

# 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 CE

### Description

The Type 8702B... side connector and 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.

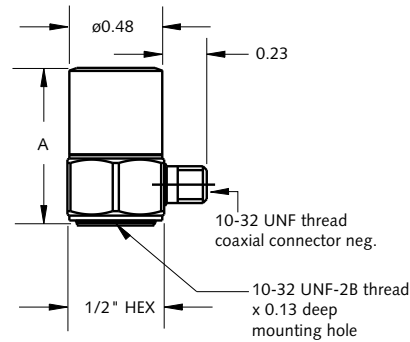
Models identified with an M1 are ground isolated versions. All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel.

### Application

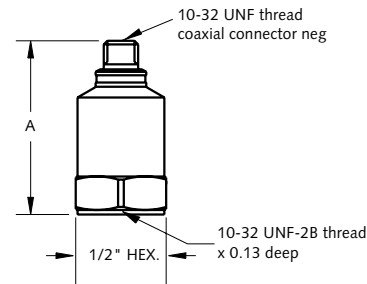
All types are designed for general purpose vibration measurement in a laboratory or industrial environment. They can be used for environmental testing (with or without temperature cycling), ESS, vehicle tests, automotive NVH testing, rotating machinery vibration analysis.

### 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.



Dim	Type 8702B...	Type 8702B...M1
A	0.76	0.80



Dim	Type 8704B...	Type 8704B...M1
A	0.96	0.98

Dimensions are shown in [in], unless otherwise note

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## Technical data

Specification	Unit	Type 8702/4B25	Type 8702/4B50	Type 8702/4B100
Acceleration range	g	±25	±50	±100
Acceleration limit	gpk	±50	±100	±200
Transverse acceleration limit	gpk	±50	±100	±200
Threshold nom.	grms	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.	s	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)	gpk	2,000	2,000	2,000
Temperature coeff. of sensitivity	%/°F	-0.03	-0.03	-0.03
Operating temperature range	°F	-65 ... 210	-65 ... 210	-65 ... 210
Storage temperature range	°F	-100 ... 250	-100 ... 250	-100 ... 250

## Output

Bias nom.	VDC	11	11	11
Impedance	$\Omega$	<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 $\Omega$	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.
Degree of protection case/connector	type	hermetic	hermetic	hermetic
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.x0.13 dp)	type	stud	stud	stud
Mounting torque	lbf-in	18	18	18

1 g = 9.80665 m/s<sup>2</sup>, 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 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 instruction manual for the Type 8702B... and 8704B... series accelerometers provides detailed information regarding mounting surface preparation.

**Included accessories**

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

**Optional accessories**

- Mounting magnet 8452A
- Triaxial mounting cube 8502
- Adhesive mounting base 8436

**Ordering key**

**Connector location**

Side connector	2B
Top connector	4B

**Measuring range**

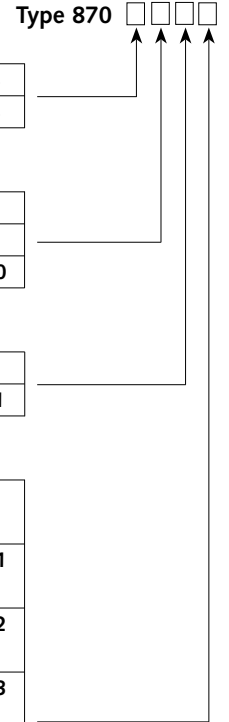
±25 g	25
±50 g	50
±100 g	100

**Variant**

Standard	
Ground isolated	M1

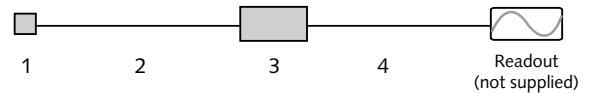
**TEDS templates**

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 – Transfer Function Disabled	T05
P1451.4 v1.0 template 25 – Transfer Function Enabled	T06



**Measuring chain**

- |  |                  |
|--|------------------|
| 1 Low impedance sensor                 | Type 8702/04B... |
| 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             |



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