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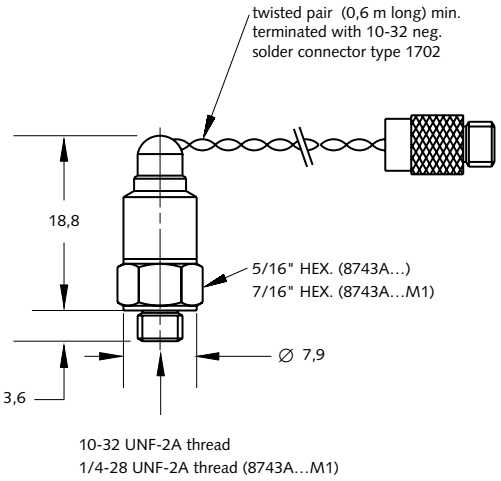
K-Shear® Accelerometer

Type 8743A…

High Resonant Frequency, Shock Accelerometer, Optional Case Isolation

Quartz Shock Accelerometer for measuring impulse, impact and pyrotechnic shock. The 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
- 100000g range
- Optional Case Isolation
- 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

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

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Technical Data

Type		Unit	8743A100
Acceleration Range		g	±100000
Acceleration Limit		gpk	±110000
Threshold nom.		grms	2,6
Sensitivity, nom.		mV/g	0,05
Resonant Frequency mounted, nom.		kHz	100
Frequency Response, ±10%		Hz	0,5 … 10000
Amplitude Non-linearity		%FSO	±1
Time Constant nom.		s	≥1
Transverse Sensitivity nom., (max. 5)		%	1,5
Long Term Stability		%	±1
Environmental:			
Base Strain Sensitivity @ 250με		g/με	0,005
Shock Limit (1ms pulse)			
	8743A…	gpk	120000
	8743A…M1	gpk	150000
Temperature Coeff. of Sensitivity		%/°C	-0,06
Temperature Range Operating		°C	-55 … 120
Output:			
Bias nom.		VDC	11
Impedance		Ω	<100
Voltage full scale		V	±5
Source:			
Voltage		VDC	18 … 30
Constant Current		mA	2 … 20
Construction:			
Sensing Element		type	Quartz Shear
Housing/Base		material	St. Stl.
Sealing-housing/connector		type	Hermetic
Connector		type	10-32 UNF neg.
Ground Isolated min.		MΩ	≥100
Weight	8743A…	grams	4,5
	8743A…M1	grams	9
Mounting (stud)	8743A…	type	10-32 UNF
	8743A…M1	type	1/4-28 UNF
Mounting Torque	8743A…	Nm	2
	8743A…M1	Nm	3,4

1 g = 9,80665 m/s², 1 Inch = 25.4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,113 Nm

Mounting

The case isolated 8743A… is attached to the test structure by its integral 1/4-28 UNF stud and the non isolated 8743 version, uses an integral 10-32 UNF stud. Reliable and accurate measurements require that the mounting surface be clean and flat. The Operating Instruction Manual for the shock accelerometer series provides detailed information regarding mounting surface preparation.

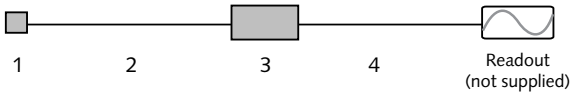
Ordering Key

Measuring Range	
±100000g	100

Variants	
Standard	-
Case isolated	M1

8743A □ □

Measuring Chain		Type
1	Low Impedance Sensor	8743A…
2	Sensor cable, 10-32 pos. to BNC pos.	1761B…
3	Power Supply/Signal Conditioner	51…
4	Outout cable, BNC pos. to BNC pos.	1511



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