

K-Shear® Accelerometer

Type 8730A...

Miniature, Stud Mount, Voltage Mode Accelerometer

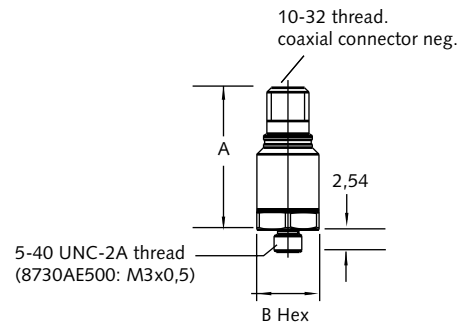
Small, 1,9 gram weight general purpose accelerometer for vibration measurements in wide range of applications. Available with an integral 5-40 UNC mounting stud, this light weight hermetically sealed accelerometer features a wide frequency response.

- Low impedance voltage mode
- Quartz shear sensing element
- Ultra-low base strain sensitivity
- Minimal thermal transient response
- Ground isolated version available
- Conforming to CE

Description

The light weight, 8730A... accelerometer series uses Kistler's uniquely designed K-Shear quartz sensing element. Operating in the shear mode with precisely cut quartz plates, allows the accelerometers to exhibit ultra low sensitivity to thermal transients, base strain and transverse motion. Housed in a hermetically sealed titanium case, the quartz sensing elements afford excellent long-term stability that ensures repeatable and accurate measurements.

The standard 8730A... and the low temperature 8730A500M8 accelerometer weighs only 1,9 grams while the M1 version which is slightly larger and "off-ground" weighs 2,5 grams. Internal microelectronic Piezotron® signal conditioning circuit converts the charge developed in the quartz element as a result of the accelerometer being subjected to a vibration, into a useable high level voltage signal at a low impedance output. The low impedance output provides high immunity to noise and insensitivity to cable motion. Kistler's design allows the use of rugged, low cost coaxial cable between the accelerometer and power/readout equipment. Where minimum cable and connector weight are desirable, the 1761B... general purpose cable is recommended.



Dimensions:	A (mm)	B
8730A...	16,26	9/32"
8730A...M1	17,52	5/16"
8730AE500	16,26	8 mm

Application

The light weight and small size of the 8730A... Series is recommended for precision measurements on small, thin-walled structures or where space is limited. Changes in dynamic response of the test article due to accelerometer mass loading are minimized when using this family of accelerometers. It is ideal for high frequency vibration measurements.

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Technical Data

Type	Unit	8730A500	8730AE500	8730A500M1
Acceleration Range	g	±500	±500	±500
Acceleration Limit	gpk	±1000	±1000	±1000
Transverse Acceleration Limit	gpk	±1000	±1000	±1000
Threshold nom. (noise μV_{rms})	grms	0,01 (130)	0,02 (200)	0,02 (200)
8730A500M8	grms	0,02 (200)	--	--
Sensitivity ($\pm 10\%$)	mV/g	10	10	10
Resonant Frequency mounted, nom.	kHz	76	76	76
Frequency Response, $\pm 5\%$	Hz	2 ... 10000	2 ... 10000	2 ... 7000
Amplitude Non-linearity	%FSO	±1	±1	±1
Time Constant nom.	s	0,5	0,5	0,5
Transverse Sensitivity nom., (max.)	%	1,5 (3)	1,5 (3)	1,5 (3)
Long Term Stability	%	±1	±1	±1
Environmental:				
Base Strain Sensitivity @ 250 $\mu\epsilon$	g/ $\mu\epsilon$	0,05	0,05	0,01
Shock Limit (1ms pulse)	gpk	5000	5000	5000
Temperature Coeff. of Sensitivity	%/°C	-0,054	-0,054	-0,054
Temperature Range Operating	°C	-55 ... 120	-55 ... 120	-55 ... 120
8793A500M8	°C	-195 ... 120	--	--
Temperature Range Storage	°C	-75 ... 150	-75 ... 120	-75 ... 150
8793A500M8	°C	-195 ... 120	--	--
Output:				
Bias nom.	VDC	11	11	11
Impedance	Ω	<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	2 ... 18	2 ... 18	2 ... 18
Impedance min.	k Ω	>100	>100	>100
Construction:				
Sensing Element	type	Quartz Shear	Quartz Shear	Quartz Shear
Housing/Base	material	Titanium	Titanium	Titanium
Sealing-housing/connector	type	Hermetic	Hermetic	Hermetic
Connector	type	10-32 UNF neg.	10-32 UNF neg.	10-32 UNF neg.
Ground Isolated min.	M Ω	--	--	10
Weight	grams	1,9	1,9	2,5
Mounting (stud)	type	5-40 UNF	M3 x 0,5	5-40 UNF
Mounting Torque	Nm	1	1	1

1 g = 9,80665 m/s², 1 Inch = 25,4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,1129 Nm

Mounting

The 8730A... can be attached to the test structure by its integral 5-40 stud. Reliable and accurate measurements require that the mounting surface be clean and flat. The Operating Instruction Manual for the 8730A... accelerometer series provides detailed information regarding mounting surface preparation.

Ordering Key

Measuring Range

±500g	500
±500g, integral M3 stud, 8mm case hex	E500

Variants

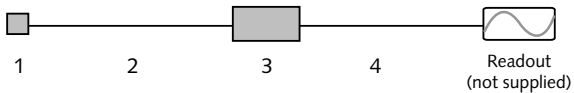
Standard	-
Ground isolated	M1
Low Temperature	M8

8730A



Measuring Chain

- | | Type |
|--|-------------|
| 1 Low Impedance Sensor | 87 |
| 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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