



User Manual

用户手册



## **STORM67** Series IO-Link master station

PROFINET\_RT Protocol

EtherNET/IP Protocol

CC-LINK IE FIELD BASIC Protocol

EtherCAT Protocol

IO-Link Main Station Protocol

Version Information

| Version Number | Modification Date | Version Description | Modifier     |
|----------------|-------------------|---------------------|--------------|
| V1.00          | 2024.11.12        | Release version     | Liu Xiaofeng |
|                |                   |                     |              |
|                |                   |                     |              |
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Document Usage Instructions

This document outlines the product's functional specifications, installation, operation, and settings, as well as information related to network protocols. This document is intended for use by well-trained electrical automation engineers only.

Patent Information

The designer of this product has obtained patent protection for both the appearance of the product and its technical implementation method. Any attempt to copy, imitate, or reverse engineer the product may violate the law.

Safety Matters

This product is a professional equipment for industrial use and can only be operated by personnel with electrical operation experience. Before use, please carefully read this manual and follow the instructions to operate it. Failure to do so may result in personnel injury or product damage.

This product is designed to meet the IP67 protection level.

Software Download

Please log in to the official website of Wuxi Lekko Automation Technology Co., Ltd. at [www.latcos.cn](http://www.latcos.cn) to download.

# CATALOGUE

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## 1.Product Overview

## Preface

This product is a professional equipment for industrial use and can only be operated by personnel with electrical operation experience. Before use, please carefully read this manual and follow the instructions to operate it. This will prevent personnel injuries or product damage.

The STORM67 series IO-Link master station IP67 module is an IO-Link master station device based on the standard IO architecture. It supports Ethernet buses such as PROFINET, EtherNET/IP, CC-LINK IE FIELD BASIC, and EtherCAT. The user side supports the IO-Link protocol and is a gateway device for both bus slaves and IO-Link masters. Whether it is the bus interface or the IO-Link interface, it can be connected to devices from multiple manufacturers, ensuring high compatibility and providing users with multiple options for data acquisition, optimizing system configuration, simplifying on-site wiring, and improving system reliability. Product Features:

- IP67 protection grade

Suitable for harsh industrial environments

- Compact in size

Suitable for applications with limited space

- Fast speed

Based on high-performance communication chips

- Easy to diagnose

Innovative channel indicator design, close to the channel, the channel status is clearly visible, convenient for detection and maintenance, web parameter setting, more convenient for configuration.

- Simple wiring

Simple with standard cables



## 2. Naming Rules

## 2.1 Naming Rules

**PN- 08 IOL**  
                                        
 (1)      (2) (3)      (4)      (5)

| Number | Meaning                      | Explanation                                                                                                                                                                           |
|--------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)    | Ethernet bus protocol        | PN: Abbreviation for PROFINET protocol<br>EA: Abbreviation for EtherCAT protocol<br>EP: Abbreviation for EtherNET/IP protocol<br>CE: Abbreviation for CC-LINK IE FIELD BASIC protocol |
| (2)    | Number of IO-Link interfaces | 08: 8 ↑:IO-Link Port                                                                                                                                                                  |
| (3)    | I/O interface                | Empty: Class-A                                                                                                                                                                        |
| (4)    | Product technology           | IOL:IO-Link Abbreviation                                                                                                                                                              |
| (5)    | Input signal type            | Vacant: PNP                                                                                                                                                                           |

## 2.2 Model list

| Model    | Product Description                                                          |
|----------|------------------------------------------------------------------------------|
| PN-08IOL | PROFINET bus protocol 8 x Class-A ports IO-Link master station               |
| EA-08IOL | EtherCAT bus protocol 8 x Class-A ports IO-Link master station               |
| EP-08IOL | EtherNET/IP bus protocol 8 x Class-A ports IO-Link master station            |
| CE-08IOL | CC-LINK IE FIELD BASIC bus protocol 8 x Class-A ports IO-Link master station |



### 3. Product Specifications

### 3.1 General parameters

| Communication interface parameters                     |                                                                    |
|--------------------------------------------------------|--------------------------------------------------------------------|
| Bus protocol                                           | PROFINET、EtherCAT、EtherNet/IP、CC-Link IE Field Basic               |
| Bus interface                                          | 2 * M12, 4-pin, D-code socket end                                  |
| Electrical isolation                                   | 500V                                                               |
| Data transmission medium                               | 5 categories or more of UTP or STP (STP is recommended)            |
| Transmission distance                                  | $\leq 100\text{m}$ (length of a single network cable)              |
| Technical Specifications                               |                                                                    |
| Configuration method                                   | Through the programming software corresponding to the main station |
| Power interface Power supply                           | 2*M12, 5PIN, L-Code pin end                                        |
| Configuration method                                   | 24VDC (18~36VDC)                                                   |
| $U_S$ Total current                                    | Max:9A                                                             |
| $U_S$ Consumption current                              | $\leq 150\text{mA}$                                                |
| $U_L$ Total current                                    | Max:9A                                                             |
| $U_L$ Consumption current                              | 25mA + sensor power supply current + load output current           |
| $GND_S$ and $GND_L$ Isolation by electrical insulation | yes                                                                |
| Weight                                                 | Approximately 520g                                                 |
| Size                                                   | 200×60×30mm                                                        |
| Working temperature                                    | -25~70°C                                                           |
| Storage temperature                                    | -40~85°C                                                           |
| Relative humidity                                      | 5%-95%No condensation                                              |
| Protection level                                       | IP67                                                               |

## 3.2 Input and output electrical components

### 3.2.1 PROFINET Bus module parameters

| Product model                            | PN-08IOL                                          |
|------------------------------------------|---------------------------------------------------|
| Bus protocol                             | PROFINET                                          |
| Rated voltage                            | 24VDC (18~36VDC)                                  |
| DI/DO/IO-Link interface                  | 8 x M12-A, 5-pin, threaded end                    |
| Number of IO-Link channels               | 8                                                 |
| IO-Link version                          | V1.1                                              |
| IO-Link transmission rate                | COM1 (4.8kbps) 、COM2 (38.4kbps) 、COM3 (230.4kbps) |
| Maximum number of input channels         | Maximum 16                                        |
| Input signal type                        | PNP                                               |
| Input filtering                          | Support, default configuration is 5ms             |
| Maximum number of output channels        | Maximum 8                                         |
| Maximum current of single-channel output | MAX 500mA(IEC 61131-2 type 2)                     |
| Output signal type                       | PNP/NPN                                           |
| Load type                                | Resistive load, inductive load                    |
| Total output current                     | 9A                                                |
| Port protection                          | Overcurrent protection                            |
| Isolation method                         | US and UL are not isolated                        |
| Channel signal light                     | Support                                           |

### 3.2.2 EtherCAT Bus module parameters

| Product model                            | EA-08IOL                                          |
|------------------------------------------|---------------------------------------------------|
| Bus protocol                             | EtherCAT                                          |
| Rated voltage                            | 24VDC (18~36VDC)                                  |
| DI/DO/IO-Link interface                  | 8 x M12-A, 5-pin, threaded end                    |
| Number of IO-Link channels               | 8                                                 |
| IO-Link version                          | V1.1                                              |
| IO-Link transmission rate                | COM1 (4.8kbps) 、COM2 (38.4kbps) 、COM3 (230.4kbps) |
| Maximum number of input channels         | Maximum 16                                        |
| Input signal type                        | PNP                                               |
| Input filtering                          | Support, default configuration is 5ms             |
| Maximum number of output channels        | 8                                                 |
| Maximum current of single-channel output | MAX 500mA(IEC 61131-2 type 2)                     |
| Output signal type                       | PNP/NPN                                           |
| Load type                                | Resistive load, inductive load                    |
| Total output current                     | 9A                                                |
| Port protection                          | Overcurrent protection                            |
| Isolation method                         | Us and UL are not isolated                        |
| Channel signal light                     | Support                                           |

### 3.2.2 EtherNet/IP Bus module parameters

| Product model                            | EP-08IOL                                          |
|------------------------------------------|---------------------------------------------------|
| Bus protocol                             | EtherNet/IP                                       |
| Rated voltage                            | 24VDC (18~36VDC)                                  |
| DI/DO/IO-Link interface                  | 8 x M12-A, 5-pin, threaded end                    |
| Number of IO-Link channels               | 8                                                 |
| IO-Link version                          | V1.1                                              |
| IO-Link transmission rate                | COM1 (4.8kbps) 、COM2 (38.4kbps) 、COM3 (230.4kbps) |
| Maximum number of input channels         | Maximum 16                                        |
| Input signal type                        | PNP                                               |
| Input filtering                          | Support, default configuration is 5ms             |
| Maximum number of output channels        | 8                                                 |
| Maximum current of single-channel output | MAX 500mA(IEC 61131-2 type 2)                     |
| Output signal type                       | PNP/NPN                                           |
| Load type                                | Resistive load, inductive load                    |
| Total output current                     | 9A                                                |
| Port protection                          | Overcurrent protection                            |
| Isolation method                         | Us and UL are not isolated                        |
| Channel signal light                     | Support                                           |

### 3.2.2 CC-Link IE Field Basic Bus module parameters

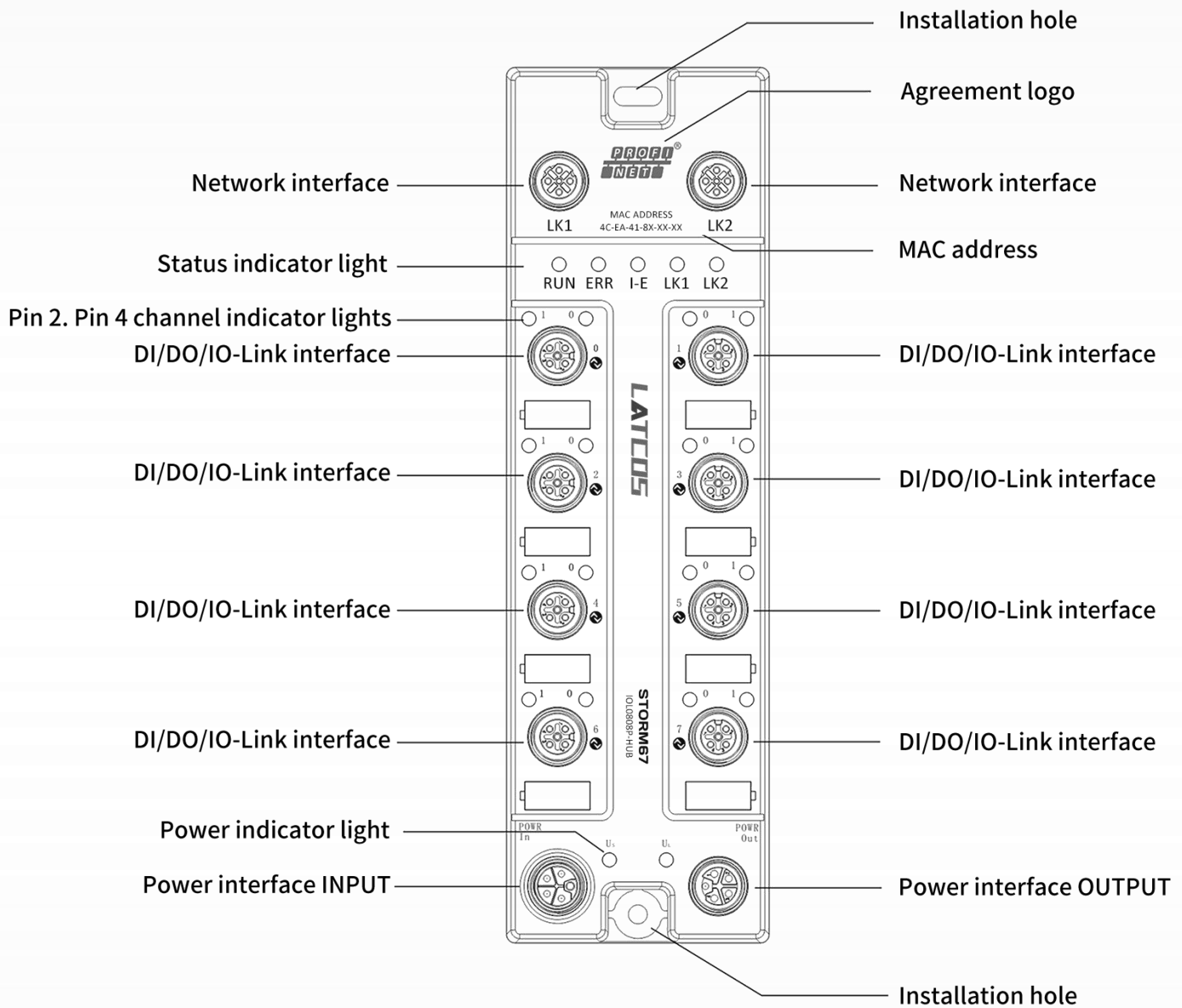
| Product model                            | CE-08IOL                                          |
|------------------------------------------|---------------------------------------------------|
| Bus protocol                             | CC-Link IE Field Basic                            |
| Rated voltage                            | 24VDC (18~36VDC)                                  |
| DI/DO/IO-Link interface                  | 8 x M12-A, 5-pin, threaded end                    |
| Number of IO-Link channels               | 8                                                 |
| IO-Link version                          | V1.1                                              |
| IO-Link transmission rate                | COM1 (4.8kbps) 、COM2 (38.4kbps) 、COM3 (230.4kbps) |
| Maximum number of input channels         | Maximum 16                                        |
| Input signal type                        | PNP                                               |
| Input filtering                          | Support, default configuration is 5ms             |
| Maximum number of output channels        | 8                                                 |
| Maximum current of single-channel output | MAX 500mA(IEC 61131-2 type 2)                     |
| Output signal type                       | PNP/NPN                                           |
| Load type                                | Resistive load, inductive load                    |
| Total output current                     | 9A                                                |
| Port protection                          | Overcurrent protection                            |
| Isolation method                         | Us and UL are not isolated                        |
| Channel signal light                     | Support                                           |



## 4. Product Panel Introduction

## 4.1 Module structure

Introduction to each part of the module



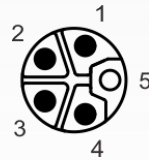
## 4.2 LED indicator function

| Logo | Name                              | Color | Status        | Description                                                                                                |
|------|-----------------------------------|-------|---------------|------------------------------------------------------------------------------------------------------------|
| RUN  | Operating status indicator light  | green | Constantly on | Module is operating normally                                                                               |
|      |                                   |       | Turn off      | Module is not operating                                                                                    |
| ERR  | System alarm indicator light      | red   | Constantly on | Module has abnormal operation                                                                              |
|      |                                   |       | Turn off      | System is operating normally or not powered on                                                             |
| I-E  | IO-Link station failure alarm     | green | Flashing      | IO-Link station disconnection alarm                                                                        |
|      |                                   |       | Turn off      | IO-Link normal communication or IO-Link is not enabled                                                     |
| LK1  | Network indicator light 1         | green | Constantly on | Establish network connection                                                                               |
|      |                                   |       | Flashing      | Network connection with data exchange                                                                      |
|      |                                   |       | Turn off      | No data exchange or abnormality                                                                            |
| LK2  | Network indicator light 2         | green | Constantly on | Establish network connection                                                                               |
|      |                                   |       | Flashing      | Network connection with data exchange                                                                      |
|      |                                   |       | Turn off      | No data exchange or abnormality                                                                            |
| Us   | System power indicator light      | green | Constantly on | Power supply is normal                                                                                     |
|      |                                   |       | Turn off      | Module is not powered on or power supply is abnormal                                                       |
| UL   | Load power indicator light        | green | Constantly on | Power supply is normal                                                                                     |
|      |                                   |       | Turn off      | Module is not powered on or power supply is abnormal                                                       |
| 1    | Pin4 channel indicator light      | green | Constantly on | Pin4 input or output status is 1 (IO function)                                                             |
|      |                                   |       | Flashing      | IO-Link communication connection is successful (IO-Link function)                                          |
|      |                                   |       | Turn off      | Pin4 input or output status is 0 (IO function), IO-Link communication is not connected (IO-Link function). |
| 0    | Port power supply indicator light | green | Constantly on | IO-Link power supply (IO-Link function). IO power supply (IO function).                                    |
|      |                                   |       | Turn off      | Port is not powered                                                                                        |

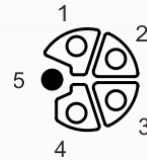
## 4.3 Electrical connection of the interface

### 4.3.1 Power interface (M12 L-code)

Power input port definition



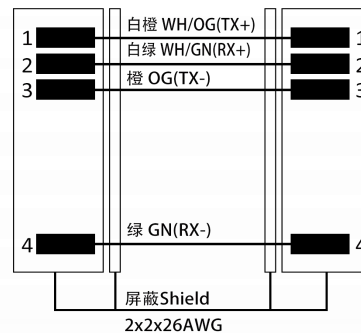
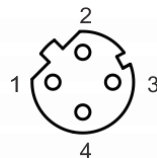
Power output port definition



| Pin number | Function | Description                | Wire core color |
|------------|----------|----------------------------|-----------------|
| 1          | US+      | +24V (system power supply) | Brown           |
| 2          | UL-      | 0V (load power supply)     | White           |
| 3          | US-      | 0V (system power supply)   | Blue            |
| 4          | UL+      | +24V (load power supply)   | Black           |
| 5          | PE       | Protective grounding PE    | Grey            |

### 4.3.2 Network interface (M12 D-code)

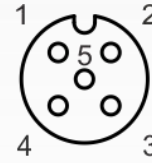
Network interface definition



| Pin number | Function | Description    |
|------------|----------|----------------|
| 1          | TX+      | Send data +    |
| 2          | RX+      | Receive data + |
| 3          | TX-      | Send data -    |
| 4          | RX-      | Receive data - |

### 4.3.3 IO interface (M12 A-code)

#### IO Interface Definition



| Pin number | Function | Description                                 | Wire core color |
|------------|----------|---------------------------------------------|-----------------|
| 1          | UL+      | +24V (for load power supply)                | Brown White     |
| 2          | DI B     | Signal input                                | Blue            |
| 3          | UL-      | 0V (for load power supply)<br>DI/DO/IO-Link | Black           |
| 4          | DI/DO A  | Protective Grounding PE                     | Grey            |
| 5          | PE       | +24V (for load power supply)                | Brown White     |



## 5. Installation and wiring



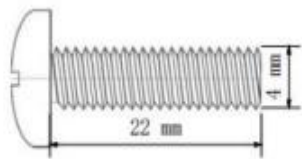
## 5.2 Installation environment requirements

Please avoid installing in the following locations:

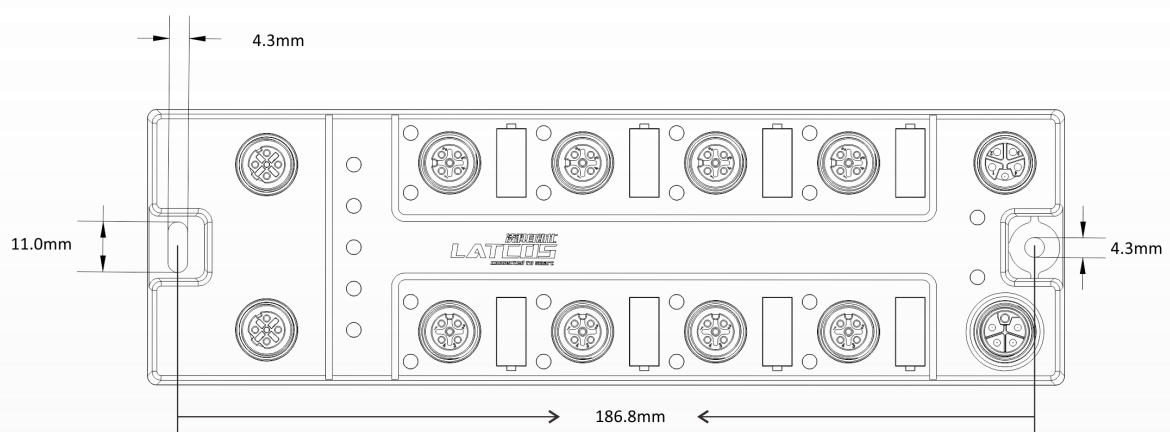
- Areas exposed to direct sunlight
- Locations where the environmental temperature or relative humidity exceeds the specifications of the module
- Areas with corrosive gases, flammable gases
- Areas with acid, oil, and chemical droplets
- Areas with dust, iron filings, and sparks flying
- Locations where the module body is directly subjected to severe impact and vibration
- Areas with strong electric fields, magnetic fields, radiation, and static interference
- Locations near power lines and high-voltage alternating current lines

## 5.3 Module installation

Please use screws with a specification of M4\*22mm or larger to securely install the module body.

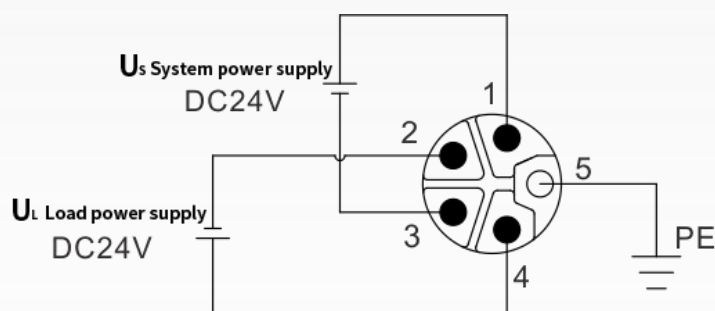


The dimensions of the installation holes for the module are shown in the following figure.



## 5.4 Connection instructions

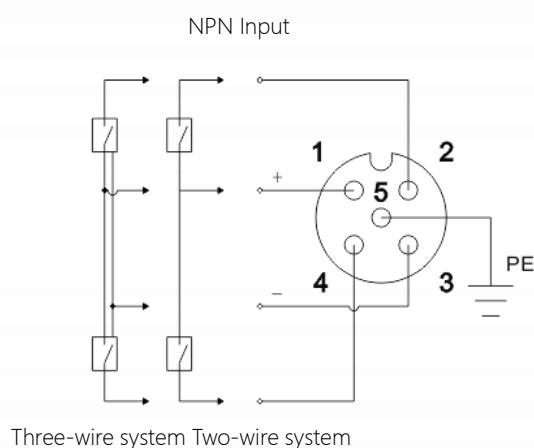
### 5.4.1 Power interface wiring diagram



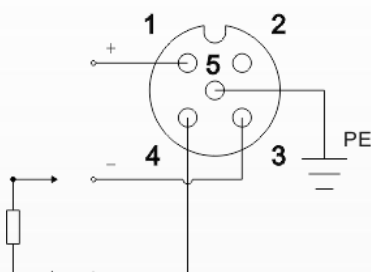
#### Notes for Attention

- The power supply of the recommendation system and the load power supply are respectively powered by different switching power supplies to ensure the stability of operation.
- The power supply rules refer to the "Power Supply Rules" section.

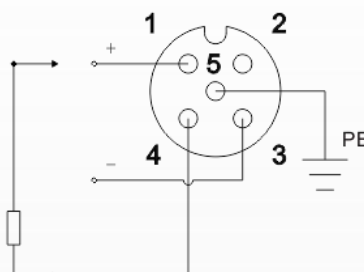
### 5.4.2 IO interface wiring diagram



#### NPN Output



#### PNP Output



#### Notes for Attention

- Please install the waterproof cap provided with the module on the unused connector interface and tighten it to achieve the IP67 protection level.
- Regarding the digital input, please follow the input guidelines of EN61131-2, Type 2.



## 6. Function Description

## 6.1 Parameter Explanation

### 6.1.1 Output clear and retain function

The clear/hold function is designed to handle the output signals of each port. This function can be configured for the module's output actions in the event of a bus anomaly. It supports three types of operations:

Low-level output (Clear 0): When communication is disconnected, the module's output channel outputs a low level.

High-level output (Clear 1): When communication is disconnected, the module's output channel outputs a high level.

Hold output: When communication is disconnected (Hold last value), the module's output channel maintains the last status level continuously.

### 6.1.2 PROFINET master station configuration of ISDU parameters

Due to the limitations of the protocol, the PROFINET master station does not support the read operation of ISDU, but only supports the write operation of ISDU before configuration. If multiple write operations are needed, configuration operations can be issued multiple times. The slave station usually supports saving the configuration and does not lose the configuration upon power-on.

The Index, Subindex, and Length fields of the PROFINET master station can only be filled with decimal DEC values.

The IOL0808P-HUB from KION supports configuration input filtering function, output error mode, output error value setting, and other functions. The following introduces the configuration methods of these three functions by taking the slave station IOL0808P-HUB connected to port 1 and the status display of port 1 as 3 (IO-Link OP status) as an example.

**Example 1:** As above, set Index to 65 (0x0041), Subindex to 0 (0x00), Length to 1 (0x02), and Data to 05.

**Example 2:** As above, set Index to 66 (0x0042), Subindex to 0 (0x00), Length to 1 (0x10), and Data to 0F.

**Example 3:** As above, set Index to 67 (0x0043), Subindex to 0 (0x00), Length to 1 (0x01), and Data to 0F.

● The configuration method of the PROFINET master ISDU is introduced taking the TIA Portal V17 software as an example. [For specific steps, please refer to the ISDU parameter configuration in Section 6.2.1.](#)

### 6.1.3 DI/DO/IO-Link Mode Function

#### 1. Port DI/DO Mode

- ◆ Pin2 is fixed as DI mode. Default configuration is not applied.
- ◆ For each port of the PROFINET master station, Pin4 supports standard DI/DO (NPN or PNP) mode. In the module, select the corresponding standard DI, standard DO (NPN), or standard DO (PNP) mode, and default configuration is not applied.
- ◆ The standard DI/DO mode of the PROFINET master station port. Process data reference Appendix E.

#### 2. Port IO-Link Mode

- ◆ All ports of the PROFINET master station support the IO-Link mode.
- ◆ Under normal circumstances, the length of the process data from the slave station should be consistent with the configured data length of the corresponding module, but it can also be compatible.

For example: the process data from the slave station is 2 bytes of input, and the module can also choose to input more than 2 bytes, such as 4 bytes; but it cannot choose to input less than 2 bytes. The device status will indicate that the input length does not match.

- The configuration method for PROFINET master station DI/DO/IO-Link mode functions is introduced using the TIA Portal V17 software. The specific steps can be found in Chapter 6.2.1 under the section of DI/DO/IO-Link settings.

## 6.2 PROFINET Master Station Configuration

### Application

#### 6.2.1 Application in the TIA Portal V16 Software Environment

##### 1. Preparation Work

- Hardware Environment
  - Take the module model PN-08IOL as an example
  - 0 port connects to the IOL slave module IOL0808P-HUB
  - One computer, pre-installed with TIA Portal V17 software
  - PROFINET dedicated shielded cable
  - One Siemens PLC, this description takes the Siemens S7-1200 CPU 1211C DC/DC/DC as an example
  - One switching power supply
  - Device configuration file

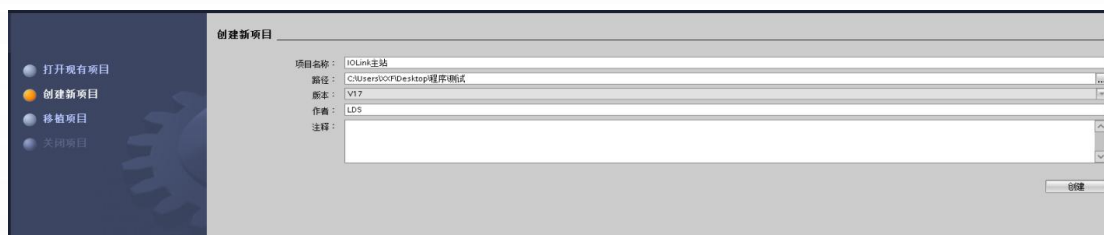
Configuration file download address: <https://www.latcos.cn>

- Hardware configuration and wiring

Please follow the "5 Installation and Wiring" instructions for operation.

##### 2. New Project

a. Open the TIA Portal V16 software, click "Create New Project", and after entering all the information, click "Create", as shown in the following figure.



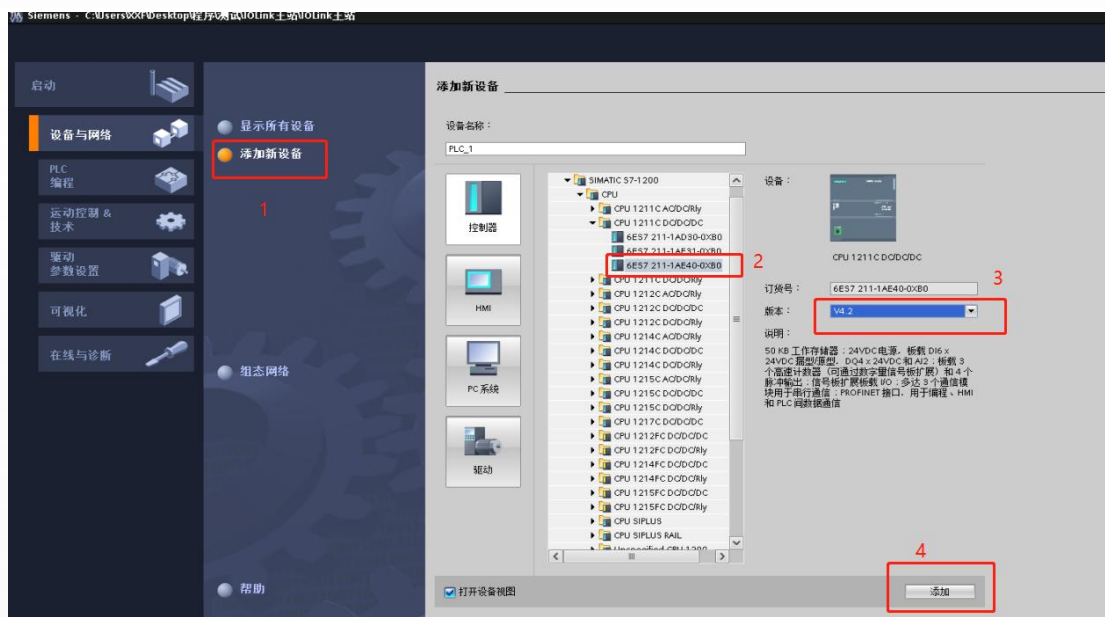
- ◆ Project Name: Customizable, can retain default.
- ◆ Path: Project maintains the path, can retain default.
- ◆ Version: Can retain default.
- ◆ Author: Can retain default.
- ◆ Comment: Customizable, can be left blank

### 3. Add PLC controller

a. Click on "Configure Device", as shown in the following figure.



b. Click on "Add New Device", select the current PLC model being used, and then click "Add", as shown in the figure below. After the addition is completed, you can see that the PLC has been added to the device navigation tree.

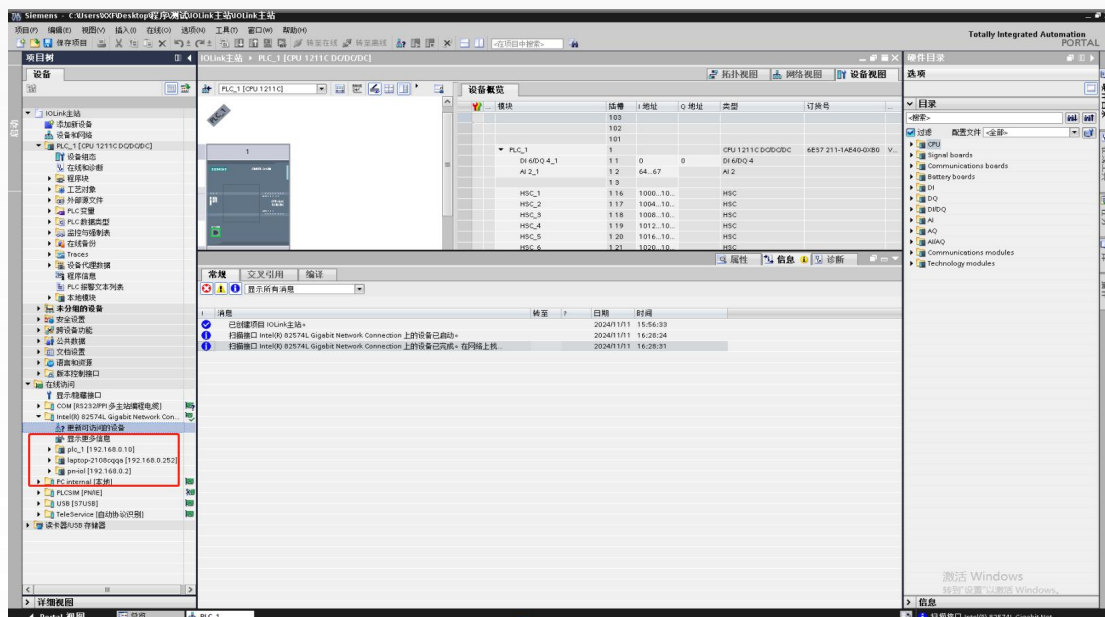


#### 4. Scanning connection devices

a. Click on the "Online Access -> Update Accessible Devices" item in the left navigation tree, as shown in the following image.

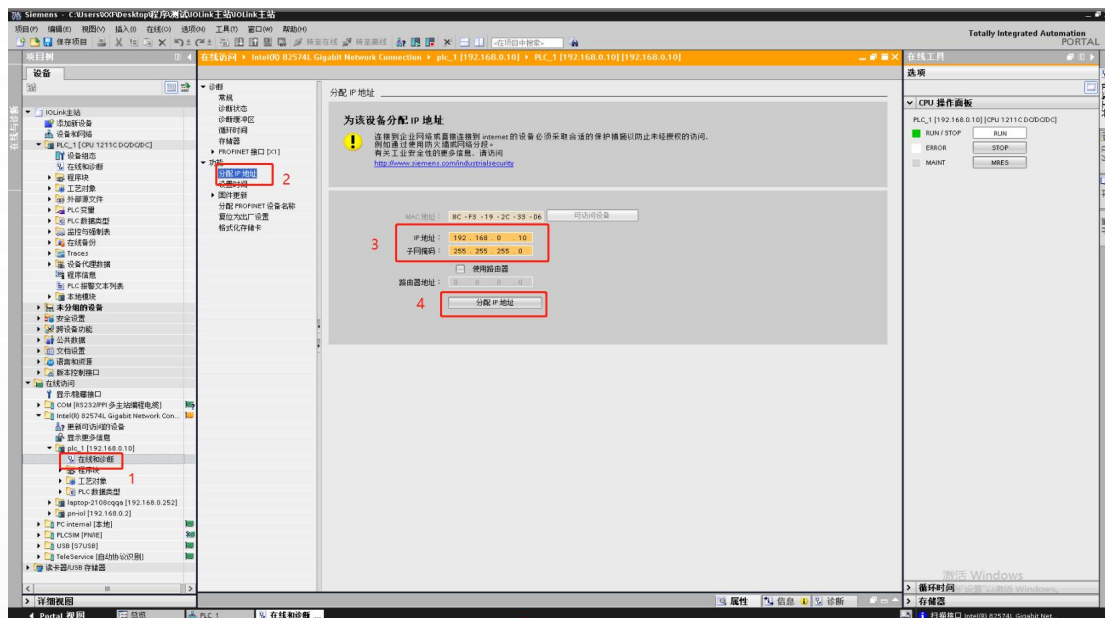


b. The update is complete. The connected slave devices are displayed as shown in the following figure.

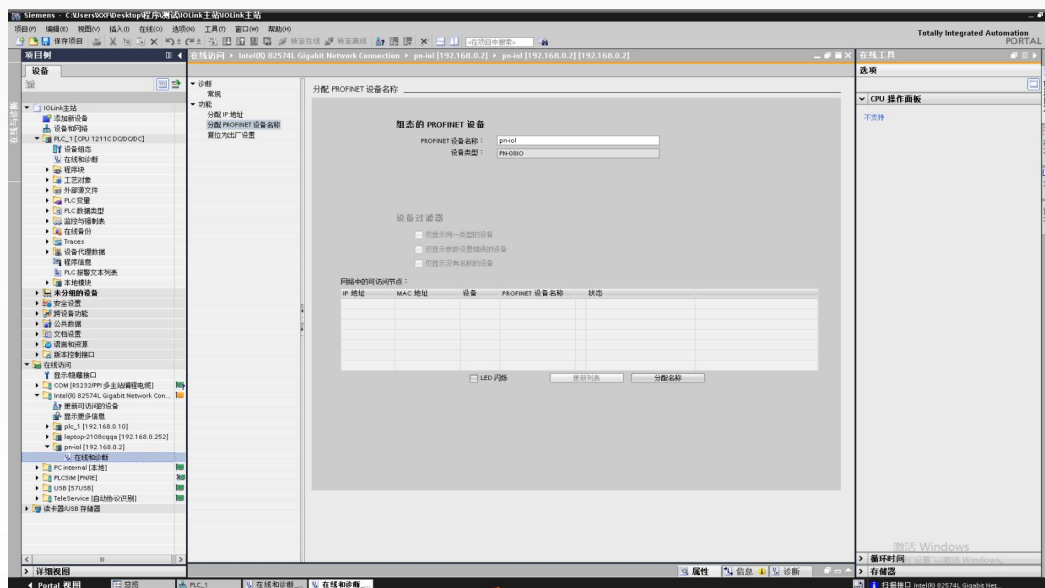


The IP address of the computer must be in the same network segment as the PLC. If they are not in the same network segment, after modifying the computer's IP address, repeat the above steps.

c. Double-click the left navigation tree under "Station Equipment" from "Online and Diagnostics". In the "Functions" menu, you can assign the current IP address and configuration name of the slave station.



d. Click on "Assign PROFINET device name", enter "PROFINET device name", and then click "Assign name", as shown in the following figure.



## 5. Add GSD configuration file

a. In the menu bar, select "Options -> Manage General Site Description File (GSDML) (D)".



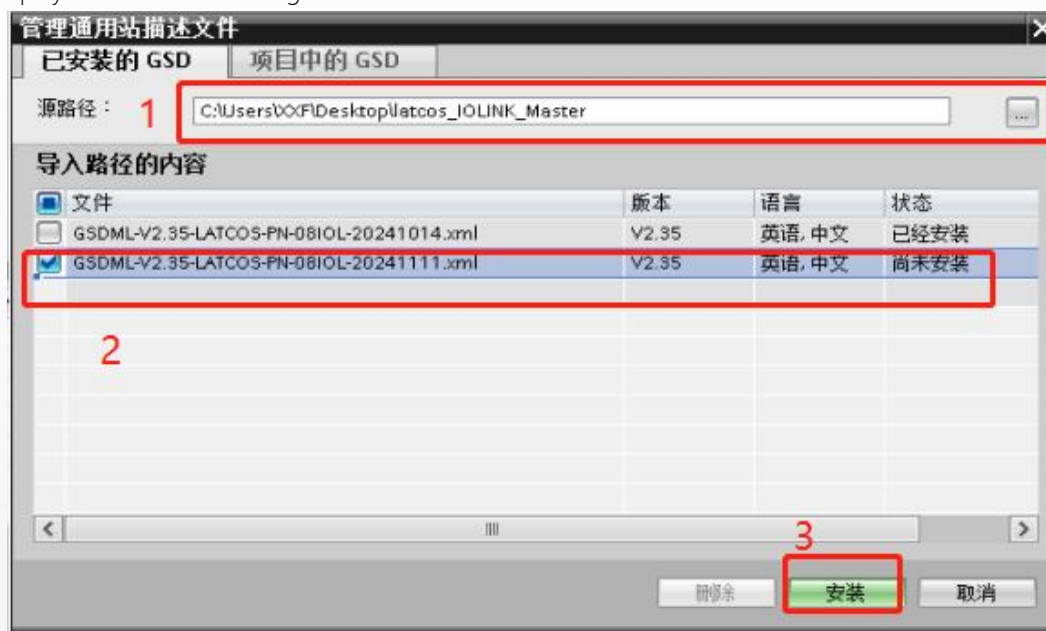
b. Click on "Source Path" to select the folder where the GSD files are stored.

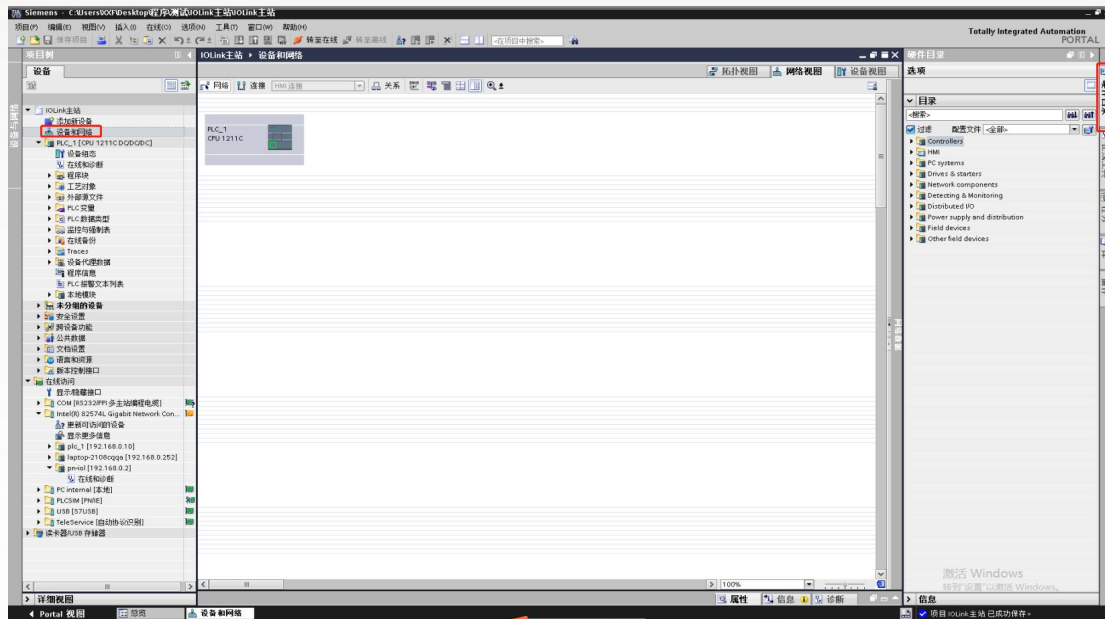
c. Check if the status of the GSD file to be added is "Not Installed". If it is not installed, click "Install"; if it is already installed, click "Cancel" to skip the installation step.

## 6. Add slave station equipment

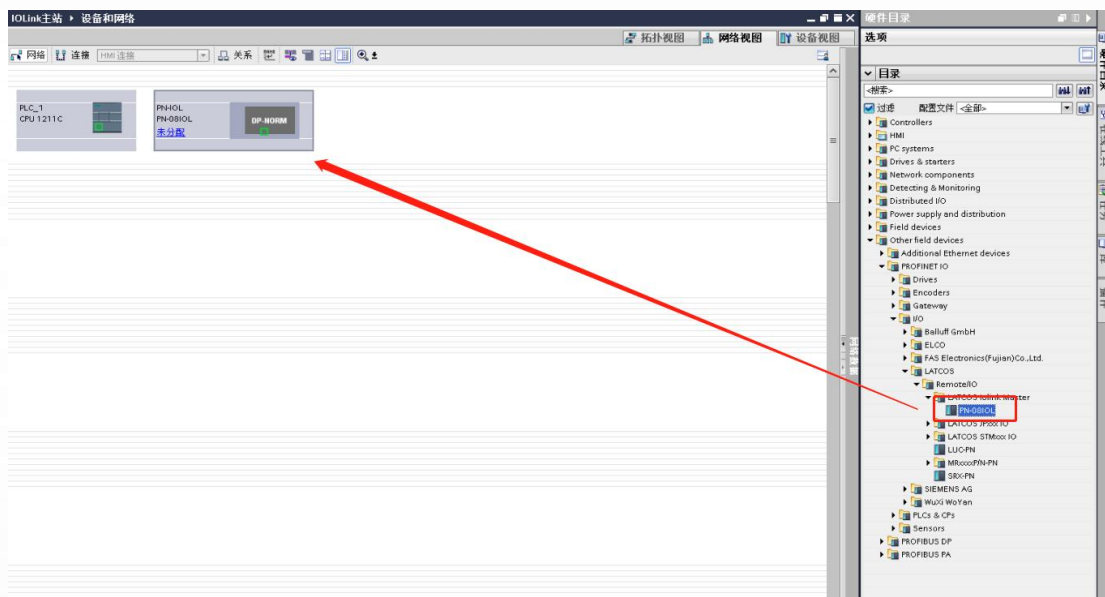
a. Double-click on the "Devices and Networks" node in the left navigation tree.

b. Click on the vertical button of the "Hardware Directory" on the right, and the directory will be displayed as shown in the figure below.





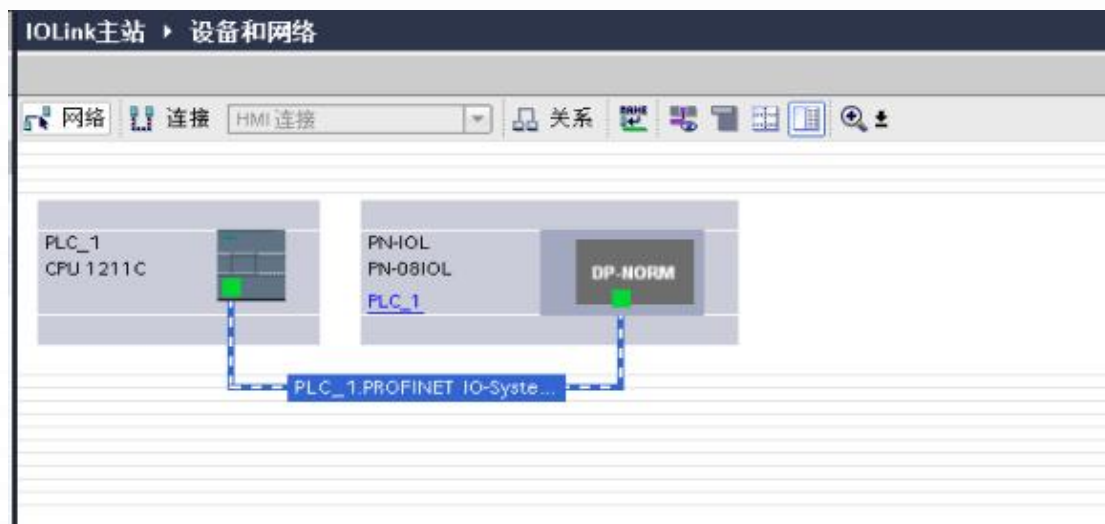
c. Locate the "PN-08IOL" module in the hardware directory, then drag or double-click "PN-08IOL" to move it to the "Network View", as shown in the figure below. If you want to connect multiple modules, you can do so by adding them one by one in the "Hardware Directory" on the right side according to the actual topology.



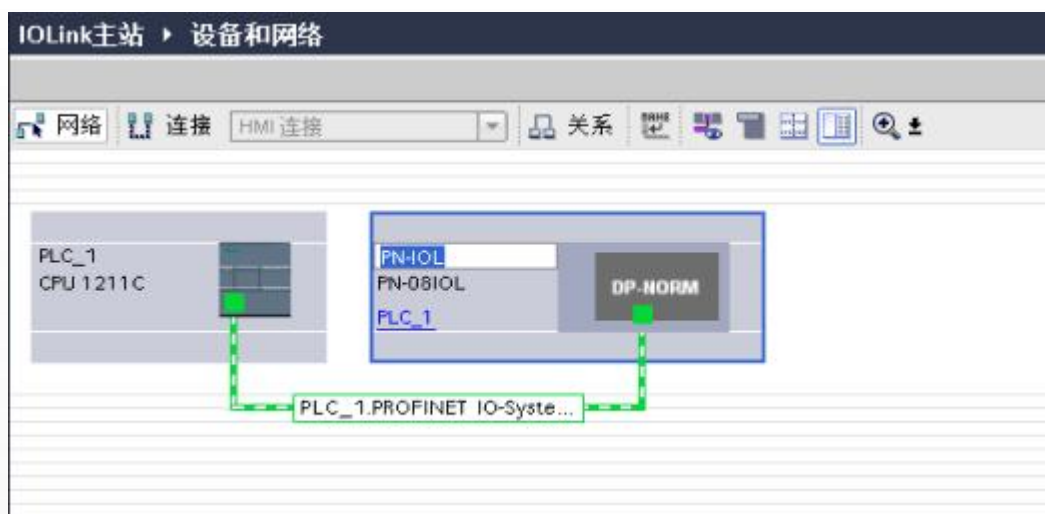
d. Click on "Unallocated (in blue font)" on the slave device, then select "PLC\_1.PROFINET Interface\_1", as shown in the following figure.



e. After the connection is completed, it will look as shown in the figure below.



f. Click on the device name to rename the device, as shown in the following figure.



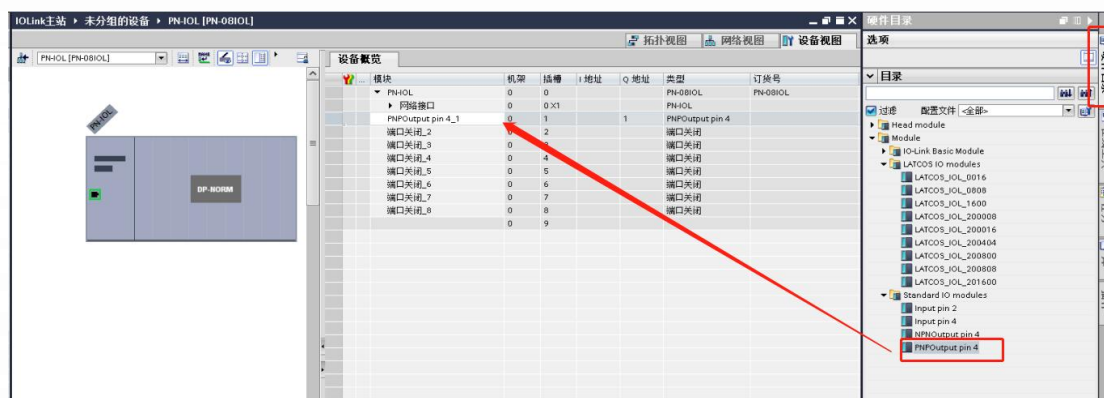
## 7. DI/DO/IO-Link Settings

a. Click on "Device View" to enter the device overview. You can see the topology configuration information, including the I/O addresses automatically assigned by the system. The I/O addresses can be changed by yourself, as shown in the following figure. Slots 1-8 can be configured with DI/DO/IO-Link.

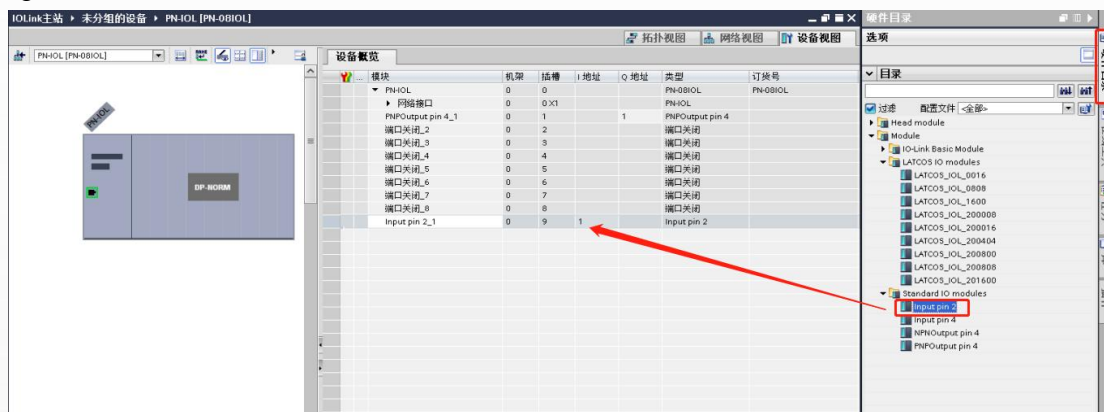


| 模块     | 机架 | 插槽   | I 地址 | Q 地址 | 类型       | 订货号      |
|--------|----|------|------|------|----------|----------|
| PN-IOL | 0  | 0    |      |      | PN-08IOL | PN-08IOL |
| 网络接口   | 0  | 0 X1 |      |      | PN-IOL   |          |
| 端口关闭_1 | 0  | 1    |      |      | 端口关闭     |          |
| 端口关闭_2 | 0  | 2    |      |      | 端口关闭     |          |
| 端口关闭_3 | 0  | 3    |      |      | 端口关闭     |          |
| 端口关闭_4 | 0  | 4    |      |      | 端口关闭     |          |
| 端口关闭_5 | 0  | 5    |      |      | 端口关闭     |          |
| 端口关闭_6 | 0  | 6    |      |      | 端口关闭     |          |
| 端口关闭_7 | 0  | 7    |      |      | 端口关闭     |          |
| 端口关闭_8 | 0  | 8    |      |      | 端口关闭     |          |
|        | 0  | 9    |      |      |          |          |

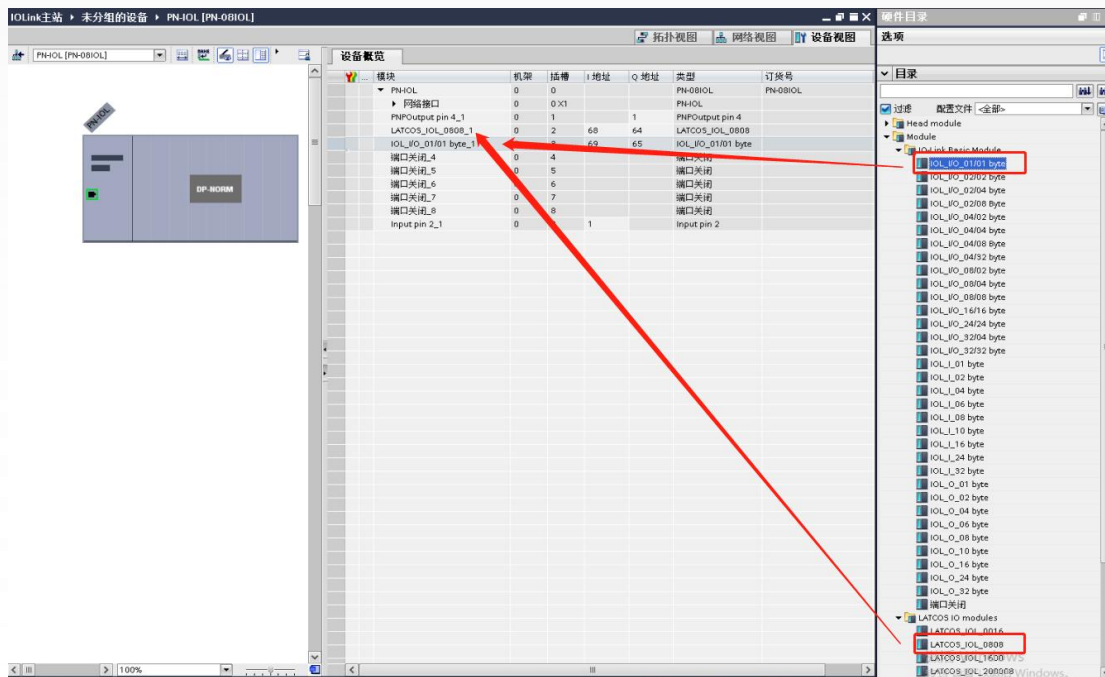
b. When configuring the DI/DO of each port PIN4 on the main station module PN-08IOL, select slots 1-8 corresponding to ports 0-7. Right-click to delete, then double-click to add "Input pin4/NPN Output pin4/PNP Output pin4" in the "Hardware Directory" on the right side, as shown in the following figure.



c. When configuring the DI function of PIN2 on each port of the main station module PN-08IOL, select slot 9. Double-click on the "Hardware Directory" on the right side and then click "Add Input Pin2" to complete the configuration, as shown in the following figure.

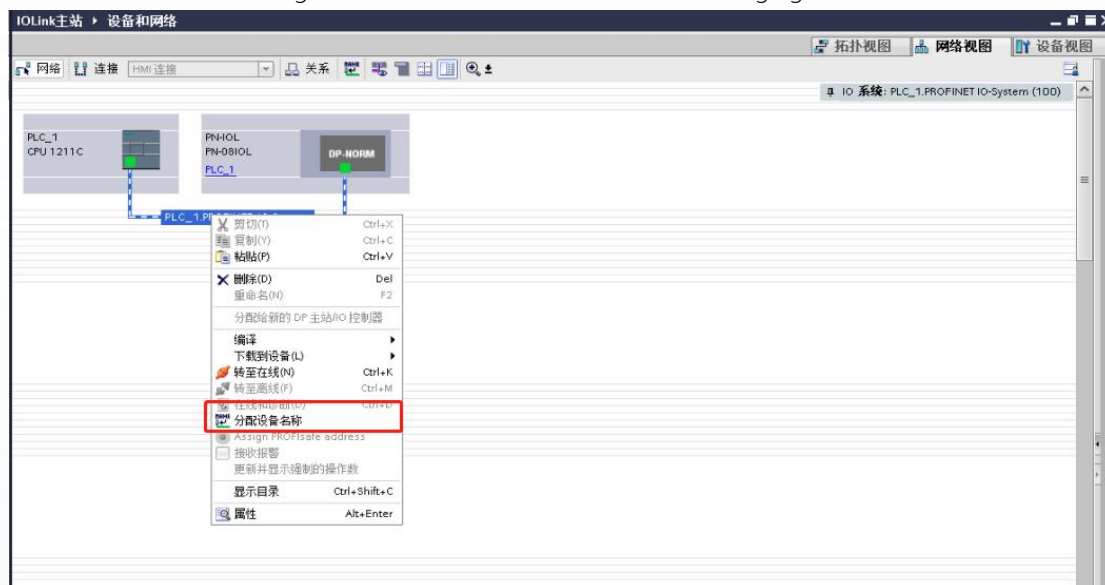


d. The 1st port and 2nd port of the main station module PN-08IOL were connected to the IOL0808-HUB module. Locate the module under the "Hardware Directory" on the right side, right-click on "Port Closed\_2" and select "Delete". Then, double-click on "LATCOS\_IOL\_0808" or "IOL\_I/O\_01/01 byte" to add the IO-Link slave station to the configuration, as shown in the following figure. (Note: The IOL0808-HUB is configured with 8 input channels and 8 output channels, so select 01/01 byte.)

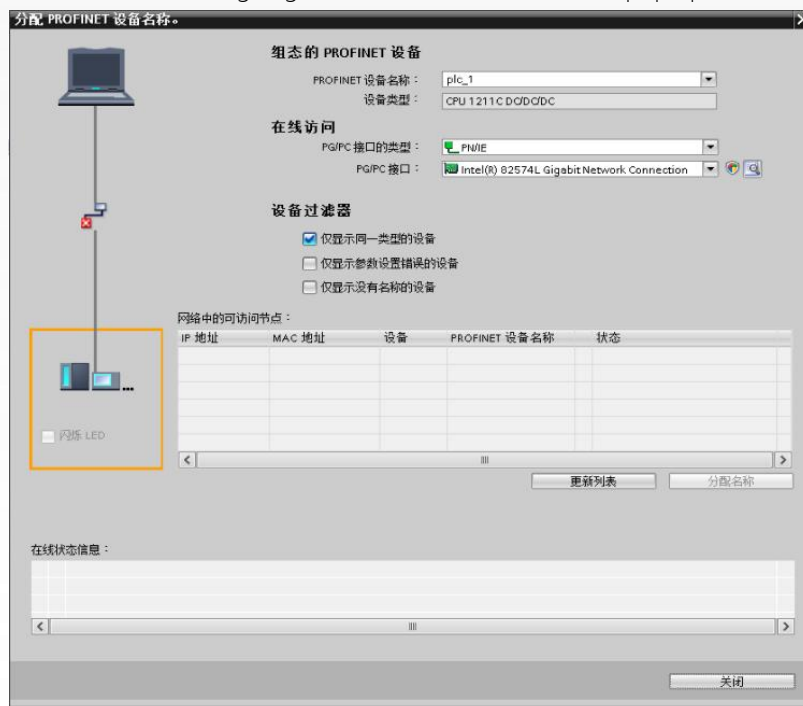


## 8. Allocation of Equipment Names

a. Switch to the "Network View", right-click on the connection line between the PLC and the module PN-08IOL, and select "Assign Device Name", as shown in the following figure.



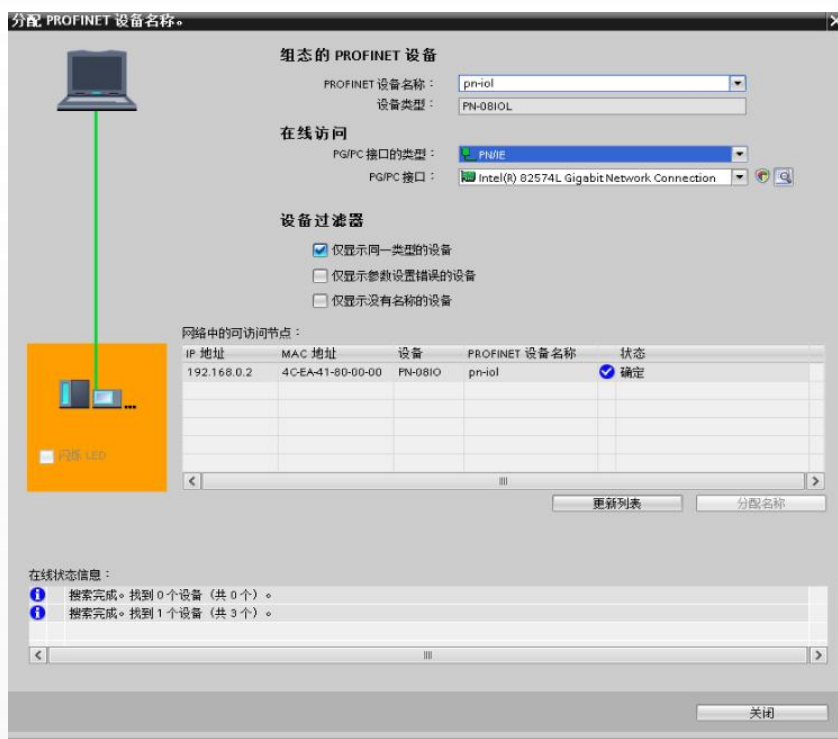
b. A window for "Assigning PROFINET Device Name" will pop up, as shown in the following figure.



Check whether the MAC address printed on the module is the same as the MAC address of the assigned device name.

- ◆ PROFINET device name: The name set in the "Assigned PROFINET Device Name" section.
- ◆ Type of PG/PC interface: PN/IE.
- ◆ PG/PC interface: The actual network adapter used.

c. Select the slave device one by one, click "Update List", then click "Assign Name". Check whether the status of the node in "Accessible Nodes in the Network" is "Confirmed", as shown in the following figure.



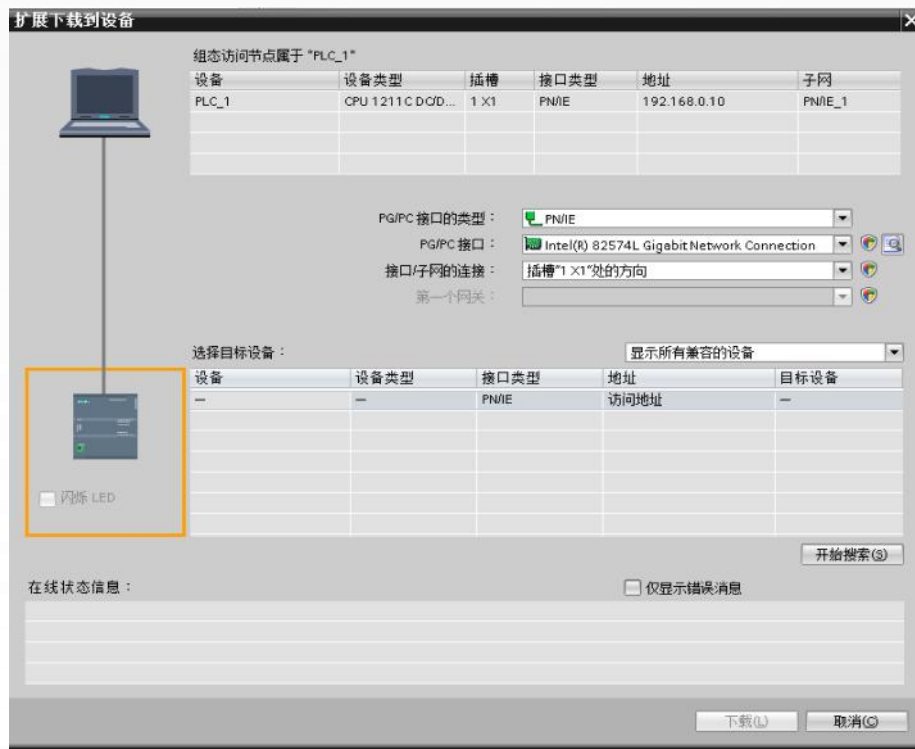
d. Click "Close".

## 9. Download configuration structure

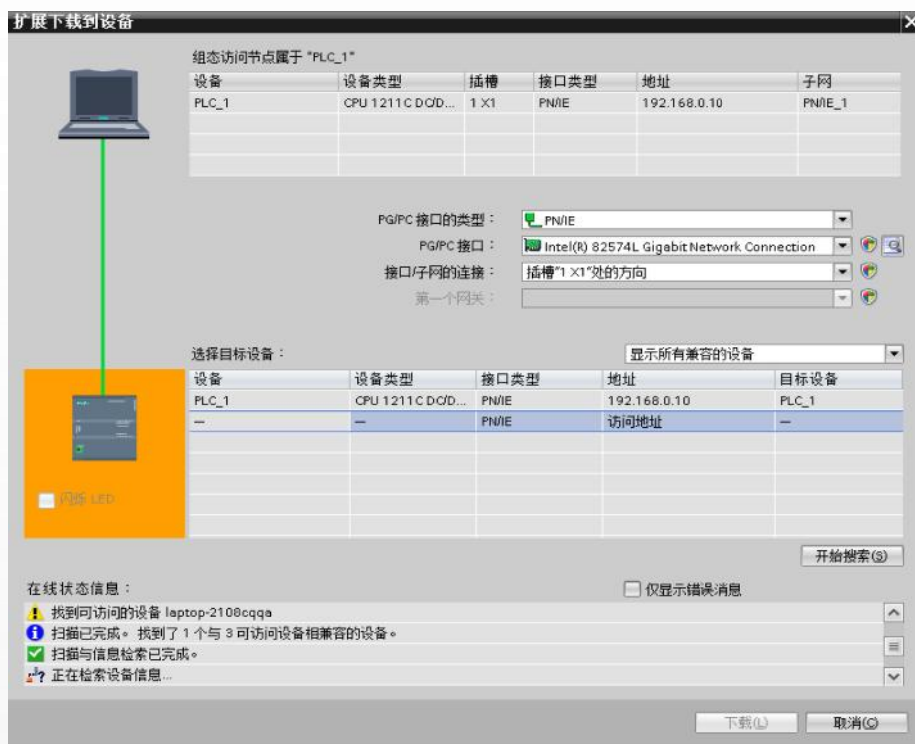
a. In the "Network View", select the PLC.

b. Click the button on the menu bar , Download the current configuration to the PLC.

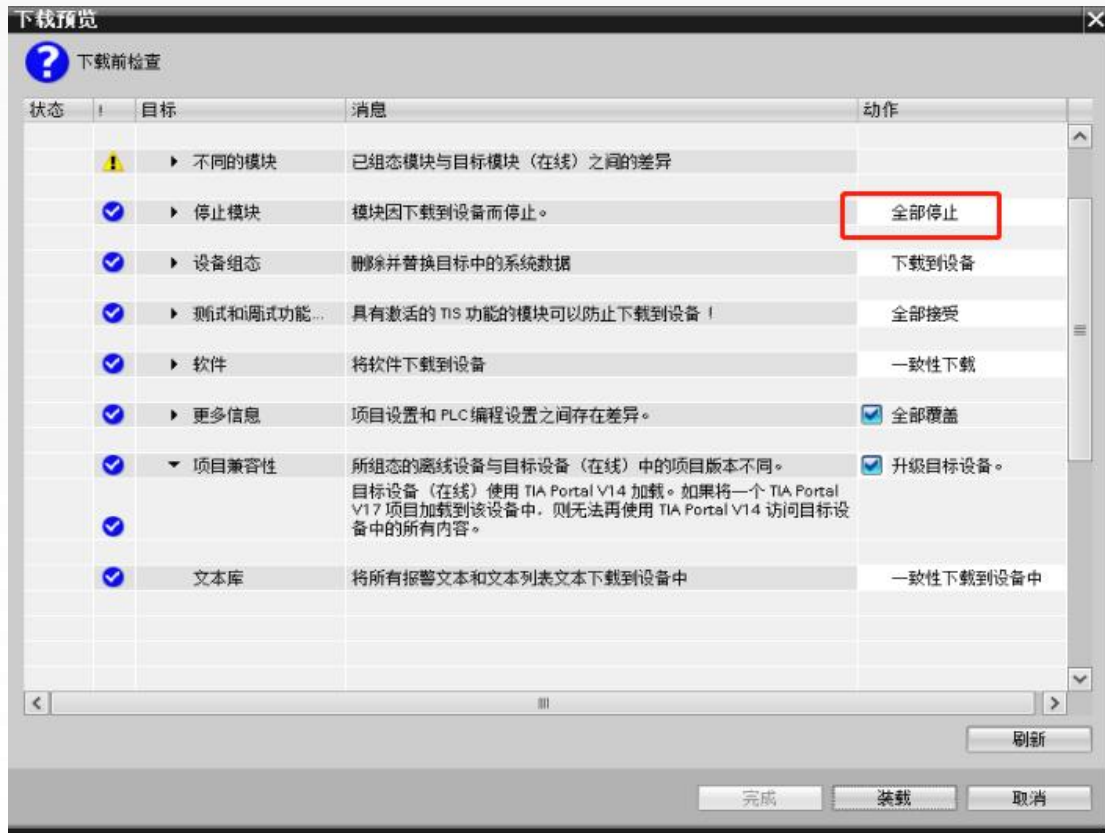
c. On the "Expand and Download to Device" interface that pops up, configure it as shown in the following picture.



d. Click on "Start Search", as shown in the following picture.



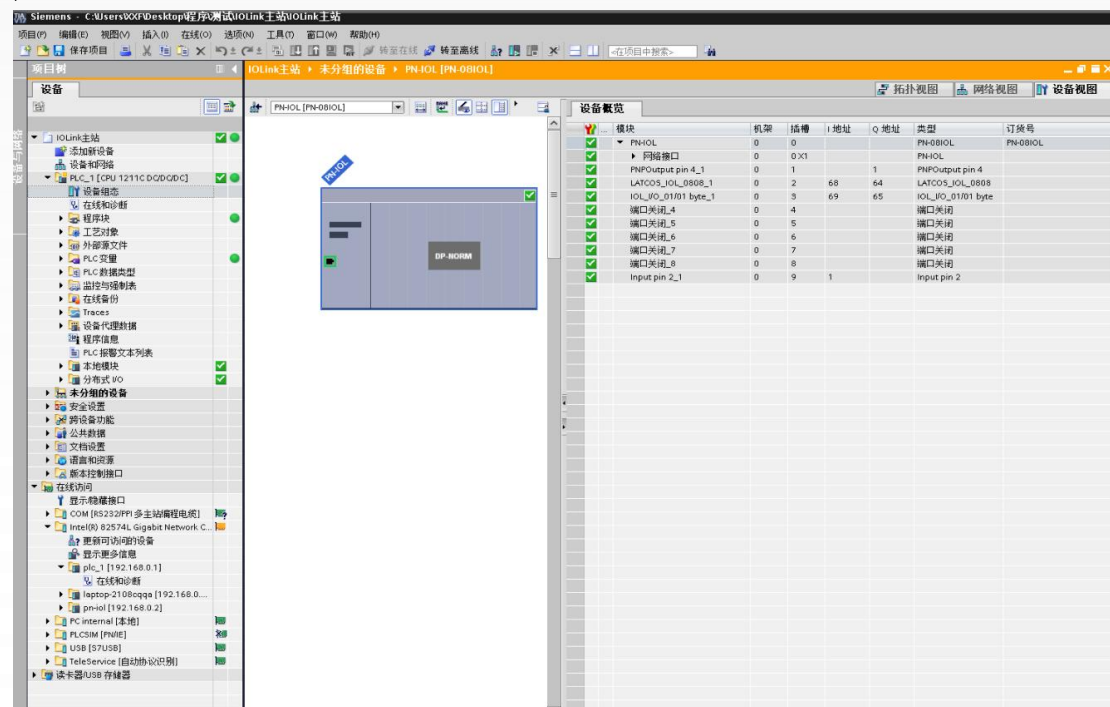
- e. Click on "Download".
- f. Select "Continue without synchronization".
- g. Select "Stop all".



- h. Click "Load".
- i. Click "Finish".
- j. Re-power the device.

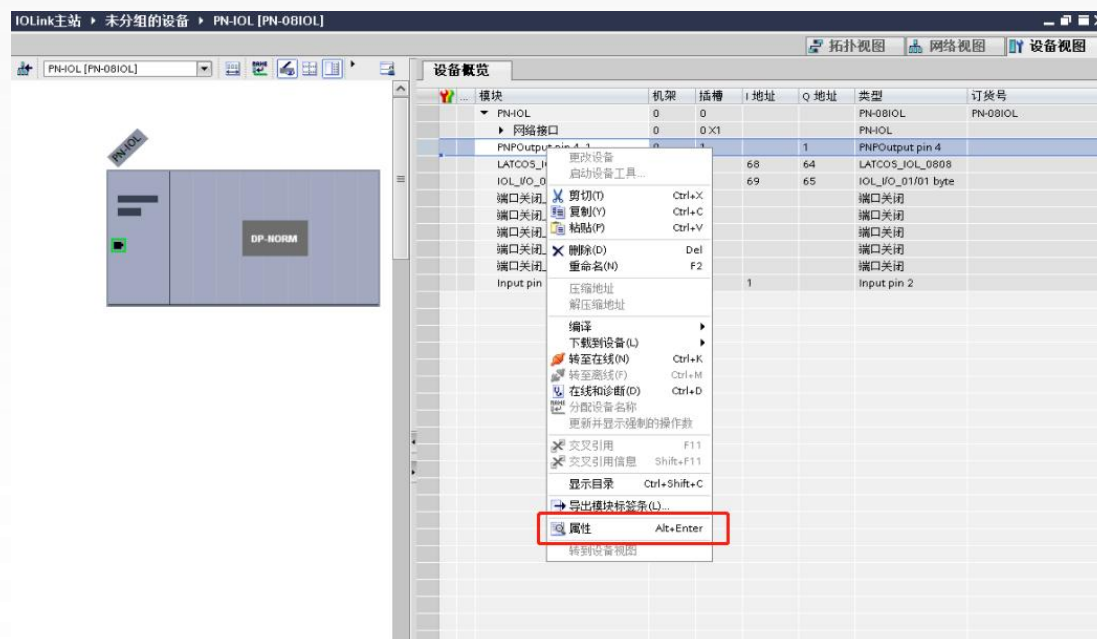
## 10.Communication Connectiona.

Click the button, then click "Go Online". If the icons are all green, it indicates a successful connection, as shown in the following picture.



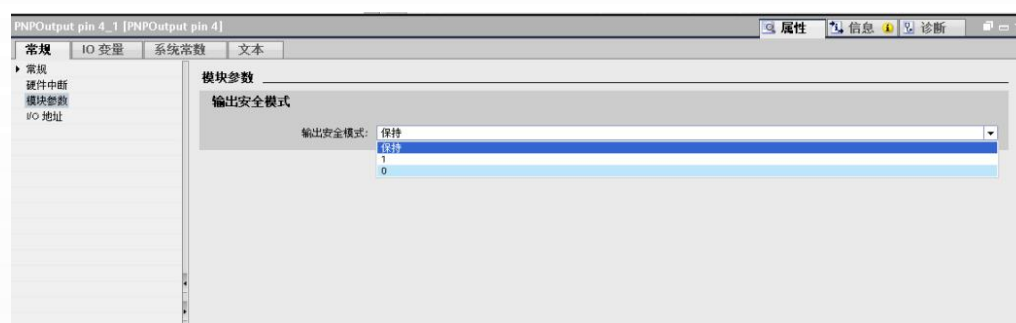
## 11. Main Station Parameter Configuration

a. Open the "Device View", in offline mode, right-click on the module name "PNPOutput pin 4\_1", and then click "Properties", as shown in the following figure.



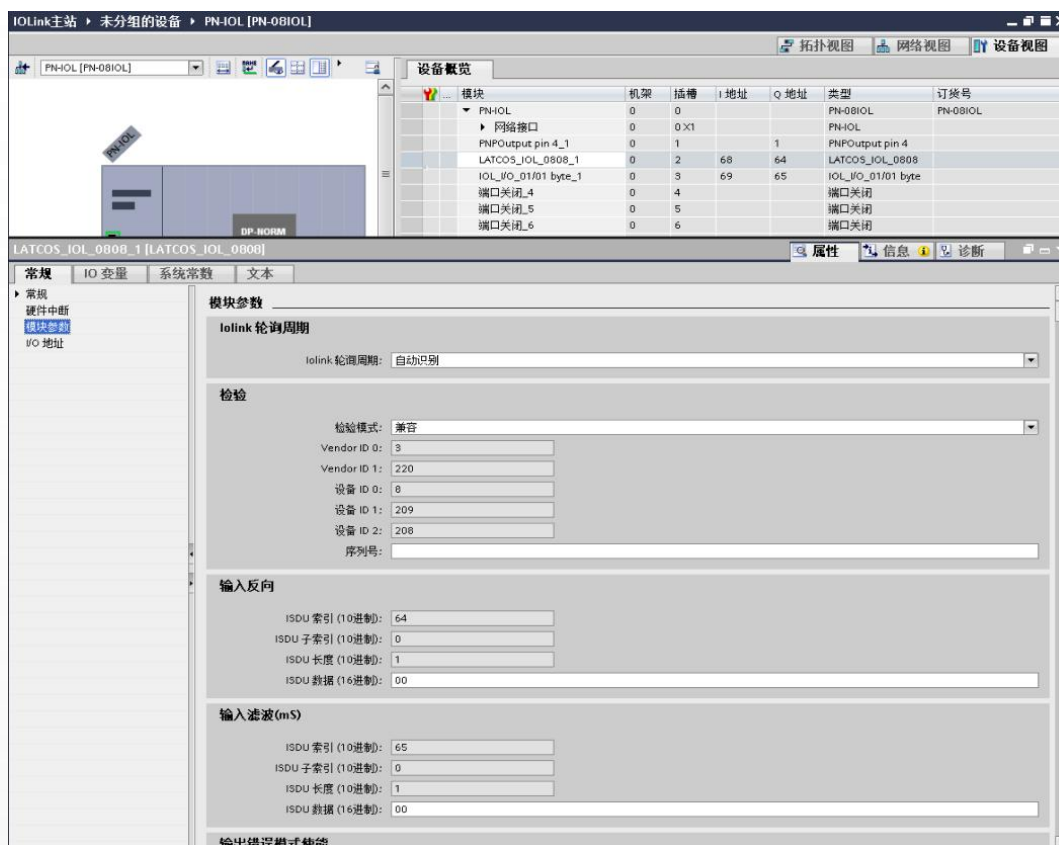
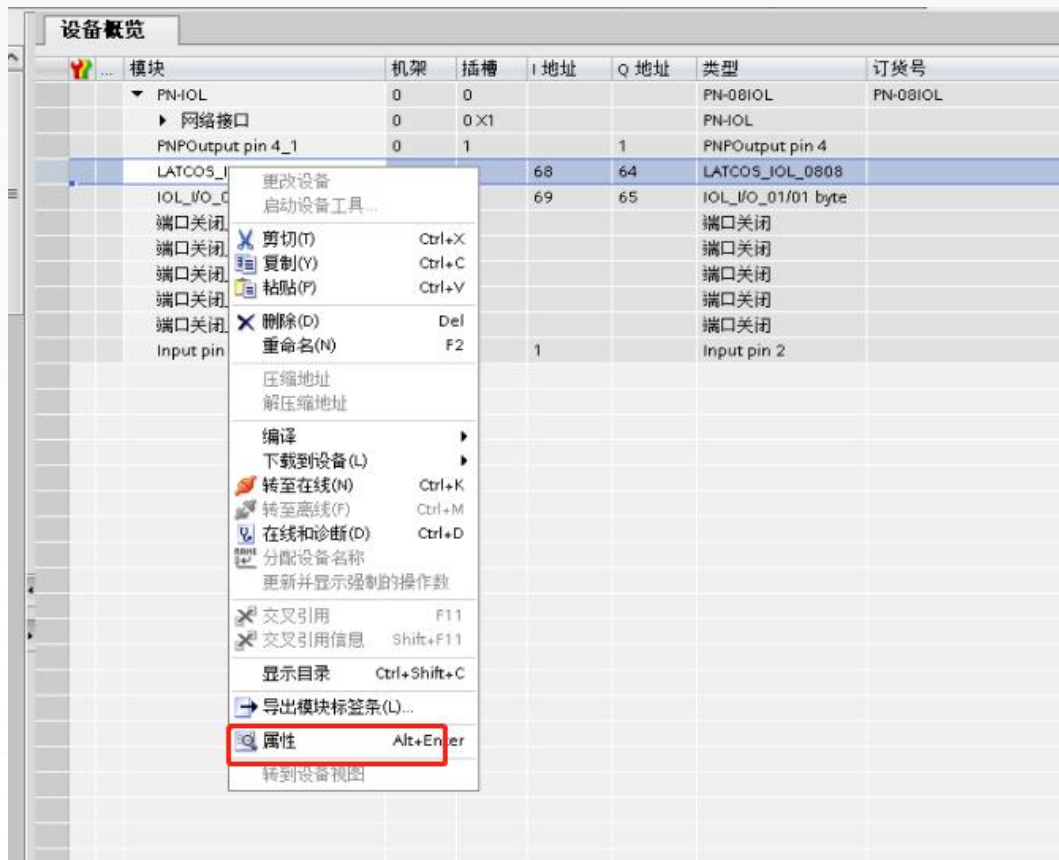
b. On the attribute page, click "Module Parameters", as shown in the following figure. The parameters can be configured according to actual usage requirements. After configuration, re-download the program to the PLC. The PLC and the module need to be powered on again.

Method to clear the hold function settings: Take Port 0 Pin 4 as an example. On the parameter page of Module PNPOutput pin 4\_1, click the radio button on the right side of "Output Safety Mode" to make the settings selection, as shown in the figure below. After configuration, re-download the program to the PLC. The PLC and the module need to be powered on again.

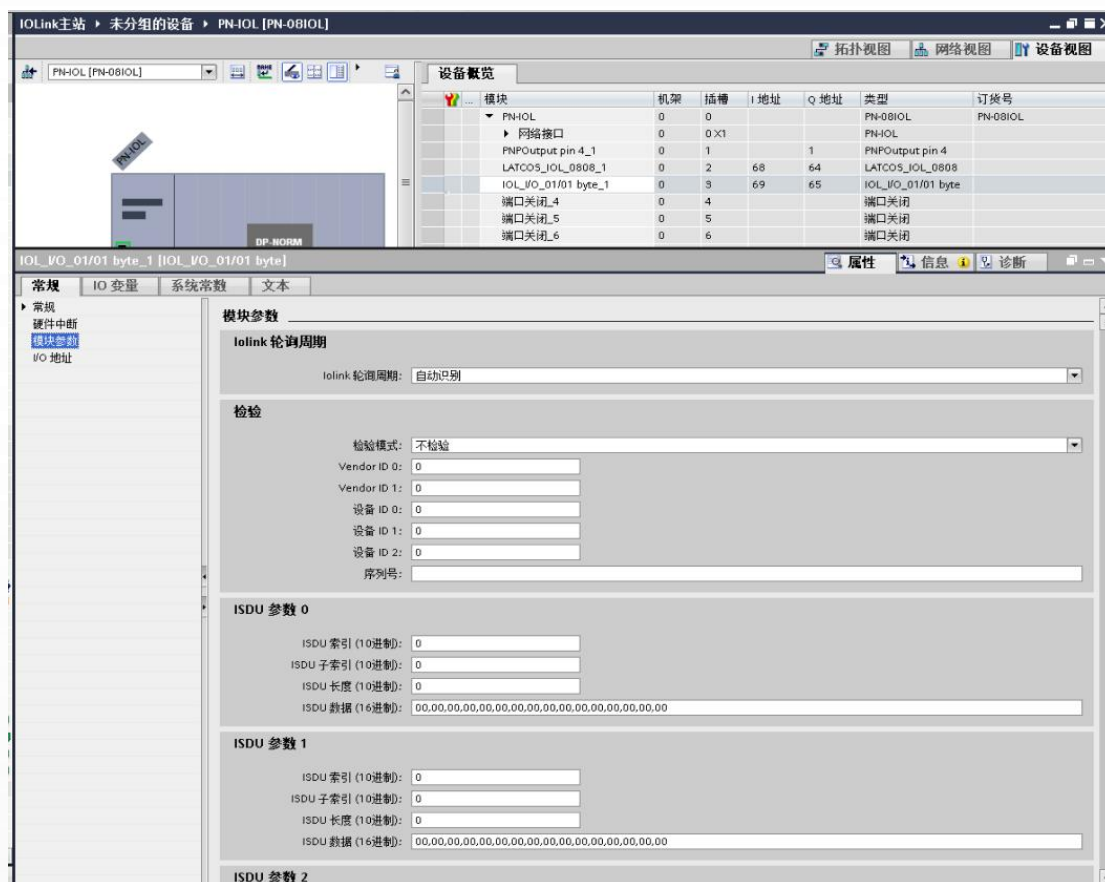
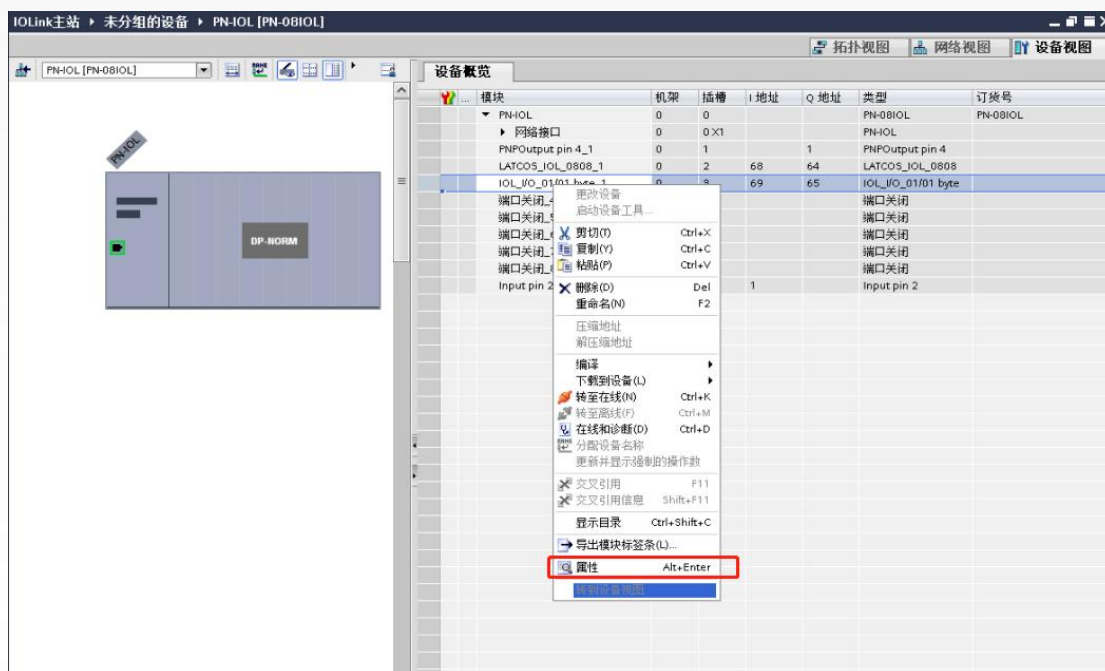


## 12. Configuration of ISDU parameters at the station

a. On the "Device View" page, in offline mode, right-click on the "LATCOS\_IOL\_0808" module name of the slave station, and then click "Properties", as shown in the following figure.



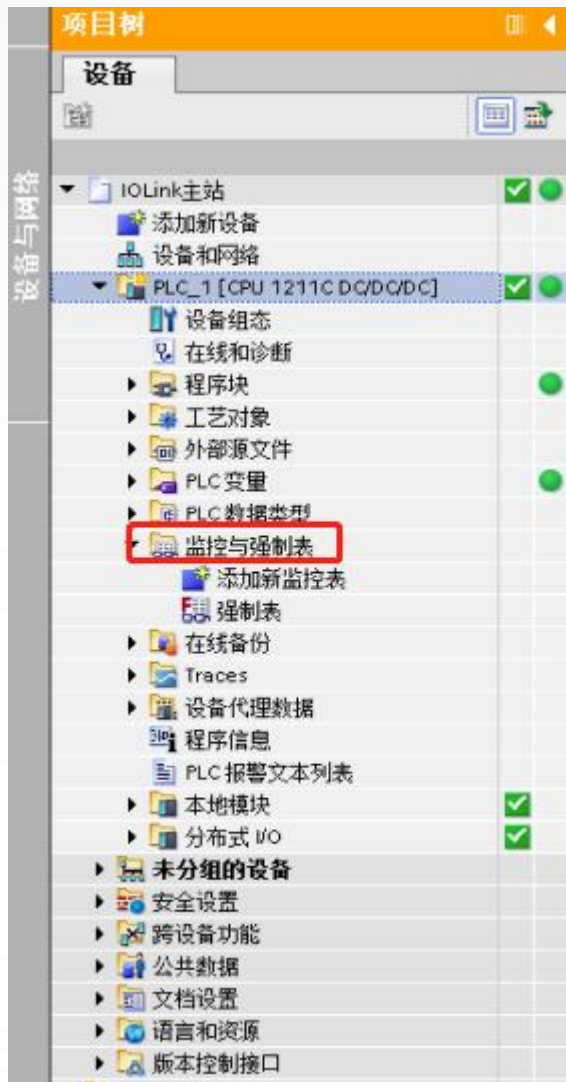
b. On the "Device View" page, in the offline state, right-click on the slave module name "IOL\_I/O\_01/01 byte", and then click "Properties", as shown in the following figure.



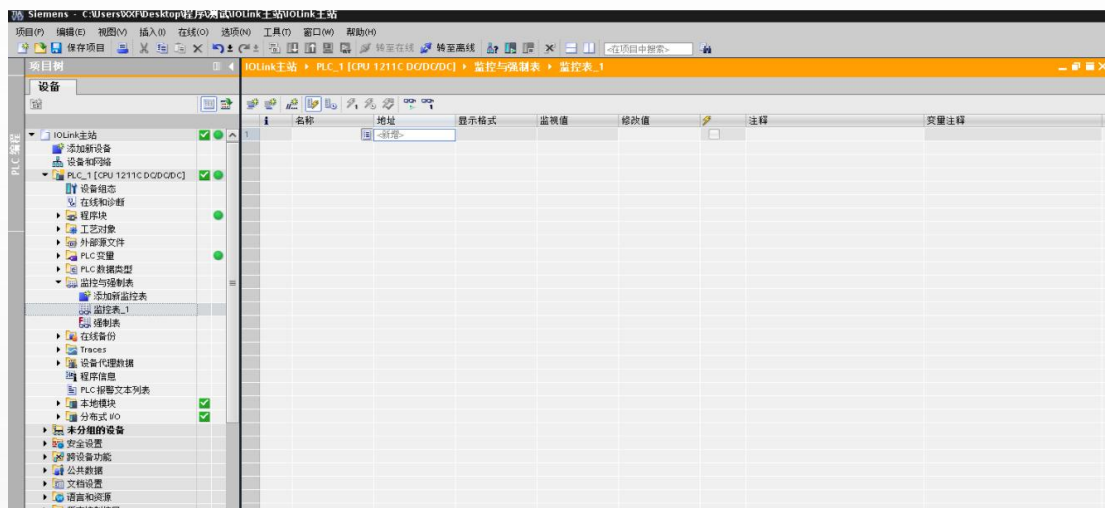
c. On the attribute page, click "Module Parameters", as shown in the figure below. The parameters can be configured according to actual usage requirements. After configuration, re-download the program to the PLC. The PLC and the module need to be powered on again.

### 13. Function Verification.

a. Expand the left-side project navigation and select "Monitoring and Enforcement Table", as shown in the following figure.



b. Double-click "Add New Monitoring Table", and the system will create a new monitoring table, as shown in the following figure.



c. Open the "Device View" and check the channel Q address (output signal channel address) and I address (input signal channel address) of the master module PN-08IOL in the device overview, and the channel Q address (output signal channel address) and I address (input signal channel address) of the slave module LATCOS\_IOL\_0808\_1 and the channel Q address (output signal channel address) and I address (input signal channel address) of the slave module IOL\_I/O\_01/01 byte\_1.

For example:

The "Q address" of the PN-08IOL module is 1, and the "I address" is 1;

The "Q address" of the slave module LATCOS\_IOL\_0808\_1 is 64, and the "I address" is 68,

The "Q address" of the slave module IOL\_I/O\_01/01 byte\_1 is 65, and the "I address" is 69, as shown in the following figure.

| 设备概览 |                      |    |      |      |      |                    |          |
|------|----------------------|----|------|------|------|--------------------|----------|
|      | 模块                   | 机架 | 插槽   | I 地址 | Q 地址 | 类型                 | 订货号      |
| ✓    | PN-IOL               | 0  | 0    |      |      | PN-08IOL           | PN-08IOL |
| ✓    | 网络接口                 | 0  | 0 X1 |      |      | PN-IOL             |          |
| ✓    | PNOutput pin 4_1     | 0  | 1    |      | 1    | PNOutput pin 4     |          |
| ✓    | LATCOS_IOL_0808_1    | 0  | 2    | 68   | 64   | LATCOS_IOL_0808    |          |
| ✓    | IOL_I/O_01/01 byte_1 | 0  | 3    | 69   | 65   | IOL_I/O_01/01 byte |          |
| ✓    | 端口关闭_4               | 0  | 4    |      |      | 端口关闭               |          |
| ✓    | 端口关闭_5               | 0  | 5    |      |      | 端口关闭               |          |
| ✓    | 端口关闭_6               | 0  | 6    |      |      | 端口关闭               |          |
| ✓    | 端口关闭_7               | 0  | 7    |      |      | 端口关闭               |          |
| ✓    | 端口关闭_8               | 0  | 8    |      |      | 端口关闭               |          |
| ✓    | Input pin 2_1        | 0  | 9    | 1    |      | Input pin 2        |          |

The IB1 of the main station module PN-08IOL represents the monitoring value of the Pin2 input signal from 0 to 7, and Q1.0 represents the output signal of Pin4 at 0.

d. Fill in the input and output channel addresses in the address cell of the monitoring table, press the "Enter" key, and after completing all the entries, click the button to monitor the data, as shown in the following figure.

| IOlink主站 > PLC_1 [CPU 1211C D0/D0C] > 监控与强制表 > 监控表_1 |    |       |      |       |     |                          |    |      |
|------------------------------------------------------|----|-------|------|-------|-----|--------------------------|----|------|
|                                                      | 名称 | 地址    | 显示格式 | 监视值   | 修改值 |                          | 注释 | 变量注释 |
| 1                                                    |    | %B1   | 十六进制 | 16#00 |     | <input type="checkbox"/> |    |      |
| 2                                                    |    | %Q1.0 | 布尔型  | FALSE |     | <input type="checkbox"/> |    |      |
| 3                                                    |    | %B68  | 十六进制 | 16#00 |     | <input type="checkbox"/> |    |      |
| 4                                                    |    | %Q64  | 十六进制 | 16#00 |     | <input type="checkbox"/> |    |      |
| 5                                                    |    | %B69  | 十六进制 | 16#00 |     | <input type="checkbox"/> |    |      |
| 6                                                    |    | %Q65  | 十六进制 | 16#00 |     | <input type="checkbox"/> |    |      |
| 7                                                    |    | <新增>  |      |       |     | <input type="checkbox"/> |    |      |

e. Taking the configuration of the first 8 channels as input and the last 8 channels as output as an example, IB68 represents the input signal values of slave module 0 to 3, and QB64 represents the

output signal values of slave module 4 to 7. In the "Modified Value" cell of QB64, input "FF".  
Click the button to write. You will see that the 8 channel indicator lights of the slave module 4 to 7 are illuminated, as shown in the following figure.

|   | 名称 | 地址    | 显示格式 | 监视值   | 修改值   |                                     | 注释 |
|---|----|-------|------|-------|-------|-------------------------------------|----|
| 1 |    | %IB1  | 十六进制 | 16#00 |       | <input type="checkbox"/>            |    |
| 2 |    | %Q1.0 | 布尔型  | FALSE |       | <input type="checkbox"/>            |    |
| 3 |    | %IB68 | 十六进制 | 16#00 |       | <input type="checkbox"/>            |    |
| 4 |    | %QB64 | 十六进制 | 16#00 | 16#FF | <input checked="" type="checkbox"/> |    |
| 5 |    | %IB69 | 十六进制 | 16#00 |       | <input type="checkbox"/>            |    |
| 6 |    | %QB65 | 十六进制 | 16#00 |       | <input type="checkbox"/>            |    |
| 7 |    | <新增>  |      |       |       | <input type="checkbox"/>            |    |

f. When a valid voltage is input to the station module 0, the input value "16#03" can be monitored in IB68, which is "2#0000 0011", as shown in the figure below.

|   | 名称 | 地址    | 显示格式 | 监视值         | 修改值   |                                     | 注释 | 变量注释 |
|---|----|-------|------|-------------|-------|-------------------------------------|----|------|
| 1 |    | %IB1  | 十六进制 | 16#00       |       | <input type="checkbox"/>            |    |      |
| 2 |    | %Q1.0 | 布尔型  | FALSE       |       | <input type="checkbox"/>            |    |      |
| 3 |    | %IB68 | 十六进制 | 2#0000_0011 |       | <input type="checkbox"/>            |    |      |
| 4 |    | %QB64 | 十六进制 | 16#00       | 16#FF | <input checked="" type="checkbox"/> |    |      |
| 5 |    | %IB69 | 十六进制 | 16#00       |       | <input type="checkbox"/>            |    |      |
| 6 |    | %QB65 | 十六进制 | 16#00       |       | <input type="checkbox"/>            |    |      |
| 7 |    | <新增>  |      |             |       | <input type="checkbox"/>            |    |      |

## Appendix A

In the configuration files of the STORM67 series PROFINET master station, modules for defining the lengths of input process data, output process data, and input/output combined process data have been defined. The list is shown in the following table:

| Name               | Description                                                               |
|--------------------|---------------------------------------------------------------------------|
| IOL_I_01 Byte      | Input process data length: 1 byte                                         |
| IOL_I_02 Byte      | Input process data length: 2 bytes                                        |
| IOL_I_04 Byte      | Input process data length: 4 bytes                                        |
| IOL_I_06 Byte      | Input process data length: 6 bytes                                        |
| IOL_I_08 Byte      | Input process data length: 8 bytes                                        |
| IOL_I_10 Byte      | Input process data length: 10 bytes                                       |
| IOL_I_16 Byte      | Input process data length: 16 bytes                                       |
| IOL_I_24 Byte      | Input process data length: 24 bytes                                       |
| IOL_I_32 Byte      | Input process data length: 32 bytes                                       |
| IOL_O_01 Byte      | Output process data length: 1 byte                                        |
| IOL_O_02 Byte      | Output process data length: 2 bytes                                       |
| IOL_O_04 Byte      | Output process data length: 4 bytes                                       |
| IOL_O_06 Byte      | Output process data length: 6 bytes                                       |
| IOL_O_08 Byte      | Output process data length: 8 bytes                                       |
| IOL_O_10 Byte      | Output process data length: 10 bytes                                      |
| IOL_O_16 Byte      | Output process data length: 16 bytes                                      |
| IOL_O_24 Byte      | Output process data length: 24 bytes                                      |
| IOL_O_32 Byte      | Output process data length: 32 bytes                                      |
| IOL_I/O_01/01 Byte | Input process data length: 1 byte, Output process data length: 1 byte     |
| IOL_I/O_02/02 Byte | Input process data length: 2 bytes, Output process data length: 2 bytes   |
| IOL_I/O_02/04 Byte | Input process data length: 2 bytes, Output process data length: 4 bytes   |
| IOL_I/O_02/08 Byte | Input process data length: 2 bytes, Output process data length: 8 bytes   |
| IOL_I/O_04/02 Byte | Input process data length: 4 bytes, Output process data length: 2 bytes   |
| IOL_I/O_04/04 Byte | Input process data length: 4 bytes, Output process data length: 4 bytes   |
| IOL_I/O_04/08 Byte | Input process data length: 4 bytes, Output process data length: 8 bytes   |
| IOL_I/O_04/32 Byte | Input process data length: 4 bytes, Output process data length: 32 bytes  |
| IOL_I/O_08/02 Byte | Input process data length: 8 bytes, Output process data length: 2 bytes   |
| IOL_I/O_08/04 Byte | Input process data length: 8 bytes, Output process data length: 4 bytes   |
| IOL_I/O_08/08 Byte | Input process data length: 8 bytes, Output process data length: 8 bytes   |
| IOL_I/O_16/16 Byte | Input process data length: 16 bytes, Output process data length: 16 bytes |
| IOL_I/O_24/24 Byte | Input process data length: 24 bytes, Output process data length: 24 bytes |
| IOL_I/O_32/04 Byte | Input process data length: 32 bytes, Output process data length: 4 bytes  |
| IOL_I/O_32/32 Byte | Input process data length: 32 bytes, Output process data length: 32 bytes |

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