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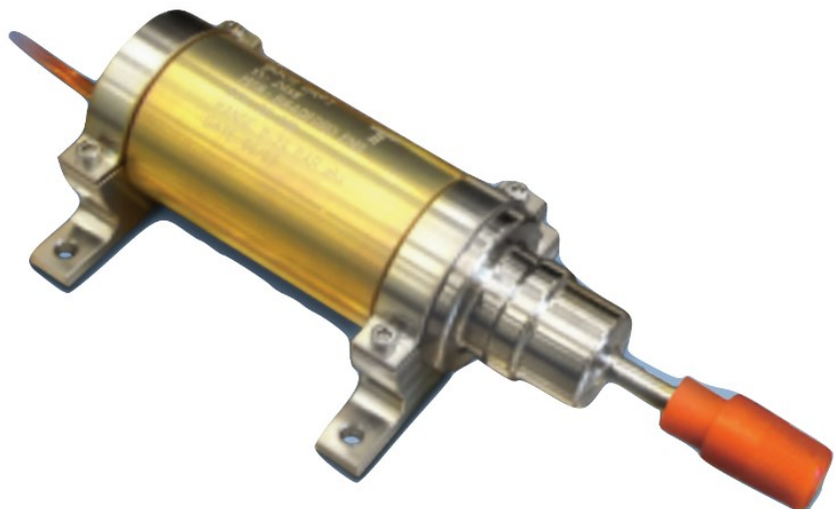
HIGH ACCURACY PRESSURE TRANSDUCER



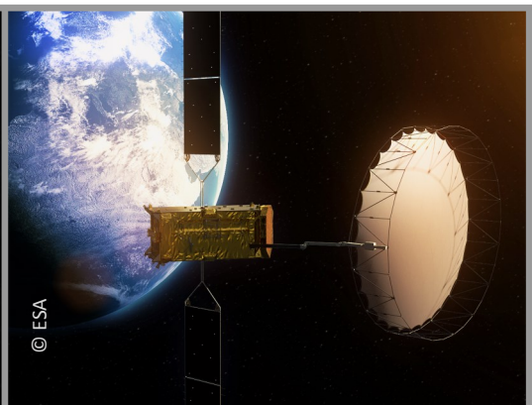
The High Accuracy Pressure Transducer (HAPT) is a piezo-resistive principle based, fully ESA qualified pressure gauging component, for both gaseous or liquid media.

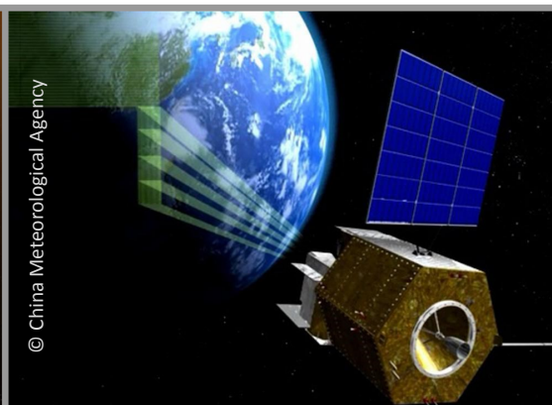
The unit consists of a pressure-sensing element and a dedicated set of electronics, integrated into one compact design. The fully seal-welded sensor housing construction is optimised to enable one generic design for pressure ranges up to 30 barA, with maximum flexibility for adaptation to customer specific requirements. Wetted parts have demonstrated compatibility with all the typical propellants currently in use in spaceflight (hydrazine, MON, MMH, Green Propellant), whereas a qualified joint material enables different materials for fluidic interfaces.

The digital temperature compensation and Smart-electronics allows for accuracies ≤0.05% FS, depending upon the operational temperature range. Auto-compensation compensates drift over lifetime, which strongly enhances EOL accuracy. Higher order polynomials are provided with each unit for output compensation.

Key Advantages

- Qualified to GEO applications; full S-Class EEE-parts
- Unprecedented accuracy and performance
- Relative measurement principle with automatic compensation for lifetime and radiation drift
- Flying on AlphaSat CPS and FY4 satellite constellation





High Accuracy Pressure Transducer

Characteristic	Performance / Interfaces Budget
Medium Compatibility	Hydrazine, MON, MMH, IPA, GHe, GN_2, GXe, Deionized H_2O, HFE, Green Propellant LMP-103S
Pressures	0–10 to 0–30 barA
Proof Pressure Factor	2 times operating pressure
Burst Pressure	4 times operating pressure
Internal / External Leakage	< 10^{-8} scc/sec GHe
Measurement Accuracy	± 0.05% FS (pending temperature range)
Mass	< 250g (excluding cable)
Envelope (l x w x h)	150 (for 30mm stub tube) x 77 x 43.5mm
Fluidic Interface	Weldable Tube Stub or screwed AS4395 fitting
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 1.5g^2/Hz 100 - 400 Hz: Constant at 1.5g^2/Hz 400 – 590 Hz: Decrease at 0.5g^2/Hz 590 – 700 Hz: Constant at 0.5g^2/Hz 700 – 1200 Hz: Constant at 0.3g^2/Hz 1200 – 2000 Hz: Decrease 6.0dB/Octave 180 s each Axis, Overall 31.8g RMS
Shock	200Hz: 100g, 2000Hz: 2000 g, 10000 Hz: 2000 g, Q-factor = 10
Thermal Vacuum Qualification	-40˚ to +75˚C Non-Operating, -20˚ to +70˚C Operating
EMC Requirements	According MIL-STD-461E, dedicated project delta-qualifications
Radiation Resistance	50 kRAD(Si) EEE – parts
Power Supply	12-15 V Single
Power Consumption	< 800 mW
Output Signals	Digital pressure and temperature signals, TTL-frequency
Interface Wires	Flying leads according ESCC-3901

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ABOUT

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

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