

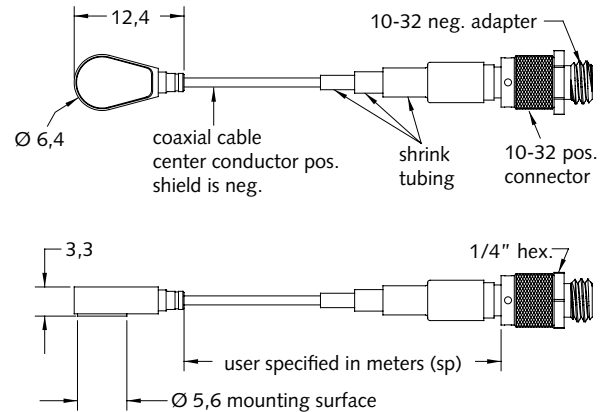
# Ceramic Shear Accelerometer

Type 8278A...

## Miniature, 0,7 Gram, Charge Mode Accelerometer

Small, light weight general purpose accelerometer for vibration and shock measurements

- High impedance charge mode
- Ultra low base strain
- Wide frequency response  $\pm 5\%$ , 1 ... 10000 Hz
- Ground Isolated
- High sensitivity, -1.3 pC/g
- Integral cable
- Temperature -75 ... 180 °C



### Description

The 8278A... is a wide frequency, ultra miniature, light weight accelerometer that contains a uniquely designed ceramic shear sensing element. The shear mode element design provides an immunity to base strain and transverse motion.

The standard 8278A... accelerometer includes an integral repairable Teflon jacketed 3ft. long cable terminated with a 10-32 pos. connector. Special length cables are also available. A 1729 10-32 neg. to 10-32 neg. adapter is provided to facilitate connection to standard extension cables with 10-32 pos. connectors. The 8278A... is designed for wax or adhesive mounting and is supplied with a custom wrench to facilitate removal after testing.

External signal conditioning converts the charge developed in the ceramic element, due to shock and vibration, into a low impedance voltage signal. For example, the 5050A... In-Line Charge Amplifier, can be powered by a power supply/coupler like the 5134A... to create a representative voltage signal.

### CE Compliant Information

Because high impedance, charge mode accelerometers contain no electronics, CE certification to the EMC Directive is not appropriate. When a high impedance accelerometer is used with a CE certified signal conditioner (i.e., charge amplifier...), it is said that this system is CE compliant.

### Application

The light weight, low profile and small size of the 8278A... 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 include product test stress screening and critical component evaluation as well environmental testing.

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**Technical Data**

Type	Unit	8278A500
Acceleration Range	g	± 500
Sensitivity, ±20%	pC/g	-1,3
Resonant Frequency, mounted, nom.	kHz	≥ 40*
Frequency Response, ±5%	Hz	1...10000
Shock (1ms pulse width), max.	g	10000
Transverse Sensitivity, max. 5%	%	3 Typ*
Amplitude Linearity	%FSO	±1
<b>ELECTRICAL</b>		
Capacitance (without connector), nom.	pF	100
Insulation Resistance	@ 23 °C	Ω ≥ 10 <sup>12</sup>
	@ 180 °C	Ω ≥ 10 <sup>8</sup>
Ground Isolation	MΩ	≥ 10
<b>Environmental:</b>		
Temperature Range, Operating	°C	-75 ... 180
Temperature Coeff. of Sensitivity, nom.	%/°C	0,18
Base Strain Sensitivity @250µε	g/µε	0,001
<b>Construction:</b>		
Sensing Element	Type	Ceramic Shear
Construction	Seal	Epoxy
Mounting	Type	Wax/Adhesive
Case Material	Type	Anodized Al.
Weight	grams	0,7

\* wax mounted

1 g = 9,80665 m/s<sup>2</sup>, 1 inch = 25,4 mm, 1 gram = 0,03527 oz, 1 lbf-in = 0,113 Nm

**Mounting**

The 8278A... 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 the mounting surface to be clean and flat. The Operating Instruction Manual for the 8278A... 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 accelerometer 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.

**Accessories Included**

	Type
• Petro Wax	8432
• Removal Wrench	1388
• Adapter 10-32 neg. to 10-32 neg.	1729

**Optional Accessories**

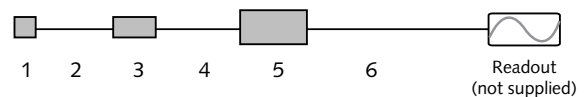
	Type
• High impedance Cable, 10-32 pos. to BNC	1631C
• In-line charge amp	5050A...
• Power supply/Signal conditioner	5134A...
• Outout cable, BNC pos. to BNC pos.	1511

**Ordering Key**

Measuring Range	±500g	500	8278A	<input type="checkbox"/>	<input type="checkbox"/>
Variants	User specified cable length (X = length in meters)	X			

**Measuring Chain**

	Type
1 High impedance sensor	8278A...
2 Sensor cable, 10-32 pos. to BNC pos..	1631C...
3 In-Line charge converter	5050A...
4 Outout cable, BNC pos. to BNC pos.	1511
5 Power supply/Signal conditioner	51...
6 Outout cable, BNC pos. to BNC pos.	1511



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