

FNI MPL-302-105-M

IP 67 Module User Manual



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- 1.1. Manual structure** This manual is organized by organization, so the chapters are interconnected. Section 2: Basic Safety Information.
Chapter 3: Getting Started Guide
Chapter 4: Technical data
.....
- 1.2. Typography** The following typographic conventions are used in this manual.
- Enumerate** The enumeration is displayed as a list with bullets.
·Entry1
·Entry2
- Action** Action descriptions are represented by a front triangle.
The result of the action is represented by an arrow.
Action description 1
Action result
Action description 2
Step programs can also be displayed numerically in parentheses.
(1) Step 1
(2) Step 2
- Grammar** Number:
Decimal numbers are displayed without additional indicators (eg 123)
Hexadecimal numbers are displayed with an additional indicator hex (eg: 00hex)
or with the prefix
"0X" (eg: 0x00)
- Cross-reference** Cross-references indicate where to find additional information on this topic.

- 1.3. Symbols**
- Notes**
This symbol indicates a general comment.

- Notice!**
This symbol indicates the most important safety notice.

- 1.4. Acronym**
- FNI FAS Network Interface
I Standard input port
PN Profinet
ECT EtherCAT
CIE CC_link IEF Basic
EIP Ethernet/IP
EMC Electromagnetic Compatibility
FE functional ground
O Standard output port
- 1.5. Viewing deviations** The product views and explanations in this manual may deviate from the actual product. They are only left and right solutions



Explain the materials used.

2 safety

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

Precautions!

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

2.3. General security Notes Debug and check Before debugging, you should read the contents of the user manual carefully.

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

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

- Unauthorized tampering
• Improper use
• Owner/operator's obligations

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

The owner/operator must take proper precautions when using this equipment. Use only a power source compatible with this device and connect only approved cables.

Fault

In the event of a defect or equipment malfunction that cannot be corrected, the equipment must be taken out of operation to avoid possible damage from unauthorized use.

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

2.4. Corrosion resistance

Precautions!

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

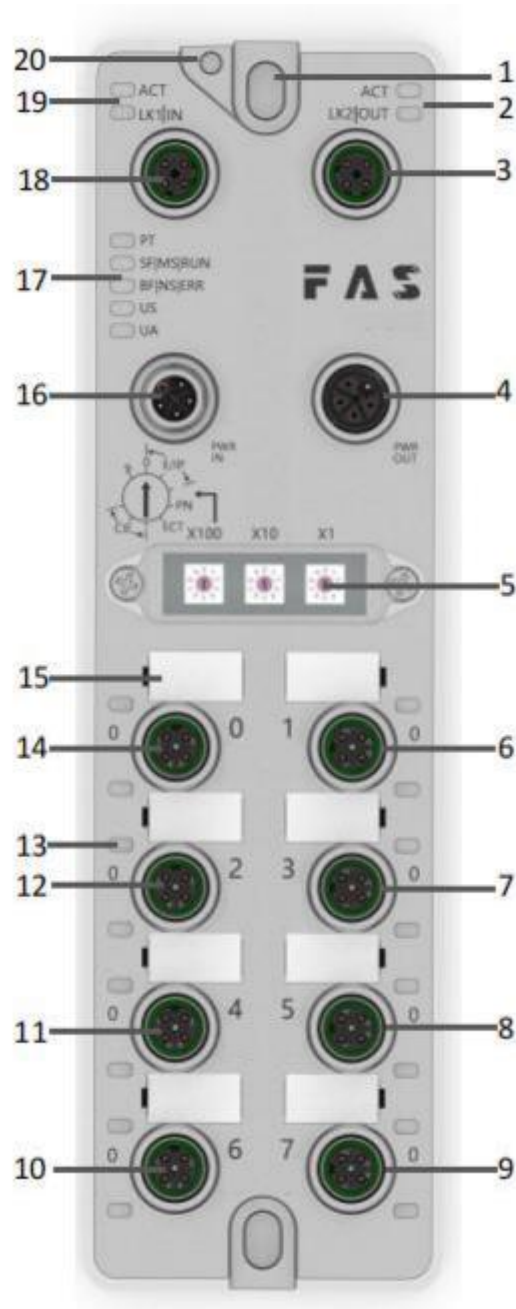
Dangerous voltage

Precautions!

Disconnect all power sources before using the equipment!

3. Getting Started Guide

3.1. Module overview



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

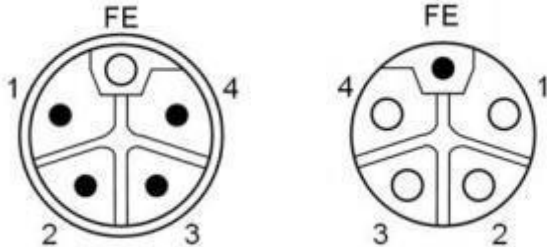
3. Getting Started Guide

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

3.3. Electrical connections

3.3.1 Power interface(L-code)

Definition of power input port Definition of power outlet



| Pin | Function | Describe |
|-----|--------------------|----------|
| 1 | Us+ | +24V |
| 2 | Ua-* | 0V |
| 3 | Us- | 0V |
| 4 | Ua+* | +24V |
| FE | Functional ground* | FE |

Notes:

1. If possible, supply sensor/module power and actuator power separately.Total current <9A. The total current of all modules is <9A, even when daisy-chaining the actuator power supply. 2. The FE connection from the housing to the machine must be low impedance and kept as short as possible.3.3.2 Network Interface (D-code)

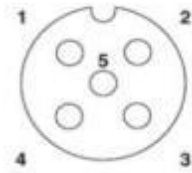


| Pin | Function | |
|-----|----------|---------------|
| 1 | Tx+ | Send data+ |
| 2 | Rx+ | Receive data+ |
| 3 | Tx- | Send data- |
| 4 | Rx- | Receive data- |

Notes:

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

3.3.3 I/O-Port(A-code)

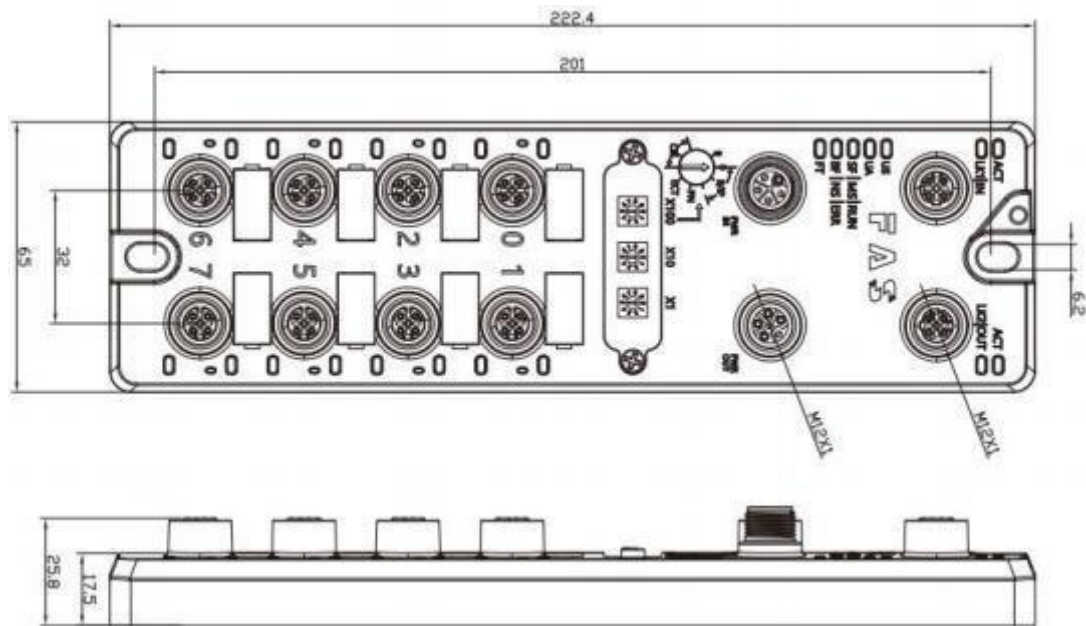


| Pin | Function |
|-----|--------------|
| 1 | +24V,1A |
| 2 | Enter/output |
| 3 | 0V |
| 4 | Enter/output |
| 5 | FE |

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

4. Technical data

4.1. size



4.2 Mechanical data

| | |
|--------------------------------------|---|
| Shell material | Die-cast aluminum case, pearl nickel plated |
| Housing class according to IEC 60529 | IP67 (only in plug-in or plug-in style) |
| Power interface | L-Code (Male and Female) |
| Input port/output port | M12, A-Code (8*female) |
| Size(W*H*D) | 65mm*222mm*25.8mm |
| Installation type | 2-Through Hole Mounting |
| Ground Bus Accessories | M4 |
| weight | About 670g |

4.3. Operating conditions

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

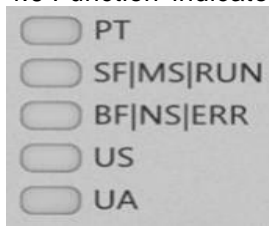
4.4. Electrical data

| | |
|-------------------------------------|-----------------------------|
| Voltage | 18~30V DC, Symbol EN61131-2 |
| Voltage fluctuation | <1% |
| Input current at supply voltage 24V | <130mA |

4.5 Network port

| | |
|----------------------------------|--|
| Port | 2 x 10Base-/100Base-Tx |
| Port connection | M12 , D-Code |
| IEEE 802.3 Compliant Cable Types | Shielded twisted pair, min. STP CAT 5/STP CAT 5e |
| Data transfer rate | 10/100 M bit/s |
| Maximum cable length | 100m |
| Flow control | Half condition/full condition(IEEE 802.3-PAUSE) |

4.6 Function indicator

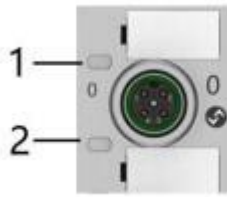


| | | |
|----|--------|---|
| PT | Green | EtherNet/IP communication protocol |
| | Yellow | ProfiNet communication protocol |
| | Blue | EtherCat communication protocol |
| | White | CC-Link IField basic communication protocol |

ECT Communication Protocol Module Status

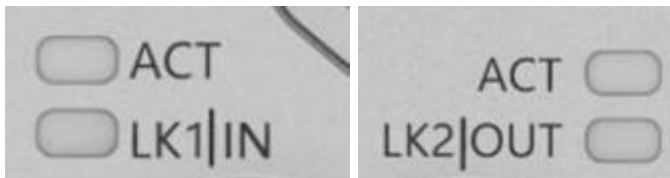
| LED | State | Function |
|-----------|-------------------------|---|
| US | Green | Power is OK |
| | Red | Greater than 30V or less than 11V |
| | Flashing red | less than 18V |
| UA | Green | Power is OK |
| | Red | Greater than 30V or less than 11V |
| | Flashing red | less than 18V |
| SF/MS/RUN | Closure | No error, device initialization |
| | Green light flashing | Pre-operational: The device is in a pre-operational state |
| | 2.5Hz | Safe Operation: The device is in safe operation |
| | Green light flashes 1HZ | Running: The device is running |
| BF/NS/ERR | Steady green | No errors, device EtherCAT communication is working |
| | Closure | Invalid configuration |
| | Red light flashes 2.5HZ | local error |
| | Red light flashes 1HZ | Application watch timeout |

| | |
|------------------------|--------------------------------|
| Red light double flash | Application monitoring timeout |
|------------------------|--------------------------------|



I/O port status

| LED | State | Function |
|-----|--------------|---|
| 1 | Closure | The status of Pin4 input or output is 0 |
| 1 | Yellow | The status of Pin4 input or output is 1 |
| 1 | Red | Port configured as input: short between Pin1 and 3 |
| 1 | Flashing red | Port configured as output: Pin4 overcurrent |
| 2 | Closure | Port configured as output: short circuit between Pin1 and 3 |
| 2 | Yellow | The status of Pin2 input or output is 0 |
| 2 | Rred | The state of Pin2 input or output is 1 |
| 2 | Flashing red | Port configured as input: short between Pin1 and 3 |



Network port status

| LED | State | Function |
|------------------|----------------|---------------------|
| ACT | Closure | Bus rate: 10Mbit/s |
| | Yellow | Bus rate: 100Mbit/s |
| LK1 IN (ECT IN) | Flashing green | Data transmission |
| LK2 IN (ECT OUT) | Flashing green | Data transmission |



5 Integrated

5.1 Module configuration

5.1.1 Restore factory settings

1. Power off the device, dial 900;
2. Power on the device and wait for 10 seconds;
3. Power off the device, dial the code to the state before setting

5.1.2 Node address configuration

The node address is assigned by PLC: DIP address X100=4 X10=0 X1=0

Manual assignment of node address: DIP address X100=4, node number X10=tens X1=ones

For example: X100=4, X10=2, X1=5, the node number is 25. Note that after adjusting the dial code, it needs to be powered on again;

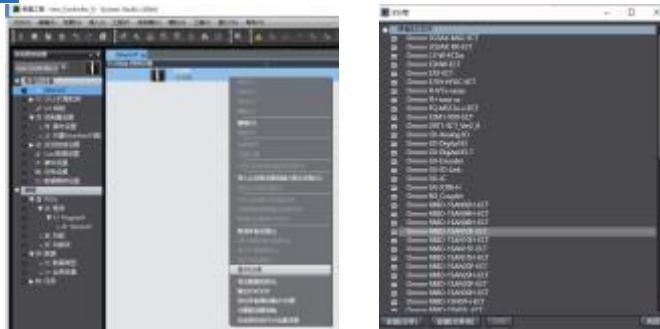
5.2 Data mapping

| process output data | | | | | | | | | |
|---|---------------------------|---------|-------|-------|-----------------|-----------------|----------|-----------------|-----------------|
| Bytes | Function | 位 (Bit) | | | | | | | |
| | | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 0 | PIN4 output | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 1 | PIN2 output | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| Data description (binary): 0=off 1=on | | | | | | | | | |
| process input data | | | | | | | | | |
| Bytes | Function | 位 (Bit) | | | | | | | |
| | | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 0 | PIN4 input | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 1 | PIN2 input | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 2 | PIN4 short circuit status | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 3 | PIN2 short circuit status | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 4 | Port power short circuit | Port7 | Port6 | Port5 | Port4 | Port3 | Port2 | Port1 | Port0 |
| 5 | Module status | | | | Us over voltage | Ua over voltage | overheat | Us undervoltage | Ua undervoltage |
| Data description (binary): 0=no signal 1=signal | | | | | | | | | |
| | | | | | | | | | |

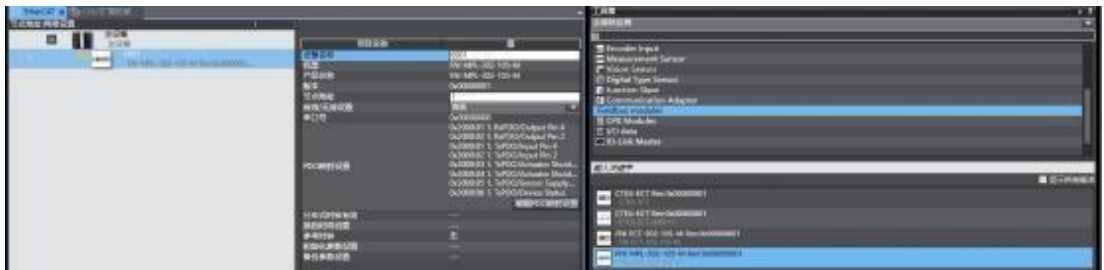


5.3.1 OMRON NX1P2 Sysmac Studio Integrated (ECT)

1、 Install the ESI file: double-click EtherCAT in the configuration and settings--right-click the master device--select "Show ESI library", and select the ESI file in the pop-up window to install



2、 Configure the module to the EtherCAT network: find the FieldBus Modules in the toolbox on the right, find the module model icon and double-click to add it to the network



3、 The PLC goes to online mode, right-click the master device, and write the node address of the slave device

4、 Variable mapping: Select the configured node in the I/O mapping, fill in the name of the variable, and the configuration is complete! .



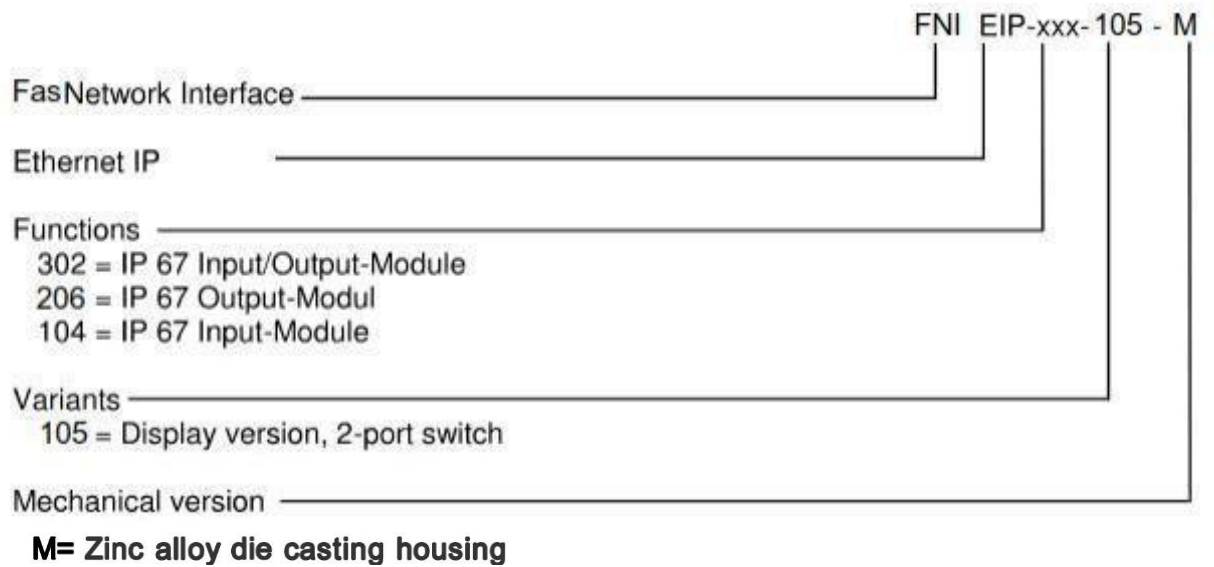
6 Appendix

6.1. Included materials

FNI MPL contains the following components

- I/O- block
- 4 blind plugs M12
- Ground bus
- Thread M4x6
- 20 tags

6.2. Order code



6.3 Ordering Information

| Product order code | Order code |
|--------------------|------------|
| FNI ECT-332- 105-M | 006E11 |