

Picotron® Accelerometer

Type 8614A...

Miniature, Wide Frequency Response, Voltage Mode Accelerometer

Small, 0.7 gram weight general purpose accelerometer with 10 ... 25 kHz frequency response for vibration measurements in wide range of applications. Available with an twisted wire leads, this light weight accelerometer is field repairable.

- Low impedance voltage mode
- Small and lightweight (0.7 grams)
- Very high resonant frequency
- Quartz sensing element
- Conforming to CE

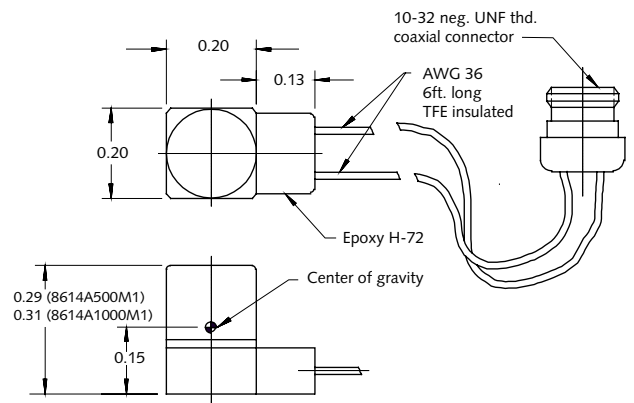
Description

The accelerometer Types 8614A... are extremely small and light-weight with a sensing element exhibiting a very high resonant frequency. Inside the accelerometer housing is a piezoelectric system consisting of a seismic mass preloaded to a quartz element and miniature hybrid Picotron® electronics. The signal conditioning circuit converts the charge developed in the quartz 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. Picotron electronics minimizes cable noise and eliminates the need for highly insulated cables. The solder pins and connecting wires with strain relief tubing installed are easily repaired in the field should they become damaged in use.

Signal and DC excitation power to the unit are conducted through a twisted pair of six-foot wires. This simple power signal circuitry makes it possible to check with ease the circuit's integrity. Power to the Type 8614A... accelerometer 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 8614A... accelerometer models are ideally suited for applications where space, mass and high frequency response are of critical importance. Typical applications include; P.C Board component shock and vibration testing; missile and aircraft vibration analysis; high speed rotating equipment performance and wear signature; and vibration responses of thin-walled structures.



Mounting

The Type 8614A... can be attached to the test structure by adhesive or wax. The accelerometer's side cable egress facilitates orientation in confined areas. Reliable and accurate measurements require that the mounting surface be clean and flat. The operating instruction manual for the Type 8614A... accelerometers provide detailed information regarding mounting surface preparation.

The recommended adhesives, to be placed between the accelerometer and the object or a ground isolated mounting pad, include:

- Petro wax, Typ 8430
- Loctite 430: general use between metals
- Loctite 495: general use between other materials.
- 3M Scotch Weld 1838: high temperatures, above 330 °F

Note: Removal of this substance is extremely difficult and care should be exercised when removing the accelerometer.

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Technical Data

Specification	Unit	Type 8614A500M1	Type 8614A1000M1
Acceleration range	g	±500	±1000
Acceleration limit	gpk	±2000	±2000
Transverse acceleration limit	gpk	±2000	±2000
Threshold, nom. (noise 100 µVrms)	grms	0.025	0.04
Sensitivity, ±5 %	mV/g	4	2.5
Resonant frequency, mounted, nom.	kHz	125	125
Frequency response, ±5 %	Hz	10 ... 25000	10 ... 25000
Amplitude non-linearity	%FSO	±1	±1
Time constant, nom.	s	0.5	0.5
Transverse sensitivity, nom.	%	<5	<5

Environmental

Shock limit (1 ms pulse)	gpk	-500 ... 1000	±2000
Temperature coefficient of sensitivity	%/°F	-0.01	-0.01
Operating temperature range	°F	-320 ... 275	-320 ... 250
Storage temperature range	°F	-320 ... 300	-320 ... 300

Output

Bias, nom.	VDC	4	11
Impedance	Ω	25	25
Voltage full scale	V	±2	±2.5
Current	mA	±2	±2

Source

Voltage	VDC	12 ... 30	20 ... 30
Constant current	mA	4	4
Impedance, min.	kΩ	100	100

Construction

Sensing element	Type	quartz-compression	quartz-compression
Case/base	material	Titanium	Titanium
Degree of protection case/connector	Type	epoxy	epoxy
Connector	Type	10-32 neg.	10-32 neg.
Ground isolated		with pad	with pad
Mass	grams	0.7	0.7
Mounting	Type	adhesive/wax	adhesive/wax

1 g = 9.80665 m/s², 1 inch = 25.4 mm, 1 gram = 0.03527 oz, 1 lbf-in = 0.1129 N·m

Accessories Included

- Petro wax
- Isolation mnt. pad, M3 thd, shipped only outside N.A.
- Mounting pad, 4-40 thd.

Type

- 8432
- 8439
- 8440

Measuring Chain

- 1 Low impedance sensor
- 2 Sensor cable, 10-32 pos. to BNC pos.
- 3 Power supply/signal conditioner
- 4 Output cable, BNC pos. to BNC pos.

Type

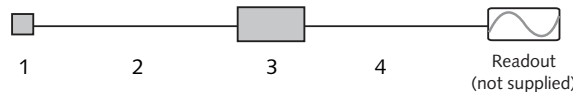
- 8614A...
- 1761B...
- 51...
- 1511

Ordering Key

Range

±500 g	500M1
±1 000 g	1000M1

Type 8614A



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