

Flow Sensor

Operation Manual



PFMV5

Thank you for purchasing an SMC PFMV5 Series Flow 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 more detailed information about operating this product, please refer to the SMC website (URL <http://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
<ul style="list-style-type: none"> ■ Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.
<ul style="list-style-type: none"> ■ 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.
<ul style="list-style-type: none"> ■ 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.
<ul style="list-style-type: none"> ■ Do not use the product for flammable fluid. A fire or explosion can result. Only air and N₂ are applicable.
<ul style="list-style-type: none"> ■ Do not use the product in a place where static electricity is a problem. Otherwise it can cause failure or malfunction of the system.
<ul style="list-style-type: none"> ■ If using the product in an interlocking circuit: <ul style="list-style-type: none"> • Provide a double interlocking system, for example a mechanical system. • Check the product regularly for proper operation. Otherwise malfunction can result, causing an accident.
<ul style="list-style-type: none"> ■ The following instructions must be followed during maintenance: <ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> ■ Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the product can result.
<ul style="list-style-type: none"> ■ 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 itself may be damaged. Cut off the power supply and stop the fluid supply. Do not apply fluid if the system is leaking. Safety cannot be assured in the case of unexpected malfunction.

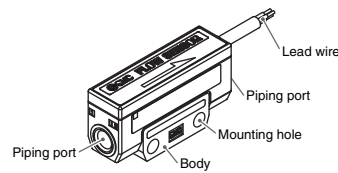
NOTE

- The direct current power supply used should be UL approved as follows
Circuit (class 2) of maximum 30Vrms (42.4 V peak) or less, with UL 1310 class 2 power supply unit or UL 1585 class 2 transformer.
- The product is a approved product only if it has a mark on the body.

Troubleshooting

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about troubleshooting.

Summary of Product parts



Item	Description
Piping port	Connection port for piping.
Body	The body of the product.
Mounting hole	Used to mount the product on a DIN rail or directly to a panel.
Lead wire	Lead wire to supply power and transmit output signals.

Mounting and Installation

Installation

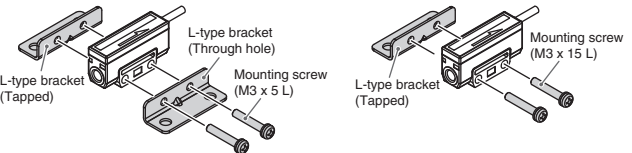
When the product is installed in a vertical direction, a natural convection will be generated due to the sensor characteristics, around the zero flow range, so there is a possibility of approximately 3%F.S. error. Take this into consideration when installing the product.

Direct mounting

- Install the product using the M3 screws (2 pcs.).

Bracket mounting

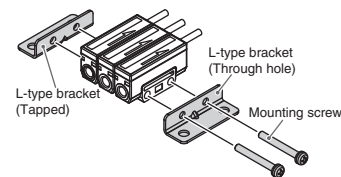
- Mount the bracket using the mounting screws (M3 x 15 L) supplied.
- The required tightening torque is 0.32±0.02 Nm.



- Install the product (with bracket) using the M4 screws (2 pcs. or 4 pcs.).
- Bracket thickness is approximately 1 mm.

Manifold mounting

- Mount the bracket using the mounting screws supplied.
- The required tightening torque is 0.32±0.02 Nm.
- Mounting in series using the mounting brackets is not suitable for all models, depending on which fitting type is used.

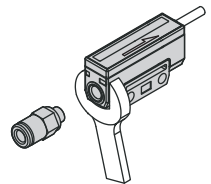


- Install the product (with bracket) using the M4 screws (4 pcs.).
- The bracket thickness is approximately 1 mm.

Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about mounting hole dimensions.

Piping

- Use the recommended fittings for PFMV5 series.
Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about recommended fittings.
- The required tightening torque of the fitting is 1 to 1.5 Nm.
- If the tightening torque is exceeded, the product can be broken. If the tightening torque is insufficient, the fittings may become loose.
- When connecting the piping, hold the specified part of the body with a spanner. Using a spanner on other parts may damage the product.
- Avoid any sealing tape from entering inside the piping.
- Ensure that there is no leakage from loose piping.
- Avoid sudden changes in the piping size on the IN side of the sensor.
- Use this product within the specified operating pressure and temperature ranges.
- Use this product within the rated flow range.
- Proof pressure is 500 kPa.



Wiring

Wiring of connector

- Connections should only be made with the power supply turned off.
- Use separate routes for the product wiring and any power or high voltage wiring.
Otherwise, malfunction may result due to noise.
- Ensure that the FG terminal is connected to ground when using a commercially available switch-mode power supply.
When a switch-mode power supply is connected to the product, switching noise will be superimposed and the product specification can no longer be met. This can be prevented by inserting a noise filter, such as a line noise filter and ferrite core, between the switch-mode power supply and the product, or by using a series power supply instead of a switch-mode power supply.

Lead wire

Colour	Content
Brown	DC(+)
Black	OUT(Analogue output)
Blue	DC(-)

Specifications / Outline with Dimensions

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

SMC Corporation URL <http://www.smcworld.com>

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