

Model 142 Inline Strain Gage Amplifier



Low Noise Inline Strain Gage Amplifier
User Selectable Gain Settings
Includes Auto-Zero Function
Small Rugged Package



The **Model 142** is a remote in-line strain gage amplifier designed to be used with 1/4 bridge strain gage instruments. The amplifier features five user selectable gain settings with a gain accuracy of $\pm 0.5\%$ and offers a wide bandwidth to 100kHz. The model 142 offers a unique auto-zero function (patent pending) that allows the operator to zero the offset voltage to within $\pm 1.5\text{mV}$ either remotely or by pressing the on-board push button at the user's command, usually right before the taking of data. This feature removes any offset drift from the strain gage for a more accurate measurement.

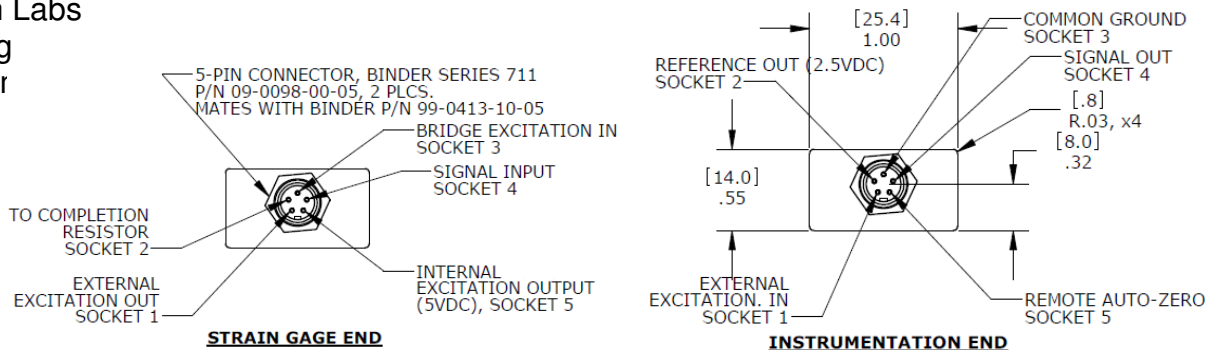
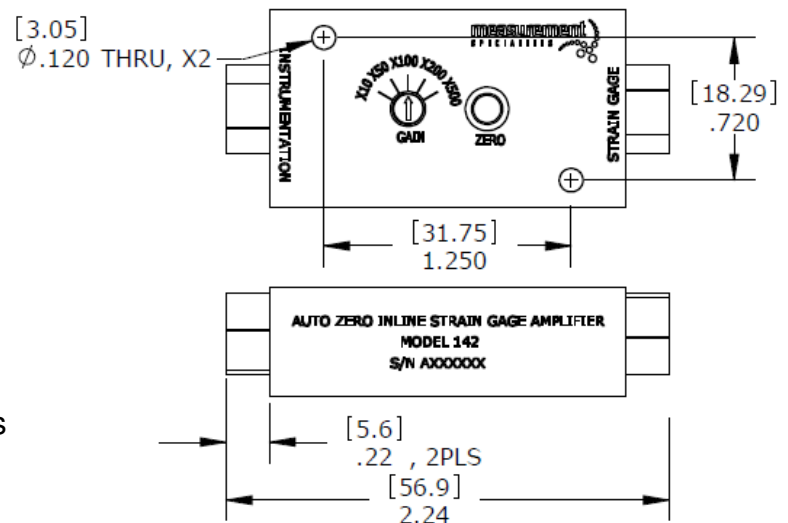
FEATURES

- Interface with 1/4 Bridge Strain Gages
- $\pm 1.5\text{mV}$ Auto-Zero Function
- x10, x50, x100, x200 & x500 Gain Settings
- Wide Bandwidth to 100kHz
- Regulated 5 Vdc Gage Excitation

APPLICATIONS

- Static Force Testing
- Instrumentation Labs
- Load Monitoring
- Strain Measurer

dimensions



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performance specifications

All values are typical at $\pm 24^{\circ}\text{C}$ unless otherwise stated. Measurement Specialties reserves the right to update and change these specifications without notice.

Parameters

DYNAMIC

Input Type	Uniaxial Strain Gage, 4 Wires, 1/4 Bridge
Input Range (V)	0.5 to ($V_{exc} - 0.6$), each input referenced to ground
User Selectable Gain Settings	x10, x50, x100, x200, x500
Bandwidth (-3dB)	DC to 100kHz
Noise (nV/ $\sqrt{\text{Hz}}$)	30 RTI + 2000 RTO
Zero Output After Auto-Zero Actuation ¹	$\pm 1.5\text{mV}$, referenced to 2.5V reference out
Input Range Limit for Auto-Zero Function	$\pm 10\text{Volts/gain}$

ELECTRICAL

Input Excitation (Vdc) ²	5 to 30
Bridge Excitation (Vdc) ²	5 (regulated)
Reverse Polarity Protection	-20V, on excitation line
Quiescent Current (mA)	15, without bridge
Reference Out (Vdc)	2.5 ± 0.05 , referenced to ground
Output Voltage Limit (Vpk)	± 2 , referenced to 2.5V reference out
Gain Accuracy (%)	0.5
Output Impedance (Ω)	<50
Insulation Resistance (M Ω)	>100 @ 50Vdc

ENVIRONMENTAL

Operating Temperature ($^{\circ}\text{C}$)	-20 to +70
Storage Temperature ($^{\circ}\text{C}$)	-20 to +70
Environmental Protection	IP50
Vibration (g)	20 pk from 50Hz to 2000Hz
Shock (g)	2000 pk with 3.6ms Haversine pulse

PHYSICAL

Case Material	Anodized Aluminum
Electrical Connector, Input	Binder Connector P/N 09-0098-00-05 (mates with Binder Connector P/N 99-0413-10-05)
Electrical Connector, Output	Binder Connector P/N 09-0098-00-05 (mates with Binder Connector P/N 99-0413-10-05)
Weight (grams)	34

¹ Auto-zero can be actuated using pushbutton or grounding remote auto-zero pin for minimum 2 sec. Multiple actuations may be required to achieve the $\pm 1.5\text{mV}$ limit.

² The strain gage can be powered using external gage excitation voltage (through Socket 1 of connection) without using the on-board voltage regulator

³ Supply Out: 5.00 ± 0.10 Vdc, <150 mamps current source, >5.2 Vdc excitation required.

⁴ Excitation and common ground are direct connections from instrumentation end to transducer end.

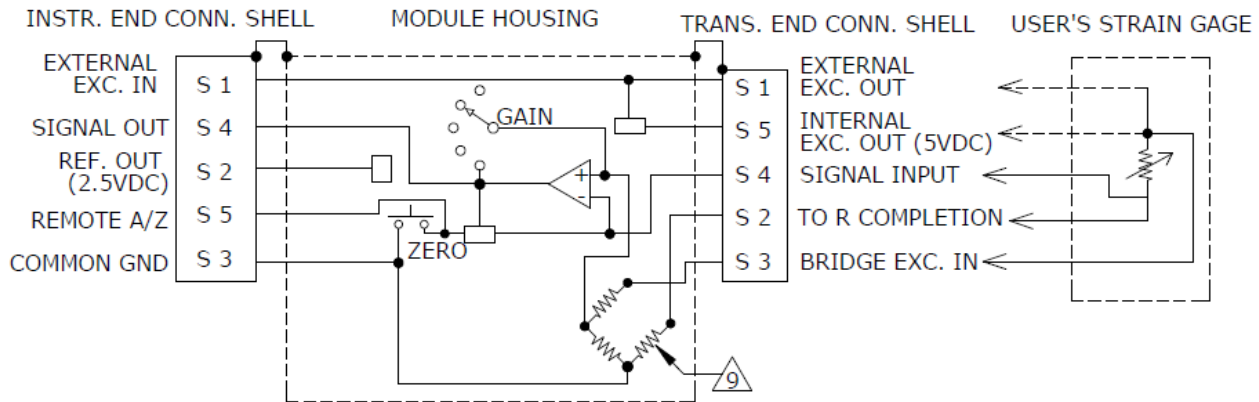
Supplied accessories: AC-G04393 2x Mating Connector Plug (Binder Connector P/N 99-0413-10-05)

Optional accessories: 379-XXX Cable Assembly, 5x #30 AWG, (XXX designates length in inches, 10ft standard)

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schematic



The model 142 is supplied with a 350 ohm completion resistor installed at the factory. This resistor can be replaced by the user with another value if required to match that of the strain gage. Suggested metal film resistor: Vishay Dale PTF56 Series, $\pm 0.1\%$, $\pm 5\text{PPM}/^\circ\text{C}$, 1/8W

ordering info

PART NUMBERING Model Number

Model 142