

K-Shear Accelerometer

Type 8704B5000

Dual-purpose, voltage mode accelerometer

The Type 8704B5000 rugged, lightweight dual purpose accelerometer measures vibration or mechanical shock in a wide range of applications. High level vibration measurements or impulse/impact levels up to 5 000 g can be made with this welded, her-metically sealed accelerometer.

- Low impedance, voltage mode
- Quartz-shear sensing elements
- Ultra-low base strain
- Ultra low thermal transient response
- Hermetically sealed
- Conforming to CE

Description

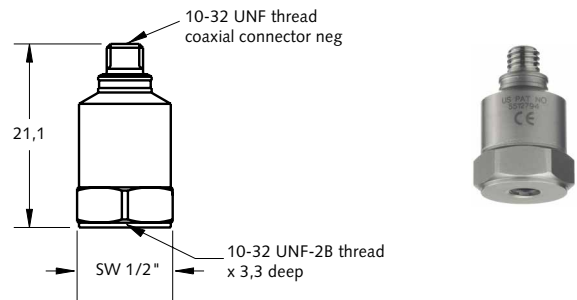
The accelerometer Type 8704B5000 accurately measures mechanical shock or vibration up to 5 000 g. The unique K-Shear sensing system is insensitive to base strain, transverse acceleration and thermal transients. Quartz shear cut, sensing crystals ensure long-term stability not achievable with other sensing materials.

The sensor is constructed in a hermetically sealed, welded, titanium case. The 10-32 thread top connector features a robust design to provide years of reliable operation under conditions where repeated shock and vibration is encountered.

The built-in Piezotron electronic impedance converter, provides a high signal level at a low impedance output allowing the use of inexpensive coaxial cable. The accelerometer can be powered by a Kistler 5100 series coupler/signal conditioner or by any industry standard IEPE (Integrated Electronic Piezo-Electric) sensor power source.

Application

The Type 8704B5000 can be used for general purpose vibration measurements in a laboratory or for environmental product shock testing in vehicle, automotive, metal-to-metal impacting, shipping package design and survivability.



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 operating instruction manual for the accelerometer Type 8704B5000 provides detailed information regarding mounting surface preparation.

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Technical data

| Specification | Unit | Type 8704B5000 |
|---|------------------|----------------|
| Acceleration range | g | ±5 000 |
| Overload | g _{pk} | ±10 000 |
| Threshold (noise, 130 μV _{rms}), nom. | g _{rms} | 0,13 |
| Sensitivity, ±5 % | mV/g | 1 |
| Resonant frequency mounted, nom. | kHz | 54 |
| Frequency response, ±5 % | Hz | 1 ... 10 000 |
| Amplitude non-linearity nom. | %FSO | ±1 |
| Time constant | s | 1,5 |
| Transverse sensitivity, nom. (max. 5) | % | 1,5 |
| Long-term stability | % | ±1 |

Environmental

| | | |
|--|-----------------|-------------|
| Base strain sensitivity @ 250 με | g/με | 0,01 |
| Shock limit (1 ms pulse) | g _{pk} | 10 000 |
| Temperature coefficient of sensitivity | %/°C | -0,06 |
| Operating temperature range | °C | -55 ... 120 |
| Storage temperature range | °C | -75 ... 150 |

Output

| | | |
|--------------------|-----|------|
| Bias, nom. | VDC | 11 |
| Impedance | Ω | <100 |
| Voltage full scale | V | ±5 |
| Current | mA | 2 |

Source

| | | |
|------------------|-----|-----------|
| Voltage | VDC | 20 ... 30 |
| Constant current | mA | 2 ... 20 |
| Impedance, min. | kΩ | 100 |

Construction

| | | |
|-------------------------------------|----------|--------------|
| Sensing element | Type | quartz-shear |
| Case/base | material | Titanium |
| Degree of protection case/connector | Type | Hermetic |
| Connector | Type | 10-32 neg. |
| Ground isolated | | with pad |
| Mass | grams | 7,1 |
| Mounting (10-32 thd.x3,3) | Type | stud |

1 g = 9,80665 m/s², 1 Inch = 25,4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,113 N·m

Included accessories

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

Ordering key

Range

±5 000 g 5000

Type 8704B

Measuring chain

| | |
|--|------------|
| 1 Low impedance sensor | Type 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 |

