

PiezoStar accelerometer

Type 8715B...

Voltage mode accelerometer

Type 8715B... is a miniature, lightweight accelerometer for shock and vibration measurements especially for changing temperature conditions. Type 8715B... is available in 250 g, 500 g, and 1 000 g ranges, featuring a rugged, hermetically sealed construction.

- IEPE voltage mode
- Unique PiezoStar sensing element
- -54 ... 165 °C [-65 ... 330 °F] operating temperature range
- Ultra-low temperature sensitivity
- 0.7 Hz ... 10 kHz (± 5 %) frequency range
- Low base strain sensitivity
- Lightweight, hermetically sealed
- Conforming to CE

Description

The Type 8715B... side connector accelerometer utilizes Kistler's unique PiezoStar seismic element. Operating at -54...165 °C [-65...329 °F], this unique element provides a wide operating frequency, base strain and low transverse sensitivity to minimize measurement errors.

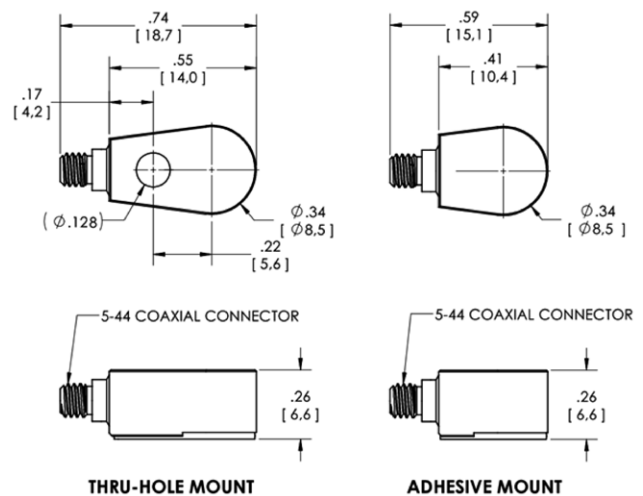
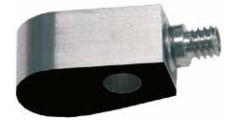
An internal Piezotron impedance converter circuit converts the charge developed in the PiezoStar seismic element during shock or vibration into a voltage output. PiezoStar accelerometers provide excellent long term stability and repeatability. The accelerometer is ground isolated and has a hermetically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

Application

Type 8715B... 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 8715B... 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 8715B... instruction manual provides detailed information regarding mounting surface preparation.



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

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.

8715B_003-343a-08.18

Technical data

Specifications	Units	Type 8715BxxxA00		Type 8715BxxxS00 and 8715BxxxS00T		
		250	500	250	500	1K0
Dynamic						
Acceleration range	g	±250	±500	±250	±500	±1 000
Frequency response, ±5 %	Hz	0.7 ... 10 000	0.7 ... 10 000	0.7 ... 10 000	0.7 ... 10 000	0.7 ... 10 000
Frequency response, ±10 %	Hz	0.5 ... 15 000	0.5 ... 15 000	0.5 ... 15 000	0.5 ... 15 000	0.5 ... 15 000
Sensitivity at 100 Hz, 10 g rms	mV/g	20± 10 %	10± 10 %	20± 10 %	10± 10 %	5± 10 %
Resonant frequency, nom.	kHz	>60	>60	>60	>60	>60
Transverse sensitivity, max. 5.0 %	%	3.0 Typ.		3.0 Typ.		
Amplitude linearity	%FSO	±1		±1		

Electrical

Output						
Bias, nom.	VDC	11		11		
Impedance	Ω	<100		<100		
Current	mA	2		2		
Voltage, F.S., nom.	V	±5		±5		
Threshold (1 Hz to 10 kHz), nom.	g rms	<0.005	<0.009	<0.005	<0.009	<0.015
Time constant	sec	1.3		1.3		1.9
Supply, current nom.	mA	2 ... 18		2 ... 18		
Source, voltage	VDC	20 ... 30		20 ... 30		

Environmental

Acceleration limit	g	±500	±1 000	±500	±1 000	±2 000
Shock (1 ms pulse width) max.	g	5 000		5 000		
Vibration max.	g	1 000	2 000	1 000	2 000	4 000
Temperature range, operating	°C	-54 ... 165				
Without TEDS	°C			-54 ... 165		
With TEDS	°C			-54 ... 120		
Temperature coef. of sensitivity	%/°C	-0.004	-0.004	0.008	0.012	0.012
Long term stability	%	±1		±1		
Base strain sensitivity @250 µε	g/µε			0.012		0.015

Physical

Weight	gr	1.7	1.6	2.0	1.9	1.9
Sensor element		PiezoStar		PiezoStar		
Case material		Titanium		Titanium		
Construction	Seal	Hermetic		Hermetic		
Mounting		Adhesive				
Mouting torque	N·m			0.51± 0.05		
Connector		5-44 Coaxial		5-44 Coaxial		
MISC.						
TEDS Accelerometer template				For TEDS units see TEDS templates spread sheet		
Accessories: (1) Type 8446AE3				4-40 x 7/16" isolated screw assembly		

1) The Type 8715Bxxxxxxx meets the appropriate CE requirements.

2) The Type 8715BxxxS00T accelerometers contain an internal Transducer Electronic Data Sheet (TEDS), which conforms to the requirements of IEEE Std. 1451.4, Smart Transducer Interface, Mixed Mode Communication Protocol and Transducer Electronic Data Sheet Format, for sensors and actuators.

3) For TEDS sensors, TEDS Data Retention and Data Communications may be degraded for temperatures exceeding (-40 °C ... 110 °C). Analog operation over the operating temperature is unaffected.

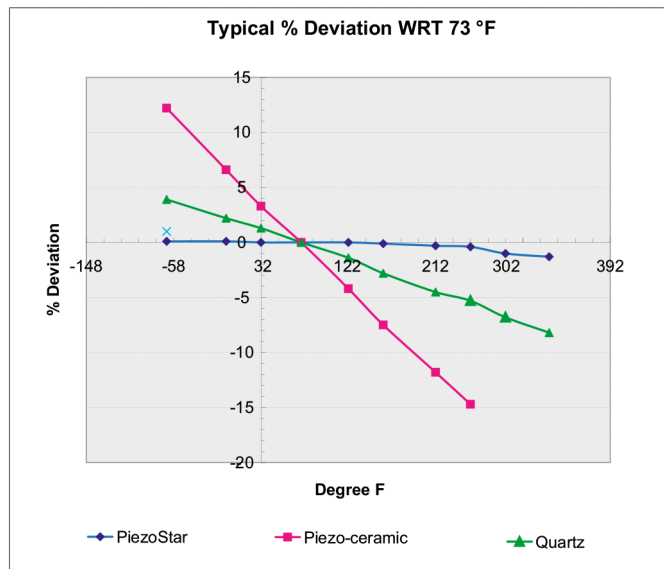


Fig. 1: Typical % of deviation

Accessories included

- 4-40x7/16" isolated screw assembly **Type** 8446AE3
- M2,5x12 mm isolated screw assembly **Type** 8446AM3

Optional accessories

- 10-32 pos. to BNC pos. cable **Type** 1761B...
- 5-44 pos. to 10-32 neg. silicon jacketed cable **Type** 1766AK01sp
- Adhesive mounting base, 4-40 thd. **Type** 8462K01
- Adhesive mounting base, M2.5 thd. **Type** 8462K02

Ordering key

Type 8715B...

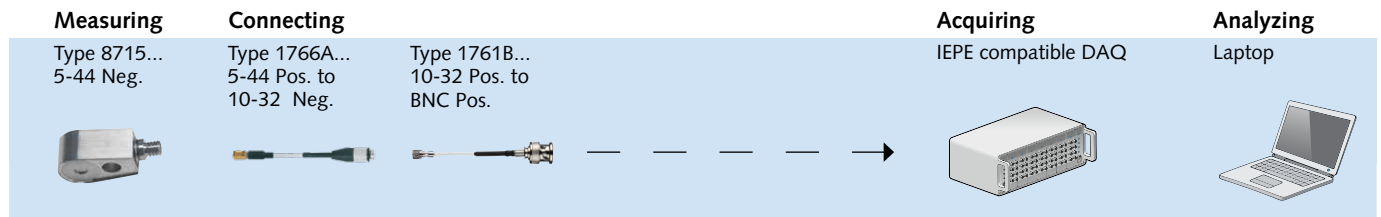
Measuring range	
±250 g	250
±500 g	500
±1 000 g	1K0

Mounting	
Adhesive mount [±250g, and ±500g only]	A00
Thru-hole mount	S00

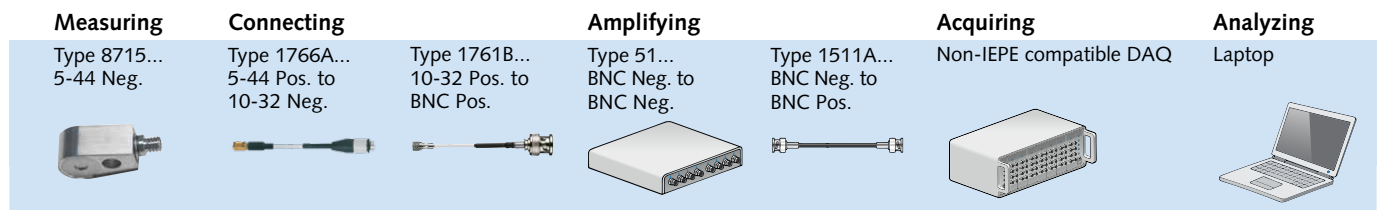
TEDS templates/variants	
High temperature	-
TEDS, IEEE 1451.4 V0.9 Template 0 (UTID 1)	T
IEEE 1451.4 V0.9	T01
Template 24 (UTID 116225)	T01
LMS-Template 117, free format point ID	T02
LMS-Template 118, Fahrzeugformat (field 14 geometry = 0)	T03
LMS-Template 118, aerospace format (field 14 geometry = 1)	T04
P1451.4 V1.0 template 25 – transfer function disabled	T05
P1451.4 V1.0 template 25 – transfer function enabled	T06

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IEPE sensor and customer IEPE compatible DAQ



IEPE sensor and non-IEPE compatible DAQ



IEPE sensor and Kistler LabAmp

