PRODUCT
USE INSTRUCTIONS

Ordering code: 00BT31

Part number: FNI IOL-711-006-M12
Type: 8xAI, PT100

Contents

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.

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■ Dangerous voltage

Precautions!

Disconnect all power before using the device!

■General security

Debugging and inspection	Fault	Owner/Operator Obligations	Expected use
Before debugging, read the user manual carefully.	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.	This equipment is an EMC Class A compliant product. This device produces RF noise.	The warranty and limited liability statement provided by the manufacturer does not cover damage caused by: ·Unauthorized tampering ·Improper use operation ·The instructions provided in the user manual explain the use, installation and handling of discrepancie
This system cannot be used in an environment where the safety of personnel depends on the functionality of the equipment.	Only after the housing is fully installed can the intended use be assured.	The owner/operator must take appropriate precautions to use this equipment.	
		This device can only use the power supply that matches this device, and can only connect cables approved for application.	

1.Component function description

1.1 Overall introduction to the module
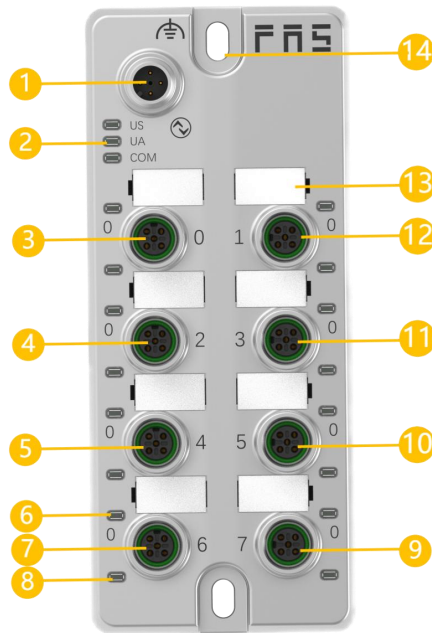
| 1	2	3	4	5	6	7
IO-Link interface	Status LED	Analog input port 0	Analog input port 2	Analog input port 4	Status LED:Analog input port 6 Pin2	Analog input port 6
8	9	10	11	12	13	14
Status LED: Analog input port 6 Pin4	Analog input port 7	Analog input port 5	Analog input port 3	Analog input port 1	Label	Earth interface

2.Interface definition

2.1 IO-Link interface (M12 A-coded)

M12,A-code, Male
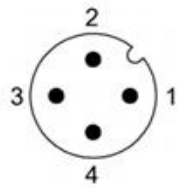
Pin	Illustrate
1	US power supply, +24V(<1.2A)
2	NC
3	GND
4	C/Q, IO-Link data transmission channel

2.2 Analog input port connection diagram (M12 A-coded)
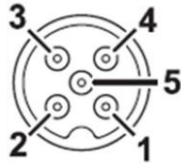
Pin	Illustrate
1	Analog input positive
2	Analog input positive
3	Analog input negative
4	Analog input negative
5	NC

Sensor wiring requirements:

1. Sensor 2-wire type:
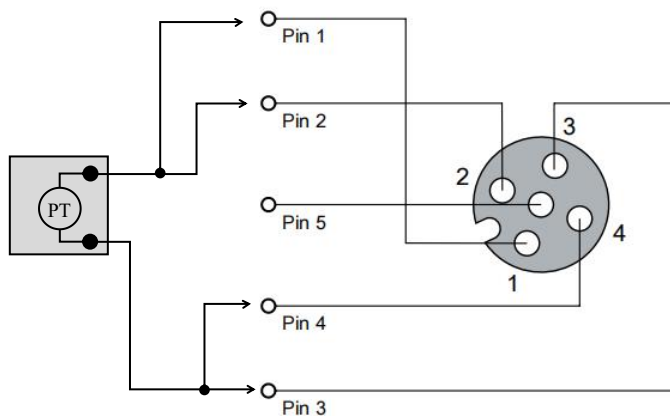
a.Pin1、2 Short-circuit the positive terminal of the sensor

b.Pin3、4 Short-circuit the negative electrode of the sensor

2、Sensor 3-wire type:
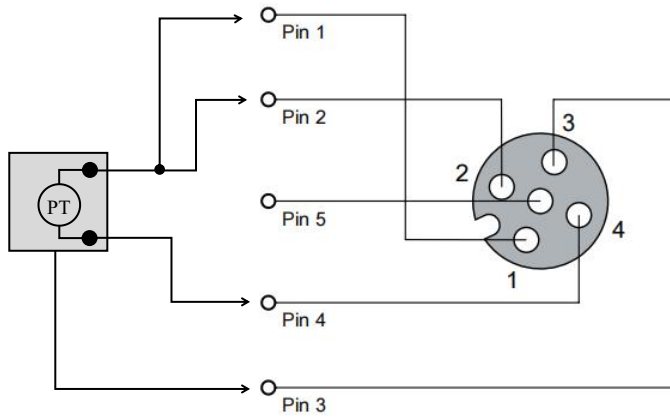
a.Pin1 and 2 are short-circuited to the positive electrode of the sensor.

b.Pin3 is connected to the negative pole of the sensor

c.Pin4 is connected to the negative pole of the sensor

3、Sensor 4-wire type:
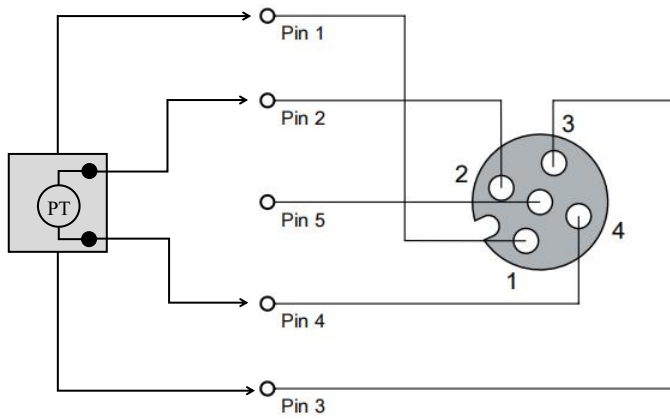
a.Pin1 is connected to the positive pole of the sensor

b.Pin2 is connected to the positive pole of the sensor

c.Pin3 is connected to the negative pole of the sensor

d.Pin4 is connected to the negative pole of the sensor.

2.3 Status LED meter

Module total indicator light:

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

Analog input port:

LED	State	Function
4	Closure	No analog signal input
4	Yellow	Analog signal input is valid
4	Red	Analog signal input short circuit
5	Closure	*Spare
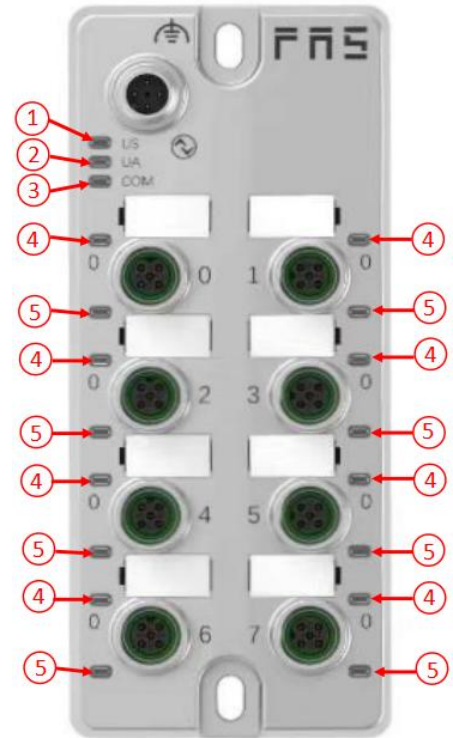
2.4 Mechanical dimensions

Project	Specification
Dimensions (Width xHeight x Depth)	65MMx153.4MMx29MM
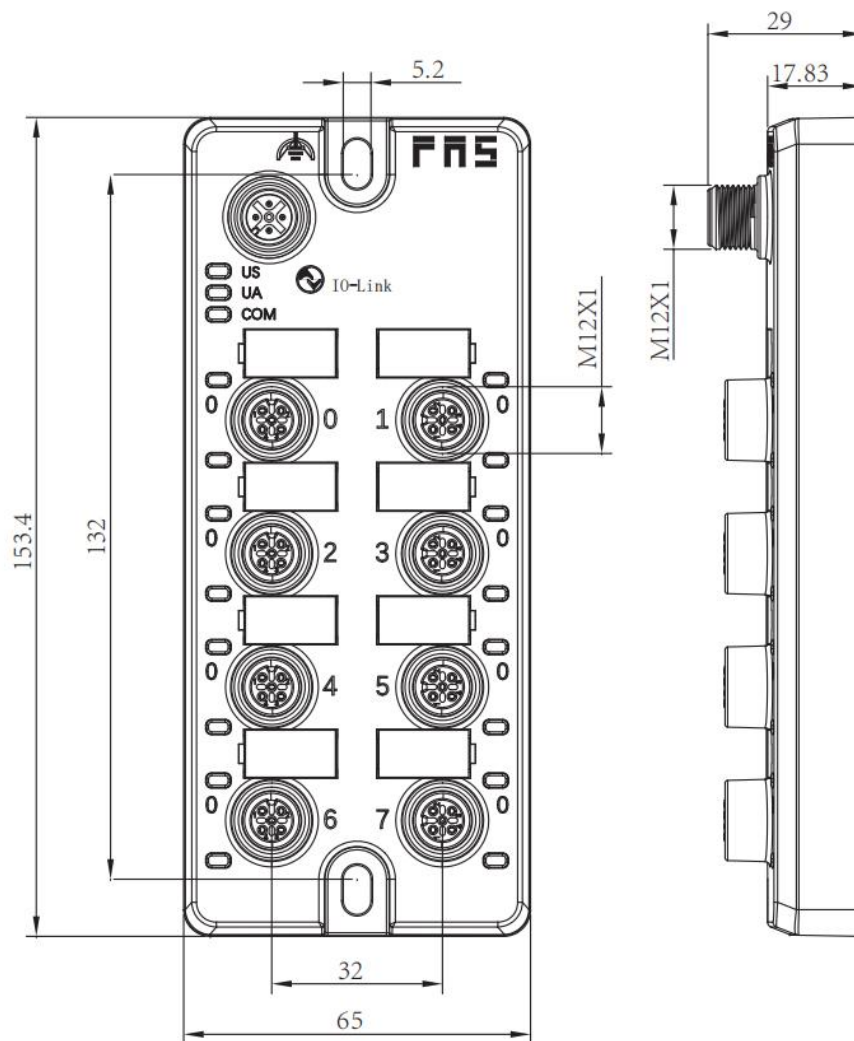
3.IO-Link data

3.1 Communication parameters

Data transmission baud rate	COM2 (38.4kbit/s)
Frame type	2.V
Minimum cycle time	3ms
Process data cycle time	3ms, consistent with the minimum cycle time
Process data length	16 bytes input

3.2 Process data

3.2.1 Process data/input data

	Byte1								Byte0							
Analog input port 0	Bit 7	Bit 6	Eit 5	Eit 4	Eit 3	Eit 2	Bit 1	Bit O	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Eit 1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1
	Byte3								**Byte2**							
Analog input port 1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit O	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1
	Byte5								**Byte4**							
Analog input port 2	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit O	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

Analog input port	Byte7								Byte6							
Analog input port 3	Bit7	Bit6	Bit5	Bit4	Eit3	Bit2	Bit1	BitO	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bito
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

Analog input port	Byte9								Byte8							
Analog input port 4	Eit7	Bit6	Bit5	Eit4	Eit3	Bit2	Eit1	BitO	Eit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

Analog input port	Byte11								Byte10							
Analog input port 5	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	BitO	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

Analog input port	Byte13								Byte12							
Analog input port 6	Bit7	Bit6	Bit5	Bit4	Eit3	Bit2	Bit1	BitO	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bito
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

Analog input port	Byte15								Byte14							
Analog input port 7	Eit7	Bit6	Bit5	Eit4	Eit3	Bit2	Bit1	Eit0	Eit7	Bit6	Bit5	Bit4	Eit3	Bit2	Bit1	BitO
	FT100 Temperature value															Positive temperature=0 Negative temperature=1

3.2.2 Process input data calculation example

Byte	Byte1								Byte0							
Bit	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit l	Bit O	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit l	Bit0
16 base value	0x27								0x10							
2 base value	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0
Actual temperature value calculation	Binary value 0010011100010000 (The positive and negative temperature flags are 0, no need to shift one bit to the right) converted to decimal value 10000 PT100 temperature value=10000*0.01=100℃															Positive temperature=0 Negative temperature=1

Byte	Byte1								Byte0							
Bit	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit l	Bit 0	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit l	Bit0
16 base value	0x17								0x95							
2 base value	0	0	0		0	1	1	1	1	0	0	1	0	1	0	1
Conversion instructions	Binary value 0000101111001010 (The positive and negative temperature flags are 1 and need to be shifted one position to the right) Convert to decimal value 3018 PT100 temperature value=3018*0.01=-30.18℃															Positive temperature=0 Negative temperature=1

3.3 Service data

DPP	SPDU		Object name	length	Scope	Defaults
Index	Index	Subindex				
			Supplier ID	2		0x0454
			Device ID	3		0x099EE2
	0x10	0	Supplier name	19		FAS(Fujian)Co.,LTD
	0x11	0	Supplier text	16		www.fas-elec.com
	0x12	0	Product name	13		FNI IOL-711-001-M12
	0x13	0	Product ID	5	Read only	00BT31
	0x14	0	Product text	44		IO-Link M12 8AI 100PT
	0x16	0	Hardware version	3		1.0
	0x17	0	Firmware version	3		1.0

(Identification data)

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=Powered by+24V
0xC0	0x30	0x03	0x5000	0x0100	0x0010	0x0002
0xF3			0x5112			
Disappear	Mistake	AL	Device hardware	Powered by	Power supply low voltage	U2=Powered by+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			

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