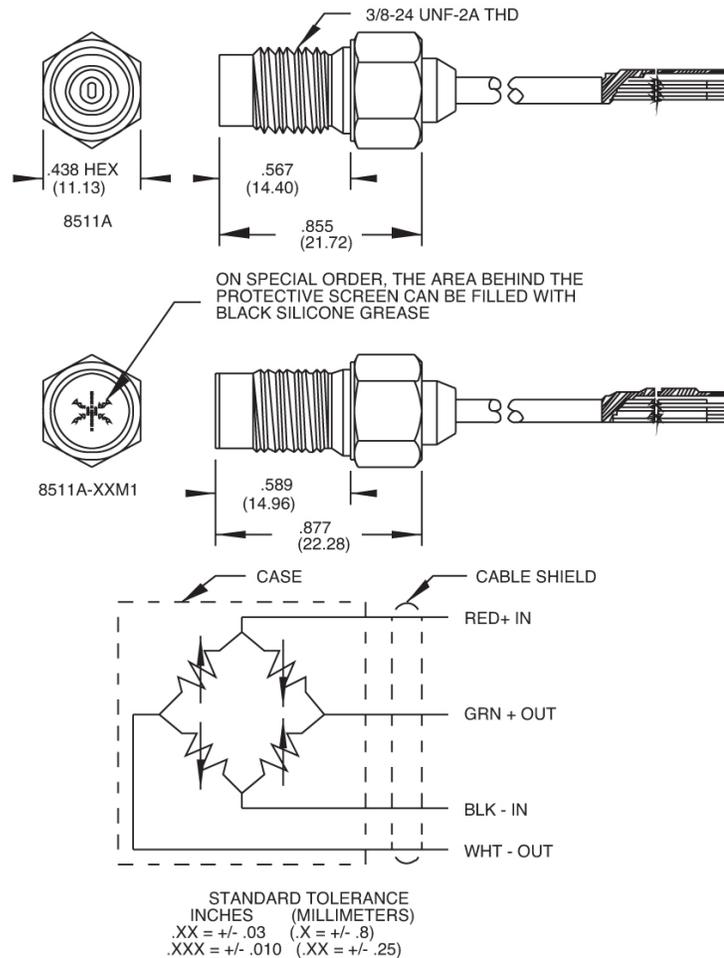


Piezoresistive pressure transducer

Model 8511A -5K, -10K, -20K



Key features

- 5000, 10 000, 20 000 psig ranges
- Rugged
- High sensitivity
- Temperature compensated

Description

Model 8511A is a rugged, piezoresistive pressure transducer for high pressures. It has a 3/8-inch mounting thread and is available in ranges from 5000 to 20 000 psig.

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, high shock resistance, and high stability during temperature transients.

8511A is widely used for high pressure applications such as studies of structural loading by shock waves resulting from explosive blasts, pulsations in hydraulic and combustion systems. For harsh environments where there is particle impingement, an optional version is available with a protective screen and a black silicone grease coating which further reduces photoflash sensitivity and provides an effective thermal barrier for short duration high temperature service.

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Specifications

The following performance specifications are 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.

Dynamic characteristics	Units	-5K	-10K	-20K
Range	psig	0-5000	0-10 000	0-20 000
Positive sensitivity	mV/psi typical	0.100	0.050	0.025
Combined: non-linearity, non-repeatability, pressure hysteresis	% FSO RSS max	1.5	3.0	3.0
Non-linearity, independent	% FSO max	1.2	2.5	2.5
Non-repeatability	% FSO max	0.5	0.5	0.5
Pressure hysteresis	% FSO max	1.0	1.0	1.0
Zero measurand output	mV max	±25	±25	±25
Zero shift after 2.5x range	±% 2.5X FSO max	0.1	0.2	[1]
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 to 200°F (-18°C to +93°C)	±% max	4	4	4
Resonance frequency	Hz 1.5	>1 000 000	>1 000 000	>1 000 000
Non-linearity at 2.5x range	% 2.5X FSO	0.3	0.8	[1]
Warm-up time [2]	ms	1	1	1
Acceleration sensitivity	Equiv. psi/g	0.001	0.002	0.003
Burst pressure (diaphragm)	psi Min	20 000	30 000	40 000
Electrical				
Supply voltage	10.0 Vdc standard, 18 Vdc maximum			
Polarity	Positive output for increasing pressure into (+) port			
Resistance				
Input	2000 ohms typical			
Output	1500 ohms typical			
Isolation	100 megohms minimum at 50 Volts; leads to case, leads to shield, shield to case			
Mechanical				
Case, material	Stainless steel			
Cable, integral	Four conductor No. 32 AWG ETFE insulated leads, braided shield, silicone jacket			
Dead volume (+) port	0.004 cubic inches (0.06 cc)			
Mounting/torque	3/8-24 UNF-2A threaded case 0.567 inch (14.4 mm) long/12 ±2 lbf-ft (16 ±2 Nm)			
Weight	11 grams (cable weighs 9 grams/meter)			
Environmental				
Media	Media in (+) measurand port is exposed to nickel-iron alloy, Parylene C and epoxy. Internal seals are epoxy and are compatible with clean dry gas media.			
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. External case is sealed with epoxy. Circuit within case, vented through cable, is coated with Parylene C.			
Calibration data				
A calibration certificate is supplied with each unit.				

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Accessories

Product	Description	8511A
22688	Copper gasket (-5K, -10K)	Included
22686	Washer, high pressure (-20k)	Included

Options

Options	Description
M1	"Star" screen and black grease
M5	Metric thread
M8	"B" screen and black grease
M37	Integral connector, no vent tube, hole on side

Notes

1. Overrange is limited to 40,000 psi for the 8511A-20K
2. Warm-up time is defined as elapsed time from excitation voltage "turn on" until the transducer output is the $\pm 1\%$ of reading accuracy.
3. Model number definition:

Ordering information

1. 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.

