



Model 27AM1 Isotron[®] accelerometer

Features

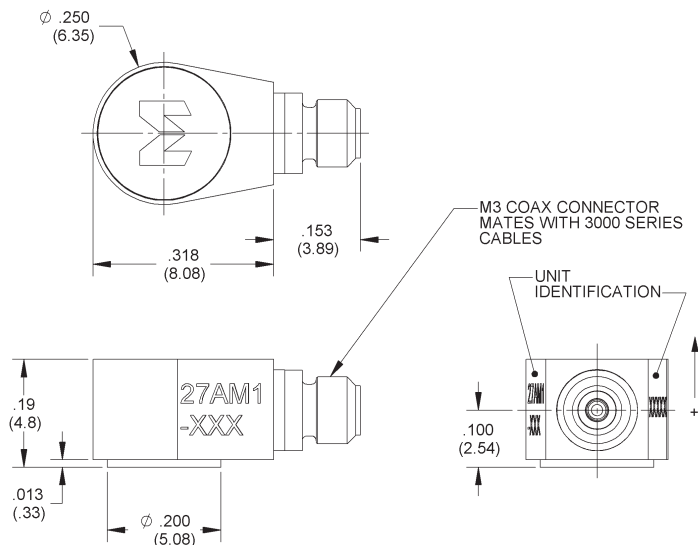
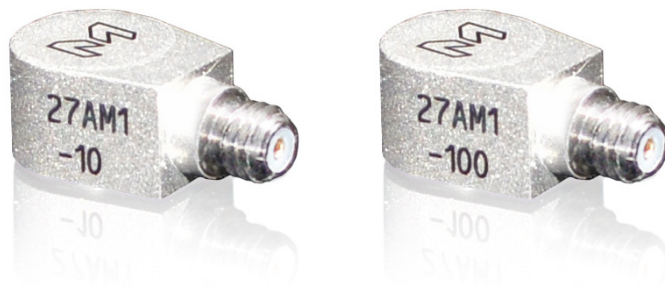
- 27AM1-10-R, 27AMI-100-R available as replacement sensor
- Low impedance output
- Adhesive mounting
- Light weight (1 gm)
- Flexible, detachable cable
- Hermetically sealed, titanium case

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.

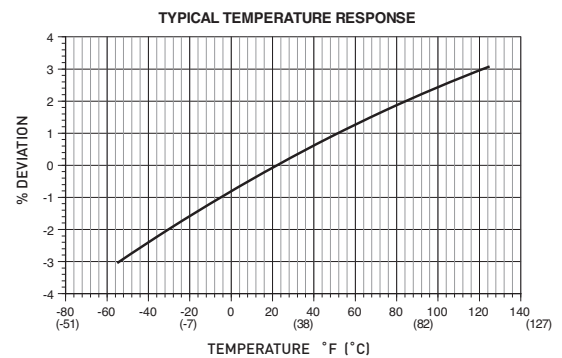
Model 27AM1 feature Endevco's Piezite[®] Type P-8 crystal element, operating in annular shear mode, which exhibits excellent output sensitivity stability over time. These accelerometers incorporate an internal hybrid signal conditioner in a two-wire system, which transmits its low impedance voltage output 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 4416B, 133, 2793, 2775B, 4999, 6634C or OASIS 2000 (4990A-X with cards 428 and/or 433) computer-controlled system are recommended for use with these accelerometers.



STANDARD TOLERANCE
 INCHES (MILLIMETERS)
 .XX = $\pm .02$ (X = $\pm .5$)
 .XXX = $\pm .010$ (XX = $\pm .25$)

SOL



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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	Hz		
±10% (typical)	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	Hz		
< 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 to full scale

Output characteristics

Acceleration directed into base of unit produces positive output

Output polarity			
DC output bias voltage	Vdc		
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		
Full scale output voltage	V		
Residual noise	equiv. µg rms	2000	400
1 Hz to 10 kHz, broadband			
Overload recovery 2X full scale	µs		< 10
Grounding			Signal ground connects 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		
To within 10% of final 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

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	dB	20 Hz to 10 kHz 10 Hz to 50 kHz

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Accessories

Product	Description	27AM1	27AM1-R
3053VM1	Cable assembly, 10ft	Included	Optional
2943M1	Removal tool	Included	Optional
2987M9	Isolation mount	Included	Optional
32279	Mounting wax	Included	Optional
32227	Mounting wax	Optional	Optional
133	Signal conditioner	Optional	Optional
2775B	Signal conditioner	Optional	Optional
2793	Isotron [®] signal conditioner	Optional	Optional
4416B	Signal conditioner	Optional	Optional
6634C	Signal conditioner—does not support i-TEDS	Optional	Optional
4999	Signal conditioner—does not support i-TEDS	Optional	Optional
4990A-X	OASIS 2000 computer controlled system with cards 428, 433 and/or 482B - only 482B supports i-TEDS	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 Meggitt's warranty.
5. Maintain high levels of precision and accuracy using Meggitt's factory calibration services. Call Meggitt's inside sales force at 800-982-6732 for recommended intervals, pricing and turnaround time for these services as well as for quotations on our standard products.

