

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.)	$V_{OH}$	$V_{CC} = 12 \text{ to } 24\text{VDC}$ $I_{OH} = 0.5\text{mA}$	5	5.7	VDC
Output voltage (min.)	$V_{OL}$	$V_{CC} = 12 \text{ to } 24\text{VDC}$ $I_{OL} = -0.5\text{mA}$	0	1	VDC

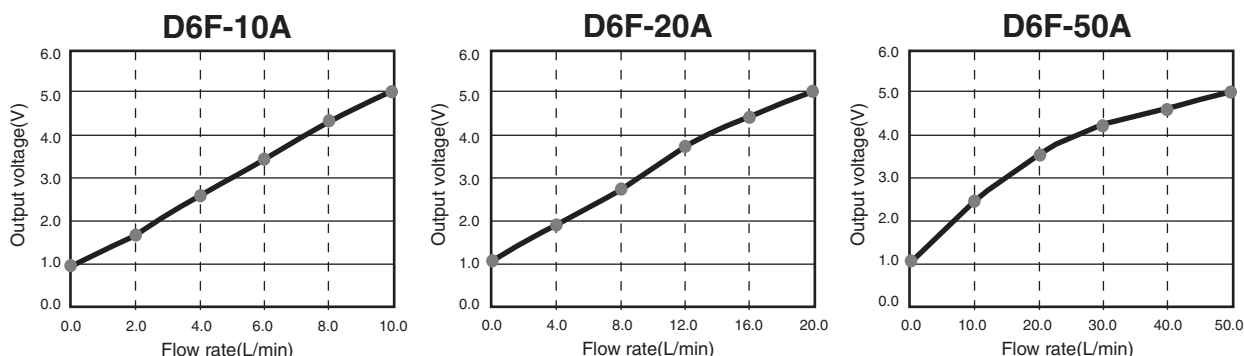
# Characteristics

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 <sub>CC</sub> = 12 to 24 VDC, V <sub>SS</sub> = 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

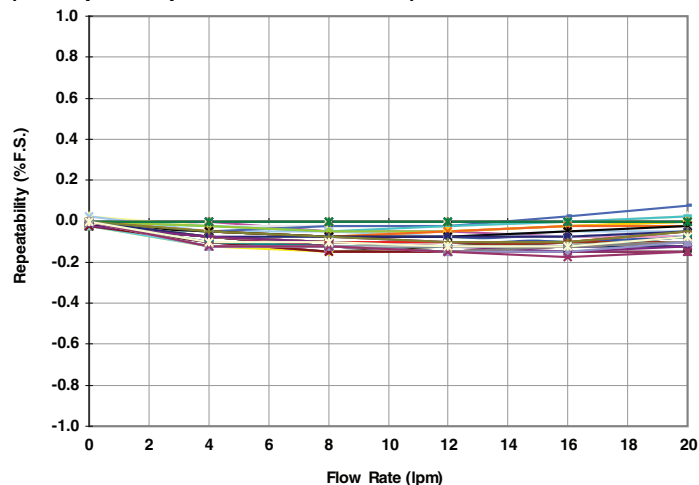
### D6F-50A

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)



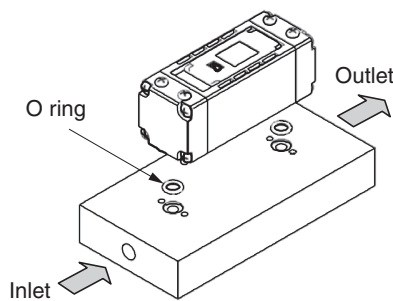
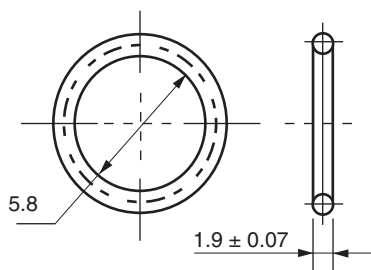
## Installation: D6F-□A5-000

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;

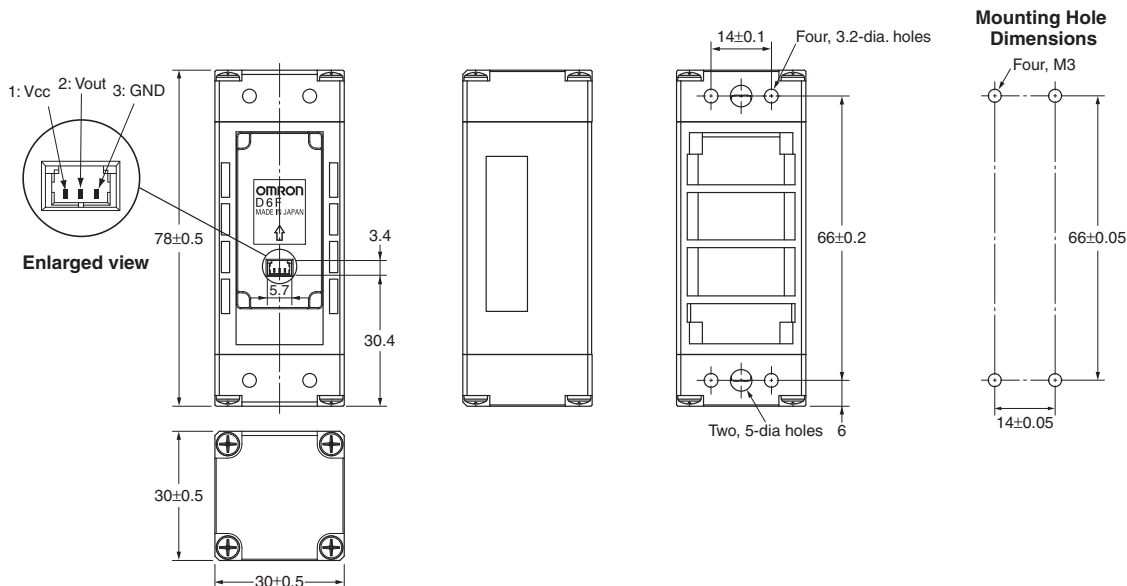
- Material: NBR70 (recommended for all applications including medical and food processing.)
- Example part number: JASO part number: CO 0003
- Alternative manufacturers with similar DO and W dimensions may be used



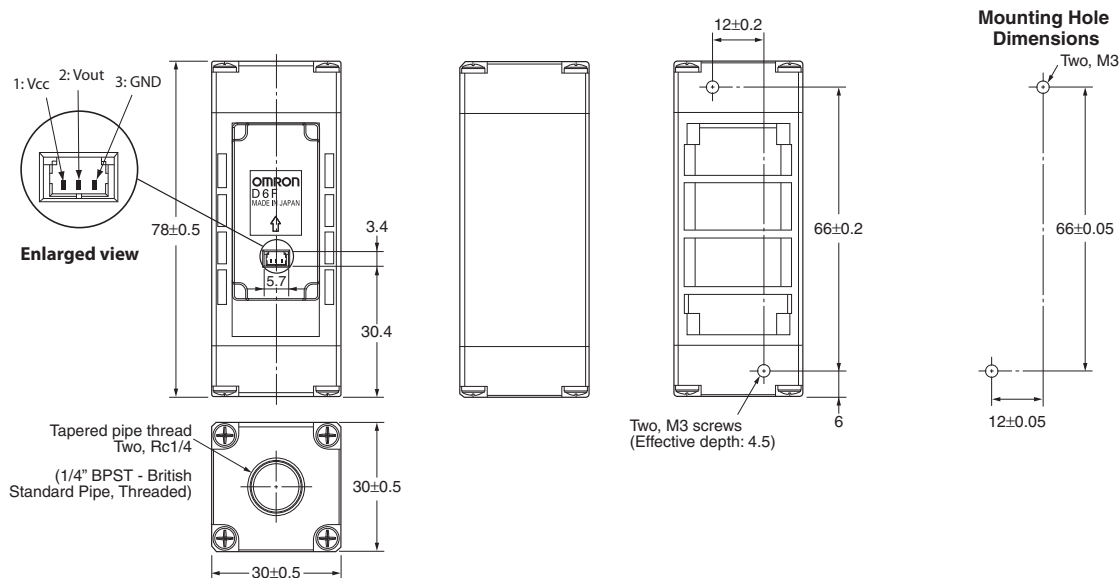
# Dimensions

Unit: mm

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

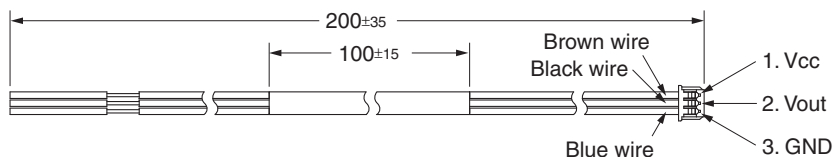


## D6F-10A6-000, D6F-20A6-000, and D6F-50A6-000



### 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.

A large grid of small squares, typical of a memo pad, for taking notes. The grid consists of 20 columns and 30 rows of squares.

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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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