

PiezoStar Accelerometer

Type 8715A...

Center hole, voltage mode accelerometer

Type 8715A... is a miniature, lightweight accelerometer for shock and vibration measurements especially for changing temperature conditions. Type 8715A... is available in a 5 000 g-range, featuring a rugged, hermetically sealed construction.

- IEPE voltage mode
- Unique PiezoStar sensing element
- -55 ... 165 °C [-65 ... 330 °F] operating temperature range
- Ultra-low temperature sensitivity
- 2 Hz ... 10 kHz (± 5 %) frequency range
- Low base strain sensitivity
- Lightweight, hermetically sealed
- Conforming to **CE**

Description

The Type 8715A... side connector accelerometer utilizes Kistler's unique PiezoStar seismic element. Operating at -55 ... 165 °C [-65 ... 330 °F], this unique element provides a wide operating frequency, ultra-low temperature coefficient of sensitivity of -0.01 %/°C [-0.006 %/°F], low base strain and low transverse sensitivity to minimize measurement errors.

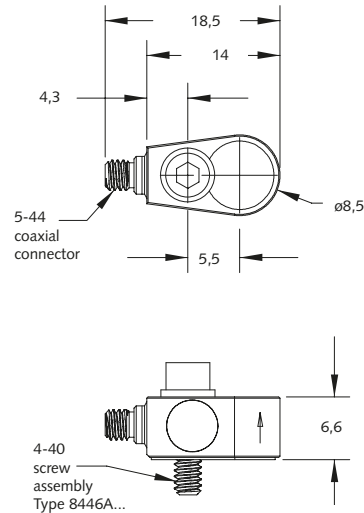
An internal Piezotron impedance converter circuit converts the charge developed in the PiezoStar seismic element during shock or vibration into a voltage output. PiezoStar accelerometers provide excellent long term stability and repeatability. The accelerometer is ground isolated and has a hermetically sealed titanium housing.

Application

Type 8715A... is designed for shock and vibration measuring in changing temperature conditions. General applications include: Environmental Testing (ESS) Product Acceptance/Qualification Testing, and Aviation Testing.

Mounting

Type 8715A... is mounted using a center hole screw or adhesive. A threaded 4-40 or M2.5 isolated screw assembly provides positive attachment of the accelerometer to the test structure. Reliable and accurate measurements require that the mounting surface be clean and flat. The Type 8715A... instruction manual provides detailed information regarding mounting surface preparation.



Outline drawing for Type 8715A... (units: mm [in])

Accessing TEDS Data

Accelerometers with a "T" suffix are variants of the standard version incorporating the "Smart Sensor" design. Viewing an accelerometer's data sheet requires an Interface/Coupler, such as the Kistler LabAmp Type 5165A... power supply/signal conditioner.

The Interface provides negative current excitation (reverse polarity) altering the operating mode of the PiezoSmart sensor allowing the program editor software to read or add information contained in the memory chip.

Technical data

Specifications	Unit	Type 8715A5000...
Acceleration range	g	±5 000
Acceleration limit	g _{pk}	±8 000
Threshold, nom. (noise 100 µV _{rms}) nom.	g _{rms}	0,04
Sensitivity (±5 %)	mV/g	1
Resonant frequency, mounted, nom.	kHz	>70
Frequency response, ±5 %	Hz	2 ... 10 000
Amplitude linearity, nom.	%FSO	±1
Time constant	s	0,3
Transverse sensitivity, nom. (max. 5)	%	3

Environmental

Base strain sensitivity @ 250 µε	g/µε	<0,005
Shock limit (0,2 ms pulse)	g _{pk}	8 000
Temperature coeff. of sensitivity	%/°C	–0,01
	%/°F	–0,006
Operating temperature range Type 8715A...M5	°C	–55 ... 165
	°F	–65 ... 330
Type 8715A...T ¹⁾	°C	–40 ... 121
	°F	–40 ... 250

Output

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

Power Supply

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

Construction

Sensing element	Type	PiezoStar
Housing/base	material	Titanium
Sealing-housing/connector	Type	Hermetic
Connector	Type	5-44 neg.
Ground isolated		yes
Mass	grams	2,1
Mounting	Type	cap screw
Tightening torque	N·m	0.51 ±0.05
	lbf·in	4.5 ±0.5

1 g = 9,80665 m/s², 1 Inch = 25,4 mm, 1 Gram = 0,03527 oz, 1 lbf·in = 0,113 N·m

¹⁾ TEDS data retention and data communications may be degraded for temperatures exceeding –40 ... 110 °C [–40 ... 230 °F]. Analog operation over the operating temperature is unaffected.

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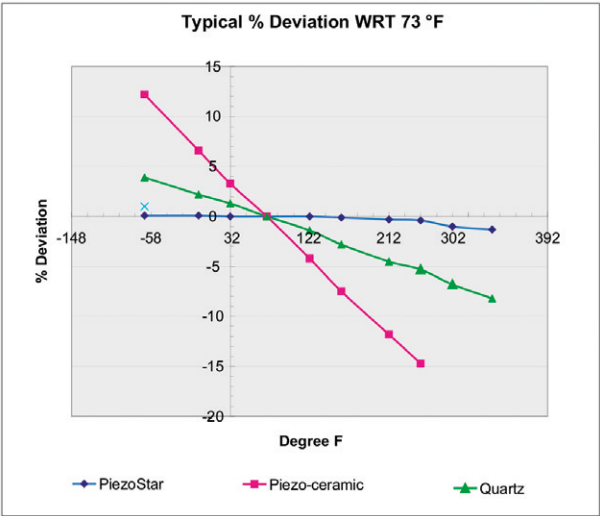


Fig. 1: Typical % of deviation

Accessories included

- 4–40x7/16" isolated screw assembly
- M2.5x12 mm isolated screw assembly

Type

8446AE3
8446AM3

Optional accessories

- 10–32 pos. to BNC pos. cable
- 5–44 pos. to 10–32 neg. silicon jacketed cable
- Adhesive mounting base, 4–40 thd.
- Adhesive mounting base, M2.5 thd.

Type

1761B...
1766AK01sp
8462K01
8462K02

Ordering key

Measuring range

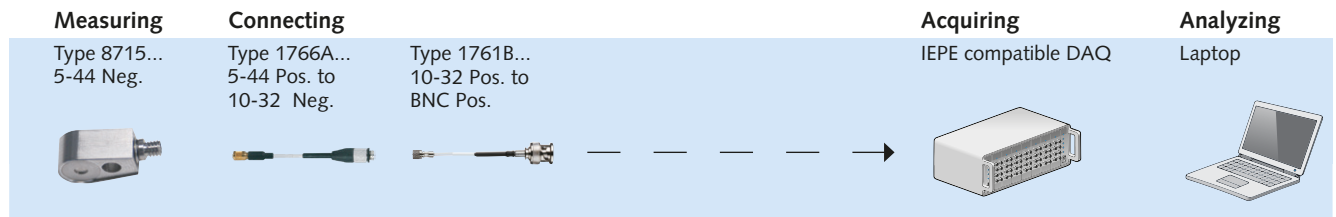
±5 000 g 5 000

TEDS Templates/Variants

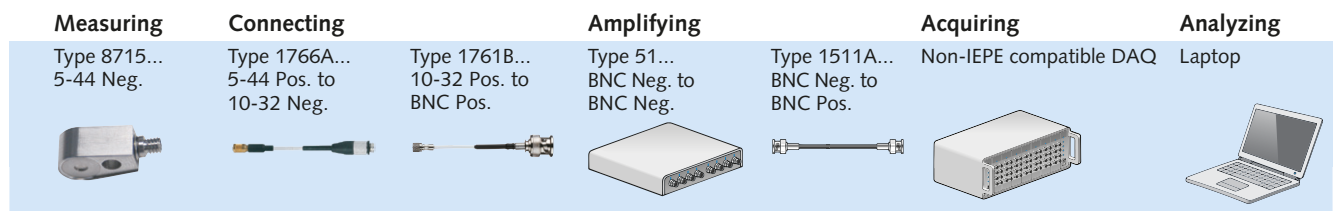
High temperature	M5
TEDS, IEEE 1451.4 V0.9	T
Template 0 (UTID 1)	
TEDS, IEEE 1451.4 V0.9	T01
Template 24 (UTID 116225)	
LMS Template 117, Free format Point ID	T02
LMS Template 118, Automotive Format (Field 14 Geometry = 0)	T03
LMS Template 118, Aerospace Format (Field 14 Geometry = 1)	T04
P1451.4 V1.0 Template 25 – Transfer Function Disabled	T05
P1451.4 V1.0 Template 25 – Transfer Function Enabled	T06

Typ 8715A

IEPE sensor and customer IEPE compatible DAQ



IEPE sensor and non-IEPE compatible DAQ



IEPE sensor and Kistler LabAmp

