

# 147B

## HIGH RESOLUTION ACCELEROMETERS



The 147B High Resolution Accelerometers are a force-balance accelerometer that converts acceleration signals into voltage signals to measure various low frequency and ultra-low frequency motion. The 147B accelerometer is available in both triaxial and uniaxial packages.

The 147B accelerometer uses a state-of-the-art force balance feedback technique to make up for the mechanical characteristic limitations of conventional accelerometers. This overcomes the shortcomings of nonlinear distortion and threshold of sensitivity of elastic measuring parts.

The advanced features of the 147B accelerometer include high sensitivity, large linear range, high resolution, and high dynamic range.

The 147B accelerometer has DC response. The 147B Low Noise model is +/- 4g (+/- 2g Optional) full scale and provides excellent dynamic range, which is useful when used with 32-bit digitizers like the Wrangler Data loggers. High sensitivity, large linear range, high resolution, and high dynamic range make the 147B model best suited for free field applications such as micro zonation, siteresponse, earthquake monitoring, and more.

The 147B housing is sealed to meet IP67 standards for watertight integrity. For the triaxial package, mounting is accomplished with a single bolt, and 3point leveling.

The following chart is a graphic presentation of the sensor amplitude operating range via the ANSS method.

### KEY FEATURES

- » Low Noise
- » State-of-the-Art Accelerometer
- » Sensitivity & Offset Stable

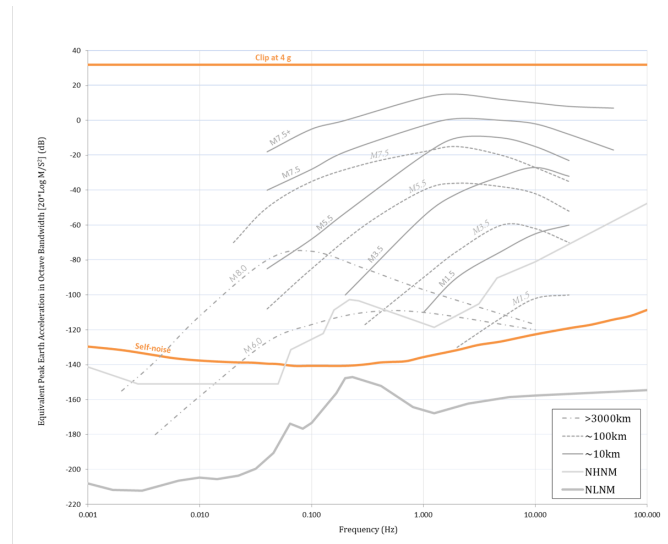
### APPLICATIONS

- » Free Field Reference
- » Building Arrays
- » Structural Monitoring
- » Site Response
- » Aftershock Studies

# 147B

## HIGH RESOLUTION ACCELEROMETERS

<b>MODEL</b>	<b>147B</b>
<b>ELECTRICAL</b>	
<b>Full-scale Range</b>	± 4 g ( 2 g Optional)
<b>Full-scale Output</b>	± 20 V differential, 40 VPP
<b>Sensitivity</b>	5 V/g
<b>PERFORMANCE</b>	
<b>Self-Noise</b>	<1 µm/s/s
<b>Dynamic Range</b>	>155 dB (DC to 10 Hz)
<b>Linearity</b>	<0.1 %
<b>Frequency Response</b>	Flat DC-100 Hz +/- 0.05 dB ; DC-250 Hz +/- 3 dB
<b>Bandwidth</b>	DC-250 Hz (-3 dB point)
<b>Damping</b>	0.7
<b>Self-test Response</b>	Logic level input will produce consistent
<b>Lightning Protection</b>	Built-in surge protection
<b>Cross Axis Sensitivity</b>	<1%
<b>Hysteresis</b>	<0.1% of full-scale
<b>Thermal Drift</b>	≤600 µg/°C
<b>POWER</b>	
<b>Average Power</b>	<1 W Triaxial Version
<b>Power Supply</b>	+9 to +18 VDC



Reference: New Low-noise Model (NLNM)  
 J. Peterson (1993), Observation and Modeling of Seismic Background Noise, U.S. Geological Survey Open-File Report 93-322  
 Event Magnitudes  
 J. F. Clinton & T. H. Heaton (2002), Potential Advantages of a Strong Motion Velocity Meter over a Strong Motion Accelerometer, Seismological Research Letters, Vol. 73, No. 3, May/June 2002

<b>ENVIRONMENTAL</b>	
<b>Operating Temperature</b>	-4 °F to 140 °F (-20 °C to 60 °C)
<b>Storage Temperature</b>	-40 °F to 185 °F (-40 °C to 85 °C)
<b>Humidity</b>	0 – 100% not-condensing
<b>Watertight Integrity</b>	IP67
<b>Shock</b>	Survives a 1 meter drop on any axis
<b>MECHANICAL - TRIAXIAL PACKAGE</b>	
<b>Dimensions</b>	4.9 W x 5.3 L x 3.85 H inches (12.5 x 13.5 x 9.8 cms) Height without connector 3.25 inches (8.25 cms)
<b>Weight</b>	4.4 lb (2 Kg)
<b>MECHANICAL - UNIAXIAL PACKAGE</b>	
<b>Dimensions</b>	2.48 W x 5.04 L x 2.72 H inches (6.3 x 12.8 x 6.9 cms)
<b>Weight</b>	<2 lbs

### NORTH AMERICA

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### CUSTOMER SUPPORT

REF TEK products are installed in locations around the world, from urban settings to rainforests to deserts. The environments are often challenging for electronics and REF TEK Systems is committed to providing reliable, practical support. Our team includes seismologists and seismic installation experts as well as engineers and technicians.

**Contact [support@reftek.com](mailto:support@reftek.com).**