13201A/23201A Accelerometer

Rugged ±1 g to ±2 g
Zero g Bias Stability ±2 mg
Very Low Noise 110 µg/√Hz

Analog Accelerometer

The Measurement Specialties 13201A (uniaxial) and 23201A (biaxial) analog accelerometers offer precision measurements over the entire the -40ºC to +85ºC temperature range with superior bias stability and approximately 100 µg measurement resolution.

Accurately measuring ±1 g, ±1.5 g, or ±2 g accelerations on one or two axes, their tough, compact housing holds potted electronics. The small size and built-in power regulation allow installation where other accelerometers can't. Choose the bandwidth and range options best suited for your application.

The voltage output of the 13201A and 23201A is directly proportional to the acceleration along the axis. Each DC-coupled output is fully scaled, referenced, and temperature compensated. Users are supplied with a calibration certificate listing sensitivity and offset for each sensor, as well as the on-axis and transverse alignment parameters needed to ensure rapid and efficient system implementation. Increased offset compensation can be obtained with Option C002.

The accelerometers have a nominal full scale output swing of ±2 Volts. The zero g output level is nominally +2.5 Volts. Custom versions can be provided.

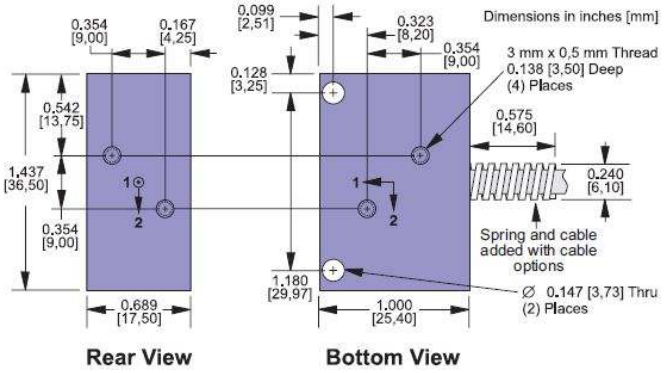
FEATURES

- High Accuracy and Linearity over Wide Temperature Range
- Rugged for Harsh Environments
- Small Size
- Built-in Power Supply Regulation
- Easy Installation
- Three Year Warranty

APPLICATIONS

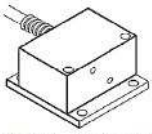
- Vehicle dynamics
- Construction Equipment
- Research & Development
- Test & Measurement
- Military/Aerospace

dimensions

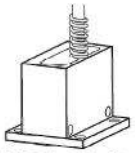


Two through holes and four 3 mm x 0.5 mm threaded holes are provided for mounting.

Mounting adapters (sold separately)

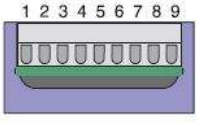


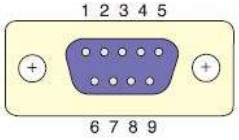
35173A Horizontal



35172A Vertical

connections





Pin	1	2	3	4	5	6	7	8	9
Signal	A2+	Signal-	T+	+5VOut	A1+	Signal-	Self Test	+V_S	Gnd
Wire	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White

13201A/23201A Accelerometer

performance specifications

$T_A = T_{min}$ to T_{max} ; $8.5 \le V_S \le 36$ V; Acceleration = 0 g unless otherwise noted; within one year of calibration. Improved specifications available upon request.

PARAMETERS	Min	Typical	Max	Units	Conditions/Notes
Range: Measurement Full Scale		±2.0		g	On each axis. Must specify via Option Rnnn
Sensitivity					
At 25ºC, Option R002		1000*		mV/g	Precise values on cal certificate
Drift Tmin to Tmax		±0.3		%	Percent of sensitivity at 25ºC
Zero g Bias Level					
At 25 ºC		2.500		V	Typ ±2 mV; Precise values on cal certificate
Drift to Tmin or Tmax, Option C001		±20	±60	mg	At <1.25ºC/min. temperature rate of change
Drift to Tmin or Tmax, Option C002		±2	±6	mg	At <1.25ºC/min. temperature rate of change
Alignment					
Deviation from Ideal Axes		±0.75	±3.0	degrees	Precise values on cal certificate. Can be compensated if required
Transverse Sensitivity		±0.25		%	Inherent sensor error, excluding misalignment
Nonlinearity		±0.2	±1.25	% FSR	Best fit straight line
Frequency Response	0		2100	Hz	Upper cutoff per option Bnnn, -3 dB pt ±10%
Noise Density		110		µg/√Hz	
Self-Test Pull-Up Resistor	5			kΩ	Logic "1"≥3.5 V, Logic "0"≤1.5 V; "0" causes self-test
Temperature Sensor					
Sensitivity		6.45		mV/ºC	Error ±1 ºC over temperature
0ºC Bias Level		509		mV	
Outputs					Series 100 Ω for capacitance tolerance
Output Voltage Swing R001, R1.5	0.05		4.95	V	>1 MΩ load
Output Voltage Swing R002	0.55		4.8	V	>1 MΩ load; limits typically reach 0.2 V to 4.95 V
Power Supply (V_S)					
Input Voltage Limits	-80		+80	V	-80 V continuous, >38 V if ≤550 ms, duty <1%
Input Voltage - Operating	+8.5		+36	V	Continuous
Input Current		10		mA	No load, quiescent
Rejection Ratio		>120		dB	DC
Temperature Range (T_A)	-40		+85	ºC	
Mass		35		grams	Excludes cable; T000 values on cal certificate
Shock Survival	-3500		+3500	g	Any axis for 0.5 ms, powered or unpowered

*Scale linearly with range option Rnnn; see Ordering Information

ordering info

23201A - R002 - B094 - T004 - C002

Instrument
23201A
13201A

Range
R002 : ±2 g
R1.5 : ±1.5 g
R001 : ±1 g

Bandwidth
B2k1 : 0 to 2100 Hz
B1k4 : 0 to 1400 Hz
B944 : 0 to 944 Hz
B380 : 0 to 380 Hz
B208 : 0 to 208 Hz
B142 : 0 to 142 Hz
B094 : 0 to 94 Hz
B066 : 0 to 66 Hz
B031 : 0 to 31 Hz
B6.6 : 0 to 6.6 Hz

Termination
T004 : 4 ft. cable with DB9M
T000 : Terminal block
T*nnn*: Custom length, *nnn* ft. (call SI)

Calibration
C001 : Std room temp cal only
C002 : C001 cal plus -40 to +85°C offset compensation

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