

PiezoStar® Accelerometer

Type 8703A...
8705A...

General Purpose, Voltage Mode Accelerometers

The 8703A and 8705A are small, light weight accelerometers for shock and vibration measurements for rapidly changing temperature conditions. The 8703A... and 8705A... are available in two measuring ranges, 50g and 250g, with or without integral ground isolation. These accelerometers feature a rugged, hermetically sealed construction.

- IEPE Voltage mode
- Unique PiezoStar sensing element
- -55 ... 165 °C operation
- Ultra-low temperature sensitivity
- 0.5...10 kHz (5%) frequency range
- Low base strain sensitivity
- Lightweight, hermetically sealed
- Conforming to CE

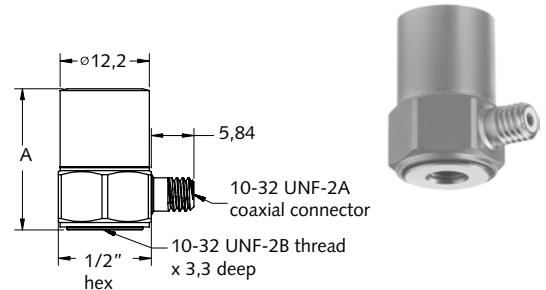
Description

The 8703A... side connector and 8705A... top connector accelerometer series utilizes Kistler's unique PiezoStar seismic element that provides both wide operating frequency and ultra low temperature coefficient of sensitivity of 0.004%/°C.

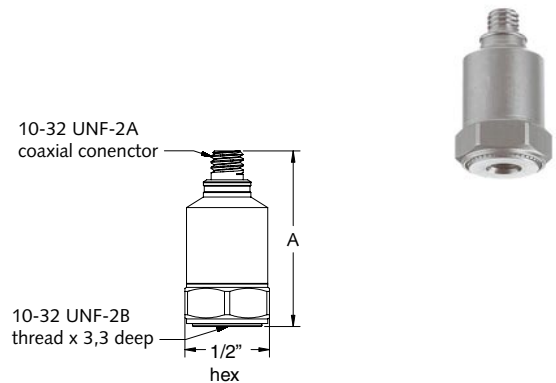
The accelerometer family operates from -55°C to +165°C and exhibits low thermal sensitivity low base strain and low transverse sensitivity minimizing measurement errors.

An internal Piezotron® impedance converter circuit converts the charge developed in the PiezoStar seismic element during shock or vibration into a voltage output. In addition to the ultra-low thermal sensitivity, PiezoStar accelerometers provide excellent long-term stability and repeatability.

The accelerometer family is available in ground isolated versions (indicated with M1 suffix). All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel.



Dim	8703A50M1	8703A50M5	8703A250M1	8703A250M5
A	20,3	19,3	17,0	16,0



Dim	8705A50M1	8705A50M5	8705A250M1	8705A250M5
A	24,6	24,4	21,3	20,8

Application

The 8703A... and 8705A... are designed for rapidly changing temperature conditions, shock and vibration measurements. General applications include: Environmental Testing (ESS) Product Acceptance/Qualification Testing, Powertrain/Automotive NVH and Aviation Testing.

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Technical Data

Type	Unit	8703A50M1/M5 8705A50M1/M5	8703A250M1/M5 8705A250M1/M5
Acceleration Range	g	±50	±250
Acceleration Limit	gpk	±100	±500
Transverse Acceleration Limit	gpk	±100	±500
Threshold nom.	grms	0,0012	0,006
Sensitivity, ±5%	mV/g	100	20
Resonant Frequency mounted, nom.	M1	40	50
	M5	40	70
Frequency Response, ±5%	Hz	0,5 ... 10000	0,5 ... 10000
Amplitude Non-linearity	%FSO	±1	±1
Time Constant nom.	s	1	1
Transverse Sensitivity nom., (max. 5)	%	3	3
Environmental:			
Base Strain Sensitivity @ 250µε	M1	g/µε	0,015
	M5	g/µε	0,015
Shock Limit (1ms pulse width)	gpk	2000	2000
Temperature Coefficient of Sensitivity	%/°C	-0,004	-0,004
Temperature Range Operating	°C	-55 ... 165	-55 ... 165
Output:			
Bias nom.	VDC	11	11
Impedance	Ω	<100	<100
Voltage full scale	V	±5	±5
Source:			
Voltage	VDC	20 ... 30	20 ... 30
Constant Current	mA	4	4
Impedance min.	kΩ	100	100
Construction:			
Sensing Element	type	PiezoStar Crystal	PiezoStar Crystal
Housing/Base	M1	material	Titanium/St. Stl.
	M5	material	Titanium
Sealing-housing/connector	type	hermetic	hermetic
Connector	type	10-32 neg.	10-32 neg.
Ground Isolated min. (M1 only)	MΩ	10	10
Weight	8703A...M1	grams	10
	8703A...M5	grams	8,8
	8705A...M1	grams	8,4
	8705A...M5	grams	7,6
Mounting Torque	Nm	2	2

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

Mounting

A threaded 10-32 UNF stud provides positive attachment of the accelerometer to the test structure. Reliable and accurate measurements require that the mounting surface be clean and flat. The operating instruction manual for the 8703A... and 8705A... series accelerometers provides detailed information regarding mounting surface preparation.

Accessories Included

- | | |
|---|---------------------|
| • 10-32 mounting stud ext. | Type
8402 |
| • Mounting stud, 10-32 to M6; shipped only outside N. America | 8411 |

Optional Accessories

- | | |
|--------------------------|----------------------|
| • Mounting magnet | Type
8452A |
| • Triaxial mounting cube | 8502 |

Ordering Key

Connector Location

Side	3A
Top	5A

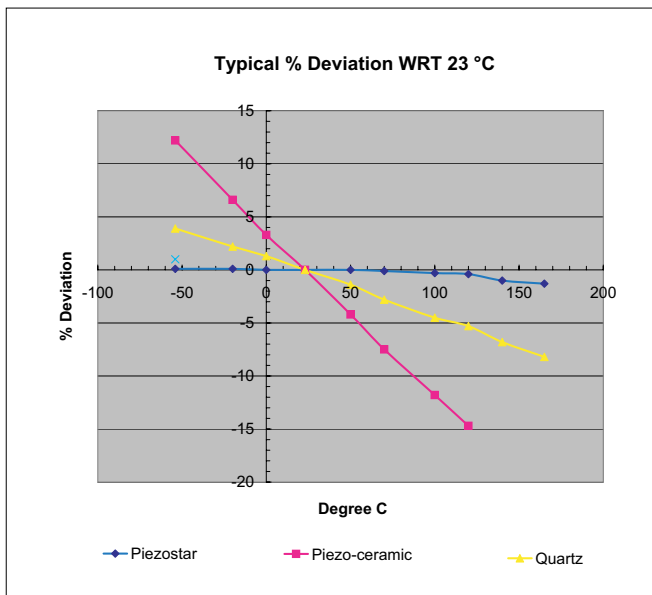
870

Measuring Range

±50g	50
±250g	250

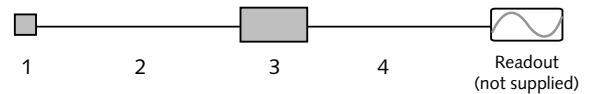
Variants (required, choose one)

Ground isolated, high temp.	M1
High temperature	M5



Measuring Chain

- | | |
|-----------------------------------|---------------------------|
| 1 Low Impedance Sensor | Type
870...A... |
| 2 Sensor Cable | 1761B... |
| 3 Power Supply/Signal Conditioner | 51... |
| 4 Output cable to readout | 1511 |



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