

# Piezoelectric Accelerometer

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**ENDEVCO  
 MODEL  
 2276**



## Model 2276

- High Temperature Operation (+482°C)
- Radiation Hardened
- Inconel Construction
- Requires No External Power
- Nuclear or High Temperature Applications



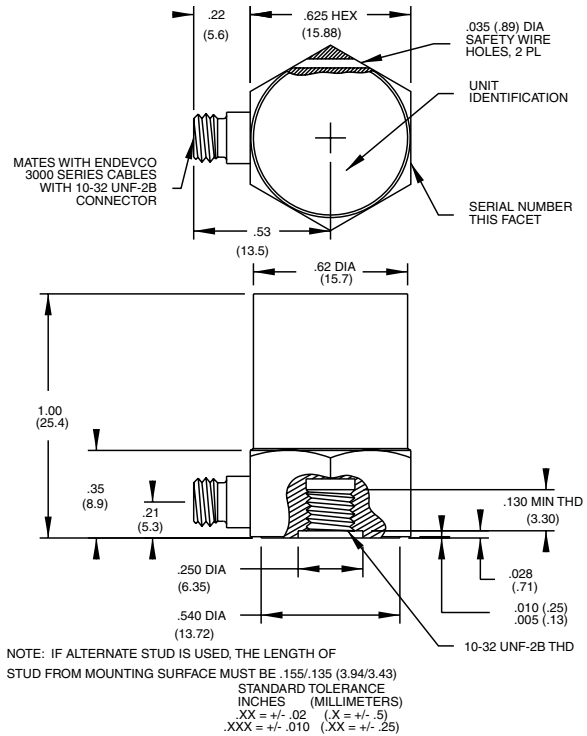
Actual size

### DESCRIPTION

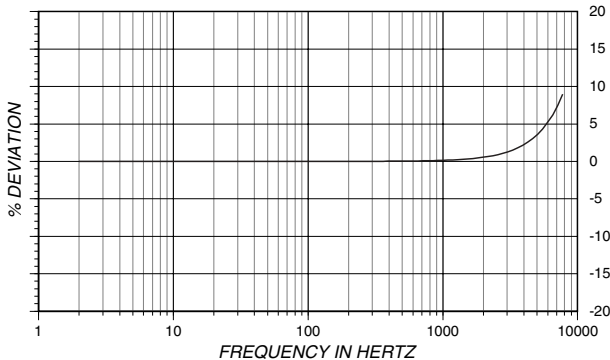
The ENDEVCO® Model 2276 is a precision piezoelectric accelerometer for shock and vibration measurement of structures subjected to very high temperatures. It is capable of operation in nuclear environments during the presence of Gamma and Neutron radiation. This accelerometer features a side mounted 10-32 receptacle and hex base construction with a 10-32 or M5 center stud mount. The accelerometer is a self-generating device that requires no external power source for operation.

The 2276 features ENDEVCO's PIEZITE® Type P-14 sensing element in our patented ISOBASE® construction, to provide for flat charge temperature response over the range of -67°F to +900°F (-55°C to +482°C). In addition, ISOBASE construction provides mechanical isolation of bending motion from the mounting base. The unit is constructed using Inconel, and provides for hermeticity through welding and glass-to-metal fusion at the connector. Signal return is connected to case.

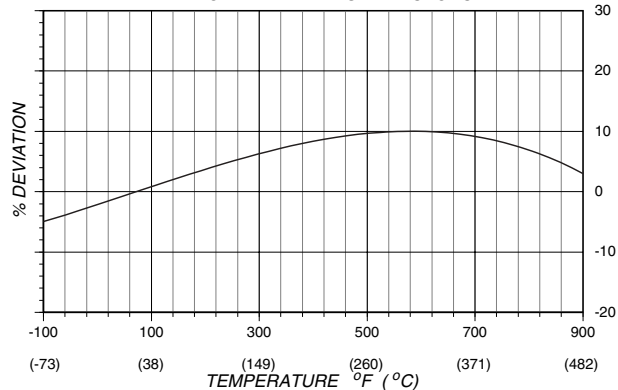
ENDEVCO Signal Conditioner Model 2721B is recommended for use with this accelerometer. The 2771A Remote Charge Converter is also compatible for applications using this high impedance accelerometer.



TYPICAL AMPLITUDE RESPONSE



TYPICAL TEMPERATURE RESPONSE



# 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	
CHARGE SENSITIVITY		
TYPICAL	pC/g	10.0
MINIMUM	pC/g	9.0
FREQUENCY RESPONSE		
RESONANCE FREQUENCY	kHz	27
AMPLITUDE RESPONSE [1]		
±5%	Hz	1 to 5000
±1dB	Hz	.5 to 7000
TEMPERATURE RESPONSE		
See Typical Curve		
TRANSVERSE SENSITIVITY	%	≤ 3 (≤ 1 on special order)
AMPLITUDE LINEARITY [3]	%	1
Per 1000 g, 0 to 3000 g		

## ELECTRICAL CHARACTERISTICS

OUTPUT POLARITY	Acceleration directed into base of unit produces positive output	
RESISTANCE	GΩ	≥ 1
At +900°F (+482°C) [2]	KΩ	≥ 100
CAPACITANCE	pF	660, ±200
GROUNDING	Signal return connected to case	

## ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE RANGE	-67°F to +900°F (-55°C to +482°C)	
HUMIDITY	Hermetically sealed	
SINUSOIDAL VIBRATION LIMIT	g	500
SHOCK LIMIT [3]	g	3000
BASE STRAIN SENSITIVITY	equiv. g pk/μ strain	0.002
RADIATION		
INTEGRATED GAMMA FLUX	rad	Up to 6.2 x 10 <sup>10</sup>
INTEGRATED NEUTRON FLUX	N/cm <sup>2</sup>	Up to 3.7 x 10 <sup>18</sup>

## PHYSICAL CHARACTERISTICS

DIMENSIONS		See Outline Drawing
WEIGHT	gm (oz)	30 (1.1)
CASE MATERIAL		Inconel
CONNECTOR [4]		10-32 coaxial connector
MOUNTING TORQUE	lbf-in (Nm)	18 (2)

## CALIBRATION

SUPPLIED:		
FREQUENCY RESPONSE	%	20 Hz to 5000 Hz
	dB	5000 Hz through resonance
SENSITIVITY		pC/g
MAXIMUM TRANSVERSE SENSITIVITY		%
MOUNTED RESONANCE FREQUENCY		kHz
CAPACITANCE		pF

## ACCESSORIES

Model 2981-12	MOUNTING STUD, 10-32 to 10-32
Model 3075M6-120 (10 ft)	CABLE ASSEMBLY, High Temp
EHM 464	HEX KEY WRENCH

## OPTIONAL ACCESSORIES

Model 3090C-120 (10 ft)	CABLE ASSEMBLY, for under +500°F
Model 2981-4	MOUNTING STUD, 10-32 to M5
P/N 30846	PIN RETENTION ALIGNMENT KIT
P/N 2981-3	ADAPTOR STUD, 10-32

- 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.
- Repeated insertion of mating cable may result in a loss of pin retention and intermittent output. Use Endevco 30846 Pin Retention Alignment Kit to bring socket to original shape.
- 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.

## NOTES

- Low-end response of the transducer is a function of its associated electronics.
- Because of low resistance at high temperatures, the signal conditioner must be capable of operating with the specified source resistance.

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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