



Installation & Maintenance Manual

Flow Sensor

Series PFM5



Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue 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.

This product is class A equipment that is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

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. Otherwise an injury can be caused.

Safety Instructions (Continued)

Caution

- Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the product can result.
- 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 is 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.

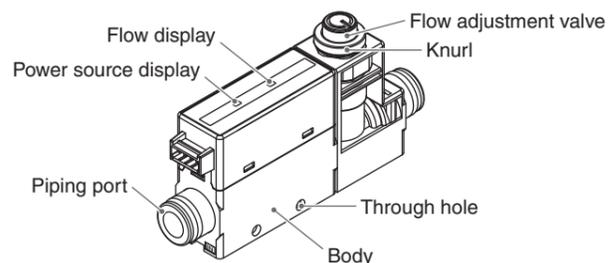
NOTE

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

Model Indication and How to Order

Refer to the operation manual and the product catalogue for more detailed information.

Names and Functions of Individual Parts

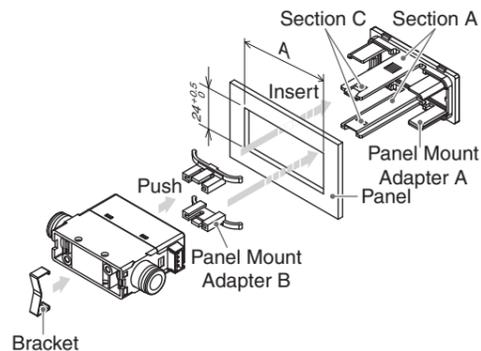


Power source display (green): Turns on when power is supplied.
 Flow display (green): Flashing interval depends on the flow value. As flow increases, flash interval is shortened. The light turns to red when rated flow is exceeded.
 Body: Product itself.
 Flow adjustment valve: Orifice mechanism to adjust the flow.
 Piping port: Connection port for piping.
 Knurl: Used to lock the flow adjustment valve.
 Through hole: Used to mount the product on a DIN rail or a panel directly.

Installation

Panel mounting

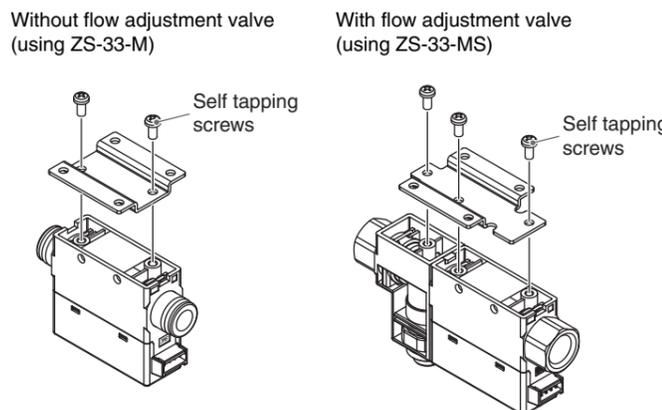
- Insert Panel Mount Adapter B (supplied as an accessory) into Section A of Panel Mount Adapter A.
- Push Panel Mount Adapter B from behind until the display is fixed onto the panel.
- The pin of Panel Mount Adapter B engages the notched part of Panel Adapter C to fix the display.
- The switch can be mounted on a panel with a thickness of 1 to 3.2 mm.
- See the illustration below for panel cut out dimensions.



	Dimension A	Adapter
Without flow adjustment valve	54 ^{+0.5} ₀	ZS-33-J
With flow adjustment valve	74 ^{+0.5} ₀	ZS-33-JS

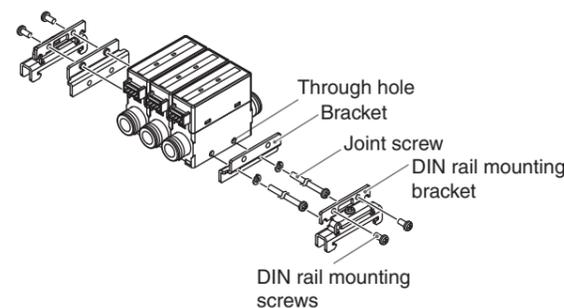
Bracket mounting

- Fasten the bracket mounting screws to a torque of 0.5±0.05 Nm.



DIN rail mounting

- The tightening torque for DIN rail mounting screws and joint screws should be 0.4±0.05 Nm.

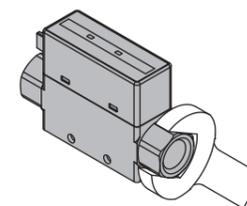


Note) DIN rail mounting is not suitable for models with port type F02: G1/4.

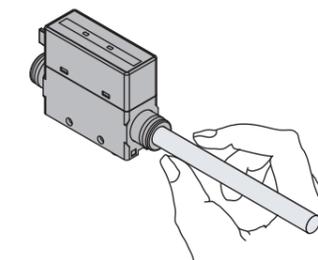
Installation (Continued)

Piping

- Ensure tightening torque is correct when installing piping.
- Refer to the following table for the appropriate torque values.
- Hold the metal part with a spanner when piping.



Nominal size of screws	Appropriate torque Nm
Rc1/8	7 to 9
Rc1/4	12 to 14



- For one-touch fitting, insert the tube to the end so that it cannot be pulled out.
- Insertion with excessive force can cause damage.
- Ensure there is no leakage after piping.
- Use this product within the specified operating pressure range and operating temperature range.
- Withstand pressure is 1.0 MPa.

Wiring

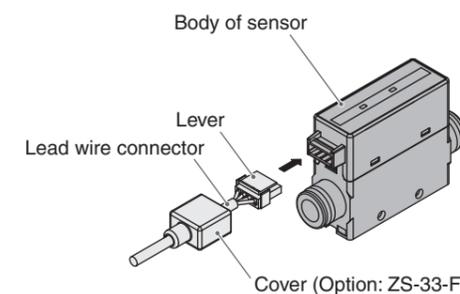
Connection

- Make connection after turning the power off.
- Use a separate route when installing wire. Malfunction stemming from noise may occur if wire is installed in the same route as that of power or high-voltage cable.
- Be sure to ground terminal FG when using a switching regulator obtained on the market. If analogue output is performed connecting to a switching regulator obtained on the market, switching noise will be superimposed and product specification can no longer be met. This can be prevented by inserting a noise filter, such as a line noise filter and a ferrite element, between the switching regulator and the pressure switch, or by using a series power supply instead of a switching regulator.

Connector

Connecting/Disconnecting

- When connecting the connector, insert it straight onto the pin holding the lever and connector body between fingers and lock the connector by pushing the lever claw into the square groove in the body of the sensor.
- When disconnecting the connector, push down the lever by thumb to disengage the lever claw from the square groove. Then pull the connector straight out.



Maintenance

How to reset the product after power cut or de-energizing

The setting of the product will be retained as it was before a power cut or de-energizing.

The output condition is also basically recovered to that before a power cut or de-energizing, but may change depending on the operating environment. Therefore, check the safety of the whole facility before operating the product.

Error Indication Function

This function is to display error location and content when a problem or an error has occurred.

Error Name	Error Display	Error Content	Troubleshooting
Flow Error	 Flow display is red.	Flow exceeds rated flow range.	Apply flow within rated flow range.
System Error	 Power source display is red.	System error. Possible damage of internal circuit.	Turn off the power supply to clear the error. Then supply the power again.

If the error can not be reset after the above measures are taken, then please contact SMC.

Troubleshooting

Refer to the operation manual for this product.

Specification

Refer to the operation manual and the product catalogue for more detailed information.

Outline with Dimensions (in mm)

Refer to the operation manual and the product catalogue for more detailed information.

Contact

AUSTRIA	(43) 2262 62280	NETHERLANDS	(31) 20 531 8888
BELGIUM	(32) 3 355 1464	NORWAY	(47) 67 12 90 20
CZECH REP.	(420) 541 424 611	POLAND	(48) 22 211 9600
DENMARK	(45) 7025 2900	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	SLOVAKIA	(421) 2 444 56725
FRANCE	(33) 1 6476 1000	SLOVENIA	(386) 73 885 412
GERMANY	(49) 6103 4020	SPAIN	(34) 945 184 100
GREECE	(30) 210 271 7265	SWEDEN	(46) 8 603 1200
HUNGARY	(36) 23 511 390	SWITZERLAND	(41) 52 396 3131
IRELAND	(353) 1 403 9000	UNITED KINGDOM	(44) 1908 563888
ITALY	(39) 02 92711		

SMC Corporation

URL <http://www.smcworld.com> (Global) <http://www.smceu.com> (Europe)

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