



# PRODUCT

USE INSTRUCTIONS

---



**Ordering code: 007CA5**

**Part number: FNI MPL-106-000-S**

# FNI MPL-106-000-S

8 DI NPN

## IP 67 module user manual



## Contents

|                                                            |    |
|------------------------------------------------------------|----|
| <b>Security</b> .....                                      | 4  |
| ■ Expected use.....                                        | 4  |
| ■ Installation and start-up .....                          | 4  |
| ■ Corrosion resistance .....                               | 4  |
| ■ Dangerous voltage.....                                   | 4  |
| ■ General security.....                                    | 5  |
| <b>1 Getting started guide</b> .....                       | 6  |
| 1.1 Module overview .....                                  | 6  |
| 1.2 Mechanical connection.....                             | 7  |
| 1.3 Electrical connections .....                           | 7  |
| 1.3.1 Power interface (M8) .....                           | 7  |
| 1.3.2 Network interface (M8) .....                         | 8  |
| 1.3.3 I/O- port(M8) .....                                  | 8  |
| 1.3.4 Remote module wiring method.....                     | 8  |
| <b>2 Technical data</b> .....                              | 10 |
| 2.1 Size .....                                             | 10 |
| 2.2 Mechanical data.....                                   | 10 |
| 2.3 Operating conditions .....                             | 10 |
| 2.4 Electrical data.....                                   | 11 |
| 2.5 Network port .....                                     | 11 |
| 2.6 Function indicator .....                               | 11 |
| <b>3 Integrated</b> .....                                  | 14 |
| 3.1 Data mapping.....                                      | 14 |
| 3.2 PLC integration tutorial.....                          | 15 |
| 3.2.1 Siemens S7-1200 Botu Integration (PN) .....          | 15 |
| 3.2.2 Omron NX1P2 Sysmac Studio Integrated (EIP) .....     | 17 |
| 3.2.4 Mitsubishi FX5U Work2 Central Integration (CIE)..... | 19 |
| <b>4 Appendix</b> .....                                    | 21 |
| 4.1 Ordering information .....                             | 21 |

## ■ 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!

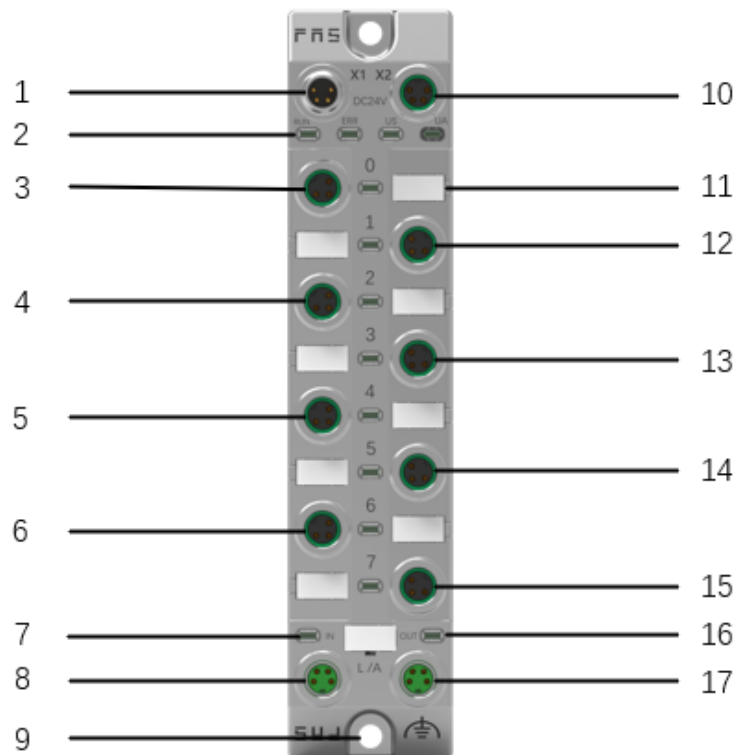
---

## ■ 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.<br>This device produces RF noise.                                                                                                                               | <p>The warranty and limited liability statement provided by the manufacturer does not cover damage caused by:</p> <ul style="list-style-type: none"> <li>·Unauthorized tampering</li> <li>·Improper use operation</li> </ul> <p>·The instructions provided in the user manual explain the use, installation and handling of discrepancies</p> |
| 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.                                                                                     | <p>The owner/operator must take appropriate precautions to use this equipment.</p> <p>This device can only use the power supply that matches this device, and can only connect cables approved for application.</p> |                                                                                                                                                                                                                                                                                                                                               |

# 1. Getting Started Guide

## 1.1 Module overview



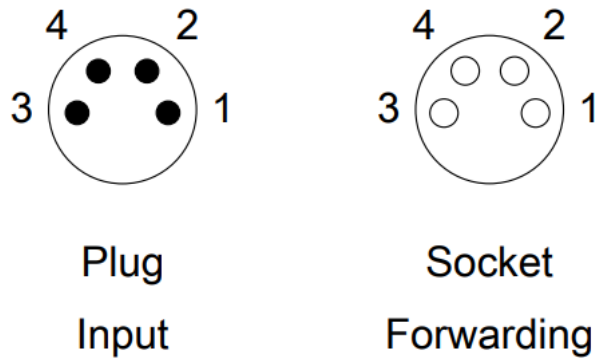
- |                                  |                                    |
|----------------------------------|------------------------------------|
| 1 Power input port               | 10 Power output port               |
| 2 Module indicator               | 11 Port identification board       |
| 3 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 connection

### 1.3.1 Power interface (M8)

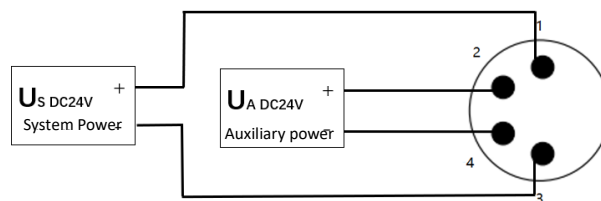


| Pin | Function | Description |
|-----|----------|-------------|
| 1   | Us+      | +24V(Brown) |
| 2   | Ua+*     | +24V(White) |
| 3   | Us-      | 0V(Blue)    |
| 4   | Ua-*     | 0V(Black)   |

Note:

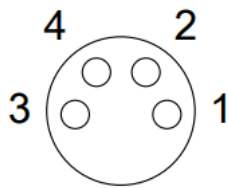
1. If possible, provide sensor/module power supply and actuator power supply separately.  
Total current <4A. Total current of all modules <4A, even when actuator power supplies are daisy chained.
2. The FE connection from the housing to the machine must be low impedance and kept as short as possible.

### Power port



### 1.3.2 Network Interface (M8)

| Pin | Function |            |
|-----|----------|------------|
| 1   | Tx+      | Send data+ |

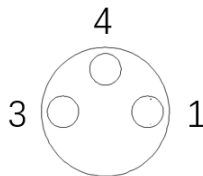


|   |     |               |
|---|-----|---------------|
| 2 | Rx+ | Receive data+ |
| 3 | Tx- | Send data-    |
| 4 | Rx- | Receive data- |

Note:

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

### 1.3.3 I/O-port (M8)



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

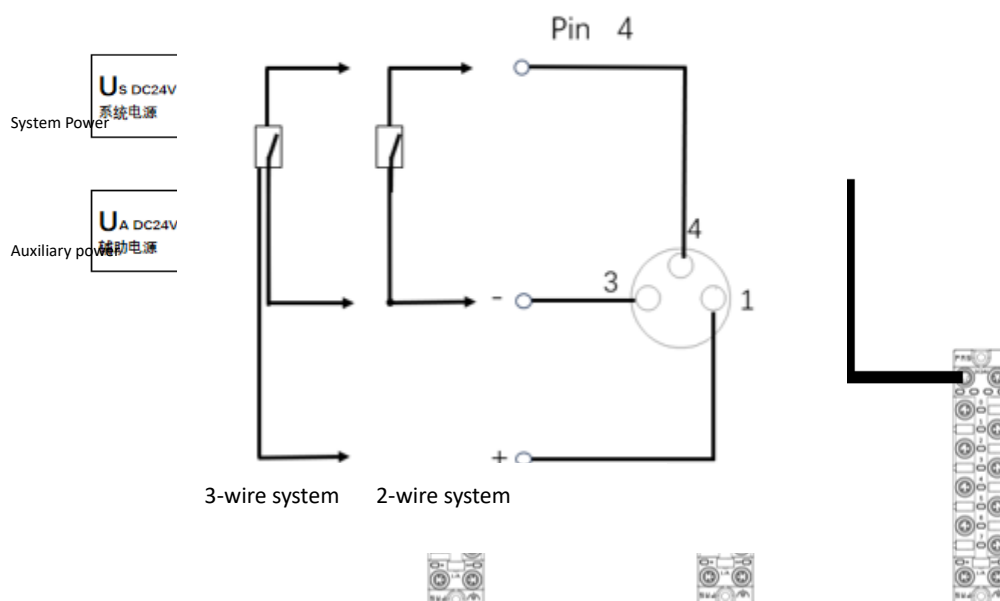
Note:

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

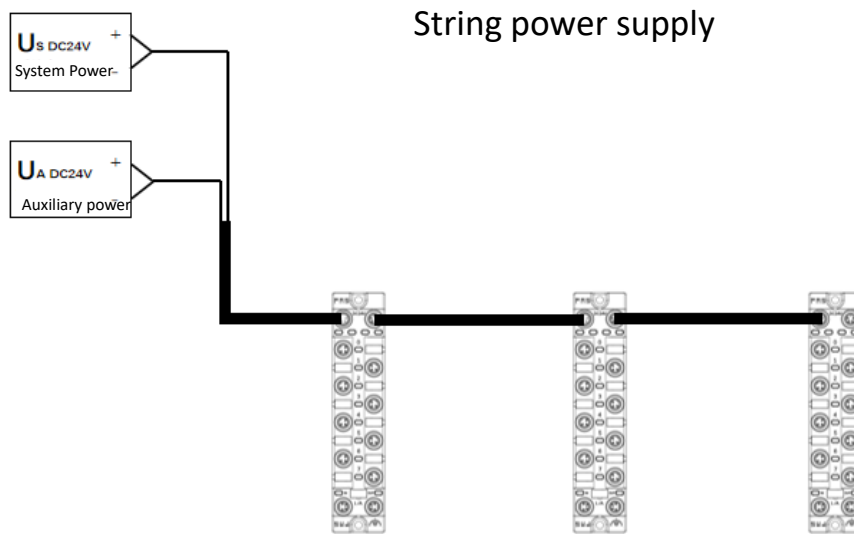
### 1.3.4 Remc

Normal I/O

NPN input



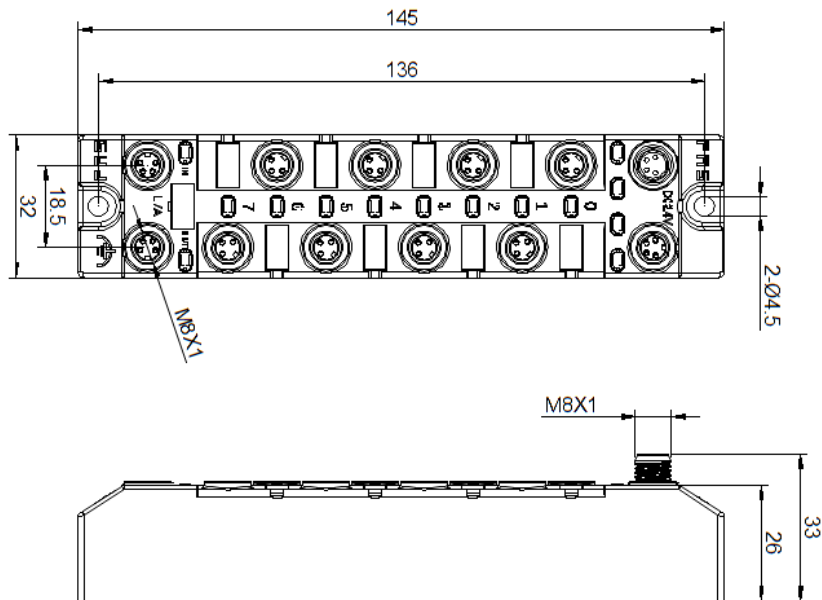
In independent power supply mode, the maximum current of each master station can reach 4A.



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 |
| 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 | -5°C ~ 85°C  |
| Storage temperature   | -25°C ~ 85°C |

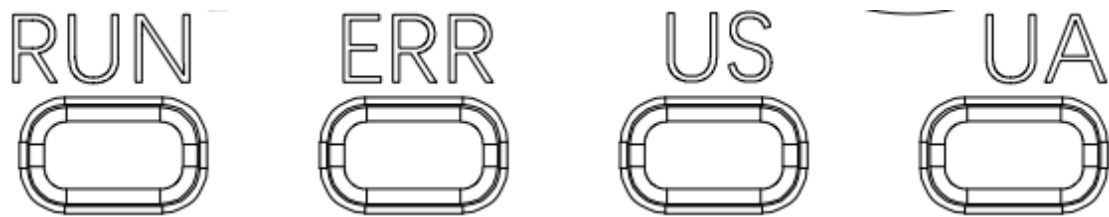
## 2.4. Electrical data

|                                                           |                                 |
|-----------------------------------------------------------|---------------------------------|
| 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               | 10/100Mbit/s                                                     |
| Maximum cable length             | 100m                                                             |
| Flow control                     | Half working condition/full working condition (IEEE 802.3-PAUSE) |

## 2.6 Function indicator



### PN communication protocol module status

| LED | Show                      | Function                                            |
|-----|---------------------------|-----------------------------------------------------|
| 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              |                                                     |
| ERR | Closure                   | Running: The device is running                      |
|     | Red light flashes 2.5HZ   | No errors, device EtherCAT communication is working |
|     | Red light flashes 1HZ     | Invalid configuration                               |
| US  | Green                     | local error                                         |
|     | Flashing red              | Input voltage is normal                             |
| UA  | Green                     | Input voltage low (< 18 V)                          |
|     | Flashing red              | Output voltage is normal                            |
|     | Red always on             | Output voltage low (< 18 V)                         |

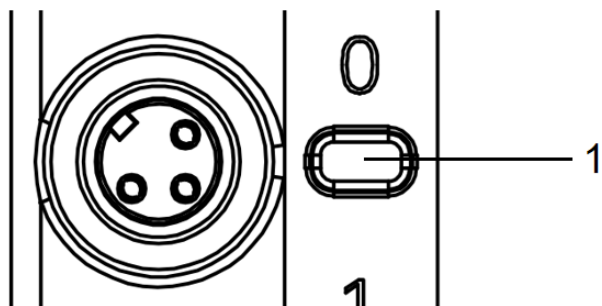
#### EIP communication protocol module status

| LED | Show                                      | Function                                             |
|-----|-------------------------------------------|------------------------------------------------------|
| RUN | Green light is always on                  | Working status: The equipment is running normally    |
|     | Green light flashes 1HZ                   | Standby: The device is not configured                |
|     | Flashing green, red and green alternately | Self-test: The device is undergoing a power-on test. |
|     | Flashing red 1HZ                          | Recoverable faults:                                  |
|     | Red light always on                       | Unrecoverable failure                                |
|     | Closure                                   | US no input voltage                                  |
| ERR | Green light is always on                  | Connected                                            |
|     | Green light flashes 1HZ                   | Not connected:                                       |
|     | Flashing green and red alternately        | Self-test: The device is undergoing a power-on test. |
|     | Red light flashes 1HZ                     | Connection timed out                                 |
|     | Red light always on                       | Duplicate IP:                                        |
|     | Closure                                   | USNo input voltage or no IP address                  |
| US  | Green                                     | Input voltage is normal                              |
|     | Flashing red                              | Input voltage low (< 18 V)                           |
| UA  | Green                                     | Output voltage is normal                             |
|     | Flashing red                              | Output voltage low (< 18 V)                          |
|     | Red always on                             | No output voltage present (< 11 V)                   |

#### CIE communication protocol module status

| LED | Show                      | Function                           |
|-----|---------------------------|------------------------------------|
| RUN | Green light off           | Module not connected               |
|     | Green light flashes 2.5HZ | Module has no communication        |
|     | Green light flashes 1HZ   | Module not configured              |
|     | Steady green              | Running: The device is running     |
| ERR | Closure                   | Module works fine                  |
|     | Red light always on       | Communication error                |
| US  | Green                     | Input voltage is normal            |
|     | Flashing red              | Input voltage low (< 18 V)         |
| UA  | Green                     | Output voltage is normal           |
|     | Flashing red              | Output voltage low (< 18 V)        |
|     | Red always on             | No output voltage present (< 11 V) |

#### I/O port status



| LED | Status  | Function                                                   |
|-----|---------|------------------------------------------------------------|
| 1   | Closure | The status of Pin4 input is 0                              |
| 1   | Yellow  | The status of Pin4 input is 1                              |
| 1   | Red     | Port configured as input: short circuit between Pin1 and 3 |

Network port status



| LED | Status         | Function                  |
|-----|----------------|---------------------------|
| IN  | Flashing green | Data transfer in progress |
| OUT | Flashing green | Data transfer in progress |

## 3.Integrated

### 3.1 Data mapping

| PROFINET communication protocol module data     |                      |       |       |       |                       |                       |                |               |               |
|-------------------------------------------------|----------------------|-------|-------|-------|-----------------------|-----------------------|----------------|---------------|---------------|
| Module                                          | Function description |       |       |       |                       |                       |                |               |               |
|                                                 | Status description   | Bit7  | Bit6  | Bit5  | Bit4                  | Bit3                  | Bit2           | Bit1          | Bit0          |
| Device Status                                   | Module status        |       |       |       | US<br>Overvol<br>tage | UA<br>Overvol<br>tage | Overhe<br>ated | US<br>voltage | UA<br>voltage |
| Standard input                                  | Digital input        | PORT7 | PORT6 | PORT5 | PORT4                 | PORT3                 | PORT2          | PORT1         | PORT0         |
| Data description (binary): 0=no signal 1=signal |                      |       |       |       |                       |                       |                |               |               |

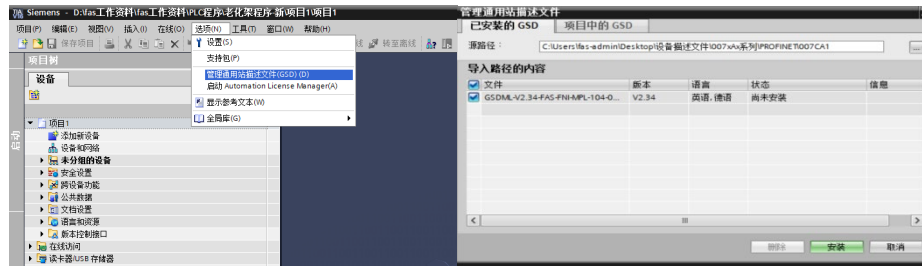
| EIP communication protocol process input data   |                      |       |       |       |                       |                       |                |               |               |
|-------------------------------------------------|----------------------|-------|-------|-------|-----------------------|-----------------------|----------------|---------------|---------------|
| Byte                                            | Function description |       |       |       |                       |                       |                |               |               |
|                                                 | Status description   | Bit7  | Bit6  | Bit5  | Bit4                  | Bit3                  | Bit2           | Bit1          | Bit0          |
| 0                                               | Standard IO<br>input | PORT7 | PORT6 | PORT5 | PORT4                 | PORT3                 | PORT2          | PORT1         | PORT0         |
| 1                                               | Module status        |       |       |       | US<br>Overvol<br>tage | UA<br>Overvol<br>tage | Overhe<br>ated | US<br>voltage | UA<br>voltage |
| Data description (binary): 0=no signal 1=signal |                      |       |       |       |                       |                       |                |               |               |

| CIEBS communication protocol process data |                                   |       |       |       |       |       |       |       |  |
|-------------------------------------------|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|--|
| Function description                      |                                   |       |       |       |       |       |       |       |  |
| Regional function<br>description          | X107                              | X106  | X105  | X104  | X103  | X102  | X101  | X100  |  |
| RX area standard IO input<br>0=off, 1=on  | PORT7                             | PORT6 | PORT5 | PORT4 | PORT3 | PORT2 | PORT1 | PORT0 |  |
|                                           | The remaining points are reserved |       |       |       |       |       |       |       |  |

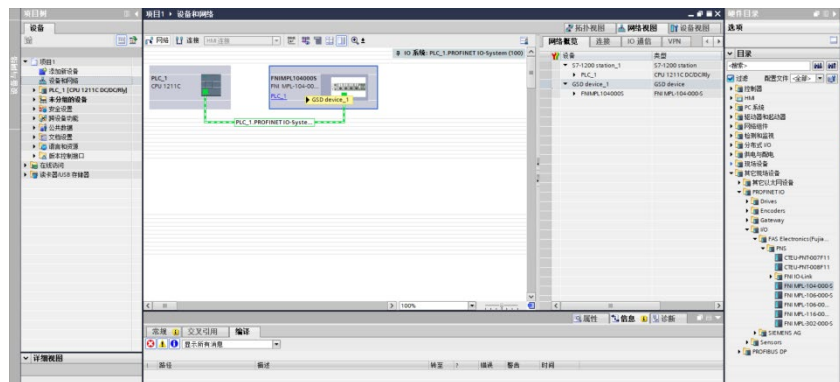
## 3.2 PLC integration tutorial

### 3.2.1 Siemens S7-1200 Botu Integration (PN)

#### 1. Install the GSD file

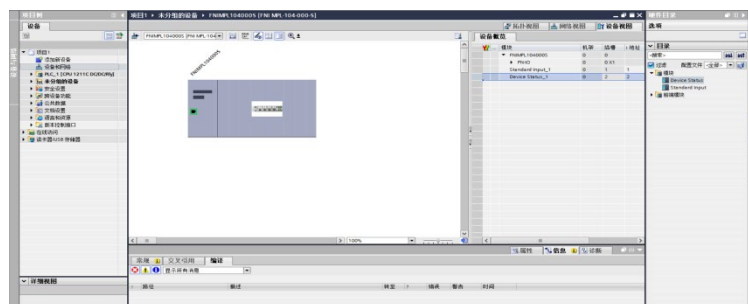


2. In PLC---Device Configuration---Network View---Hardware Catalog, select the module and drag it in, click "Unassigned", and select the PLC to be connected;



3. Double-click the module to enter the configuration.

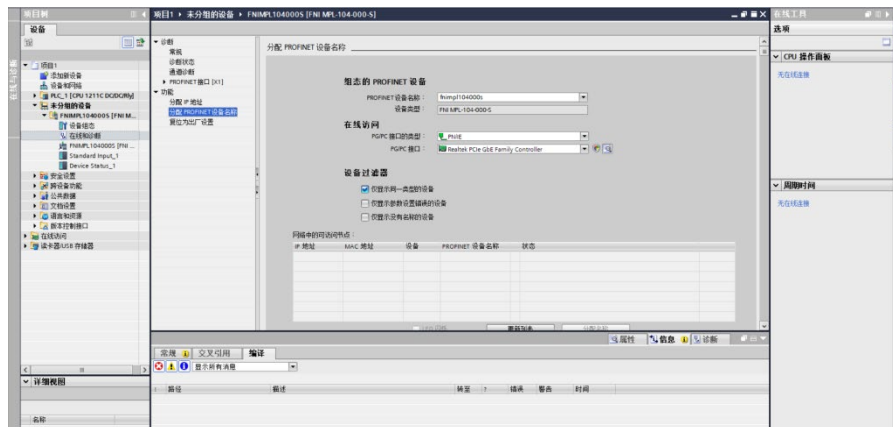
- (1) Slot function configuration: Select the required data in the hardware catalog--Module and drag it into the slot in the device overview window;



- (2) After the configuration is completed, click Download in the configuration view.

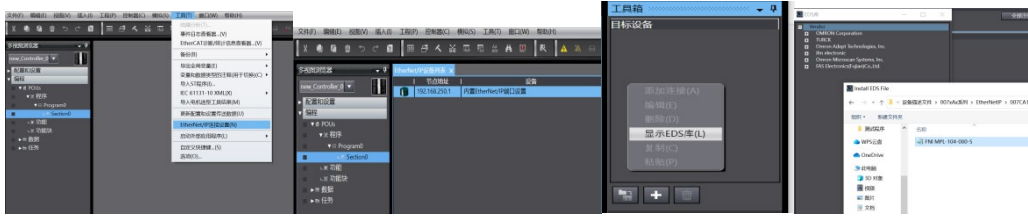
4. Assign module PN name: PLC switches to online state, select "Ungrouped Device"---Click the module name----

Select Online and Diagnosis---Function-----Assign PROFINET device name-- --Select the module to be assigned in the list (should be selected based on the physical MAC) ---Click "Assign Name" to complete the configuration! .

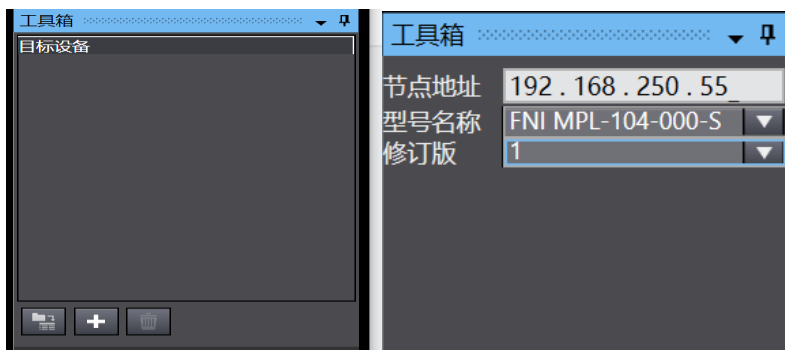


### 3.3.2 Omron NX1P2 Sysmac Studio Integration (EIP)

1. Install the EDS file: Tools---ETHERNET/IP connection settings---double-click PLC in the window---the toolbox on the right is blank Right-click and select "Show EDS Library", click "Install" in the pop-up window, and select EDS file installation

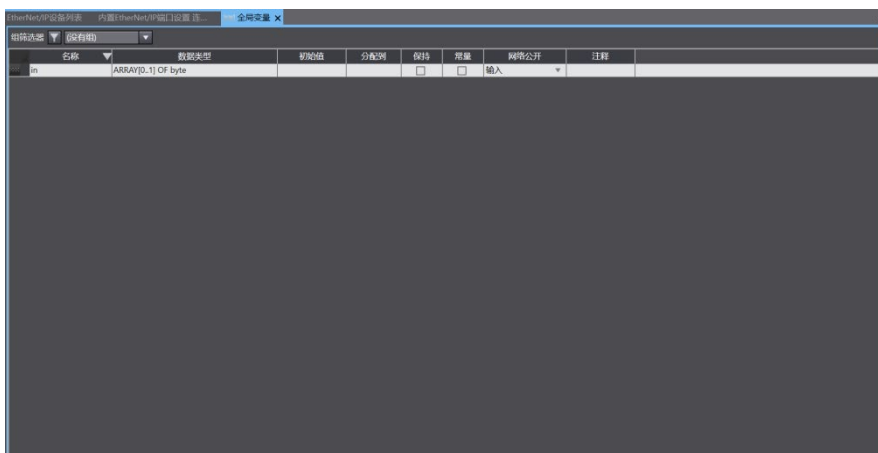


2. Create a module: Click "+" in the toolbox window, fill in the module IP address, model name, version, and click Click "Add" below to complete the module creation;

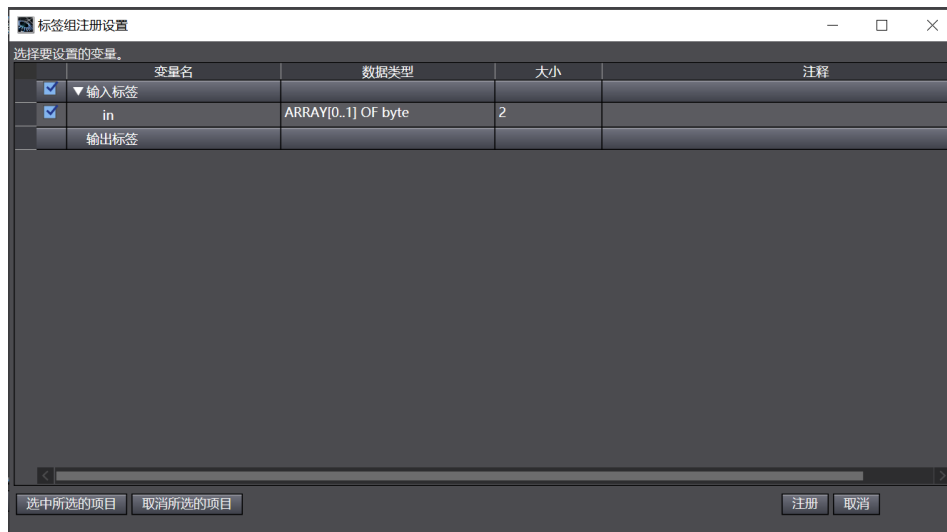


3. Create variable association:

- (1) Programming--Data--Global variables create two arrays and input 2 bytes.  
Corresponding input and output should be configured in network disclosure;



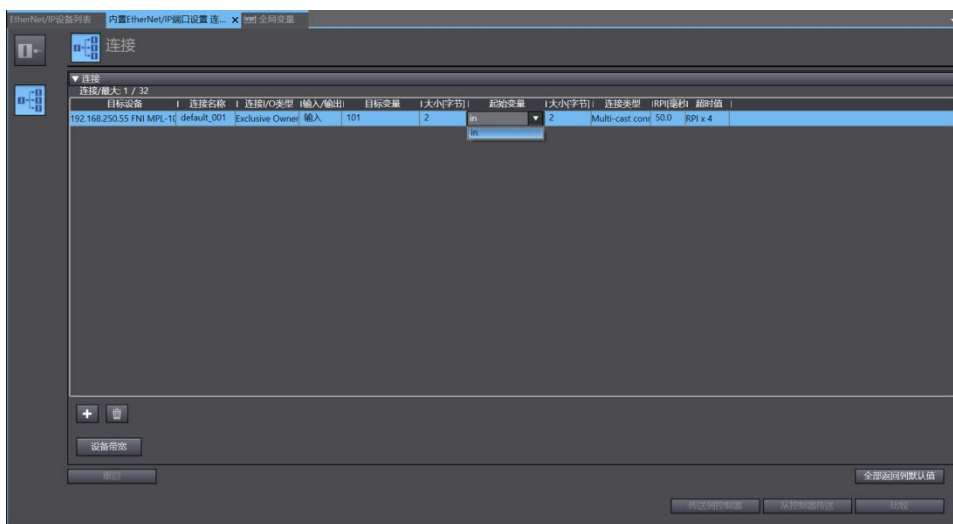
- (2) In the built-in ETHERNET/IP port setting window--select the first icon (label) on the left---click Click "Register All"



(3) In the built-in ETHERNET/IP port setting window--select the second icon on the left (Connection)---click "Click "+", and the target device selects the previously configured module.

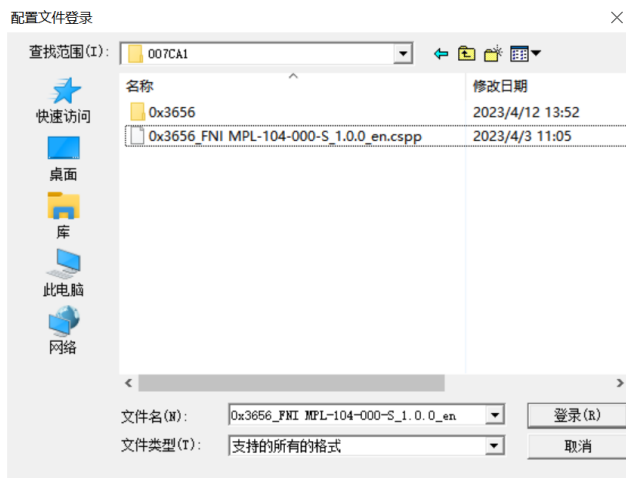
Select EXCLUSIVE Owner for IO type, Select the corresponding input and output, the target variable must be filled in 101; then select the corresponding starting variable, complete

Online after success. Select "Transfer to controller" and the configuration is complete!

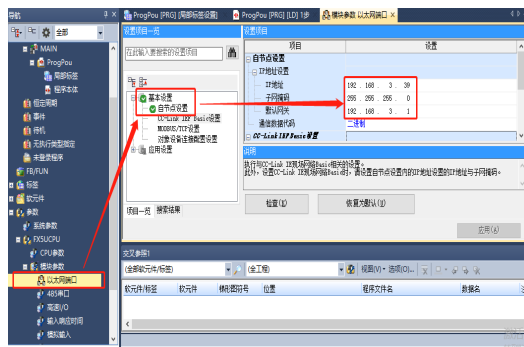


### 3.3.4 Mitsubishi FX5U Work2 Integration (CIE)

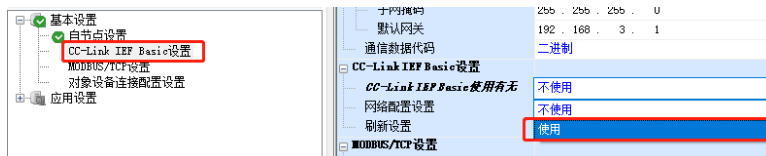
1. Install the CCSP file: First open GX WORKS 3-Tools-Configuration File Management-Login-CSPP file (required The project must be closed before the file can be imported)



2. Click Project on the left - Parameters - FX5UCPU - Module parameters - Ethernet port, Basic settings - Self-node settings. Set own node IP



3. Click CC-Link IEF Basic settings - select whether to use CC-Link IEF Basic - click Use



4. Click CC-Link IEF Basic settings-select network configuration settings-detailed settings;



5. Automatic detection of connected devices - occupies 1 station, IP address is set using DIP switch - reflects the setting and closes

连接设备的自动检测

链接扫描设置

总连接台数

1

|   | 台数                | 型号 | 站号 | 站类型 | RX/RX+设置  |      |      | RW/RW+设置 |      |      | 组No. | 保留站 | IP地址          | 子网掩码 |
|---|-------------------|----|----|-----|-----------|------|------|----------|------|------|------|-----|---------------|------|
|   |                   |    |    |     | 点数        | 起始   | 结束   | 点数       | 起始   | 结束   |      |     |               |      |
| 0 | 本站                |    | 0  | 主站  |           |      |      |          |      |      |      |     |               |      |
| 1 | FNI MPL-104-000-S |    | 1  | 从站  | 64 (占用1站) | 0000 | 003F | 32       | 0000 | 001F | 1    | 无设置 | 192.168.3.250 |      |

6. To refresh the target, select the specified device-software name M-assign the device address-application, and the configuration is completed!

| 链接侧  |    |       |       |   | CPU侧 |      |    |     |     |  |
|------|----|-------|-------|---|------|------|----|-----|-----|--|
| 软元件名 | 点数 | 起始    | 结束    |   | 刷新目标 | 软元件名 | 点数 | 起始  | 结束  |  |
| RX   | 64 | 00000 | 0003F | ↔ | 指定软元 | X    | 64 | 100 | 177 |  |
| RY   | 64 | 00000 | 0003F | ↔ | 指定软元 | Y    | 64 | 100 | 177 |  |
| RWr  | 32 | 00000 | 0001F | ↔ | 指定软元 | D    | 32 | 100 | 131 |  |
| RWw  | 32 | 00000 | 0001F | ↔ | 指定软元 | D    | 32 | 200 | 231 |  |

# 4. Appendix

## 4.1 Ordering information

|                       |               |
|-----------------------|---------------|
| Product ordering code | Ordering code |
| FNI MPL-106-000-S     | 007CA5        |

■ High Quality Product / Sincere Service



경기도 성남시 중원구 사기막골로 124

SKn 테크노파크 메가동 303 호

E-mail: [sales@creken.com](mailto:sales@creken.com) [www.creken.com](http://www.creken.com)



**FAS** / Factory Automation Solution

No. 33 Liuqiao Road, Shangjie Town, Minhou County, Fujian Province

[www.faselec.com](http://www.faselec.com)