

# Accelerometers

## HIGH PERFORMANCE, TACTICAL GRADE, TG SERIES

- ▼ Ultra Low Noise, High Stability,  $\pm 2g$  and  $\pm 10g$ , 3-Axis Accelerometer
- ▼  $\mu g$  Resolution
- ▼ mg Stability
- ▼ Integrated Temperature Sensor

## Applications

- ▼ Inertial Navigation
- ▼ Seismic Instrumentation
- ▼ Automotive Testing



## TG Series

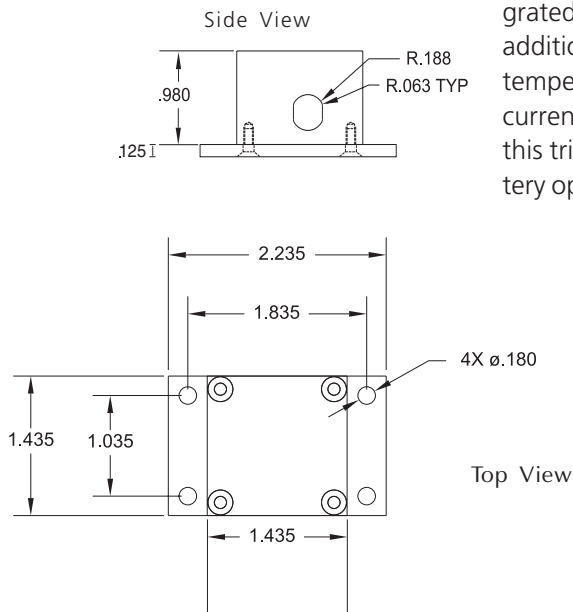
The TG Series Tri-axial accelerometers are high performance  $\pm 2 g$  and  $\pm 10 g$  sensors. The TG features a precision three-layer silicon differential capacitive MEMS sensing element that provides ultra low noise with excellent stability. The sensor is fully signal conditioned and factory calibrated. The single-ended, high level analog outputs do not require external signal conditioning and are easy to interface to standard data acquisition systems.

The TG Series operates on a single DC supply from 3.3 V to 5.5 V and includes a high performance integrated temperature sensor for additional accuracy under extreme temperature applications. The typical current consumption of 1.5mA makes this triaxial device attractive for battery operated systems.

The sensor is packaged in an industrial anodized aluminum package that is moisture resistant and rugged for industrial, automotive, and military applications.

For data logging requirements, Crossbow's offer the AD128 and AD2000 data logging systems. These devices allow users a turn-key data recording system for seismic data acquisition, structural testing, and other measurement applications. Check the Accelerometer accessories section for more details on the AD128 and AD2000 data loggers.

Figure 1



Specifications	Min	Typical	Max
<b>Performance</b>			
Input Range (g)			
CXL02TG3		± 2	
CXL10TG3		± 10	
Bias Stability <sup>1</sup> (mg)			
CXL02TG3		± 8.5	
CXL10TG3		± 12	
Sensitivity (mV/g)			
CXL02TG3	767	833	900
CXL10TG3	153	167	180
Cross Axis Sensitivity <sup>2</sup> (% FS)			3
Non-Linearity <sup>3</sup> (% FS)		0.75	1.5
Noise Density (µg/Hz <sup>1/2</sup> )		20	
Noise at 100 Hz Bandwidth (mg rms)		0.6	
Frequency Response (Hz)			
CXL02TG3	200		
CXL10TG3	200		
Misalignment (% FS)			1.0
Temp. Sensor Accuracy (°C)		2	3
Temp. Sensor Transfer Function	$T_a(°C)=[44.4 °C/V] \times [V_{temp\_sensor}/(V_{supply}/5V)-1.375V]$		
<b>Environment</b>			
Operating Temp. Range (°C)	- 40		+ 125
Storage Operating Range (°C)	- 40		+ 125
Shock (g)			6000
Vibration (20 Hz to 500 Hz) (g rms)			20
<b>Electrical</b>			
Supply Voltage <sup>4</sup>	3.3		5.5
Supply Current (mA)		1.5	2.0
Span Output (Volts)	0.5		4.5
Zero g Output (V)	2.490	2.500	2.510
Zero g Drift Over Temp. (-40°C to 85°C) µV/°C		170	
Output Loading, Resistive (kOhm)	10		
Output Loading, Capacitive (pF)			50
<b>Physical</b>			
Size (standard config.)	1.105" x 2.235" x 1.435" (2.81cm x 5.68cm x 3.65cm)		
Weight (standard config.)	3.5 oz (110 gm)		
Case Material	Anodized Aluminum Casing, Fully Potted		
Cable	3', PVC Jacket, 6 Conductor		
Connector	1" Pigtail End, Stripped and Tinned		

Pin	Color	Function
1	Red	Power In
2	Black	Ground
3	White	X-Axis Out
4	Yellow	Y-Axis Out
5	Green	Z-Axis Out
6	Blue	Temperature

Pin Diagram

accelerometers

All values are specified at operation voltage of 5.0V and temperature of 25°C unless noted otherwise.

Notes

1. After temperature compensation by user.
  2. Cross-axis sensitivity is output created by forces induced in the orthogonal axis.
  3. Non-linearity is the deviation of the output from a best fit straight line through full scale.
  4. Sensitivity and Zero g Output are ratiometric to supply voltage.
- Specifications subject to change without notice



Ordering Information

Model	Description	Span (g)	Sensitivity (mV/g)	Noise (mg rms)	Bandwidth (Hz)
CXL02TG3	± 2 g, Tri-axial Precision Accelerometer w/ Baseplate	± 2	833	0.6	DC-200
CXL10TG3	± 10 g, Tri-axial Precision Accelerometer w/ Baseplate	± 10	167	0.6	DC-200