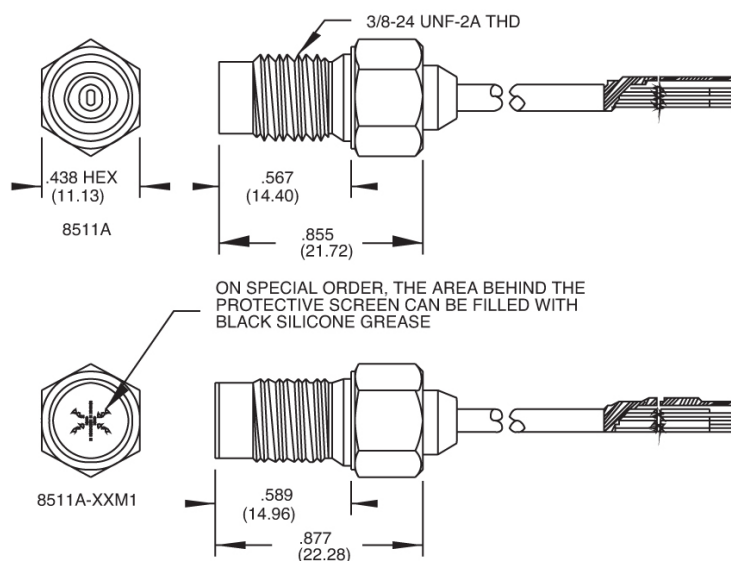


Piezoresistive pressure transducer

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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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.

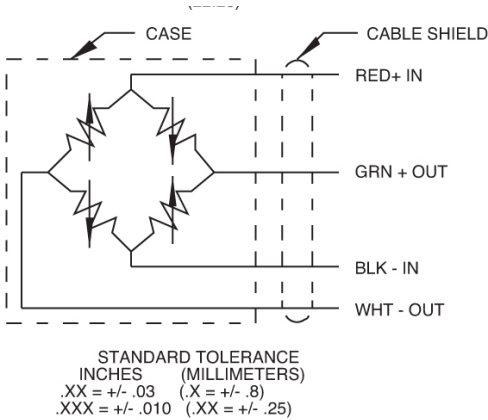
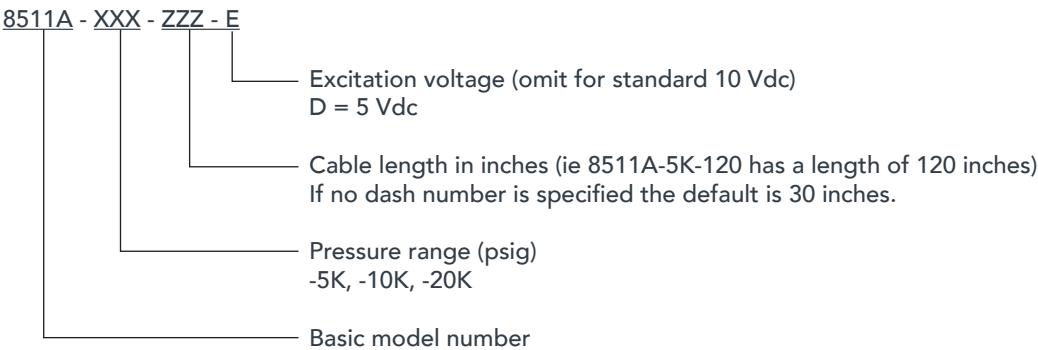
| Specifications | | | | |
|---|--|------------|------------|------------|
| Dynamic characteristics | Units | -5K | -10K | -20K |
| Range | psig | 0-5000 | 0-10 000 | 0-20 000 |
| Positive sensitivity | mV/psi typical | 0.1 | 0.05 | 0.025 |
| Combined: non-linearity, non-repeatability, pressure hysteresis | % FSO RSS max | 1.5 | 3 | 3 |
| 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 | 1 | 1 |
| 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 | >1 000 000 | >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 Teflon® insulated leads, braided shield, silicone jacket | | | |
| Dead volume (+) port | 0.004 cubic inches (0.06 cc) | | | |
| Mounting | 3/8-24 UNF-2A threaded case 0.567 inch (14.4 mm) long | | | |
| Torque | Torque 12 +/-2 lbf-ft (16 +/-2 Nm) for 5K and 10K; 25 +/-4 lbf-ft (34 +/-5 Nm) for 20K | | | |
| 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 | | | | |
| ISO17025 Calibration includes: range, sensitivity, non-linearity, non-repeatability, hysteresis, zero measurand output, thermal zero shift and thermal sensitivity shift. | | | | |

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| Accessories | | |
|-------------|--|----------|
| Options | Description | 8511A |
| 22688 | Copper gasket (-5K, -10K) | Included |
| 22686 | Washer, high pressure (-20k) | Included |
| M1 | "Star" screen and black grease | Optional |
| M8 | "B" screen and black grease | Optional |
| M37 | Integral connector, no vent tube, hole on side | Optional |

Notes

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



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