

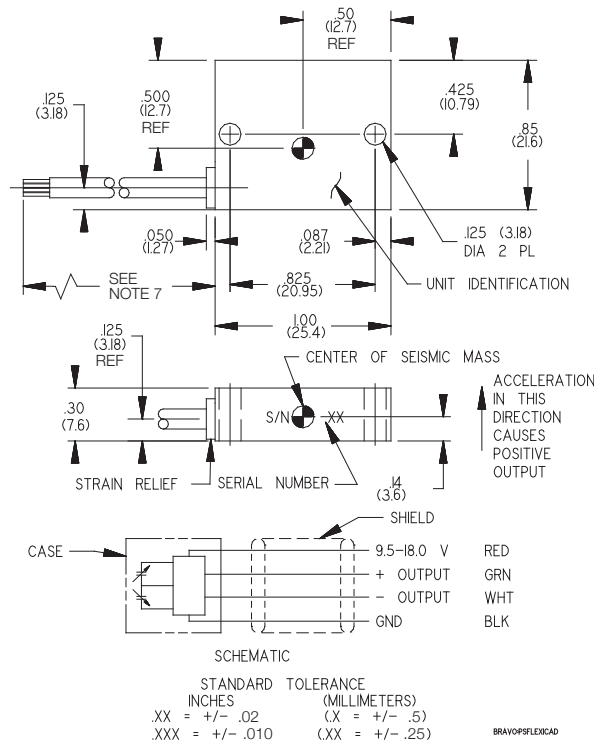
Endevco®

Variable capacitance accelerometer

Model 7290A

Key features

- DC response
- 2, 10, 30, 50 and 100 g full scale ranges
- Motion, low frequency, tilt
- 10K g shock survivability



The model 7290A accelerometer family utilizes unique variable capacitance microsensors. The accelerometers are designed for measurement of relatively low level accelerations in aerospace and automotive environments. Typical applications require measurement of whole body motion immediately after the accelerometer is subjected to a shock motion, and in the presence of severe vibrational inputs.

Gas damping and internal overrange stops enable the anisotropically-etched silicon microsensors to withstand high shock and acceleration loads.

Model 7290A can operate from 9.5 V to 18.0 V and provide a high level, low impedance output. The ± 2 volt differential output is dc coupled at a dc bias of approximately 3.6 V. Frequency response is controlled by the near-critically damped sensors. The use of gas damping results in very small thermally-induced changes of frequency response.

Endevco three-channel systems, model 136 or 436 are recommended as signal conditioner and power supply.

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

Meggitt Sensing Systems

Our measurement product competencies:

Piezoelectric accelerometers | Piezoresistive accelerometers | Isotron accelerometers | Variable capacitance accelerometers | Pressure transducers | Acoustic sensors | Electronic instruments | Calibration systems | Shakers | Modal hammers | Cable assemblies

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smart engineering for
extreme environments

Endevco®

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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	-2	-10	-30	-50	-100
Range	g	±2	±10	±30	±50	±100
Sensitivity	mV/g	1000 ±50	200 ±10	66 ±4	40 ±2	20 ±1
Frequency response (± 5%)	Hz	0 to 15	0 to 500	0 to 800	0 to 1000	0 to 1000
Mounted resonance frequency	Hz	1300	3000	5500	6000	6000
Non-linearity and hysteresis	% FSO typ (max)	±0.20 (±0.50)	±0.20 (±0.50)	±0.20 (±0.50)	±0.20 (±0.50)	±1 (±2)
Transverse sensitivity	% (max)	2	2	2	2	2
Zero measurand output	mV (max)	±50	±50	±50	±50	±50
Damping ratio	Typ.	4.0	0.7	0.7	0.6	0.6
Damping ratio change						
From -65°F to +250°F [-55°C to +121°C]	%/°C	+0.08	+0.08	+0.08	+0.08	+0.08
Thermal zero shift (max)						
From 32°F to 122°F [0°C to 50°C]	% FSO	±1.0	±1.0	±1.0	±1.0	±1.0
From -13°F to +167°F [-25°C to +75°C]	% FSO	±2.0	±2.0	±2.0	±2.0	±2.0
Thermal sensitivity shift (max)						
From 32°F to 122°F [0°C to +50°C]	%	±2.0	±2.0	±2.0	±2.0	±2.0
From -13°F to +167°F [-25°C to +75°C]	%	±3.0	±3.0	±3.0	±3.0	±3.0
Thermal transient error per ISA RP 37.2	Equiv. g/°C	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Overrange [determined by electrical clipping or mechanical stops, whichever is smaller.]						
Electrical clipping	g	-3.5/+3.8	-18/+19	-53/+57	-87/+95	-175/+190
Mechanical stops, typical	g	±4	±30	±90	±90	±150
Recovery time	µs	< 10	< 10	< 10	< 10	< 10
Resolution [2]	Equiv. g's	0.0002	.0010	.0030	.0050	.0100
Base strain sensitivity, max	Equiv. g's	0.01	0.01	0.01	0.01	0.01
Magnetic susceptibility (∅ 100 gauss, 60 Hz)	Equiv. g's	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Warm-up time (to within 1%)	ms	1	1	1	1	1

Electrical characteristics

Excitation voltage	9.5 to 18.0 Vdc
Current drain	8.5 mA typ, 10 mA max
Output impedance/load	500 ohms max/10K ohms resistance minimum, 0.1 µF capacitance maximum
Residual noise	100 µV rms typ, 0.5 to 100 Hz 500 µV rms typ, 0.5 Hz to 10 kHz

Physical characteristics

Case material	Anodized aluminum alloy
Electrical connections	Integral cable, four conductor No. 28 AWG, Teflon® insulated leads, braided shield, Hyperflex™ jacket
Mounting/torque	Two holes for 4-40 or M3 mounting screws / 6 lbf-in [0.68 Nm]
Weight	12 grams without cable [cable weighs 9 grams/meter]

Environmental characteristics

Acceleration limits (in any direction)	
Static	20 000 g
Vibration	100 g sinusoidal 20 - 2000 Hz / 40 g rms random 20 - 2000 Hz
Shock	5000 g [150 µS haversine pulse] for -2 and -10; 10 000 g [80 µS haversine pulse] for -30, -50, -100
Zero shift	0.1% FSO typical at 5000 g
Temperature	
Operating	-65°F to +250°F [-55°C to +121°C]
Storage	-100°F to +300°F [-73°C to +150°C]
Humidity/altitude	Unaffected. Unit is epoxy sealed.
ESD sensitivity	Unit meets Class 2 requirements of MIL-STD-883, Method 3015

Calibration

Sensitivity (measured with 15 Vdc excitation)	1 g and 5 Hz for -2; 10 g and 100 Hz for all other ranges
Frequency response	1 g, 1 to 100 Hz for -2; 10 g, 20 to 10 000 Hz for all other ranges
Zero measurand output	measured at room temp
Transverse sensitivity	measured at 1 g

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Accessories

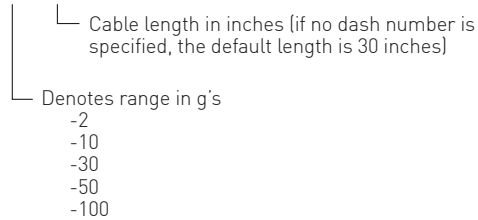
Product	Description	7290A
EHW265	(2) size 4, flat washers	Included
EH702	(2) 4-40 x 7/16 inch cap screws	Included
EHM464	(1) hex wrench	Included
7990	triaxial mounting block	Optional

Notes

1. Full scale output (FSO) is nominally 4 volts.
2. Resolution = (2x residual noise; 0.5 to 100 Hz) / sensitivity.
3. Maintain high levels of precision and accuracy using Meggitt's factory calibration services. Call Meggitt's inside sales force at 800-982-6732 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.
4. Model number definition:

Model definition

7290A-XXX-ZZZ



Contact

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Continued product improvement necessitates that Meggitt reserve the right to modify these specifications without notice. Meggitt 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. 082616

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