

Strain Gage Amplifiers

Series AMP-SG-M1

- Single channel miniature amplifier
- Highly accurate bridge excitation
- Provides high level voltage signal output
- Externally adjustable shunt resistance
- Externally adjustable gain
- Precision low noise differential amplifier
- Remote bridge excitation On/Off capability
- Remote shunt calibration capability

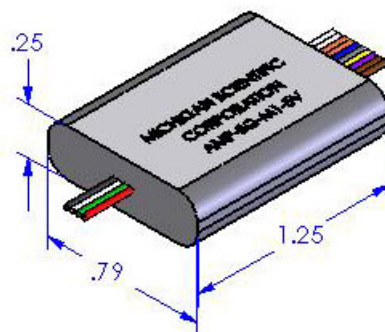


Description

Michigan Scientific's *AMP-SG-M1 Strain Gage Amplifiers* are ideal for applications where signal conditioning is needed and space is limited. They are designed to provide signal amplification prior to passing the signal through a slip ring. Superior data accuracy is achieved by locating the signal amplifier on the rotating side of the slip ring. This configuration greatly improves signal quality because the amplifier is located closer to the sensor which reduces errors due to long lead wires, connector resistance variations, and electro-magnetic interference.

These strain gage amplifiers incorporate a precision low drift bridge excitation supply, a stable differential amplifier, and a remotely activated shunt calibration resistor for system span verification. Each amplifier provides strain gage bridge excitation and amplification for one channel. Multiple channel configurations are available.

Drawings



C586004S_M1.PSD

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Rev. A

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Specifications

PARAMETER	SPECIFICATION
BRIDGE EXCITATION	
Type	DC Constant Voltage (Bipolar excitation)
Magnitude	AMP-SG-M1-5 ± 2.5 V (5 volts total) AMP-SG-M1-10 ± 5.0 V (10 volts total)
Accuracy	0.40%
Temperature Coefficient	0.0005 %/ $^{\circ}$ C Max (0.00028 %/ $^{\circ}$ F)
Current Limit	AMP-SG-M1-5 42 mA AMP-SG-M1-10 84 mA
REMOTE CALIBRATION	
Positive & negative shunt Calibration	
Shunt Resistance	internal values 100K Ω and 1M Ω external values 100k Ω Through 1M Ω
Shunt accuracy	@ 100k Ω 0.1% @ 1M Ω 0.1%
GAIN	
Range	with external jumper 100 & 2000 V/V w/ external resistor 100 through 2000 V/V
Accuracy	@ 25 $^{\circ}$ C, Gain =100 ± 0.05 % typ (± 0.50 %max) @ 25 $^{\circ}$ C, Gain =1000 ± 0.50 %typ (± 1.0 %max)
Temperature Coefficient	0.0025 %/ $^{\circ}$ C (0.0014 %/ $^{\circ}$ F)
OUTPUT	
Range	± 10 V Max
Capacitive Load	1000 pF Max
VOLTAGE OFFSET	
Referred to input of amplifier	
Initial @ 25 $^{\circ}$ C	± 10 μ V typ (± 50 μ V max)
Temperature Stability	± 0.1 μ V / $^{\circ}$ C typ (± 0.25 μ V / $^{\circ}$ C max)
Time Stability	± 0.1 μ V / month
DC CMRR	160 dB
Noise rti 0.01 - 10 Hz	0.7 μ V p-p
DYNAMIC RESPONSE	
Frequency Response -3dB	
	@ Gain=1000 20 kHz
	@ Gain=100 20 kHz
Slew rate	4 V/ μ s
Settling Time to 0.01% @ Gain=100	9 μ s
POWER REQUIREMENTS	
Voltage @ 25 $^{\circ}$ C	± 15 VDC
Current	± 15 mA plus Bridge Load (+15 mA additional during shunt calibration)
ENVIRONMENT	
Specification	-40 to +85 $^{\circ}$ C (-40 to +185 $^{\circ}$ F)
Operation	-40 to +125 $^{\circ}$ C (-40 to +257 $^{\circ}$ F)
MECHANICAL	
AMP-SG-M1	
Weight	14.17 G (0.50 Oz)
Overall Length	31.75 mm (1.250 in)
Overall Height	6.35 mm (0.250 in)
Overall Width	20.32 mm (0.800 in)

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