



FNI ECT-508-105-M

IO Link Master IO Link Master Module User Manual





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1 Notes

1.1. Manual structure 1.1 This manual is organized by organization, so the chapters are interconnected.

Section 2: Basic Security Information.

Chapter 3: Getting Started Guide

Chapter 4: Technical Data

.....

1.2. Typography The following typographic conventions are used in this manual.

Enumerate The enumeration is displayed as a list with bullets.

- Headword 1

- Headword 2

Action Action descriptions are represented by a front triangle. The result of the action is represented by an arrow.

Action description 1

Action result

Action description 2

Step programs can also be displayed numerically in parentheses.

(1) Step1

(2) Step2

Grammar number:

Decimal numbers are displayed without additional indicators (eg 123)

Hexadecimal numbers are displayed with an additional indicator hex (eg: 00hex) or with the prefix "0X" (eg: 0x00)

Cross reference

Cross-references indicate where to find additional information on this topic.

1.3. Symbol

Notes

This symbol indicates a general comment.

Notice!!

This symbol indicates the most important safety notice.

1.4. acronym

FNI: FAS Network Interface

I :standard input

port

ECT: EtherCAT EMC

Electromagnetic Compatibility

FE: functional ground

O standard output port

1.5. Perspective Deviations The product views and explanations in this manual may deviate from the actual product. They are used only left and right to explain the material.



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2.1.Expected usage This manual describes as a decentralized input and output module for connection to an industrial network.

2.2. Install and start Precautions!

Installation and start-up should only be carried out by trained and specialized personnel. A qualified individual is one who is familiar with the installation and operation of the product and has the necessary qualifications to do so. Any damage caused by unauthorized operation or illegal and improper use is not covered by the manufacturer's warranty. Equipment operators are responsible for ensuring compliance with appropriate safety and accident prevention regulations.

2.3. General security Debug and check

Notes Before debugging, you should read the contents of the user manual carefully.

The system cannot be used in applications where the safety of personnel depends on the functionality of the equipment.

intended use

The manufacturer's warranty coverage and limited liability statement do not cover damage caused by:

- Unauthorized tampering
- Improper use
- Handling, installation and operation that do not conform to the instructions provided in the user manual

Owner/Operator Obligations

This device is an EMC Class A compliant product. This device generates RF noise.

The owner/operator must take proper precautions when using this equipment. This device can only use

Use a power supply compatible with this equipment, and connect

only approved cables.

Fault

If the defect or equipment failure cannot be corrected, the operation of the equipment must be stopped in order to

protected from possible damage caused by unauthorized use.

Intended use can only be ensured when the enclosure is fully installed.

2.4. Corrosion resistance Precautions!

FNI modules generally have good chemical and oil resistance characteristics. When used in aggressive media (e.g. high concentrations of chemicals, oils, lubricants and coolants (i.e. very low water content)), these media must be checked before the corresponding application material compatibility confirm. If the module fails or is damaged due to this corrosive medium, no claim for defects can be claimed.

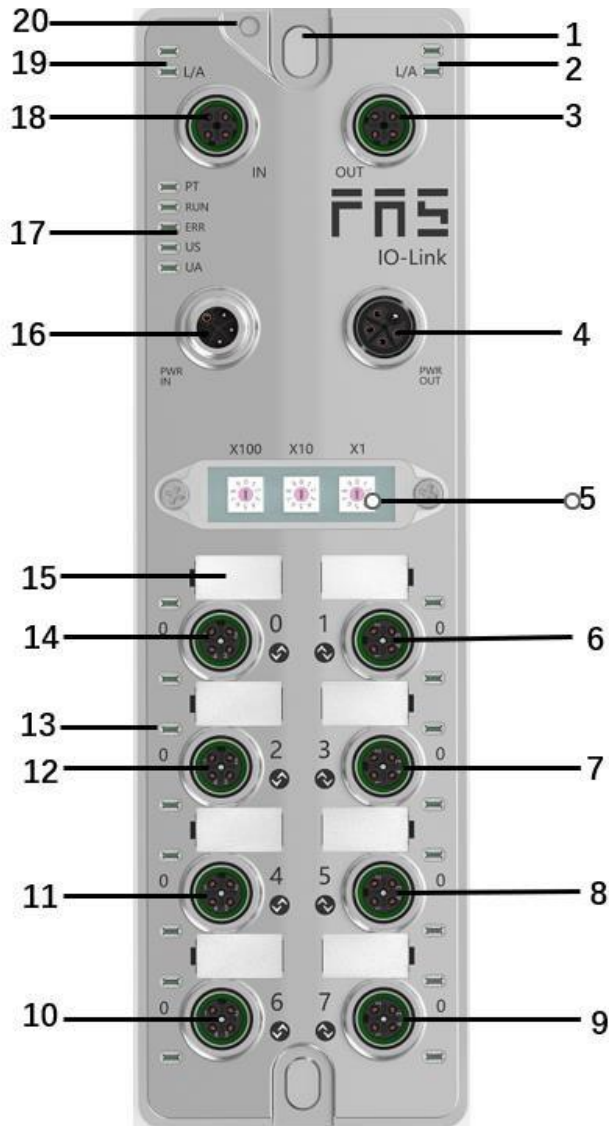
Dangerous voltage Precautions!

Disconnect all power sources before using the equipment!

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3 Getting Started Guide

3.1. Module overview



第 5 页 共 22

- | | | |
|-----------------------------------|---------------------------|------------------------------------|
| 1 Mounting holes | 8 Port 5 | 15 Port Identification Board |
| 2 Network port 2 status indicator | 9 Port 7 | 16 Power input port |
| 3 Network port 2 | 10 Port 6 | 17 Module indicator |
| 4 Power outlet | 11 Port 4 | 18 Network port 1 |
| 5 DIP switch | 12 Port 2 | 19 Network port 1 status indicator |
| 6 Port 1 | 13 Port Status Indicators | 20 Ground connection |
| 7 Port 3 | 14 Port 0 | |

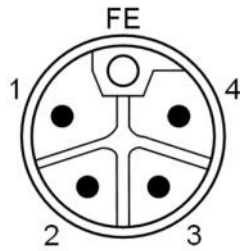
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3.2. Mechanical connection The modules are attached using 2 M6 bolts and 2 washers.
Isolation pads are available as accessories.

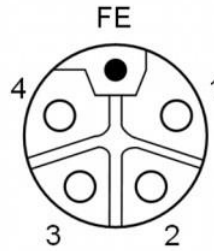
3.3. Electrical connections

3.3.1 Power interface(L-code)

Definition of power input port



Definition of power outlet

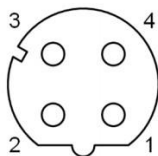


Pin	Features	Describe
1	Us+	+24V(BR)
2	Ua-*	0V(WH)
3	Us-	0V(BL)
4	Ua+*	+24V(BK)
FE	Functional ground*	FE(yellow-green)

Notes:

1. If possible, supply sensor/module power and actuator power separately.
Total current <9A, even if the actuator power supply is daisy chained, the total current of all modules is <9A.
2. The FE connection from the housing to the machine must be low impedance and kept as short as possible.

3.3.2 Network Interface(D-code)



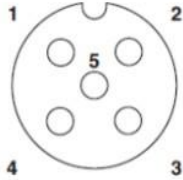
pin	features	
1	Tx+	Send data+
2	Rx+	receive data+
3	Tx-	Send data+
4	Rx-	receive data+

notes: Unused I/O port sockets must be covered with end caps to meet IP67 rating.

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3.3.3 I/O-port(A-code)

Port0~Port7 define:

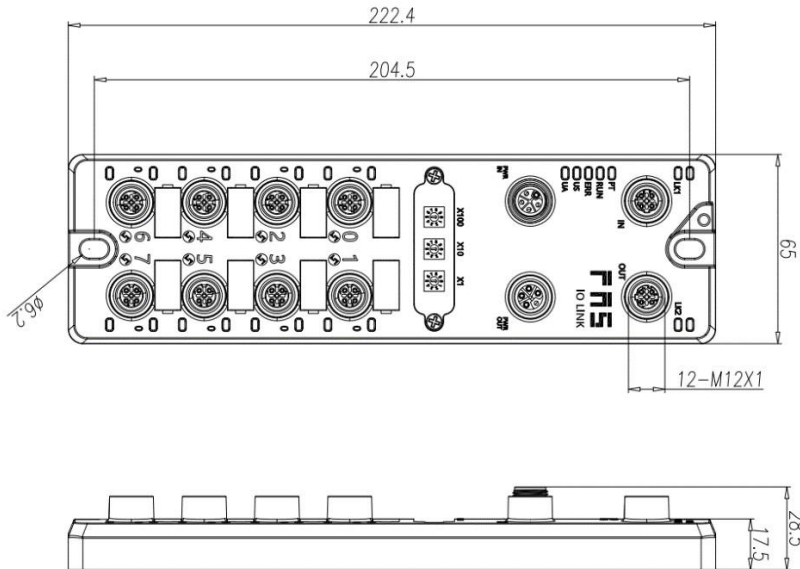


pin	Features
1	+24V (BR)
2	Input Output(White)
3	0V (BL)
4	Input/Output/IOLINK (Bk)
5	FE

Notes:

1. For digital sensor input, please follow the input guidelines of EN61131-2, Type 2.
2. The maximum output current of pins 2 and 4 is 2A. The total current of the module is <9A.
3. Unused I/O port sockets must be covered with end caps to meet IP67 protect

4.1. Size





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4.2 Mechanical data

Shell material	Die-cast aluminum case, pearl nickel plated
Enclosure rating according to IEC 60529	IP67(Only in plug-in or plug-in style)
Power interface	L-Code(male and female)
Input port/output port	M12, A-Code(8* female)
Size(W*H*D)	65mm*222mm*25.8mm
Installation type	2-Through hole mounting
Ground Bus Accessories	M4
weight	Make an appointment670g

4.3. Operating conditions

Operating temperature	-5° C ~ 70° C
Storage temperature	-25° C ~ 70° C

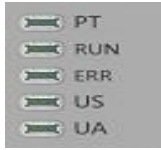
4.4. Electrical data

voltage	18~30V DC, symbol EN61131-2
voltage fluctuation	<1%
Input current when supply voltage is 24V	<130mA

4.5 Network port

port	2 x 10Base-/100Base-Tx
port connection	M12, D-Code
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 condition/full condition (IEEE 802.3-PAUSE)

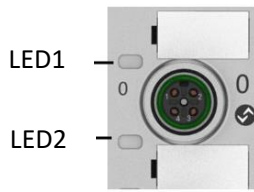
4.6 function indicator



PT	BLUE	EtherCat letter of agreement
----	------	------------------------------

PN Communication protocol module status

LED	show	Function
RUN	green light off	work normally
	green light flashing 2.5HZ	Pre-running: The device is in a pre-running state
	green light flashing 1HZ	Safe operation: The device is in safe operation
	Steady green	Running: The device is running
ERR	off	Device EtherCAT communication is active
	Red light flashing 2.5HZ	Invalid configuration
	Red light flashing 1HZ	local error
	red double flash	Application watch timeout
US	green	input voltage is normal
	Res light flashing	input voltage is normal (< 18 V)
UA	green	The output voltage is normal
	Res light flashing	low output voltage (< 18 V)
	Red always on	no output voltage (< 11 V)



I/O port status LED	State	Features
1	Closure	The status of Pin4 input or output is 0
1	Yellow	The status of Pin4 input or output is 1
1	Red	Port is configured as input: Pin1 overcurrent Port configured as output: Pin4 overcurrent
1	Flashing red	Port configured as output: Pin1 overcurrent
1	Green	IO Link connected
1	Flashing green	IO Link not connected
2	Closure	The status of Pin2 input or output is 0
2	Yellow	The status of Pin2 input or output is 1
2	Red	Port is configured as input: Pin1 overcurrent Port configured as output: Pin2 overcurrent
2	flashing red	Port configured as output: Pin1 overcurrent



Network port status

LED	State	Features
IN(L/A)	Flashing green	Data transmission
OUT (L/A)	Flashing green	Data transmission

4.7 EtherCAT node address setting

1. Set by dial code (1~192 or 401~499)

a. Switch to the EtherCAT communication protocol, the X100 dial is the hundreds digit of the address, the X10 dial is the tens digit of the address, and the X1 dial is the ones digit of the address

b. After dialing the code in the power-on state, it needs to be powered on again. 2. Set by PLC

a. Switch to the EtherCAT communication protocol, the X100 dial is 0, the X10 dial is 0, and the X1 dial is 0

b. Set node address through PLC software

5 Technical data

5.1 PLC integrated

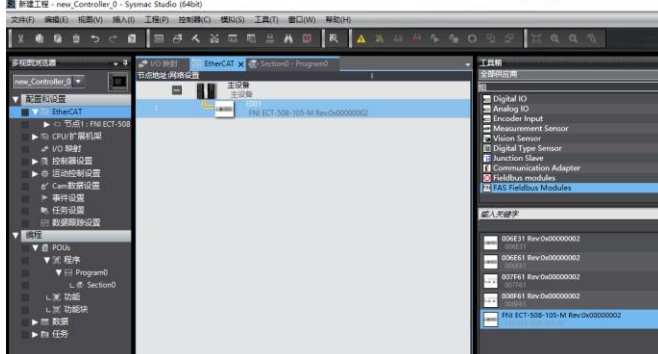
5.1.1 OmronNX1P2 Sysmac Studio integrated 这里, You will see how to integrate this module into an Omron PLC Example, take Omron NX1P2 PLC as an example

Install the ESI file: Configuration and Settings --- EtherCAT --- Right-click the main device --- Click to display the ESI library --- Click "Install File" in the pop-up window --- Select the corresponding product ESI file

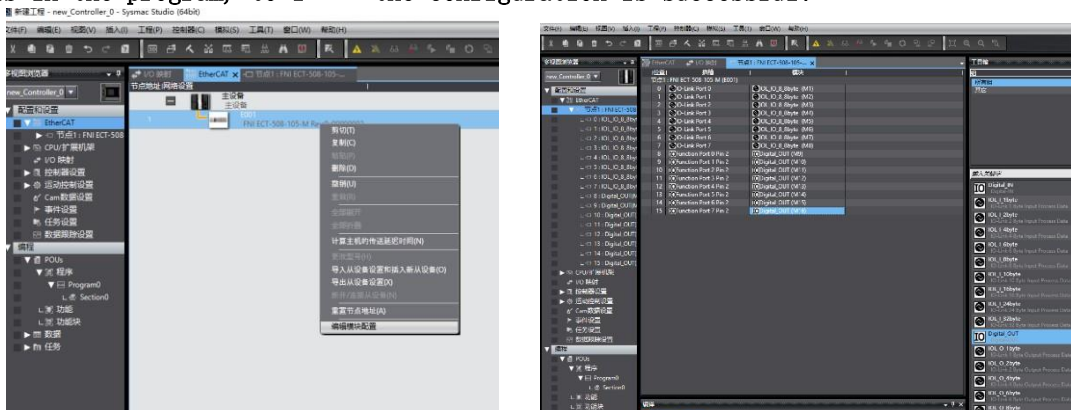


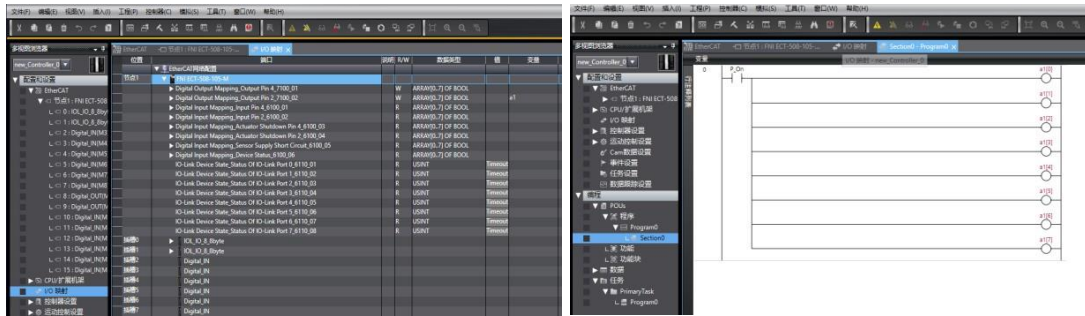
Create a module: Click on the right toolbox---find FAS Fieldbus Modules---select the product model FNI ECT-508-105-M

Double-click the corresponding product to add it to the main device



Module slot data (IOLINK mode): Right click the module --- select edit module configuration --- drag the required data into the module slot --- if the slave station has an output signal, open the master station PIN2 --- Click on I/O Mapping --- Give Digital Output Mapping_Output Pin 2 a variable --- Set Output Pin 2, the port that uses output signals in the program, to 1 --- the configuration is successful!





Module I/O Variables:

Digital Output Mapping_Output Pin 4

Digital Output Mapping_Output Pin 2

Digital Input Mapping_Input Pin 4

Digital Input Mapping_Input Pin 2

Digital Input Mapping_Actuator Shutdown Pin 4

Digital Input Mapping_Actuator Shutdown Pin 2

Digital Input Mapping_Sensor Supply Short circuit

Digital Input Mapping_Device Status

数字输出映射_输出引脚 2

数字输入映射_输入引脚 2

数字输入映射_输入引脚 2

输入引脚 4 短路检测

输入引脚 2 短路检测

输入引脚 1 引脚 3 短路检测

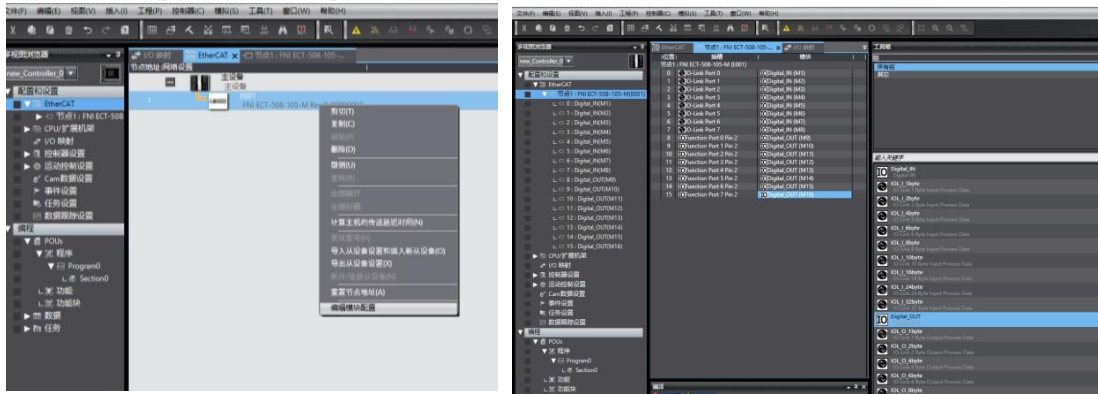
设备过程输入状态

byte	Equipment Process Input State Functional								
	Function Description	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	Standard IO input 0=no signal 1=have no	Port7 Pin4	Port6 Pin4	Port5 Pin4	Port4 Pin4	Port3 Pin4	Port2 Pin4	Port1 Pin4	Port0 Pin4
1	Standard IO input 0=no signal 1=have signal	Port7 Pin2	Port6 Pin2	Port5 Pin2	Port4 Pin2	Port3 Pin2	Port2 Pin2	Port1 Pin2	Port0 Pin2
2	short circuit detection (Pin4 overcurrent) 0=no overcurrent 1= overcurrent	-	-	-	-	Port3 Pin4	Port2 Pin4	Port1 Pin4	Port0 Pin4

3	short circuit detection (Pin2 overcurrent) 0=no signal 1=have signal	-	-	-	-	Port3 Pin2	Port2 Pin2	Port1 Pin2	Port0 Pin2
4	short circuit detection (Pin1 overcurrent) 0=no signal 1=have signal	Port7 Pin1	Port6 Pin1	Port5 Pin1	Port4 Pin1	Port3 Pin1	Port2 Pin1	Port1 Pin1	Port0 Pin1
5	IOLink communication status 0=unconnected 1=connected	Port7	Port6	Port5	Port4	Port3	Port2	Port1	Port0

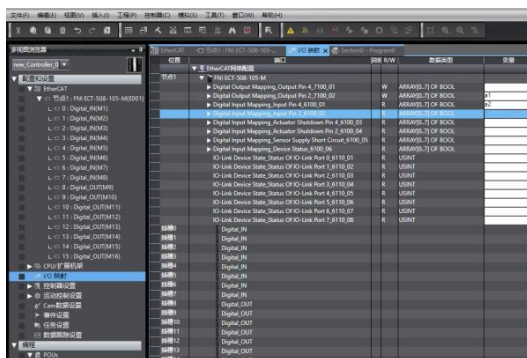
6	IOLink PD efficient 0= prohibit 1= Enable	Port7	Port6	Port5	Port4	Port3	Port2	Port1	Port0
7	module status	-	-	-	Uovervoltage	Ua overvoltage	overvoltage	Us undervoltage	Ua undervoltage

Module slot data (common IO mode): right click on the module --- select edit module configuration --- drag the required data into the module slot (0~7: Pro0~7 PIN4 pin function, 8~15: Pro0~7 PIN2 pin function) --- click I/O mapping --- set the input and output variables of PIN2 and PIN4 pins of the port



As shown above, Pro0~7 PIN4 is the input setting, and Pro0~7 PIN2 is the output setting, that is, in the I/O variable

Digital Output Mapping_Output Pin 2 Digital Input Mapping_Input Pin 4 Fill in the variables and then program in the program ---- Configuration is complete!

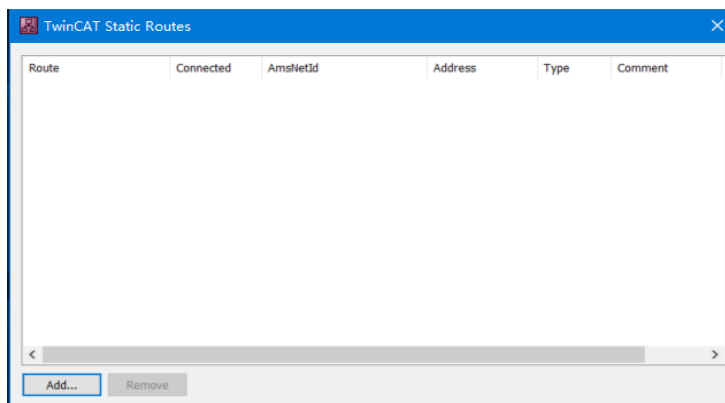


5.1.2 In BECKHOFF TwinCAT XAE 5.1.2 In BECKHOFF TwinCAT XAE

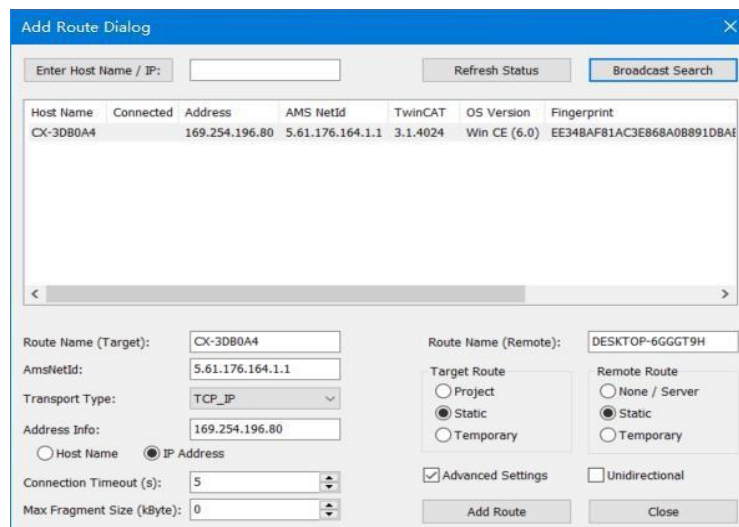
Add PLC path: Right-click the TwinCAT icon in the lower right corner to open Edit Routes



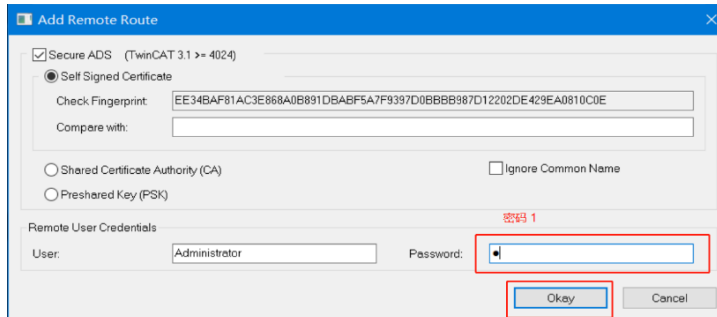
Click Add...; Add Route (Add Route Dialog)



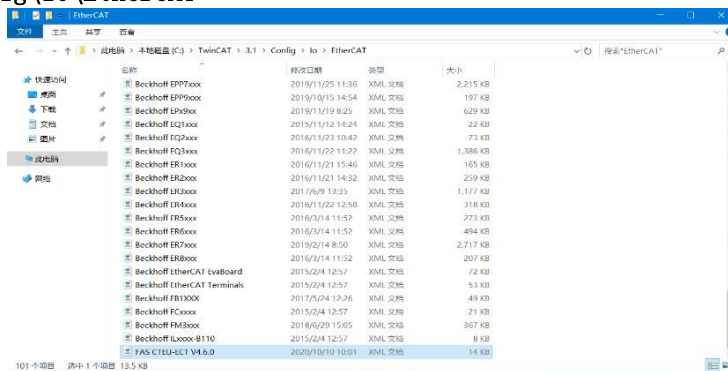
Broadcast Search-select PLC(CX-3D0A4)-Add Route



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

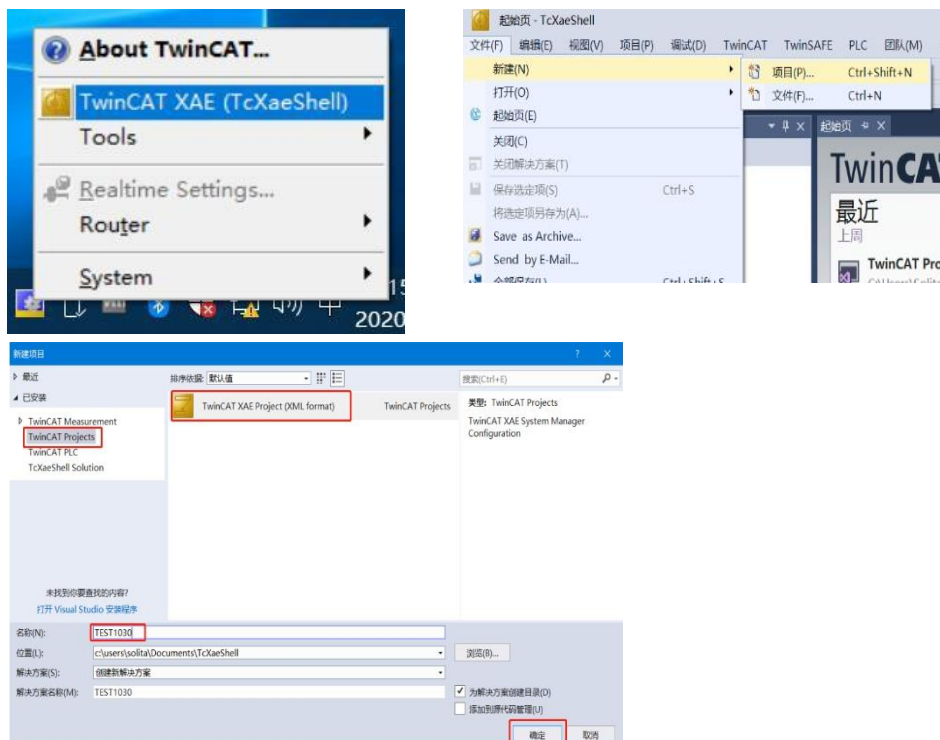


Add device configuration file: FAS FNI-ECT-508-105 (provided by FAS) Copy the file to the following path to complete the configuration file addition:
C:\TwinCAT\3.1\Config\IO\EtherCAT



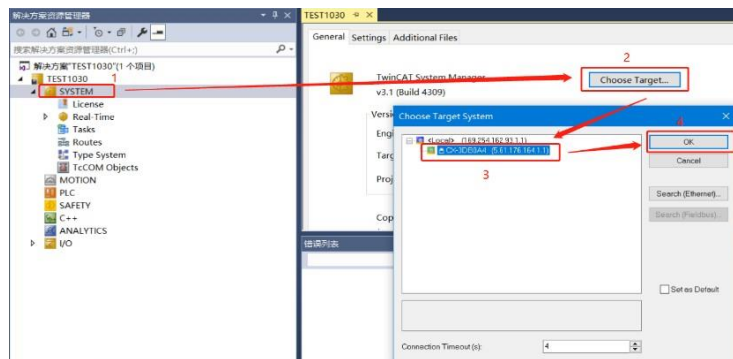
New Construction:

Open TwinCAT XAE software---File-New-Project---select TwinCAT XAE Project---enter name-OK



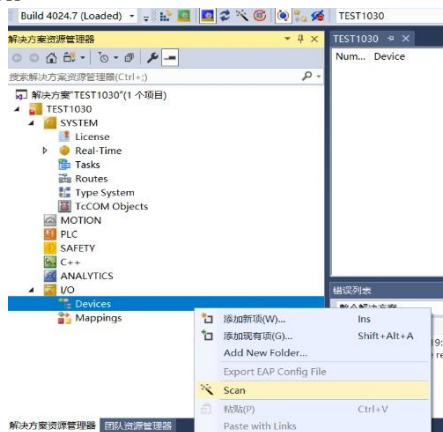
Select target system:

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



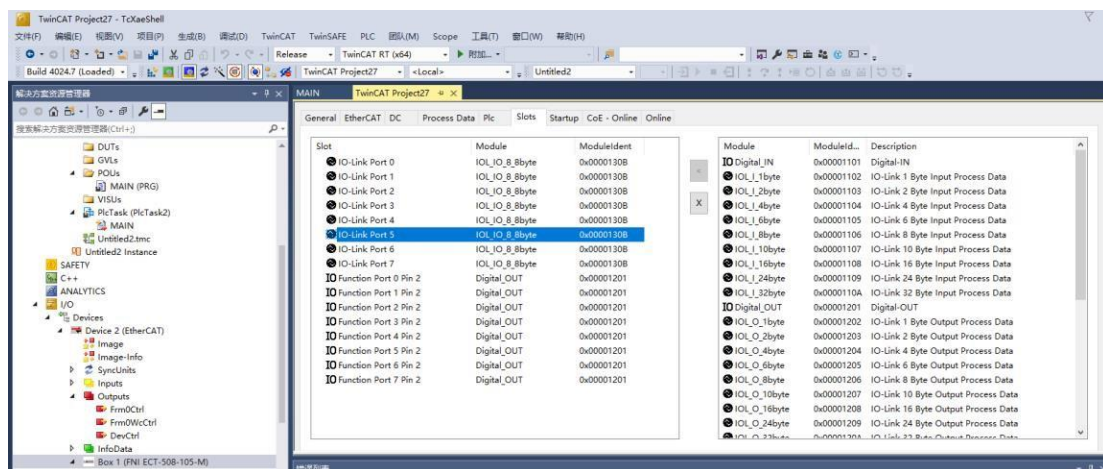
add module:

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



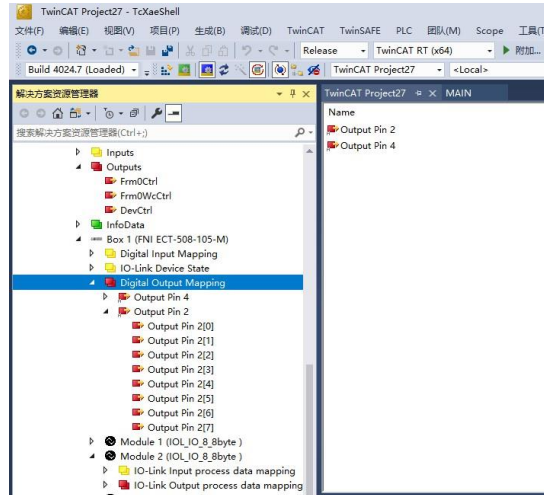
Module slot data (IOLINK mode):

Find the module FNI-ECT-508-105-M under the resource manager, select Slots, select the required slot data for configuration, slots 0~7 are PIN4 functions, slots 8~15 are PIN2 functions



Module slot PIN2 data setting:

If the slave station module has output signal access, the master station module PIN2 must be opened, and assigned in the program ----- configuration is complete! When the variable Output PIN2 is set to 1, PIN2 is enabled; when it is set to 0, PIN2 is disabled



Module slave station data setting (COE setting):

Find the module FNI-ECT-508-105-M under the resource manager 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
 8140: 0 :master Pro 4 Port Data Settings
 8150: 0 :master Pro 5 Port Data Settings
 8160: 0 :master Pro 6 Port Data Settings
 8170: 0 :master Pro 7 Port Data Settings

Set parameters and data according to the manual of the slave station moduleIndex:

index
 Subindex: sub-index
 Length: Data length BYTE Type (When reading or writing, fill in the data length first)
 Data: data mapping Control: 1= read 2= to write
 Error code: error code



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

(1) When you need to configure the IOLINK slave station, you should write to set Pin4 as the IOLINK function, and write Control 2 to complete the configuration of the slave station;

Note that the input value of Index and Subindex is decimal, and the input and output value of Data is hexadecimal;

(2) Commonly used indexing functions of FAS slaves:

Example: a. Input and output configuration: Index =65, Subindex=0; the following figure is an example of slave station 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	
16进制值 (填入到Data)		F				F				F				F				F				F				F								

For example: the DI/DO requirement of the slave station module is full output (FFFF)

Index=65 (from the station manual) Subindex=0

Length=2 Data=FFFF

Control=2 →Enter

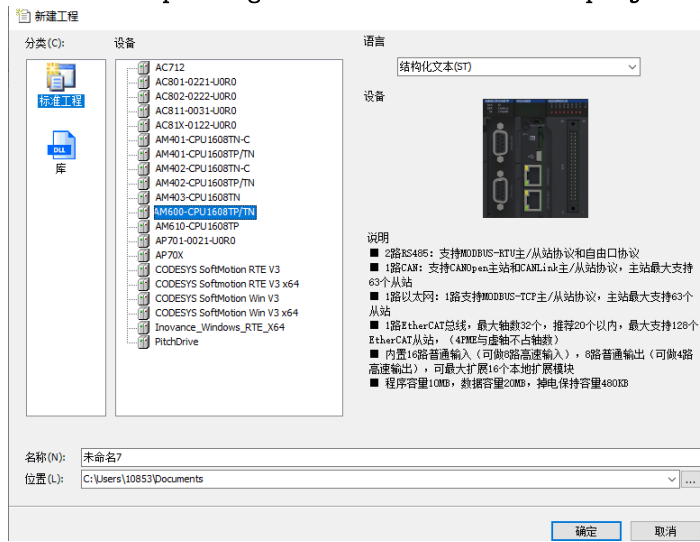
The writing is successful, and the module configuration becomes full output

5.1.2 In Huichuan AM600- CPU1608TP/TN integrated

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

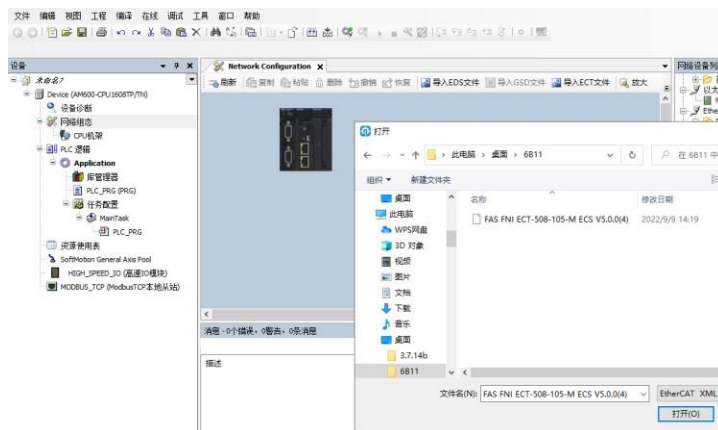
Add new project:

Select the corresponding PLC model for the new project

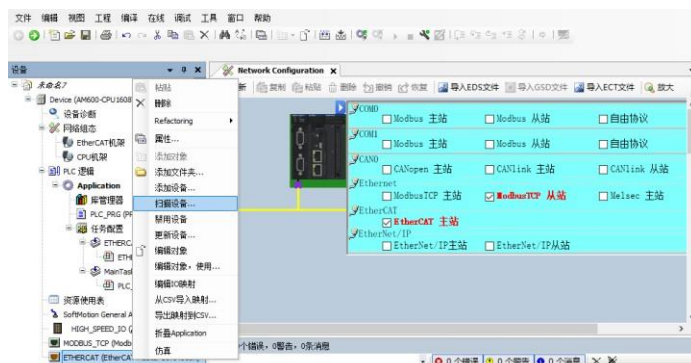


Add module:

Double-click the network configuration----click to import ECT file----select the master station description file FNI-ECT-508-105-M

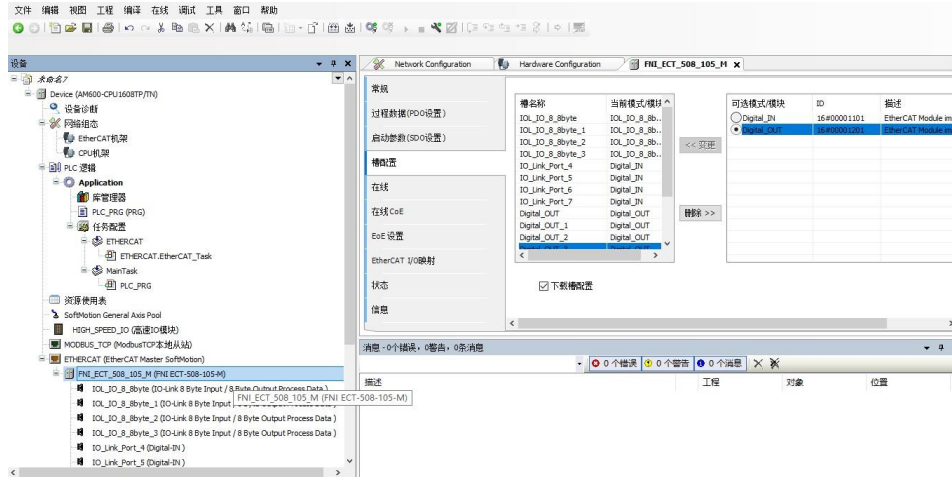


Click PLC---check the EtherCAT master station---choose the device on the left side ----
-right click ETHERCAT-----scan the device



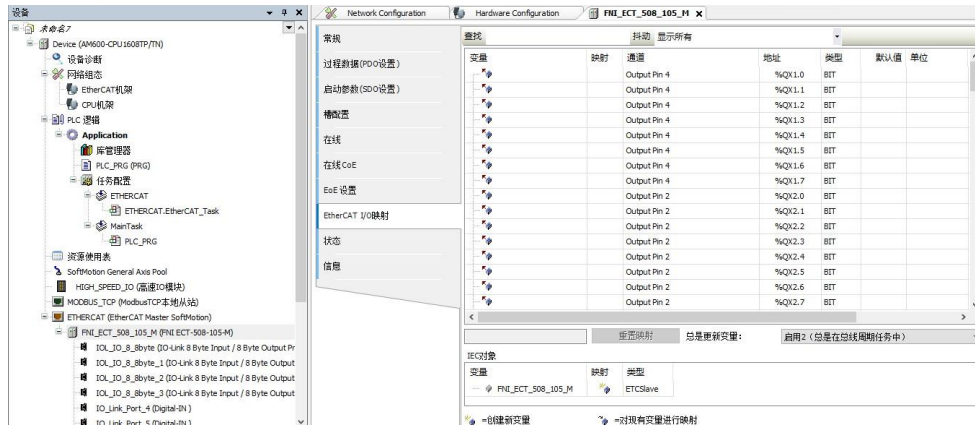
Module slot data:

Double-click the left device frame module FNI-ECT-508-105-M -----Slot configuration -----Select the required slot data to configure Slot 0~7 is PIN4 function Slot 8~15 For PIN2 function



Module slot PIN2 data setting

If the slave station module has output signal access, the PIN2 of the master station module must be opened, and assigned in the program----- configuration is complete! When the variable Output PIN2 address is set to 1, PIN2 is enabled; when set to 0, PIN2 is disabled



6 appendix

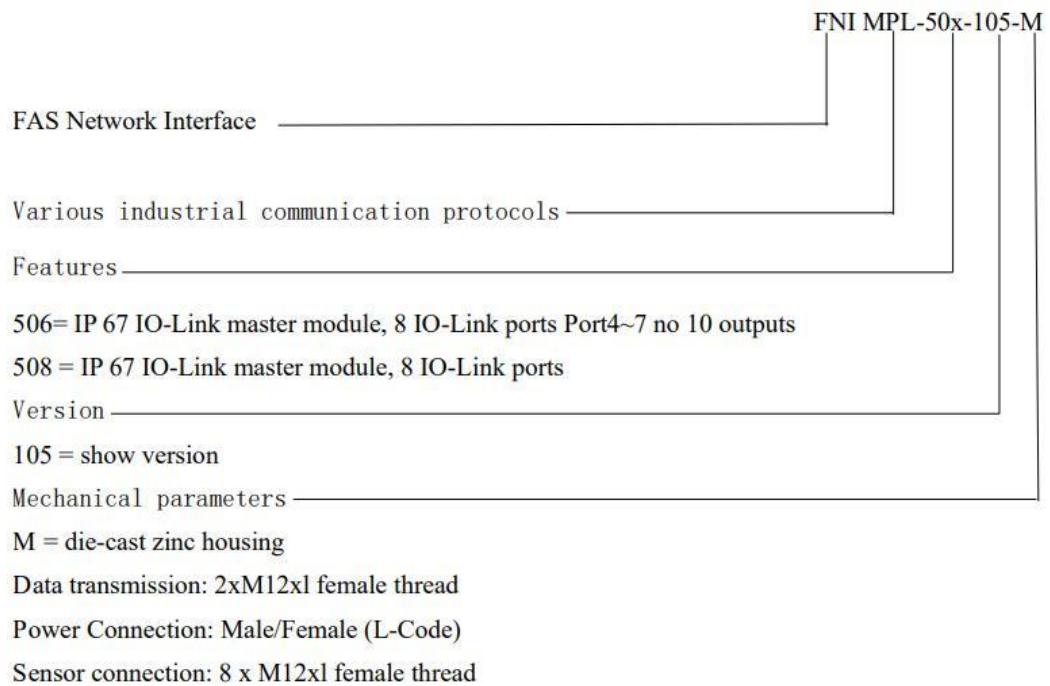
6.1. Included materials FNI ECT contains the following components

- I/O-blocks

4 blind plugs M12

- Ground busbar
- Thread M4x6
- 20 tags

6.2. order code



6.3 ordering information

Product order code	order code
FNI ECT-506-105-M	006B31