ENDEVCO
AN AMPHENOL COMPANY

PERFORMANCE SPECIFICATION
TRIAXIAL ACCELEROMETER
65-XXX

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
76601	NR	6/30/22	NAD	Initial Release of Performance Specification of 65-XXX	DAM	52944

1.0 DESCRIPTION

The ENDEVCO Model 65 is a miniature triaxial accelerometer designed for laboratory testing and modal analysis data acquisition. The ENDEVCO Model 65 is packaged in a 10 mm cube of welded titanium construction. The ENDEVCO Model 65 uses ruggedized sensors which withstand shock levels greater than comparable cantilever beam accelerometers.

Interface to the ENDEVCO Model 65 triaxial accelerometer is made via side connector Microtech style 4-pin receptacle. Power to the ENDEVCO Model 65, in the form of a constant current, travels through the same pins as the low impedance output signals. The ENDEVCO Model 65 is designed for adhesive mounting or a M2.5 screw mount.

The first two characters (65) identify the base number for this model, with the remaining digits distinguishing the range and sensitivity. The ENDEVCO Model 65 is available in two sensitivity values, 10 mV/g and 100 mV/g. See Section 9.0 for additional model definition detail.

The following performance specifications conform to ISA-RP-37.2 (1964) and are typical values, referenced at +75°F (+24°C), 4 mA, and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), are supplied.

		Units	65-10	65-100
2.0	**DYNAMIC CHARACTERISTICS**			
2.1	RANGE [1]	g	±500	±50
2.2	VOLTAGE SENSITIVITY			
	Typical	mV/g	10	100
	Minimum / Maximum (± 20%)		8 / 12	80 / 120
2.3	FREQUENCY RESPONSE		See Typical Curve, Figure 1	
2.3.1	Amplitude vs. Frequency [2]			
	± 5 %		.8 Hz to 10000	3 Hz to 6000
	± 1 dB		.4 to 10000	1.5 to 6000
	± 3 dB		.2 to 10000	0.7 to 10000
2.3.2	Resonance Frequency			
	Typical	kHz	60	45
	Minimum		55	40
2.3.4	Phase vs. Frequency			
	< 5°	Hz	3 to 1500	10 to 1500

		Units	65-10	65-100
2.4	SENSITIVITY DEVIATION VS. TEMPERATURE		See Typical Curves, Figures 2 and 3	
	At -67°F (-55°C)	%	-4	-4
	At +257°F (+125°C)		7	5
2.5	TRANSVERSE SENSITIVITY [3]			
	Maximum	%	< 5	
2.6	AMPLITUDE LINEARITY	%	< 1	
3.0	**OUTPUT CHARACTERISTICS**			
3.1	OUTPUT POLIARITY		See arrows on Outline Drawing, Figure 5	
3.2	DC OUTPUT BIAS VOLTAGE [4]			
	Room Temperature, 75°F (23°C)	Vdc	+11.5 to +13.5	
	-65°F to +257°F (-55°C to +125°C)		+7.5 to +16.0	
3.3	OUTPUT CONNECTION		See Connection Diagram, Figure 4	
3.4	OUTPUT IMPEDANCE			
	2 mA to 3 mA	Ω	<300	
	3 mA to 20 mA	Ω	<100	
3.5	MAXIMUM FULL SCALE OUTPUT	V pk	± 5	
3.6	NOISE (Floor)			
	Broadband (2 Hz to 10 kHz)	µG rms	800	400
	Spectral:	µG/√Hz		
	1 Hz		500	300
	10 Hz		80	50
	100 Hz		15	10
	1 kHz		6	4
3.7	GROUNDING		Signal ground is connected to the case	
4.0	**POWER REQUIREMENT**			
4.1	VOLTAGE SUPPLY	Vdc	+23 to +30	
4.2	CURRENT REQUIREMENT	mA	+2 to +20	
4.3	WARM-UP TIME [5]	sec	<20	

		Units	65-10	65-100
5.0	**ENVIRONMENTAL CHARACTERISTICS**			
5.1	TEMPERATURE RANGE Operating		-65°F to +257°F (-55°C to +125°C)	
	Storage		-65°F to +257°F (-55°C to +125°C)	
5.2	HUMIDITY		Hermetically Sealed	
5.3	SINUSOIDAL VIBRATION LIMIT	g pk	500	200
5.4	SHOCK LIMIT [6]	g pk	10000	10000
5.5	BASE STRAIN SENSITIVITY At 250µ strain	eq. g/µstrain	<0.001	<0.001
5.6	THERMAL TRANSIENT SENSITIVITY	eq. g/°F	0.02	0.02
6.0	**PHYSICAL CHARACTERISTICS**			
6.1	DIMENSIONS		See Outline Drawing, Figure 5	
6.2	WEIGHT	oz (gram)	0.17 (5)	
6.3	CASE MATERIAL		Titanium, commercially pure	
6.4	CONNECTOR [7]		4-pin Microtech-style side mounted	
6.5	MOUNTING [8] Mounting Torque	 lbf-in (N-m)	Adhesive or M2.5 thread 8 (0.90)	
7.0	**ACCESSORIES**			
7.1	SUPPLIED 3027AM3-120 [9] [10] [11] EH755 EH761 32279 [9]		 Cable Assembly Screw, Cap, Hex Socket, M2.5 - .45 x 6 mm Screw, Set, Hex Socket, M2.5 - .45 x 6 mm Mounting Wax	
7.2	OPTIONAL 3027A-120 [6] 3027AVM13-XXX [10] 40965 EH769 41013		 Cable Assembly Cable Assembly Mounting Block Screw, Set, Hex Socket, M2.5 X 4mm [13] Mounting Clip	

8.0 **CALIBRATION**

8.1 SUPPLIED, each axis [12]

Sensitivity	mV/g	
Bias	Vdc	
Transverse Sensitivity	%	
Frequency Response	%	
X and Y axis [Limits: ±5]		20 to 6000 HZ
Z and axis [Limits: ±5]		20 to 10000 HZ

9.0 **NOTES:**

[1] Specified linear measurement limit of sensor.

[2] Relative to 100 Hz reading

[3] 3% maximum transverse sensitivity is available on request

[4] 22 Vdc minimum must be available to the accelerometer to ensure full scale operation at the temperature extremes.

[5] Operable is defined as 90% of the final bias value.

[6] Shock pulses of short duration may excite transducer resonance. Shock level above the sinusoidal vibration limit may produce temporary zero shift which will result in erroneous velocity or displacement data after integration.

[7] Microtech DR-4S-4 receptacle mates with Endevco Model 3027AM3.

[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] The 3027A cable assembly should be used in applications where the accelerometer is used near its upper temperature extreme, 257°F (125°C). The supplied cable assembly, [9] the 3027AM3-120, is rated for use up to only 185°F (85°C).

[10] The 3027AVM13-XXX cable assembly should be used as a 257°F (125°C) extension cable for model 3027AM3-120. Cable length, in inches, is specified by a model number suffix. A 120-inch cable, model 3027AVM13-120, is standard. Varied lengths are also available on special order.

[11] For "-R" assemblies the noted accessories are optional.

[12] Due to mounting method, a reverse polarity will be printed on the X-Axis Calibration.

[13] Applicable only if P/N 40965 (Mounting Block) is ordered.

14 Model Number Definition:

65 – XXX – R

- R — Indicates replacement unit (omit if units are not replacements).
- XXX — Denotes typical sensitivity in mV/g.
  - -10
  - -100
- 65 — Basic Model Number

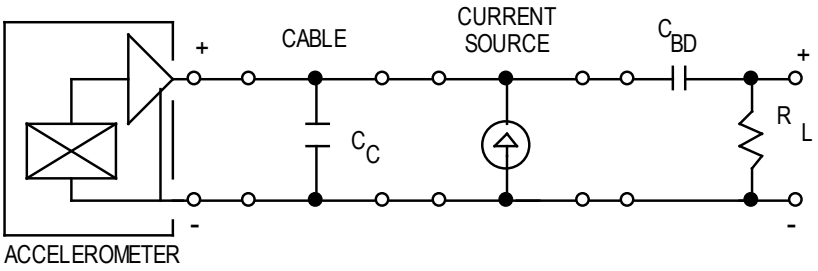

FIGURE 1
Connection Diagram
Each Axis

Range is dependent on the sensitivity of the unit and bias, and the compliance voltage of the constant current power source. The positive range is limited to the difference between the compliance voltage and the unit's bias, divided by the unit's sensitivity. The negative range is limited to approximately 2 volts less than the bias voltage divided by the unit's sensitivity. Cable capacitance C_C will load the accelerometer output, affecting frequency response, and is dependent on the magnitude of constant current. R_L should not be less than 100 kΩ.

Bias decoupling capacitor (C_{BD}) and load resistor (R_L) can be determined from:

$$f_{-3dB} = \frac{1}{2 \pi R_L C_{BD}}$$ where f_{-3dB} is the lowest frequency of interest.

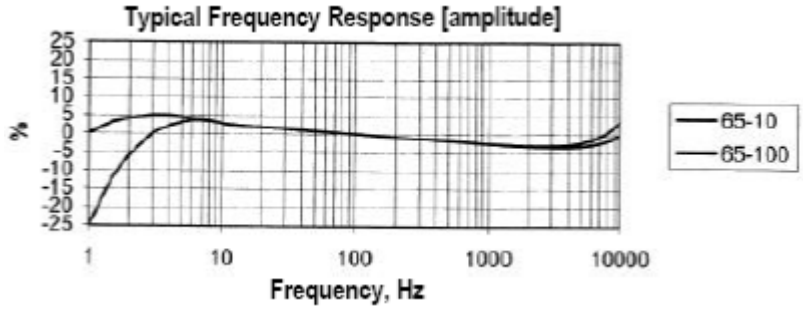

FIGURE 2
TYPICAL FREQUENCY RESPONSE [AMPLITUDE]
MODEL 65-10, 65-100

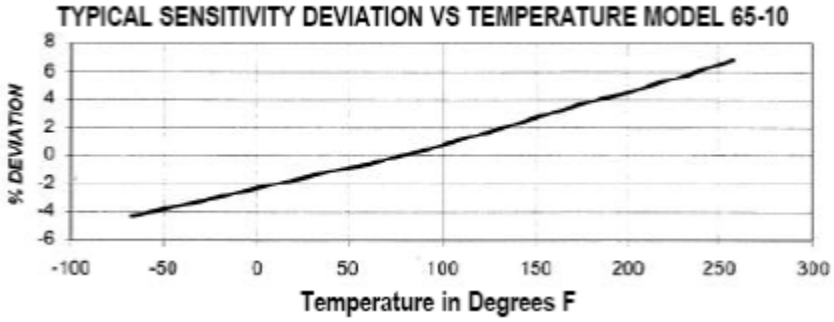

FIGURE 3
TYPICAL SENSITIVITY DEVIATION VS TEMPERATURE
MODEL 65-10

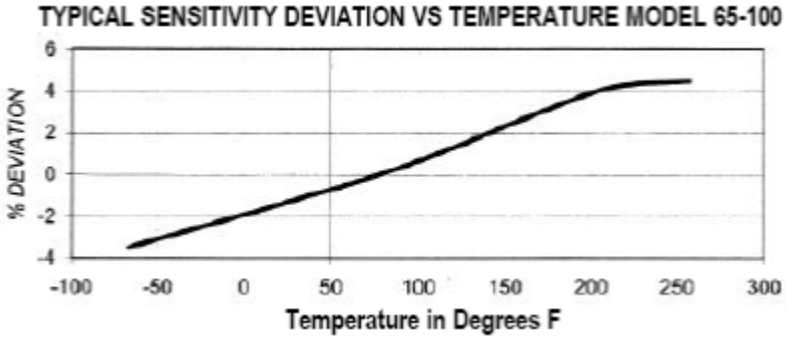

FIGURE 4
TYPICAL SENSITIVITY DEVIATION VS TEMPERATURE
MODEL 65-100