



# Installation & Maintenance Manual

## EX510 Series Input unit

### Series EX510-DX□1



### Safety Instructions

The body of unit and this manual contain the essential information for the protection of users and others from possible injury and property damage and to ensure correct handling.

Please check that you fully understand the definitions of the following messages (symbols) before going on to read the body of this manual, and always follow the instructions.

Please also read the instruction manuals etc. of related machines and understand the contents before use.

#### IMPORTANT MESSAGES

Read this manual and follow its instructions. Signal words such as WARNING, CAUTION and NOTE will be followed by important safety information that must be carefully reviewed.

#### WARNING

Indicates a potentially hazardous situation that could result in death or severe injury if you do not follow instructions.

#### CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor injury or moderate injury.

#### NOTE

Gives you helpful information.

#### WARNING

**Do not disassemble, modify (including change of printed circuit board) or repair.**

An injury or failure can result.

**Do not operate beyond the specification range.**

Fire, malfunction or damage can result.

Only use the unit after confirming the specification.

**Do not use the product in an environment of flammable, explosive or corrosive gas.**

Otherwise fire, explosion or corrosion can result.

This product is not explosion-proof type.

**For use in interlock circuit:**

•Provide double interlock system by adding different type of protection (such as mechanical protection).

•Check the product regularly to ensure proper operation.

Otherwise accident caused by malfunction can result.

**Before performing maintenance:**

•Turn off the power supply.

•Stop air supply, exhaust compressed air in piping, and confirm the release to atmosphere.

Otherwise injury can result.

### Safety Instructions (continued)

#### CAUTION

**Conduct proper functional inspection after completing maintenance.**

In the case of abnormality such as unit does not work normally, stop the operation. Otherwise safety cannot be assured due to unintended malfunction.

**Provide grounding to improve safety and noise resistance of reduced wiring system.**

Provide grounding as close to the unit as possible to shorten distance for grounding.

#### NOTE

The direct-current power supply to combine should be UL authorization power supply.

1. A limited voltage/current circuit which conforms to UL508.

A circuit to which power is supplied by the secondary coil of a transformer that meets the following conditions.

- Maximum voltage (with no load) : less than 30Vrms (42.4V peak)
- Maximum current : (1)less than 8A (including when short circuited)  
(2)limited by circuit protector (such as fuse)  
with the following ratings

No load voltage (V peak)	Max. current rating (A)
0 to 20 [V]	5.0
20 to 30 [V]	100/peak voltage

2. UL1310 Class 2 power supply unit or circuit of max. 30Vrms (42.4Vpeak) or less using a UL1585 Class 2 transformer as power source.

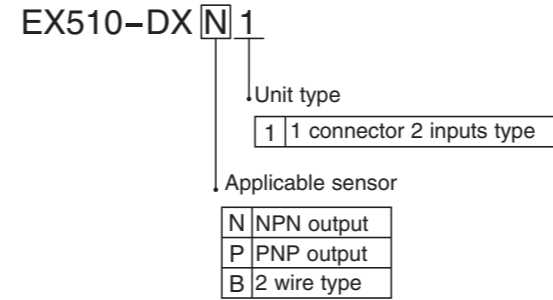
Follow the instructions given below when handling the reduced wiring system.

Failure to follow instructions may damage the unit.

- Operate the unit within the specified voltage range.
- Reserve a space for maintenance.
- Do not remove labels.
- Do not drop, hit or apply excessive shock to the product.
- Follow the specified tightening torque.
- Do not bend or apply tensile force to cables, or apply force by placing heavy load on them.
- Connect wires and cables correctly.
- Do not connect wires while the power is on.
- Do not lay wires or cables with power cable or high-voltage cable in the same wiring route.
- Verify the insulation of wiring.
- Separate power cables for solenoid valves from power cables for Input and control unit.
- Take proper measurements against noise such as noise filter when the reduced wiring system is incorporated in equipment or devices.
- Select the proper type of protection according to the environment of operation.
- Take sufficient shielding measures when installing at the following place.
  - (1) A place where noise due to static electricity is generated
  - (2) A place where electric field strength is high
  - (3) A place where there is radioactive irradiation
  - (4) A place near power line

- Do not use the product nearby a place where electric surges are generated.
- Use reduced wiring system equipped with surge absorber when a surge-generating load such as a solenoid valve is driven directly.
- Prevent foreign matter such as remnant of wires from entering this product.
- Do not expose the reduced wiring system to vibration and impact.
- Keep the specified ambient temperature range.
- Do not expose reduced wiring system to heat radiation from a heat source located nearby.
- Perform maintenance and check regularly.
- Perform a proper functional check.
- Do not use the product with chemicals such as benzene and thinner.

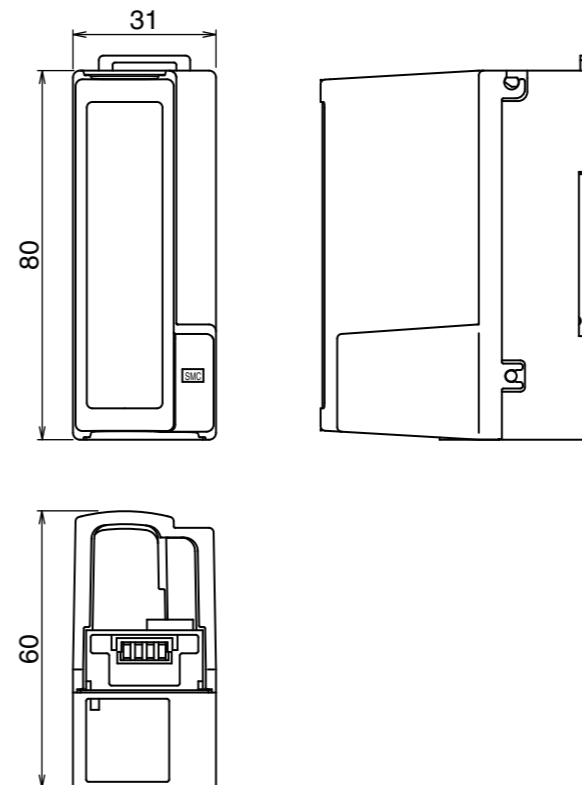
### Model Indication Method



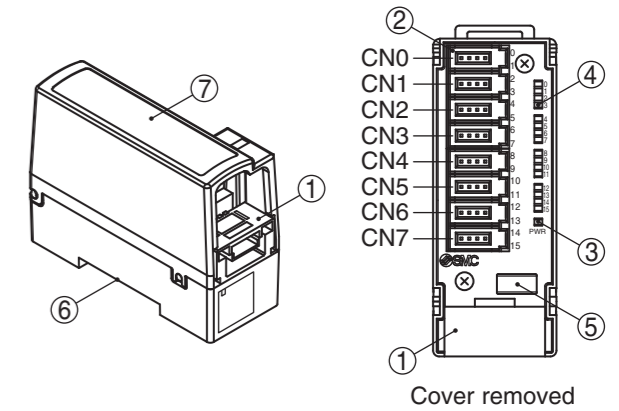
### Specifications

Item	EX510-DXN1	EX510-DXP1	EX510-DXB1
Applicable sensor	NPN output	PNP output	2 wire type
Number of input points	16 points (See diagram below for details.)		
Supply voltage for sensor	24VDC		
Max. supply current for sensor	0.2A/1 point, 0.9A/1unit		
Current consumption	100mA or less (inside of input unit)		
Input resistance	5.6kΩ		
Rated input current	Approx. 4mA		
ON voltage/ON current	17V or more/2.5mA or more (Between input terminal and +24V for sensor)	17V or more/2.5mA or more (Between input terminal and 0V for sensor)	
OFF voltage/OFF current	7V or less/1mA or less (Between input terminal and +24V for sensor)	7V or less / 1mA or less (Between input terminal and 0V for sensor)	
LED display	Green LED (lights up during ON time)		
Weight	EX510-DX□1 : 90g (including accessories)		

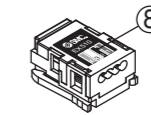
### Dimensions (in mm)



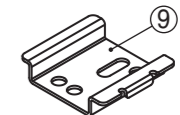
### Name of Parts/Accessories



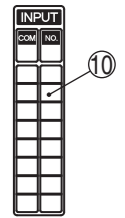
#### Accessories



Branch connector  
(2 pieces)  
(EX510-LC1)



Bracket



Marker plate

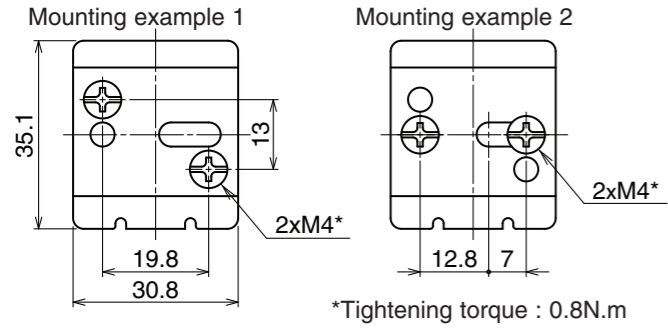
No.	Parts	Purpose
1	Branch connector at Input unit	Used to crimp branch connector (⑧) into branch cable (EX510-FC□□) and connect them to GW unit.
2	e-con socket	The sensor is connected.
3	Power supply LED	Light ON : Power ON (normal) Light OFF : Power OFF
4	Display LED	Light ON : Sensor signal input ON Light OFF : Sensor signal input OFF
5	Fuse	Fuse is replaceable.
6	Mounting slot	Used to mount DIN rail on the unit and establish mounting by attached bracket (⑨) (and screws).
7	Cover	Used to protect sensor cable and provided with marker plate (⑩) on the top.

## Installation

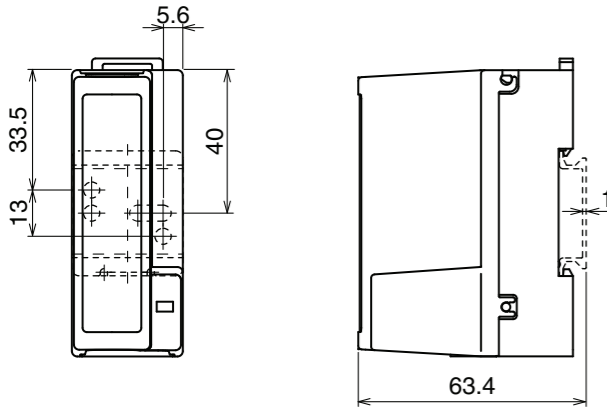
### Mounted by screw

(Tolerance ±0.2mm)

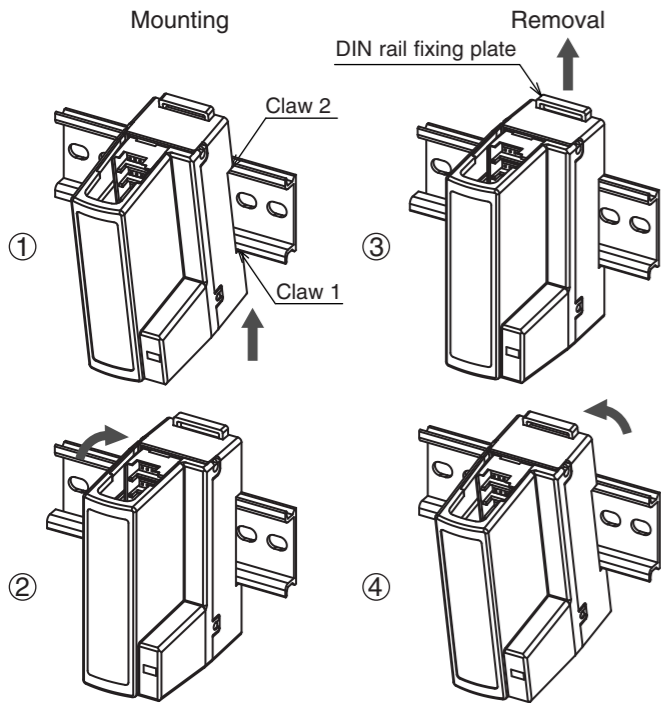
① Mount bracket with 2 pieces of M4 screw.



② Mount Input unit on bracket. Mounting and removal method are the same as "Mounted on DIN rail" in the next item.



### Mounted on DIN rail



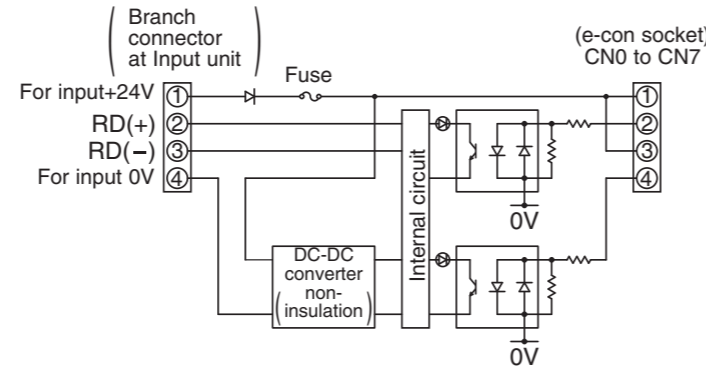
Put claw 1 of the body under DIN rail or bracket and push it upward. Push down claw 2 to the opposite rail until the claw clicks securely on to rail. (Mounting procedure ① and ②)

For removing, lever up DIN rail fixing plate of the body with a flat screwdriver, and remove it by tilting Claw 2 side forward. (Removal procedure ③ and ④)

## Wiring

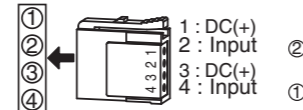
### EX510-DXB1 : Input unit for 2-wire type (1 connector 2 inputs type)

#### Internal circuit

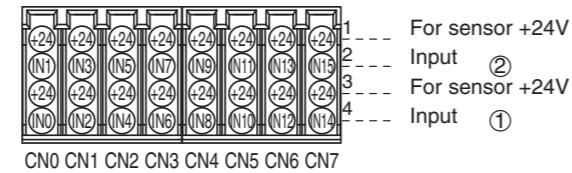


#### Example of wiring

(e-con socket) CN0 to CN7

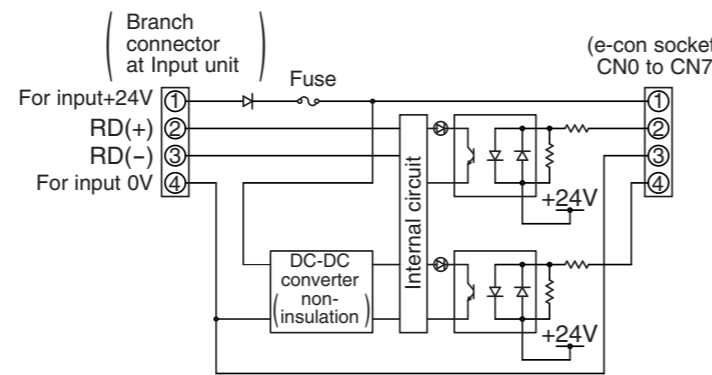


Refer to the following figure for the pin assignment of e-con socket.



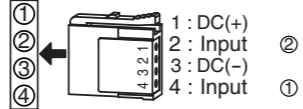
### EX510-DXN1 : Input unit for NPN (1 connector 2 inputs type)

#### Internal circuit

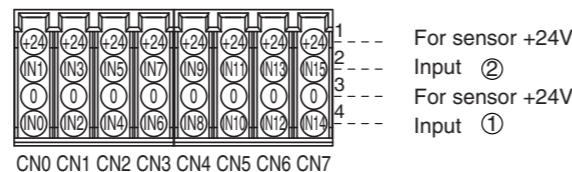


#### Example of wiring

(e-con socket) CN0 to CN7



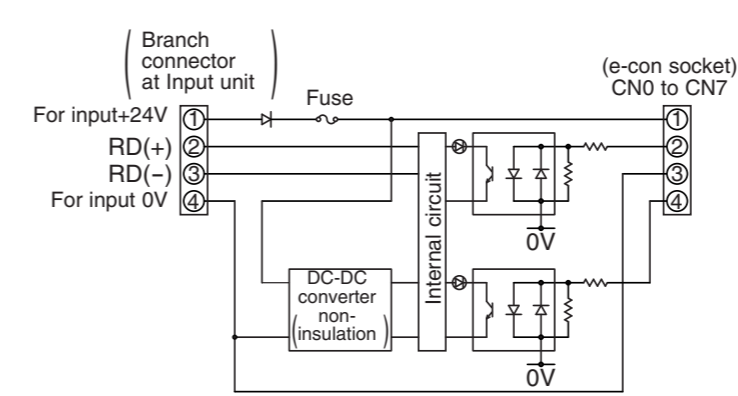
Refer to the following figure for the pin assignment of e-con socket.



## Wiring (continued)

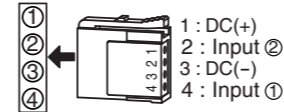
### EX510-DXP1 : Input unit for PNP (1 connector 2 inputs type)

#### Internal circuit

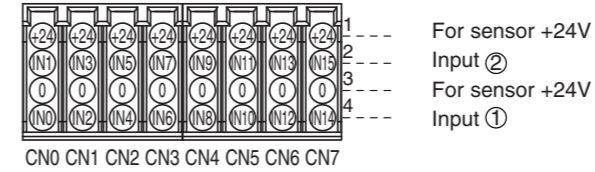


#### Example of wiring

(e-con socket) CN0 to CN7



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



### Branch cable wiring

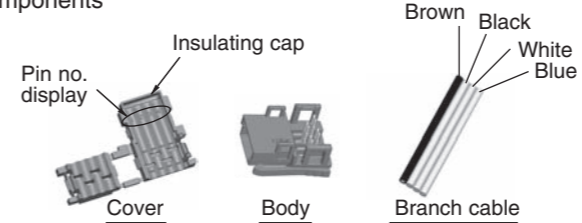
Input unit and GW unit are connected with branch cable and branch connector.

SI unit and Input unit have 2 branch connectors for each.

### Pressure assembly of branch connector

The method of pressure assembly of branch connector is explained.

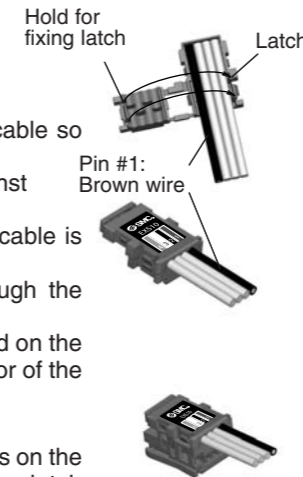
#### (1) Components



#### (2) Working procedure

- Set a branch cable in the cover.
  - Set the brown wire of the branch cable so that it comes to the pin #1.
  - Push the cable ends securely against insulating cap in cover.
  - Fold the cover so that the branch cable is trapped between the cover.
  - Fix the latch tip by inserting through the hole for the fixing latch.
- Note) Check the color of wire printed on the branch connector and the color of the cables are the same.

Tentative fixing to the body. Fit 4 latches on the body to 4 ditches on the cover, and press them until the latch engages to the level 1.



## Wiring (continued)

### ③ Press fitting

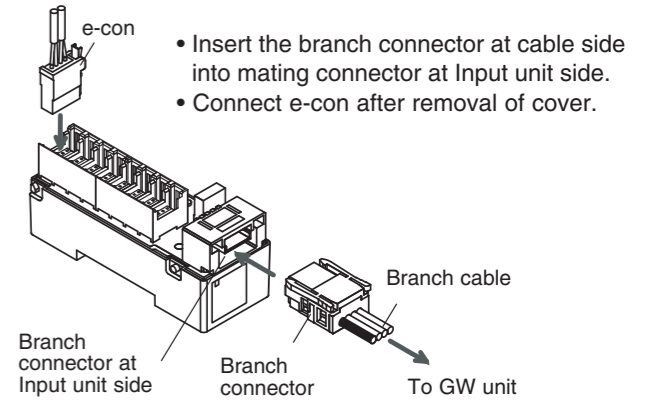
Press the cover to the body with suitable pliers.

### ④ Confirmation

Check that all of the 4 latches are fully engaged.



### Wiring of branch cables and e-con



## Contact

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DENMARK	(45) 7025 2900	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	SLOVAKIA	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	SLOVENIA	(386) 73 885 412
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GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
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