

Three Channel Strain Gage Amplifier Box

Model SGA3A

- Ideal for use with Michigan Scientific Load Cells
- Highly accurate bridge excitation
- Provides high level voltage signal output
- Precision low noise differential amplifier
- Remote bridge excitation On/Off capability
- Remote shunt calibration capability
- Available in a variety of channel configurations
- Optional strain gauge summation wiring, for use with multiple loads cells used in parallel



Description

The Michigan Scientific *SGA3A Strain Gage Amplifier Box* is ideal for use with any of MSC's wide variety of three directional load cells. The *SGA3A* provides highly accurate excitation voltage to the load cell, a stable differential amplifier, and a remotely activated shunt resistor for system span verification. The result is an accurate, high level voltage output signal. The shunt calibration can be easily invoked with the flip of a switch when used with a Michigan Scientific *PS-DC* or *PS-AC Power Supply*.

MSC will select the appropriate amplifier gain and shunt resistors for use with your selected load cell. The fixed precision resistors are factory installed.

The standard *SGA3A* is comprised of three independent miniature strain gauge amplifiers. MSC can customize the amplifier box to any number of channels desired. The *SGA3A* can also incorporate strain gauge summation wiring. This saves cost when using an array of load cells to measure three directions of force because only one amplifier box is required.



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Specifications

PARAMETER	SPECIFICATION
BRIDGE EXCITATION	
Type	DC Constant Voltage (Bipolar excitation)
Magnitude	±5 V (10 Volts total) ±2.5 V (5 Volts total)
Accuracy	0.40%
Temperature Coefficient	0.0005%/°C Max (0.00028%/°F)
Current Limit	84 mA per channel (10 Volt Excitation)
REMOTE CALIBRATION	
Positive & negative shunt calibration	
Shunt Resistance	100 KΩ and 1 MΩ
Shunt accuracy	0.1%
GAIN	
Range	100 & 2000 V/V
Accuracy (25°C, Gain =100)	±0.05% typ (±0.50% max)
Accuracy (25°C, Gain =1000)	±0.50% typ (±1.0% max)
Temperature Coefficient	0.0025%/°C (0.0014%/°F)
OUTPUT	
Range	±10 V Max
Capacitive Load	1000 pF Max
VOLTAGE OFFSET	
Referred to input of amplifier	
Initial (25°C)	±10 μV typ (±50 μV max)
Temperature Stability	±0.1 μV/°C typ (±0.25 μV/°C max)
Time Stability	±0.1 μV/month
DC CMRR	160 dB
Noise (rti 0.01 - 10 Hz)	0.7 μV p-p
DYNAMIC RESPONSE	
Frequency Response -3dB (@ Gain=1000)	20 kHz
Frequency Response -3dB (@ Gain=100)	40 kHz
Slew rate	4 V/μs
Settling Time to 0.01% @ Gain=100	9 μs
POWER REQUIREMENTS	
Voltage	±15 Vdc
Current (Normal Operation)	±45 mA plus Bridge Load (3 channels)
Current (Shunt Operation)	±60 mA plus Bridge Load (3 channels)
ENVIRONMENT	
Specification	-40 to +85°C (-40 to +185°F)
Operation	-40 to +125°C (-40 to +257°F)