

Strain Gage Amplifier

Model 5804

The Columbia Model 5804 Military-Grade Strain Gage Amplifier is designed to amplify signals from Columbia's DT and DTD Series Full-Bridge Strain Sensors. The system will provide both strain and temperature outputs.

The strain output incorporates a microprocessor-driven auto zeroing circuit capable of compensating for input offsets of up to $\pm 3000 \mu\epsilon$ equivalent and will automatically drive the output to 0.00 VDC in the presence of input offset equivalent strains within that range. This feature allows the operator to correct for any strain offsets resulting from gage mounting, material fatigue or material deformation. Auto zeroing may be performed automatically on power-up, or on command manually with the use of the auto zero function pin on the power connector.

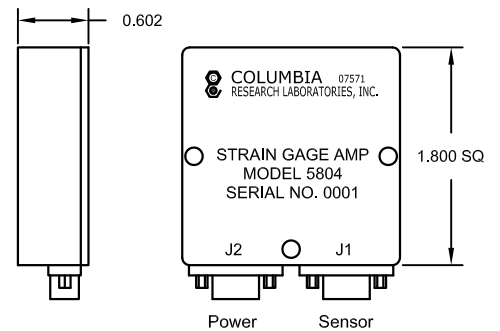
The temperature output is derived from an internal 1000 Ω platinum RTD and provides a linearized output of 40 mV / Deg C from -40°C (0.00 V) to $+85^\circ\text{C}$ (5.00 V). The temperature output will remain within $\pm 3^\circ$ or $\pm 120\text{mV}$ of the straight line passing thru these two points over its rated operating range.

- Connects to any Columbia Full Bridge Strain Sensor
- Strain & Temperature Outputs
- Wide Input Power Range
- Auto Zeroing Capability



SPECIFICATIONS

Operational	5804
Power Required	+15 to +35VDC (+28VDC Nom.)
DC Current Drain	25mA Max.
Strain Signal Output ¹	$\pm 5.000\text{VDC}$ 0.00VDC = 0 Micro Strains Standard: Output corresponding to $\pm 5000 \mu\epsilon$ Optional: Output corresponding to Specified Range
Temperature Output	0.0VDC @ -40°C and 5.00VDC @ $+85^\circ\text{C}$ $\pm 3^\circ$ or $\pm 120\text{mV}$ of straight line passing thru
Temperature Scale Factor	40Mv/ $^\circ\text{C}$ Nominal
Output Protection	Over-Voltage and Over-Current Protection on both Strain and Temperature Outputs
Measurement Accuracy (Strain)	$\pm 5\%$
Electronic Filtering ²	2-Pole Butterworth Filter with response set to -3dB @2000Hz
Fault Detection	The amplifier will provide fault detection on all four strain sensor lead wires with positive indication of any combination of broken or unconnected strain sensor lead wires. Faults will be indicated by an out-of-range output from the amplifier at the end of the auto-zeroing period. Open fault detection of the temperature probe is intrinsic.
Operating Temperature	-40 to $+85^\circ\text{C}$



SENSOR PIN FUNCTIONS

1	Bridge Drive (+)
2	Bridge Output (+)
3	Bridge Output (-)
4	Bridge Drive (-)
5	Shield/Case Ground
8	
9	

AMPLIFIER PIN FUNCTIONS

1	+DC Power Input
9	DC Power Ground
7	Strain Output
3	Temperature Output
5	Signal Ground
4	Auto Zero Select
8	Shield/Case Ground

Physical

Size	1.800 \pm 0.010" Square x 0.602 \pm 0.015" High
Mounting	(3) #6 Clearance Holes
Weight	55gm Nominal
Case Seal	Epoxy
Grounding	Case Isolated from Signal / Power Ground
Power Interface	Cannon MSN-9PSB Connector
Sensor Interface	Cannon MDM-9SSP Connector

¹ Specify optional Strain Output Range as model number suffix (e.g. Model 5804 - Range \pm XXXX $\mu\epsilon$)

² Optional cutoff Frequencies Available