



# Installation & Maintenance Manual

## EX510 series SI unit

Series EX510-S□01□, EX510-S□02□

### 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
Above 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 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

EX510-S□0□□

#### Mounting

No symbol	Mounted by screw
A	Mounted vertically on DIN rail
B	Mounted horizontally on DIN rail
C	Mounted horizontally on DIN rail (Specific for SJ series) Note

Note) Only EX510-S□02

#### Objective manifold valve

1	Non-plug-in manifold
2	Plug-in manifold

#### Output specification

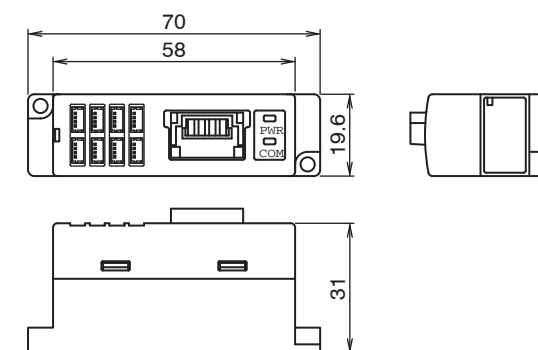
0	NPN output (Common(+))
1	PNP output (Common(-))

### Specifications

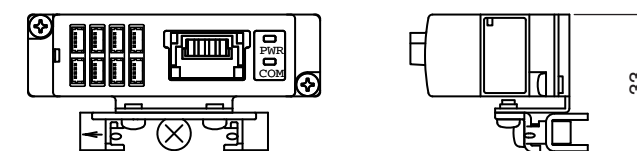
Item	Specification	
Model	EX510-S001□, S002□	EX510-S101□, S102□
Output type	NPN output (Sink type)	PNP output (source type)
Number of output points	16 points	
Rated load voltage	24VDC	
Maximum load current	Meet the three following conditions (1) 0.25A or less/1 point (2) 1.4A or less/1 unit (3) Total current of OUT0 to OUT7 : 1A or less, Total current of OUT8 to OUT15 : 1A or less	
Protection	Built-in protection circuit for short circuit	
Current consumption	50mA or less (inside of SI unit)	
Weight	EX510-S□01 : 40g, EX510-S□01A, B : 80g EX510-S□02 : 50g, EX510-S□02A, B, C : 90g (including accessories)	

### Dimensions (in mm)

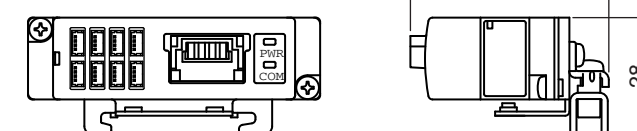
#### EX510-S□01



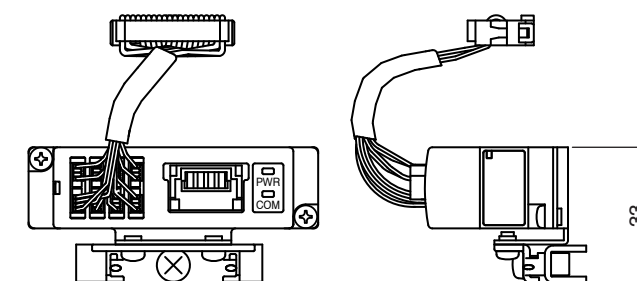
#### EX510-S□01A



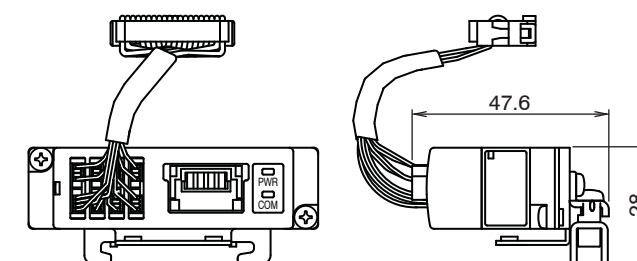
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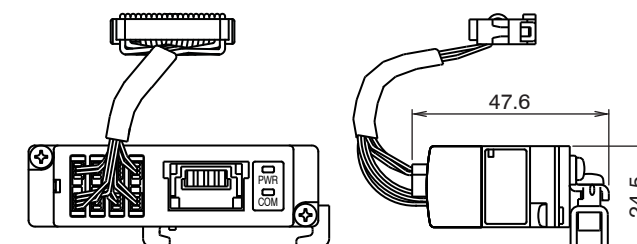
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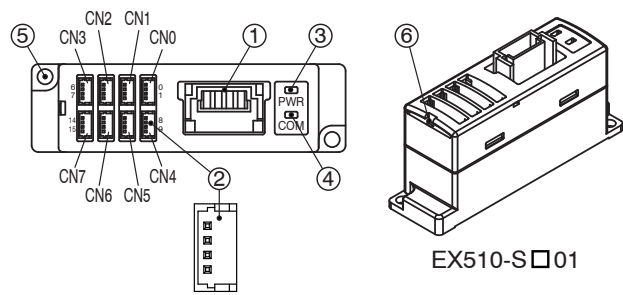
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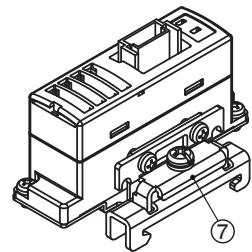
#### EX510-S□02C



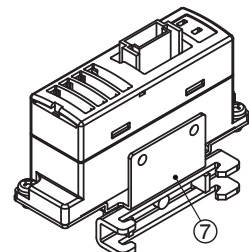
Name of Parts/Accessories



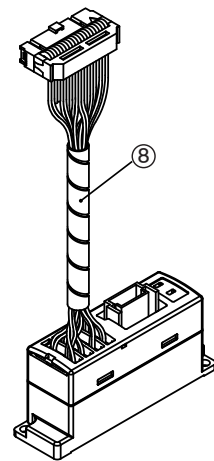
EX510-S□01



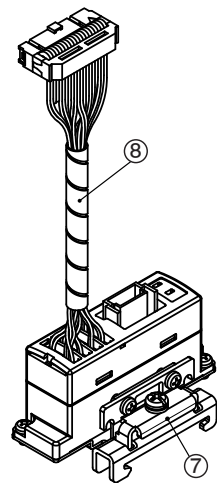
EX510-S□01A



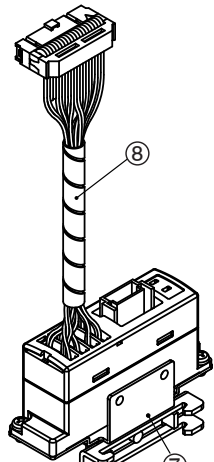
EX510-S□01B



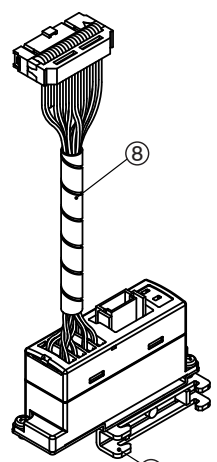
EX510-S□02



EX510-S□02A



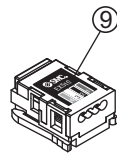
EX510-S□02B



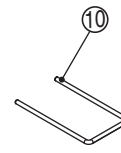
EX510-S□02C

Name of Parts/Accessories (continued)

Accessories



Branch connector (2 pieces) (EX510-LC1)



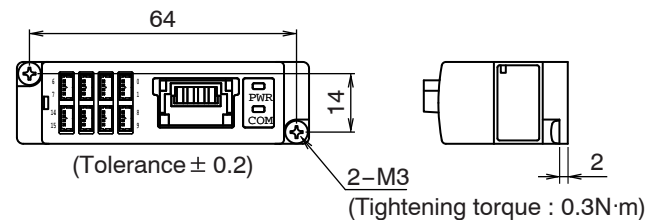
Connector lock pin (1 piece)

\*This is intergrated into the body of the unit for EX510-S\* 02\* .

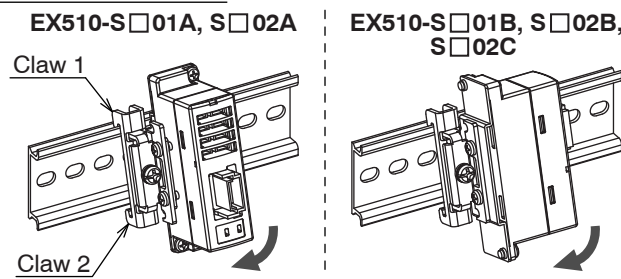
No.	Parts	Purpose
1	SI unit side, Branch connector	Crimps branch cable (EX510-FC□□) to branch connector (9) and connects them to GW unit.
2	Load mounting connector	Connects output equipment such as solenoid valve.
3	Power supply LED	Light ON : Power on (normal) Light OFF : Power off
4	Communication LED	Light ON : Data received Light OFF : No data received
5	Mounting hole	Used when a unit is mounted with 2 M3 screws.
6	Connector locking pin inserted hole	Receive connector locking pin(10).
7	DIN rail mounting bracket	Possible to mount on DIN rail.
8	Adaptor cable assembly	Connects a plug-in valve manifold.

Installation

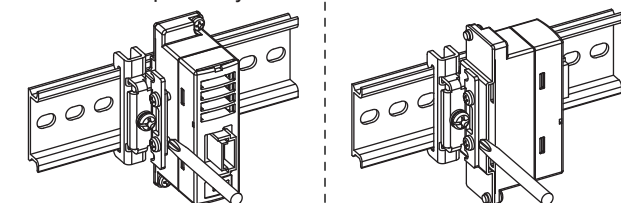
Mounted by screw



Mounted on DIN rail



① Hook claw 1 over the upper side and claw 2 over the low side of DIN rail respectively.

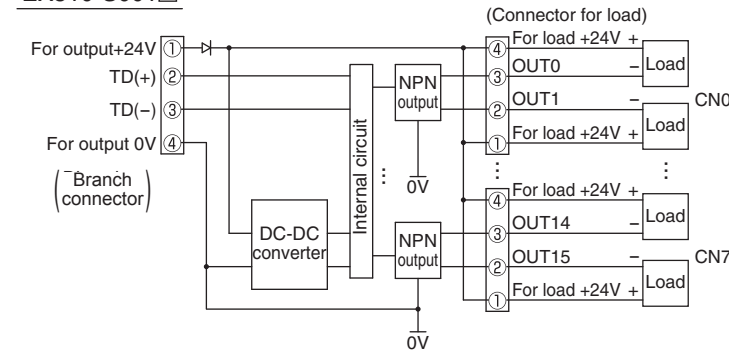


② Tighten the screw by Phillips driver until DIN rail is secured. (Tightening torque : 0.6N·m)

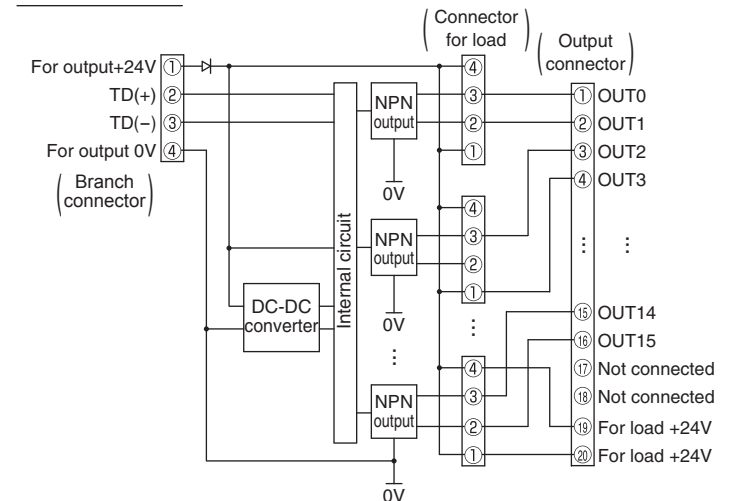
③ When the DIN rail is disconnected, loosen the screw and dis-engage claw 2 and then claw 1 in order.

Wiring

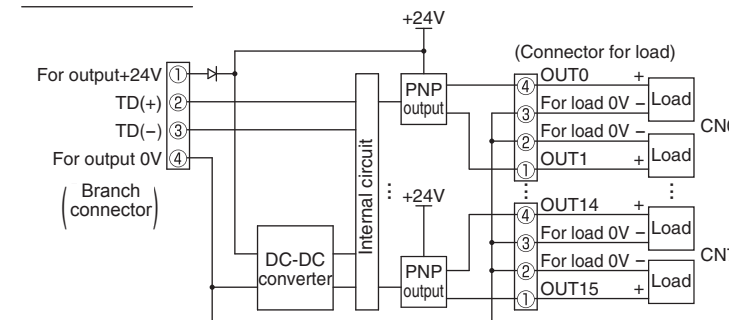
EX510-S001□



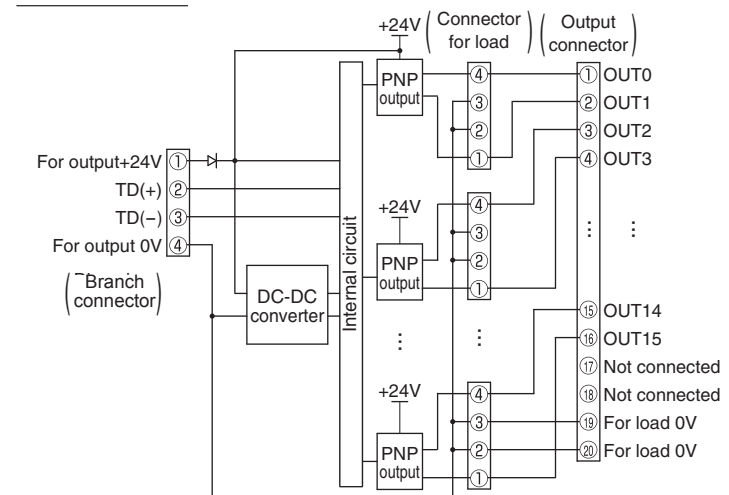
EX510-S002□



EX510-S101□



EX510-S102□



NPN and PNP outputs use the transistor with built in protective function for short circuit.

Wiring (continued)

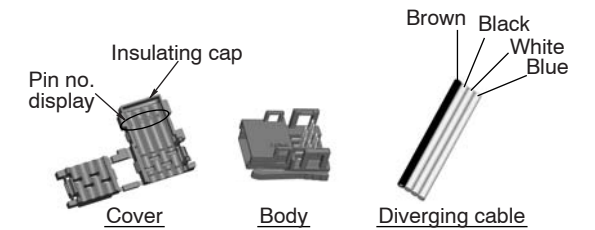
Branch cable wiring

The wiring between each unit should use branch cables, and connected with branch connectors. The SI unit and input unit have 2 branch connectors for each.

Pressure assembly of branch connector

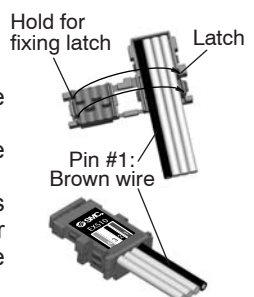
The method of pressure assembly of the branch connector is explained.

(1) Components



(2) Working procedure

- Set a branch cable in the cover.
    - Set the brown wire of the branch cable so that it matches to pin #1.
    - Push the cable ends against the insulating cap in the 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 the wires printed on the branch connector and the color of the cables are the same.



② Tentative fixing to the body.

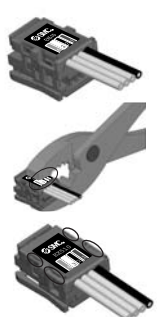
Fit 4 latches on the body to 4 ditches on the cover, and press them until the latch engages to the level 1.

③ Press fitting

Press the cover to the body with suitable pliers.

④ Confirmation

Check that all 4 latches are fully engaged.

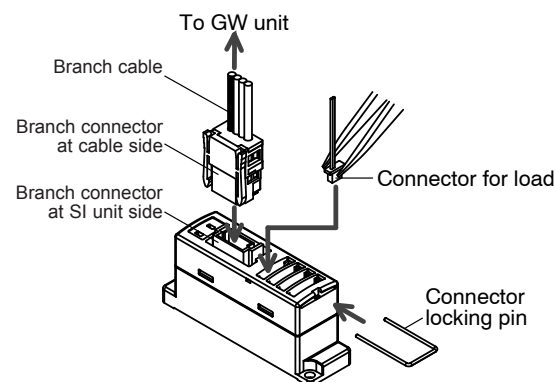


## Wiring (continued)

## Wiring of branch cables and connector for load

## EX510-S001□ / S101□

- Insert branch connector of cable side into mating connector of SI unit side.
- Insert connector for load with pliers. After all the connectors for load are inserted, insert connector locking pin. The output No. of each connector for load can be found on the following table.



## EX510-S001□

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 (+)							

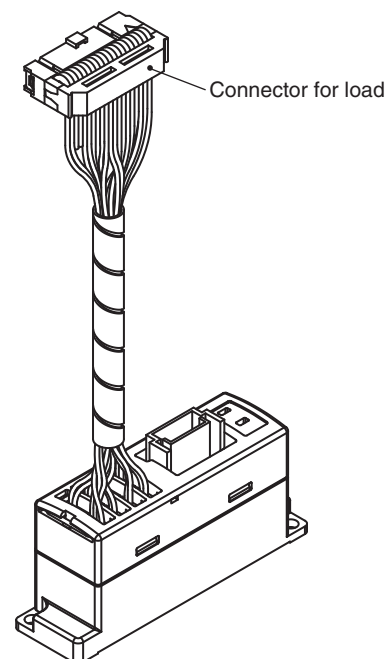
## EX510-S101□

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

## Wiring (continued)

## EX510-S002□ / S102□

- Insert branch connector of cable side into mating connector of SI unit side.



## EX510-S002□

1	3	5	7	9	11	13	15	17	19
2	4	6	8	10	12	14	16	18	20

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

## EX510-S102□

1	3	5	7	9	11	13	15	17	19
2	4	6	8	10	12	14	16	18	20

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

## Contact

AUSTRIA	(43) 2262 62280	NETHERLANDS	(31) 20 531 8888
BELGIUM	(32) 3 355 1464	NORWAY	(47) 67 12 90 20
CZECH REP.	(420) 541 424 611	POLAND	(48) 22 211 9600
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
GERMANY	(49) 6103 4020	SPAIN	(34) 945 184 100
GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
HUNGARY	(36) 23 511 390	SWITZERLAND	(41) 52 396 3131
IRELAND	(353) 1 403 9000	UNITED KINGDOM	(44) 1908 563888
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