

Accelerometers

VIBRATION, HF SERIES

- ▼ Low Noise, Wide Bandwidth
- ▼ Easy to Use
- ▼ Constant Current or Constant Voltage Excitation
- ▼ ± 10 g and ± 100 g Ranges

Applications

- ▼ Vehicle and Engine Testing
- ▼ Shock Recording
- ▼ Predictive Maintenance
- ▼ Industrial Vibration Monitoring



HF SERIES

The HF Series accelerometers are precision vibration sensors based on an advanced piezoelectric material integrated with signal conditioning (charge amp) and current regulation electronics. The sensor features low noise, 300 μ grms, and wide bandwidth, 0.3 -10,000 Hz. The sensor's electronics are uniquely designed to be compatible with both current loop systems and voltage mode systems. Unlike the other Crossbow accelerometer series, the HF Series does not have a DC response, which means the unit will not respond to gravity or other very low frequency (<0.3 Hz) signals.

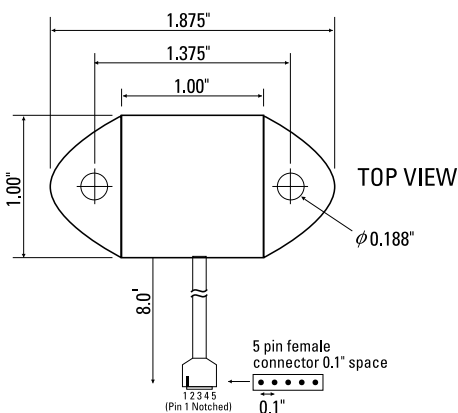
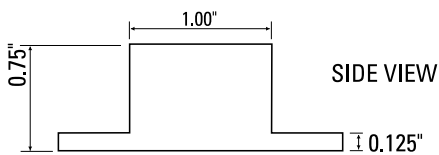
The sensor is an excellent choice for vibration monitoring of all kinds: vehicle and engine testing, shock recording, predictive maintenance, industrial vibration monitoring, acoustic and high frequency measurements.

The sensor is delivered with a calibration sheet which standardizes the sensitivity to within 2%. The

sensor is available in two packages, a standard nylon package, and an optional high temperature aluminum package.

The sensor can be powered by a current source using the signal wire and ground. If powered by a current source, the signal wire is used as both the excitation signal and the sensor signal. A constant current of 0.3-20 mA is provided by either a current source such as a battery box, signal conditioner, or analyzer instrument with current source I/O capability. This interface allows the sensor backward compatibility with many older systems.

As an alternative to the constant current excitation, an unregulated +5 to +30 VDC power supply can be used. The output signal span is ± 1 V centered about 3 V. The 3 V signal is the zero-g voltage offset. This interface is compatible with the Crossbow accessories family and eliminates cumbersome and costly interface electronics, e.g., battery powered and line powered signal conditioners.



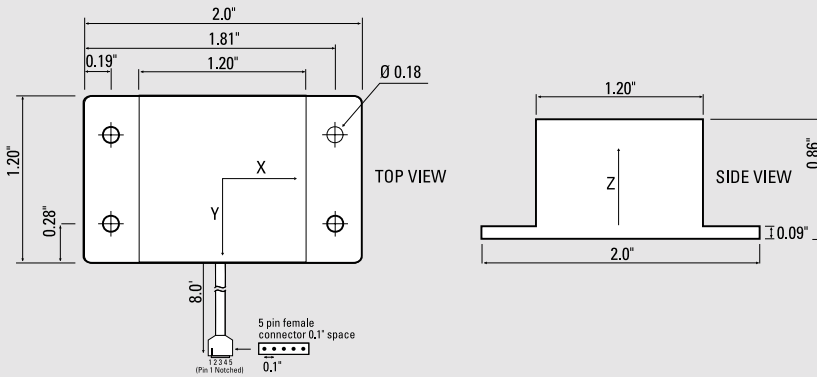
Specifications	CXL10HF1Z	CXL10HF3	CXL100HF1Z	CXL100HF3
Performance				
Input Range (g) ¹	± 10	± 10	± 100	± 100
Sensitivity (mV/g) ¹	± 100	± 100	± 10	± 10
Transverse Sensitivity (% FS)	5	5	5	5
Non-Linearity (% of FS)	1	1	1	1
Sensitivity Drift /Temp (%/°C)	0.18	0.18	0.18	0.18
Strain Sensitivity (g/μe)	0.0001	0.0001	0.0001	0.0001
Broadband Noise (μg rms)	300	300	300	300
Bandwidth (Hz) ²	0.3-10,000*	0.3-10,000*	0.3-10,000*	0.3-10,000*
Start Up Time (sec) ⁵	2.5	2.5	2.5	2.5
Environment				
Nylon Package				
Oper. Temp. Range (°C)	-40 to +85°	-40 to +85°	-40 to +85°	-40 to +85°
Storage Temp. Range (°C)	-50 to +85°	-50 to +85°	-50 to +85°	-50 to +85°
High Temperature Casing				
Oper. Temperature (°C)	-40 to +125°	-40 to +125°	-40 to +125°	-40 to +125°
Storage Temperature (°C)	-50 to +125°	-50 to +125°	-50 to +125°	-50 to +125°
Shock (g) ⁴	5000	5000	5000	5000
Electrical				
Voltage Mode				
Supply Voltage (VDC) ⁶	5 - 30	5 - 30	5 - 30	5 - 30
Supply Current (mA) ⁶	0.4	1	0.4	1
Current Mode				
Supply Voltage (VDC) ⁷	5 - 30	5 - 30	5 - 30	5 - 30
Current (constant) (mA)	0.3 - 20	0.3 - 20	0.3 - 20	0.3 - 20
Zero g Output (VDC) ³	3 ± 1	3 ± 1	3 ± 1	3 ± 1
Span Voltage (V)	± 1	± 1	± 1	± 1
Physical				
Size	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	Standard package	1.59 oz (45 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).
* Maximum Frequency Response - package and mounting dependent.
1. ±2%, Calibration sheet provided
2. ±3dB, AC coupled sensor
3. Ignore if used with current source excitation
4. 1 ms half sine
5. within 10%
6. when used in voltage mode
7. excitation voltage and signal share wire
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)	Bandwidth (Hz)
CXL10HF1Z	Z	± 10	± 100	0.3-10,000
CXL10HF3	TRI	± 10	± 100	0.3-10,000
CXL100HF1Z	Z	± 100	± 10	0.3-10,000
CXL100HF3	TRI	± 100	± 10	0.3-10,000
OPTIONS				
-AL	High Temperature Package (see package drawing above)			