

# Model 2220E Piezoelectric accelerometer

## Features

- **NEW!** 2220E-R available as replacement sensor
- High temperature (260°C)
- Miniature design
- 360° cable orientation
- Hermetically sealed
- Small-motor testing, APU's, hydraulic actuators

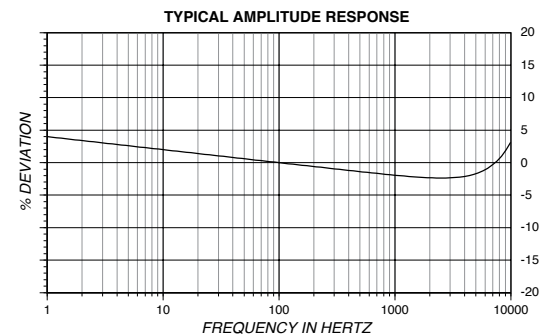
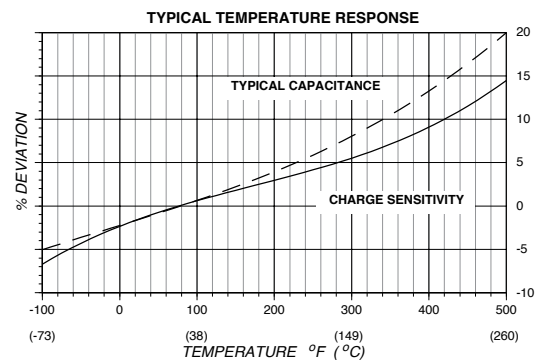
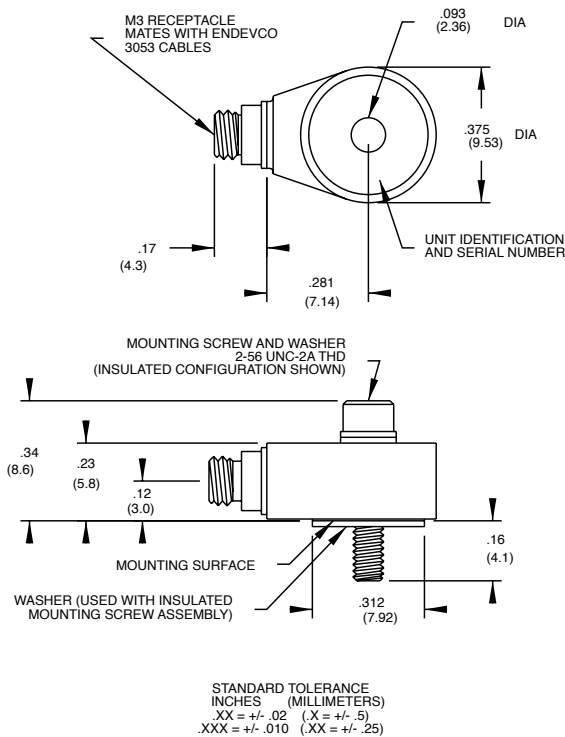


## Description

The Endevco® model 2220E is a miniature piezoelectric accelerometer designed specifically for high temperature vibration measurement on mini-structures and small objects. The unit is hermetically sealed and ideal for use in extreme environments. Its light weight (3.1 gm) effectively eliminates mass loading. The accelerometer is a self-generating device that requires no external power source for operation.

Model 2220E features Endevco's Piezite® type P-8 crystal element operating in annular shear mode. This configuration exhibits excellent output sensitivity stability over time. Signal ground is connected to the outer case of the unit. When used with the supplied isolated mounting screw assembly, the accelerometer is electrically isolated from ground. A specially designed, low-noise coaxial cable is supplied for error-free operation. The transducer utilizes a centrally located thru bolt, allowing 360° cable orientation. The unit may also be mounted with an adhesive.

Endevco signal conditioner models 133, 2775B, 2771C, or OASIS 2000 computer-controlled system are recommended for use with this high-impedance accelerometer.



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## Specifications

The following performance specifications conform to ISA-RP-37.2 (1964) and are typical values, referenced at +75 °F (+24 °C), 4 mA and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied

### Dynamic characteristics

	Units	
<b>Charge sensitivity</b>		
Typical	pC/g	3.0
Minimum	pC/g	2.0
<b>Frequency response</b>		See typical amplitude response
<b>Resonance frequency</b>	kHz	50
<b>Amplitude response [1]</b>		
±5%	Hz	1 to 10 000
±1 dB	Hz	1 to 12 000
<b>Temperature response</b>		See typical curve
<b>Transverse sensitivity</b>	%	≤5
<b>Amplitude linearity</b>		
Per 500g, 0 to 5000 g	%	1

### Electrical characteristics

<b>Output polarity</b>		Acceleration directed into the base of the unit produces positive output
<b>Resistance</b>	GΩ	≥20
Resistance at +500 °F (+260 °C)	MΩ	≥25
<b>Capacitance</b>	pF	770
<b>Grounding</b>		Signal return connected to case. Case isolated from mounting surface by insulated screw assembly

### Environmental characteristics

<b>Temperature range</b>		-67 °F to +500 °F (-55 °C to +260 °C)
<b>Humidity</b>		Hermetically sealed
<b>Sinusoidal vibration limit</b>	g pk	1000
<b>Shock limit [2]</b>	g pk	5000
<b>Base strain sensitivity</b>	equiv. g/μ strain	0.05

### Physical characteristics

<b>Dimensions</b>		See outline drawing
<b>Weight</b>	gm (oz)	3.1 (0.11)
<b>Case material</b>		304L stainless steel
<b>Connector</b>		M3 x 0.5 6H thread, mates with Endevco 3053 cables
<b>Mounting torque</b>	lbf-in (Nm)	5 (0.57)

### Calibration

<b>Supplied:</b>		
<b>Charge sensitivity</b>	pC/g	
<b>Capacitance</b>	pF	
<b>Maximum transverse sensitivity</b>	%	
<b>Charge frequency response</b>	%	20 Hz to 10 000 Hz
	dB	10 to 50 kHz

### Accessories

Product	Description	2220E	2220E-R
EH96	Mounting screw	Included	Included
EHM178	Wrench	Included	Optional
3053V-120	Cable assembly, 10ft	Included	Optional
12746	Insulated mounting screw assembly	Included	Included
EHW95	Washer	Included	Included
3090DV-XXX	Cable assembly, extension (10-32/10-32)	Optional	Optional
EJ34	Cable adapter	Optional	Optional
2771C	In-line charge converter	Optional	Optional
133	Signal conditioner	Optional	Optional
2775B	Signal conditioner	Optional	Optional
4990A-1	OASIS 2000 computer-controlled system	Optional	Optional

### Notes:

1. Low-end response of the transducer is a function of its associated electronics.
2. Short duration shock pulses, such as those generated by metal-to-metal impacts, may excite transducer resonance and cause linearity errors. Send for TP290 for more details.
3. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 800-982-6732 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.