Endevco®

Piezoresistive pressure transducer
Model 8511A -5K, -10K, -20K

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.

Recommended electronics for signal conditioning and power supply are the model 126 and 136 general purpose three channel conditioners, ultra low noise 4430A conditioner, or the 4990A-X (Oasis) multi-channel rack mount system.

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

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Aerospace Energy Measurement

Meggitt Sensing Systems

Our measurement product competencies:
- Piezoelectric accelerometers
- Piezoresistive accelerometers
- Isotron accelerometers
- Variable capacitance accelerometers
- Pressure transducers
- Acoustic sensors
- Electronic instruments
- Calibration systems
- Shakers
- Modal hammers
- Cable assemblies

Meggitt smart engineering for extreme environments
The following performance specifications conform to ISA-RP-37.2 (1964) and 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.

### Dynamic characteristics

<table>
<thead>
<tr>
<th>Units</th>
<th>-5K</th>
<th>-10K</th>
<th>-20K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range [1]</td>
<td>psig</td>
<td>0-5000</td>
<td>0-10,000</td>
</tr>
<tr>
<td>Positive sensitivity [1]</td>
<td>mV/psi</td>
<td>0.100 ±0.033</td>
<td>0.050 ±0.017</td>
</tr>
<tr>
<td>Combined: non-linearity, non-repeatability, pressure hysteresis [2]</td>
<td>% FSO RSS typical</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Non-Linearity, independent</td>
<td>% FSO typical</td>
<td>1.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Non-Repeatability</td>
<td>% FSO typical</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Pressure Hysteresis</td>
<td>% FSO typical</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Zero shift after 2x range</td>
<td>±% 2X FSO Max</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Thermal zero shift</td>
<td>±% FSO Max</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Thermal sensitivity shift</td>
<td>±% Max</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Resonance frequency</td>
<td>Hz 1.5</td>
<td>&gt;1,000,000</td>
<td>&gt;1,000,000</td>
</tr>
<tr>
<td>Non-linearity at 3x range [4]</td>
<td>% 3X FSO</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Warm-up time [6]</td>
<td>ms 20v</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Acceleration sensitivity</td>
<td>Equiv. psi/g</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>Burst pressure (diaphragm)</td>
<td>psi Min</td>
<td>20,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

### Electrical

- Full scale output: 500 mV typical (270 mV min) at 10.0 Vdc
- Supply voltage [7]: 10.0 Vdc standard, 18 Vdc maximum
- Electrical configuration: Active four-arm piezoresistive bridge
- Polarity: Positive output for increasing pressure into (+) port
- Resistance Input: 2000 ohms min
- Output: 1000 min
- 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
- 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/torque: 3/8-24 UNF-2A threaded case 0.567 inch [14.4 mm] long/12 ±2 lb-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 [8]: -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.