

PiezoStar Accelerometer

Type 8703A..., 8705A...

General purpose, voltage mode accelerometers

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

- IEPE voltage mode
- Unique PiezoStar sensing element
- -65 ... 330 °F operation
- Ultra-low temperature sensitivity
- 0.5 Hz ... 10 kHz (±5 %) frequency range
- Low base strain sensitivity
- Lightweight, hermetically sealed
- Conforming to CE

Description

The side connector Type 8703A... and top connector accelerometer Type 8705A... utilizes Kistler's unique PiezoStar seismic element that provides both wide operating frequency and ultra low temperature coefficient of sensitivity of 0.002 %/°F.

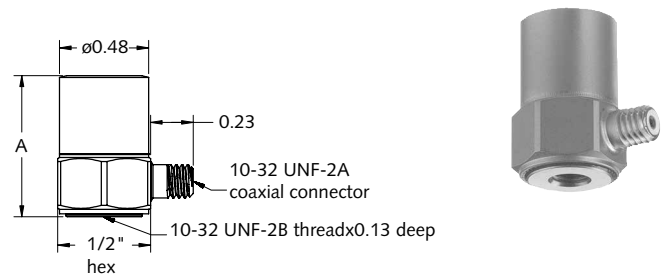
The accelerometer family operates from -65 ... 330 °F and exhibits low thermal sensitivity low base strain and low transverse sensitivity minimizing measurement errors.

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.

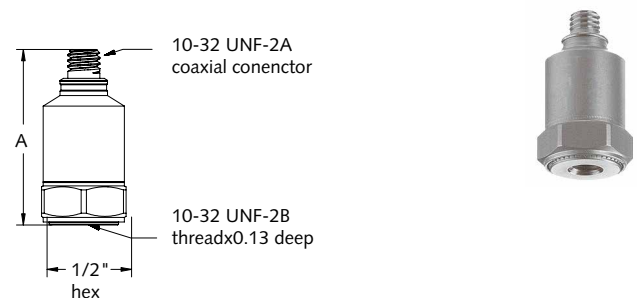
The accelerometer family is available in ground isolated versions (indicated with M1 suffix). All units are hermetically sealed and are constructed entirely of titanium or a combination of titanium and stainless steel.

Application

The Type 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.



Dim	Type 8703A50M1	8703A50M5/M8	8703A250M1	8703A250M5
A	0.80	0.76	0.67	0.63



Dim	Type 8705A50M1	8705A50M5	8705A250M1	8705A250M5
A	0.97	0.96	0.84	0.82

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Technical data

Specification	Unit	Type 8703/05A50	Type 8703/05A250
Acceleration range	g	±50	±250
Acceleration limit	gpk	±100	±500
Transverse acceleration limit	gpk	±100	±500
Threshold, nom. (noise 120 µVrms)	grms	0.0012	0.006
Sensitivity, ±5% Type 8703A50M8, ±10%	mV/g	100	20
Resonant frequency mounted, nom. Type 8703A250M5/8705A250M5	kHz kHz	40 –	50 70
Frequency response, ±5 % Type 8703A50M8	Hz Hz	0.5 ... 10 000 1 ... 5 000	0.5 ... 10 000 –
Amplitude non-linearity	%FSO	±1	±1
Time constant, nom.	s	1	1
Transverse sensitivity, nom. (max. 5)	%	3	3
Long term stability	%	±1	±1

Environmental

Base strain sensitivity at 250 µε Type 8703A250M5/8705A250M5	g/µε g/µε	0.015 –	0.03 0.05
Shock limit (1 ms pulse)	gpk	2 000	2 000
Temperature coefficient of sensitivity	°F	0.002	0.002
Operating temperature range Type 8703A50M8	°F °F	–65 ... 330 –320 ... 250	–65 ... 330 –

Output

Bias, nom.	VDC	11	11
Impedance	Ω	<100	<100
Voltage full scale	V	±5	±5
Current	mA	2 ... 20	2 ... 20

Source

Voltage	VDC	20 ... 30	20 ... 30
Constant current	mA	4	4
Impedance, min.	kΩ	>100	>100

Construction

Sensing element	Type	PiezoStar	PiezoStar
Case/base	material	titanium/stainless steel	titanium/stainless steel
Degree of protection case/connector	Type	hermetic	hermetic
Connector	Type	10-32 neg.	10-32 neg.
Ground isolated	Type 8703A...M1/8705A...M1	yes	yes
Mass	Type 8703A...M1/8705A...M1	grams	grams
	Type 8703A...M5/8705A...M5	8.8/7.6	6.9/6.7
Mounting (10-32 thd.x0.13 dp.)	Type	stud	stud
Mounting torque	lbf-in	18	18

1 g = 9.80665 m/s², 1 Inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.113 N-m

8703A_000-557a-08.21

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 accelerometers Type 8703A... and 8705A... provides detailed information regarding mounting surface preparation.

Included accessories

- 10-32 mounting stud ext. **Type 8402**
- Mounting stud, 10-32 to M6; shipped only outside N.A. **Type 8411**
- ISO 17025 Calibration Certificate

Optional accessories

- Mounting magnet **Type 8452A**
- Triaxial mounting cube **Type 8502**

Ordering key

Connector location

Side	3
Top	5

Range

±50 g	50
±250 g	250

Variant

Ground isolated	M1
High temperature	M5
Low temperature, Type 8703A50 only	M8

Type 870 A

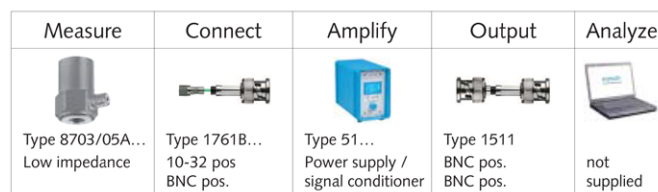
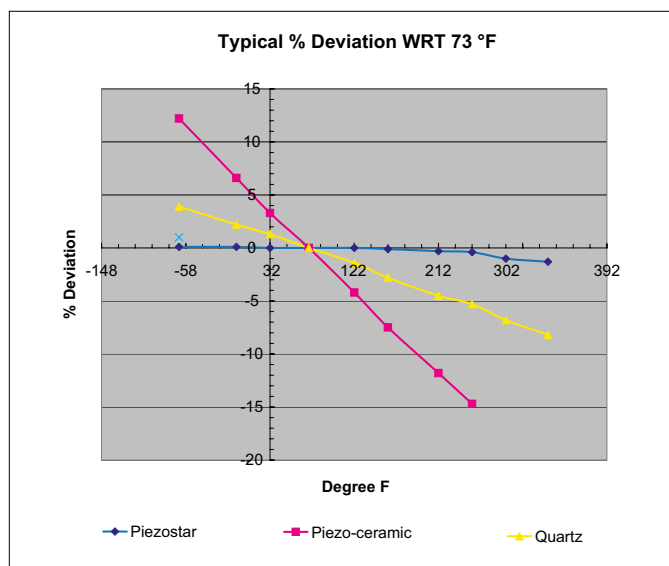


Fig. 1: Measuring chain

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