

PERFORMANCE SPECIFICATION
 ACCELEROMETER
 (Model 7270AXXM6-ZZZ)

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
EDVPS7270AM6	K	4/12/23	NAD	Adding Performance Model Chart for Sensitivity, Range and Overrange Limit	JAS	53081

1.0 DESCRIPTION

The ENDEVCO® Model 7270AM6 series of piezoresistive accelerometer are rugged units with built-in mechanical filters designed for shock measurements. The mechanical filter assembly is designed to mitigate the high frequency content of a shock pulse in order to protect the accelerometer sensor from high frequency inputs that would otherwise exceed the over-range limits. The Model 7270A-XXXM6 is available in ranges of 2000 to 60000 g Full Scale.

Developed by Sandia National Laboratories, the mechanical isolator consists of an aluminum housing lined with two layers of elastomer filter that cushions the Model 7270A Piezoresistive Accelerometer. With the elastomer on both sides of the accelerometer, the response is the same to both positive and negative accelerations. The mechanical filter used in the Model 7270A-XXXM6 features a damped output with a linear phase shift. The unit is useable over the frequency range from DC to 10 kHz for the temperature range of -30 to +150°F (-34 to +66°C).

The ENDEVCO® Model 126, 136 or 436 are recommended as signal conditioner and power supply.

U.S. Patents 4,498,229, 4,605,919 and 4,689,600.

2.0 PERFORMANCE

MODEL	Sensitivity (microvolts/g)			Range [1]	Overrange Limit [3]
	Min.	Typ.	Max.	(g)	(g)
-60K	1.5	3	5	60 000	100 000
-20K	5	10	15	20 000	60 000
-6K	15	30	50	6 000	18 000
-2K	50	100	150	2 000	10 000

- 2.1 AMPLITUDE LINEARITY [1] ±2% of reading up to acceleration corresponding to the recommended range. Measurement uncertainties prevent stating this as a specification limit at accelerations above 10 000 g.
- 2.2 ZERO SHIFT DUE TO HALF SINE ACCELERATION CAUSING 200 mV AT FULL SCALE RANGE 0.5 mV maximum
- 2.3 MOUNTED FREQUENCY RESPONSE [2] ±10% typical to 10 000 Hz
- 2.4 TRANSVERSE SENSITIVITY < 5% typical
- 2.5 SENSITIVITY DEVIATION DUE ±10% maximum, 0°F to +150°F (-18°C to

	TEMPERATURE		+66°C) relative to sensitivity at +75° (24°C)
			Typical deviation is -1.2% change in sensitivity per +18°F (+10°C) change in case temperature.
2.6	ZERO MEASURAND OUTPUT		±100 mV maximum at +75°F (+24°C)
2.7	THERMAL ZERO SHIFT		±50 mV maximum, -30°F to +150°F (-34°C to +66°C) relative to +75°F (+24°C)
2.8	ZERO SHIFT DUE TO MOUNTING TORQUE		±2 mV maximum, 75 lbf-in
3.0	<u>ELECTRICAL</u>		
3.1	EXCITATION		10.00 Vdc, 12 Vdc maximum
3.2	RESISTANCE INPUT/OUTPUT		550 ±200 ohms 550 ±200 ohms
3.3	INSULATION RESISTANCE		100 MΩ minimum at 100 Vdc between the sensor (all leads tied together) and cable shield or case.
3.4	WARM-UP TIME REQUIRED TO MEET THE ABOVE SPECIFICATIONS		2 minutes maximum, 15 seconds typical
4.0	<u>PHYSICAL</u>		
4.1	CASE MATERIAL		7270A Housing, 17-4 PH CRES
4.2	HOUSING, TOP & BOTTOM		Type 7075-T6 Aluminum
4.3	WEIGHT EXCLUDING CABLE		8.4 grams
4.4	IDENTIFICATION		Model number and serial number on label at end of cable.
4.5	MOUNTING [3]		Integral 1/4 - 28 mounting stud Recommended mounting torque, 75 lbf-in applied to bottom part of housing.
5.0	<u>ENVIRONMENTAL</u>		
5.1	TEMPERATURE	Operating: Non-Operating:	-30°F to +150°F (-34°C to +66°C) -65°F to +250°F (-54°C to +121°C)
5.2	SHOCK LIMITS (In any direction) [3]		Half-sine pulse at full scale range.
5.3	HUMIDITY		Epoxy sealed
5.4	BASE STRAIN SENSITIVITY		Typically less than 0.5 mV for 250 microstrain when tested per ISA 37.2, para 6.5.
6.0	<u>CALIBRATION DATA SUPPLIED</u>		(Taken at room temperature and 10.00 Vdc)
6.1	SENSITIVITY [4]		Shock Sensitivity at 5000 g, half-sine pulse for 6K, 20K & 60K

Shock Sensitivity at 2000 g, half-sine pulse for 2K

6.2 ZERO MEASURAND OUTPUT

Measured at 10.00 Vdc

6.3 INPUT OUTPUT RESISTANCE

7.0 **ACCESSORIES**

7.1 SUPPLIED

7.1.1 Application Notes P/N 31279

7.1.2 Wrench, Assembly P/N 31290

7.2 OPTIONAL

7.2.1 Triax Mounting Block P/N 32103

8.0 **NOTES:**

[1] The overrange limit is a design safety margin. Operating the unit above its rated range is not recommended.

[2] The sensor chip includes two masses, each with a separate resonant frequency. If these resonances are excited, the transducer output will exhibit a "beat" frequency.

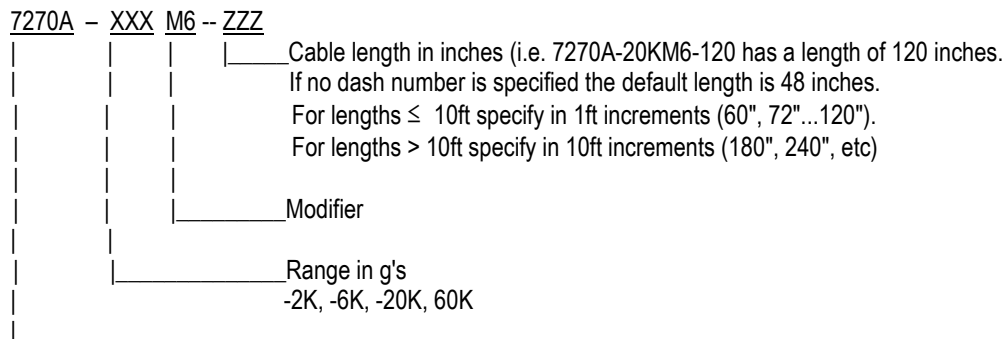
[3] Use 75 lbf-in mounting torque, to insure intimate contact between accelerometer and mounting surface. loss of meaningful data and possible damage to the accelerometer due to rattling on its mounting surface can result from using either too high or too low a value of mounting torque.

If large transverse shocks are anticipated, the use of liquid thread locking compounds is recommended to reduce loss of screw preload.

[4] Prior to final calibration, each accelerometer is given a shock in its sensitive axis approximately equal to its rated range.

[5] Deleted.

[6] Model Number Definition:



|_____ Basic Model Number