

### FEATURES

- Ranges 0...1000 sccm<sup>1</sup> and 0...6 slpm<sup>2</sup>
- Actual mass flow sensing
- 1...5 V output
- Manifold mount/o-ring sealed

### SERVICE

To be used with dry gases only

The AWM series is NOT designed for liquid flow and will be damaged by liquid flow through the sensor

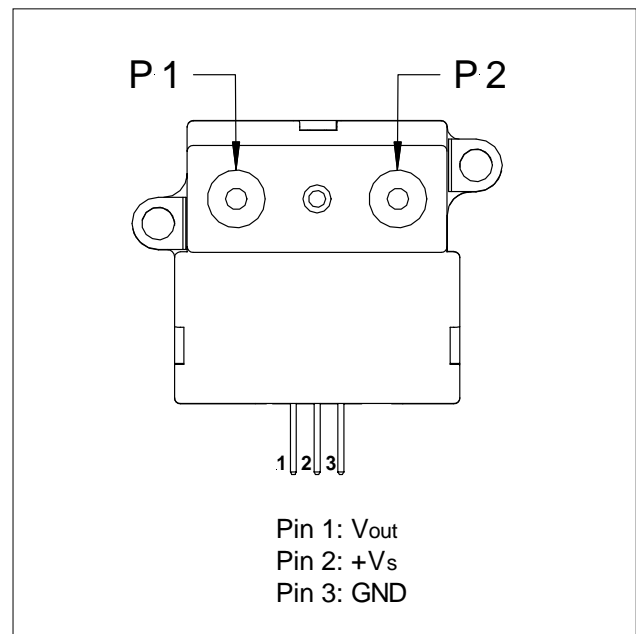


### SPECIFICATIONS

#### Maximum ratings

Supply voltage <sup>3</sup>	8 to 15 V typ. 10 ±0.01 V
Power consumption	
AWM43300V	60 mW
AWM43600V	75 mW
Output load	
NPN (Sinking)	10 mA
PNP (Sourcing)	20 mA
Temperature limits	
Operating	-25 to 85°C
Storage	-40 to 90°C
Mechanical shock	100 g (5 drops, 6 axes)

### ELECTRICAL CONNECTION



Note:

<sup>1</sup> sccm denotes standard cubic centimeters per minute, 1000 sccm = 1 slpm

<sup>2</sup> slpm denotes standard liters per minute, which is a flow measurement referenced to standard conditions of 0°C, 1 bar, 50% RH.

<sup>3</sup> Output voltage is ratiometric to supply voltage

**FLOW SENSOR CHARACTERISTICS<sup>4</sup>**

$V_s = 10 \pm 0.01$  V,  $T_A = 25^\circ\text{C}$

Part no.	Flow range (full scale)	Max. flow change <sup>5</sup>	Output voltage @ trim point
AWM43300V	1000 sccm <sup>1</sup>	5.0 l/sec	5 $\pm$ 0.15 V @ 1000 sccm <sup>1</sup>
AWM43600V	6 SLPM <sup>2</sup>	5.0 l/sec	5 $\pm$ 0.15 V @ 6 SLPM <sup>2</sup>

**PERFORMANCE CHARACTERISTICS**

$V_s = 10 \pm 0.01$  V,  $T_A = 25^\circ\text{C}$

Characteristics		Min.	Typ.	Max.	Unit	
Zero offset		0.95	1.0	1.05	V	
Repeatability and hysteresis (combined)	AWM43300V			$\pm$ 0.5	% reading	
	AWM43600V			$\pm$ 1.0		
Ratiometricity error <sup>3</sup>				$\pm$ 0.3		
Temperature effects <sup>6</sup>	Offset	-25 to 85 °C		$\pm$ 0.025	V	
	Span	-25 to 25 °C	AWM43300V		-5.0	% reading
			AWM43600V		-6.0	
		25 to 85 °C	AWM43300V		6.0	
AWM43600V				6.0		
Response time			1.0	3.0	ms	
Common mode pressure	AWM43300V			150	psi	
	AWM43600V			25		

Notes:

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<sup>2</sup> SLPM denotes standard liters per minute, which is a flow measurement referenced to standard conditions of 0°C, 1 bar, 50% RH.

<sup>3</sup> Output voltage is ratiometric to supply voltage

<sup>4</sup> A 5 micron filter is recommended for all devices.

<sup>5</sup> Maximum allowable rate of flow change to prevent damage.

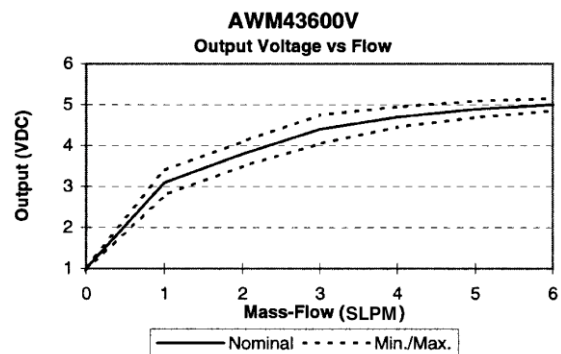
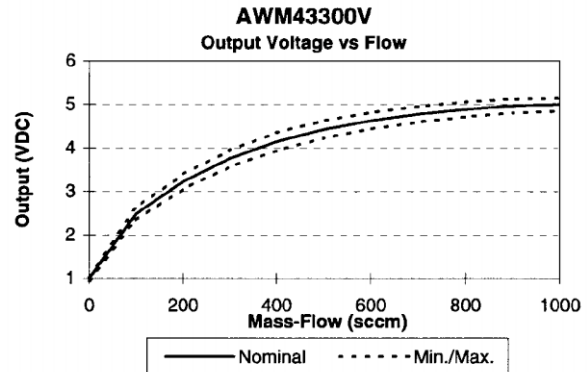
<sup>6</sup> Shift is relative to 25 °C.

### OUTPUT FLOW VS INTERCHANGEABILITY

$V_s = 10 \pm 0.01 \text{ V}$ ,  $T_A = 25^\circ\text{C}$

AWM43300V				AWM43600V			
Press. mBar	Flow sccm	Nom. VDC	Tol. $\pm$ VDC	Press. mBar	Flow SLPM	Nom. VDC	Tol. $\pm$ VDC
2.23	1000	5.00	0.15	20.0	6	5.00	0.15
1.87	900	4.97	0.16	14.7	5	4.89	0.20
1.52	800	4.89	0.17	9.07	4	4.70	0.25
1.16	700	4.78	0.18	6.40	3	4.40	0.35
0.94	600	4.63	0.19	3.35	2	3.80	0.30
0.71	500	4.43	0.20	1.17	1	3.10	0.30
0.50	400	4.15	0.21	0.00	0	1.00	0.05
0.33	300	3.76	0.19				
0.19	200	3.23	0.17				
0.08	100	2.49	0.14				
0.00	0	1.00	0.05				

### OUTPUT CURVES



### GAS CORRECTION FACTORS<sup>7</sup>

Gas type	Correction factor (approx.)
Helium (He)	0.5 <sup>8</sup>
Hydrogen (H <sub>2</sub> )	0.7 <sup>8,9</sup>
Argon (Ar)	0.95
Nitrogen (N <sub>2</sub> )	1.0
Oxygen (O <sub>2</sub> )	1.0
Air	1.0
Nitric oxide (NO)	1.0
Carbon monoxide (CO)	1.0
Methane (CH <sub>4</sub> )	1.1
Ammonia (NH <sub>3</sub> )	1.1
Nitrous oxide (N <sub>2</sub> O)	1.35
Nitrogen dioxide (NO <sub>2</sub> )	1.35
Carbon dioxide (CO <sub>2</sub> )	1.35

Notes:

<sup>7</sup> Gas correction factors are referenced to nitrogen (N<sub>2</sub>) as calibration gas type. Approximate gas correction factors are provided as guidelines only. Individual gas types may perform differently at temperature extremes and varying flow rates.

<sup>8</sup> When sensing Hydrogen (H<sub>2</sub>) or Helium (He) it may be necessary to power the mass flow sensor using increased supply voltage: Hydrogen typ. 12 V, Helium typ. 15 V

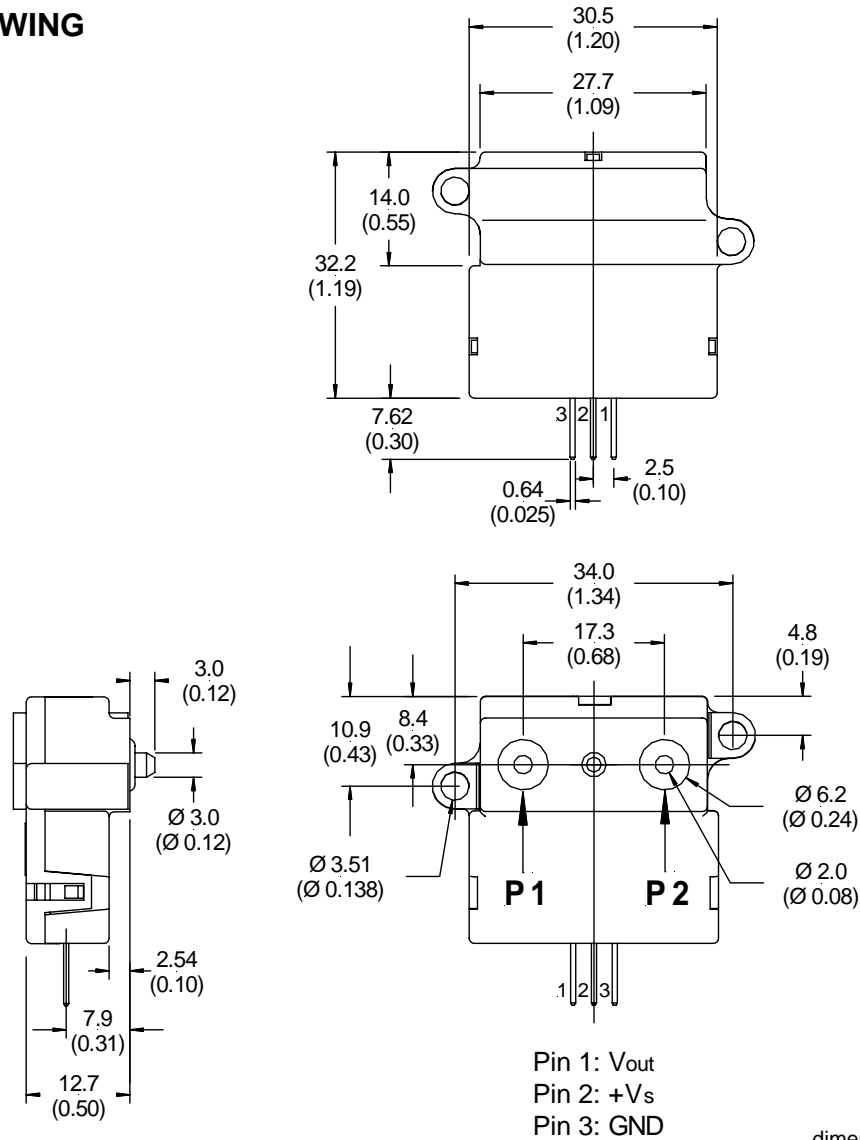
<sup>9</sup> Hydrogen (H<sub>2</sub>) flow measurement requires the use of a special sensor. These devices provide normal operation when sensing hydrogen flow and are designated with an "H" at the end of the order number.

# AWM43000 Series

## Mass flow sensor for gases

Honeywell

### OUTLINE DRAWING



mass: approx. 11 g

dimensions in mm (inches)

### ORDERING INFORMATION

Flow range	Dry gas	Hydrogen gas <sup>9</sup>
1000 sccm	AWM43300V	AWM43300VH
6 SLPM	AWM43600V	---

Note:

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