

K-Shear Accelerometer

Type 8793A...

Low profile, voltage mode triaxial accelerometer

The triaxial accelerometer Type 8793A... measures shock and vibration in three mutually perpendicular axes. They are available in two extended operating temperature ranges; the Type 8793A500M5 for high temperature operation and the Type 8793A500M8 for low temperature cryogenic operation.

- Low impedance voltage mode
- Low profile design
- Quartz shear accuracy and stability
- High +165°C [+330°F] and low -195°C [-320°F] temperature versions
- Hermetically sealed
- Conforming to CE

Description

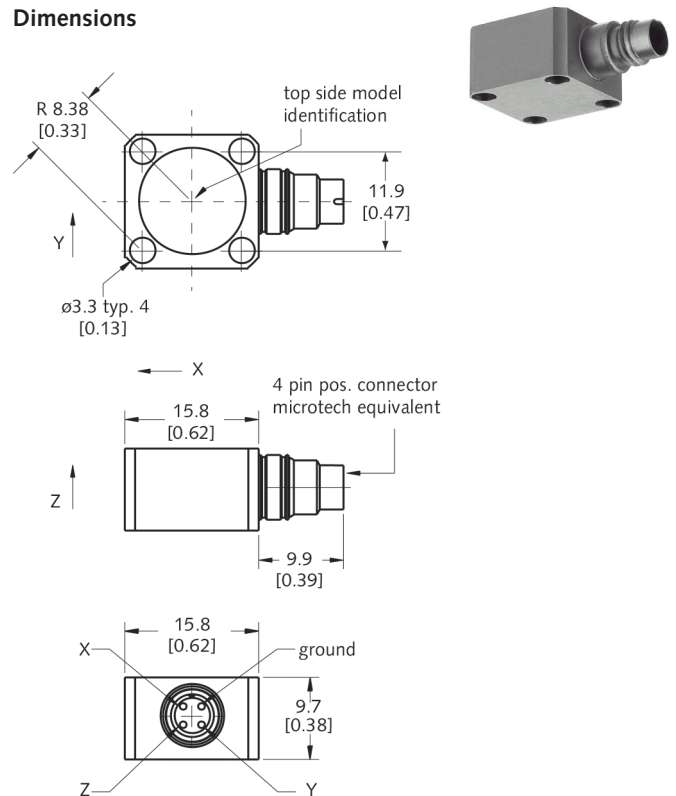
Contained within the housing of the accelerometer Type 8793A... are three individual shear sensitive quartz elements oriented such that they only respond to a vibration component occurring in the x, y and z axis. Each sensing element is internally connected to a Piezotron microelectronic circuit that converts the charge signal from the quartz piezoelectric element into a low impedance voltage output signal.

Kistler's K-Shear sensing elements are hermetically sealed in a stainless steel housing and provide long term stability, a wide operating frequency range along with extremely low sensitivity to thermal transients and transverse acceleration.

Application

The accelerometer measures simultaneously the three components of the acting acceleration (i.e., shock or vibration), permitting the resulting vector to be determined, magnitude and direction. Because of its low weight, the sensor is especially useful for measuring on small and lightweight structures, where mass loading must be kept at a minimum. It can also be used for drop tests and finds application in a wide variety of vehicle vibration studies, modal analysis, product development and aerospace testing.

Dimensions



Dimensions are shown in mm [in], unless otherwise noted.

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 a TEDS compatible data acquisition system. Their 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.

Mounting

Reliable and accurate measurements require that the mounting surface be clean and flat. The sensor can be attached to the structure with supplied screws. The operating instruction manual for the Type 8793A... provides detailed information regarding mounting surface preparation.

8793A_000-261e-03.20

Technical data

Specification	Unit	Type 8793A500
Acceleration range	g	±500
Acceleration limit	gpk	±1,000
Transverse acceleration limit	gpk	±1,000
Threshold (noise 200 µVrms), nom.	grms	0.002
Sensitivity, ±10%	mV/g	10
Resonant frequency mounted, nom.	kHz	>80
Frequency response, ±5%	Hz	2.5 ... 10,000
Amplitude non-linearity	%FSO	±1
Time constant, nom.	s	0.5
Type 8793A500M3	s	1
Transverse sensitivity, nom. (max. 3)	%	1.5

Environmental

Base strain sensitivity @ 250 µε	g/µε	0.015
Shock limit (1 ms pulse)	gpk	5,000
Temperature coeff. of sensitivity	%/°C [%/°F]	-0.03 [-0.02]
Operating temperature range		
Type 8793A500	°C [°F]	-55 ... 120 [-65 ... 250]
Type 8793A500M5	°C [°F]	-55 ... 165 [-65 ... 330]
Type 8793A500M8	°C [°F]	-195 ... 120 [-320 ... 250]
Type 8793A500T	°C [°F]	-40 ... 120 [-40 ... 250]
Storage temperature range		
Type 8793A500M5/M8/-	°C [°F]	-75 ... 150 [-100 ... 300]
Type 8793A500T	°C [°F]	-55 ... 125 [-67 ... 257]

Output

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

Power supply

Voltage	VDC	20 ... 30
Constant current	mA	2 ... 18
Impedance, min.	kΩ	100

Construction

Sensing element	type	quartz-shear
Housing/base	material	stainless steel
Degree of protection case/connector (EN 60529)	type	IP68
Connector	type	4 pin pos.

Ground isolated		with pad
Mass	grams	11
Mounting (ø3.3 hole)	type	cap screw
Tightening torque	N·m	0.45 ... 0.56

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

Included accessories

- 4 cap screws 4-40 UNC-2Ax1/2" long
- 4 cap screws M2,5x12 mm long

Type/Mat. No.

431-0375-005
431-0475-004

Optional accessories

- Fluoropolymer jacketed breakout cable, ¼-28, 4 pin (neg.) to 3x BNC (pos.); (xx = length: 3, 5, 10, 20 meters – for other special length use 1756CK04SP)
- Flexible silicone jacketed breakout cable, ¼-28, 4 pin (neg.) to 3x BNC (pos.); (xx = length: 3, 5, 10 meters – for other special length use 1734AK03SP/K04SP)
- Aluminium anodized adhesive mounting plate for ground isolation
- Aluminium anodized isolation plate for through hole mount (requires 4 x Type 8446AE4 or AM4)
- Isolated M2.5 screw for usage of Type 800M154
- Isolated 4-40 UNC screw for usage of Type 800M154

Type/Mat. No.

1756CxxK04
1734AxxK03/K04
800M144
800M154
8446AM4
8446AE4

Ordering key

Measuring range

±500 g **500**

Type 8793A...

TEDS templates/variants

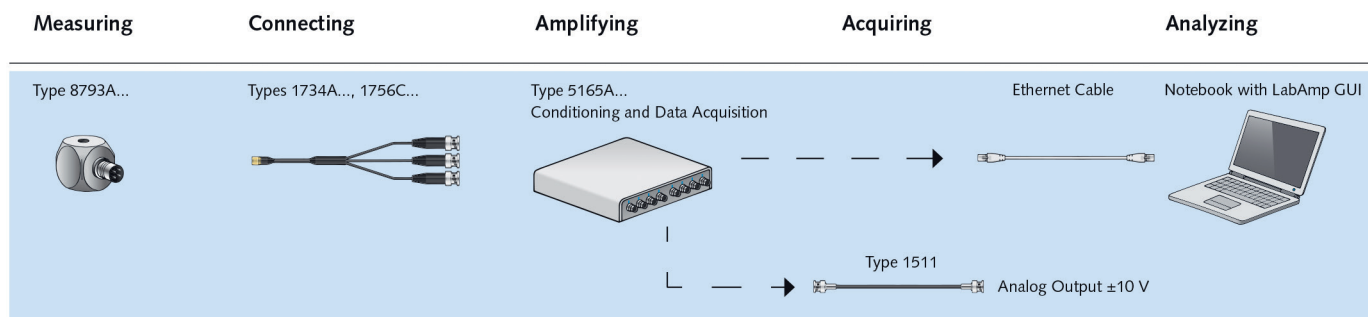
Standard, base temperature	-
High temperature	M5
Low temperature	M8
Default, IEEE 1451.4 V0.9 template 0 (UTID 1)	T
IEEE 1451.4 V0.9 template 24 (UTID 116225)	T01
LMS Template 117, free format Point ID	T02
LMS template 118, automotive format (Field 14 geometry = 0)	T03
LMS template 118, aerospace format (Field 14 geometry = 1)	T04
P1451.4 v1.0 template 25 - transfer function disabled	T05
P1451.4 v1.0 template 25 - transfer function enabled	T06

Measuring chains

IEPE sensor and customer IEPE compatible DAQ



IEPE sensor and Kistler LabAmp



8793A_000-261e-03.20