

## **MINI PRESSURE TRANSDUCER**





Bradford's Miniaturized Standard Accuracy Pressure Transducer (mini-SAPT) is a piezo-resistive principle based, fully ESA qualified pressure gauging component, both for gaseous or liquid media. The design is based on Bradford's SAPT which has extensive heritage of 200+ units in space.

The unit consists of a pressure-sensing element and a dedicated set of electronics, integrated into one compact design. The fully seal-welded sensor housing construction is optimized to enable one generic design for pressure ranges from 3 to 320 barA, with maximum flexibility for adaptation to customer specific requirements. Wetted parts have demonstrated compatibility with all the typical propellants currently in use in spaceflight (hydrazine, MON, MMH, LMP-103S), whereas a qualified joint material enables different materials for fluidic interfaces.

The integrated analogue temperature compensation allows for accuracies  $\leq$  0.3-0.5%FS, depending upon the operational temperature range and data output approximation (Best Fit Straight Line or Polynomial).

### Key Advantages

- Qualified for telecom/GEO (Hi-Rel EEE-parts) applications
- Excellent performance characteristics
- High-accuracy calibration traceable to national standards
- Units delivered for SGEO PSA and CGCS, BepiColombo FCU and Lisa PathFinder
- Ongoing production heritage of over 70 units



# MINI PRESSURE TRANSDUCER

Characteristic	Performance / Interfaces Budget
Medium Compatibility	Hydrazine, MON, MMH, LMP-103S, Ammonia, IPA, GHe, GN <sub>2</sub> , GXe, Deionized H <sub>2</sub> O
Pressures	0–3 to 0–320 barA
Proof Pressure Factor	2 times operating pressure
Burst Pressure	Up to 1250 barA
Internal / External Leakage	< 10 <sup>-8</sup> scc/sec GHe
Measurement Accuracy	$\pm$ 0.3% FS to $\pm$ 0.5% FS (pending temperature range)
Mass	< 125 g (excluding cable)
Envelope (I x w x h)	84.6 (for 30mm stub tube) x 72 x 43.5 mm
Fluidic Interface	Weldable 1/4" or 1/8" Tube Stub, Titanium or Stainless Steel
Structural Interface	4 bolts M4
Wetted Materials	Ti6Al4V and/or AISI 316L/304L
Operational Life	18 Years
Sine Vibration	5-20 Hz: 11mm 0-Peak, 20-100 Hz 20g
Constant Acceleration	20g in each Axis Direction
Random Vibration	10 – 100 Hz: Increase 6.9dB/Octave to 1.5g²/Hz 100 - 400 Hz: Constant at 1.5g²/Hz 400 – 590 Hz: Decrease to 0.5g²/Hz 590 – 700 Hz: Constant at 0.5g²/Hz 700 – 1200 Hz: Constant at 0.3g²/Hz 1200 – 2000 Hz: Decrease 6.0dB/Octave 180 s each Axis, Overall 31.8g RMS
Shock	100 Hz: 80g 500 Hz: 300g 1000 Hz: 1700g 3000 Hz: 1800g 10000 Hz: 5000g
Thermal Vacuum Qualification	-50° to +75°C Non-Operating, -40° to +75°C Operating
EMC Requirements	According MIL-STD-461E, dedicated project delta-qualifications
Radiation Resistance	100 kRAD(Si) EEE – parts
Power Supply	28 V, < 300 mW
Output Signals	Analogue, 0.5 to 5V
Interface Wires	Flying leads according ESCC-3901

#### ABOUT



Bradford is a high-tech European developer and manufacturer of satellite control sub-systems and components.

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