

Piezoresistive Accelerometer

**ENDEVCO
MODEL
7231C-750**

Model 7231C-750

- 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.

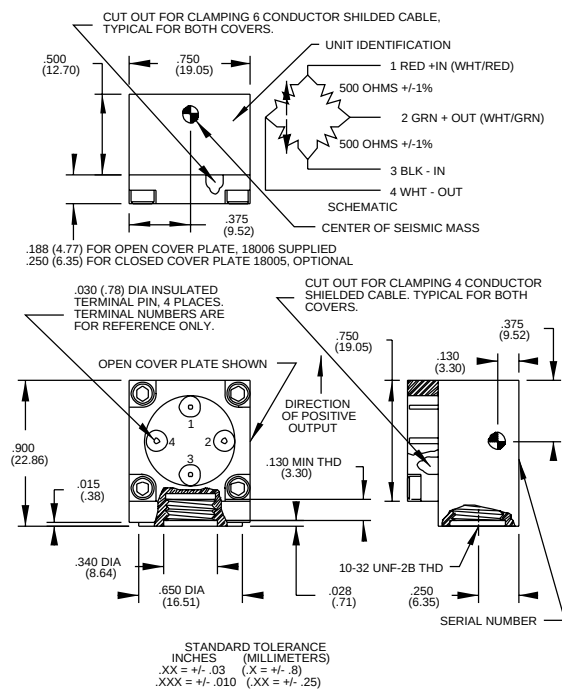
The Model 7231C utilizes two active silicon strain gages and two fixed resistors (500 Ω each) arranged in a Wheatstone bridge configuration. This configuration provides for a low impedance output of 150 mV full scale with 10 Vdc excitation and shunt calibration capability.

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 $\pm 3\%$ 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.



Actual size



SPECIFICATIONS

CERTIFIED PERFORMANCE: All specifications assume +75°F (+24°C), 100 Hz and 10 Vdc excitation unless otherwise stated. The following parameters are 100% tested. Calibration data, traceable to the National Institute of Standards and Technology (NIST), is supplied.

	Units	7231C-750
RANGE	g pk	± 750
SENSITIVITY (at 100 Hz) [1]	mV/g Typ (Min)	0.20 (0.15)
AMPLITUDE RESPONSE		
$\pm 5\%$	Hz	0 to 2000
$\pm 1\text{dB}$	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

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SPECIFICATIONS - continued
PERFORMANCE CHARACTERISTICS- continued

	Units	7231C-750
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

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

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

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 DATA SUPPLIED

SENSITIVITY (at 100Hz 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

EHM178	ALLEN WRENCH
EH3	(4) 2-56 X 1/4 INCH SOCKET HEAD CAP SCREWS
18006	OPEN COVER PLATE
2981-3	MOUNTING STUD (10-32 UNF-2A)

OPTIONAL ACCESSORIES

18005	CLOSED COVER PLATE
22299	CABLE ASSEMBLY, 6 CONDUCTOR, SHIELDED
27542-1	CABLE ASSEMBLY, 4 CONDUCTOR, SHIELDED, RED JACKET
27542-2	CABLE ASSEMBLY, 4 CONDUCTOR, SHIELDED, BLUE JACKET
27542-3	CABLE ASSEMBLY, 4 CONDUCTOR, SHIELDED, WHITE JACKET
27551	CLOSED COVER PLATE ASSEMBLY
2981-4	MOUNTING STUD (M5-0.8)
7950	TRIAXIAL MOUNTING BLOCK

NOTES

1. Sensitivity of 0.20 ±3% mV/g is available on special order ("S" option). Accelerometer sensitivity decreases approximately 4% per 100 ft. (30 m) of cable. Standardized sensitivity is available with cable length to 25 ft. (7.62 m), maximum. Longer lengths require use of power supplies with external sensing capability, and appropriate cable.
2. In shock measurements, minimum pulse duration for half-sine

or triangular pulses should exceed 0.25 milliseconds to avoid excessive high frequency ringing. (See Endevco Piezoresistive Accelerometer Manual).

3. 1% transverse sensitivity available on "T" option.
4. Rated excitation is 10.0 Vdc. The strain gage elements have a positive temperature coefficient of resistance of approximately 0.5% per °F.
5. Other excitation voltages may be used to 15.0 Vdc. Specify at time of order to obtain a more accurate calibration.
6. Measured at approximately 1Vdc. Bridge resistance increases with applied voltage due to heat dissipation in the strain gage elements.
7. Shield of cable should be clamped to case, or case grounded in order to shield sensing elements.
8. 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.

NOTE: Tighter Specifications are available on special order.

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.