

# K-Shear<sup>®</sup> Accelerometer

Type 8791A250

## Miniature, Voltage Mode Triaxial Accelerometer

The triaxial accelerometer Type 8791A250 measures shock and vibration in three orthogonal axes. Weighing only 4 grams with a cube size of 0.4 inch, this 250 g range triaxial accelerometer is housed in a welded titanium case and features an integral four conductor shielded cable terminated in a male Microtech compatible connector.

- Low impedance voltage output
- Quartz shear sensing elements
- High immunity to thermal transients
- Ultra-low base strain sensitivity
- Miniature cube design
- Light weight
- Conforming to CE

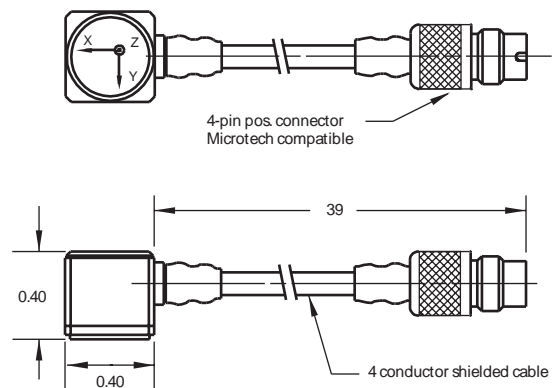
### Description

The Type 8791A250 is a low impedance, voltage mode triaxial accelerometer housed in a miniature, cube-shaped enclosure and designed for adhesive mounting. The triaxial design permits simultaneous impact and vibration measurements in three mutually perpendicular axes: X, Y and Z.

Kistler's K-Shear element design provides a wide operating frequency range along with extremely low sensitivity to thermal transients, base strain and transverse acceleration. Quartz sensing crystals ensure the long-term stability not achievable with other sensing materials. Three Piezotron<sup>®</sup> microelectronic circuits convert the charge signal from each quartz element into a useable high level voltage signal at a low impedance output allowing the use of low-cost cables. An advantage of a low impedance output is the ability to drive long cable lengths with low-noise susceptibility. The unit is housed in a welded titanium case with the integral cable epoxy sealed to the housing.

### Application

The extremely low weight of the accelerometer Type 8791A250 is highly attractive where mass loading of test structure is a major concern. The compact size offers high accessibility and convenient locating where critical placement is required. The sensor is highly suited for modal analysis applications, general vibration measurements during product development where the advantage of compactness is a plus.



8791A\_000-259a-07.08

**Technical Data**

Specification	Unit	Type 8791A250
Acceleration range	g	±250
Threshold (noise 130 µVrms), nom.	grms	0.006
Sensitivity, ±15 %	mV/g	20
Resonant frequency mounted, nom.	kHz	18
Frequency response, ±5 %	Hz	1 ... 2000
Amplitude non-linearity	%FSO	±1
Time constant, nom.	s	0.3

**Environmental**

Base strain sensitivity, @ 250 µε	g/µε	0.01
Random vibration, max.	grms	±500
Shock limit (1 ms pulse)	gpk	3000
Temperature coefficient of sensitivity	%/°F	-0.03
Operating temperature range	°F	-65 ... 250

**Output**

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

**Source**

Voltage	VDC	18 ... 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	epoxy
Connector	Type	4-pin pos.
Ground isolated		no
Mass	grams	4
Mounting	Type	adhesive/wax

1 g = 9.80665 m/s<sup>2</sup>, 1 Inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.113 N·m

**Mounting**

Reliable and accurate measurements require that the mounting surface be clean and flat. The sensor can be attached to the structure with wax or adhesive. The Instruction Manual for the Type 8791A250 provides detailed information regarding mounting surface preparation.

**Included Accessories**

- Mounting wax

**Type**  
8432

**Ordering Code**

- K-Shear-Accelerometer, miniature, range ±250 g

**Type**  
8791A250

**Measuring Chain**

- 1 Low impedance sensor
- 2 Sensor cable, 10-32 pos. to BNC pos.
- 3 Power supply/signal conditioner
- 4 Output cable, BNC pos. to BNC pos.

**Type**  
8791A250  
1761B...  
51...  
1511

