

# Honeywell

## Interactive Catalog Replaces Catalog Pages

Honeywell Sensing and Control has replaced the PDF product catalog with the new **Interactive Catalog**. The **Interactive Catalog** is a power search tool that makes it easier to find product information. It includes more installation, application, and technical information than ever before.



**Click this icon to try the new  
Interactive Catalog.**

---

**Sensing and Control**  
Honeywell Inc.  
11 West Spring Street  
Freeport, Illinois 61032

### In-Line Flow Measurement

AWM5000 Series Microbridge Mass Air-flow Sensors feature a venturi type flow housing. They measure flow as high as 20 standard liters per minute (SLPM) while inducing a maximum pressure drop of 2.25" H<sub>2</sub>O. The microbridge chip is in direct contact with the flow stream, greatly reducing error possibilities due to orifice or bypass channel clogging.

### Rugged, Versatile Package

The rugged plastic package has been designed to withstand common mode pressures up to 50 psi, and the small sensing element allows 100 gs of shock without compromising performance. The included "AMP" compatible connector provides reliable connection in demanding applications.

### On-board Signal Conditioning

Each AWM5000 sensor contains circuitry which performs amplification, linearization, temperature compensation, and gas calibration. Figure 1 (Heater Control Circuit) and Figure 2 (Sensor Bridge Circuit and Amplification Linearization Circuit) illustrate the on-board electrical circuitry for the AWM5000 Series. A 1 to 5 VDC linear output is possible for all listings regardless of flow range (5, 10, 15, or 20 SLPM) or calibration gas (nitrogen, carbon dioxide, nitrous oxide, or argon). All calibration is performed by active laser trimming.

Figure 1

Heater Control Circuit

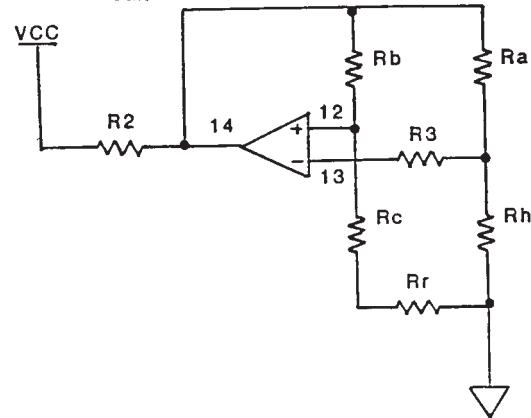
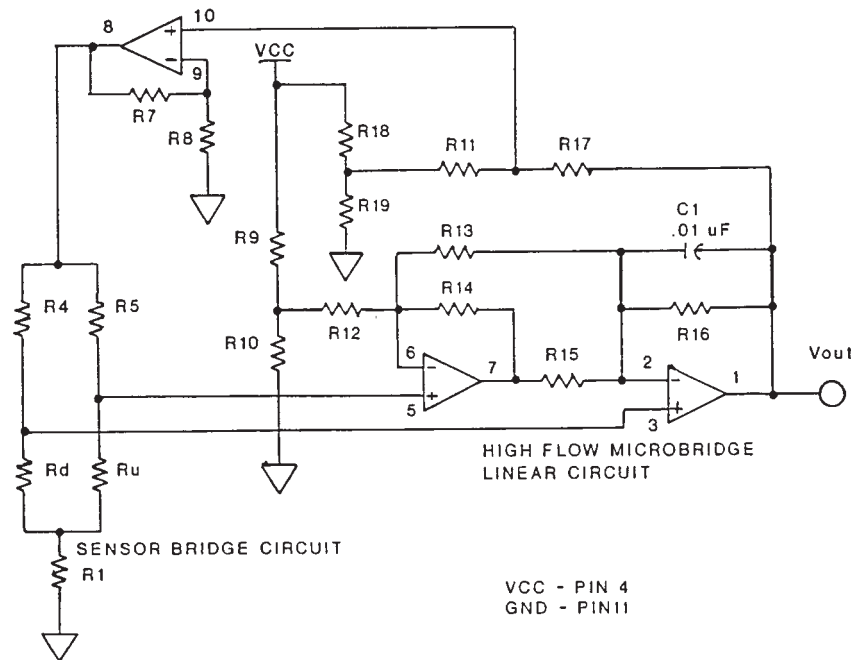


Figure 2

Sensor Bridge Circuit and Amplification Linearization Circuit



Null output VDC	0.95	1	1.05
Null output shift –20° to 70°C	—	±0.050 VDC	±.200 VDC
Common Mode Pressure (psi)	—	—	50
Temperature range	–20° to +70°C, (–4° to 158°F)		
Weight	60 grams (2.12 oz.)		
Shock ratings	100 g peak, 6 msec half-sine (3 drops, each direction of 3 axes)		
Output @ laser trim point	5 VDC @ Full Scale Flow		
Output voltage shift +20° to –25°C, +20° to 70°C	Suffix VA or VN ±7.0% Reading, Suffix VC ±10.0% Reading		
Linearity error (2)	±3.0% Reading (max.)		
Repeatability & Hysteresis	±0.5% Reading (max.)		
Connector (Included) —Four pin receptacle	MICRO SWITCH (SS12143)/AMP (103956-3)		
Leak rate, max	0.1 psi/min. at static condition, (Note 2)		

**Notes:**

1. Linearity specification applies from 2 to 100% full scale of gas flow range, and does not apply to null output at 0 SLPM.
2. The AWM5000 series product has a leakage spec of less than 0.1 psi per minute at 50 psi common mode pressure. If during installation, the end adapters are twisted with respect to the flowtube, this may compromise the seal between the o-ring and the flowtube and may cause a temporary leak. This leak might be as high as 1 psi or might remain in specification. It will self-reseal as the o-ring takes a new set. Approximately 85% of the leakage will dissipate in 24 hours. Within 48 hours, complete recovery will take place.
3. SLPM denotes standard liters per minute, which is a flow measurement referenced to standard conditions of 0°C/1 bar (sea level), 50% RH.

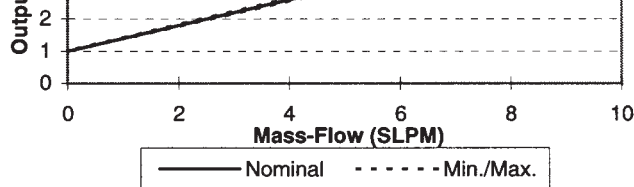
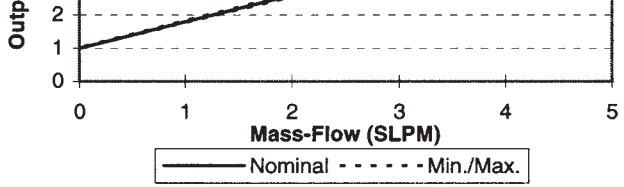
**NOTICE**

**AWM5000—Chimney Effect**

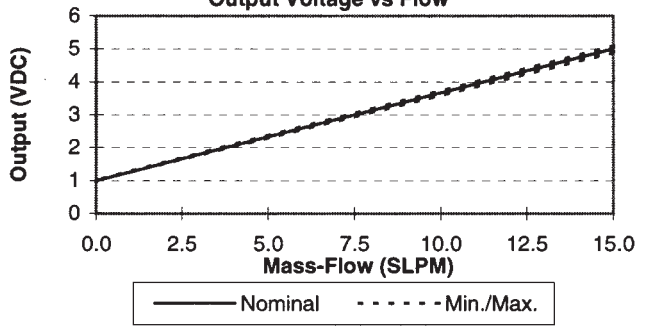
AWM microbridge mass airflow sensors detect mass airflow caused by heat transfer. The thermally isolated microbridge structure consists of a heater resistor positioned between two temperature sensing resistors.

The heater resistor maintains a constant temperature, 160°C above ambient, during sensor operation. Airflow moving past the chip transfers heat from the heater resistor. This airflow warms the downstream resistor and cools the upstream resistor. The temperature change and the resulting change in resistance of the temperature resistors is proportional to the mass airflow across the sensing element.

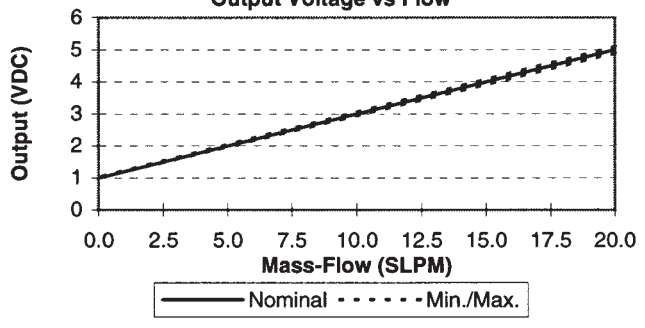
When the sensor is mounted in a vertical position, under zero flow conditions, the sensor may produce an output that is the result of thermally induced convection current. This occurrence is measurable in the AWM5000 Series, particularly in the 5 SLPM versions. When designing the sensor into applications where null stability is critical, avoid mounting the sensor in a vertical position.



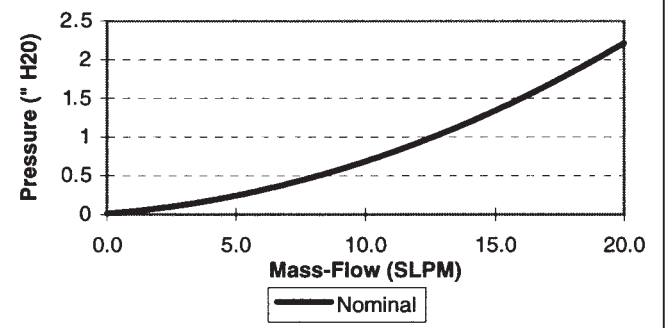
**AWM5103V Series**  
1-5 VDC Linear Output  
Output Voltage vs Flow



**AWM5104V**  
1-5 Linear Output  
Output Voltage vs Flow



**AWM5000 Series**  
Pressure vs Mass-Flow



Airflow

AWM5103VA	15 SLPM, Argon calibration
AWM5103VC	15 SLPM, CO <sub>2</sub> calibration (2)
AWM5103VN	15 SLPM, N <sub>2</sub> calibration (1)
AWM5104VA	20 SLPM, Argon calibration
AWM5104VC	20 SLPM, CO <sub>2</sub> calibration (2)
AWM5104VN	20 SLPM, N <sub>2</sub> calibration (1)

## CONNECTOR ORDER GUIDE

Catalog Listing	Description
SS12143	Four pin Electrical connector Connectors use Amp 103956-3

**Note:** All listings have 1 - 5 VDC linear output with 10 VDC supply over given flow range for a specific calibration gas.

- N<sub>2</sub> calibration is identical to O<sub>2</sub> and air calibration.
- CO<sub>2</sub> calibration is identical to N<sub>2</sub>O calibration.
- For additional gas correction factors, see Application Note 3.

## OUTPUT CONNECTIONS

Pin 1 + Supply voltage

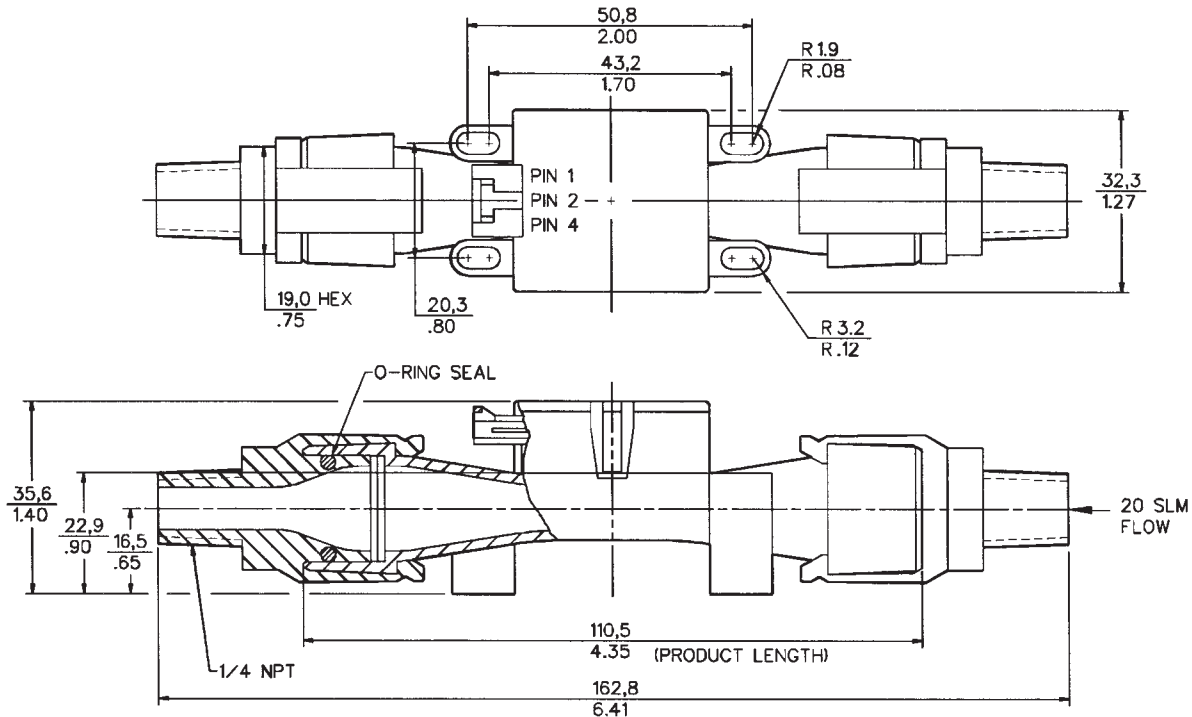
Pin 2 Ground

Pin 3 No connection

Pin 4 Output voltage

Arrow on bottom of housing indicates direction of flow.

## MOUNTING DIMENSIONS (for reference only)



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Environmental Test Equipment](#) category:*

*Click to view products by [Honeywell](#) manufacturer:*

Other Similar products are found below :

[CW40](#) [F150C10E3DRT](#) [F150LTC20](#) [F150CD10E2](#) [F150L75](#) [F150LRS](#) [S-11](#) [FLUKE-LDG](#) [382153](#) [FM100](#) [RH210](#) [382253](#) [MO290-P](#)  
[GEO-CABLE-REEL-50M](#) [T197914](#) [RD300-L](#) [IR11BD](#) [IR11GM](#) [IR12GM](#) [IR21BD](#) [IR31CE](#) [IR32BC](#) [IR33BC](#) [MP7217TC](#) [NGM-1](#) [SGX-](#)  
[7NH3](#) [UT381](#) [F150-SLC50](#) [AW-CO-1000](#) [AW-NmHc-100](#) [3.000.401](#) [AX-7535](#) [CS-9S6SS-A](#) [P 2800 A](#) [P 2801](#) [P 2802](#) [P 5039](#) [P 5130](#) [P](#)  
[5055](#) [P 5060](#) [P 5065](#) [P 5086](#) [P 5090](#) [P 5110](#) [P 5115](#) [P 5135](#) [P 5140](#) [P 5145](#) [P 5150](#) [P 5160](#)