

Ceramic Shear Accelerometer

Type 8778A500...

Ultra Miniature, 0.4 Gram Weight, Voltage Mode Accelerometer

Small, light weight general purpose accelerometer for vibration measurements in wide range of applications. Available in two cable versions, the standard with a permanent attached cable and the M14 with a field replaceable twisted wire pair.

- Low impedance, voltage mode
- Ultra low base strain and thermal transient response
- Wide frequency response, 2 ... 9000 Hz ($\pm 5\%$)
- Ground isolated assembly
- High 10 mV/g sensitivity
- Conforming to CE

Description

The Type 8778A500... and 8778A500M14 are high frequency, ultra miniature, light weight accelerometers that contain uniquely designed ceramic shear sensing element. The shear mode element design provides an immunity to thermal transients, base strain and transverse motion.

An internal microelectronic Piezotron[®] signal conditioning circuit converts the charge developed in the ceramic element as a result of the accelerometer being subjected to a vibration, into a useable high level voltage output signal at a low impedance level. The standard Type 8778A500... accelerometer includes an integral Teflon[®] jacketed 3 ft long cable terminated with a 10-32 neg. connector while the M14 version features a field replaceable twisted wire pair and connector. The units are designed for wax or adhesive mounting and is supplied with a custom wrench to facilitate removal after testing. Power to the Type 8778A500... accelerometers can be provided by any Kistler coupler Type 51... or by any industry standard voltage mode IEPE (Integral Electronic Piezo-Electric) power supply/coupler.

Application

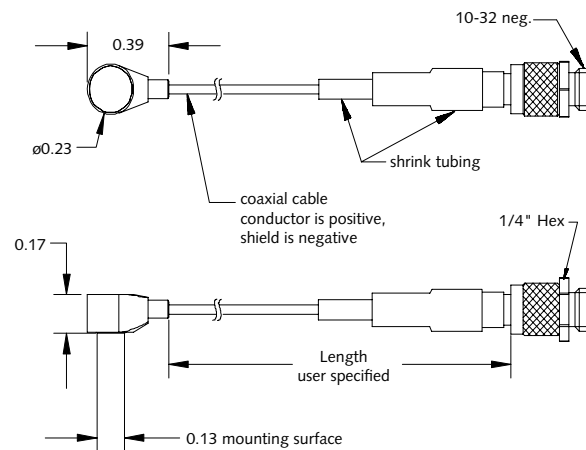
The light weight, low profile and small size of the accelerometer Type 8778A500... makes it ideal for: precision vibration measurements; modal analysis on small, thin walled structures or where space is limited and mass loading is of primary concern. Typical applications included PC Board stress screening and critical component evaluation on disk drive assemblies.



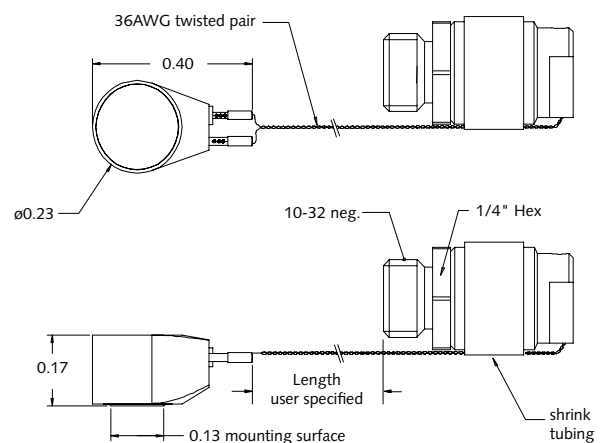
Type 8778A500sp



Type 8778A500M14sp



Type 8778A500sp



Type 8778A500M14sp

¹⁾ Teflon[®] is a registered trademark of DuPont.

Technical Data

Specification	Unit	Type 8778A500...
Acceleration range	g	±500
Acceleration limit	gpk	±750
Threshold (noise 100 μ Vrms), nom.	grms	0.01
Sensitivity, ± 5 %	mV/g	10
Resonant frequency mounted, nom.	kHz	70*
Frequency response, ± 5 %	Hz	2 ... 9000*
Amplitude non-linearity	%FSO	±1
Time constant, nom.	s	≥0.3
Transverse sensitivity, nom. (max. 5)	%	3

Environmental

Base strain sensitivity @ 250 $\mu\epsilon$	g/ $\mu\epsilon$	0.009*
Shock limit (1 ms pulse)	gpk	5000
Temperature coefficient of sensitivity	%/°F	-0.08
Operating temperature range (4 mA supply current)	°F	-65 ... 250

Output

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

Source

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

Construction

Sensing element	Type	ceramic-shear
Case/base	material	Aluminum/hard anodized/Titanium
Degree of protection case/connector	Type	epoxy
Connector-terminates	Type	10-32 neg.
Ground isolation, min.	M Ω	10
Weight (excluding cable)	grams	0.4
Mounting	Type	adhesive/wax

* wax mounted

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

Mounting

The Type 8778A500... can be attached to the test structure by adhesive or wax. The accelerometer's side cable facilitates orientation in confined areas. Reliable and accurate measurements require that the mounting surface be clean and flat. The operating instruction manual for the accelerometer Type 8778A... (002-085) provides detailed information regarding mounting surface preparation.

The recommended adhesives to be placed between the accelerometer's base and the test object surface include:

- Petro wax, Type 8432
- Loctite 430 general purpose for adhesion to metals
- Loctite 495 general purpose for adhesion to other materials

Note: Removal of an adhesively mounted unit is extremely difficult and care should be exercised during the removal process. An appropriate adhesive solvent and the Type 1378 custom designed removal wrench should be used to twist the accelerometer off of the test object.

Included Accessories

Included Accessories	Type
• Petro wax	8432
• Removal wrench	1378

Optional Accessories

Optional Accessories	Type
• Connecting cable for low impedance sensors	1761B
• Cable kit (needed to connect Type 8778A500... to Kistler couplers)	1764A

Ordering Key

Connector/Cable	Type 8778A500
Solder pins/no cable	M14
10-32 neg./integral coax cable	sp
10-32 neg./repairable twisted pair cable	M14sp

Related Accelerometers

Related Accelerometers	Type
• integral cable, 1.6 gram weight	8728A500
• top 10-32 connector, 1.9 gram weight	8730A500
• integral cable, 1.1 gram weight	8732A500
• integral cable, 1.1 gram weight with mounting flange	8734A500