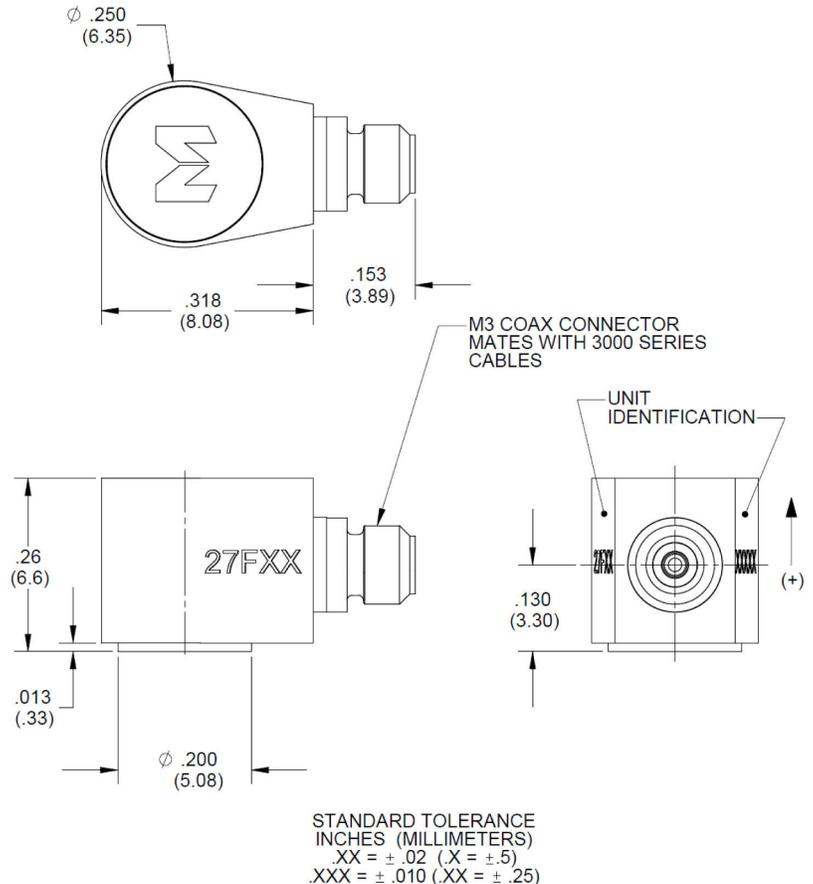
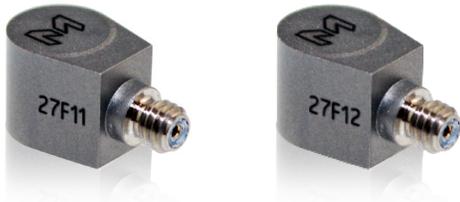


Miniature TEDS accelerometer

Model 27F11 / F12



Key features

- Miniature teardrop IEPE accelerometer
- IEEE P1451.4 TEDS v0.9
- Adhesive mounted
- Hermetically sealed
- Wide bandwidth
- 27F11-R, 27F12-R available as replacement sensor

Description

Model 27FXX is the smallest Isotron® accelerometer with IEEE P1451.4 Transducer Electronic Data Sheet (TEDS), designed specifically for measuring vibration on mini-structures and small objects. The accelerometer offers a high resonance frequency and wide bandwidth and its light weight effectively eliminates mass loading of the test structure. A field replaceable miniature cable is supplied standard with each unit.

Model 27FXX features 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. The signal ground of the accelerometer is connected to the case. If electrical case isolation is needed, an isolation mounting pad is included. Additionally, a tool is included in the package to assist with the proper removal of the accelerometer from its mounting surface.

The model number suffix identifies the range and sensitivity, where 27F11 indicates a 10 mV/g sensitivity, 500 g range unit, and 27F12 indicates a 100 mV/g sensitivity, 50 g range unit.

This product is fully compliant to the European Union's Low Voltage Directive, 2006/95/EC and EMC Directive 2004/108/EC and is eligible to bear the CE Mark.

Miniature TEDS accelerometer

Model 27F11 / F12

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	27F11	27F12
Range	g	±500	±50
Voltage sensitivity			
Typical	mV/g	10	100
Minimum	mV/g	9	90
Maximum	mV/g	11	110
Frequency response			
Resonance frequency			
Typical	kHz	50	
Minimum	kHz	45	
Amplitude response			
±10%	Hz	2 to 10000	3 to 10000
±3 dB	Hz	1.0 to 15000	1.5 to 15000
Phase response			
<5°	Hz	4 to 40000	10 to 2500
Sensitivity deviation over temperature			
At -67°F (-55°C), min/max	%		0 / -15
At +257°F (+125°C), min or max	%		+10 / -5
Transverse sensitivity	%		<5
Amplitude linearity	%		<2
Electrical characteristics			
Output polarity		Acceleration directed into the base produces positive output	
DC output bias voltage [1]			
Room temperature, +75°F (+24°C)	Vdc		+11.0 to +14.0
-67°F to +257°F (-55°C to +125°C)	Vdc		+7.5 to +16.0
Output impedance	Ω		<200
Noise floor			
Broadband			
1 Hz to 10000 Hz	equiv. µg rms	2000	400
Spectral			
1 Hz		1500	300
10 Hz		200	50
100 Hz		30	10
1000 Hz		10	4
Grounding		Signal ground is connected to the case	
Sensitivity deviation versus current, 2 to 10 mA	%		±1
Power requirements			
Supply voltage	Vdc		+20 to +30 [2]
Supply current	mA		+2 to +20 [3]
Warm-up time [4]	sec		<2
Digital communication (TEDS) device			DS2431X+u
Environmental characteristics			
Temperature range			
Operating	°F (°C)		-67 to +257 (-55 to +125)
TEDS communication	°F (°C)		+32 to +185 (0 to 85)
Humidity			Hermetically sealed
Sinusoidal vibration limit [5]	g pk		1000
Shock limit [6]	g pk		5000
Base strain sensitivity at 250µ strain	eq. g/µstrain	0.13	0.05
Thermal transient sensitivity	equiv. g pk/°F	0.16	0.07
Electromagnetic noise	equiv g/Gauss	0.0001	0.00006

Miniature TEDS accelerometer

Model 27F11 / F12

Physical characteristics

Dimensions			See outline drawing	
Weight	oz (gram)	0.028 (0.8)		0.035 (1.0)
Case material			Titanium alloy	
Connector [7]			M3 receptacle, side mount	
Mounting [8]			Adhesive	

Calibration data supplied, each axis

Sensitivity	mV/g		
Transverse sensitivity, maximum	%		
Frequency response		20 Hz to 10000 Hz	
		10 kHz to 30 kHz	
Bias	Vdc		

Accessories

Product	Description	27FXX	27FXX-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

Notes

- 23 Vdc minimum must be available to the accelerometer to ensure full scale operation at the temperature extremes.
- Supply voltage requirement of 20V - 30V at -55°C to +100°C, 23V - 30V at -55°C to +125°C.
- Supply current requirement of 2mA - 20mA at -55°C to +100°C, 2mA - 10mA at -55°C to +125°C.
- DC bias within 10% of final value.
- Destructive limit.
- Destructive limit. Shock is a one-time event. 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.
- Mates with Endevco model 3053VM1 cable.
- Be careful not to apply abusive forces when removing the accelerometer from a structure. Hammer taps and wrench "snaps" often impart permanent damage to the case and internal sensors.

Ordering information

- 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:

