

# MEMS Air Velocity Sensor D6F-W

## MEMS precision technology for repeatable airflow velocity detection.

- Precision uni-directional air velocity detection with  $\pm 5\%$  full-scale repeatable accuracy.
- Integral passive Dust Segregation System (DSS) prevents contamination of sensor element.
- Compact size: 39 (L) x 20 (W) x 9 (H) mm
- Output signal amplified & temperature compensated.
- User friendly - no adjustment necessary.
- RoHS Compliant



## Ordering Information

| Description              | Case  | Applicable Gas    | Flow Range | Model       |
|--------------------------|-------|-------------------|------------|-------------|
| Velocity Sensor          | PPS   | Air (See note 1.) | 0-1 m/sec  | D6F-W01A1   |
|                          |       |                   | 0-4 m/sec  | D6F-W04A1   |
|                          |       |                   | 0-10 m/sec | D6F-W10A1   |
| Cable Connector Assembly | - - - | - - -             | - - -      | D6F-W CABLE |

- Note:** 1. Dry gas must not contain large particles, eg dust, oil, mist.  
2. Cable Assembly is sold separately.

## Specifications

### ■ Characteristics

| Models                         | D6F-W01A1                                                                                         | D6F-W04A1  | D6F-W10A1   |
|--------------------------------|---------------------------------------------------------------------------------------------------|------------|-------------|
| Flow Range (See note 1.)       | 0 to 1 m/s                                                                                        | 0 to 4 m/s | 0 to 10 m/s |
| Applicable Gas (See note 2.)   | Air                                                                                               |            |             |
| Electrical Connection          | Connector (3 wire)                                                                                |            |             |
| Power Supply                   | 10.8 to 26.4 VDC                                                                                  |            |             |
| Current Consumption            | Max. 15 mA (no load, Vcc = 12 to 24VDC, 25°C)                                                     |            |             |
| Operating Output Voltage (VDC) | 1 to 5 VDC                                                                                        |            |             |
| Output Voltage (Max.)          | 5.7 VDC (Lead resistance 10kΩ)                                                                    |            |             |
| Output Voltage (Min.)          | 0 VDC (Lead resistance 10kΩ)                                                                      |            |             |
| Accuracy                       | $\pm 5\%$ F.S. max. of detected characteristics at 25 °C                                          |            |             |
| Repeatability (See note 3.)    | $\pm 0.4\%$ F.S.                                                                                  |            |             |
| Case Material                  | PPS                                                                                               |            |             |
| Degree of Protection           | IP40                                                                                              |            |             |
| 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    | $\pm 5\%$ 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. 1 mA) between lead terminals and case. |            |             |
| Weight                         | 6.3 g                                                                                             |            |             |

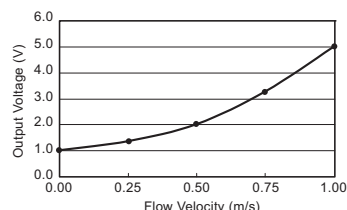
- Note:** 1. Flow range at 0°C, 101.3kPa.  
2. Dry gas. (must not contain large particles, dust, oil, mist)  
3. Reference (typical)

## Absolute Maximum Rating

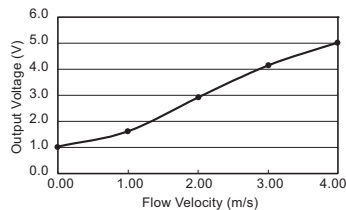
| Item                 | Symbol | Rating | Unit |
|----------------------|--------|--------|------|
| Power supply voltage | Vcc    | 26.4   | VDC  |
| Output voltage       | Vout   | 6.0    | VDC  |

## Output Voltage Characteristics

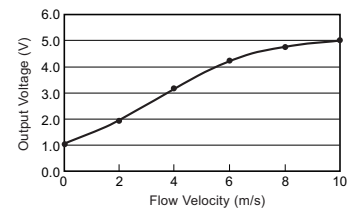
D6F-W01A1



D6F-W04A1



D6F-W10A1



### D6F-W01A1

| Flow Velocity (m/s)  | 0.00     | 0.25     | 0.50     | 0.75     | 1.00     |
|----------------------|----------|----------|----------|----------|----------|
| Output Voltage (VDC) | 1.00±0.2 | 1.35±0.2 | 2.01±0.2 | 3.27±0.2 | 5.00±0.2 |

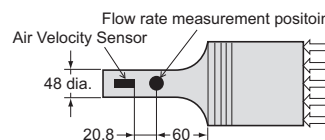
### D6F-W04A1

| Flow Velocity (m/s)  | 0        | 1        | 2        | 3        | 4        |
|----------------------|----------|----------|----------|----------|----------|
| Output Voltage (VDC) | 1.00±0.2 | 1.58±0.2 | 2.88±0.2 | 4.11±0.2 | 5.00±0.2 |

**Note:** 1. Air velocity. D6F-W is optimally adjusted for air velocity detection, derived from mass air-flow measurement according to our in-house test method using a wind tunnel  $\phi$  48 mm as shown in Fig. 1.

2. Measurement condition: Power supply voltage  $12 \pm 0.1$  VDC, ambient temperature  $25 \pm 5^\circ\text{C}$ . and dry air.

Fig. 1.



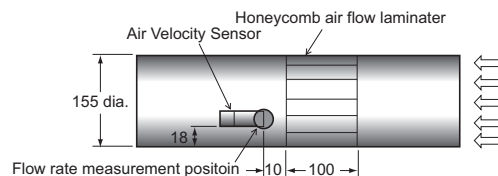
### D6F-W10A1

| Flow Velocity (m/s)  | 0         | 2         | 4         | 6         | 8         | 10        |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Output Voltage (VDC) | 1.00±0.24 | 1.94±0.24 | 3.23±0.24 | 4.25±0.24 | 4.73±0.24 | 5.00±0.24 |

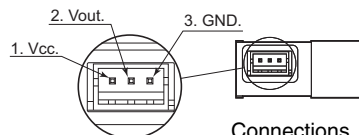
**Note:** 1. Air velocity. D6F-W is optimally adjusted for air velocity detection, derived from mass air-flow measurement according to our in-house test method using a wind tunnel  $\phi$  155 mm as shown in Fig. 2.

2. Measurement condition: Power supply voltage  $12 \pm 0.1$  VDC, ambient temperature  $25 \pm 5^\circ\text{C}$ . and dry air.

Fig. 2.



## Connections



Enlarged view

Connections

Pin No.

1: Vcc  
2: Vout  
3: GND

Connector

S3B-ZR-SM2-TF

(Made by JST Mfg. Co., Ltd.)

The connector linked to this product should use the following JST Mfg.Co.,Ltd. housing, contacts and electrical wire

1) **Contact:** SZH-002T-P0.5

**Wire:** AWG#28 to #26

OR

2) **Contact:** SZH-003T-P0.5

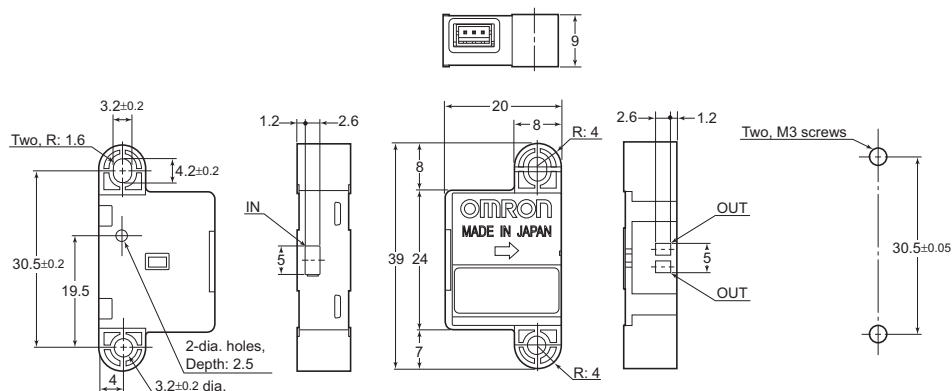
**Wire:** AWG#32 to #28

**Housing:** ZHR-3

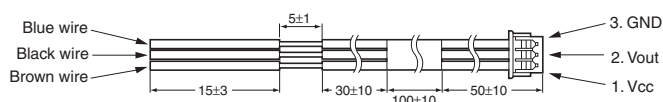
# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

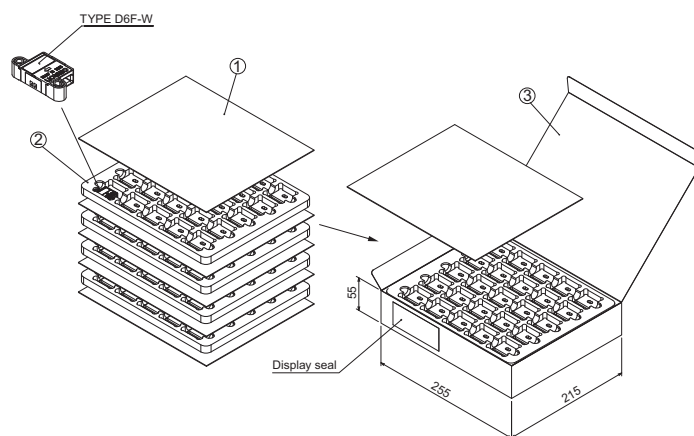
**D6F-W01A1**  
**D6F-W04A1**  
**D6F-W10A1**



**D6F-W CABLE**  
**(Sold separately)**



# Packaging

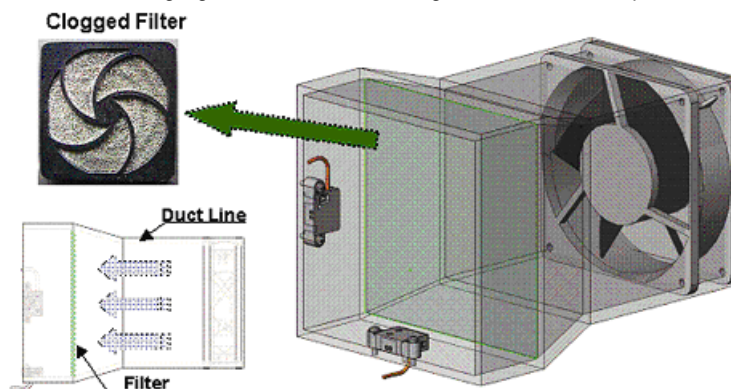


| No. | Item          | Material     |
|-----|---------------|--------------|
| 1   | Sock liner    | CCNB         |
| 2   | Tray (25pcs)  | Polyethylene |
| 3   | Box (100 pcs) | CCNB         |

# Application Example

## Clogged Filter Detection

The D6F-W air flow sensor detects the decrease in air velocity through the filter as it becomes more contaminated with particles. The moment the velocity drops below a certain threshold, a warning signal is sent out, indicating the need for filter replacement.



**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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