

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
- ▼ Modal Analysis



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.

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.

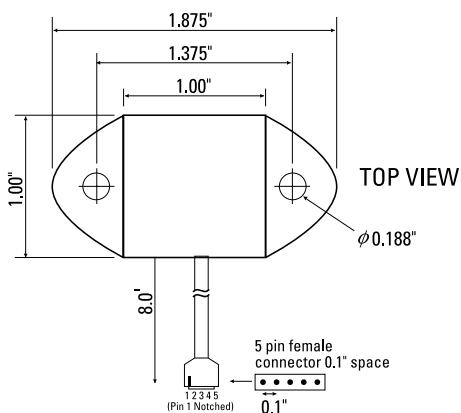
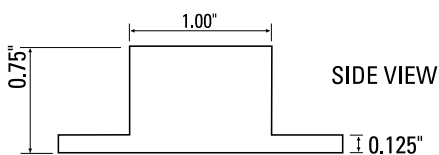
The LF Series operates on a single 5 VDC or a 6 - 30 VDC unregulated supply with the -R option. The -R option also provides 10ms over voltage and reverse voltage protection. The LF Series sensor provides a direct high-level analog voltage signal out-

put. The output requires no external signal conditioning and is easy to interface to standard data acquisition systems.

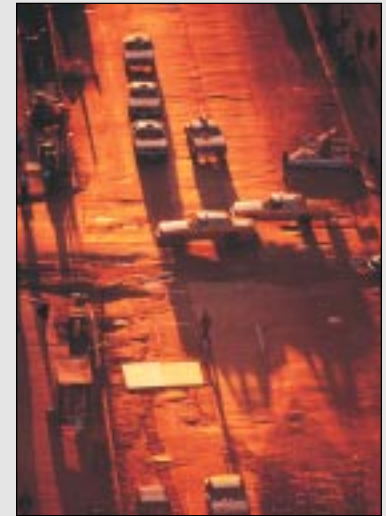
Each module's offset and scale factor are factory calibrated and tested. Standard modules have a bandwidth of 50 Hz.

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).

Standard Package



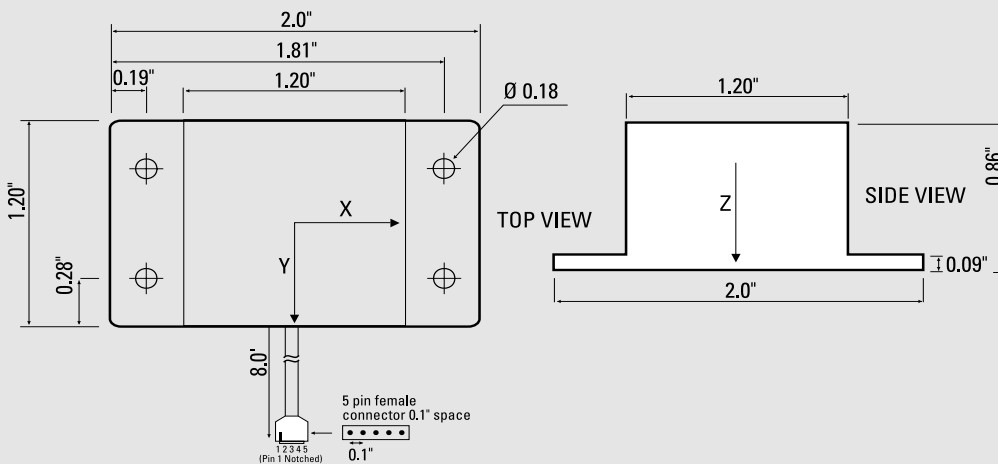
Specifications	CXL01LF1 CXL01LF1Z CXL01LF3	CXL02LF1 CXL02LF1Z CXL02LF3	Remarks
Performance			
Input Range (g)	± 1	± 2	± 5%
Zero g Drift (mV)	± 30	± 30	0°C to +70°C
Sensitivity (V/g)	2	1	± 5%
Transverse Sensitivity (%FS)	± 5	± 5	Max
Non-Linearity (%FS)	± 3	± 2	Typical
Alignment Error (deg)	± 2	± 2	Typical
Noise Density (µg/Hz ^{1/2})	70	140	Typical
Noise (mg rms)	0.5	1	Typical
Bandwidth (Hz)	DC-50	DC-50	Typical
Environment			
Temperature Range (°C)	-40 to +85	-40 to +85	
Shock (g)	2000	2000	
Electrical			
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)	2/axis	2/axis	Typical
Span Output (Volts)	± 2.0 ± 0.1	± 2.0 ± 0.1	@ +25°C
Output Loading	>20kΩ, <30 nF	>20kΩ, <30 nF	
Physical			
Size (Approx.)	Standard package	0.75" x 1.875" x 1.00" (1.90 cm x 4.76 cm x 2.54 cm)	
	Aluminum package	0.95" x 2.00" x 1.20" (2.41 cm x 5.08 cm x 3.05 cm)	
Weight (Approx.)	Standard package	1.62 oz (46 gm)	
	Aluminum package	2.40 oz (68 gm)	



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 (i.e., much of it can be tuned out by adjusting the package orientation). 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.
 Specifications subject to change without notice

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)
CXL01LF1	X	±1	2	0.5	DC-50
CXL01LF1Z	Z	±1	2	0.5	DC-50
CXL01LF3	TRI	±1	2	0.5	DC-50
CXL02LF1	X	±2	1	1	DC-50
CXL02LF1Z	Z	±2	1	1	DC-50
CXL02LF3	TRI	±2	1	1	DC-50
OPTIONS					
-R	Voltage Regulator, 6 – 30 VDC input				
-AL	High Temperature Package (see package drawing above)				
If ordering options, please specify model followed by the regulator option and then the package option, e.g., CXL02LF1-R-AL					