

ENDEVCO® MODEL 8514 SUBMINIATURE PIEZORESISTIVE PRESSURE TRANSDUCERS

300 mV Full Scale 0.065 in Diameter

The Model 8514 is a rugged, subminiature piezoresistive pressure transducer. It has a case diameter of only 0.065 in and is available in ranges from 10 to 100 psig 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 8514 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 Model 8514 suitable for use on small-scale models in wind tunnels.

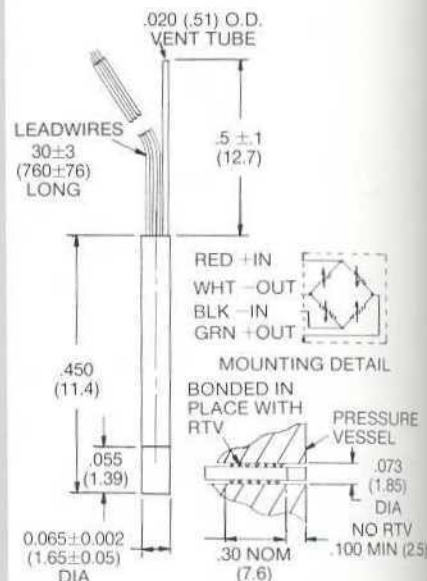


SPECIFICATIONS

(According to ANSI and ISA Standards.)

		MODEL 8514-10	MODEL 8514-20	MODEL 8514-50	MODEL 8514-100
PERFORMANCE					
(Parameters listed below are 100% tested and calibration data supplied.)					
RANGE	psig	0-10	0-20	0-50	0-100
SENSITIVITY	mV/psi ¹	30 ± 10	15 ± 5	6 ± 2	3 ± 1
COMBINED NON-LINEARITY, NON-REPEATABILITY, PRESSURE HYSTERESIS (max)					
	% FSO ² RSS	1.0	0.5	0.5	0.5
NON-linearity, independent (typical)					
	% FSO	0.5	0.2	0.2	0.2
Non-repeatability (typical)					
	% FSO	0.1	0.1	0.1	0.1
Pressure hysteresis (typical)					
	% FSO	0.1	0.1	0.1	0.1
ZERO MEASURAND OUTPUT ³					
(max at 10.0 Vdc & +75°F [+24°C])	mV	±10	±10	±10	±10
ZERO SHIFT (max at 3X Range)					
	% 3XFSO	0.1	0.1	0.1	0.1
THERMAL ZERO SHIFT (max) ⁴					
	% FSO	3	3	3	3
THERMAL SENSITIVITY SHIFT ⁴					
(maximum)	%	4	4	4	4
(Parameters listed below are established from testing of sample units)					
RESONANT FREQUENCY (typical)	Hz	140 000	180 000	320 000	410 000
NON-LINEARITY					
(typical at 3X Range)	% 3XFSO	1.0	0.7	0.5	0.5
THERMAL TRANSIENT RESPONSE ⁵					
	psi/°F	0.001	0.003	0.005	0.01
PHOTO FLASH RESPONSE					
(typical) ⁶	psi	0.1	0.5	1.0	1.5
WARM-UP TIME					
(typical, to 1% accuracy)	ms	1	1	1	1
ACCELERATION SENSITIVITY					
(typical)	psi/g	0.00015	0.0002	0.0003	0.0006
BURST PRESSURE					
(max, diaphragm/reference side)	psi	100/50	150/50	200/50	400/50
ELECTRICAL					
FULL SCALE OUTPUT	mV	300 ± 100 at 10.0 Vdc			
SUPPLY VOLTAGE ⁷	Vdc	10.0 recommended, 18.0 maximum			
ELECTRICAL CONFIGURATION					
Active four-arm piezoresistive bridge					
POLARITY					
Positive for increasing pressure into (+) port					
RESISTANCE					
Input	Ω	2000 + 800			
Output	Ω	1600 ± 500			
Isolation (minimum)					
	MΩ	100, at 50 volts; leads to case			
NOISE					
	μVrms	5, typical; 50 maximum; dc to 50 000 Hz			
PHYSICAL					
CASE					
Nickel-iron alloy					
LEADWIRES					
Integral, four #36 AWG FEP Teflon [®] insulated leads, 30 ± 3 in (760 ± 76 mm)					
DEAD VOLUME					
(in measurand [+]) port)		0.000015 in ³ (0.0002 cm ³)			
MOUNTING					
Bond into No. 49 drill hole using RTV such as Dow Corning Silastic [®] 738					
0.003 (0.08), 4 leads 0.01 oz/ft (0.8 gm/m), typical					
ENVIRONMENTAL					
MEDIA					
See Note 8					
TEMPERATURE RANGE					
	°F (°C)	-65°F to +250°F (-54°C to +121°C) ⁹			
VIBRATION					
	g pk	1000			
ACCELERATION					
	g	1000			
SHOCK (100 μsec haversine pulse)					
	g	20 000			

CALIBRATION DATA SUPPLIED IS TRACEABLE TO NATIONAL BUREAU OF STANDARDS.



Dimensions in inches and (millimetres)

NOTES

- ¹1 psi = 6.895 kPa
 - ²FSO (Full Scale Output) is defined as transducer output from 0 to +FS, which is typically 300 mV.
 - ³Zero Measurand Output (ZMO) is the transducer output with 0 psi applied.
 - ⁴Over the compensated temperature range of 0°F to +200°F (-18°C to +93°C), reference +75°F (+24°C).
 - ⁵Typical at 10.0 Vdc excitation per ISA-S37.10 Para. 6.7, Proc. I.
 - ⁶Per ISA-S37.10, Para. 6.7, Proc. II.
 - ⁷Use of excitation voltages other than 10.0 Vdc requires manufacture and calibration at that voltage since thermal errors increase with high excitation voltages. Endevco Models 4423/4225 Signal Conditioner and Model 4428 Pressure Minisystem are recommended power supplies.
 - ⁸Internal seals are epoxy and are compatible with clean dry gas media. Media in (+) measurand port is exposed to nickel-iron alloy, Parylene C, and epoxy.
 - ⁹Units can be compensated over any 200°F (93°C) span from -65°F to +250°F (-54°C to +121°C) on special order.
- NOTE: Tighter specifications are available on special order.

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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.

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