

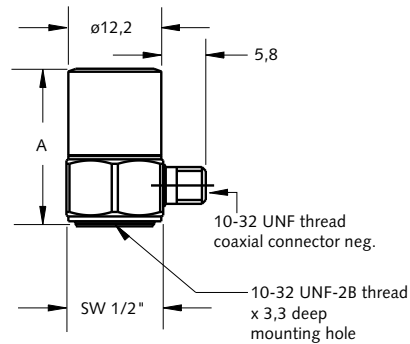
K-Shear Accelerometers

Type 8702B..., 8704B...

General purpose, voltage mode accelerometers

Small, relatively light weight general purpose accelerometers for vibration measurements in wide range of applications. Available in three measuring ranges 25 g, 50 g and 100 g, all range types are available in a ground isolated option. These accelerometers feature a rugged, hermetically sealed construction.

- Low impedance, voltage mode
- Quartz-shear sensing elements
- Ultra-low base strain
- Minimal thermal transient response
- Lightweight, hermetically sealed Titanium case
- Conforming to CCE



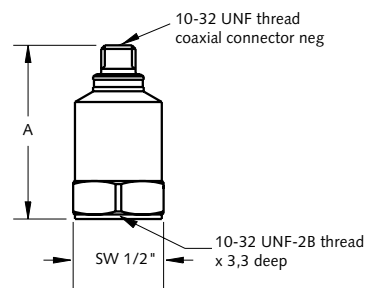
| Dim | Typ 8702B... | Typ 8702B...M1 |
|-----|--------------|----------------|
| A | 19,3 | 20,3 |

Description

The Type 8702B... side connector and Type 8704B... top connector accelerometer series use a unique shear mode sensing element made of stable quartz crystals. The quartz sensing elements afford excellent long-term stability that ensure repeatable, accurate measurements for many years. Additionally the shear element design provides low transverse sensitivity along with an insensitivity to base strain and thermal transients.

All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel. An internal circuit Piezotron impedance converter provides a high signal level at low impedance output.

Models identified with an M1 are ground isolated versions. All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel.



| Dim | Typ 8704B... | Typ 8704B...M1 |
|-----|--------------|----------------|
| A | 24,4 | 24,9 |

Application

All types are designed for general purpose vibration measurement in a laboratory or industrial environment. They can be used for environmental testing (with or without temperature cycling), ESS, vehicle tests, automotive NVH testing, rotating machinery vibration analysis.

Accessing TEDS data

Accelerometers with a 'T' suffix are variants of the standard version incorporating the 'Smart Sensor' design. Viewing an accelerometer's data sheet requires an Interface/Coupler such as Kistler's Type 5165A... or 5000M04 with TEDS Editor software. The Interface provides negative current excitation (reverse polarity) altering the operating mode of the PiezoSmart sensor allowing the program editor software to read or add information contained in the memory chip.

8702B_000-239e-01.19

Technical data

| Specification | Unit | Type 8702/4B25 | Type 8702/4B50 | Type 8702/4B100 |
|---------------------------------------|-----------|----------------|----------------|-----------------|
| Acceleration range | g | ±25 | ±50 | ±100 |
| Acceleration limit | g_{pk} | ±50 | ±100 | ±200 |
| Transverse acceleration limit | g_{pk} | ±50 | ±100 | ±200 |
| Threshold nom. | g_{rms} | 0,002 | 0,004 | 0,006 |
| Sensitivity, ±5 % | mV/g | 200 | 100 | 50 |
| Resonant frequency mounted nom. | kHz | 54 | 54 | 54 |
| Frequency response, ±5 % | Hz | 1 ... 8 000 | 0,5 ... 10 000 | 0,5 ... 10 000 |
| Amplitude non-linearity | %FSO | ±1 | ±1 | ±1 |
| Time constant nom. | sec | 1 | 2 | 1,5 |
| Transverse sensitivity nom., (max. 3) | % | 1,5 | 1,5 | 1,5 |
| Long-term stability | % | ±1 | ±1 | ±1 |

Environmental

| | | | | |
|---|------------------|-------------|-------------|-------------|
| Base strain sensitivity @ 250 $\mu\epsilon$ | g/ $\mu\epsilon$ | 0,01 | 0,01 | 0,01 |
| Shock limit (1 ms pulse) | g_{pk} | 2 000 | 2 000 | 2 000 |
| Temperature coeff. of sensitivity | %/ $^{\circ}C$ | -0,06 | -0,06 | -0,06 |
| Temperature range operating | $^{\circ}C$ | -55 ... 100 | -55 ... 100 | -55 ... 100 |
| Temperature range storage | $^{\circ}C$ | -75 ... 120 | -75 ... 120 | -75 ... 120 |

Output

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

Source

| | | | | |
|------------------|------------|-----------|-----------|-----------|
| Voltage | VDC | 20 ... 30 | 20 ... 30 | 20 ... 30 |
| Constant current | mA | 4 | 4 | 4 |
| Impedance min. | k Ω | 100 | 100 | 100 |

Construction

| | | | | |
|--------------------------------|-------------|---------------------|---------------------|---------------------|
| Sensing element | type | quartz-shear | quartz-shear | quartz-shear |
| Housing/base | material | Titanium / St. Stl. | Titanium / St. Stl. | Titanium / St. Stl. |
| Sealing-housing/connector | type | IP68 | IP68 | IP68 |
| Connector | type | 10-32 neg. | 10-32 neg. | 10-32 neg. |
| Ground isolated | | with pad/M1 | with pad/M1 | with pad/M1 |
| Mass | grams | 8,7/7,5 | 8,7/7,5 | 8,7/7,5 |
| | M1 grams | 9,7/8 | 9,7/8 | 9,7/8 |
| Mounting (10-32 thd. x 3,3 dp) | type | 10-32x3,3 | 10-32x3,3 | 10-32x3,3 |
| Mounting torque | N·m | 2 | 2 | 2 |

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

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 Type 8702B... and Type 8704B... series accelerometers provides detailed information regarding mounting surface preparation.

Accessories included

- | | |
|------------------------------|---------------------|
| • Mounting stud, 10-32/10-32 | Type 8402 |
| • Mounting stud, 10-32/M6 | 8411 |

Optional accessories

- | | |
|--------------------------|---------------------|
| • Triaxial mounting cube | Type 8502 |
| • Mounting magnet | 8452A |

Ordering key

Connector location

| | |
|----------------|-----------|
| Side connector | 2B |
| Top connector | 4B |

Measuring range

| | |
|--------|------------|
| ±25 g | 25 |
| ±50 g | 50 |
| ±100 g | 100 |

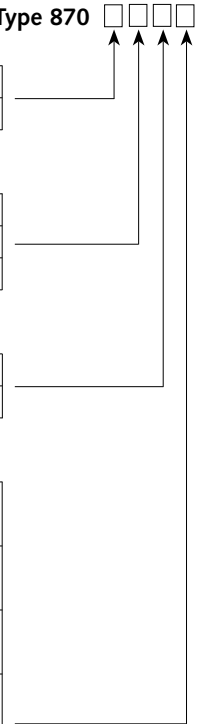
Variant

| | |
|-----------------|-----------|
| Standard | |
| Ground isolated | M1 |

TEDS templates

| | |
|--|------------|
| Default, IEEE 1451.4 V0.9 Template 0 (UTID 1) | T |
| IEEE 1451.4 V0.9 Template 24 (UTID 116225) | T01 |
| LMS Template 117, Free format Point ID | T02 |
| LMS Template 118, Automotive Format (Field 14 Geometry = 0) | T03 |
| LMS Template 118, Aerospace Format (Field 14 Geometry = 1) | T04 |
| P1451.4 v1.0 template 25 – Transfe Function Disabled | T05 |
| P1451.4 v1.0 template 25 – Transfer Function Enabled | T06 |

Type 870



Measuring chain

- | | |
|---|----------------------------|
| 1 Low impedance sensor | Type 8702/04B... |
| 2 Sensor cable, 10-32 pos. to 1x BNC pos. | 1761B/C... |
| 3 Power supply/signal conditioner | 51... |
| 4 Output cable, BNC pos. to BNC pos. | 1511 |

