MAF sensor

AWM3000 Series Small Flow Amplification

AWM3000 series is a gas mass flow sensor with output of 1-5V. Figure 1, Figure 2 and Figure 3 are the heater control circuit, dual sensing circuit and differential amplification circuit inside the sensor respectively

Figure 1 Fever Control Circuit

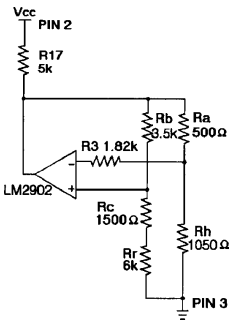


Figure 2 Power Supply Circuit of Sensing Bridge

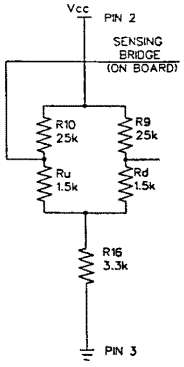
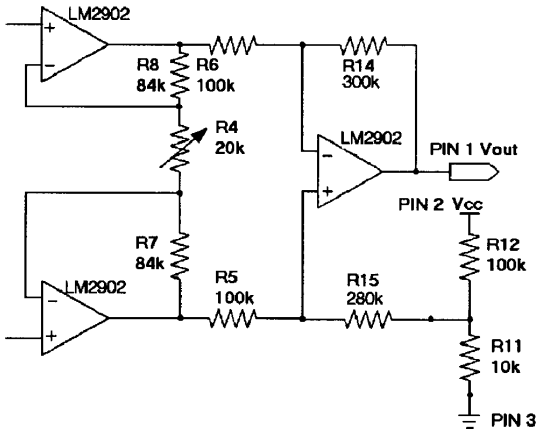


Figure 3 Differential Amplifier Circuit



characteristic：

- Laser calibration ensures consistent interchangeability and • flow rate measurement up to 1.0LPM

Technical specifications: 10.0±0.01VDC

	AWM3100V	AWM3150V	AWM3200V	AWM3300V
Flow range (span)	+200sccm	+30sccm		+1000sccm
Pressure range (psi) (see appendix)			± 2.0" water column	
output voltage @ peg point	5VDC@ 200sccm	3.4VDC@ 25sccm	5VDC@ 2" water column	5VDC 1000sccm
Zero Point Voltage	1.00±0.05VDC	1.00±0.1VDC	1.00±0.08mV	1.00±0.1VDC
Zero point drift +25~-25°C +25~+85°C	±25mV	±100mV	±25mV	±25mV
Output voltage drift Max + 25~-25°C +25~+85°C	-4% reading +4% reading	± 5.0% reading ±5.0% read	+24.0% Readings-24.0% Readings	-5% reading +5% reading
Repetition & Stagnation Max	± 0.5% reading	± 1% Readings	± 0.5% reading	± 1% read

	Min	Typ.	Max.
Power supply (VDC)	8.0	10±0.01	15 (2)
power dissipation (mW)	---	50	60
Reaction time (ms)	---	1.0	3.0 (1)
Co-compression pressure (psi)	---	---	25
working temperature	-25~85°C		
Storage temperature (°C)	-40~90°C		
Impact (5drops, 6axis)	100g peak (5drops,6axis)		

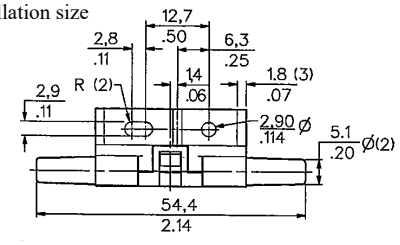
Note: 1. The maximum time required for signal processing initial preheating is 1 minute

2. The output voltage varies with the ratio of the power supply voltage

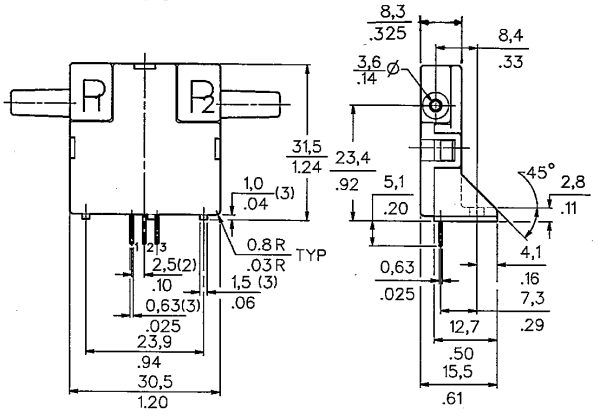
3、 The temperature drift of differential device is mainly caused by the change of gas concentration with temperature

The temperature drift of gas flow devices is mainly the square root coefficient of thin film TCR and the temperature drift of thick film resistors, plus the temperature drift of operational amplifiers

installation size



4. For damage prevention, maximum allowable flow rate variation: 5.0SLPM/1.0 second



Recommended model	range
AWM3100V	+200SCCM
AWM3201CR	± 0.5 inch water
AWM3200V	± 2 inches of water
AWM3300V	+1000SCCM

Note: The positive airflow direction is defined as flowing from hole P1 to hole P2 and resulting in a positive output. Do not apply a force of more than 10 pounds in each direction of the two measured empty holes.

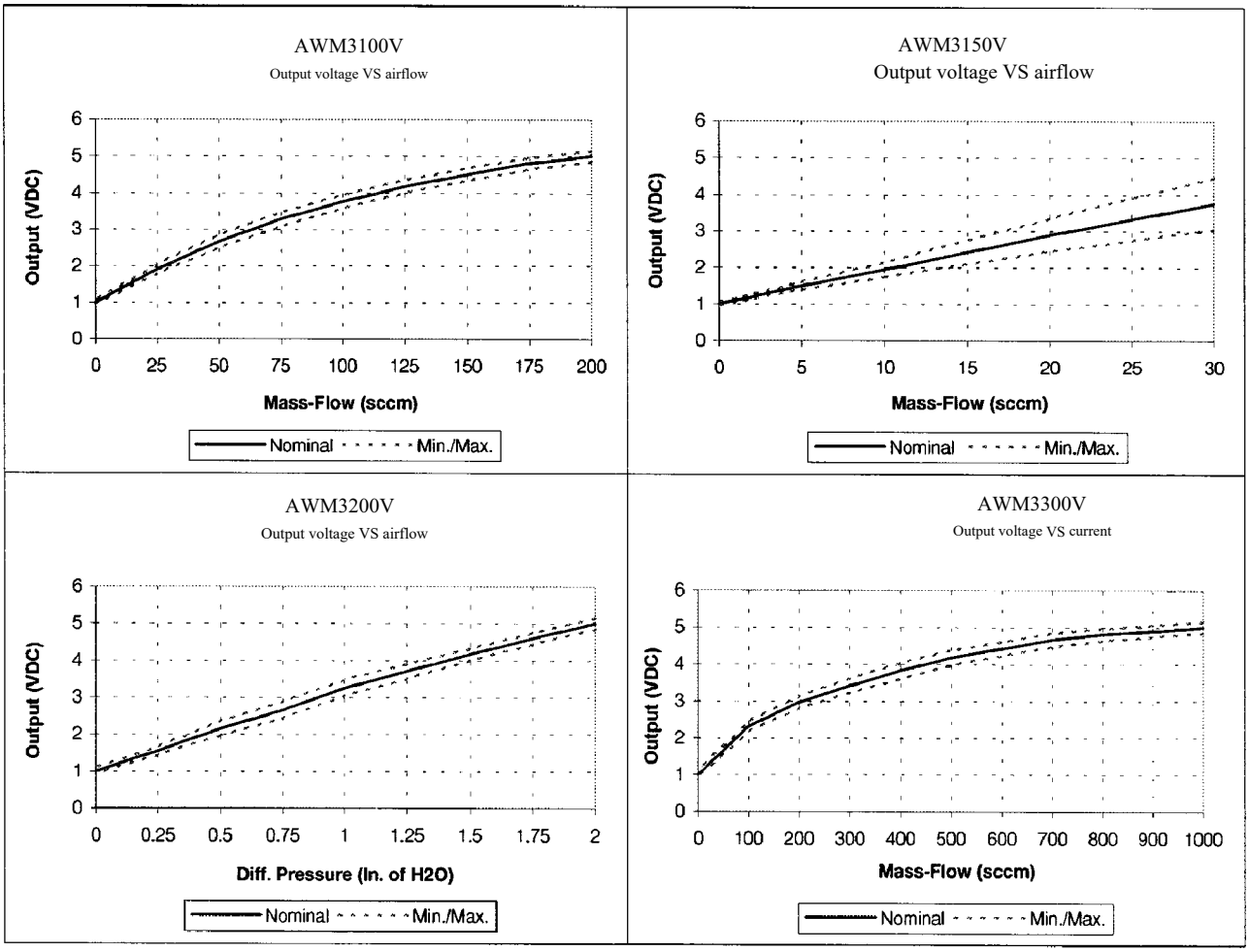
MAF sensor

AWM3000 Series Small Flow/no Amplification

Output airflow VS device interchangeability

AWM3100V			AWM3150V			AWM3200V			AWM3300V		
Flow	NOM	TOL	Flow	NOM	TOL	Pressure	NOM	TOL	Flow	NOM	TOL
Sccm	VDC	V	Sccm	VDC	±V	in H_2O	VDC	±V	Sccm	VDC	±V
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	0.10	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
20	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

curve of output



MAF sensor

AWM3000 Series Differential Pressure/Bidirectional Flow Measurement

AWM3000 series new products

- AWM3200CR
  Measuring 2" water column micro differential pressure using the principle of thermal micro bridge, 4-20mA standard output
- AWM3201CR
  -Using the hot microbridge principle to measure 0.5" water column differential pressure, 4-20mA standard output
- AWM3303V
  -1 L/min bidirectional flow measurement

Output airflow VS device interchangeability

* AWM3200CR and AWM3201CR are linear 4-20mA outputs, see figure

AWM3303V		
Flow	NOM	TOL
Sccm	VDC	±V
1000	5.00	0.15
800	4.82	0.18
600	4.67	0.20
400	4.42	0.20
200	3.96	0.15
0	3.00	0.05
-200	2.03	0.18
-400	1.62	0.20
-600	1.35	0.25
-800	1.15	0.30
-1000	1.00	0.35

Technical specifications: 10.0 ± 0.01VDC

	AWM3200CR*	AWM3201CR*	AWM3303V
Flow range (span)			±1000sccm(1 SLPM)
Pressure range (psi)	0-2" water column	1-0.5" water column	
Output type	4-20mA DC (linear)	4-20mA DC (linear)	1-5VDC (note 2)
Output @ reference point	20.0±1 mA DC @2"H_2O	20.0±1 mA DC @5"H_2O	5.00±0.150VDC
Zero point output	4.00±0.3mA DC	4.00±0.4mA DC	3.00±0.05VDC
Zero point drift- 25 to +25˚C +25～85˚C	 ±5mA DC(max) ±0.7mA DC(max)	 ±0.4mA DC(max) ±0.6mA DC(max), 0.1mA typ	 ±0.050VDC
Output temperature drift Max +25～-25 ˚C +25～85˚C	+24% reading-31% reading	+32% reading Note 3-32% reading	-5% reading +5% reading
linear error	±5% Readings	±5% Readings	---
External output impedance	100~300Ω	100-300Ω	---
Reaction time (ms) Note 1	60ms(max)	60ms(max)	3ms
Repetition & Stagnation Max	± 0.5% reading	± 0.5% reading	± 1% read
Power supply (VDC)	10±0.01	10±0.01	8-15
	Min	Typ.	
power dissipation (mW)	---	50	100
Co-compression pressure (psi)	---	---	25
calibration gas	nitrogen		
working temperature	-25~85˚C		
Storage temperature (˚C)	-40~90˚C		
lash	100g peak (5drops, 6axis)		

Note: 1. The maximum time required for signal processing initial preheating is 1 minute

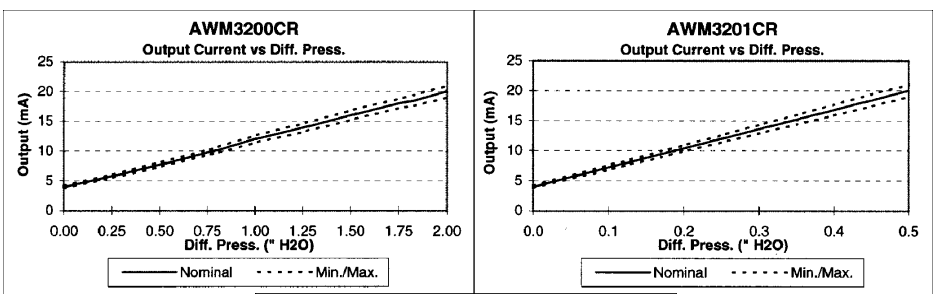
2. The output voltage varies with the ratio of the power supply voltage

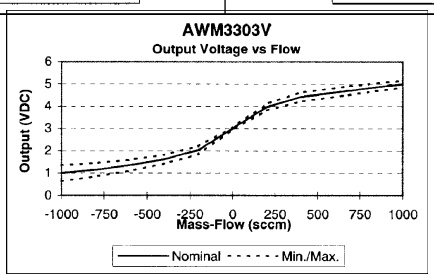
3. The temperature drift of differential pressure device is mainly due to the change of gas concentration with temperature

The temperature drift of gas flow devices is mainly due to the square root coefficient of thin film TCR and the temperature drift of thick film resistors, plus the temperature drift of operational amplifiers

*5 micron filter must be on the micropressure sensor

curve of output





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