

# Piezoelectric Accelerometer

## Model 2225/2225M5A

- High-g Shock
- Industry Standard
- Rugged - Requires No External Power
- Annular Shear
- Shock Measurements on Test Articles and Structures



Actual size

### DESCRIPTION

The ENDEVCO® Models 2225 and 2225M5A are lightweight piezoelectric accelerometers designed specifically for measuring high-g shock on structures and test articles. These sensors are the industry standard for shock accelerometers. The Model 2225 features a 10-32 threaded hole, while the Model 2225M5A features a 1/4-28 threaded hole for additional mounting integrity needed during high-g shock. The accelerometer is a self-generating device that requires no external power source for operation.

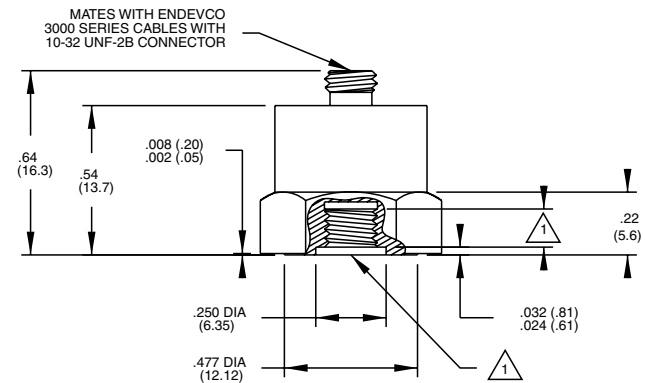
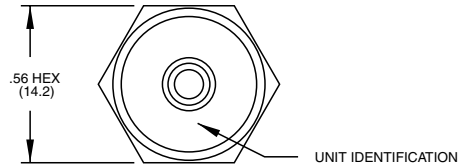
Models 2225 and 2225M5A feature ENDEVCO's PIEZITE® Type P-8 and P-10 crystal elements respectively, operating in annular shear mode. These specially designed crystals exhibit low base strain sensitivity, high resonance frequency, and excellent output stability over time. Signal ground is connected to the outer case of the unit. The accelerometer features a 10-32 top connector and requires a low-noise coaxial cable for error-free operation.

ENDEVCO Signal Conditioner Models 133 and 2775A are recommended for use with these high impedance accelerometers.

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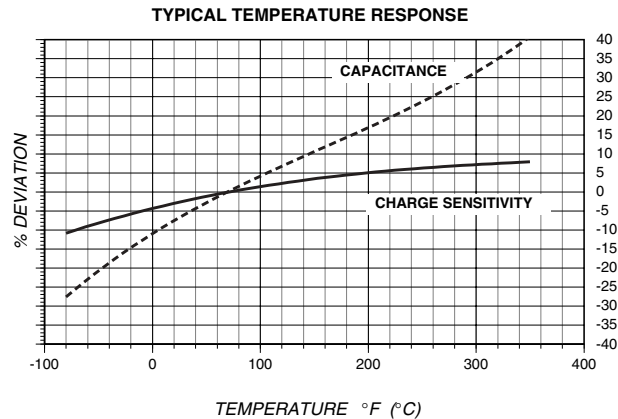
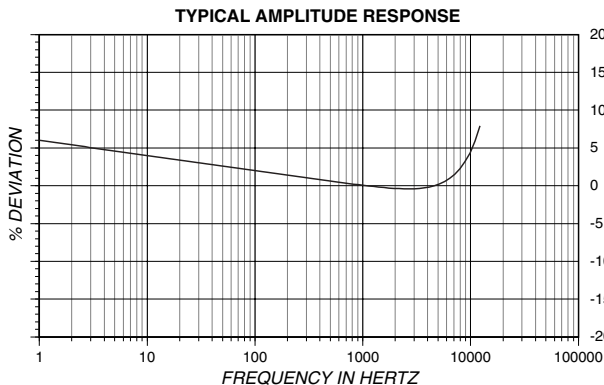
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**ENDEVCO**  
**MODEL**  
**2225/M5A**



△ FOR MODEL 2225 (SHOWN), THREAD IS 10-32 UNF-2B, .125 MIN DEPTH.  
 FOR MODEL 2225M5A, THREAD IS 1/4-28 UNF-2B, .155 MIN DEPTH.

STANDARD TOLERANCE  
 INCHES (MILLIMETERS)  
 .XX = +/- .02 (X = +/- .5)  
 .XXX = +/- .010 (.XX = +/- .25)



# ENDEVCO MODEL 2225/M5A

## Piezoelectric Accelerometer

### 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	2225	2225M5A
CHARGE SENSITIVITY			
TYPICAL	pC/g	0.75	0.025
MINIMUM	pC/g	0.60	0.020
FREQUENCY RESPONSE			
RESONANCE FREQUENCY [1]	kHz	See Typical Amplitude Response	
AMPLITUDE RESPONSE [2]		100	
±5%	Hz	4 to 10 000	
±1dB	Hz	1 to 12 000	
TEMPERATURE RESPONSE			
See Typical Curve			
TRANSVERSE SENSITIVITY	%	≤ 5	
AMPLITUDE LINEARITY [3]	%	0.5 Per 1000 g, 0 to 20 000 g	10 to 100 kg

### ELECTRICAL CHARACTERISTICS

OUTPUT POLARITY		Acceleration directed into base produces positive output	
RESISTANCE	GΩ	≥ 10	
CAPACITANCE	pF	800	115
GROUNDING		Signal return connected to case	

### ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE RANGE		-67°F to +350°F (-55°C to +177°C) [5]	
HUMIDITY		Epoxy sealed, non-hermetic	
SINUSOIDAL VIBRATION LIMIT	g pk	10 000	
SHOCK LIMIT	g pk	20 000	100 000
BASE STRAIN SENSITIVITY	equiv. g pk/μ strain	0.03	
THERMAL TRANSIENT SENSITIVITY	equiv. g pk/°F (°C)	0.005 (0.009)	0.00001 (0.00002)

### PHYSICAL CHARACTERISTICS

DIMENSIONS		See Outline Drawing	
WEIGHT	gm (oz)	13 (0.46)	
CASE MATERIAL		Stainless Steel	
CONNECTOR		Coaxial, 10-32 thread, mates with Endevco 3000 Series cables	
MOUNTING TORQUE	lbf-in (Nm)	18 (2)	24 (2.7)

### CALIBRATION

SUPPLIED:			
FREQUENCY RESPONSE	%	20 to 10 000 Hz	N/A
	dB	10 000 to 50 000 Hz	N/A
CHARGE SENSITIVITY	pC/g		[4]
MAXIMUM TRANSVERSE SENSITIVITY	%		N/A
CAPACITANCE	pF		[4]

### ACCESSORIES For Model 2225

Model 3090C-120 (10 ft) CABLE ASSEMBLY  
Model 2981-3 MOUNTING STUD (10-32 to 10-32)

### ACCESSORIES For Model 2225M5A

Model 3060C-120 (10 ft) CABLE ASSEMBLY  
Model 2984-2 MOUNTING STUD (1/4-28 to 1/4-28)

### OPTIONAL ACCESSORIES

Model 2771AM3 IN-LINE CHARGE CONVERTOR FOR USE WITH CONSTANT CURRENT SOURCE  
Model 2950 TRIAXIAL MOUNTING BLOCK

### NOTES

- Minor resonances between 30 kHz and 80 kHz exist.
- Low-end response of the transducer is a function of its associated electronics.
- Short duration shock pulses, such as those generated by metal-to-metal impacts, may excite transducer resonance and cause linearity errors. Send for TP290 for more details.
- Only charge sensitivity and capacitance is supplied.
- Temperature range for 2225/M5A is limited to 0°F to +150°F (-18°C to +66°C)
- 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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