

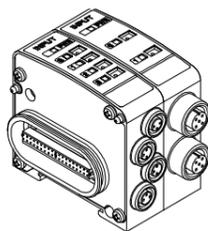


ORIGINAL INSTRUCTIONS

## Instruction Manual

### Fieldbus device - Input unit

#### EX250-IE1 / -IE2 / -IE3



The intended use of this Input unit is to provide sensor inputs for the control of pneumatic valves and I/O.

### 1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)<sup>\*)</sup>, and other safety regulations.

- \*) ISO 4414: Pneumatic fluid power - General rules relating to systems.  
 ISO 4413: Hydraulic fluid power - General rules relating to systems.  
 IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)  
 ISO 10218-1: Manipulating industrial robots - Safety, etc.
- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
  - Keep this manual in a safe place for future reference.

<b>Caution</b>	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
<b>Warning</b>	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
<b>Danger</b>	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

### Warning

- Always ensure compliance with relevant safety laws and standards.
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for further Safety Instructions.
- Special products (-X) might have specifications different from those shown in the specifications section. Contact SMC for specific drawings.

## 2 Specifications

### 2.1 General specifications

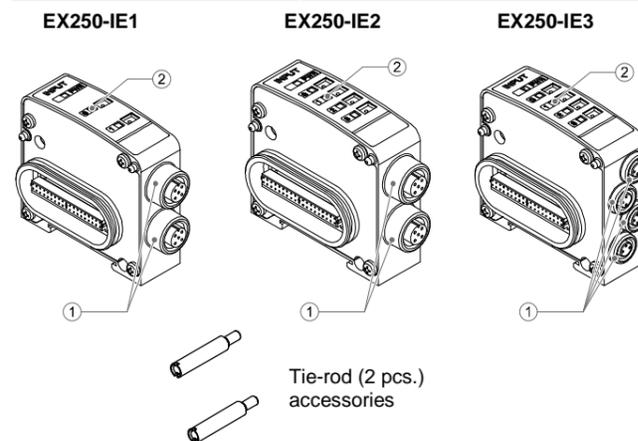
Item	Specification
Ambient temperature	+10 to +50 °C
Ambient humidity	35 to 85% RH (no condensation)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	500 VAC for 1 minute
Insulation resistance	500 VDC min. 10 MΩ
Operating environment	No corrosive gas
Enclosure rating	IP67
Weight	90 g

### 2.2 Electrical specifications

Item	Specification		
Model number	EX250-IE1	EX250-IE2	EX250-IE3
No. of Input points	2 points	4 points	4 points
Input connector	M12	M12	M8
Corresponding sensors	Current source type (PNP output) Current sink type (NPN output) <sup>*1</sup>		
Rated voltage	19.2 to 28.8 VDC <sup>*2</sup>		
Logic"1" input voltage VH	11 to 30 VDC		
Logic"0" input voltage VL	-3 to +5 VDC		
Logic"1" input current IH	8 mA typical		
2 wire sensor connection	Possible		
Logic"0" allowable current IL	2.5 mA max.		
Input delay time	3 msec. typical		
Sensor supply current	120 mA / input block (30 mA / sensor) <sup>*3</sup>		
Short-circuit protection	500 mA fuse (each input block)		

- \*1: Change-over using a switch (for changing the whole input block).  
 \*2: Approx. 1 V of voltage drop for power supply voltage (power for SI unit and input block).  
 \*3: For an extended input block or when 32 sensors are used, the total sensor supply current should not exceed 1 A.

## 3 Name and function of parts



No.	Part	Description
1	Input connector	For connecting an input (i.e. sensor).
2	Operation LED's	Displays the power supply and input status

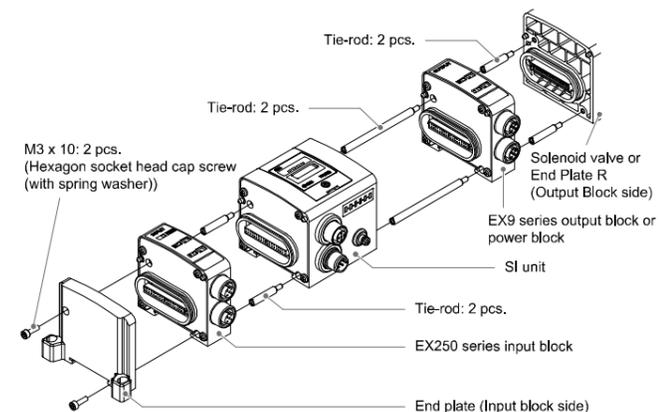
## 4 Installation

### 4.1 Installation

#### Warning

- Do not install the product unless the safety instructions have been read and understood.

### Assembly and disassembly of the units



### 4.2 Assembly of the units

- Hold the SI unit and the Input block together in order to ensure there is no gap between them, while tightening the screws.
- Tighten the screws with the specified tightening torque (0.6 N•m).

### 4.3 Assembly Precautions

- Be sure to switch off the power.
- Check there is no foreign matter inside the SI unit or input unit.
- Check there is no damage and no foreign matter stuck to the gasket.
- Be sure to tighten the screws with the specified torque.

### 4.4 Environment

#### Warning

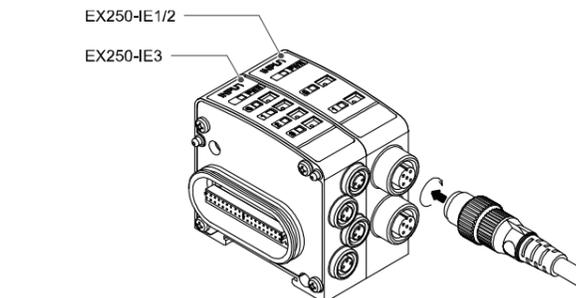
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.

## 5 Wiring

### 5.1 Cable Connection

Select the appropriate cables to mate with the connectors mounted on the SI unit.

- Align the key groove of the cable connector (plug) with the input connector (socket) on the input block.
- Tighten the locknut on the cable by turning it clockwise by hand.
- Confirm that the connector does not move.



#### Warning

- A waterproof cap (SMC Part No. EX9-AWTS for M12, EX9-AWES for M8) must be used on all unused connectors to maintain the IP67 enclosure rating. (Tightening torque: M12 = 0.1 N•m, M8 = 0.05 N•m).

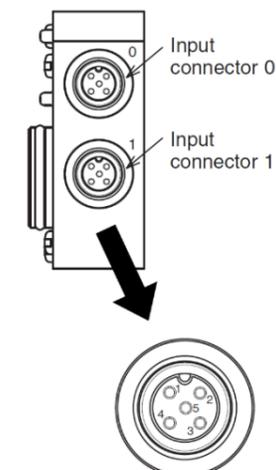
## 5 Wiring (continued)

### 5.2 Input Connector pin layout

#### EX250-IE1

Input Connector 0: M12 5-pin socket

Pin No.	Signal	Description
1	24V	Sensor power +
2	IN1	Sensor 1 input
3	0V	Sensor power -
4	IN0	Sensor 0 input
5	FE	Functional Earth



Input Connector 1: M12 5-pin socket

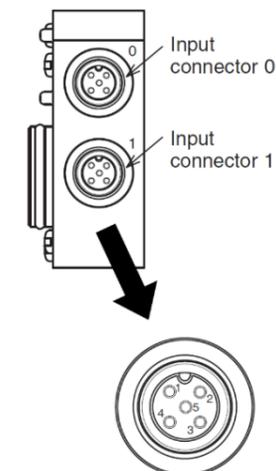
Pin No.	Signal	Description
1	24V	Sensor power +
2	N.C.	Not used
3	0V	Sensor power -
4	IN1	Sensor 1 input
5	FE	Functional Earth

Input connector 0 pin No.2 and Input connector 1 pin No.4 are connected together inside the Input Block. This enables two different inputs by using a single Input connector 0 and reduces the cost of wiring.

#### EX250-IE2

Input Connector 0: M12 5-pin socket

Pin No.	Signal	Description
1	24V	Sensor power +
2	IN1	Sensor 1 input
3	0V	Sensor power -
4	IN0	Sensor 0 input
5	FE	Functional Earth



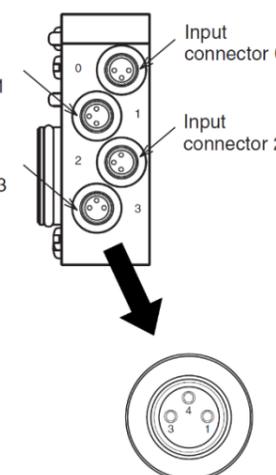
Input Connector 1: M12 5-pin socket

Pin No.	Signal	Description
1	24V	Sensor power +
2	IN3	Sensor 3 input
3	0V	Sensor power -
4	IN2	Sensor 2 input
5	FE	Functional Earth

#### EX250-IE3

Input Connector 0,1,2,3: M8 3-pin socket

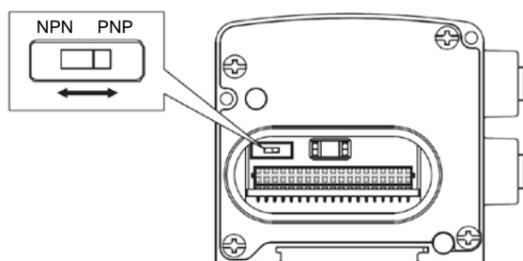
Pin No.	Signal	Description
1	24V	Sensor power +
3	0V	Sensor power -
4	IN	Sensor input



## 6 Setting

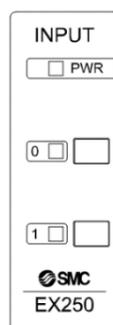
### 6.1 Switch Setting

- The Input Block can be switched to NPN / PNP for each applicable sensor.
- Remove the input block and set the switch with a small flat blade screwdriver. Power must be turned OFF.
- Install the input block after setting.
- The default switch setting of the product is PNP.

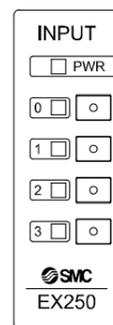


## 7 LED Display

EX250-IE1



EX250-IE2 / -IE3



LED		Description
PWR	Green ON	Power supply for sensor is ON.
	OFF	Power supply for sensor is OFF.
0, 1, 2, 3	Yellow ON	Sensor input signal is ON (Logic "1").
	OFF	Sensor input signal is OFF (Logic "0").

## 8 How to Order

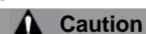
Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for How to order information.

## 9 Outline Dimensions (mm)

Refer to the operation manual on the SMC website (URL: <https://www.smcworld.com>) for outline dimensions.

## 10 Maintenance

### 10.1 General Maintenance



**Caution**

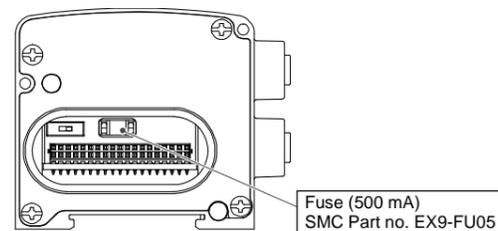
- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.

## 10 Maintenance (continued)

- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions
- Stop operation if the product does not function correctly.

### 10.2 Fuse replacement

- The current to the sensor must be 30 mA max. for each input point.
- In the power supply for the sensor, if an over current occurs because of a short circuit etc, the power supply will be cut-off by the fuse blowing.
- In this case, the user must fix the cause of the short circuit before exchanging the fuse.
- In changing, separate the combination of units and perform on each individual input block.



## 11 Limitations of Use

### 11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

## 12 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose of this product correctly, in order to reduce the impact on human health and the environment.

## 13 Contacts

Refer to [www.smcworld.com](https://www.smcworld.com) or [www.smc.eu](https://www.smc.eu) for your local distributor / importer.

## SMC Corporation

URL: <https://www.smcworld.com> (Global) <https://www.smc.eu> (Europe)  
 SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan  
 Specifications are subject to change without prior notice from the manufacturer.  
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