

INTEGRAL ELECTRONICS (IEPE) PIEZOELECTRIC ACCELEROMETER

MODEL 2009A

- Outstanding Dynamic Range
- Wide Bandwidth
- Low Impedance Output
- Top Connector
- Stud Mounted



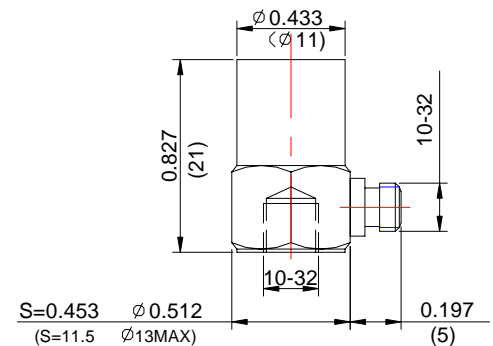
actual size

Description

The VIP Sensors Model 2009A is a stud mounted piezoelectric accelerometer designed for general vibration measurement on structures and objects. It features a high signal-to-noise ratio, a high output sensitivity, and a wide bandwidth. The accelerometer transmits its low impedance voltage output through the same cable that supplies the constant current power.

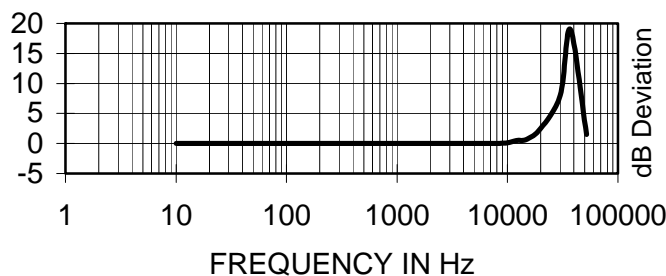
The Model 2009A design is sealed against external contamination. Signal ground is connected to the outer case of the unit. When used with an isolated mounting stud, the accelerometer is electrically isolated from ground. The accelerometer features a 10-32 top connector that is used with coaxial cable for error-free operation.

VIP Sensors Signal Conditioner Models 5005, 5100 and 5102 are recommended for use with this low impedance accelerometer.

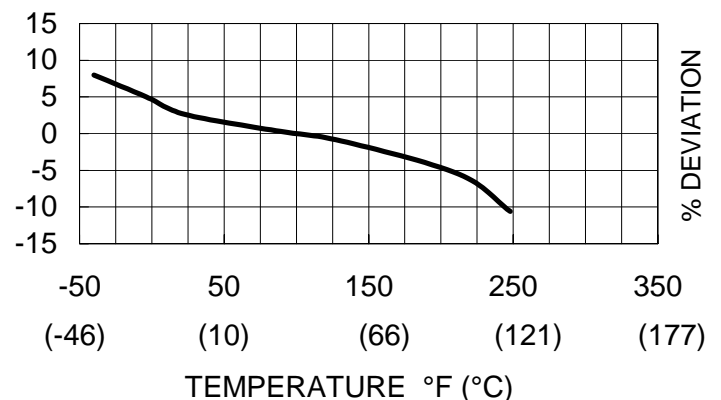


in (mm)

Typical Amplitude Response



Typical Temperature Response



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SPECIFICATIONS

The following performance specifications conform to ISA-RP-37.2 (1964) and are typical values, referenced at +75°F (+24°C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

| | UNITS | |
|---|-----------------------------|---|
| DYNAMIC CHARACTERISTICS | | |
| Range | g (m/s ²) | 500 (4903.3) |
| Voltage Sensitivity, typical | mV/g (mV/m/s ²) | 10 (1.02) |
| Transverse Sensitivity | % | ≤ 5 |
| Frequency Response | | See Typical Amplitude Response |
| Resonance Frequency | Hz | 35,000 |
| Amplitude Response | | |
| ± 5 % | Hz | 1 – 8,000 |
| ± 1 dB | Hz | 0.5 – 10,000 |
| Temperature Response | | See Typical Temperature Response |
| Amplitude Linearity | % | < 1 |
| ELECTRICAL CHARACTERISTICS | | |
| Output Polarity | | Acceleration directed from base into the transducer defined as positive |
| Power Source Voltage (Constant Current) | VDC | +12 to +28 |
| Supply Current | mA | 2 to 10 |
| Bias Voltage | V | 7 ±1 |
| Full Scale Output Voltage (peak) | Vp | ≤ 5 |
| Output Impedance | Ω | < 100 |
| Noise | mg (mm/s ²) | < 5 (< 49.0) |
| Grounding | | Signal ground connected to case |
| ENVIRONMENTAL CHARACTERISTICS | | |
| Temperature Range | | -4°F to 248°F (-20°C to +120°C) |
| Humidity | | Epoxy sealed |
| Shock Limit | g pk (m/s ² pk) | 1,000 (9807) |
| Base Strain | equiv. g /μstrain | 0.0006 |
| Magnetic Field Sensitivity | equiv. g rms /gauss (T) | 1E-4 (10) |
| Thermal Transient Sensitivity | equiv. g /°C | 0.12 |
| PHYSICAL CHARACTERISTICS | | |
| Weight | oz (grams) | 0.42 (12) |
| Case Material | | Stainless Steel |
| Mounting | | 10-32, torque 2 N-m (18 lbf-in) |
| Piezoelectric Material | | PZT-5 |
| Structure | | Center Compression |
| Output Connector | | 10-32 receptacle, top mounting |

ACCESSORIES

Included:

9005L10 Coaxial Cable 10-32/BNC, 10ft (3.3 m)
 9504-8 10-32/10-32 Mounting Stud
 Calibration Sheet

Optional:

9006L10 Coaxial Cable 10-32/10-32, 10 ft (3.3 m)
 9505-8 10-32/10-32 Isolated Mounting Stud

NOTES

- Short duration shock pulses, such as those generated by metal-to-metal impacts, may excite transducer resonance and cause linearity errors.