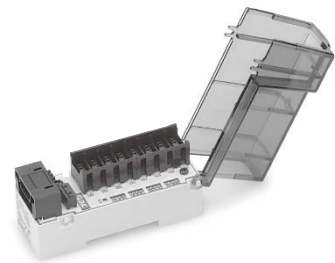




## Instruction Manual

Fieldbus system - Input unit  
EX510-DXN1 / -DXP1 / -DXB1

The intended use of this product is to provide inputs to control pneumatic valves and I/O while connected to an SI or Gateway module.

## 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.

<sup>\*)</sup> 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.

## 2 Specifications

## 2.1 General specifications

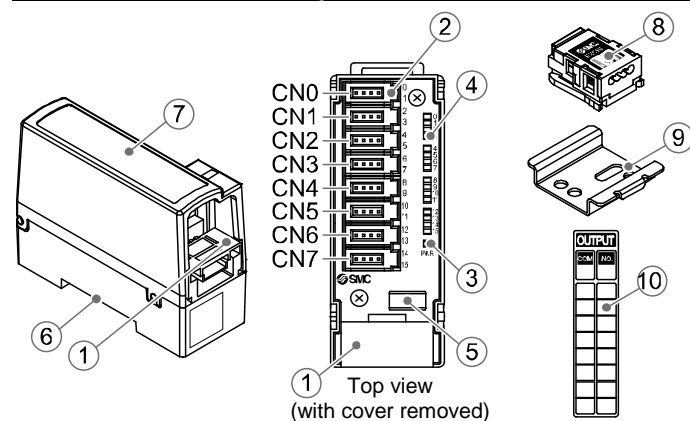
Item	Specifications
Enclosure rating	IP20
Withstand voltage	500 VAC for 1 minute (between FG and terminal block)
Insulation resistance	10 MΩ or more 500 VDC (between FG and terminal block)
Ambient temperature	Operating: -10 to +50 °C Storage: -20 to +60 °C
Ambient humidity	35 to 85% RH (no condensation)
Operating atmosphere	No corrosive gas
Weight	90 g (including accessories)

## 2 Specifications (continued)

## 2.2 Input unit specifications

Item	Specification		
	EX510-DXN1	EX510-DXP1	EX510-DXB1
Applicable input	NPN	PNP	2 wire type
Number of inputs	16 inputs		
Voltage for sensors	24 VDC		
Max. Supply current for sensors	0.2 A / 1 input, 0.9 A / 1 unit		
Current consumption	100 mA max. (inside input unit)		
Input resistance	5.6 kΩ		
Rated input current	4 mA max.		
ON voltage / ON current	17 V min. / 2.5 mA min. (between input and +24 V for sensor)	17 V min. / 2.5 mA min. (between input and 0 V for sensor)	
OFF voltage / OFF current	7 V max. / 1 mA max. (between input and +24 V for sensor)	7 V max. / 1 mA max. (between input and 0 V for sensor)	
LED display	Green LED ON: During ON time		

## 3 Name and function of parts



No	Part	Description
1	Branch connector	Connection for branch cable to connect to Gateway unit.
2	Sensor connectors	Connector for sensor inputs (CN0-7).
3	Power supply LED	LED ON: Power ON (normal) LED OFF: Power OFF
4	Display LED	LED ON: Sensor input signal ON LED OFF: Sensor input signal OFF
5	Fuse	Replaceable fuse
6	Mounting slot	Used for mounting on DIN rail or bracket.
7	Cover	Cover to protect sensor cables and provide label marking.
8	Branch connector	Connector for branch cable (2 pcs.)
9	Bracket	Bracket for mounting the product.
10	Marker plate	Label marking for input details.

## 4 Installation

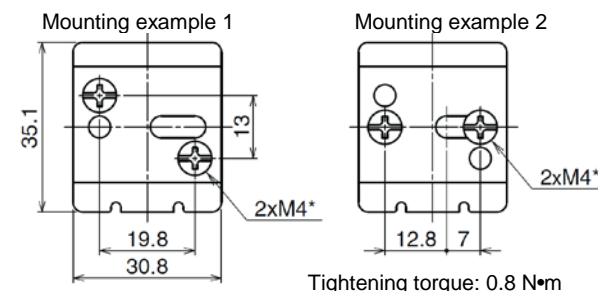
## 4.1 Installation

## Warning

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

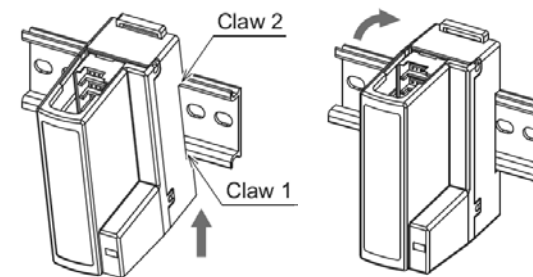
## • Direct mounting with bracket

1. Install the bracket using 2 x M4 screws.
2. Mount the Input unit on the bracket.

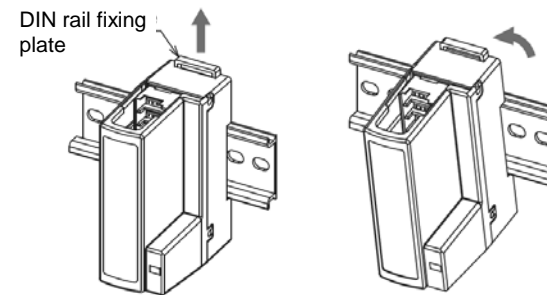


## • DIN rail mounting

To mount the product hook claw 1 under the lower side and claw 2 over the upper side of the DIN rail. Press down until it clicks.



To remove from the DIN rail, push up the DIN rail fixing plate with a flat blade screwdriver, and remove by tilting claw 2 forward.



## 4.2 Environment

## Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product specifications.

## 5 Wiring

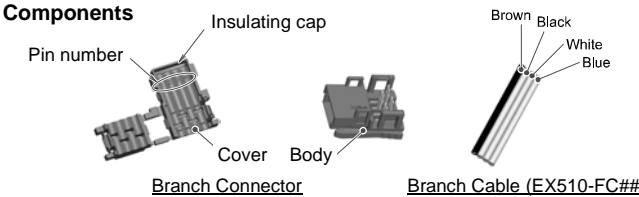
## 5.1 Branch cable wiring

The wiring between the Input unit and GW unit uses a branch cable (EX510-FC##) and branch connector (EX510-LC1). The Input unit has 2 branch connectors.

## 5.1.1 Pressure welding the branch connector

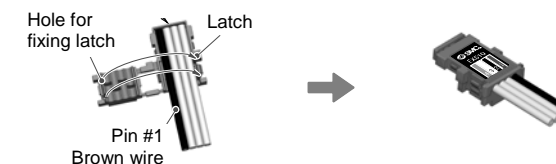
The pressure welding assembly method of the branch connector is described below.

## • Components



## • Assembly procedure

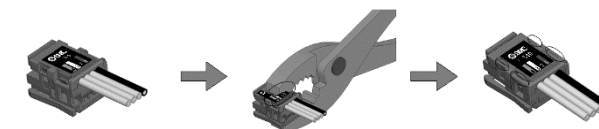
- 1) Set a branch cable into the cover with the Brown wire to pin #1.
- 2) Push the cable end up to the insulating cap on the cover.
- 3) Fold the cover so that the branch cable is trapped between the cover.
- 4) Fix the latch tip by inserting it through the fixing latch hole.



- 5) Check that the wire colour marked on the branch connector is the same as the branch cable wire colour.

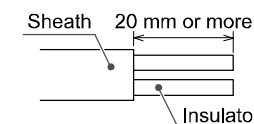
## • Cable clamping

- 1) Tentatively fix the Body. Fit the 4 latches on the body to the 4 ditches in the cover and press them until the latch engages.
- 2) Press fit the cover to the body using suitable pliers.
- 3) Check that all of the 4 latches are fully engaged.



## 5.2 Sensor connector (e-CON) wiring

• Attach the connector to the lead wire. The sensor wire should be stripped as shown in the figure. Do not cut the insulator. Refer to the table below for corresponding connector, wire size and e-CON connector.



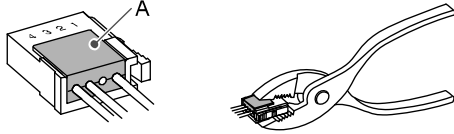
SMC Part No.	Colour	AWG (Wire size mm <sup>2</sup> )	Insulator diameter (mm)	3M company Part No.
ZS-28-C	Red	24 - 26 (0.14 - 0.2)	0.8 to 1.0	37104-3101-000FL
ZS-28-C-1	Yellow		1.0 to 1.2	37104-3122-000FL
ZS-28-C-2	Orange		1.2 to 1.6	37104-3163-000FL
ZS-28-C-3	Green	20 - 22 (0.3 - 0.5)	1.0 to 1.2	37104-2124-000FL
ZS-28-C-4	Blue		1.2 to 1.6	37104-2165-000FL
ZS-28-C-5	Grey		1.6 to 2.0	37104-2206-000FL

## 5 Wiring (continued)

### 5.2.1 Sensor Connector Pin Layout

- The core of the corresponding colour shown in section 5.3 below is put into the pin of the number marked on the e-CON connector to the bottom.

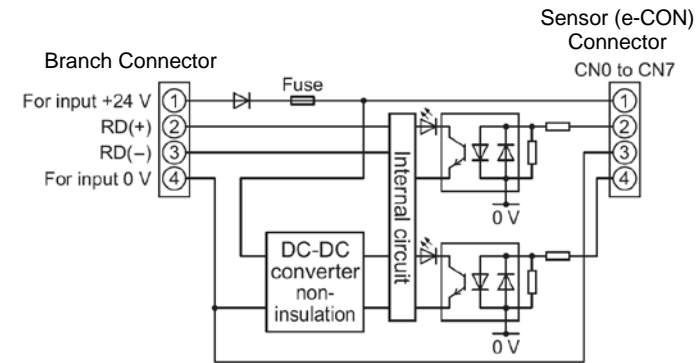
- Check that the above-mentioned wire preparation has been performed correctly, then part A shown in the figure is pushed in by hand to make temporary connection.



- Part A centre should be pressed straight in using a suitable tool, such as pliers. The e-CON connector cannot be re-used once it has been completely crimped.
- In case of connection failure or when a pin is mis-wired, always use a new e-CON connector.

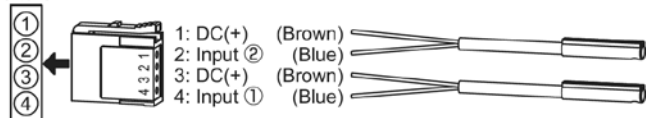
## 5.3 Internal Circuit and Wiring

### 5.3.1 EX510-DXB1: For 2 wire input (1 connector, 2 inputs)

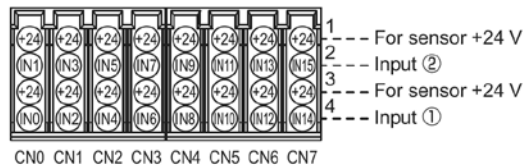


### Wiring example for D-M9B (2 wire auto switch)

Sensor (e-CON) Connector  
CN0 to CN7

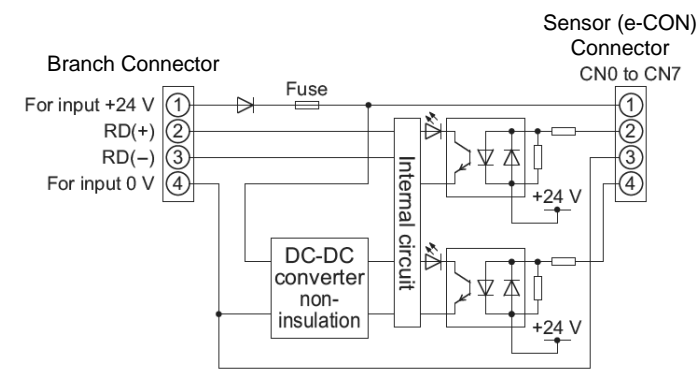


Refer to the following figure for the pin assignment of e-con socket.

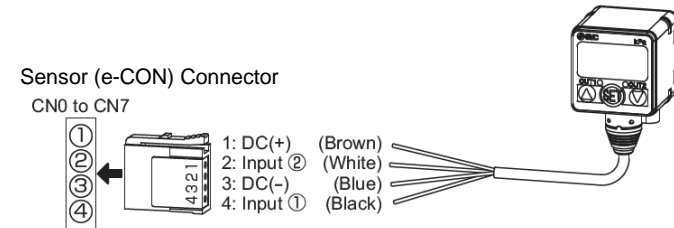


## 5 Wiring (continued)

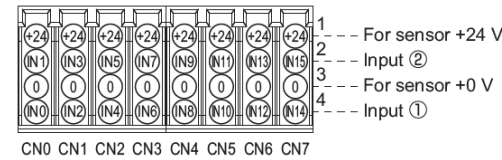
### 5.3.2 EX510-DXN1: For NPN input (1 connector, 2 inputs)



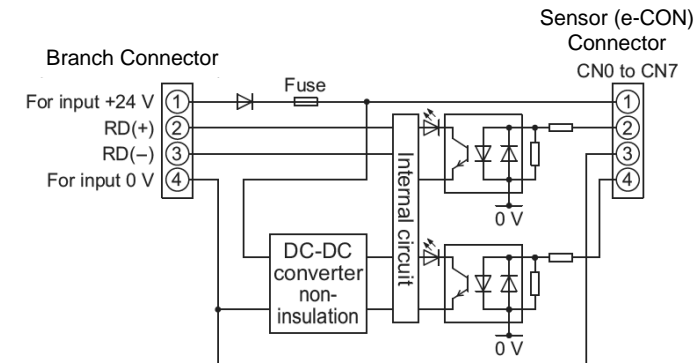
### Wiring example for ZSE40 (pressure switch, NPN, 2 outputs)



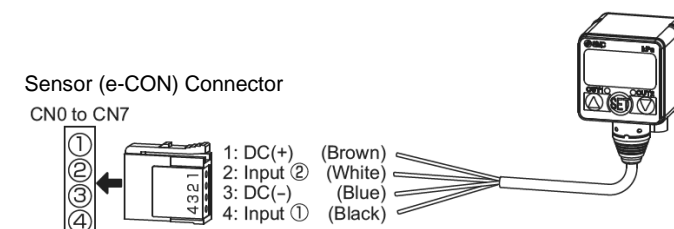
Refer to the following figure for the pin assignment of e-con socket.



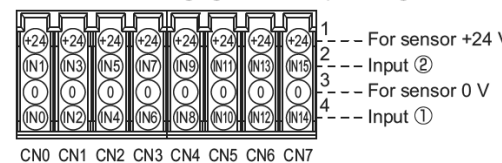
### 5.3.3 EX510-DXP1: For PNP input (1 connector, 2 inputs)



### Wiring example for ZSE40 (pressure switch, PNP, 2 outputs)



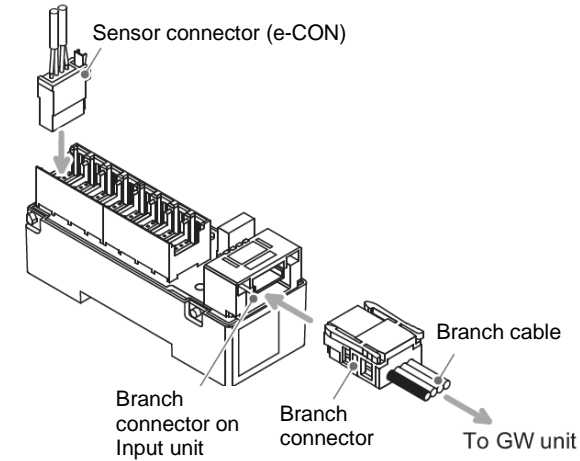
Refer to the following figure for the pin assignment of e-con socket.



## 5 Wiring (continued)

### 5.4 Connection of Branch cable and Sensor connectors

- Insert the branch cable into the socket on the Input unit.
- Insert the sensor connectors after removing the cover.



## 6 How to Order

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

## 7 Outline Dimensions (mm)

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

## 8 Limitations of Use

### 8.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

## 9 Product disposal

This product should 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.

## 10 Maintenance

### 10.1 General Maintenance



- 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.
- 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.

## 11 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)  
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