

Strain Gage Amplifiers

Series AMP-SG-MH-BC

- Contains bridge completion resistors
- Single-channel miniature amplifier
- Highly accurate bridge excitation
- Provides high-level voltage signal output
- Externally adjustable shunt resistance
- Externally adjustable gain
- Remote bridge excitation on/off capability
- Remote shunt calibration capability



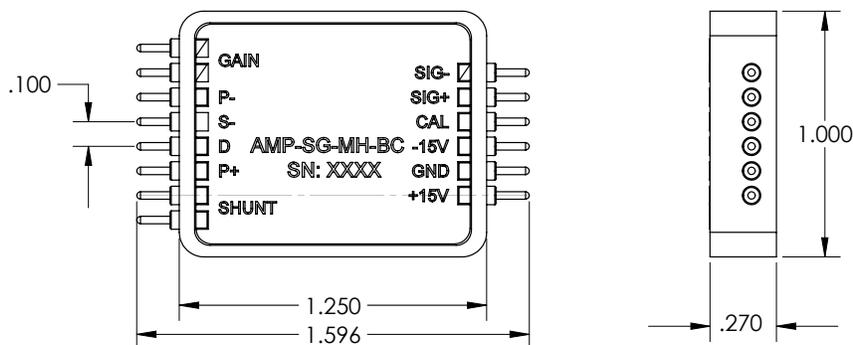
Description

The Michigan Scientific *AMP-SG-MH-BC 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 electromagnetic interference.

A full strain gauge bridge is needed to allow the *AMP-SG-MH-BC* to regulate the bridge excitation. The *AMP-SG-MH-BC* has completion resistors built-in for either quarter or half bridge measurements. Without a quarter or half bridge connected properly, measurement of the excitation is not meaningful.

These 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 gauge bridge excitation and amplification for one channel. Multiple channel configurations are available.

Drawing



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Specifications

PARAMETER	SPECIFICATION
BRIDGE EXCITATION	
Type	DC constant voltage (bipolar excitation)
Magnitude	AMP-SG-MH-BC-5: ± 2.5 V (5 V total) AMP-SG-MH-BC-10: ± 5.0 V (10 V total)
Accuracy	0.40 %
Temperature coefficient	0.0005 %/°C Max (0.00028 %/°F)
Current limit	AMP-SG-MH-BC-5: 42 mA AMP-SG-MH-BC-10: 84 mA
Completion Resistance	350 Ω
REMOTE CALIBRATION ¹	
Shunt resistance internal value	100 k Ω and 1 M Ω
Shunt resistance external value	100 k Ω through 1 M Ω
Shunt accuracy at 100 k Ω	0.1%
Shunt accuracy at 1 M Ω	0.1%
GAIN	
Range with external jumper	100 V/V and 2,000 V/V
Range with external resistor	100 V/V through 2,000 V/V
Accuracy at 25 °C, gain=100 V/V	± 0.05 % typ (± 0.50 %max)
Accuracy at 25 °C, gain=1,000 V/V	± 0.50 %typ (± 1.0 %max)
Temperature coefficient	0.0025 %/°C (0.0014 %/°F)
OUTPUT	
Range	± 10 V maximum
Capacitive load	1000 pF maximum
VOLTAGE OFFSET ²	
Initial at 25 °C	± 10 μ V typ (± 50 μ V max)
Temperature stability	± 0.1 μ V/°C typ (± 0.25 μ V/°C max)
Time stability	± 0.1 μ V/month
DC CMRR	160 dB
Noise (rti 0.01 Hz-10 Hz)	0.7 μ V p-p
DYNAMIC RESPONSE	
Frequency response (-3 dB), gain=100 V/V	20 kHz
Frequency response (-3 dB), gain=1,000 V/V	20 kHz
Slew rate	4 V/ μ s
Settling time to 0.01%, gain=100 V/V	9 μ s
POWER REQUIREMENTS	
Voltage at 25 °C	± 15 Vdc
Current	± 15 mA plus bridge load (± 30 mA during shunt calibration)
ENVIRONMENT	
Specification	-40 °F to +185 °F (-40 °C to +85 °C)
Operation	-40 °F to +257 °F (-40 °C to +125 °C)
MECHANICAL	
Weight	0.39 oz (11 g)
Overall length	1.60 in (40.5 mm)
Overall height	0.27 in (6.9 mm)
Overall width	1.00 in (25.4 mm)
¹ Positive and negative shunt calibration	
² Referred to input of amplifier	