

SUMMIT 23200B

Rugged ± 10 to ± 40 g Biaxial Accelerometer with Signal Conditioning and Temperature Sensor



Technical Data*

Features and Benefits

High Accuracy and Linearity over Wide Temperature Range

The voltage output for each axis of the 23200B is directly proportional to the acceleration along that axis. Each DC-coupled output is fully scaled, referenced, and temperature compensated. Accuracy is improved by minimizing variations due to temperature and aging effects, resulting in a sensor that is more stable over temperature than piezoelectric or piezoresistive devices. Critical applications can use the built-in temperature sensor to compensate for residual temperature effects.

Calibration Certificate

Each 23200B can be supplied with an optional calibration certificate listing gain, offset, and on-axis and transverse alignment parameters needed to ensure rapid and efficient system implementation. The alignment data can be used to compensate the measured values if needed.

Self-Test on Digital Command

A TTL-compatible self-test input causes a simulated acceleration to be injected into both accelerometers to verify channel integrity.

Small Size

Complete conditioned biaxial accelerometer in less than a cubic inch.

Built-in Power Supply Regulation

Unregulated DC power from +8 to +30 volts is all that is required to measure accelerations on both axes. The 23200B is ideal for automotive applications with the ability to survive both continuous reverse battery to -20V and load dump transients to +60V.

Easy installation

Built-in terminal block or cable with 9-pin connector makes it easy to wire the 23200B. Two through holes and four tapped holes simplify mounting.

Suitable for Harsh Environments

The 23200B is robust and can be used in harsh environments. The unit will survive 500 g powered and 2000 g unpowered.

*Data subject to change without notice

Simplify Acceleration and Temperature Measurements

The Summit Instruments 23200B accelerometer has two orthogonal axes and a temperature sensor in a small rugged package. The small size and built-in power regulation allow the 23200B to fit where other accelerometers can't. A power source of +8 to +30 VDC is all that is required to measure temperature and ± 10 g, ± 15 g, ± 20 g, ± 25 g, ± 30 g or ± 40 g accelerations on each of two axes.

When extra precision is required, the high repeatability of the built-in temperature allows precise compensation of temperature effects and alignment data provided on the optional calibration certificate can be used to compensate for transverse sensitivity and alignment errors.

Each axial sensor has been tested over the -40 to +85°C temperature range. Each axis has a nominal full scale output swing of ± 2 volts. The zero g output level is nominally +2.5 volts. Precise values for each axis are provided on the optional calibration certificate. Custom versions of the 23200B can be provided for applications which require different ranges and/or bandwidths.

SUMMET 23200B



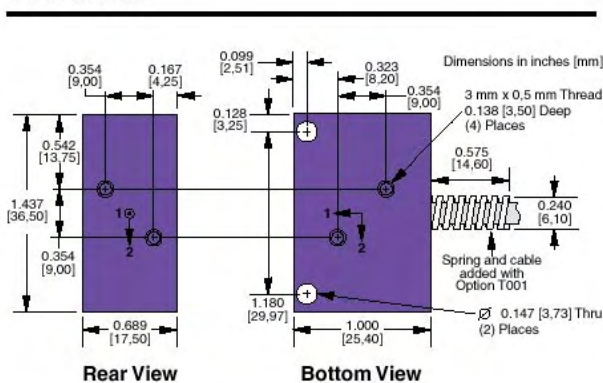
Specifications

T_A = T_{MIN} to T_{MAX}, 8 ≤V_S ≤30 V, Acceleration = 0 g, unless otherwise noted.

Parameter	Min	Typical	Max	Units	Conditions/Notes
Range					
Measurement Full Scale	±10		±40	g	On each axis. Must specify via Opt. Rnnn
Shock survival, powered	-500		+500	g	Any axis for 0.5 ms. Recovers on power cycle.
Shock survival, unpowered	-2000		+2000	g	Any axis for 0.5 ms.
Sensitivity					
At 25°C, ±40 g FSR Drift T _{MIN} to T _{MAX}		56 [†] ±0.5		mV/g %	Precise values on Opt. C001 cal certificate. Percent of sensitivity at 25°C
Zero G Bias Level					
At 25°C Drift T _{MIN} to T _{MAX}	2.1	±0.2	2.9	V g	Precise values on Opt. C001 cal certificate. Repeatable, can be compensated.
Alignment					
Deviation from ideal axes		±2.0	±3.0	degrees	Precise values on Opt. C001 cal certificate. Can be compensated if required.
Transverse Sensitivity					
		0.25		%	Inherent sensor error, excluding misalignment.
Nonlinearity					
		0.2		% FSR	Best fit straight line.
Upper Cutoff Frequency					
	4.6		1000	Hz	-3dB point ±10% Must specify via Opt. Bnnn.
Noise					
Density Amplitude DC to 100 Hz		1 10	2.5	mg/√ Hz mg rms	4 Hz to 1 kHz
Self Test Input Impedance					
	30	50		kΩ	To ground. Logic "1" ≥ 2V, Logic "0" ≤ 0.8V
Temperature Sensor					
Sensitivity Repeatability Long term drift Absolute error		8.25	±0.1 ±0.1 ±3	mV/°K °C °C °C	Precise values on Opt. C002 cal certificate. V _T at -40°C ≈ 1.92V ; V _T at +85°C ≈ 3.16V At 25°C after temperature cycle 25°C offset removed (±5°C uncorrected)
Outputs					
Output voltage swing Capacitive Drive Capability	0.05 1000		4.95	V pF	I _{OUT} = ±0.5 mA Accelerometer outputs; T output drives 300pF
Power Supply (V_S)					
Input voltage limits Input voltage - operating Input current Rejection Ratio	-20 +8	6	+60 +30 9	V V mA dB	-20V continuous, >30V if <100ms, duty <1% No load, quiescent. DC
Temperature Range (T_A)					
	-40		+85	°C	Terminal block Opt. T000 rated to -30°C
Mass					
		35		g	Precise value on Opt. C001 cal certificate.

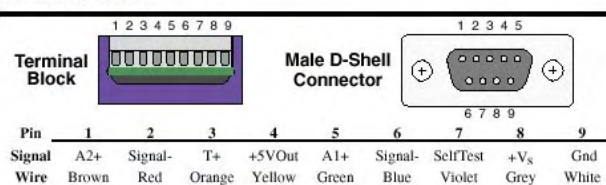
[†] Scale linearly with range option Rnnn.

Mechanical



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

Connections



Ordering Information

- 23200B** Biaxial accelerometer ±10 to ±40 g
 (-Bnnn, -Rnnn, & -Tnnn options required)
- Bnnn Bandwidth 3 dB cutoff (nnn Hz)
 - C001 Add calibration certificate
 - C002 Add temperature calibration
 - Rnnn Range (±nnn g FSR)
 - Tnnn Terminal block (T000) or (nnn foot) cable with 9-pin male D-subminiature connector at end
 - W024 Extend warranty from 1 year to 2 years