

# Accelerometers

## HIGH SENSITIVITY, LF SERIES

- ▼ Low g, 1-axis and 3-axis Accelerometers
- ▼ Excellent Offset Stability Over Temperature
- ▼ Low Noise Density 70  $\mu\text{g}/\text{Hz}^{1/2}$

## Applications

- ▼ Instrumentation
- ▼ Orientation Measurements



## LF Series

The LF Series single and three axis accelerometers are precision,  $\pm 1 \text{ g}$  and  $\pm 2 \text{ g}$  acceleration sensors. Common applications include instrumentation, modal analysis, and orientation measurements.

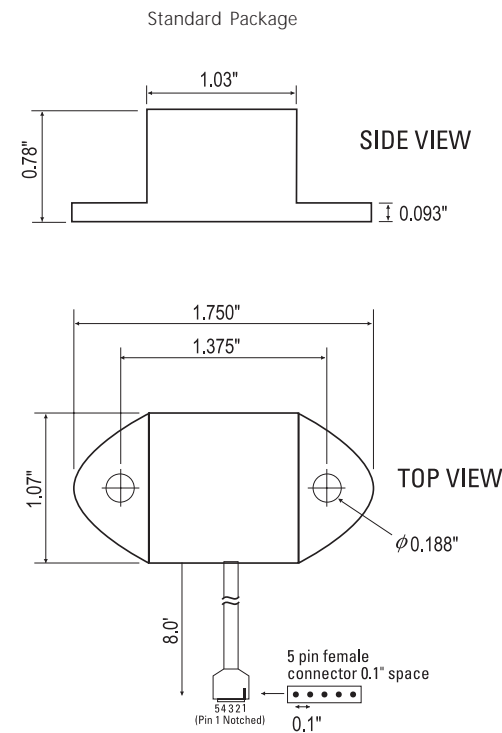
Each module's offset and scale factor are factory calibrated and tested. Standard modules have a bandwidth of 50 Hz.

The module should be securely attached using screws or adhesive. The LF Series accelerometers are available in two package options - nylon (both single and tri-axial), and high temperature aluminum (both single and tri-axial).

The LF Series sensing element is a bulk micro-machined three layer silicon structure. The three layers form a differential capacitor with low noise. The sensor is bonded to a high-quality ceramic substrate where it is coupled to signal conditioning electronics. The entire package design is optimized for minimal thermal hysteresis, yielding superior DC response.

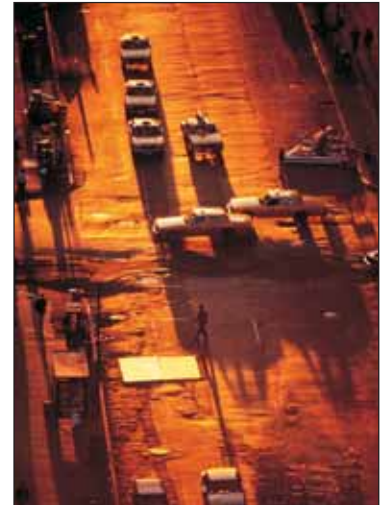
For data logging requirements, Crossbow offers the AD128 and AD2000 data logging systems. These devices allow users a turn-key data recording system for seismic data acquisition, structural testing, and other measurement applications. Check the Accelerometer accessories section for more details on the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

The LF Series operates on a single 5 VDC or a 6 - 30 VDC unregulated supply with the -R option. The LF Series sensor provides a direct high-level analog voltage signal output. The output requires no external signal conditioning and is easy to interface to standard data acquisition systems.



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Specifications	CXLO1LF1 CXLO1LF3	CXLO2LF1 CXLO2LF1Z CXLO2LF3	Remarks
<b>Performance</b>			
Input Range (g)	± 1	± 2	± 5%
Zero g Drift (mV)	± 30	± 30	0°C to +70°C
Sensitivity (V/g)	2	1	± 5%
Transverse Sensitivity (%FS)	± 5	± 5	Max
Non-Linearity (%FS)	± 3	± 2	Typical
Alignment Error (deg)	± 2	± 2	Typical
Noise Density (µg/Hz <sup>1/2</sup> )	70	140	Typical
Noise (mg rms)	0.5	1.0	Typical
Bandwidth (Hz)	DC-50	DC-50	± 5%
<b>Environment</b>			
Temperature Range (°C)	-40 to +85	-40 to +85	
Shock (g)	2000	2000	
<b>Electrical</b>			
Supply Voltage (Volts)	+5 ± 0.25	+5 ± 0.25	
Zero g Output (Volts)	+2.5 ± 0.15	+2.5 ± 0.15	@ +25°C
Supply Voltage -R option (Volts)	+6 to +30	+6 to +30	Unregulated
Supply Current (mA)	4/axis	4/axis	Typical
Span Output (Volts)	± 2.0 ± 0.1	± 2.0 ± 0.1	@ +25°C
Output Loading	>20kΩ, <30 nF	>20kΩ, <30 nF	
<b>Physical</b>			
Standard package			
Size (in)	0.78 x 1.75 x 1.07	0.78 x 1.75 x 1.07	
Size (cm)	1.98 x 4.45 x 2.72	1.98 x 4.45 x 2.72	
Weight	1.62 oz (46 gm)	1.62 oz (46 gm)	
Aluminum package			
Size (in)	0.95 x 2.00 x 1.20	0.95 x 2.00 x 1.20	
Size (cm)	2.41 x 5.08 x 3.05	2.41 x 5.08 x 3.05	
Weight	2.40 oz (68 gm)	2.40 oz (68 gm)	

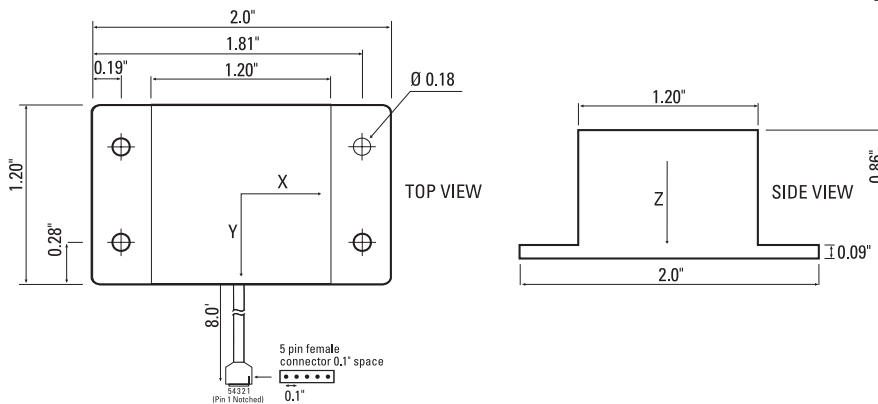


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**Notes**  
 All frequency break points are -3 dB, single pole, -6 dB per octave roll-off. Non-linearity is the deviation from a best fit straight line at full scale. Transverse sensitivity is error measured in the primary axis output created by forces induced in the orthogonal axis. Transverse sensitivity error is primarily due to the effects of misalignment. Zero g drift is specified as the typical change in 0 g level from its initial value at +25 °C to its worst case value at Tmin or Tmax.

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

Pin Diagram



High Temperature Package



Ordering Information

Model	Axes	Span (g)	Sensitivity (V/g)	Noise (mg rms)	Bandwidth (Hz)
CXLO1LF1	X	± 1	2	0.5	DC-50
CXLO1LF3	TRI	± 1	2	0.5	DC-50
CXLO2LF1	X	± 2	1	1	DC-50
CXLO2LF1Z	Z	± 2	1	1	DC-50
CXLO2LF3	TRI	± 2	1	1	DC-50
<b>OPTIONS</b>					
-R	Voltage Regulator, 6 – 30 VDC input				
-AL	High Temperature Package (see package drawing above)				