

Model 7231C-750 Piezoresistive accelerometer

Features

- Rugged, undamped
- Automotive standard
- 750 g full scale
- DC response

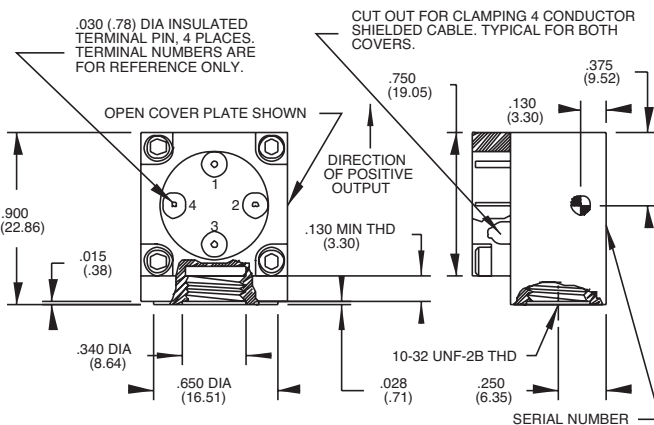
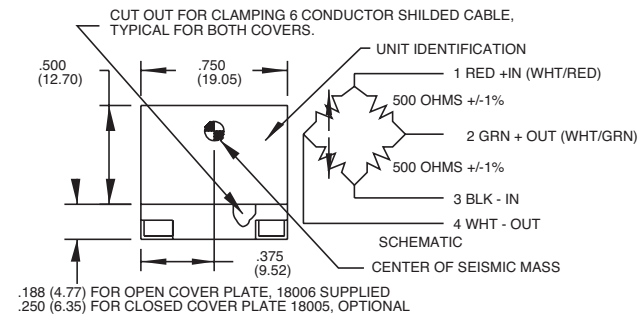


Description

The Endevco® model 7231C-750 is a rugged, undamped, medium g level piezoresistive accelerometer designed specifically for automotive crash test studies. This transducer has become the FMVSS 208 standard for anthropomorphic dummy response studies, providing measurements of head, chest, pelvis and other body accelerations in studies for safer vehicle and restraint design.

The model 7231C utilizes two active silicon strain gages and two fixed resistors (500 Ω each) arranged in a Wheatstone bridge configuration. This configuration provides for a low impedance output of 150 mV full scale with 10 Vdc excitation and shunt calibration capability.

The model 7231C utilizes an anodized aluminum housing and an open connector cover to allow for solder terminal pins to be accessed. A closed cover configuration with cable strain relief shielding the solder pin terminals is available on special order. This unit is also available with increased performance, providing for 1% transverse sensitivity ("T" option), and ±3% tolerance on sensitivity ("S" option) on special order. Endevco model 136 Three-Channel System, model 4430A or OASIS 2000 Computer-Controlled System are recommended as signal conditioner and power supply.



STANDARD TOLERANCE
INCHES (MILLIMETERS)
.XX = +/- .03 (X = +/- .8)
.XXX = +/- .010 (XX = +/- .25)

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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) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Dynamic characteristics

| | Units | 7231C-750 |
|---------------------------------------|----------------|-------------|
| Range | g pk | ±750 |
| Sensitivity (at 100 Hz) [1] | mV/g Typ (Min) | 0.20 (0.15) |
| Amplitude response | | |
| ±5% | Hz | 0 to 2000 |
| ±1dB | Hz | 0 to 3000 |
| Mounted resonance frequency [2] | Hz | 25 000 |
| Damping ratio | | 0.005 |
| Non-linearity and hysteresis | | |
| [% of reading, to full range] | % Max | ±1 |
| Transverse sensitivity [3] | % Max | 3 |
| Zero measurand output | mV Max | ±25 |
| Thermal zero shift | | |
| From -10°F to +150°F (-23°C to +66°C) | mV Max | ±15 |
| Thermal sensitivity shift | | |
| At 0°F and 150°F (-18°C and +66°C) | % Typ | -3 |
| Warm-up time | Minutes Max | 1 |

Electrical characteristics

| | |
|---------------------------|---|
| Excitation [3] [4] | 10.0 Vdc, 15 Vdc maximum |
| Input resistance [4] [6] | 525 ohms |
| Output resistance [4] [6] | 525 ohms |
| Fixed resistors | 500 ohms ±1% |
| Insulation resistance | 100 megohms minimum at 100 Vdc; all leads to case |

Physical characteristics

| | |
|----------------------------|--|
| Case, material | Anodized aluminum alloy |
| Electrical connections [7] | Four solder pins. Cable shield may be clamped to case with cover plate |
| Identification | Manufacturer's logo, model number and serial number |
| Mounting/torque | Hole for 10-32 UNF x 1/8 inch mounting stud/18 lbf-in (2Nm) |
| Weight | 24 grams |

Environmental characteristics

| | |
|--|------------------------------------|
| Acceleration limits (in any direction) | |
| Static | 1000 g |
| Sinusoidal vibration | 1000 g pk below 2000 Hz |
| Shock (half-sine pulse) | 2500 g, 250 µsec or longer |
| Temperature | |
| Operating | -10°F to +150°F (-23°C to +66°C) |
| Storage | -100°F to +300°F (-73°C to +149°C) |
| Humidity | Unaffected. Unit is epoxy sealed |
| Altitude | Unaffected |

Calibration

| | |
|-------------------------------------|--|
| Supplied: | |
| Sensitivity (at 100 Hz and 10 g pk) | mVg |
| Frequency response | 20 to 2000 Hz, % deviation reference 100 Hz; dB plot continued through resonance frequency |
| Zero measurand output | mV |
| Maximum transverse sensitivity | % of sensitivity |
| Mounted transverse sensitivity | Hz |
| Input and output resistance | Ohms |

Accessories

| | |
|----------|--------------------------------|
| EHM464 | wrench, hex key |
| 92981-12 | mounting stud, 10-32, hex I.D. |
| 2981-3 | stud, 10-32 adapter (optional) |

Notes:

- Accelerometer sensitivity decreases approximately 4% per 100 feet of cable. Standardized sensitivity is available (see ordering information).
- Rated excitation is 10.00 Vdc. The strain gage elements have a positive temperature coefficient of resistance of approximately 0.5% per °F. Power supply current capability (regulation) should be carefully considered when operating at low temperature extremes, especially when exciting more than one transducer from a single supply.
- Other excitation voltages may be used to 15.0 Vdc, but should be specified at time of order to obtain most accurate calibration.
- Measured at approximately 1 mA. Bridge resistance increases with applied voltage due to heat dissipation in the strain gage elements.
- Shield connected to case is available (see ordering information).

Ordering information

7231CXX-X-X-XX-XXX

| | |
|--|--|
| Cable length in inches (omitted if no cable) | |
| Cable position: | 00 = No cable 03 = 3 o'clock 06 = 6 o'clock 09 = 9 o'clock 12 = 12 o'clock |
| Cable type: | A = No cable B = 4 conductor, shield isolated from case C = 4 conductor, shield grounded to case D = 6 conductor, shield isolated from case E = 6 conductor, shield grounded to case |
| Cover: | 1 = Open cover 2 = Closed cover (terminals not visible) |
| Options: | T = 1% max. crosstalk TS = 1% max. crosstalk with 0.200 ±3% mV/g sensitivity |



Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of con-stant 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.