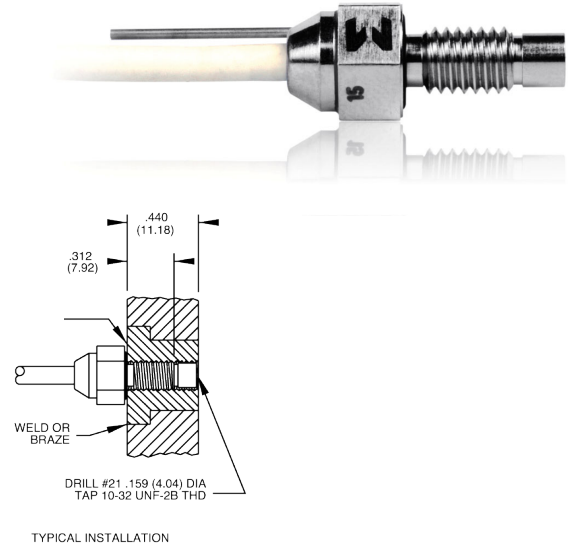
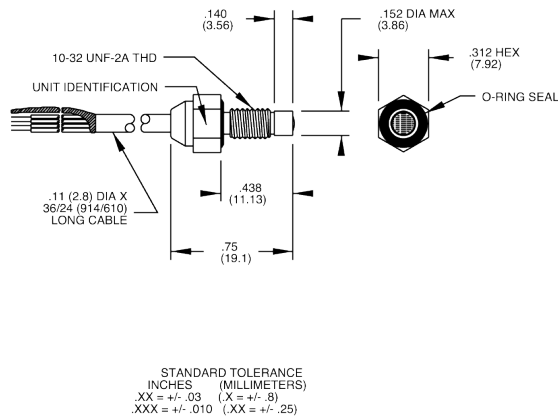


Piezoresistive pressure transducer

Model 8510C -15, -50, -100



Key features

- 15, 50 and 100 psig ranges
- 225mV full scale output
- Rugged, miniature
- Gage

Description

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.

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.

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The following performance specifications are typical values, referenced at +75°F (+24°C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Specifications				
Dynamic characteristics	Units	-15	-50	-100
Range [1]	psig	0-15	0-50	0-100
Positive sensitivity	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 [2]	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
Thermal sensitivity shift				
from 0°F and +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 [3]	psi/°C	0.005	0.005	0.02
Photoflash response [4]	Equiv. psi	0.1	0.3	0.6
Warm-up time [5]	ms	1	1	1
Acceleration sensitivity	Equiv. psi/g	0.00015	0.00015	0.00015
Burst pressure (diaphragm/reference side) [6]	psi min	75/300	250/300	400/300
Electrical				
Full scale output	225 mV typical (140 mV minimum) at 10.0 Vdc			
Supply voltage	10.0 Vdc standard, 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	4 conductor No. 32 AWG ETFE insulated leads, braided shield, silicone jacket			
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 characteristics				
Media [7]				
Temperature	-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 supplied				
ISO17025 Calibration includes: range, sensitivity, non-linearity, non-repeatability, hysteresis, zero measurand output, zero shift after 3X range, thermal zero shift and thermal sensitivity shift.				

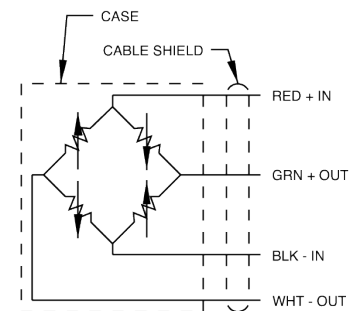
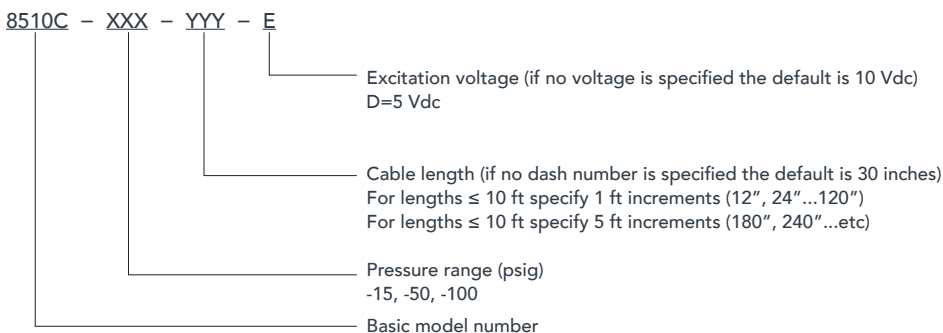
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Accessories		
Options	Description	8510C
EHR93	O-ring, Viton	Included
EHR96	O-ring, fluorosilicone for leak tight operation below 0°F (18°C)	Optional
24328-3/XXX	4 conductor shielded cable, white	Optional

Options		
Options	Description	
M1	No vent tube	
M4	Gel	
M5	Metric thread	
M7	No screen	
M11	"B" screen	
M37	Inetral connector, no vent tube, hole on side	

Notes

- 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.
- Zero Measurand Output (ZMO) is the transducer output with 0 psig applied.
- 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.
- 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.
- Warm-up time is defined as elapsed time from excitation voltage "turn on" until the transducer output is within $\pm 1\%$ of reading accuracy.
- Note that the differential pressure on the diaphragm may not exceed the diaphragm pressure limit.
- 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.
- Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.



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