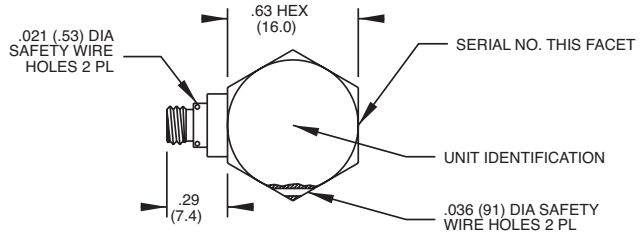
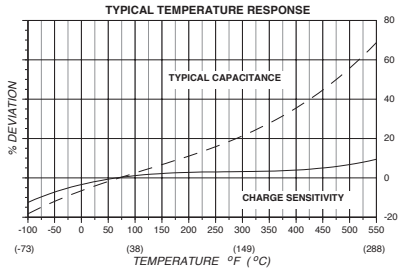
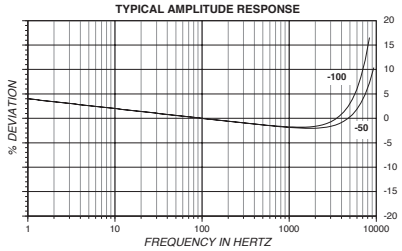
ENDEVCO
AN AMPHENOL COMPANY

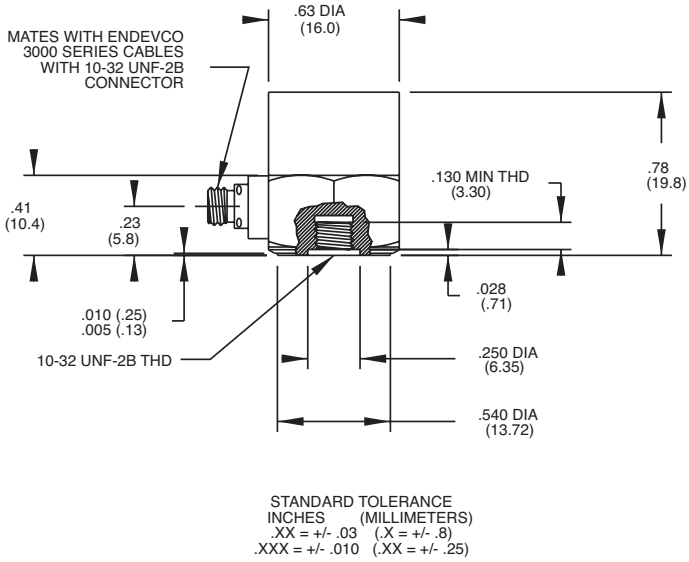
Piezoelectric accelerometer

Model 7703A -50,-100









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

The Endevco® model 7703A-XXX Isoshear piezoelectric accelerometer is designed for general vibration measurement on structures and objects. The Isoshear design is extremely stable and insensitive to such environmental inputs as base bending and thermal transients. This line of accelerometers has been tested in a radiation environment up to 10^8 rads. They are also capable of measurement up to +550°F (+288°C). These units are hermetically sealed against external contamination. The accelerometer is a self-generating device that requires no external power source for operation.

The model 7703A features Endevco's Piezite® type P-8 crystal element, operating in shear mode. This device exhibits low base strain sensitivity, high resonance frequency, and excellent output stability over time. Signal ground is isolated from the outer case of the unit. The accelerometer features a 10-32 side-connector. A low-noise coaxial cable is required for error-free operation. The model number suffix indicates acceleration sensitivity in pC/g; i.e., 7703A-100 features output sensitivity of 100 pC/g.

Endevco signal conditioner models 133, 2771C, 2775B, 6634C or OASIS 2000 computer-controlled system are recommended for use with this high impedance accelerometer.

Key features

- NEW! 7703A-50-R and 7703A-100-R available as replacement sensors
- Hermetically sealed
- Ground isolated
- Side connector, 5/8" hex
- Temperature compensated to +288°C
- General vibration measurements
- Radiation environment up to 108 rads

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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	-50	-100
Charge sensitivity			
Typical	pC/g	50	100
Minimum	pC/g	45	90
Frequency response		See typical amplitude response	
Resonance frequency			
Typical	kHz	26	20
Minimum	kHz	22	18
Amplitude response [1]			
±5%	Hz	1 to 6000	1 to 5000
±1 dB (ref)	Hz	1 to 9000	1 to 8000
Temperature		See typical curve	
-67°F (-55°C) max/min	%	-13.6 / -1	-13.6 / -1
+350°F (+177°C) max/min	%	+12 / -5.6	+12 / -5.6
+550°F (+288°C) max/min	%	+24.2 / -2.4	+24.2 / -2.4
Transverse sensitivity	%	≤ 3	≤ 3
Amplitude linearity	%	1/250 g	1/125 g
Up to vibration limit			

Electrical characteristics			
Output polarity	Acceleration directed into the base of unit produces positive output at center socket of receptacle		
Resistance [2]	GΩ	≥ 10	≥ 10
Resistance at +550°F (+288°C)	MΩ	≥ 25	≥ 25
Isolation	GΩ	≥ 1	≥ 1
Capacitance	pF	2800	2800
Grounding		Signal return isolated from case	

Environmental characteristics			
Temperature range [3]		-67°F to +550°F (-55°C to +288°C)	
Humidity		Hermetically sealed	
Sinusoidal vibration limit	g pk	2000	1000
Shock limit [4]	g pk	10 000	5000
Base strain sensitivity	equiv. g pk / μ strain	0.0016	0.0008
Electromagnetic sensitivity	equiv. g rms / gauss	0.0002	0.0002
Thermal transient sensitivity	equiv. g pk / °F (/°C)	0.004 (0.007)	0.003 (0.005)
Radiation			
Integrated gamma flux	rad	up to 10^8	up to 10^8
Integrated neutron flux	N/cm^2	up to 10^{10}	up to 10^{10}

Physical characteristics			
Dimensions		See outline drawing	
Weight	gm (oz)	25 (0.9)	29 (1.0)
Case material		Stainless steel	
Connector		Coaxial receptacle with 10-32 UNF threads designed to mate with Endevco model 3000 cable series	
Mounting torque	lbf-in (Nm)	18 (2)	18 (2)

Calibration			
Supplied:			
Charge frequency response	%	20 Hz to 6 kHz	20 Hz to 5 kHz
	dB	6 kHz thru resonance	5 kHz thru resonance
Charge sensitivity	pC/g		
Maximum transverse sensitivity	%		
Capacitance	pF		

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Accessories

Product	Description	7703A -50, -100	7703A -50-R, -100-R
3090C-120	Cable assembly, for use up to 500°F, 10 ft	Included	Optional
2981-12	Mounting stud, 10-32 to 10-32	Included	Included
EHM464	Hex key wrench	Included	Optional
3075M6-120	Cable assembly, for use up to 500°F, 10 ft	Optional	Optional
3097M1-120	Cable assembly, for use up to 302°F, radiation environment, 10 ft	Optional	Optional
2981-3	Stud, 10-32 adapter	Optional	Optional
2981-4	Mounting stud, 10-32 to M5	Optional	Optional
2950	Triaxial mounting block	Optional	Optional
133	Signal conditioner	Optional	Optional
2771C	In-line charge converter IEPE powered	Optional	Optional
2775B	Signal conditioner	Optional	Optional
6634C	Signal conditioner - does not support i-TEDS	Optional	Optional
4990A-X	Oasis 2000 computer-controlled system with 428 and/or 433	Optional	Optional

Notes:

1. Low-end response of the transducer is a function of its associated electronics. Models -50 and -100 have case resonance at approximately 23 kHz.
2. Prolonged exposure at maximum temperature may decrease the return to room temperature resistance to as low as 25 MΩ but will not degrade the overall performance of the unit. All units are processed to initially meet 10 GΩ at room temperature.
3. Charge output is temperature compensated.
4. Short duration shock pulses, such as those generated by metal-to-metal impacts, may excite transducer resonance and cause linearity errors. See TP290 for more details.
5. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

Contact

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APPLIES TO CALIFORNIA FACILITY