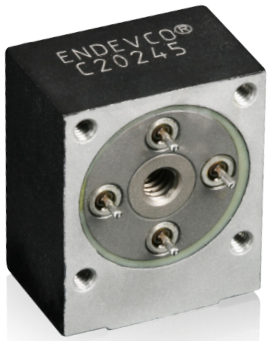
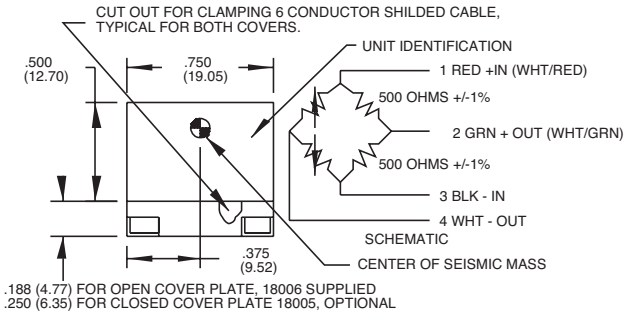
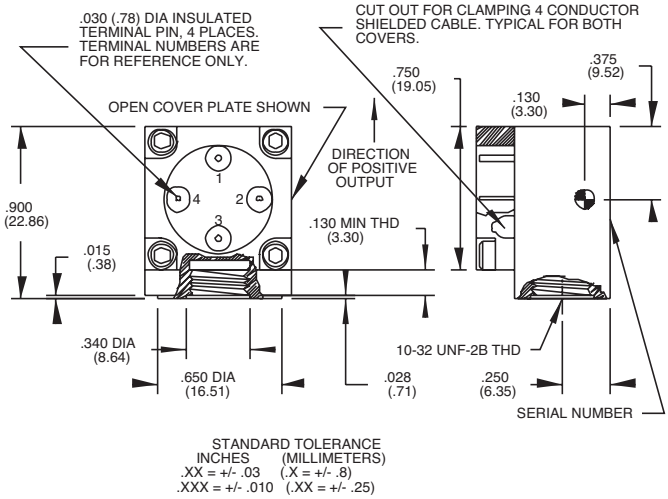
Model 7231C-750
Piezoresistive accelerometer

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.

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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)

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

Notes:

1. Accelerometer sensitivity decreases approximately 4% per 100 feet of cable. Standardized sensitivity is available (see ordering information).
2. Rated excitation is 10.00 Vdc. The strain gage elements have a positive temperature coefficient of reisitance 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.
3. Other excitation voltages may be used to 15.0 Vdc, but should be specified at time of order to obtain most accurate calibration.
4. Measured at approximately 1 mA. Bridge resistance increases with applied voltage due to heat dissipation in the strain gage elements.
7. Shield connected to case is available (see ordering information).

APPLIES TO CALIFORNIA FACILITY

Continued product improvement necessitates that Endevco reserve the right to modify thesespecifications 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.

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