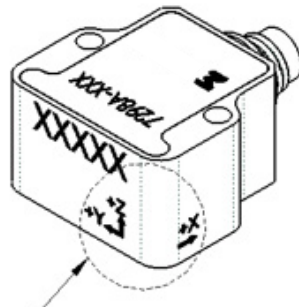
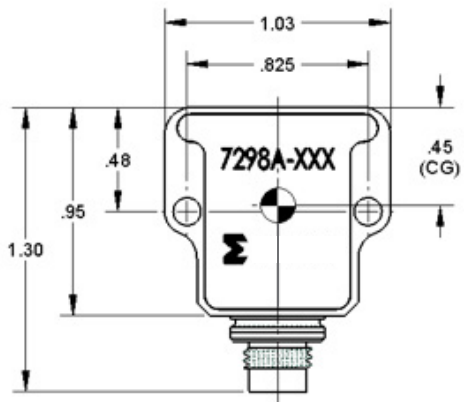


Triaxial variable capacitance accelerometer

Model 7298A



ACCELERATIONS IN THE POSITIVE DIRECTIONS OF THE MARKED COORDINATE SYSTEM WILL GIVE POSITIVE OUTPUTS FOR EACH CORRESPONDING AXIS.



Key features

- Hermetic titanium package
- 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

Description

The Endevco® Model 7298A 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 electronics 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 hermetic screw-mount package featuring an integral hermetic receptacle.

Internal signal conditioning allows the 7298A 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 ± 2 Vdc 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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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.

Specifications								
Dynamic characteristics	Units	-2	-5	-10	-30	-50	-100	-200
Range	g	±2	±5	±10	±30	±50	±100	±200
Sensitivity	mV/g	1,000 ±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 1,000	0 to 1,500	0 to 1,500	0 to 1,500
Frequency response (± 10%)	Hz	0 to 30	0 to 65	0 to 1,200	0 to 1,800	0 to 3,000	0 to 3,000	0 to 3,000
Frequency response (± 3dB)	Hz	0 to 55	0 to 120	0 to 3,200	0 to 3,400	0 to 4,500	0 to 4,500	0 to 4,500
Mounted resonance frequency	Hz typ.	1,300	1,600	3,000	5,500	6,000	6,000	6,000
Non-linearity and hysteresis [2]	%FSO typ	±0.5	±0.5	±0.5	±0.5	±1	±1	±1
Transverse sensitivity	%	1	1	1	1	1	1	1
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	g (typ)	±2.4	±6	±12	±36	±60	±120	±240
Mechanical stops	g (typ)	±4	±12	±30	±90	±90	±200	±300
Recovery time	µs	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Threshold (resolution) [3]	Equiv. g's	0.0005	0.0013	0.0025	0.0075	0.013	0.025	0.050
Electrical characteristics								
Excitation voltage	Vdc				6.0 to 45.0			
Current drain	mA				14 (typ) 16 (max)			
Output impedance/load	ohms				120 max			
Residual noise	mVrms				0.5 to 1,000Hz, 0.3 typ			
	mVrms				0.5 to 10,000Hz, 0.5 typ			
Physical characteristics								
Case material	Titanium							
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	5,000 g (150 µs haversine pulse) for -2, -5 and -10; 10 000 g (80 µs haversine pulse) for -30, -50, -100, -200							
Zero shift	0.1% FSO typical at 5000 g							
Temperature								
Operating	-67°F to +257°F (-55°C to +125°C)							
Storage	-40°F to +212°F (-40°C to +100°C)							
Humidity/altitude	Unaffected. Unit is hermetically sealed.							
ESD sensitivity	Unit meets Class 2 requirements of MIL-STD-883, Method 3015							
Calibration data								
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 5,000 Hz for all other ranges							
Zero measurand output								

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Accessories		
Product	Description	7298A
EHW265	Size 4, flat washer (2)	Included
EH69	4-40 x 3/4 inch cap screws (2)	Included
EHM464	Hex key wrench	Included
3911-XXX	Mating cable assembly	Optional

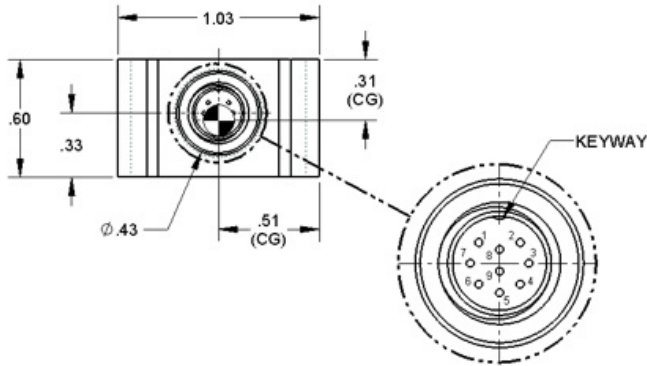
Notes

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

7298A - 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



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

PIN ASSIGNMENT
 1 = EXC 6 = -YOUT
 2 = GND 7 = +XOUT
 3 = +ZOUT 8 = -XOUT
 4 = -ZOUT 9 = NOT USED
 5 = +YOUT



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