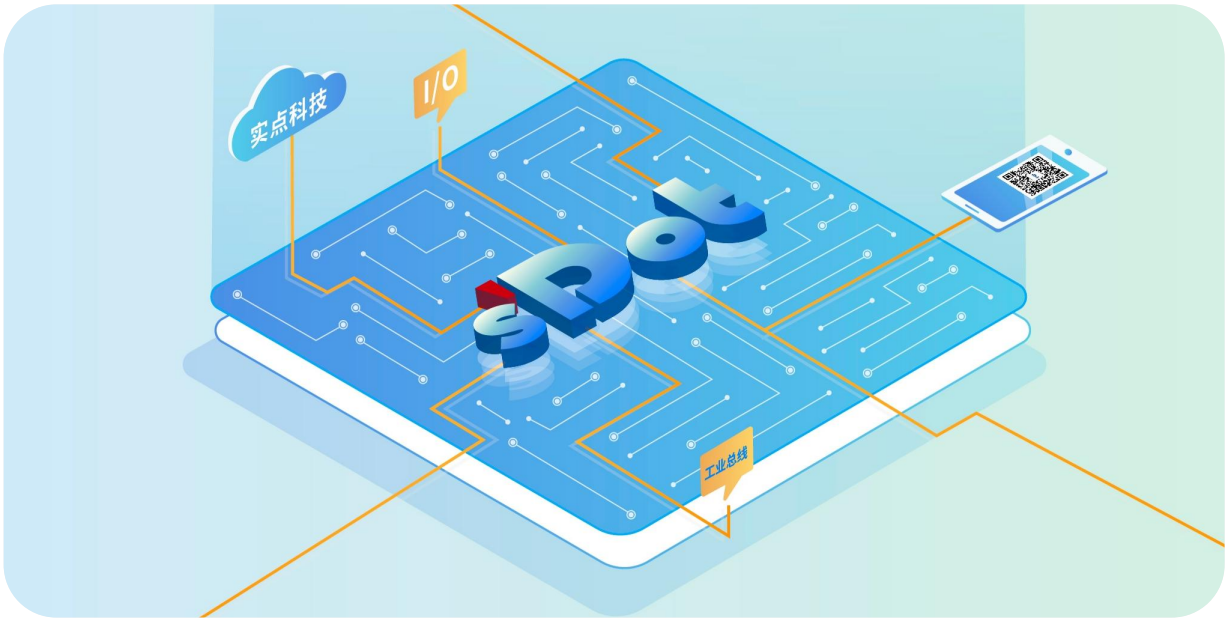

Modbus TCP

MT4 Series Integrated I/O

User Manual

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1 Product Overview

1.1 Product Introduction

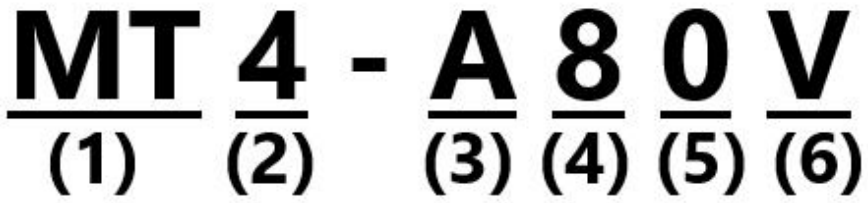
The MT4 series of integrated I/O modules adopts a Modbus TCP bus interface, has a built-in switch, and dual industrial network ports. These modules are compact, offer high real-time performance, and are available in a variety of types, providing users with multiple options for high-speed data acquisition, optimized system configuration, simplified field wiring, and improved system reliability.

1.2 Product Features

- **Small size**
  It has a compact structure and occupies little space, measuring only 102×72×25 mm.
- **Dual network ports**
  Built-in switch.
- **Fast**
  100Mbps industrial Ethernet port.
- **A wide variety of modules**
  A full range of I/O types are available, supporting flexible expansion; digital and analog modules can be integrated.
- **Easy to diagnose**
  The innovative channel indicator light design is placed close to the channel, making the channel status clear at a glance and facilitating inspection and maintenance.
- **Easy configuration**
  It is easy to configure and supports major mainstream Modbus TCP master stations.
- **Easy installation wiring**
  DIN 35 mm standard rail mounting
  It adopts spring-loaded terminal blocks, making wiring convenient and quick.

2 Naming Rules

2.1 Naming Rules



serial number	meaning	Value description				
(1)	Bus Protocol	MT: Modbus TCP protocol				
(2)	Product Series	4: Integrated I/O				
(3)	I/O types	Default: Digital A: Analog				
(4)	Number of input signal points	Analog : 0, 4, 8 Digital: 0, 8, 16, 24, 32				
(5)	Number of output signal points	Analog: 0, 4, 8 Digital: 0, 8, 16, 24, 32				
(6)	Input/output characteristics	**Digital**			**Analog**	
		coding	Input	Output	coding	illustrate
		A	NPN, 3ms	NPN, 0.5A	I	4~20 mA, 0~20 mA
		B	PNP, 3ms	PNP, 0.5A	V	-10~+10 V, 0~+10 V, -5~+5 V, 1~+5 V, 2~10 V
		BW	PNP, 3ms	PNP, 0.25A		
		J	Compatible	relay		

			with NPN/PNP, 3ms			
		P	Compatible with NPN/PNP, 3ms	PNP		

2.2 Model List

model	Product Description	
MT4-3200A	32-channel digital input module, NPN type	
MT4-3200B	32-channel digital input module, PNP type	
MT4-1616A	16-channel digital input/output module, NPN type	
MT4-1616B	16-channel digital input/output module, PNP type	
MT4-1616BW		
MT4-1600A	16-channel digital input module, NPN type	
MT4-1600B	16-channel digital input module, PNP type	
MT4-0032A	32-channel digital output module, NPN type	
MT4-0032B	32-channel digital output module, PNP type	
MT4-0032BW		
MT4-0016A	16-channel digital output module, NPN type	
MT4-0016B	16-channel digital output module, PNP type	
MT4-0016BW		
MT4-0808A	8-channel digital input/output module, NPN type	
MT4-0808B	8-channel digital input/output module, PNP type	
MT4-0808BW		
MT4-2408A	24-channel digital input, 8-channel digital output module, NPN type	
MT4-1612J	16-channel digital input and 12-channel relay output module, input compatible with NPN/PNP types.	
MT4-1616P	16-channel digital input/output module, input compatible with NPN/PNP, output type PNP.	
MT4-A80V	8-channel analog voltage input module	Selectable measurement range: 0: -10~+10 V ,1:0~+10 V 2:-10~+10V ,3:-5~+5V 4: 1~+5 V, 5: 2~+10 V
MT4-A40V	4-channel analog voltage input module	
MT4-A08V	8-channel analog voltage output module	
MT4-A04V	4-channel analog voltage output module	
MT4-A80I	8-channel analog current input module	Selectable measuring range: 0:4~20 mA ,1:0~20 mA 2: 4~20 mA, 3: 0~20 mA
MT4-A40I	4-channel analog current input module	
MT4-A08I	8-channel analog current output module	
MT4-A04I	4-channel analog current output module	
XX4 C10_4	Public End Extension Module	

3 Product Parameters

3.1 General parameters

Interface parameters	
Bus Protocol	Modbus TCP
Number of I/O stations	127
Data transmission medium	Ethernet CAT5cable
Transmission rate	100 Mbps
Transmission distance	≤100 m (distance between stations)
Bus interface	2×RJ45
Technical parameters	
Configuration method	via the main site
power supply	24 VDC (18V~30V)
weight	Approximately 130 g
size	102×72×25 mm
Operating temperature	0~+55℃
Storage temperature	-20~+75℃
relative temperature	95%, no condensation
Protection level	IP20

3.2 Digital parameters

Digital input	
Rated voltage	24 VDC (18V~30V)
signal points	8, 16, 24, 32
signal type	NPN/PNP
"0" signal voltage (PNP)	-3~+3 V
"1" signal voltage (PNP)	15~30V
"0" signal voltage (NPN)	15~30V
"1" signal voltage (NPN)	-3~+3 V
Input filtering	3 ms
Input current	4 mA
Isolation methods	Optical isolation
Isolation and withstand voltage	500 VAC
Channel indicator lights	Green LED lights
Digital output	
Rated voltage	24 VDC (18V~30V)
signal points	8, 16, 24, 32
signal type	NPN/PNP
Load type	Resistive load, inductive load
Single-channel rated current	NPN type Max: 500 mA PNP type, maximum: 500 mA BW type Max: 250mA
Port protection	Overvoltage and overcurrent protection
Isolation methods	Optical isolation
Isolation and withstand voltage	500 VAC
Channel indicator lights	Green LED lights
Relay output	
Rated voltage	24 VDC (18V~30V)
signal points	12
Isolation methods	Optocouplers, relays
Rated load	2A single-channel relay output
Channel indicator lights	Green LED lights

3.3 Analog parameters

Analog input	
Input points	4, 8
Input signal (voltage type)	0:-10~+10 V (-32768~32767) 1: 0~+10 V (0~65535) 2: -10~+10 V (-27648~27648) 3 -5~+5 V (-27648~27648) 4: 1~+5 V (0~27648) 5: 2~+10 V (0~27648)
Input signal (current type)	0: 4~20 mA (0~65535) 1: 0~20 mA (0~65535) 2: 4~20 mA (0~27648) 3: 0~20 mA (0~27648)
resolution	16 bit
Sampling rate	≤1 ksps
accuracy	±0.1%
Input impedance (voltage type)	≥2 kΩ
Input impedance (current type)	100 Ω
Isolation and withstand voltage	500 VAC
Channel indicator lights	Green LED lights
Analog output	
Output points	4, 8
Output signal (voltage type)	0:-10~+10 V (-32768~32767) 1: 0~+10 V (0~65535) 2: -10~+10 V (-27648~27648) 3 -5~+5 V (-27648~27648) 4: 1~+5 V (0~27648) 5: 2~+10 V (0~27648)
Output signal (current type)	0: 4~20 mA (0~65535) 1: 0~20 mA (0~65535) 2: 4~20 mA (0~27648) 3: 0~20 mA (0~27648)
resolution	16 bit
accuracy	±0.1%
Load impedance (voltage type)	≥2 kΩ
Load impedance (current type)	≤200 Ω
Isolation and withstand voltage	500 VAC
Channel indicator lights	Green LED lights

3.4 Common-side extension module parameters

Common terminal	
Rated voltage	125 VDC/AC 250V
Rated current	8 A
Number of public terminals	4 sets (10 pieces/set)

4 Panel

4.1 Product Structure

Product Part Names and Functional **Descriptions**

4.2 Indicator light function

Module identification and indicator lights				
name	**logo**	**color**	**state**	**Status Description**
Power indicator light	PWR	green	ON	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal.
Operating status indicator	RUN	green	ON	The system is running normally.
			OFF	Abnormal operation (such as communication timeout)
Alarm indicator	ERR	red	Flashing	The module is malfunctioning (e.g., transmission rate, station number setting out of range, communication error, etc.).
			OFF	The module is working without any issues.
Input channel status indicator	0 ~ F	green	ON	The module channel has a signal input.
			OFF	The module channel has no signal input or the signal input is abnormal.
Output channel status indicator	0 ~ F	green	ON	The module channel has signal output.
			OFF	The module channel has no signal output or the signal output is abnormal.

Network port status indicator			
logo	**color**	**state**	**Status Description**
1	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
2	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

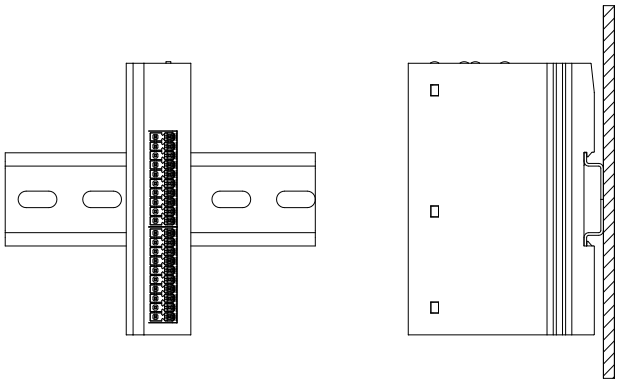
5 Installation and removal

Installation/Removal Precautions

- 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 the module is installed vertically and that there is sufficient clearance between the module and surrounding equipment.
- Installation and disassembly must be performed with the power off.

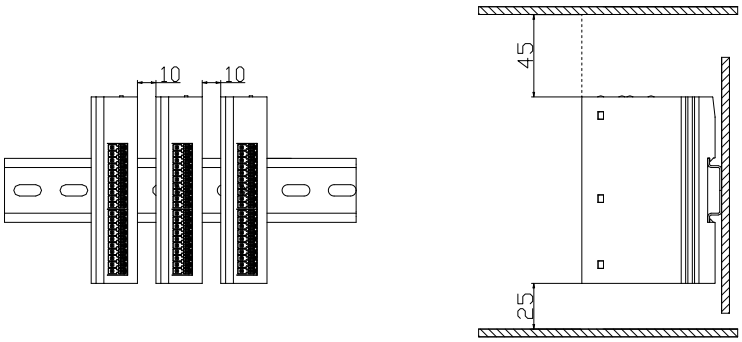
Installation direction

To ensure proper heat dissipation, the module must be installed vertically to ensure unobstructed airflow inside the module.



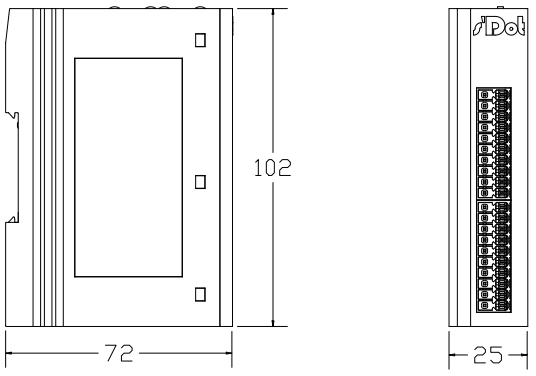
Minimum spacing

The module has an IP20 protection rating and must be installed inside a box or cabinet. During installation, please maintain the minimum spacing (unit: mm) between the module and other modules or heat-generating devices, or between the module and other devices or wiring channels above and below it, as shown in the diagram below.



5.1 External dimensions

External dimensions (unit: mm)

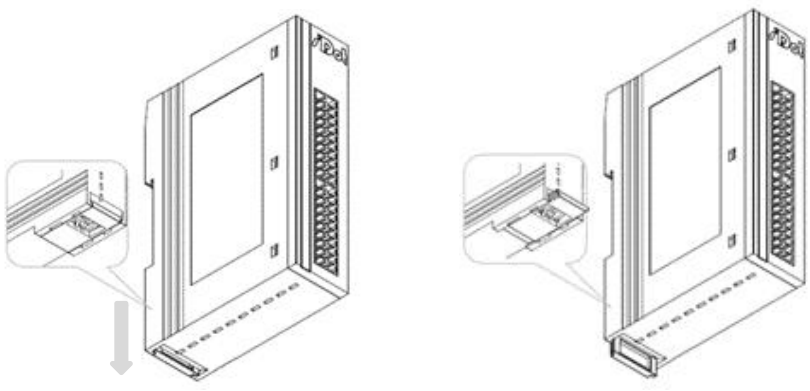


Installation method:

1. Top and bottom aligned;
2. DIN 35 mm guide rail, snap-on installation.

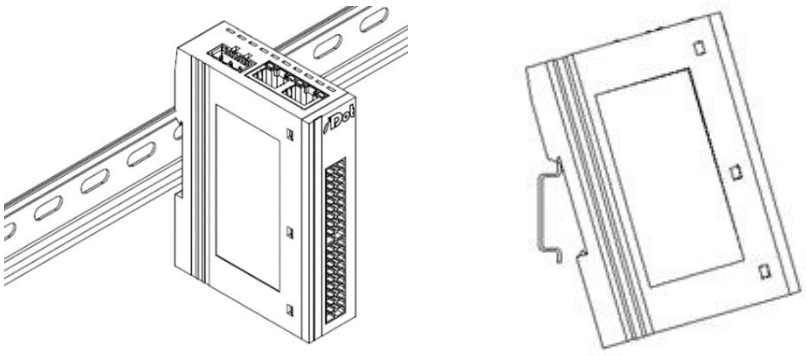
5.2 Installation and removal

Install	step



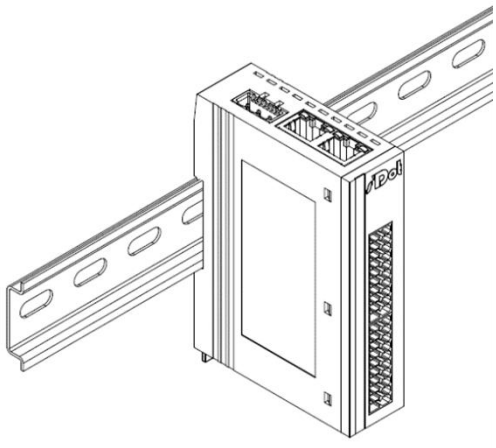
①②

Push the latch at the bottom of the module outwards, as shown in Figure ①, until you hear a "click" sound.



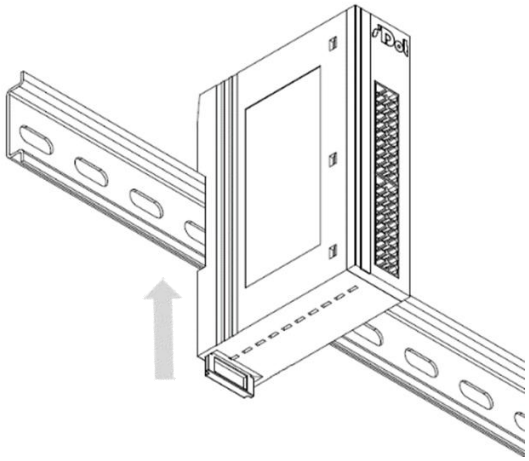
③ ④

Align the upper edge of the module clip with the upper edge of the guide rail, and place the module into the guide rail, as shown in Figures ③ and ④.



⑤

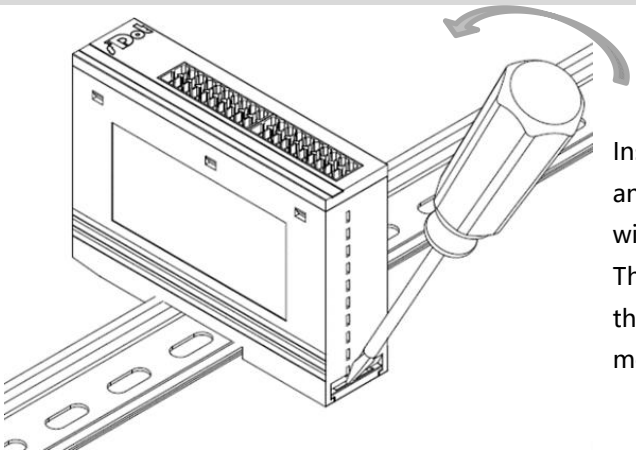
The modules are positioned as shown in Figure ⑤.



Push the clip along the guide rail until you hear a click, indicating that the module installation is complete, as shown in Figure 6.

⑥

Disassembly	step



Insert the flathead screwdriver into the clip and apply force towards the module (you will hear a sound), as shown in Figure 7. Then, remove the module by performing the reverse operation of installing the module.

⑦

6 Wiring

6.1 Terminal blocks

Terminal blocks		
Signal line terminals	Extreme number	2×20 P
	wire diameter	22~17 AWG 0.3~1.0 mm²
Power terminals	Extreme number	3P
	wire diameter	22~16 AWG 0.3~1.5 mm²
Bus interface	2×RJ45	UTP or STP of Category 5 or higher (STP recommended)

6.2 Wiring instructions and requirements

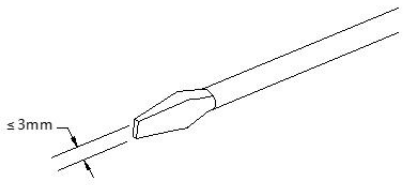
Power connection precautions

- 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.
- The PE element must be reliably grounded.

Wiring tool requirements

The terminals feature a screwless design, allowing for easy installation and removal of cables.

Flathead screwdriver operation (size: ≤3mm).



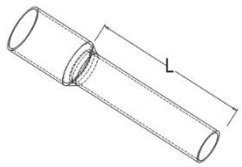
Stripping length requirements

Recommended stripping length: 10 mm.

Wiring method

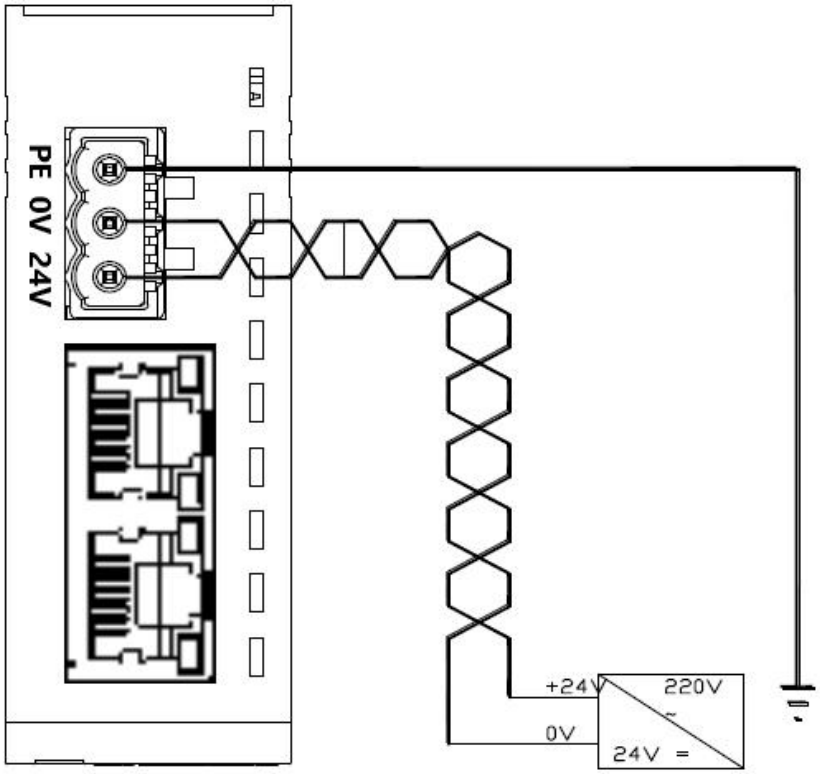
For a single-strand rigid wire, after stripping the wire to the corresponding length,Press down the button and simultaneouslySingle-strand wire insertion.

After stripping the multi-strand flexible wire to the corresponding length, use the corresponding standard cold-pressed terminals (tubular insulated terminals, see the table below for reference specifications).Press down the button and simultaneously pull the lineinsert.

Specifications of tubular insulated ends		
Specifications	model	conductor cross-sectional area (mm^2)
 Tubular insulated terminalsLThe length is10mm	E0310	0.3
	E0510	0.5
	E7510	0.75
	E1010	1.0
	E1510	1.5

Power connection: Power module 3P terminal

Using a DC24V power module, refer to the wiring method and connect the power supply according to the circuit shown in the diagram below, while ensuring that the PE is reliably grounded (twisted pair cable is recommended for the power supply).

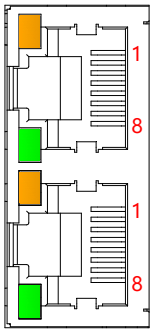


Signal and load power wiring

The load power supply uses a DC 24V power supply. For wiring the load power supply and signal lines, please refer to the corresponding I/O module wiring diagram and wiring method to press the cables into the terminal blocks (see details).6.3 I/O Module Wiring Diagram).

Bus connection method

It uses a standard RJ45 network interface and a standard crystal connector, and the pin assignment is shown in the figure below.



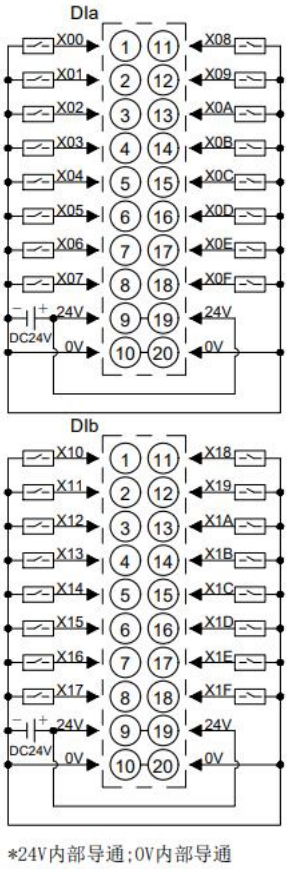
pin number	Signal
1	TD+
2	TD-
3	RD+
4	one
5	one
6	RD-
7	one
8	one

☛ Precautions

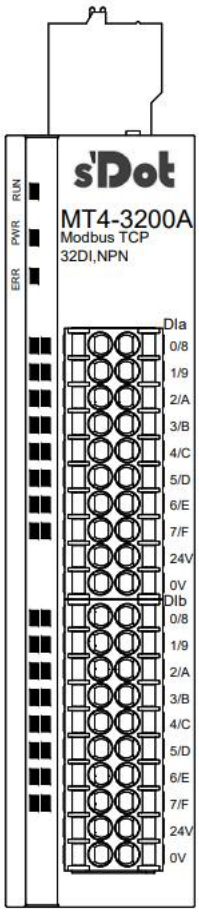
- Category 5 or higher double-shielded (braided mesh + aluminum foil) STP cables are recommended for use as communication cables.
- The length of cables between devices must not exceed 100 m.

6.3 I/O module wiring diagram

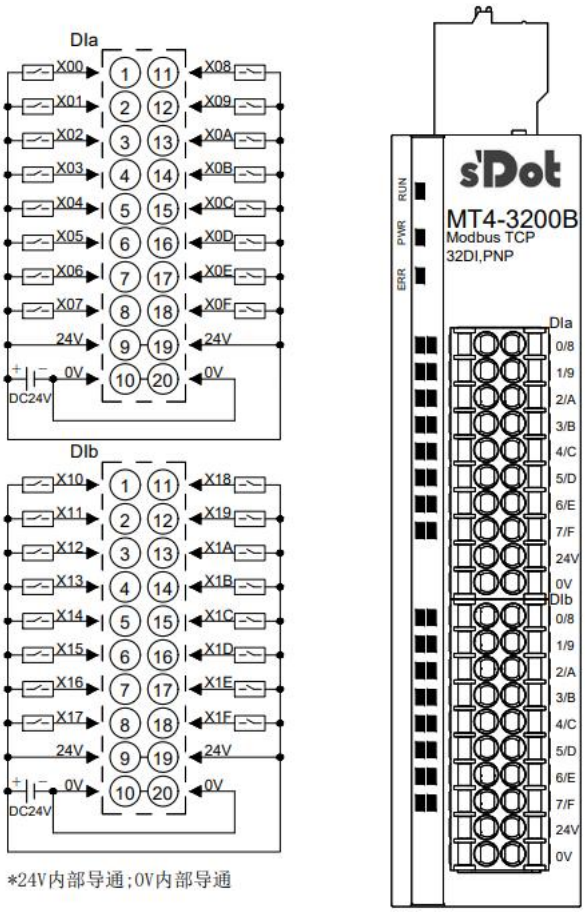
6.3.1 MT4-3200A



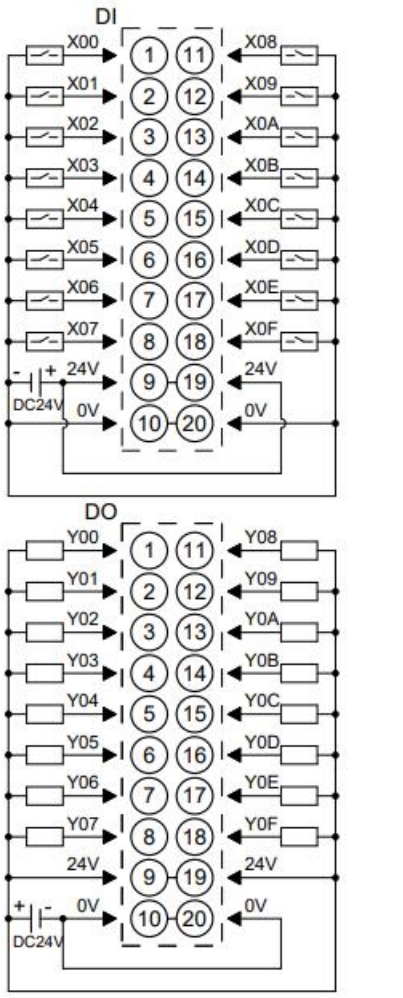
*24V内部导通;0V内部导通



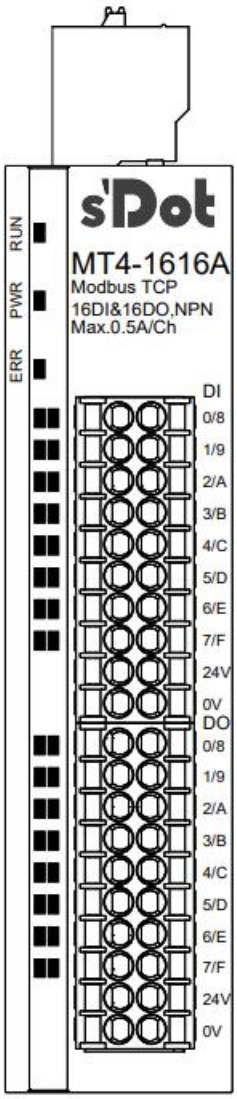
6.3.2 MT4-3200B



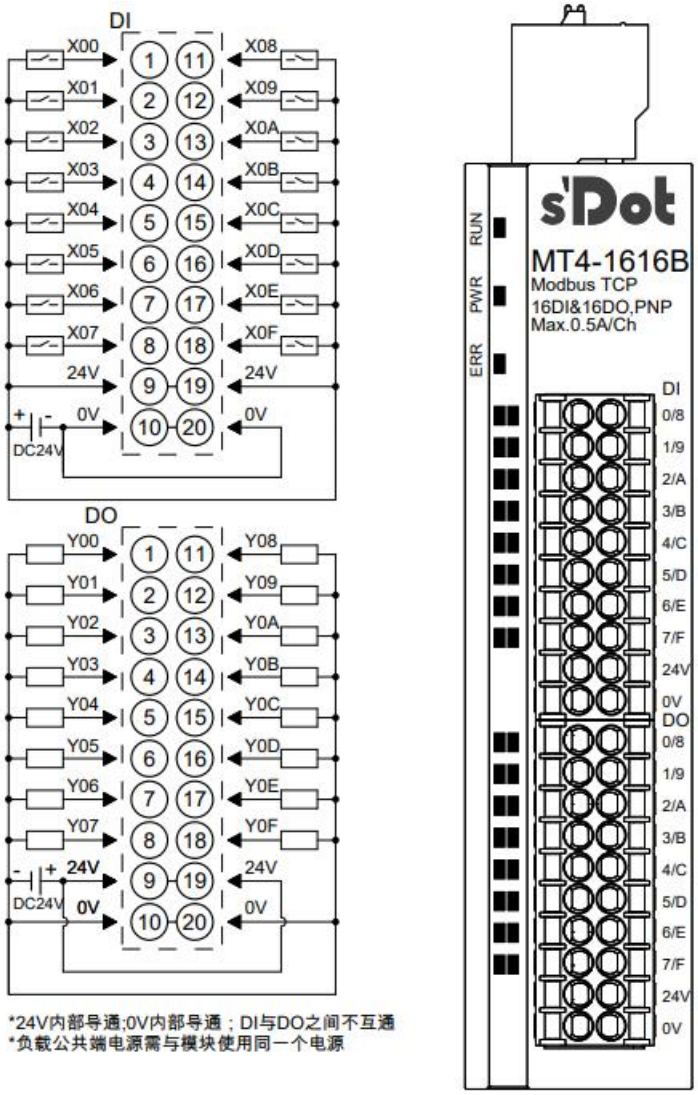
6.3.3 MT4-1616A



*24V内部导通;0V内部导通；DI与DO之间不互通
*负载公共端电源需与模块使用同一个电源

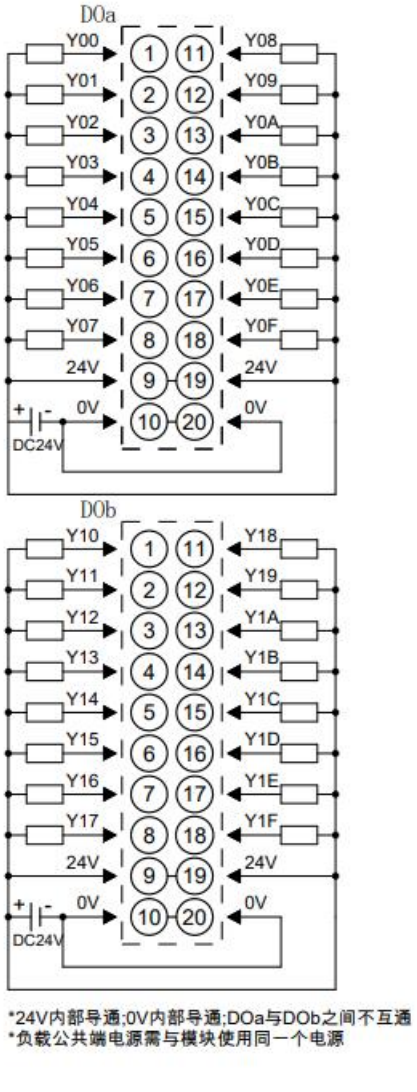


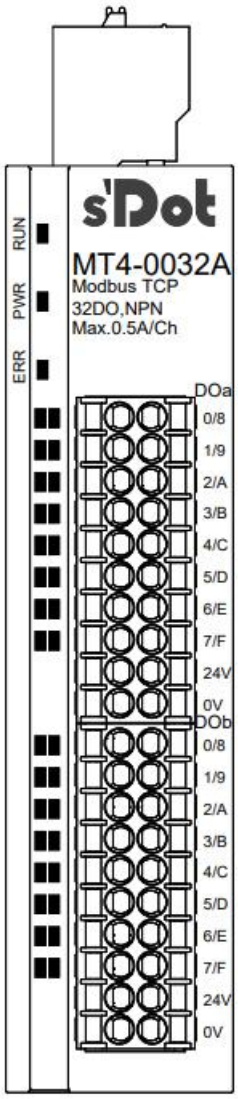
6.3.4 MT4-1616B/MT4-1616BW



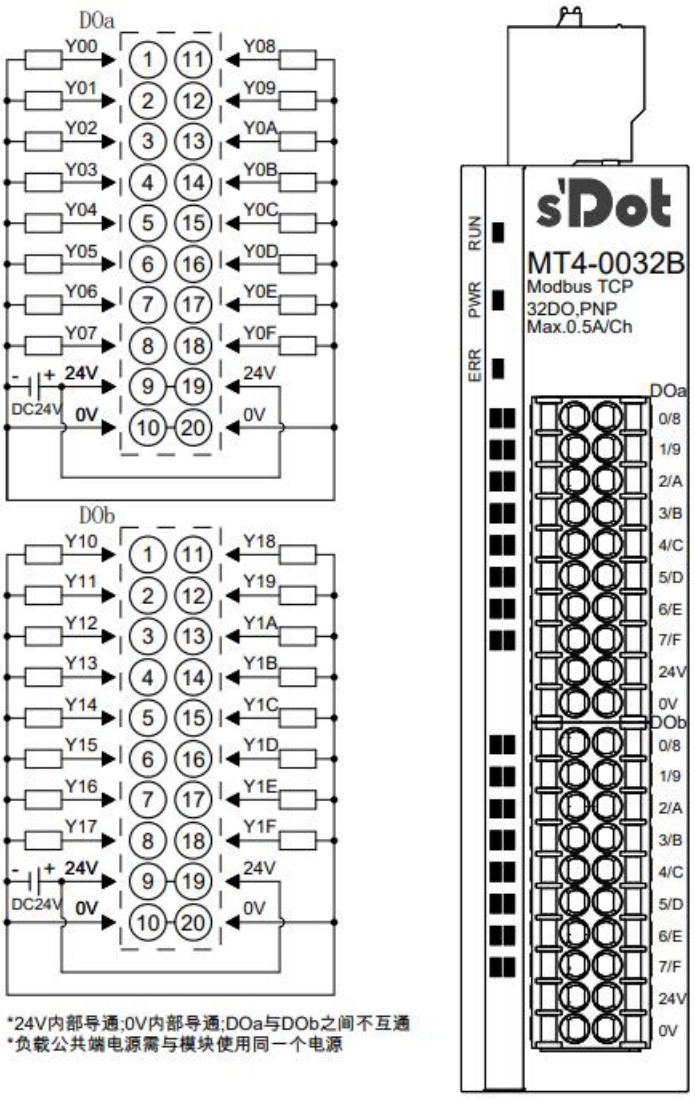
Note: The silkscreen of the MT4-1616BW module is MT4-1616BW, and the wiring diagram is the same as that of the MT4-1616B.

6.3.5 MT4-0032A



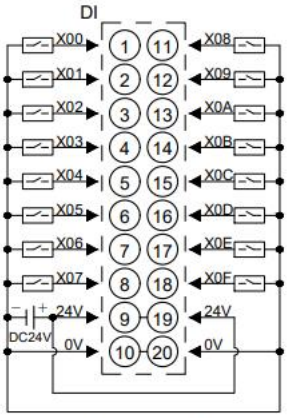


6.3.6 MT4-0032B/MT4-0032BW

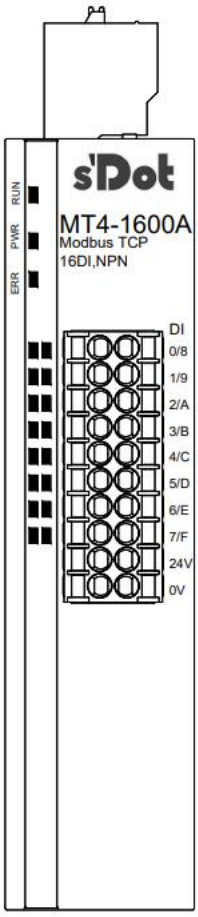


Note: The silkscreen of the MT4-0032BW module is MT4-0032BW, and the wiring diagram is the same as that of the MT4-0032B.

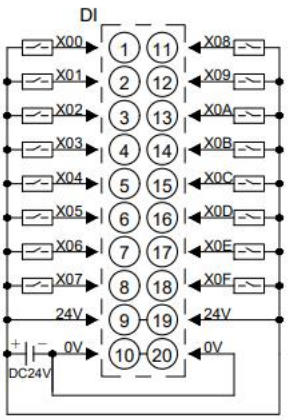
6.3.7 MT4-1600A



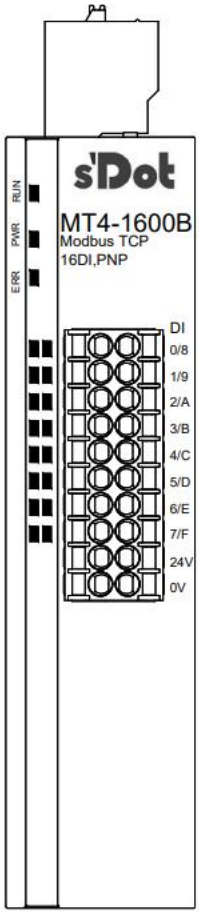
*24V内部导通;0V内部导通



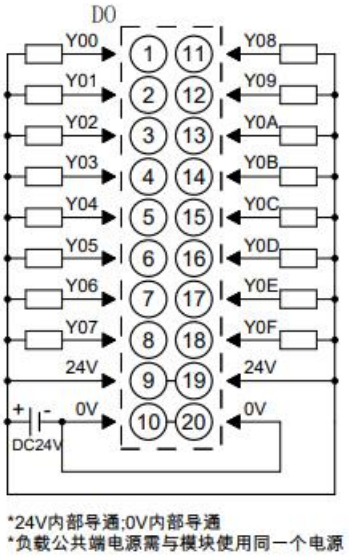
6.3.8 MT4-1600B



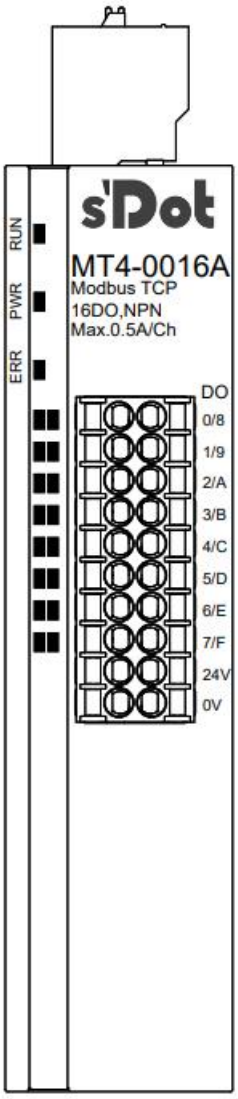
*24V内部导通;0V内部导通



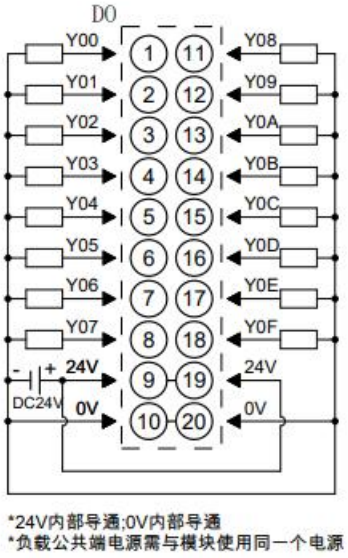
6.3.9 MT4-0016A

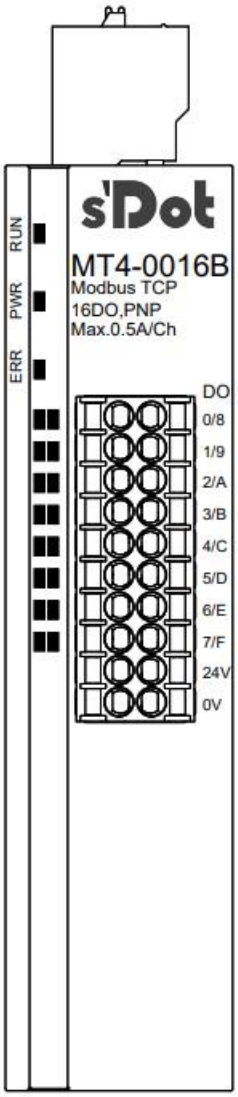


*24V内部导通;0V内部导通
*负载公共端电源需与模块使用同一个电源



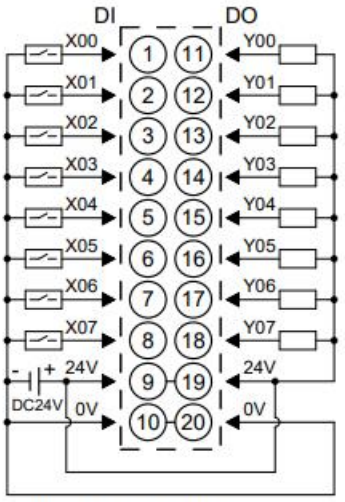
6.3.10 MT4-0016B/MT4-0016BW

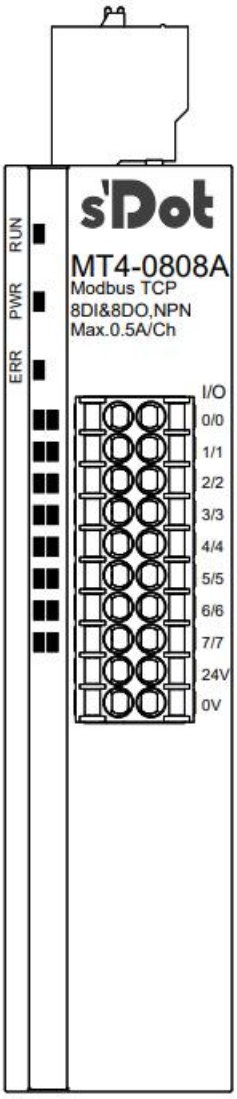




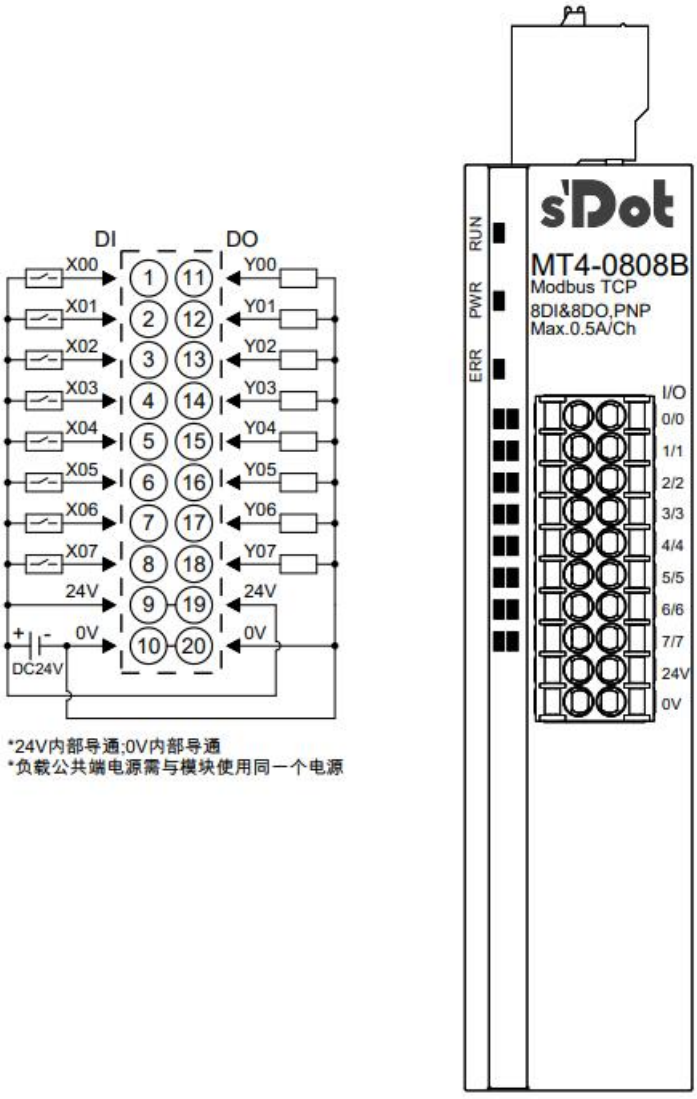
Note: The silkscreen of the MT4-0016BW module is MT4-0016BW, and the wiring diagram is the same as that of the MT4-0016B.

6.3.11 MT4-0808A



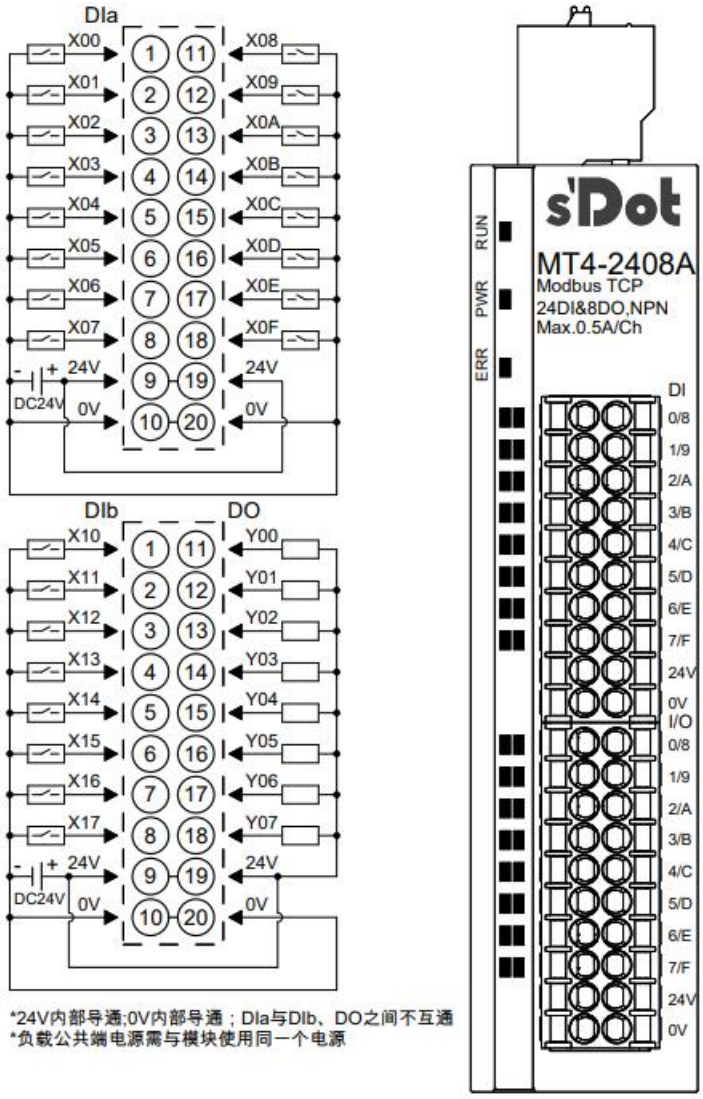


6.3.12 MT4-0808B/MT4-0808BW

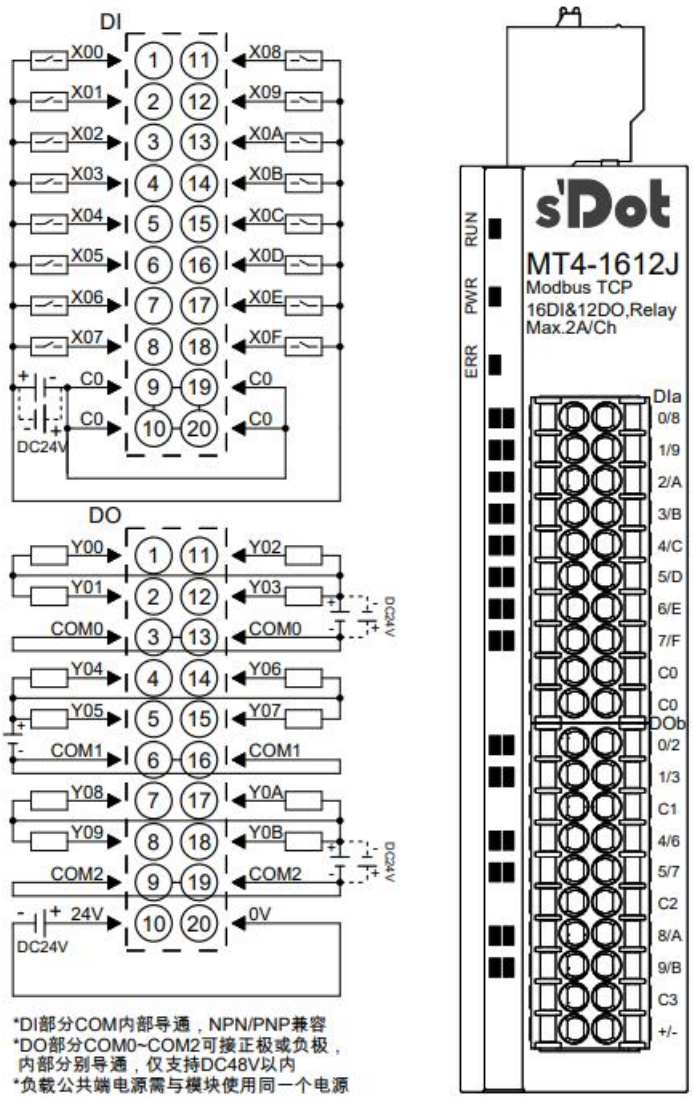


Note: The silkscreen marking of the MT4-0808BW module is MT4-0808BW, and the wiring diagram is the same as that of the MT4-0808B.

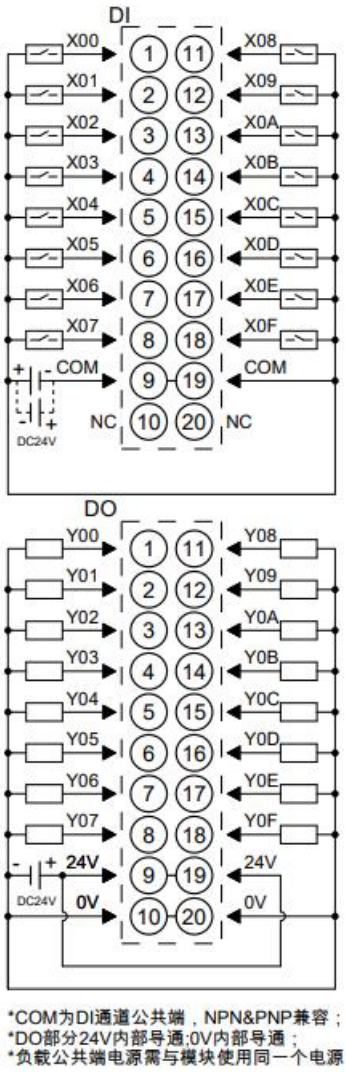
6.3.13 MT4-2408A

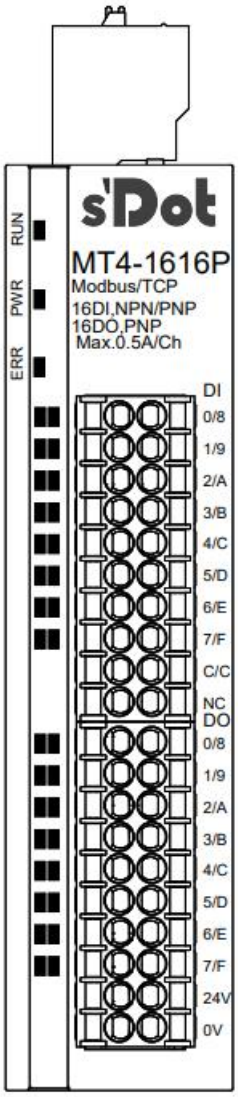


6.3.14 MT4-1612J

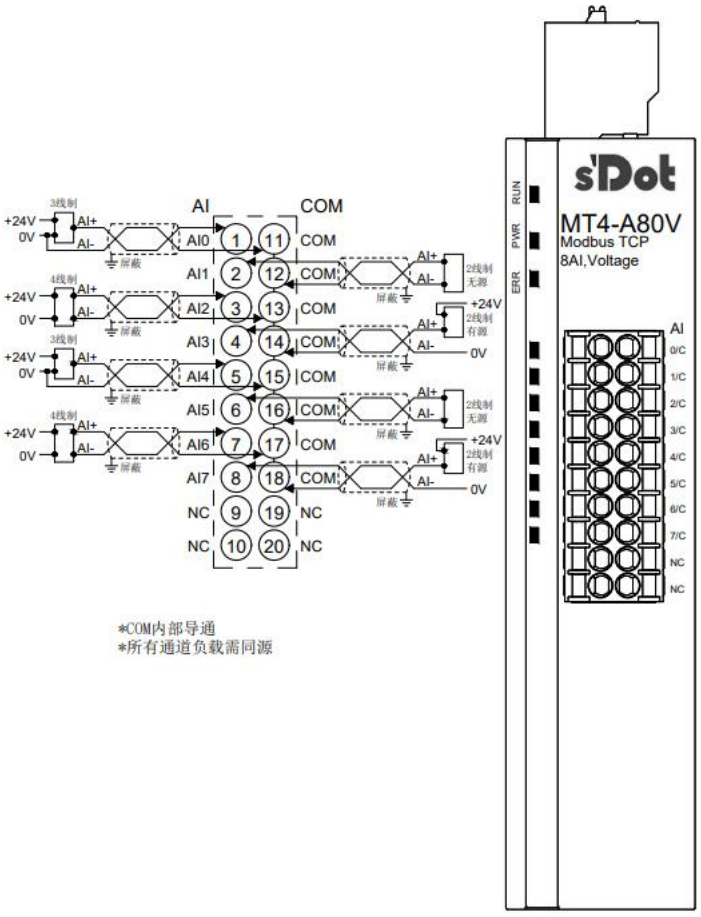


6.3.15 MT4-1616P

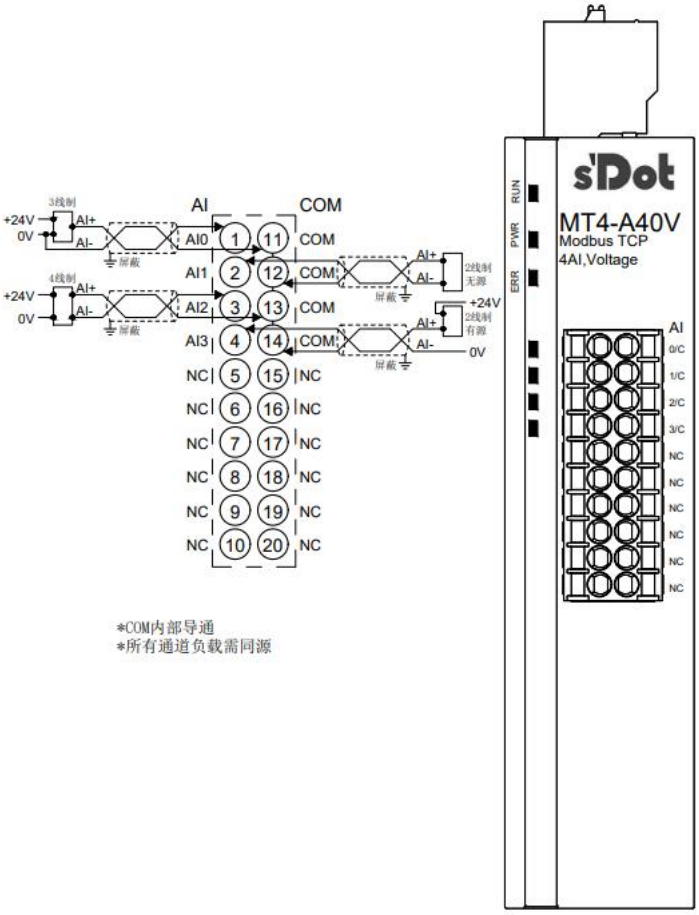




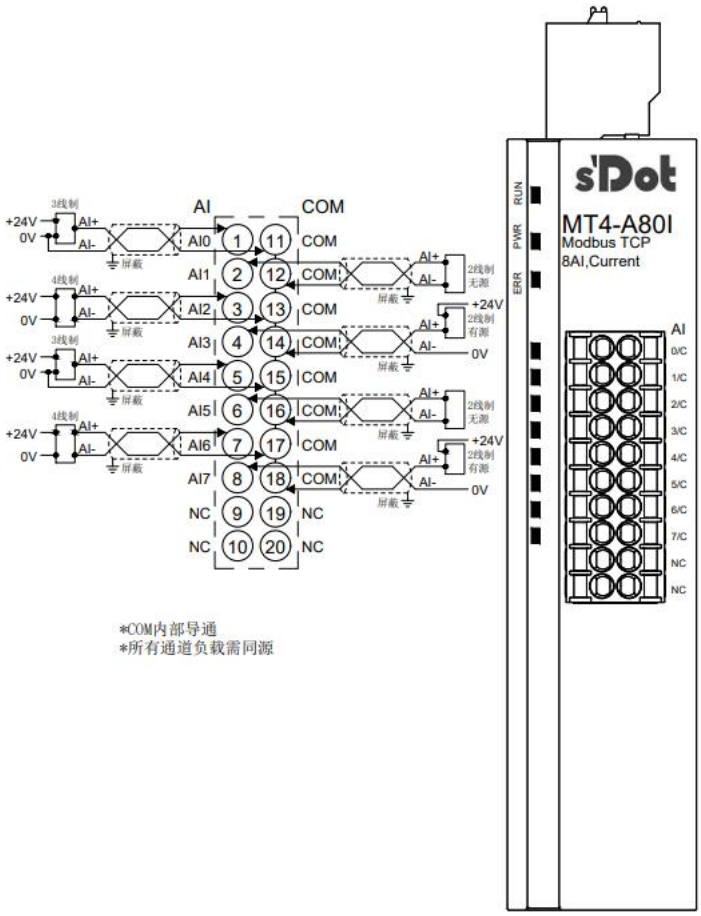
6.3.16 MT4-A80V



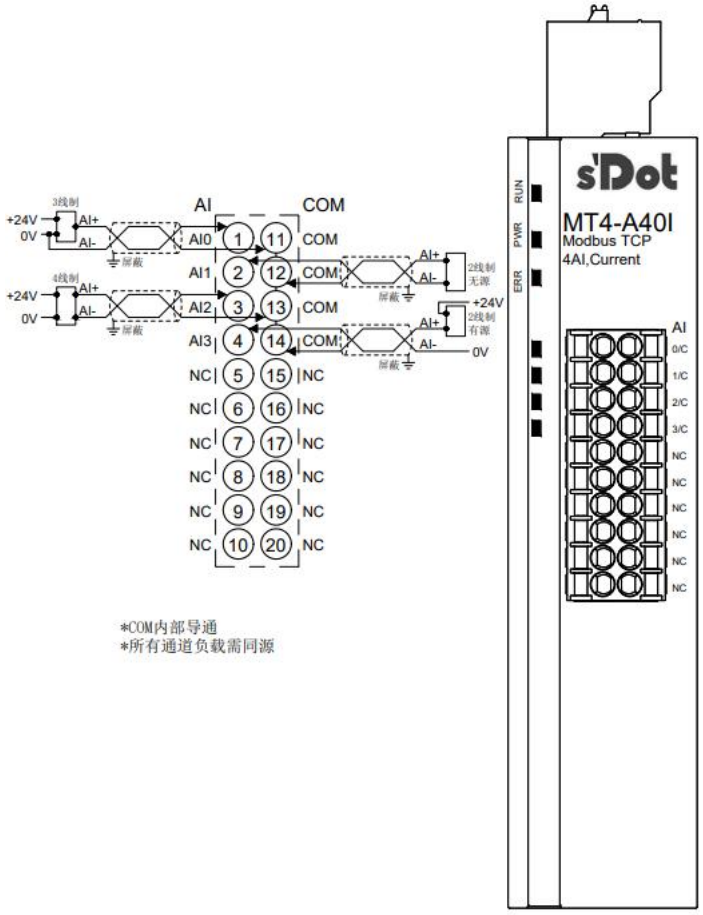
6.3.17 MT4-A40V



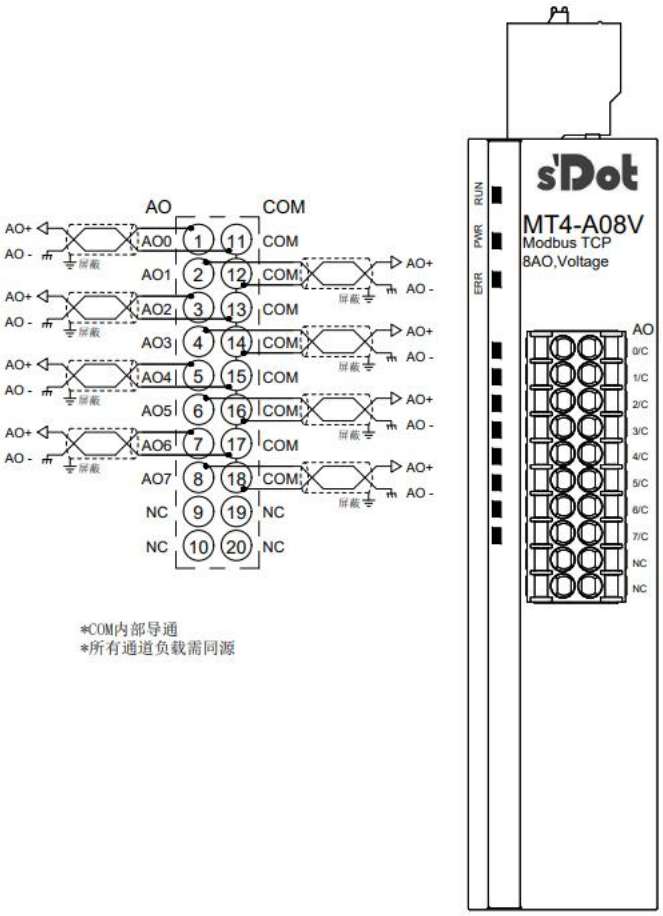
6.3.18 MT4-A80I



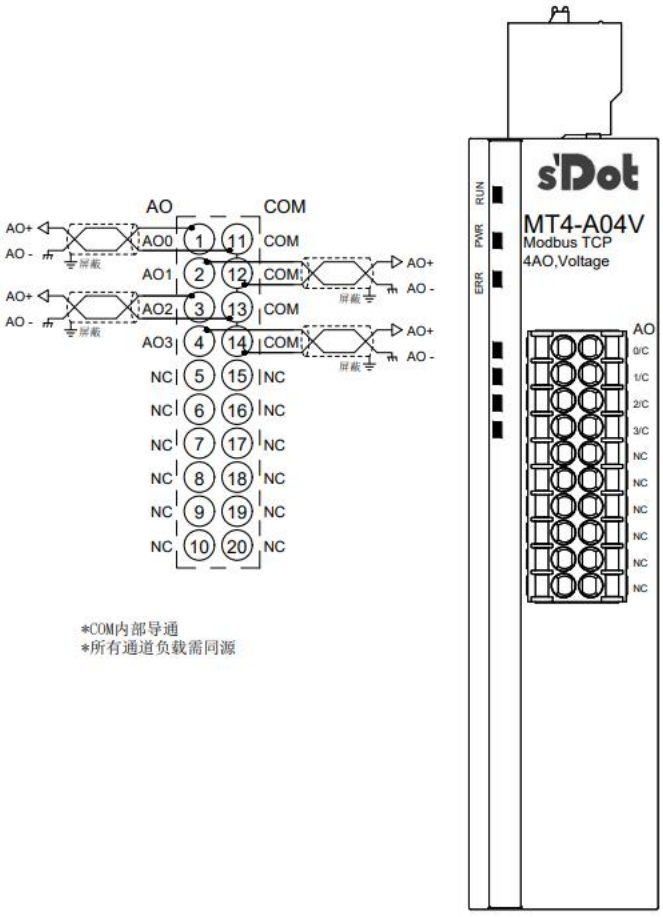
6.3.19 MT4-A40I



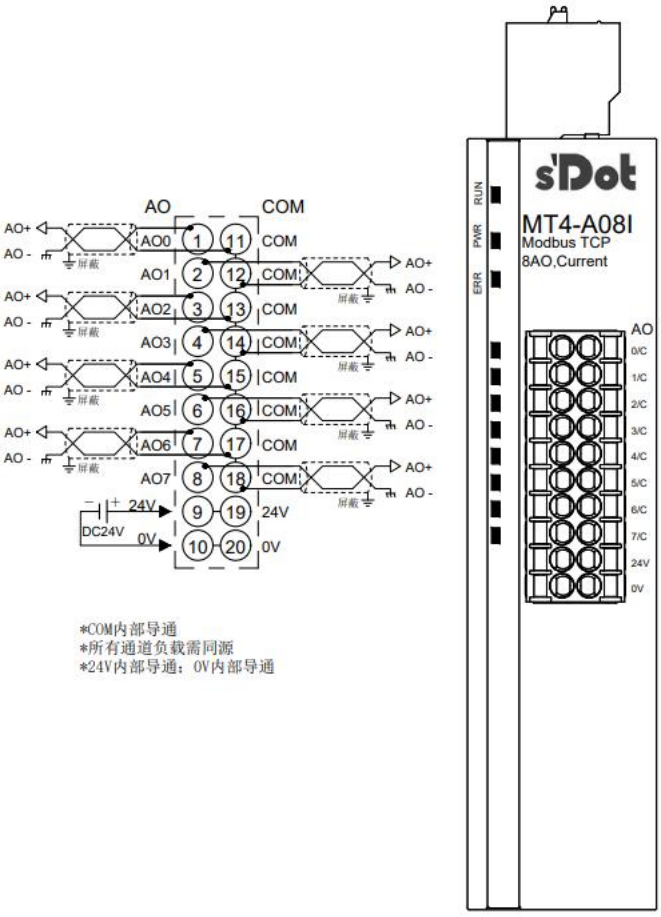
6.3.20 MT4-A08V



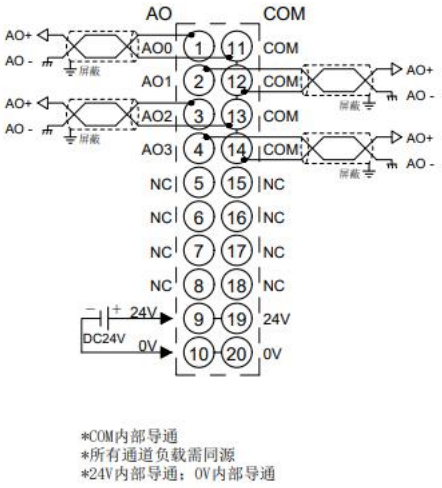
6.3.21 MT4-A04V

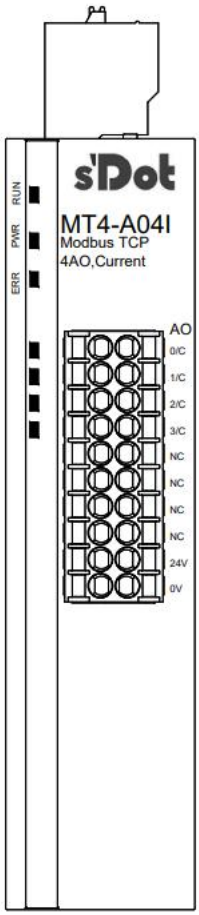


6.3.22 MT4-A08I

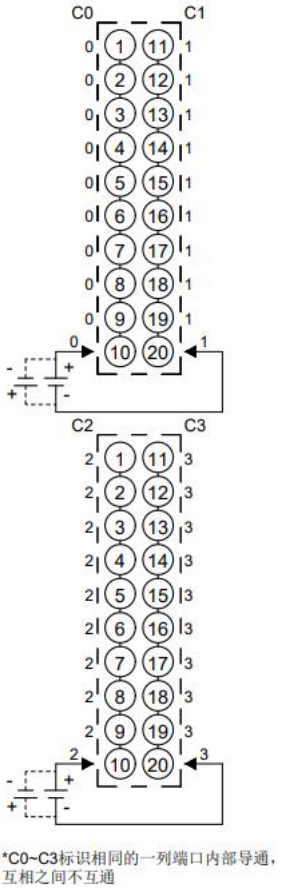


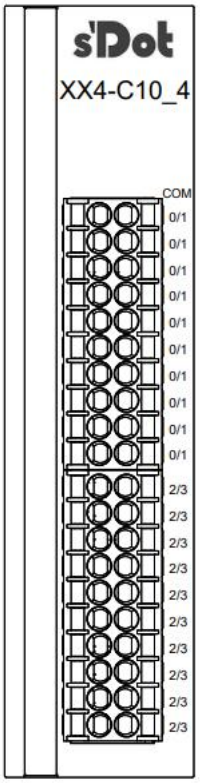
6.3.23 MT4-A04I





6.4 Wiring diagram of common terminal expansion module





7 Use

7.1 IP settings and modifications

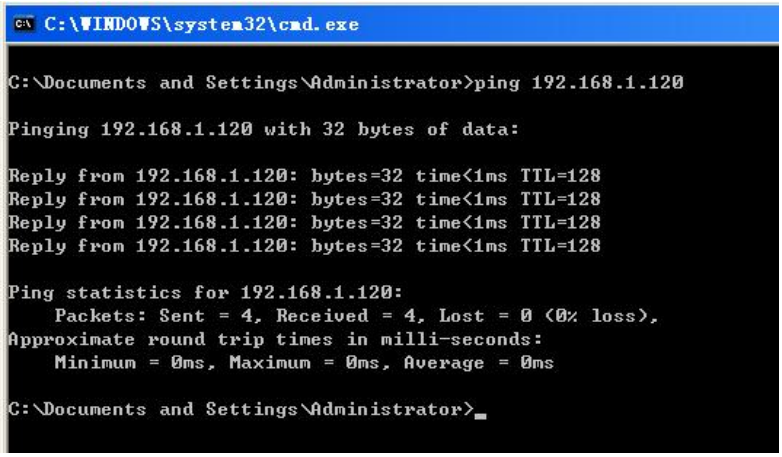
Each slave module is assigned a default IP address at the factory. The default IP addresses are typically as follows:

IP address: 192.168.1.120
Subnet mask: 255.255.255.0
Gateway: 192.168.1.1

1、Check the communication network

a. First, connect the module and the PC using a network cable, and set the PC's IP address and the module's IP address to be on the same network segment, as shown in the figure below:

b. Run the Windows CMD command, as shown in the image below.



Note: In the command prompt, type: ping 192.168.1.120 to observe the network connection. No packet loss is normal. If any abnormalities occur, please check the IP address settings and network connection.

2、Modify the module's IP address

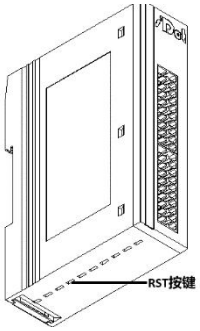
a. Modify the module's IP address via a webpage. Enter the module's IP address (192.168.1.120 in this example) into your browser's address bar, as shown in the image below:

b. In the IP address field, you can enter the required IP address, subnet mask, and gateway. After making changes, click Save and restart the module.

7.2 Factory reset

If the IP address is forgotten, lost, or other abnormalities occur during use, the module can be reset using the IP address reset function to restore the factory default IP address settings. The default IP address is as follows:

IP address: 192.168.1.120
Subnet mask: 255.255.255.0
Gateway: 192.168.1.1



☛ Precautions

- Power on the module, press and hold the reset button for 1 second. The RUN/ERR light will flash. After stopping, the RUN/ERR light will remain on. This completes the reset.

  It needs to be powered off and restarted afterwards.
- For resetting, please use insulated tools with a diameter or thickness of less than 1.2 mm.

7.3 Module parameter setting function

7.3.1 Output clear and hold function

The clear/hold function is for modules with outputs. This function can be configured to control the module's output when communication is lost.

Clear output: When communication is disconnected, the module output channel will automatically clear the output, which can be configured from 1 to 30 seconds.

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

Configuration method

Power on the module, connect it to the computer via network cable, and change the computer's IP address to be on the same network segment as the module's IP address. Enter the module's IP address into Internet Explorer, as shown in the image below.

- Clear/Keep:

The system default value is 0. After the disconnection time is set, the output will be cleared after the configured time expires.

When the hold value is set to 1, the output retains the state before the disconnection.

- Disconnection time:

The value can be set from 1 to 30, in seconds.

The system default value is 0, so this function is invalid.

7.3.2 Analog range configuration function

The analog quantity range setting function is for analog input/output modules, allowing you to set the range of the analog quantity. (See details for range)3.3 Analog Parameters)

7.4 Module function code mapping table

The module supports a total of 5 function codes: read coil 0x01(1), read discrete input 0x02(2), write multiple coils 0x0f(15), read holding register 0x03(3), and write multiple registers 0x10(16).

Digital Input/Output Address Mapping Table				
Read coil 0x01(1)				
aisle	Channel 0	Channel 1	...	Channel 127
Starting position	0	1	...	127
Maximum length	128	127	...	1
Read discrete input 0x02(2)				
aisle	Channel 0	Channel 1	...	Channel 63
Starting position	0	1	...	63
Maximum length	64	63	...	1
Write multiple coils 0x0f(15)				
aisle	Channel 64	Channel 65	...	Channel 127
Starting position	64	65	...	127
Maximum length	64	63	...	1
Read holding register 0x03(3)				
aisle	Channels 0~15	Channels 16-31	...	Channels 112-127
Starting address	0	1	...	7
Maximum address	8	7	...	1
Write multiple registers 0x10(16)				
aisle	Channels 64-79	Channel 80~95	Channels 80-111	Channels 112-127
Starting address	4	5	6	7
Maximum address	4	3	2	1

Analog Input/Output Address Mapping Table								
Read holding register 0x03(3)								
aisle	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7
Starting address	8	9	10	11	12	13	14	15
Maximum address	8	7	6	5	4	3	2	1
Write multiple registers 0x10(16)								
aisle	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7
Starting address	16	17	18	19	20	twenty one	twenty two	twenty three
Maximum address	8	7	6	5	4	3	2	1

Analog range selection address mapping table								
Write multiple registers 0x10(16)								
8-channel analog range selection address mapping table								
aisle	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6	Channel 7
Starting address	32	33	34	35	36	37	38	39
Maximum address	8	7	6	5	4	3	2	1
4-channel analog range selection address mapping table								
aisle	Channel 0	Channel 1	Channel 2	Channel 3				
Starting address	32	33	34	35				
Maximum address	4	3	2	1				

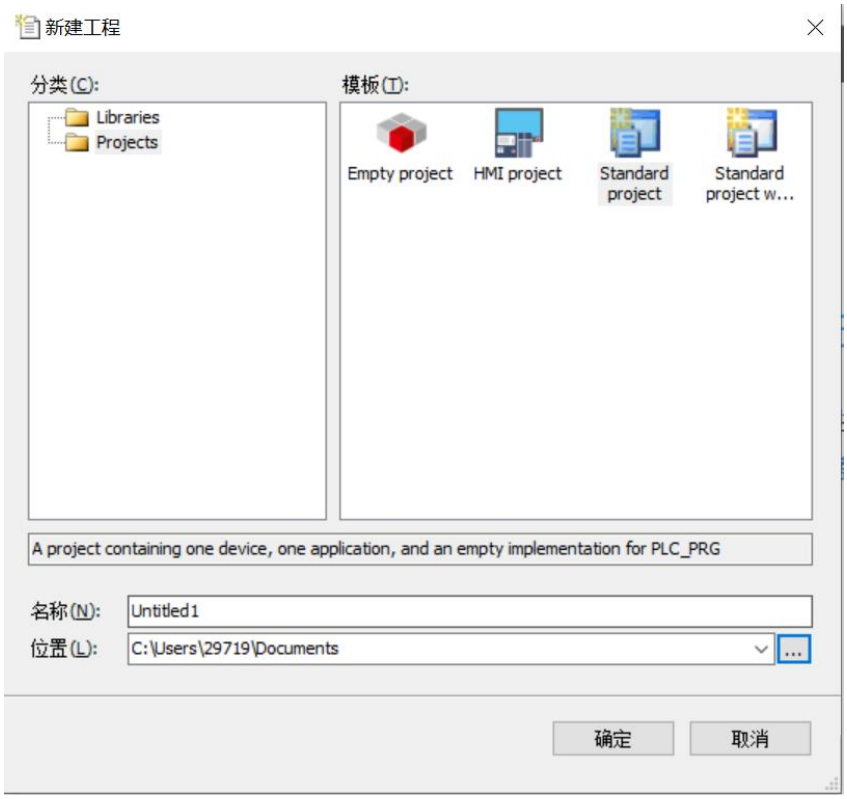
7.5 Application in CODESYS V3.5 software environment

1、Preparation

- **Hardware environment**
  - **Module preparation**
    This instruction uses the MT4-1616A as an example.
  - **One computer, pre-installed with CODESYS V3.5 software.**
    Set the computer's IP address and module to be on the same network segment.
    Each slave module is assigned a default IP address at the factory. The default IP addresses are typically as follows:
    IP address: 192.168.1.120
    Subnet mask: 255.255.255.0
    Gateway: 192.168.1.1
  - **Standard network cable**
  - **Module mounting rails and rail fasteners**
  - **One switching power supply**
- **Hardware configuration and wiring**
  Please refer to "5 Installation and Removal"6-wire connectionThis indicates that the module has been correctly connected to the system.
- **Module power on**
  After verifying that the wiring is correct, power on the MT4-1616A module.

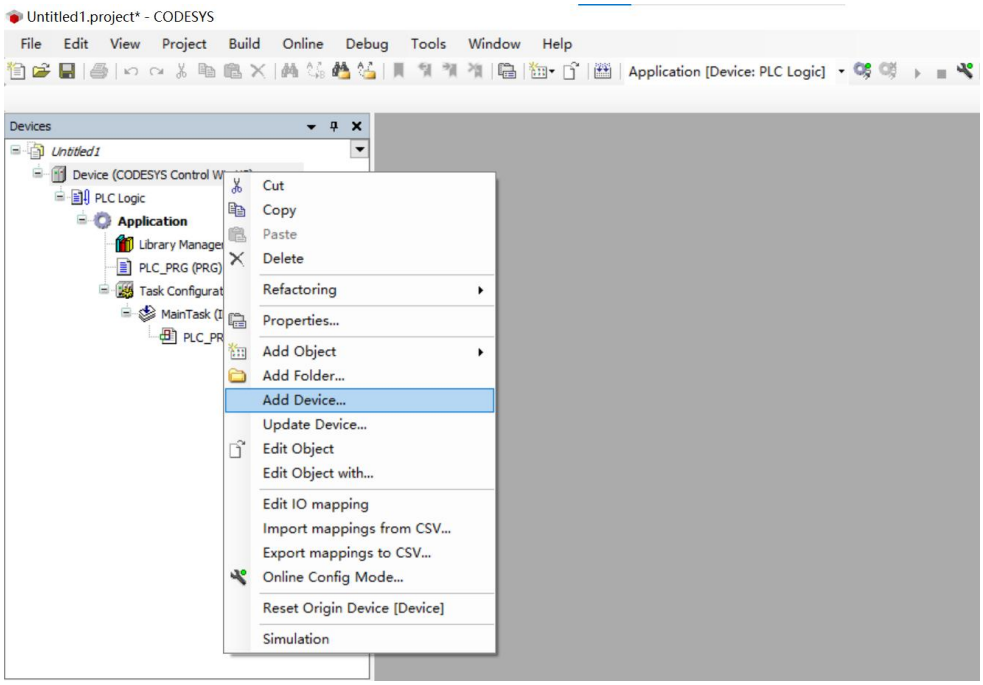
2、Create a project

a. Log in to CODESYS, click "File -> New Project", enter a name, and click "OK", as shown in the figure below.

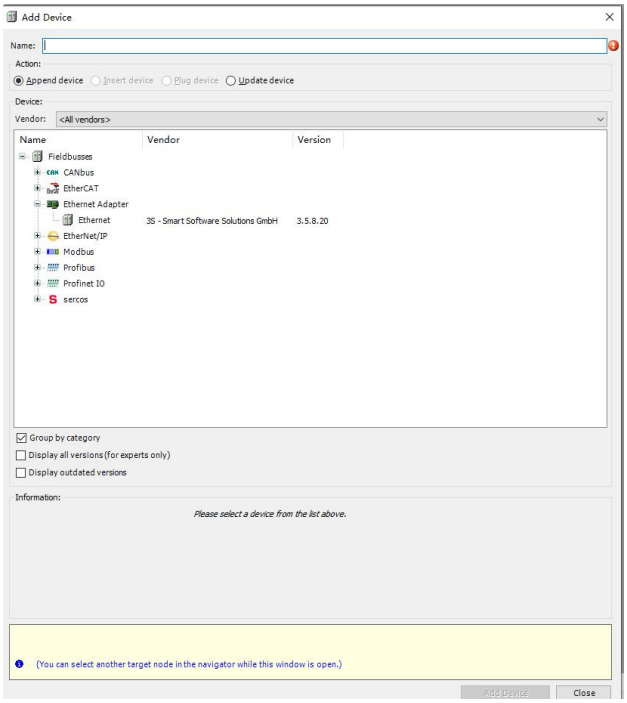


3、 Add Ethernet

a. Right-click "Device (CODESYS Control Win V3)" in the left navigation tree of CODESYS, and click "Add Device", as shown in the figure below.

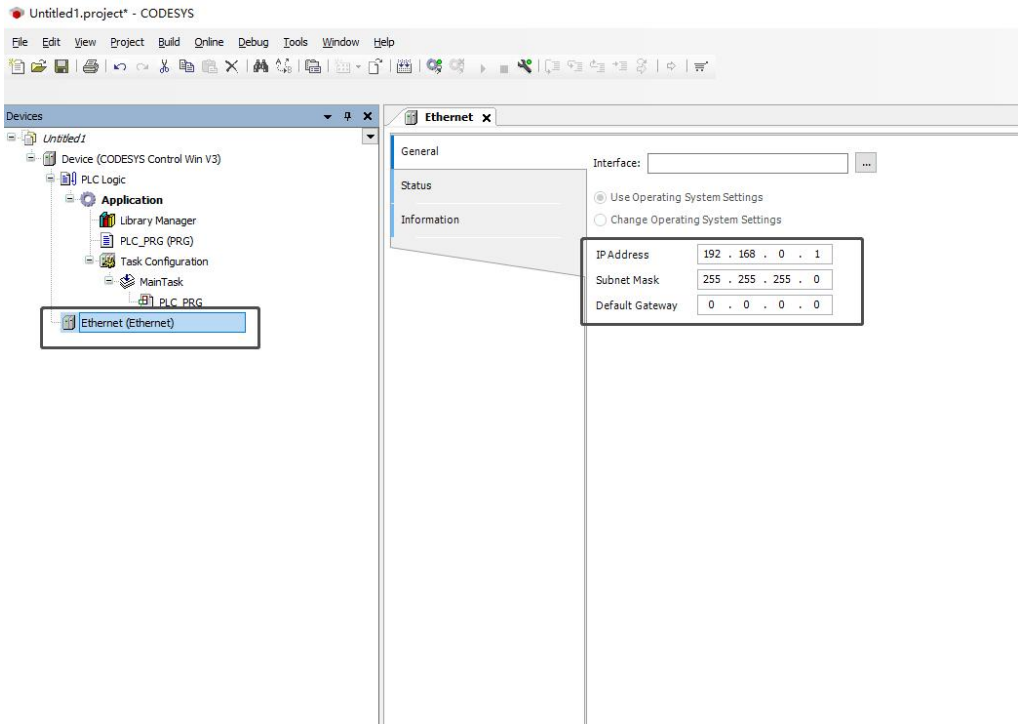


b. Select "Ethernet Adapter -> Ethernet" and add it, as shown in the image below.



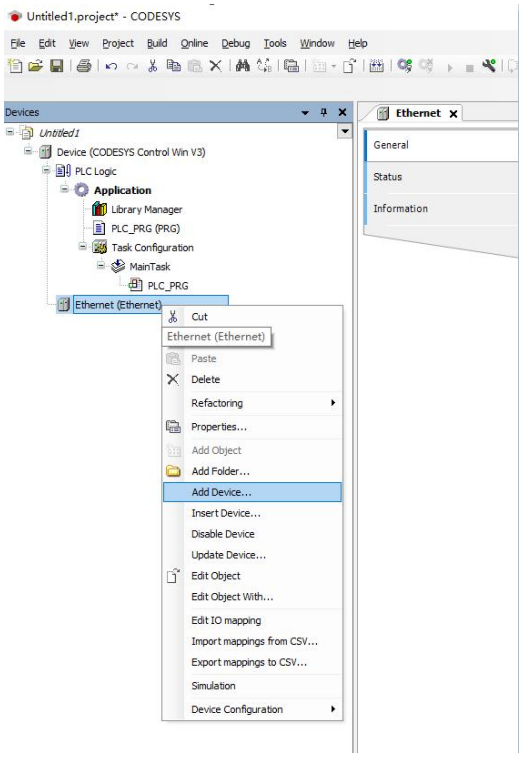
4、Configure Ethernet network parameters

a. Double-click "Ethernet (Ethernet)" in the left navigation tree to open the main menu on the right, then click..."..." Open the network adapter window, select Ethernet. The CODESYS master station IP and the MT slave station module IP must be in the same network segment, as shown in the figure below.

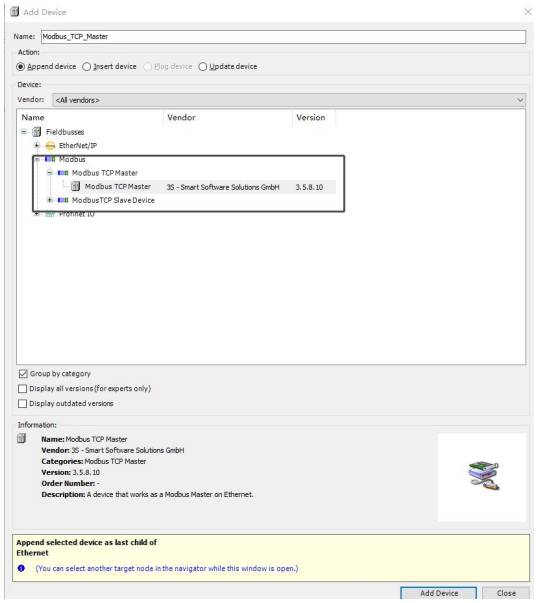


5、Add Modbus TCP Master and Modbus TCP Slave

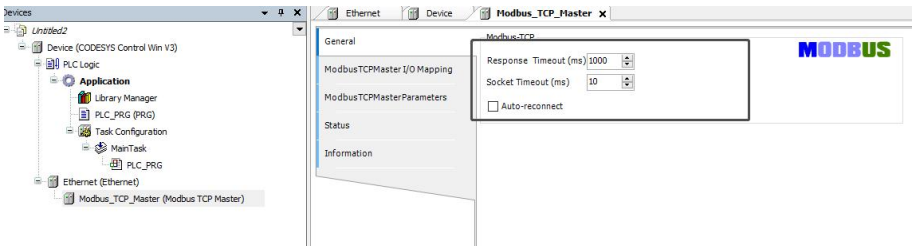
a. Right-click "Ethernet (Ethernet)" in the left navigation tree, and click "Add Device", as shown in the figure below.



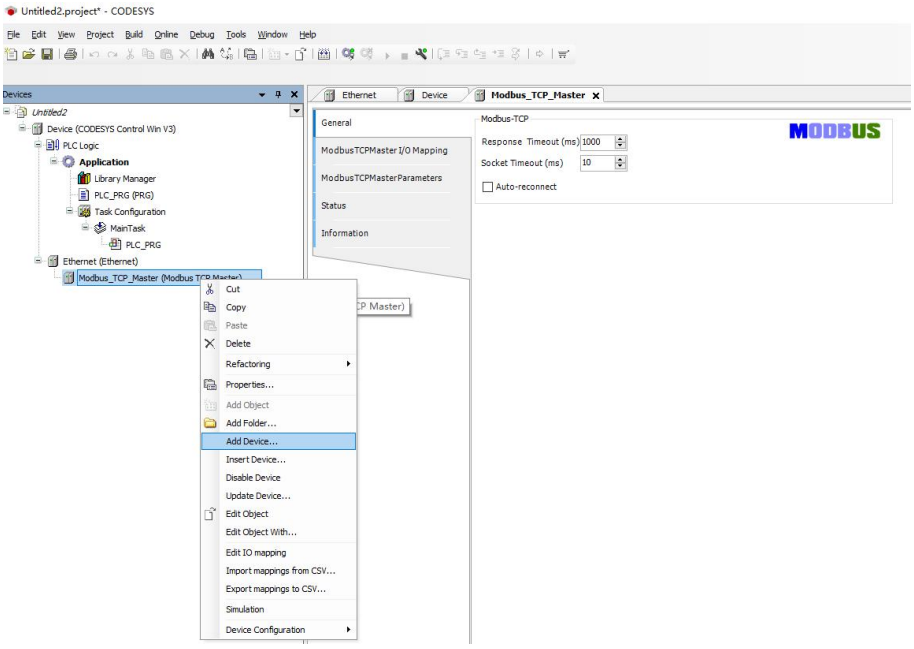
b. Select "Modbus TCP Master" and add it, as shown in the image below.



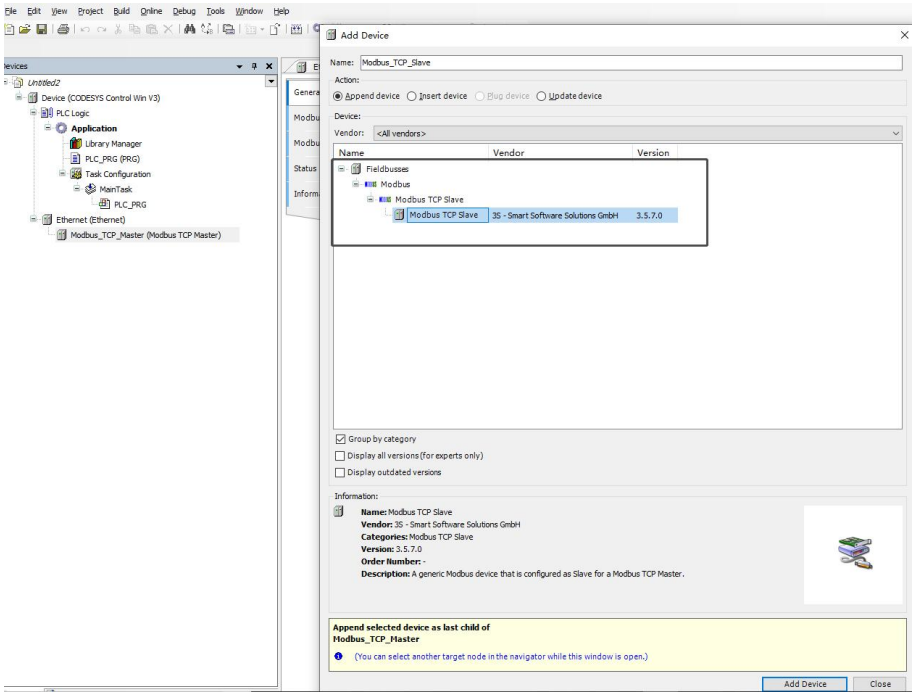
c. Double-click "Modbus TCP Master" in the left navigation tree to open the main menu on the right. Click "General" to configure Modbus TCP Master, as shown in the figure below.



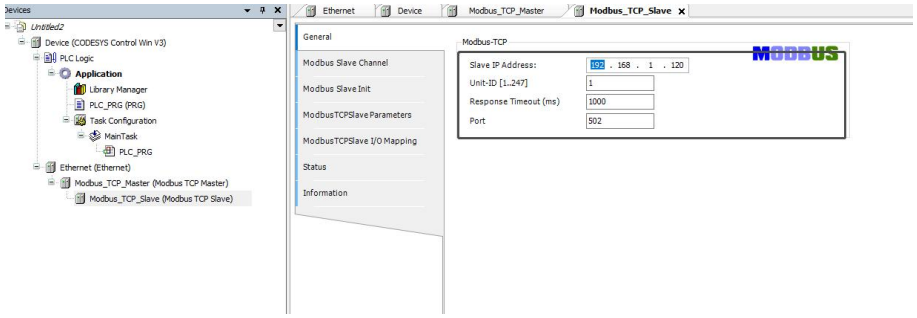
d. Right-click "Modbus TCP Master" in the left navigation tree, and click "Add Device", as shown in the figure below.



e. Select "Modbus TCP Slave" and add it, as shown in the image below.

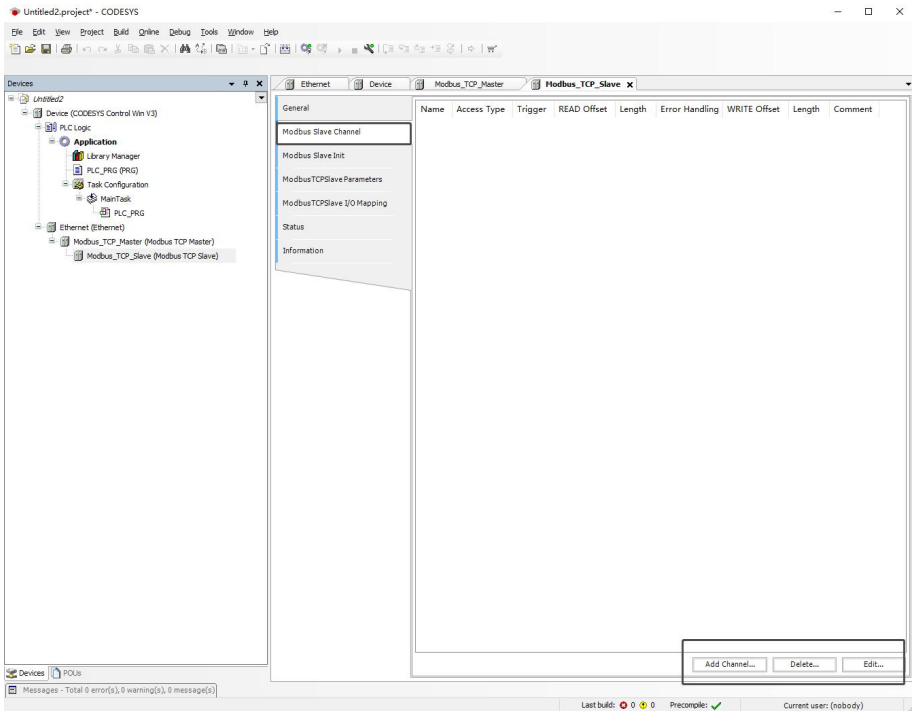


f. Double-click "Modbus TCP Slave" in the left navigation tree to open the main menu on the right. Click "General" to configure Modbus TCP Slave. Set the slave IP address to "192.168.1.120", ID to "1", response time to "1000", and port number to "502", as shown in the figure below.

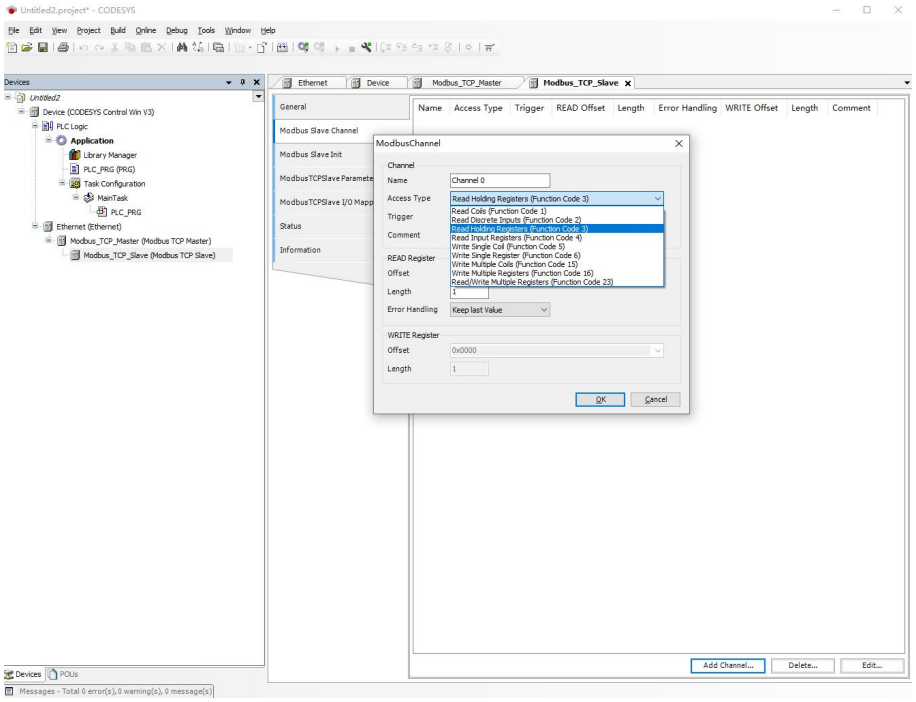


6、Configure the slave station's IO channel

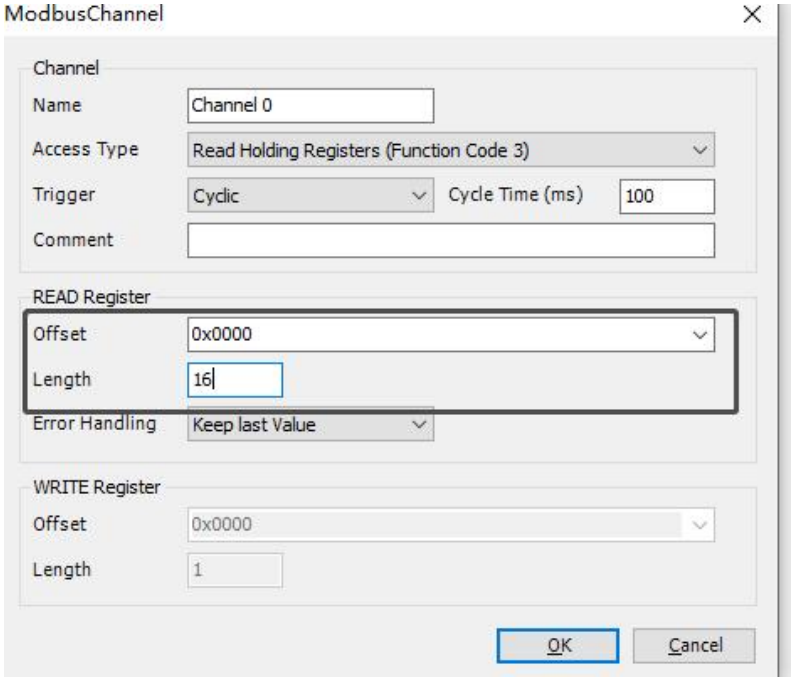
a. On the right-hand main page of Modbus TCP Slave, click "Modbus Slave Channel", then click "ADD Channel", as shown in the figure below.



b. The Channel 0 configuration window will pop up, as shown in the image below.



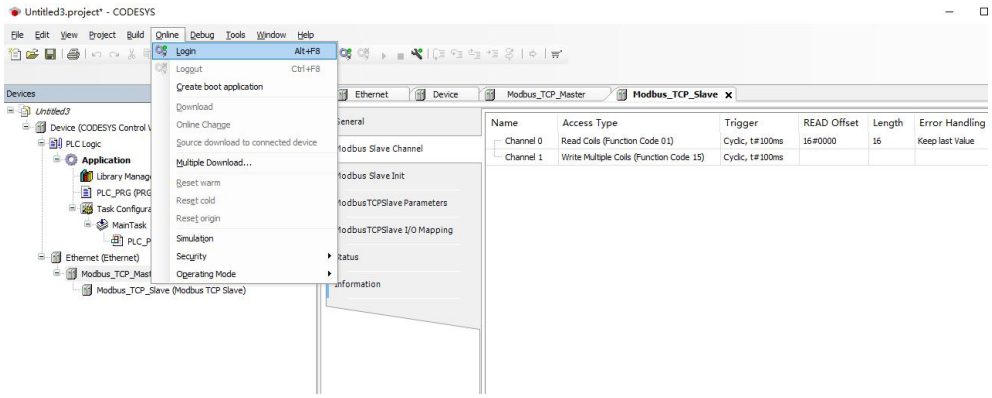
c. The MT4-1616A digital input module has a function code of 3 corresponding to the read coil. In the Channel 0 configuration window, the Access Type (function code) is 03 Read Holding Registers, the offset is 0, and the Length is 16. After setting, click "OK", as shown in the figure below.



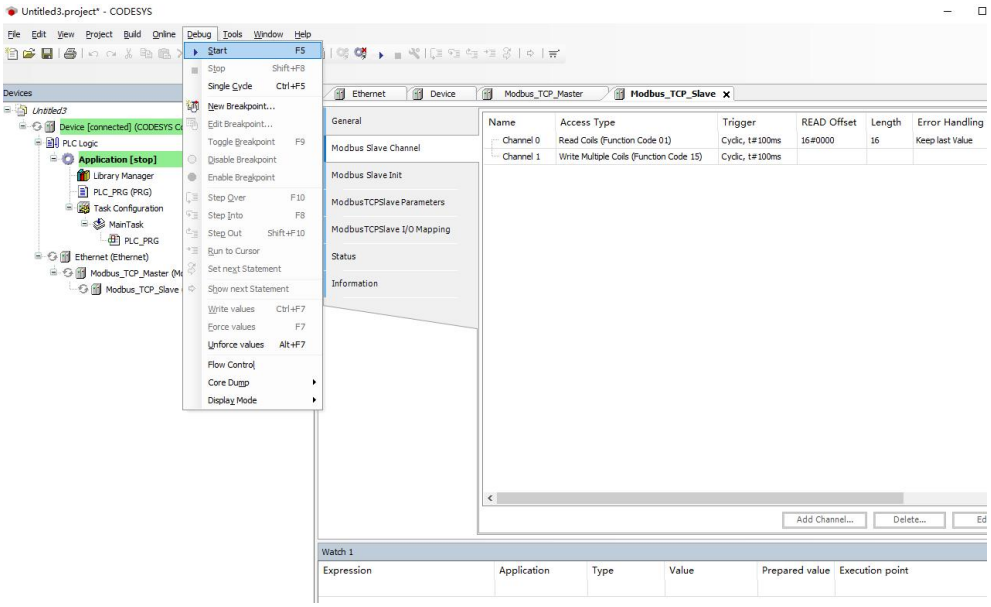
d. For the MT4-1616A digital output module, the function code for the write coil is 15. In the Channel 0 configuration window, the Access Type (function code) is 15 Write Multiple Coils, the offset is 64, and the length is 16. The operation steps are the same as above.

7、 Run the main station program

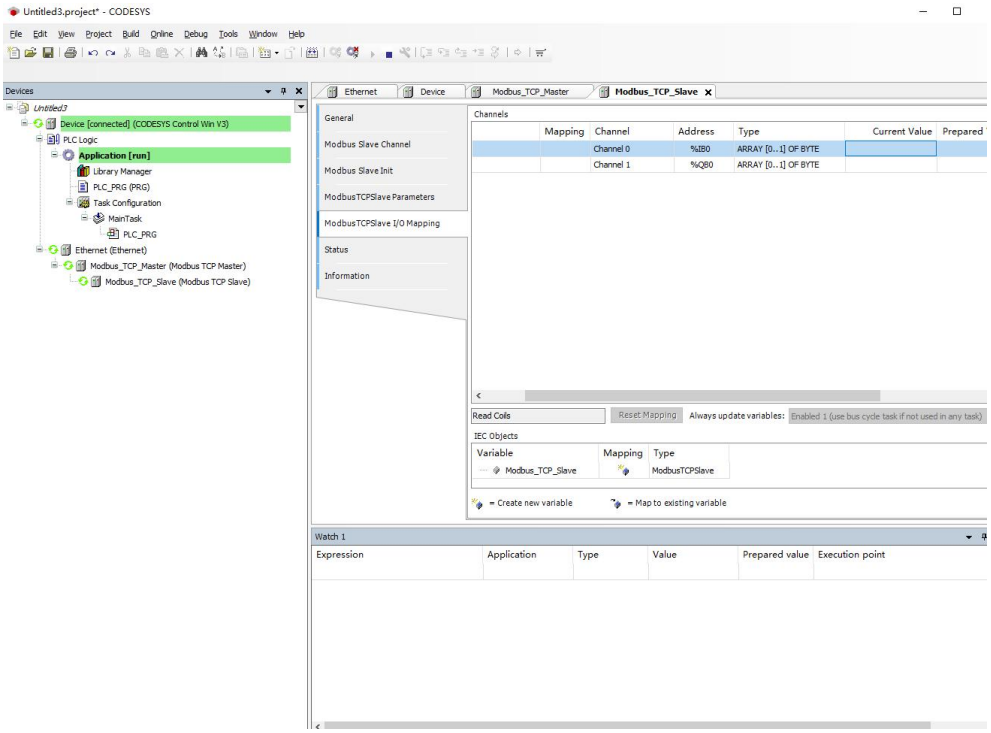
a. Log in to the PLC by clicking "Online->Login", as shown in the image below.



b. Click "Debug-> start", as shown in the image below.



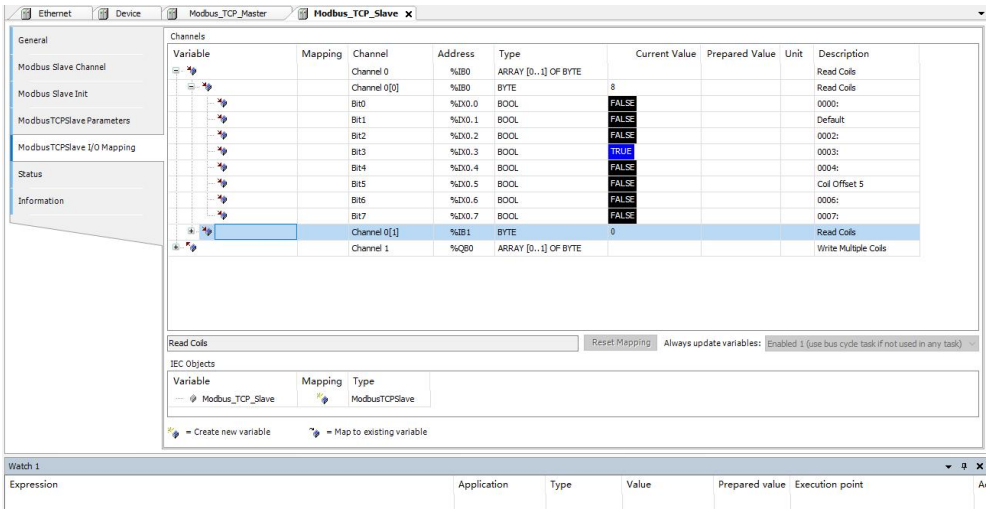
c. After running, the device directory tree is shown in the following figure.



8、Functional verification

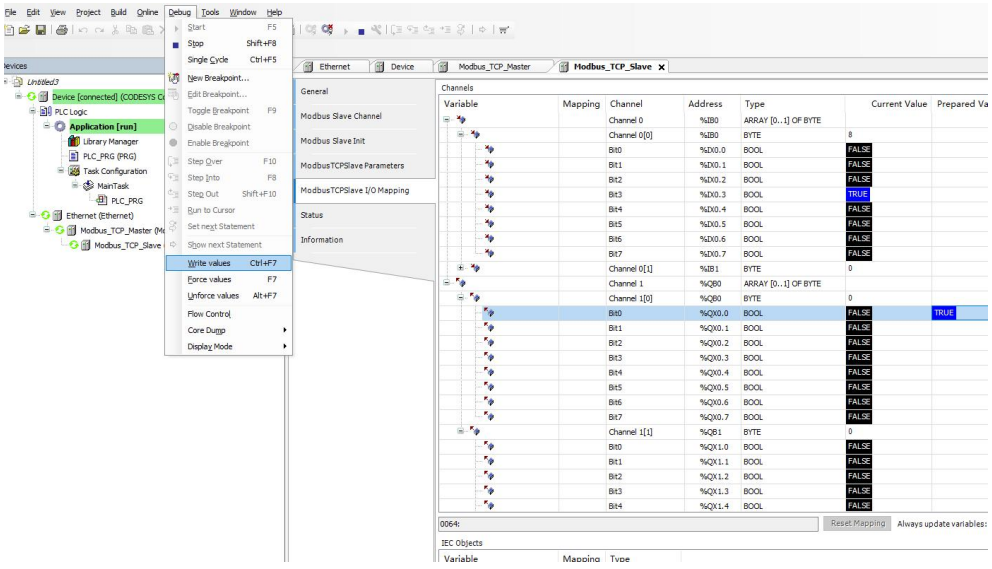
◆ Digital input module

a. On the main page on the right side of Modbus TCP Slave, click "ModbusTCPSlaveI/O Mapping" to observe the changes in the input values. The variable option in the lower right corner keeps updating. Select "Enable 1", as shown in the figure below.



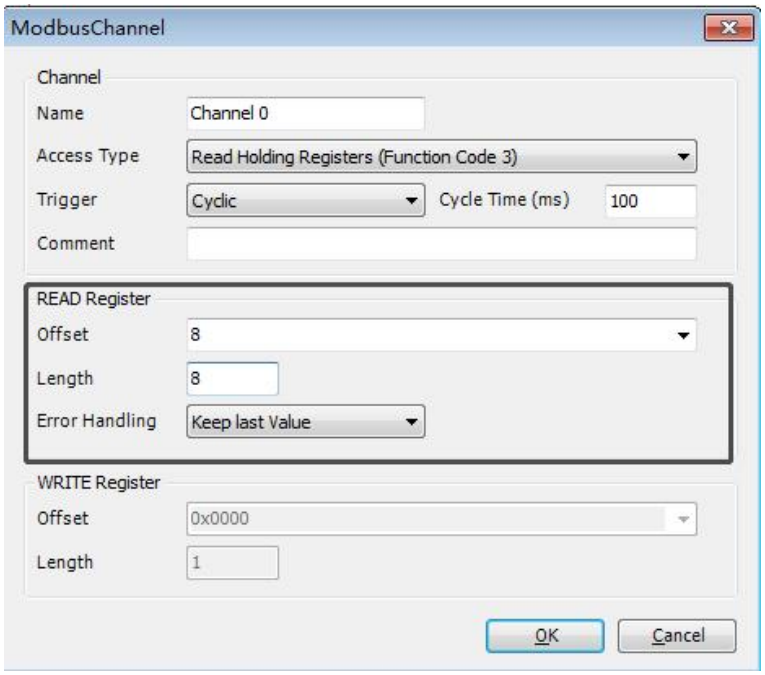
◆ Digital output module

a. Click "Debug->Write values", and write the value "TRUE\FALSE" in the corresponding Prepared Value field on the output channel. The corresponding channel will then be turned on, as shown in the figure below.

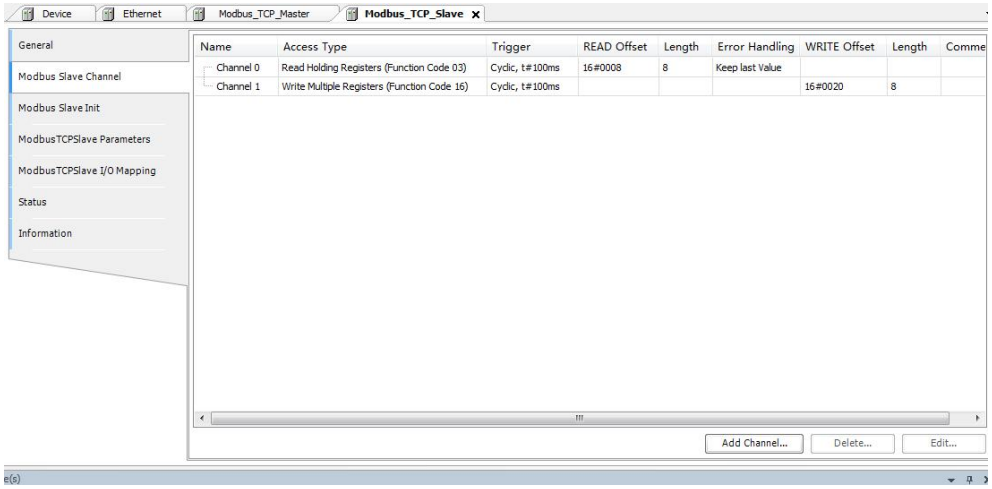


◆ **Analog input module**

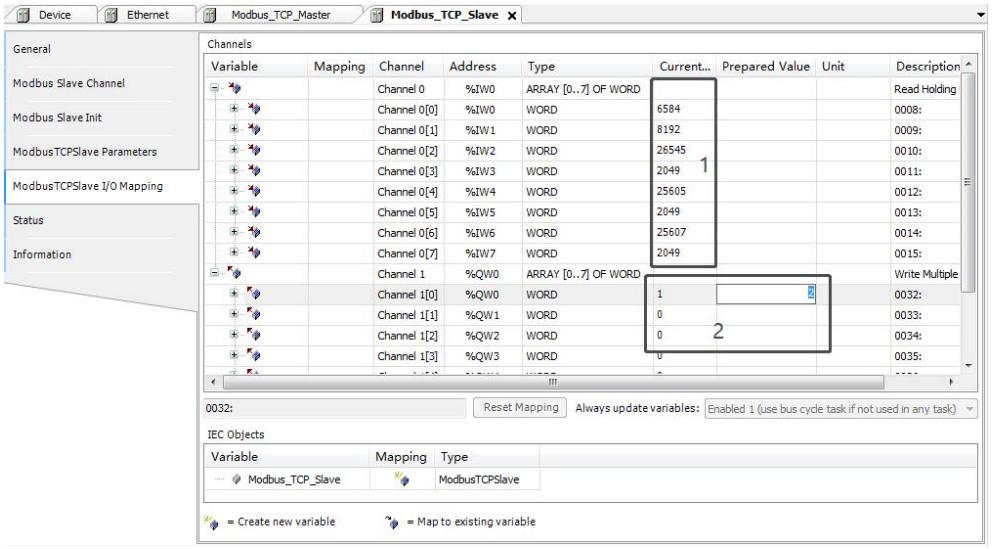
a. On the right-hand main page of Modbus TCP Slave, click "Modbus Slave Channel", then click "ADD Channel". The Channel 0 configuration window will pop up. The function code for reading the analog channel register is 3. In the Channel 0 configuration window, the Access Type (function code) is 03 Read Holding Registers, the offset is 8, and the Length is 8. After setting, click "OK", as shown in the figure below.



b. To configure the channel parameters, set the function code for writing multiple registers to 16 for the analog channel. Click "ADD Channel". In the pop-up Channel 1 configuration window, set the Access Type (function code) to 16, Write Multiple Registers, the offset to 32, and the Length to 8. After setting, click "OK". The result should look like the image below.



c. Click "Modbus TCPSlave I/O Mapping", 1: monitor the input value, 2: modify the analog input range, as shown in the figure below.



◆ **Analog output module**

a. Referring to the analog input example above, add analog output and parameter configuration channels.

b. On the right-hand main page of Modbus TCP Slave, click "ModbusTCPSlaveI/O Mapping". 1: Write the required code value, 2: Write the range selection, as shown in the figure below.