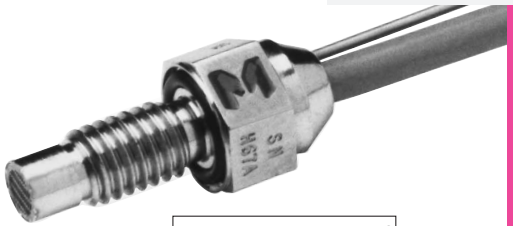
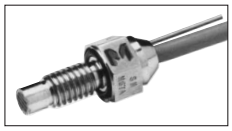
Piezoresistive Pressure Transducer

ENDEVCO MODEL 8510C

Model 8510C-15, -50 and -100

- **15 to 100 psi, 225 mV Full Scale**
- **Rugged, Miniature**





Actual size

DESCRIPTION

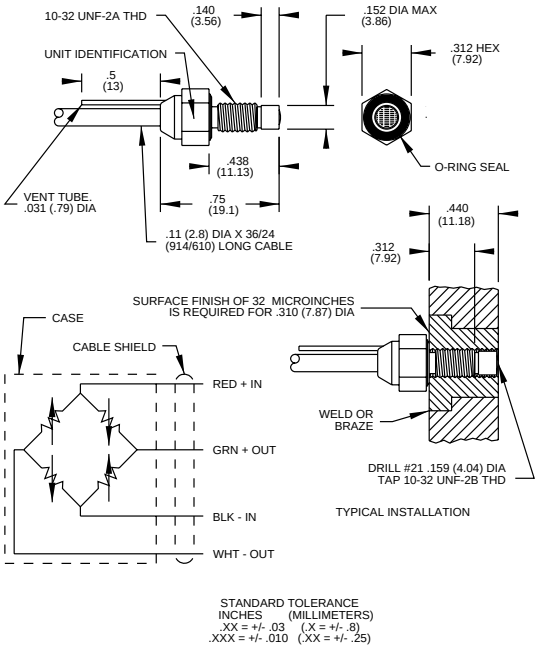
The ENDEVCO® Model 8510C is a rugged, miniature, high sensitivity piezoresistive pressure transducer. Its high sensitivity combined with high resonance makes it ideal for measuring dynamic pressure. It has a 10-32 mounting thread, 0.15 inch (3.8 mm) face diameter and is available in ranges from 15 psi to 100 psi. The Model 8510B is available for lower and 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 8510C is designed for a wide variety of aerospace, automotive and industrial measurements which require a combination of small size, high sensitivity, and wideband frequency response. Typical applications include process control, jet engine inlet pressure measurements and wind tunnel flow measurements. Its vent tube may be connected to a standard reference manifold or used for differential pressure measurements.

The Model 8510C is available with Metric M5X0.8 mounting thread as 8510C-XXM5 on special order.

ENDEVCO Model 136 Three-Channel System, Model 4430A Signal Conditioner, or Model 68207 BCAS™ Computer Controlled System are recommended as signal conditioner and power supply.



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	8510C-15	-50	-100
RANGE [1]	psig	0 - 15	0 - 50	0 - 100
POSITIVE SENSITIVITY [2]	mV/psi Typ (Min)	15.0 (9.3)	4.5 (2.8)	2.25 (1.4)
COMBINED: NON-LINEARITY, NON-REPEATABILITY, PRESSURE HYSTERESIS	% FSO RSS Max	0.50	0.40	0.40
Non-Linearity, Independent	% FSO Typ	0.15	0.1	0.1
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	±20	±20	±20
ZERO SHIFT AFTER 3X RANGE	±% 3X FSO Max (Typ)	0.2 (0.02)	0.2 (0.02)	0.2 (0.02)
THERMAL ZERO SHIFT From 0°F to 200°F (-18°C to +93°C)	±% FSO Max	3	3	3

ENDEVCO MODEL 8510C

Piezoresistive Pressure Transducer

SPECIFICATIONS—continued

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

	Units	8510C -15	-50	-100
THERMAL SENSITIVITY SHIFT				
From 0°F to 200°F (-18°C to +93°C)	±% Max	3	3	3
RESONANCE FREQUENCY	Hz	180 000	320 000	500 000
NON-LINEARITY AT 3X RANGE	% 3X FSO	1.0	1.0	1.0
THERMAL TRANSIENT RESPONSE PER	psi/°F	0.003	0.003	0.01
ISA-S37.10, PARA. 6.7, PROCEDURE I [4]	psi/°C	0.005	0.005	0.02
PHOTOFLASH RESPONSE [5]	Equiv. psi	0.1	0.3	0.6
WARM-UP TIME [6]	ms	1	1	1
ACCELERATION SENSITIVITY	Equiv. psi/g	0.00015	0.00015	0.00015
BURST PRESSURE				
(Diaphragm/Reference Side) [7]	psi Min	75/300	250/300	400/300

ELECTRICAL

FULL SCALE OUTPUT	225 mV typical (140 mV minimum) at 10.0 Vdc
SUPPLY VOLTAGE [8]	10.0 Vdc recommended, 15 Vdc maximum
ELECTRICAL CONFIGURATION	Active four-arm piezoresistive bridge
POLARITY	Positive output for increasing pressure into (+) port (end with screen on it)
RESISTANCE	
Input	2600 ohms typical, 1700 ohms minimum
Output	1500 ohms typical, 2200 ohms maximum
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 ±3 in (760 ± 76 mm)
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 [9]	
TEMPERATURE [10] [11]	-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. FSO (Full Scale Output) is defined as transducer output change from 0 psig to + full scale pressure. Calibration provided is for positive pressure. Sensitivity to negative pressures is typically within 1% of positive pressure sensitivity.
2. 1 psi = 6.895 kPa = 0.069 bar.
3. Zero Measurand Output (ZMO) is the transducer output with 0 psig applied.
4. Significant 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 1 Vdc.
5. Per ISA-S37.10, Para. 6.7, Proc. I. 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.
6. Warm-up time is defined as elapsed time from excitation voltage "turn on" until the transducer output is within ±1% of reading accuracy.
7. Note that the differential pressure on the diaphragm may not exceed the diaphragm pressure limit.
8. Use of excitation voltages other than 10.0 Vdc requires manufacture and calibration at that voltage since thermal errors increase with high excitation voltages.
9. Internal seals are epoxy compatible with clean dry gas media. Media is exposed to CRES, ceramic, silicon, Parylene C, epoxy, silicone rubber, and the O-Ring. For use in water or corrosive media, contact the factory for modifications and installation precautions which may be taken to extend service life. Reference port media is restricted to clean, dry noncorrosive gases.
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. O-Ring, ENDEVCO part number EHR93 VITON® is supplied unless otherwise specified on Purchase Order. Part number EHR96 Parker material L677-70 for leak tight operation below 0°F (-18°C) is available on special order.

NOTE: Tighter 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.

INTERTECHNOLOGY INC. 1-800-465-1600
1 Scarsdale Road
Don Mills, ON M3B 2R2
Tel: 416-445-5500
Fax: 416-445-1170
E-Mail: sales@intertechnology.com