

Ceramic Shear

Type 8778A...

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 $\pm 5\%$ 2 to 9000 Hz
- Ground Isolated assembly
- High 10 mV/g sensitivity
- CE Compliant



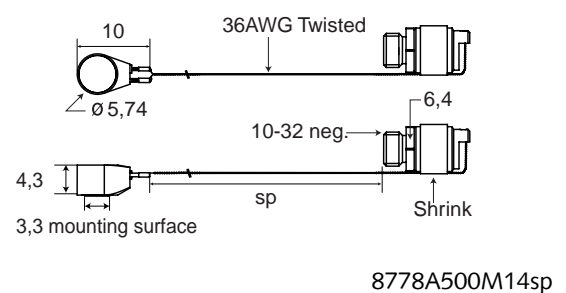
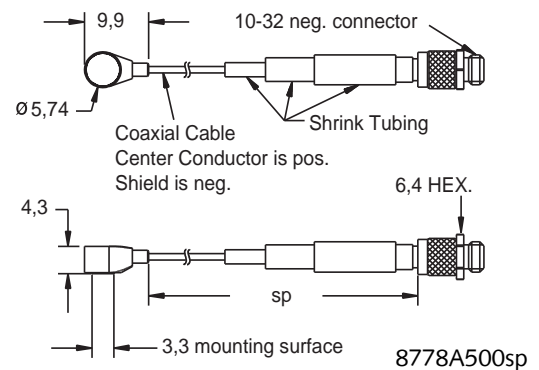
Description

The 8778A500 and the 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 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 8778A accelerometers can be provided by any Kistler 5100 series coupler 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 8778A500 accelerometer 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.



000-256e-05.04 (K8.8778)

Technical Data

Type	Units	8778A500, M14
Acceleration Range	g	±500
Acceleration Limit	gpk	±750
Threshold nom.	grms	0,01
Sensitivity	mV/g	10
Resonant Frequency mounted, nom.	kHz	70*
Frequency Response ±5%	Hz	2 ... 9000*
Amplitude Non-linearity	%FSO	±1
Time Constant	s	≥0,3
Transverse Sensitivity typ., (max.)	%	3 (5)
Environmental:		
Base Strain Sensitivity @ 250 µε	g/µε	0,009*
Shock Limit (1ms pulse width) max.	gpk	5000
Temperature Coefficient of Sensitivity	%/°C	-0,14
Temperature Range Operating (4mA supply current)	°C	-55 ... 120
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
Housing/Base	material	Titanium, Al./ hard anodized
Sealing - housing/connector	type	Epoxy
Connector-terminates	type	10-32 neg.
Ground Isolation min.	MΩ	10
Weight (excluding cable)	grams	0,40
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 = 0,1129 Nm

Mounting

The 8778 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 8778A500 accelerometer 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

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 1378 custom designed removal wrench should be used to twist the accelerometer off of the test object.

Ordering Key

Connector/Cable	8778A500	<input type="checkbox"/>
Solder pins / no cable	M14	
10-32 neg. / integral coax cable	sp	
10-32 neg. / repairable twisted pair cable	M14sp	

sp = user specified cable length in meters, (15m max.)

Supplied Accessories

8432	Petro Wax
1378	Removal Wrench

Optional Accessories

1764A...	cable kit (needed to connect 8778A... to Kistler couplers)
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Related Accelerometers

8728A500	integral cable, 1,6 gram weight
8730A500	top 10-32 connector, 1,9 gram weight
8732A500	integral cable, 1,1 gram weight
8734A500	integral cable, 1,1 gram weight with mounting flange