

PERFORMANCE SPECIFICATION  
 ISOLATED ACCELEROMETER  
 7704A-XXXX

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
77826	NR	11/20/23	DAM	Initial Release with -1000 Added	DAM	54321

 1.0 DESCRIPTION

The ENDEVCO® Model 7704A-XXX ISOSHEAR piezoelectric accelerometer is designed for general vibration measurement in structures and objects. The ISOSHEAR design is extremely stable and virtually insensitive to such environmental inputs as base bending and thermal transients. This line of accelerometers have been tested in a radiation environment up to 10<sup>8</sup> rads without performance degradation. They are also capable of accurate vibration measurement up to +550°F (+288°C) and are hermetically sealed against external contamination.

The Model 7704A-XXX features ENDEVCO's PIEZITE® Type P-8 crystal element, operating in the shear mode, which exhibits low base strain sensitivity, high resonance frequency and excellent output stability over time. This piezoelectric accelerometer self-generates its high impedance output and requires no external power for operation. Signal ground is isolated from the outer case of the unit. The accelerometer features a 10-32 top-connector. A low-noise coaxial cable is required for error-free operation. The model number suffix indicates acceleration sensitivity in pC/g; i.e., 7704A-100 features output sensitivity of 100 pC/g.

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.

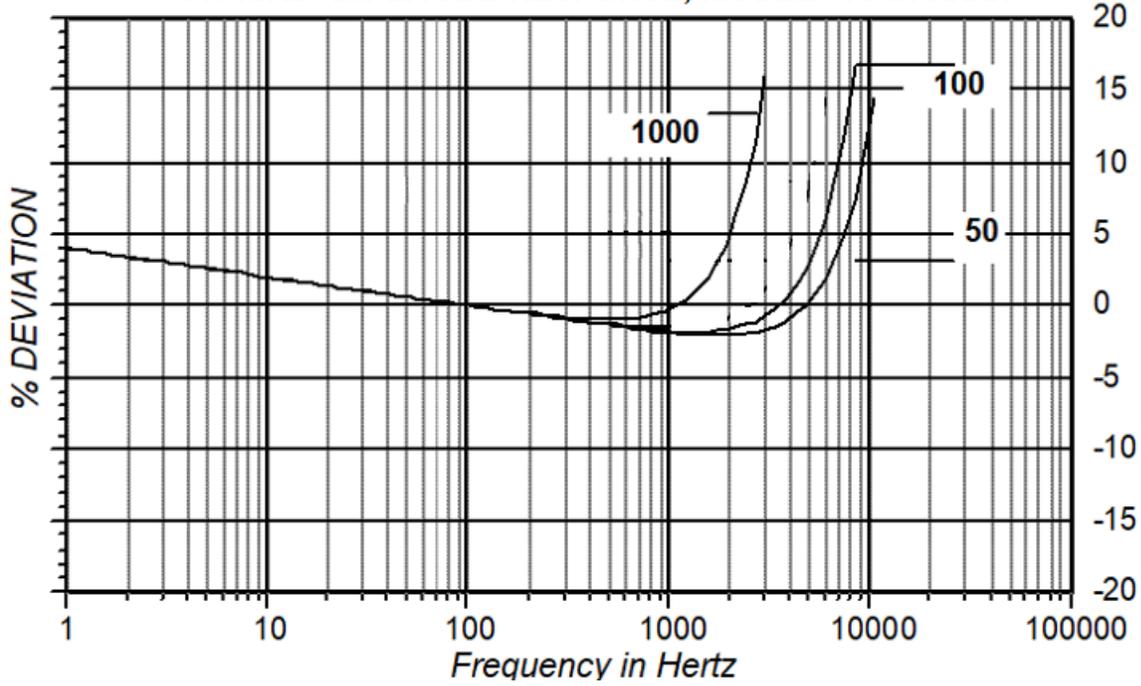
		Units	Dash Range Numbers		
			<u>-50</u>	<u>-100</u>	<u>-1000</u>
2.0	<b><u>DYNAMIC CHARACTERISTICS</u></b>				
2.1	CHARGE SENSITIVITY				
2.1.1	Typical	pC/g	50	100	1000
2.1.2	Minimum	pC/g	45	90	900
2.2	FREQUENCY RESPONSE		See Typical Curve		
2.2.1	Resonance Frequency				
2.2.1.1	Typical	kHz	26	20	7.5
2.2.1.2	Minimum	kHz	22	18	6
2.2.3	Amplitude Response [1] [4]				
	± 5%	Hz	1 to 6 k	1 to 5 k	1 to 2k
	±1dB (ref.)	Hz	1 to 9 k	1 to 8 k	1 to 3K

		Units	Dash Range Numbers		
			<u>-50</u>	<u>-100</u>	<u>-1000</u>
2.3	TEMPERATURE RESPONSE		See Typical Curve		
2.3.1	-67°F (-55°C) max/min	%	-13.6 / -1		
2.3.2	-350°F (+177°C) max/min	%	+12 / -5.6		
2.3.3	+550°F (+288°C) max/min	%	+24.2 / -2.4		
2.4	TRANSVERSE SENSITIVITY	%	≤ 3		
2.5	AMPLITUDE LINEARITY Up to vibration limit	%	1/250 g	1/125 g	1/25g
3.0	<b><u>ELECTRICAL CHARACTERISTICS</u></b>				
3.1	OUTPUT POLARITY		Acceleration directed into base of unit produces positive output at center socket of receptacle.		
3.2	RESISTANCE [2]	GΩ	≥ 10		
3.2.1	At +550°F (+288°C)	MΩ	≥ 25		
3.3	ISOLATION	GΩ	≥ 1		
3.3.1	At +550°F (+288°C)	MΩ	≥ 10		
3.4	CAPACITANCE	pF	2800	2800	5600
3.5	GROUNDING		Signal return isolated from case		
4.0	<b><u>ENVIRONMENTAL CHARACTERISTICS</u></b>				
4.1	TEMPERATURE RANGE		-67°F to +550°F (-55°C to +288°C)		
4.2	HUMIDITY		Hermetically sealed		
4.3	SINUSOIDAL VIBRATION LIMIT	g pk	2000	1000	500
4.4	SHOCK LIMIT [3]	g pk	10000	5000	1000
4.5	BASE STRAIN SENSITIVITY	equiv. g pk/μ strain	0.0016	0.0008	0.00008
4.6	ELECTROMAGNETIC SENSITIVITY	equiv. g rms/gauss	0.0002	0.0002	0.00001
4.7	TRANSIENT TEMPERATURE ERROR	equiv. g pk/°F	0.004	0.003	0.001

		Units	Dash Range Numbers		
4.8	RADIATION		<u>-50</u>	<u>-100</u>	<u>-1000</u>
4.8.1	Integrated Gamma Flux	rad		Up to 10 <sup>8</sup>	
4.8.2	Integrated Neutron Flux	N/cm <sup>2</sup>		Up to 10 <sup>10</sup>	
5.0	<b><u>PHYSICAL CHARACTERISTICS</u></b>				
5.1	DIMENSIONS		See Outline Drawings		
5.2	WEIGHT	gm (oz)	25 (0.9)	29 (1.0)	120 (4.2)
5.3	CASE MATERIAL		Stainless Steel		
5.4	CONNECTOR		Coaxial receptacle with 10-32 UNF threads designed to mate with ENDEVCO Model 3000 series cable.		
5.5	MOUNTING TORQUE	lbf-in (N·m)	18 (2)		
6.0	<b><u>ACCESSORIES</u></b>				
6.1	SUPPLIED				
	3090C-120 (10 ft), for use to +500°F (+260°C) [5]		Cable Assembly, 1x		
	92981-12		Mounting Stud, 10-32, Hex I.D., 1x		
	EHM464 [5]		Hex Key Wrench, 1 x		
	OPTIONAL				
	3075M6-120 (10 ft) for use above +500°F (+260°C)		Cable Assembly, 1 x		
	2981-4		Mounting Stud, 1 x		
	2981-3		Adapter Stud, 10-32, 1 x		



**TYPICAL AMPLITUDE RESPONSE, MODEL 7704A-XXXX**



**TYPICAL TEMPERATURE RESPONSE, MODEL 7704A**

