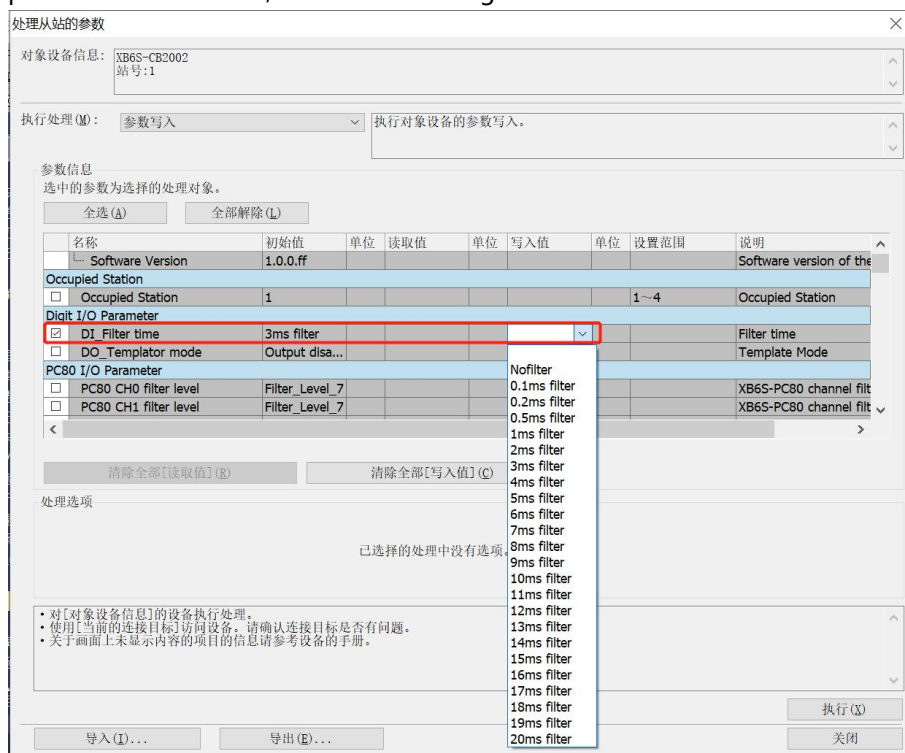


10、Parameter settings

- In the CC-Link IEF Basic configuration window, right-click the slave device and select "Online -> Process Slave Parameters".
- In the parameter pop-up window for processing slave stations, set the execution process to "Parameter Write" and click "Cancel All" to facilitate individual parameter configuration, as shown in the figure below.

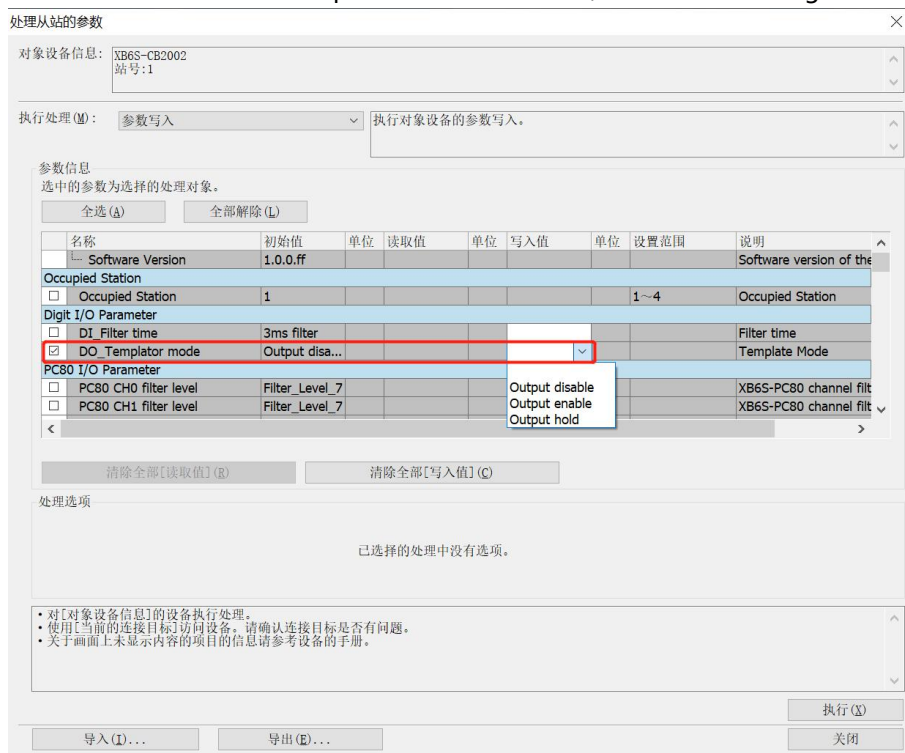


- c. For example, to modify the digital filter time parameter, you can check the "DI_Filter time" function option, select the filter time as needed in "Write value", and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller so that the parameters take effect, as shown in the figure below.

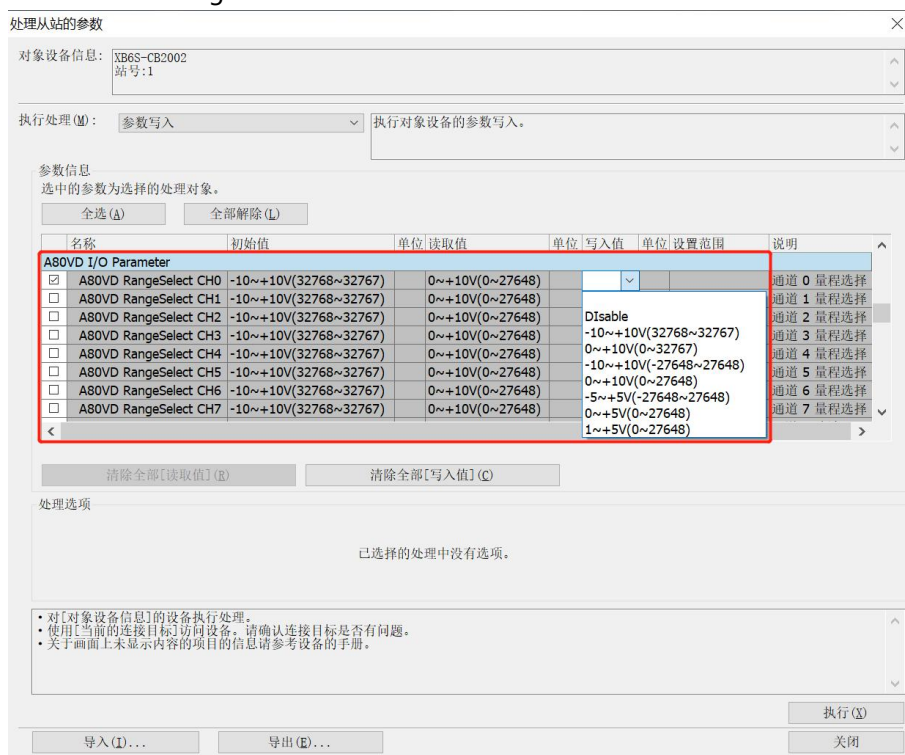


- d. For example, to clear/hold digital output signals, you can check the "DO_Templator mode" option, and in "Write Value", select "Output disable", "Output enable" or "Output hold" as

needed. After setting, click "Execute" to save the parameters to the coupler and download them to the controller so that the parameters take effect, as shown in the figure below.



- e. For example, to modify the analog voltage range of the XB6S-A80VD, you can check the "RangeSelect" function option, select the range of the channel as needed in "Write Value", configure each channel independently, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller so that the parameters take effect, as shown in the figure below.



- f. For example, to modify the analog input filtering parameters of the XB6S-A80VD, you can check the "Filter Channel" function option, enter the number of filters as needed in "Write Value", configure each channel independently, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller so that the parameters take effect, as shown in the figure below.

处理从站的参数

对象设备信息: XB6S-CB2002
站号:1

执行处理(M): 参数写入 执行对象设备的参数写入。

参数信息
选中的参数为选择的处理对象。

全选(A) 全部解除(L)

名称	初始值	单位	读取值	单位	写入值	单位	设置范围	说明
☒ A80VD Filter Channel00	10		10		20		1~200	通道 0 滤波设置
☐ A80VD Filter Channel01	10		10				1~200	通道 1 滤波设置
☐ A80VD Filter Channel02	10		10				1~200	通道 2 滤波设置
☐ A80VD Filter Channel03	10		10				1~200	通道 3 滤波设置
☐ A80VD Filter Channel04	10		10				1~200	通道 4 滤波设置
☐ A80VD Filter Channel05	10		10				1~200	通道 5 滤波设置
☐ A80VD Filter Channel06	10		10				1~200	通道 6 滤波设置
☐ A80VD Filter Channel07	10		10				1~200	通道 7 滤波设置

A801 I/O Parameter

清除全部[读取值](R) 清除全部[写入值](C)

处理选项
已选择的处理中没有选项。

• 对[对象设备信息]的设备执行处理。
• 使用[当前的连接目标]访问设备。请确认连接目标是否有问题。
• 关于画面上未显示内容的项目的信息请参考设备的手册。

导入(I)... 导出(E)... 执行(X) 关闭

- g. For example, to modify the analog output current range of the XB6S-A08I, you can check the "RangeSelect" function option, select the range of the channel as needed in "Write Value", configure each channel independently, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller so that the parameters take effect, as shown in the figure below.

处理从站的参数

对象设备信息: XB6S-CB2002
站号: 1

执行处理 (M): 参数写入 执行对象设备的参数写入。

参数信息
选中的参数为选择的处理对象。

全选 (A) 全部解除 (L)

名称	初始值	单位/读取值	单位/写入值	单位/设置范围	说明
A08I I/O Parameter					
☒ A08I RangeSelect CH0	0~20mA(0~65535)	4~20mA(0~27648)			通道 0 量程选择
☐ A08I RangeSelect CH1	0~20mA(0~65535)	4~20mA(0~27648)			通道 1 量程选择
☐ A08I RangeSelect CH2	0~20mA(0~65535)	4~20mA(0~27648)			通道 2 量程选择
☐ A08I RangeSelect CH3	0~20mA(0~65535)	4~20mA(0~27648)			通道 3 量程选择
☐ A08I RangeSelect CH4	0~20mA(0~65535)	4~20mA(0~27648)			通道 4 量程选择
☐ A08I RangeSelect CH5	0~20mA(0~65535)	4~20mA(0~27648)			通道 5 量程选择
☐ A08I RangeSelect CH6	0~20mA(0~65535)	4~20mA(0~27648)			通道 6 量程选择
☐ A08I RangeSelect CH7	0~20mA(0~65535)	4~20mA(0~27648)			通道 7 量程选择
☐ A08I TemplateMode	Clear	Hold			模板模式选择

清除全部[读取值] (E) 清除全部[写入值] (C)

处理选项
已选择的处理中没有选项。

• 对[对象设备信息]的设备执行处理。
• 使用[当前的连接目标]访问设备。请确认连接目标是否有问题。
• 关于画面上未显示内容的项目的信息请参考设备的手册。

执行 (X) 导出 (I)... 导出 (E)... 关闭

- h. For example, to modify the analog output clear/hold function of the XB6S-A08I, all channels are in output clear mode by default. Module channels can be configured individually. Select the function options you want to set and configure them in "Write Value". See the corresponding relationship below. [6.2.5 Clearing/Holding Analog Output Signals](#) After setting, click "Execute" to save the parameters to the coupler and download them to the controller so that the parameters take effect, as shown in the figure below.

处理从站的参数

对象设备信息: XB6S-CB2002
站号: 1

执行处理 (M): 参数写入 执行对象设备的参数写入。

参数信息
选中的参数为选择的处理对象。

全选 (A) 全部解除 (L)

名称	初始值	单位/读取值	单位/写入值	单位/设置范围	说明
☒ A08I TemplateMode	Clear	Hold			模板模式选择
☒ A08I TemplateValue CH0	TemplateValue	TemplateValue			通道 0 模式选择
☐ A08I TemplateValue CH1	TemplateValue	TemplateValue			通道 1 模式选择
☐ A08I TemplateValue CH2	TemplateValue	TemplateValue			通道 2 模式选择
☐ A08I TemplateValue CH3	TemplateValue	TemplateValue			通道 3 模式选择
☐ A08I TemplateValue CH4	TemplateValue	TemplateValue			通道 4 模式选择
☐ A08I TemplateValue CH5	TemplateValue	TemplateValue			通道 5 模式选择
☐ A08I TemplateValue CH6	TemplateValue	TemplateValue			通道 6 模式选择
☐ A08I TemplateValue CH7	TemplateValue	TemplateValue			通道 7 模式选择
☐ A08I PresetValue CH0	0	0		0~4294967295	通道 0 预设值

清除全部[读取值] (E) 清除全部[写入值] (C)

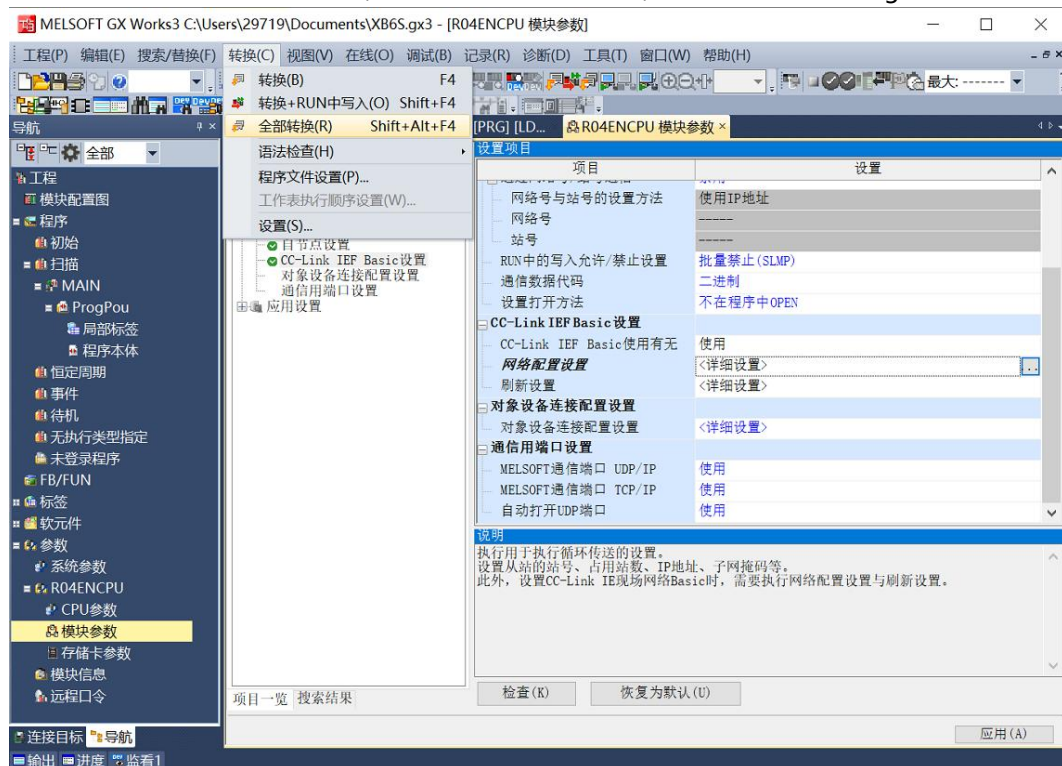
处理选项
已选择的处理中没有选项。

• 对[对象设备信息]的设备执行处理。
• 使用[当前的连接目标]访问设备。请确认连接目标是否有问题。
• 关于画面上未显示内容的项目的信息请参考设备的手册。

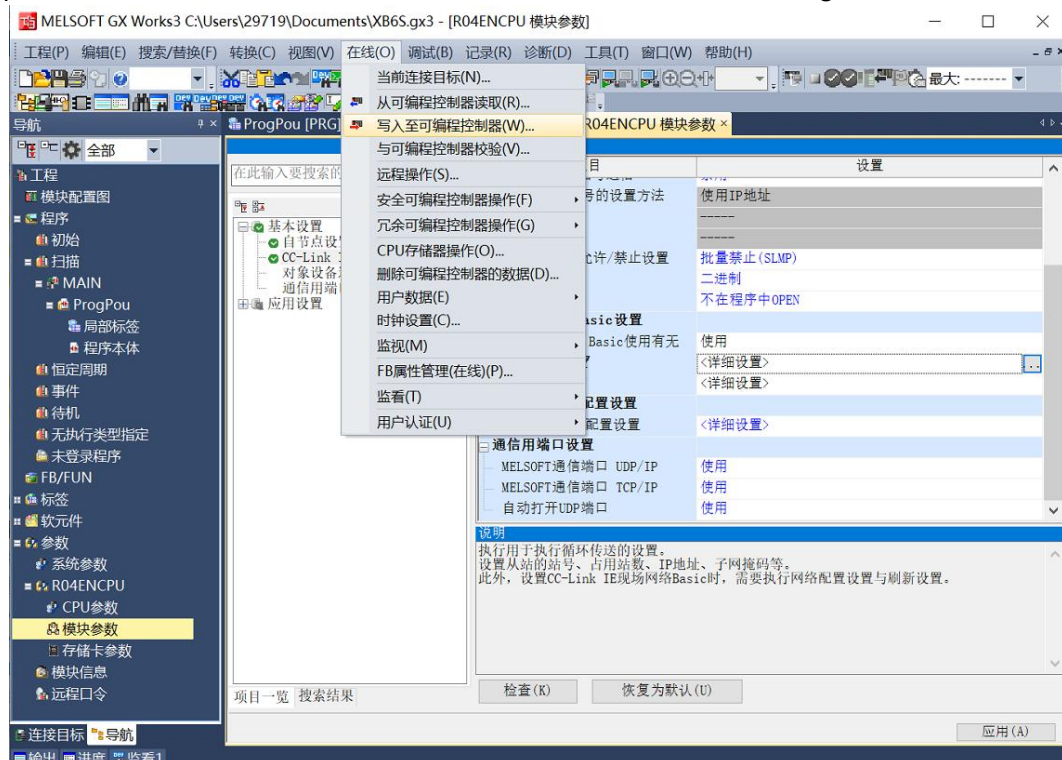
执行 (X) 导出 (I)... 导出 (E)... 关闭

11、Download settings parameters

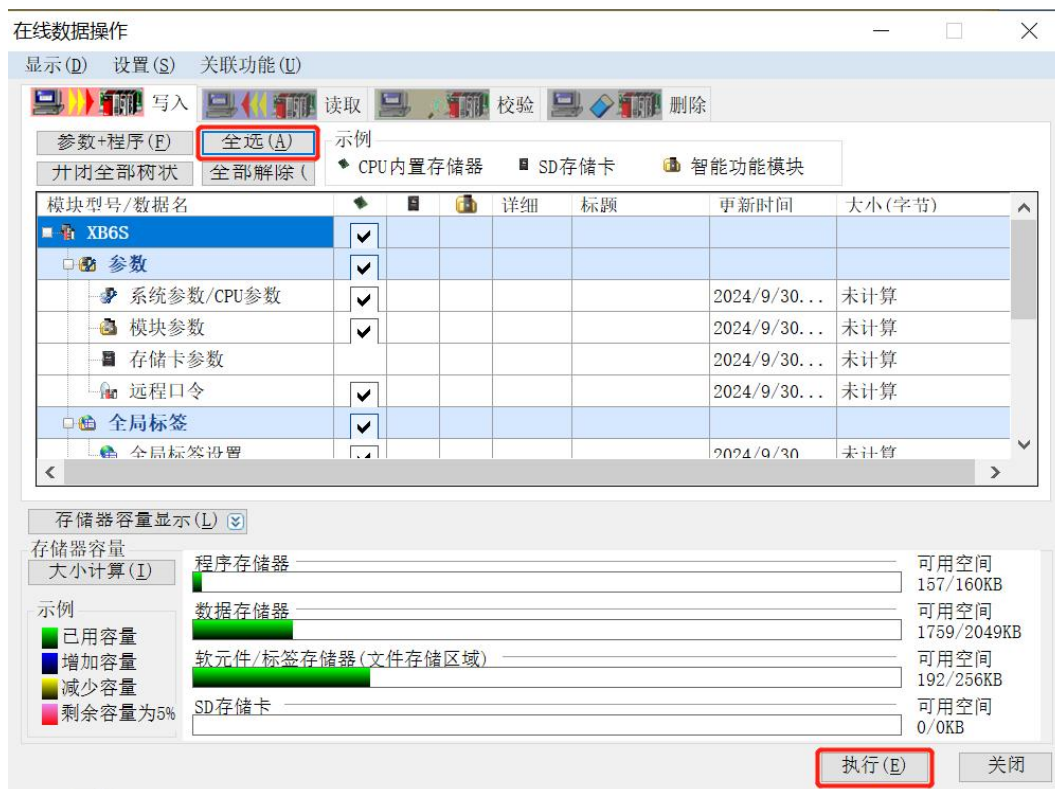
- a. Click "Convert" in the menu bar, then click "Convert All", as shown in the image below.



- b. Click "Online" in the menu bar, then click "Write to Programmable Controller" to write the set parameters into the CPU module of the main station, as shown in the figure below.



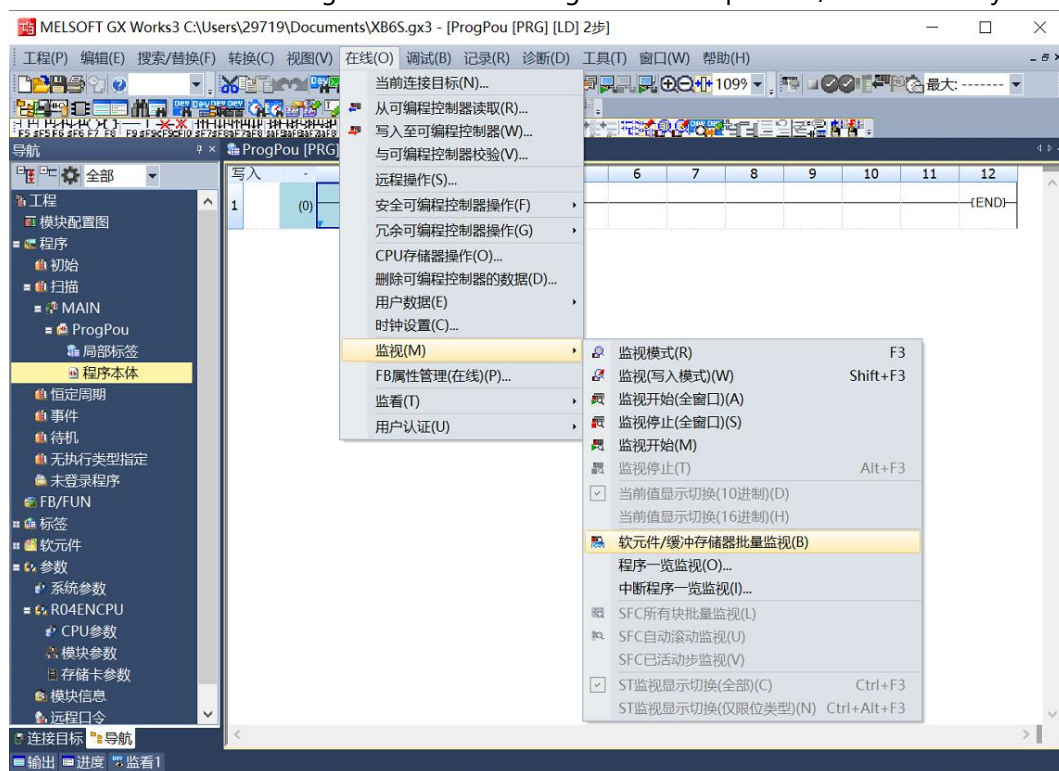
- c. A "Online Data Operation" dialog box will pop up. Select "Select All", as shown in the image below.



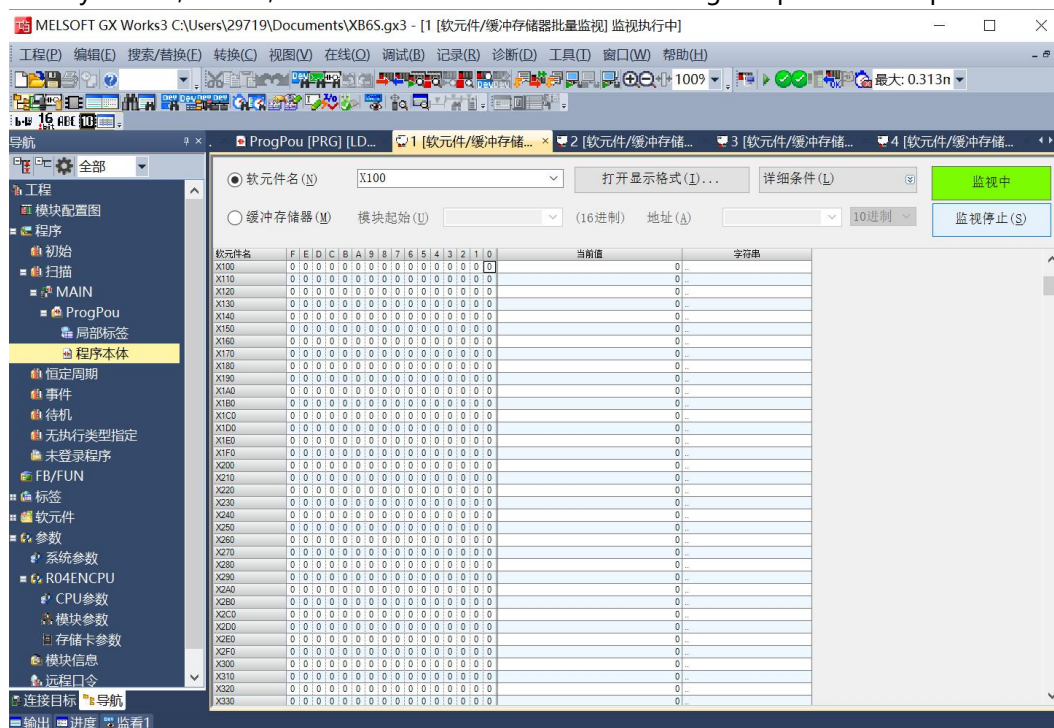
- d. Click "Execute".
- e. A pop-up prompt box asks, "After executing remote STOP, do you want to execute PLC write?" Select "Yes".
- f. A pop-up dialog box appears asking, "Parameters already exist, overwrite?" Select "Yes to all".
- g. A pop-up message box appears: "No data exists in the software component comment. No data was written." Click "OK".
- h. A pop-up prompt box appears: "CPU is in STOP state. Do you want to perform remote RUN?" Select "Yes".
- i. A pop-up message box will appear saying "Completed". Click "OK".
- j. The download and parameter settings process is now complete. Click "Close".
- k. Power off the module and PLC and then power them back on.

12. Monitoring settings

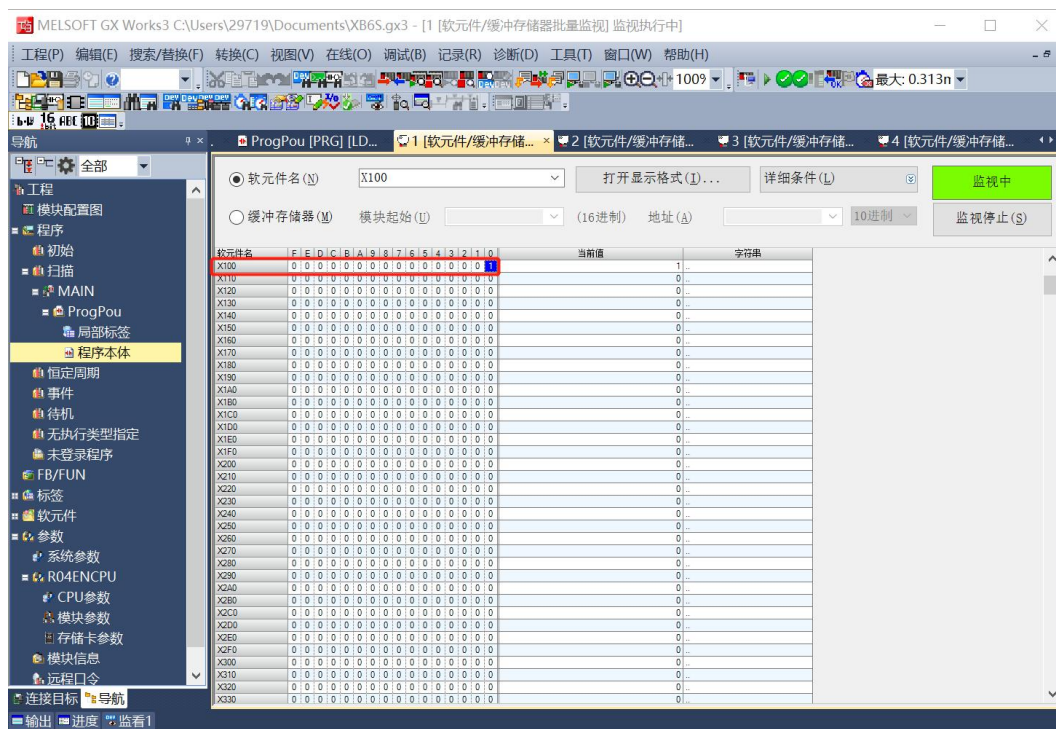
- a. Select "Online -> Monitoring -> Batch Monitoring of Soft Components/Cache Memory".



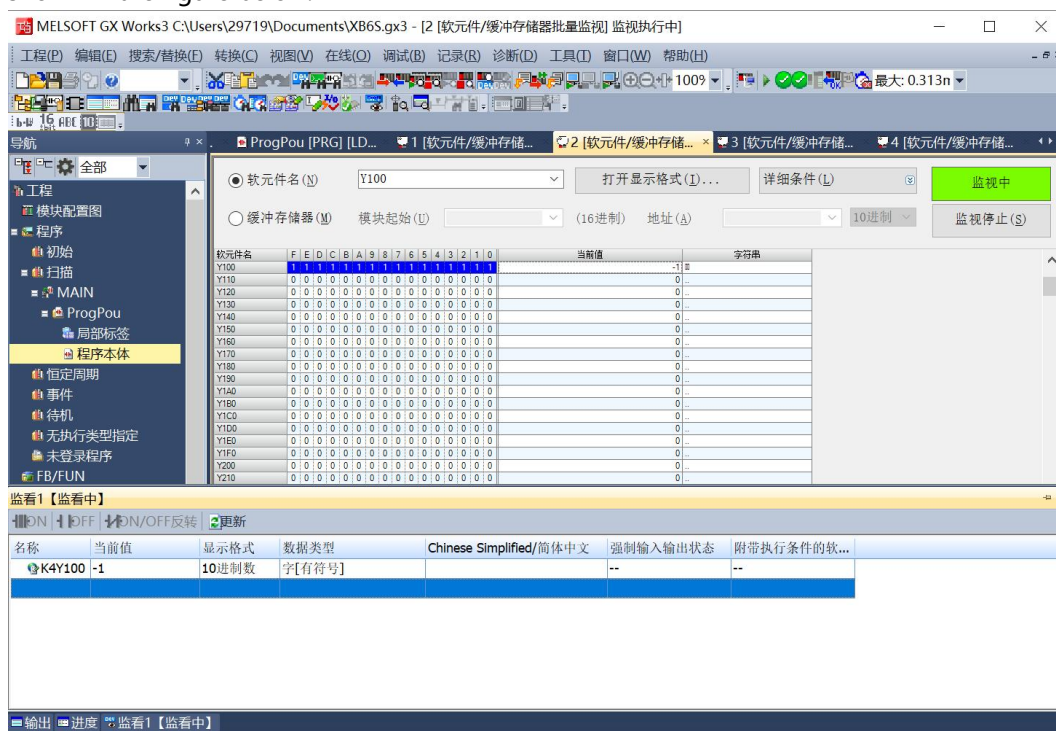
- b. Repeat the above steps to create four monitoring interfaces. In the "Software Component Name" field of each of the four monitoring interfaces, enter the parameters for "Remote Input (RX) Refresh Software Component", "Remote Output (RY) Refresh Software Component", "Remote Register (RWr)" and "Remote Register (RWw)" as set in the network parameter settings interface, namely "X100", "Y100", "D1000" and "D2000". The monitoring setup is now complete.



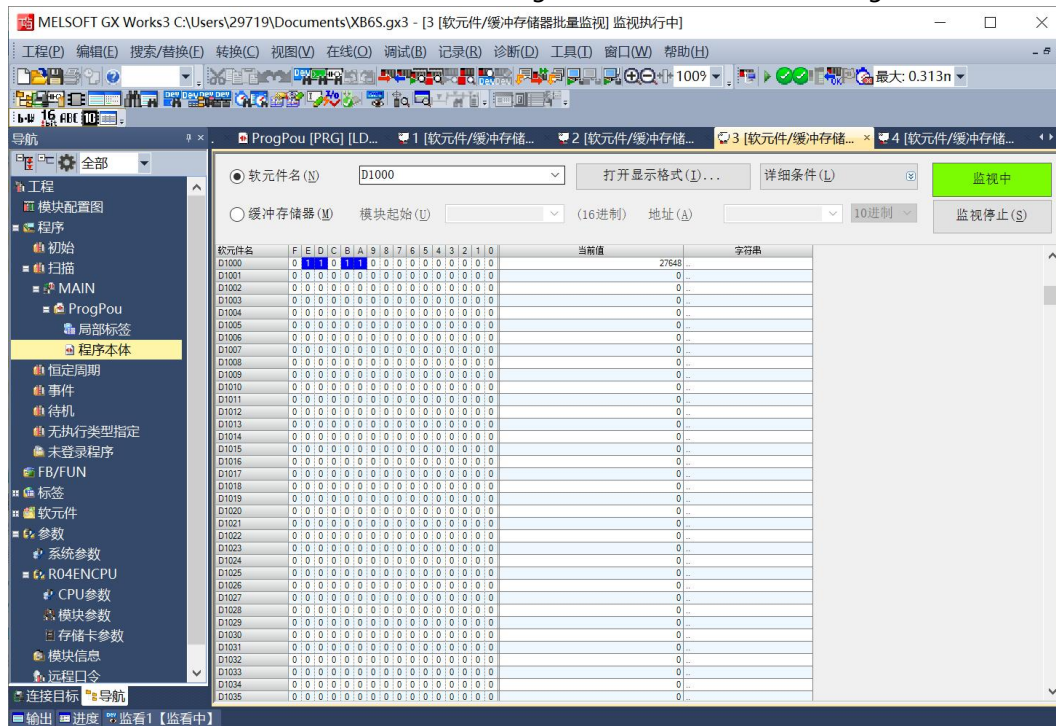
- c. The XB6S-1616B module has 16 input channels, each occupying 1 bit, corresponding to X100 (0~F). When an effective voltage is input to input channel 0, the indicator light for channel 0 on the module will be constantly lit, and the X100 value on the monitoring interface will be 1, as shown in the figure below.



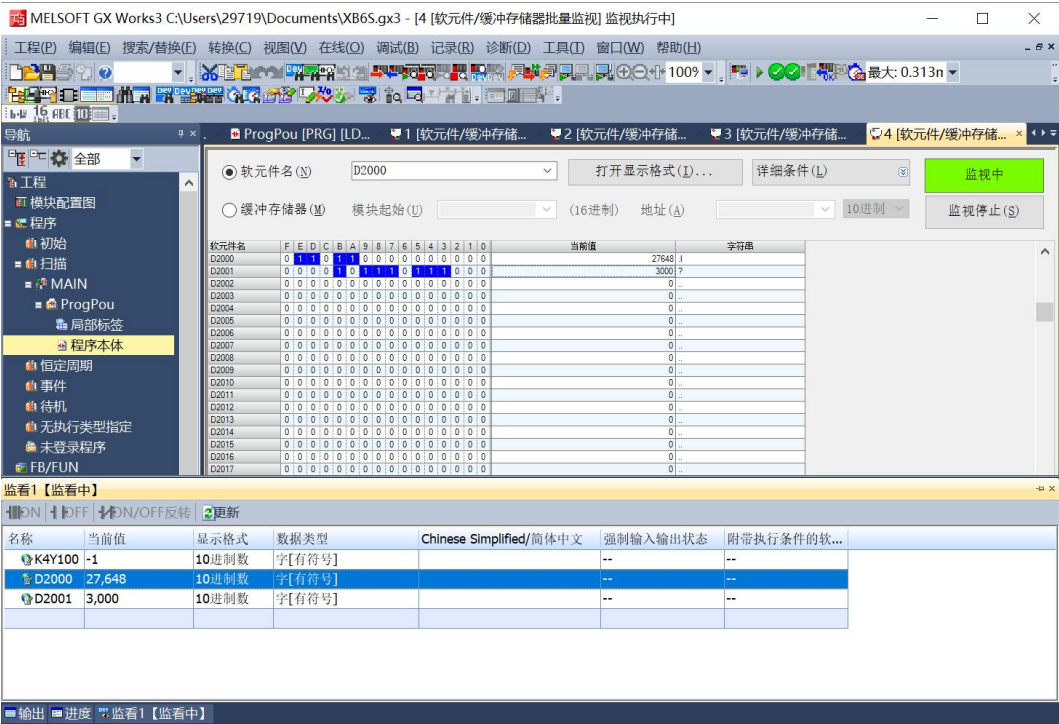
- d. The XB6S-1616B module has 16 output channels, each occupying 1 bit, corresponding to Y100 (0~F). Double-clicking the value can modify the channel value. When the value of any channel from 0 to F is 1, the indicator light of the corresponding channel is always on. When the channel value is 0, the indicator light of the corresponding channel is off. The monitoring interface is shown in the figure below.



- e. The XB6S-A80VD module has 8 analog input channels, each occupying 2 bytes, starting at address D1000, corresponding to D1000 (0~F)~D1007 (0~F). The input voltage code value of each channel can be viewed on the monitoring interface, as shown in the figure below.



- f. The XB6S-A08I module has 8 analog output channels, each occupying 2 bytes, starting at address D2000, corresponding to D2000 (0~F)~D2007 (0~F). The values of D2000~D2007 can be modified to current code values. The monitoring interface is shown in the figure below.



6.6.2 Application in the IO Config Tool software environment

1、Preparation

- **Hardware environment**

- **Module preparation:** This guide uses the **XB6S-CB2002+XB6S-1616B+XB6S-A80VD+XB6S-A08I topology as an example.**
- **One computer, pre-installed with IO Config Tool software, is configured to have its IP address and the module on the same network segment.**

Each coupler module is assigned a default IP address at the factory. The default IP addresses are typically as follows:

IP address: 192.168.3.100

Gateway: 192.168.3.1

Mask: 255.255.255.0

- **CC-Link IE Field Basic Dedicated Shielded Cable**
- **One switching power supply**

- **Hardware configuration and wiring**

Please follow the instructions [4. Installation and Removal](#)" and [5-wire connection](#)" Required Operation"

- **Module power on**

After verifying that the wiring is correct, power on the coupler module + I/O module device combination.

2、Scanning equipment

- Open the IO Config Tool software, select the network address and module IP address to be on the same network segment in the "Please select network card" drop-down box, and click "Scan devices", as shown in the figure below.



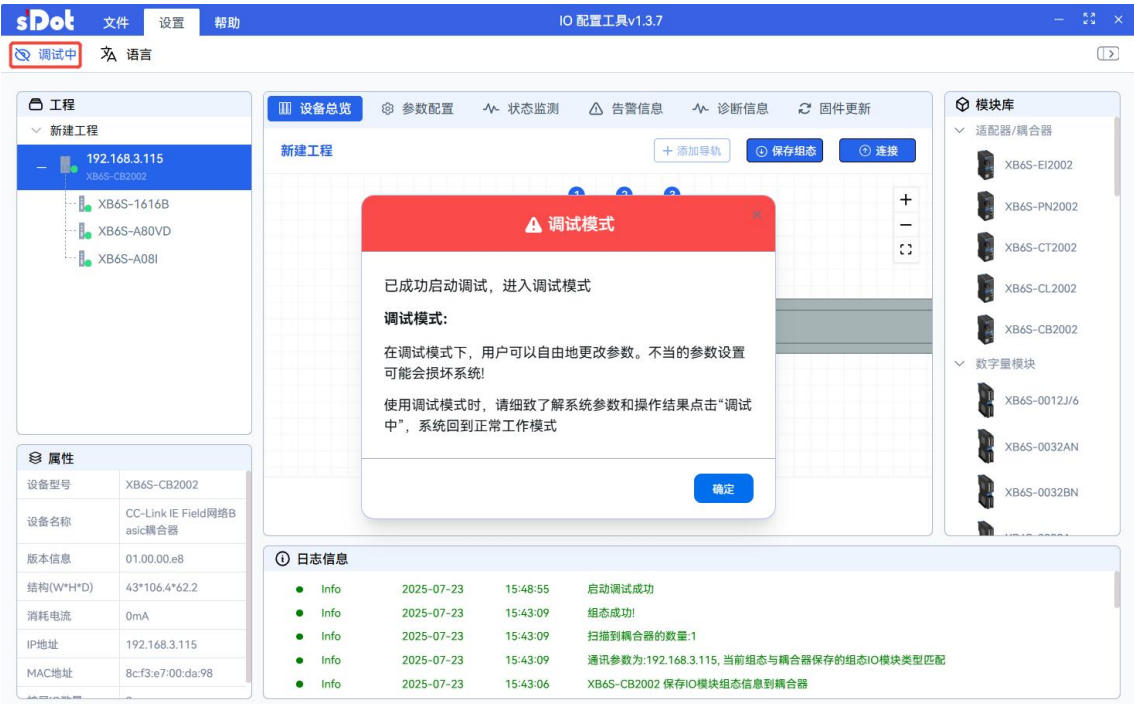
- b. After successfully scanning the device, you will enter the device overview page. The page mainly has six functions: ① menu bar, ② engineering bar, ③ module properties, ④ module configuration overview, ⑤ log information, and ⑥ module library, as shown in the figure below.



Note: You can view the coupler's IP address in the project panel; the log information shows the number of couplers detected.

3. Parameter configuration

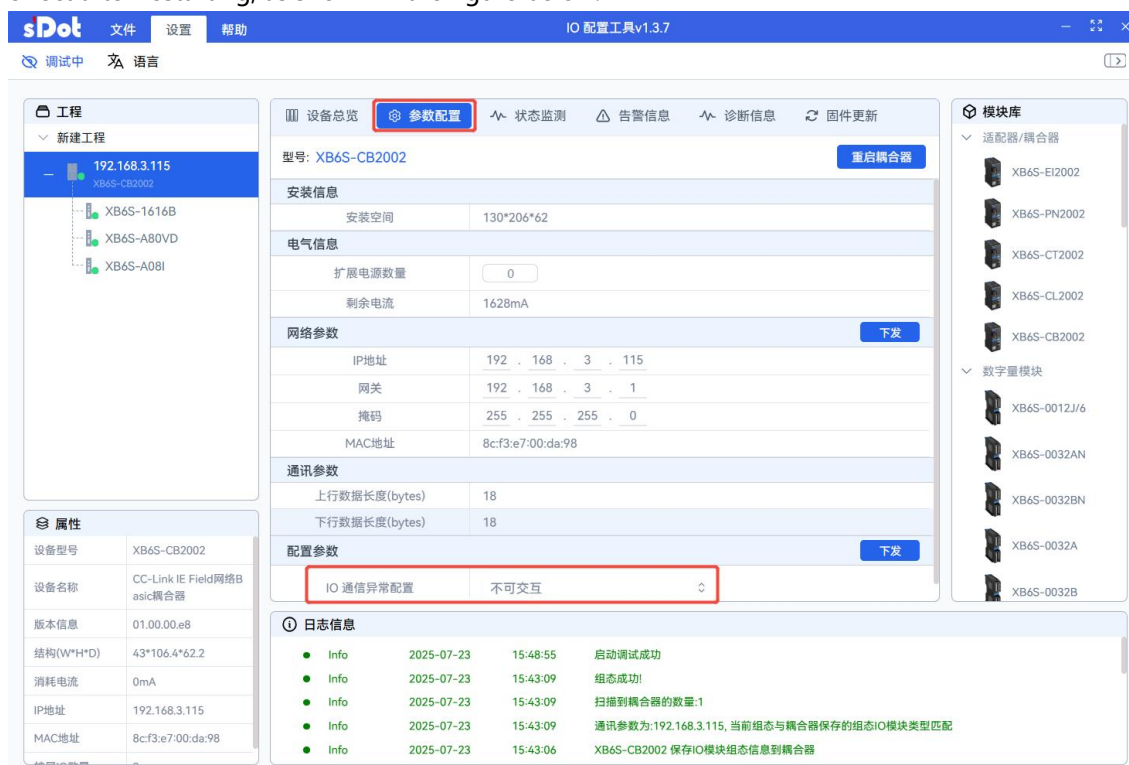
- a. Parameter configuration must be performed in debug mode. Click the "Settings -> Debug" button in the menu bar to successfully enter debug mode. The button status will switch to "Debugging in progress" and a window will pop up indicating that debugging has started successfully. Click "OK", as shown in the figure below.



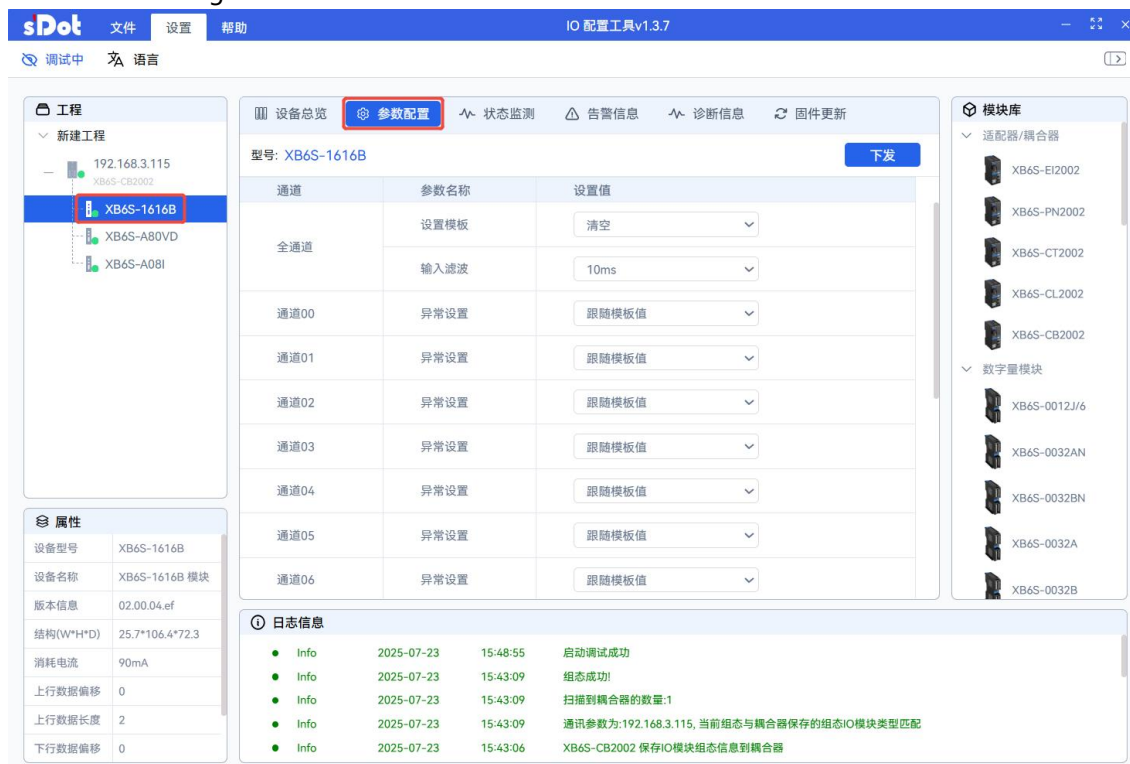
- b. After entering debug mode, on the device overview page, click the XB6S-CB2002 module, then click "Parameter Configuration" to enter the coupler parameter configuration page, as shown in the figure below.



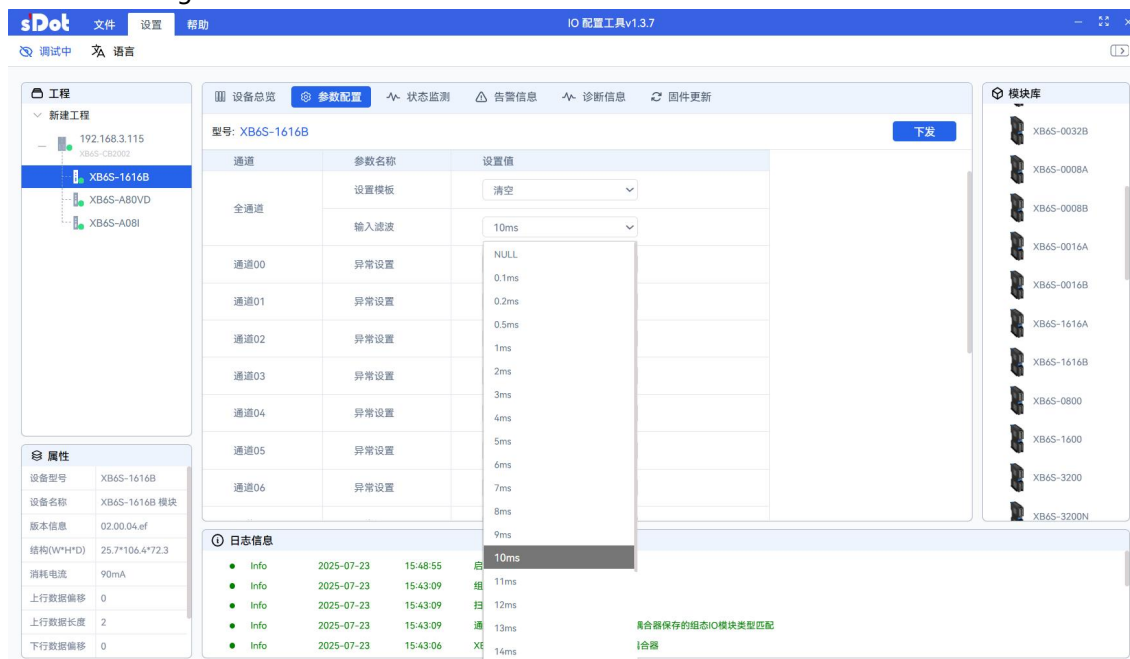
- c. On the coupler parameter configuration page, you can view the module's installation information, electrical information, and communication parameters. You can configure the module's network parameters according to your actual needs. After configuring the parameters, click "Deploy" and then "Restart Coupler" in sequence. The configured parameters will take effect after restarting, as shown in the figure below.



- d. Select the XB6S-1616B module in the left-hand engineering panel to enter the XB6S-1616B parameter configuration page. Here you can configure the digital input filtering and output signal clear/hold functions. The parameters can be configured according to actual usage needs, as shown in the figure below.

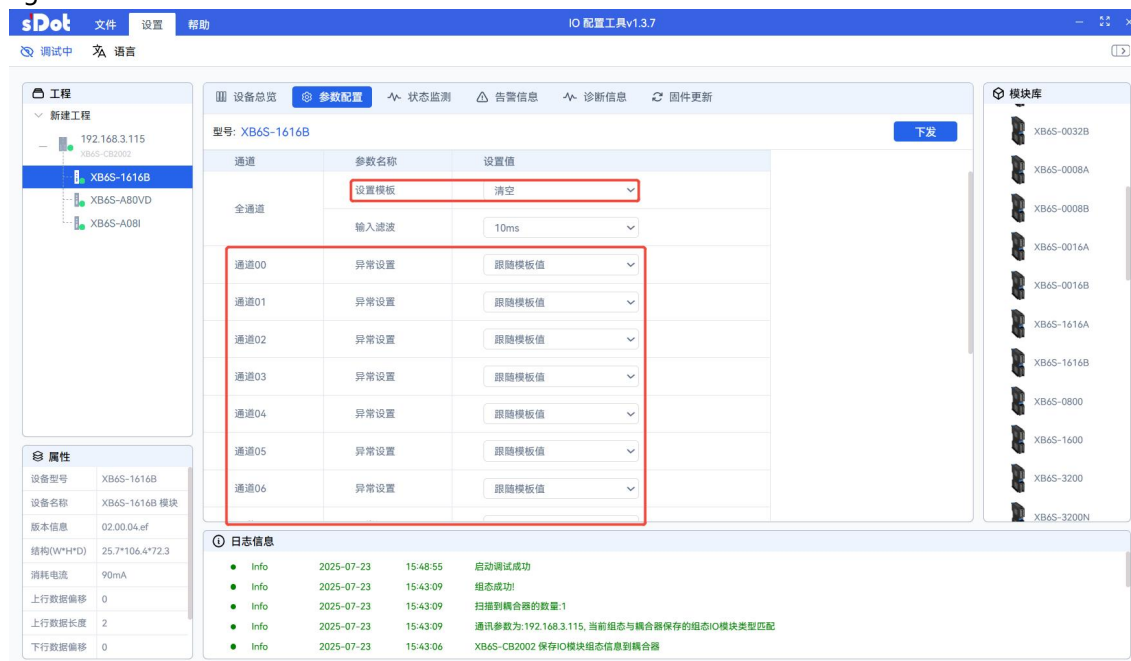


- e. The filtering time for digital inputs can be set from 0 to 20ms. After configuration, click "Issue", as shown in the figure below.

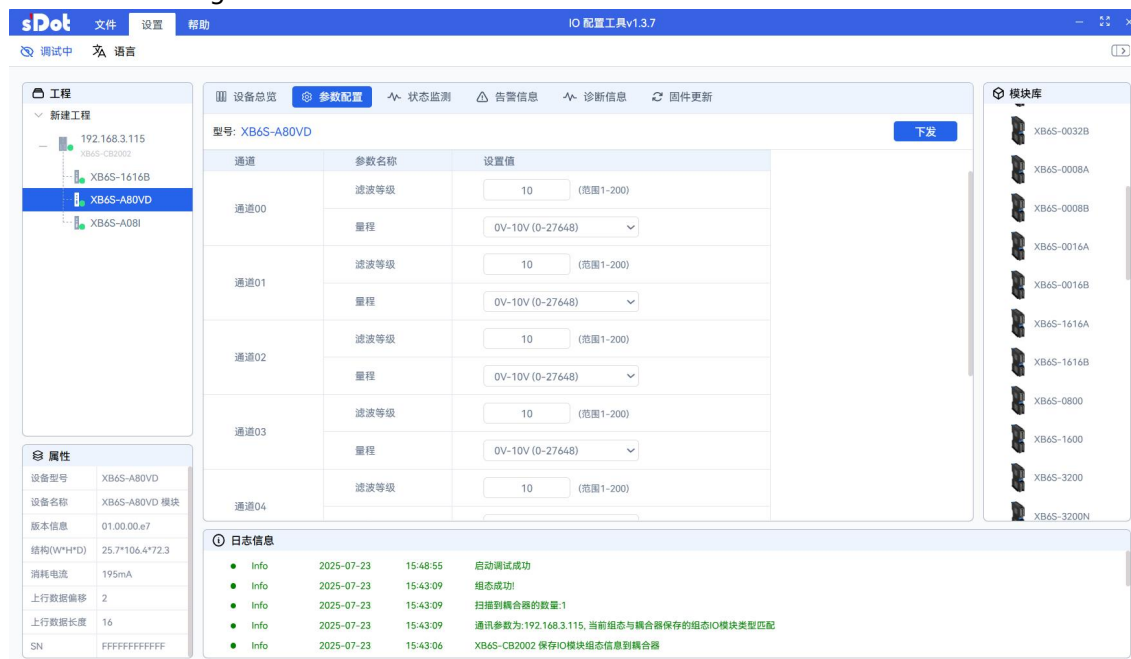


- f. The digital output signal clear/hold function is preset to output clear mode for all channels by default. Module channels can be configured individually; see the corresponding relationship below.

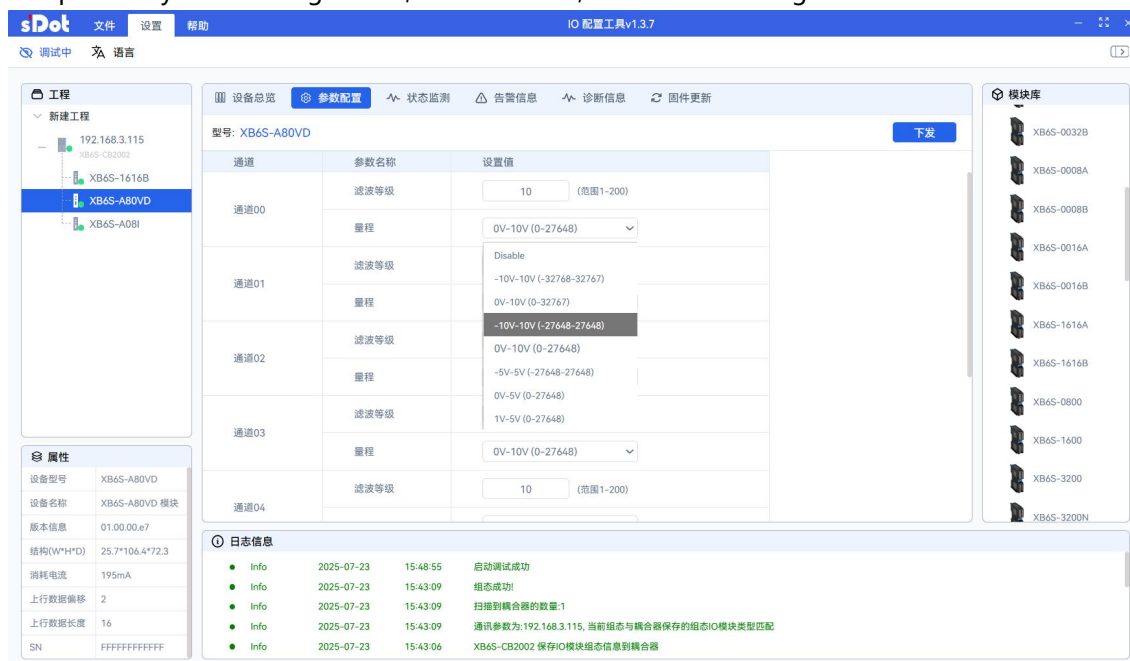
[6.2.2 Clearing/Holding Digital Output Signals](#) After configuration, click "Issue", as shown in the figure below.



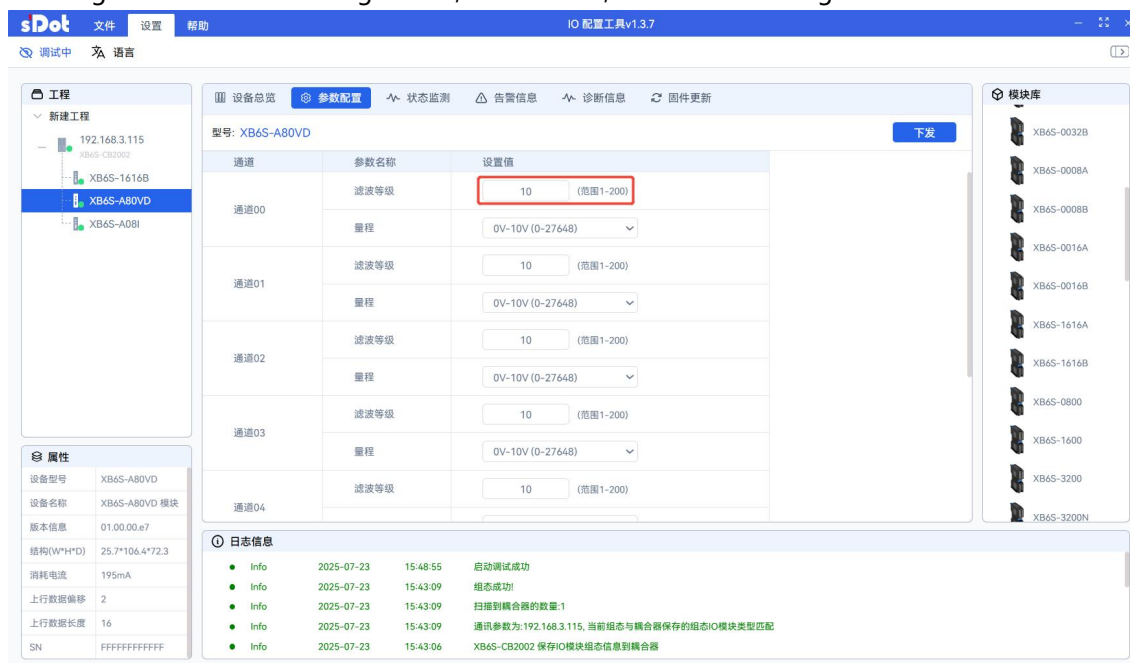
- g. Select the XB6S-A80VD module in the left-hand engineering panel to enter the XB6S-A80VD parameter configuration page. Here you can configure the analog voltage range and analog input filtering parameters. The parameters can be configured according to actual usage needs, as shown in the figure below.



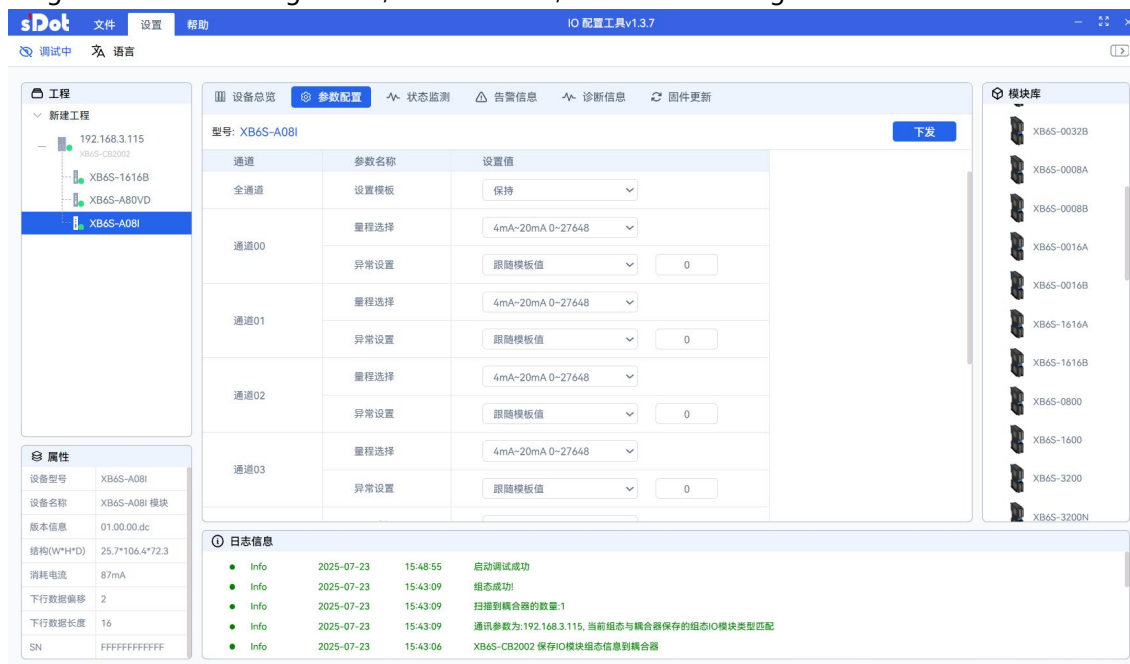
- h. The analog input voltage can be configured with 9 ranges, each channel can be configured independently. After configuration, click "Submit", as shown in the figure below.



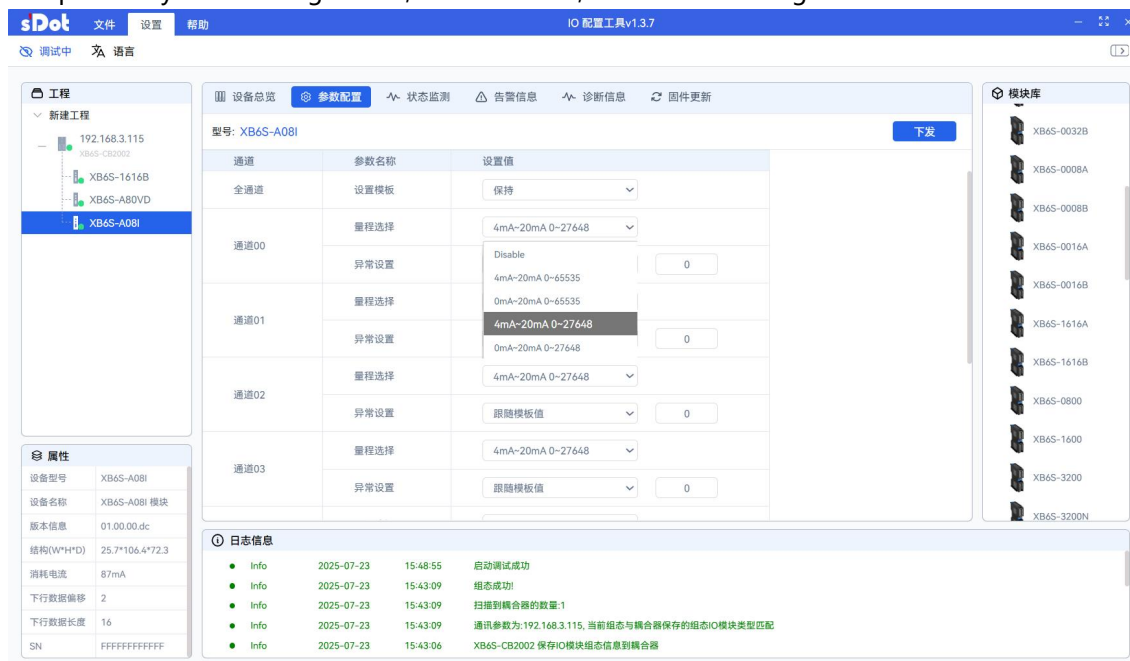
- i. The analog input filter can be configured from 1 to 200, and supports independent configuration of a single channel. After configuration, click "Issue", as shown in the figure below.



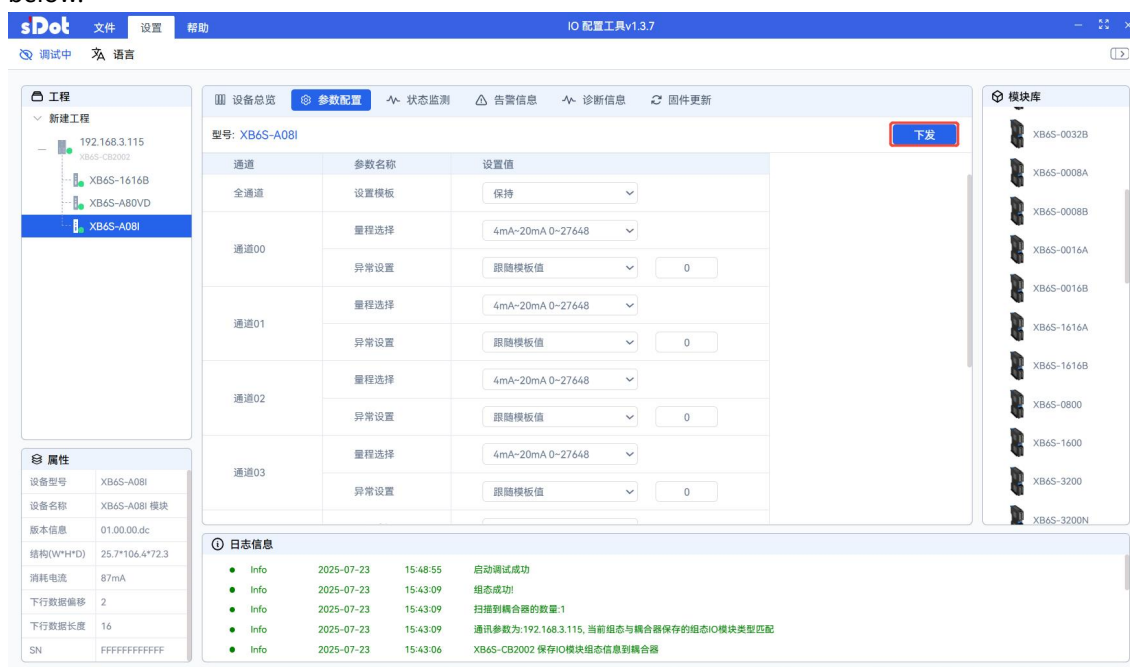
- j. Select the XB6S-A08I module in the left-hand engineering panel to enter the XB6S-A08I parameter configuration page. Here you can configure the analog current range and the analog output signal clear/hold parameters. The parameters can be configured according to actual usage needs. After configuration, click "Submit", as shown in the figure below.



- k. The analog output current can be configured to 5 ranges, each channel can be configured independently. After configuration, click "Submit", as shown in the figure below.

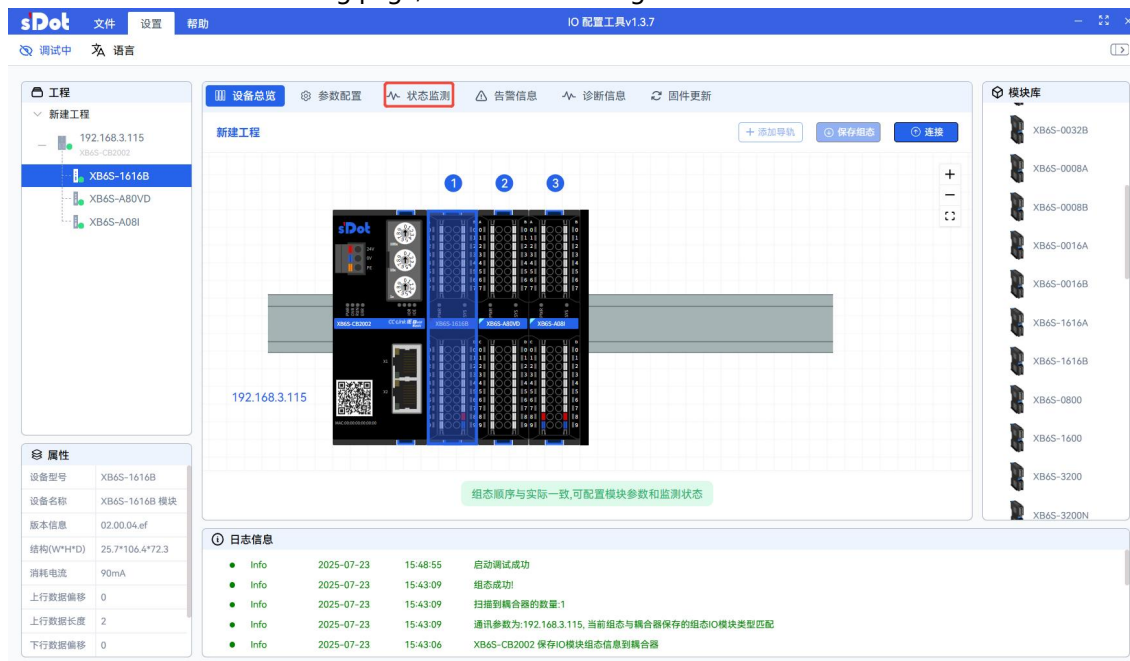


- I. Analog output signal clear/hold function. By default, all channels are in output clear mode. Module channels can be configured individually; see the corresponding relationship [6.2.5 Clearing/Holding Analog Output Signals](#). After configuration, click "Issue", as shown in the figure below.

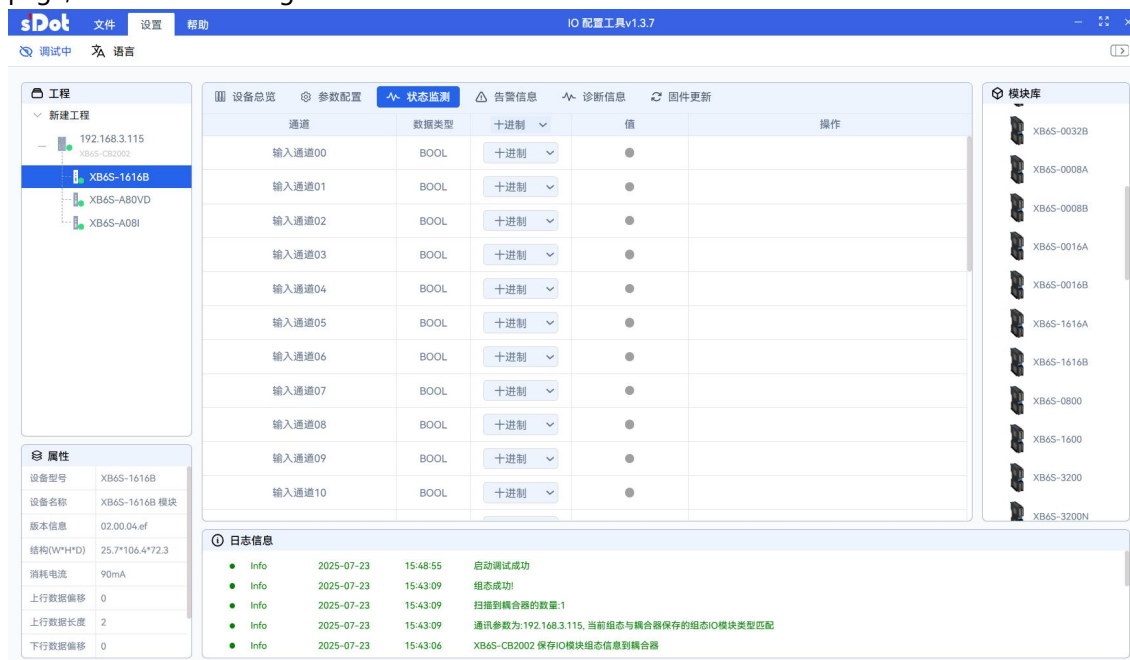


4. I/O function

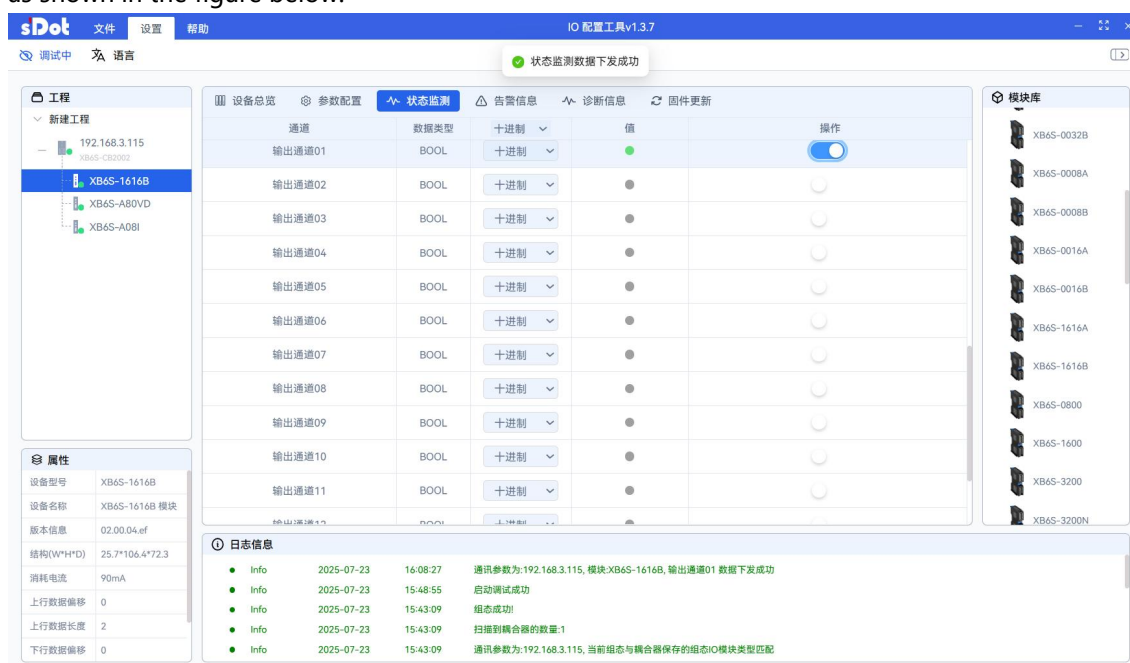
- a. Module status monitoring must be performed in debug mode. After entering debug mode, click on the XB6S-1616B module on the device overview page, then click "Status Monitoring" to enter the module status monitoring page, as shown in the figure below.



- b. On the status monitoring page of the XB6S-1616B module, when the module...When an effective voltage is input to the input channel, the input value can be monitored on the status monitoring page, as shown in the figure below.



- c. XB6S-1616B The module's output channels can be forced to output via the "Operation" button, as shown in the figure below.



- d. Select the XB6S-A80VD module in the left-hand engineering pane to enter the XB6S-A80VD status monitoring page, where you can monitor the input voltage code value of each channel. As shown in the figure below, the correspondence between code values and voltages is detailed in [link to diagram]. [3.3.4 Analog Voltage Parameters.](#)



- e. In the left-hand engineering panel, select the XB6S-A08I module to enter the XB6S-A08I status monitoring page. After entering the current code value, click "Send" to force output for each channel. As shown in the figure below, the correspondence between code value and current is detailed in [link to diagram]. [3.3.5 Analog Current Parameters.](#)

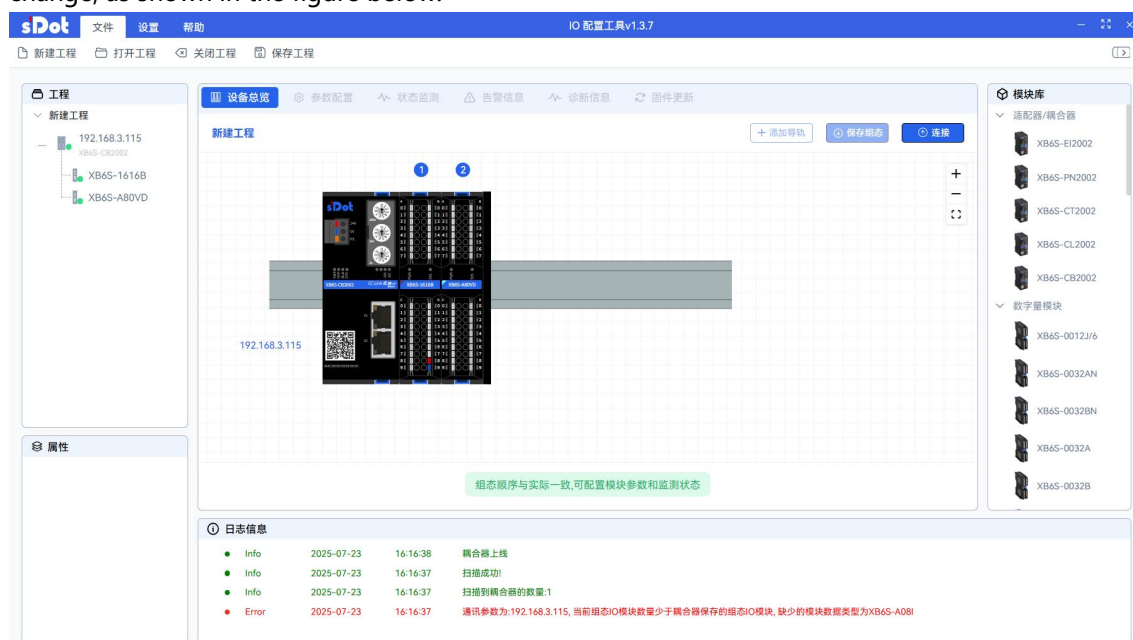


5. Topology state comparison function

- On the device overview page, select the coupler and click "Save Configuration" to save the current configuration information to the coupler. A "Save Successful" prompt box will pop up, as shown in the figure below.

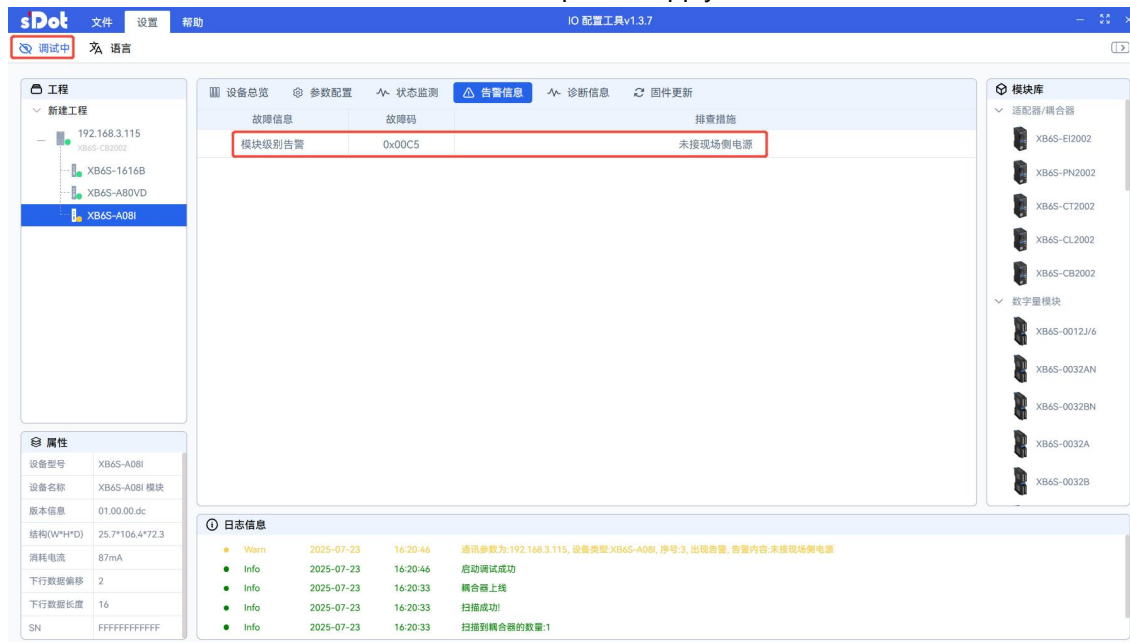


- When the topology changes, a power-on scan can be performed. The log information window displays a comparison between the current configuration and the configuration before the change, as shown in the figure below.



6. Fault Code Viewing

- a. Fault codes must be viewed in debug mode. After entering debug mode, click "Alarm Information" to view the alarm information in the alarm information window, as shown in the figure below. The alarm code is Hex: 00c5, which means voltage error and the load side voltage is not connected. You can check whether the field power supply is connected.

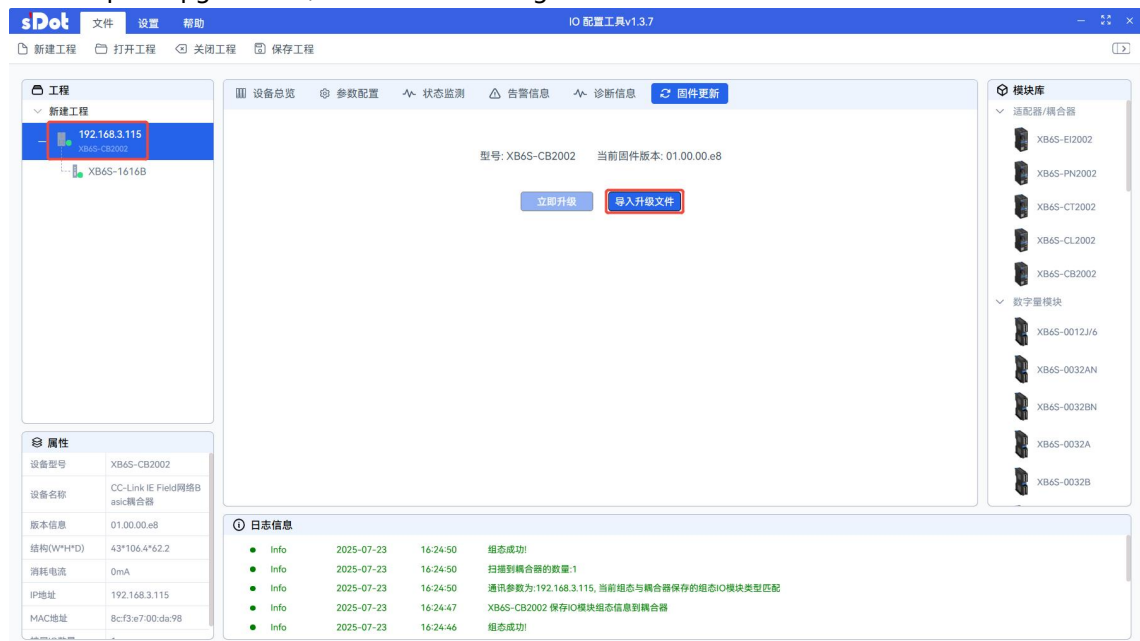


6.7 Firmware online upgrade

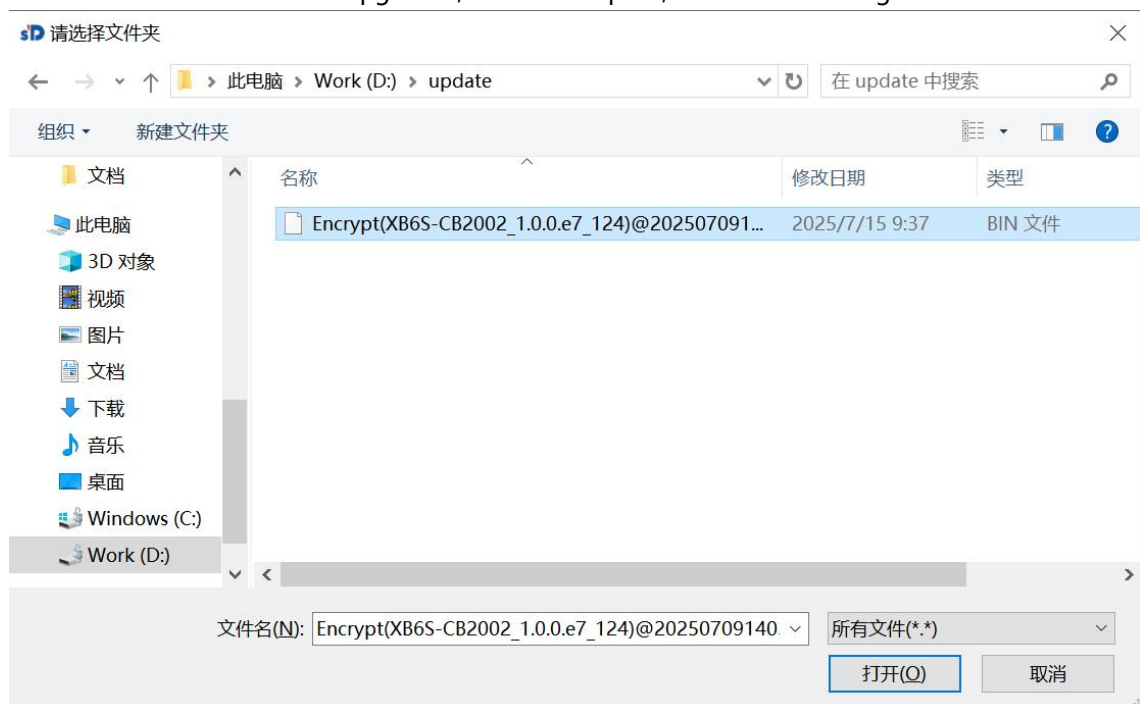
1. Taking the IO Config Tool software as an example, with the topology being XB6S-CB2002+XB6S-1616B, enter the firmware update page, as shown in the figure below.



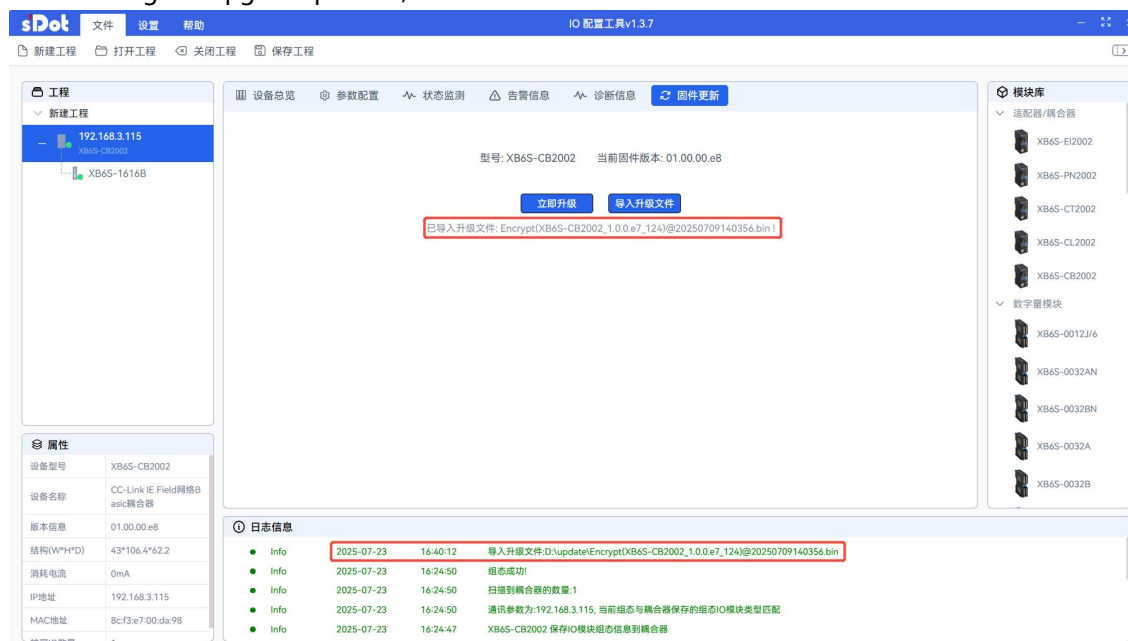
- 2、To upgrade the XB6S-CB2002 coupler, click "XB6S-CB2002" in the project pane on the left, then click "Import Upgrade File," as shown in the figure below.



- 3、In the pop-up file opening window, select the "All Files" option, select the bin file corresponding to the module that needs to be upgraded, and click "Open", as shown in the figure below.



- 4、 After the upgrade file is successfully imported, click "Upgrade Now," as shown in the image below.
Note: During the upgrade process, other buttons in the software cannot be clicked.



- 5、 Successful upgrade process for different modules

CC-Link IE Field Basic Coupler Online Upgrade:

- 1) Once the progress bar is full, the IOR of the coupler starts flashing at 10Hz (on for 50ms and off for 50ms);
- 2) The IOR (Interference Orbit) changes from flashing at 10Hz to flashing at 1Hz, indicating a successful upgrade.

Online upgrade of IO module:

- 1) Once the progress bar is full, the coupler IOR and the SYS of the module being upgraded begin to flash at 10Hz (50ms on and 50ms off);
- 2) The SYS signal of the module being upgraded changes from 10Hz to off, indicating a successful upgrade (a power cycle is required after the upgrade to reconnect properly).
- 3) Other modules can be upgraded without interrupting power.