

# Quartz Accelerometer

Type 8002K

## Vibration Standard

Type 8002K is a high precision accelerometer for shock and vibration measurements in laboratory applications. Its excellent performance is derived from an ultra-stable crystalline quartz sensing element.

- High impedance, charge mode
- Quartz stability and repeatability
- Wide operating temperature range

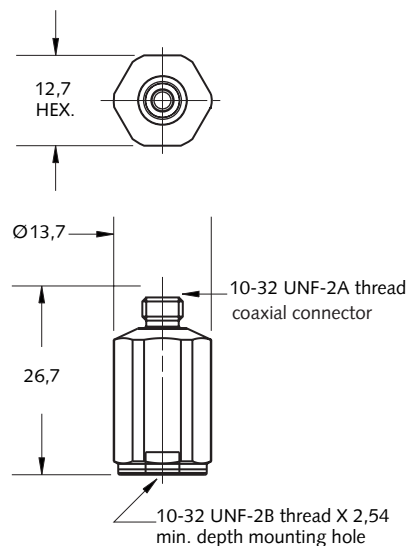
### Description

Contained within the housing is a piezoelectric assembly consisting of a seismic mass preloaded to a quartz element stack. The force acting on the quartz measuring element is proportional to the acceleration in accordance with Newton's Law:  $F=ma$ . This element, in turn, gives an electrical charge signal proportional to the force, and therefore, to the acceleration. The charge signal is conducted through a low noise coaxial cable, such as the 1631 series, then converted and amplified to a proportional output voltage in a charge amplifier (such as Type 5010).

The 8002K accelerometer is a special version with emphasis on transverse sensitivity and amplitude non-linearity. The 8002K along with a 5022 Charge Amplifier form Kistler's 8802 Laboratory Vibration Reference Standard.

### Application

The 8002K is primarily a reference accelerometer, used in Kistler's high precision 8802 Vibration Reference Standard system.



### CE Compliant Information

Because high impedance, charge mode accelerometers contain no electronics, CE certification to the EMC Directive is not appropriate. When a high impedance accelerometer is used with a CE certified signal conditioner (i.e., charge amplifier...), the system is CE compliant.

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## Technical Data

Type	Units	8002K
Acceleration Range	g	±1000
Acceleration Limit	g <sub>pk</sub>	±2000
Transverse Acceleration Limit	g <sub>pk</sub>	±500
Threshold nom.	g <sub>rms</sub>	0,02
Sensitivity, ±10%	pC/g	-1
Resonant Frequency mounted, nom.	kHz	40
Frequency Response, -1%, +5%	Hz	≈0 ... 6000
Amplitude Non-linearity	%FSO	±0,5
Insulation Resistance	Ω	≥10 <sup>13</sup>
Capacitance, nom.	pF	90
Transverse Sensitivity nom.	%	≤2
Long Term Stability	%	0,5
Environmental:		
Base Strain Error @250g/με	g/με	0,12
Temperature Coefficient of Sensitivity	%/°C	-0,03
Temperature Range Operating	°C	-70 ... 120
Temperature Range Storage	°C	-125 ... 200
Construction:		
Sensing Element	type	quartz/ compression
Housing/Base	material	stainless steel
Sealing-housing/connector	type	welded/epoxy
Connector	type	10-32 UNF- 2A THD. coaxial
Weight	grams	20
Mounting Torque	Nm	2

1 g = 9.80665 m/s<sup>2</sup>, 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 Nm

## Mounting

Mounting is accomplished by inserting a Type 8402 stud into 10-32 UNF threaded hole in the object to be measured. Orthogonal measurements in three principal axes can be accomplished by utilizing a Type 8502 triaxial mounting cube.

## Accessories Included

- mounting stud with a 10-32 UNF thread

## Type

8402

## Optional Accessories

- mounting stud 10-32 to M6
- triaxial mounting cube

## Type

8411

8502

## Ordering Key

Measuring Range

±1000g

K

8002