



## Model 23 Piezoelectric accelerometer

### Features

- **NEW!** 23-R available as replacement sensor
- Adhesive mounting
- Disk drive, circuit board and scale model testing
- Extremely small triaxial
- Very lightweight (0.8 gm)
- Ground isolated

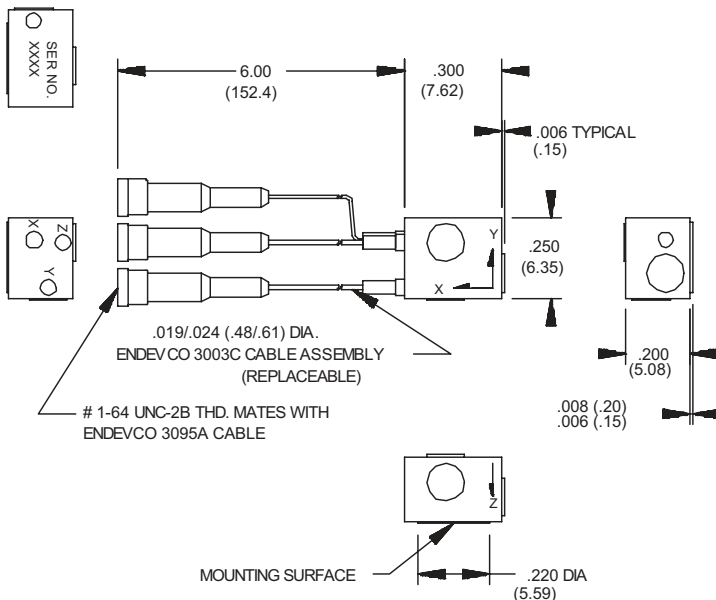


### Description

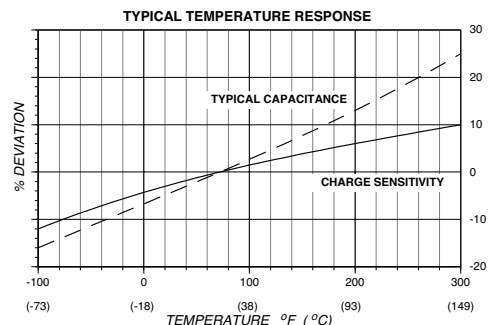
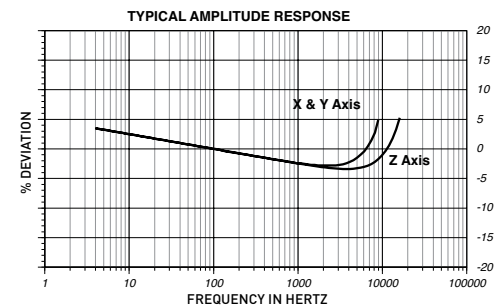
The Endevco® model 23 is an extremely small piezoelectric accelerometer. It is designed specifically for vibration measurement in three orthogonal axes on small objects such as scaled models, circuit boards, and disk drives. Its light weight (0.8 gm without the replaceable coaxial cables) effectively eliminates mass loading. All three low-noise cables exit from a single surface to allow mounting flexibility. The accelerometer is a self-generating device that requires no external power source for operation.

The model 23 features Endevco's Piezite® type P-8 crystal element, operating in radial shear mode, which exhibits excellent long term output sensitivity stability. Signal ground is isolated from the mounting surface of the unit by a hard anodized surface. Specially designed low-noise coaxial cables are supplied for error-free operation. An accelerometer/cable removal tool is included in the package to ensure proper removal in the field.

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



STANDARD TOLERANCE  
INCHES (MILLIMETERS)  
.XX = +/- .50 (.X = +/- 12.7)  
.XXX = +/- .010 (.XX = +/- .25)



# Model 23 Piezoelectric accelerometer

**MEGGITT**  
smart engineering for  
extreme environments

## Specifications

The following performance specifications conform to ISA-RP-37.2 and are typical values, referenced at +75°F (+24°C), 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	0.40
Minimum	pC/g	0.30
<b>Frequency response</b>		See typical amplitude response
<b>Resonance frequency</b>	kHz	50
<b>Amplitude response [1]</b>		
Z axis: ±5%	Hz	5 to 10 000
±1 dB (ref.)	Hz	3 to 12 000
X & Y axis: ±5%	Hz	5 to 8000
±1 dB (ref.)	Hz	3 to 10 000
<b>Temperature response</b>		See typical curve
<b>Transverse sensitivity</b>	%	≤5
<b>Amplitude linearity</b>		
Per 250g, 0 to 2000 g	%	1

### Electrical characteristics

<b>Output polarity</b>		Acceleration applied in the direction of the arrow on the unit produces positive output
<b>Resistance</b>	GΩ	≥10
Resistance at +300°F (+149°C)	MΩ	≥100
<b>Isolation</b>	GΩ	≥1
<b>Capacitance</b>	pF	290
Including 6 inch model 3003C cable assembly		
<b>Grounding</b>		Signal ground isolated from mounting surface

### Environmental characteristics

<b>Temperature range</b>		-100°F to +300°F [-73°C to +149°C]
<b>Humidity</b>		Epoxy sealed, non-hermetic
<b>Sinusoidal vibration limit</b>	g pk	1000
<b>Shock limit [2] [3]</b>	g pk	10 000 in any axis
<b>Base strain sensitivity</b>	equiv. gpk/μ strain	0.008
<b>Electromagnetic sensitivity</b>	equiv. g rms/gauss	0.09

### Physical characteristics

<b>Dimensions</b>		See outline drawing
<b>Weight</b>		
Unit only	gm (oz)	0.8 (0.03)
Unit with cable	gm (oz)	1.7 (0.06)
<b>Case material</b>		Aluminum alloy, hard anodized
<b>Cable description [4]</b>		Three 0.19/.024 diameter PFA insulated coaxial cable, 0.003 diameter center conductor, Teflon PFA dielectric
<b>Mounting [5]</b>		Adhesive

### Calibration

<b>Supplied:</b>		
<b>Charge sensitivity</b>	pC/g	
Each axis		
<b>Capacitance, including 6 inch replaceable cable</b>	pC	
<b>Transverse sensitivity</b>	%	
<b>Charge frequency response</b>	%	20 Hz to 10 kHz

### Accessories

Product	Description	23	23-R
18060	Removal wrench for cable and accelerometer	Included	Optional
3095A-120	Cable assembly, 10 ft, three each	Included	Optional
3003C	Cable assembly, three each, attached	Included	Included
32279	Mounting wax	Included	Optional
133	Signal conditioner	Optional	Optional
2775B	Signal conditioner	Optional	Optional
4990A-1	OASIS 2000 computer-controlled system	Optional	Optional

### Notes:

- Low-end response of the transducer is a function of its associated electronics.
- When exposed to high g and large displacement, the cables must be tied down as close to the accelerometer as possible to prevent cable whip and subsequent cable failure.

- 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.
- See instruction manual before removing cable assemblies.
- Adhesives such as petro-wax, hot-melt glue, and cyanoacrylate epoxy (super glue) may be used to mount the accelerometer temporarily to the test structure. An adhesive mounting kit (P/N 31849) is available as an option from Endevco. To remove an epoxy-mounted accelerometer, first soften the epoxy with an appropriate solvent and then twist the unit off with the supplied removal wrench. Damage to sensors caused by inappropriate removal procedures are not covered by Endevco's warranty.
- 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.



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Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability.

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