

Piezoresistive Pressure Transducer

**ENDEVCO
MODEL
8534A**

Model 8534A -10, -20, -50 and -100

- 10 to 100 psia
- 300 mV Full Scale
- Rugged, Subminiature
- 0.065 Inch Diameter

DESCRIPTION

The ENDEVCO® Model 8534A is a rugged, subminiature piezoresistive pressure transducer for measuring absolute pressure. It has a case diameter of only 0.065 inch (1.65 mm) and is available in ranges from 10 to 100 psia full scale. Full scale output is 300 mV with high overload capability and high frequency response.

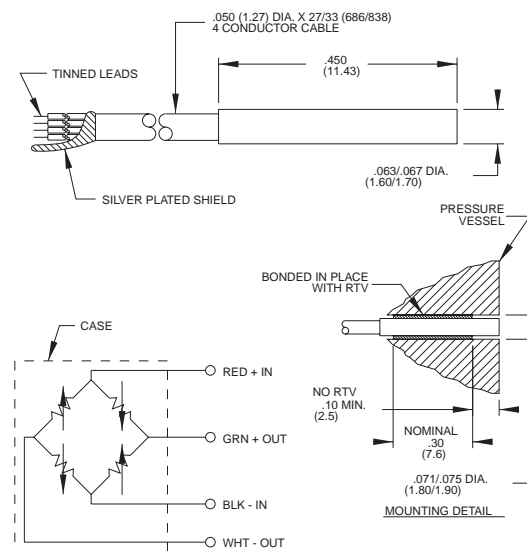
ENDEVCO pressure transducers feature an active four-arm strain gage bridge diffused into a sculptured silicon diaphragm for maximum sensitivity and wideband frequency response. Self-contained hybrid temperature compensation provides stable performance over the wide temperature range of 0°F to +200°F (-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 8534A can be installed in locations which are difficult to reach. Its small size permits flush mounting on curved surfaces. Its high sensitivity combined with small size and high resonance makes the 8534A suitable for use on small-scale models in wind tunnels.

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



Actual size



STANDARD TOLERANCE
INCHES (MILLIMETERS)
.XX = +/- .03 (.X = +/- .8)
.XXX = +/- .010 (.XX = +/- .25)

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	8534A-10	-20	-50	-100
RANGE [1]	psia	0 - 10	0 - 20	0 - 50	0 - 100
SENSITIVITY [1]	mV/psia	30 ±10	15 ±5	6 ±2	3 ±1
COMBINED: NON-LINEARITY, NON REPEATABILITY, PRESSURE HYSTERESIS [2]					
Non-Linearity, Independent	% FSO Typ	0.5	0.2	0.2	0.2
Non-Repeatability	% FSO Typ	0.1	0.1	0.1	0.1
Pressure Hysteresis	% FSO Typ	0.1	0.1	0.1	0.1
ZERO MEASURAND OUTPUT [3]	mV Max	±10	±10	±10	±10
ZERO SHIFT AFTER 3X RANGE	±% 3X FSO Max (Typ)	0.2 (0.02)	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	3
THERMAL SENSITIVITY SHIFT					
From 0°F to +200°F (-18°C to +93°C)	±% Max	4	4	4	4

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SPECIFICATIONS—continued

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

	Units	8534A-10	-20	-50	-100
RESONANCE FREQUENCY	Hz	140 000	200 000	370 000	410 000
NON-LINEARITY AT 3X RANGE	% 3X FSO	1.0	1.0	1.0	0.5
THERMAL TRANSIENT RESPONSE PER ISA-S37.10, PARA. 6.7, PROCEDURE I [4]	psi/°F	0.001	0.003	0.005	0.01
	psi/°C	0.002	0.005	0.009	0.02
PHOTOFLASH RESPONSE [5]	Equiv. psi	0.1	0.5	1.0	1.0
WARM-UP TIME [6]	ms	1	1	1	1
ACCELERATION SENSITIVITY					
Longitudinal	Equiv. psi/g	0.00015	0.0002	0.0003	0.0006
Lateral	Equiv. psi/g	0.00006	0.00005	0.0002	0.0004
BURST PRESSURE (Diaphragm)	psi Min	100	150	200	400

ELECTRICAL

FULL SCALE OUTPUT	300 ±100 mV at 10.0 Vdc
SUPPLY VOLTAGE [5]	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	Nickel -Iron Alloy
CABLE, INTEGRAL	Four conductor No. 36 AWG Teflon® insulated leads, braided shield, Teflon jacket 30 ±3 inches, (760 ±76 mm)
DEAD VOLUME	0.000015 cubic inches (0.0002 cc)
MOUNTING	Bond into #49 drill hole (1.85 mm) using RTV, such as DOW CORNING Silastic® 738; RTV is not permitted within 0.10 inch (2.5 mm) of unit's face
WEIGHT (excluding lead wires)	0.08 gram (cable weighs 3.6 grams/meter)

ENVIRONMENTAL

MEDIA	Internal seals are epoxy and are compatible with clean dry gas media. Media is exposed to nickel-iron alloy, Parylene C, and epoxy. For use in water or corrosive media, contact the factory for modifications and installation precautions which may be taken to extend service life.
TEMPERATURE [7]	-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, 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.

OPTIONAL ACCESSORY

25034 4 CONDUCTOR SHIELDED CABLE

NOTES

- 1 psi = 6.895 kPa = 0.069 bar.
- FSO (Full Scale Output) is defined as transducer output change from 0 psia to + full scale pressure.
- Zero Measurand Output (ZMO) is the transducer output with 0 psia applied.
- Use of excitation voltages other than 10.0 Vdc requires manufacture and calibration at that since thermal errors increase with high excitation voltages.
- Per ISA-S37.10, Para 6.7, Procedure II.

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. Units can be compensated over any 200°F (93°C) span from -65°F to +250°F (-54°C to +121°C)

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.