

**PERFORMANCE SPECIFICATION
PRESSURE TRANSDUCER
(8530C M37-XXXX-X-X)**

Document Number	Rev	Date	Entered by	Description of Change	Change Accountable Engineer	ECO
79532	NR	8/23/24	NAD	Initial Release of Performance Specification, Pressure Transducer (8530C M37-XXXX-X-X)	EDB	55004

1.0 DESCRIPTION

The ENDEVCO® Model 8530CM37 is a miniature, high sensitivity piezoresistive pressure transducer with an intergral electrical receptacle for measuring absolute pressure. The volume behind the diaphragm is evacuated and glass sealed to provide an absolute pressure reference. Full scale output is nominally 225 mV with high overload capability and high frequency response. It is available in ranges from 15 psia to 100 psia. The Model 8530BM37 is available for higher pressure ranges.

ENDEVCO® pressure transducers feature a four-arm strain gage bridge ion implanted into a unique sculptured silicon diaphragm for maximum sensitivity and wideband frequency response. Self-contained hybrid temperature compensation provides stable performance over the temperature range of 0°F to 200°F (-18°C to +93°C). ENDEVCO® transducers also feature excellent linearity (even to 3X range), high shock resistance, and high stability during temperature transients.

The Model 8530CM37 has been used successfully in many blast test situations. For this application, a protective coating is recommended to eliminate photoflash sensitivity and provide particle impingement protection. This coating does not degrade the superior dynamic response characteristics of the sensor.

2.0 CERTIFIED PERFORMANCE

All specifications assume +75°F (+24°C) and 10 Vdc excitation unless otherwise stated. The following parameters are 100% tested. Calibration data, traceable to the National Institute of Standards and Technology (NIST), is supplied.

		Units	Range Dash Number		
			<u>-15</u>	<u>-50</u>	<u>-100</u>
2.1	RANGE	psia	0 - 15	0 - 50	0 - 100
2.2	SENSITIVITY	mV/psi Typ (Min)	15.0 (9.3)	4.5 (2.8)	2.25 (1.4)
2.3	COMBINED: NON-LINEARITY, NON-REPEATABILITY, PRESSURE HYSTERESIS [1]	% FSO RSS Max	0.50	0.40	0.40
2.3.1	Non-Linearity, Independent	% FSO Typ	0.15	0.1	0.1
2.3.2	Non-Repeatability	% FSO Typ	0.1	0.1	0.1
2.3.3	Pressure Hysteresis	% FSO Typ	0.1	0.1	0.1
2.4	ZERO MEASURAND OUTPUT	mV Max	± 20	± 20	± 20
2.5	ZERO SHIFT AFTER 3X RANGE	± % 3X FSO Max	0.2	0.2	0.2

		Units	Range Dash Number		
			<u>-15</u>	<u>-50</u>	<u>-100</u>
2.6	THERMAL ZERO SHIFT From 0°F to 200°F (-18°C to +93°C)	± % FSO Max	3	3	3
2.7	THERMAL SENSITIVITY SHIFT From 0°F to 200°F (-18°C to +93°C)	± % Max	3	3	3
3.0	<u>TYPICAL PERFORMANCE CHARACTERISTICS</u> The following parameters are established from testing of sample units.				
3.1	RESONANT FREQUENCY	Hz	180 000	320 000	500 000
3.2	NON-LINEARITY AT 3X RANGE	% 3X FSO	1.0	1.0	1.0
3.3	ZERO SHIFT WITH MOUNTING TORQUE 15 lbf-in. (1.7 Nm)	% FSO	0.2	0.5	0.5
3.4	THERMAL TRANSIENT RESPONSE PER ISA-S37.10, PARA. 6.7, PROCEDURE I [2]	psi/°F psi/°C	0.003 0.005	0.003 0.005	0.010 0.018
3.5	PHOTOFLASH RESPONSE [3]	Equiv. psi	0.1	0.3	0.6
3.6	WARM-UP TIME [4]	ms	1	1	1
3.7	ACCELERATION SENSITIVITY	Equiv. psi/g	0.00015	0.00015	0.00015
3.8	BURST PRESSURE (Diaphragm)	psia Min	75	250	400
3.9	CASE PRESSURE [5]	psia Min	1000	1000	1000
4.0	<u>ELECTRICAL</u>				
4.1	FULL SCALE OUTPUT	225 mV typical (140 mV minimum) at 10.0 Vdc			
4.2	SUPPLY VOLTAGE [6]	10.0 Vdc recommended, 15 Vdc maximum			
4.3	ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge			
4.4	POLARITY	Positive output for increasing pressure			
4.5	RESISTANCE				
4.5.1	Input	2600 ohms typical, 1700 ohms minimum			
4.5.2	Output	1500 ohms typical, 2200 ohms maximum			
4.5.3	Isolation	100 megohms minimum at 50 Volts; leads to case			
4.6	NOISE	5 microvolts rms typical, dc to 50 000 Hz; 50 microvolts rms maximum, dc to 50 000 Hz			

10.0 **NOTES**

- [1] FSO (Full Scale Output) is defined as transducer output change from 0 psia to + full scale pressure.
- [2] Significantly higher thermal transient errors occur if the excitation voltage exceeds 10 Vdc. For sensitive phase change studies, many users reduce the excitation to 5 Vdc or even 1Vdc.
- [3] Per ISA-S37.10, Para. 6.7, Proc. II. The metal screen partially shields the silicon diaphragm from incident radiation. Accordingly, light incident at acute angles to the screen generally increases the error by a factor of 2 or 3.
- [4] Warm-up time is defined as elapsed time from excitation voltage “turn on” until the transducer output is within $\pm 1\%$ of reading accuracy.
- [5] Case pressure is the media containment pressure in the event of diaphragm rupture.
- [6] For best results when using excitation voltages other than 10.0 Vdc, it is recommended that the transducer be calibrated at the desired excitation during manufacture. Otherwise larger thermal errors may occur, especially at voltages above 10 Vdc.
- [7] O-Ring, ENDEVCO® part number EHR93 PARKER 5-125, compound V747-75 (VITON®) is supplied unless otherwise specified on purchase order. Fluorosilicone O-ring, ENDEVCO® part number EHR96 Parker material L677-70, for leak tight operation below 0°F is available on special order.
- [8] Units can be compensated over any 200°F (93°C) span.
- [9] The front of the unit is sealed with epoxy and is compatible with clean dry gas media. Media in measurand port is exposed to Cres, Parylene C, Epoxy and the Viton O-ring. The unit is not suitable for use with high pH or low pH liquids, long term exposure to water or exposure to solvents which may attack epoxies.
- [10] Model Number Definition:

