

# Piezoresistive Pressure Transducer

## Model 8530B-200, -500 and -1000

- 200 to 1000 psia
- Absolute Reference

**ENDEVCO  
MODEL  
8530B**

### DESCRIPTION

The ENDEVCO® Model 8530B is a miniature, high sensitivity piezoresistive pressure transducer for measuring absolute pressure. The volume behind the diaphragm is evacuated and glass sealed to provide an absolute pressure reference. Full scale output is 300 mV with high overload capability and high frequency response. It is available in ranges from 200 psia to 1000 psia. The Model 8530C is available for lower pressure ranges.

ENDEVCO pressure transducers feature an active four-arm strain gage bridge diffused into a 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 8530B 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.

The Model 8530B is available with Metric M5X0.8 mounting threads as 8530B-XXM5 on special order. Also available with integral four-pin connector as Model 8530B-XXM37.

ENDEVCO Model 136 Three-Channel System, Model 4428A or 4430A Signal Conditioner, or OASIS 2000 Computer-Controlled System are recommended as signal conditioner and power supply.

\*Option X: 40°F to 140°F (5°C to 60°C)

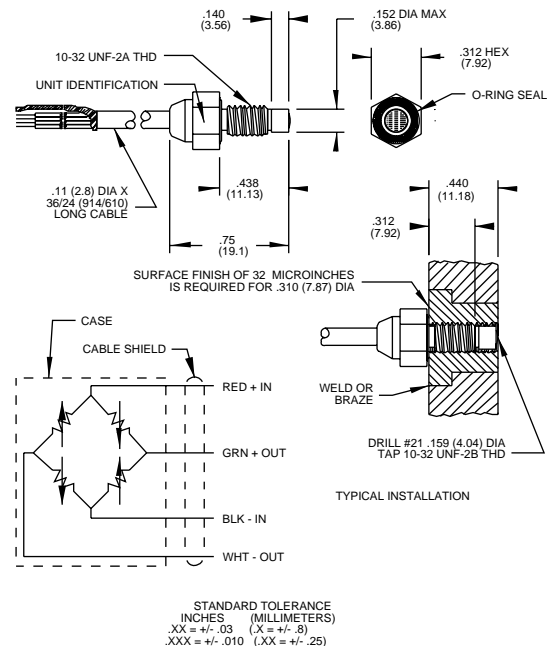
### SPECIFICATIONS

**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	8530B-200	-500	-1000
RANGE	psia	0 - 200	0 - 500	0 - 1000
SENSITIVITY [1]	mV/psi	1.5 ±0.5	0.6 ±0.2	0.3 ±0.1
COMBINED: NON-LINEARITY, NON-REPEATABILITY, PRESSURE HYSTERESIS [2]				
	% FSO RSS Max	0.50	0.50	0.50
Non-Linearity, Independent	% FSO Typ	0.2	0.2	0.2
Non-Repeatability	% FSO Typ	0.1	0.1	0.1
Pressure Hysteresis	% FSO Typ	0.1	0.1	0.1
ZERO MEASURAND OUTPUT [3]	mV Max	±10	±10	±10
ZERO SHIFT AFTER 3X RANGE	±% 3X FSO Max	0.2	0.2	0.2
	(Typ)	(0.05)	(0.05)	(0.1)
THERMAL ZERO SHIFT				
From 0°F to 200°F (-18°C to +93°C)	±% FSO Max	3	3	3
From 40°F to 140°F (5°C to 60°C)	±% FSO Max	3	3	3 X-Option
THERMAL SENSITIVITY SHIFT				
From 0°F to 200°F (-18°C to +93°C)	±% Max	4	4	4
From 40°F to 140°F (5°C to 60°C)	±% Max	4	4	4 X-Option



Actual size



# Piezoresistive Pressure Transducer

## SPECIFICATIONS—continued

**TYPICAL PERFORMANCE CHARACTERISTICS:** The following parameters are established from testing of sample units.

	Units	8530B-200	-500	-1000
RESONANCE FREQUENCY	Hz	750 000	1 000 000	>1 000 000
NON-LINEARITY AT 3X RANGE	% 3X FSO	1.5	2.0	2.0
THERMAL TRANSIENT RESPONSE PER ISA-S37.10, PARA. 6.7, PROCEDURE I	psi/°F	0.02	0.02	0.04
	psi/°C	0.04	0.04	0.07
PHOTOFLASH RESPONSE [4]	Equiv. psi	5	10	20
WARM-UP TIME [5]	ms	1	1	1
ACCELERATION SENSITIVITY	Equiv. psi/g	0.0003	0.0002	0.0002
BURST PRESSURE (Diaphragm)	psia Min	800	2000	4000
CASE PRESSURE [6]	psia Min	1000	5000	5000

### ELECTRICAL

FULL SCALE OUTPUT	300 ±100 mV at 10.0 Vdc
SUPPLY VOLTAGE [7]	10.0 Vdc recommended, 18 Vdc maximum
ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge
POLARITY	Positive output for increasing pressure
RESISTANCE	
Input	2000 ±800 ohms
Output	1600 ±500 ohms
Isolation	100 megohms minimum at 50 Volts; leads to case, leads to shield, shield to case
NOISE	5 microvolts rms typical, dc to 50 000 Hz; 50 microvolts rms maximum, dc to 50 000 Hz

### MECHANICAL

CASE, MATERIAL	Stainless Steel (17-4 PH CRES)
CABLE, INTEGRAL	Four conductor No. 32 AWG Teflon® insulated leads, braided shield, silicone jacket, 30 ±6 in (760 ±150mm)
DEAD VOLUME (+) PORT	0.0003 cubic inches (0.005 cc)
MOUNTING/TORQUE	10-32 UNF-2A threaded case 0.438 inch (11.12 mm) long/15 ±5 lbf-in (1.7 ±0.6 Nm)
WEIGHT	2.3 grams (cable weighs 9 grams/meter)

### ENVIRONMENTAL

MEDIA [8] [9]	Clean dry gas, Contact factory for protective modifications for other media
TEMPERATURE [10]	-65°F to +250°F (-54°C to +121°C)
VIBRATION	1000 g pk
ACCELERATION	1000 g
SHOCK	20 000 g, 100 microsecond haversine pulse
HUMIDITY	Isolation resistance greater than 100 megohms at 50 volts when tested per MIL-STD-202E, Method 103B, Test Condition B.

### CALIBRATION DATA

Data supplied for all parameters in Certified Performance section. Optional calibrations available for all parameters in Typical Performance section.

### ACCESSORY

EHR93 O-RING, VITON

### OPTIONAL ACCESSORIES

EHR96 O-RING, FLUOROSILICONE  
24328 4 CONDUCTOR SHIELDED CABLE

### NOTES

- 1 psi = 6.895 kPa = 0.069 bar.
- FSO (Full Scale Output) is defined as transducer output from 0 to + full scale pressure which is typically 300 mV.
- Zero Measurand Output (ZMO) is the transducer output with 0 psia applied.
- Per ISA-S37.10, Para. 6.7, Proc. II
- Warm-up time is defined as elapsed time from excitation voltage "turn on" until the transducer output is within ±1% of reading accuracy.
- Case pressure identifies media containment pressure in the event of diaphragm rupture.
- Use of excitation voltages other than 10.0 Vdc requires manufacture and calibration at that voltage since thermal errors increase with high excitation voltages.

8. Internal seals are epoxy and are compatible with clean dry gas media. Media in measurand port is exposed to CRES, Parylene C, epoxy and the VITON O-Ring. Not suitable for use with high pH or low pH liquids, long term exposure to water, or exposure to solvents which may attack epoxies.
9. O-Ring, PARKER No. 5-125, compound V747-75 (VITON®) is supplied unless otherwise specified on purchase order. Fluorosilicone O-ring, for leak-tight operation below 0°F is available on special order.
10. Units can be compensated over any 200°F (93°C) span from -65°F to +250°F (-54°C to +121°C) on special order.
11. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco'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.

NOTE: Tighter specifications and barometric specifications are available on special order.

Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability.