PRODUCT USE INSTRUCTIONS

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[Technical Support]

Order Code: 003E11

Part Number: FNI PBS-302-105-M

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FNI PBS-302-105-M
16 DI/DO PNP
PROFIBUS DP I/O Module User Manual



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Safety

■ Intended Use

This manual describes the device as a decentralized input/output module for connection to an industrial network.

■ Installation and Commissioning

Notice!

Installation and commissioning may only be carried out by trained specialists. Qualified personnel are persons familiar with the installation and operation of the product and who possess the qualifications required to perform this work. Damage caused by unauthorized operation or improper or unlawful use is not covered by the manufacturer's warranty. The equipment operator is responsible for ensuring compliance with the applicable safety and accident-prevention regulations.

■ Corrosion Resistance

Notice!

FNI modules generally offer good resistance to chemicals and oils. When used in corrosive media, such as highly concentrated chemicals, oils, lubricants, coolants, or other media with very low water content, material compatibility for the intended application must be checked and confirmed in advance. No warranty claim may be made for module failure or damage caused by such corrosive media.

■ Hazardous Voltage

Notice!

Disconnect all power supplies before using the device!

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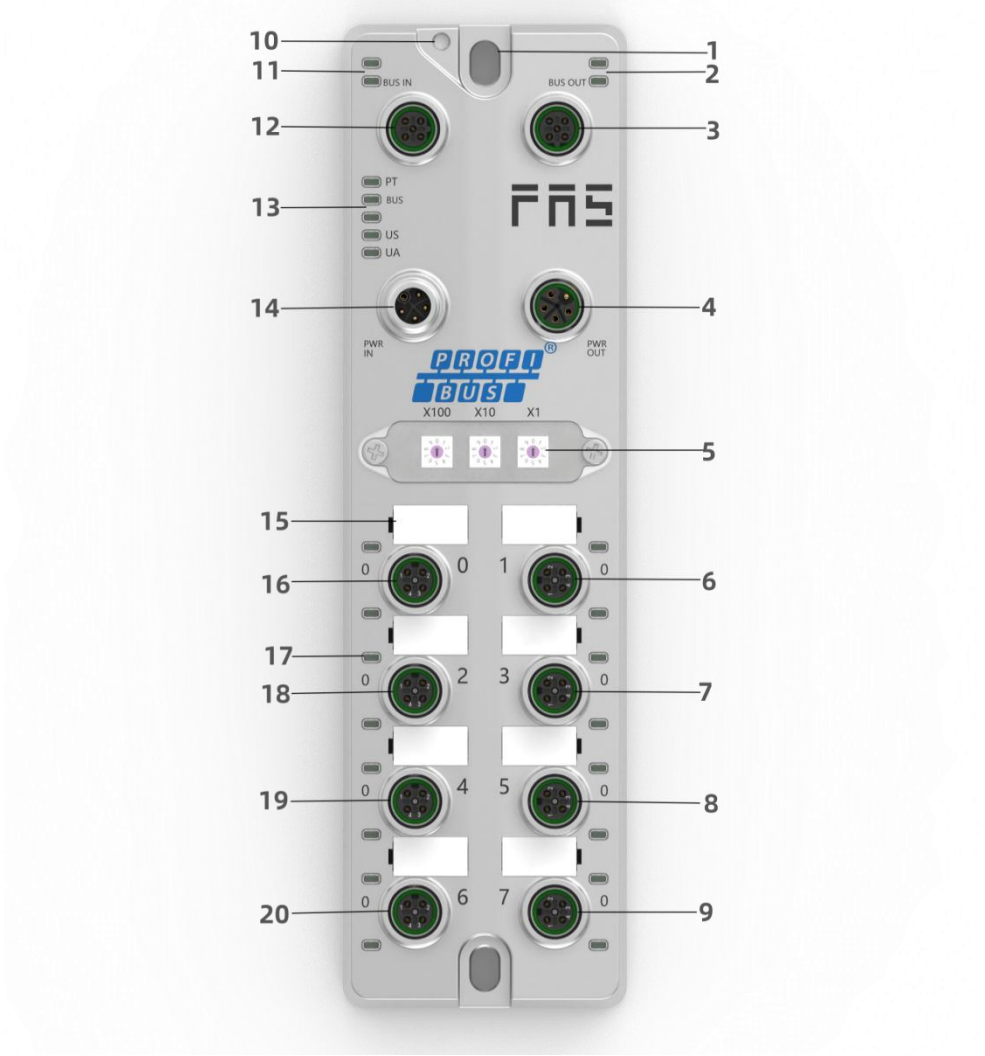
■ General Safety

<table>
<tr><th>Commissioning and Inspection</th><th>Faults</th><th>Obligations of the Owner/Operator</th><th>Intended Use</th></tr>
<tr><td>Read the user manual carefully before commissioning.</td><td>If a defect or device fault cannot be corrected, operation of the device must be stopped to prevent damage that could result from unauthorized use.</td><td>This device is an EMC Class A product and may generate RF interference.</td><td rowspan="3">The manufacturer’s warranty and limitation-of-liability provisions do not cover damage caused by:
• Unauthorized modifications
• Improper use
• Use, installation, or operation that does not comply with the instructions in this user manual</td></tr>
<tr><td rowspan="2">This system must not be used in environments where personnel safety depends on device function.</td><td rowspan="2">Intended use can only be ensured when the housing is fully installed.</td><td>The owner/operator must take appropriate precautions when using this device.</td></tr>
<tr><td>Use only a power supply compatible with this device and connect only approved cables.</td></tr>
</table>

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1 Getting Started

1.1 Module Overview



1 Mounting hole
2 Network port 2 status indicator
3 Network port 2
4 Power output port
5 DIP switches
6 Port 1
7 Port 3
8 Port 5
9 Port 7
10 Ground connection
11 Network port 1 status indicator
12 Network port 1
13 Port status indicators
14 Power input port
15 Port label plate
16 Port 0
17 Module indicators
18 Port 2
19 Port 4
20 Port 6

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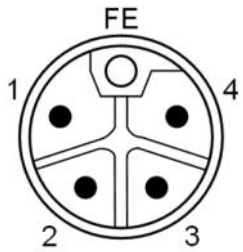
1.2 Mechanical Connection

The module is mounted using two M6 bolts and two washers.
Insulating pads are supplied as accessories.

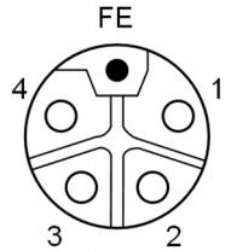
1.3 Electrical Connection

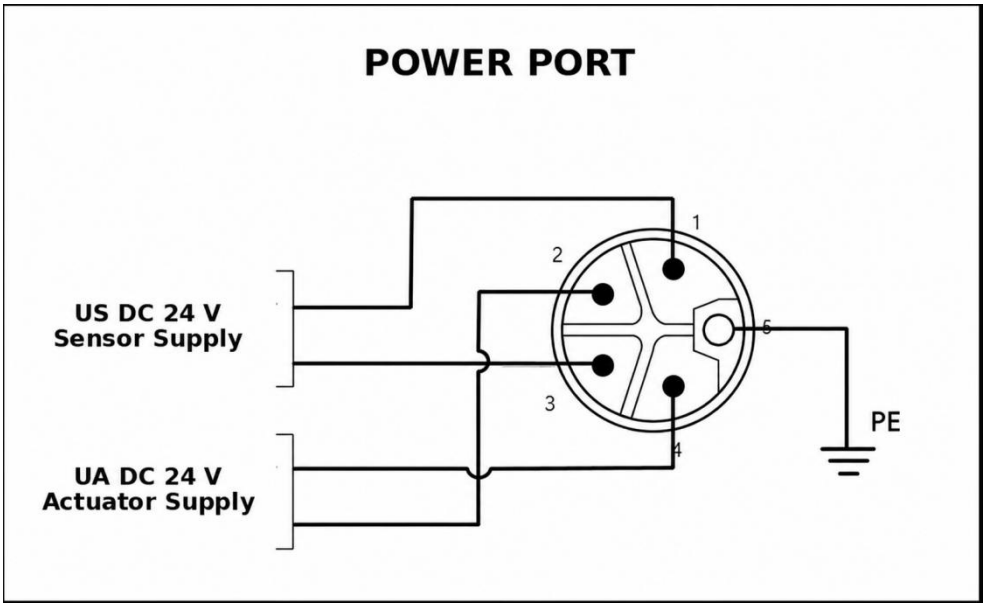
1.3.1 Power Interface (L-coded)

Power Input Pinout



Power Output Pinout





Pin	Function	Description
1	Us+	+24V(brown)
2	Ua-*	0V(white)
3	Us-	0V(blue)
4	Ua+*	+24V(black)
FE	Functional Earth*	FE(yellow/green)

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Notes:

1. Where possible, provide separate power supplies for the sensors/module and the actuators.
The total current must be <16 A. Even when the actuator power supply is daisy-chained, the total current of all modules must remain <16 A.

2. The FE connection from the housing to the machine must have low impedance and be kept as short as possible.

1.3.2 Network Interface (B-coded)

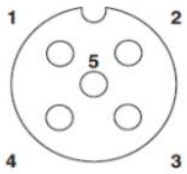


Pin	Function	
1	(Empty)	
2	RxD/TxD-N A line	Communication A
3	(Empty)	
4	RxD/TxD-P B line	Communication B
5	(Empty)	

Note:

1. Unused I/O port sockets must be covered with protective caps to maintain the IP67 protection rating.
2. For network terminal modules, the BUS OUT interface must use a terminating resistor (FAS model: 0C4R11).

1.3.3 I/O Ports (A-coded)

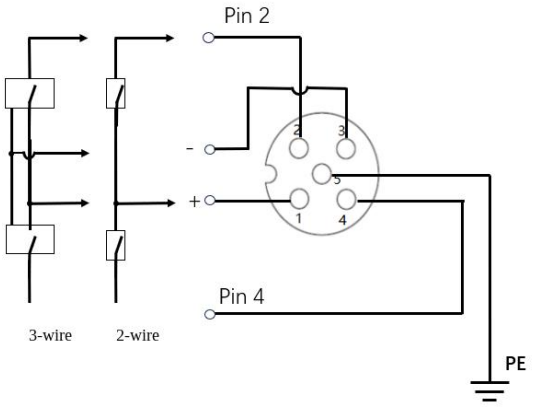


Pin	Function
1	+24 V (brown), maximum current 1 A
2	Input/Output (white)
3	0V(blue)
4	Input/Output (black)
5	FE(gray)

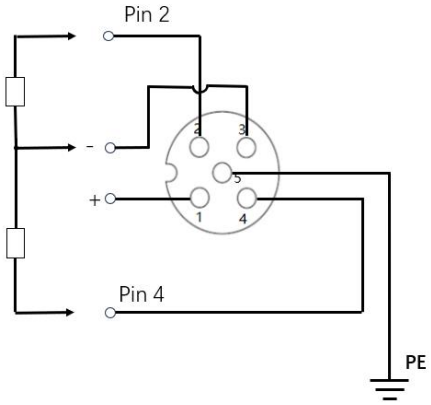
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STANDARD I/O

PNP INPUT



PNP OUTPUT

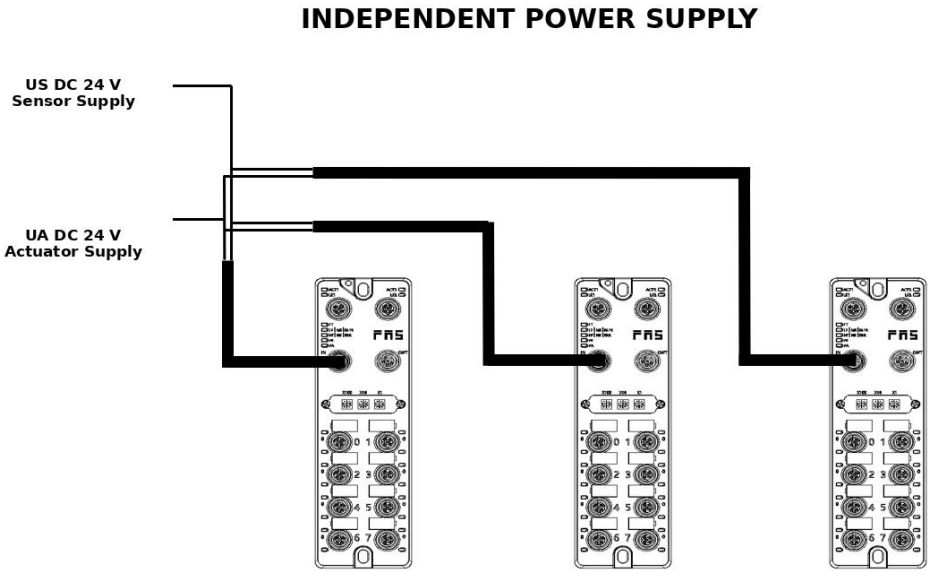


Notes:

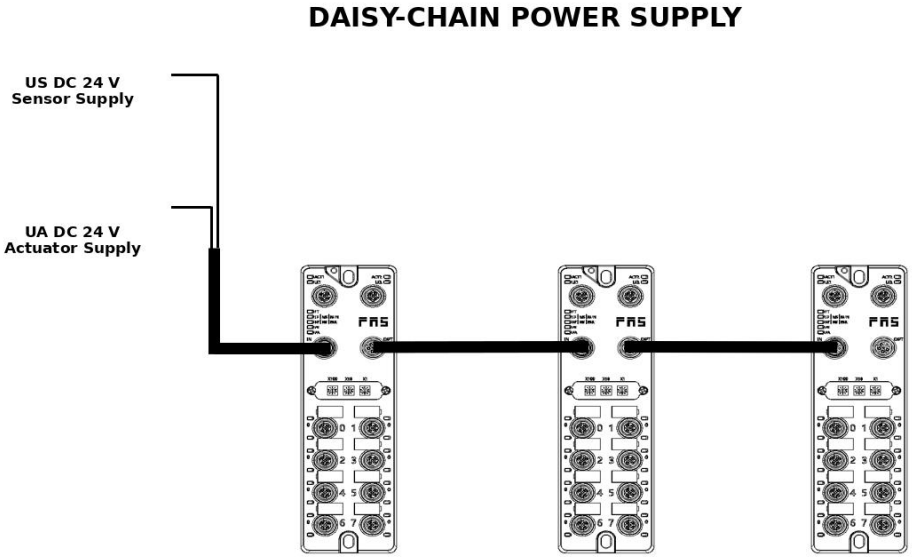
1. Digital sensor inputs: follow EN 61131-2, Type 2.
2. Max. output current per port: 2 A; overload alarm: >3.5 A; total module current: 16 A.
3. Cap unused I/O ports to maintain IP67.

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1.3.4 Master Module Wiring Methods



In independent power-supply mode, each master can support a maximum current of 16 A.

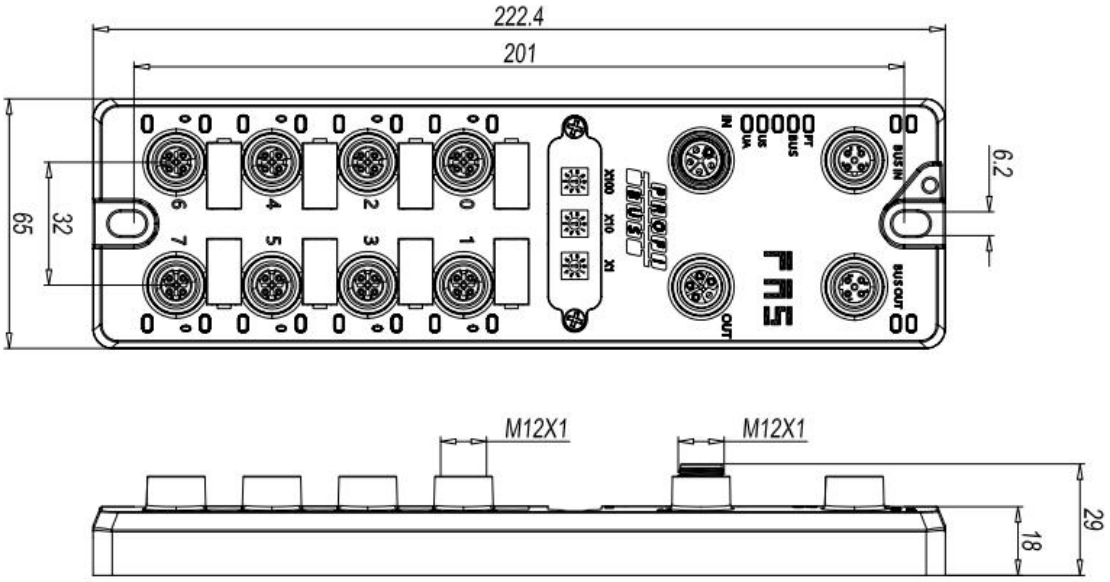


In daisy-chain power-supply mode, when downstream modules are connected through the preceding module, the accumulated current must not exceed 16 A.

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2 Technical Data

2.1 Dimensions



2.2 Mechanical Data

Housing material	Die-cast aluminum housing, pearl-nickel plated
Protection rating according to IEC 60529	IP67 (only when connectors or protective caps are installed)
Power interface	L-coded (male and female)
Input/output ports	M12, A-coded (8 female)
Dimensions (W × H × D)	65mm*222mm*29mm
Mounting type	2 through-hole mounting points
Ground-bus connection	M4
Weight	Approx. 670 g

2.3 Operating Conditions

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

2.4 Electrical Data

Supply voltage	18–30 V DC, compliant with EN 61131-2
Voltage ripple	＜1%

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Input current at 24 V supply voltage	<130mA

2.5 Network Ports

Ports	2 x 10Base-/100Base-Tx
Port connection	M12，D-Code
Cable type according to IEEE 802.3	Shielded twisted pair, minimum STP CAT 5 / STP CAT 5e
Data transmission rate	10/100 M bit/s
Maximum cable length	100m
Flow control	Half-duplex/full-duplex (IEEE 802.3 PAUSE)

2.6 Function Indicators

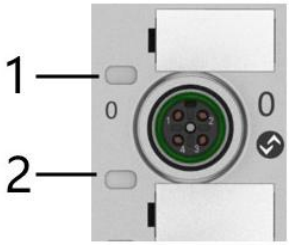


PT	Off	Profibus Communication Protocol

Profibus-DP Communication Protocol Module Status

LED	Indication	Function
BUS	Green continuously on	Communication normal
	Green flashing at 2 Hz	Master is in CLEAR state
	Red flashing at 1 Hz	Not configured
	Red flashing at 2 Hz	No data exchange
	Red continuously on	Configuration error
US	Green	Input voltage normal
	Red flashing	Input voltage low (<18 V)
UA	Green	Output voltage normal
	Red flashing	Output voltage low (<18 V)
	Red continuously on	Output voltage absent (<11 V)

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I/O Port Status

LED	Status	Function
1	Off	Pin 4 input/output status is 0
1	Yellow	Pin 4 input/output status is 1
1	Red	Port configured as input: Pin 1 overcurrent Port configured as output: Pin 4 overcurrent
1	Red flashing	Port configured as output: Pin 1 overcurrent
2	Off	Pin 2 input/output status is 0
2	Yellow	Pin 2 input/output status is 1
2	Red	Port configured as input: Pin 1 overcurrent Port configured as output: Pin 2 overcurrent
2	Red flashing	Port configured as output: Pin 1 overcurrent

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3 Integration

3.1 Module Configuration

3.1.1 Restore Factory Settings

1. Power off the device; set the DIP switches to 900.
2. Power on the device; wait 10 seconds.
3. Power off the device; restore the previous DIP-switch setting.
4. Power on the device to restore the factory settings.

3.1.2 Node Address Configuration

1. For node address 12: X100=0, X10=1, X1=2.

3.2 Data Mapping

PROFIBUS Process Monitoring Data									
Module	Function Description								
	Status Description	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Actuator shutdown pin 2	Pin 2 port overcurrent: 0 = normal, 1 = overcurrent	Port7 Pin2	Port6 Pin42	Port5 Pin2	Port4 Pin2	Port3 Pin2	Port2 Pin2	Port1 Pin2	Port0 Pin2
Actuator shutdown pin 4	Pin 4 port overcurrent: 0 = normal, 1 = overcurrent	Port7 Pin4	Port6 Pin4	Port5 Pin4	Port4 Pin4	Port3 Pin4	Port2 Pin4	Port1 Pin4	Port0 Pin4
Sensor supply short circuit	Pin 1 port overcurrent: 0 = normal, 1 = overcurrent	Port7 Pin1	Port6 Pin1	Port5 Pin1	Port4 Pin1	Port3 Pin1	Port2 Pin1	Port1 Pin1	Port0 Pin1
Device Status	Module Status	-	-	-	Us overvoltage	Ua overvoltage	Over temperature	Us undervoltage	Ua undervoltage
PROFIBUS Slot Functions									
Inputpin2	Input pin2	Port7 Pin2	Port6 Pin42	Port5 Pin2	Port4 Pin2	Port3 Pin2	Port2 Pin2	Port1 Pin2	Port0 Pin2
Inputpin4	Input Pin4	Port7 Pin4	Port6 Pin4	Port5 Pin4	Port4 Pin4	Port3 Pin4	Port2 Pin4	Port1 Pin4	Port0 Pin4

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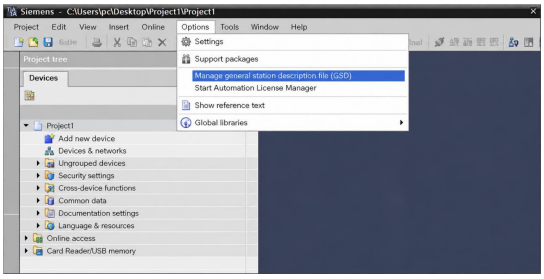
Outputpin2	Output pin2	Port7 Pin2	Port6 Pin42	Port5 Pin2	Port4 Pin2	Port3 Pin2	Port2 Pin2	Port1 Pin2	Port0 Pin2
Outputpin4	Output Pin4	Port7 Pin4	Port6 Pin4	Port5 Pin4	Port4 Pin4	Port3 Pin4	Port2 Pin4	Port1 Pin4	Port0 Pin4

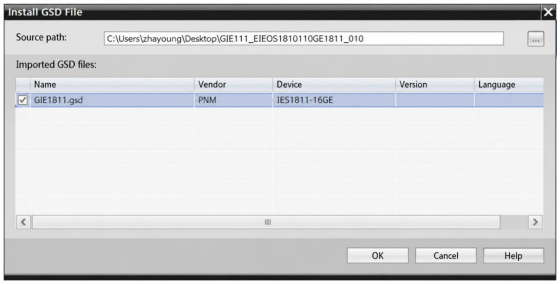
3.3 PLC Integration Tutorial

(Set the module node address before configuration; see Section 3.1.2.)

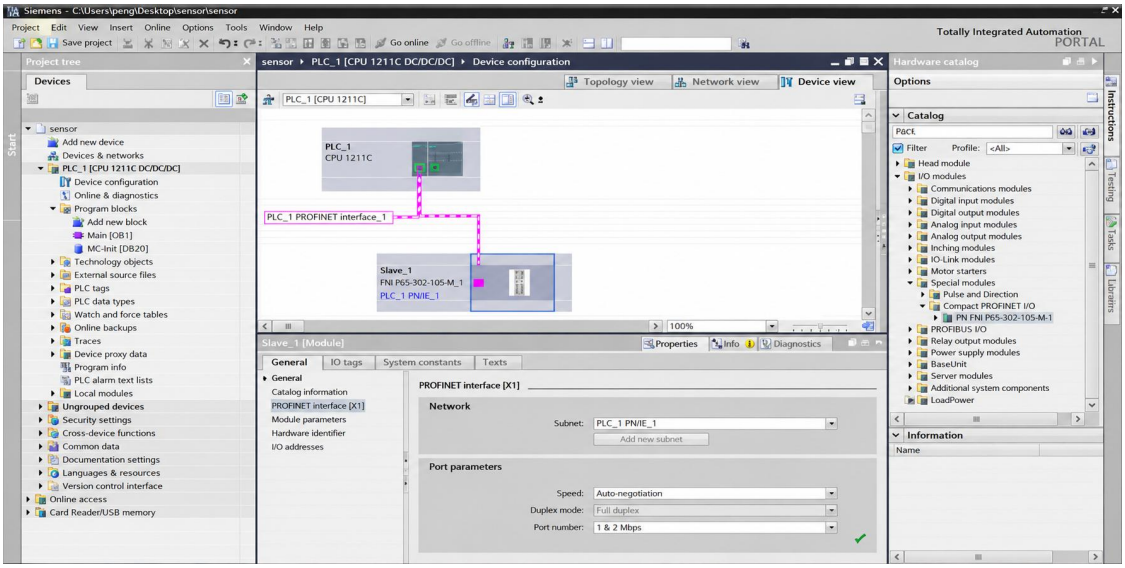
3.3.1 Integration with Siemens S7-1200 in TIA Portal (PROFIBUS DP)

1. Install the GSD file.





2. In PLC > Device Configuration > Network View > Hardware Catalog, select the module and drag it into the workspace. Click “Not assigned” and select the PLC to be connected.

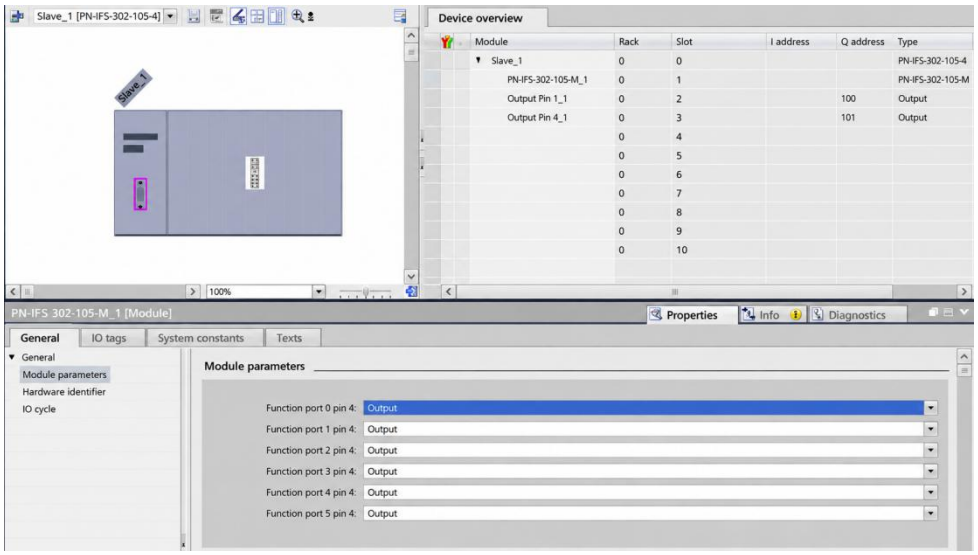


3. Double-click the module to open its configuration.

(1) Slot function configuration: In Hardware Catalog > Module, select the required data and drag it into the corresponding slot in the Device Overview window.

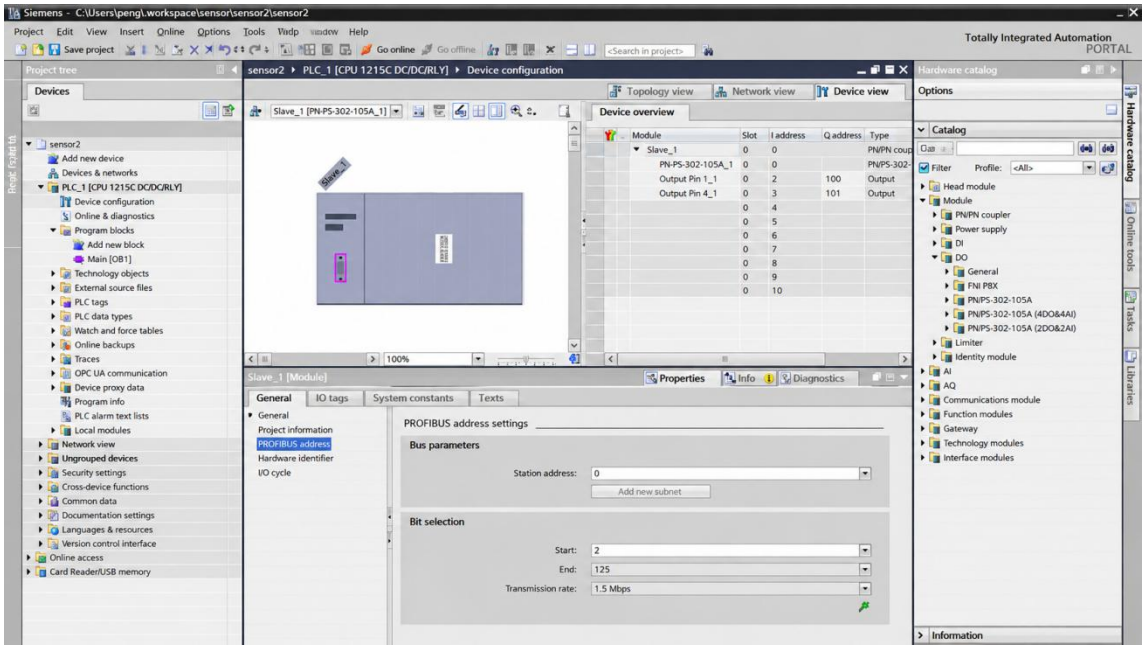
(2) Module port function configuration: Click the module icon, select “General,” click the “FNI PBS-302-105-M” slot, and select “Module-specific parameters.” Configure the port function as Output, NO input (normally open), NC input (normally closed), or Input/Output (automatic input/output adaptation).

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(3) After configuration, click Download in the configuration view.

4. Assign the module address: General > PROFIBUS address. Enter the same address as the DIP-switch setting on the module.



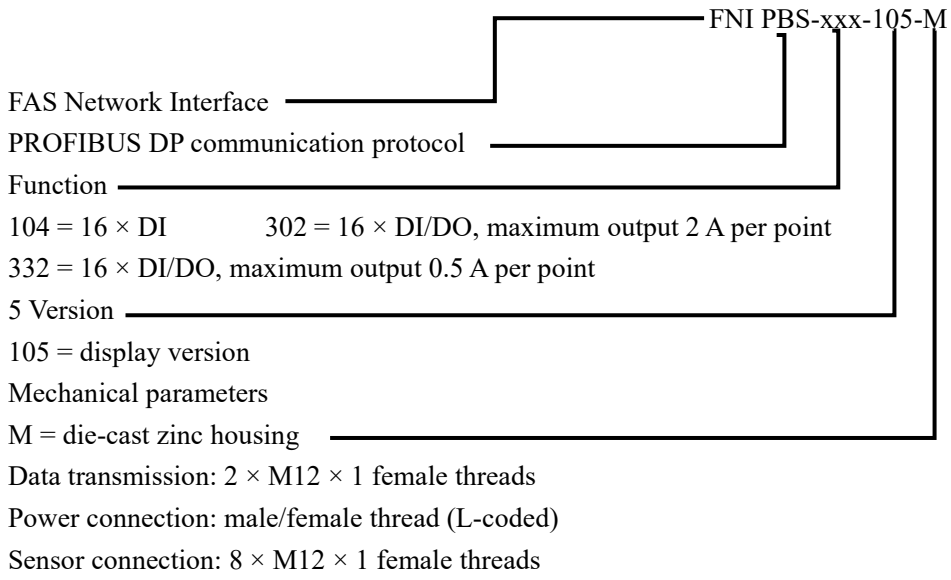
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4 Appendix

4.1 Included Items

- The FNI MPL includes the following components:
- I/O block
- Four M12 protective caps
- Ground-bus connection
- M4 × 6 screw
- 20 labels

4.2 Order Code



4.3 Ordering Information

Product part number	Order code
FNI PBS-302-105-M	003E11

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