



ORIGINAL INSTRUCTIONS

## Instruction Manual

### Fieldbus system - Output unit

#### EX510-DY#3 / -DY#4



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

### 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

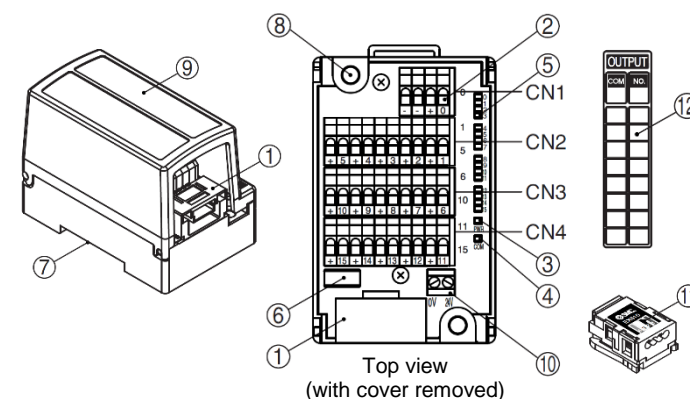
Item	Specifications
Enclosure rating	IP20
Withstand voltage	500 VAC for 1 minute (between FG and terminal block)
Insulation resistance	10 MΩ or more 500 VDC (between FG and terminal block)
Ambient temperature	Operating: -10 to +50 °C Storage: -20 to +60 °C
Ambient humidity	35 to 85% RH (no condensation)
Operating atmosphere	No corrosive gas
Weight	130 g (including accessories)

## 2 Specifications (continued)

### 2.2 Output unit specifications

Item	Specification			
	EX510-DYN3	EX510-DYP3	EX510-DYN4	EX510-DYP4
Model	EX510-DYN3	EX510-DYP3	EX510-DYN4	EX510-DYP4
Output type	NPN / sink (positive common)	PNP / source (negative common)	NPN / sink (positive common)	PNP / source (negative common)
Number of outputs	16 outputs			
Rated Load Voltage	24 VDC			
Power supply type	Internal power supply (from GW unit)		External power supply (from power supply connector)	
Power supply connector wire size	-		0.14 to 1.5 mm <sup>2</sup> (AWG26 to 16)	
Output connector	Cage clamp type (WAGO 739-304 / 310)			
Output wire size	0.08 to 1.5 mm <sup>2</sup> (AWG28 to 16)			
Maximum Load current	To meet the following 3 conditions: 1) 1 output: 0.5 A max. 2) 1 unit: 1 A max. 3) Total current of OUT0 - 7: 1 A max. OUT8 - 15: 1 A max.		To meet the following 3 conditions: 1) 1 output: 0.5 A max. 2) 1 unit: 3 A max. 3) Total current of OUT0 - 7: 1.5 A max. OUT8 - 15: 1.5 A max.	
	Short circuit protection			
Protection	Short circuit protection			
Current consumption	50 mA max. (output unit circuit)			

## 3 Name and function of parts



No	Part	Description
1	Branch connector	Connection for branch cable to GW unit.
2	Output terminals	Connection for output loads.
3	Power supply LED	LED ON: Power ON (normal) LED OFF: Power OFF
4	Communication LED	LED ON: Receiving data LED OFF: No data received
5	Display LED	LED ON: Output signal ON LED OFF: Output signal OFF
6	Fuse	Replaceable fuse.
7	Mounting slot	Used for mounting on DIN rail.
8	Mounting hole	Used for direct mounting with M4 screws.
9	Cover	Cover to protect cables and provide label marking.
10	Power supply terminals	Connection for external power supply (EX510-DYN4, -DYP4).
11	Branch connector	Connector for branch cable (2 pcs.)
12	Marker plate	Label marking for output details.

## 4 Installation

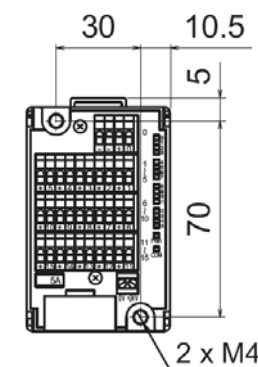
### 4.1 Installation

#### Warning

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

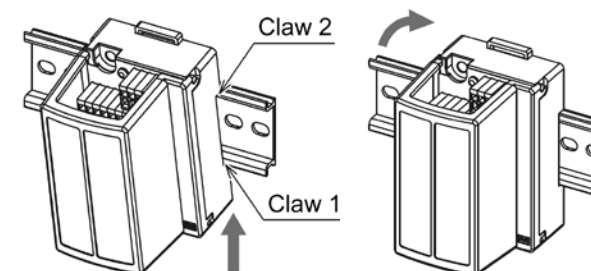
#### • Direct mounting

Install the output unit using 2 x M4 screws.  
Tightening torque: 0.8 N·m.

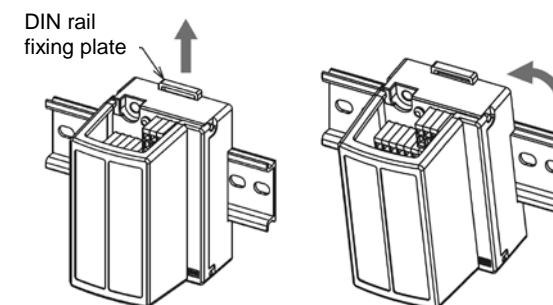


#### • DIN rail mounting

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

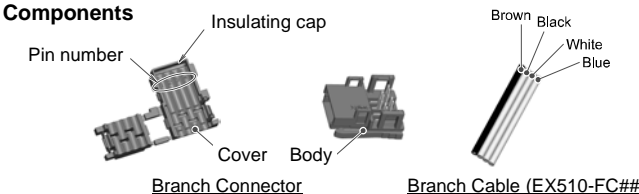
### 5.1 Branch cable wiring

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

#### 5.1.1 Pressure welding the branch connector

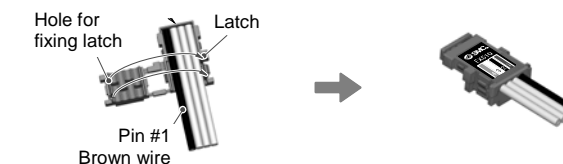
The pressure welding assembly method of the branch connector is described below.

#### • 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

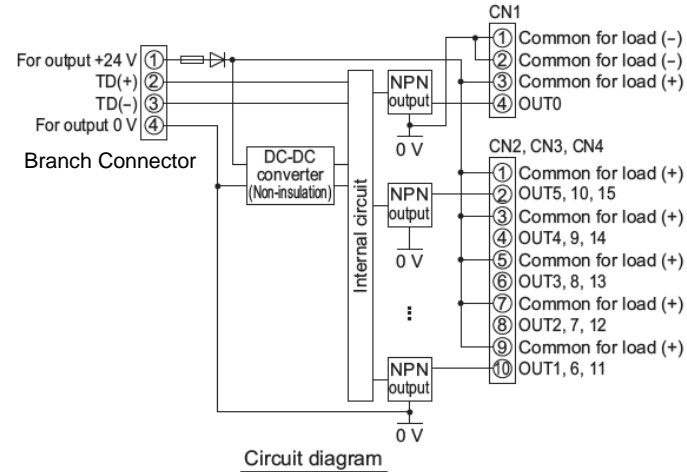
- 1) Tentatively fix the Body. Fit the 4 latches on the body to the 4 ditches in the cover and press them until the latch engages.
- 2) Press fit the cover to the body using suitable pliers.
- 3) Check that all of the 4 latches are fully engaged.



## 5 Wiring (continued)

### 5.2 Internal Circuit and Wiring

#### 5.2.1 EX510-DYN3: NPN output (internal GW power supply)



Terminal connector (CN1)

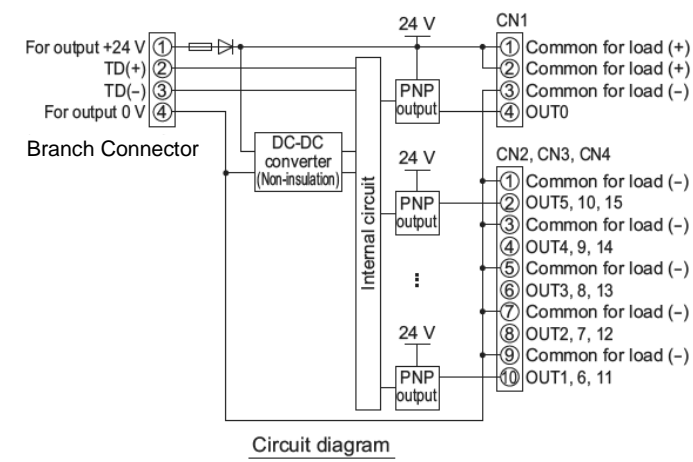
No.	Name	Function
1	COM	Common for load (-)
2	COM	Common for load (-)
3	COM	Common for load (+)
4	Output	OUT0

Terminal connector (CN2, CN3, CN4)

No.	Name	Function		
		CN2	CN3	CN4
1	COM	Common for load (+)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for load (+)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for load (+)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for load (+)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for load (+)		
10	Output	OUT1	OUT6	OUT11

## 5 Wiring (continued)

#### 5.2.3 EX510-DYP3: PNP output (internal GW power supply)



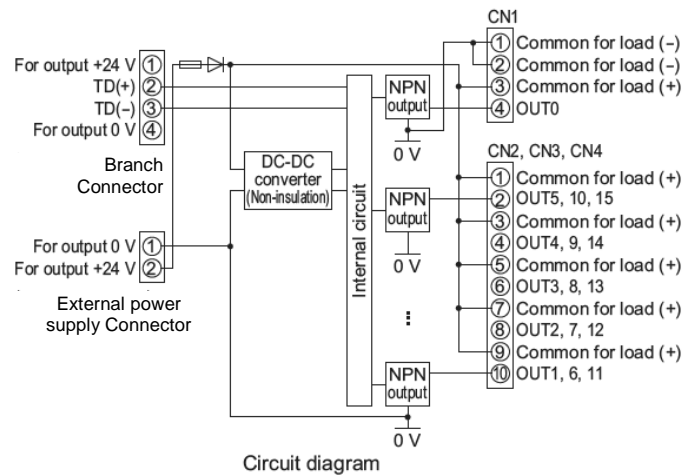
Terminal connector (CN1)

No.	Name	Function
1	COM	Common for load (+)
2	COM	Common for load (+)
3	COM	Common for load (-)
4	Output	OUT0

Terminal connector (CN2, CN3, CN4)

No.	Name	Function		
		CN2	CN3	CN4
1	COM	Common for load (-)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for load (-)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for load (-)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for load (-)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for load (-)		
10	Output	OUT1	OUT6	OUT11

#### 5.2.2 EX510-DYN4: NPN output (external power supply)



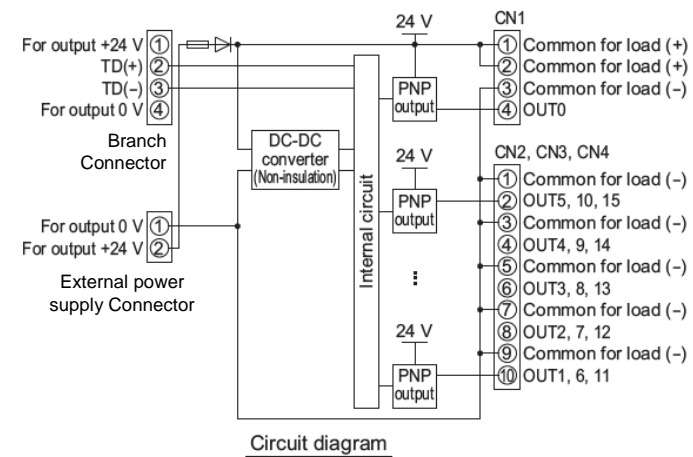
Terminal connector (CN1)

No.	Name	Function
1	COM	Common for load (-)
2	COM	Common for load (-)
3	COM	Common for load (+)
4	Output	OUT0

Terminal connector (CN2, CN3, CN4)

No.	Name	Function		
		CN2	CN3	CN4
1	COM	Common for load (+)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for load (+)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for load (+)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for load (+)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for load (+)		
10	Output	OUT1	OUT6	OUT11

#### 5.2.4 EX510-DYP4: PNP output (external power supply)



Terminal connector (CN1)

No.	Name	Function
1	COM	Common for load (+)
2	COM	Common for load (+)
3	COM	Common for load (-)
4	Output	OUT0

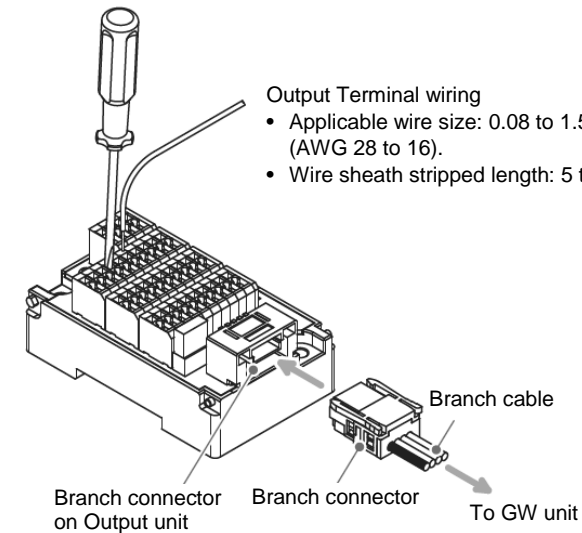
Terminal connector (CN2, CN3, CN4)

No.	Name	Function		
		CN2	CN3	CN4
1	COM	Common for load (-)		
2	Output	OUT5	OUT10	OUT15
3	COM	Common for load (-)		
4	Output	OUT4	OUT9	OUT14
5	COM	Common for load (-)		
6	Output	OUT3	OUT8	OUT13
7	COM	Common for load (-)		
8	Output	OUT2	OUT7	OUT12
9	COM	Common for load (-)		
10	Output	OUT1	OUT6	OUT11

## 5 Wiring (continued)

### 5.3 Connection of Branch cable and Output wiring

- 1) Insert the branch cable into the socket on the Output unit.
- 2) Insert the output wiring after removing the cover as follows:
  - Insert a flat blade screwdriver into the slot in the terminal block connector to the end position.
  - Hold the terminal wire clamp open using the blade of the screwdriver.
  - Insert a wire into the wire entry of the terminal block and pull the screwdriver out to finish.



- Applicable wire size: 0.08 to 1.5mm<sup>2</sup> (AWG 28 to 16).
- Wire sheath stripped length: 5 to 6 mm.
- Stripping the output wire too long might expose a conductor and cause insulation failure, and too short may trap the sheath causing the conductor to be unclamped or clamped improperly, resulting in contact failure or disconnection of the wire.
- The flat blade screwdriver should have a 2.5 mm x 0.4 mm blade end width to hold the clamp open.

## 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](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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