



# PRODUCT

USE INSTRUCTIONS

---



[ Technical support ]

**Ordering code: 00BB11**

**Part number: FNI IOL-710-000-M12**

**Type: 4xAI, 0-10V DC, 8xDI**

## Contents

|   |           |
|---|-----------|
| Security .....  | 3         |
| ■ Expected use .....  | 3         |
| ■ Installation and start-up .....                             | 3         |
| ■ Corrosion resistance .....                                  | 3         |
| ■ Dangerous voltage .....                                     | 3         |
| ■ General security .....                                      | 4         |
| <b>1. Component function description .....</b>                | <b>5</b>  |
| 1.1 Module overview .....                                     | 5         |
| <b>2. Interface definition .....</b>                          | <b>6</b>  |
| 2.1 IO-Link interface (M12 A-Coded) .....                     | 6         |
| 2.2 Analog input port connection diagram (M12 A-Coded) .....  | 6         |
| 2.3 Digital input port connection diagram (M12 A-Coded) ..... | 7         |
| 2.4 Status LED meter .....                                    | 8         |
| 2.5 Mechanical dimensions .....                               | 9         |
| <b>3 .IO-Link data .....</b>                                  | <b>10</b> |
| 3.1 Communication parameters .....                            | 10        |
| 3.2 Process data .....  | 10        |
| 3.2.1 Process data/input data .....                           | 10        |
| 3.3 Service data .....  | 11        |
| 3.4 Error code .....  | 12        |
| 3.5 Event .....   | 12        |

# Security

## ■ Expected use

This manual describes as decentralized input and output modules for connecting to an industrial network.

---

## ■ Installation and start-up

Precautions!

Installation and start-up may only be performed by trained personnel. A qualified individual is one who is familiar with the installation and operation of the product and has the necessary qualifications to perform such operations. Any damage caused by unauthorized operation or illegal and improper use is not covered by the manufacturer's warranty. The equipment operator is responsible for ensuring that appropriate safety and accident prevention regulations are observed.

---

## ■ Corrosion resistance

Precautions!

FNI modules generally have good chemical and oil resistance. When used in corrosive media (e.g. high concentrations of chemicals, oils, lubricants, coolants and other material media (i.e. very low water content), these media must be checked before the corresponding application material compatibility. If a module fails or is damaged due to this corrosive medium, a defect claim cannot be made.

---

## ■ Dangerous voltage

Precautions!

Disconnect all power before using the device!

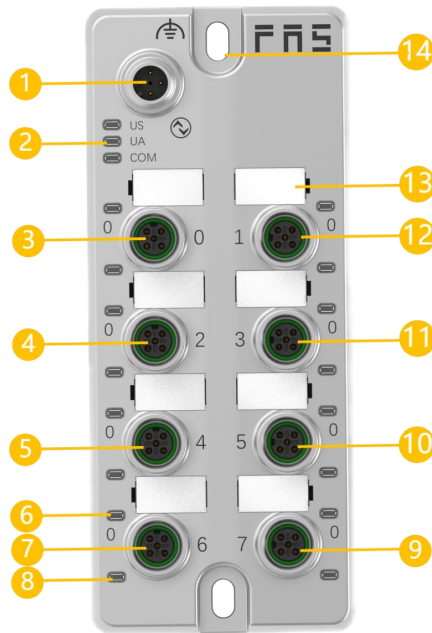
---

## ■ General security

| Debugging and inspection   | Trouble   | Owner/operator obligations  | Expected use  |
|--|---|---|---|
| <p>Before debugging, read the user manual carefully.</p>   | <p>If the defect or equipment failure cannot be corrected, the operation of the equipment must be stopped to avoid damage that may be caused by unauthorized use.</p> | <p>This equipment is an EMC Class A compliant product. This device produces RF noise.</p>   | <p>The warranty and limited liability statement provided by the manufacturer does not cover damage caused by:</p> <ul style="list-style-type: none"> <li>·Unauthorized tampering</li> <li>·Improper use operation</li> </ul> <p>·The instructions provided in the user manual explain the use, installation and handling of discrepancies</p> |
| <p>This system cannot be used in an environment where the safety of personnel depends on the functionality of the equipment.</p> | <p>Only after the housing is fully installed can the intended use be assured.</p>   | <p>The owner/operator must take appropriate precautions to use this equipment.</p> <p>This device can only use the power supply that matches this device, and can only connect cables approved for application.</p> |   |

# 1.Component function description

## 1.1 Module overview

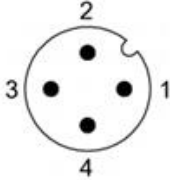


| 1                                  | 2                  | 3                   | 4                   | 5                   | 6                                  | 7                  |
|------------------------------------|--------------------|---------------------|---------------------|---------------------|------------------------------------|--------------------|
| IO-Link interface                  | Status LED         | Analog input port 0 | Analog input port 2 | Digital I/O port 4  | Status LED:Digital I/O port 6 Pin2 | Digital I/O port 6 |
| 8                                  | 9                  | 10                  | 11                  | 12                  | 13                                 | 14                 |
| Status LED:Digital I/O port 6 Pin4 | Digital I/O port 7 | Digital I/O port 5  | Analog input port 3 | Analog input port 1 | Label                              | Earth interface    |

## 2.Interface definition

### 2.1 IO-Link interface

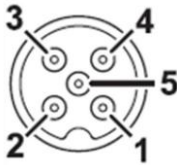
M12,A-Coded, Male



| Pin | Illustrate                             |
|-----|--|
| 1   | US power supply,+24V (<1.2A)           |
| 2   | NC                                     |
| 3   | GND                                    |
| 4   | C/Q, IO-Link data transmission channel |

### 2.2 Analog input port connection diagram(M12 A-Coded)

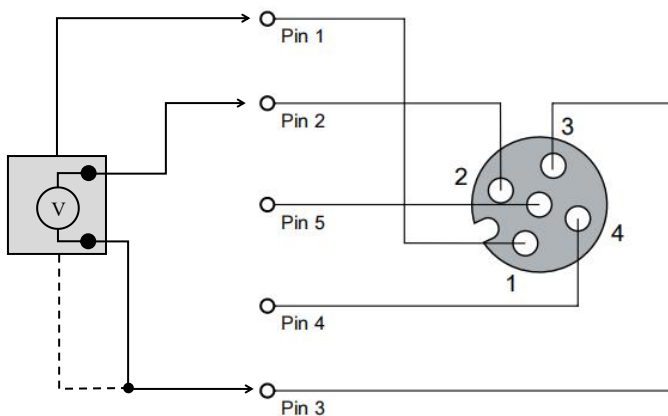
M12,A-Coded,Female



| Pin | Illustrate    |
|-----|---------------|
| 1   | +24V (<350mA) |
| 2   | Analog input  |
| 3   | 0V,GND        |
| 4   | NC            |
| 5   | NC            |

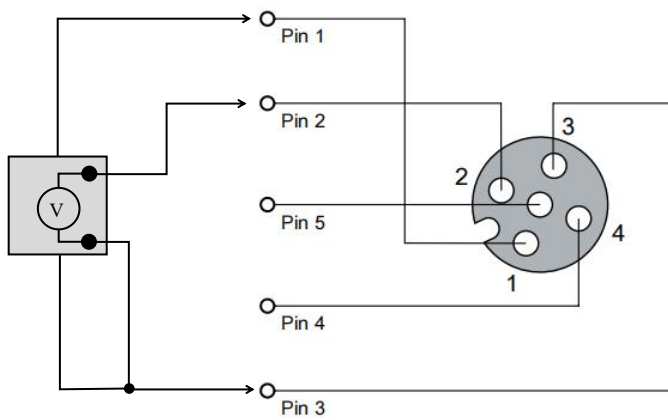
Sensor wiring requirements:

#### 1. Sensor 3-wire type:



- a. Pin1 Connect to the positive pole of the sensor power supply
- b. Pin2 Connect sensor signal
- c. Pin3 Connect to the negative pole of the sensor power supply

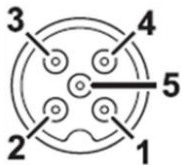
## 2. Sensor 4-wire type:



- a. Pin1 Connect to the positive pole of the sensor power supply
- b. Pin2 Connect to the positive pole of the sensor signal
- c. Pin3 Connect the negative pole of the sensor power supply and the negative pole of the sensor signal.

### 2.3 Digital input port connection diagram (M12 A-coded)

M12,A-Coded,Female



| Pin | Illustrate         |
|-----|--------------------|
| 1   | +24V (<350mA)      |
| 2   | Dgital input (PNP) |
| 3   | 0V,GND             |
| 4   | Dgital input (PNP) |
| 5   | NC                 |

## 2.4 Status LED meter

Module total indicator light:

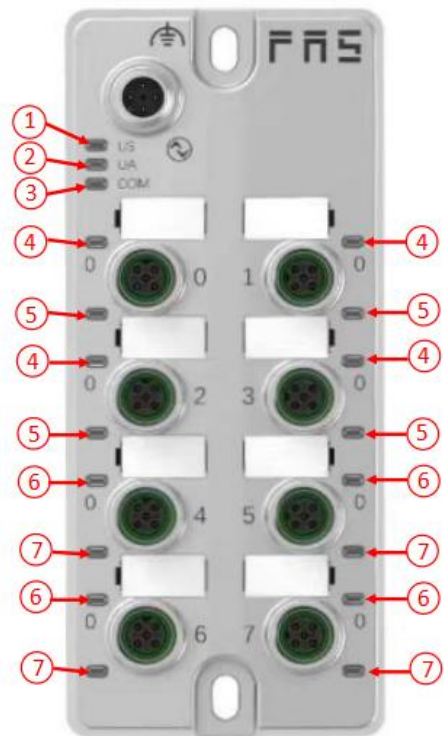
| LED | State                    | Function                         |
|-----|--------------------------|----------------------------------|
| 1   | Closure                  | US power supply abnormality      |
| 1   | Green light is always on | US power supply is normal        |
| 2   | Closure                  | *Spare                           |
| 3   | Closure                  | Module exception                 |
| 3   | Green slow flash         | IO-Link communication failed     |
| 3   | Green pulse flash        | IO-Link communication successful |

Analog input port:

| LED | State   | Function                          |
|-----|---------|-----------------------------------|
| 4   | Closure | No analog signal input            |
| 4   | Yellow  | Analog signal input is valid      |
| 4   | Rred    | Analog signal input short circuit |
| 5   | Closure | *Spare                            |

Digital input port:

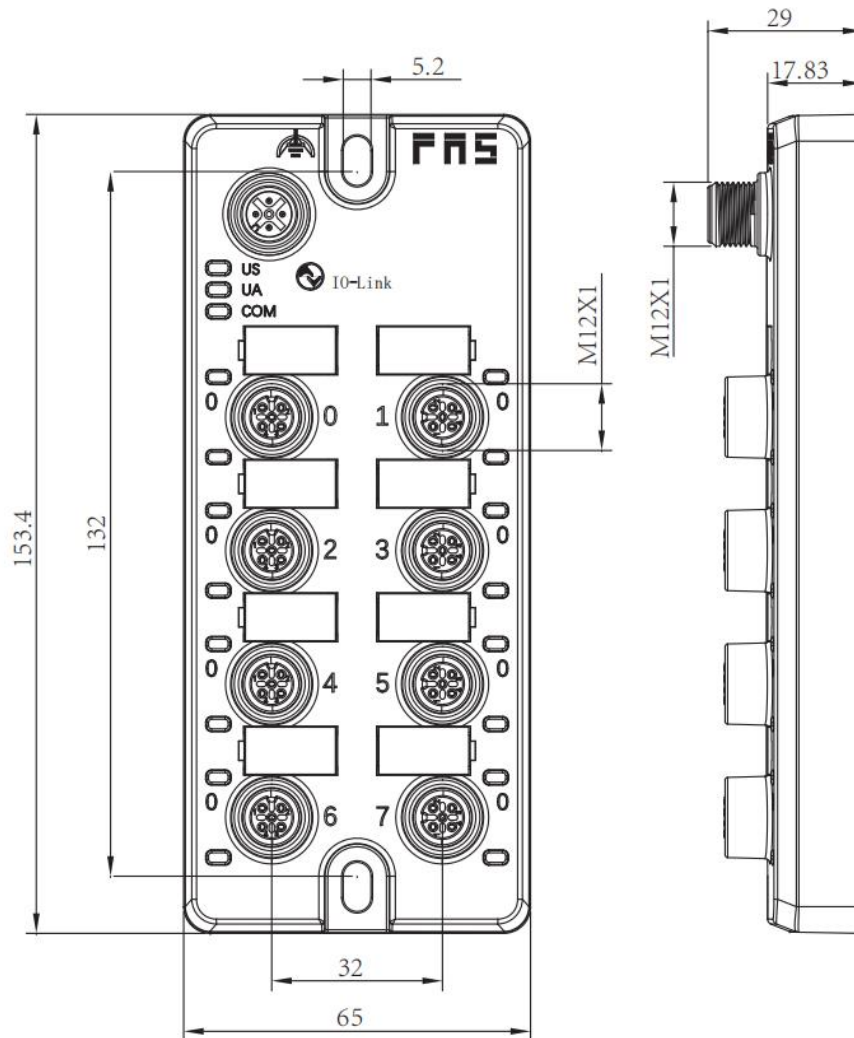
| LED | State   | Function                                |
|-----|---------|---|
| 6   | Closure | PIN2 no digital signal input            |
| 6   | Yellow  | PIN2 digital signal input is valid      |
| 6   | Rred    | PIN2 digital signal input short circuit |
| 7   | Closure | PIN4 no digital signal input            |
| 7   | Yellow  | PIN4 digital signal input is valid      |
| 7   | Rred    | PIN4 digital signal input short circuit |





## 2.5 Mechanical dimensions

| Project                             | Specification     |
|-------------------------------------|-------------------|
| Dimensions (Width x Height x Depth) | 65MMx153.4MMx29MM |



## 3.IO-Link data

### 3.1 Communication parameters

|                             |  |
|-----------------------------|--|
| Data transmission baud rate | COM2 (38.4kbit/s)                          |
| Frame type                  | 2.V  |
| Minimum cycle time          | 5ms  |
| Process data cycle time     | 5ms, corresponds to the minimum cycle time |
| Process data length         | 10 byte input                              |
| Analog detection range      | 0~10V DC                                   |
| Analog output value range   | 0~65535 (Correspond 0-10V DC)              |

### 3.2 Process data

#### 3.2.1 Process data/input data

Note: 0 is MSB, 9 is LSB.

| Byte     | 0                   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   | 2                   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |
|----------|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit      | 7                   | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7                   | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Describe | Analog input port 0 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Analog input port 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Byte     | 4                   |   |   |   |   |   |   |   | 5 |   |   |   |   |   |   |   | 6                   |   |   |   |   |   |   |   | 7 |   |   |   |   |   |   |   |
|----------|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit      | 7                   | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7                   | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Describe | Analog input port 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Analog input port 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

| Byte     | 8                 |                   |                   |                   |                   |                   |                   |                   |          | 9 |   |   |   |   |   |   |  |
|----------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------|---|---|---|---|---|---|---|--|
| Bit      | 7                 | 6                 | 5                 | 4                 | 3                 | 2                 | 1                 | 0                 | 7        | 6 | 5 | 4 | 3 | 2 | 1 | 0 |  |
| Describe | Input port 7 Pin4 | Input port 6 Pin4 | Input port 5 Pin4 | Input port 4 Pin4 | Input port 3 Pin2 | Input port 2 Pin2 | Input port 1 Pin2 | Input port 0 Pin2 | Reserved |   |   |   |   |   |   |   |  |

### 3.3 Service data

|                     | DPP   | SPDU  |                  | Object name       | length | Scope     | Defaults                    |
|---------------------|-------|-------|------------------|-------------------|--------|-----------|-----------------------------|
|                     | Index | Index | Subindex         |                   |        |           |                             |
| Identification data |       |       |                  | Supplier ID       | 2      |           | 0x0454                      |
|                     |       |       |                  | Device ID         | 3      |           | 0x0995E1                    |
|                     |       | 0x10  | 0                | Supplier name     | 19     | Read only | FAS(Fujian)Co.,LTD          |
|                     |       | 0x11  | 0                | Supplier text     | 16     |           | www.fas-elec.com            |
|                     |       | 0x12  | 0                | Product name      | Max64  |           | FNI IOL-710-000-M12         |
|                     |       | 0x13  | 0                | Product ID        | Max32  |           | 00BB11                      |
|                     |       | 0x14  | 0                | Product text      | 44     |           | IO-Link M12 4AI 8DI 0...10V |
|                     |       | 0x16  | 0                | Hard ware version | 3      |           | 20200909                    |
|                     | 0x17  | 0     | Firmware version | 3                 | 2.01   |           |                             |
| Parameter data      |       | 0x40  | 0                | Equipment type    | 1      | 00-FF     | 0x00                        |
|                     |       |       |                  |                   |        |           |                             |

### 3.4 Error code

| Error code                    | Additional code             |
|-------------------------------|-----------------------------|
| Device application error 0x80 | Index not available 0x11    |
|                               | Subindex not available 0x12 |
|                               | Value out of range 0x30     |

### 3.5 Event

| Class/qualifier |         |         | Code (high + low) |            |                              |                      |
|-----------------|---------|---------|-------------------|------------|------------------------------|----------------------|
| Model           | Type    | Example |                   |            |                              |                      |
| Appear          | Mistake | AL      | Device hardware   | Powered by | Power supply low voltage     | U2=Power supply +24V |
| 0xC0            | 0x30    | 0x03    | 0x5000            | 0x0100     | 0x0010                       | 0x0002               |
| 0xF3            |         |         | 0x5112            |            |                              |                      |
| Disappear       | Mistake | AL      | Device hardware   | Powered by | Power supply low voltage     | U2=Power supply +24V |
| 0x80            | 0x30    | 0x03    | 0x5000            | 0x0100     | 0x0010                       | 0x0002               |
| 0xB3            |         |         | 0x5112            |            |                              |                      |
| Appear          | Mistake | AL      | Device hardware   | Powered by | Power supply for peripherals |                      |
| 0xC0            | 0x30    | 0x03    | 0x5000            | 0x0100     | 0x0060                       |                      |
| 0xF3            |         |         | 0x5160            |            |                              |                      |
| Disappear       | Mistake | AL      | Device hardware   | Powered by | Power supply for peripherals |                      |
| 0x80            | 0x30    | 0x03    | 0x5000            | 0x0100     | 0x0060                       |                      |
| 0xB3            |         |         | 0x5160            |            |                              |                      |

High quality products · Sincere service



[ Technical support ]



[ Official website ]



Telephone : 0591-22991876

Technical support : +86 13306936805

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

Business support : +86 19905006938

Address: Room 009, A1, Building 1, National University Science and Technology  
Park Science and Technology Innovation Center, No. 6 Qiuyang East Road,  
Shangjie Town, Minhou County, Fujian Province.