PRODUCT

USE INSTRUCTIONS

[Technical support]

Ordering code: 006AA1

Part number: FNI ECT-500-105-S

FNI ECT-500-105-S

4xIO-Link ClassA,4 DI PNP

IP 67 IO-Link Master module user manual

Contents

Security

■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

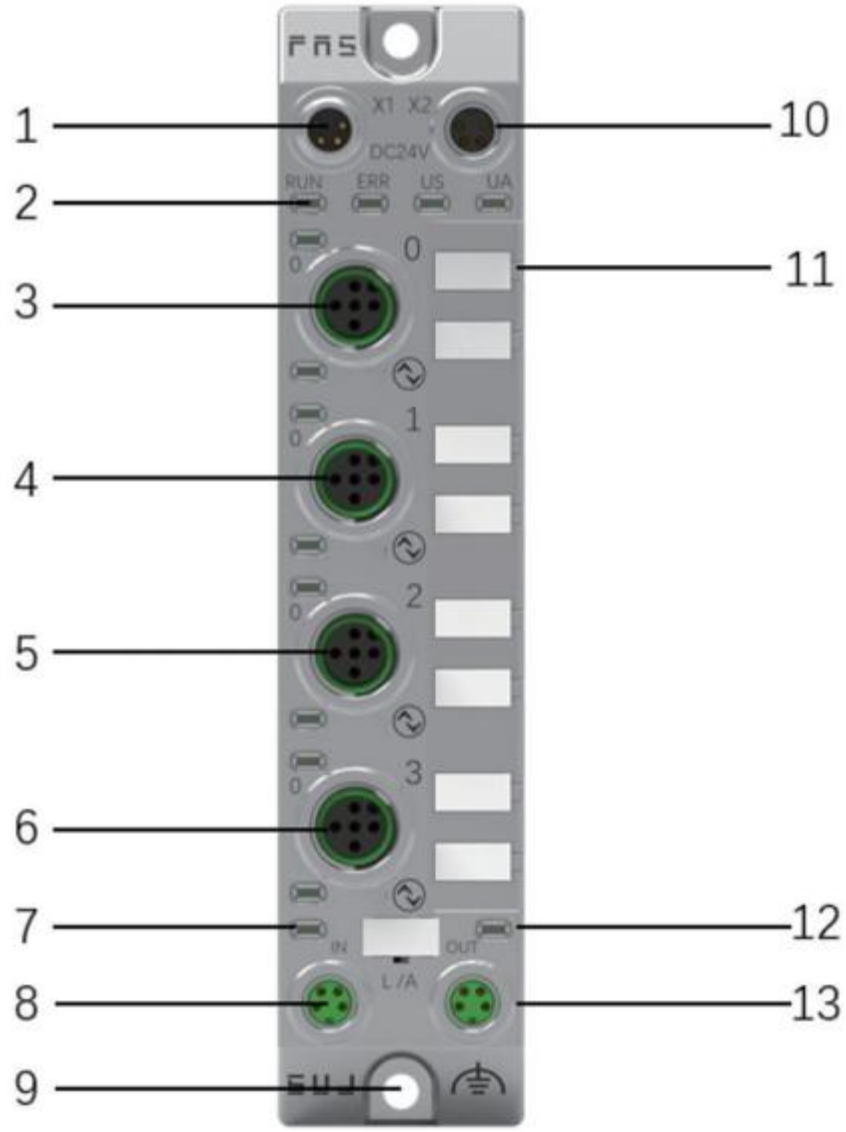
Precautions!
Disconnect all power before using the device!

■General security

<table>
<tr><th>Debugging and inspection</th><th>Fault</th><th>Owner/operator obligations</th><th>Expected use</th></tr>
<tr><td>Before debugging, read the user manual carefully.</td><td>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.</td><td>This equipment is an EMC Class A compliant product. This device produces RF noise.</td><td rowspan="3">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</td></tr>
<tr><td rowspan="2">This system cannot be used in an environment where the safety of personnel depends on the functionality of the equipment.</td><td rowspan="2">Only after the housing is fully installed can the intended use be assured.</td><td>The owner/operator must take appropriate precautions to use this equipment.</td></tr>
<tr><td>This device can only use the power supply that matches this device, and can only connect cables approved for application.</td></tr>
</table>

1 Getting Started Guide

1.1 Module overview



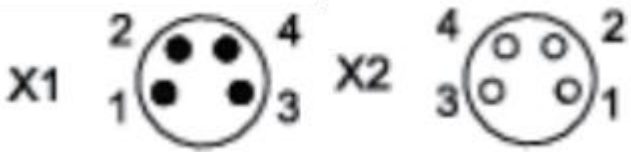
1.Power input port
2.Module indicator light
3.Port 0
4.Port 1
5.Port 2
6.Port 3
7. Network input status indicator
8 Network input port
9 Ground connection
10 power output port
11 Port identification board
12 Network output status indicator light
13 Network output port

1.2 Mechanical connection

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

1.3 Electrical connection

1.3.1 Power interface(L-code)



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

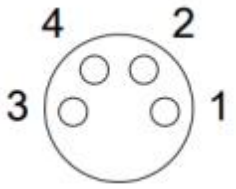
Note:

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.。

1.3.2 Network interface（ M8）

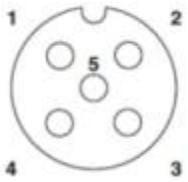


Pin	Function	
1	Tx+	Send data+
2	Rx+	Receive data+
3	Rx-	Send data-
4	Tx-	Receive data-

Note:

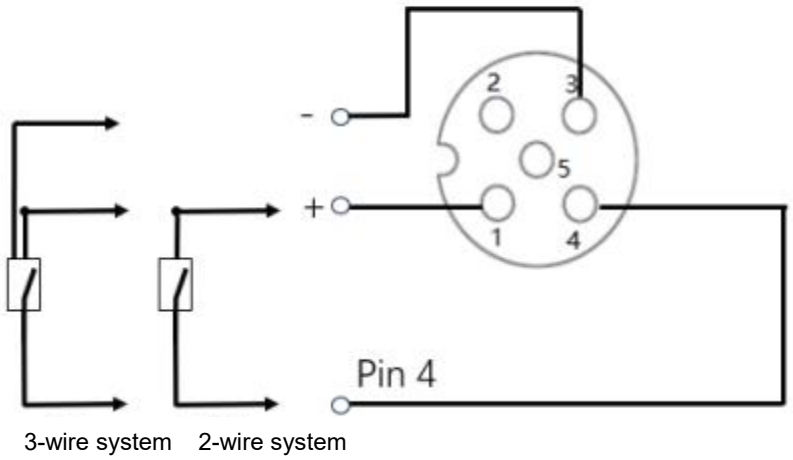
Unused I/O port sockets must be covered with end caps to meet IP67 protection, etc.

1.3.3 I/O interface (A-code)



Pin	Function
1（Brown）	24V Maximum current 1A
2（White）	Input
3（Blue）	0V
4（Black）	Input/Output/IOLINK
5（Grey）	FE

PNP Input



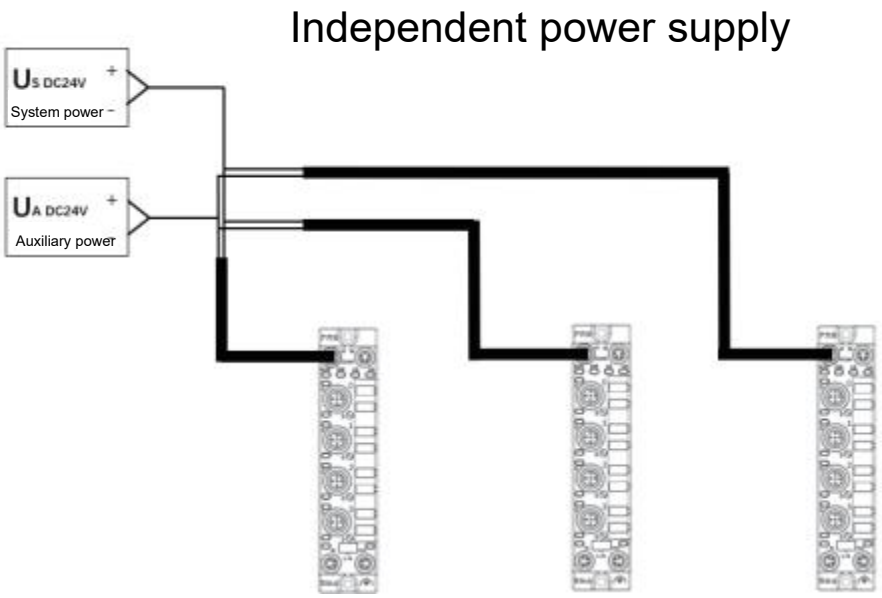
Note:

1、For digital sensor inputs, follow the input guidance of EN61131-2, Type 2.。

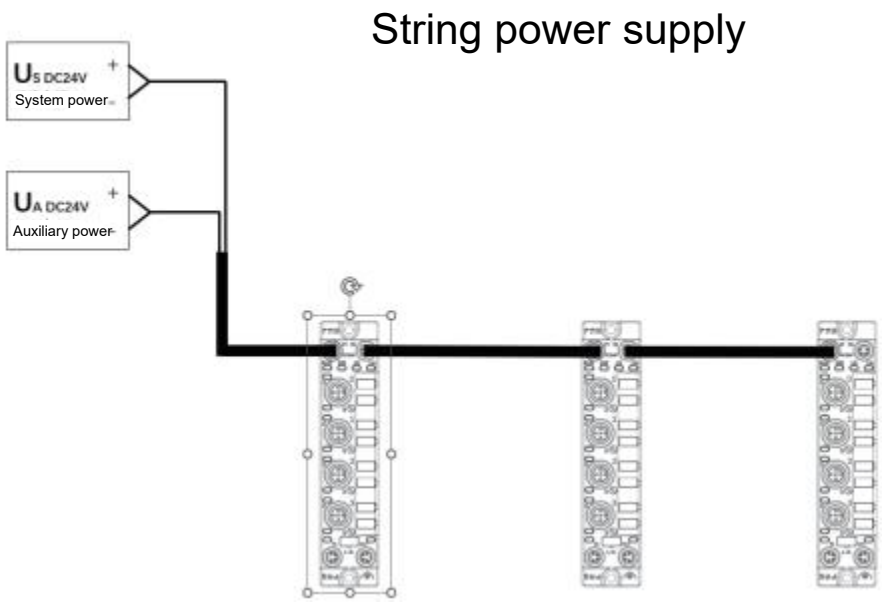
2、The maximum single output current of pins 2 and 4 is 0.5A. The total module current is <4A.

3、Unused I/O port sockets must be covered with end caps to meet IP67 protection rating.

1.3.4 Master module wiring method



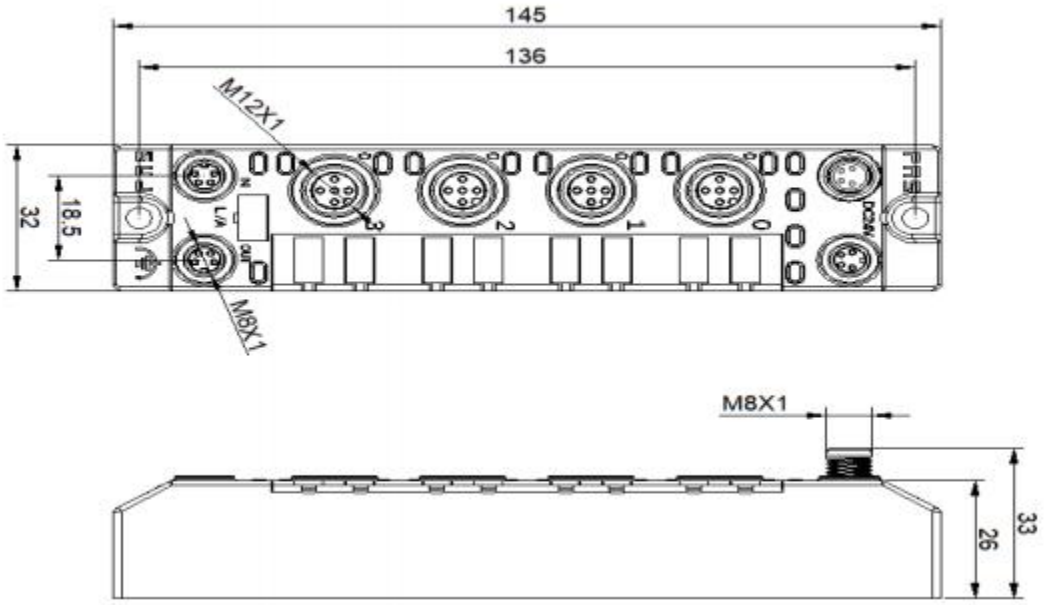
In independent power supply mode, the maximum current of each master station can reach 4A.



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	Die-cast aluminum housing, pearl nickel plated
The shell grade complies with IEC 60529	IP67(Only in plug-in or plug type)
Power interface	M8(male and female)
Input port/output port	M8， A Code(4*female)
Size(W*H*D)	32mm*145mm*26mm
Installation type	2-Through hole mounting
Ground bus accessories	M4
Weight	About670g

2.3. Operating conditions

Operating temperature	-5℃ ~ 70℃
Storage temperature	-25℃ ~ 70℃

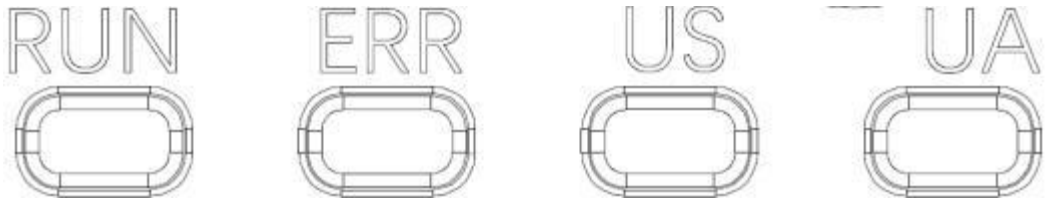
2.4. Electrical data

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

2.5 Network Port

Port	2 x 10Base-/100Base-Tx
Port connection	M8
conform to IEEE 802.3 of cable type	Shielded Twisted Pair, Minimum STP CAT 5/STP CAT 5e
Data transmission rate	10/100 M bit/s
Maximum cable length	100m
Flow control	Half duty/full duty (IEEE 802.3-PAUSE)

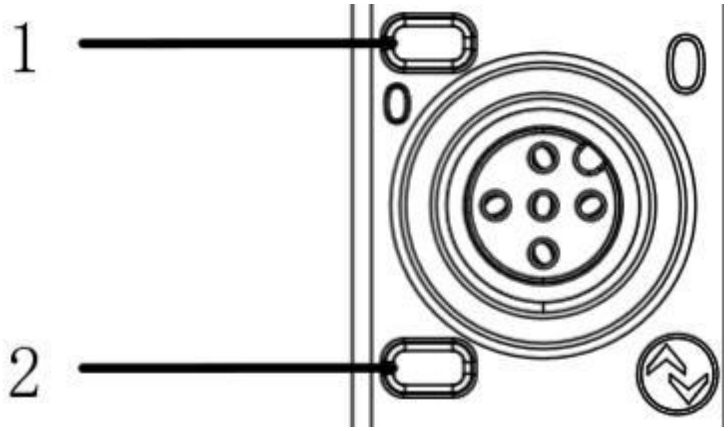
2.6 Function indicator



Module status

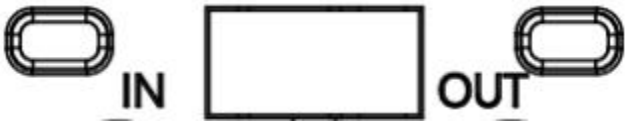
RUN	Green light off	Working properly
	Green light flashing 2.5HZ	Pre-run: the device is in pre-run state
	Green blinking 1HZ	Safe operation: equipment in safe operating condition
	Green Always On	Running: the device is in operation
ERR	Cloture	Device EtherCAT communication is active
	Red flashing 2.5HZ	Invalid configuration
	Red flashing 1HZ	local error
	Red double flash	Application Monitor Timeout
US	Green	Input voltage normal
	Red flashing	Low input voltage (< 18 V)
UA	Green	Output voltage is normal
	Red flashing	Low output voltage (< 18 V)
	Red Always On	Output voltage not present (< 11 V)

I/O port state



LED	State	Function
1	Closure	The status of Pin4 input is 0
1	Yellow	The status of Pin4 input is 1
1	Red	pin4 short circuit
1	Flashing red	pin1 short circuit
2	Closure	The status of Pin2 input is 0
2	Yellow	The status of Pin2 input is 1
2	Red	UA power supply disconnected or network down or pin2 short-circuited
2	Flashing red	pin1 short circuit

Network Port Status



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

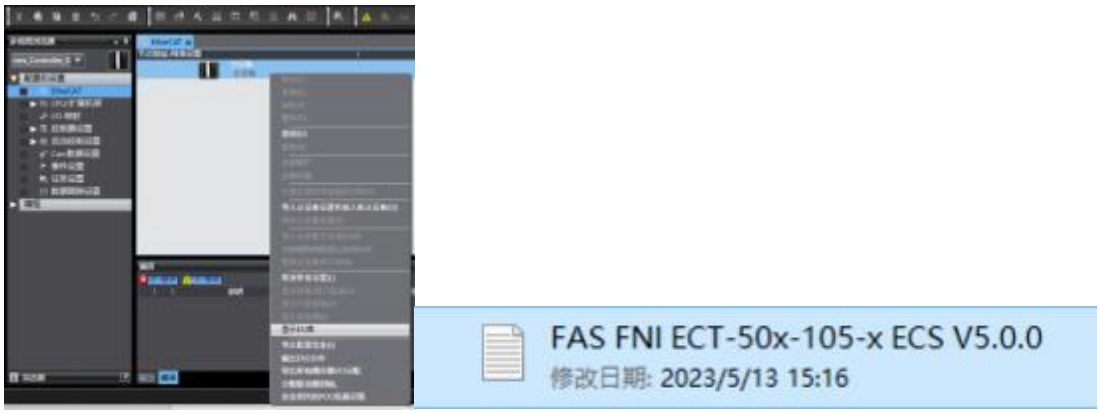
3 integrated

3.1 PLC Integration Tutorial

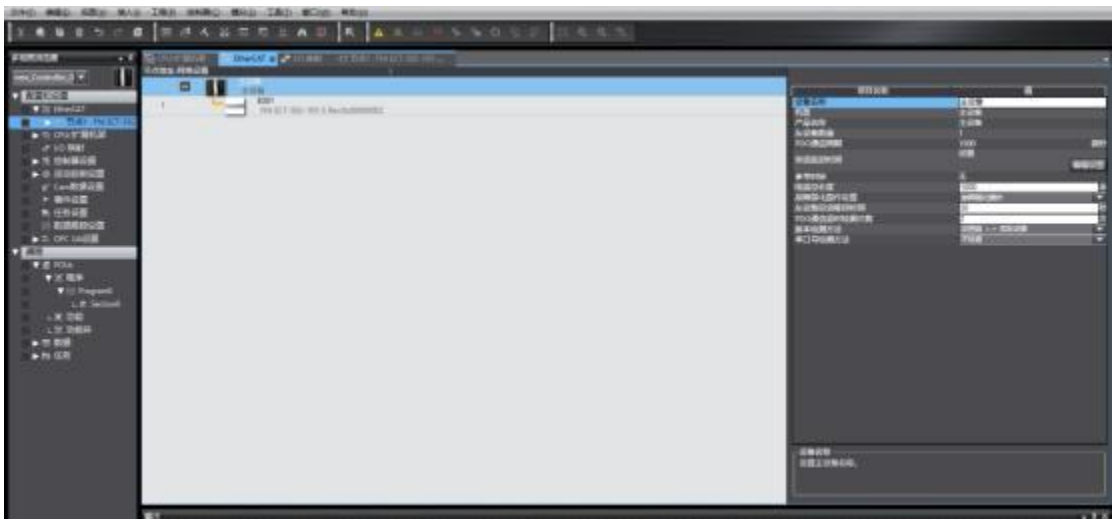
3.1.1 Omron NX1P2 integrated in sysmac studio

Here you will see an example of how to integrate this module into an OMRON PLC, using the OMRON NX1P2 PLC as an example.

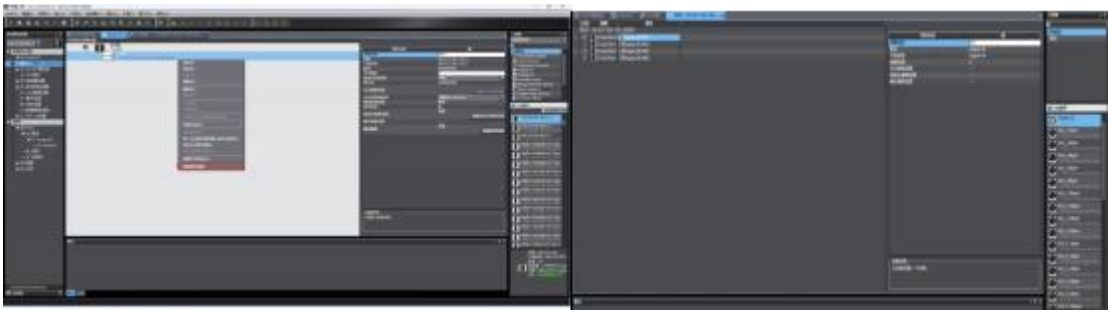
Installation of ESI files :Configuration and Settings---EtherECT---Right-click on the master device---Click on Show ESI library---Click on “Install files” in the popup window---Select the corresponding product ESI file.

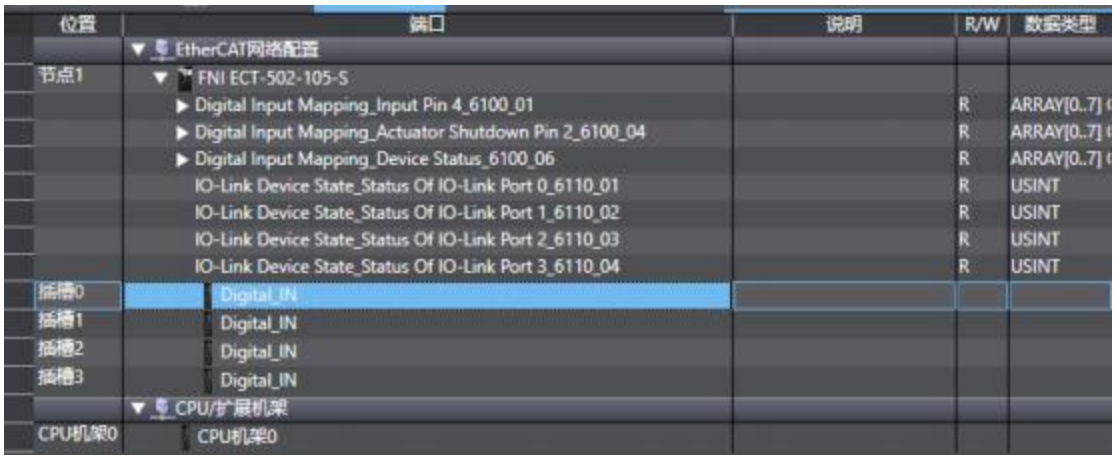


To create a module: Click on the toolbox on the right side----find FAS Fieldbus Modules---select the product model FNI ECT-502-105-S and double-click on the corresponding product to add it to the master device.



Module slot data (IOLINK mode): right-click on the module --- select Edit Module Configuration --- drag the required data into the module slot --- if the slave has an output signal, you need to open the master's PIN2 --- click on the I/O mapping --- give the Digital Output Mapping_Output Pin 2 a variable ---- is useful in the program! Output Pin 2 of the output signal port is set to 1 --- that means the configuration is successful!

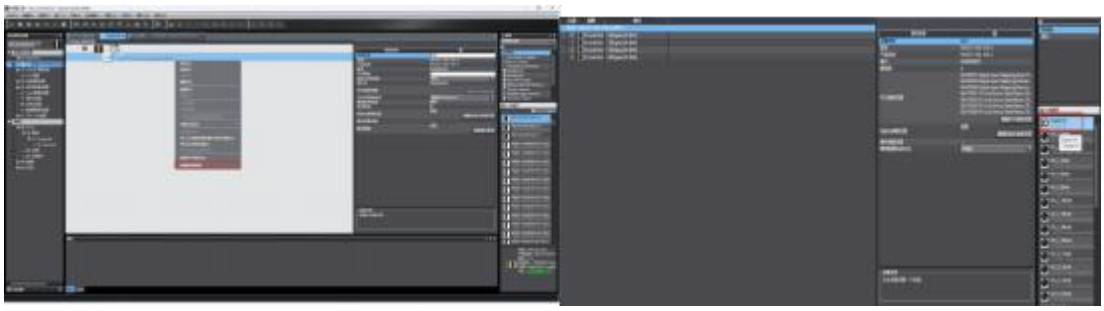




模块**I/o** 变量(Module I/o Variables).

Digital Input Mapping-Input pin 4	数字输入映射-输入引脚2
Digital Input Mapping-Actuator shutdown pin 2	输入引脚2 短路检测
Digital Input Mapping-Device status	设备过程输入状态

Block slot data (normal IO mode): Right-click on the module---select Edit Module Configuration---drag Digital_IN into the module slot.



As shown above, Pro0~4 PIN4 are input settings ---- Configuration completed!

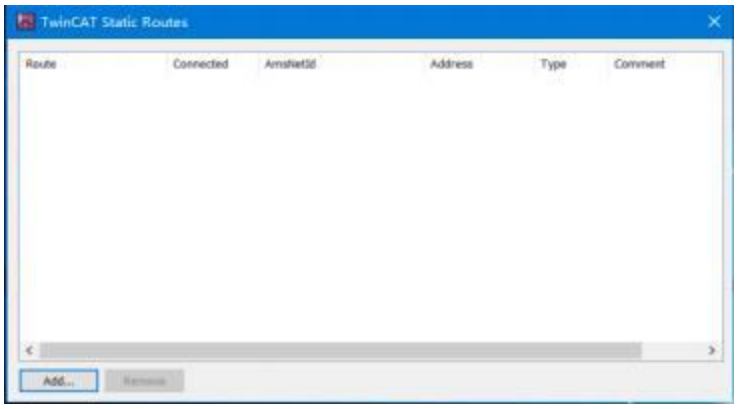
3.1.2 Integration in **BECKHOFFT WinCATXAE**

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

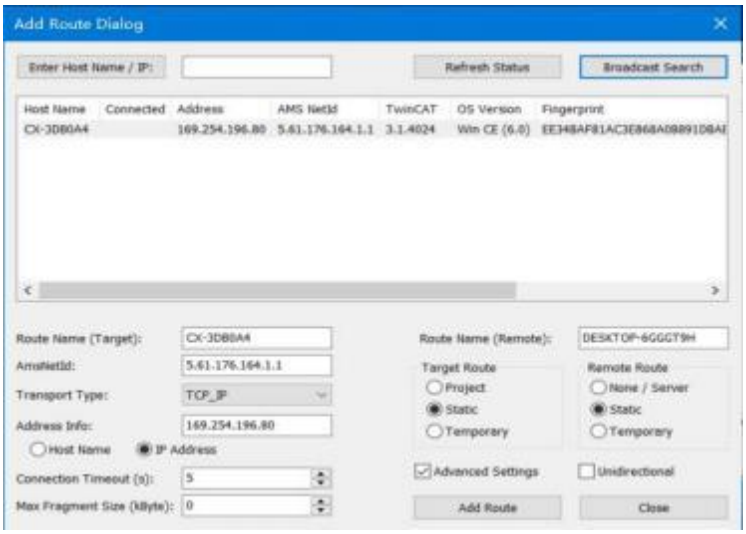
Add PLC Path ：

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

Click Add...; Add Route Dialog



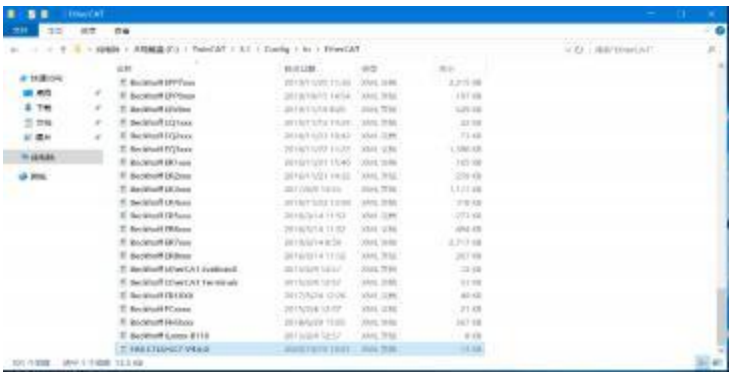
Broadcast Search-Select PLC(CX-3D0A4)-Add Route



Enter the default password “1”-click OK to finish adding the PLC path.

Add device configuration file: FAS FNI-ECT-502-105 (provided by FAS)

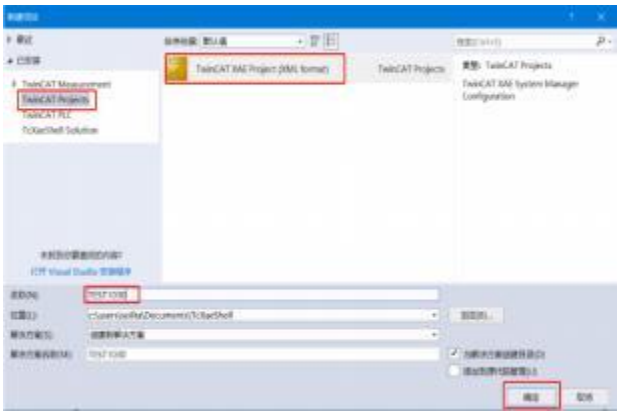
Finish adding the configuration file by copying the file to the following path: C:\TwinCAT\3.1\Config\IO\EtherCAT



New Project:

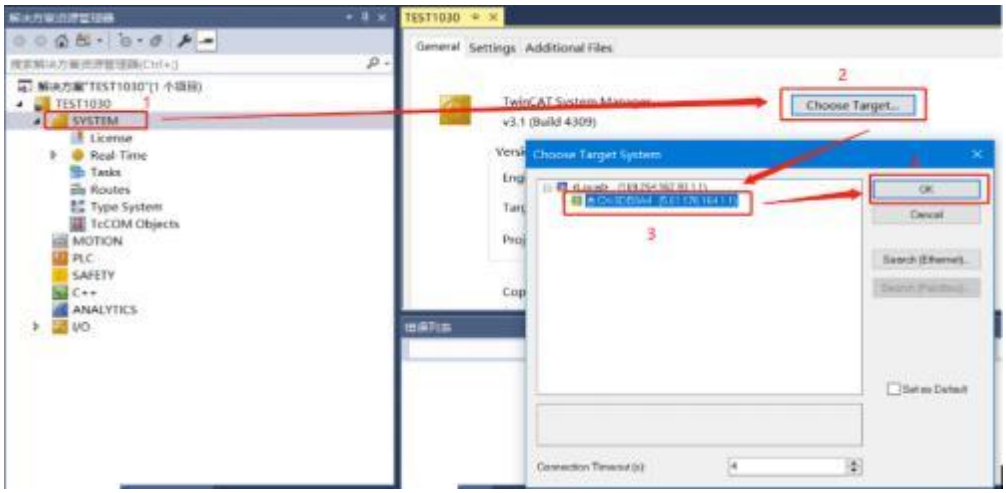
Open TwinCAT XAE software - - File - New - Project - - Select TwinCAT XAE Project - Enter name - Confirm

Define



Select Target System:

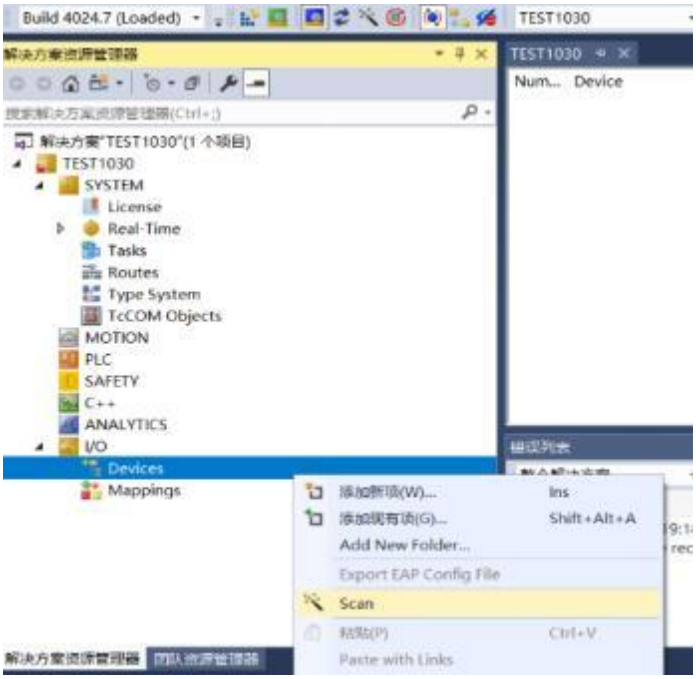
SYSTEM-Choose Target System-Select PLC(CX-3DB0A4)-OK



Add module:

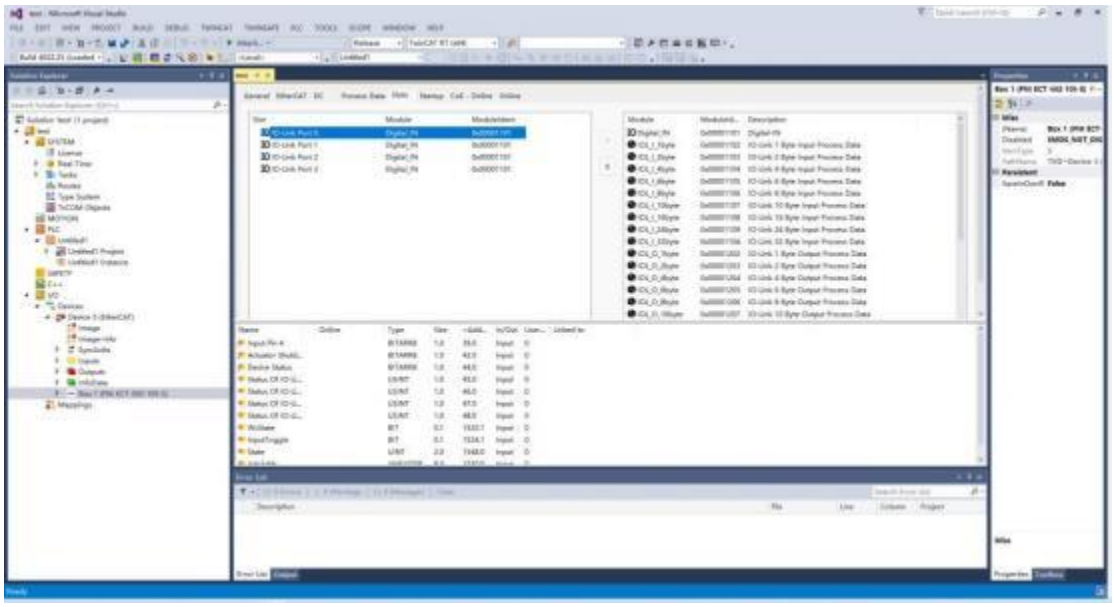
Pull down IO Options-DEVICES-SCAN; search for master, select Device 2(EtherCAT)-OKAdd module.

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



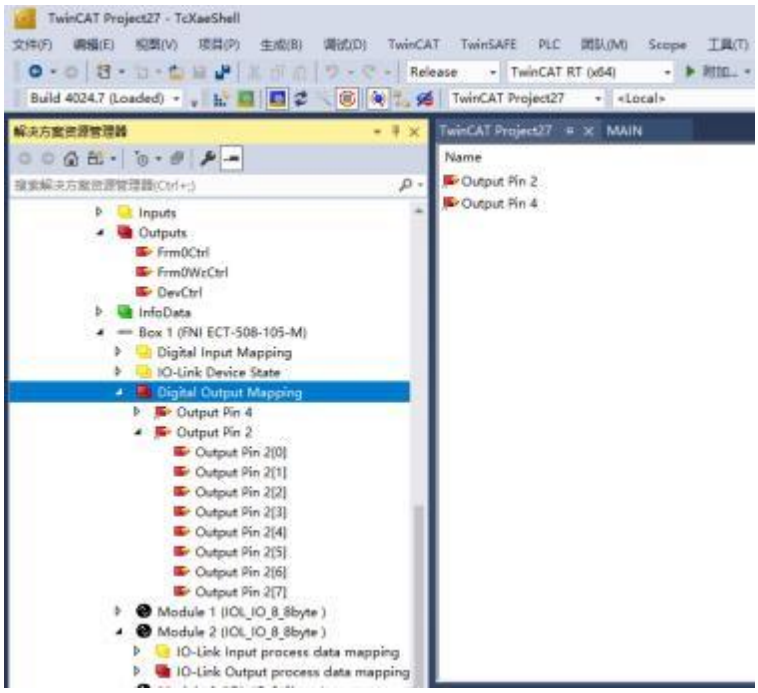
Module slot data (IOLINK mode):

Under Explorer, find the module FNI-ECT-502-105-S and select Slots to configure the desired slot data.



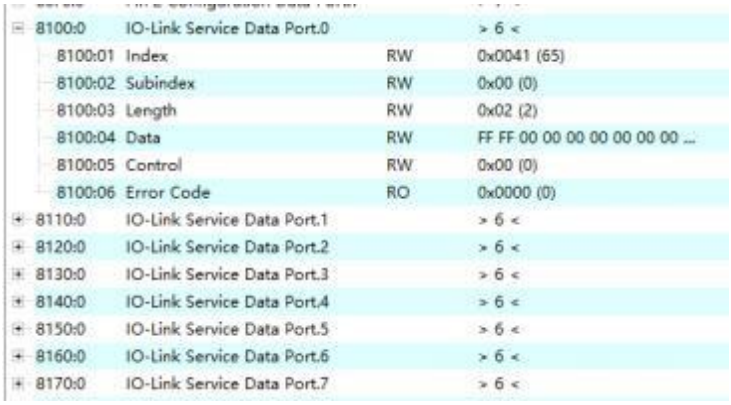
Module Slot PIN2 Data Setting:

If there is an output signal from the hub module, PIN2 of the master module must be turned on, and it is given a value in the program ----- to complete the configuration! When the variable Output PIN2 is set to 1 and PIN2 enable is set to 0, PIN2 is closed!



Module hub Data Setup (COE Setup):

Under Explorer, find the module FNI-ECT-502-105-S and click COE-On-line.



8100:0	IO-Link Service Data Port.0		> 6 <
8100:01	Index	RW	0x0041 (65)
8100:02	Subindex	RW	0x00 (0)
8100:03	Length	RW	0x02 (2)
8100:04	Data	RW	FF FF 00 00 00 00 00 00 ...
8100:05	Control	RW	0x00 (0)
8100:06	Error Code	RO	0x0000 (0)
8110:0	IO-Link Service Data Port.1		> 6 <
8120:0	IO-Link Service Data Port.2		> 6 <
8130:0	IO-Link Service Data Port.3		> 6 <
8140:0	IO-Link Service Data Port.4		> 6 <
8150:0	IO-Link Service Data Port.5		> 6 <
8160:0	IO-Link Service Data Port.6		> 6 <
8170:0	IO-Link Service Data Port.7		> 6 <

8100：0 :Master Pro 0 Port data settings

8110：0 :Master Pro 1 Port data settings

8120：0 :Master Pro 2 Port data settings

8130：0 :Master Pro 3 Port data settings

Parameters and data settings according to the hub Module manual

Index： 索引

subindex： 子索引

Length： 数据长度 BYTE 型 **(**读取或写入时，先填写数据长度**)**

Data： 数据映射

control： 1=读取 2=写入

Error code： 错误代码

IOLINK hub configuration (this function is online configuration, the hub and master should maintain normal communication)

(1) When you need to configure IOLINK hub, you should write to set pin4 as IOLINK function, and control write 2 data configuration to finish the hub effective configuration;

Note that the Index and subindex inputs are in decimal, and the Data input and output are in hexadecimal;

(2) FAs Hub common indexing functions:

Example: a. Input/Output Configuration: Index =65 , subindex=0; The following figure shows an example of hub configuration:

功能说明			从站														从站扩展													
IP67防护等级产品对应PIN脚		端口号	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
		对应PIN脚	PIN4								PIN2								PIN4								PIN2							
IP20防护等级产品对应PIN脚		端口号	8	7	6	5	4	3	2	1	16	15	14	13	12	11	10	9	/															
2进制值（0表示输入，1表示输出）			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16进制值(填入到Data)			F			F					F				F				F				F				F				F			

Example: Hub module DI/DO demand for full output (FFFF)

Index=65(Hub instructions)

subindex=0

Length=2

Data=FFFF

control=2 → Enter

Write successful, module configuration changed to full output

3.1.3 Integration in **Huichuan AM600-CPU1608TP/TN**

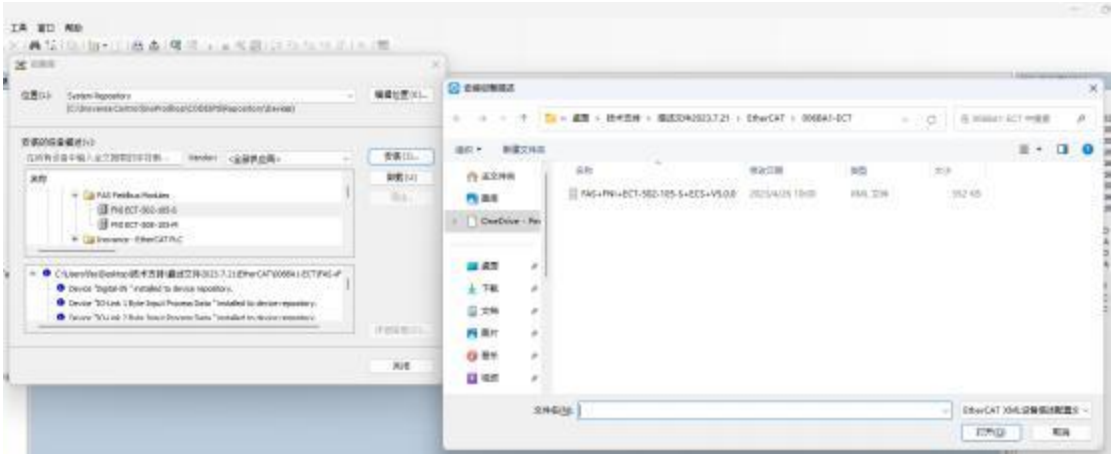
Here you will see an example of how to integrate this module into Inproshop, using the AM600-CPU1608TP/TN PLC as an example:

Adding a new project :

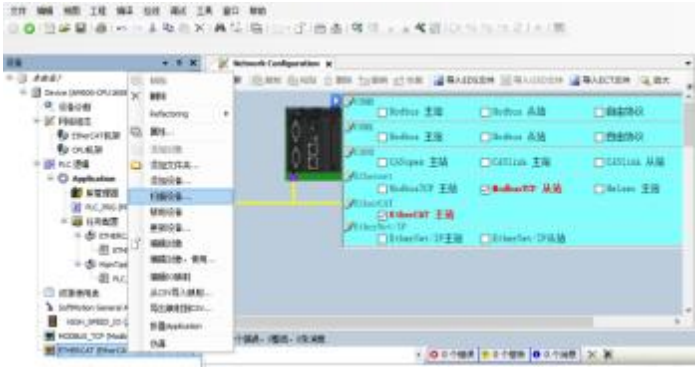
Select the corresponding PLC model for a new project

Add module:

Double-click Network Configuration ---- Click Import ECT File ---- Select Master Description File FNI-ECT-502-105-S

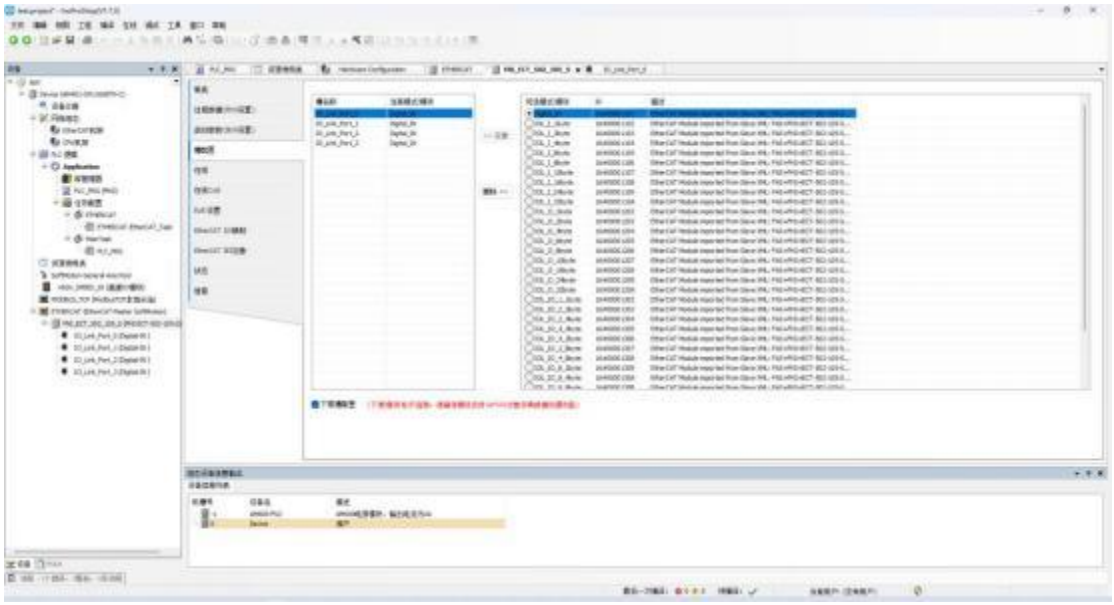


Click PLC --- check EtherCAT master --- select left device ----- right click ETHERCAT ---- scan device



Module slot data:

Double-click on the left device box module FNI-ECT-502-105-S ------ Slot Configuration ---- to select the desired slot data for configuration



Module Slot PIN2 Data Setting:

If there is an output signal from the hub module, the master module PIN2 must be turned on and assigned a value in the program ------ configuration is complete!

4.Appendix

4.1 Order code

Product Ordering Code	Ordering code
FNI ECT-500-105-S	006AA1

High quality products · Sincere service

[Technical support]

[Official website]

Telephone : 0591-22991876
Official website: www.faselec.com
Technical support : +86 13306936805
Business support : +86 19905006938
Address: Room 009, A1, Building 1, National University Science and Technology Park Science and Technology Innovation Center, No. 6 Qiuyang East Road, Shangjie Town, Minhou County, Fujian Province.