

# MEMS Mass Flow Sensor

## D6F-03A3-000

**Compact, sensors featuring MEMS technology for precision mass airflow measurement**

- Precision unidirectional mass airflow up to 3 LPM
- Stable output across full scale
- Ultra-compact size 36.6 (L) x 8 (W) x 16.8 (H) mm
- Low power consumption



## Application Examples

- Pick and place systems
- Industrial processes
- Leak detection
- Spectroscopy
- Mass flow controllers
- Scientific / test equipment
- Environmental comfort controls
- Fuel cell controls

## Ordering Information

Model	Case	Applicable Gas	Flow Range
D6F-03A3-000	Thermoplastic resin / Aluminum alloy	Air*	0 – 3 LPM
D6F-Cable2			

\*Dry gas must not contain large particles, e.g., dust, oil, mist.

## Rating

**Absolute maximum rating**

Item	Term	Rating	Unit
Power-supply voltage	$V_{CC}$	26.4	VDC
Output voltage	$V_{OUT}$	6	VDC

## ■ Electrical Performance

### Recommended operation condition and DC characteristic

Item	Term	Condition	MIN	TYP	MAX	Unit
Power-supply voltage	$V_{CC}$	—	10.8	—	26.4	VDC
Operating temperature	$T_{OPR}$	—	0	—	50	°C
Maximum output voltage	$V_{OH}$	Load resistance 10k $\Omega$	5	—	5.7	VDC
Minimum output voltage	$V_{OL}$	Load resistance 10k $\Omega$	0	—	1	VDC

## ■ Basic Performance

0 to 3L/min. (Normal) volumetric flow rate at 0°C, 101.3kPa.

Measurement condition: Power-supply voltage 12  $\pm$  0.1VDC, ambient temperature 25  $\pm$  5°C and ambient air humidity 25 to 75% RH.

### D6F-03A3-000

Flow Rate L/min (normal)	0	0.6	1.2	1.8	2.4	3.0
Output Voltage (VDC)	1.00 $\pm$ 0.2	2.83 $\pm$ 0.2	3.77 $\pm$ 0.2	4.34 $\pm$ 0.2	4.72 $\pm$ 0.2	5.00 $\pm$ 0.2

## ■ Characteristics

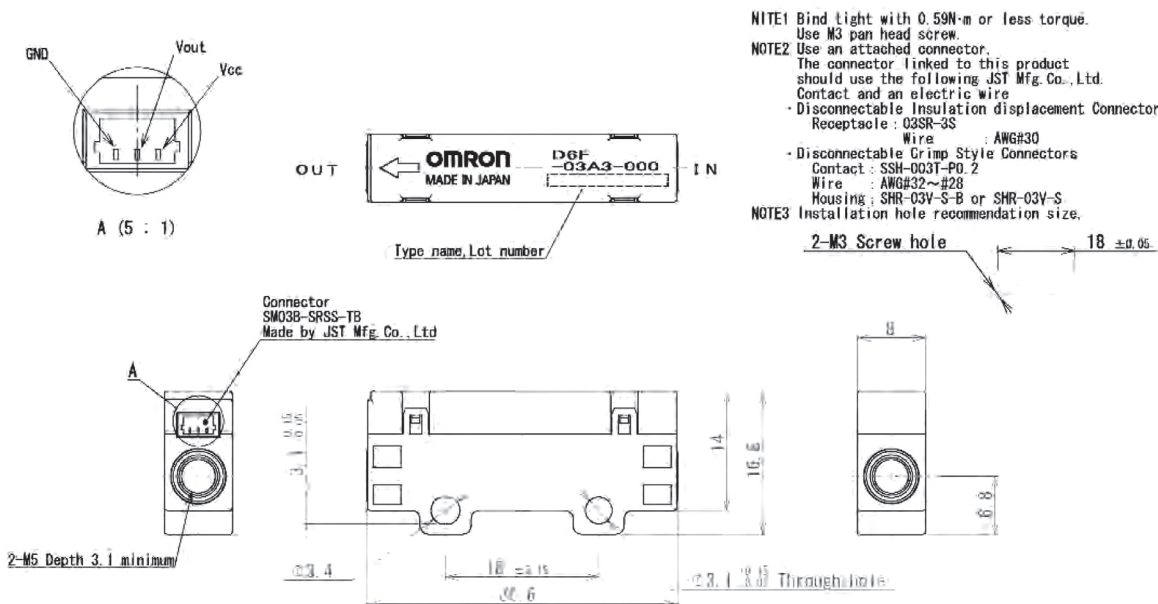
Degree of Protection	IP40
Applicable Gas	Air
Electrical Connection	Connector (3 wire)
Output Signal	Analog, 1-5VDC (load resistance 10k $\Omega$ min)
Current Consumption	Max 15mA (no load, $V_{CC}$ = 12 to 24VDC, $V_{SS}$ = GND = 0V, 25°C)
Repeat Accuracy	$\pm$ 5% FSD max, 25°C
Insulation Resistance	20Mohm min. (500VDC between lead terminals and case)
Dielectric Strength	500VAC, 50/60Hz for 1 minute (leakage current typ. <1mA) between lead terminals and case
Withstand Pressure	200 kPa
Operating Temperature	0 to 50°C (with no ice or dew condensation)
Operating Humidity	85%RH max. (with no ice or dew condensation)
Storage Temperature	-10 to 60°C (with no ice or dew condensation)
Storage Humidity	85%RH max. (with no ice or dew condensation)
Weight	5.27g

## ■ Precautions

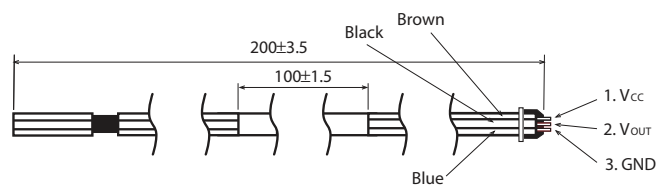
- Avoid use in excessively dirty, wet environments
- Do not use in the presence of flammable gases (e.g. hydrogen, methane, ethane) and liquefied petroleum gas. In addition, do not use with corrosive gases (e.g. chlorine, sulphur, acids, alkalis, etc.).
- Install in the direction of the arrow indicated.
- For best results (optimum accuracy), mount horizontally.
- Use four suitable M3 screws for mounting. Do not exceed a fixing torque of 0.59 Nm.
- Do not modify D6F- in any way.
- Do not place any object in or close to the inlet and outlet orifices.
- Do not use the sensor in any of the following environments:
  - a location that receives radiant heat from the sun or apparatus
  - a place where intense light may radiate down
  - where fast changing temperatures occur
  - locations prone to freezing, high humidity, condensation
  - places where large magnitudes of vibration or shock could occur
- Noise countermeasures: VERY IMPORTANT: Take suitable precautions to minimize the effects and potential for induced electrical noise. Install away from apparatus that generates strong high frequencies, surges and spikes. Take particular care to install away from AC power transformers, live mains power lines and high power magnetic circuits. Attach a surge suppressor and a noise filter to the peripheral equipment.
- Ensure good grounding is achieved by grounding the GND terminal to the peripheral equipment's main ground frame connection and its associated regulated power supply.
- Do not make a direct solder connection to the integral terminals. It is recommended you use the optional cable 'D6F-CABLE2' for attachment and to ensure correct connection.
- D6F- is a precision component. Keep in original packaging and remove only when ready for installation. Damage may occur if subjected to excessive force (e.g. dropped or kicked). Any item suspected to be damaged should be discarded.
- Immediately following installation, a qualified person should perform checks to ensure safe, satisfactory operation.

# Dimensions

All dimensions are shown in millimeters.



## ■ D6F-Cable2 (Optional)



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