

ADXL150EM-1, ADXL150EM-3

FEATURES

High Performance Prepackaged Accelerometers
 Complete Acceleration Measurement System
 Small, Low Cost, Ready-to-Use
 ± 10 g, 100 Hz Single and Multiaxis Versions
 Wide Dynamic Range: ± 10 mg to ± 10 g
 Low Power Supply Current
 +5 V Single Supply Operation
 Easy Screw-Down/Bolt-Down Mounting
 ± 4 g and ± 25 g Models Also Available

APPLICATIONS

Vibration Analysis, Seismic and Earthquake Monitoring, Crash Sensing, Robotic Applications, Shipping and Transportation Shock Monitoring, Active Suspension Applications, Medical Analysis, Active Sound Cancellation, and Much More

GENERAL DESCRIPTION

The ADXL150EM evaluation modules provide a complete acceleration measurement system in a low cost package. These modules simplify the evaluation and testing of our ADXL150/ADXL250 monolithic accelerometer ICs.

The ADXL150 (single) and ADXL250 (dual axis) accelerometers offer lower noise and superior signal to noise ratio over the ADXL50. In addition, the scale factor and 0 g output level are both ratiometric to the power supply so the accelerometer and any following circuitry (such as an ADC, etc.) will track each other if the supply voltage varies.

Each module contains one or more XL150 series accelerometers precalibrated to a convenient output scale factor with onboard low-pass filtering.

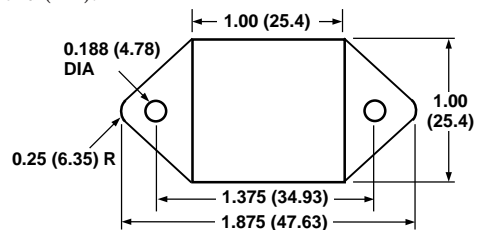
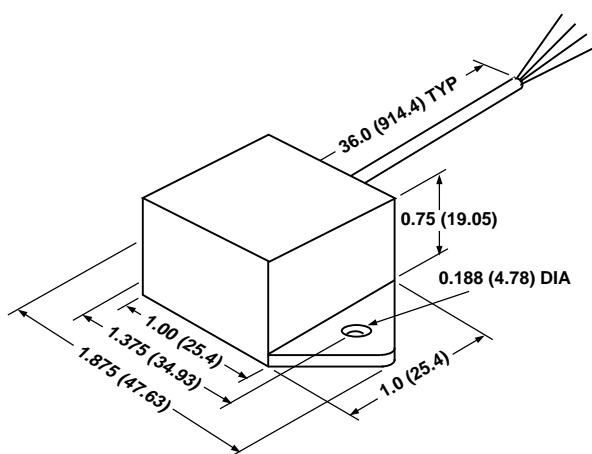


All that is required to use these modules is a +5 volt power supply. The module should be attached (i.e., screwed or glued down) securely to the object being measured, taking care that the axis of sensitivity, indicated by the large arrow on the top of the module, is aligned with the expected acceleration.

Modules are available in other package styles (such as ruggedized metallic box) and in other g ranges from NGT Technology, 3 Cross Road, LaGrangeville, NY 12540-5705, 914-223-3359, and from Crossbow Technology, 41 East Daggette Drive, San Jose, CA 95134, 408-324-4830.

OUTLINE DIMENSIONS

Dimensions shown in inches and (mm).



CABLE SIGNAL COLOR CODE

| FUNCTION | COLOR |
|------------|--------|
| +5VDC | RED |
| COM RTN | BLACK |
| A1 (X) OUT | WHITE |
| A2 (Y) OUT | YELLOW |
| A3 (Z) OUT | GREEN |

REV. A

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ADXL150EM-1/ADXL150EM-3—SPECIFICATIONS

ACCELEROMETER EVALUATION MODULES

| Model | ADXL150 EM-1 Single Axis | ADXL150 EM-3 Tri-Axial | Units | Remarks |
|-------------------------------------|--------------------------------|------------------------------|---------|--------------------|
| Span | ±10 | ±10 | g | ±5% |
| Sensitivity ¹ | 200 | 200 | mV/g | ±5%, @ +5.00 V |
| Bandwidth | DC–100 Hz | DC–100 Hz | Hz | ±5% |
| Noise | 10 | 10 | mg rms | typ |
| Orientation | Horizontal | Tri-Axial | | |
| Zero g Output ² | +2.5 ± 0.1 | +2.5 ± 0.1 | Volts | @ +25°C, @ +5.00 V |
| Zero g Drift ³ | ±0.2 | ±0.2 | g | 0°C to +70°C typ |
| Span Output | ±2.0 ± 0.1 | ±2.0 ± 0.1 | Volts | @ +25°C, @ +5.00 V |
| Nonlinearity ⁴ | ±0.2 | ±0.2 | % FS | typ |
| Alignment | ±2 | ±2 | Degrees | typ |
| Transverse Sensitivity ⁵ | ±3.5 | ±3.5 | % FS | typ |
| Temperature Range | 0°C to 70°C | 0°C to 70°C | °C | |
| Shock | 500 | 500 | g | Powered |
| | 2000 | 2000 | g | Unpowered |
| Output Loading | >2 kΩ < 1 nF | >2 kΩ < 1 nF | | max |
| Supply Voltage | | | | |
| Specified Performance | +5 ± 0.25 | +5 ± 0.25 | Volts | max |
| Functional Range | +5 ± 1 | +5 ± 1 | Volts | typ |
| Supply Current | 3.5 | 10 | mA | typ |

NOTES

¹Ratiometric to Supply: $V_{OUT} = (V_S/2) - (\text{sensitivity} \times (V_S/5 \text{ V}) \times \text{accel})$

²Ratiometric to supply, proportional to $V_S/2$.

³Zero 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 T_{MIN} or T_{MAX} .

⁴Nonlinearity is the deviation from a best fit straight line at full scale.

⁵Transverse 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).

⁶All frequency break points are -3 dB, single pole, -6 dB per octave roll-off.

Specifications subject to change without notice.