KISTLER

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PiezoStar® Accelerometer

Type 8715A...

Center Hole, Voltage Mode Accelerometer

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

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

Description

Type 8715A… side connector accelerometer utilizes Kistler's unique PiezoStar seismic element that provides both wide opera-ting frequency and ultra low temperature coefficient of sensitivity of –0,01 %/°C.

The accelerometer operates from –55 … 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 is ground isolated and has a hermetically sealed titanium housing.

Application

The 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. Type 8715A… instruction manual provides detailed information regarding mounting surface preparation.
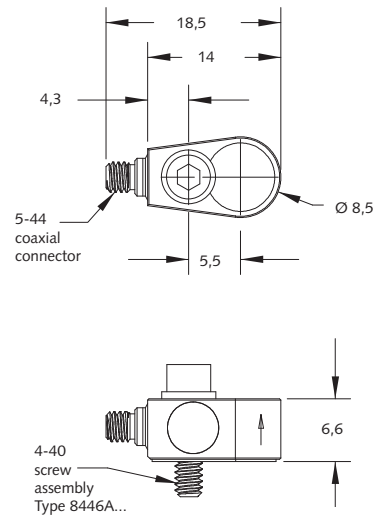
Technical Data

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

Environmental

Base strain sensitivity @ 250 µε	g/µε	0,005
Shock (0,2 ms pulse)	gpk	8 000
Temperature coeff. of sensitivity	%/°C	–0,01
Operating temperature range		
Type 8715A5000	°C	–55 … 165
Type 8715A…T [1]	°C	–40 … 120

Output

Bias nom.	VDC	11
Impedance	Ω	≤100
Voltage full scale	V	±5

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Power Supply

Voltage	VDC	20 … 30
Constant current	mA	2 … 18

Construction

Sensing element	Type	PiezoStar
Case/base	material	titanium
Degree of protection case/connector (EN 60529)		IP68
Connector	Type	5-44 neg.
Ground isolated		yes
Mass	grams	2,1
Mounting	Type	cap screw
Tightening torque	N·m	0,51

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). Analog operation over the operating temperature is unaffected.
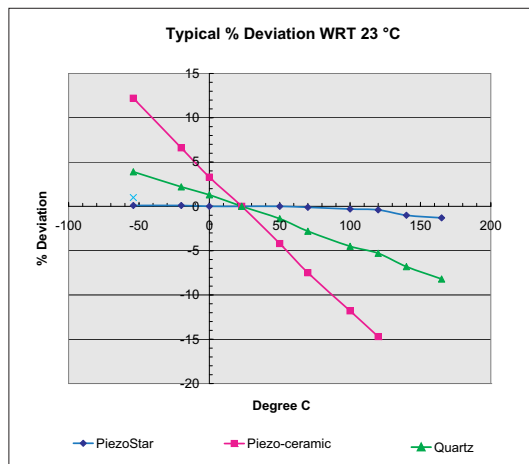

Fig 1: Typical % of deviation

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 Kistler's Type 5134B… or 5000M04 with TEDS Editor software. 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.

Accessories Included

	Type
• 4-40x7/16" isolated screw assembly	8446AE3
• M2,5x12 mm isolated screw assembly shipped outside N.A.	8446AM3

Optional Accessories

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

Ordering Key

8715A ☐☐

Range

±5 000 g	5000

TEDS Templates

High temperature	M5
TEDS, IEEE 1451.4 V0.9 Template 0 (UTID 1)	T
IEEE 1451.4 V0.9 Template 24 (UTID 116225)	T01
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 = 0)	T04
P1451.4 V1.0 Template 25 Transfer Function Disabled	T05
P1451.4 V1.0 Template 25 Transfer Function Disabled	T06

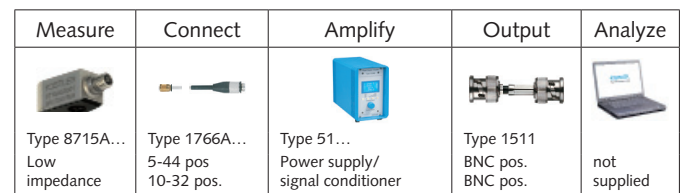| Measure	Connect	Amplify	Output	Analyze
Type 8715A… Low impedance	Type 1766A… 5-44 pos 10-32 pos.	Type 51… Power supply/ signal conditioner	Type 1511 BNC pos. BNC pos.	not supplied

Fig. 2: Measuring chain

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