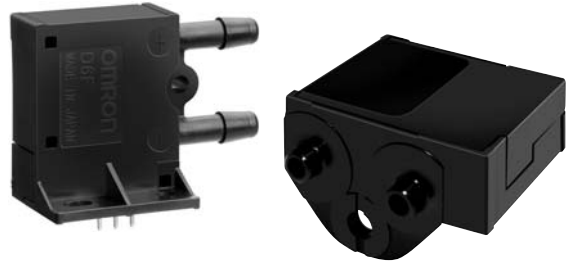


MEMS Flow Sensor

D6F-P

A Compact, High-performance Flow Sensor with Dust Segregation Structure.

- Built in Dust Segregation System (DSS).
- High resolution and repeatability, even at low flow rates.
- Barbed ports with connector or PCB terminals or manifold mount with connector versions.
- Built in voltage regulator, temperature compensation and amplified output.



RoHS Compliant

Application Examples

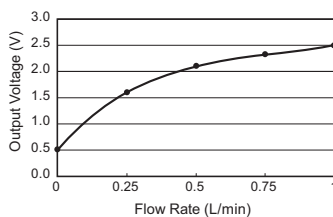
- Building Automation: HVAC
- Medical: Ventilators, CPAP, Anesthesia
- Industrial: Fuel Cell, Process Control, Clogged filter detection

Ordering Information

Model	Case	Calibration Gas (See note 1.)	Flow Range
D6F-P0010A1 (Lead terminals)	PBT	Air (See note 2.)	0-1 LPM
D6F-P0010A2 (Connector)	PBT	Air (See note 2.)	0-1 LPM
D6F-P0010AM2 (Connector manifold mount)	PBT	Air (See note 2.)	0-1 LPM
D6F-CABLE2 (Optional) (A2 and AM2)			

- Note:**
1. Could be calibrated for different gas types. Consult your Omron representative.
 2. Dry gas must not contain large particles, eg dust, oil, mist.

Output Voltage Characteristics



0 to 1L/min (normal) volumetric flow rate at 0 °C, 101.3kPa.

Measurement condition: Power supply voltage 5 ± 0.1 VDC, ambient temperature 25 ± 5 °C and ambient humidity 35 to 75% RH.

Flow Rate (LPM)	0.00	0.25	0.50	0.75	1.00
Output Voltage (VDC)	0.50 ± 0.10	1.60 ± 0.10	2.10 ± 0.10	2.31 ± 0.10	2.50 ± 0.10

Characteristics / Performance

Models	D6F-P0010A1	D6F-P0010A2	D6F-P0010AM2
Flow Range (See note 1.)	0 to 1 L/min.		
Calibration Gas (See note 2.)	Air		
Flow Port Type	barbed fitting maximum outside dia. 4.9 mm		manifold mount
Electrical Connection	Lead terminal	Connector (3 wire)	
Power Supply	4.75 to 5.25 VDC		
Current Consumption	Max. 15 mA (no load, Vcc = 5 VDC)		
Output Voltage	0.5 to 2.5 VDC		
Accuracy	± 5% F.S. max. of detected characteristics at 25 °C (typical test results within +/-2% F.S.)		
Repeatability (See note 3.)	± 0.4% F.S.		
Output Voltage (Max.)	3.1 VDC (Lead resistance 10 kΩ)		
Output Voltage (Min.)	0 VDC (Lead resistance 10 kΩ)		
Rated Power Supply Voltage	10 VDC		
Rated Output Voltage	4 VDC		
Case	PBT		
Degree of Protection	IP40		
Withstand Pressure	50 kPa (7 psi)		
Pressure Drop (See note 3.)	0.19 kPa		0.48 kPa
Operating Temperature	-10 to 60 °C (with no icing or condensation)		
Operating Humidity	35 to 85% RH (with no icing or condensation)		
Storage Temperature	-40 to 80 °C (with no icing or condensation)		
Storage Humidity	35 to 85% RH (with no icing or condensation)		
Temperature Characteristics	± 5% F.S. max. of detected characteristics at 25 °C (within -10 to 60 °C)		
Insulation Resistance	20 MΩ (500 VDC between lead terminal and the case)		
Dielectric Strength	500 VAC, 50/60 Hz for 1 minute. (Leakage current typ. Max. 1mA) between lead terminals and case.		
Weight	8.5 g		8.0 g

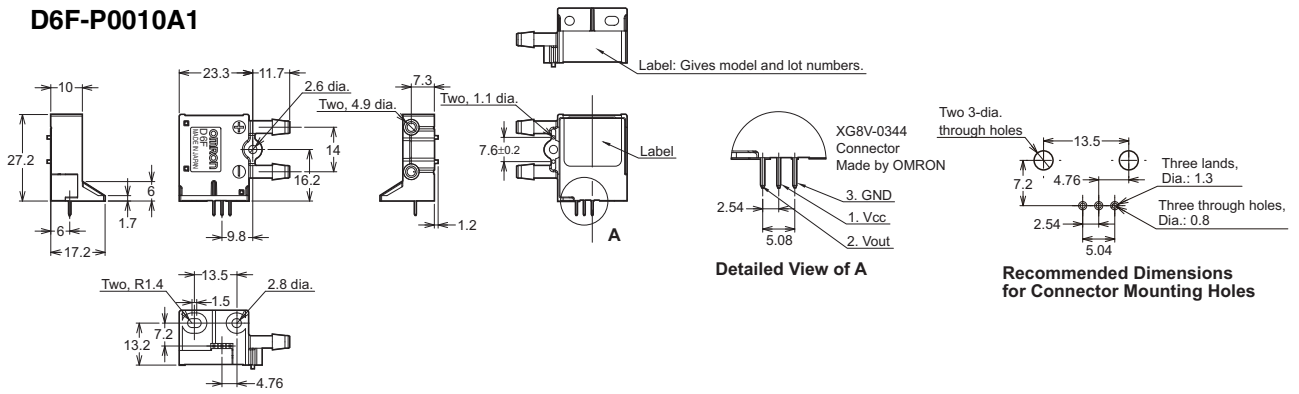
- Note:**
1. 0 to 1 L/min. (normal) volumetric flow rate at 0 °C, 101.3kPa.
 2. Dry gas. (must not contain large particles, eh dust, oil, mist)
 3. Reference (typical)

Connections / Dimensions

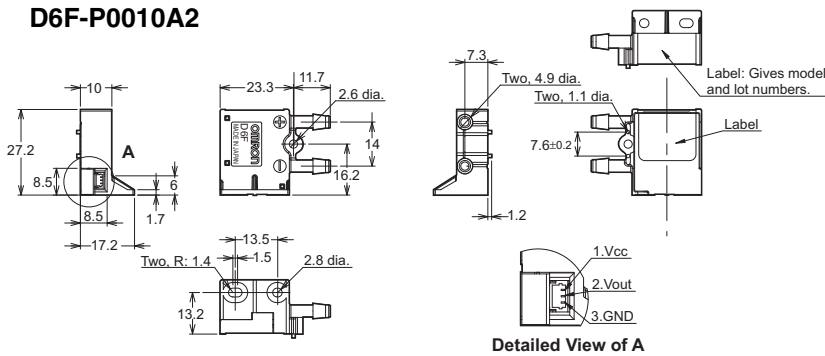
(Unit: mm)

Note: All units are in millimeters unless otherwise indicated.

■ PCB terminals D6F-P0010A1



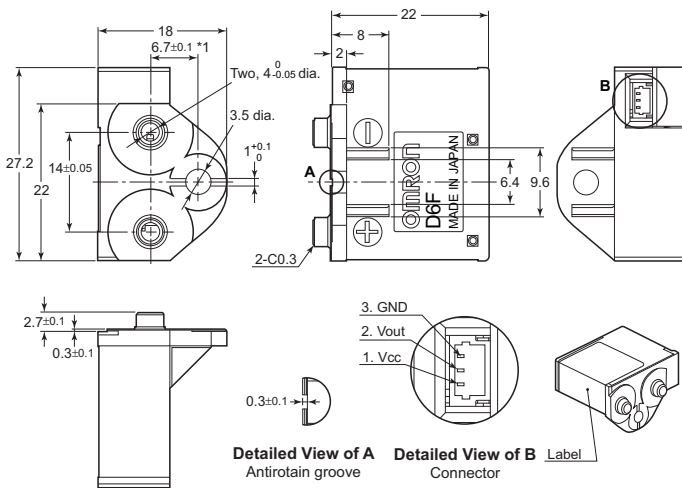
■ Connector D6F-P0010A2



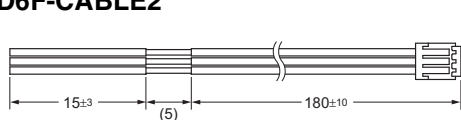
Note: The connector linked to this product should use the following JST Mfg. Co.,Ltd.

- 1) Pressure welding connector
Socket: 03SR-3S
Wire: AWG#30 or
- 2) Crimp type connector
Contact: SSH-003T-P0.2
Wire: AWG#32 to #28
Housing: SHR-03V-S

D6F-P0010AM2

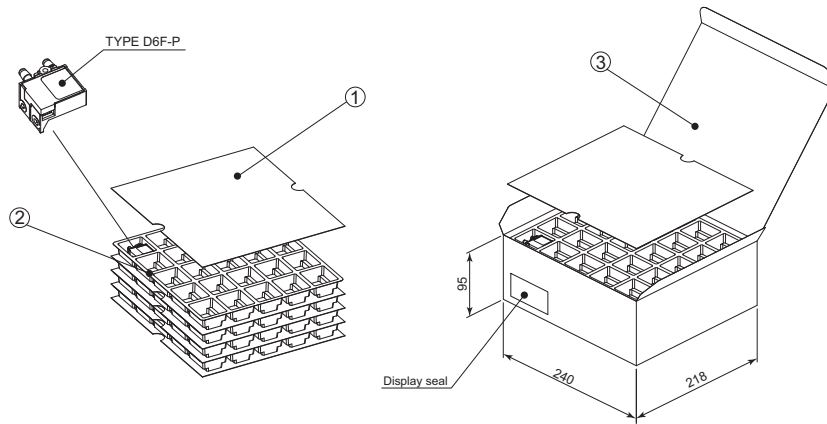


■ CABLE (Optional) D6F-CABLE2



GND - white
Vout - black
Vcc - red

Packaging



No.	Item	Material
1	Sock liner	CCNB
2	Tray (25pcs)	Polyethylene
3	Box (100 pcs)	CCNB

Safety Precautions

■ Caution

The D6F is built for use with general-purpose devices. In particular, when using the D6F for applications with the safety requirements described below, take steps to ensure system and device safety through measures such as fail-safe designs, redundant designs, and regular inspections. The D6F-P is not suitable for: or if that is too strong of a statement, something like:

"Particular attention should be paid to applications including, but not limited to, the following:

- Safety devices for ensuring safety for persons.
- Transportation equipment control (such as applications to stop operation)
- Aviation and space equipment
- Nuclear power equipment

Do not use the D6F for applications in which D6F operation would directly affect human life.

■ Precautions for Correct Use

Fluids, Piping, and Sensor Installation

1. Do not use combustible gas (such as hydrogen) or corrosive gas (such as chlorine, sulfur, acid, or alkali) other than the specified applicable fluids. Doing so may cause product failure.
2. The specified performance may not be obtained if the D6F is used for fluids other than the specified applicable fluids.
3. After removing the Sensor from the package, do not allow foreign particles to enter the piping. Foreign particles in the piping may cause product failure.
4. It is recommended that the pipes be mounted horizontally. If they are not mounted horizontally, an error of $\pm 1\%$ FS or higher may result.
5. Install the Sensor on a flat surface. Incorrect installation may cause malfunctions or may make it impossible to obtain correct measurements.
6. Turn OFF the power supply to the system before installing the Sensor. If the Sensor is installed while the power supply is ON, electric shock or incorrect operation may occur.
7. Always check operation after installing the Sensor.
8. Do not drop the Sensor or disassemble the cover.
9. Depending on the environment and the mounting position, foreign objects, such as dust or dirt, may enter into the Sensor and partially or completely block the flow path. If this occurs, the Sensor may not be able to sufficiently perform as described above. Make sure that you understand how to use the Sensor and test it in advance with the actual equipment with which it is to be used.
10. Install the piping so that the fluid flows in the direction from plus (+) to minus (-). Correct measurements cannot be obtained if the fluid flows in the wrong direction.

<D6F-0010A1/-P0010A2>

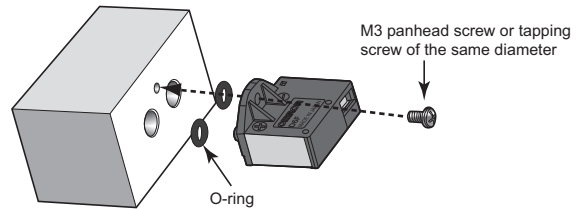
1. When installing the Sensor on a PCB, solder the terminals after first securing the Sensor to the PCB.
2. Install the Sensor using M2.6 panhead screws or tapping screws of the same diameter, and tighten them to a torque of 0.59 N•m maximum.

<D6F-0010AM2>

1. Install the Sensor using M3 panhead screws or tapping screws of the same diameter, and tighten them to a torque of 0.59 N•m maximum.
2. Use O-rings to seal the fluid inlet and outlet sections. (Recommended O-ring: JIS B 2401 bearing number P4 or ISO 3601-1 Dicignation: A0037G)

Installation Example

O-rings are not attached.



Operating Environment

Do not use the Sensor in the following locations:

- Locations subject to direct radiant heat from heating equipment
- Locations subject to water or oil
- Locations subject to direct sunlight
- Locations subject to sudden temperature changes
- Locations where there is a possibility of icing or condensation
- Locations subject to strong vibration or shock

Countermeasures Against Noise

Noise may make it impossible to obtain correct measurements.

Consider the following countermeasures.

- Install the Sensor as far as possible from devices that generate surges or strong high frequencies (such as high-frequency welders and machines).
- Attach surge absorbers or noise filters to noise-generating devices that are near the Sensor (in particular, equipment with inductance, such as motors, transformers, solenoids, and magnetic coils). (It also helps to separate pipes and ducts, and to use shielded cables.)

Power Supply

- Use the applicable connectors. Directly soldering the connection terminals will cause product failure.
- Check the terminal names and polarity and wire the power supply correctly. Incorrect wiring will cause failure of internal components.
- When using a commercially available switching regulator, ground the FG (frame ground) and G (ground) terminals.

■ RoHS Directive

The RoHS mark is displayed on the packing of products for which the six substances banned by the RoHS Directive have been abolished (both in processing and in the electronic components mounted to the PCBs).

Note: RoHS marking may be deleted if it is later determined that parts that were previously treated as RoHS compliant are not compliant due to circumstances at the supplier of the parts.

RoHS Compliance Standards

The following standards are used to determine RoHS compliance for the six banned substances.

- Lead: 1,000 ppm max.
- Hexavalent chromium: 1,000 ppm max.
- Mercury: 1,000 ppm max.
- PBB: 1,000 ppm max.
- Cadmium: 100 ppm max.
- PBDE: 1,000 ppm max.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. A183-E1-02 **In the interest of product improvement, specifications are subject to change without notice.**

OMRON Corporation

Micro Devices H.Q.
Micro Devices Division

686-1 Ichimiyake, Yasu,
Shiga, 520-2326 JAPAN

Tel: (81)77-588-9200/Fax: (81)77-588-9909

Printed in Japan
0210 (0109) (W)