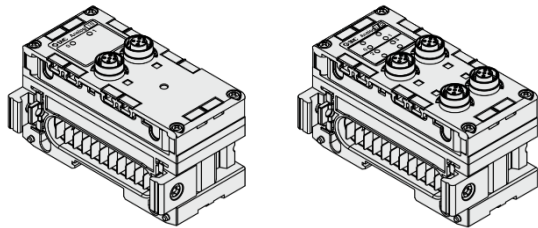




ORIGINAL INSTRUCTIONS

Instruction Manual  
Fieldbus device – Analogue unit  
EX600-AXA / EX600-AYA / EX600-AMB



The intended use of the analogue input, output and I/O unit is to connect I/O devices to an 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>\*)</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.

2 Specifications

2.1 General specifications

Item	Specifications
Ambient temperature	-10 to +50 °C
Storage temperature	-20 to +60 °C
Ambient humidity	35 to 85%RH (No condensate)
Withstand voltage	500 VAC applied for 1 minute
Insulation resistance	500 VDC, 10 MΩ or more
Enclosure rating	IP67
Weight	300 g approx.

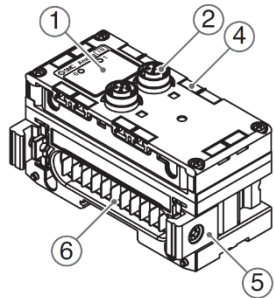
2 Specifications (continued)

2.2 Electrical specifications

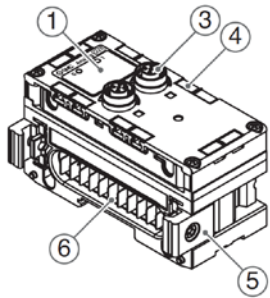
Model	EX600-AXA	EX600-AYA	EX600-AMB
Power supply for control and input	24 VDC, 2 A max.		
Power supply for outputs.	-	24 VDC, 2 A max.	
No. of inputs	2	-	2
No. of outputs	-	2	2
Input signal range	-10 V to 10 V -20 mA to 20 mA	-	0 V to 10 V 0 mA to 20 mA
Output signal range	-	0 V to 10 V 0 mA to 20 mA	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 parts

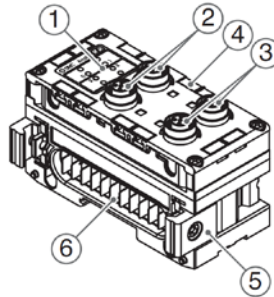
EX600-AXA (Input unit)



EX600-AYA (Output unit)



EX600-AMB (Input / Output unit)



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.

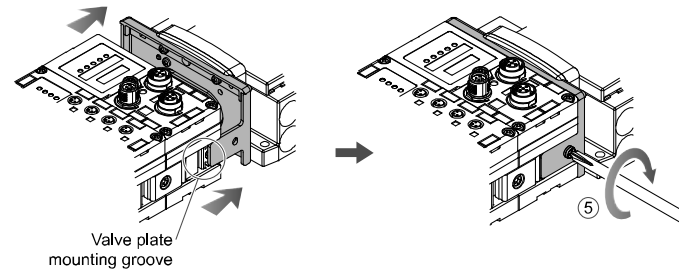
4 Assembly

4.1 Assembling the unit

**Warning**

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

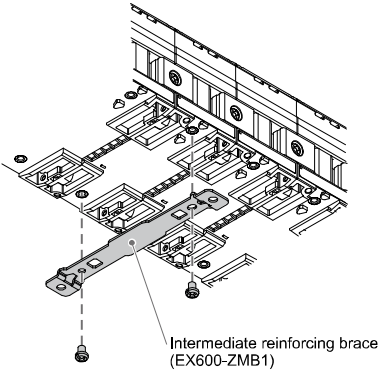
- (1) Connect an I/O unit to the end plate. Digital and analogue units can be connected in any order. Joint bracket screw tightening torque: 1.5 to 1.6 N•m.
- (2) Add more I/O units. Up to 9 I/O units can be connected to one manifold.
- (3) Connect the SI unit. After connecting the required I/O units, 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).

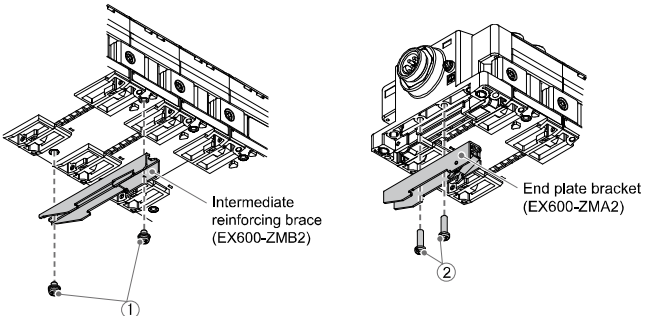


- (2) Mount and tighten the end plate at one end of the unit and mount the intermediate reinforcing brace if required using M4 screws (Tightening torque: 0.7 to 0.8 N•m). Fix the end plate at the valve side while referring to the operation manual for the applicable valve series.

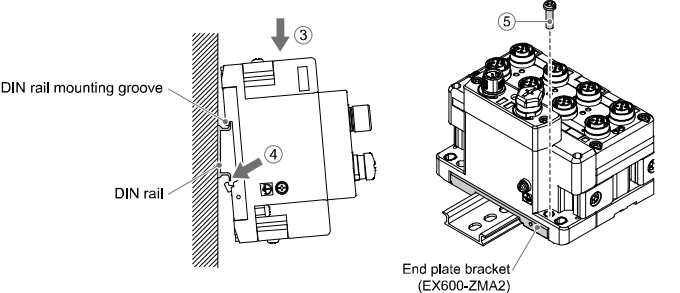
5 Installation (continued)

• 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).



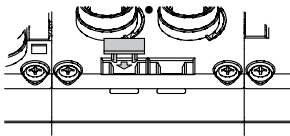
- (3) Hook the DIN rail mounting groove on to the DIN rail.
- (4) Press the manifold using its side hooked to the DIN rail as a fulcrum until the manifold is locked onto the DIN rail.
- (5) Fix the manifold by tightening the DIN rail fixing screws (M4 x 20) on the end plate bracket (Tightening torque: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

5.1 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.



5.2 Environment

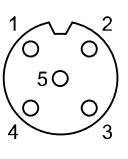
**Warning**

- 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.

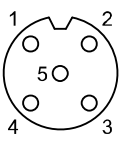
6 Wiring

6.1 Wiring connections

- Analogue Input and Output unit

Connector	Pin No.	Signal name	
		EX600-AXA Analogue Input	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

- Analogue I/O unit

Connector	Pin No.	Signal name	
		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)
	5	FE	FE

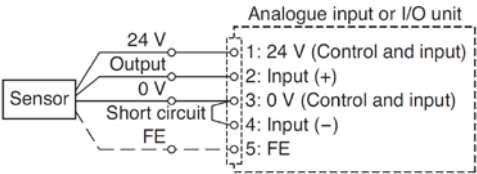
The M12 connector cable for fieldbus and power supply connections has two types, Standard M12 and SPEEDCON compatible. If both plug and socket have SPEEDCON connectors, the cable can be inserted and connected by turning it a 1/2 rotation. A standard connector can be connected to a SPEEDCON connector.

Warning

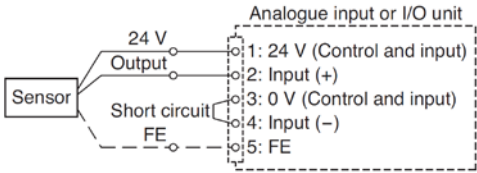
- Be sure to fit a seal cap (EX9-AWTS) on any unused connectors. Proper use of the seal cap enables the enclosure to maintain IP67 specification.

6.2 Examples of wiring input devices

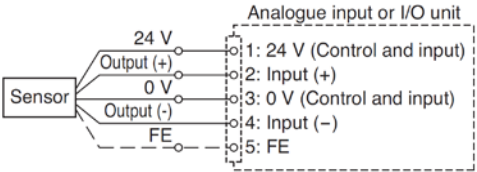
- When using a sensor with analogue output signal of 0 V.



- 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 2-pin (input+) and 4-pin (input-). When using an analogue sensor which is not a differential type, pin 3-pin and 4-pin must be connected together externally.

7 LED Display

7.1 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>

7.2 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.

7.3 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	Input	<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	Input	<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>
	Output	The upper or lower limit of the measuring value (with user setting value) is exceeded.

8 How to Order

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

9 Outline Dimensions (mm)

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

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 Limitations of Use

11.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

12 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.

13 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)  
SMC Corporation, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan  
Specifications are subject to change without prior notice from the manufacturer.  
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