DECOWELL®

Industrial Signal Processing Expert

# FS Series Remote IO

## User Manual

DECOWELL Industrial Intelligence makes reliable partners


Website: www.decowellauto.com
Email: contact@decowellauto.com
Address: Building 13, Ruichuang Intelligent Manufacturing Park,
No. 19 Lanxin Road, Pukou District, Nanjing

# Contents

# Preface

**Copyright Notice**

Copyright ©2020

Nanjing DECOWELL Automation Co., Ltd.Copyright, all rights reserved. Without the written permission of our company, no unit or individual may excerpt or copy part or all of the contents of this document without authorization, and may not disseminate it in any form.

DECOWELL WELLLINKIO are trademarks of our company. Other registered trademarks appearing in this document are owned by their respective owners.

Due to product version upgrades or other reasons, the contents of this document are subject to periodic updates. Unless otherwise agreed, this document is for reference only, and all statements, information, and recommendations contained herein do not constitute any express or implied warranty.

**Scope of this document**

This document is applicable to FS Series Remote IO system

**Introduction**

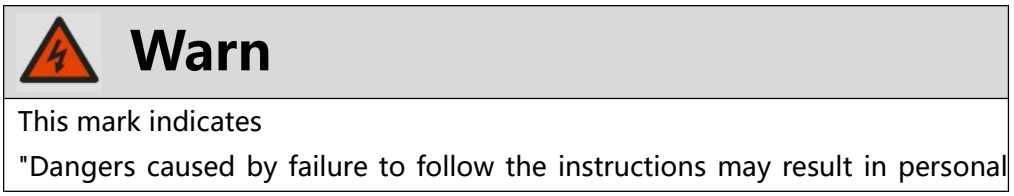
This manual mainly introduces FS technical specifications, installation, and commissioning of the series of remote I/O modules. The main contents include:

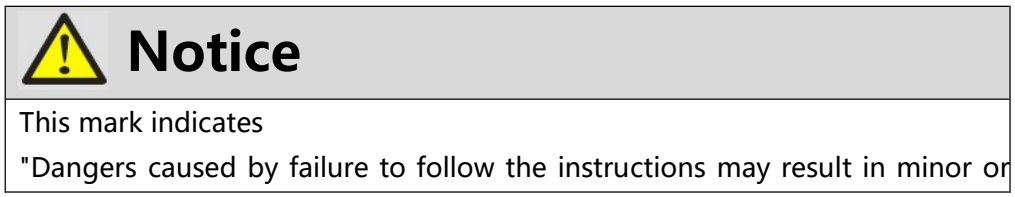
- System Overview: Provides an introduction to the FS Series remote I/O modules, including ordering information, product composition, system architecture, as well as transportation and storage environment.
- Product Description: Details the technical specifications of the FS Series remote I/O modules.
- Installation and Removal Guide: Describes how to install and remove the FS Series remote I/O modules.
- Mechanical and Electrical Drawings: Includes dimensional drawings and electrical wiring diagrams of the FS Series remote I/O modules.
- User Guide: Demonstrates how the FS Series remote I/O modules communicate and connect with various mainstream PLCs through practical examples.

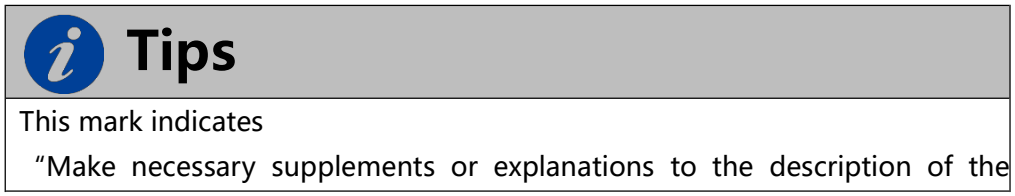
**Precautions**

This document describes in detail the WELL-LINK FS usage of the series remote I/O modules is for people with certain engineering experience. Nanjing DECOWELL is not responsible for any consequences caused by the use of this information.

Before attempting to use the device, please read the relevant precautions of the device carefully and be sure to comply with the installation and commissioning safety precautions and operating procedures. For the possible hazards and damages caused by incorrect use of the device, please refer to the following symbols.




**Target customers**

This manual provides information about FS Installation and commissioning information for a range of remote I/O modules, designed for engineers, installers, maintenance personnel and electricians with general automation knowledge.

**Recycling and Disposal**

To ensure environmentally friendly recycling and disposal of your old device, please contact a certified electronic waste disposal service.

**Online Support**

In addition to this manual, you can also obtain more product information by checking the official website.

http://www.decowellauto.com

# 1.System Overview

## 1.1 What is Remote IO

Remote I/O, also known as distributed I/O, refers to electronic devices commonly used in process or factory automation that transmit and receive input and output signals to and from main electronic equipment (such as DCS, PLC, or PC) via communication technologies like industrial fieldbus.

## 1.2 Composition

The FS Series remote I/O modules mainly consist of system status indicators, system power supply, input/output channels, communication interface, and I/O channel indicators, as shown in Figure 1-2.

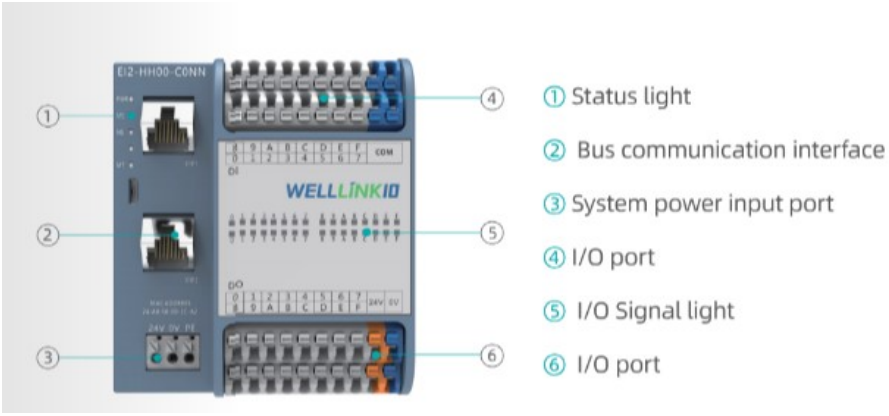



Figure 1-2 FS Series Remote IO Module composition

## 1.3 Features of the module

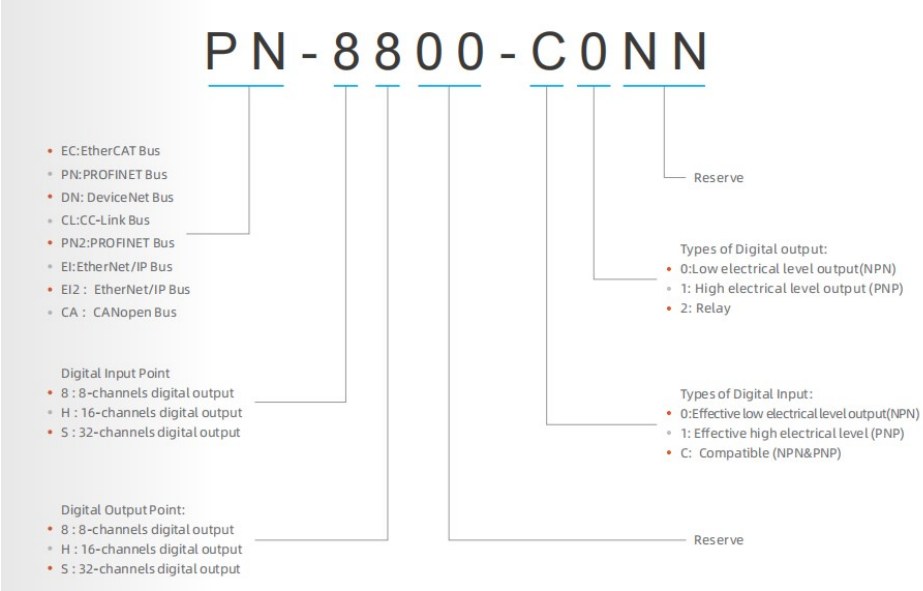
The FS Series remote I/O modules feature an integrated design that combines the communication interface, input/output I/O interfaces, system and I/O indicators. They are characterized by high integration, rich communication protocols, compact size, and ease of use.

## 1.4 Application areas

The FS Series remote I/O modules are widely used across various fields, such as new energy, lithium battery, non-standard automation, robotics, CNC machines, intelligent parking systems, logistics sorting, educational equipment, environmental protection, and heating systems.

# 2.Module parameters

## 2.1 Naming conventions




## 2.2 Module communication protocol interface parameters

It mainly introduces parameters such as bus protocol, interface type, interface mode and communication rate in the module.

### 2.2.1 PROFINET protocol

| PROFINETModule Communication Protocol Interface Parameters | |
|---|---|
| Bus protocol | PROFINET |
| Interface Type | Industry EtherNET |
| Interface | 2×RJ45 |
| Communication rate | 100Mbps |
| Communication distance | 100m (distance between stations) |
| Electrical isolation | have |

PN Module system indicator light description

| NO. | Indicator Lights | Illustrate | Color | State | Meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | Equipment running and the communication is normal |
| | | | | OFF | No power or system abnormality |
| 3 | SF | --- | --- | --- | --- |
| 4 | BF | System fault indicator | red | ON | Communication abnormality |
| | | | | OFF | Equipment running and the communication is normal |

PN2 Module system indicator light description

| No. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | The equipment is running and the communication is normal |
| | | | | OFF | No power or system abnormality |
| 3 | SF | --- | --- | --- | --- |
| 4 | BF | System fault indicator | red | ON | Communication abnormality |
| | | | | OFF | The equipment is running and the communication is normal |
| 5 | MT | Maintenance indicator | green | Flash 5HZ | Flashing during the upgrade process |
| | | | | Flash 1HZ | Flashes when the reset button is pressed |
| | | | | ON | Reset operation completed |
| | | | | OFF | Non-maintenance status |

### 2.2.2 EtherCAT protocol

| EtherCATModule communication protocol interface parameters | |
|---|---|
| Bus protocol | EtherCAT |
| Interface Type | Industry EtherNET |
| Interface | 2×RJ45 |
| Communication rate | 100Mbps |
| Communication distance | 100m (distance between stations) |
| Electrical isolation | have |

EtherCAT Module system indicator light description

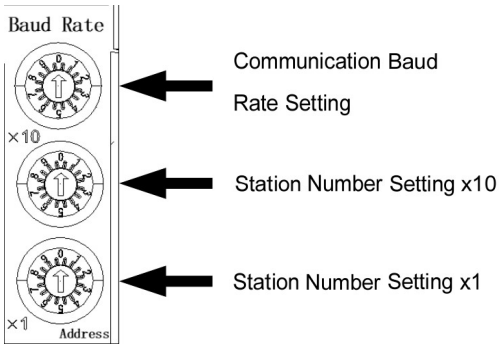
| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | OP Status, running normally |
| | | | | OFF | INIT Status, initialization status |
| | | | | Flash | PRE-OP Status, communication initialization completed |
| | | | | Single flash | SAFE-OP Status, SDO and PDO Unavailable |
| 3 | ERR | System fault indicator | red | ON | Application controller failure |
| | | | | OFF | No Error |
| | | | | Flashes twice | Process data watchdog timeout/EtherCAT watchdog timeout |
| | | | | Flash once | Local Error |
| | | | | Flash | Configuration Error |

### 2.2.3 CC-Link protocol

- CC-Link module communication protocol interface parameters

| CC-Link module communication protocol interface parameters | |
|---|---|
| Bus protocol | CC-Link |
| Working Mode | CC-Link remote I/O station |
| Connection | Shielded twisted pair |
| Communication rate | 156kbps～10Mbps |
| Address Configuration | 1~64 |
| Electrical isolation | have |

- CC-Link remote IO Module DIP Setting




| CCLink communication rate setting | | |
|---|---|---|
| Dial position number | Communication rate | Corresponding transmission distance |
| 0 | 156kbps | 1200m |
| 1 | 625kbps | 600m |
| 2 | 2.5Mbps | 200m |
| 3 | 5Mbps | 150m |
| 4 | 10Mbps | 100m |

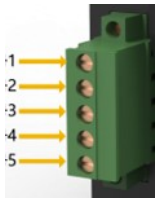
CC Link module system indicator light description

| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | The equipment is running and the communication is normal |
| | | | | OFF | Connection not established |
| 3 | ERR | System fault indicator | red | ON | Module communication abnormality |
| | | | | OFF | Module communication is normal |

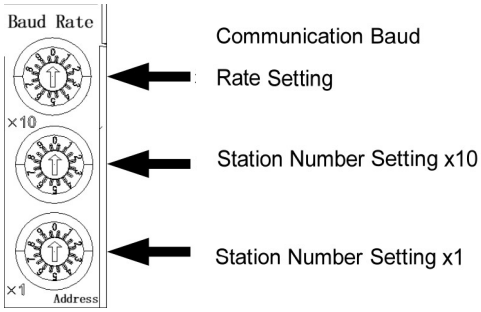
### 2.2.4 DeviceNet protocol

- DeviceNet module communication protocol interface parameters

| DeviceNet Module communication protocol interface parameters | |
|---|---|
| Bus protocol | DeviceNet |
| Connection | Shielded twisted pair |
| Communication rate | 125kbps/250kbps/500kbps |
| Address Configuration | 0~63 |
| Electrical isolation | have |

| DeviceNet communication interface | Position No. | Signal | Signal Definition |
|---|---|---|---|
|  | 1 | V+ | Positive power supply |
| | 2 | CH | Data signal positive |
| | 3 | SLD | Shielded wire |
| | 4 | CL | Data signal negative |
| | 5 | V- | Negative pole of power supply |

- DeviceNet Remote IO Module communication interface definition
- DeviceNet Remote IO Module DIP Setting




| DeviceNet communication rate setting | |
|---|---|
| 0 | 125kbps |
| 1 | 250kbps |
| 2 | 500kbps |

DeviceNet module system indicator light description

| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | The equipment is running and the communication is normal |
| | | | | OFF | Connection not established |
| 3 | ERR | System fault indicator | red | ON | Module communication abnormality |
| | | | | OFF | Module communication is normal |

### 2.2.5 CC-LinkIE FieldBASIC Protocol

| CC-Link IE Field BasicModule communication protocol interface parameters | |
|---|---|
| Bus protocol | CC-Link IE Field Basic |
| Interface Type | Industry EtherNET |
| Interface | 2×RJ45 |
| Communication rate | 100Mbps |
| Communication distance | 100m (distance between stations) |
| Electrical isolation | have |

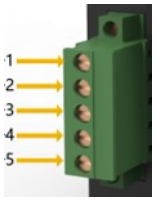
CC-Link IE Field BASIC module system indicator light description

| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | The equipment is running and the communication is normal |
| | | | | OFF | Connection not established |
| | | | | Flash | Factory reset signal detected |
| 3 | ERR | System fault indicator | red | ON | Module communication abnormality |
| | | | | OFF | Module communication is normal |

### 2.2.6 CANopen protocol

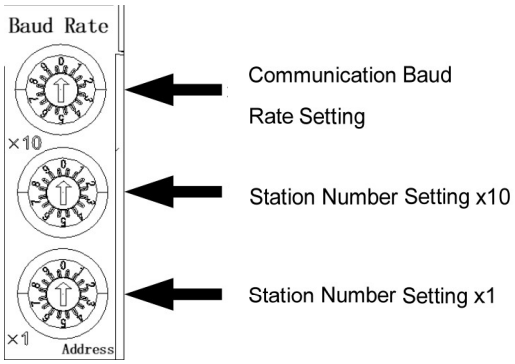
- CANopen module communication protocol interface parameters

| CANopen module communication protocol interface parameters | |
|---|---|
| Bus protocol | CANopen |
| Connection | Shielded twisted pair |
| Communication rate | 10kbps～1Mbps |
| Address Settings | DIP switch settings |
| Communication distance | The maximum communication distance is determined by the communication rate |
| Electrical isolation | have |

| CANopen communication interface | Position No. | Signal | Signal Definition |
|---|---|---|---|
|  | 1 | +V | Positive power supply |
| | 2 | CH | Data signal positive |
| | 3 | SLD | Shielded wire |
| | 4 | CL | Data signal negative |
| | 5 | -V | Negative pole of power supply |



- CANopen remote IO Module communication interface definition
- CANopen remote IO Module DIP Setting




| CANOpen communication rate setting | |
|---|---|
| 0 | 10kbps |
| 1 | 20kbps |
| 2 | 50kbps |
| 3 | 100kbps |
| 4 | 125kbps |
| 5 | 250kbps |
| 6 | 500kbps |
| 7 | 1000kbps |

CC-LinkIE FieldBASIC module system indicator light description

| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | RUN | Running indicator light | green | ON | The module enters the operating state and the communication is normal. |
| | | | | OFF | The module enters the initialization state |
| | | | | 1 flash long off | The module enters the operation stop state |
| | | | | 5HZ Flash | The module enters pre-operationstate; |
| 3 | ERR | System fault indicator | red | ON | Module failure |
| | | | | OFF | The module enters the running state |

### 2.2.7 EtherNet/IP protocol

| EtherNet/IP Module communication protocol interface parameters | |
|---|---|
| Bus protocol | EtherNet/IP |
| Interface Type | Industry EtherNET |
| Interface | 2×RJ45 |
| Communication rate | 100Mbps |
| Communication distance | 100m (distance between stations) |
| Electrical isolation | have |

EtherNet/IPModule system indicator light description

| NO. | Indicator Lights | illustrate | color | state | meaning |
|---|---|---|---|---|---|
| 1 | POWER | Power indicator | green | ON | Power supply is normal |
| | | | | OFF | The power supply is disconnected or faulty. |
| 2 | MS | Module status indicator | green | ON | The equipment is operating normally |
| | | | | 1HZFlash | Standby, device not configured yet |
| | | | Red and Green | 1HZFlash | Self-test, the device is performing a power-on test |
| | | | | OFF | The device has no power |
| | | | red | ON | Main faults: The device has detected a major, unrecoverable fault. |
| | | | | 1HZFlash | No power supply:The device is missing power. |
| 3 | NS | Network status indicator | green | ON | Connected, the device has at least one established connection |
| | | | | 1HZFlash | No connection, the device has not established a connection |
| | | | Red and Green | 1HZFlash | Self-test, the device is performing a power-on test |
| | | | | OFF | No power or no IP address |

| | | | | | |
|---|---|---|---|---|---|
| | | | red | ON | Repeat IP address |
| | | | | 1HZFlash | Connection timed out. One or more connections to this device have timed out. |
| 4 | MT | Maintenance indicator | green | Flash 5HZ | Flashing during the upgrade process |
| | | | | Flash 1HZ | Flashes when the reset button is pressed |
| | | | | ON | Reset operation completed |
| | | | | OFF | Non-maintenance status |

## 2.3 Module input/output channel technical parameters

### 2.3.1 XX-8800-C0NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL, CI, CA etc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-8800-C0NN Integrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-8800-C0NN |
| Product Name | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 38mA |
| **Input channel parameters** | |
| Number of input channels | 8 |
| Input signal type | NPN&PNP compatible (Transistor) |
| NPN Signal Level | 0～5V |
| PNP Signal Level | 15~30V |
| Current consumption per channel | 5mA |
| Port protection | Overvoltage protection |

| | |
|---|---|
| Electrical isolation | AC500V |
| Output channel parameters | |
| Number of output channels | 8 |
| Input signal type | NPN(transistor) |
| Rated level | 0V(Max: 1.5V） |
| Single channel rated current | Max: 0.5A（8The total current output by the channels is 2A） |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |
| Physical parameters | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.2 XX-8800-C1NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL, CI, CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-8800-C1NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-8800-C1NN |
| Product Name | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 38mA |

| Input channel parameters | |
|---|---|
| Number of input channels | 8 |
| Input signal type | NPN&PNP Compatible (Transistor) |
| NPN signal Level | 0～5V |
| PNP signal Level | 15~30V |
| Current consumption per channel | 5mA |
| Port protection | Overvoltage protection |
| Electrical isolation | AC500V |
| **Output channel parameters** | |
| Number of output channels | 8 |
| Input signal type | PNP(transistor) |
| Rated level | 24V(18~36V） |
| Single channel rated current | Max: 0.5A（8The total current output by the channels is 2A） |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |
| **Physical parameters** | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.3 XX-8800-C2NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL, CI, CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-8800-C2NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-8800-C2NN |
| Product Name | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 38mA |
| **Input channel parameters** | |
| Number of input channels | 8 |
| Input signal type | NPN&PNPCompatible (Transistor) |
| NPNSignal Level | 0～5V |
| PNPSignal Level | 15~30V |
| Current consumption per channel | 5mA |
| Port protection | Overvoltage protection |
| Electrical isolation | AC500V |
| **Output channel parameters** | |
| Number of output channels | 8 |
| Input signal type | Relay (normally open) |
| Rated level | 240VAC/30VDC |
| Single channel rated current | 5A |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |
| **Physical parameters** | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.4 XX-HH00-C0NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL,CI,CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-HH00-C0NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |

| | |
|---|---|
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-HH00-C0NN |
| Product Name | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 40mA |
| **Input channel parameters** | |
| Number of input channels | 16 |
| Input signal type | NPN&PNPCompatible (Transistor) |
| NPN Signal Level | 0～5V |
| PNP Signal Level | 15~30V |
| Current consumption per channel | 5mA |
| Port protection | Overvoltage protection |
| Electrical isolation | AC500V |
| **Output channel parameters** | |
| Number of output channels | 16 |
| Input signal type | NPN(transistor) |
| Rated level | 0V(Max: 1.5V） |
| Single channel rated current | Max: 0.5A（8The total current output by the channels is 2A） |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |
| **Physical parameters** | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |

| | |
|---|---|
| Protection level | IP20 |

### 2.3.5 XX-HH00-C1NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL,CI,CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-HH00-C1NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-HH00-C1NN |
| Product Name | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 40mA |
| **Input channel parameters** | |
| Number of input channels | 16 |
| Input signal type | NPN&PNPCompatible (Transistor) |
| NPNSignal Level | 0～5V |
| PNPSignal Level | 15~30V |
| Current consumption per channel | 5mA |
| Port protection | Overvoltage protection |
| Electrical isolation | AC500V |
| **Output channel parameters** | |
| Number of output channels | 16 |
| Input signal type | PNP(transistor) |
| Rated level | 24V(18~36V） |
| Single channel rated | Max: 0.5A（8The total current output by the channels is 2A） |

| | |
|---|---|
| current | |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |
| Physical parameters | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.6 XX-S000-CNNN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL,CI,CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-S000-CNNNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-HH00-C0NN |
| Product Name | 32 digital inputs (NPN & PNP) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 40mA |
| Input channel parameters | |
| Number of input channels | 32 |
| Input signal type | NPN&PNPCompatible (Transistor) |
| NPNSignal Level | 0～5V |
| PNPSignal Level | 15~30V |
| Current consumption | 5mA |

| | |
|---|---|
| per channel | |
| Port protection | Overvoltage protection |
| Electrical isolation | AC500V |
| Physical parameters | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.7 XX-0S00-N0NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL,CI,CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-0S00-N0NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-0S00-N0NN |
| Product Name | 32 digital outputs (NPN) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 40mA |
| Output channel parameters | |
| Number of output channels | 32 |
| Input signal type | NPN(transistor) |
| Rated level | 0V(Max: 1.5V） |
| Single channel rated current | Max: 0.5A（8The total current output by the channels is 2A） |
| Port protection | Overvoltage and overcurrent protection |

| | |
|---|---|
| Electrical isolation | AC500V |
| Physical parameters | |
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

### 2.3.8 XX-0S00-N1NN

Tip: XX represents the bus protocol to be selected (for example:PN、EC, CL,CI,CAetc.), the input and output parameters and external dimensions of the modules are consistent.

- XX-HH00-C1NNIntegrated module model

| model | Specifications |
|---|---|
| XX-8800-C0NN | 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) |
| XX-8800-C1NN | 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) |
| XX-8800-C2NN | 8-channel digital input (NPN & PNP) 8-channel digital output (relay) |
| XX-HH00-C0NN | 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) |
| XX-HH00-C1NN | 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) |
| XX-S000-CNNN | 32 digital inputs (NPN & PNP) |
| XX-0S00-N0NN | 32 digital outputs (NPN) |
| XX-0S00-N1NN | 32 digital outputs (PNP) |

- Module parameter introduction

| Technical Parameters | |
|---|---|
| model | XX-0S00-N1NN |
| Product Name | 32 digital outputs (PNP) |
| Bus protocol | PROFINET,EtherCAT,CC-Link,DeviceNet<br>CC-LinkIE Field Basic, CANopen |
| Rated input voltage | 24V(18~36V） |
| Current consumption | 40mA |
| Output channel parameters | |
| Number of output channels | 32 |
| Input signal type | PNP(transistor) |
| Rated level | 24V(18~36V） |
| Single channel rated current | Max: 0.5A（8The total current output by the channels is 2A） |
| Port protection | Overvoltage and overcurrent protection |
| Electrical isolation | AC500V |

| Physical parameters | |
|---|---|
| Dimensions | 90mm×100mm×45.4mm |
| Operating temperature | -10~55℃ |
| Storage temperature | -25~85℃ |
| Relative humidity | 95% non-condensing |
| Protection level | IP20 |

# 3.Module Installation

## 3.1 Basics

FS protection level of the series modules is IP20, which means that FSThe series modules can only be installed on rails, control cabinets or electrical operating rooms and in dry environments (protection levelIP20). Safety protection must be provided in cabinets, control cabinets or operating rooms to prevent electric shock and fire spread.

FS series modules can be mounted on mounting rails in accordance with EN 60715 (35×7.5 mm or 35×15 mm). In the control cabinet, separate grounding of the mounting rail is required. Exception: If the rail is mounted on a grounded galvanized mounting plate, separate grounding of the rail is not required.

## 3.2 Installation clearance

When installing and removing FS series modules, a minimum clearance must be maintained, as shown in Figure 3-1.

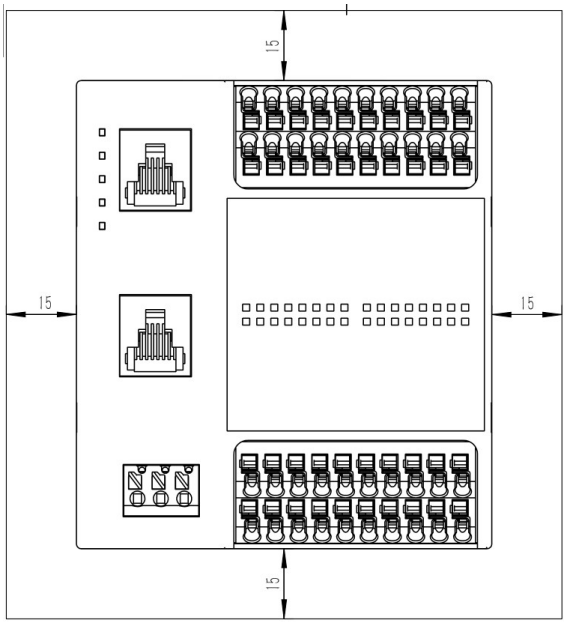



Figure 3-1Minimum installation clearance

## 3.3 IO Module installation and removal

### 3.3.1 IO Module Installation

1. First, pull out the rail clip under the module with a flat-blade screwdriver;

2. Hang the module on DIN35On the rail, use a flat-blade screwdriver to push the rail clip at the bottom into place and lock it, as shown in Figure 3-2 shown.

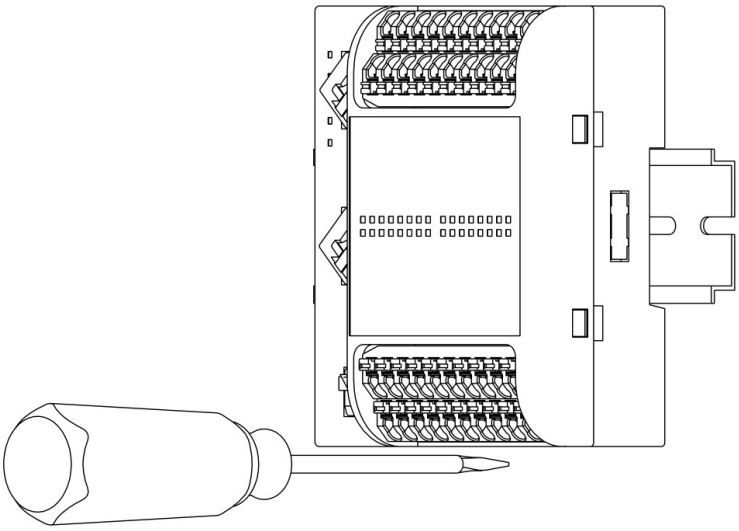


Figure 3-2 Module Installation

### 3.3.2 IO Module removal

1. First, pull out the rail clip under the module with a flat-blade screwdriver;

2. Gently pull the module out andIN35The guide rail forms an angle, and then pushes the module out of the net, as shown in Figure 3-3shown.

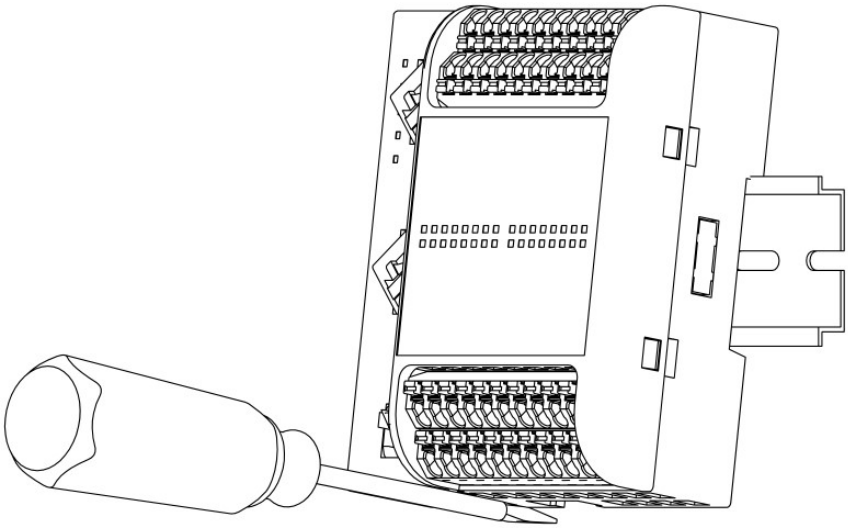


Figure 3-3Module removal

# 4.Dimensions and Wiring Diagram

## 4.1 Module Dimensions

FS dimensions of all modules in the series are consistent, that is, the length, width and height are equal.

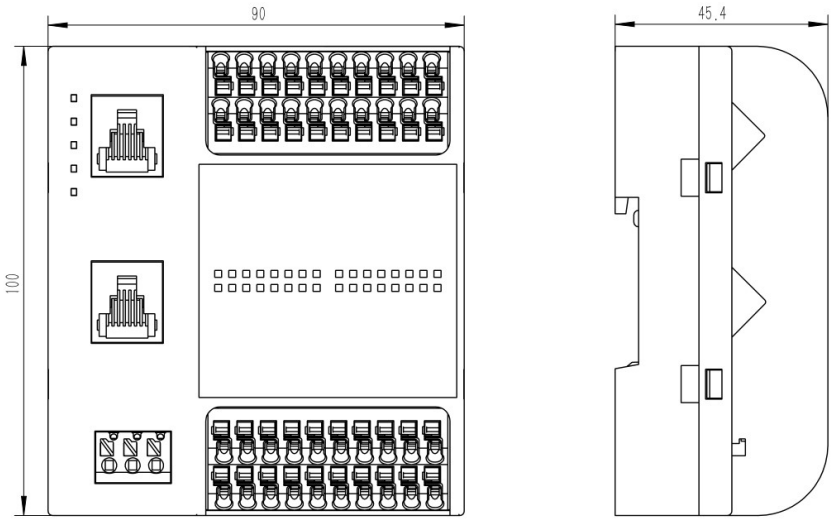



Figure 4-1Module Dimensions

## 4.2Module power wiring diagram

The power wiring diagram for EtherCAT, PROFINET, CC-Link, and CC-Link IE Field Basic remote I/O modules in the FS series is shown in Figure 4-3.

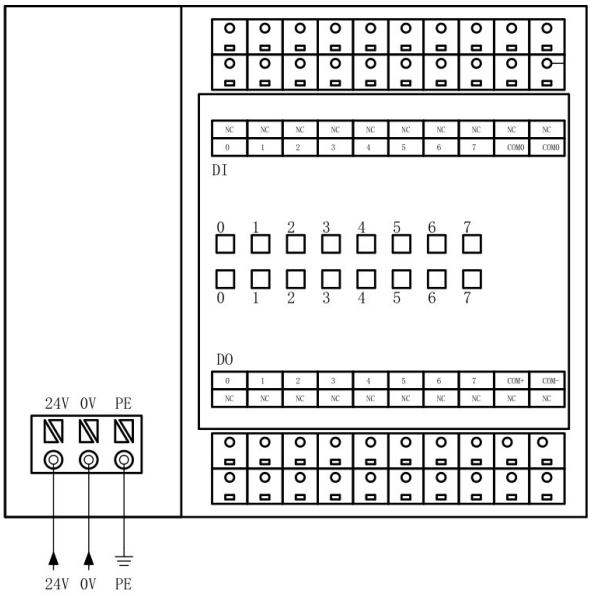



Figure 4-3Power wiring diagram

The wiring diagram of the DeviceNet remote I/O module in the FS series differs from that

of modules using other bus protocols, as shown in Figure 4-4.

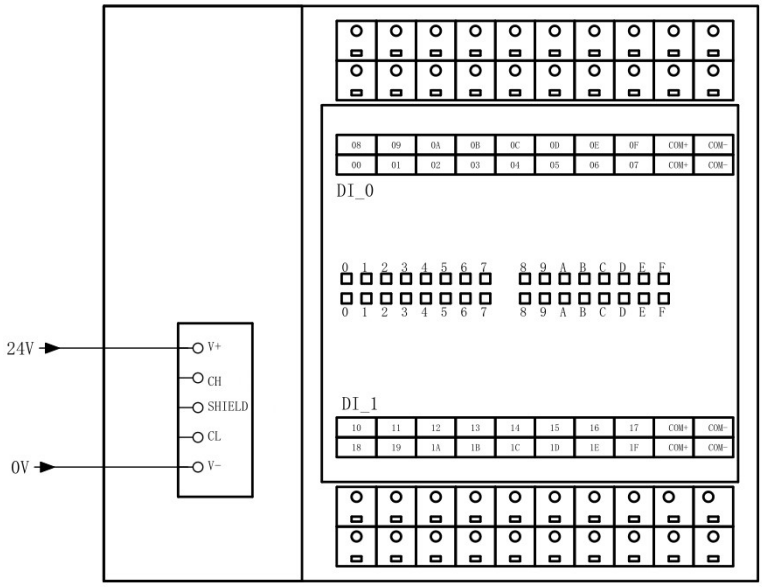



Figure 4-4Power wiring diagram

## 4.3 Digital input channel wiring diagram

In the FS series remote I/O modules, all input channels support both NPN and PNP signal types; however, only one type—either NPN or PNP—can be used during operation.

### 4.3.1Digital input channel NPN Signal wiring diagram

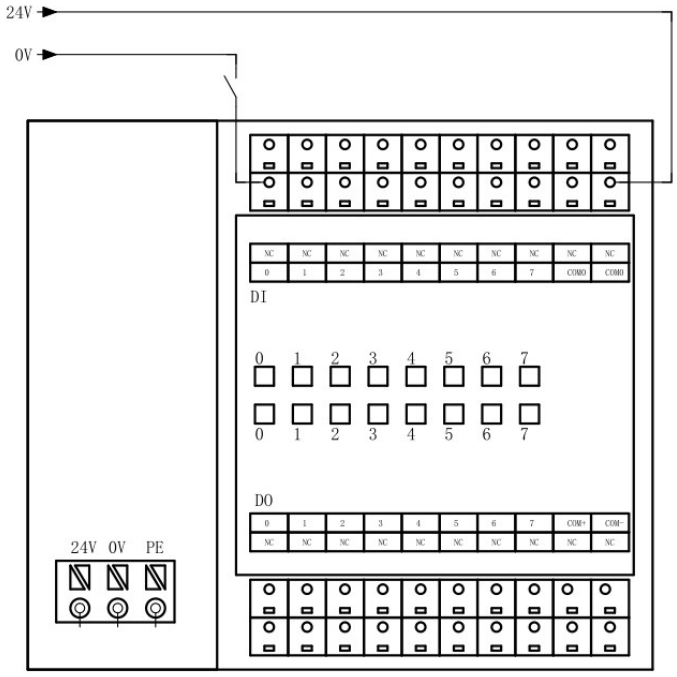



Figure 4-5Digital input channels NPN connection

### 4.3.1Digital input channel PNP Signal wiring diagram

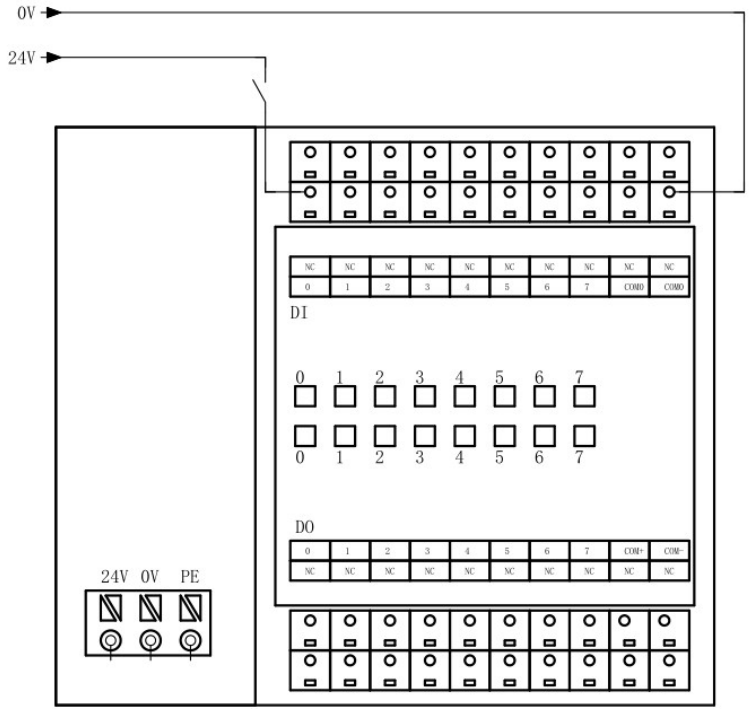



Figure 4-5Digital input channels PNP connection

## 4.4 Digital output wiring diagram

### 4.4.1Digital output NPN Wiring Diagram

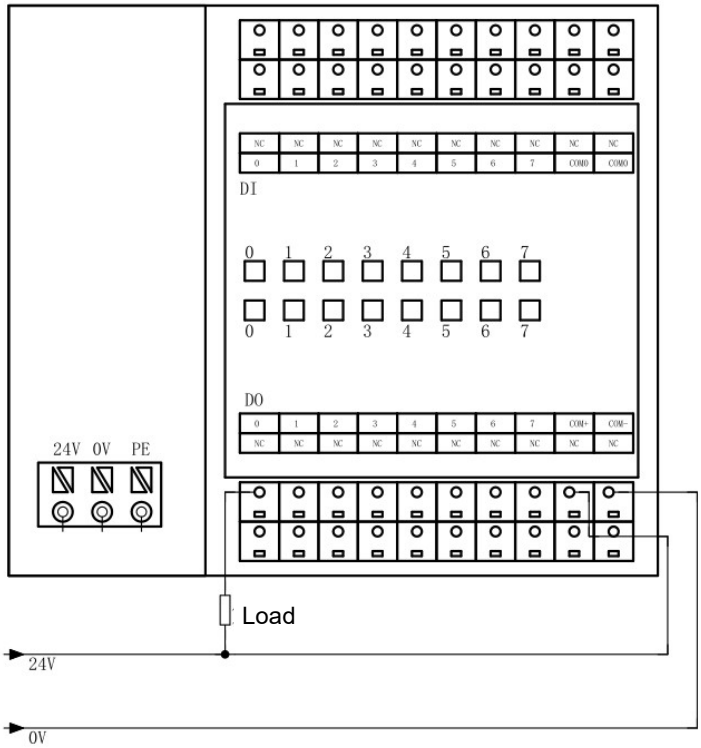



Figure 4-6Digital output channels NPN connection

### 4.4.2Digital output PNP Wiring Diagram

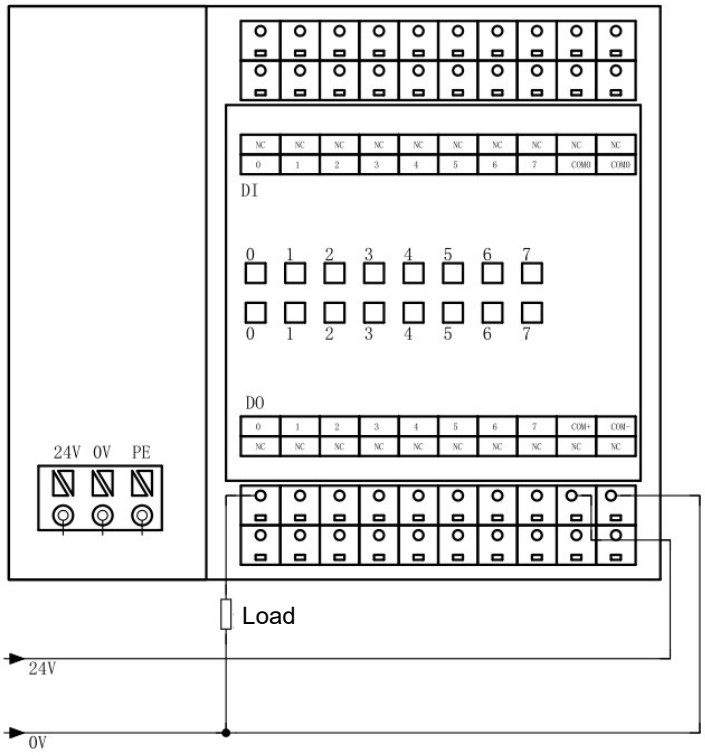



Figure 4-6Digital output channels PNP connection

## 4.5 Relay output wiring diagram

### 4.5.1 Relay output DC load wiring diagram

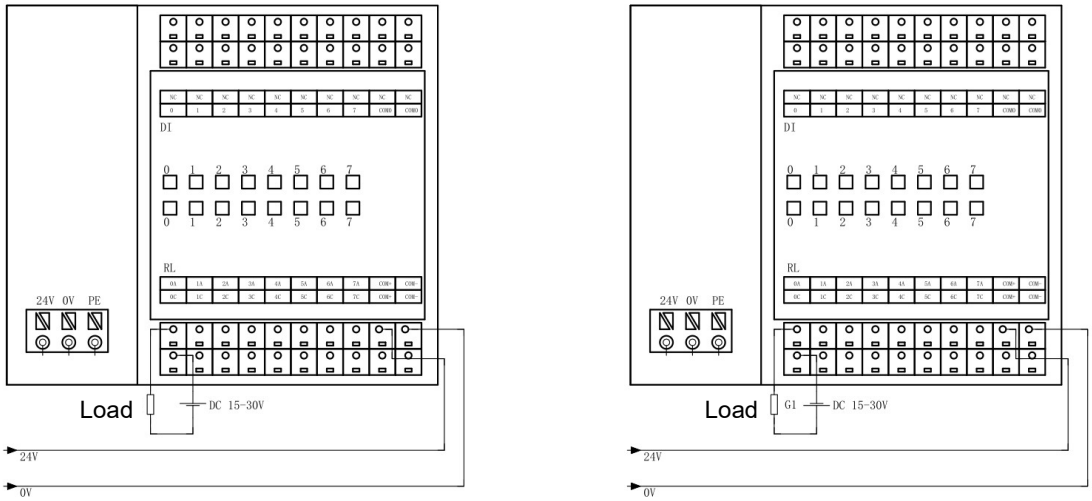



Figure 4-7 Relay output DC load wiring diagram

### 4.5.2 Relay output AC load wiring diagram

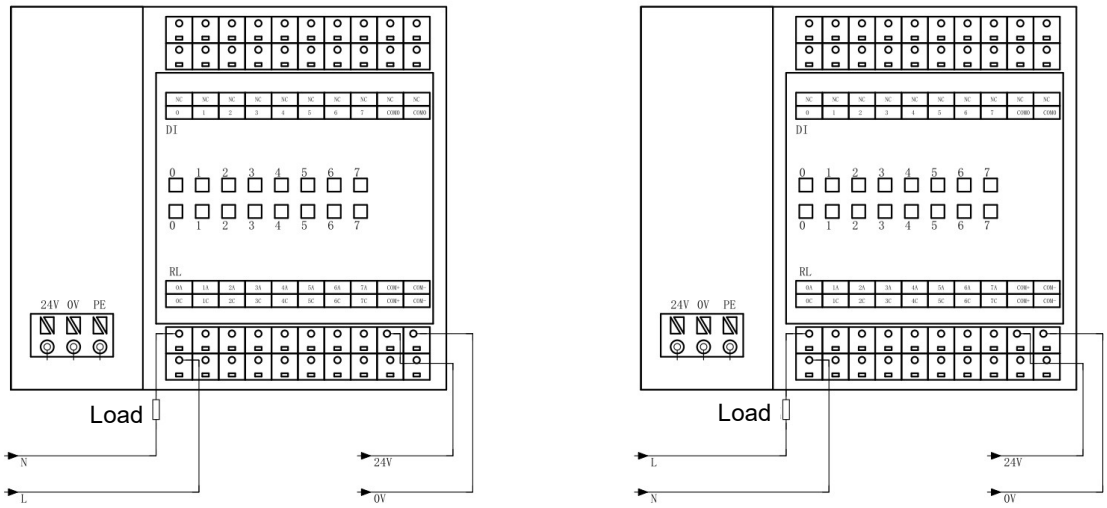



Figure 4-8 Relay output AC load wiring diagram

# 5.FS Series IO configuration

This chapter mainly introduces the connection and configuration of FS series remote I/O modules with mainstream industrial PLC, including configuration in the programming software and parameter settings of certain modules.

## 5.1 EtherCAT Protocol

### 5.1.1 TwinCAT3andEtherCATProtocol IO Module connections and configuration

1. Communication connection diagram, as shown in Figure 5-1-1shown.

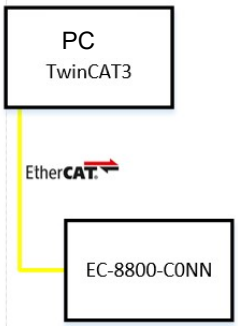



Figure 5-1-1Communication connection diagram

2. Hardware configuration as shown in Table 5-1-2Shown

Table 5-1-2Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InstallTwinCAT3 |
| EC-8800-C0NN | 1 | EtherCAT protocol 8DI/8DOModules |
| Network cable | several | |

3, Install XML Description File

Installing XML description files into TwinCAT3As shown in Figure 5-1-3The default folder for this example is (C:\TwinCAT\3.1\Config\Io\EtherCAT)

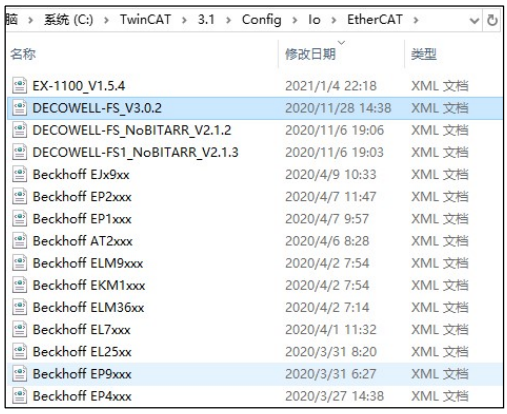



Figure 5-1-3Install XML Description File

4. New project and equipment configuration

Open TwinCAT3In the software, select "File" > New > Project from the menu bar, as shown in Figure 5-1-4As shown, in the New Project window, select "TwinCATprojects", as shown in Figure 5-1-5shown.


Figure 5-1-4New Project

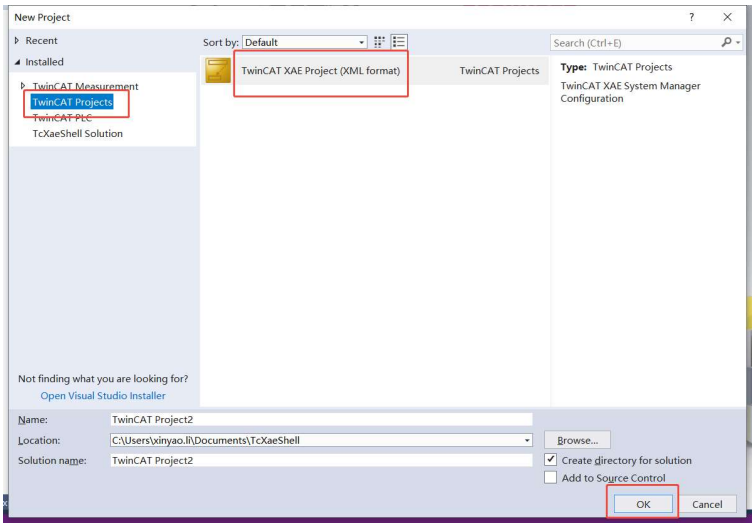



Figure 5-1-5Select TwinCATproject

I connected to the programming computerOScan to the project, click "I/O">Devices">"Scan", as shown in Figure 5-1-6As shown, the scanned hardware configuration is shown in Figure 5-1-7shown.

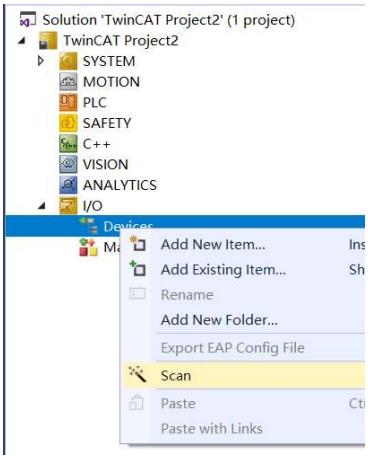



Figure 5-1-6 Scan IO device

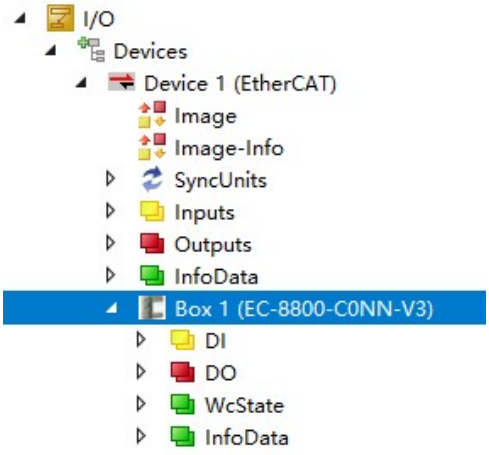



Figure 5-1-7 Hardware Configuration

### 5.1.2 CODESYS and EtherCAT Protocol IO Module connections and configuration

1. Communication connection diagram, as shown in Figure 5-1-8shown.

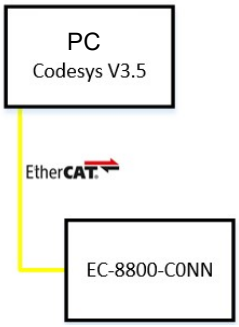



Figure 5-1-8Communication connection diagram

2. Hardware configuration as shown in Table 5-1-2Shown

Table 5-1-2Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InstallCodesysV3.5 |
| EC-8800-C0NN | 1 | EtherCAT protocol 8DI/8DOModules |
| Network cable | several | |

3. Install XML Description File

Open CODESYS V3.5In the software, select "Tools" > "Device Repository" from the menu bar, as shown in Figure 5-1-9shown.

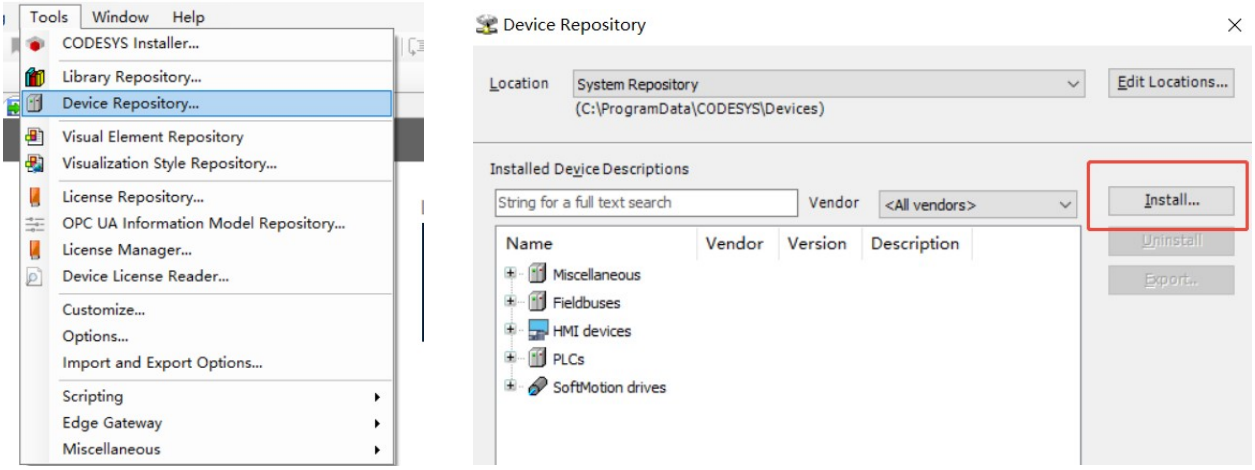



Figure 5-1-9Install XML Device Description File

4. New project and equipment configuration

Open CODESYS V3.5Software, select New Project > Project > Standard project", as shown in Figure 5-1-10shown.

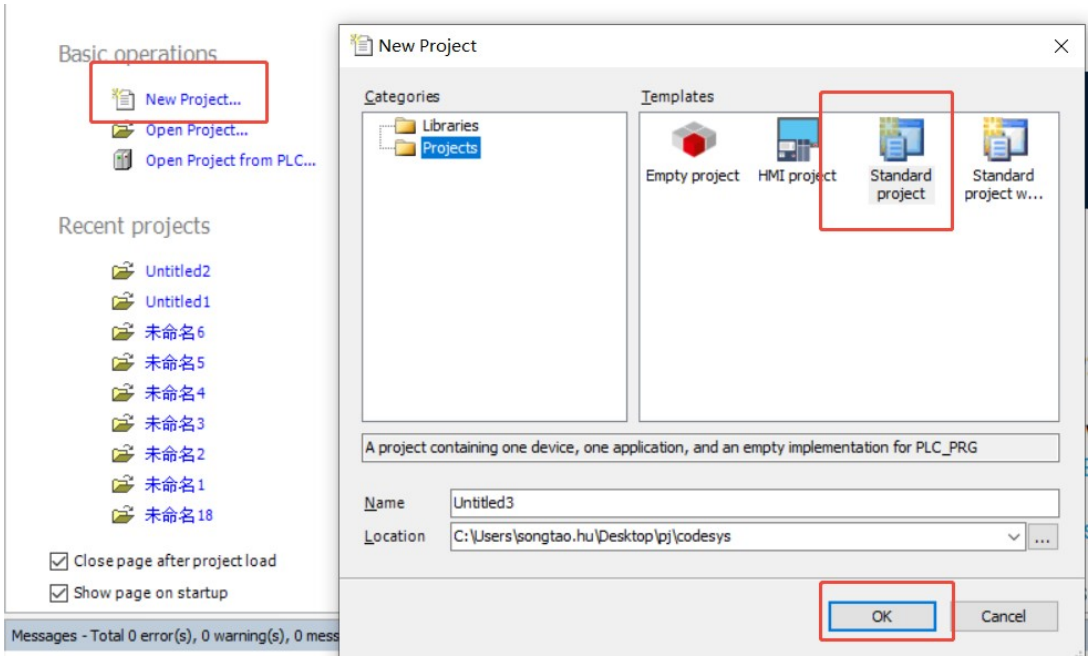



Figure 5-1-10New Construction

In the standard project window, select "CODESYS SoftMotionWinV3",PLC_PRGSelect "Structured Text (ST)", as shown in Figure 5-1-11shown.

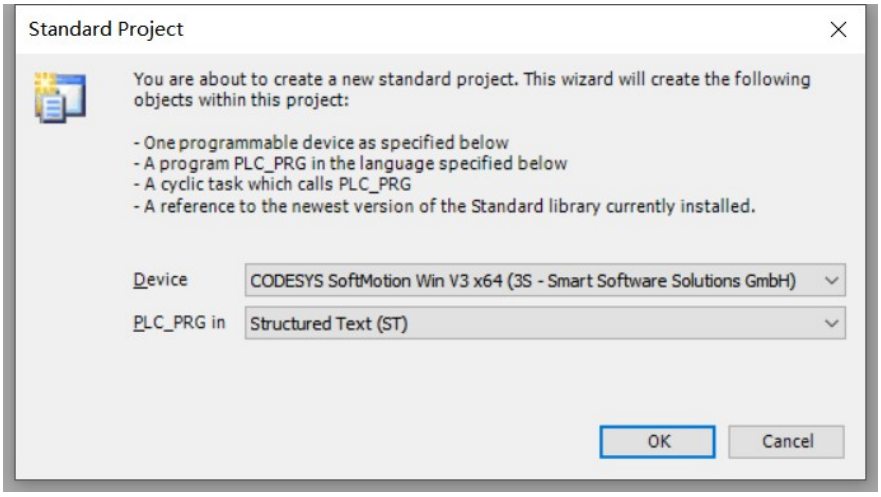



Figure 5-1-11Select device and programming language

**Tip: Softmotion can drive and I/O, Control can only take I/OBut not with drive.**

In the device tree, "Device (CODESYS SoftMotionWinV3)">"Add device", as shown in Figure 5-1-12As shown, in the Add Device window, select Fieldbus > EtherCAT">EtherCAT Master", as shown in Figure 5-1-13 shown.

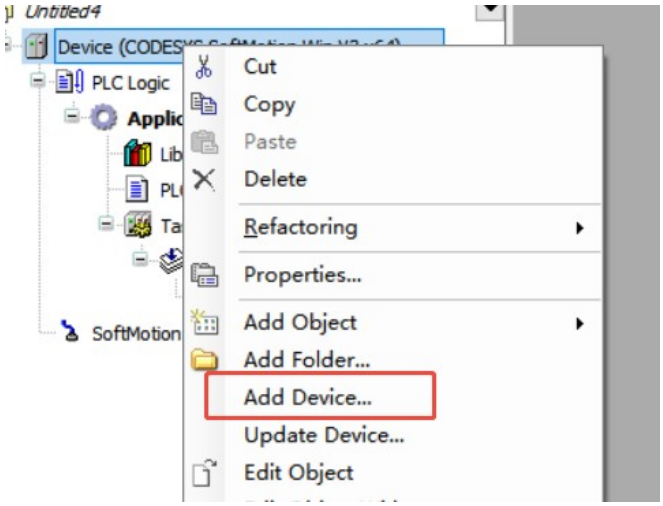



Figure 5-1-12Add a device

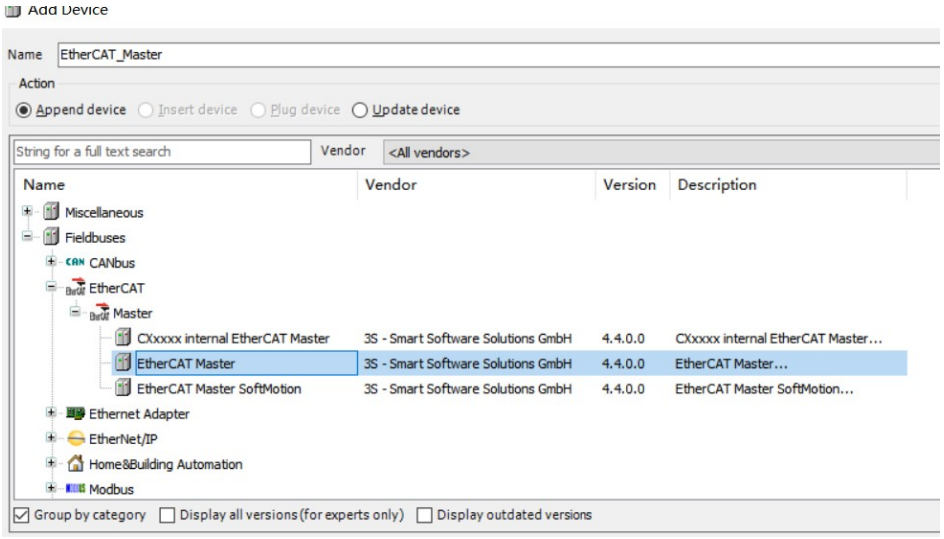



Figure 5-1-13 Choose EtherCAT bus

For EtherCAT Master allocates the network port, double-click "EtherCAT_Master”> “EtherCAT NICSettings > Browse, as shown in Figure 5-1-14shown.

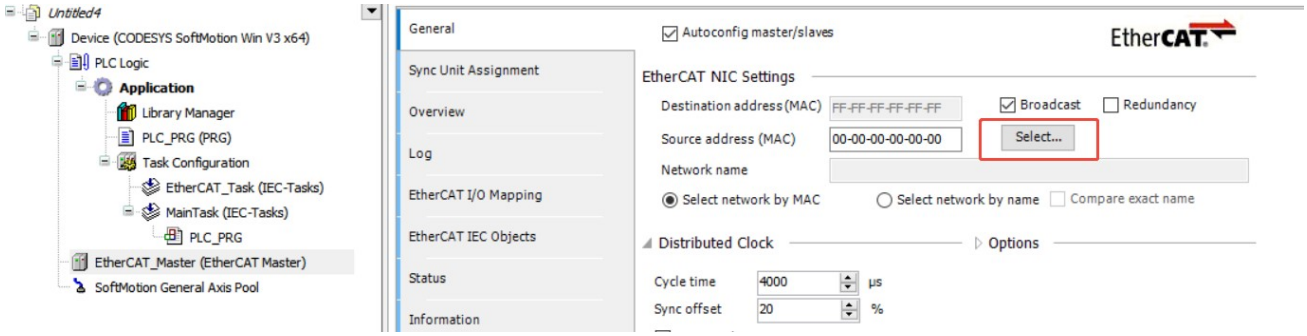



Figure 5-1-14Assign network port

**Tip: Before assigning the network port, you need to download the project to the controller**

Manually IO Add the module to the device tree, right-click "EtherCAT Master">"Add Device", select "EC-8800-C0NN”, as shown in Figure 5-1-15shown.

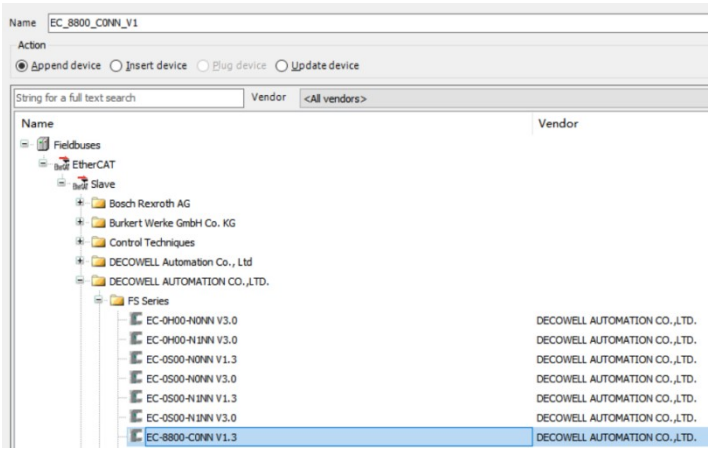



Figure 5-1-15Add the module to the device tree

5. Download and monitor the program

Select "Online" > "Login to" from the menu bar,Confirm the download, then start the program and select "Debug" > "Start" in the menu bar.

### 5.1.3 Sysmac Studio and EtherCAT Protocol I/O Module

1. Communication connection diagram, as shown in Figure 5-1-16shown.

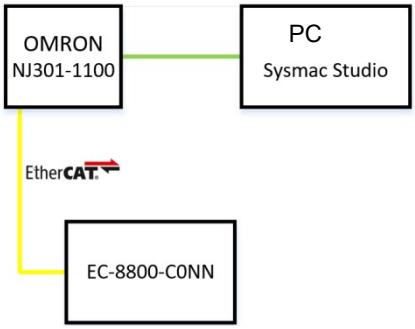



Figure 5-1-16 Communication connection diagram

2. Hardware configuration is shown in Table 5-1-3Shown

Table 5-1-3Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | Sysmac Studio |
| Controller | 1 | NJN301-1100 |
| EC-8800-C0NN | 1 | EtherCAT protocol 8DI/8DOModules |
| Network cable | several | |

3. New project and equipment configuration

Open Sysmac Studio, select "New Project" and configure the device model and version number, as shown in Figure 5-1-18 shown.

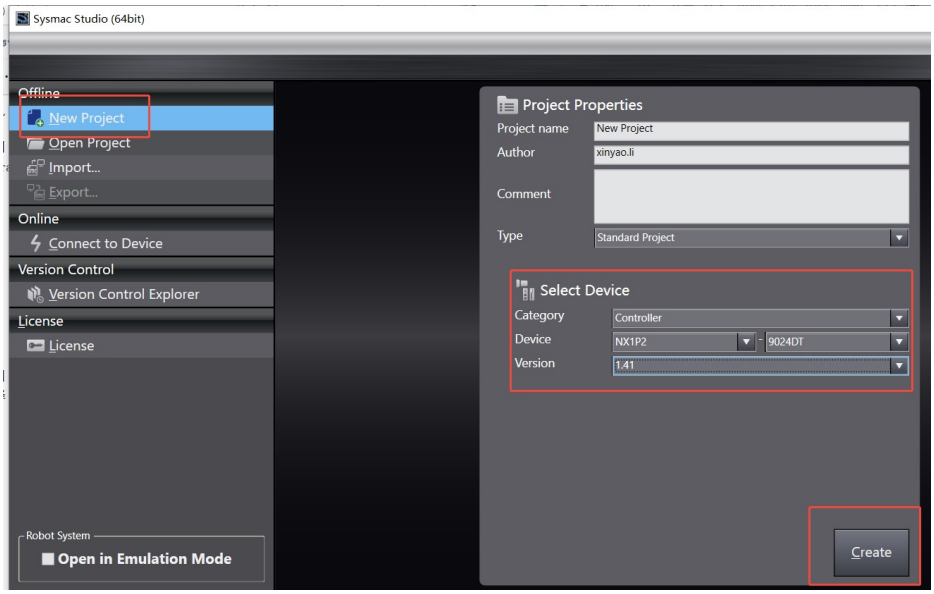



Figure 5-1-17 New Construction

4. Install XML Description File

As shown in Figure 5-1-17 Open Sysmac Studio's ESI library, click "Install (file)", Select the XML file and confirm, then wait for the installation to complete.

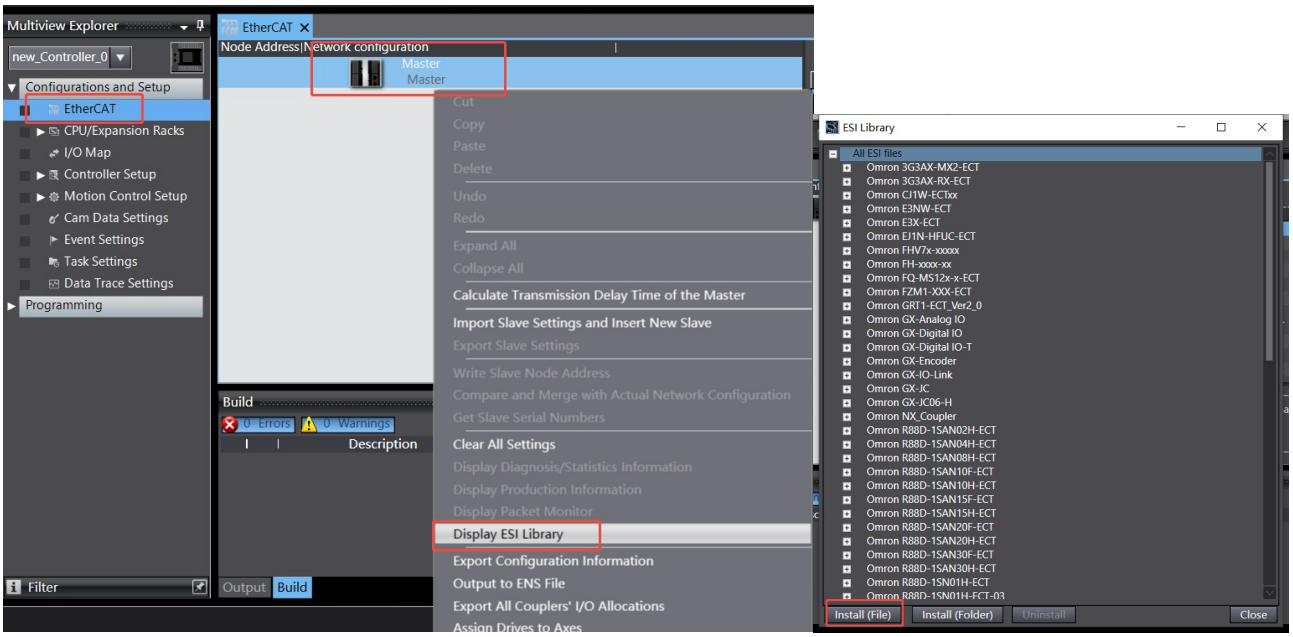



Figure 5-1-18 Display ESI library

To add an adapter, double-click "EtherCAT" in the Multiview Explorer, select "FS Series" in the Toolbox, and then select "EC-8800-C0NN-V3" at the bottom of the Toolbox, as shown in Figure 5-1-19.

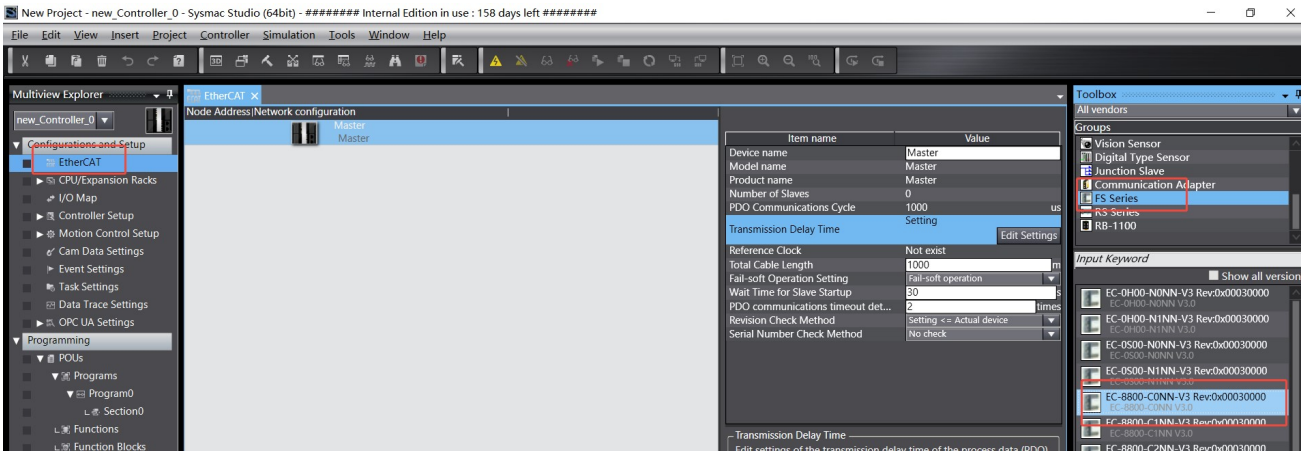



Figure 5-1-19 Adding Modules

Click the online icon, right-click the mouse on the icon of the master device, and select Write Slave Device Node Address (the default node of the WELL-LINK EtherCAT slave device is 0, so the node number must be set), as shown in Figure 5-1-20shown.

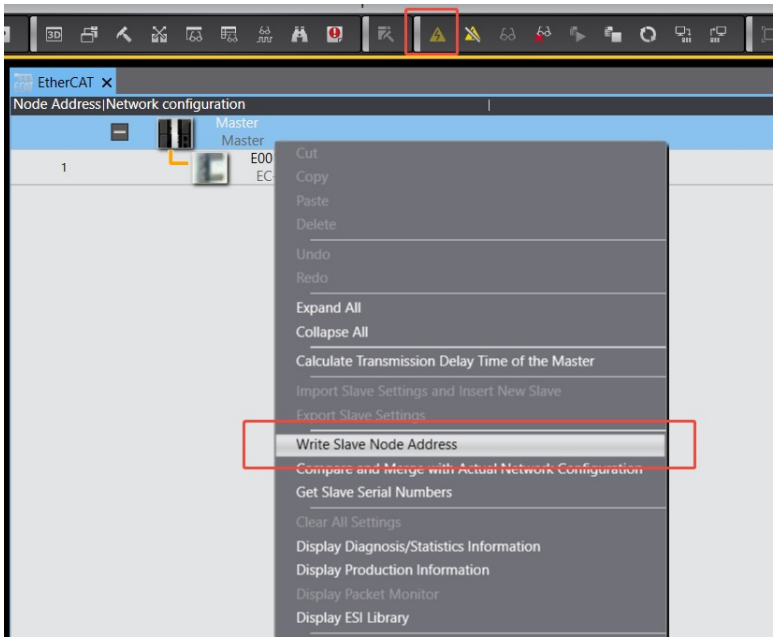



Figure 5-1-20Node address write

**Note: After writing the node address, the device needs to be restarted for the node address to take effect.**

After the device restarts, download the program to the controller. Select "Controller" > "Transfer" > "Transfer to Controller (T)" in the menu bar, as shown in Figure 5-twenty oneas shown, and execute the download.

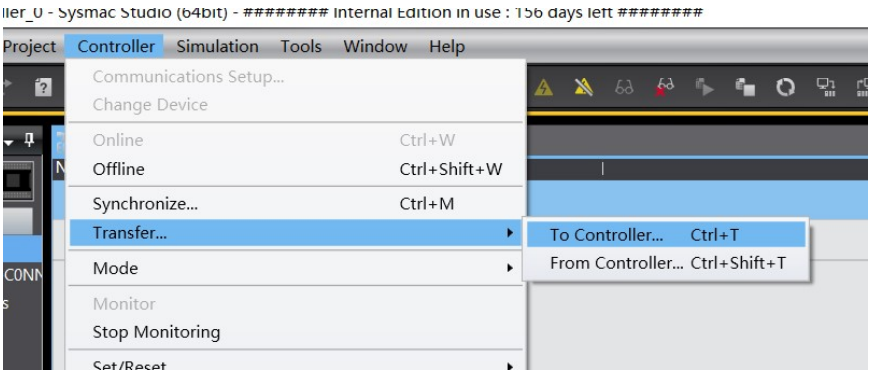



Figure 5-1-21Program Download

## 5.2 PROFINET Protocol

### 5.2.1 TIA Portal and PROFINET Protocol IO Module connections and configuration

1. Communication connection diagram, as shown in the figure5-2-1shown.

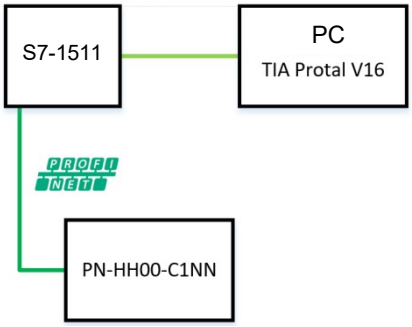



Figure 5-2-1Communication connection diagram

2. Hardware configuration as shown in the table5-2-1Shown

surface5-2-1Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | Install TIA Portal V16 |
| Controller | 1 | S7-1511 |
| PN-HH00-C1NN | 1 | PROFINET16DI/16DOModul es |
| Network cable | several | |

3. Installation GSD document

Open TIA Portal V16, select "Options" > "Support Device Description Files (GSD)", as shown in the figure5-2-2shown.

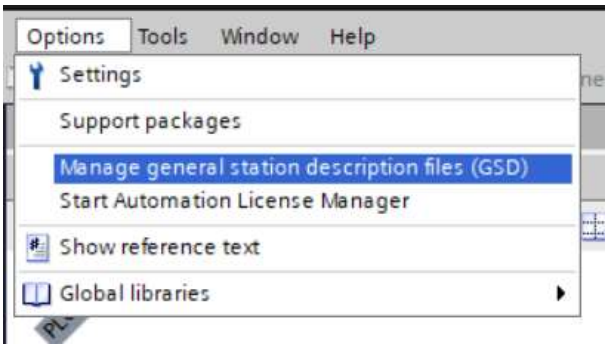



Figure 5-2-2Install GSD document

4. New project and equipment configuration

Open TIA Portal V16, select New Project and configure, as shown in the figure5-2-3.

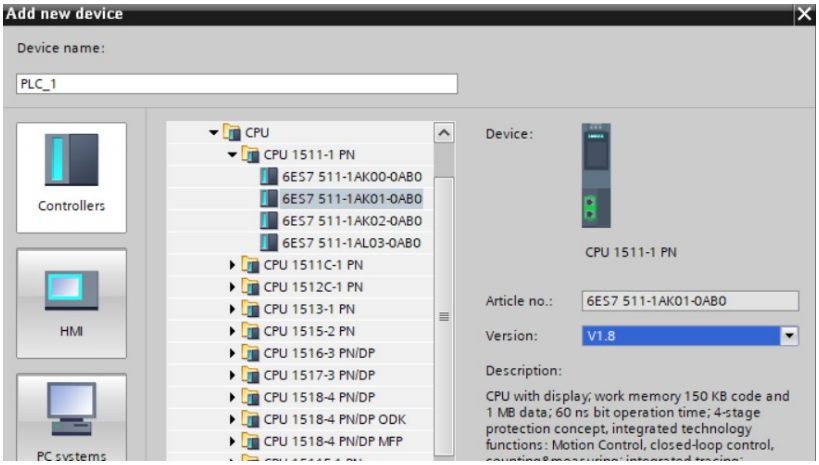



Figure 5-2-3New Construction

Configure the device, switch to the network view window, expand the hardware directory on the right, and select PN-HH00-C1NNDrag it to the network view, as shown in the figure5-2-4shown.

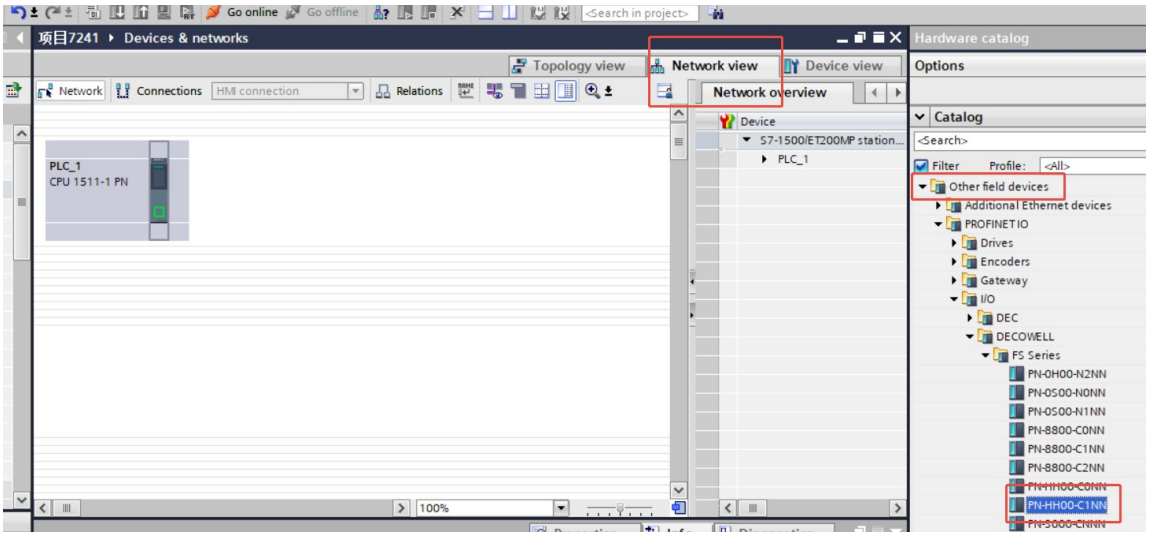



Figure 5-2-4 Configuring the device

In the network view for remote IO module assignment controller, mouse click IOIn the module "Not assigned", select PLC_1.PROFINET interface_1, as shown in the figure5-2-5shown.

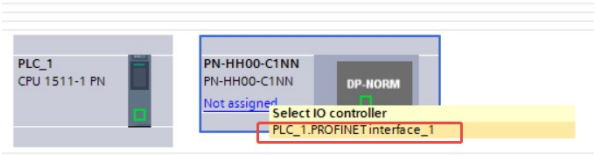



Figure 5-2-5Allocation IO Controller

Setting I/OModule IPAddress, in the device view, double-click the module to enter the property view, as shown in the figure5-2-6shown.

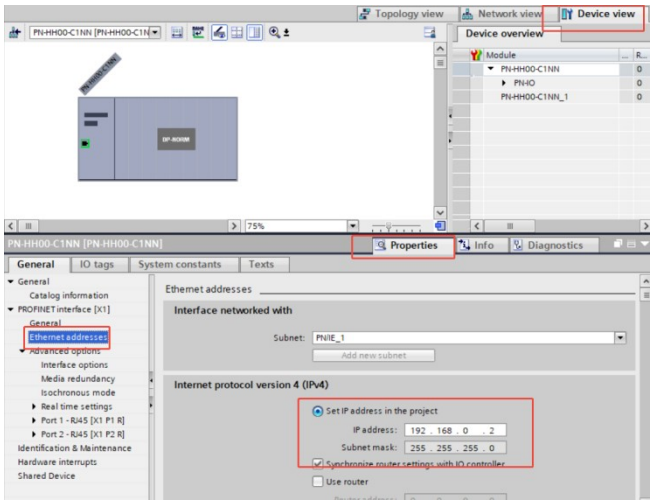
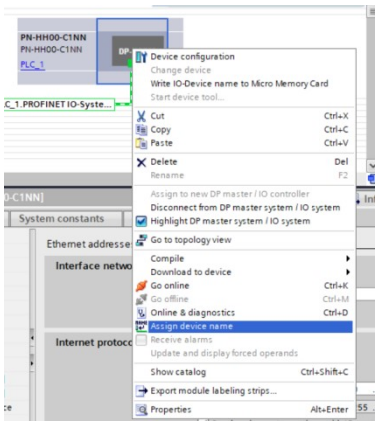



Figure 5-2-6Allocation IP address

remoteAssign device names to I/O modules. Right-click the module and select “Assign device name” as shown in Figure 5-2-7. Select the interface type and update the list and assign a name as shown in Figure 5-2-8.



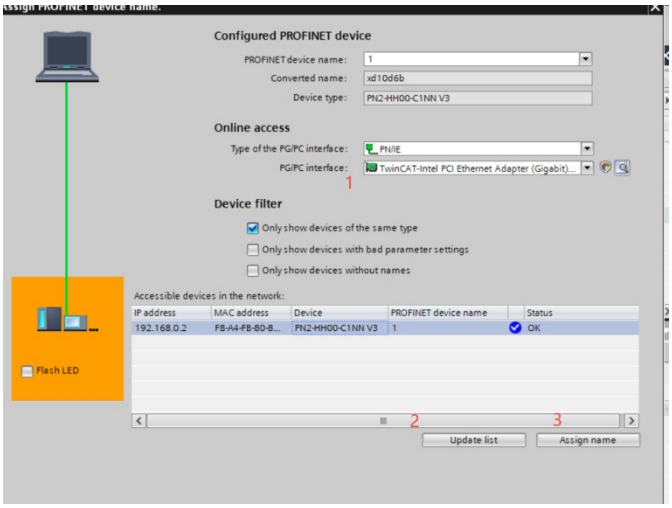




Figure 5-2-7 Assigning a Device Name

Figure 5-2-8 Write device name

Select all devices in the network view and download, as shown in the figure5-2-9As shown, after the program is downloaded, start CPURun and switch to online monitoring to see if the communication is normal, as shown in the figure5-2-10shown.

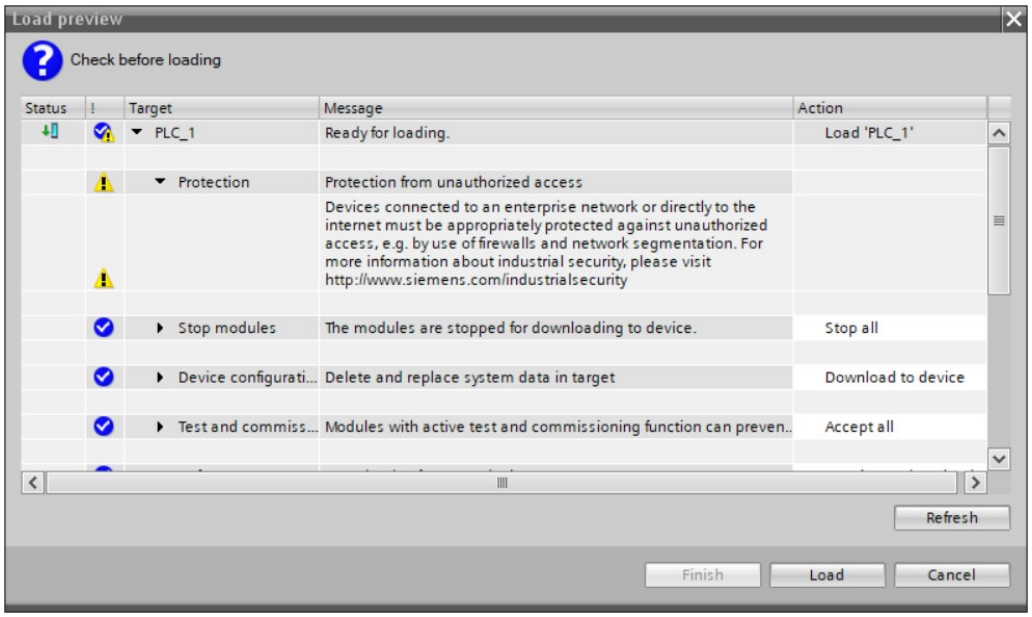



Figure 5-2-10Program Download

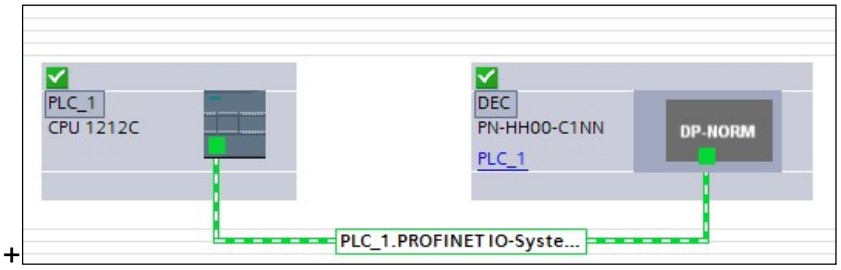



Figure 5-2-11Equipment Monitoring

### 5.2.2 Step7 Smart and PROFINET protocol IO moduleConnection and configuration

1. Communication connection diagram, as shown in the figure5-2-12shown.

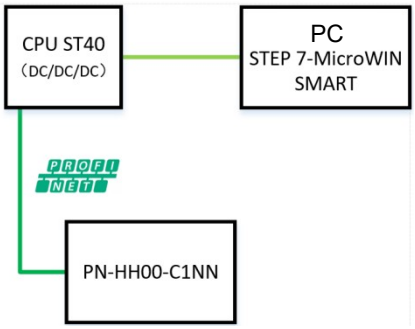



Figure 5-2-12Communication connection diagram

2. Hardware configuration as shown in the table5-2-2Shown

Table 5-2-2 Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InstallSTEP7-MicroWIN SMART |
| Controller | 1 | CPU ST40(DC/DC/DC) |
| PN-HH00-C1NN | 1 | PROFINETprotocol16DI/16DOModules |
| Network cable | several | |

3. Install GSD document

OpenSTEP7-MicroWIN SMART, select "GSDML Management", as shown in the figure5-2-13shown.

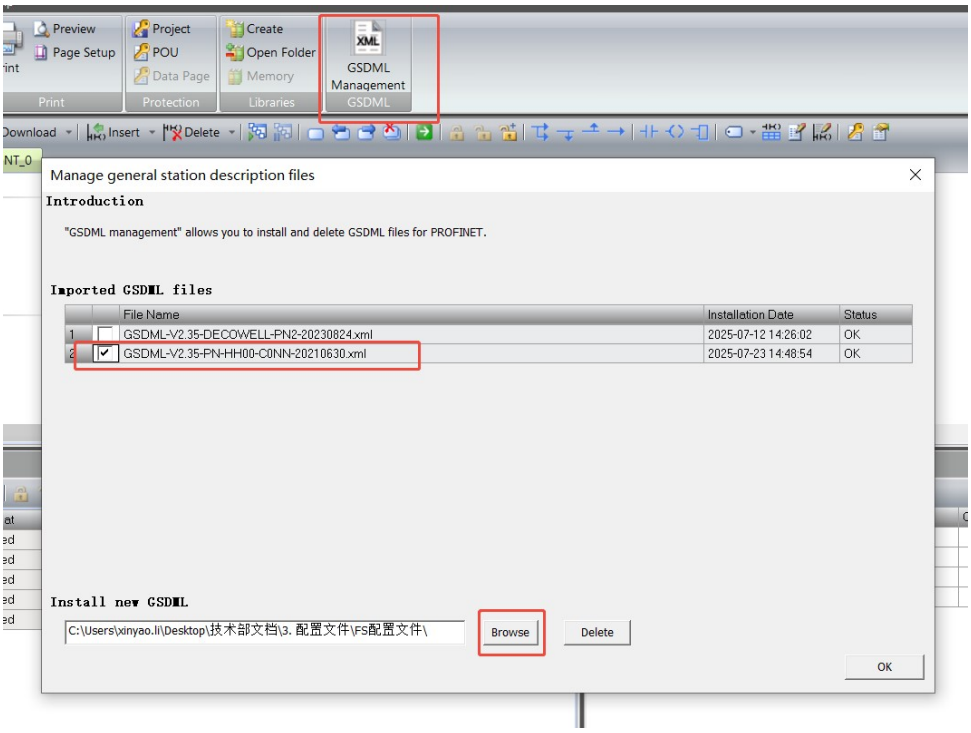



Figure 5-2-13Install GSD document

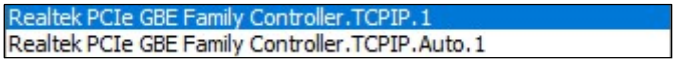
4. Assign device name

In the menu bar, select "Tools" > "Find PROFINET Devices". In the window that appears, select the network card connected to the module and search for devices. Select the module from the network and edit its device name, as shown in Figure 5-2-14.

Notice:

① **When selecting a network card, two options will appear for the same network card, as**

**shown in the figure below. Here, select the network card without Auto.**




**②After assigning the device name, make sure that the device name used when configuring the IO module is exactly the same as the one assigned above; otherwise, the PLC will not be able to communicate properly with the IO module.**

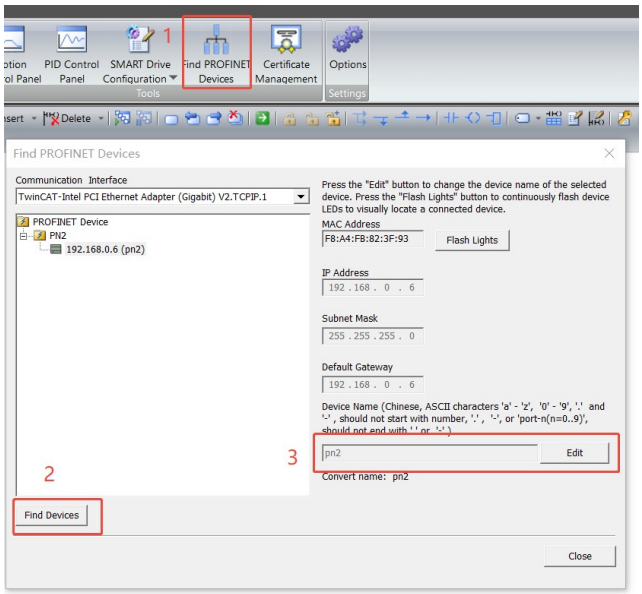



Figure 5-2-14Assigning a Device Name

5. New Project and Equipment Configuration

From the menu bar, select Tools > PROFINET", select PLCThe role is the controller, as shown in the figure5-2-15As shown, add IOmodule and assign a device name (which must be the same as the device name assigned in step 4 above) andPAddress and confirm the generation, as shown in the figure5-2-16shown.

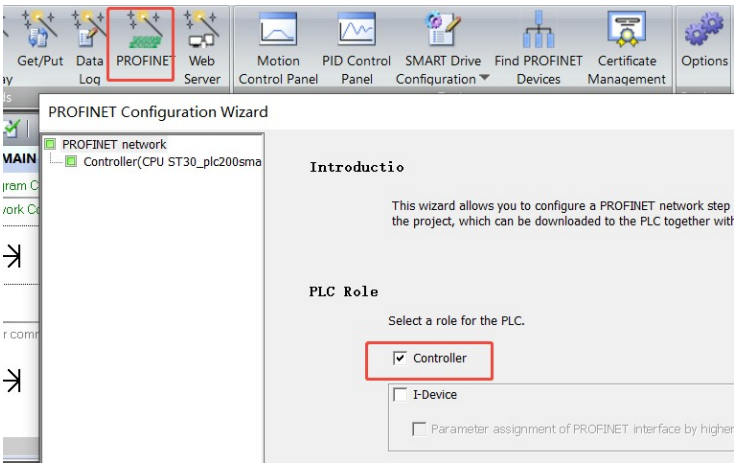



Figure 5-2-15Select PLC Role

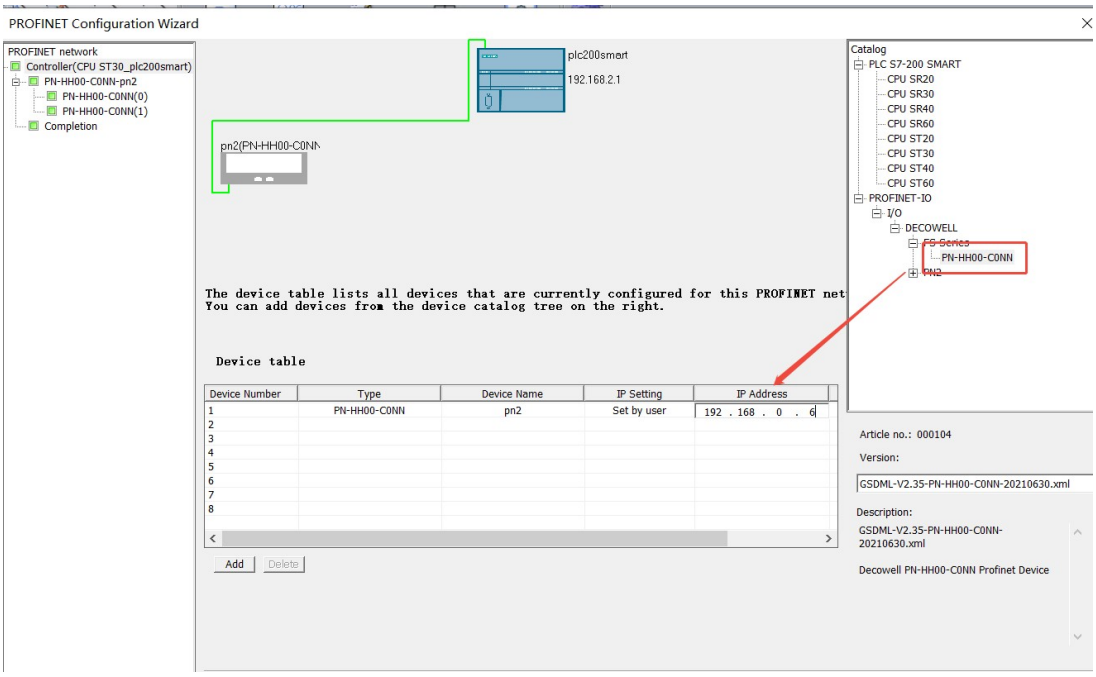



Figure 5-2-16Assign a device name and IP address

6、Program download

In the menu bar, select "PLC" > "Download", then in the communication window, choose "Find CPU". Select the PLC to which you want to download the program, and proceed with the download.

**Note:** When using STEP 7-MicroWIN SMART to configure PROFINET communication for the S7-200 SMART, the CPU firmware version must be ≥ V2.4. For firmware version V2.3, an online firmware upgrade is supported. However, for firmware versions below V2.3, the firmware must be updated using a memory card inserted into the CPU.

### 5.2.3 CODESYS and PROFINET protocol IO module Connection and configuration

1. Communication connection diagram, as shown in the figure 5-2-17 shown.

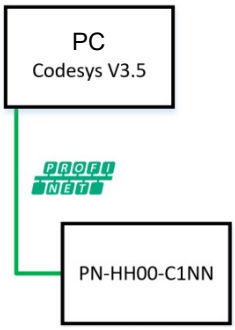



Figure 5-2-17Communication connection diagram.

2. Hardware configuration as shown in the table5-2-4Shown

surface5-2-4Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InstallCodesysV3.5 |
| PN-HH00-C1NN | 1 | PROFINETprotocol16DI/16DOModules |
| Network cable | several | |

2. Install GSDdocument

Open CODESYS V3.5Software, select "Tools" > "Device Repository" from the menu bar, as shown in the figure5-2-18shown.

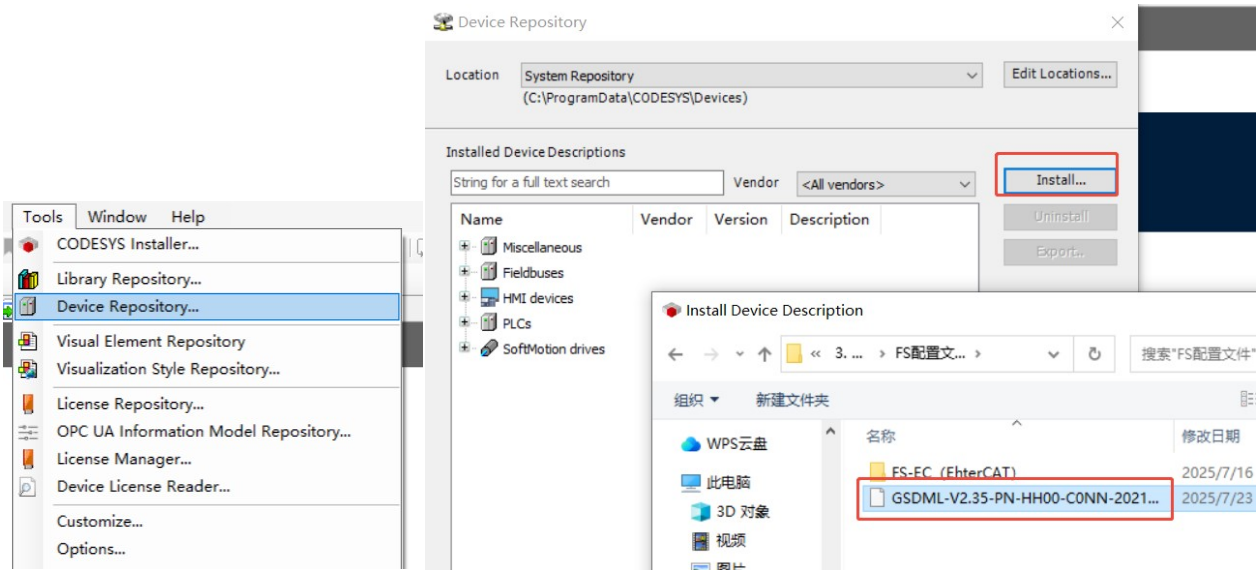



Figure 5-2-18Install GSD document

4, New Project and Equipment Configuration

Open CODESYS V3.5Software, select New Project > Project > Standard project", as shown in the figure5-2-19shown.

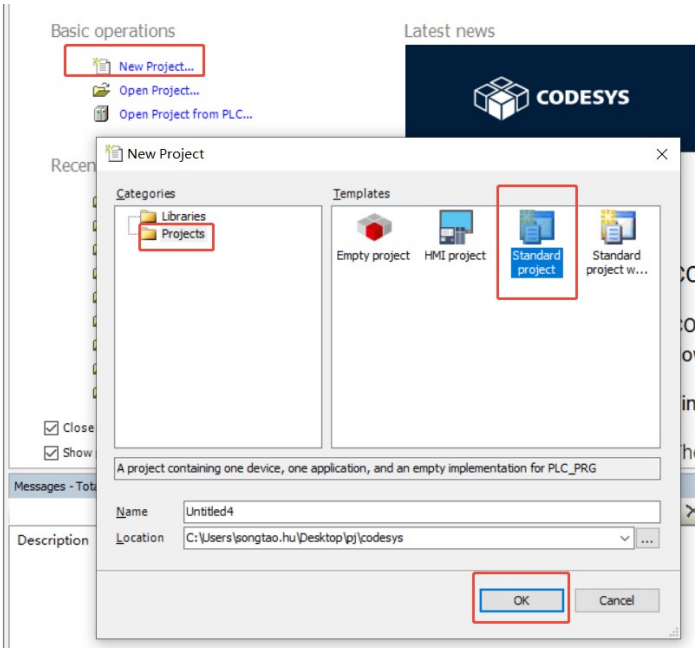



Figure 5-2-19New Construction

In the standard project window, select "CODESYS SoftMotion Win V3" as the device, and choose "Structured Text (ST)" as the programming language for PLC_PRG, as shown in Figure 5-2-20.

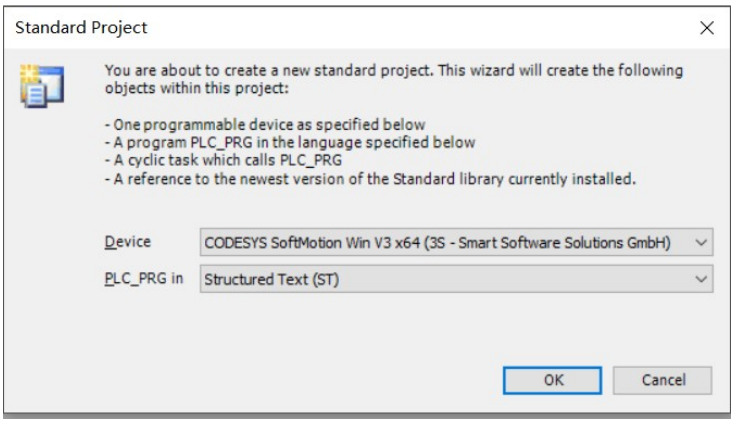



Figure 5-2-20Select device and programming language

In the device tree, go to "Device (CODESYS SoftMotion Win V3)" > "Add Device", and add both the Ethernet adapter and the PROFINET IO Controller, as shown in Figures 5-2-21 and 5-2-22.

**Tip:** When configuring PROFINET IO in the native CODESYS software, if an error occurs due to a missing library, the user needs to manually double-click the Library Manager. In the Library Manager window, select and download the missing library—this process requires an active internet connection.

Additionally, pay attention to the IP address and subnet of the network port connected to the IO device. Make sure they are in the same subnet when setting the IP address of the IO device to avoid communication issues.

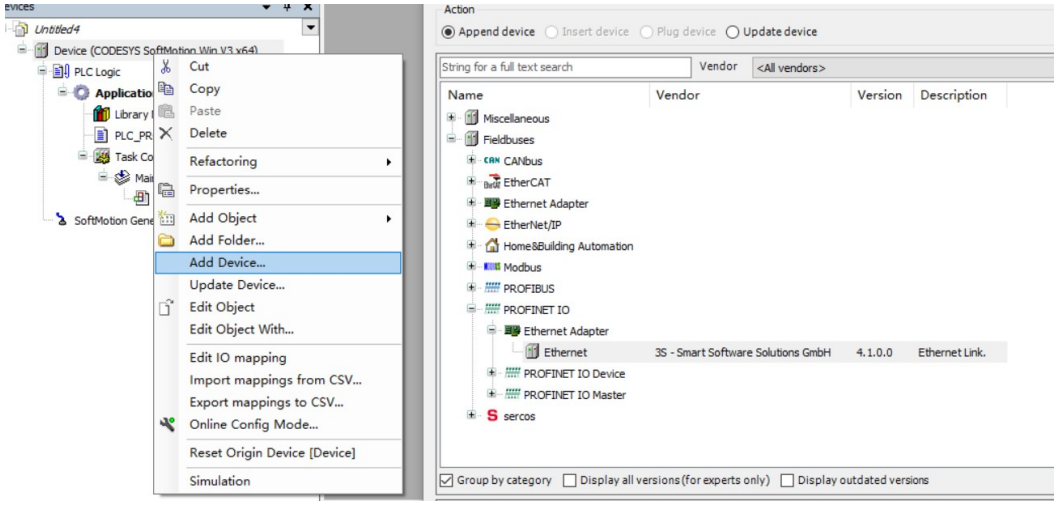



Figure 5-2-21Adding an Ethernet Adapter

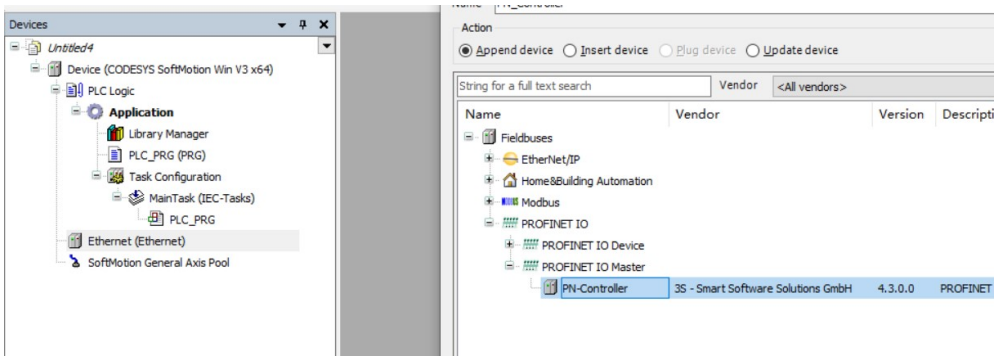



Figure 5-2-22Add PROFINET IOMain Station

In the device tree, double-click "Ethernet" to assign the Ethernet port and configure the IP parameters of the PROFINET IO Controller, as shown in Figures 5-2-23 and 5-2-24.

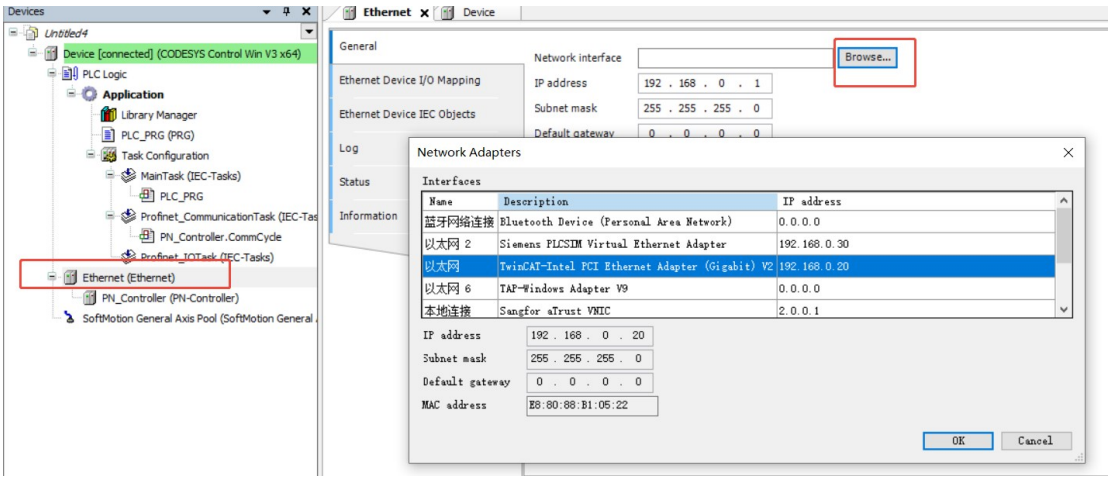



Figure 5-2-23 Ethernet allocation network port

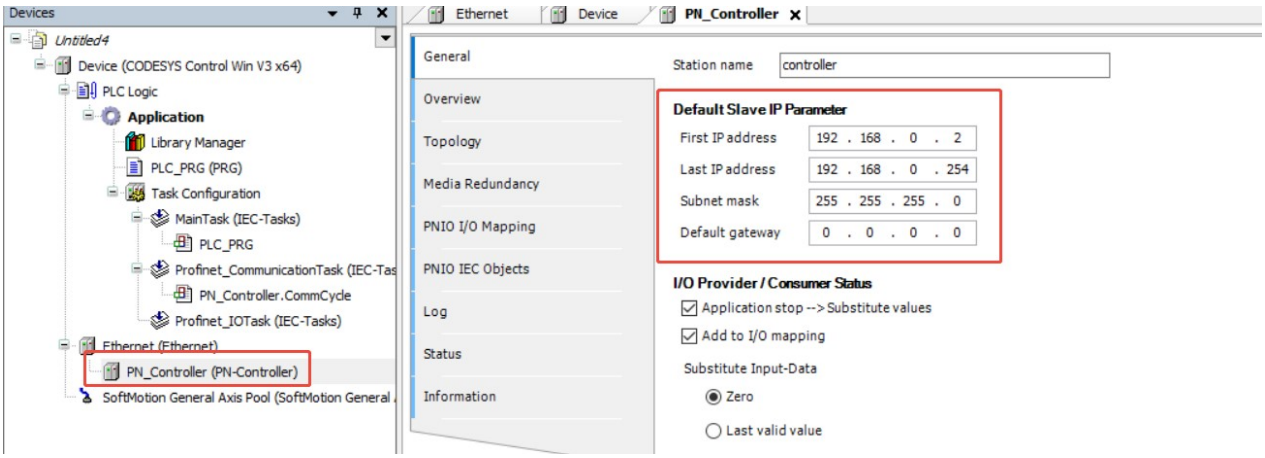



Figure 5-2-24Setting PROFINET IO Master Station IP

Download the program to the controller and start it. Then exit login mode. Right-click PN_Controller and select "Scan Devices". In the device window, select the module and assign the device name and IP address, as shown in Figure 5-2-25.Then, copy the device into the project, as shown in Figure 5-2-26.

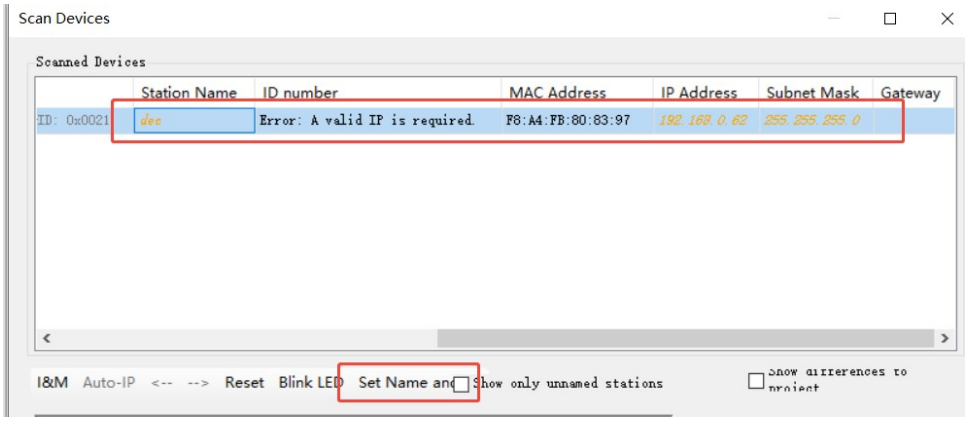



Figure 5-2-25Assign a name to IP address

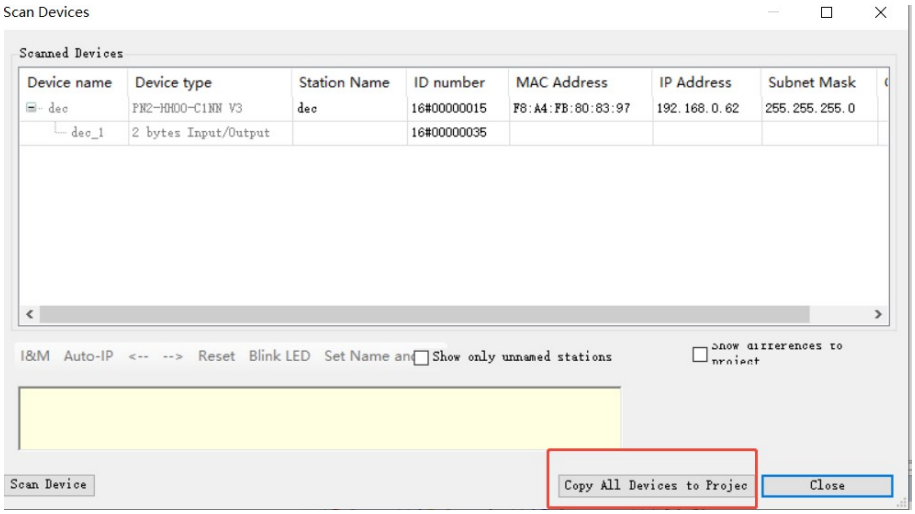



Figure 5-2-26Copy the device to the project

5. Program download and device monitoring

Download the project to the controller and start running and monitoring, as shown in the figure5-2-27shown.

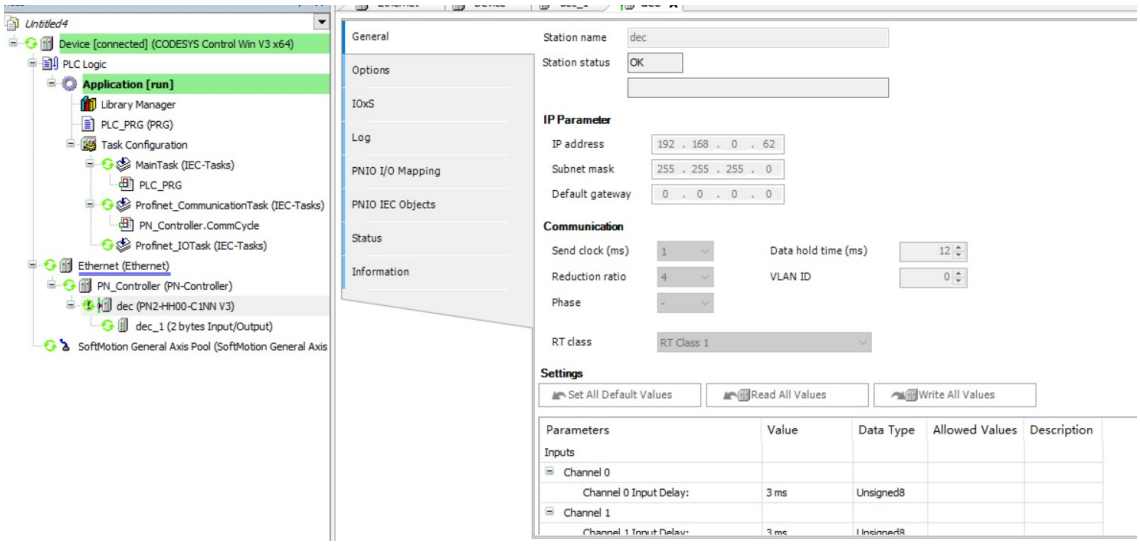



Figure 5-2-27Program download and monitoring

## 5.3 CC-Link IE Field Basic protocol

### 5.3.1 GX-Works2 and CC-Link IE Field Basic protocol IO module connections and configuration

1. Communication connection diagram, as shown in the figure5-3-1shown.

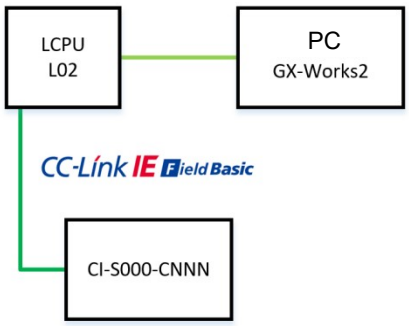



Figure 5-3-1Communication connection diagram

2. Hardware configuration is shown in Table 5-3-1shown.

Table 5-5-1 Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | Installing GX-Works2 |
| Controller | 1 | L02 |
| CI-HH00-C0NN | 1 | CC-Link IE Field Basic Protocol 16DI/16DO Module |
| Network cable | several | |

3. Description file installation

Open the GX-Works2 programming software. From the menu bar, select “Tool” > “Profile” > “Login”, as shown in Figure 5-3-1, and then select the description file that needs to be installed.

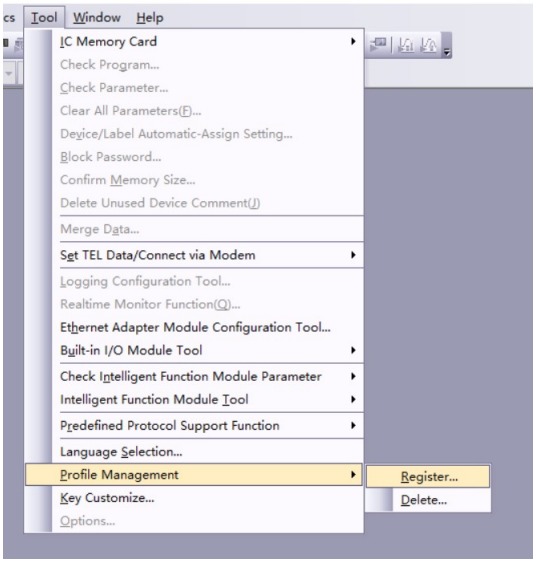



Figure 5-3-1Description file installation

4. New construction projects

Open the GX-Works2 software. From the menu bar, select “Project” > “New”, then choose the PLC series, CPU type, and programming language. In this case, the L-series CPU is used as an example, as shown in Figure 5-3-2.

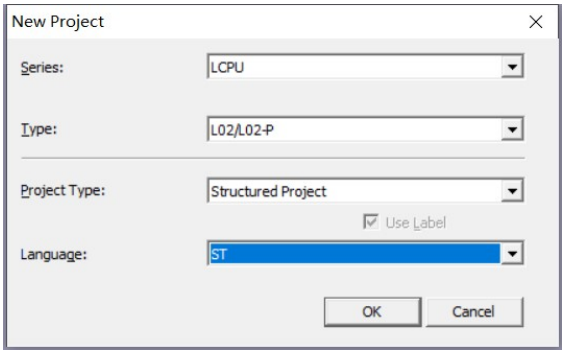



Figure 5-3-2Select PLC type

To configure CC-Link IE Field Basic parameters, go to the left navigation window and select “Parameter” > “PLC Parameter”. In the L parameter settings window, choose “Built-in Ethernet Port Settings”, then set the IP address and subnet mask for the PLC master station. After completing the settings, click “CC-Link IE Field Basic Settings”, as shown in Figure

5-3-3.

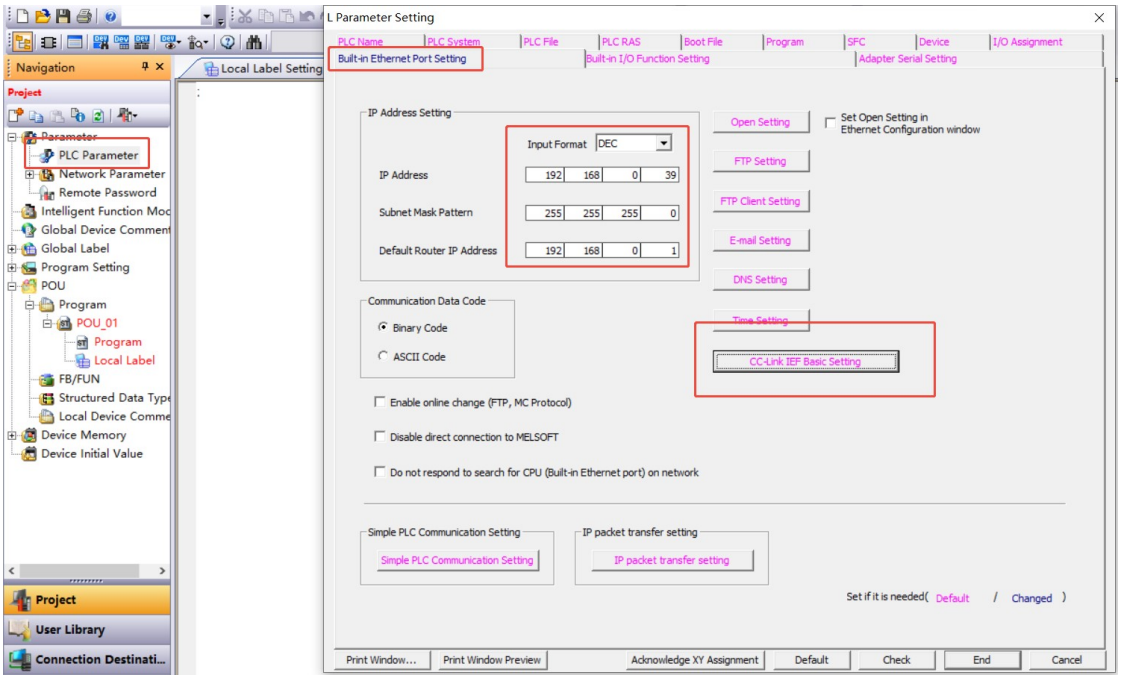



Figure 5-3-3Setting PLC IP Address

In the CC-Link IE Field Basic settings window, check the option “Use CC-Link IE Field Basic”, and then click “Network Configuration Settings”, as shown in Figure 5-3-4.

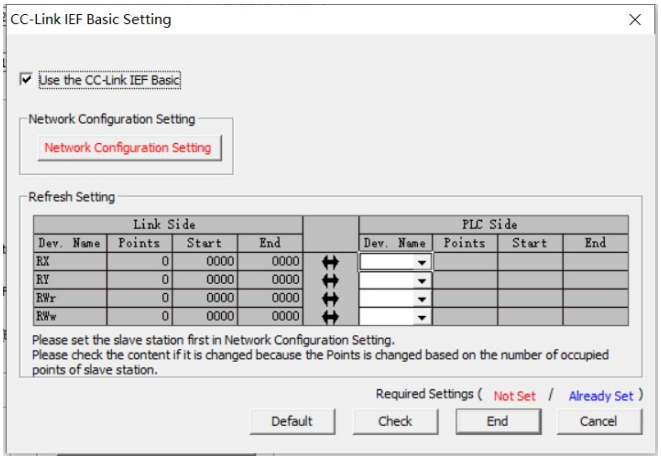



Figure 5-3-4 Network Configuration Settings

Method 1 for adding modules: Manual addition. In the CC-Link IE Field Basic configuration window, drag the I/O modules from the right side directly into the CPU area at the lower left for configuration, as shown in Figure 5-3-5.

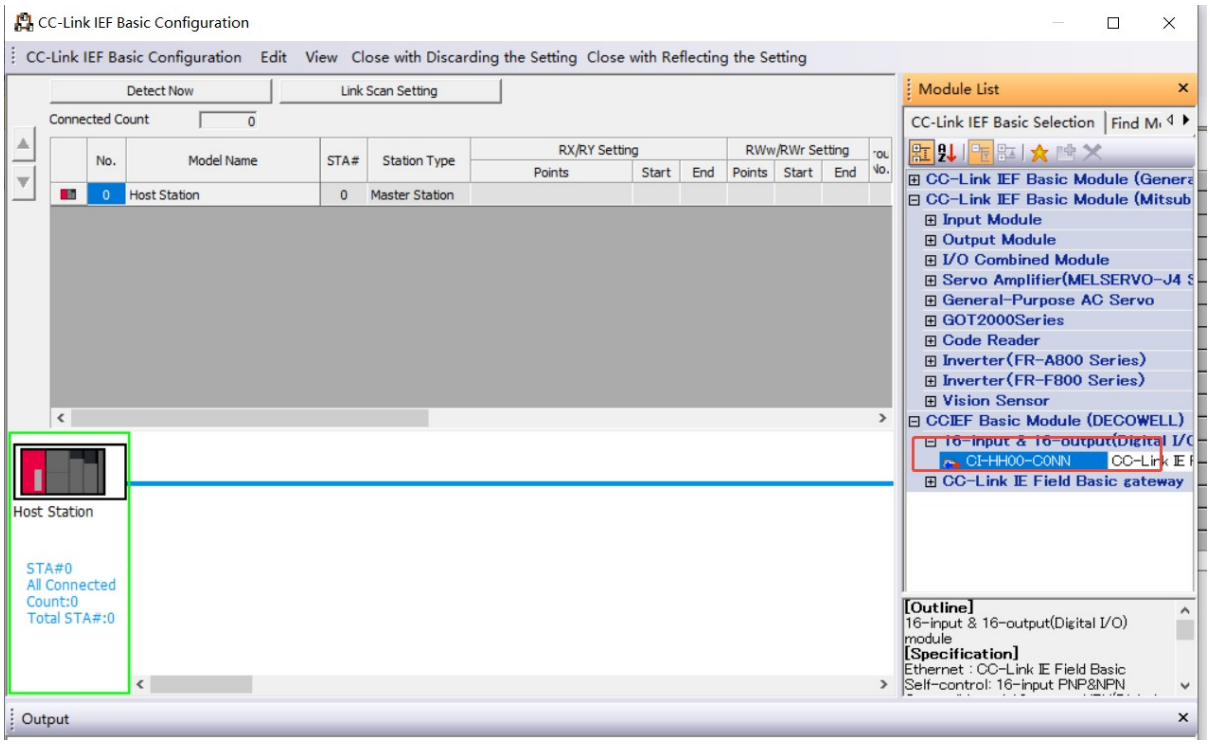



Figure 5-3-5Manually add modules

Method 2 for adding modules: Scan modules on the network into the device configuration. In the CC-Link IE Field Basic configuration window, select “Auto-detect connected devices”, as shown in Figure 5-3-6.

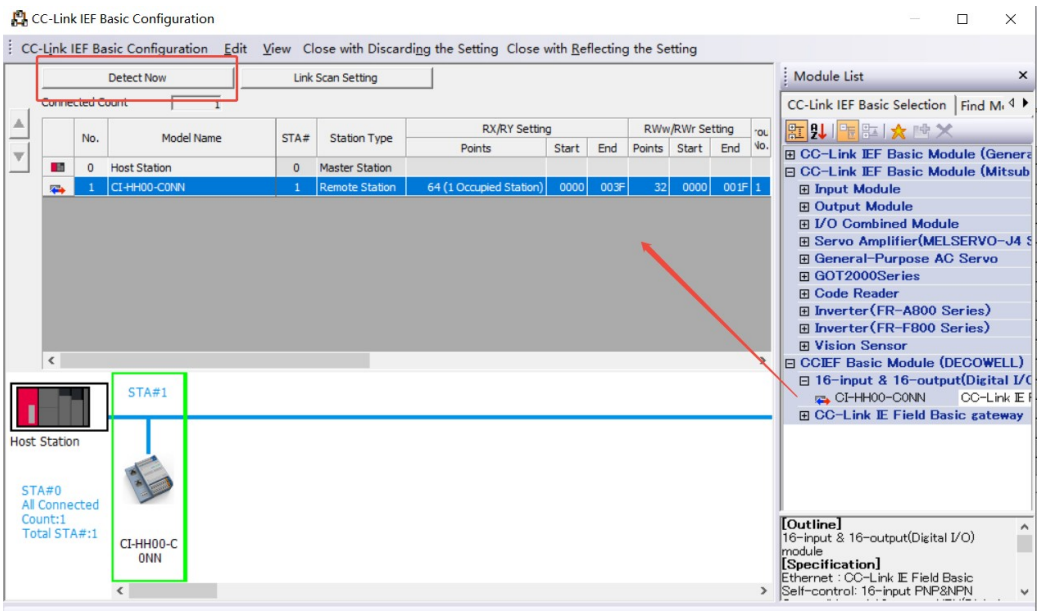



Figure 5-3-6Scan the network for modules

To modify the module’s IP address (default IP address: 192.168.1.88), double-click the IP address field of the module in the CC-Link IE Field Basic configuration window to edit it. After modifying, right-click the module’s IP address, select “Online” > “Reflect Slave

Communication Settings” to apply the IP address change, as shown in Figure 5-3-7. Finally, click “Reflect Settings and Close”, as shown in Figure 5-3-8.

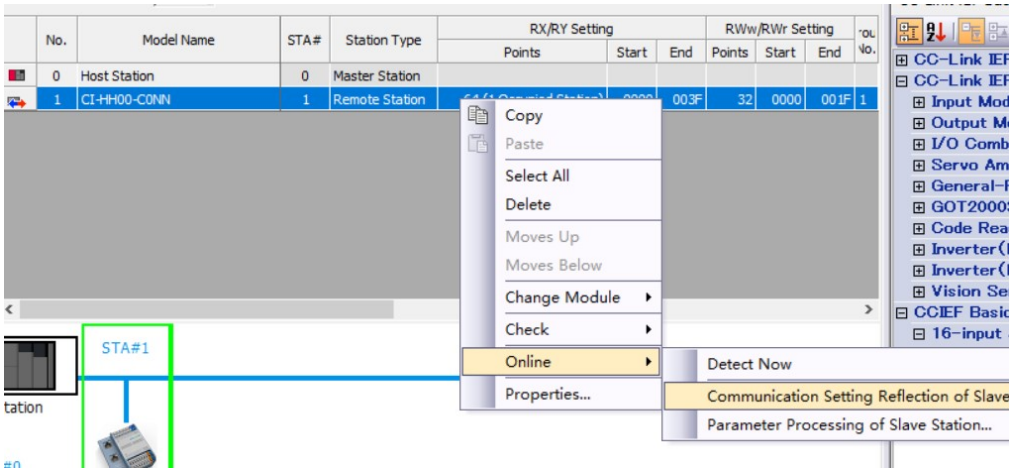



Figure 5-3-7Modification Module IP address

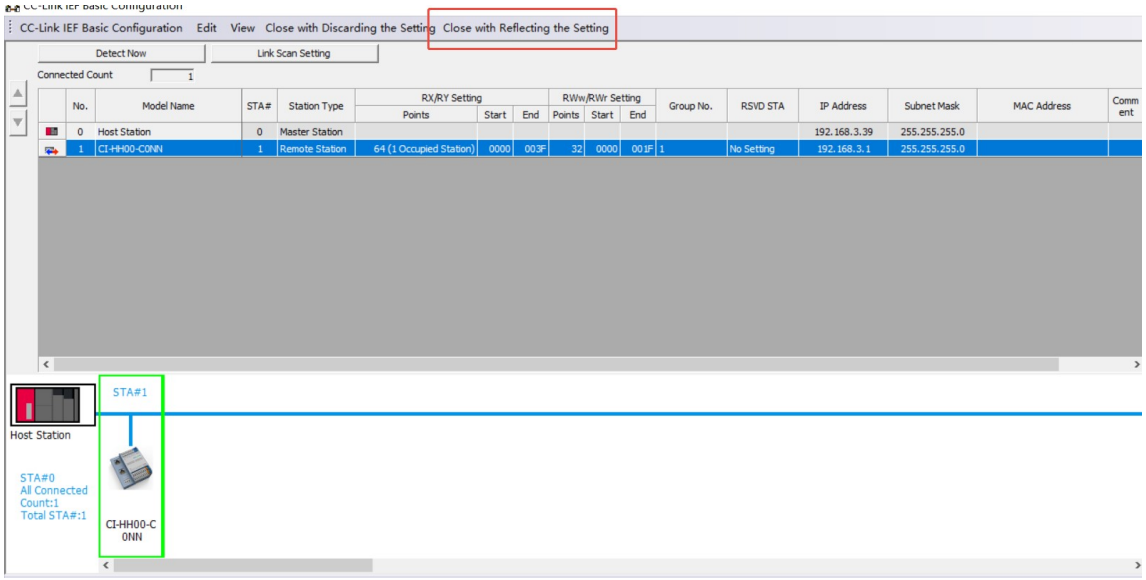



Figure 5-3-8Reflect settings and close

I/O Mapping Configuration: In the CC-Link IE Field Basic configuration window, set the starting address points for the remote I/O module’s inputs and outputs, as shown in Figure 5-3-9.

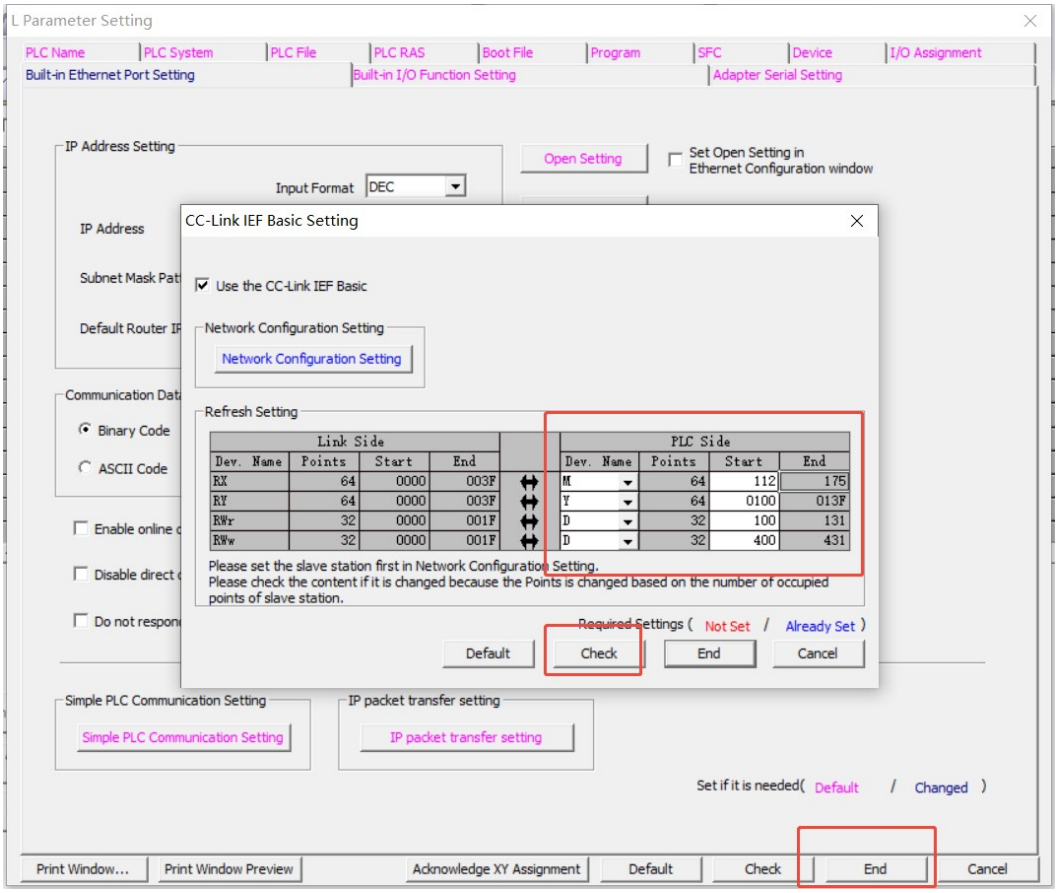



Figure 5-3-9 IO Mapping Configuration

5.CC-Link IE Field Basic Output Point Mapping Method: Each slave occupies 64 points, i.e., 64 DI and 64 DO. Here, the input and output points correspond to the starting addresses X100 and Y100, respectively. The slave I/O point mapping is shown in Figure 5-3-10.

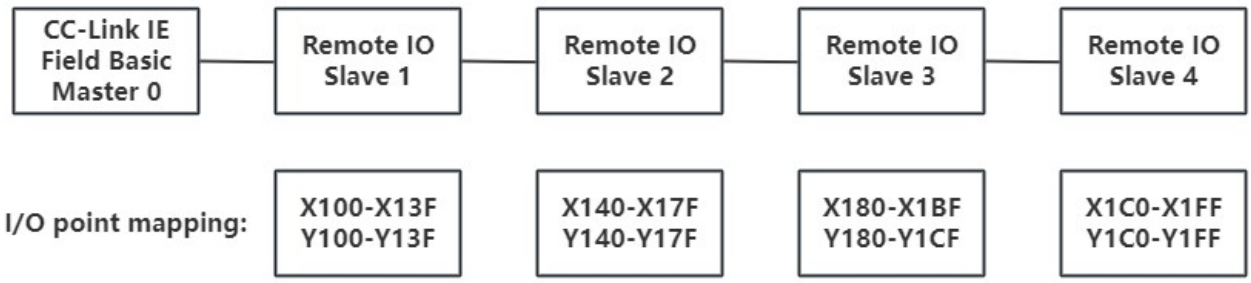



Figure 5-3-10Slave IOPoint Mapping

6. Diagnose communication status

After completing the parameter configuration, download the project to the PLC. You can then check the communication status through online diagnostics. From the menu bar, select “Diagnostics” > “CC-Link IE Field Basic Diagnostics”, and view the status of the slave I/O

modules in the CC-Link IE Field Basic diagnostics window.

## 5.4 CC-Link protocol

### 5.4.1 GX-Works2 and CCLink protocol IO Module connections and configuration

1. Communication connection diagram, as shown in the figure5-4-1shown.

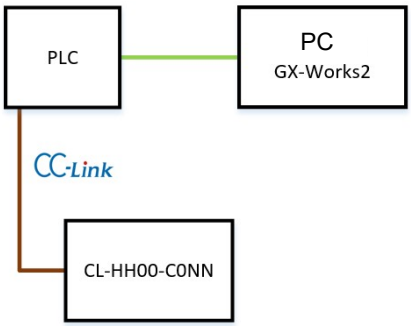



Figure 5-4-1Communication connection diagram

2. Hardware configuration as shown in the table5-4-1Shown

surface5-4-1Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InstallGX-Works2 |
| PLC | 1 | Support CCLink protocol |
| CL-HH00-C0NN | 1 | CC-Linkprotocol 16DI/16DOModules |
| CCLink communication line | several | |

3. New project and communication parameter configuration

Open the GX-Works2 software and select the actual CPU model used on site. Then, in the project's left navigation pane, go to "Parameter" > "Network Parameter" > "CC-Link". In the CC-Link parameter settings window, configure the CC-Link slave settings as shown in Figure 5-4-2, and the CC-Link network parameters as shown in Figure 5-4-3.

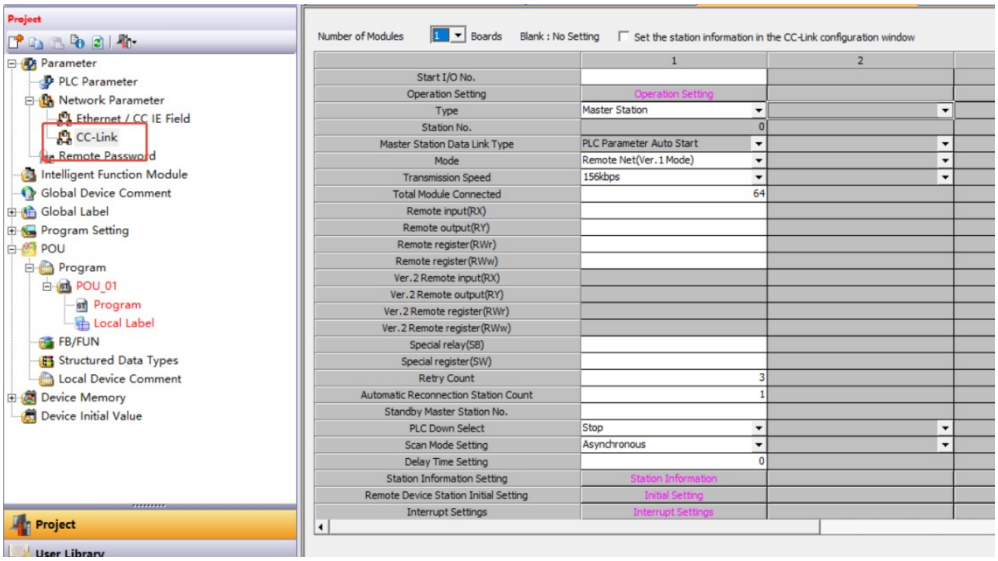



Figure 5-4-2Open CCLink parameter setting window

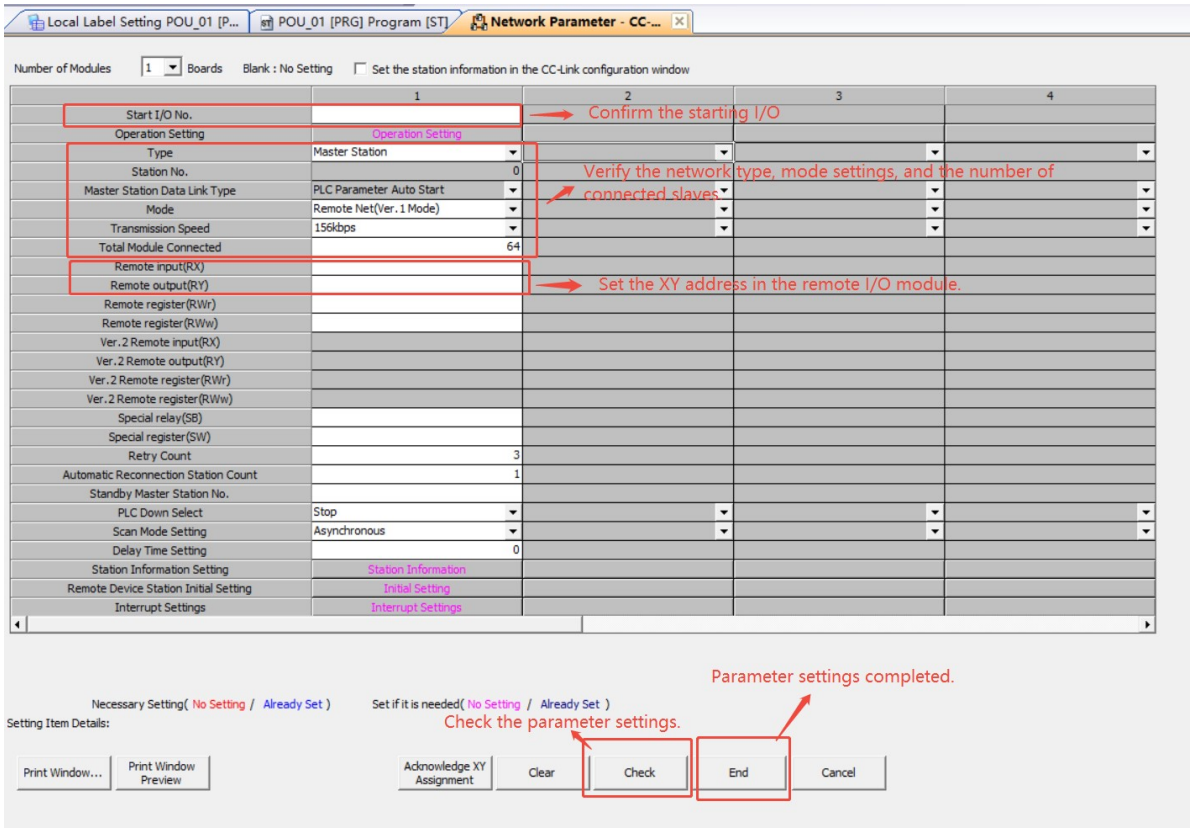



Figure 5-4-3 CC-Link parameter settings

4.CC-Link module communication address allocation diagram

FSSeries CCLink protocol remote IOModule as CCLink remote IOStation, each module occupies 32DIand32DO(Mitsubishi CCLink protocol), module address allocation and use, as shown in Figure 5-4-4shown.

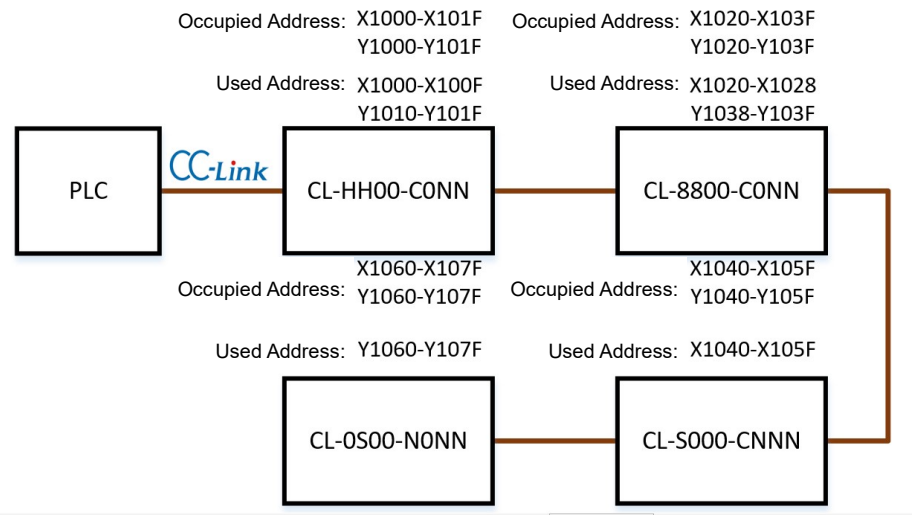



Figure 5-4-4 CC-Link address allocation

## 5.5 DeviceNet Protocol

### 5.5.1 CX-one and DeviceNet protocol IO Module connections and configuration

**Tip:** There are two configuration methods for communication between CX-One and EX-1010: manual and automatic. For details, please refer to items 4 and 5 in section 5.3.1.

1. Communication connection diagram, as shown in Figure 5-5-1shown.

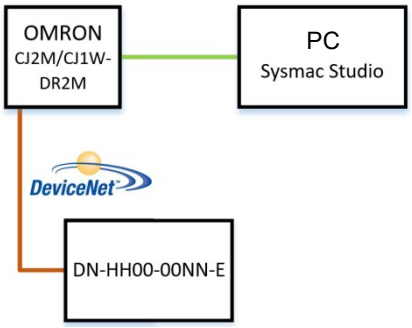



Figure 5-5-1Communication connection diagram

**Note: The power interface on the DeviceNet adapter requires a separate DC 24V power supply. Additionally, terminal resistors must be installed at both ends of the network. The wiring method for the terminal resistors is shown in Figure 5-5-2.**

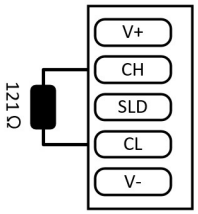



Figure 5-5-2Terminal resistance wiring

2. Hardware configuration as shown in the table5-5-1Shown

surface5-5-1Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | CX-one |
| Controller | 1 | CJ2M/CJ1W-DR2M |
| DN-HH00-C0NN | 1 | DeviceNet protocol 16DI/16DOModules |
| DeviceNet communication line | several | |

3、Install EDS document

Open the CX-Integrator configuration software, select "Tools" > "DeviceNet Tools" > "Edit Configuration File" > "Vendor ID/Equipment Type Table", as shown in the figure5-5-3shown.

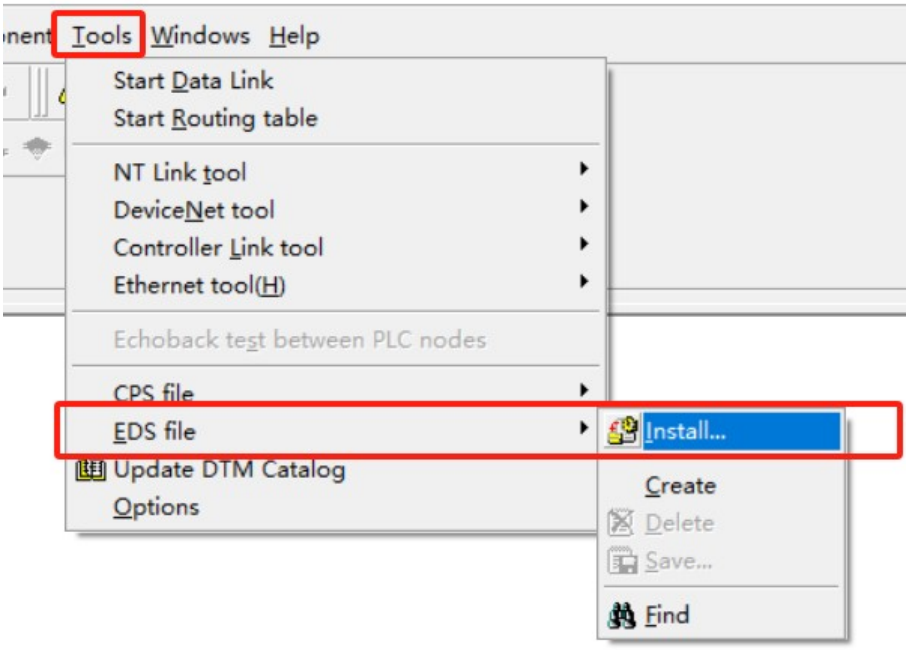



Figure 5-5-3Install EDSdocument

4, Device Configuration (Auto Scan)

Open the CX-Integrator configuration software, in the menu bar select 'Network' > 'Communication Settings', and choose the PLC model as 'CJ2M (CPU Model: CPU31)', as shown in Figure 5-5-4.

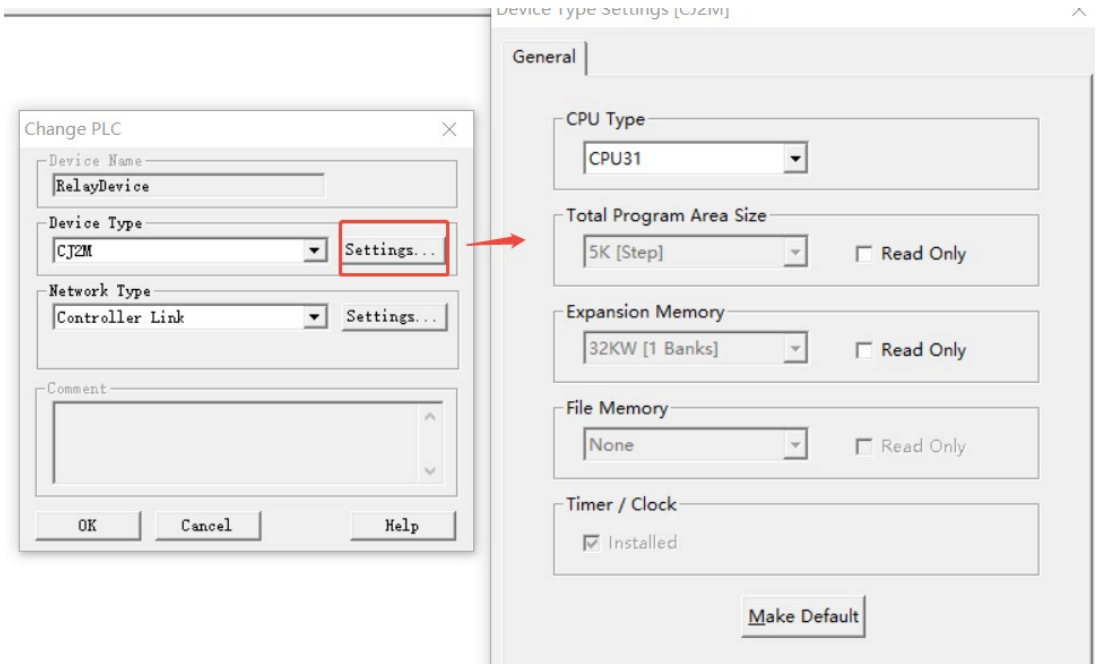



Figure 5-5-4Configuration CPU

Automatic scanning, click the 'Online Work' button, double-click the DeviceNet [CJ1W-DRM21] network (-), node (1), unit (0), and set the network name, then confirm the transfer as shown in Figure 5-5-5. Double-click DN-HH00-C0NN to check if the Omron PLC can detect the DN-HH00-C0NN slave station.

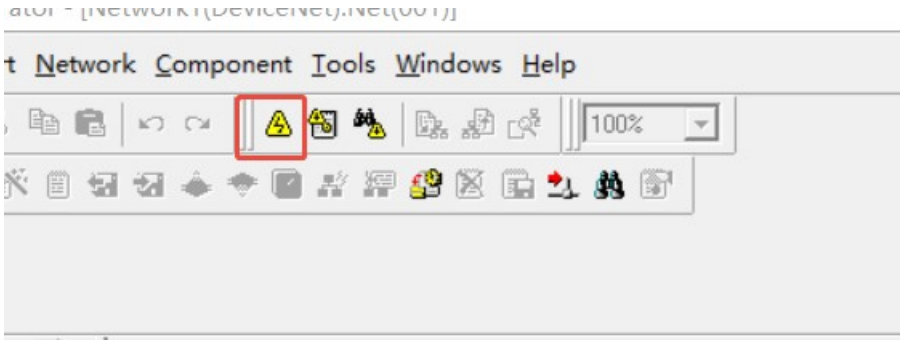



Figure 5-5-5Automatic scanning

5. Device Configuration (Manual Configuration)

On the right side, click "New Project", select "Insert Network", and select "DeviceNet" as shown in the figure5-5-6shown.

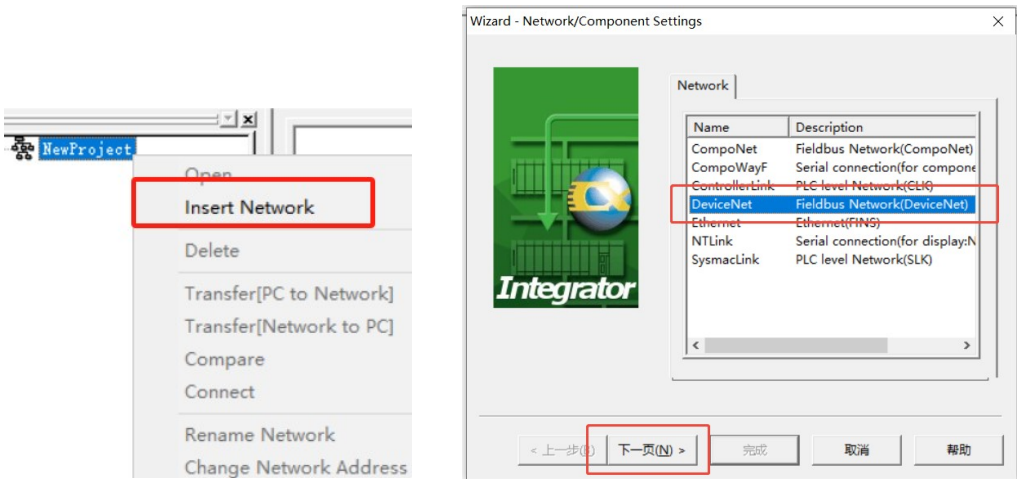



Figure 5-5-6Insert Network

In the inserted network, add Devive firstNet Communication Module CJ1W-DRM21, then add IODevice, right-click the network icon > "Insert Component", select DN-HH00-C0NN, as shown in the figure5-5-7shown.

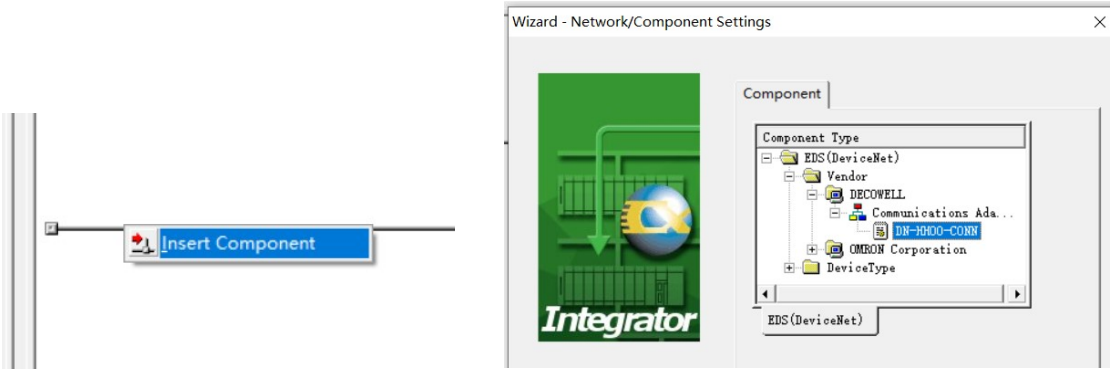



Figure 5-5-7Add Remote IOModules

6, download configuration information

Right-click "CJ1W-DR2M" icon, select "Parameters" > "Edit", as shown in the figure5-5-8shown.

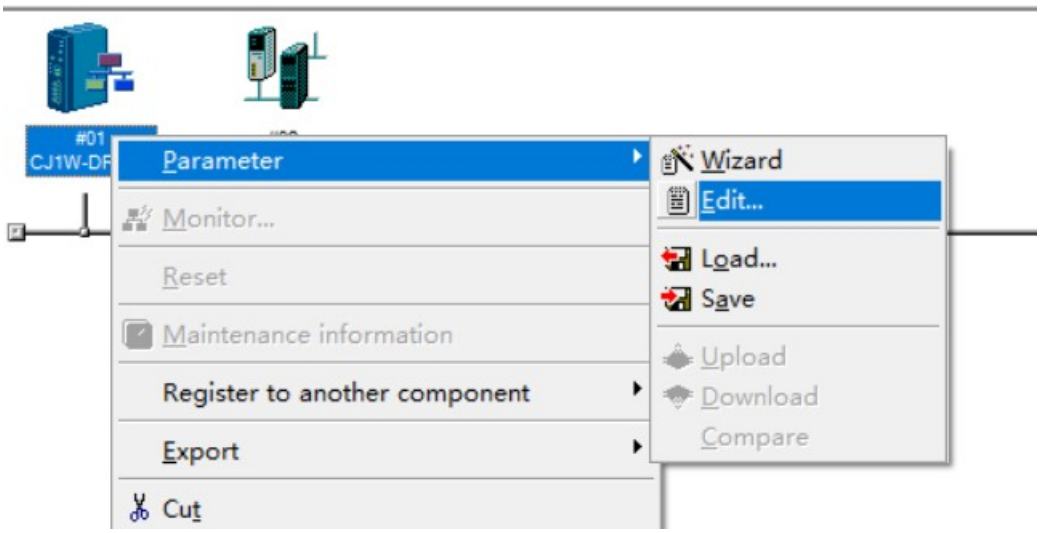



Figure 5-5-8Open parameter editing

In the Edit Device Parameters window, select the "Register button" to register the slave device, as shown in the figure5-5-9After successful registration, you can see the PLC internal address corresponding to the input and output of the slave I/O module. Finally, click the "Download" button to download the configuration information to the PLC, as shown in the figure5-5-10After the download is complete, you can see that the NET RUN indicator on the adapter is on and the SYS indicator flashes once per second.

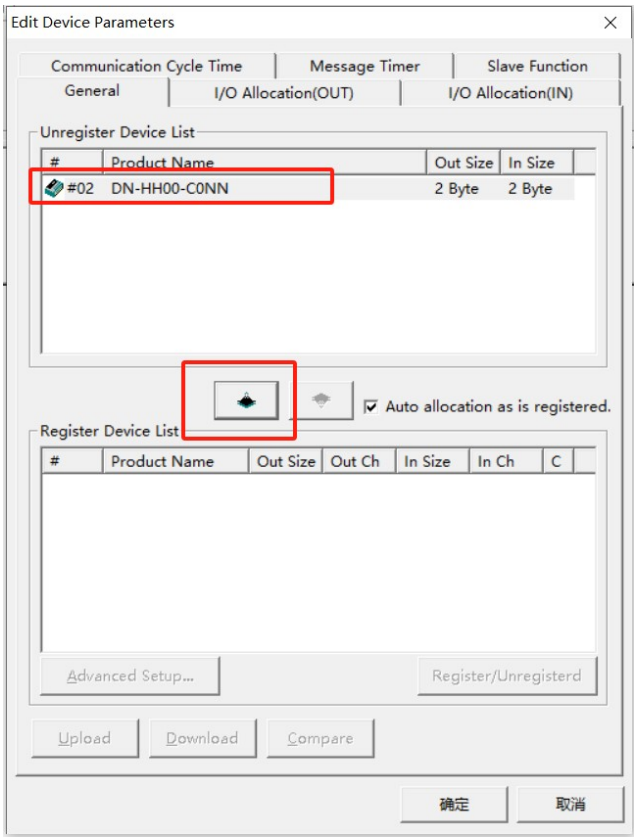



Figure 5-5-9Slave Device Registration

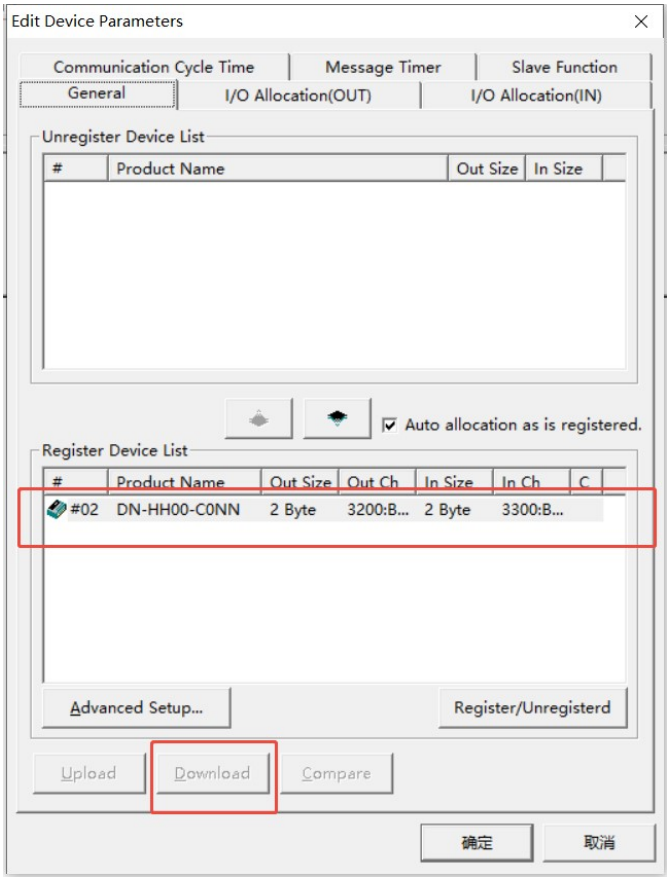



Figure 5-5-10Download Configuration

## 5.6 CAN open protocol

### 5.6.1 AutoShop with CANopen Protocol IO Modules

1. Communication connection diagram, as shown in Figure 5-6-1shown.

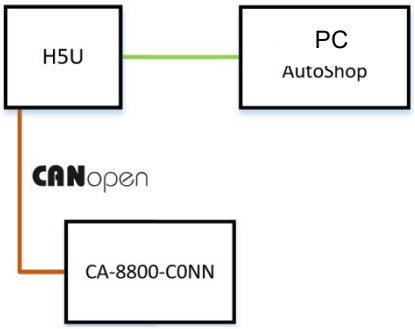



Figure 5-6-1 Communication connection diagram

**Notice:**The power interface on the CANopen adapter requires a separate DC 24V power supply. Terminal resistors must be added to both end modules of the network. The wiring method for the terminal resistors is shown in Figure 5-6-2.

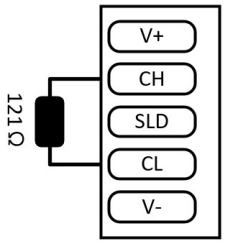



Figure 5-6-2 Terminal resistance wiring

2. Hardware configuration is shown in Table 5-6-1Shown

Table 5-6-1Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | AutShop |
| Controller | 1 | H5U-A8 |
| CA-8800-C0NN | 1 | CANopen 8DI/8DO Modules |
| Communication line | several | |

3. Create a project

Open the AutoShop software, select the actual model corresponding to H5U and create a project. In the configuration panel on the left side of the project, double-click “CAN (CANLink)”, change the protocol type to CANopen, and set the communication baud rate to 125 kbps, as shown in Figure 5-6-3.

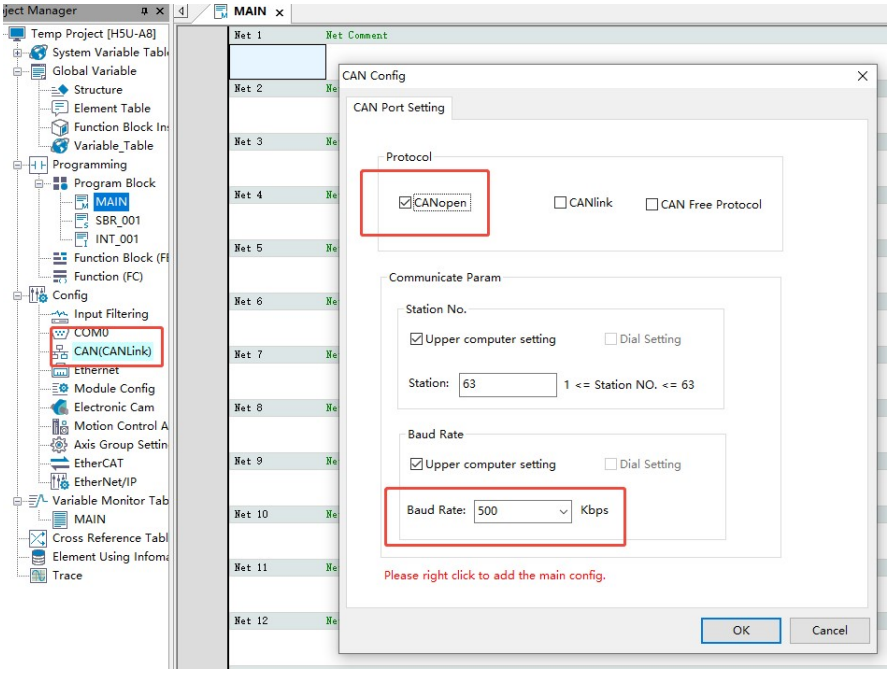



Figure 5-6-3 CANOpen communication parameter settings

Install EDS document

In the configuration panel on the left, right-click “CAN (CANopen)” and select “Add CAN Configuration.” Then double-click the CANopen configuration. In the blank area of the CANopen device list on the right side of the view, right-click and select “Import EDS,” as shown in Figure 5-6-4.

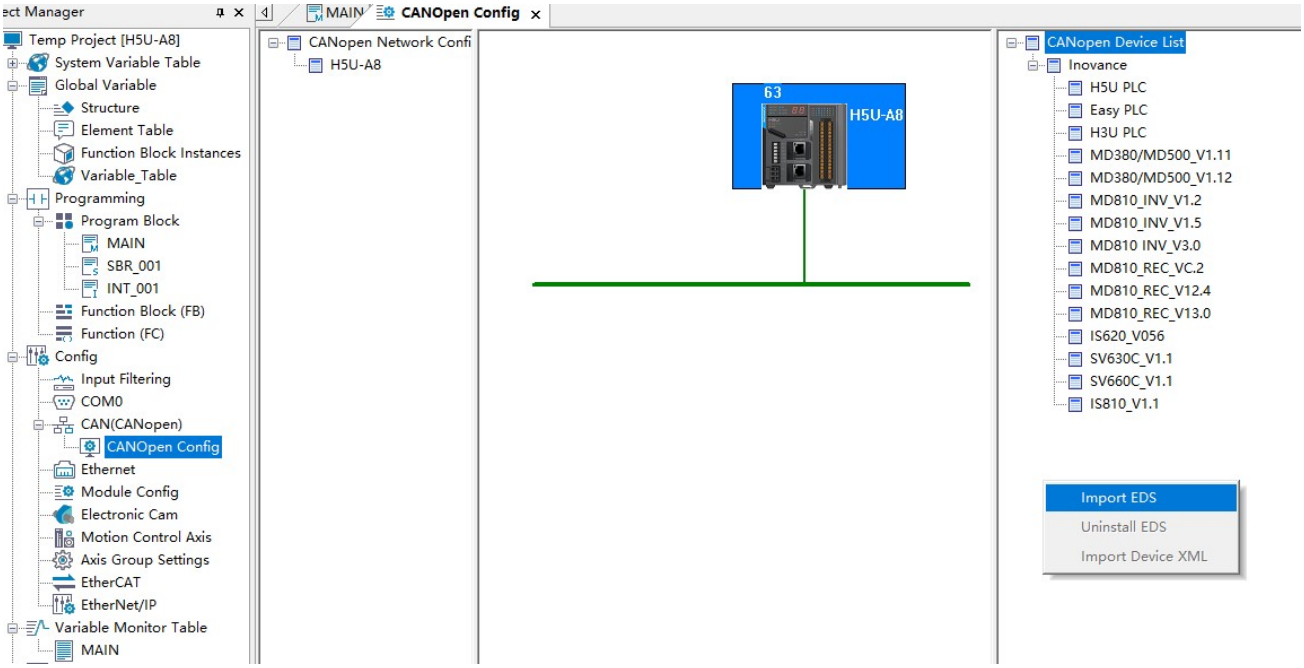



Figure 5-6-4 Install EDS document

Right click "CAN（CANLink)" and select "Add CAN Config", and add CA-8800-C0NN module, as shown in Figure 5-6-5As shown;

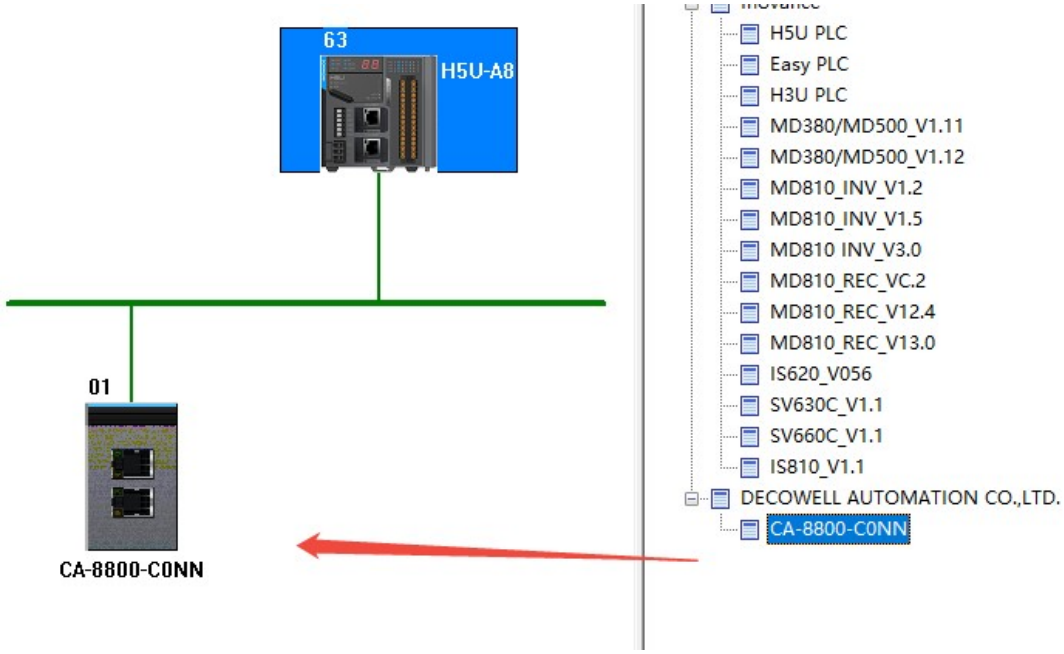


Figure 5-6-5Add CANopen module

Double-click the CA-8800-C0NN module in the configuration panel, and configure the Node ID (Note: The Node ID must match the actual address set by the DIP switch; otherwise, communication will not function properly), as shown in Figure 5-6-7. Then check the I/O mapping addresses of the actual CANopen module, as shown in Figure 5-6-8.

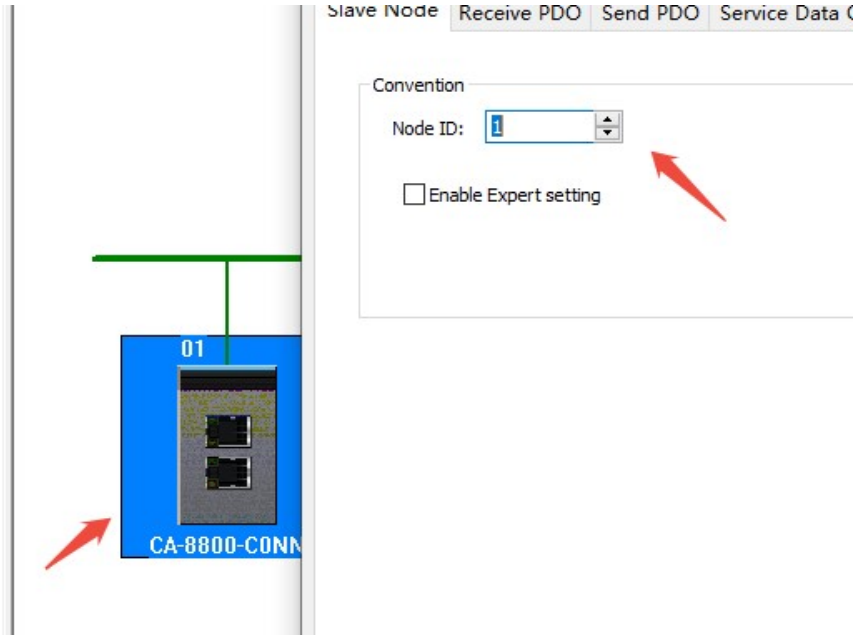



Figure 5-6-7Setting Node ID

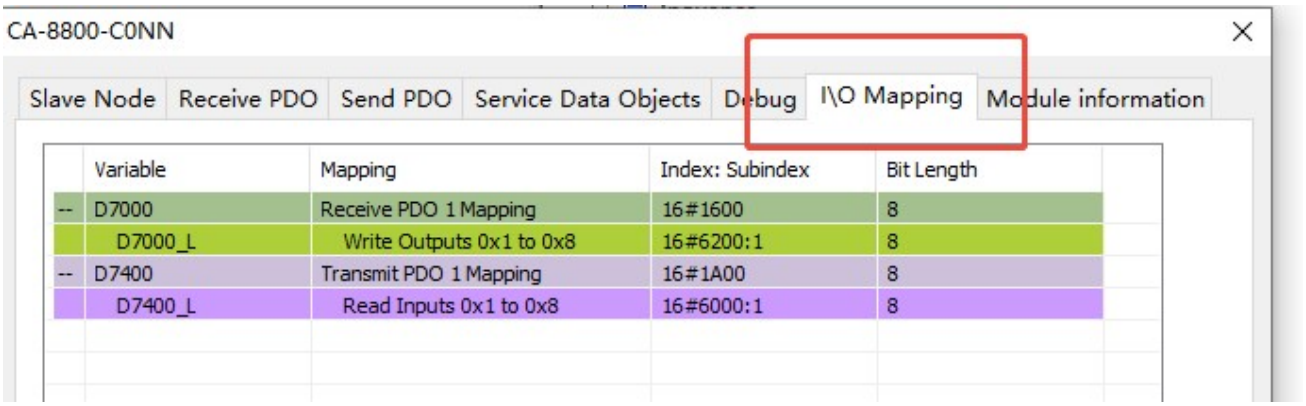



Figure 5-6-8 I/OAddress Mapping

**Tip:** In this example, D700_L stores the values of the 8-channel digital outputs, while D7400_L stores the values of the 8-channel digital inputs.

### 5.6.2 InoProShop with CANopen Protocol IO Modules

1. Communication connection diagram, as shown in Figure 5-6-9shown.

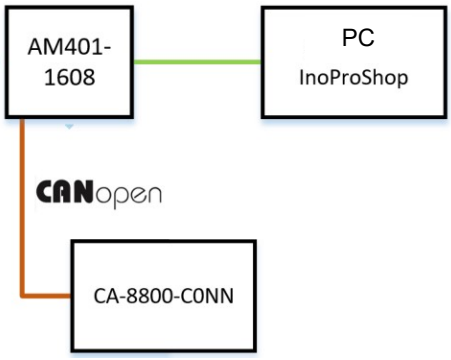



Figure 5-6-9Communication connection diagram

**Notice:**The power interface on the CANopen adapter requires a separate DC 24V power supply. Terminal resistors must be added to both end modules of the network. The wiring method for the terminal resistors is shown in Figure 5-6-10.

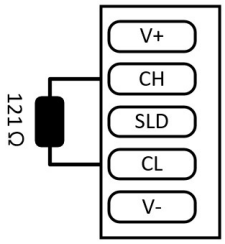



Figure 5-6-10 Terminal resistance wiring

2. Hardware configuration is shown in Table 5-6-2Shown

Table 5-6-2Hardware Configuration Table

| Hardware | Quantity | Remark |
|---|---|---|
| Programming Computer | 1 | InoProShop |
| Controller | 1 | AM401-1608 |
| CA-8800-C0NN | 1 | CANopen 8DI/8DOModules |
| Communication line | several | |

3. Install EDS document

OpenInoProShopProgramming software, select "Tools" > "Device Library" in the menu bar, select "Install" in the device library window, and select the EDS File, as shown in Figure 5-6-11shown.

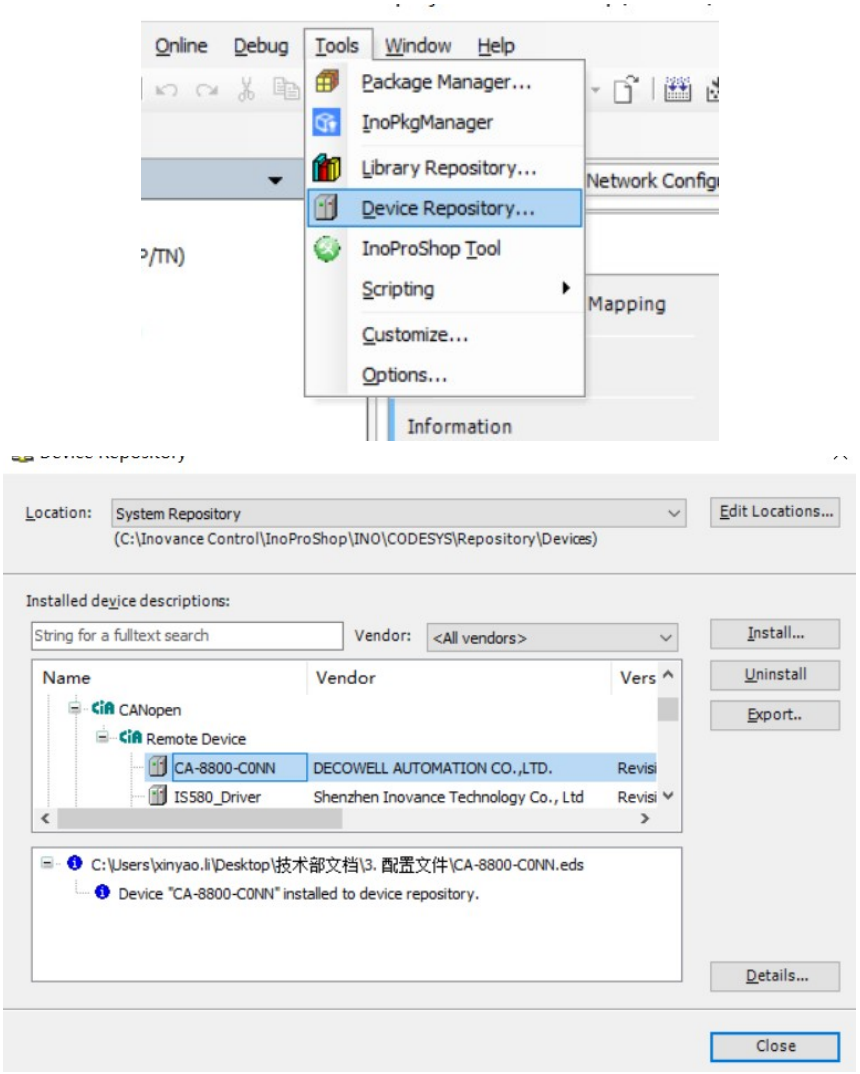



Figure 5-6-11Install EDSdocument

4. Create a project

Open the InoProShop programming software, create a new project, and select the actual corresponding CPU model. In the project configuration panel on the left, double-click to open “LocalBus Config,” then click on the CPU and select “CANopen Master,” as shown in Figure 5-6-12.

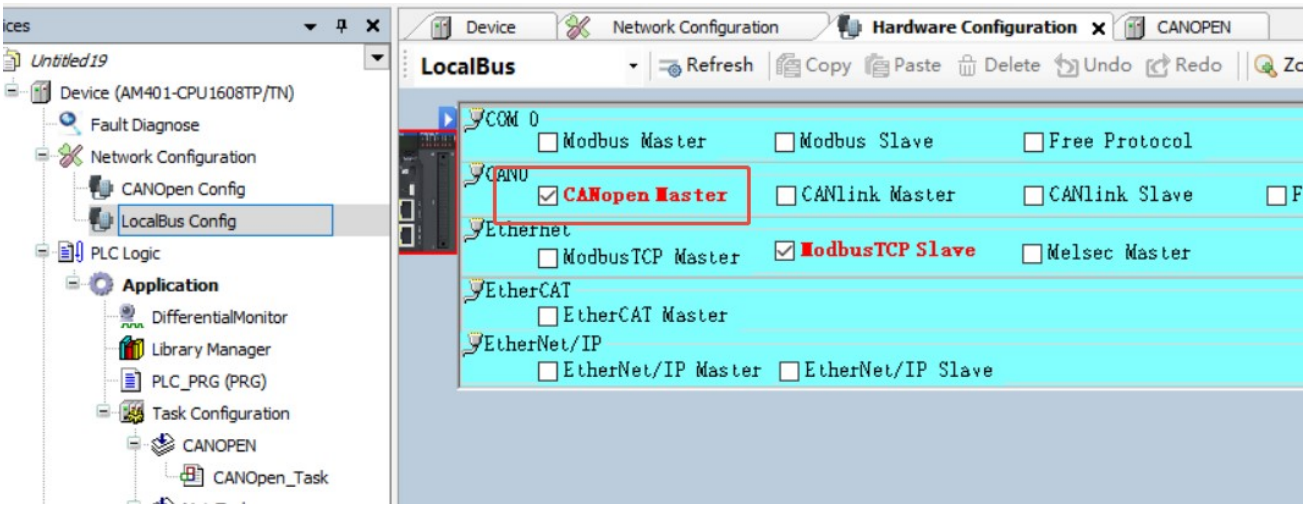



Figure 5-6-12Configuration CANopen

In the device list on the left, double-click “CANOPEN (CANopen Master)” to configure the communication parameters of the CANopen master, as shown in Figure 5-6-13.

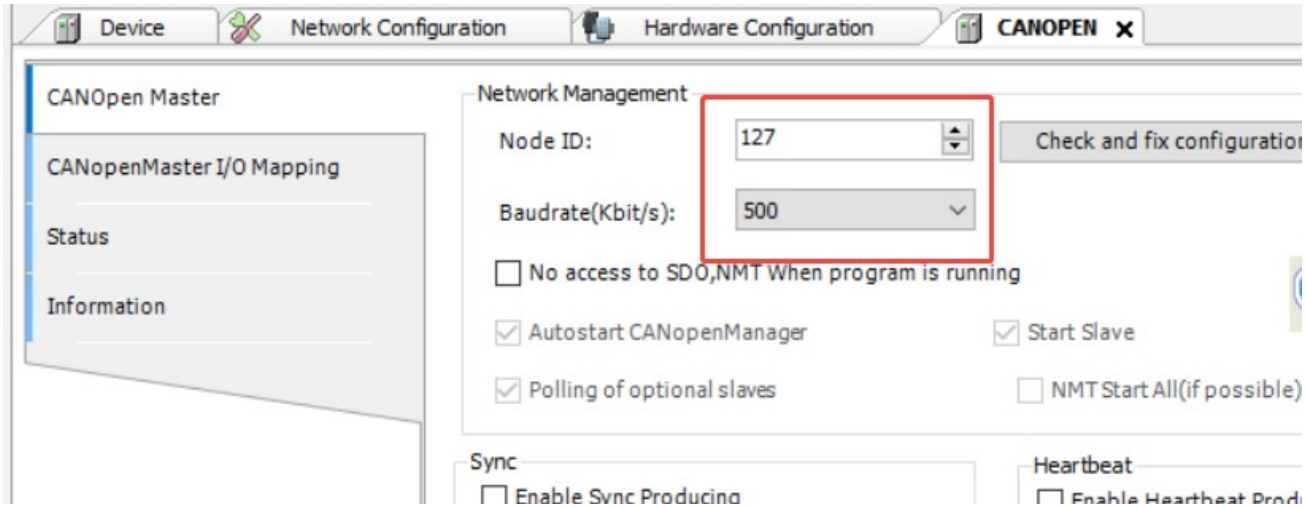



Figure 5-6-13 Configuration CANopen master station communication parameters

Double-click to open “Network Configuration.” In the configuration window, drag and drop “CA-8800-C0NN” from the third-party manufacturer list under the CANopen device list into the network device list, as shown in Figure 5-6-14.

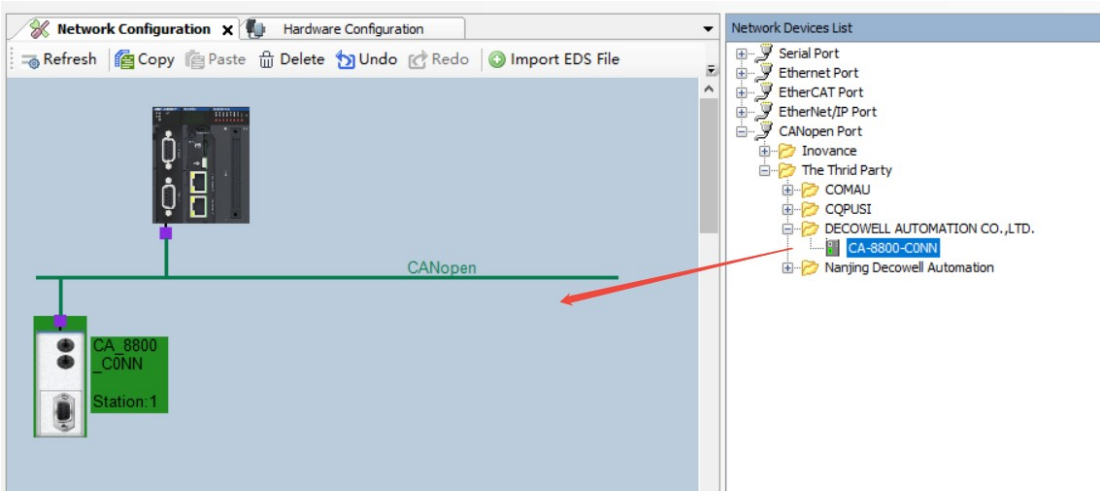



Figure 5-6-14Add CANopen module

In the device list, double-click the CA-8800-C0NN module and configure the Node ID (Note: The Node ID must match the address set by the physical DIP switch; otherwise, communication will not function properly), as shown in Figure 5-6-15. Then check the I/O mapping addresses of the actual CANopen module, as shown in Figure 5-6-16.

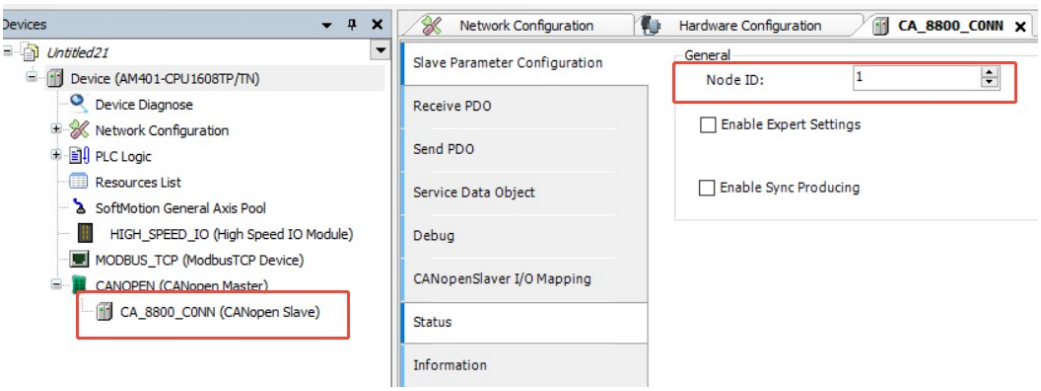



Figure 5-6-15Setting Node ID

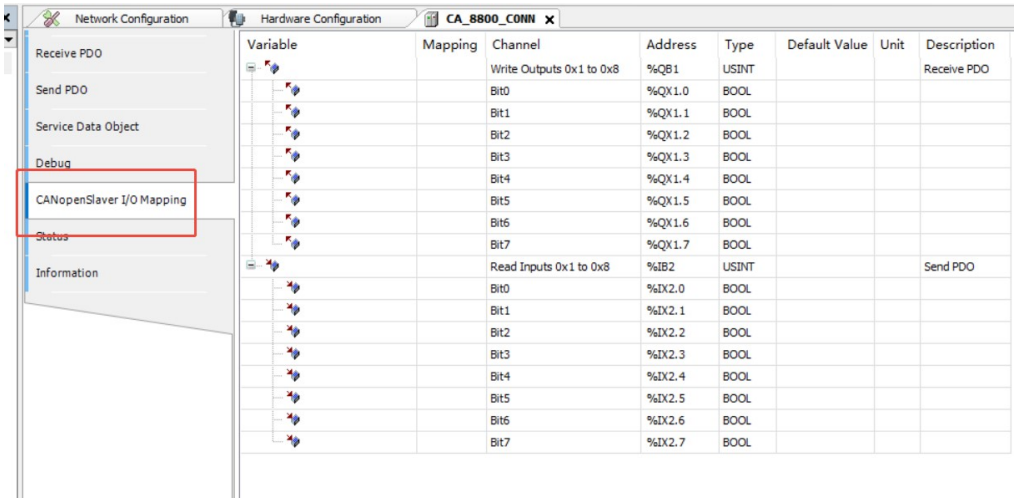



Figure 5-6-16 I/OAddress Mapping

## 5.7 EtherNet/IP Protocol

### 5.7.1 KV STUDIO With EtherNet/IP protocol IOModule connections and configuration

1. Communication connection diagram, as shown in Figure 5-7-1Shown

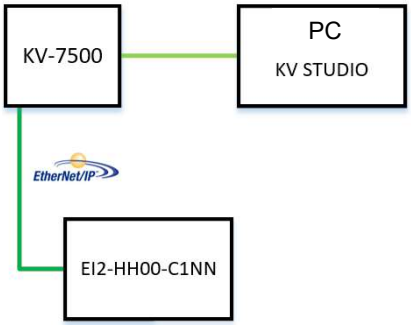



Figure 5-7-1Communication connection diagram

2、Hardware configuration as shown in Table 5-7-1Shown

Table 5-7-1Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | KV STUDIO,IP Setting Tool software |
| PLC | 1 | KV-7500 |
| EI2-HH00-C1NN | 1 | EtherNet/IP Protocol 16DI/16DOModules |
| Communication line | several | |

**Module IP Address Settings**

Open IP Setting Tool software, select the network card connected to the module, and scan the online IO Module, as shown in Figure 5-7-2shown.

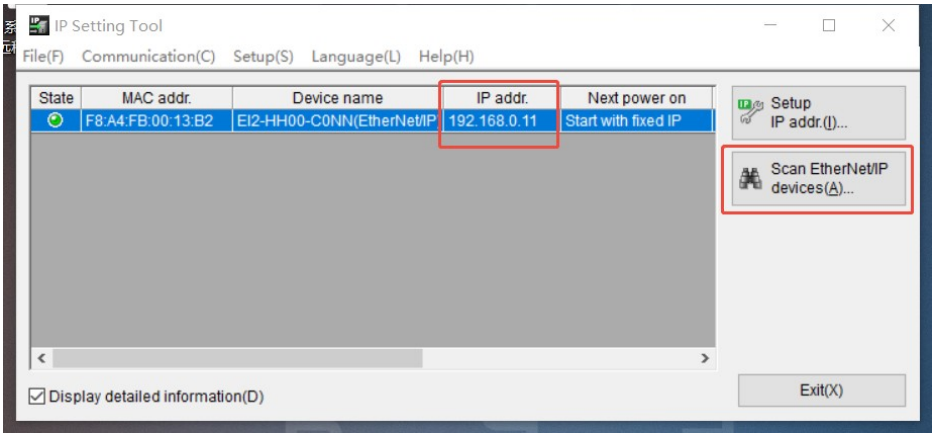



Figure 5-7-2Scan Online IOModules

Select the module in the scan list whose IP address needs to be modified (Note: the module is set to BOOTP by default at the factory and has no IP address. After setting the IP address, be sure to select "Static IP" as the startup mode), as shown in Figure 5-7-3.

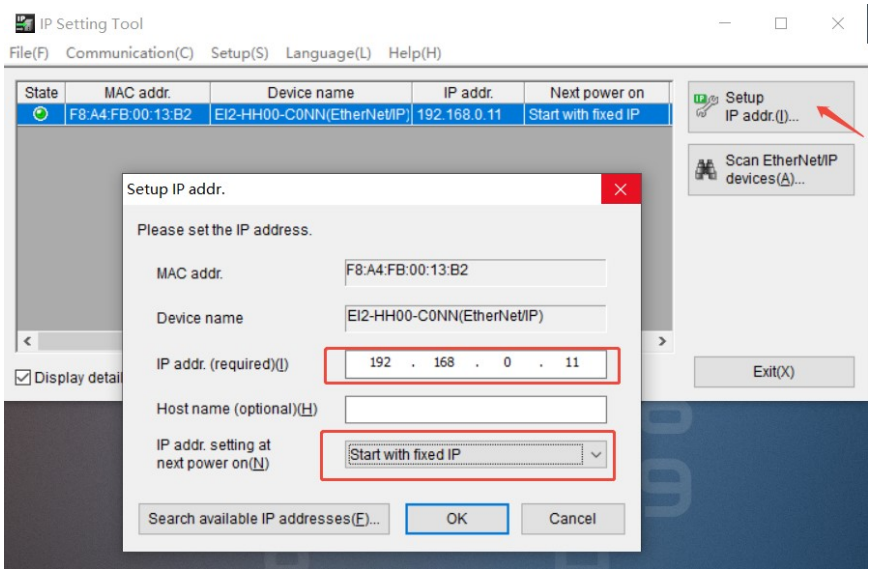



Figure 5-7-3Setting IP address

**Suggestion:**

**Since the module does not have an IP address by default, configure the PC's network adapter IPv4 settings to be in the same subnet as the IP address you intend to assign to the module before setting the module's IP.**

4、Install EDS document

Open the KV STUDIO software, create a new project, and double-click “EtherNet/IP” in the project device tree to open the EtherNet/IP settings window. In the EtherNet/IP settings window, go to the menu bar and select “EDS File” > “Register,” as shown in Figure 5-7-4.

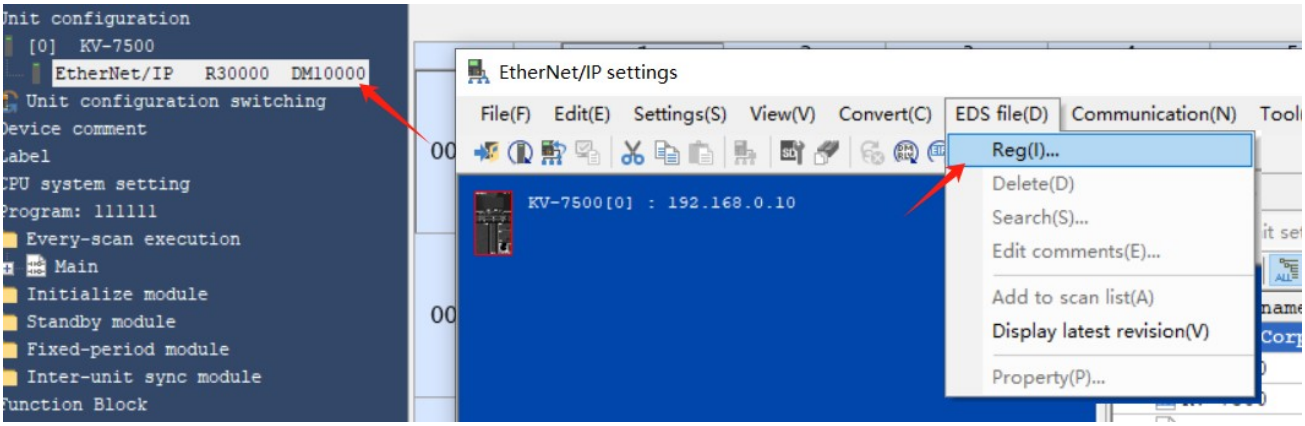



Figure 5-7-4Install EDS document

5. New project and equipment configuration

Open KV STUDIO software, create a new project, and double-click “EtherNet/IP” in the project device tree to open the EtherNet/IP settings window. Manually add EI2-HH00-C1NN to the EtherNet/IP list, as shown in Figure 5-7-5.

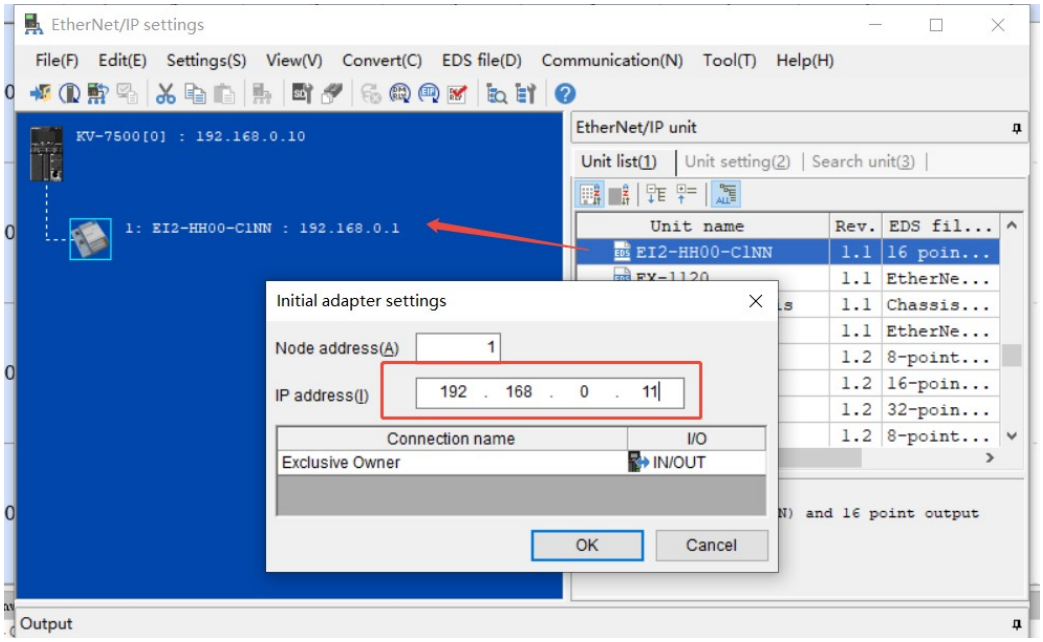



Figure 5-7-5Manually addEI2-HH00-C1NNTo EtherNet/IP List

Scan the EI2-HH00-C1NN adapter online (first ensure that the online module and the PLC are on the same subnet). In the EtherNet/IP settings window, go to the menu bar and select “File” > “Auto Configuration,” as shown in Figure 5-7-6.

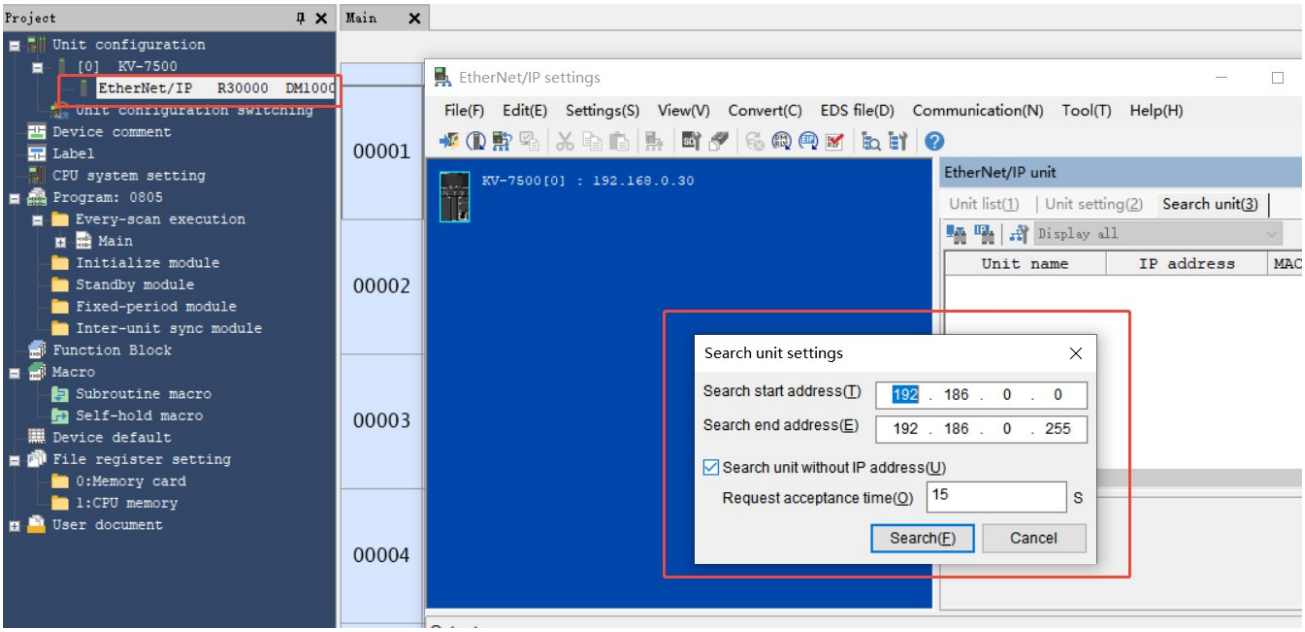



Figure 5-7-6 Online EI2-HH00-C1NN Module scan up

Apply configuration and download configuration and program to PLCand monitor the module operation status, as shown in Figure 5-7-7 shown.

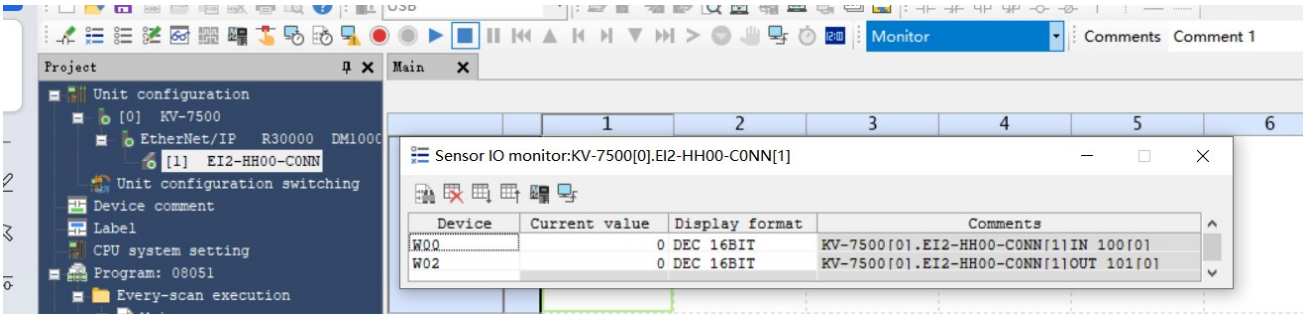



Figure 5-7-7Run and monitor

### 5.7.2 Machine Expert and EtherNet/IP protocol IO Module connections and configuration

1. Communication connection diagram, as shown in Figure 5-7-8Shown

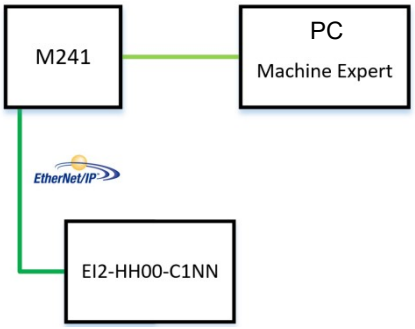



Figure 5-7-8Communication connection diagram

2、Hardware configuration as shown in Table 5-7-2Shown

Table 5-7-2Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | Machine Expert,IP Setting Toolsoftware |
| PLC | 1 | M241 |
| EI2-HH00-C1NN | 1 | EtherNet/IP Protocol 16DI/16DOModules |
| Communication line | several | |

**Module IP Address Settings**

Open IP Setting Tool software, select the network card connected to the module, and scan the online IO Module, as shown in Figure 5-7-9shown.

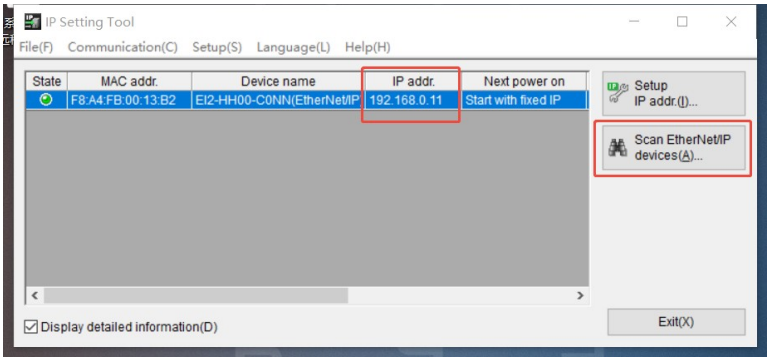



Figure 5-7-9Scan Online IOModules

Select the module in the scan list whose IP address needs to be modified (Note: the module is set to BOOTP by default at the factory and has no IP address. After setting the IP address, be sure to select "Static IP" as the startup mode), as shown in Figure 5-7-10shown.

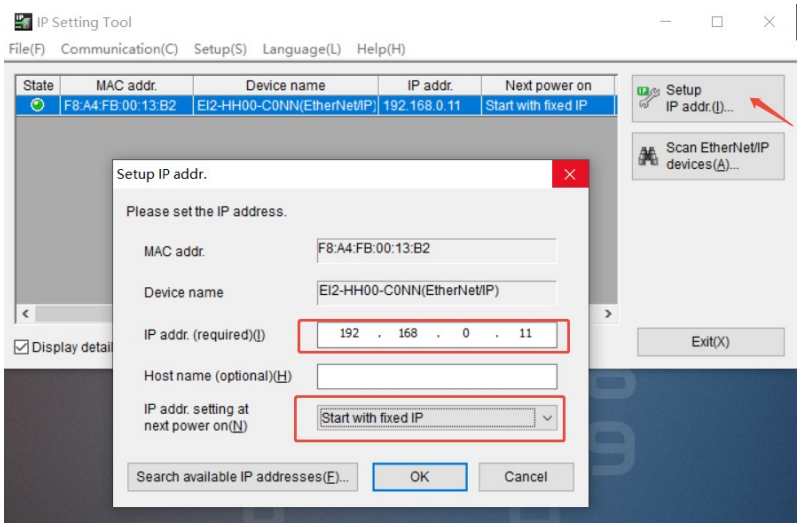



Figure 5-7-10Setting IPaddress

**Recommendation:** The module does not have an IP address by default. Before configuring the module's IP address, first set the PC’s network adapter IPv4 to the same subnet as the IP address you intend to assign to the module.

4. Install EDS document

Open Machine Expert V2.0Programming software, select "Tools" > "Device Repository" in the menu bar, and select "Install" in the Device Repository window, as shown in Figure 5-7-2As shown, select EDS file "EI2-HH00-C1NN" and confirm the installation.

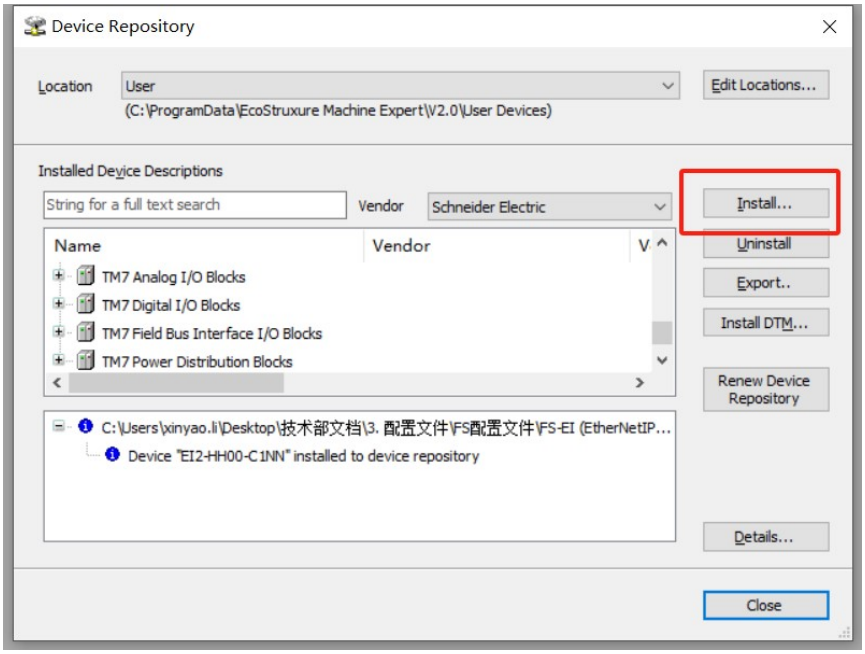



Figure 5-7-11Install EDSdocument

5. New project and equipment configuration

Open Machine Expert V2.0, create a project, and right-click "EtherNET_1"Select "Add Device", as shown in Figure 5-7-12As shown,

In the Add Device window, select "Protocol Manager" > "Industrial Ethernet Manager", as shown in Figure 5-7-13As shown, right-click "_" under the device tree(Industrial Ethernet Manager)">"Add Device", in the device window, select "DECOWELL AUTOMATION CO.,LTD", and select "EI2-HH00-C1NN", as shown in Figure 5-7-14shown.

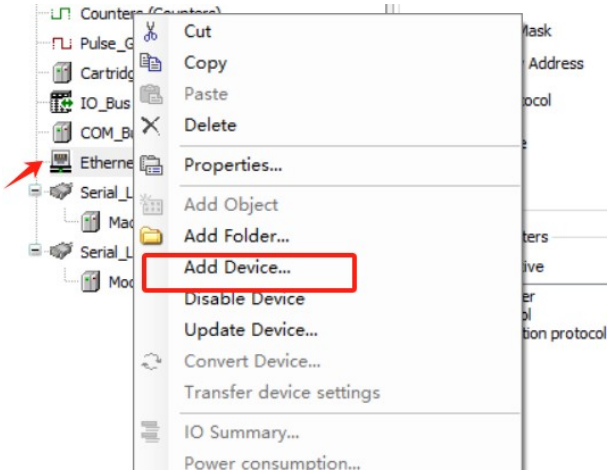



Figure 5-7-12Add a device

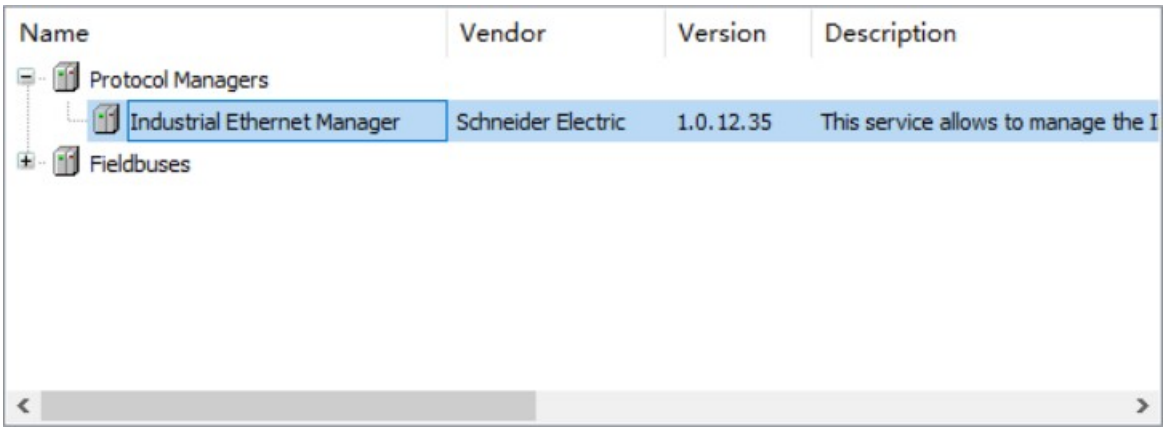



Figure 5-7-13Adding Industrial Ethernet Manager

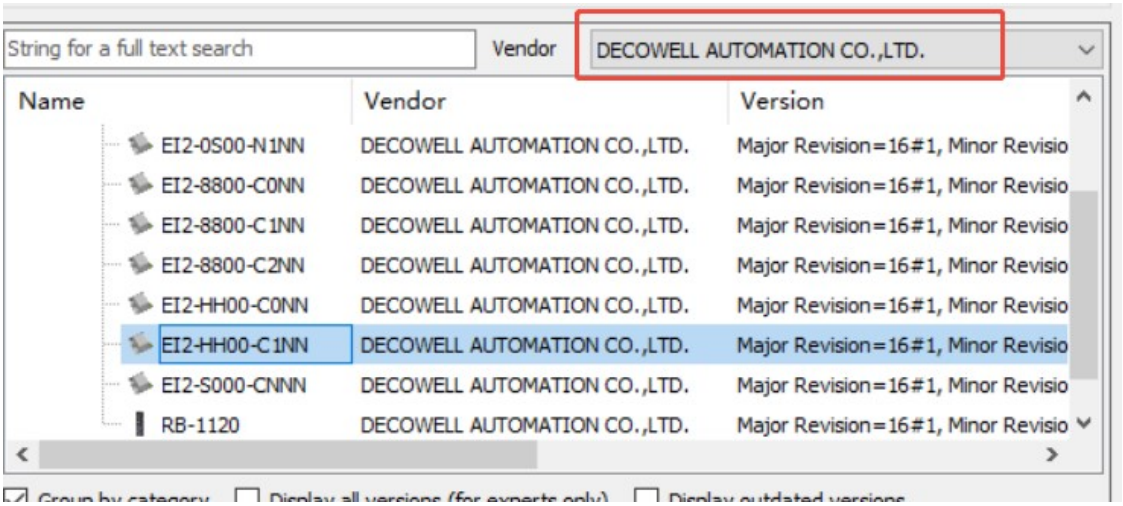



Figure 5-7-14Add EI2-HH00-C1NN

Configure the parameters of EI2-HH00-C1NN by double-clicking “EI2-HH00-C1NN” in the device tree. Set the IP address to a static IP address, as shown in Figure 5-7-15.

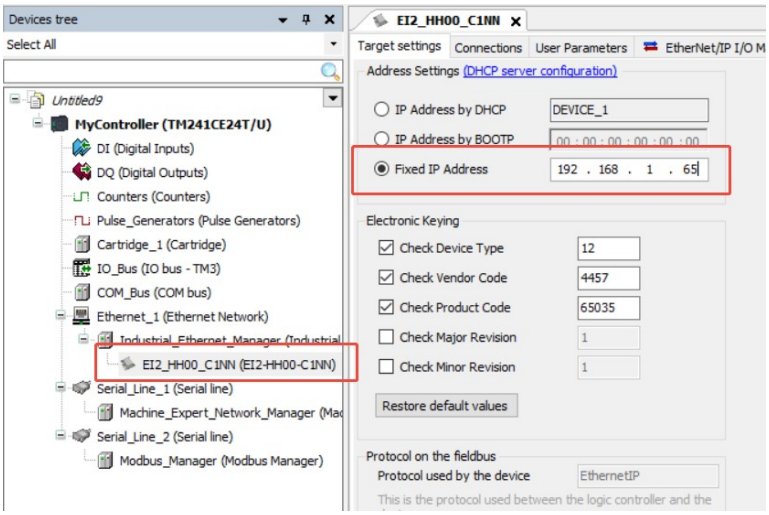



Figure 5-7-15Configuration IPaddress

To view the I/O address mapping, double-click “EI2-HH00-C1NN” in the device tree and

navigate to the EtherNet/IP I/O Mapping section, as shown in Figure 5-7-16.

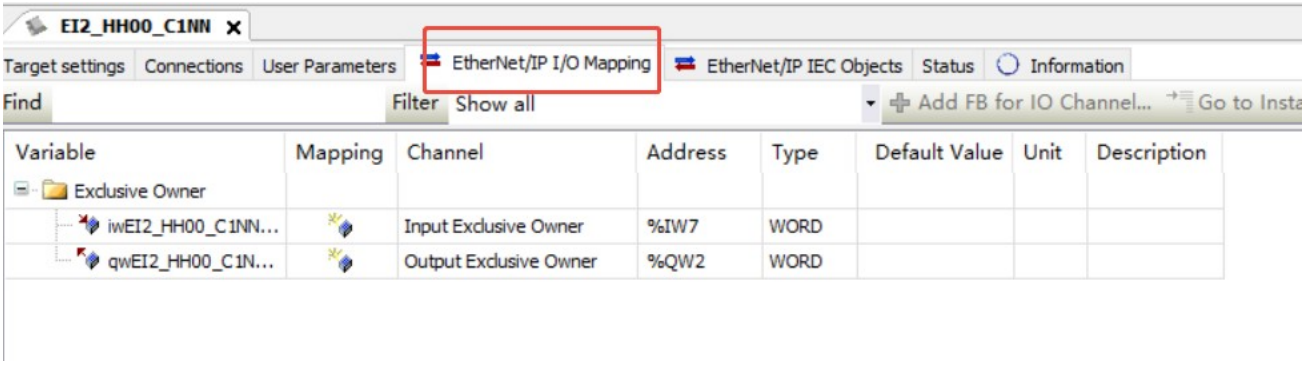



Figure 5-7-16 IOAddress Mapping

### 5.7.3 CODESYS and EtherNet/IP Protocol IOModule connections and configuration

1. Communication connection diagram, as shown in Figure 5-7-8Shown

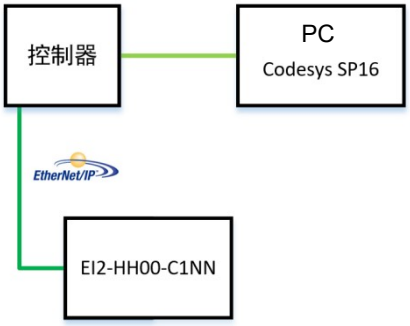



Figure 5-7-17Communication connection diagram

2、Hardware configuration as shown in Table 5-7-3Shown

Table 5-7-3Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | CodesysSP16,IP Setting Toolsoftware |
| PLC | 1 | |
| EI2-HH00-C1NN | 1 | EtherNet/IP Protocol 16DI/16DOModules |
| Communication line | several | |

**Module IP Address Settings**

Open IP Setting Tool software, select the network card connected to the module, and scan the online IO Module, as shown in Figure 5-7-18shown.

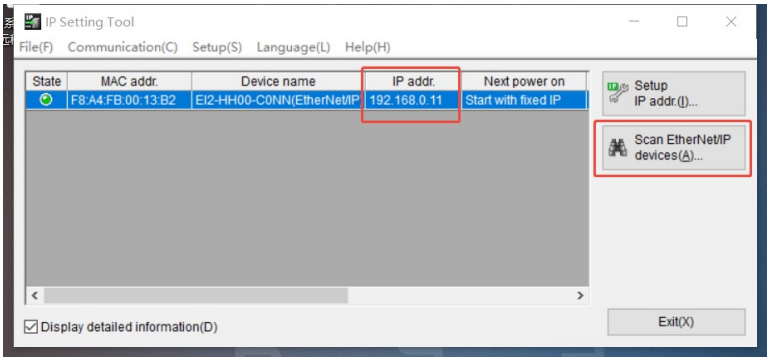



Figure 5-7-18Scan Online IOModules

Select the module in the scan list whose IP address needs to be modified (Note: the module is set to BOOTP by default at the factory and has no IP address. After setting the IP address, be sure to select "Static IP" as the startup mode), as shown in Figure 5-7-19shown.

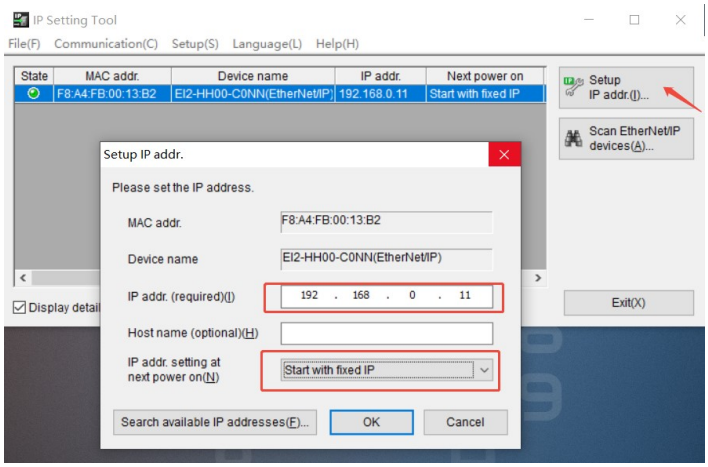



Figure 5-7-19Setting IP address

**Recommendation:** The module does not have an IP address by default. Before configuring the module's IP address, first set the PC’s network adapter IPv4 to the same subnet as the IP address you intend to assign to the module.

4. Install EDS document

Open the CODESYS SP16 programming software, go to the menu bar and select “Tools” > “Device Repository.” In the Device Repository window, click “Install” as shown in Figure 5-7-20. Then, select “General Version” > “EI2-HH00-C1NN” from the EDS folder and confirm the installation.

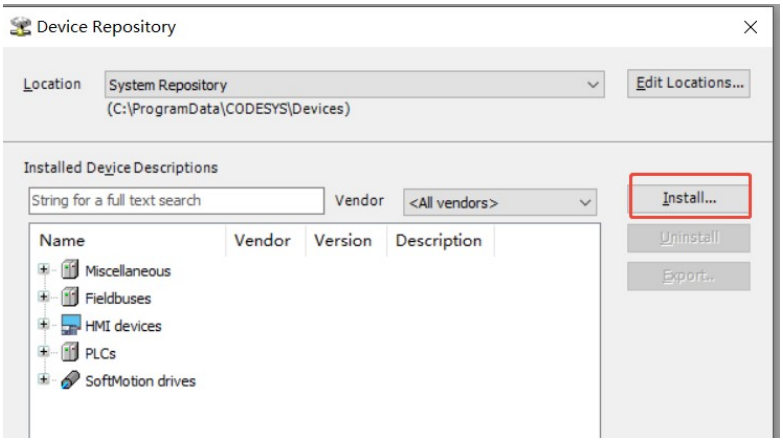



Figure 5-7-20 Install EDS document

5. New project and equipment configuration

Open CODESYS SP16, create a new project, and right-click on “Device” in the device tree, then select “Add Device.” In the Add Device window, select “Ethernet,” as shown in Figure 5-7-21.

Next, right-click on “Ethernet” in the device tree and select “Add Device.” In the Add Device window, choose “EtherNet/IP Scanner,” as shown in Figure 5-7-22.

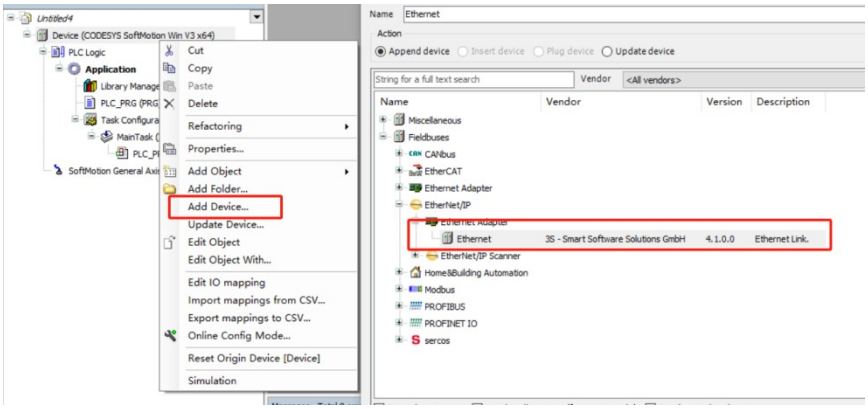



Figure 5-7-21 Adding an Ethernet Adapter


Figure 5-7-22 Add Ethernet IP scanner

Configure the network card of the Ethernet adapter, double-click "Ethernet" under the

device tree, open the page and select the network card that needs to communicate with the EtherNet/IP slave, as shown in Figure 5-7-23 shown.

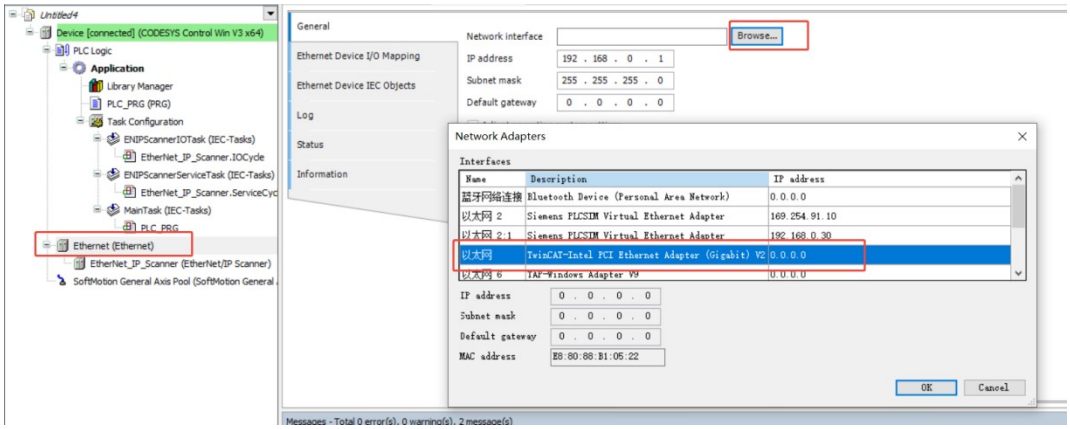



Figure 5-7-23 Configuring the Ethernet Adapter Network Card

Right-click the "EtherNet_IP_Scanner"Select "Add Device", select "EI2-HH00-C1NN", as shown in Figure 5-7-24 shown.

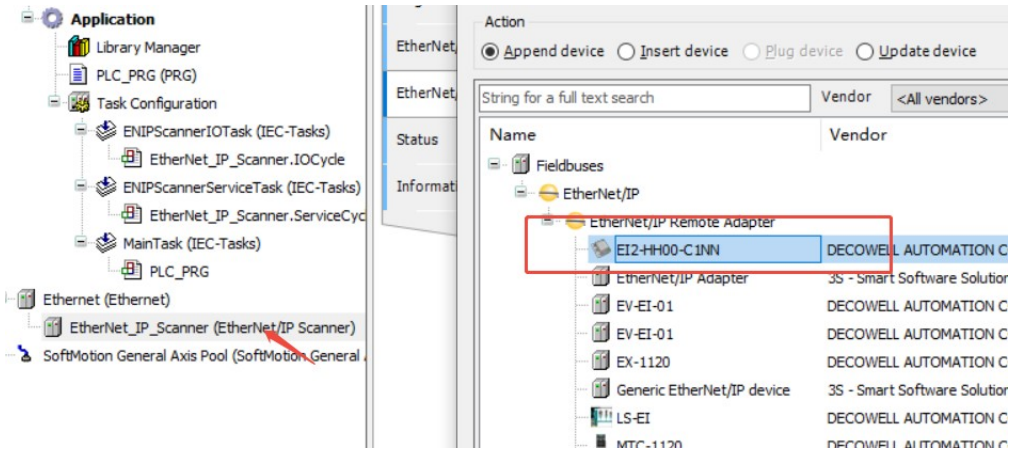



Figure 5-7-24 Add EI2-HH00-C1NNModules

Configure the IP address of the EI2-HH00-C1NN adapter by double-clicking “EI2-HH00-C1NN” in the device tree. Enter the IP address (make sure it matches the actual IP address set on the module), as shown in Figure 5-7-25.

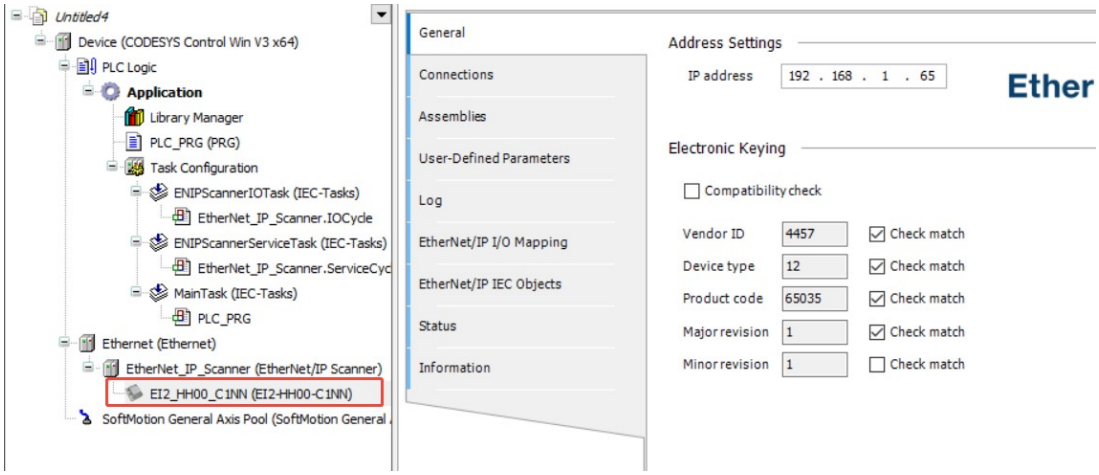



Figure 5-7-25Configuration EI2-HH00-C1NNModule IPaddress

To view the I/O address mapping, double-click “EI2-HH00-C1NN” in the device tree and go to the EtherNet/IP I/O Mapping section, as shown in Figure 5-7-26.

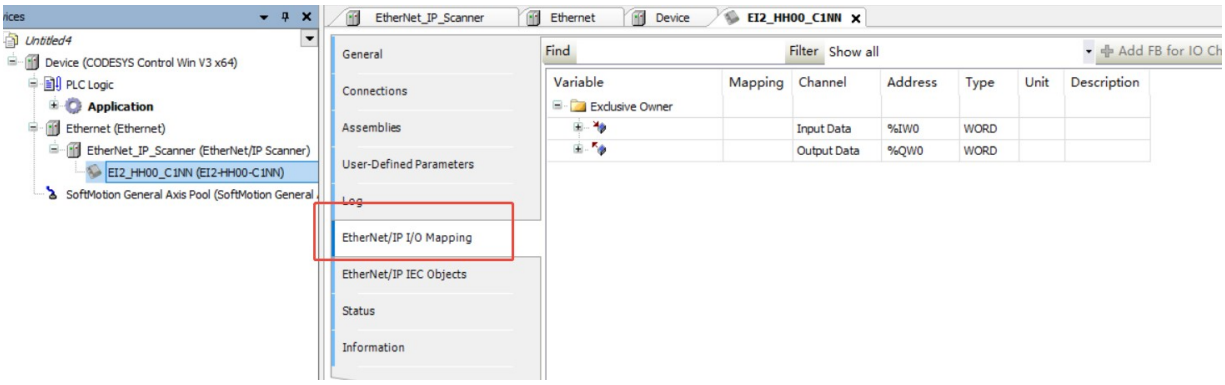



Figure 5-7-26View IO Address Mapping

### 5.7.4 Sysmac Studio and EtherNet/IP Protocol IO Module connections and configuration

1. Communication connection diagram, as shown in Figure 5-7-27Shown

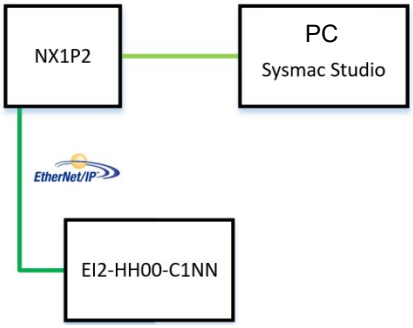



Figure 5-7-27Communication connection diagram

2、Hardware configuration as shown in Table 5-7-4Shown

Table 5-7-4Hardware Configuration Table

| hardware | quantity | Remark |
|---|---|---|
| Programming Computer | 1 | Sysmac Studio,IP Setting Toolsoftware |
| NX1P2 | 1 | |
| EI2-HH00-C1NN | 1 | EtherNet/IP Protocol 16DI/16DOModules |
| Communication line | several | |

**Module IPAddress Settings**

Open IP Setting Tool software, select the network card connected to the module, and scan the online IO Module, as shown in Figure 5-7-28shown.

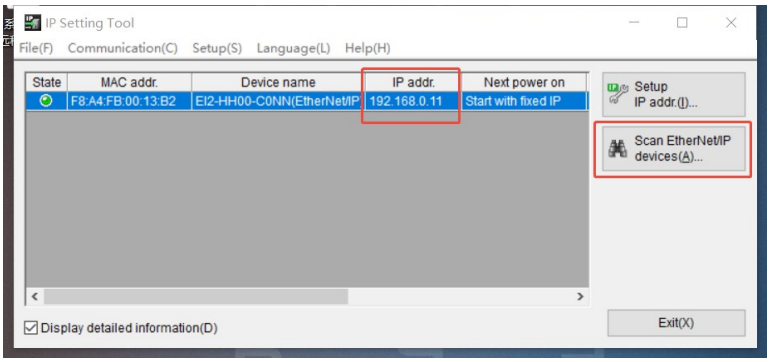



Figure 5-7-28Scan Online IO Modules

Select the module in the scan list whose IP address needs to be modified (Note: the module is set to BOOTP by default at the factory and has no IP address. After setting the IP address, be sure to select "Static IP" as the startup mode), as shown in Figure 5-7-29 shown.

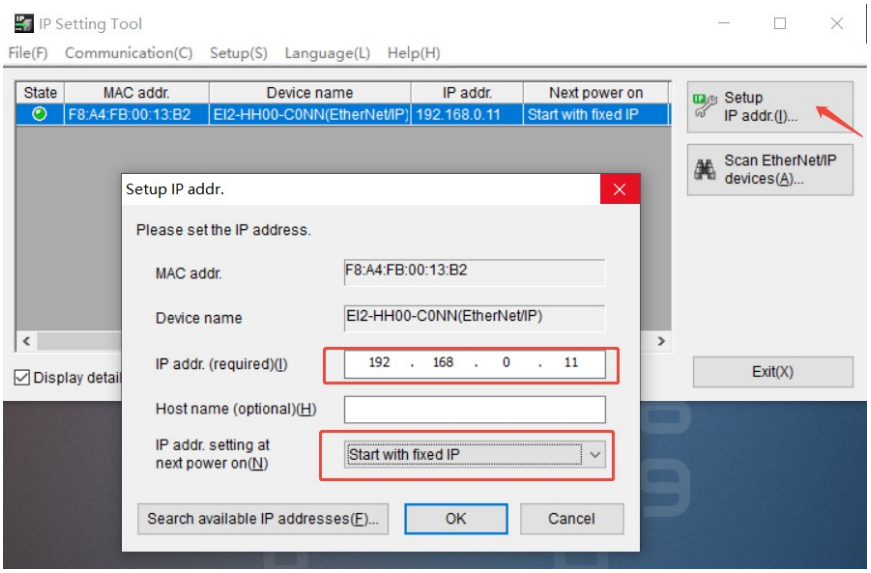



Figure 5-7-29Setting IPaddress

**Recommendation:** The module does not have an IP address by default. Before configuring the module's IP address, first set the PC's network adapter IPv4 to the same subnet as the IP address you intend to assign to the module.

4. New project and equipment configuration

Open the Sysmac Studio programming software to create a project, and configure the EtherNet/IP port with a fixed IP address (matching the actual PLC port IP), as shown in Figure 5-7-30.

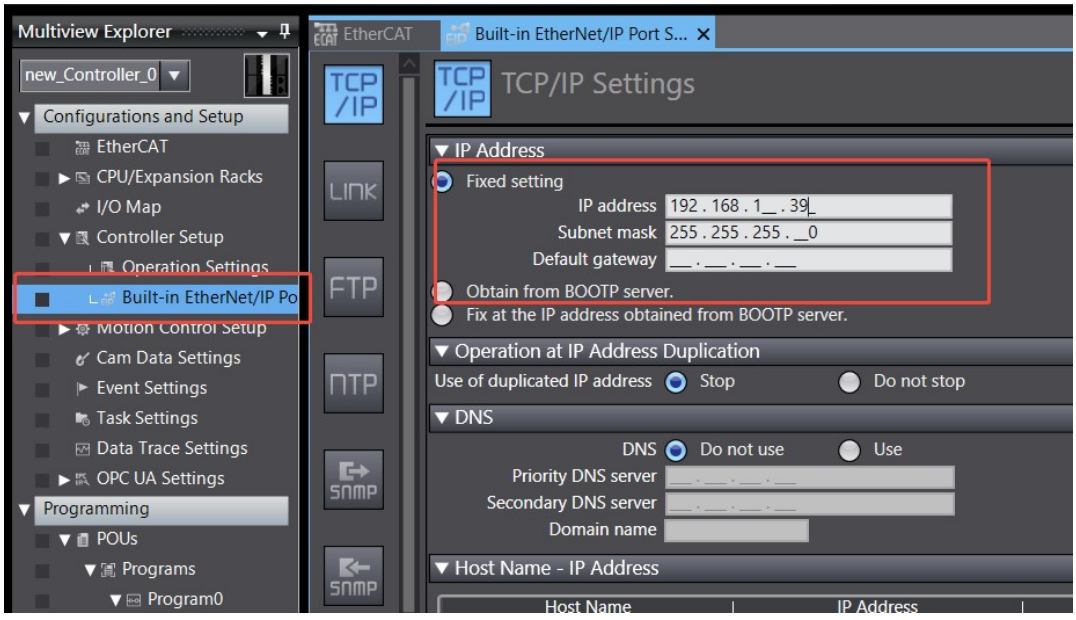



Figure 5-7-30 EtherNet/IP Port Settings

Create all variables, create input and output variables in the global variables, and the length of the variables must be consistent with the actual

The input and output byte lengths in the module are consistent, as shown in the figure 5-7-31 shown.

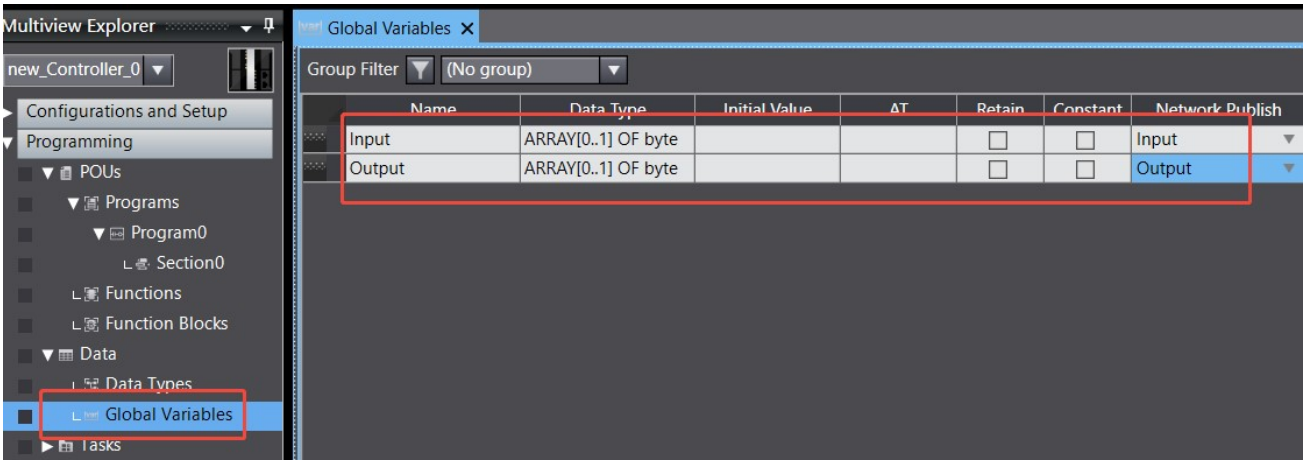



Figure 5-7-31Creating Global Variables

In the menu bar, select “Tools” > “EtherNet/IP Connection Settings”. In the EtherNet/IP List window, double-click the node address to open the EtherNet/IP Port Connection Settings window, as shown in Figure 5-7-32.

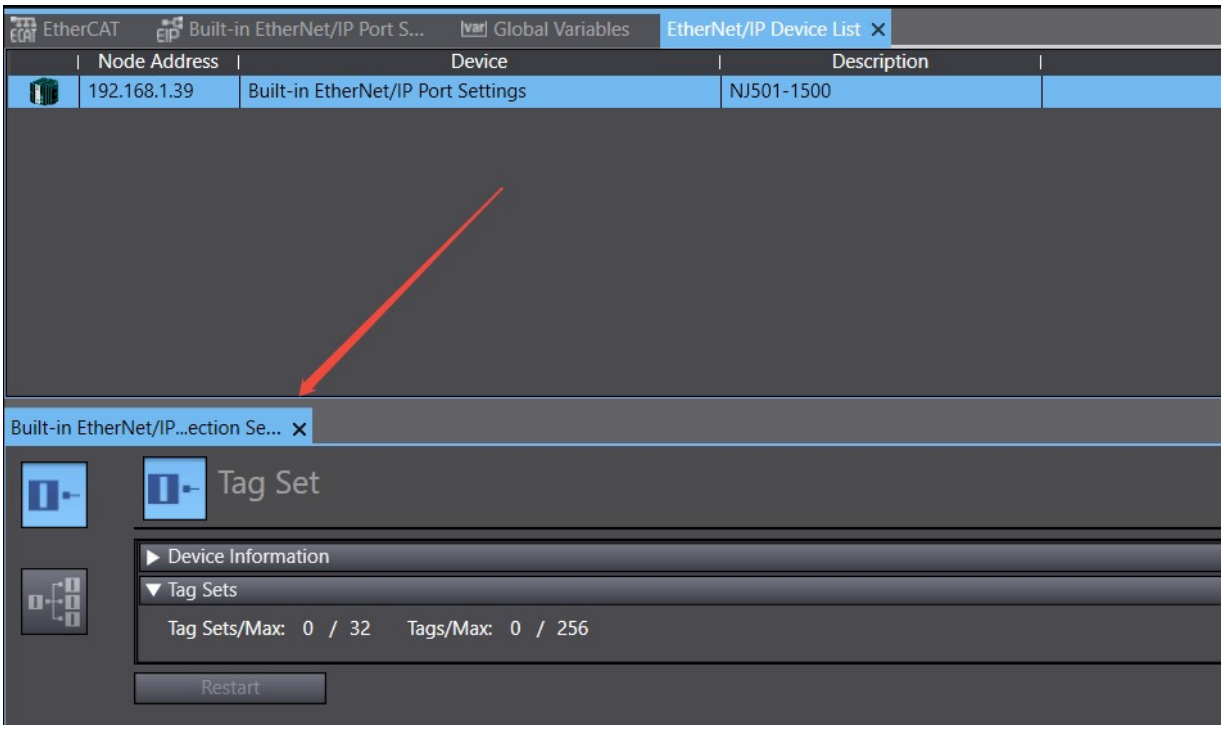



Figure 5-7-32 Open the built-in EtherNet/IP port setting connection setting window

Register variables. In the built-in EtherNet/IP port setting connection setting window, select the "Tag Group" window and click "Register All" to register the newly created global variables, as shown in Figure 5-7-33 shown.

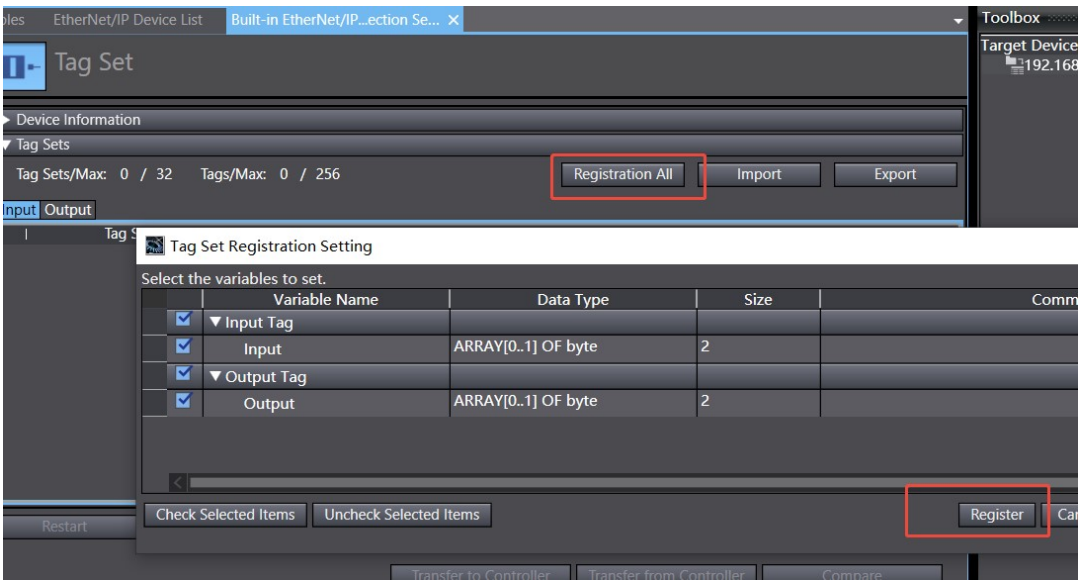



Figure 5-7-33Global variable registration

To install the EDS file, in the opened Built-in EtherNet/IP Port Connection Settings window, right-click on the blank area of the toolbox on the right and select “Show EDS Library”, as shown in Figure 5-7-34. In the EDS Library window, select “Install” and open the EDS file to be installed, as shown in Figure 5-7-35.

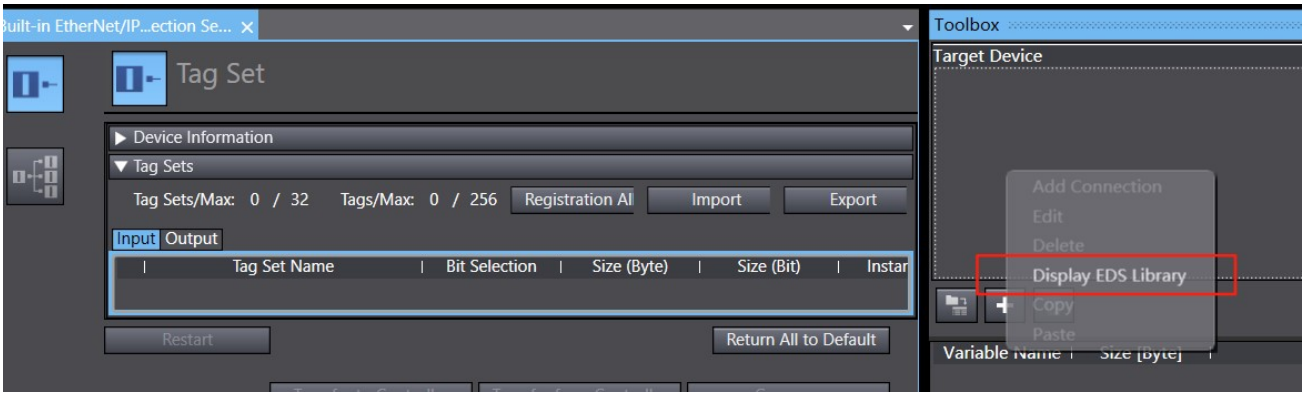



Figure 5-7-34 Display EDS Library

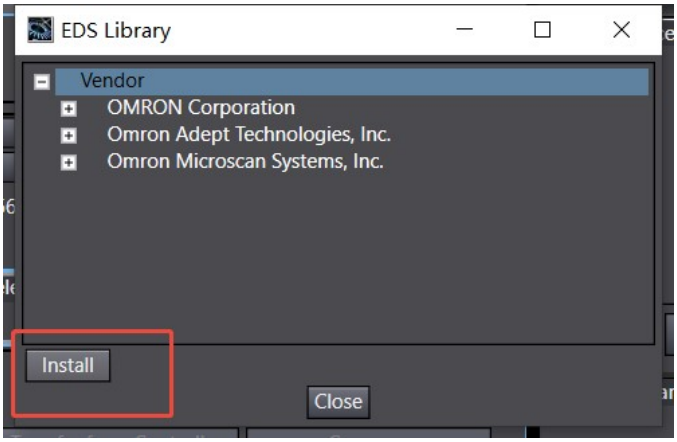


Figure 5-7-35Install EDS document

Add the device to be communicated with and configure its parameters. In the toolbox, select “Add Target Device”, as shown in Figure 5-7-36. The user needs to enter the EtherNet/IP slave IP address, slave model, and revision version. After completion, click the “Add” button at the lower left of the dialog box.

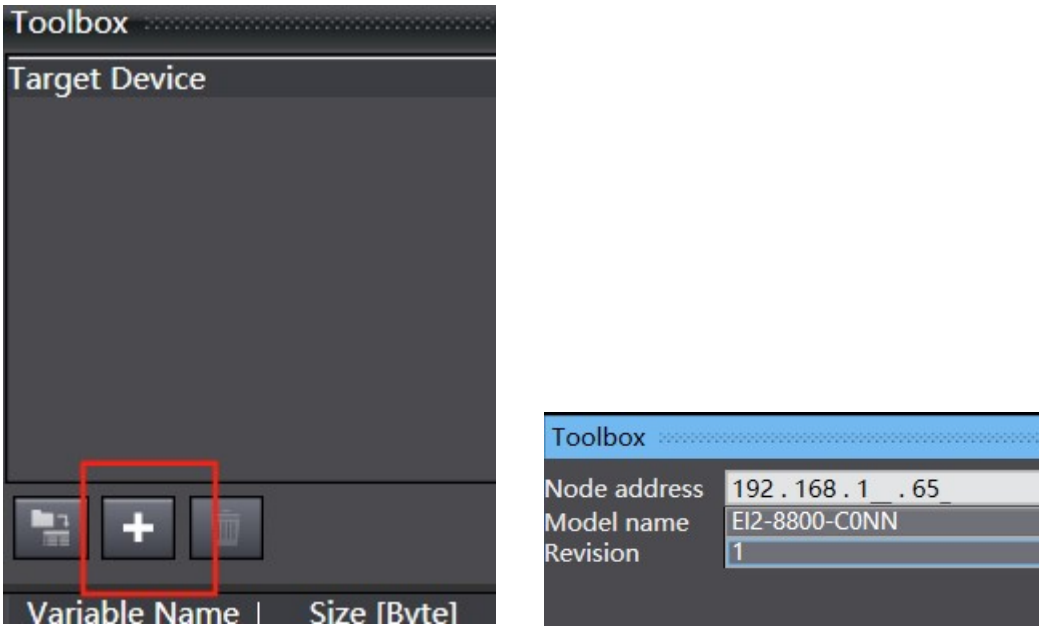



Figure 5-7-36Add target device

In the toolbox, set the target device "192.168.1.65 EI2-HH00-C1NNVersion 1" and drag it to the connection, as shown in Figure 5-7-37As shown,

Configure the target device parameters,EI2-HH00-C1NNEnter the target variable as 100, the output target variable is 101, the input and output byte sizes are both 10, select the registered global variable as the starting variable, as shown in Figure 5-7-38As shown;

Switch the PLC to online mode and then to program mode, then select “Transfer to Controller”, as shown in Figure 5-7-39.

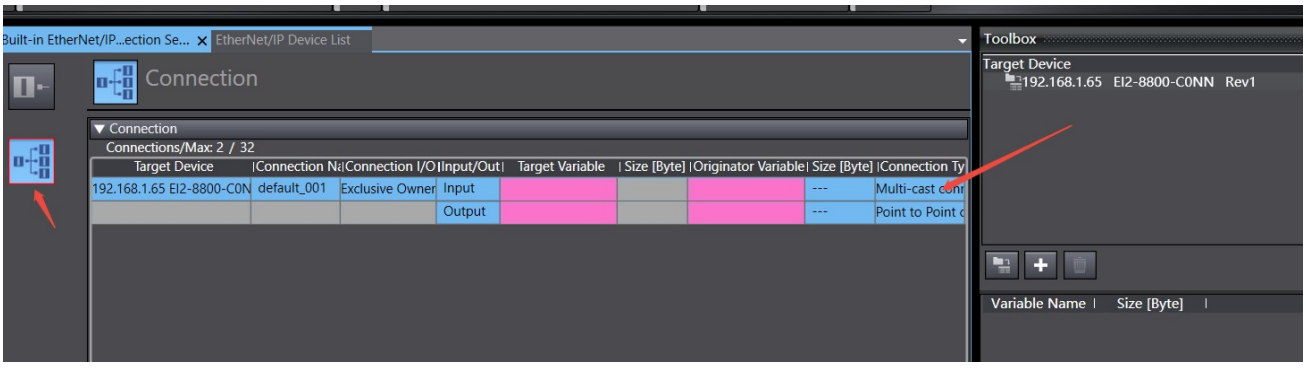



Figure 5-7-37Adding a connected device

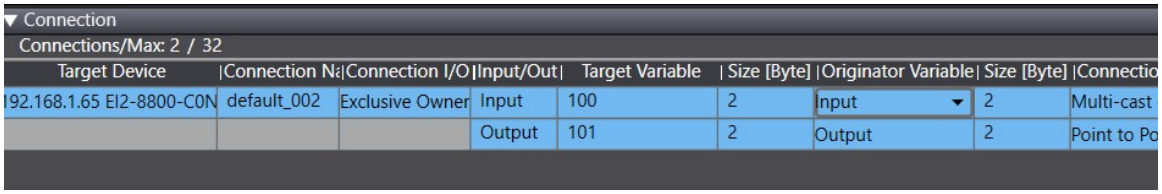



Figure 5-7-38Configure target device parameters

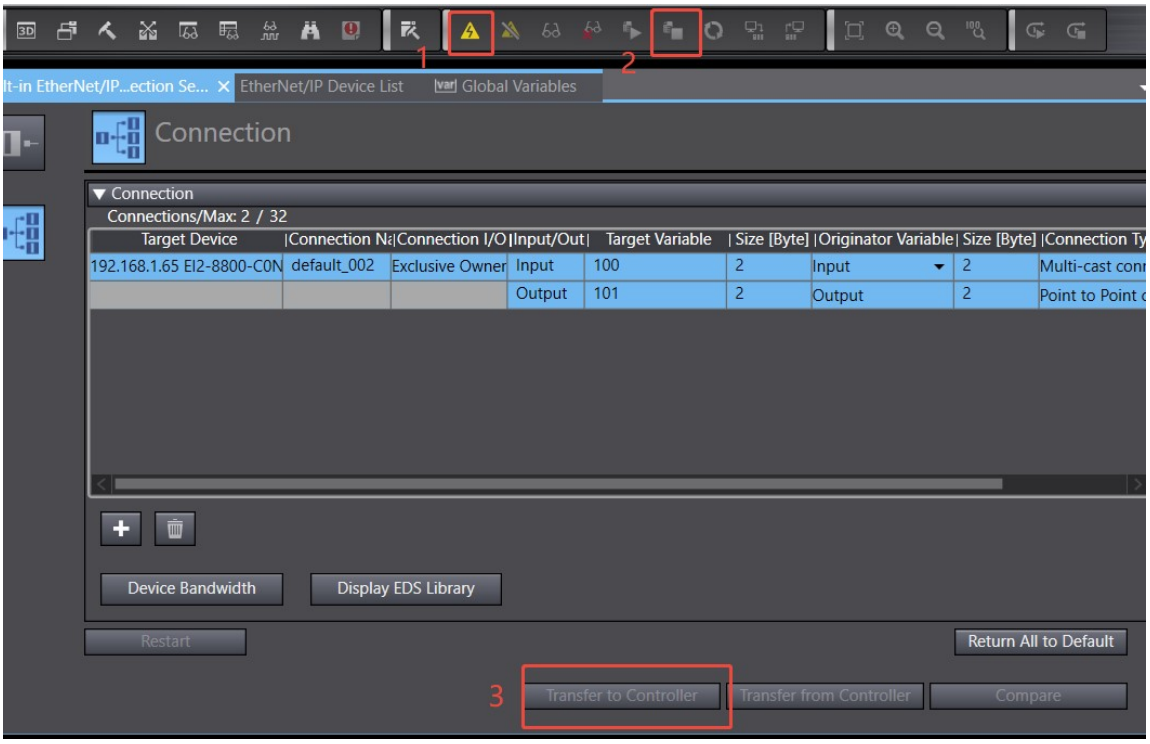



Figure 5-7-39EtherNet/IP Configuration transfer to controller

# Appendix

FS Series product ordering information

| FS integrated-PROFINET communication protocol digital input and output module | | |
|---|---|---|
| Product Model | Product Description | Order Number |
| PN-8800-C0NN | PROFINET 8-channel digital input (NPN & PNP)<br>8-channel digital output (NPN) | 00-01-01 |
| PN-8800-C1NN | PROFINET 8-channel digital input (NPN & PNP)<br>8-channel digital output (PNP) | 00-01-02 |
| PN-8800-C2NN | PROFINET 8-channel digital input (NPN & PNP)<br>8-channel digital output (relay) | 00-01-03 |
| PN-HH00-C0NN | PROFINET 16-channel digital input (NPN & PNP)<br>16-channel digital output (NPN) | 00-01-04 |
| PN-HH00-C1NN | PROFINET 16-channel digital input (NPN & PNP)<br>16-channel digital output (PNP) | 00-01-05 |
| PN-S000-CNNN | PROFINET 32-channel digital input (NPN & PNP) | 00-01-08 |
| PN-0S00-N0NN | PROFINET 32 digital outputs (NPN) | 00-01-09 |
| PN-0S00-N1NN | PROFINET 32 digital outputs (PNP) | 00-01-10 |
| FS integrated-EtherCAT communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| EC-8800-C0NN | EtherCAT 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) | 00-02-01 |
| EC-8800-C1NN | EtherCAT 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) | 00-02-02 |
| EC-8800-C2NN | EtherCAT 8-channel digital input (NPN & PNP) 8-channel digital output (relay) | 00-02-03 |
| EC-HH00-C0NN | EtherCAT 16-channel digital input (NPN & PNP)<br>16-channel digital output (NPN) | 00-02-04 |

| | | |
|---|---|---|
| EC-HH00-C1NN | EtherCAT 16-channel digital input (NPN & PNP)<br>16-channel digital output (PNP) | 00-02-05 |
| EC-S000-CNNN | EtherCAT 32-channel digital input (NPN & PNP) | 00-02-08 |
| EC-0S00-N0NN | EtherCAT 32-channel digital output (NPN) | 00-02-09 |
| EC-0S00-N1NN | EtherCAT 32-channel digital output (PNP) | 00-02-10 |
| FS integrated-CC-Link communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| CL-8800-C0NN | CC-LINK 8-way digital input (NPN & PNP) 8-way digital output (NPN) | 00-03-01 |
| CL-8800-C1NN | CC-LINK 8-way digital input (NPN & PNP) 8-way digital output (PNP) | 00-03-02 |
| CL-8800-C2NN | CC-LINK 8-way digital input (NPN & PNP) 8-way digital output (relay) | 00-03-03 |
| CL-HH00-C0NN | CC-LINK 16-channel digital input (NPN & PNP)<br>16-channel digital output (NPN) | 00-03-04 |
| CL-HH00-C1NN | CC-LINK 16-channel digital input (NPN & PNP)<br>16-channel digital output (PNP) | 00-03-05 |
| CL-S000-CNNN | CC-LINK 32-channel digital input (NPN & PNP) | 00-03-07 |
| CL-0S00-N0NN | CC-LINK 32-channel digital output (NPN) | 00-03-08 |
| CL-0S00-N1NN | CC-LINK 32-channel digital output (PNP) | 00-03-09 |
| FS integrated-DeviceNet communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| DN-8800-C0NN | DEVICENET 8-channel digital input (NPN & PNP)<br>8-channel digital output (NPN) | 00-04-01 |
| DN-8800-C1NN | DEVICENET 8-channel digital input (NPN & PNP)<br>8-channel digital output (PNP) | 00-04-02 |
| DN-8800-C2NN | DEVICENET 8-channel digital input (NPN & PNP)<br>8-channel digital output (relay) | 00-04-03 |

| | | |
|---|---|---|
| DN-HH00-C0NN | DEVICENET 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) | 00-04-04 |
| DN-HH00-C1NN | DEVICENET 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) | 00-04-05 |
| DN-S000-CNNN | DEVICENET 32-channel digital input (NPN & PNP) | 00-04-08 |
| DN-0S00-N0NN | DEVICENET 32-channel digital output (NPN) | 00-04-09 |
| DN-0S00-N1NN | DEVICENET 32-channel digital output (PNP) | 00-04-10 |
| FS integrated- CC-Link IE Field Basic communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| CI-8800-C0NN | CC-Link IE Field Basic 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) | 00-06-01 |
| CI-8800-C1NN | CC-Link IE Field Basic 8-channel digital input (NPN & PNP) 8-channel digital output (PNP) | 00-06-02 |
| CI-8800-C2NN | CC-Link IE Field Basic 8-channel digital input (NPN & PNP) 8-channel digital output (relay) | 00-06-03 |
| CI-HH00-C0NN | CC-Link IE Field Basic 16-channel digital input (NPN & PNP) 16-channel digital output (NPN) | 00-06-04 |
| CI-HH00-C1NN | CC-Link IE Field Basic 16-channel digital input (NPN & PNP) 16-channel digital output (PNP) | 00-06-05 |
| CI-S000-CNNN | CC-Link IE Field Basic 32-channel digital input (NPN & PNP) | 00-06-06 |
| CI-0S00-N0NN | CC-Link IE Field Basic 32-channel digital output (NPN) | 00-06-07 |
| CI-0S00-N1NN | CC-Link IE Field Basic 32-channel digital output (PNP) | 00-06-08 |
| FS integrated-PROFINET communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| PN2-8800-C0NN | PROFINET 8-channel digital input (NPN & PNP) 8-channel digital output (NPN) | 00-01-11 |

| | | |
|---|---|---|
| PN2-8800-C1NN | PROFINET 8-channel digital input (NPN & PNP)<br>8-channel digital output (PNP) | 00-01-12 |
| PN2-8800-C2NN | PROFINET 8-channel digital input (NPN & PNP)<br>8-channel digital output (relay) | 00-01-13 |
| PN2-HH00-C0NN | PROFINET 16-channel digital input (NPN & PNP)<br>16-channel digital output (NPN) | 00-01-14 |
| PN2-HH00-C1NN | PROFINET 16-channel digital input (NPN & PNP)<br>16-channel digital output (PNP) | 00-01-15 |
| PN2-S000-CNNN | PROFINET 32-channel digital input (NPN & PNP) | 00-01-18 |
| PN2-0S00-N0NN | PROFINET 32 digital outputs (NPN) | 00-01-19 |
| PN2-0S00-N1NN | PROFINET 32 digital outputs (PNP) | 00-01-20 |
| FS integrated-EtherNet/IP communication protocol digital input and output module | | |
| Product Model | Product Description | Order Number |
| EI2-8800-C0NN | EtherNet/IP 8-channel digital input (NPN & PNP)<br>8-channel digital output (NPN) | 00-05-11 |
| EI2-8800-C1NN | EtherNet/IP 8-channel digital input (NPN & PNP)<br>8-channel digital output (PNP) | 00-05-12 |
| EI2-8800-C2NN | EtherNet/IP 8-channel digital input (NPN & PNP)<br>8-channel digital output (relay) | 00-05-13 |
| EI2-HH00-C0NN | EtherNet/IP 16-channel digital input (NPN & PNP)<br>16-channel digital output (NPN) | 00-05-14 |
| EI2-HH00-C1NN | EtherNet/IP 16-channel digital input (NPN & PNP)<br>16-channel digital output (PNP) | 00-05-15 |
| EI2-S000-CNNN | EtherNet/IP 32 digital inputs (NPN & PNP) | 00-05-16 |
| EI2-0S00-N0NN | EtherNet/IP 32 digital outputs (NPN) | 00-05-17 |
| EI2-0S00-N1NN | EtherNet/IP 32 digital outputs (PNP) | 00-05-18 |