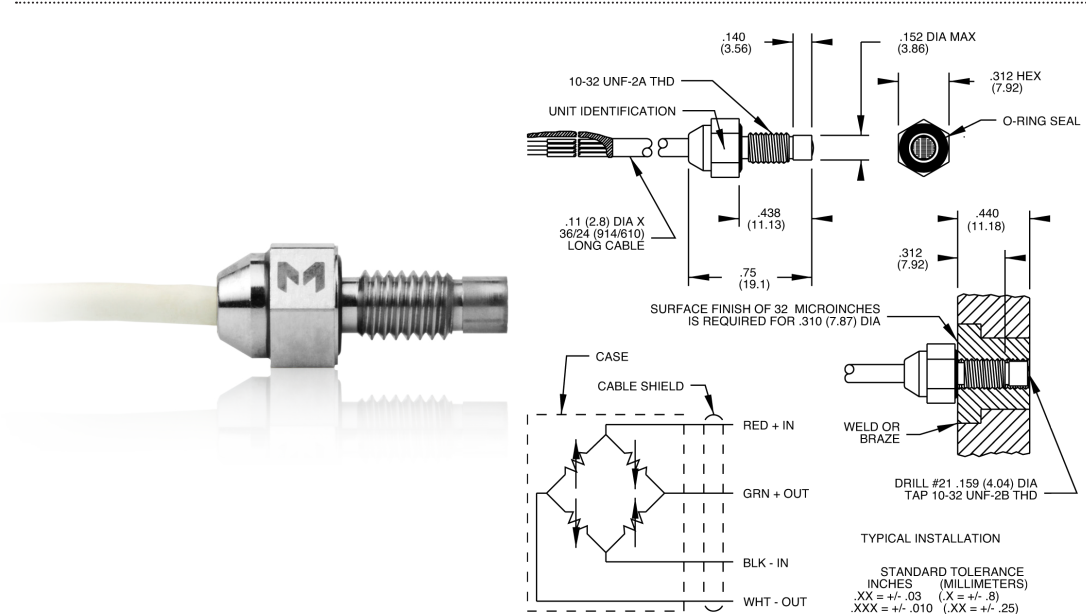


Piezoresistive pressure transducer

Model 8530C -15, -50, -100



Key features

- 15, 50 and 100 psia ranges
- 225 mV full scale
- Absolute reference

Model 8530C is a miniature, high sensitivity piezoresistive pressure transducer for measuring absolute pressure. The volume behind the diaphragm is evacuated and glass sealed to provide an absolute pressure reference. Full scale output is 225 mV with high overload capability and high frequency response. It is available in ranges from 15 psia to 100 psia. 8530B is available for 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.

8530C has been used successfully in many blast test situations. For this application, a protective coating is recommended to eliminate photoflash sensitivity and provide particle impingement protection. This coating does not degrade the superior dynamic response characteristics of the sensor.

8530C is available with metric M5 mounting thread as 8530C-XXM5 on special order. See "other options."

Recommended electronics for signal conditioning and power supply are ultra low noise 4430A conditioner or the 4990A-X (Oasis) multi-channel rack mount system.

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Specifications

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 | Units | -15 | -50 | -100 |
|---|------------------|------------|-----------|------------|
| Range [1] | psia | 0-15 | 0-50 | 0-100 |
| Sensitivity [1] | mV/psi typ (min) | 15.0 (9.3) | 4.5 (2.8) | 2.25 (1.4) |
| Combined: non-linearity, non repeatability, pressure hysteresis [2] | % 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 [3] | mV max | ±20 | ±20 | ±20 |
| Zero shift after 3X range | ±% 3X FSO max | 0.2 | 0.2 | 0.2 |
| Thermal zero shift | | | | |
| From 0 to 200°F (-18°C to +93°C) | ±% FSO max | 3 | 3 | 3 |
| Thermal sensitivity shift | | | | |
| From 0 to 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 |
| Zero shift with mounting torque | | | | |
| 15 lbf-in. (1.7 Nm) | % FSO | 0.2 | 0.5 | 0.5 |
| Thermal transient response per ISA-S37.10, PARA. 6.7, procedure I [4] | psi / °F | 0.003 | 0.003 | 0.010 |
| | psi / °C | 0.005 | 0.005 | 0.018 |
| Photoflash response [5] | equiv psi | 0.1 | 0.3 | 0.6 |
| Warm-up time [6] | ms | 1 | 1 | 1 |
| Acceleration sensitivity | equiv. psi/g | 0.00015 | 0.00015 | 0.00015 |
| Burst pressure (diaphragm) | psia min | 75 | 250 | 400 |
| Case pressure [7] | psia min | 1000 | 1000 | 1000 |

Electrical

| | |
|--------------------------|---|
| Full scale output | 225 mV typical (140 mV minimum) at 10.0 Vdc |
| Supply voltage [8] | 10.0 Vdc recommended, 15 Vdc maximum |
| Electrical configuration | Active four-arm piezoresistive bridge |
| Polarity | Positive output for increasing pressure |
| Resistance | |
| Input | 2600 ohms typical, 1700 ohm 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 | Four conductor No. 32 AWG Teflon insulated leads, braided shield, silicone jacket, 30 ±6 in (760 ±150 mm) |
| 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

| | |
|------------------|---|
| Media [9] | 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 |
| Temperature [10] | -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 V when tested per MIL-STD-202E, method 103B, test condition |

Calibration data

Data supplied for all parameters in Certified Performance section. Optional calibrations available for all parameters in Typical Performance section

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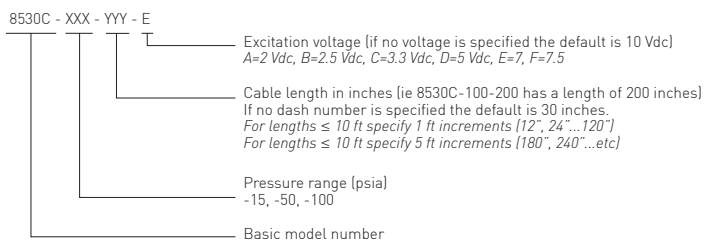
Accessories

| Product | Description | 8530C |
|---------|-----------------------------------|----------|
| EHR93 | O-ring, Viton | Included |
| EHR96 | O-ring, fluorosilicone | Optional |
| 24328-3 | 4 conductor shielded cable, white | Optional |

Notes

- 1 psi = 6.895 kPa = 0.069 bar.
- FSO (Full Scale Output) is defined as transducer output change from 0 psia to + full scale pressure.
- Zero Measurand Output (ZMO) is the transducer output with 0 psia applied.
- Significantly 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. II. 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.
- Case pressure identifies media containment pressure in the event of diaphragm rupture.
- For best results when using excitation voltages other than 10.0 Vdc, it is recommended that the transducer be calibrated at the desired excitation during manufacture. Otherwise larger thermal errors may occur, especially at voltages above 10 Vdc.
- O-ring, EHR93 Parker 5-125, compound V747-75 (Viton®) is supplied unless otherwise specified on purchase order. Fluorosilicone O-ring, EHR96 Parker material L677-70, for leak tight operation below 0°F is available on special order.
- 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.
- NOTE: Tighter specifications are available on special order.

Model definition



Other options

- M1 "A" screen, black grease - ITAR
- M2 "B" screen, black grease - ITAR
- M5 Metric thread
- M37 Integral connector
- M58 "B" screen
- M57 No screen, gel
- M59 No screen

Contact

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