Installation Instructions for the MICRO SWITCH AWM3000 Series Microbridge Mass Airflow Sensors

PK 88671

GENERAL INFORMATION

AWM3000 Series Microbridge Mass Airflow Sensors operate on the theory that airflow directed across the surface of a sensing element causes heat transfer. Output voltage varies in proportion to the mass of air or other gas flowing through a given sensor's inlet and outlet ports.

Current sink/source. Maximum current ratings are 10 mA sinking and 20 mA sourcing, governed by an LM224 operational amplifier in the final stage of the instrumentation amplifier.

MEDIA CONTAMINATION

Media flowing through the sensor should be free of condensing moisture and particulate contaminants. An inexpensive 5 micron filter upstream of the sensing element substantially reduces the risk of damage due to contaminants.

MOUNTING INSTRUCTIONS

NOTICE

1. Maximum torque of 0,226 Nm (2 in./lbs.) is recommended when tightening mounting screws or other fasteners.
2. When connecting tubing to sensor ports, grasp housing between thumb and forefinger, so that port designation is covered, supporting the port. Ease tubing onto port. Do not expose ports to forces greater than 22,2 N (5 pounds) in a direction perpendicular to port centerline. Thin-walled 1/4" Tygon or equivalent tubing is recommended.

SOLDERING INSTRUCTIONS

Please note: sensor should be securely attached to printed circuit board before soldering.

Hand soldering: Use temperature controlled soldering iron with 3,2 mm (1/8 in.) diameter tip. Set temperature at 400°C (750°F). Hold tip on terminal for 5 seconds maximum. Use Type R flux rosin core solder and hand clean after soldering.

Wave soldering: Set solder temperature at 250°C (480°F) maximum. Run belt at minimum of 1.54 m (5 feet) per minute. Cover tube ends when cleaning.

CLEANING

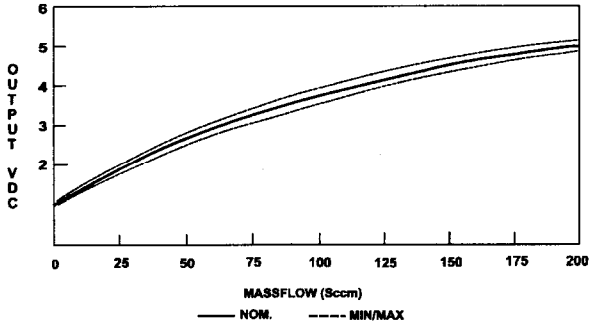
NOTICE

Do not use ultrasonics when cleaning. This may damage the microstructure.

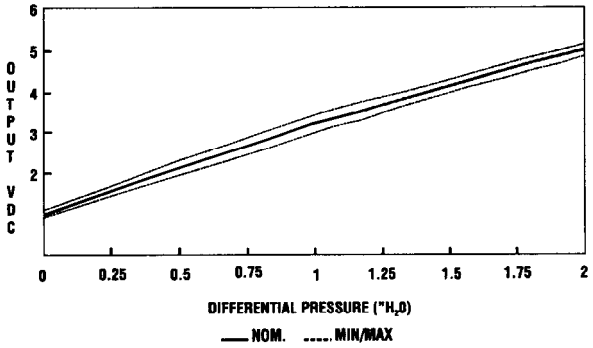
1. Cover ends of tube during cleaning. Certain solvents may attack the epoxy sealing chip tube to ceramic substrate.
2. Do not use: methylene chloride, methyl pyrrolidone, III trichlorethane, or any oxidizing type acid such as formic acid.

OUTPUT CURVES

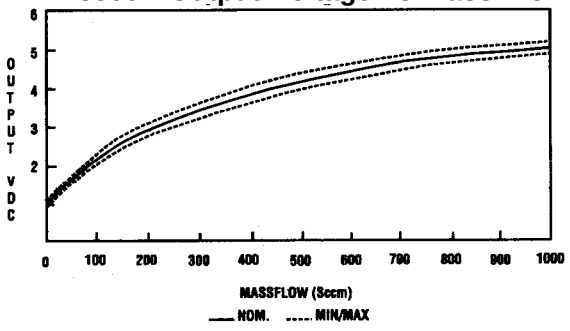
AWM3100V Output Voltage vs Mass Flow



AWM3200V Output Voltage vs Pressure



AWM3300V Output Voltage vs Mass Flow



SPECIFICATIONS

Type	AWM3100V	AWM3150V	AWM3200V	AWM3300V
Recommended excitation	10 ± 0.01 VDC	10 ± 0.01 VDC	10 ± 0.01 VDC	10 ± 0.01 VDC (2)
Power consumption	50 mW	50 mW	50 mW	50 mW
Output voltage @ laser trim point	5.00 VDC @ 200 sccm	1.5 VDC @ 5 sccm	5.00 VDC @ 2" H_2O	5.00 VDC @ 1000 sccm
Null voltage	1.00 ± .05 VDC	1.00 ± .10 VDC	1.00 ± .08 VDC	1.00 ± .10 VDC
Null voltage shift @ 25 to +23°C or +25 to +85°C	±25mV	±75mV	±25mV	±25mV
Output voltage shift				
-25 to +25°C	-5% Reading	-5% Reading	+24% Reading	-5% Reading (4)
+25 to +85°C	+6% Reading	+6% Reading	-24% Reading	+6% Reading
Repeatability & hysteresis, max.	± 0.50% reading	± 1.0% reading	± 0.50% reading	± 1.0% reading (3)
Response time, max.	3.0 msec	3.0 msec	3.0 msec	3.0 msec (1)
Temperature range				
Operating	-25 to +85°C	-25 to +85°C	-25 to +85°C	-25 to +85°C
Storage	-40 to +90°C	-40 to +90°C	-40 to +90°C	-40 to +90°C
Termination (0.100" centers)	0.025" square	0.025" square	0.025" square	0.025" square
Weight	10.8 grams	10.8 grams	10.8 grams	10.8 grams
Shock rating (5 drops, ea. of 6 axes)	100 g peak	100 g peak	100 g peak	100 g peak
Overpressure, max.	25 psi	25 psi	25 psi	25 psi (5)

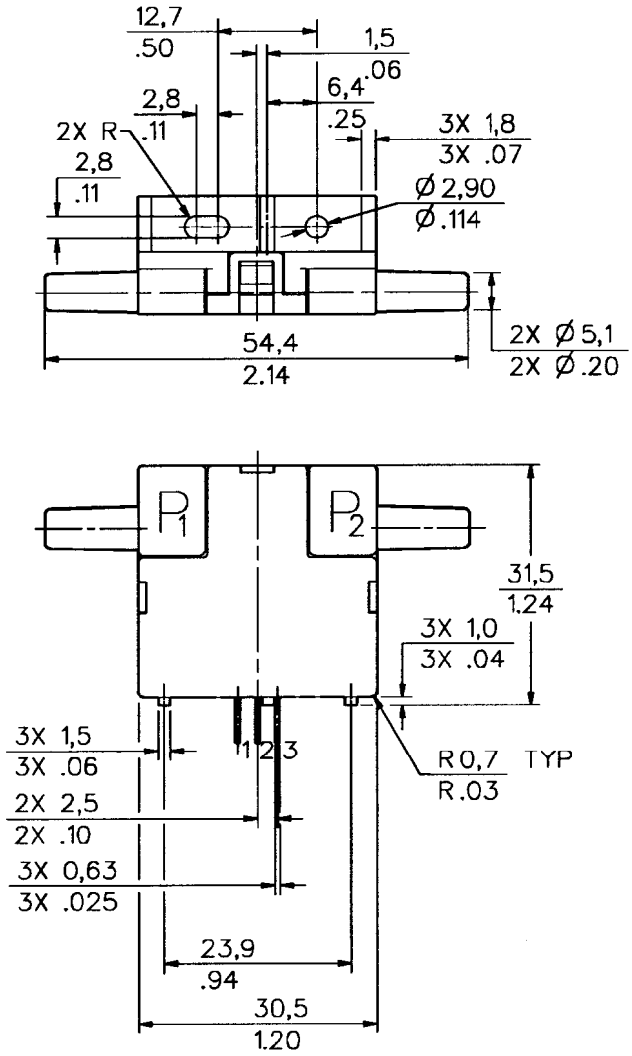
1. Response time typically 1 msec from 10-90%. Initial warmup time for signal conditioned circuitry is 1 minute max.
2. Output voltage is ratiometric to supply voltage.
3. Repeatability and hysteresis tolerances reflect inherent inaccuracies of the measurement equipment.
4. Temperature shifts in differential pressure devices are mostly due to the density change of the gas over temperature.
5. Maximum flow rate to prevent damage to sensing element (includes flow pulse) is 5 LPM.

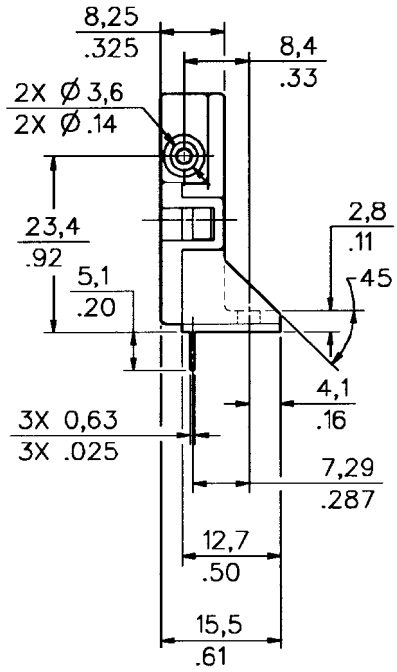
OUTPUT FLOW VS. INTERCHANGEABILITY

AWM3100V			AWM3150V			AWM3200V			AWM3300V		
Flow sccm	Nom. VDC	Tol. (2) ± VDC	Flow sccm	Nom. VDC	Tol. (2) ± VDC	Flow sccm	Nom. VDC	Tol. (2) ± VDC	Pres. in. H_2O	Nom. VDC	Tol. (2) ± VDC
200	5.00	0.15	30	3.75	0.70	2.00	5.00	0.15	1000	5.00	0.15
175	4.80	0.16	20	2.90	0.45	1.75	4.59	0.15	900	4.90	0.16
150	4.50	0.17	10	1.95	0.20	1.50	4.16	0.16	800	4.80	0.17
125	4.17	0.18	5	1.50	0.07	1.25	3.70	0.20	700	4.66	0.18
100	3.75	0.19	4	1.40	0.08	1.00	3.25	0.22	600	4.42	0.19
75	3.27	0.19	3	1.30	0.08	0.75	2.65	0.22	500	4.18	0.20
50	2.67	0.17	2	1.20	0.07	0.50	2.15	0.19	400	3.82	0.21
25	1.90	0.13	1	1.10	0.06	0.25	1.55	0.11	300	3.41	0.19
0	1.00	0.05	0	1.00	0.05	0.00	1.00	0.08	200	2.96	0.17
									100	2.30	0.14
									0	1.00	0.10

The unique design of the microbridge mass airflow sensor accommodates your special requirements. Custom laser trimming and flow channel dimensioning can conform performance characteristics to specific applications. Please contact your MICRO SWITCH sales office.

MOUNTING DIMENSIONS (for reference only)





DESCRIPTION

Catalog Listing	Flow Range
AWM3100V	+200 sccm / + 0.2 in. H_2O full scale
AWM3150V	+30 sccm / + 1 in. H_2O full scale
AWM3200V	+ 60 sccm (± 20 sccm) + 2 in. H_2O full scale
AWM3300V	+1000 sccm / 1.3 in. (± 0.1 in.) H_2O full scale

OUTPUT CONNECTIONS

Pin 1	Output voltage
Pin 2	+ Supply voltage
Pin 3	Ground

Note: Positive flow direction is defined as proceeding into Port 1 (P1) and out of Port 2 (P2), and results in a positive output.

AWM3000 Series Microbridge Mass Airflow Sensor PK 88671

SALES AND SERVICE

Honeywell's MICRO SWITCH Division serves its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact a nearby sales office. Or call:

1-800-537-6945 USA
1-416-293-8111 Canada
1-815-235-6847 International

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While we provide application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

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Honeywell

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