

K-Shear[®] Accelerometer

Type 8743A...

High Resonant Frequency, Shock Accelerometer

Quartz shock accelerometer for measuring impulse, impact and pyrotechnic shock. Type 8743A... shock accelerometers have a rugged welded construction and integral stud to ensure a rigid coupling to the test structure.

- Low impedance, voltage mode
- Unique quartz shear sensing element
- 5 000 ... 100 000 g range
- Low transverse sensitivity
- Rugged connector for repeated connections
- Wide bandwidth, high resonant frequency
- Conforming to CE

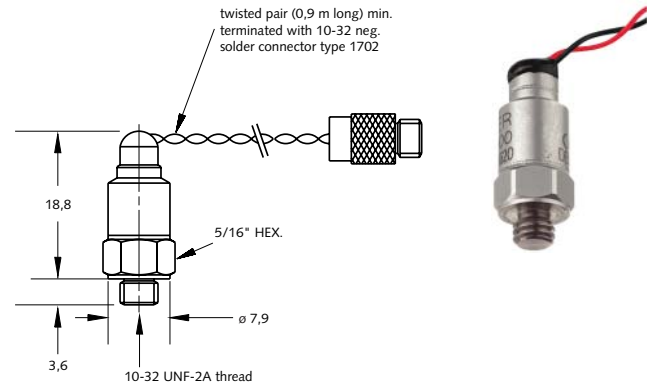
Description

The sensing element contained within this shock accelerometer series features a unique, shear mode four quartz crystal configuration combined with an annular preload sleeve and seismic mass. The element design provides a high 100 kHz resonance frequency ensuring accurate measurement of high speed events with zero shift and internal amplifier saturation virtually eliminated. These shock sensors exhibit insensitivity to thermal transients, and have extremely low transverse and base strain sensitivity. Using quartz as the sensing material adds another performance benefit in that quartz will not depolarize if exposed to high shock. The case isolated option uses a patented technique that ensures high resonant frequency while providing electrical isolation.

An internal microelectronic Piezotron[®] signal conditioning circuit converts the charge developed in the quartz element as a result of the accelerometer being subjected to shock, into a useable high level voltage output signal at a low impedance level. The low impedance output provides high immunity to noise and insensitivity to cable motion.

Application

Type 8743A... accelerometer makes it ideally suited for high g level shock tests with metal to metal impacts and mid to far field pyrotechnic measurements.



Mounting

Type 8743 version uses an integral 10-32 UNF stud. Reliable and accurate measurements require that the mounting surface be clean and flat. The instruction manual for the shock accelerometer series provides detailed information regarding mounting surface preparation.

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Technical Data

Specification	Unit	Type 8743A5	Type 8743A10	Type 8743A20	Type 8743A50	Type 8743A100
Acceleration range	g	±5 000	±10 000	±20 000	±50 000	±100 000
Acceleration limit	gpk	±6 000	±12 000	±24 000	±60 000	±110 000
Threshold, nom.	grms	0,13	0,25	0,5	1,3	2,6
Sensitivity ±5 %	mV/g	1	0,5	0,25	0,1	0,05
Resonant frequency mounted, nom.	kHz	100	100	100	100	100
Frequency response, ±7 %	Hz	1 ... 10 000	1 ... 10 000	1 ... 10 000	1 ... 10 000	0,5 ... 10 000
Amplitude non-linearity	%FSO	±1	±1	±1	±1	±1
Time constant, nom.	s	≥ 0,5	≥ 0,5	≥ 0,5	≥ 0,5	≥ 1
Transverse sensitivity, nom. (max. 5)	%	1,5	1,5	1,5	1,5	1,5

Environmental

Base strain sensitivity @ 250 µε	g/µε	0,005	0,005	0,005	0,005	0,005
Shock (1 ms pulse)	gpk	5 000	5 000	5 000	100 000	120 000
Temperature coeff. of sensitivity	%/°C	-0,06	-0,06	-0,06	-0,06	-0,06
Operating temperature range	°C	-55 ... 120	-55 ... 120	-55 ... 120	-55 ... 120	-55 ... 120

Output

Bias, nom.	VDC	11	11	11	11	11
Impedance	Ω	<100	<100	<100	<100	<100
Voltage full scale	V	±5	±5	±5	±5	±5

Source

Voltage	VDC	18 ... 30	18 ... 30	18 ... 30	18 ... 30	18 ... 30
Constant current	mA	2 ... 20	2 ... 20	2 ... 20	2 ... 20	2 ... 20

Construction

Sensing element	Type	quartz-shear	quartz-shear	quartz-shear	quartz-shear	quartz-shear
Housing/Base	material	St. Stl.	St. Stl.	St. Stl.	St. Stl.	St. Stl.
Sealing Housing/Connector	Type	IP68	IP68	IP68	IP68	IP68
Connector	Type	10-32 neg. int	10-32 neg. int	10-32 neg. int	10-32 neg. int	10-32 neg. int
Mass	grams	4,5	4,5	4,5	4,5	4,5
Mounting (10-32 x 0,14)	Type	10-32 UNF-2A	10-32 UNF-2A	10-32 UNF-2A	10-32 UNF-2A	10-32 UNF-2A
Mounting torque	N·m	2	2	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

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.

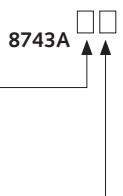
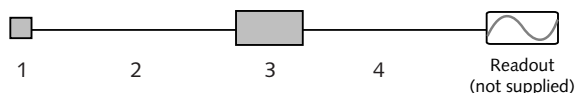
Type

- 8743A...
- 1761B...
- 51...
- 1511

Ordering Key

Range

±5 000 g	5
±10 000 g	10
±20 000 g	20
±50 000 g	50
±100 000 g	100



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