Piezoelectric Accelerometer

ENDEVCO MODEL 22

Model 22

- **World's Smallest Accelerometer**
- **Extremely Light Weight (0.14 gm)**
- **Adhesive Mounting**
- **Ground Isolated**
- **Scale Model, Circuit Board, Disk Drive Testing**

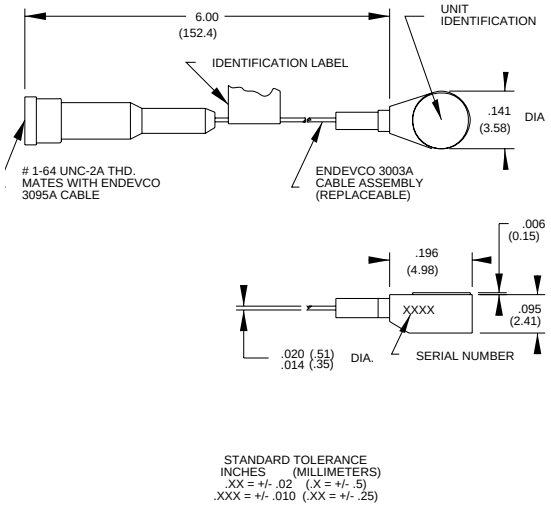
Actual size

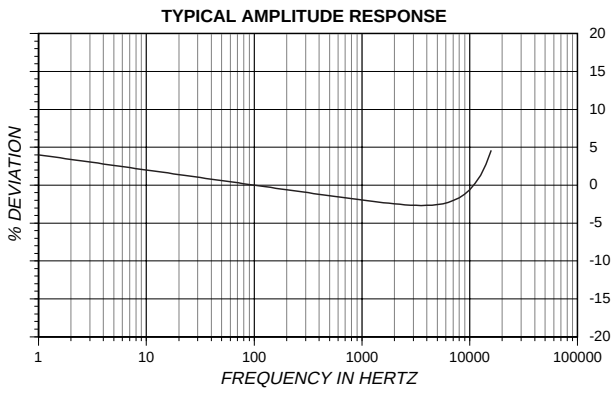
DESCRIPTION

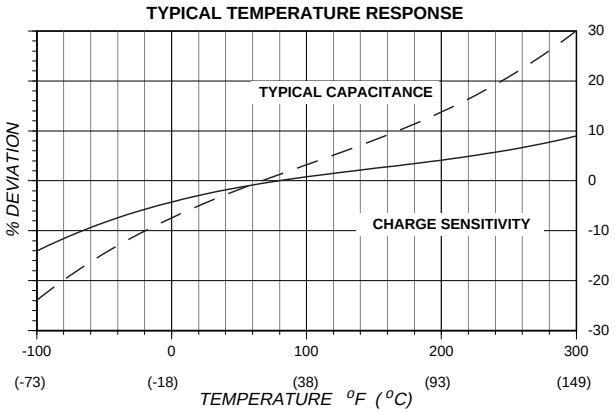
The ENDEVCO® Model 22 PICOMIN™ is the world's smallest piezoelectric accelerometer, designed specifically for vibration measurement on small objects such as scaled models, circuit boards, and disk drives. Its light weight, (0.14 gm) effectively eliminates mass loading effects. The transducer is designed to have reverse polarity with respect to acceleration going into the mounting base. The accelerometer is a self-generating device that requires no external power source for operation.

The Model 22 features ENDEVCO's PIEZITE® Type P-8 crystal element, operating in radial shear mode, which exhibits excellent output sensitivity stability over time. Signal ground is isolated from the mounting surface of the unit by a hard anodized surface. Specially designed low-noise coaxial cable is supplied for error-free operation. A tool is included in the shipping case to ensure proper removal of the cable and transducer in the field.

ENDEVCO Signal Conditioner Models 133, 2775A or OASIS 2000 Computer-Controlled System are recommended for use with this high impedance accelerometer.







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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	
CHARGE SENSITIVITY		
TYPICAL	pC/g	0.40
MINIMUM	pC/g	0.30
FREQUENCY RESPONSE		See Typical Amplitude Response
RESONANCE FREQUENCY	kHz	54
AMPLITUDE RESPONSE [1]		
± 5%	Hz	1 to 10 000
±1dB	Hz	.5 to10 000
TEMPERATURE RESPONSE		See Typical Curve
TRANSVERSE SENSITIVITY	%	≤ 5
AMPLITUDE LINEARITY [3]		
To 500 g	%	1
500 g to 4000 g	% per 200 g	1

ELECTRICAL CHARACTERISTICS		
OUTPUT POLARITY		Acceleration directed into the base of the unit produces negative output
RESISTANCE	GΩ	≥ 10
ISOLATION	GΩ	≥ 1
CAPACITANCE Including 6 inch Model 3003A-6	pF	250
ISOLATION CAPACITANCE	pF	50
GROUNDING		Signal ground isolated from mounting surface

ENVIRONMENTAL CHARACTERISTICS		
TEMPERATURE RANGE		-100°F to +300°F(-73°C to +149°C)
HUMIDITY		Epoxy Sealed, non-hermetic
SINUSOIDAL VIBRATION LIMIT	g pk	2500
SHOCK LIMIT [2]	g pk	10 000
BASE STRAIN SENSITIVITY	equiv. g/μ strain	0.008
ELECTROMAGNETIC SENSITIVITY	equiv. g rms/gauss	0.0009

PHYSICAL CHARACTERISTICS		
DIMENSIONS		See Outline Drawing
WEIGHT		
UNIT ONLY	gm (oz)	0.14 (0.005)
UNIT WITH CABLE	gm (oz)	0.4 (0.014)
CASE MATERIAL		Aluminum Alloy, Hard Anodized
CABLE DESCRIPTION [4]		0.013 diameter TFE insulated coaxial cable, 0.003 diameter CRES center conductor, Teflon dielectric. CRES outer sheath
MOUNTING [5]		Adhesive

CALIBRATION		
SUPPLIED:		
CHARGE SENSITIVITY	pC/g	
VOLTAGE SENSITIVITY With 6 inch replaceable cable	mV/g	
TRANSDUCER CAPACITANCE Including 6 inch replaceable cable	pF	
CABLE CAPACITANCE	pF	
TRANSVERSE SENSITIVITY	%	
CHARGE FREQUENCY RESPONSE	%	20 Hz to 10 kHz

ACCESSORIES

P/N 17267	ACCELEROMETER AND CABLE REMOVAL WRENCH*
Model 3095A-120 (10 ft)	CABLE ASSEMBLY
P/N 16426	CAPSULE OF SILICONE COMPOUND
Model 3003A-6 (6 In.)	CABLE ASSEMBLY

NOTES

1. Low-end response of the transducer is a function of its associated electronics.
2. When exposed to high g, and large displacement, the cables must be tied down as close to the accelerometer as possible to prevent cable whip and subsequent cable failure.
3. 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.
4. See instruction manual before removing cable assembly.
5. Depending on the dynamic and environmental requirements, adhesives such as petro-wax, hot-melt glue, and cyanoacrylate epoxy (super glue) may be used to mount the accelerometer temporarily to the test structure. An adhesive mounting kit (P/N 31849) is available as an option from Endevco. *Removing epoxy-mounted accelerometers by, first softening the epoxy with an appropriate solvent, then twist the unit off with the supplied removal tool. Failure to heed this caution may cause permanent damage to the transducer, which is not covered under warranty.
6. 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.

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