

Pressure Sensor Operation Manual



PSE53#/54#/550/56#/57# Series

Thank you for purchasing an SMC PSE53#/54#/550/56#/57# Series Pressure Sensor. Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain the operation manual about this product, please refer to the SMC website (URL <https://www.smcworld.com>) or contact SMC directly.

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) and other safety regulations.

- 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.

Operator

- ◆ This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- ◆ Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

Safety Instructions

Warning

- Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.
- Do not operate the product outside of the specifications. Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Verify the specifications before use.
- Do not operate in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. This product is not designed to be explosion proof.
- Do not use the product in a place where static electricity is a problem. Otherwise it can cause failure or malfunction of the system.
- If using the product in an interlocking circuit:
 - Provide a double interlocking system, for example a mechanical system
 - Check the product regularly for proper operation
 - Otherwise malfunction can result, causing an accident.
- The following instructions must be followed during maintenance:
 - Turn off the power supply
 - Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance work
 - Otherwise an injury can result.

Caution

- After maintenance is complete, perform appropriate functional inspections and leak tests. Stop operation if the equipment does not function properly or there is a leakage of fluid. When leakage occurs from parts other than the piping, the product might be faulty. Disconnect the power supply and stop the fluid supply. Do not apply fluid under leaking conditions. Safety cannot be assured in the case of unexpected malfunction.

NOTE

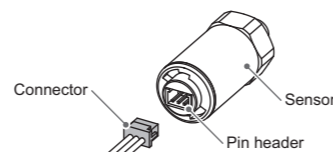
- The direct current power supply to be used should be UL approved as follows: Circuit (of Class 2) which is of maximum 30 Vrms (42.4 V peak), with UL1310 Class 2 power supply unit or UL1585 Class 2 transformer.
- The product is a UL approved product only if it has a mark on the body.
- Do not drop, hit or apply shock to the Pressure Sensor.
- Do not pull the lead wire forcefully, or lift the product by pulling the lead wire.
- Do not use in a place where the product could be splashed by oil or chemicals.
- Wire correctly.
- Do not perform wiring while the power is on.
- Do not route wires and cables together with power or high voltage cables.
- Be sure to ground terminal FG when using a commercially available switch-mode power supply.
- When analogue output is used, install a noise filter (line noise filter, ferrite element, etc.) between the switch-mode power supply and this product.

Mounting and Installation

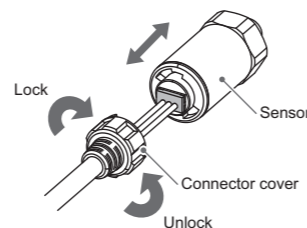
PSE53# series

Connecting the sensor cable

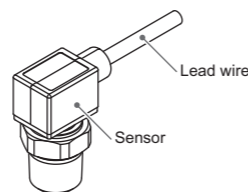
- Insert the connector into the sensor, paying attention to the connector direction.



- The sensor cable includes a connector cover to prevent the connector from falling out.
- Install the connector cover to the sensor, rotating clockwise to lock.
- To remove the sensor cable, rotate the connector cover anti-clockwise to release the lock, and remove connector cover. After removing the cover, pull out the connector.



PSE54# series

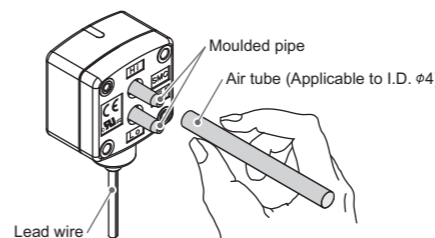


- When piping, apply a spanner to the piping section of the sensor.

PSE550 series

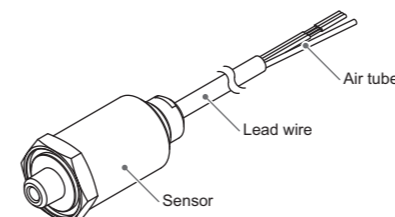
Piping connections

- Cut the tube end perpendicular.
- Insert the tubing to the sensor firmly for 8 mm or more from the end of the moulded pipe. The force necessary for piping insertion is approximately 25 N.
- Insert the air tube for low pressure to Lo piping and the air tube for high pressure to Hi piping.



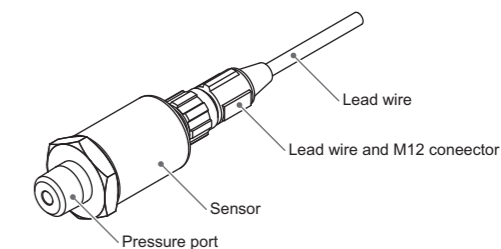
- Do not apply unnecessary forces such as twisting, pulling, moment loads, etc. on fittings or tubing.
- When a tubing from a company other than SMC is used, ensure that the tubing has an internal diameter and tolerance of $\phi 4 \pm 0.3$ mm.

PSE56# series



- Applicable fluid is a fluid that does not corrode SUS316L.
- When piping, apply a spanner to the piping section of the sensor.
- To protect the sensor from water and dust, install an air tube to a safe area.

PSE57# series

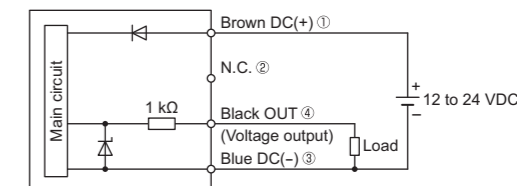


- Applicable fluid is a fluid that does not corrode C3604 + nickel plated, Al2O3 (aluminum oxide) and FKM.
- When piping, apply a spanner to the piping section of the sensor.

Internal circuit and wiring

Output specification

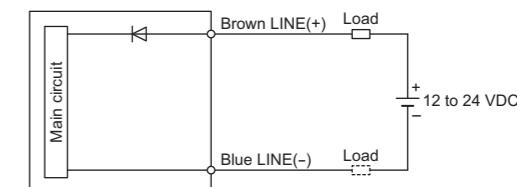
- PSE5##
Voltage output: 1 to 5 V
Output impedance: Approx. 1 k Ω



*: The pin numbers in the diagram indicate the PSE57# series 4 pin connector. All other series have 3 wires.

PSE5##-28

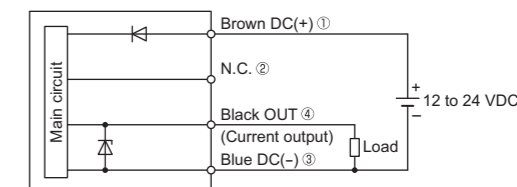
- Current output: 4 to 20 mA
Allowable load impedance: 500 Ω or less (at 24 VDC)
100 Ω or less (at 12 VDC)



*: Install the load either on the LINE(+) or LINE(-) side.
*: The PSE53# and PSE54# series are not available with current output.

PSE57#-28

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



*: The pin numbers in the diagram indicate the PSE57# series 4 pin connector.

Specifications/Outline with Dimensions

Refer to the product catalogue or SMC website (URL <https://www.smcworld.com>) for more information about the product specifications and outline dimensions.

SMC Corporation

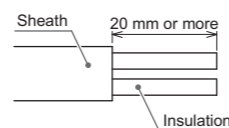
URL <https://www.smcworld.com>
Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: +81 3-5207-8249 Fax: +81 3-5298-5362

Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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Wiring

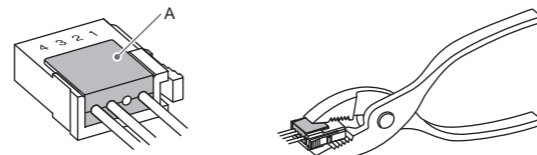
Attaching the connector to the sensor wire

- Strip the sensor wire as shown below.
- Do not cut the insulation.



- Insert the corresponding wire colour shown in the table into the pin number printed on the sensor connector, to the bottom.

| Pin No. | Wire colour | | |
|---------|----------------------|-----------------|------------------------|
| | PSE5## | PSE5##-28 | PSE57#-28 |
| 1 | Brown (DC+) | Brown (LINE(+)) | Brown (DC+) |
| 2 | N.C. | N.C. | N.C. |
| 3 | Blue (DC-) | N.C. | Blue (DC-) |
| 4 | Black (IN: 1 to 5 V) | Blue (LINE(-)) | Black (IN: 4 to 20 mA) |



- Check that the above preparation has been performed correctly, then part A shown should be pressed in by hand to make temporary connection.
- Part A should then be pressed in using a suitable tool, such as pliers.
- The e-con connector cannot be re-used once it has been fully crimped. In cases of connection failure such as incorrect order of wires or incomplete insertion, please use a new connector.
- When connecting the sensor to the PSE200 or PSE300 series, use e-con connector as listed below.

| Series | SMC corporation | Tyco Electronics | Sumitomo 3M | OMRON |
|--------|-----------------|------------------|------------------|-----------|
| PSE53# | | 3-1473562-4 | | |
| PSE54# | ZS-28-C | 1-1473562-4 | 37104-3101-000FL | XN2A-1430 |
| PSE550 | | | | |
| PSE56# | | 1473562-4 | | |
| PSE57# | ZS-28-CA-4 | 2-1473562-4 | 37104-3122-000FL | |

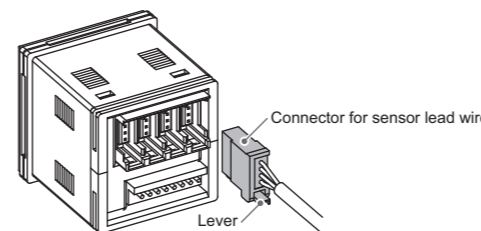
- For information about e-con connectors please consult the manufacturers catalogue.

Controller and applicable sensors

Connecting/Disconnecting

- When mounting the connector, insert it straight into the socket, holding the lever and connector body, and push the connector until the lever hooks into the housing, and locks.
- When removing the connector, press down the lever to release the hook from the housing and pull the connector straight out.

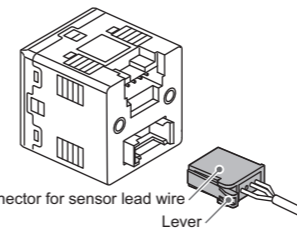
- PSE200A series (PSE5##)



| Pressure range | For compound pressure | For vacuum | For low pressure | For positive pressure |
|----------------------------|--------------------------------------|----------------------------|------------------|--------------------------------------|
| Applicable pressure sensor | PSE533 PSE543 PSE563 PSE573 | PSE531 PSE541 PSE561 | PSE532 | PSE530 PSE540 PSE560 PSE570 |

- PSE300 series (PSE5##)

- PSE310 series (PSE5##-28)



| Pressure range | For compound pressure | For vacuum | For low pressure | For positive pressure | For low differential pressure |
|----------------------------|--------------------------------------|----------------------------|------------------|--------------------------------------|-------------------------------|
| Applicable pressure sensor | PSE533 PSE543 PSE563 PSE573 | PSE531 PSE541 PSE561 | PSE532 | PSE530 PSE540 PSE560 PSE570 | PSE564 PSE574 PSE550 |