

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



8778A500sp

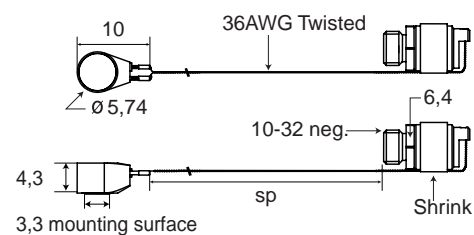
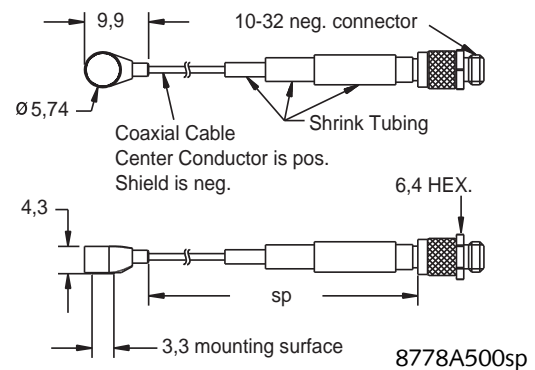


8778A500M14sp

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

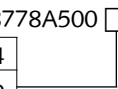
The 8778 can be attached to the test structure by adhesive or wax. The accelerometer's side cable facilitates orientation in confined areas. Reliable and accurate measurements require that the mounting surface be clean and flat. The Operating Instruction Manual for the 8778A500 accelerometer provides 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)

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