

Modular Spinning Strain Gage Amplifier

Model AMP-SG-U2 Series

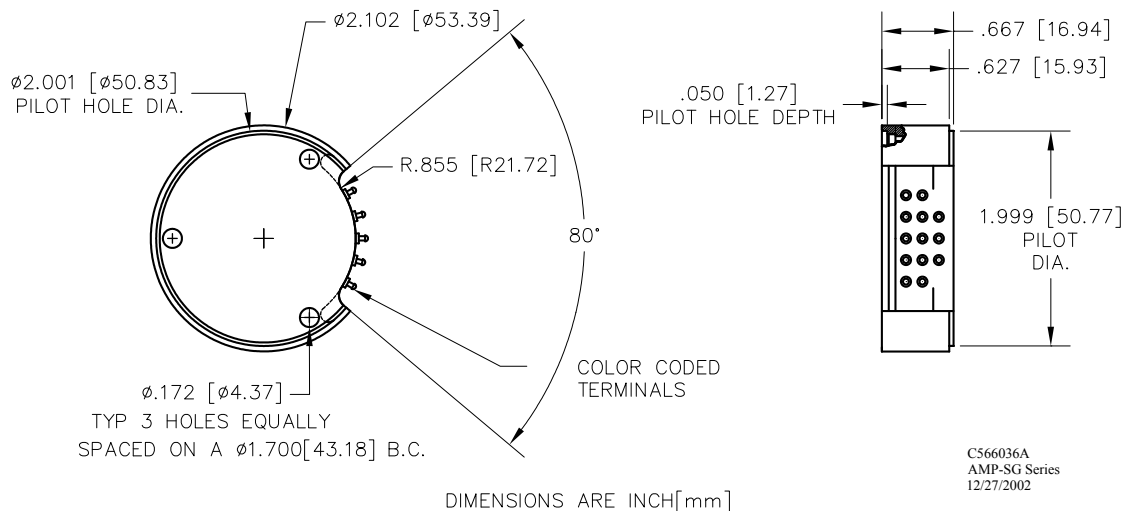
- Highly accurate bridge excitation
- Provides high level voltage signal output
- Externally adjustable shunt resistance
- Externally adjustable gain
- Precision low noise differential amplifier
- Remote bridge excitation On/Off capability
- Remote shunt calibration capability
- Pilots on SR series slip ring rotors
- Amplifiers are stackable for multi-channel use



Description

The *Modular Spinning Strain Gage Amplifier* is designed to mount on the rotor (spinning side) of all Michigan Scientific SR series slip rings. 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 *Modular Spinning 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 module provides strain gage bridge excitation and amplification for one channel. For multiple channels, the amplifiers may be stacked or arrayed around an adapter plate. Refer to the literature in the Technical Notes section for a wiring schematic of an individual amplifier and recommended wiring techniques when using multiple amplifiers.



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Rev. A

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Specifications

PARAMETER	SPECIFICATION
BRIDGE EXCITATION	
Type	DC Constant Voltage (Bipolar excitation)
Magnitude	AMP-SG-U2 ±2.5V Standard (5 volts total) AMP-SG-U2-10 ±5.0V Available (10 volts total) AMP-SG-U2-17 ±8.5V Available (17 volts total) AMP-SG-U2-20 ±10.0V Available (20 volts total)
Accuracy	0.20%
Temperature Coefficient	0.0005%/°C Max (0.00028 %/°F)
Current Limit	AMP-SG-U2 42 mA AMP-SG-U2-10 84 mA AMP-SG-U2-17 142 mA AMP-SG-U2-20 167 mA
REMOTE CALIBRATION	
	Positive & negative shunt calibration
Shunt Resistance internal value external value	100kΩ & 1 MΩ 100kΩ through 1 MΩ
Shunt accuracy @ 100kΩ @ 1MΩ	0.02% 0.10%
GAIN	
	Externally adjustable
Range w/ jumper w/ external resistor	100 & 2000 V/V 100 through 2000 V/V
Accuracy @ 25°C, Gain =100 @ 25°C, Gain =1000	±0.05 %typ (±0.50 % max) ±0.50 %typ (±1.0 %max)
Temperature Coefficient	0.0025 %/°C (0.0014 %/°F)
OUTPUT	
Range	±10V Max
Capacitive Load	1000 pF Max
VOLTAGE OFFSET	
	Referred to input of amplifier
Initial @ 25°C	±10 μV
Temperature Stability	±0.1 μV /°C
Time Stability	±1.0 μV / Month
DC CMRR	160 dB
Noise rti 0.01 to 10 Hz	0.7 μV p-p
DYNAMIC RESPONSE	
	<i>Higher Bandwidths Available</i>
Frequency Response @ Gain=1000 -3dB @ Gain=100	1 kHz 10 kHz
Slew rate	0.5 V/ μs
Settling Time to 0.01% @ Gain=100	145 μs
POWER REQUIREMENTS	
Voltage @ 25°C	±13 to ±17 VDC
Current	±15 mA plus Bridge Load (+15 mA additional during shunt calibration)
ENVIRONMENT	
Specification	-25 to +85°C (-13 to +185°F)
Operation	-55 to +125°C (-67 to +257°F)
MECHANICAL	
Weight	AMP-SG-U2, AMP-SG-U2-10 64 g (2.25 oz) AMP-SG-U2-17, AMP-SG-U2-20 82 g (2.89 oz)
OPTIONS: Four models are available from stock: APM-SG-U2, AMP-SG-U2-10, AMP-SG-U2-17, AMP-SG-U2-20 These units provide 5V, 10V, 17V, or 20V excitation respectively. Other custom bridge excitations are available.	

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