

Miniature PiezoStar® Accelerometer

Type 8766A250...
8766A500...

IEPE Triaxial Accelerometer Cube (250 g, 500 g)

Type 8766A250... and 8766A500... miniature triaxial accelerometer (± 250 g or ± 500 g) measures simultaneous shock and vibration in three orthogonal axes. A summary of key features is as follows:

- IEPE, 250 g and 500 g ranges (for 50 g range see data sheet 8766A_000-607)
- PiezoStar element with very low sensitivity to temperature
- Miniature, low mass
- Hermetic, titanium construction
- Mini and standard, 4-pin connector options
- High temperature (165 °C) option
- Conforming to CE

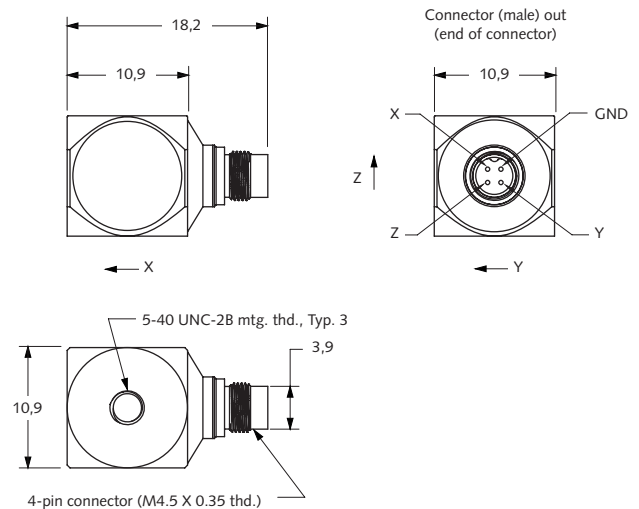
Description

Type 8766A250... and 8766A500... is an IEPE triaxial accelerometer designed for high temperature applications. It uses Kistler's PiezoStar shear element design which provides wide operating frequency range and extremely low sensitivity to temperature changes, as shown in Figure 1 (see pg. 3). The IEPE sensor combines PiezoStar crystals and high gain integral hybrid microelectronics to achieve very low sensitivity variation over the operating temperature range, compared to other sensing element designs. The Kistler shear element technology also ensures high immunity to base strain errors. The accelerometer uses a welded titanium construction for low mass and an industry standard 4-pin connector as well as a mini 4-pin connector for lower mass and wider frequency operation. All variations provide reliable measurements and long-term stability especially at higher operating temperatures.

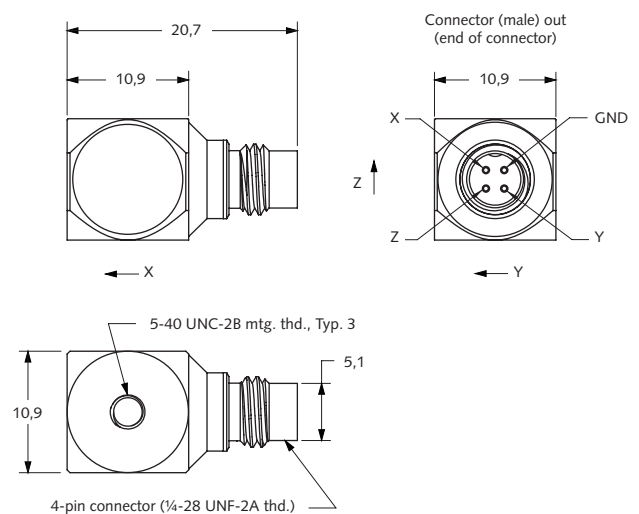
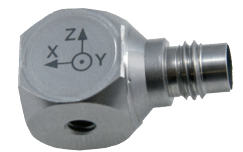
Application

This miniature and light weight triaxial accelerometer family is ideally suited for structural analysis of small components or sub-systems and well as full vehicle testing for aviation, space, automotive as well as a wide range of general test structures. The PiezoStar accelerometer technology excels in operational testing over dynamic test conditions.

Type 8766A250A...
and 8766A500A...



Type 8766A250B...
and 8766A500B...



8766A_000-841e-03.10

Technical Data

Type Number	Unit	Type 8766A250AB	Type 8766A500AB	Type 8766A250AH	Type 8766A500AH
		Type 8766A250BB	Type 8766A500BB	Type 8766A250BH	Type 8766A500BH
Acceleration range	g	±250	±500	±250	±500
Acceleration limit	gpk	±500	±1 000	±500	±1 000
Threshold (1 ... 10 kHz)	grms	<0,006	<0,01	<0,006	<0,01
Sensitivity at 100 Hz, (±10 %)	mV/g	20	10	20	10
Resonant frequency mounted	kHz	>55	>70	>55	>70
Frequency response					
Type 8766A...A...					
(±5 %)	Hz	0,5 ... 10 000	0,5 ... 10 000	0,5 ... 10 000	0,5 ... 10 000
(±10 %)	Hz	0,5 ... 12 000	0,5 ... 15 000	0,5 ... 12 000	0,5 ... 15 000
Type 8766A...B...					
(±5 %)	Hz	0,5 ... 8 000	0,5 ... 8 000	0,5 ... 8 000	0,5 ... 8 000
(±10 %)	Hz	0,5 ... 10 000	0,5 ... 12 000	0,5 ... 10 000	0,5 ... 12 000
Amplitude non-linearity	%FSO	±1	±1	±1	±1
Time constant nom.	s	1,2	1,2	1,2	1,2
Transverse sensitivity (5 % max.), typ.	%	1,5	1,5	1,5	1,5
Environmental					
Base strain sensitivity @ 250 µε	g/µε	0,005	0,005	0,005	0,005
Random Vibration max.	grms	1 000	2 000	1 000	2 000
Shock limit (1 ms pulse), max.	gpk	5 000	5 000	5 000	5 000
Temperature coeff. of sensitivity	%/°C	-0,005	-0,004	-0,005	-0,004
Operating temperature range	°C	-54 ... 120	-54 ... 120	-54 ... 165	-54 ... 165
Output					
Bias nom.	VDC	11	11	11	11
Impedance	Ω	<100	<100	<100	<100
Voltage full scale	V	±5	±5	±5	±5
Power Supply					
Voltage	VDC	20 ... 30	20 ... 30	20 ... 30	20 ... 30
Constant current	mA	2 ... 18	2 ... 18	2 ... 18	2 ... 18
Construction					
Sensing element		PiezoStar	PiezoStar	PiezoStar	PiezoStar
Housing/base	material	Titanium	Titanium	Titanium	Titanium
Sealing housing/ connector (EN 60529)	Type	IP 68	IP 68	IP 68	IP 68
Connector					
Type 8766A...A...	Type	4-pin (M4,5)	4-pin (M4,5)	4-pin (M4,5)	4-pin (M4,5)
Type 8766A...B...	Type	4-pin (¼-28)	4-pin (¼-28)	4-pin (¼-28)	4-pin (¼-28)
Ground isolated		with accessory	with accessory	with accessory	with accessory
Mass					
Type 8766A...A...	grams	4	3,7	4	3,7
Type 8766A...B...	grams	4,3	4	4,3	4
Mounting	Type	5-40 UNC-2B	5-40 UNC-2B	5-40 UNC-2B	5-40 UNC-2B
Mounting torque	N·m	0,8	0,8	0,8	0,8

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

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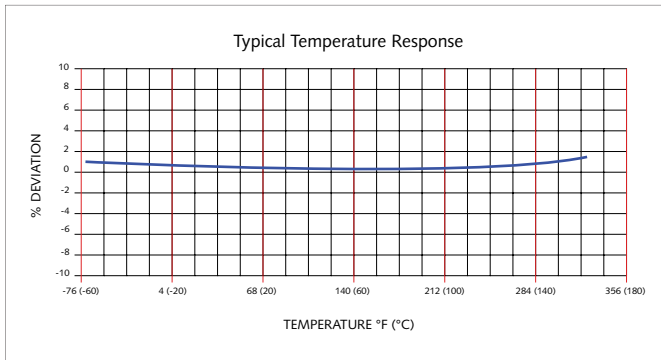


Fig. 1: PiezoStar® sensitivity variation with temperature (typical plot)

Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. The sensor can be attached to the structure with wax, adhesive or supplied mounting screw. Several optional ground isolated mounting accessories are also available for added mounting flexibility. Type 8766A250... and 8766A500... has three 5-40 UNC-2B threaded holes for flexible stud mounting on a test object, fully utilizing each mounting side of the cube design. In addition, the three threaded holes provide reliable mounting for calibration of each orthogonal axis. The instruction manual for Type 8766A250... and 8766A500... provides detailed information regarding mounting surface preparation.

Type 8400K06 5-40 to 10-32 Ground isolated mounting base	Type 8400K04 5-40 to M6 Ground isolated Mounting Base	Type 8440K01 5-40 Ground isolated mount- ing base	Type 8436 Adhesive ground isolated, hex. mounting base with 10-32 thd. hole	Type 8452 Magnet mount- ing base with 10-32 thd. hole

Fig. 2: Mounting accessories

Accessories Included

- 5-40 to 10-32 adapter screw **Type** 8416
- Mounting wax **Type** 8432

Optional Accessories

- 5-40 to 10-32 ground isolated mounting base **Type** 8400K06
- 5-40 to M6 ground isolated mounting Base **Type** 8400K04
- 5-40 ground isolated mounting base **Type** 8440K01
- Adhesive ground isolated, hex. mount-
ing base with 10-32 thd. hole **Type** 8436
- Magnet mounting base with 10-32 thd. hole **Type** 8452A

Optional Cables

- Teflon® jacketed breakout cable – ¼-28
4-pin (neg.) to 3x BNC (pos.) **Type** 1756B...
- Teflon® jacketed breakout cable – mini
4-pin (neg.) to 3x BNC (pos.) **Type** 1784A...
- Flexible silicone jacketed breakout
cable – ¼-28 4-pin (neg.) 3x BNC (pos.) **Type** 1734A...

Ordering Key

Measuring Range

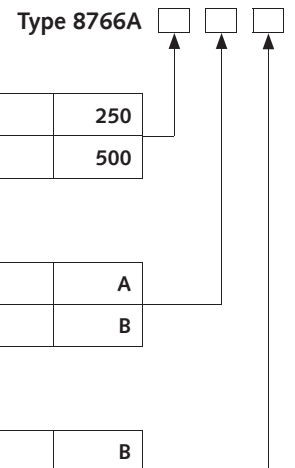
±250 g	250
±500 g	500

Connector

Mini 4-pin (pos.)	A
Standard, ¼-28 4-pin (pos.)	B

Variants

Standard, base temperature	B
High temperature	H



Measure	Connect	Amplify	Output	Analyze
 Type 8766A250... and 8766A500... Low impedance IEPE	 Type 1756B... or Type 1734A... or Type 1784A... 4-pin neg. 3x BNC pos.	 Type 51... Power supply / signal conditioner	 Type 1511 BNC pos. BNC pos.	 not supplied

Fig. 3: Measuring chain

Note: 1784A... is used for 8766A...A...,
1756B... and 1734A... are used for 8766A...B...