15203B /25203B /35203B Accelerometer



Digital Accelerometers User Configurable ±1 to ±15 g

Digital Accelerometer

These Measurement Specialties digital accelerometers are complete, easy-to-use, userconfigurable 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.

No data acquisition system is required; data is streamed directly to a PC. A connection kit is available to set up and begin testing immediately upon receipt of the sensor.

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.

Calibrated, ranged and filtered data can be streamed out at up to 3 Mbit/ sec via RS-485. Analog output of up to three calibrated, ranged and filtered channels are provided for compatibility with existing systems.

FEATURES

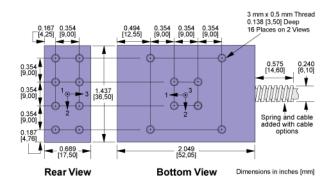
- User Configurable Settings
- RS485 Serial and Analog Outputs
- High Accuracy and Linearity over Wide Temperature Range
- Built-in Calibration Data
- Built-in Power Supply Regulation
- Easy Installation
- Suitable for Harsh Environments
- DO-160 Version Available
- Three Year Warranty

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)

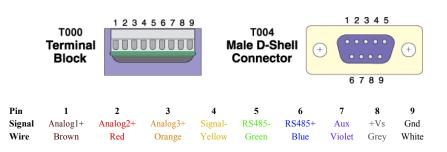




35170A Horizontal

35172A Vertical

connections



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15203B/25203B /35203B Accelerometer



performance specifications

T_A = T_{min} to T_{max}; Acceleration = 0 g unless otherwise noted; within one year of calibration. Improved specifications available upon request.

Range: Measurement Full Scale On each axis, user configurable Option R015 ± 15 g Option R006 ± 60 g Sensitivity Drift 25°C to T _{min} or T _{max} ± 60 mg Repeatable, can be compensated Alignment ± 1.0 ± 3.0 degrees Deviation from ideal axes Irransverse 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 $\mu g/NHz$ $T_A = 25 ^{\circ}C$ Range -55 125 °C Range -55 125 °C Range -55 125 °C Range inder Size ± 2.0 ± 3.5 °C Sensor Scan Rate $5,000$ $42,500$ Hz User configurable; channels processed in parallel Analog Outputs** 22 5 °C $Configurable to sensor Configurable to sensor Voltage Swing 0.25 4.75$	PARAMETERS	Min	Typical	Мах	Units	Conditions/Notes
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Nonlinearity0.1% FSRBest fit straight lineFrequency Response0800HzLower filter cutoffs are user configurable*Noise Density120 $\mu g / Hz$ $T_A = 25 ^{\circ}C$ Femperature Sensor0.25°CRange-55125°CAccuracy ± 2.0 ± 3.5 °COligital Signal Processor32bitsSensor Scan Rate15,00042,500HzUser configurable; channels processed in parallelAnalog Outputs**ConfigurableConfigurable; channels processed in parallelYoltage Swing0.254.75V $I_{out} = 5 mA$ mpedance to Analog -100130220 Ω Nonlinearity0.15% FSRExcluding sensor nonlinearityDigital Output Word Size16bitsFiltered, gained and calibration correctedPower Supply (Vs)480V-80 V continuous, >38 V if ≤550 ms, duty <1%	Transverse Sensitivity		±0.25		0	Inherent sensor error, excluding misalignment
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Accuracy±2.0±3.5°CT _A = -40 to +85 °CDigital Signal Processor32bitsInternal Word Size32bitsSensor Scan Rate15,00042,500HzUser configurable; channels processed in parallelAnalog Outputs**Configurable to sensorConfigurable to sensorVoltage Swing0.254.75VIout = 5 mAmpedance to Analog -100130220ΩNonlinearity0.15% FSRExcluding sensor nonlinearityDigital Output Word Size16bitsFiltered, gained and calibration correctedPower Supply (Vs)-50mAnput Voltage Limits-80+80V-80 V continuous, >38 V if ≤550 ms, duty <1%nput Current50mARejection Ratio80120dBDCFemperature Range (T _A)-40+85°CTerminal block option T000 rated to -30 °CWass78grams	Range	-55		125	°C	
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Sensor Scan Rate15,00042,500HzUser configurable; channels processed in parallelAnalog Outputs**Configurable to sensorVoltage Swing0.254.75V I_{out} = 5 mAmpedance to Analog -100130220 Ω Nonlinearity0.15% FSRExcluding sensor nonlinearityDigital Output Word Size16bitsFiltered, gained and calibration correctedPower Supply (Vs)+80V-80 V continuous, >38 V if ≤550 ms, duty <1%nput Voltage Limits-80+80VNonlinearity50mAPower Supply (Vrage – Operating)+8.5+36VRejection Ratio80120MBDig Current50mARejection Ratio80120dBMass78grams	Digital Signal Processor					
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Nonlinearity0.15% FSRExcluding sensor nonlinearityDigital Output Word Size16bitsFiltered, gained and calibration correctedPower Supply (Vs)16bitsFiltered, gained and calibration correctednput Voltage Limits-80+80V-80 V continuous, >38 V if ≤550 ms, duty <1%nput Voltage – Operating+8.5+36VContinuousnput Current50mARejection Ratio80120dBDCTemperature Range (T _A)-40+85°CTerminal block option T000 rated to -30 °CMass78grams	Voltage Swing	0.25		4.75	V	I _{out} = 5 mA
Digital Output Word Size 16 bits Filtered, gained and calibration corrected Power Supply (Vs) -80 -8	Impedance to Analog -	100	130	220	Ω	
Power Supply (Vs)+80V-80 V continuous, >38 V if \leq 550 ms, duty <1%nput Voltage Limits-80+8.5+36VContinuousnput Voltage – Operating+8.5+36VContinuousnput Current50mAExerciseMaxRejection Ratio80120dBDCTemperature Range (T _A)-40+85°CTerminal block option T000 rated to -30 °CMass78grams	Nonlinearity			0.15	% FSR	Excluding sensor nonlinearity
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nput Current 50 mA Rejection Ratio 80 120 dB DC Temperature Range (T_A) -40 +85 °C Terminal block option T000 rated to -30 °C Mass 78 grams	Input Voltage Limits	-80		+80	V	-80 V continuous, >38 V if ≤550 ms, duty <1%
Rejection Ratio 80 120 dB DC Temperature Range (T _A) -40 +85 °C Terminal block option T000 rated to -30 °C Mass 78 grams	Input Voltage – Operating	+8.5		+36	V	Continuous
Femperature Range (T _A) -40 +85 °C Terminal block option T000 rated to -30 °C Mass 78 grams	Input Current		50		mA	
Mass 78 grams	Rejection Ratio	80	120		dB	DC
	Temperature Range (T _A)	-40		+85	°C	Terminal block option T000 rated to -30 °C
Shock Survival – Sensor -1500 +1500 g Any axis for 0.5 ms, limited by oscillator	Mass		78		grams	
	Shock Survival – Sensor	-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

