

Compact67 I/O Module

----EtherNet/IP System Manual



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Preface

1. Scope of this manual:

This manual applies to the FCEI-16UP-M12 module of ELCO.

The information in this manual enables you to run the FCEI-16UP-M12 module on EtherNet/IP as a distributed I/O device.

2. Basic knowledge requirements

This manual presumes a general knowledge in the field of automation engineering and describes the components based on the data valid at the time of its release.

ELCO reserves the right of including a product information for each new component, and for each component of a later version.

3. Guide:

This manual introduces the hardware and usage of the FCEN-16UP-MP4 module for the EtherNet/IP protocol.

Covered topics are:

- **Installation and wiring**
- **Commissioning and diagnostics**
- **Components**
- **Article numbers**
- **Technical specifications**

4. Technical support:

Please contact your local ELCO representative or dial 400-608-4005 if you have any questions about the products described in this manual.

Additional information about ELCO products is available:

<https://www.elcoautomation.com/en-us/>

5. Disclaimer of liability:

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

1. Product overview

1.1 Introduction

The FCEI series module supporting I/O signals is a new type of distributed I/O system with IP67. This series of products adopts a fully sealed design structure and can be directly installed in industrial sites, including harsh working environments where liquids, dust, and vibrations may occur.

1.2 Applications

The standard Compact67 I/O module provides a reliable and trustworthy solution for fieldbus I/O systems that connect controllers and are applied in harsh field environments.

The Compact67 module based on a 60mm wide IP67 protective housing can be installed in a standardized manner and operate safely and reliably in harsh working environments where water, dust, and vibration may occur. These characteristics make them suitable for various application scenarios, such as material conveying systems, automated assembly systems, etc.

Other features include support for multiple signal inputs and outputs, and embedded high brightness LED diagnostics to help maintenance personnel more easily determine I/O, module, and network status.

1.3 Features

- Up to IP67 protection class
- Compact design saves space for direct installation of mechanical equipment
- Fast and reliable connector connection
- Can connect multiple input or output switch signals
- LED status display
- Channel level protection and diagnosis

1.4 Type

NO.	Type	Description
1	FCEI-1600P-M12	EtherNet/IP I/O module 16DI PNP
2	FCEI-0808P-M12	EtherNet/IP I/O module 8DI & 8DO PNP
3	FCEI-16UP-M12	EtherNet/IP I/O module 16DIO PNP

2. Technical characteristics

2.1 Hardware

FCEI-16UP-M12

ARTICLE PROPERTIES

PRODUCT TYPE	Compact67 EtherNET/IP	OPERATING MODES	Auto-negotiation, Auto-MDI/MDI-X
DESCRIPTION	16 configurable input / output, PNP, 8 x M12	TRANSFER RATE	10 / 100 Mbps
PROTOCOL	EtherNet/IP	ADDRESS SETTINGS	DHCP, BOOTP

ELECTRICAL DATA

SUPPLY VOLTAGE	24 V DC (18 ... 30 V DC)	INPUT CHANNELS	Max.16
MODULE CONSUMPTION CURRENT	Max. 200 mA	INPUT SUPPLY CURRENT	Max.200 mA per channel
OUTPUT SUPPLY CURRENT	Total max. 8 A	INPUT SIGNAL TYPE	PNP sensor, stroke switch, dry contact, etc.
ELECTRICAL ISOLATION	Module / Ui and Uo voltage isolation	INPUT DELAY	2.5 ms
POWER SUPPLY	2 x 7/8" 5pin, Male + Female	OUTPUT CHANNELS	Max.16
BUS COMMUNICATION	2 x M12 D-code 4pin, Female	OUTPUT RATED CURRENT	Max. 2 A per channel, total max. 8 A
SIGNAL CONNECTION	8 x M12 A-code 4pin, Female	OUTPUT SIGNAL TYPE	Indicator, miniature solenoid valve, etc.
COMMUNICATION INDICATION	LED indication, communication message	OUTPUT FREQUENCY	Resistive load 100 Hz, Inductive load 5 Hz
VOLTAGE DETECTION	Support, low voltage alarm	PROCESS DATA IN	4 bytes
SHORT-CIRCUIT & OVERLOAD	Support, LED indication	PROCESS DATA OUT	2 bytes
COMMUNICATION INDICATOR	Green LED		
POWER INDICATOR	Green LED		
IO STATUS INDICATOR	Green LED		

FUNCTIONAL SAFETY

MTTF (40 °C)	55a
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GENERAL DATA

MOUNTING METHOD	4-hole screw mounting	OPERATING TEMPERATURE	-25 ... +70 °C
PROTECTION CLASS	IP67	STORAGE TEMPERATURE	-40 ... +85 °C
WEIGHT	482 g	DIMENSIONS	60 x 220 x 39 mm

APPROVALS



FCEI-0808P-M12

FCEI-0808P-M12

ARTICLE PROPERTIES

PRODUCT TYPE	Compact67 EtherNET/IP	OPERATING MODES	Auto-negotiation, Auto-MDI/MDI-X
DESCRIPTION	8 input + 8 output, PNP, 8 x M12	TRANSFER RATE	10 / 100 Mbps
PROTOCOL	EtherNet/IP	ADDRESS SETTINGS	DHCP, BOOTP

ELECTRICAL DATA

SUPPLY VOLTAGE	24 V DC (18 ... 30 V DC)	INPUT CHANNELS	8
MODULE CONSUMPTION CURRENT	Max. 200 mA	INPUT SUPPLY CURRENT	Max.200 mA per channel
OUTPUT SUPPLY CURRENT	Total max. 8 A	INPUT SIGNAL TYPE	PNP sensor, stroke switch, dry contact, etc.
ELECTRICAL ISOLATION	Module / Ui and Uo voltage isolation	INPUT DELAY	2.5 ms
POWER SUPPLY	2 x 7/8" 5pin, Male + Female	OUTPUT CHANNELS	8
BUS COMMUNICATION	2 x M12 D-code 4pin, Female	OUTPUT RATED CURRENT	Max. 2 A per channel, total max. 8 A
SIGNAL CONNECTION	8 x M12 A-code 4pin, Female	OUTPUT SIGNAL TYPE	Indicator, miniature solenoid valve, etc.
COMMUNICATION INDICATION	LED indication, communication message	OUTPUT FREQUENCY	Resistive load 100 Hz, Inductive load 5 Hz
VOLTAGE DETECTION	Support, low voltage alarm	PROCESS DATA IN	3 bytes
SHORT-CIRCUIT & OVERLOAD	Support, LED indication	PROCESS DATA OUT	1 bytes
COMMUNICATION INDICATOR	Green LED		
POWER INDICATOR	Green LED		
IO STATUS INDICATOR	Green LED		

FUNCTIONAL SAFETY

MTTF (40 °C)	57a
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GENERAL DATA

MOUNTING METHOD	4-hole screw mounting	OPERATING TEMPERATURE	-25 ... +70 °C
PROTECTION CLASS	IP67	STORAGE TEMPERATURE	-40 ... +85 °C
WEIGHT	482 g	DIMENSIONS	60 x 220 x 39 mm

APPROVALS



FCEI-1600P-M12

ARTICLE PROPERTIES

PRODUCT TYPE	Compact67 EtherNET/IP	OPERATING MODES	Auto-negotiation, Auto-MDI/MDI-X
DESCRIPTION	16 input PNP, 8 x M12	TRANSFER RATE	10 / 100 Mbps
PROTOCOL	EtherNet/IP	ADDRESS SETTINGS	DHCP, BOOTP

ELECTRICAL DATA

SUPPLY VOLTAGE	24 V DC (18 ... 30 V DC)	INPUT CHANNELS	16
MODULE CONSUMPTION CURRENT	Max. 200 mA	INPUT SUPPLY CURRENT	Max.200 mA per channel
OUTPUT SUPPLY CURRENT	Total max. 8 A	INPUT SIGNAL TYPE	PNP sensor, stroke switch, dry contact, etc.
ELECTRICAL ISOLATION	Module / Ui and Uo voltage isolation	INPUT DELAY	2.5 ms
POWER SUPPLY	2 x 7/8" 5pin, Male + Female	OUTPUT CHANNELS	-
BUS COMMUNICATION	2 x M12 D-code 4pin, Female	OUTPUT RATED CURRENT	Max. 2 A per channel, total max. 8 A
SIGNAL CONNECTION	8 x M12 A-code 4pin, Female	OUTPUT SIGNAL TYPE	Indicator, miniature solenoid valve, etc.
COMMUNICATION INDICATION	LED indication, communication message	OUTPUT FREQUENCY	Resistive load 100 Hz, Inductive load 5 Hz
VOLTAGE DETECTION	Support, low voltage alarm	PROCESS DATA IN	4 bytes
SHORT-CIRCUIT & OVERLOAD	Support, LED indication	PROCESS DATA OUT	0 bytes
COMMUNICATION INDICATOR	Green LED		
POWER INDICATOR	Green LED		
IO STATUS INDICATOR	Green LED		

FUNCTIONAL SAFETY

MTTF (40 °C)	59a
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GENERAL DATA

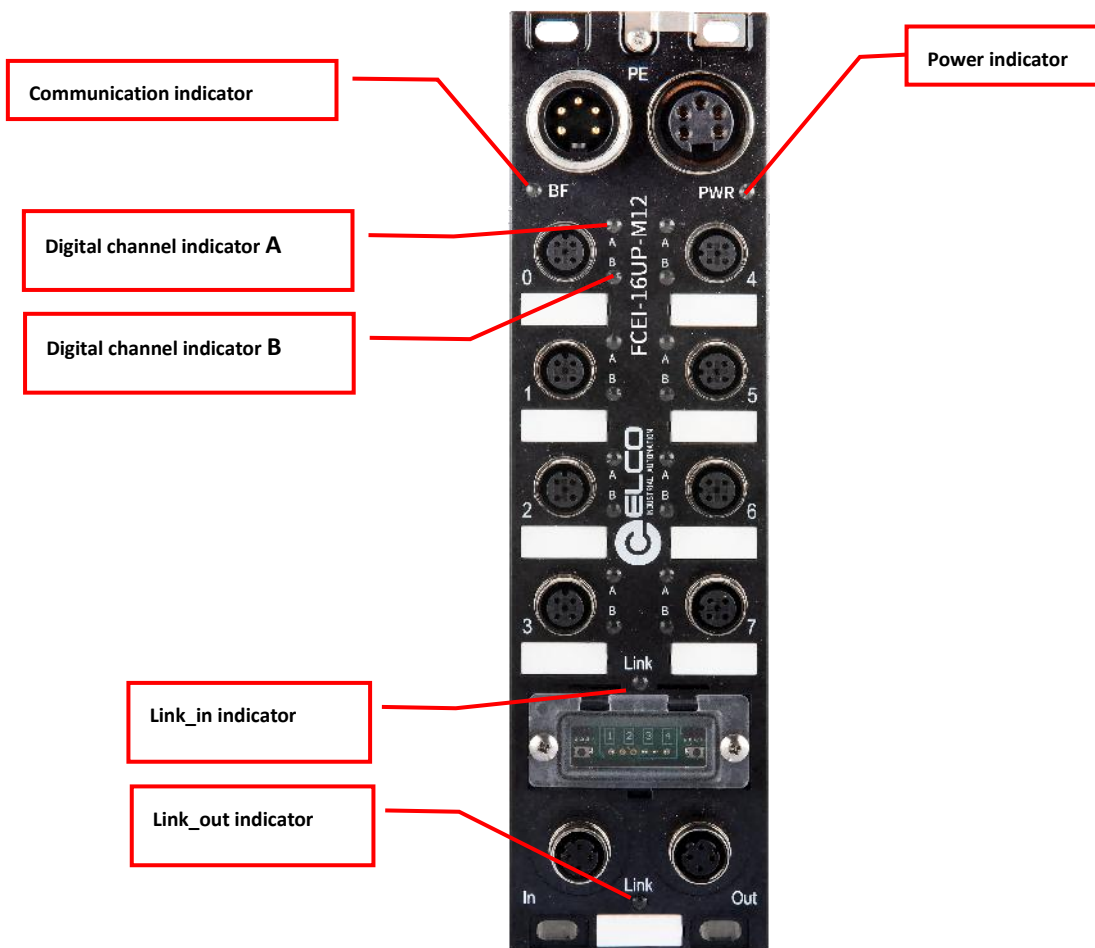
MOUNTING METHOD	4-hole screw mounting	OPERATING TEMPERATURE	-25 ... +70 °C
PROTECTION CLASS	IP67	STORAGE TEMPERATURE	-40 ... +85 °C
WEIGHT	482 g	DIMENSIONS	60 x 220 x 39 mm

APPROVALS



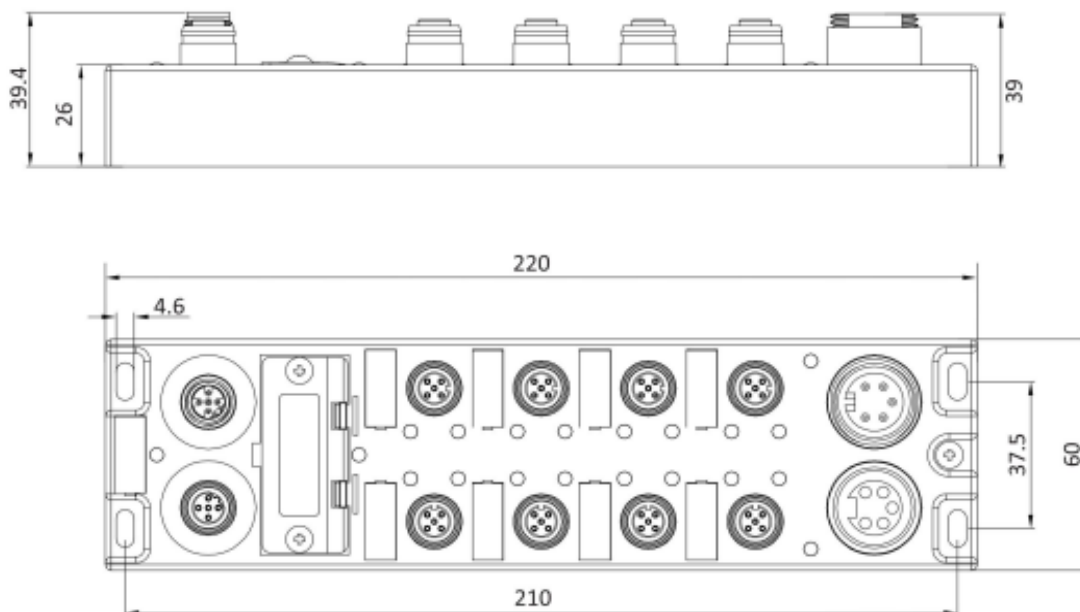
2.2 LED indicator

The module's indicator can clearly indicate its operating status. For specific fault indications and solutions, please refer to Section 5.1 "LED Fault Indicator".



3. Installation wiring

3.1 Installation dimensions



3.2 Installation position and size

Thanks to IP67 high protection level and excellent resistance to vibration and interference, FCEN-16UP-MP4 can be installed in almost any location.

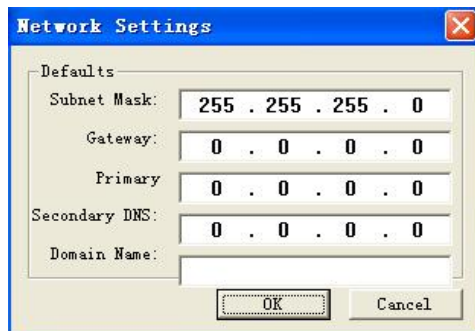
The FCEN-16UP-MP4 module adopts a compact design to maximize installation space savings. The following table shows the module installation dimensions:

	Module dimension
Installation width	60mm
Installation height	220mm
Installation depth	39mm

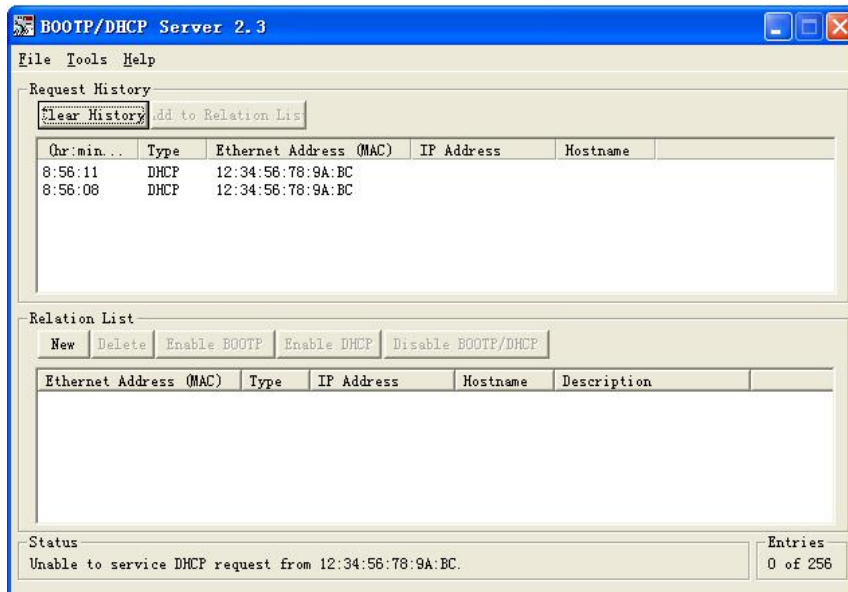
3.3 Setting the IP Address of the Compact67 Module

For the EtherNet/IP Compact67 module, the BOOTP-DHCP server tool built into Rockwell software is required to assign an IP address before its use.

First, open the BOOTP-DHCP server tool and click Tool->Network Settings to configure the network parameters and enter the subnet mask.



Then, the DHCP server tool will detect the modules and devices in the network that have not been assigned an IP address. After that, click the MAC address of the module for which you want to assign an IP address.

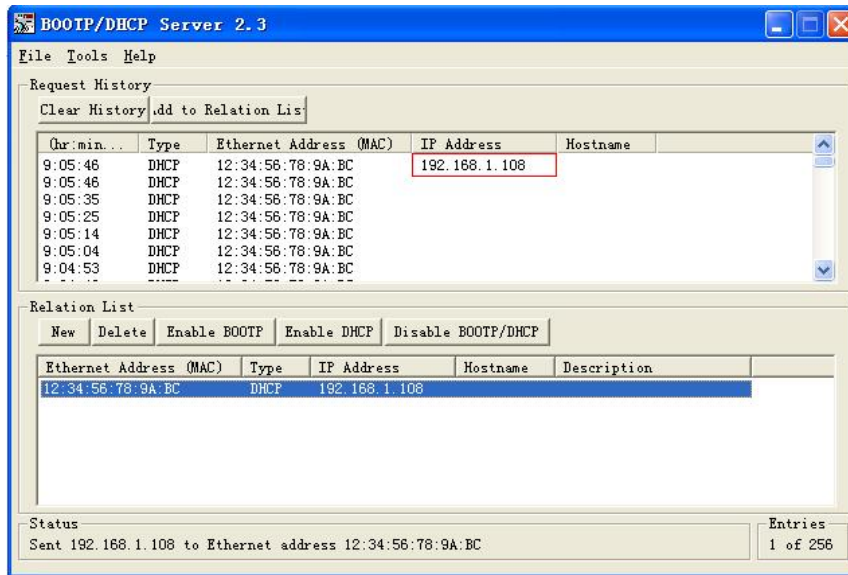


Note: If the module has already been assigned an IP address and BOOTP/DHCP has been disabled, it cannot be automatically detected. There are two ways to reset the IP address.

1) Click the "New" button to manually add the module's MAC address and the original IP address. Then click the "Enable DHCP" button. Once successful, the module can be searched. After that, close the software and power cycle the module to assign a new IP address.

2) Open the plastic protective cover below the module. With the module powered on (not yet communicating with the PLC), press the black button for more than 3 seconds. When the A - lights of each port on the module flash yellow in turn, it indicates that the IP address has been successfully cleared. Power cycle the module, and a new IP address can be assigned.

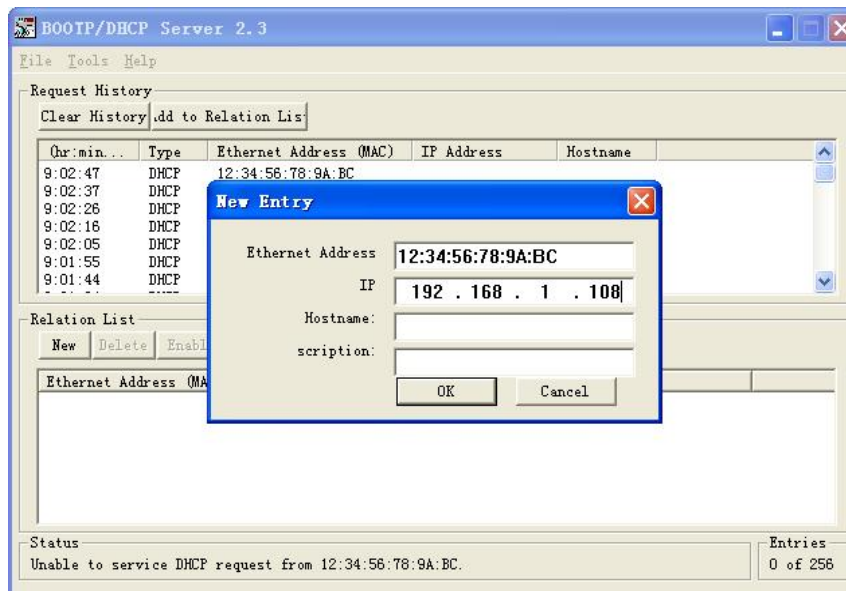




Then click "Add to Relation List" or double - click the MAC address. In the pop - up window, enter the IP address in the IP field, for example, 192.168.1.108.

Note: The assigned IP address must be in the same IP segment as the local computer. Otherwise, the assignment may not succeed.

As shown in the figure below:

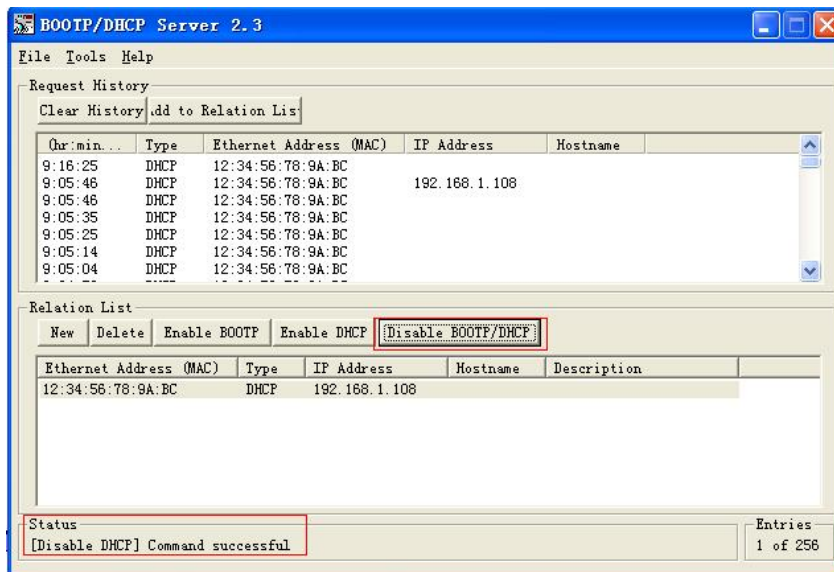


When the assigned IP address appears in the IP address column of the list, it indicates that the IP address assignment for the device has been successful. As shown in the figure below:

Once the IP address assignment is completed, the device can operate normally on the network. However, if the device is

powered off and restarted, the assigned IP address will be lost, and you will need to reassign the IP address following the steps above.

If you need to permanently save the assigned IP address in the gateway device so that it is not lost after a power outage, you need to click the "Disable BOOTP/DHCP" button in the figure below. Wait until "Command Successful" appears in the Status column, which indicates that the IP address has been successfully permanently saved. If "Command Successful" does not appear in the Status column after clicking, you need to click again until the success message is displayed. As shown in the figure below:



3.4 Wiring guidance

Please make sure to cut off power supply when wiring to ensure safety.

3.4.1 Connecting module to protective earth (FE)

- Always connect the module to protective earth.
- The module also requires this connection to protective earth in order to discharge any interference currents to ground, and for EMC compatibility.
- Always make sure you have a low-impedance connection to protective earth.

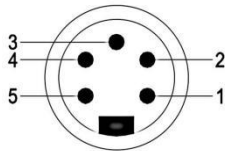
3.4.2 Module power supply

Compact67 module adopts 24VDC power supply and can supply power to the connected sensors or actuators through signal connection lines. The input voltage range is 18-30VDC, standard 7/8" 5-PIN connector.

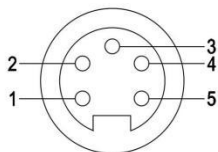
The power supply of I/O module is divided into two parts: System and sensor power supply U_s (+24V, 0V), and auxiliary power supply U_a (P24, N24). U_s is used for module chips and input signal power supply, while U_a is used for output signal power supply.

For Compact67 EIP module, the two power supply are partially isolated, electrical isolation between U_{s+} and U_{a+} , and internally connected between U_{s-} and U_{a-} .

1) Power in connector (Male)



2) Power out connector (Female)



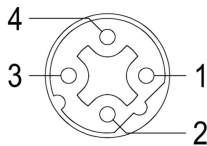
3) Power definition

Terminal	Function	Power supply
1	Output power supply 2M	0V
2	System and input power supply 1M	0V
3	Functional Earth	FE
4	System and input power supply 1L+	24V
5	Output power supply 2L+	24V

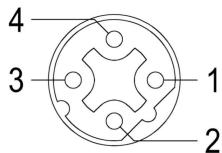
3.4.3 Module BUS connection

Compact67 module, supporting EtherNet/IP protocol, transmits signals by a shielded cable, M12 D-Code connector.

1) BUS-In (Female)



2) BUS-Out (Female)



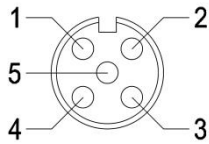
3) Bus definition

Terminal	Function	Cable color
1	Transmit Data (TD+)	Yellow
2	Receive Data (RD+)	White
3	Transmit Data (TD-)	Orange
4	Receive Data (RD-)	Blue

3.4.4 Compact67 I/O signal port cable connection

All Compact67 series I/O signals are connected through standard 5-pin M12 connectors, and each M12 port can connect up to 2 switch signals (input or output).

1) I/O port connector (Female)

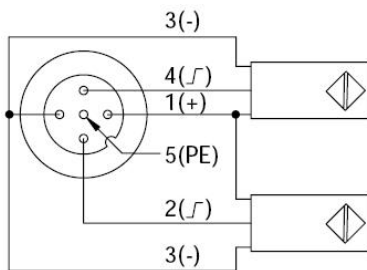


2) I/O port pin definition

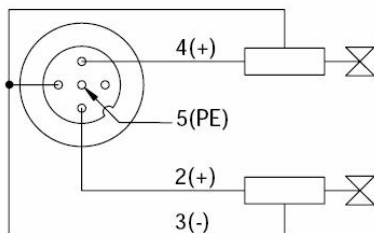
Terminal	Port function	Note
1	Power supply 24V+	
2	Signal input/output B	The second channel signal
3	Power supply GND	
4	Signal input/output A	The first signal channel
5	Functional Earth	

3) Wiring example

a) Dual input signal - one connector is connected to two switch input signals, FCEI-1600P-M12、FCEI-0808P-M12 and FCEI-16UP-M12 all supports this form of connection.

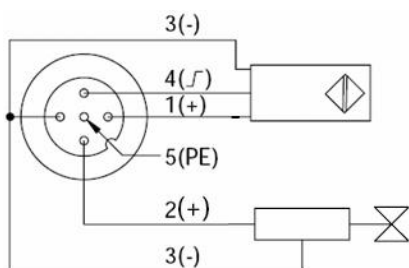


b) Dual output signal - one connector is connected to two switch output signals, FCEI-0808P-M12 and FCEI-16UP-M12 supports this form of connection.



c) Input and output signals - one connector connected to one digital input and one digital output signal, the

FCEI-16UP-M12 supports this form of connection.



3.5 Signal Address Assignment for Compact67

Each Compact67 module has a total of 8 connectors (Port0~Port7) for signal connection, and each connector has 5 pins (Pin1~Pin5) for connection. The following table, categorized by model, shows the signal status of each connector and its corresponding relationship with the Ethernet/IP bus transmission bytes.

1) 16-point pure input module FCEI-1600P-M12

This module occupies 4 bytes of input. The first two bytes indicate the input signal short circuit and output signal overload of each port, while the last two bytes indicate the signal of each port.

BYTE	BIT	PORT	Eg.
Input Byte 0	Bit 0	ShortCircuit_Port0	I 0.0
	Bit 1	ShortCircuit_Port1	I 0.1
	Bit 2	ShortCircuit_Port2	I 0.2
	Bit 3	ShortCircuit_Port3	I 0.3
	Bit 4	ShortCircuit_Port4	I 0.4
	Bit 5	ShortCircuit_Port5	I 0.5
	Bit 6	ShortCircuit_Port6	I 0.6
	Bit 7	ShortCircuit_Port7	I 0.7
Input Byte 1	Bit 0	Overload_Port0	I 1.0
	Bit 1	Overload_Port1	I 1.1
	Bit 2	Overload_Port2	I 1.2
	Bit 3	Overload_Port3	I 1.3
	Bit 4	Overload_Port4	I 1.4
	Bit 5	Overload_Port5	I 1.5
	Bit 6	Overload_Port6	I 1.6
	Bit 7	Overload_Port7	I 1.7
Input Byte 2	Bit 0	Port0.Pin4	I 2.0
	Bit 1	Port0.Pin2	I 2.1
	Bit 2	Port1.Pin4	I 2.2
	Bit 3	Port1.Pin2	I 2.3
	Bit 4	Port2.Pin4	I 2.4
	Bit 5	Port2.Pin2	I 2.5
	Bit 6	Port3.Pin4	I 2.6
	Bit 7	Port3.Pin2	I 2.7

Input Byte 3	Bit 0	Port4.Pin4	I 3.0
	Bit 1	Port4.Pin2	I 3.1
	Bit 2	Port5.Pin4	I 3.2
	Bit 3	Port5.Pin2	I 3.3
	Bit 4	Port6.Pin4	I 3.4
	Bit 5	Port6.Pin2	I 3.5
	Bit 6	Port7.Pin4	I 3.6
	Bit 7	Port7.Pin2	I 3.7

2) 8DI and 8DO module FCEI-0808P-M12

This module occupies 3 bytes of input and 1 byte of output. The first two bytes of the input represent the input signal short - circuit and output signal overload of each port. The third byte represents the input signals of the first 8 ports. The single byte of output represents the output signals of the last 8 ports.

BYTE	BIT	PORT	Eg.
Input Byte 0	Bit 0	ShortCircuit_Port0	I 0.0
	Bit 1	ShortCircuit_Port1	I 0.1
	Bit 2	ShortCircuit_Port2	I 0.2
	Bit 3	ShortCircuit_Port3	I 0.3
	Bit 4	-	I 0.4
	Bit 5	-	I 0.5
	Bit 6	-	I 0.6
	Bit 7	-	I 0.7
Input Byte 1	Bit 0	-	I 1.0
	Bit 1	-	I 1.1
	Bit 2	-	I 1.2
	Bit 3	-	I 1.3
	Bit 4	Overload_Port4	I 1.4
	Bit 5	Overload_Port5	I 1.5
	Bit 6	Overload_Port6	I 1.6
	Bit 7	Overload_Port7	I 1.7
Input Byte 2	Bit 0	Port0.Pin4	I 2.0
	Bit 1	Port0.Pin2	I 2.1
	Bit 2	Port1.Pin4	I 2.2

	Bit 3	Port1.Pin2	I 2.3
	Bit 4	Port2.Pin4	I 2.4
	Bit 5	Port2.Pin2	I 2.5
	Bit 6	Port3.Pin4	I 2.6
	Bit 7	Port3.Pin2	I 2.7
Output Byte 0	Bit 0	Port4.Pin4	Q 0.0
	Bit 1	Port4.Pin2	Q 0.1
	Bit 2	Port5.Pin4	Q 0.2
	Bit 3	Port5.Pin2	Q 0.3
	Bit 4	Port6.Pin4	Q 0.4
	Bit 5	Port6.Pin2	Q 0.5
	Bit 6	Port7.Pin4	Q 0.6
	Bit 7	Port7.Pin2	Q 0.7

3) 16-point configurable input/output module FCEI-16UP-M12

This module occupies 4 bytes for input and 2 bytes for output. The first two input bytes indicate the input signal short - circuit and output signal overload of each port. The last two input bytes represent the input signals of each port. The two output bytes represent the output signals of each port.

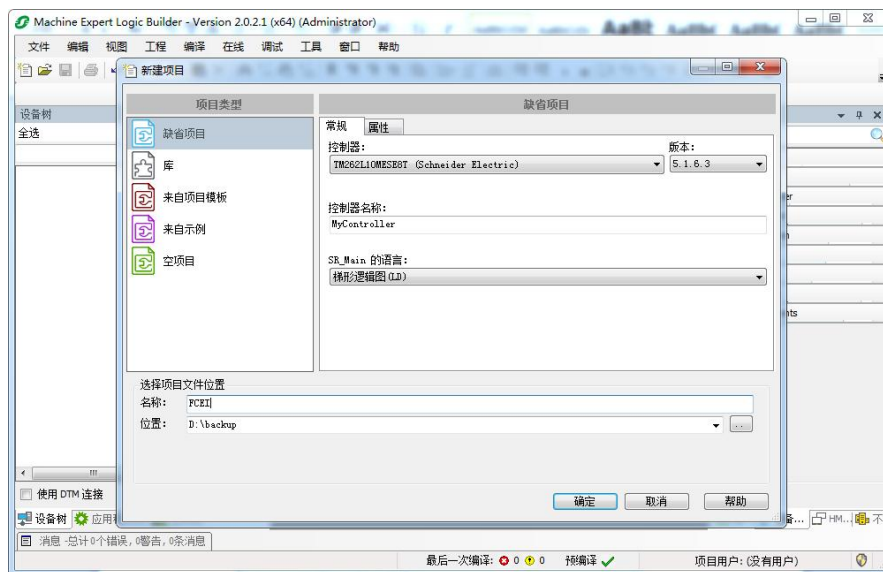
BYTE	BIT	PORT	Eg.
Input Byte 0	Bit 0	ShortCircuit_Port0	I 0.0
	Bit 1	ShortCircuit_Port1	I 0.1
	Bit 2	ShortCircuit_Port2	I 0.2
	Bit 3	ShortCircuit_Port3	I 0.3
	Bit 4	ShortCircuit_Port4	I 0.4
	Bit 5	ShortCircuit_Port5	I 0.5
	Bit 6	ShortCircuit_Port6	I 0.6
	Bit 7	ShortCircuit_Port7	I 0.7
Input Byte 1	Bit 0	Overload_Port0	I 1.0
	Bit 1	Overload_Port1	I 1.1
	Bit 2	Overload_Port2	I 1.2
	Bit 3	Overload_Port3	I 1.3
	Bit 4	Overload_Port4	I 1.4

	Bit 5	Overload_Port5	I 1.5
	Bit 6	Overload_Port6	I 1.6
	Bit 7	Overload_Port7	I 1.7
Input Byte 2 + Output Byte 0	Bit 0	Port0.Pin4	I 2.0 Q 0.0
	Bit 1	Port0.Pin2	I 2.1 Q 0.1
	Bit 2	Port1.Pin4	I 2.2 Q 0.2
	Bit 3	Port1.Pin2	I 2.3 Q 0.3
	Bit 4	Port2.Pin4	I 2.4 Q 0.4
	Bit 5	Port2.Pin2	I 2.5 Q 0.5
	Bit 6	Port3.Pin4	I 2.6 Q 0.6
	Bit 7	Port3.Pin2	I 2.7 Q 0.7
Input Byte 3 + Output Byte 1	Bit 0	Port4.Pin4	I 3.0 Q 1.0
	Bit 1	Port4.Pin2	I 3.1 Q 1.1
	Bit 2	Port5.Pin4	I 3.2 Q 1.2
	Bit 3	Port5.Pin2	I 3.3 Q 1.3
	Bit 4	Port6.Pin4	I 3.4 Q 1.4
	Bit 5	Port6.Pin2	I 3.5 Q 1.5
	Bit 6	Port7.Pin4	I 3.6 Q 1.6
	Bit 7	Port7.Pin2	I 3.7 Q 1.7

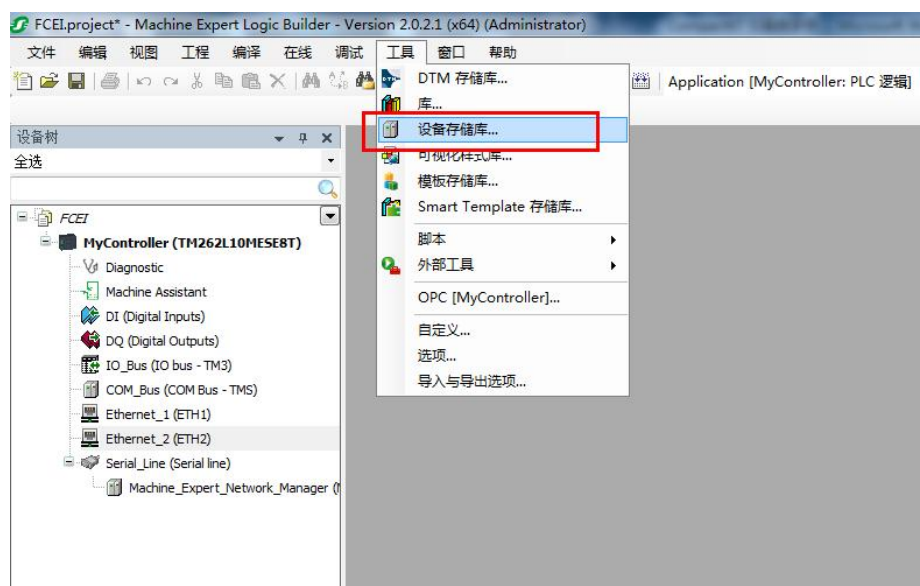
4. Configuration Commissioning(Schneider PLC)

In this example, the FCEI - 16UP - M12 module from ELCO's Compact67 series is used as an EtherNet/IP slave to connect to Schneider's controller TM262L10MESE8T with an EtherNet/IP interface. It is assumed that the EcoStruxure Machine Expert software has been installed, the required network card information has been set, and all power supply and bus connections have been completed. The IP address of the Compact67 module is set to 192.168.0.15 (the setting method can refer to section 3.3).

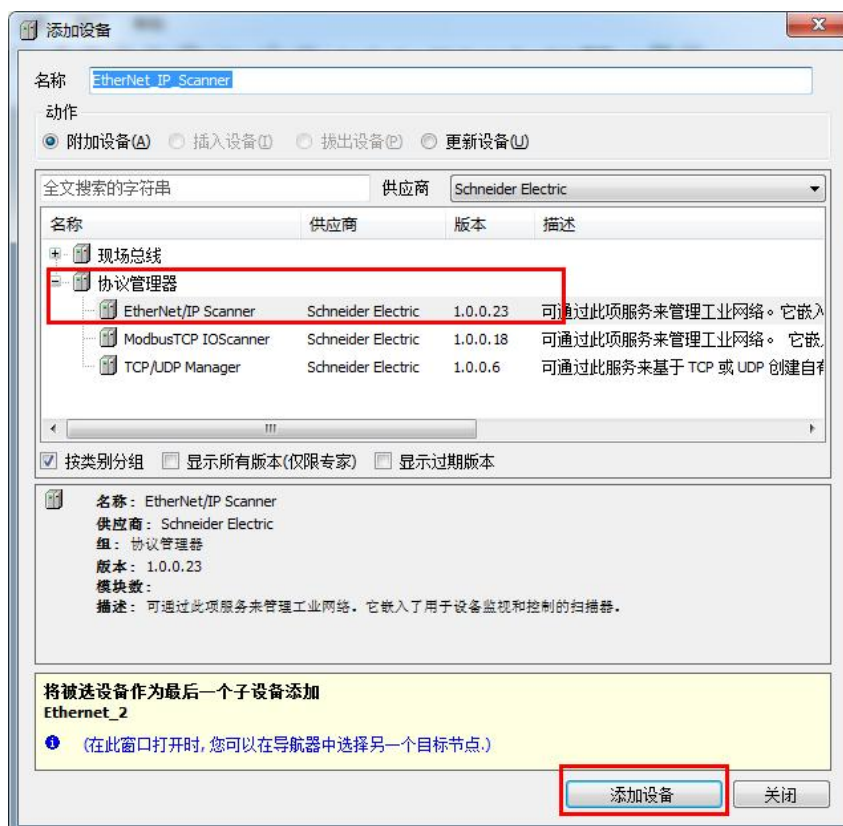
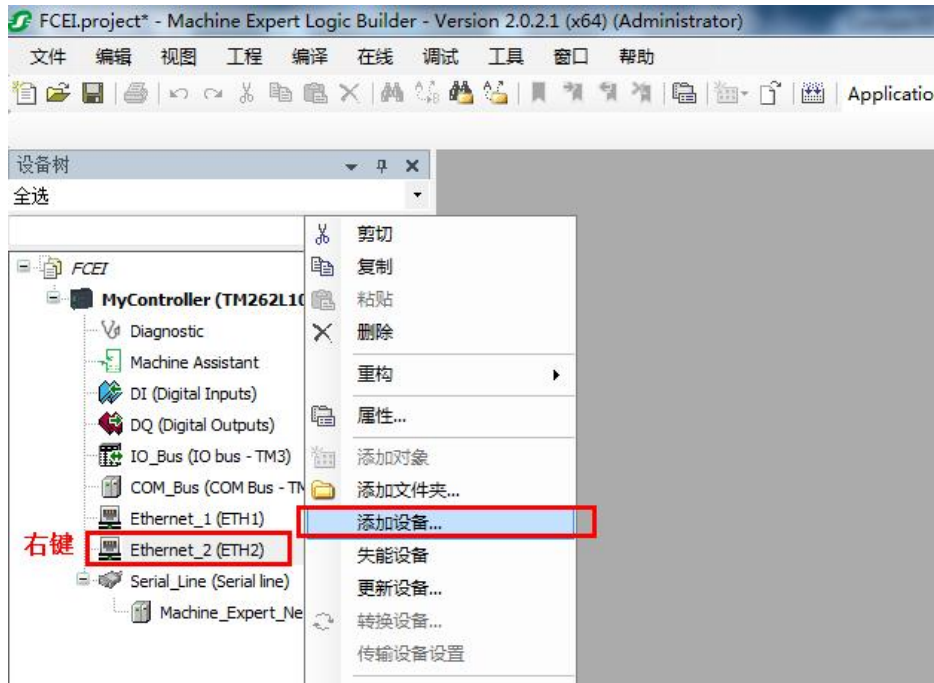
- 1) Run 'Machine Expert' and create a new project.



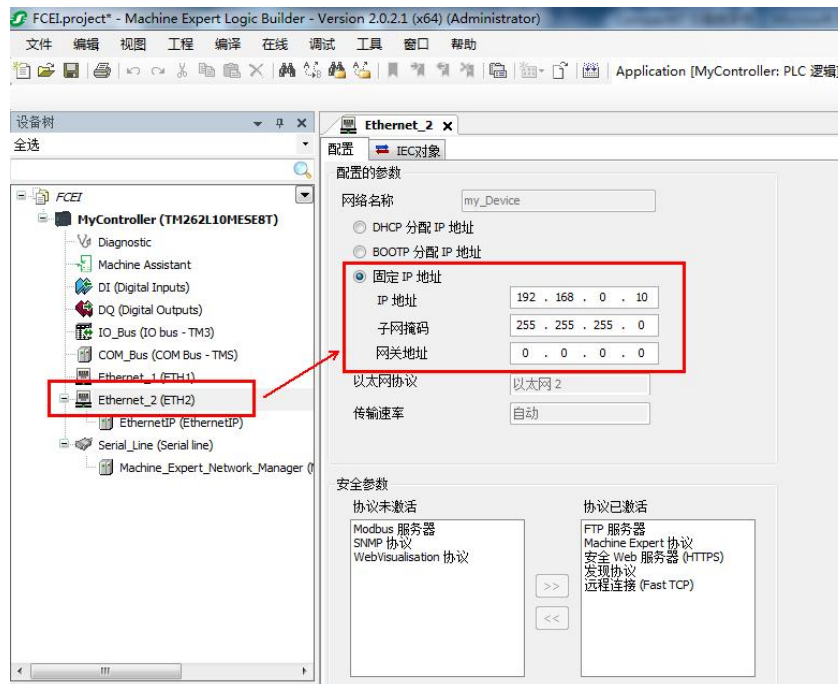
- 2) Click "Tools" in the title bar, select "Device Repository". In the pop - up interface, click the "Install" button, then select and install the EDS configuration file of the Compact67 module.



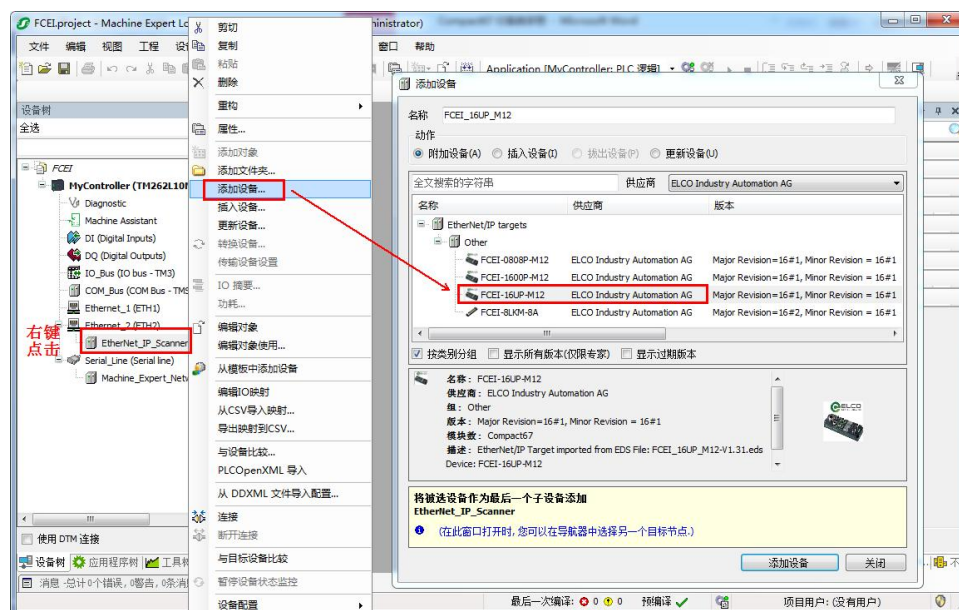
3) Right - click on the Ethernet port "Ethernet_2(ETH2)" in the left - hand device tree. From the pop - up menu, select "Add Device...". In the newly opened window, select "EthernetIP Local Adapter" and click the "Add Device" button to configure the EtherNet/IP master station.



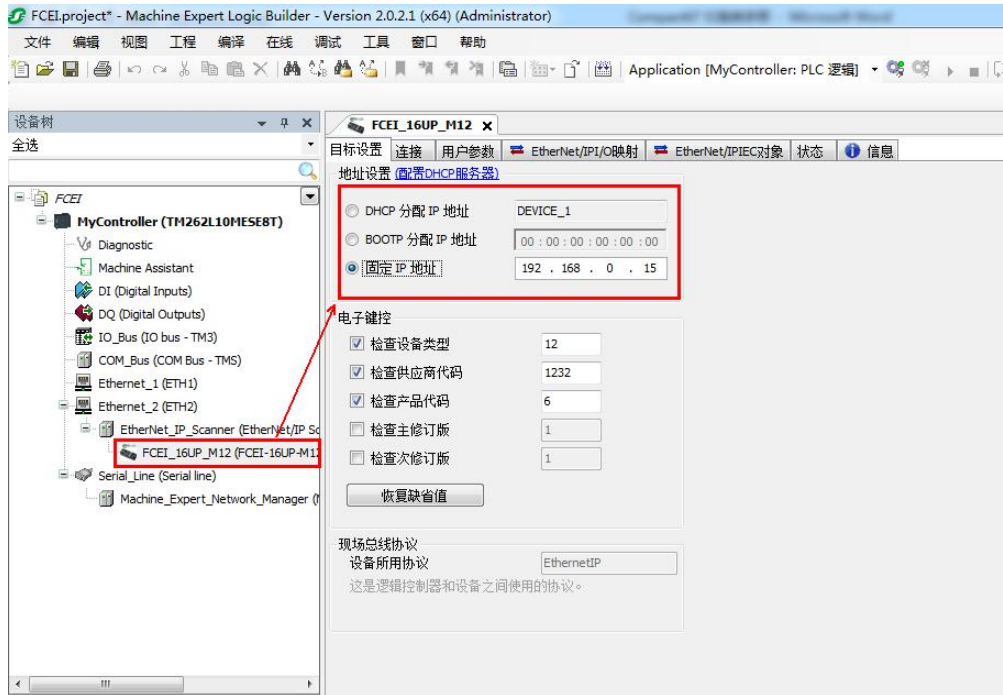
- 4) Double - click on the Ethernet port "Ethernet_2(ETH2)" in the left - hand device tree. In the newly opened interface, set the IP address of the PLC. The IP of the module needs to be in the same network segment as that of the PLC.



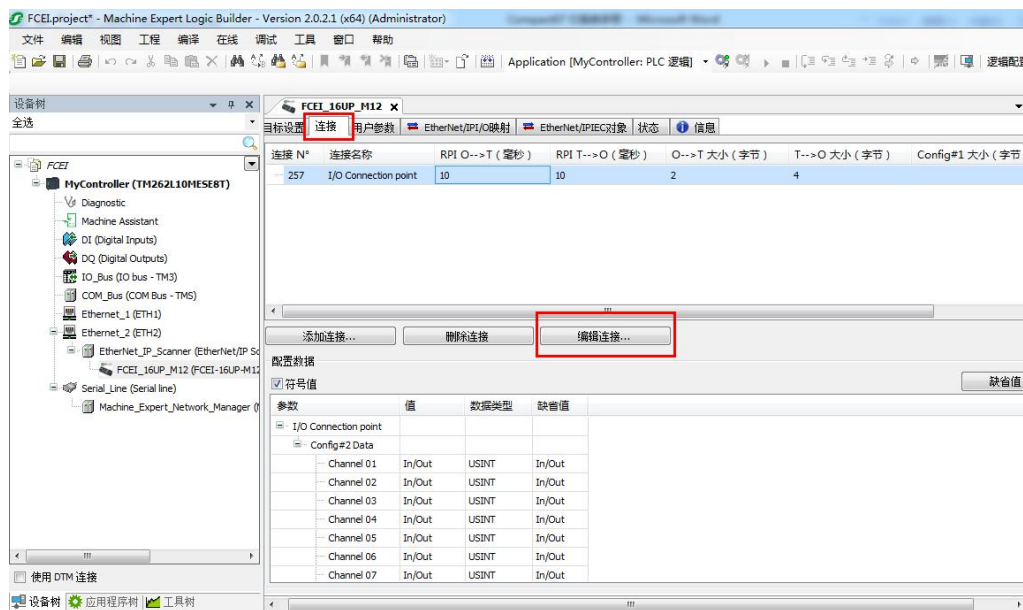
- 5) Right - click on the newly added "Ethernet_IP_Scanner" in the left - hand device tree. From the pop - up menu, select "Add Device...". In the newly opened window, select "FCEI-16UP-M12" from ELCO, and then click the "Add Device" button to configure the Compact67 module.



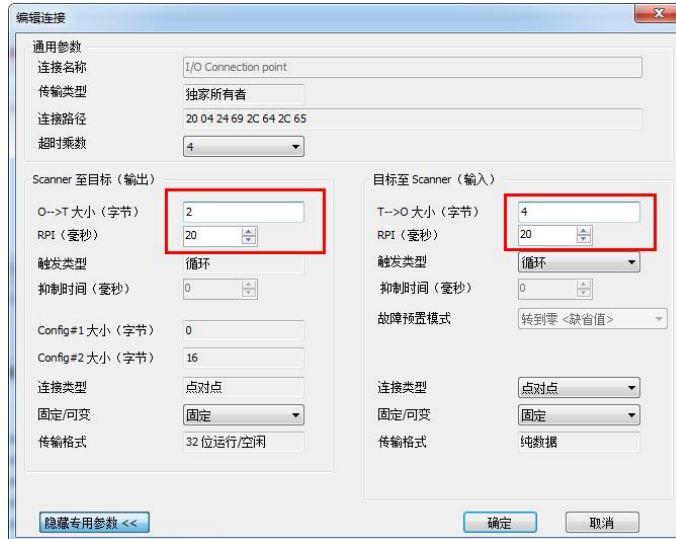
- 6) Double - click on the newly added Compact67 module. In the newly opened interface, on the "Target Settings" tab, select "Fixed IP Address" and enter the pre-assigned IP address 192.168.0.15 of the module.



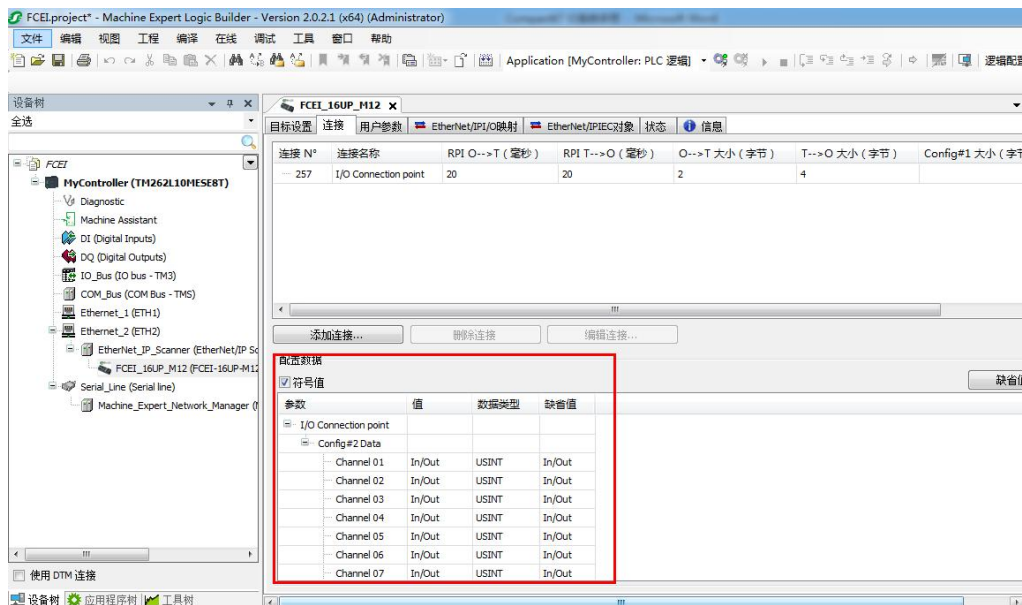
- 7) In the "Connection" tab of this module, based on the model FCEI-16UP-M12 being used, you can view the pre-set RPI (Requested Packet Interval) parameters and the input/output byte sizes. Click the "Edit Connection.." button to make modifications.



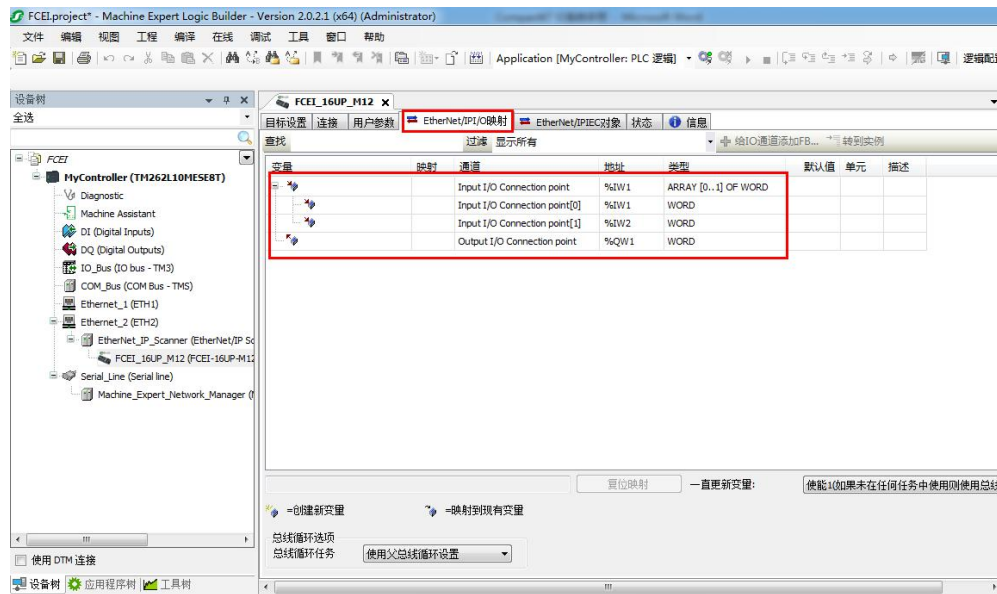
8) In the newly opened window, according to the input and output byte counts of the FCEI - 16UP - M12 module, confirm that the input bytes are 4 and the output bytes are 2. The RPI (Requested Packet Interval) time depends on the PLC settings, usually 20ms or 50ms. Then click the "OK" button.



9) At this point, in the "Connection" tab of this module, you can see that parameters such as the input and output byte counts and RPI have been set to the configured values. Also, in the lower part of the interface, you can set the input and output attributes of each port. By default, both In (input) and Out (output) are available, and you can modify them as needed.



10) In the "EtherNet/IP IO Mapping" tab of this module, you can view the input and output addresses mapped by this module and modify them as required. For specific address allocation, please refer to Section 5.2.



11) At this point, all the basic settings have been completed, and the program can be downloaded to the PLC.

5. Alarm diagnosis

5.1 LED fault indicator light

Through the LED indicator lights built into the Compact67 distributed I/O module, users can easily and quickly determine the current operating status of the module.

LED indicator light				Describe	Solution
Ui	Uo	Link (In)	Link (Out)		
-	-	-	-	Module power connection error	Check the module power supply
-	-	-	-	Output auxiliary power supply connection error	Check the module power supply
RED	-	-	-	The module power supply voltage is lower than 18V.	Replace the module power supply
-	RED	-	-	The voltage of the output auxiliary power supply is lower than 18V.	Replace the module power supply
-	-	RED	-	Bus inlet network connection fault	Check the inlet Ethernet cable
GREEN	GREEN	RED/GREEN Flash	-	The power supply is normal, and the bus inlet network is connected, but the communication has not been properly established yet.	Check the IP address assignment
					Check the module configuration
-	-	-	RED	Bus outlet network connection fault	Check the outlet Ethernet cable
GREEN	GREEN	-	RED/GREEN Flash	The power supply is normal and the bus - entry network is connected, yet communication has not been properly established.	Check the IP address assignment
					Check the module configuration
GREEN	GREEN	GREEN	-	The module is ready and exchanges data through the bus inlet.	-
GREEN	GREEN	-	GREEN	The module is ready and exchanges data through the bus outlet.数据	-

5.2 Module Address Allocation

Module Address Allocation Modules of different models occupy different areas in the PLC process image. The details are as follows:

1) 16DI, FCEI - 1600P - M12

IN=4 bytes, OUT=0 byte

IN	Byte	Bit_7	Bit_6	Bit_5	Bit_4	Bit_3	Bit_2	Bit_1	Bit_0
Status	0	Err1_C7	Err1_C6	Err1_C5	Err1_C4	Err1_C3	Err1_C2	Err1_C1	Err1_C0
	1	Err2_C7	Err2_C6	Err2_C5	Err2_C4	Err2_C3	Err2_C2	Err2_C1	Err2_C0
Signals	2	C3.Pin2	C3.Pin4	C2.Pin2	C2.Pin4	C1.Pin2	C1.Pin4	C0.Pin2	C0.Pin4
	3	C7.Pin2	C7.Pin4	C6.Pin2	C6.Pin4	C5.Pin2	C5.Pin4	C4.Pin2	C4.Pin4

2) 8DI & 8DO, FCEI-0808P-M12

IN=3 bytes, OUT=1 byte

IN	Byte	Bit_7	Bit_6	Bit_5	Bit_4	Bit_3	Bit_2	Bit_1	Bit_0
Status	0	Err1_C7	Err1_C6	Err1_C5	Err1_C4	Err1_C3	Err1_C2	Err1_C1	Err1_C0
	1	Err2_C7	Err2_C6	Err2_C5	Err2_C4	Err2_C3	Err2_C2	Err2_C1	Err2_C0
Signals	2	C3.Pin2	C3.Pin4	C2.Pin2	C2.Pin4	C1.Pin2	C1.Pin4	C0.Pin2	C0.Pin4
OUT	Byte	Bit_7	Bit_6	Bit_5	Bit_4	Bit_3	Bit_2	Bit_1	Bit_0
Signals	0	C7.Pin2	C7.Pin4	C6.Pin2	C6.Pin4	C5.Pin2	C5.Pin4	C4.Pin2	C4.Pin4

3) 16DIO, FCEI-16UP-M12

IN=4 bytes, OUT=2 byte

IN	Byte	Bit_7	Bit_6	Bit_5	Bit_4	Bit_3	Bit_2	Bit_1	Bit_0
Status	0	Err1_C7	Err1_C6	Err1_C5	Err1_C4	Err1_C3	Err1_C2	Err1_C1	Err1_C0
	1	Err2_C7	Err2_C6	Err2_C5	Err2_C4	Err2_C3	Err2_C2	Err2_C1	Err2_C0
Signals	2	C3.Pin2	C3.Pin4	C2.Pin2	C2.Pin4	C1.Pin2	C1.Pin4	C0.Pin2	C0.Pin4
	3	C7.Pin2	C7.Pin4	C6.Pin2	C6.Pin4	C5.Pin2	C5.Pin4	C4.Pin2	C4.Pin4
OUT	Byte	Bit_7	Bit_6	Bit_5	Bit_4	Bit_3	Bit_2	Bit_1	Bit_0
Signals	0	C3.Pin2	C3.Pin4	C2.Pin2	C2.Pin4	C1.Pin2	C1.Pin4	C0.Pin2	C0.Pin4
	1	C7.Pin2	C7.Pin4	C6.Pin2	C6.Pin4	C5.Pin2	C5.Pin4	C4.Pin2	C4.Pin4