



PRODUCT

USE INSTRUCTIONS



Ordering code: 006CA3

Part number: FNI ECT-102-000-S

IP 67 module user manual

8xDI PNP



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■ Expected use

This manual describes as decentralized input and output modules for connecting to an industrial network.

■ Installation and start-up

Precautions!

Installation and start-up may only be performed by trained personnel. A qualified individual is one who is familiar with the installation and operation of the product and has the necessary qualifications to perform such operations. Any damage caused by unauthorized operation or illegal and improper use is not covered by the manufacturer's warranty. The equipment operator is responsible for ensuring that appropriate safety and accident prevention regulations are observed.

■ Corrosion resistance

Precautions!

FNI modules generally have good chemical and oil resistance. When used in corrosive media (e.g. high concentrations of chemicals, oils, lubricants, coolants and other material media (i.e. very low water content), these media must be checked before the corresponding application material compatibility. If a module fails or is damaged due to this corrosive medium, a defect claim cannot be made.

■ Dangerous voltage

Precautions!

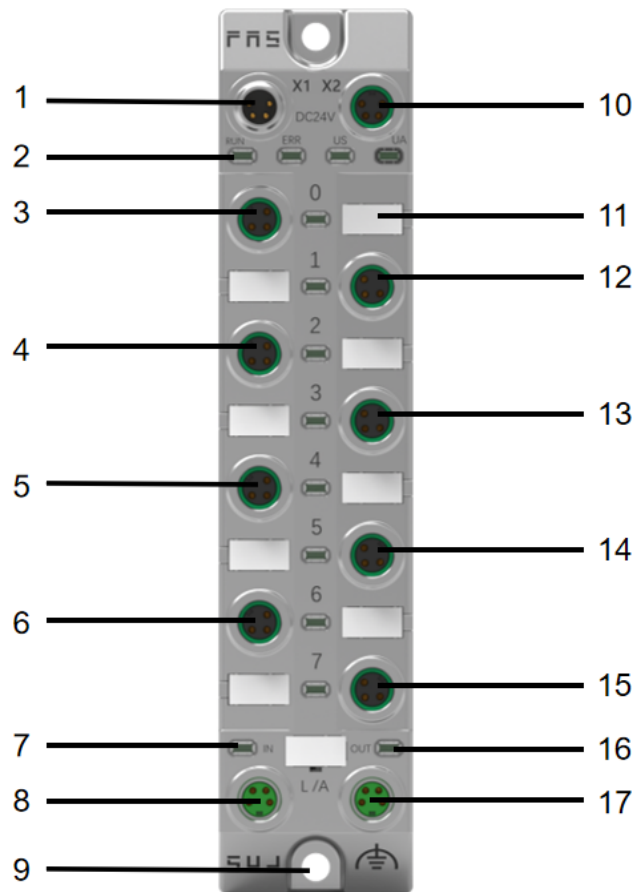
Disconnect all power before using the device!

■General security

Debugging and inspection	Fault	Owner/operator obligations	Expected use
Before debugging, read the user manual carefully.	If the defect or equipment failure cannot be corrected, the operation of the equipment must be stopped to avoid damage that may be caused by unauthorized use.	This equipment is an EMC Class A compliant product. This device produces RF noise.	The warranty and limited liability statement provided by the manufacturer does not cover damage caused by: ·Unauthorized tampering ·Improper use operation ·The instructions provided in the user manual explain the use, installation and handling of discrepancies
This system cannot be used in an environment where the safety of personnel depends on the functionality of the equipment.	Only after the housing is fully installed can the intended use be assured.	The owner/operator must take appropriate precautions to use this equipment. This device can only use the power supply that matches this device, and can only connect cables approved for application.	

1.Getting Started Guide

1.1 Module overview



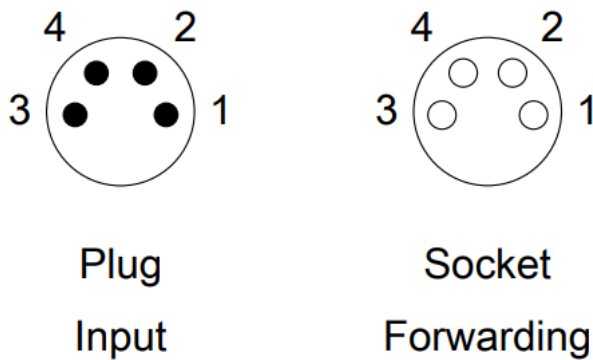
- | | |
|----------------------------------|------------------------------------|
| 1 Power input port | 10 Power output port |
| 2 Module indicator | 11 Port identification board |
| 3 port 0 | 12 port 1 |
| 4 port 2 | 13 port 3 |
| 5 port 4 | 14 port 5 |
| 6 port 6 | 15 port 7 |
| 7 Network input status indicator | 16 Network output status indicator |
| 8 Network input port | 17 Network output port |
| 9 Ground connection | |

1.2 Mechanical connection

The modules are connected using 2 M4 bolts and 2 washers.
Isolation pads are available as accessories.

1.3 Electrical connections

1.3.1 Power interface (M8)

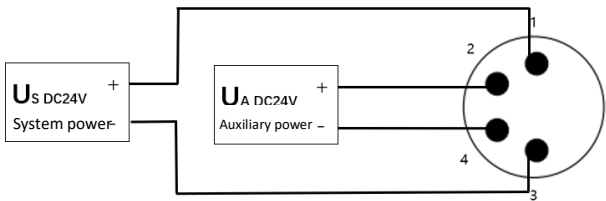


Pin	Function	Description
1	Us+	+24V (Brown)
2	Ua+*	+24V (White)
3	Us-	0V (Blue)
4	Ua-*	0V (Black)

Note:

- 1. If possible, provide sensor/module power supply and actuator power supply separately.
Total current <4A. Total current of all modules <4A, even when actuator power supplies are daisy chained.
- 2. The FE connection from the housing to the machine must be low impedance and kept as short as possible.

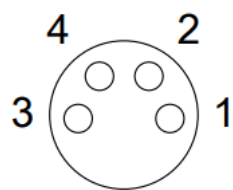
Power port



1.3.2 Network interface (M8)

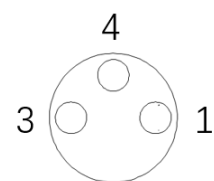
Pin	Function	
1	Tx+	Send data+
2	Rx+	Receive data+
3	Rx-	Receive data-

4	Tx-	send data-
---	-----	------------



Note:
Unused I/O port sockets must be covered with end caps to meet IP67 protection, etc.

1.3.3 I/O-port (M8)

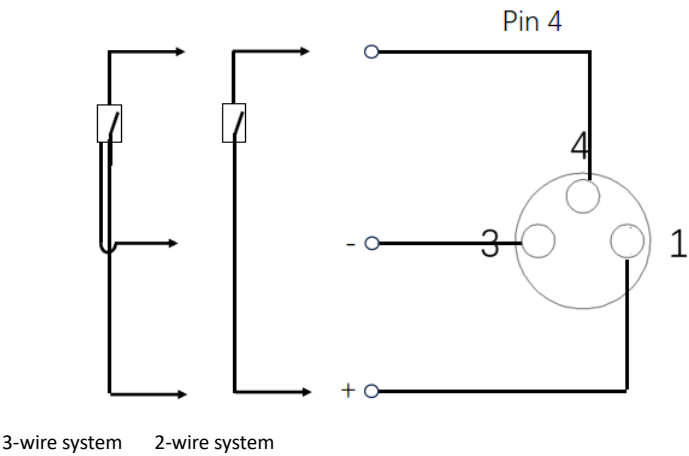


Pin	Function
1 (Brown)	24V
3 (White)	0V
4 (Black)	Input

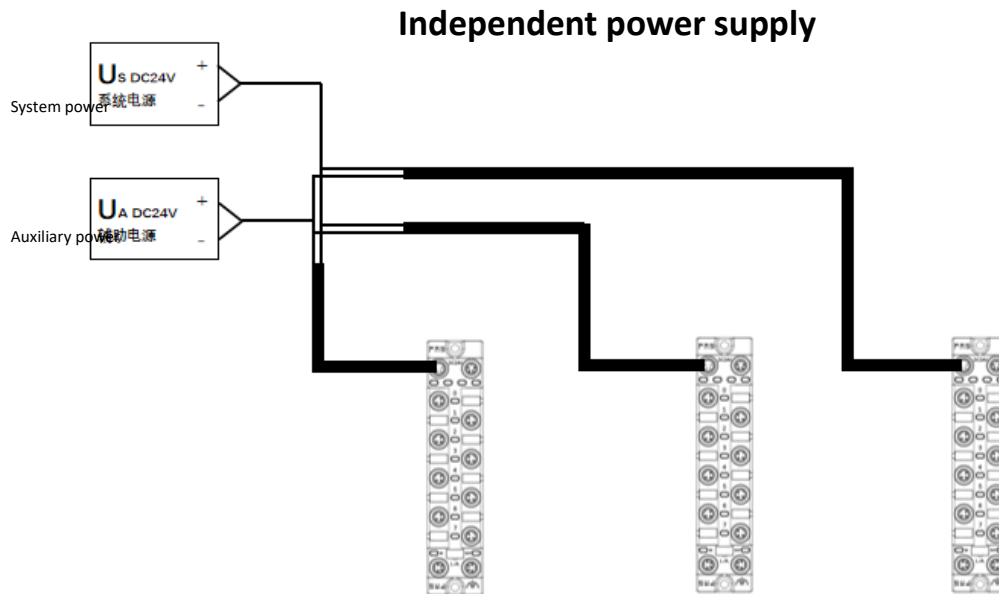
Note:

- Regarding digital sensor input, please follow the input guidance of EN61131-2, Type 2.
- Unused I/O port sockets must be covered with end caps to meet IP67 protection level.

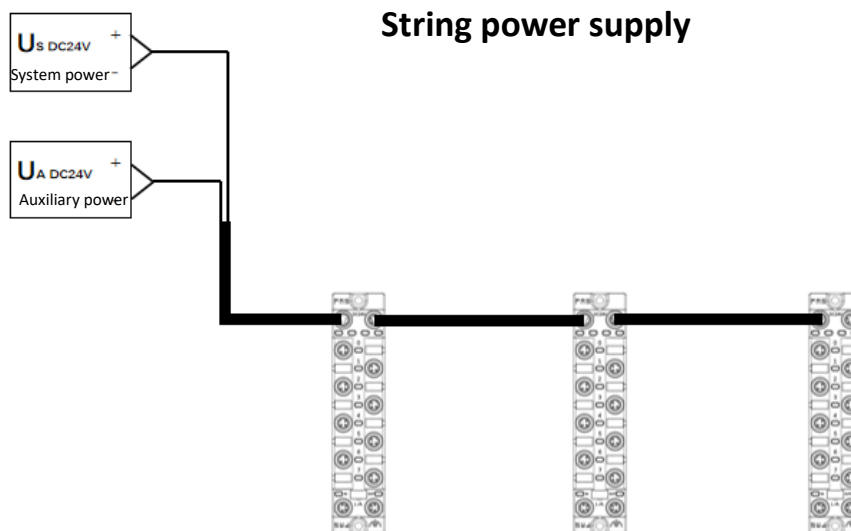
PNP input



1.3.4 Remote module wiring method



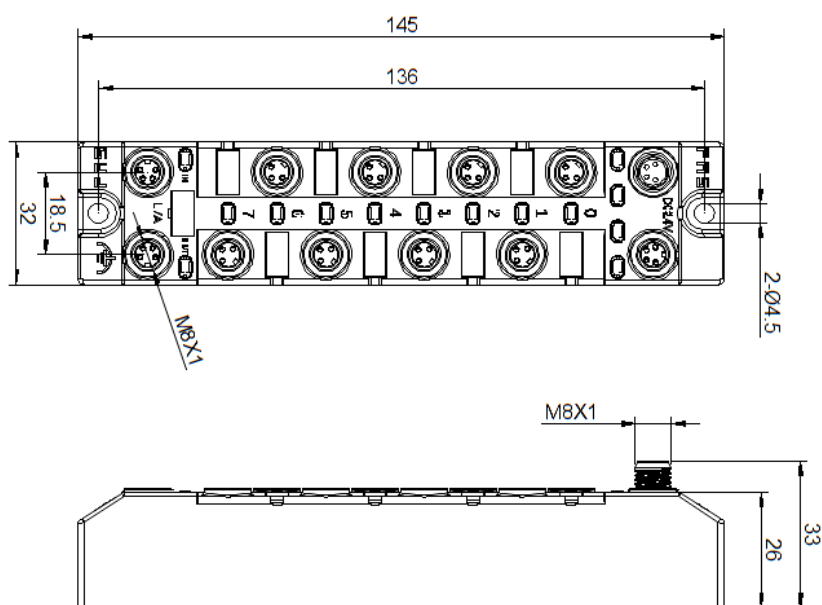
In independent power supply mode, the maximum current of each master station can reach 4A.



In the serial power supply wiring mode, if the rear module needs to be connected to the front module, the cumulative current must not exceed 4A.

2. Technical data

2.1 Size



2.2 Mechanical data

Shell material	Zinc alloy die casting
Housing rating according to IEC 60529	IP67 (only in plug-in or plug type)
Power interface	M8 (male and female)
Input port/output port	M8 (8*Female)
Size(W*H*D)	32mm*145mm*33mm
Installation type	2-Through hole mounting
Ground bus accessories	M4
Weight	About 670g

2.3 Operating conditions

Operating temperature	-25°C ~ 70°C
Storage temperature	-25°C ~ 85°C

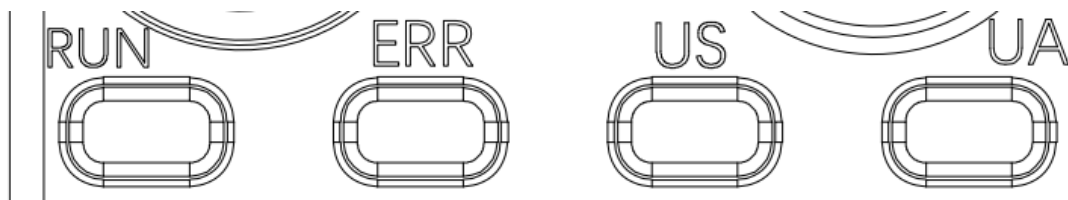
2.4 Electrical data

Voltage	18~30V DC, conform to EN61131-2
Voltage fluctuation	<1%
Module operating current when power supply voltage is 24V	<130mA

2.5 Network port

Port	2 x 10Base-/100Base-Tx
Port connection	M8
IEEE 802.3 compliant cable types	Shielded twisted pair, minimum STP CAT 5/STP CAT 5e
Data transfer rate	10/100 M bit/s
Maximum cable length	100m
Flow control	Half working condition/full working condition (IEEE 802.3-PAUSE)

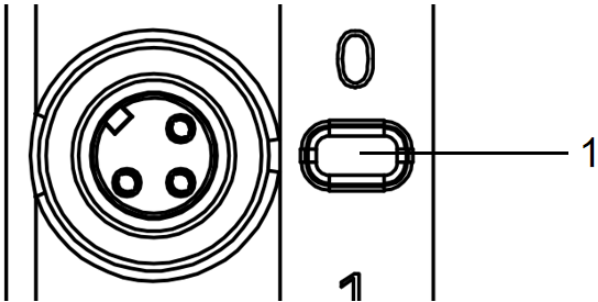
2.6 Function indicator



ECT communication protocol module status

LED	State	Function
US	Green	Power supply is normal
	Red	Greater than 30V or less than 11V
	Flashing red	Less than 18V
UA	Green	Power supply is normal
	Red	Greater than 30V or less than 11V
	Flashing red	Less than 18V
RUN	Closure	No error, device initializing
	Green light flashes 2.5HZ	Pre-operation: The device is in pre-operation state
	Green light flashes 1HZ	Safe operation: The equipment is in safe operation.
	Steady green	Running: The device is running
ERR	Closure	No errors, device EtherCAT communication is working
	Red light flashes 2.5HZ	Invalid configuration
	Red light flashes 1HZ	local error

I/O port status



LED	State	Function
1	Closure	The status of Pin4 input is 0
1	Yellow	The status of Pin4 input is 1
1	Yellow flashing	Pin1 overcurrent

Network port status



LED	State	Function
IN	Flashing green	Data transfer in progress
OUT	Flashing green	Data transfer in progress

3 Integrated

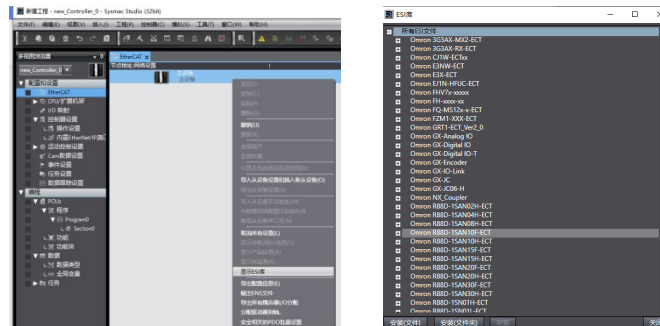
3.1 Data mapping

ECT process input data									
Byte	Function description								
	Status description	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	Standard IO input	PORT7	PORT6	PORT5	PORT4	PORT3	PORT2	PORT1	PORT0
1	Module status				US Overvoltage	UA Overvoltage	overheat	US Under voltage	UA Under voltage
Data description (binary): 0=no signal 1=signal									

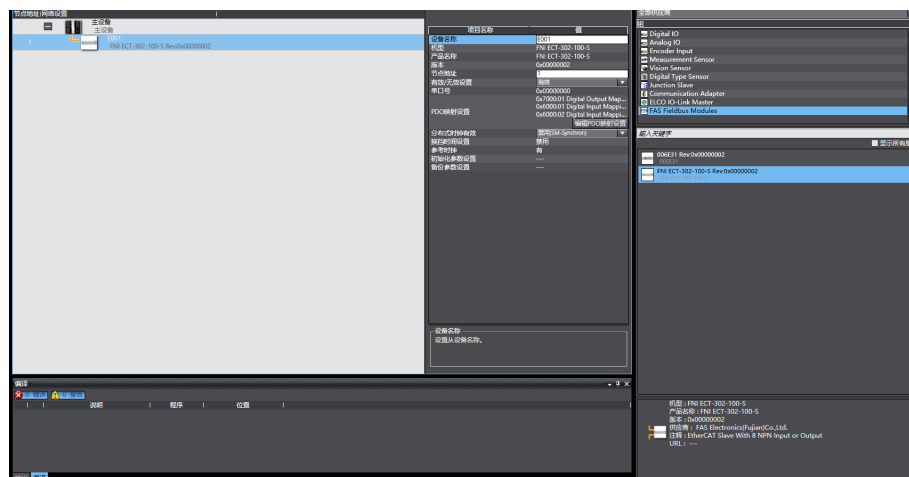
3.2 PLC integration tutorial

3.2.1 Omron NX1P2 sysmac studio integrated (ECT)

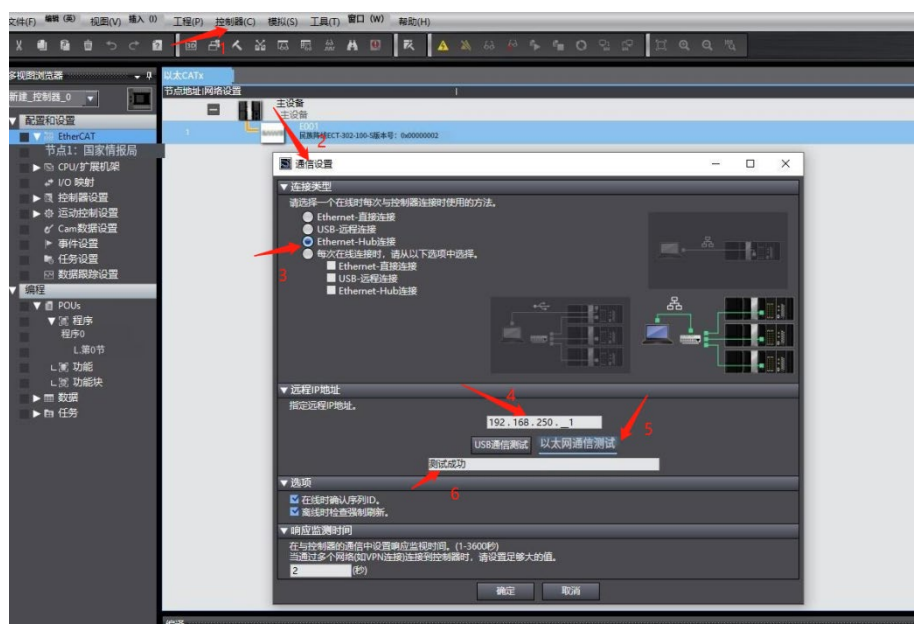
1. Install the ESI file: Double-click EtherCAT in Configuration and Settings--right-click the main device--select "Show ESI Library", and select the ESI file in the pop-up window for installation.



2. Configure the module into the EtherCAT network: Find the module model icon in the FieldBus Modules toolbox on the right and double-click to join the network.

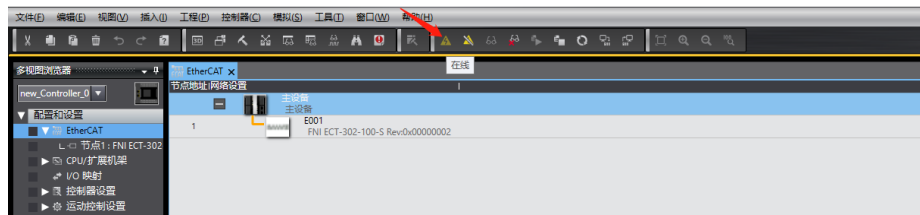


3. Click on the controller---Communication settings---Select Ethernet-Hub connection---Enter the PLC address---Click on Ethernet communication test---Test successful



4. Switch the PLC to online mode, right-click the master device and click "Write slave device node"

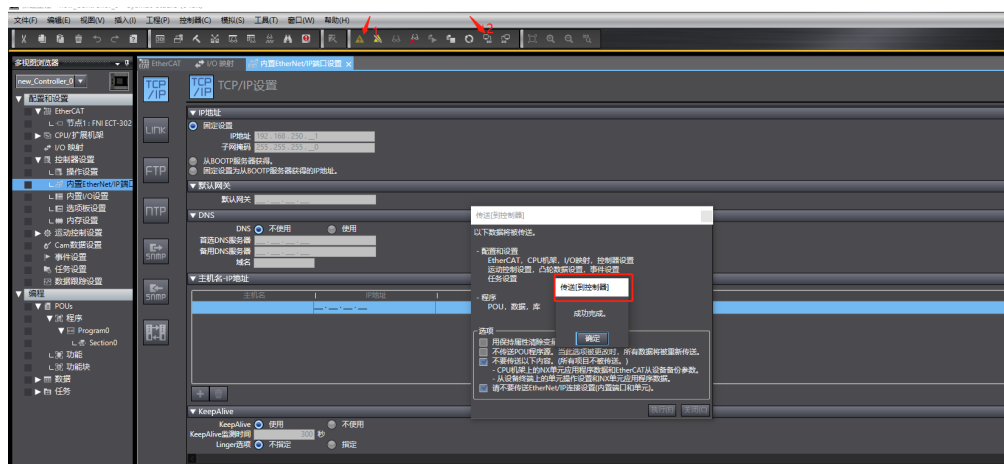
address".



5. Variable mapping: PLC goes to offline mode, select the configured node in the I/O mapping, and fill in the name of the variable.

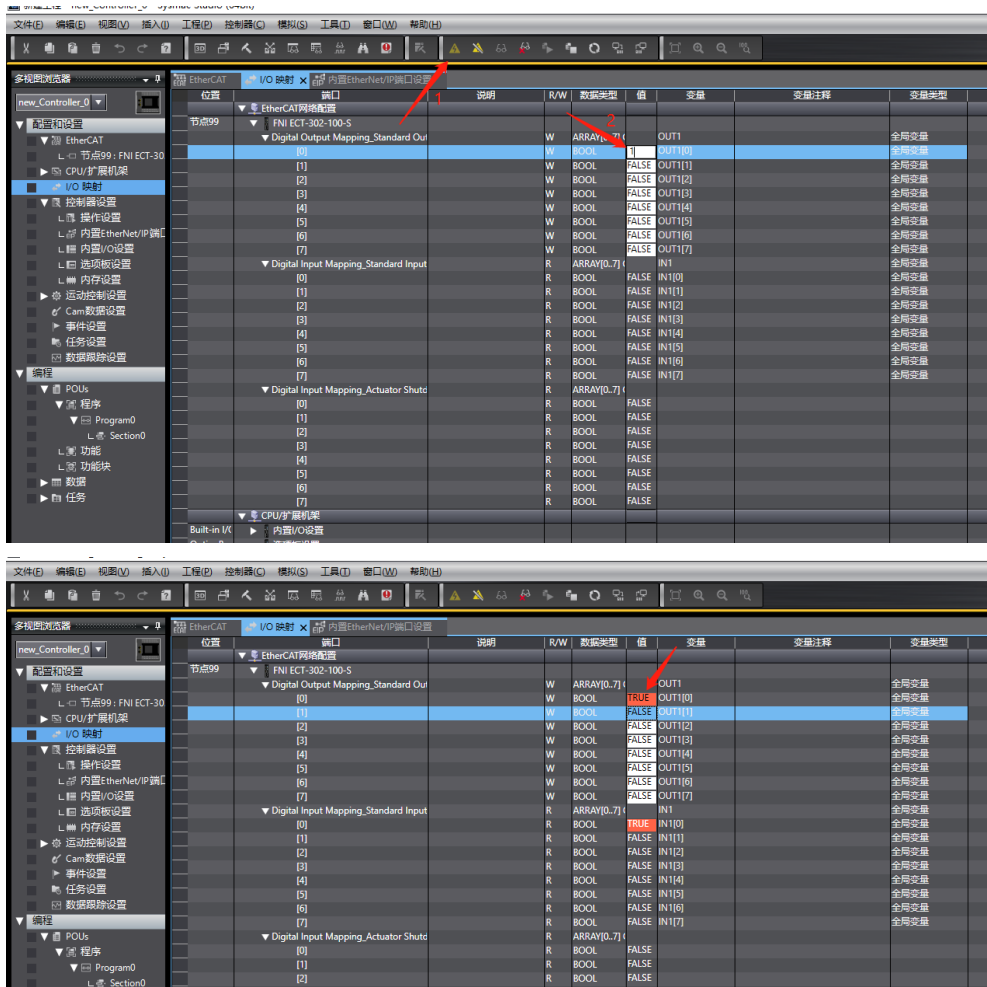


6. Switch the PLC to online mode and click "To Controller"



7. If the software setting node does not match the hardware node (if they are consistent, you can skip this step)

8. In the I/O mapping, set the output value of any port to 1 and press Enter. If the output value changes to TRUE and turns orange, the configuration is successful.

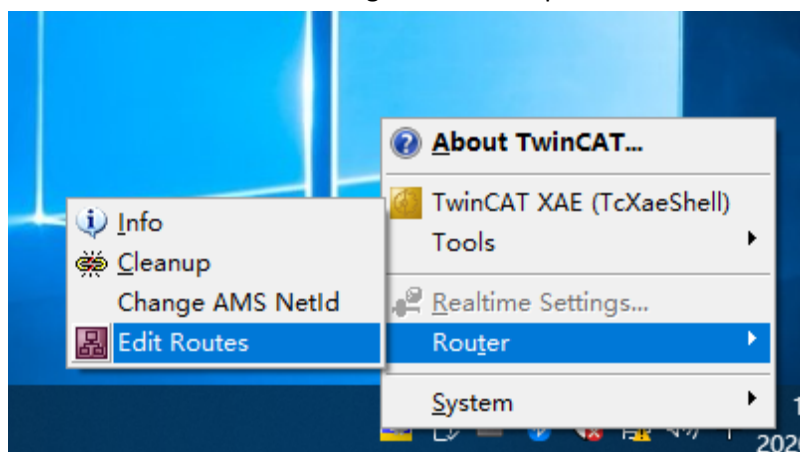


3.2.2 Integrated in BECKHOFFT winCATXAE

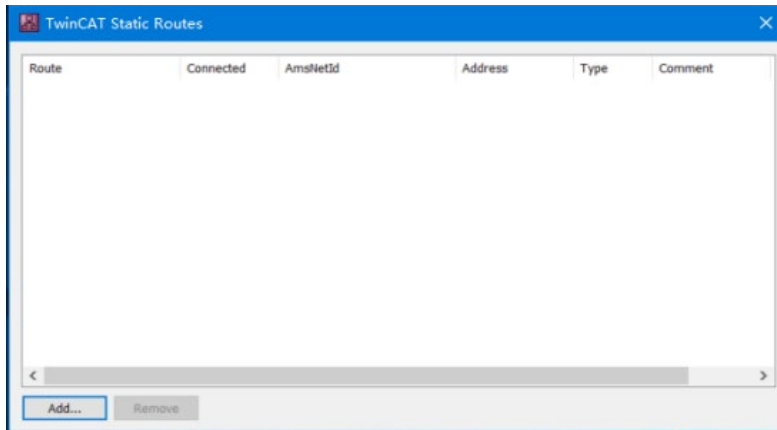
Here you will see an example of how to integrate this module into TwinCAT XAE, using a CX5050 PLC as an example:

Add PLC path:

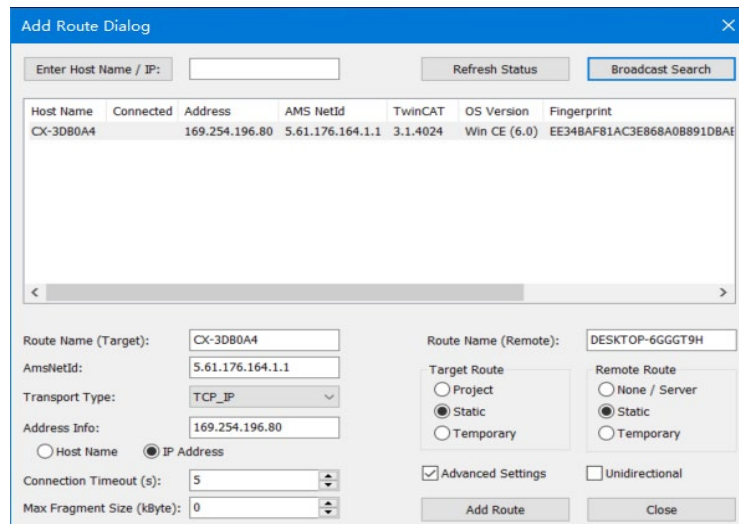
Right-click the TwinCAT icon in the lower right corner to open Edit Routes



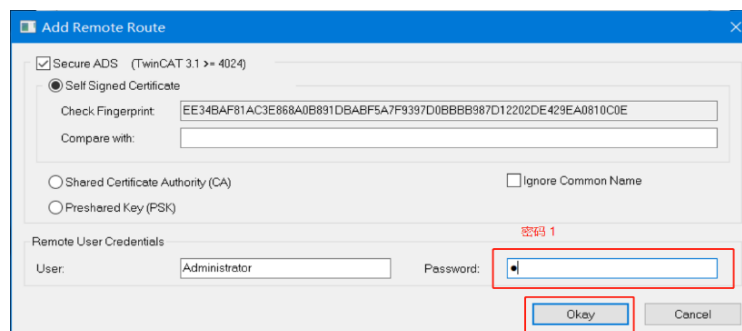
Click Add...;Add route (Add Route Dialog)



Broadcast Search- choose PLC(CX-3D0A4)-Add Route



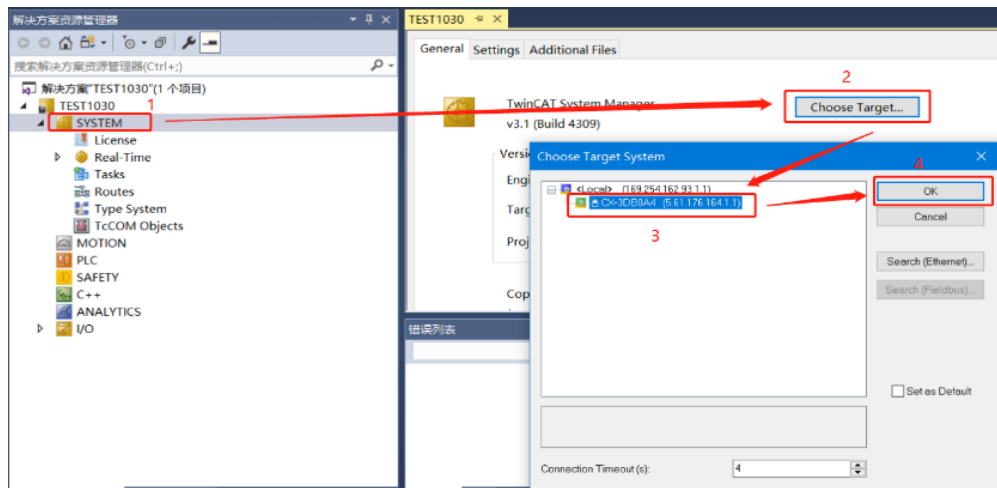
Enter the default password "1" - click OK to complete adding the PLC path



Add device profile: FAS FNI-ECT-102-000-S (provided by FAS)

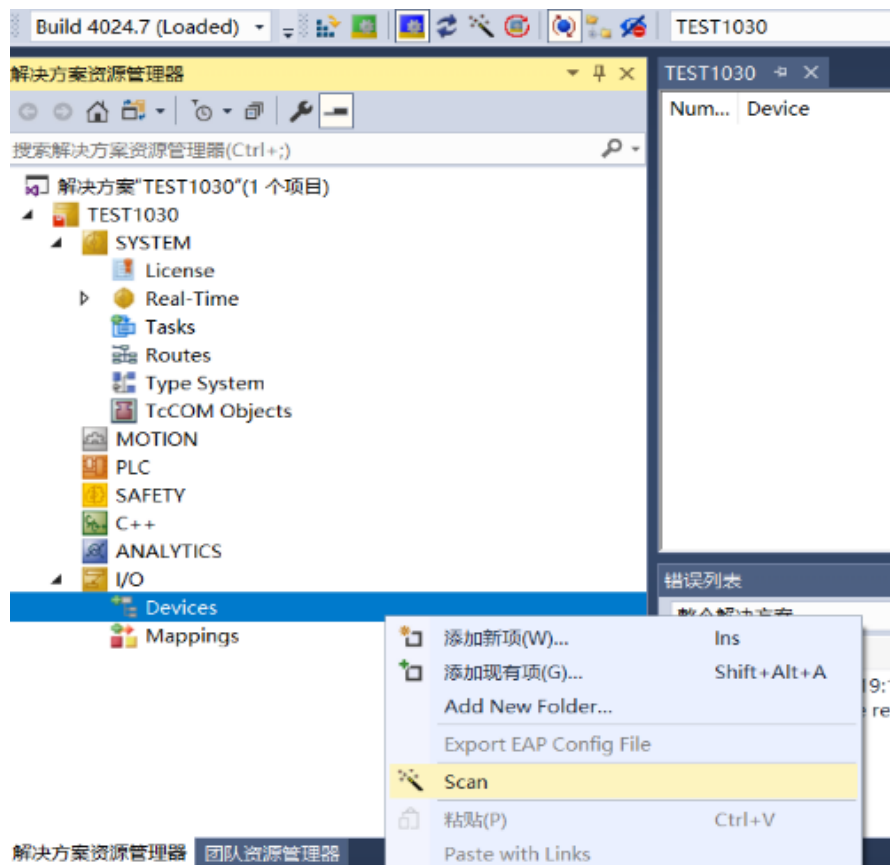
Copy the file to the following path to complete adding the configuration file:

C:\TwinCAT\3.1\Config\IO\EtherCAT



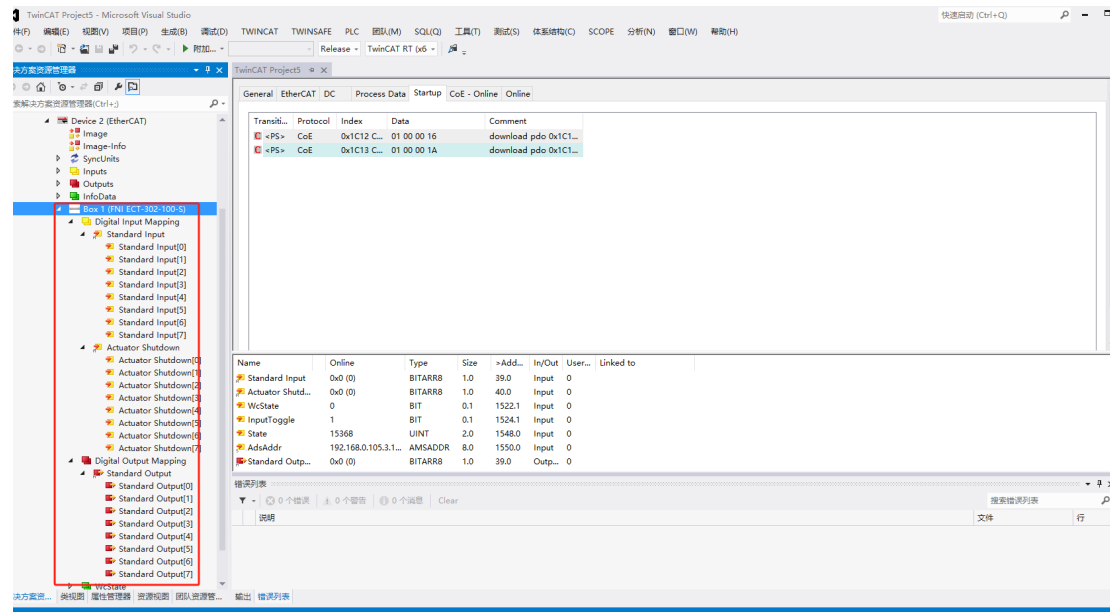
Add module:

Pull down the IO option-DEVICES-SCAN; search for the master station, select Device 2 (EtherCAT)-
OK



Module mapping data:

When the module requires input/output, the mapping below needs to be operated. When the variable is set to 1, it is output, and when it is set to 0, it is turned off.

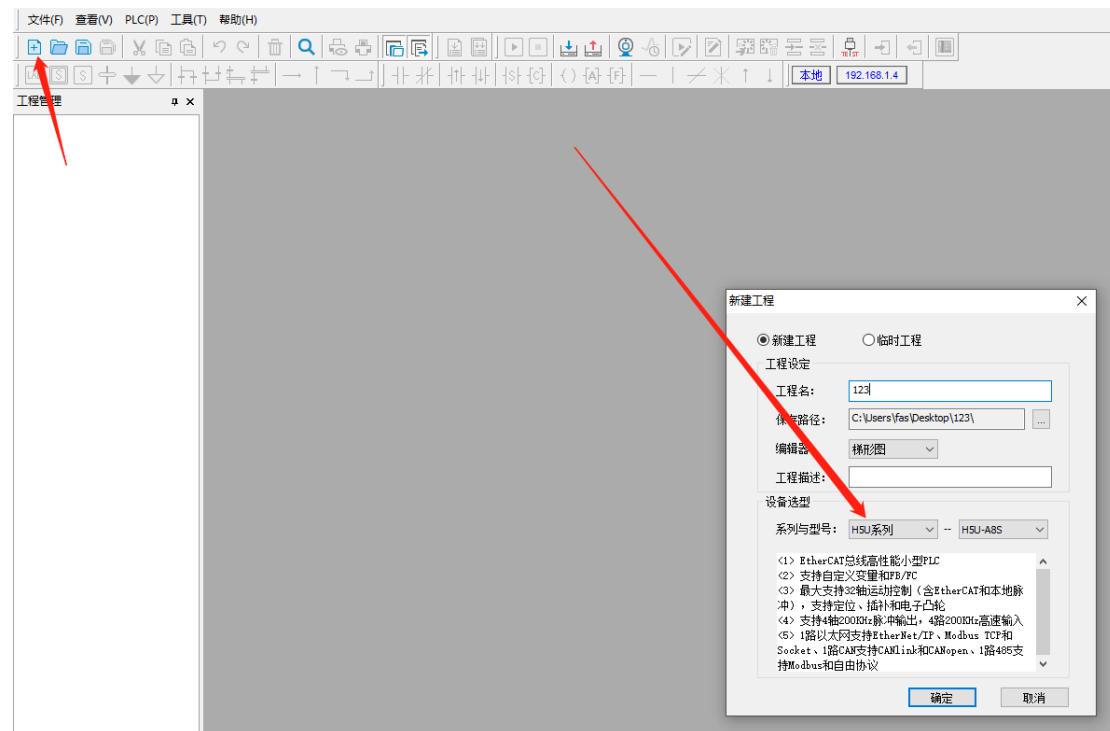


3.2.3 Integrated in Inovance H5U-1614MTD-A8S

Here you will see an example of how to integrate this module into Autoshop, taking the H5U-1614MTD-A8S as an example:

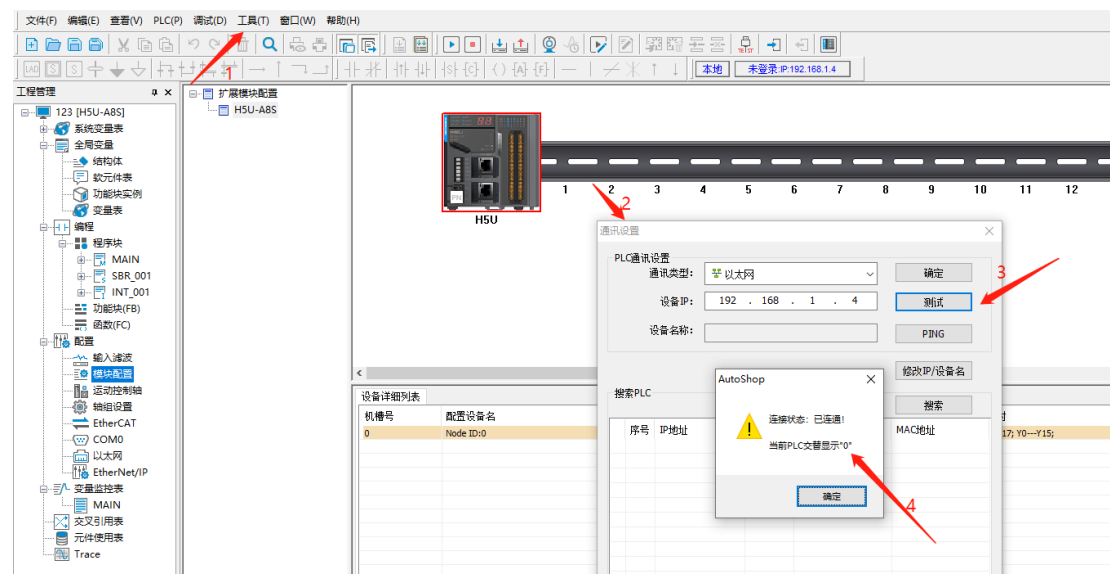
Add new project:

Select the corresponding PLC model for the construction project



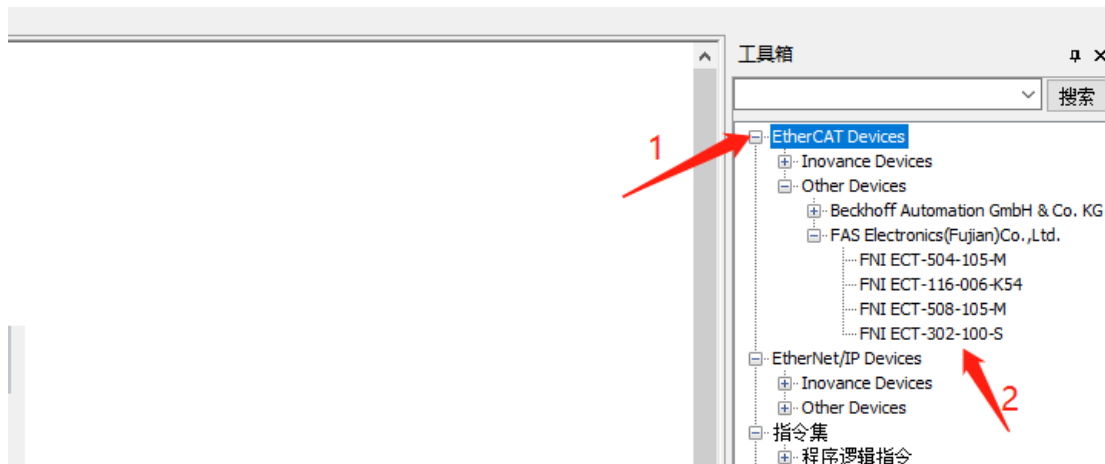
Communication settings:

Click Tools----Communication Settings----Test, the connection status shows Connected----OK



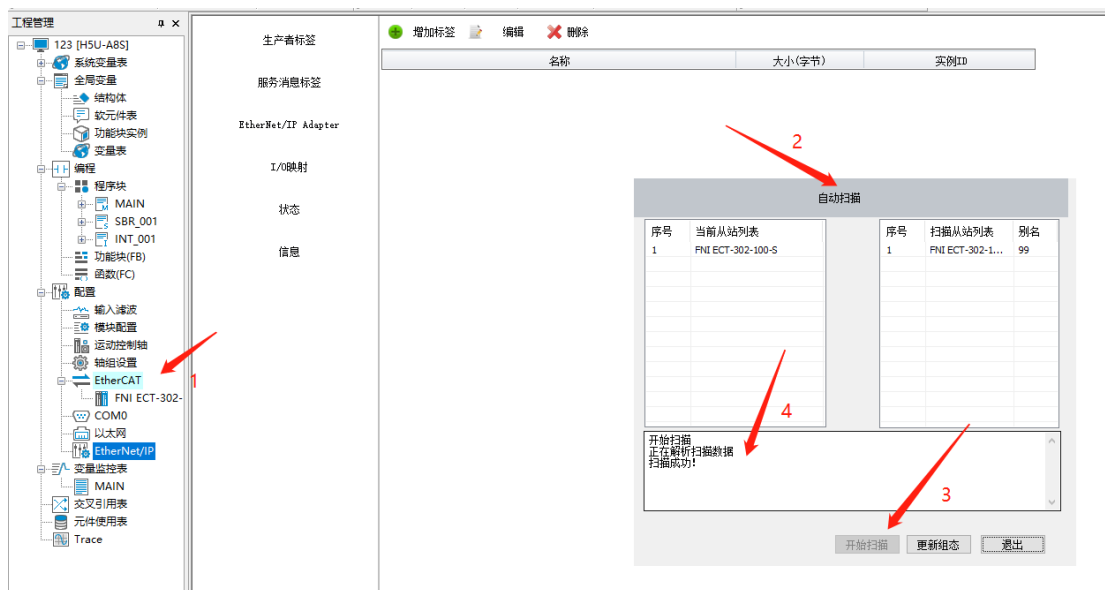
Add description file:

Right-click EtherCAT Devices in the right toolbox---Import device XML---select the description file of FNI ECT-102-000-S. (Pictured models are examples only)



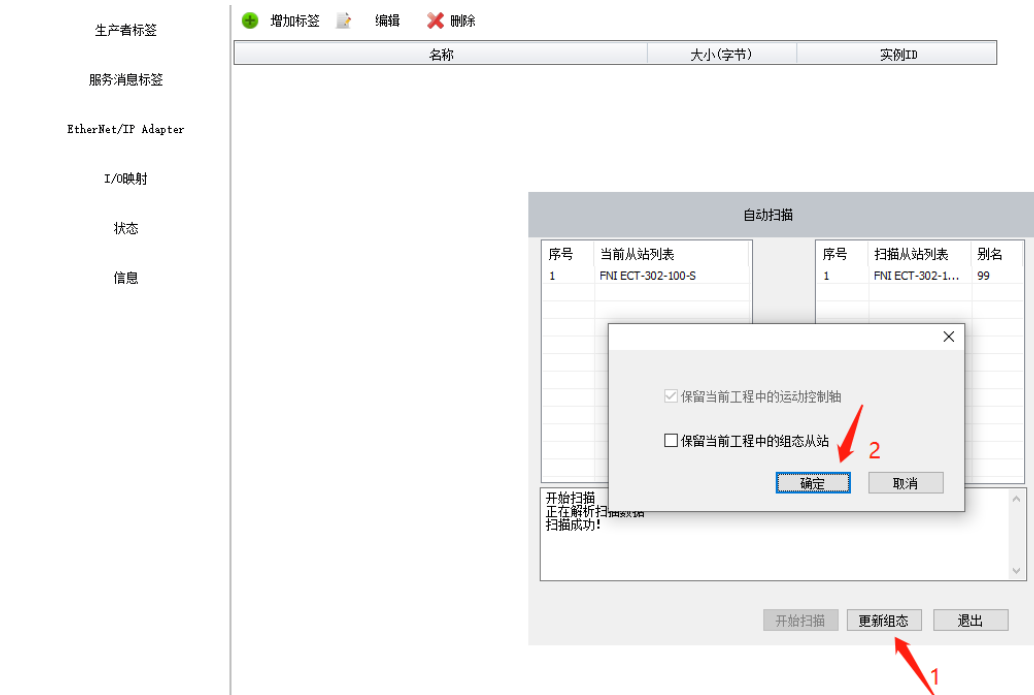
Automatic scan:

Right-click EtherCAT in the project management on the left--automatic scan--start scanning, and the scan is displayed successfully.



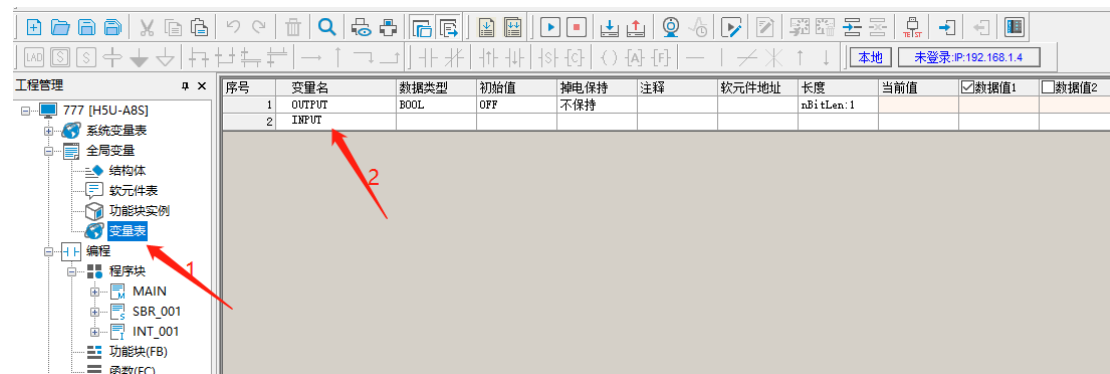
Update configuration:

After the scan is completed, click Update Configuration----OK



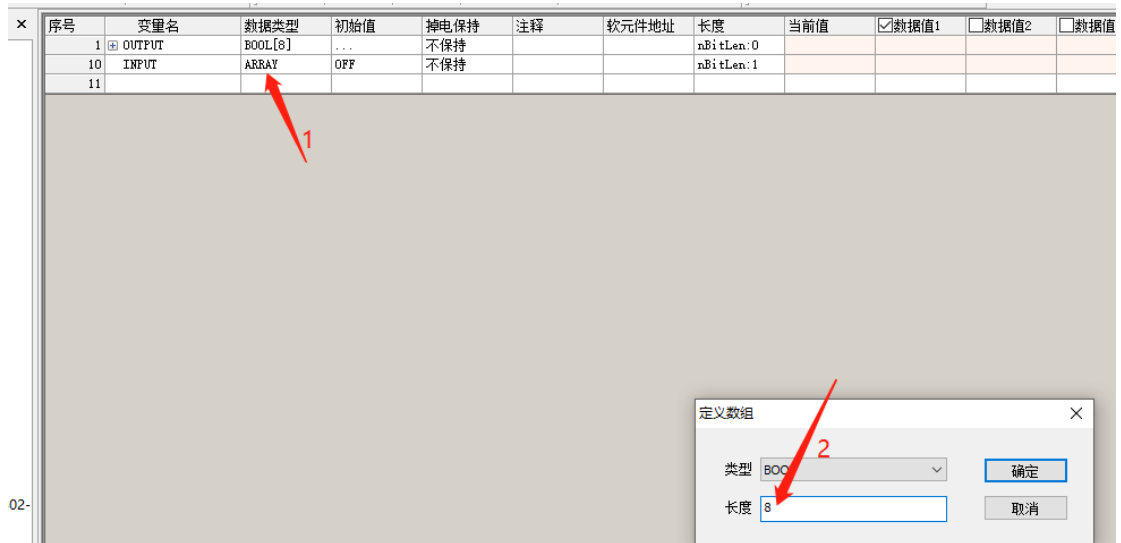
Create new variable:

Create two new input and output variables in the variable table of the project management on the left



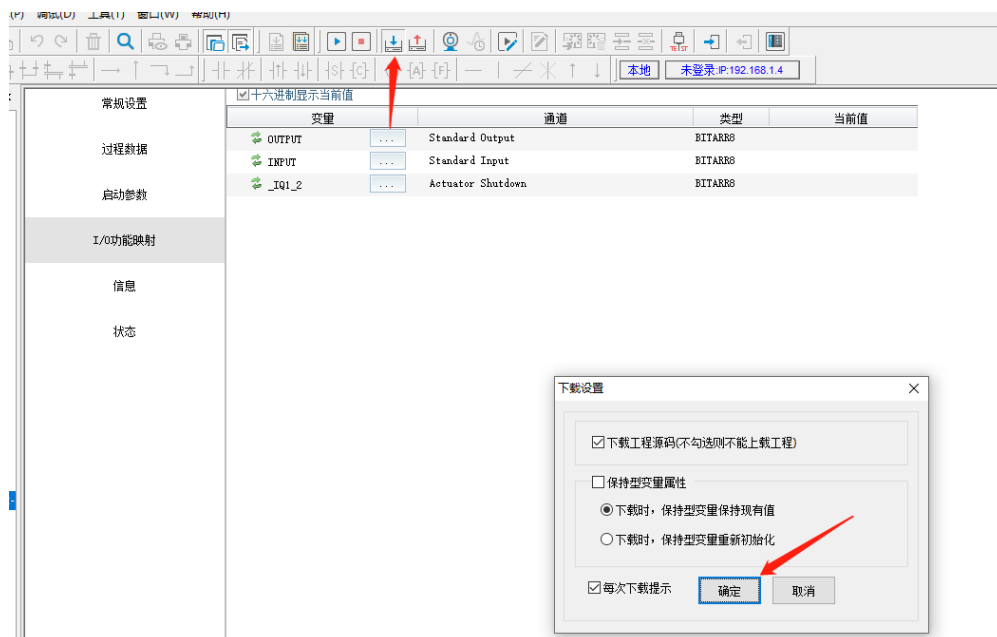
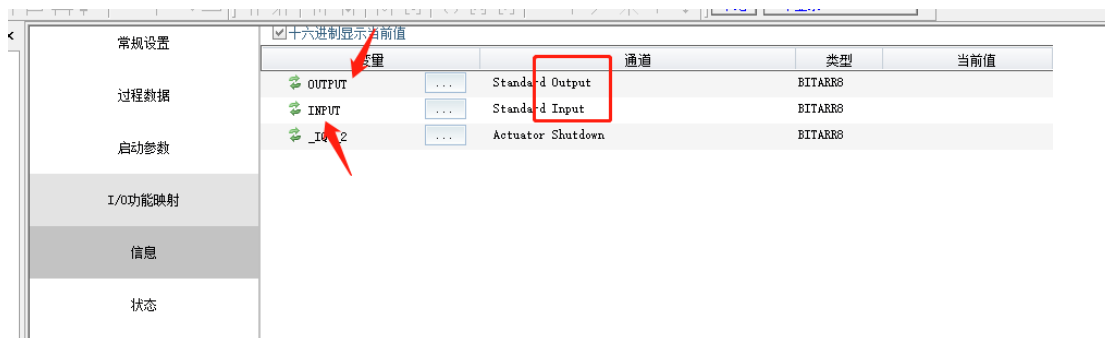
Modify variable type:

Change the data type of the variable to ARRAY, and change the length of the defined array in the pop-up window to 8



Function mapping:

Double-click the corresponding slave station in EtherCAT in the project management - I/O function mapping, modify the input and output variables to the newly created variable names in the variable table, and download them to the device.



Run the test:

After clicking Run, double-click the output variable row, type the variable name in the device, such as OUTPUT[4], and click Force ON. If the corresponding port 4 indicator lights up, the configuration is successful.

The screenshot displays the Siemens SIMATIC Manager software interface. The top menu bar includes '文件(F)', '编辑(E)', '查看(V)', 'PLC(P)', '调试(D)', '工具(T)', '窗口(W)', and '帮助(H)'. The main workspace shows the 'I/O功能映射' (I/O Function Mapping) table for the '十六进制显示当前值' (Hexadecimal Display Current Value) variable.

变量	通道	类型	当前值
OUTPUT	Standard Output	BITARR8	
INPUT	Standard Input	BITARR8	
_IQ1_2	Actuator Shutdown	BITARR8	

A red arrow points to the 'OUTPUT' row in the table. Below the table, the '写入元件' (Write Element) dialog box is open, showing the '位软元件' (Bit Soft Element) section. The '软元件' (Soft Element) dropdown is set to 'OUTPUT[4]'. The '强制 ON' (Force ON) button is highlighted with a red arrow. The '字软元件' (Word Soft Element) section shows the '软元件' (Soft Element) dropdown set to 'OUTPUT', the '数据类型' (Data Type) set to '16位整数' (16-bit Integer), and the '显示格式' (Display Format) set to '十进制' (Decimal). The '值' (Value) field is empty, and the '设置' (Set) button is visible.

4.Appendix

4.1 Ordering information

Product ordering code	Order code
FNI ECT-102-000-S	006CA3

■ High Quality Product / Sincere Service



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