# Model 23
# Piezoelectric accelerometer

## Features

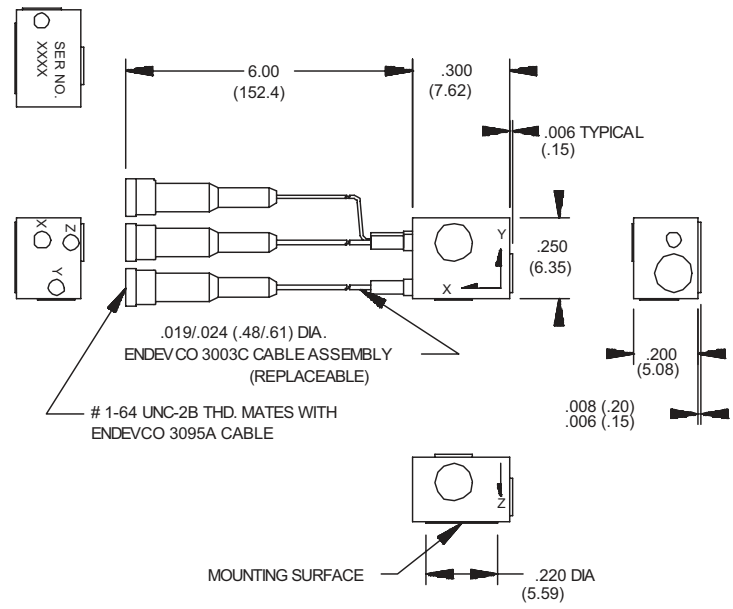
- NEW! 23-R available as replacement sensor
- Adhesive mounting
- Disk drive, circuit board and scale model testing
- Extremely small triaxial
- Very lightweight (0.8 gm)
- Ground isolated

## Description

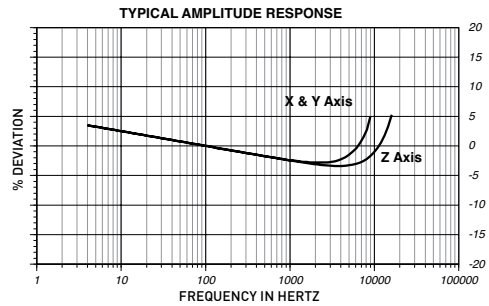
The Endevco® model 23 is an extremely small piezoelectric accelerometer. It is designed specifically for vibration measurement in three orthogonal axes on small objects such as scaled models, circuit boards, and disk drives. Its light weight (0.8 gm without the replaceable coaxial cables) effectively 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.

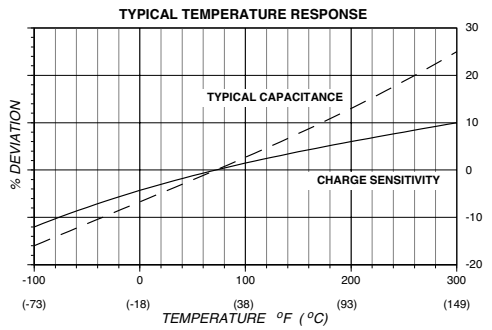
The model 23 features Endevco's Piezite® type P-8 crystal element, operating in radial shear mode, which exhibits excellent long term output sensitivity stability. Signal ground is isolated from the mounting surface of the unit by a hard anodized surface. Specially designed low-noise coaxial cables are 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)



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# Piezoelectric accelerometer

## 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 | |
|---|---|---|
| **Charge sensitivity** | | |
| **Typical** | pC/g | 0.40 |
| **Minimum** | pC/g | 0.30 |
| **Frequency response** | | See typical amplitude response |
| **Resonance frequency** | kHz | 50 |
| **Amplitude response [1]** | | |
| **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 |
| **Temperature response** | | See typical curve |
| **Transverse sensitivity** | % | ≤5 |
| **Amplitude linearity** | | |
| **Per 250g, 0 to 2000 g** | % | 1 |

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

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

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

| Calibration | | |
|---|---|---|
| **Supplied:** | | |
| **Charge sensitivity** | pC/g | |
| **Each axis** | | |
| **Capacitance, including 6 inch replaceable cable** | pC | |
| **Transverse sensitivity** | % | |
| **Charge frequency response** | % | 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 | Optioinal | 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. 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.
3. 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.
4. See instruction manual before removing cable assemblies.
5. 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.
6. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at +1 (866) 363-3826 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

APPLIES TO CALIFORNIA FACILITY