

15203B 25203B 35203B

Uniaxial Biaxia Triaxial

SPECIFICATIONS

- ◆ Digital Accelerometers
- ◆ User Configurable ± 1 g to ± 15 g

Inertial Measurements Made Fast and Easy

These Measurement Specialties digital accelerometers are complete, easy-to-use, user-configurable sensors containing one to three accelerometers, a temperature sensor, signal processor, RS-485 interface and three analog outputs in a small, easy-to-install package.

All channels are sampled simultaneously to avoid data skewing. The digital signal processor takes 16-bit samples, filters, ranges, and calibration compensates at up to 42,500 samples/sec/channel. Digital data can be streamed out at up to 3 Mbit/sec.

The output range, filter frequency and calibration of each channel, as well as telemetry configuration, can be set by the user via the RS-485 command processor. CRC-8 and CRC-16 error checking is used to ensure command and data integrity.

The built-in temperature sensor can be used by critical applications to correct for any residual temperature effects.

FEATURES AND BENEFITS

User Configurable Settings

The analog/digital output range and low-pass filter of each digital accelerometer axis can be set via a built-in RS-485 interface using a free, downloadable Instrument Configuration Utility (ICU). An RS-485 to RS-232 adapter is available.

RS-485 Serial and Analog Outputs

Calibrated, ranged and filtered data can be streamed out at up to 3 Mbit/sec via RS-485. Analog outputs are also available for compatibility with existing systems.

High Accuracy and Linearity over Wide Temperature Range

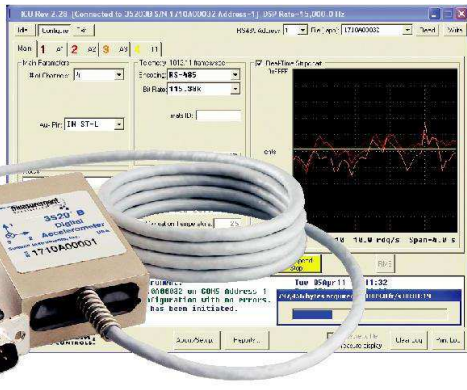
Accelerometer accuracy is improved by minimizing variations due to temperature and aging effects. Each axial sensor has been tested over the -40° to $+85^{\circ}\text{C}$ temperature range.

Built-in Calibration

Calibration data for each sensor is maintained in the accelerometer. All digital data output is fully calibrated and easily converted to user-configurable engineering units.

Self-Test

Self-test commands help verify channel integrity and wiring connections.



Small Size

Complete conditioned triaxial accelerometer with digital signal processing in approximately two cubic inches.

-Built-In Power Supply Regulation

Unregulated DC power from +8.5 to +36 volts is all that is required to measure accelerations on all axes. Digital accelerometers are ideal for automotive applications as they survive both continuous reverse battery and load dump transients. MIL-STD-704A compatible.

Easy Installation with Minimal Wiring Requirements

A built-in terminal block or cable with 9-pin connector simplifies wiring. Tapped holes on bottom and back simplify horizontal or vertical mounting.

Suitable for Harsh Environments

These accelerometers are aluminum encased, potted, and are rugged enough to be used in harsh environments.

Warranty

These Measurement Specialties digital accelerometers come with a three-year factory warranty.

SPECIFICATIONS FOR 15203B, 25203B AND 35203B - improved specifications available upon request

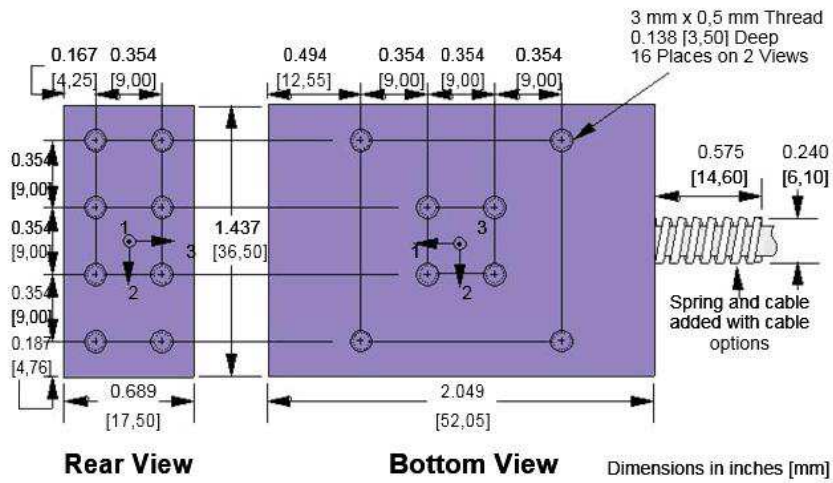
Ta = Tmin to Tmax; Acceleration = 0 g unless otherwise noted; within one year of calibration.

Parameter	Min	Typical	Max	Units	Conditions/Notes
Accelerometers Full Scale Range					On each axis. User configurable
Option R015			±15	g	
Option R006			±6	g	
Sensitivity Drift 25°C to Tmin or Tmax		±0.65		%	Percent of sensitivity at 25°C
Zero g Drift 25°C to Tmin or Tmax		60		mg	Repeatable, can be compensated
Alignment		±1.0	±3.0	degrees	Deviation from ideal axes
Transverse Sensitivity		0.25		%	Inherent sensor error, excluding misalignment
Nonlinearity		0.1		% FSR	Best fit straight line
Frequency Response	0†		800†	Hz	Lower filter cutoffs are user configurable
Noise Density		120		µg/√Hz	Ta = 25°C
Temperature Sensor					
Range	-55		125	°C	
Resolution		0.25		°C	
Accuracy		±2.0	±3.5	°C	Ta = -40 to 85°C
Digital Signal Processor					
Internal Word Size			32	bits	
Sensor Scan Rate		15,000	42,500	Hz	User configurable, channels processed in parallel
Analog Outputs*					Configurable to sensor
Voltage Swing	0.50		4.50	V	Iout = 5 mA
Impedance to Analog-	100	130	220	Ω	
Nonlinearity			0.15	% FSR	Excluding sensor nonlinearity
Digital Output Word Size			16	bits	Filtered, gained and calibration corrected
Power Supply (Vs)					
Input Voltage Limits	-80		+80	V	-80 V continuous, >36 V if <550 ms, duty <1%
Input Voltage - Operating	+8.5		+36	V	Continuous
Input Current		50		mA	
Rejection Ratio	80	120		dB	DC
Temperature Range (Ta)	-40		85	°C	Terminal block Option T000 rated to -30°C
Mass		78		grams	
Shock Survival	-1500		+1500	g	Any axis for 0.5 ms, limited by oscillator

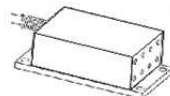
† User configurable low-pass filter 3dB cutoff (number poles configurable)

*Each channel's offset and gain are configurable

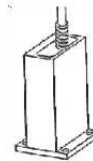
MECHANICAL



Mounting
Adapters
(Sold separately)



35170A Horizontal



35172A Vertical

CONNECTIONS



Pin	1	2	3	4	5	6	7	8	9
Signal	Analog1+	Analog2+	Analog3+	Signal-	RS485-	RS485+	Aux	+Vs	Gnd
Wire	Brown	Red	Orange	Yellow	Green	Blue	Violet	Grey	White