ENDEVCO
AN AMPHENOL COMPANY

PERFORMANCE SPECIFICATION
ACCELEROMETER
(Model 770F-XXX-Y-ZZZ)

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
78577	NR	11/27/23	NAD	Initial Release of Performance Specification Accelerometer Model 770F-XXX-Y-ZZZ	HX	54378

1.0 DESCRIPTION

The ENDEVCO® Model 770F is a low g DC accelerometer that utilizes unique variable capacitance microsensors. This accelerometer is designed for measurement of relatively low level accelerations in automotive ride quality, motorsports and high speed rail applications where measurement of whole body motion immediately after the accelerometer is subjected to a shock motion and in the presence of severe vibrational inputs is required. 770F was tested to and passed the requirements for IP67.

The 770F accelerometer is available with a choice of two power options. One option (U) allows for operation from 7V to 36V. The second option (R) allows for operation at a regulated excitation voltage of 5V. The accelerometer features various full scale g ranges including ±2g, ±10g, ±30g, ±50g, ±100g, ±200g, and provides single-ended output with a 2.5V output bias voltage.

2.0 ELECTRICAL CHARACTERISTICS

All specifications assume +75°F (+24°C) and +5 Vdc excitation (for 770F-XXX-R-ZZZ) or +15 Vdc excitation (for 770F-XXX-U-ZZZ) unless otherwise stated. The following parameters are 100% tested.

		Units	Range Dash Number					
	RANGE	g	-2	-10	-30	-50	-100	-200
2.1	SENSITIVITY	mV/g	1000	200	66	40	20	10
2.2	FREQUENCY RESPONSE	Hz						
	(±5% max, ref 100 Hz)		0-200	0-900	0-900	0-900	0-1500	0-1500
	(±10% typical, ref 100 Hz)		0-350	0-1800	0-2400	0-2400	0-4000	0-4000
	(±3dB typical, ref 100 Hz)		0-600	0-2600	0-3000	0-3000	0-5000	0-5000
2.3	ZERO MEASURAND OUTPUT	mV	2500 ±75	2500 ±60	2500 ±60	2500 ±60	2500 ±60	2500 ±60

3.0 TYPICAL PERFORMANCE

The following parameters are established from testing of sample units

3.1	TRANSVERSE SENSITIVITY (Typical)	%	3.0	3.0	3.0	3.0	3.0	3.0
3.2	THERMAL ZERO SHIFT (MAX) -40°C to +100°C, ref. 24°C (-40°F to +212°F, ref. 75°F)	%FSO [1]	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0
3.3	THERMAL SENS SHIFT (MAX) -40°C to +100°C, ref. 24°C (-40°F to +212°F, ref. 75°F)	%	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0

		Units	Range Dash Number					
			-2	-10	-30	-50	-100	-200
3.4	COMBINED NON-LINEARITY (BFSL) AND HYSTERESIS (Maximum)	%FSO	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5
3.5	NATURAL FREQUENCY, TYP	HZ	1300	2700	5500	5500	9800	9800
3.6	THRESHOLD (RESOLUTION) [2]	equiv. g's.	.0002	.001	.003	.005	.01	.02
3.7	WARM-UP TIME (to within 1% of final output value)		30 ms					

4.0 ELECTRIAL

4.1	EXCITATION VOLTAGE For option "R" supply voltage For option "U" supply voltage	 5 Vdc 7 to 36 Vdc
4.2	CURRENT DRAIN	8 mA max
4.3	OUTPUT IMPEDANCE	100 ohms max
4.4	LOAD	10K ohms resistance minimum 50 pF capacitance maximum
4.5	RESIDUAL NOISE	100 µVrms typ, 500 µVrms max; 0.5 to 100 Hz 500 µVrms typ, 1.0 mVrms max; 0.5Hz to 10 kHz
4.6	MAXIMUM EXCITATION VOLTAGE WITHOUT DAMAGE For option "R" supply voltage For option "U" supply voltage	 7 Vdc 45 Vdc
4.7	INPUT VOLTAGE PROTECTION	REVERSE POLARITY PROTECTED (For "U" option only)
4.8	INSULATION RESISTANCE Case to leads shorted together Shield to leads shorted together	100 Meg Ohms minimum at 50 Vdc

5.0 PHYSICAL

5.1	WEIGHT (typical)	6 grams (without cable) plus cable at 19 grams/meter
5.2	CASE MATERIAL	Anodized aluminum alloy.
5.2.1	CABLE TYPE	Integral 4 conductor, # 28 AWG Teflon insulated leads, Shielded with white polyurethane jacket.
5. 3	MOUNTING/TORQUE	Screw Mount, 2-56 screws/4.0 in-lbf (0.45 N-m)

6.0 ENVIRONMENTAL

6.1	ACCELERATION LIMITS (in any direction)	
6.1.1	Vibration	20 g rms random 20-2000 Hz

6.1.2	Shock 10000g	(0.15 mS haversine pulse)
6.2	TEMPERATURE	
6.2.1	Operating Range	-40°F to +212°F (-40°C to +100°C)
6.2.2	Storage Range	-40°F to +212°F (-40°C to +100°C)
6.3	HUMIDITY	IP67

7.0 CALIBRATION DATA

7.1	SENSITIVITY	Measured at 1g and 100 Hz for the -2 Measured at 10 g and 100Hz for the -10, -30, -50, -100 and 200
7.2	FREQUENCY RESPONSE	Measured at 1g, 20 to 1000 Hz for the -2 Measured at 10 g, 20 to 10000 Hz for the -10, 30, -50, -100 and -200
7.3	ZERO MEASURAND OUTPUT	Measured at room temperature

8.0 ACCESSORIES

N/A

9.0 NOTES

[1] Full scale output (FSO) is nominally 4 volts

[2] THRESHOLD = 2X RESIDUAL NOISE; .5 TO 100HZ/SENSITIVITY

[3] Model Number Definition:

770F - XXX - Y - ZZZ

- ZZZ: Cable length in inches (-30 is 30 inches)
- Y: Supply voltage options
  - "U" = 7 V to 36 V
  - "R" = 5V
- XXX: Indicates full-scale g range
  - 2, 10, 30, 50, 100, 200 (e.g. -2 = 2g full scale range)
- 770F: Basic Model Number