

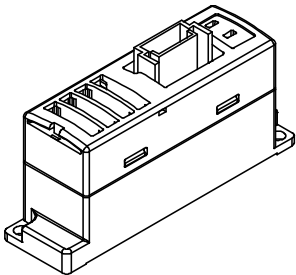


ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus system - SI unit

EX510-S001 / -S002 / -S101 / -S102



The intended use of this product is to control pneumatic valves and I/O while connected to a 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)^{*)}, and other safety regulations.

^{*)}ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.

ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components

IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements

ISO 10218-1: Robotics — Safety requirements — Part 1: Industrial robots

• 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.

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

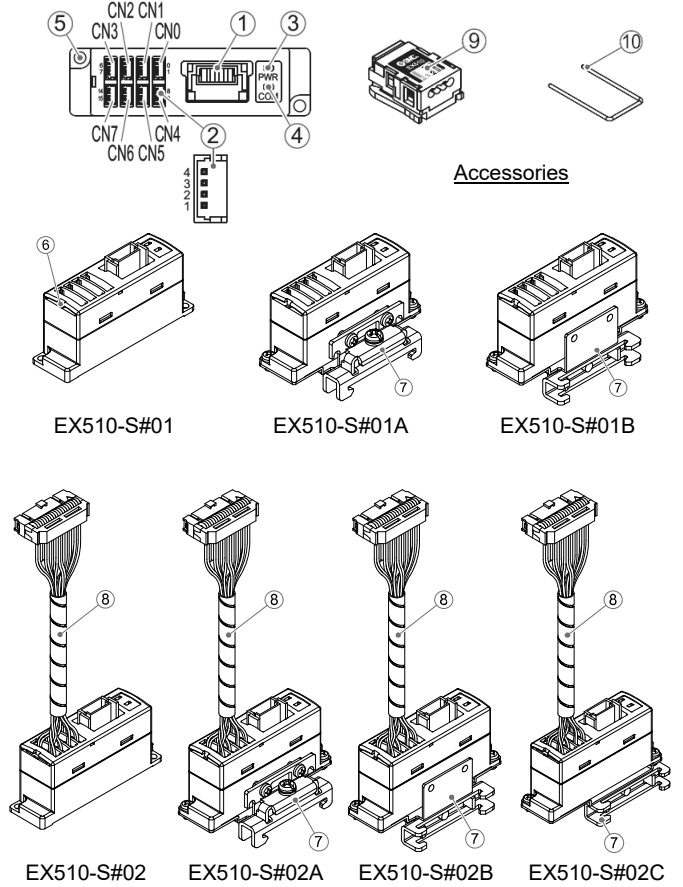
Item	Specifications
Enclosure rating	IP20
Withstand voltage	500 VAC for 1 minute (between FG and terminal block)
Insulation resistance	10 MΩ or more 500 VDC (between FG and terminal block)
Ambient temperature	Operating: -10 to +50 °C Storage: -20 to +60 °C
Ambient humidity	35 to 85% RH (no condensation)
Operating atmosphere	No corrosive gas
Weight (including accessories)	EX510-S#01: 40 g EX510-S#02: 50 g EX510-S#01A: 80 g EX510-S#02A, B, C: 90 g

2 Specifications (continued)

2.2 SI unit specifications

Item	Specification	
Model	EX510-S001, S002	EX510-S101, S102
Output type	NPN (sink type) / positive common	PNP (source type) / negative common
Number of outputs	16 outputs	
Rated Load voltage	24 VDC	
Maximum Load current	To meet the following 3 conditions: 1. 0.25 A max. per point 2. 1.4 A max. per point 3. Total current for OUT0 to 7 = 1 A max. Total current for OUT8 to 15 = 1 A max.	
Protection	Short circuit protection	
Current consumption	50 mA max. (SI unit internal circuit)	

3 Name and function of parts



No	Part	Description
1	Branch connector	Connection for branch cable to connect to Gateway unit.
2	Load connectors	Connector for output equipment such as a solenoid valve (CN0-7).
3	Power supply LED	LED ON: Power ON (normal) LED OFF: Power OFF
4	Communication LED	LED ON: Data received LED OFF: No data received
5	Mounting holes	Used for direct mounting.
6	Connector lock pin	Locking pin to lock the load connectors.
7	Mounting bracket	Used for mounting on a DIN rail.
8	Manifold cable	Connection to a plug in valve manifold.
9	Branch connector	Connector for branch cable (2 pcs.)
10	Connector lock pin	Locking pin to lock the load connectors.

4 Installation

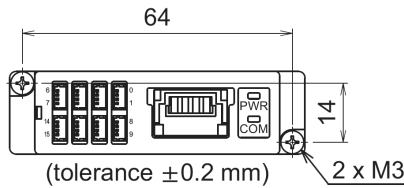
4.1 Installation

Warning

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

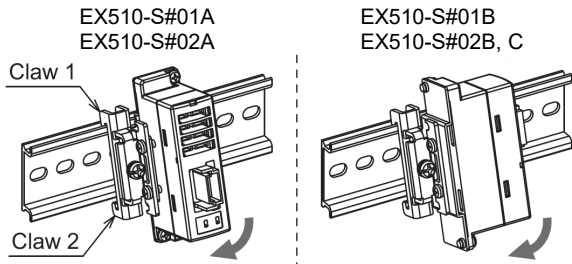
• **Direct mounting**

Install the product using 2 x M3 screws.
(Tightening torque: 0.3 N•m).

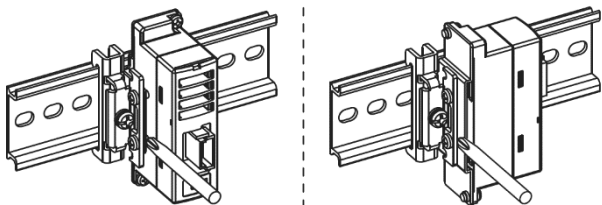


• **DIN rail mounting**

To mount the product hook claw 1 over the upper side and claw 2 over the lower side of the DIN rail.



Tighten the screw on the mounting bracket until the DIN rail mounting is secured. (Tightening torque: 0.6 N•m).



To remove from the DIN rail, loosen the screw and disengage claw 2 and then claw 1 in that order.

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

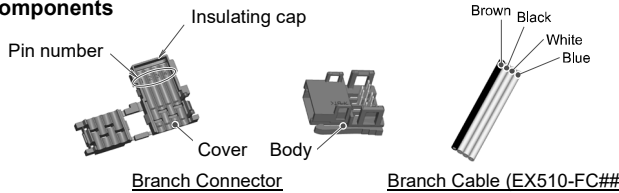
5.1 Branch cable wiring

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

5.1.1 Pressure welding the branch connector

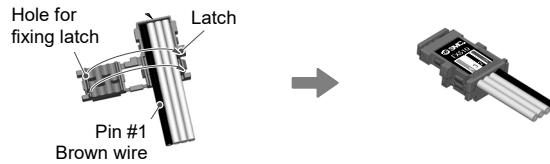
The pressure welding assembly method of the branch connector is described below.

• **Components**



• **Assembly procedure**

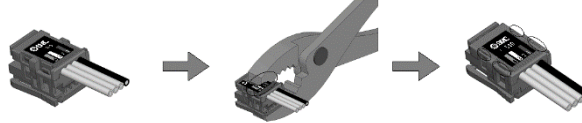
- 1) Set a branch cable into the cover with the Brown wire to pin #1.
- 2) Push the cable end up to the insulating cap on the cover.
- 3) Fold the cover so that the branch cable is trapped between the cover.
- 4) Fix the latch tip by inserting it through the fixing latch hole.



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

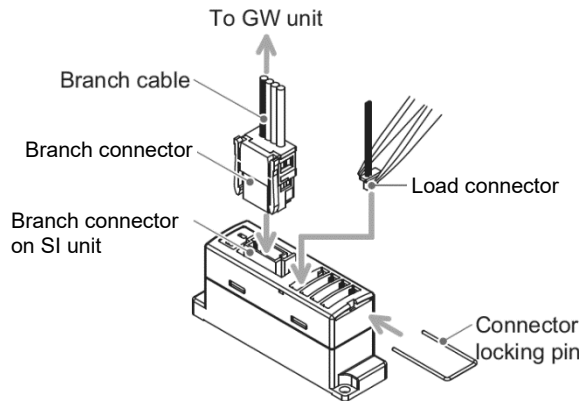
• **Cable clamping**

- 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 Connection of Branch cable and Load connectors

- 1) Insert the branch cable into the socket on the SI unit.
- 2) Insert the load connectors using small pliers (EX510-S#01 only). When all of the load connectors are inserted, insert the connector locking pin.
- 3) The output number of each load connector can be found in the table below.



5 Wiring (continued)

5.2.1 Load connector pin assignment (EX510-S#01)



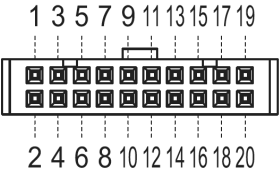
EX510-S001 (NPN)

No.	Name	Function							
		CN0	CN1	CN2	CN3	CN4	CN5	CN6	CN7
4	COM	Load actuating common (+)							
3	Output (n)	OUT0	OUT2	OUT4	OUT6	OUT8	OUT10	OUT12	OUT14
2	Output (n+1)	OUT1	OUT3	OUT5	OUT7	OUT9	OUT11	OUT13	OUT15
1	COM	Load actuating common (+)							

EX510-S101 (PNP)

No.	Name	Function							
		CN0	CN1	CN2	CN3	CN4	CN5	CN6	CN7
4	Output (n)	OUT0	OUT2	OUT4	OUT6	OUT8	OUT10	OUT12	OUT14
3	COM	Load actuating common (-)							
2	COM	Load actuating common (-)							
1	Output (n+1)	OUT1	OUT3	OUT5	OUT7	OUT9	OUT11	OUT13	OUT15

5.2.2 Output connector (MIL 20-pin) pin assignment (EX510-S#02)



EX510-S002 (NPN)

Pin No.	1	3	5	7	9	11	13	15	17	19
Output No.	0	2	4	6	8	10	12	14	-	+COM
Pin No.	2	4	6	8	10	12	14	16	18	20
Output No.	1	3	5	7	9	11	13	15	-	+COM

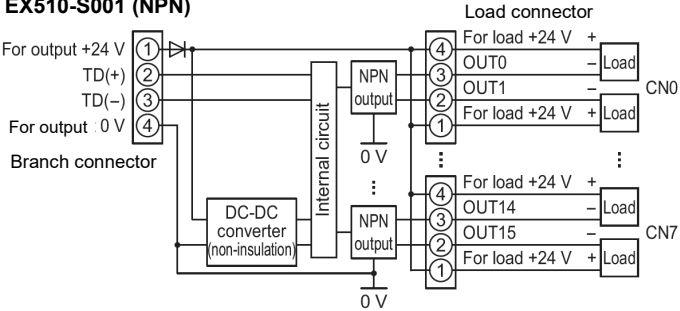
EX510-S102 (PNP)

Pin No.	1	3	5	7	9	11	13	15	17	19
Output No.	0	2	4	6	8	10	12	14	-	-COM
Pin No.	2	4	6	8	10	12	14	16	18	20
Output No.	1	3	5	7	9	11	13	15	-	-COM

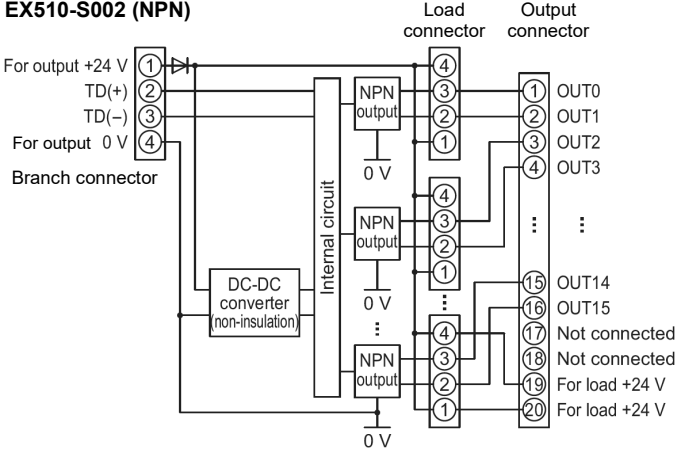
5 Wiring (continued)

5.3 Internal Circuit and Wiring

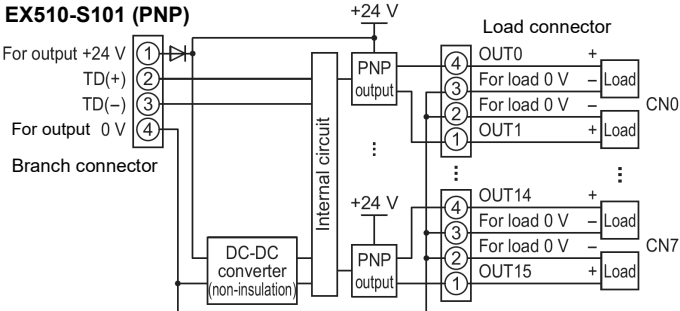
EX510-S001 (NPN)



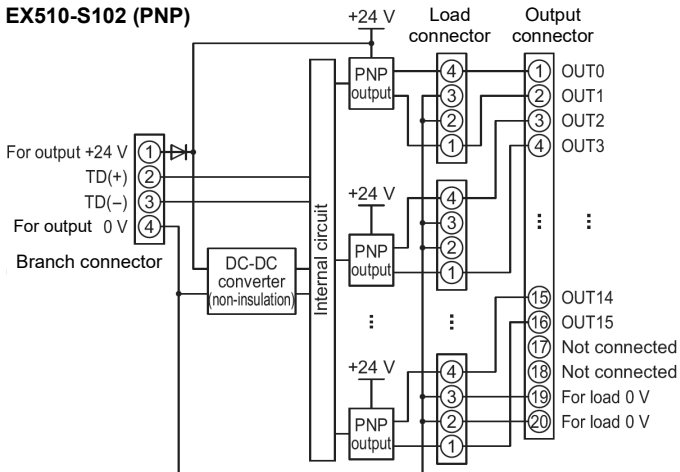
EX510-S002 (NPN)



EX510-S101 (PNP)



EX510-S102 (PNP)



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



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.
- 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 or 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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