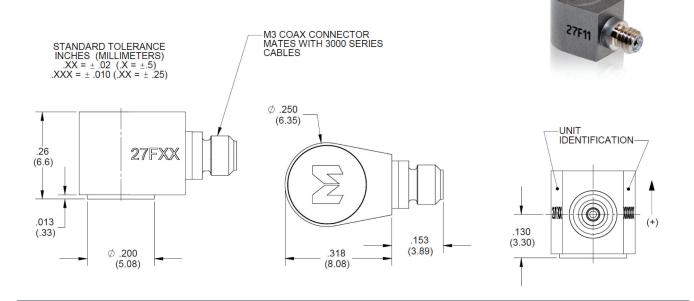


Miniature TEDS accelerometer

Model 27F11 / F12



Key features

- Miniature teardrop IEPE accelerometer
- IEEE P1451.4 TEDS v0.9
- Adhesive mounted
- Hermetically sealed
- Wide bandwidth

Description

Model 27FXX is a miniature IEPE 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.

The Model 27FXX features an annular shear design, 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.

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The following performance specifications conform to ISA-RP-37.2 (1964) and are typical values, referenced at $+75^{\circ}F$ ($+24^{\circ}C$) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Insitute of Standards and Technology (NIST) is supplied.

Dynamic characteristics	Units	27F11	27F12	
Dynamic Characteristics	Units			
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		
<u>'</u>				
Electrical characteristics				
Output polarity	A	cceleration directed into the b	ase 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	equiv. μg/√Hz			
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	%	Signal ground is connected to the case ±1		
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Power requirements				
Supply voltage	Vdc	+20 to +30 [2]		
Supply current	mV/pk	+2 to +20 [3]		
Warm-up time [4]	sec		< 2	
Digital communication (TEDS) device		DS24	131X+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	1 ()			
Sinusoidal vibration limit [5]	a nk	Hermetically sealed 1000		
	g pk		000	
Shock limit [6]	g pk			
Base strain sensitivity at 250μ strain	eq. g/µstrain	0.13	0.05	
Thermal transient sensitivity	eq. g pk/°F	0.16	0.07	
Electromagnetic noise	eq. g pk/°F	0.0001	0.00006	

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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		
•	dB	10 kHz	to 30 kHz	
Bias	Vdc			

Accessories					
Product	Description	27FXX	27FXX-R		
3053VM1-120	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		

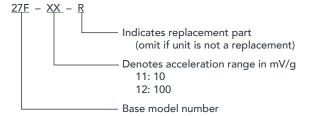
Notes

- 1. 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.
- 3. Supply current requirement of 2mA 20mA at -55°C to +100°C, 2mA
- 4. 10mA at -55°C to +125°C.
- 5. DC bias within 10% of final value.
- 6. 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.
- 8. 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:





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