

ISOTRON® Accelerometer

**ENDEVCO
MODEL
7754A-1000**

Model 7754A-1000

- **Micro-g Resolution, 1 Volt per G**
- **Near-DC Response, Flat to 0.05 Hz**
- **Survive > 1000 g's, ±5 G F.S.**
- **Low Impedance Output**
- **Hermetically Sealed, < 120 gm**
- **Applications: Spacecraft Response, Seismic Measurement, Optical and Photo Lithography Applications, Transportation Studies, etc.**

Preliminary



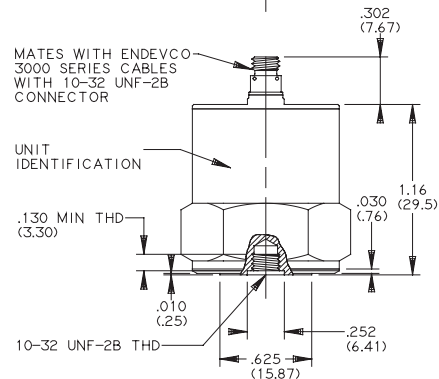
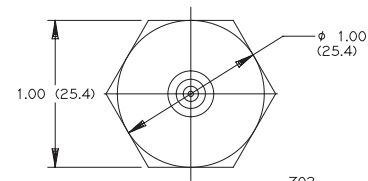
DESCRIPTION

The ENDEVCO® Model 7754A is a rugged piezoelectric accelerometer with integral electronics, designed specifically for measuring ultra-low level, low frequency vibration on structures and objects. The unit is hermetically sealed against environmental contamination, features 1 V/g sensitivity, state-of-the-art signal-to-noise ratio, near-dc frequency response, and much higher shock survivability than most servo accelerometers.

The Model 7754A incorporates an advanced low-noise hybrid circuit operating in constant current mode. A simple two-wire system transmits its low-impedance voltage output and the required power. Signal ground is connected to the outer case for complete electrostatic shielding. Electrical isolation is maintained with an isolating adaptor. The patented ISOSHEAR® design is immune to most non-vibratory inputs. To further minimize acoustic and thermal transient sensitivity, a specially designed environmental boot is supplied.

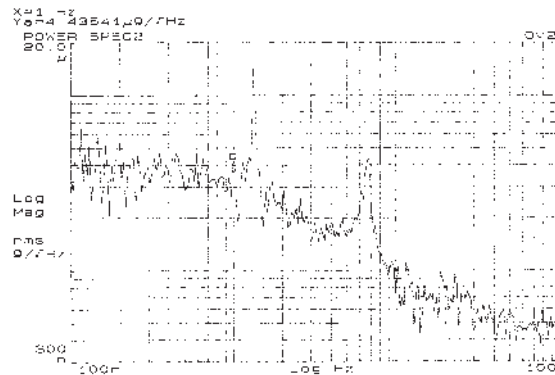
A bench test was performed to explore the resolution of the Model 7754A. Test result* is shown at right. With its exceptional signal-to-noise ratio, the transducer was able to pick up the micro-g structural responses of the test fixture induced by local seismic activities.

ENDEVCO battery-powered Signal Conditioner Model 4416BM1 or Model 2793M1 Constant Current Supply are recommended for use with this accelerometer.



CAD FILE 7754AK

STANDARD	TOLERANCE
INCHES	(MILLIMETERS)
.XX = ± .02	(X = ± .5)
.XXX = ± .010	(XX = ± .25)



ACTUAL RESPONSE SPECTRUM* FROM MODEL 7754

* This power spectrum was obtained at night in a laboratory 250 meters from a major highway. The sensor was mechanically isolated (mounted laterally on a large mass and suspended by rubber bungee cords inside a soft-mounted anechoic chamber). The first peak at 1.3 Hz shows the "swinging" mode of the suspension system, the peak at 7.5 Hz is the "bouncing" mode, which is orthogonal to the sensitive axis of the accelerometer. The actual "noise floor" of the device cannot be determined using this method due to physical limitations.

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

DYNAMIC CHARACTERISTICS	Units	-1000
RANGE	g	±5
VOLTAGE SENSITIVITY, ±5%	mV/g	1000
FREQUENCY RESPONSE (ref @20 Hz)		
Resonance Frequency [1]	kHz	9
Amplitude Response		
±1dB	Hz	0.01 to 2kHz
±5%	Hz	0.5 to 500
Phase Response		
±5°	Hz	0.2 to 160 Hz
TRANSVERSE SENSITIVITY	%	≤ 3
TEMPERATURE RESPONSE, ±5%	°F (°C)	-25 to +185 (-32 to +85)
AMPLITUDE NONLINEARITY, to full scale	%	1

OUTPUT CHARACTERISTICS

OUTPUT POLARITY		Acceleration directed into base produces positive output
DC OUTPUT BIAS VOLTAGE	Vdc	+9 to +11 @+24°C, +7.5 to +14 From +5°C to +40°C
OUTPUT IMPEDANCE	Ω	≤ 200
FULL SCALE OUTPUT VOLTAGE	V	±5
RESIDUAL NOISE		
broadband, 0.1 Hz to 100 Hz, typical	equiv. g rms	0.00001
narrow band, per √PSD, @1 Hz	equiv. g rms/√Hz	0.000001
OVERLOAD RECOVERY	sec	≤ 60
GROUNDING		Signal ground connected to case

POWER REQUIREMENT

COMPLIANCE VOLTAGE	Vdc	+18 to +24
SUPPLY CURRENT	mA	+2 to +10
WARM-UP TIME	sec	< 60

ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE RANGE		+41°F to +104°F (+5°C to +40°C)
HUMIDITY		Hermetically sealed
BASE STRAIN SENSITIVITY	eq. g/μstrain	0.00008
At 250 μstrain		
SINUSOIDAL VIBRATION LIMIT	g pk	50
SHOCK LIMIT [2]	g pk	1000

PHYSICAL CHARACTERISTICS

DIMENSIONS		See Outline Drawing
WEIGHT	gm (oz)	115 (4)
CASE MATERIAL		Stainless Steel
CONNECTOR		Top mounted 10-32, mates with Endevco 3000 series cables
MOUNTING TORQUE	lbf-in (Nm)	18 (2)

CALIBRATION

SUPPLIED:		
VOLTAGE SENSITIVITY @ 20 Hz	mV/g	
MAXIMUM TRANSVERSE SENSITIVITY	%	
FREQUENCY RESPONSE	%	1 Hz to 10 kHz

ACCESSORIES

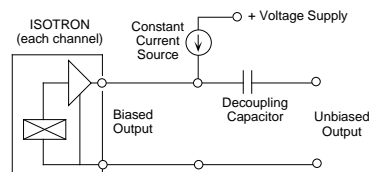
Model 2981-12	MOUNTING STUD, 10-32 to 10-32
Model 31186	ACOUSTIC BOOT [2]
Model 3061-120 (10 ft)	CABLE ASSEMBLY

OPTIONAL ACCESSORIES

Model 2988M7	MAGNETIC MOUNTING ADAPTOR
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OPTIONAL CALIBRATION

CS130UL	LOW FREQUENCY CALIBRATION FROM 0.1 Hz
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Model 4416BM1 Low Noise Signal Conditioner

NOTES

1. A built-in low-pass filter is incorporated in the hybrid electronics to suppress unwanted high-level signals due to sensor resonance.
2. The Acoustic Boot should always be used as a protective capsule during handling and transportation.
3. Model 7754AM1, side conn. version, is available at additional cost.

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.