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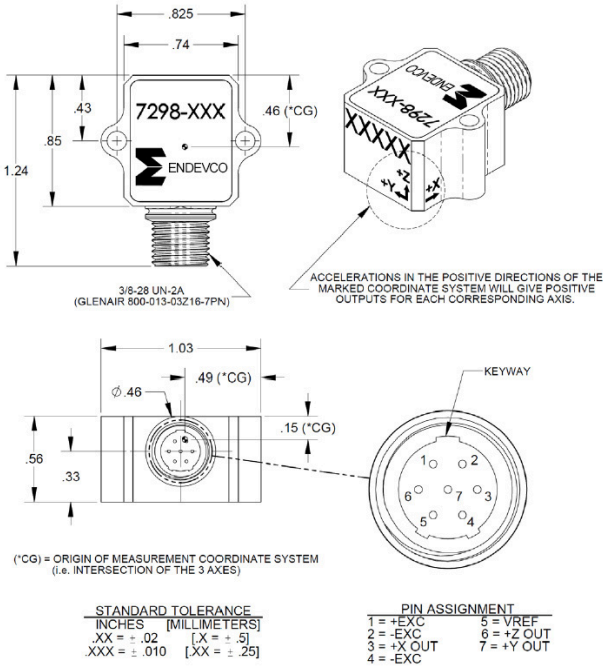
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ENDEVCO
AN AMPHENOL COMPANY

Triaxial variable capacitance accelerometer

Model 7298





Key features

- Hermetic package with water resistant connector
- 2, 5, 10, 30, 50, 100 and 200 g full scale ranges
- Motion, low frequency, tilt
- 10K g shock survivability
- Full analog signal path
- Precision digital temperature compensation

The Endevco® Model 7298 Triaxial Accelerometer family is designed to provide the high thermal stability and global accuracy that is typically required for the measurement of relatively low-level accelerations in aerospace and automobile environments. Typical applications require the measurement of whole body motion in three mutually orthogonal directions immediately following shock motion or in the presence of severe vibrational inputs. State of the art temperature compensation electroincs provide for precise compensation over a wide temperature range, while maintaining a full analog signal path.

Each axis of the triaxial accelerometer utilizes a patented variable capacitance MEMS sensing element. Gas damping and internal overrange stops enable the MEMS sensing element to withstand high shock and acceleration loads. The triaxial sensor arrangement is housed in a truly hermetic bolt-mount package featuring an integral Glenair® Mighty Mouse 800-013 series hermetic receptacle. When used with a mating plug (Glenair® series 800-006 thru 800-009) the connector assembly is protected against water ingress, making the 7298 an ideal choice for permanent installations in hose-down locations.

Internal signal conditioning allows the 7298 to operate from an excitation voltage from 6Vdc to 45Vdc while providing a high level, low impedance output. For each axis, the single-ended output is DC coupled and varies linearly from 0.5Vdc to 4.5Vdc over the input range. For operating in differential mode, a precision 2.5Vdc reference voltage is available at the connector, providing a DC coupled ±2Vdc differential output. The signal conditioning includes factory programmable temperature compensation in order to maintain stringent thermal characteristics and high accuracy. Frequency response is controlled by the use of near-critically damped sensors. As opposed to oil damping, the use of gas damping in the sensing elements results in very small thermally induced changes in frequency response.

U.S. Patents 4,574,327, 4,609,968 and 4,999,735.

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Specifications

All values assume +75°F (+24°C) and 15 Vdc excitation and apply to each of the three axes, unless otherwise stated. Calibration data traceable to National Institute of Standards and Technology (NIST) is supplied.

Dynamic characteristics	Units	-2	-5	-10	-30	-50	-100	-200
Range	g	±2	±5	±10	±30	±50	±100	±200
Sensitivity	mV/g	1000 ±50	400 ±20	200 ±10	66 ±4	40 ±2	20 ±1	10 ±0.5
Frequency response (± 5%)	Hz (max)	0 to 15	0 to 30	0 to 500	0 to 1000	0 to 1500	0 to 1500	0 to 1500
Frequency response (± 10%)	Hz	0 to 30	0 to 65	0 to 1200	0 to 1800	0 to 3000	0 to 3000	0 to 3000
Frequency response (± 3dB)	Hz	0 to 55	0 to 120	0 to 3200	0 to 3400	0 to 4500	0 to 4500	0 to 4500
Mounted resonance frequency	Hz typ.	1300	1600	3000	5500	6000	6000	6000
Non-linearity and hysteresis [1]	% FSO typ (max)	±0.5 (±1.0)	±0.5 (±1.0)	±0.5 (±1.0)	±0.5 (±1.0)	±1 (±2)	±1 (±2)	±1 (±2)
Transverse sensitivity	% (max)	1 (3)	1 (3)	1 (3)	1 (3)	1 (3)	1 (3)	1 (3)
Zero measurand output	mV	±50	±50	±50	±50	±50	±50	±50
Damping ratio	% typ	3.0	2.5	0.7	0.7	0.6	0.6	0.6
Damping ratio change	%/°C	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08
Thermal zero shift (max)								
From -40°F to 212°F (-40°C to 100°C)	% FSO	±1.0	±1.0	±1.0	±1.0	±1.0	±1.0	±1.0
Thermal sensitivity shift (max)								
From -40°F to 212°F (40°C to +100°C)	%	±1.0	±1.0	±1.0	±1.0	±1.0	±1.0	±1.0
Overrange (determined by electrical clipping or mechanical stops, whichever is smaller.)								
Electrical clipping	volts	±2.4	±2.4	±2.4	±2.4	±2.4	±2.4	±2.4
Mechanical stops	g (typ)	±4	±12	±30	±90	±90	±200	±300
Recovery time	µs	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Threshold (resolution) [2]	Equiv. g's	0.0005	0.0013	0.0025	0.0075	0.013	0.025	0.050
Base strain sensitivity, max	Equiv. g's (max)	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Electrical characteristics		
Excitation voltage	Vdc	6.0 to 45.0
Current drain	mA	12 (typ) 16 (max)
Output impedance/load	ohms	120 max
Residual noise	mVrms	0.5 to 1000Hz, 0.3 typ/0.5 max
	mVrms	0.5 to 10 000Hz, 0.5 typ/1.0 max

Physical characteristics	
Case material	Stainless steel
Connector	Glenair® Mighty Mouse 800-013-03216-7PN
Mounting/torque	Two holes for 4-40 mounting screws / 8 ±2 ibf-in (0.9 ±0.2 Nm)
Weight	22 grams (0.8 oz)

Environmental characteristics	
Acceleration limits (in any direction)	
Static	10 000 g
Shock	5000 g (150 µS haversine pulse) for -2, -5 and -10; 10 000 g (80 µS haversine pulse) for -30, -50, -100
Zero shift	0.1% FSO typical at 5000 g
Temperature	
Operating	-67°F to +257°F (-55°C to +125°C)
Storage	-76°F to +302°F (-60°C to +150°C)
Humidity/altitude	Unaffected. Unit is hermetically sealed.
ESD sensitivity	Unit meets Class 2 requirements of MIL-STD-883, Method 3015

Calibration	
Sensitivity	1 g and 5 Hz for -2 and -5; 10 g and 100 Hz for all other ranges
Frequency response	1 g, 1 to 100 Hz for -2 and -5; 10 g, 20 to 5000 Hz for all other ranges
Zero measurand output	

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Accessories

Product	Description	7298
EHW265	Size 4, flat washer (2)	Included
EH69	4-40 x 3/4 inch cap screws (2)	Included
EHM464	Hex key wrench	Included
3907-36	Mating cable assembly, 36"	Optional
3907-120	Mating cable assembly, 120"	Optional

Notes

1. Full scale output (FSO) is nominally 4 volts.
2. Threshold = (max. residual noise; 0.5 to 100 Hz) / sensitivity.
3. 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.

Model definition

7298 - XXX

Denotes typical in g's:
-2 = 2g's
-5 = 5g's
-10 = 10g's
-30 = 30g's
-50 = 50g's
-100 = 100g's
-200 = 200g's

Basic model number

Contact

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APPLIES TO CALIFORNIA FACILITY

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. 083119

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