

## MEMS Airflow Sensor

**D6F-10A, -20A, -50A**

**Compact, intelligent sensor featuring MEMS technology for precision mass airflow measurement**

- Precision mass airflow up to 50 LPM
- Stable output across full scale
- Manifold mounting feature with NBR 'O' ring option
- Compact size 78 (L) x 30 (W) x 30 (H) mm
- Low power consumption
- RoHS Compliant



## Ordering Information

| Description              | Case                                 | Applicable Gas | Flow Range** | Connection Type                           | Model        |
|--------------------------|--------------------------------------|----------------|--------------|-------------------------------------------|--------------|
| Mass Flow Sensor         | Thermoplastic resin / Aluminum alloy | Air*           | 0 – 10 LPM   | Right-angle manifold mount connection     | D6F-10A5-000 |
|                          |                                      |                | 0 – 20 LPM   |                                           | D6F-20A5-000 |
|                          |                                      |                | 0 – 50 LPM   |                                           | D6F-50A5-000 |
|                          |                                      |                | 0 – 10 LPM   | Straight RC1/4 (1/4" BSPT) threaded pipe* | D6F-10A6-000 |
|                          |                                      |                | 0 – 20 LPM   |                                           | D6F-20A6-000 |
|                          |                                      |                | 0 – 50 LPM   |                                           | D6F-50A6-000 |
| Cable Connector Assembly | ---                                  | ---            | ---          | ---                                       | D6F-CABLE1   |

**Note:** Cable Assembly is sold separately.

\* Contact Omron for other gases or thread types.

\*\*Mass flow converted to volumetric flow (standard liters per minute) at 0°C and 1 atm.

## Application Examples

- Industrial processes
- Medical Respirators and Ventilators
- MiG and TiG welding systems
- Anesthesia Delivery
- Mass flow controllers
- Scientific / test equipment
- Fuel cell controls

## Rating

### Absolute maximum rating

| Item           | Symbol    | Ratings | Unit |
|----------------|-----------|---------|------|
| Power supply   | $V_{CC}$  | 26.4    | VDC  |
| Output voltage | $V_{OUT}$ | 6       | VDC  |

### Electrical Performance

| Item                  | Term      | Condition                                 | MIN  | MAX  | Unit |
|-----------------------|-----------|-------------------------------------------|------|------|------|
| Power supply          | $V_{CC}$  | —                                         | 10.8 | 26.4 | VDC  |
| Operating temperature | $T_{OPR}$ | No condensation or icing                  | -10  | 60   | °C   |
| Output voltage (max.) | $V_{OH}$  | $V_{CC} = 12$ to 24VDC $I_{OH} = 0.5$ mA  | 5    | 5.7  | VDC  |
| Output voltage (min.) | $V_{OL}$  | $V_{CC} = 12$ to 24VDC $I_{OL} = -0.5$ mA | 0    | 1    | VDC  |

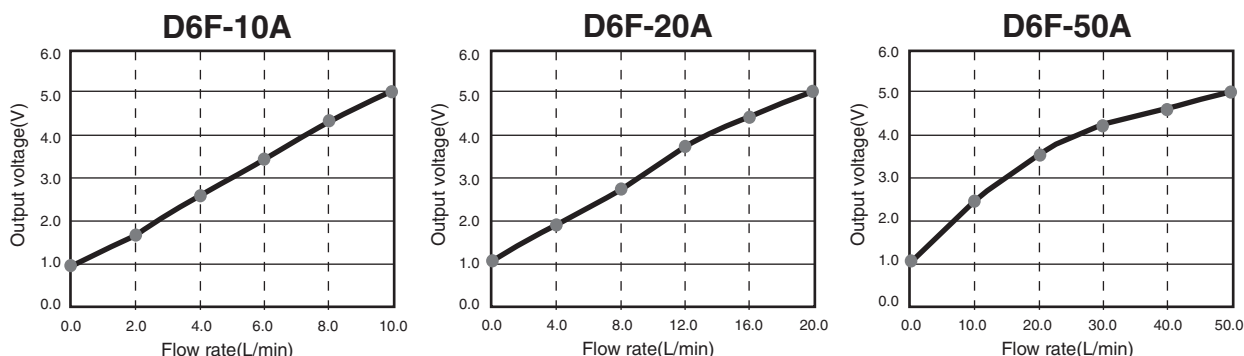
# Characteristics

| Model                         | D6F-10A□-000                                                                                           | D6F-20A□-000 | D6F-50A□-000 |
|-------------------------------|--------------------------------------------------------------------------------------------------------|--------------|--------------|
| Flow rate @ 0°C and 101.3 kPa | 0-10 L/min                                                                                             | 0-20 L/min   | 0-50 L/min   |
| Joint type*                   | Manifold mount with 'O' Ring (A5 type) or Rc 1/4 (1/4" BSPT threaded)(A6 type)**                       |              |              |
| Case material                 | Thermoplastic resin                                                                                    |              |              |
| Applicable Gas**              | Air                                                                                                    |              |              |
| Electrical Connection         | Connector (3 wire)                                                                                     |              |              |
| Withstand Pressure (max.)     | 500 kPa (about 72.5 psi)                                                                               |              |              |
| Accuracy                      | ±3% F.S. max, 25°C                                                                                     |              |              |
| Operating Temperature         | -10 to +60°C (with no icing or condensation)                                                           |              |              |
| Storage Temperature           | -30 to +80°C (with no icing or condensation)                                                           |              |              |
| Operating Humidity            | 85%RH max. (with no icing or condensation)                                                             |              |              |
| Output Signal                 | 1 to 5 VDC, Analog Output (non-linear output)                                                          |              |              |
| Current Consumption           | 15 mA max. (No-Load with $V_{CC} = 12$ to 24 VDC, $V_{SS} = 0V$ and 25°C)                              |              |              |
| Insulation Resistance         | 20MΩ min. at 500 VDC, between lead terminal and case                                                   |              |              |
| Dielectric Strength           | 500 VAC, 50/60 Hz, for 1 minute. (Leakage current typ <1 mA.), between the lead terminals and the base |              |              |
| Response Time (reference)     | 150 mS, typical                                                                                        |              |              |

\* Contact Omron for other thread types (A6)

\*\* Contact Omron for other gases.

## Operating Characteristics



### D6F-10A

| Flow Rate L/min (normal) | 0          | 2          | 4          | 6          | 8          | 10         |
|--------------------------|------------|------------|------------|------------|------------|------------|
| Output Voltage (VDC)     | 1.00 ±0.12 | 1.75 ±0.12 | 2.60 ±0.12 | 3.45 ±0.12 | 4.25 ±0.12 | 5.00 ±0.12 |

### D6F-20A

| Flow Rate L/min (normal) | 0          | 4          | 8          | 12         | 16         | 20         |
|--------------------------|------------|------------|------------|------------|------------|------------|
| Output Voltage (VDC)     | 1.00 ±0.12 | 1.93 ±0.12 | 2.87 ±0.12 | 3.70 ±0.12 | 4.41 ±0.12 | 5.00 ±0.12 |

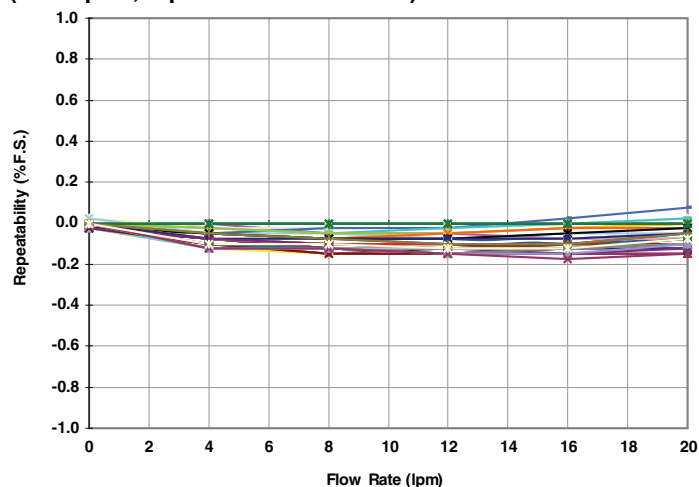
### D6F-50A

| Flow Rate L/min (normal) | 0          | 10         | 20         | 30         | 40         | 50         |
|--------------------------|------------|------------|------------|------------|------------|------------|
| Output Voltage (VDC)     | 1.00 ±0.12 | 2.45 ±0.12 | 3.51 ±0.12 | 4.20 ±0.12 | 4.66 ±0.12 | 5.00 ±0.12 |

## Test Results (typical performance)

### D6F-20A□

(5 samples, repeated 10 times each)



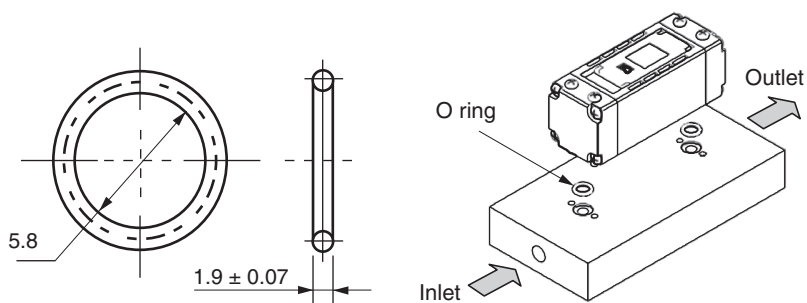
## Installation: D6F-□A5-000

Recommendation for right-angle, manifold mount connection;

Use M3 panhead screws for mounting, and tighten them to a maximum torque of 0.59 N•m. Please seal INLET and OUTLET with 'O' rings. Please install the product as shown below. Incorrect mounting may cause product failure and make it impossible to obtain correct measurements.

Recommended 'O' ring for sealing inlet and outlet orifice;

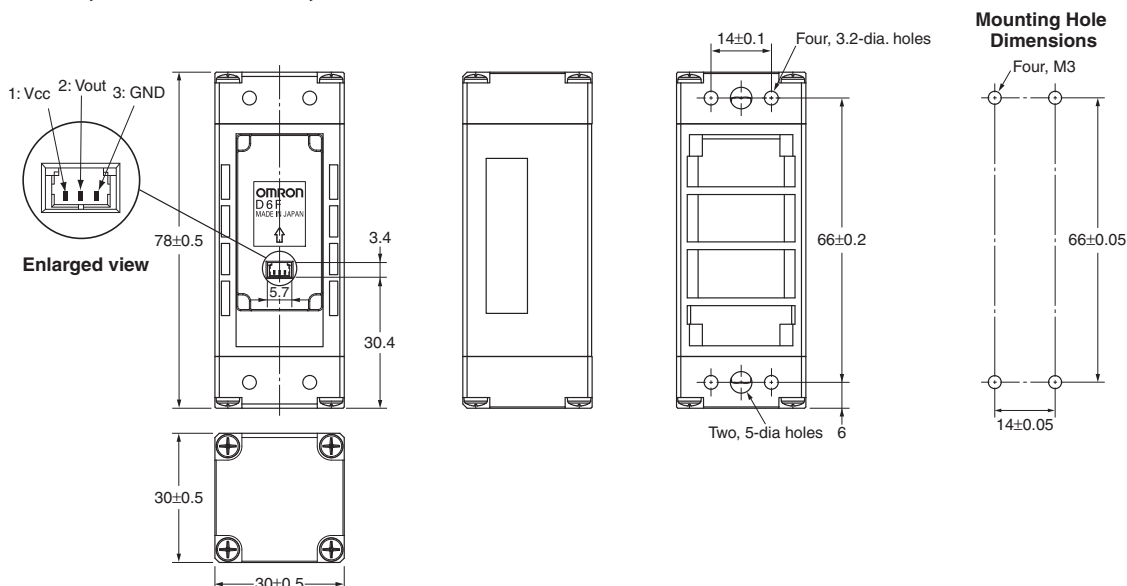
- Material: NBR70 (recommended for all applications including medical and food processing.)
- Example part number: JASO part number: CO 0003
- Alternative manufacturers with similar DO and W dimensions may be used



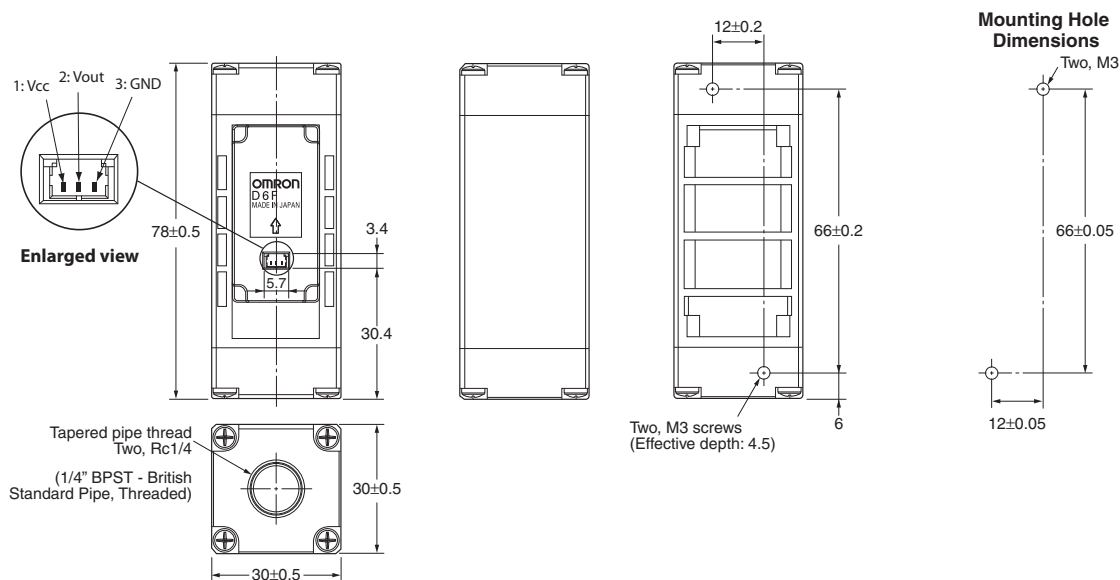
# Dimensions

Unit: mm

## D6F-10A5-000, D6F-20A5-000, D6F-50A5-000

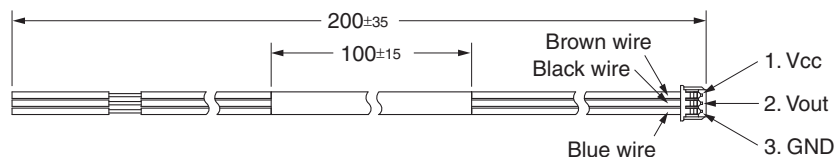


## D6F-10A6-000, D6F-20A6-000, and D6F-50A6-000



## Applicable Cable for D6F-□A□-000 (Optional - sold separately)

part number: D6F-CABLE1



Housing: Molex - 51021  
Terminal: Molex - 50079  
Wire: 26-28 AWG

**Note:** Be sure to read the precautions and information common to all D6F sensors, contained in the Technical User's Guide, "D6F Technical Information" for correct use.



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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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

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