

Variable Capacitance Accelerometer

Model 7292A-XXM1

- 2 to 100 g Full Scale
- Optional Temperature Output (M2) or Simulated Shunt Calibration (M3) also Available
- Overrange Stops
- Gas Damping
- Rugged, Hermetically Sealed

**ENDEVCO
MODEL
7292A-
XXM1**



Actual size

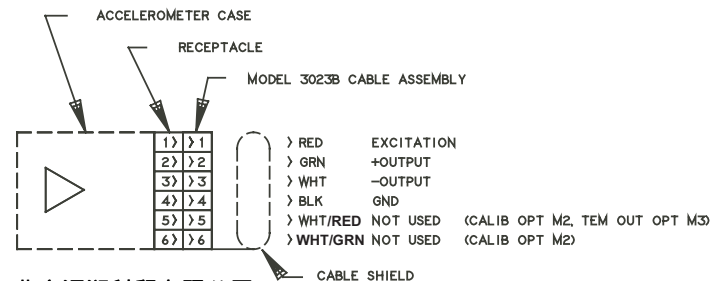
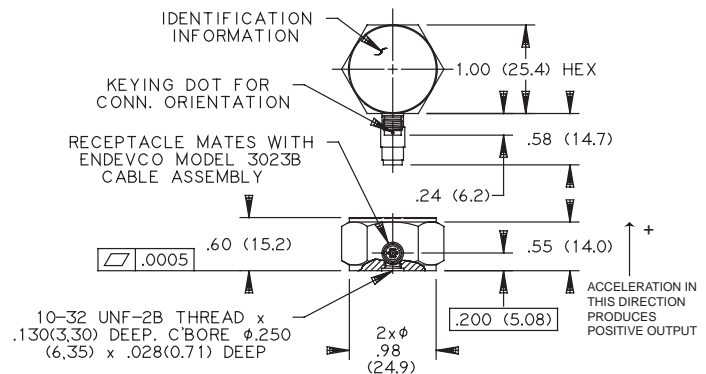
DESCRIPTION

The ENDEVCO® Model 7292A-XXM1 MICROTRON® accelerometer utilizes unique variable capacitance microsensors for the measurement of relatively low-level accelerations in rugged aerospace and automotive environments. Since it can respond to DC accelerations (steady-state events), it is ideal for measuring whole-body motion even after being subjected to shock motion. The 7292A-XXM1 series accelerometer is designed to withstand shock levels up to 10,000 g's with immediate recovery.

The 7292A-XXM1 features a rugged hermetic, stainless-steel package provides years of reliable service. The 10-32 mounting stud and 6-pin electrical interface make the 7292A-XXM1 series of accelerometers a "plug and play" equivalent to the popular Endevco 2262CA series accelerometer.

The 7292A-XXM1 operates from an 8.5 to 30 vdc source and provides a high level, low impedance output biased at 3.6v. The use of gas damping provides the near-critically damped characteristics found in the 2262 Series of accelerometers without thermally induced changes in frequency response. The output can be fed into either a differential or single-ended amplifier, or standard bridge electronics having 10 Vdc excitation.

ENDEVCO Model 136 Three-Channel System, Model 4430A or the OASIS 2000 Computer-Controlled System are recommended as signal conditioners and power supplies.



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SPECIFICATIONS

PERFORMANCE CHARACTERISTICS: All values are typical at +75°F (+24°C) and 10 Vdc excitation unless otherwise stated. Calibration data, traceable to the National Institute of Standards (NIST), is supplied.

	Units	7292-2M1	-10M1	-30M1	-50M1	-100M1
RANGE	g pk	±2	±10	±30	±50	±100
SENSITIVITY (at 100 Hz) [1] [2]	mV/g	1000 ±100	200 ±20	66 ±8	40 ±4	20 ±2
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	5500	6000
NON-LINEARITY AND HYSTERESIS [3]	% FSO Typ	±0.20	±0.20	±0.20	±0.20	±1
	% FSO (Max)	±0.50	±0.50	±0.50	±0.50	±2
TRANSVERSE SENSITIVITY [4]	% Typ	1	1	1	1	1
ZERO MEASURAND OUTPUT [2]	mV Max	±200	±200	±200	±200	±200
DAMPING RATIO		4.0	0.7	0.7	0.7	0.6
DAMPING RATIO CHANGE	%/°F	+0.04	+0.04	+0.04	+0.04	+0.04
	%/°C	+0.08	+0.08	+0.08	+0.08	+0.08

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SPECIFICATIONS

PERFORMANCE CHARACTERISTICS—continued

	Units	7292-2M1	-10M1	-30M1	-50M1	-100M1
THERMAL ZERO SHIFT						
From 32°F to 122°F (0°C to 50°C)	% FSO Max	±2.0	±2.0	±2.0	±2.0	±2.0
From -13°F to +167°F (-25°C to +75°C)	% FSO Max	±4.0	±4.0	±4.0	±4.0	±4.0
From -65°F to +250°F (-54°C to +121°C)	% FSO Max	±6.0	±6.0	±6.0	±6.0	±6.0
THERMAL SENSITIVITY SHIFT						
From 32°F to 122°F (0°C to +50°C)	% Max	±2.0	±2.0	±2.0	±2.0	±2.0
From -13°F to +167°F (-25°C to +75°C)	% Max	±4.0	±4.0	±4.0	±4.0	±4.0
From -65°F to +250°F (-54°C to +121°C)	% Max	±6.0	±6.0	±6.0	±8.0	±6.0
THERMAL TRANSIENT ERROR						
PER ISA RP 37.2	Equiv. g/°F	< 0.0006	< 0.0006	< 0.0006	< 0.0006	<0.0006
	Equiv. g/°C	< 0.001	< 0.001	< 0.001	< 0.001	<0.001
OVERRRANGE (Determined by Electrical clipping or Mechanical stops, whichever is smaller.)						
Electrical clipping	g	-3.5/+3.8	-18/+18	-53/+57	-87/+95	-175/+190
Mechanical stops, typical	g	±4	±30	±90	±200	±200
Recovery Time	µs	< 10	< 10	< 10	< 10	< 10
THRESHOLD (RESOLUTION) [5]						
	Equiv. g's	0.0005	0.0025	0.0075	0.025	0.013
BASE STRAIN SENSITIVITY, MAX [6]						
	Equiv. g's	0.01	0.01	0.01	0.01	0.01
MAGNETIC SUSCEPTIBILITY [7]						
	Equiv. g's	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
WARM-UP TIME (to within 1%)						
	ms	10	10	10	10	10

ELECTRICAL

EXCITATION [2]	8.5 ± 30.0 Vdc, Calibration
CURRENT DRAIN [8]	4.5 mA Typ, 8 mA (max)
OUTPUT IMPEDANCE/LOAD	50Ω max/10kΩ resistance minimum, 0.1µF capacitance max
RESIDUAL NOISE	100 µV rms typ, 0.5 to 100 Hz, 500µV rms typ, 0.5 Hz to 10 kHz
CASE ISOLATION	100 MΩ

PHYSICAL

CASE MATERIAL	Stainless, type 304
ELECTRICAL CONNECTIONS	6-pin, 12-48 uns threaded receptacle (mates to Endevco model 3023B-30 supplied)
MOUNTING/TORQUE	Provision for 10-32 UNF x 1/8" stud. Mounting torque 18 lbf-in (2nm)
MASS	40 grams (cable weighs 18 grams/meter)

ENVIRONMENTAL

ACCELERATION LIMITS (in any direction)	
Static	20 000 g
Sinusoidal/Random Vibration	100 g pk, 20 - 2000 Hz/40 g rms, 20 - 2000 Hz
Shock (half-sine pulse)	5000 g, 150 µsec or longer for the -2 and -10; 10 000 g, 80 µsec or longer for the -30 and -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 hermetically sealed.
ESD SENSITIVITY	
	Unit meets Class 2 requirements of MIL-STD-883, Method 3015

CALIBRATION DATA SUPPLIED (noted on shipping box)

SENSITIVITY	
(at 1g and 5 Hz for 2 g range; 10g and 100 Hz, all other ranges)	
FREQUENCY RESPONSE	1-100 Hz for the -2; all other ranges, 20 - 10,000 Hz
ZERO MEASURAND OUTPUT	mV
MAXIMUM TRANSVERSE SENSITIVITY	% of sensitivity

ACCESSORIES (included)

3023B-30	30" CABLE ASSEMBLY
92981-12	10-32 MOUNTING STUD, HEX SOCKET

OPTIONAL ACCESSORIES

2981-3	10-32 ADAPTOR STUD, SLOT
2981-4	M5 X 0.8 ADAPTOR STUD

NOTES

- Reference frequency is 5 Hz on the 2 g range, 100 Hz for -10,-30,-100
- Over the excitation range 10 ± 0.05 Vdc
- Full scale output (FSO) is nominally 4 volts
- 1% is typical. 1% maximum available on special order
- THRESHOLD = $\frac{\text{MAX. RESIDUAL NOISE: 0.5 TO 100 Hz}}{\text{SENSITIVITY}}$

- Per ISA 37.2 at 250 Microstrain
- At 100 Gauss, 60 Hz
- Current drain increases slightly with increasing excitation; typical change is +.06 mA per volt from 8.5 to 30.0 Vdc.
- Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco'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.

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.

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