INTEGRAL ELECTRONICS (IEPE)
PIEZOELECTRIC ACCELEROMETER

MODEL
2017A

- Small Size, Light Weight (5.3 grams)
- 10 and 100 mV/g Sensitivity Ranges
- Frequency Response 1 Hz to 5 KHz
- Adhesive Mounting

Description
The VIP Sensors Model 2017A is a small integral electronics piezoelectric (IEPE) accelerometer for vibration measurement on small structures and objects. Its light weight of 5.3 grams effectively minimizes mass loading. It features a high signal-to-noise ratio, output sensitivities of 10 and 100 mV/g, and a wide bandwidth. The accelerometer transmits its voltage output signal through the same cable that supplies the constant current power.

The Model 2017A 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, 5102 and 5103 are recommended for use with this low impedance accelerometer.

Typical Amplitude Response

Typical Temperature Response
## 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.

### DYNAMIC CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>UNITS</th>
<th>-S10</th>
<th>-S100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>g (m/s²)</td>
<td>500 (4903.3)</td>
<td>50 (490.3)</td>
</tr>
<tr>
<td>Voltage Sensitivity, typical</td>
<td>mV/g (mV/m²/s)</td>
<td>10 (1.02)</td>
<td>100 (10.2)</td>
</tr>
<tr>
<td>Transverse Sensitivity</td>
<td>%</td>
<td>≤ 5</td>
<td></td>
</tr>
<tr>
<td>Frequency Response</td>
<td>See Typical Amplitude Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>Hz</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Amplitude Response</td>
<td>Hz</td>
<td>1 – 5,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hz</td>
<td>0.5 – 6,000</td>
<td></td>
</tr>
<tr>
<td>Temperature Response</td>
<td>Hz</td>
<td>See Typical Temperature Response</td>
<td></td>
</tr>
<tr>
<td>Amplitude Linearity</td>
<td>%</td>
<td>≤ 1</td>
<td></td>
</tr>
</tbody>
</table>

### ELECTRICAL CHARACTERISTICS

- Output Polarity: Acceleration directed from base into the transducer defined as positive
- Power Source Voltage: VDC +18 to +28
- Supply Current: mA 2 to 10
- Bias Voltage: V 11 ± 1
- Full Scale Output Voltage (peak): Vp ≤ 5
- Output Impedance: Ω < 300
- Noise: mg (mm/s²) < 0.8 (< 7.8) < 0.08 (< 0.78)
- Grounding: Signal ground connected to case

### ENVIRONMENTAL CHARACTERISTICS

- Temperature Range: -40°F to 248°F (-40°C to +120°C)
- Humidity: Epoxy sealed
- Shock Limit: g pk (m/s² pk) 2,000 (19,613)
- Base Strain: equiv. g /µstrain 0.0002 0.002
- Magnetic Field Sensitivity: equiv. g rms /gauss 2E-5 (2) 2E-4 (2)
- Thermal Transient Sensitivity: equiv. g /°C 0.008 0.008

### PHYSICAL CHARACTERISTICS

- Weight: oz (grams) 0.19 (5.3)
- Case Material: Stainless Steel
- Mounting: Adhesive
- Piezoelectric Material: PZT-5
- Structure: Annular Shear
- Output Connector: 10-32 receptacle, top mounting

### ACCESSORIES

- Included: 9005L10 Coaxial Cable 10-32/BNC, 10ft (3.3 m)
- Calibration Sheet
- Optional: 9006L10 Coaxial Cable 10-32/10-32, 10 ft (3.3 m)
- 9505-15 Isolated Adhesive Mounting Plate

### NOTES

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