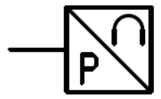
PSE540-TF2Z039EN

ORIGINAL INSTRUCTIONS

Instruction Manual
Compact Pressure Sensor
PSE540 / PSE541 / PSE543



The intended use of the pressure sensor is to measure the pressure of 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 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 the product catalogue, operation manual and handling precautions for SMC products for additional information.
- Keep this manual in a safe place for future reference.
- To ensure safety of personnel and equipment the safety instructions in this manual must be observed, along with other relevant safety practices.

⚠ **Caution**	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
⚠ **Warning**	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
⚠ **Danger**	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious 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.

2 Specifications

2.1 General Specifications

Model		PSE540(A)	PSE541(A)	PSE543(A)
Rated Pressure range		0 to 1 MPa	0 to -101 kPa	-100 to 100 kPa
Extended Analogue output range		-0.1 to 0 MPa	10.1 to 0 kPa	-
Withstand pressure		1.5 MPa	500 kPa	
Applicable fluid		Air, inert gases and incombustible gases		
Power supply voltage		12 to 24 VDC ±10% (with 10% max. voltage ripple)		
Current consumption		15 mA or less		
Protection		Protected against reverse connection		
Analogue output specification		1 to 5 VDC (rated pressure range) 0.6 to 1 VDC (extended analogue output range) Output impedance: Approx. 1 kΩ		
Accuracy (at 25°C)	PSE54#	±2% F.S. (rated pressure range) ±5% F.S. (extended analogue output range)		
	PSE54#A	±1% F.S. (rated pressure range) ±3% F.S. (extended analogue output range)		
Linearity		±0.7% F.S.	±0.4% F.S.	
Repeatability		±0.2% F.S.		
Temperature characteristics		±2% F.S. (at 25°C)		
Environmental	Enclosure	IP40		
	Ambient temperature	Operation: 0 to 50°C Storage: -20 to 70°C (no condensation or freezing)		
	Ambient humidity	Operation, Storage: 35 to 85% RH (no condensation)		
	Withstand voltage	1000 VAC or more (50/60 Hz), 1 minute (between lead block and case)		
	Insulation resistance	50 MΩ or more at 500 VDC (between lead block and case)		

2.2 Piping Specification

Model		M3	M5	01	N01	R04	R06	IM5	IM5H
Port size		M3 x0.5	M5 x0.8	R1/8 M5 x0.8	NPT 1/8 M5 x0.8	ϕ4	ϕ6	M5 fem.	M5 fem.
Material of case		Resin: PBT							
Material of fitting		SUS303		C3604BD		PBT			
Materials of parts in contact with fluid		Pressure sensor: Silicon, O ring: NBR							
Weight (kg)	With lead wire	42.4	42.7	49.3	49.3	41.4	41.6	43.3	44.1
	Without lead wire	2.9	3.2	9.8	9.8	1.9	2.1	3.8	4.6

2.3 Cable Specification

Wire Cross section	0.15 mm^2
Wire outside diameter	0.9 mm
Wire Colours	Brown, Blue, Black, White
Sheath material	Oil resistant vinyl chloride
Outside diameter	2.7 x 3.2 mm
Cable Length	3 m

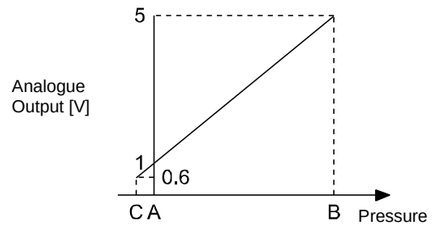
⚠ Warning

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

2 Specifications (continued)

2.4 Analogue Output

1 to 5 VDC



Range	Rated pressure range	A	B	C
For vacuum	0.0 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

3 Installation

⚠ Warning

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

3.1 Piping

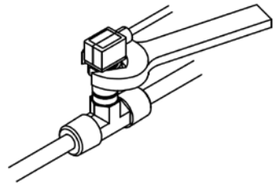
⚠ Caution

- 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.

Thread size	Tightening Torque
R1/8, NPT1/8	7 to 9 N.m
M3	1/4 rotation after tightening by hand
M5	1/6 rotation after tightening by hand

- Only fluids which are non-corrosive to SUS303, C3604BD, and NBR should be used.
- Install the piping correctly in a safe place away from water and dust.
- When piping, apply a spanner to the piping section of the sensor.



- For one touch fittings, insert the tube into the sensor fitting carefully and securely all the way to the bottom.

3.2 Environment

⚠ Warning

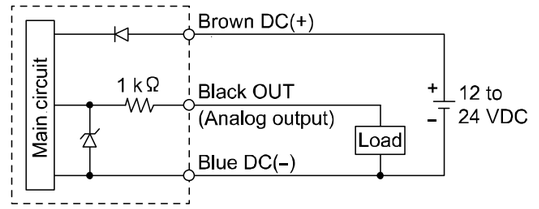
- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product’s specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product’s specifications.

4 Wiring

4.1 Internal circuit and wiring

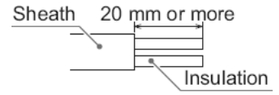
- Output specification

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



4.2 Attaching a sensor connector to the lead wire

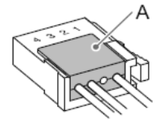
- The sensor wire sheath should be stripped as shown in the figure.
- Do not cut the insulation.

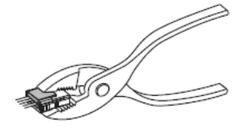


- The corresponding wire colour shown in the table should be pushed fully into the correct pin number marked on the sensor connector.

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

- 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.

Maker	Model No.
Sumitomo 3M	37104-3101-000FL
Tyco Electronics	1-1473562-4
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, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan

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