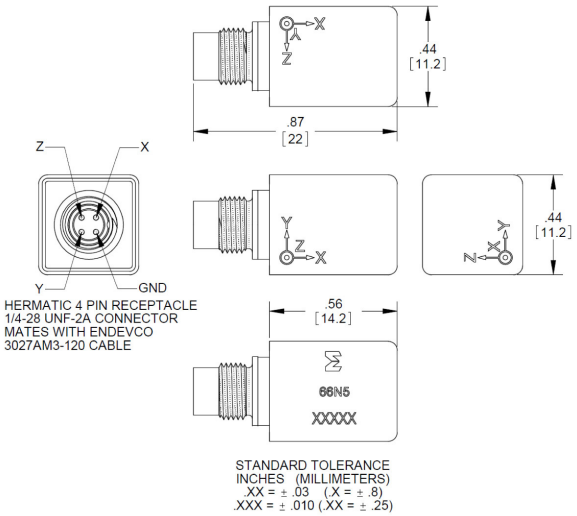
Aerospace
Energy
Measurement

Endevco®

TEDS accelerometer

Model 66N5 / N6



Endevco models 66N5 and 66N6 are miniature triaxial piezoelectric accelerometers with integral hybrid electronics with transducer electronic data sheet (TEDS) capabilities. The accelerometer is packaged in an inner case of welded titanium construction with an outer anodized aluminum case to provide electrical case isolation. One of the key design characteristics is the low unit-to-unit phase deviation at low frequency, ideal for modal analysis of large rigid bodies.

Models 66N5 and 66N6 feature Endevco's Piezite crystal elements which exhibit excellent output stability over time. These accelerometers incorporate three stand-alone, low noise internal hybrid charge converters, each operating in a two-wire system. Their low impedance voltage outputs are connected to the same cables that supply the required constant current power. TEDS contains sensor specific information which can dramatically reduce set-up time in multi-channel measurements. TEDS enables the signal conditioner to communicate digitally with the accelerometer's TEDS, compliant to IEEE P1451.4.

The model number suffix identifies the range and sensitivity, where 66N5 indicates a 10 mV/g sensitivity, 500 g range unit, and 66N6 indicates a 100 mV/g sensitivity, 50 g range unit.

Key features

- Triaxial IEPE accelerometer
- IEEE P1451.4 TEDS v0.9
- Small, lightweight
- Single connector, cable
- Hermetically sealed
- Anodized aluminum outer case for electrical isolation
- 10 and 100 mV/g sensitivity options available
- 66N5-R, 66N6-R available as replacement sensor

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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	66N5	66N6
Range	g	±500	±50
Voltage sensitivity			
Nominal	mV/g	10	100
Minimum	mV/g	8	80
Maximum	mV/g	12	120
Frequency response			
Resonance frequency			
Typical	Hz	50000	40000
Minimum	Hz	45000	35000
Amplitude response [1]			
±5%, z- and y-axis	Hz	1 to 10000	3 to 8000
±5%, x-axis	Hz	1 to 8000	3 to 6000
±1 dB, z- and y-axis	Hz	0.4 to 14000	1.5 to 10000
±1 dB, x-axis	Hz	0.4 to 11000	1.5 to 8000
±3 dB, z- and y-axis	Hz	0.2 to 24000	0.7 to 15000
±3 dB, x-axis	Hz	0.2 to 20000	0.7 to 14000
Phase response			
‹5°	Hz	3 to 1500	10 to 1500
Sensitivity deviation over temperature			
At -67°F (-55°C)	%	-4	-3.5
At +157°F (+125°C)	%	7	4.5
Transverse sensitivity	%	‹5	
Amplitude linearity	%	‹1	

Electrical characteristics			
Output polarity		Acceleration in the direction of the arrow produces positive output	
DC output bias voltage [2]			
Room temperature, +75°F (+24°C)	Vdc	+11.3 to 14.0	
-67°F to +257°F (-55°C to +125°C)	Vdc	+7.5 to +16	
Output impedance			
2 – 3 mA	Ω	‹300	
4 – 20 mA	Ω	‹100	
Noise floor			
Broadband			
0.5 Hz to 10000 Hz	mg rms	0.8	0.4
Spectral			
1 Hz	mg / √Hz	0.5	0.3
10 Hz	mg / √Hz	0.08	0.05
100 Hz	mg / √Hz	0.015	0.01
1000 Hz	mg / √Hz	0.006	0.004
Grounding		Signal ground is connected to the case and isolated from the mounting structure	
Power requirements			
Supply voltage	Vdc	+23 to +30	
Supply current	mA	+2 to +10	
Warm-up time [3]	sec	‹20	
Recovery time [4]	ms	1000	2000
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	10000	
Base strain sensitivity at 250µ strain	eq. g/µstrain	‹0.0003	
Thermal transient sensitivity	equiv. g pk/°F	0.005	0.002
Electromagnetic noise	equiv g/Gauss	0.0023	0.0014

Physical characteristics			
Dimensions		See outline drawing	
Weight	oz (gram)	0.20(5.7)	
Case material			
Inner case		Titanium	
Outer case		Anodized aluminum	
Connector [7]		4-pin Microtech-style, side mounted	
Mounting [8]		Adhesive	
Calibration data supplied, each axis			
Sensitivity	mV/g		
Transverse sensitivity, maximum	%		
Frequency response, y- and z-axis	%	20 Hz to 10000 Hz	20 Hz to 8000 Hz
Frequency response, x-axis	%	20 Hz to 8000 Hz	20 Hz to 6000 Hz
Bias	Vdc		

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Accessories

Product	Description	66NXX	66NXX-R
3027AM3-120	Triaxial cable +85°C, 3 BNCs at instrumentation end, 10 feet [9]	Included	Optional
32279	Mounting wax	Included	Optional
133	Signal conditioner	Optional	Optional
C-003-CA-005-0120	General purpose triaxial cable +200°C, 3 BNCs at instrumentation end, 10 feet	Optional	Optional

Notes

1. Due to mounting method, a reverse polarity will show on the x-axis calibration certificate. The x-axis 5% upper corner may be lower by no more than 20% from the z-axis.
2. 22 Vdc minimum must be available to the accelerometer to ensure full scale operation at the temperature extremes
3. DC bias within 10% of final value.
4. Time interval between the moment the sensor is saturated and the moment bias returns within 10% of final value.
5. Destructive limit.
6. 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.
7. Microtech DR-4S-4 receptacle mates with Endevco model 3027AM3-ZZZ and model C-003-XX-YYY-ZZZZ cables.
8. 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.
9. Supplied cable assembly, the 3027AM3-120, is only rated for use up to only +185°F (+85°C). Alternate cable should be used in applications where the accelerometer is used near its upper temperature extreme, +257°F (+125°C).
10. 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 turn-around time for these services as well as for quotations on our standard products.

Contact

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