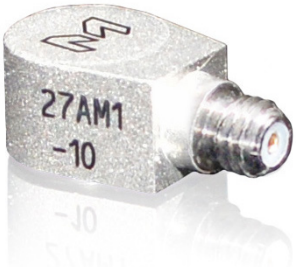
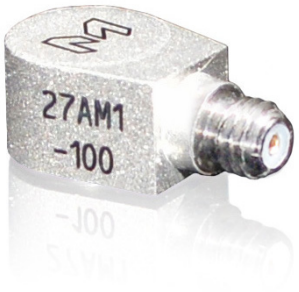
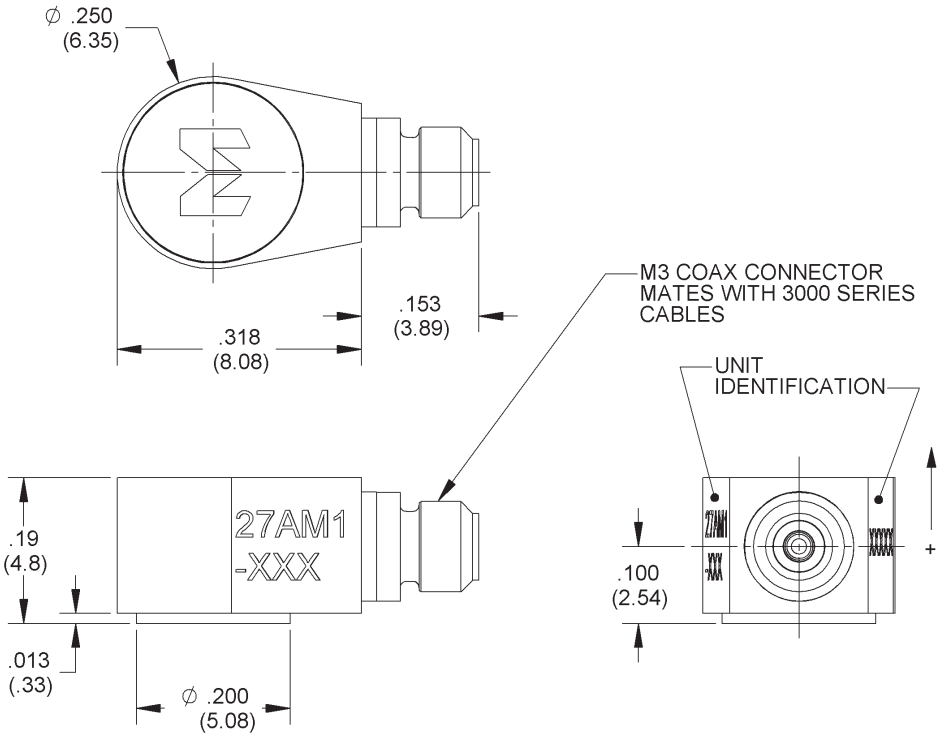
ENDEVCO
AN AMPHENOL COMPANY

Miniature Isotron® accelerometer

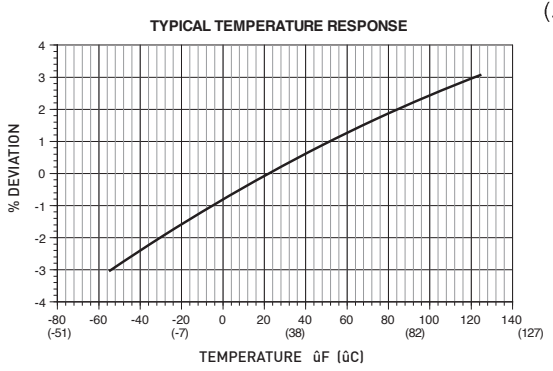
Model 27AM1







STANDARD TOLERANCE
INCHES (MILLIMETERS)
.XX = ±.02 (.X = ±.5)
.XXX = ±.010 (.XX = ±.25)



Key features

- Extremely small and light weight (1 gm)
- Hermetically sealed, titanium case
- Flexible, field replaceable cable
- Adhesive mounting

Description

The Endevco® model 27AM1 is an extremely small, adhesive mounted piezoelectric accelerometer with integral electronics, designed specifically for measuring vibration on mini-structures and small objects. These accelerometers offer high resonance frequency and wide bandwidth, their light weight (1 gm) effectively eliminates mass loading effects. A field-replaceable miniature cable is supplied with the accelerometer.

Model 27AM1 feature Endevco's Piezite® Type P-8 crystal element, operating in annular shear mode, which exhibits excellent output sensitivity stability over time. These accelerometers incorporate an internal hybrid signal conditioner in a two-wire system, which transmits its low impedance voltage output through the same cable that supplies the constant current power. A tool is included in the package to ensure proper removal of the accelerometer from its mounting surface.

Endevco signal conditioner models 4416C, 123, 133, or 6634C are recommended for use with these accelerometers.

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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**	**-10**	**-100**
Range	g pk	±500	±50
Voltage sensitivity (typical)	mV/g	10	100
min	mV/g	9	90
max	mV/g	11	110
Resonance frequency (typical)	kHz	50	
min	kHz	45	
Amplitude response			
±10%	Hz	2 to 10 000	3 to 10 000
±3 dB	Hz	1.0 to 15 000	1.5 to 15 000
Phase vs Frequency			
< 5°	Hz	4 to 40 000	4 to 2500
< 10°	Hz	2 to 40 000	2 to 5000
Sensitivity deviation vs Temperature			
at -67°F (-55°C) max/min	%	0 / -15	
at +257°F (+125°C) max/min	%	+10 / -5	
Temperature response		See typical curve	
Transverse sensitivity	%	5 max	
Amplitude linearity	%	< 2	
Output characteristics		Acceleration directed into base of unit produces positive output	
Output polarity			
DC output bias voltage			
Room temp +75°F (+24°C)	Vdc	+12.3 to +13.5	
-67°F to +257°F (-55°C to +125°C)	Vdc	+7.5 to +16	
Output impedance	Ω	< 200	
Full scale output voltage	V	±5	
Residual Noise			
Broadband (1Hz to 10KHz)	equiv. µg rms	2000	400
Spectral	equiv. µg/√Hz		
1Hz		1500	300
10 Hz		200	50
100 Hz		30	10
1000 Hz		10	4
Overload recovery 2X full scale	µs	< 10	
Grounding		Signal ground connected to case	
Power requirement			
Supply voltage [1]	Vdc	+23 to +30	
Supply current	mA	+2 to +10	
Supply noise	µA pk	< 10	
Warm-up time			
±10% of stabilized bias	sec	2	
Time constant	sec	0.5	
Environmental characteristics			
Temperature range		-67°F to +257°F (-55°C to +125°C)	
Humidity		Hermetically sealed	
Sinusoidal vibration limit	g pk	1000	
Shock limit [2]	g pk	5000	
Base strain sensitivity at 250 µstrain	equiv. g pk/µstrain	0.13	0.05
Thermal transient sensitivity	equiv. g pk/°F (/°C)	0.16 (0.29)	0.07 (0.12)
Electromagnetic sensitivity	equiv. g rms/gauss	.0001	.00006

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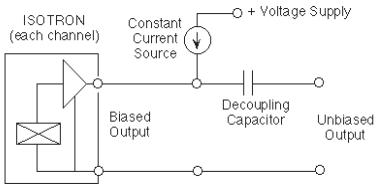
Physical characteristics			
Dimensions			See outline drawing
Weight	oz (gm)	.028 (0.8)	.035 (1.0)
Case material			Titanium alloy
Connector			Coaxial, M3 thread, side mount
Mounting [3][4]			Adhesive
Calibration			
Supplied:			
Sensitivity	mV/g		
Maximum transverse sensitivity	%		
Frequency response	%		20 Hz to 10 kHz
	dB		10 Hz to 50 kHz
Bias	Vdc		

Accessories

Product	Description	27AM1	27AM1-R
3053VM1-120	Low Noise, Coaxial Cable Assembly, VersaFlex Teflon Jacket, M3-plug to BNC Plug, 10 feet	Included	Optional
2943M1	Removal tool	Included	Optional
2987M9	Isolation mount	Included	Optional
32279	Mounting wax	Included	Optional
133	3 Channel PE/IEPE signal conditioner	Optional	Optional
4416C	1 Channel IEPE signal conditioner	Optional	Optional

Notes

1. +23 Vdc must be available to the accelerometer to ensure full scale operation at temperature extremes.
2. Shock pulses of short duration may excite transducer resonance. Shock level above the sinusoidal vibration limit may produce temporary zero shift that will result in erroneous velocity or displacement data after integration.
3. 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.
4. To remove an epoxy mounted accelerometer, first soften the epoxy with an appropriate solvent and then twist the unit off with the supplied removal wrench. Damage to sensors caused by inappropriate removal procedures are not covered by Endevco's warranty.



Ordering information

1. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

Model number definition:

27A M1 – XXX - R

- R — Indicates replacement part (omit if unit is not a replacement)
- XXX — Denotes acceleration range in mV/g
  - -10 = 10
  - -100 = 100
- M1 — Modifier
- 27A — Basic model number

APPLIES TO CALIFORNIA FACILITY