

Ceramic Shear Accelerometer

Type 8784A5, 8786A5

High Sensitivity, General Purpose, Voltage Mode Accelerometers

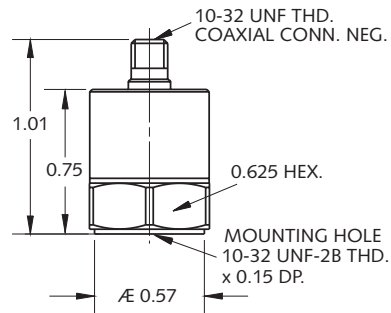
Top and side connector multi-purpose accelerometer for low level vibration measurements in a wide range of applications. Rugged, hermetically sealed, Titanium housing accelerometers designed specifically for OEM applications.

- Low impedance, voltage mode
- Ceramic Shear sensing element
- High sensitivity, resolution less than 1 mg
- Low, transverse sensitivity
- Rugged connector for repeated connections
- Priced for OEM
- Conforming to CE

Description

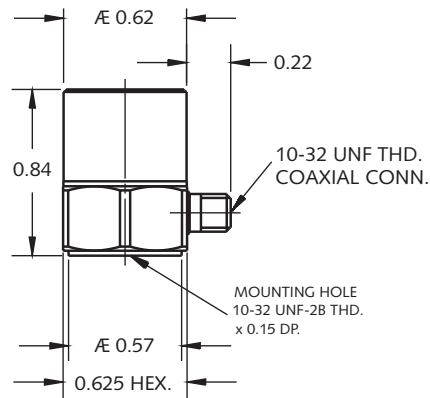
Type 8784A5 (top connector) and Type 8786A5 (side connector) are low impedance, voltage mode accelerometers designed for vibration measurements in single to multi-channel applications. The ceramic sensing element components have been designed to provide the level of performance most often required in general purpose vibration measurements. Kistler's shear technology assures high immunity to base strain, thermal transients and transverse accelerations. These accelerometers are lightweight and offer high frequency response with hermetic sealing. The unique connector design is rugged and maintains excellent integrity with repeated connections.

An internal microelectronic Piezotron® signal conditioning circuit converts the charge developed in the ceramic element, as a result of the accelerometer being subjected to a vibration, into a useable high level voltage output signal at a low impedance level. This output allows for the use of inexpensive coaxial cable, while providing high noise immunity and insensitivity to cable motion. Power to accelerometer Types 8784A5 and 8786A5 can be provided by any Kistler Type 5100 series coupler, or by any industry standard voltage mode IEPE (Integral Electronic Piezo-Electric) power supply/coupler.



Dimensions are shown in [in], unless otherwise noted.

Type 8784A5



Dimensions are shown in [in], unless otherwise noted.

Type 8786A5



Application

Types 8784A5... and 8786A5... are multi-purpose accelerometers, ideal for various applications including laboratory or industrial environments. These accelerometers provide less than one milligram resolution suitable for use in low level measurement applications. The wide bandwidth and rugged construction are ideal for impact and vibration related applications, including condition monitoring and vehicle testing. These sensors offer excellent performance and cost savings for demanding OEM applications.

Mounting

A threaded 10-32 UNF stud provides positive attachment of the accelerometer to the test structure. Reliable and accurate measurements require that the mounting surface be clean and flat. The instruction manual for Types 8784A5... and 8786A5... provides detailed information regarding mounting surface preparation.

Technical Data

| Type | Unit | 8784A5/86A5 |
|--|------------------|-------------|
| Acceleration range | g | ±5 |
| Acceleration limit | g _{pk} | ±500 |
| Threshold, nom. (noise 100 μV _{rms}) | g _{rms} | 0.0004 |
| Sensitivity (±10 %) | mV/g | 1,000 |
| Resonant frequency, mounted, nom. | kHz | 27 |
| Frequency response, ±5 % | Hz | 1 ... 6,000 |
| Amplitude linearity, nom. | %FSO | ±1 |
| Time constant | s | ≥0.5 |
| Transverse sensitivity, nom. (max. 5) | % | 1.5 |

Environmental

| | | |
|-----------------------------------|-----------------|-------------|
| Base strain sensitivity at 250 με | g/με | 0.005 |
| Shock limit (1 ms pulse) | g _{pk} | 2,500 |
| Temperature coeff. of sensitivity | %/°F | -0.03 |
| Operating temperature range | °F | -65 ... 176 |

Output

| | | |
|--------------------|-----|------|
| Bias, nom. | VDC | 11 |
| Impedance | Ω | <500 |
| Voltage full-scale | V | ±5 |

Power Supply

| | | |
|------------------|-----|-----------|
| Voltage | VDC | 18 ... 30 |
| Constant current | mA | 2 ... 20 |

Construction

| | | |
|---------------------------------|----------|---------------|
| Sensing element | type | Ceramic Shear |
| Housing/base | material | Titanium |
| Degree of protection/connector | type | Hermetic |
| Connector | type | 10-32 |
| Ground isolated | | with pad |
| Mass | grams | 21 |
| Mounting (10-32 thd. x 0.15 dp) | type | stud |
| Mounting torque | lbf-in | 18 |

1 g = 9.80665 m/s², 1 in = 25.4 mm, 1 Gram = 0.03527 oz, 1 lbf-in = 0.113 N-m

Accessories Included

| | |
|-----------------------------|-----------|
| • 10-32 mounting stud | Type 8402 |
| • 10-32 to M6 mounting stud | 8411 |

Optional Accessories

| | |
|------------------------------------|-----------|
| • 10-32 to ¼–28 thd. mounting stud | Type 8410 |
| • Adhesive mounting pad | 8436 |
| • Mounting magnet | 8452A |

Ordering Key

| Measuring range | | Type 878 |
|----------------------|-----|--------------------------|
| ±5 g, top connector | 4A5 | <input type="checkbox"/> |
| ±5 g, side connector | 6A5 | |

Measuring Chain

| | Type |
|--|----------|
| 1 Low impedance sensor | 87... |
| 2 Sensor cable, 10-32 pos. to BNC pos. | 1761B... |
| 3 Power supply/signal conditioner | 51... |
| 4 Output cable, BNC pos. to BNC pos. | 1511 |

