



ORIGINAL INSTRUCTIONS

Instruction Manual

Fieldbus device – Analogue unit

56-EX600-AXA-X10, 56-EX600-AYA-X10

56-EX600-AMB-X10

56-EX600-AXA-X10  
II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C  
II 3D Ex tc IIIC T66°C Dc IP67

56-EX600-AYA-X10  
II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C  
II 3D Ex tc IIIC T67°C Dc IP67

56-EX600-AMB-X10  
II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C  
II 3D Ex tc IIIC T76°C Dc IP67

The intended use of the analogue input and output unit is to connect I/O devices to the SI unit for the control of pneumatic valves.

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>(1)</sup>, and other safety regulations.

<sup>(1)</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.

Ex Marking Description	
II 3G Ex ec IIC T4 Gc -10°C ≤ Ta ≤ 50°C II 3D Ex tc IIIC T66°C Dc IP67	
Equipment Group II Category 3 Gas (G) and Dust (D) environment Ex - European standards apply ec – Increased safety IIC - for all types of gas T4 - Temperature classification	tc - protected by enclosure IIIC - for all types of dust T66°C - Max. surface temperature Gc/Dc - Equipment Protection Level Ta - ambient temperature IP67 - Protection structure

Based on the conformity assessment carried out by SMC Corporation.

Certificate Number: SMC 20.0009 X

1 Safety Instructions (continued)

If the Certificate number includes an X, special conditions for safe use apply as follows:-

- Protect the product from sources of heat which can generate surface temperatures greater than the temperature classification.
- Protect the product and cable connections against all impact or mechanical damage using a suitable Ex compliant enclosure.
- Protect the product from direct sunlight or UV light using a suitable protective cover.
- Do not disconnect the M12 connectors before first switching OFF the power supply.
- Use only Ex approved connectors and use shielded cable to provide grounding.
- Use only a damp cloth to clean the product to avoid an electrostatic charge.

2 Specifications

- General specifications

Item	Specifications
Ambient temperature	-10 to +50 °C
Ambient humidity	35 to 85%RH (No condensate)
Ambient storage temperature	-20 to +60 °C
Withstand voltage	500 VAC applied for 1 minute
Insulation resistance	500 VDC, 10 MΩ or more

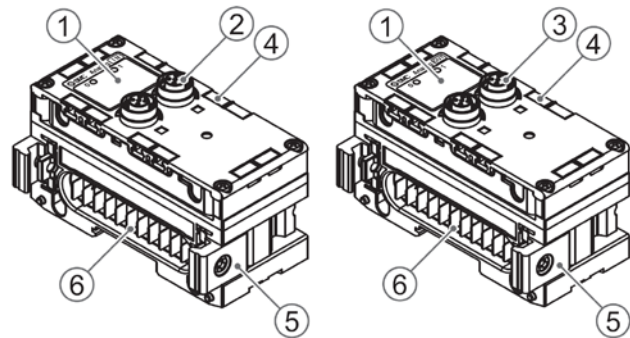
- Electrical specifications

Model	56-EX600-AXA	56-EX600-AYA	56-EX600-AMB
Power supply for control and input	24 VDC 2.0 A max.		
Power supply for outputs.	-	24 VDC 2.0 A max.	
No. of inputs	2	-	2
No. of outputs	-	2	2
Input signal range	-10 V to 10 V -20 mA to 20 mA	-	0 V to 10 V 0 mA to 20 mA
Output signal range	-	0 V to 10 V 0 mA to 20 mA	0 V to 10 V 0 mA to 20 mA
Max. Sensor supply current	0.5 A / channel	-	0.5 A / channel
Max. Load current	-	0.5 A / channel	0.5 A / channel
Linearity (25 °C)	±0.05% F.S.		
Repeatability (25 °C)	±0.15% F.S.		
Current consumption	70 mA max.	70 mA max.	100 mA max.
Protective function	Short circuit protection		

3 Name and function of Individual parts

56-EX600-AXA-X10 (input)

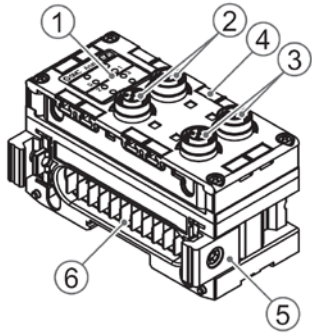
56-EX600-AYA-X10 (output)



No	Part	Description
1	LED display	Displays the status of the unit.
2	Connector (input)	Connector for Analogue Inputs.
3	Connector (output)	Connector for Analogue Outputs.
4	Marker groove	Groove for identification marker.
5	Joint bracket	Bracket for joining to adjacent units.
6	Unit connector	Connector for signal/power to next unit.

3 Name and function of Individual parts (continued)

56-EX600-AMB-X10 (I/O)



No	Part	Description
1	LED display	Displays the status of the unit.
2	Connector (input)	Connector for Analogue Inputs.
3	Connector (output)	Connector for Analogue Outputs.
4	Marker groove	Groove for identification marker.
5	Joint bracket	Bracket for joining to adjacent units.
6	Unit connector	Connector for signal/power to next unit.

4 Assembly

4.1 Assembling the unit

Warning

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

- (1) Connect an I/O unit to the end plate. Digital and analogue units can be connected in any order. Joint bracket screw tightening torque: 1.5 to 1.6 N•m.

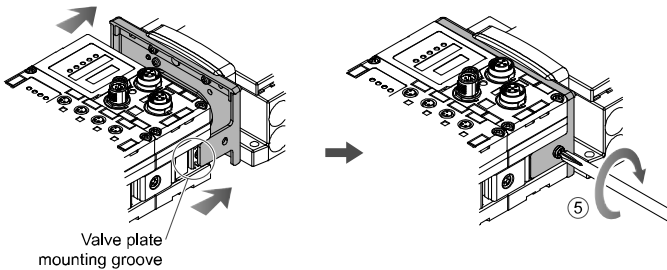
- (2) Add more I/O units. Up to 9 I/O units can be connected to one manifold.

- (3) Connect the SI unit. After connecting the required I/O units, connect the SI unit. The connection method is as above.

- (4) Mount the valve plate (EX600-ZMV#) to the valve manifold using the valve screws (M3 x 8) supplied. (Tightening torque: 0.6 to 0.7 N•m).

- (5) Connect the SI unit assembly to the valve manifold. Insert the valve plate into the valve plate mounting groove.

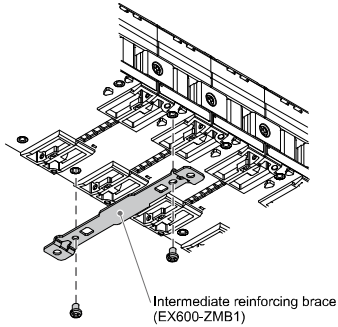
Then fix using the valve plate mounting screws (M4 x 6) supplied (Tightening torque: 0.7 to 0.8 N•m).



5 Installation

• Direct mounting

- (1) When assembling six or more units, the middle part of the assembly must be fitted with an intermediate reinforcing brace (EX600-ZMB1) before mounting using 2-M4x5 screws (Tightening torque: 0.7 to 0.8 N•m).

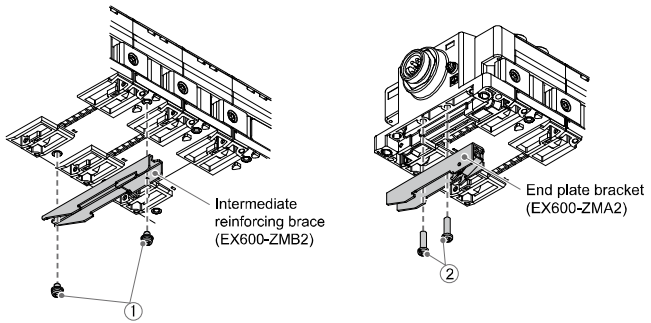


- (2) Mount and tighten the end plate at one end of the unit and mount the intermediate reinforcing brace if required using M4 screws (Tightening torque: 0.7 to 0.8 N•m). Fix the end plate at the valve side while referring to the operation manual for the applicable valve series.

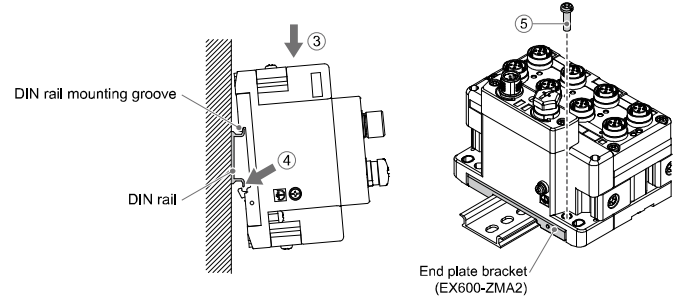
• DIN rail mounting

- (1) When assembling six or more units, the middle part of the complete assembly must be fitted with an intermediate reinforcing brace for DIN rail mounting (EX600-ZMB2), using 2-M4 x 6 screws. (Tightening torque: 0.7 to 0.8 N•m).

- (2) Mount the end plate bracket (EX600-ZMA2) to the end plate using 2-M4 x 14 screws (Tightening torque: 0.7 to 0.8 N•m). For the SY series, use end plate bracket (EX600-ZMA3).



- (3) Hook the DIN rail mounting groove on to the DIN rail.
- (4) Press the manifold using its side hooked to the DIN rail as a fulcrum until the manifold is locked onto the DIL rail.
- (5) Fix the manifold by tightening the DIN rail fixing screws (M4 x 20) on the end plate bracket (Tightening torque: 0.7 to 0.8 N•m).

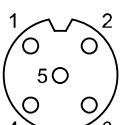


Refer to the Operation Manual for the applicable valve series on the SMC website (URL: <https://www.smcworld.com>) for the mounting method of the valve manifold.

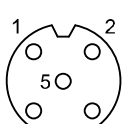
5 Installation (continued)

5.1 Wiring connections

- Analogue Input and Output unit

Connector	Pin No.	Signal name	
		56-EX600-AXA Analogue Input	56-EX600-AYA Analogue Output
	1	24 V (control and input)	24 V (output)
	2	Input +	Output
	3	0 V (control and input)	0 V (output)
	4	Input -	0 V (output)
	5	FE	FE
M12 5-pin			

- Analogue I/O unit

Connector	Pin No.	Signal name	
		56-EX600-AMB Analogue I/O	
		Input connector	Output connector
	1	24 V (control and input)	24 V (output)
	2	Input +	Output
	3	0 V (control and input)	0 V (output)
	4	Input -	0 V (output)
	M12 5-pin	5	FE

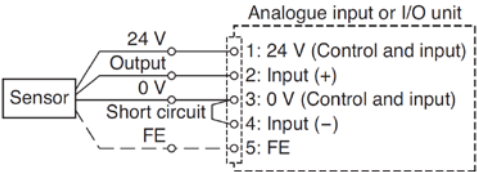
The M12 connector cable for fieldbus and power supply connections has two types, Standard M12 and SPEEDCON compatible. If both plug and socket have SPEEDCON connectors, the cable can be inserted and connected by turning it a 1/2 rotation. A standard connector can be connected to a SPEEDCON connector.

Warning

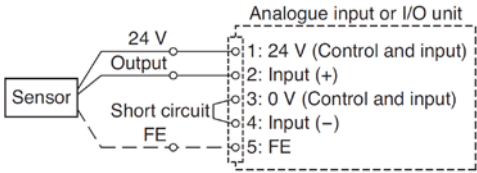
- Be sure to fit a seal cap (EX9-AWTS) on any unused connectors. Proper use of the seal cap enables the enclosure to maintain IP67 specification.

5.2 Examples of wiring input devices

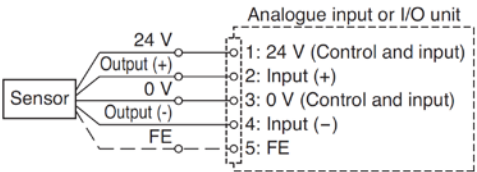
- When using a sensor with analogue output signal of 0 V.



- When using a 2-wire current output sensor.



- When using a differential output sensor.

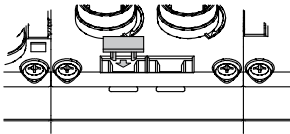


Note!  
The Analogue input unit has a differential input based on pin-2 (input+) and pin-4 (input-). When using an analogue sensor which is not a differential type, pin-3 and pin-4 must be connected together externally.

5 Installation (continued)

5.3 Identification marker

The signal name of the input or output devices and unit address can be written on the marker and can be installed on each unit. Mount a marker (EX600-ZT1) into the marker groove as required.



5.4 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

6 LED Display

- Analogue Input unit

LED	Description
OFF	Power supply for control and input is OFF.
Green LED ON	The product is operating normally.
0 and 1 Red LED ON	<ul style="list-style-type: none"><li>The analogue input current has exceeded the upper or lower limit</li><li>The range has been set for current input type, and a voltage input device is connected.</li></ul>
Red LED flashing	<ul style="list-style-type: none"><li>The upper or lower limit of the range is exceeded.</li><li>The upper or lower limit of the measuring value (with user setting value) is exceeded.</li></ul>

- Analogue Output unit

LED	Description
OFF	Power supply for control and input is OFF.
Green LED ON	The product is operating normally.
Red LED ON	The output device has a short circuit.
Red LED flashing	The upper or lower limit of the measuring value (with user setting value) is exceeded.

- Analogue I/O unit

LED	Description
OFF	Power supply for control and input is OFF.
Green LED ON	The product is operating normally.
0 and 1 Red LED ON	<div>Input</div> <ul style="list-style-type: none"><li>The analogue input current has exceeded the upper or lower limit</li><li>The range has been set for current input type, and a voltage input device is connected.</li></ul>
Red LED flashing	<div>Input</div> <ul style="list-style-type: none"><li>The upper or lower limit of the range is exceeded.</li><li>The upper or lower limit of the measuring value (with user setting value) is exceeded.</li></ul> <div>Output</div> <div>The upper or lower limit of the measuring value (with user setting value) is exceeded.</div>

7 How to Order

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

8 Outline Dimensions (mm)

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

9 Maintenance

9.1 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.

10 Limitations of Use

10.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

11 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.

12 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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