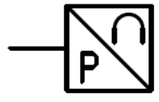
ORIGINAL INSTRUCTIONS

Instruction Manual

Pressure Sensor for General Fluids

PSE560 / PSE561 / PSE563 / PSE564



The intended use of the pressure sensor is to measure the pressure of general fluids and provide an analogue output signal.

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) [*1)], and other safety regulations.

[*1)] 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

- **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.

- Special products (-X) might have specifications which are different from those shown in the Specifications section. Contact SMC for specific drawings.

2 Specifications

2.1 General Specifications

Model	PSE560	PSE561	PSE563	PSE564
Rated Pressure range	0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa	0 to 500 kPa
Extended analogue output range	-0.1 to 0 MPa	10.1 to 0 kPa	-	-50 to 0 kPa
Withstand Pressure	1.5 MPa	500 kPa	500 kPa	750 kPa
Temperature Characteristics	±2% F.S. (0 to 50°C at 25°C) ±3% F.S. (-10 to 60° C at 25°C)			

2.2 Electrical and Environmental specifications

Model		PSE56#-#	PSE56#-#-28
Applicable fluid		Gas or liquid that will not corrode stainless steel 316L	
Electrical	Power supply voltage	12 to 24 VDC ±10% (with 10% max. voltage ripple)	
	Current consumption	10 mA or less	-
	Protection	Protected against reverse connection	
Analogue Output	Output specification	Voltage output: 1 to 5 V (rated pressure range) 0.6 to 1 V (extended analogue output range) Output impedance: approx. 1 kΩ	Current output: 4 to 20 mA (rated pressure range) Maximum Load impedance: 500 Ω (at 24 VDC) 100 Ω (at 12 VDC)
	Accuracy (at 25°C)	±1% F.S. (rated pressure range) ±3% F.S. (extended analogue output range)	
Linearity		±0.5% F.S.	
Repeatability		±0.2% F.S. (at 25°C)	
Power supply voltage effect		±0.3% F.S.	
Environmental	Enclosure	IP65	
	Withstand voltage	250 VAC, 1 minute (between lead block and housing)	
	Insulation resistance	50 MΩ or more at 50 VDC (between lead block and housing)	
	Ambient temperature	Operation: -10 to 60°C Storage: -20 to 70°C (no condensation or freezing)	
	Ambient humidity	Operation, Storage: 35 to 85% RH (no condensation)	

2.3 Piping Specification

Model	01	02	C01	N01	N02	A2	B2
Port size	R1/8 M5x0.8	R1/4 M5x0.8	Rc1/8	NPT1/8 M5x0.8	NPT1/4 M5x0.8	URJ1/4	TSJ1/4
Materials of parts in contact with fluid	Housing: C3604 + nickel plated, Piping port / pressure sensor: Stainless steel 316L						
Weight with cable	200 g	108 g	194 g	102 g	201 g	109 g	
Weight without cable	187 g	95 g	203 g	111 g	193 g	101 g	

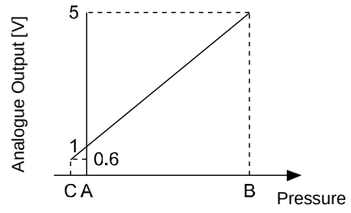
2.4 Cable Specification

Cable details	PSE56#-#: 3 cores + air tube PSE56#-#-28: 2 cores + air tube
Wire cross section	0.2 mm^2
Insulator O/D	1.12 mm
Sheath material	Oil resistant heavy-duty vinyl chloride
Sheath outside diameter	Ø5.1 mm
Cable Length	3 m

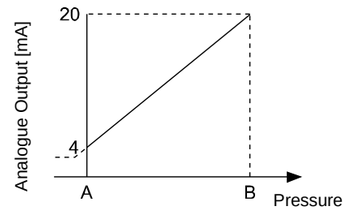
2 Specifications (continued)

2.5 Analogue Output

1 to 5 VDC



4 to 20 mA



Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound	-100 to 100 kPa	-100 kPa	100 kPa	-
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa
	0 to 500 kPa	0	500 kPa	-50 kPa

3 Installation

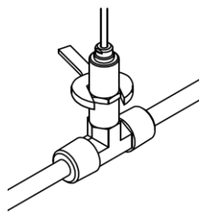
Warning

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

3.1 Piping

Caution

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.
- Only fluids which are non-corrosive to stainless steel 316L should be used.
- When piping, apply a spanner to the piping section on the sensor.



Nominal Thread size	Tightening torque (N.m)
R1/8, NPT1/8, Rc1/8	7 to 9
R1/4, NPT1/4, URJ1/4, TSJ1/4	12 to 14

3 Installation (continued)

3.2 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’s specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product’s specifications.

3.3 Lubrication

Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to the product catalogue for details.

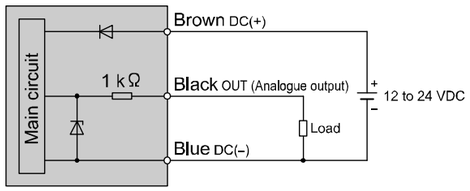
4 Wiring

4.1 Internal circuit and wiring

- Output specification

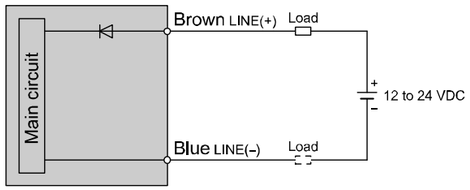
PSE56#-#

Voltage output: 1 to 5 V
Output impedance: Approx. 1 kΩ



PSE56#-#-28

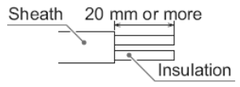
Current output: 4 to 20 mA
Allowable load impedance: 500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



4 Wiring (continued)

4.2 Attaching a sensor connector to the lead wire

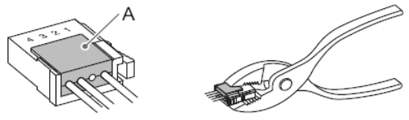
- The sensor wire sheath should be stripped as shown in the figure.
- Do not cut the insulation.



- The corresponding wire colour shown in the table should be pushed fully into the correct pin number marked on the sensor connector.

Pin No.	Wire colour	
	PSE56#	PSE56#-28
1	Brown (DC+)	Brown (LINE(+))
2	N.C.	N.C.
3	Blue (DC-)	N.C.
4	Black (IN: 1 to 5 V)	Blue (LINE(-))

- Check that the above preparation has been performed correctly, then press part A by hand to make a temporary connection.
- Press part A fully home using a suitable tool.



- The sensor connectors cannot be re-used once they have been pressed fully closed. If connection failure or incorrect wiring occurs a new sensor connector must be used.
- When connecting the sensor to a PSE200 / PSE300 series monitor, use the connector for sensor lead wire (ZS-28-C) or an e-Con* connector from the table below.

Manufacturer	Model No.
Sumitomo 3M	37104-3101-000FL
Tyco Electronics	1473562-4
OMRON	XN2A-1430

* Refer to the manufacturers e-Con connector catalogue.

5 How to Order

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

6 Outline Dimensions (mm)

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

7 Maintenance

7.1 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.

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 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)
SMC Corporation, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN

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