

APPLICATION NOTE

Aircraft Hydraulic Systems - Temperature and Pressure Sensors for High Pressure Hydraulic Systems



Reliable operation of aircraft hydraulic systems is vital to critical safe operation of commercial and military fixed wing and rotor aircraft. These hydraulic systems support aircraft flight control, actuators, landing gear and other key operations. Out of range temperature detection in these key hydraulic applications is a challenge due to the harsh operating requirements, including high and low temperatures, high vibration, salt/fog and other difficult qualification requirements found in a wide range of operating environments.



Application Challenges

- Hydraulic system operation requires highly reliable temperature and pressure sensing to signal maintenance and emergency repair requirements to flight operations.
- Temperature and Pressure Sensors must operate in the harsh, high vibration, frequent duty cycles and unpressurized aircraft environments with minimal maintenance support.
- Commercial and military flight components meet stringent requirements including shock/vibration, high reliability, Electrical Magnetic Interference (EMI), Radio Frequency Interference (RFI) and salt water/fog environment defined by the DO160G and MIL-STD specifications for aircraft operation.

Aircraft Installation Requirements

- **Pipe/Tubing Diameters:** 1/4 inch to 10 inch (10 to 250 millimeter) Hydraulic service lines
- **Flow Range:** 0.5 to 20 Standard Feet/Second (.015 to 9 Standard Meters/Second Switch Point Range, Operation to 30 Standard Feet/Second (9.1 Standard Meters/Second)
- **Media:** Hydraulic Fluids – including MIL-PRF-83282, MIL-PRF-5606, CMS 564-03 Type IV or V and other aerospace hydraulic and gearbox fluids.
- **Fluid Operating Pressures:** 0 to 6,000+ PSIG (0 to 13,800 kpa)
- **Fluid Operating Temperatures:** -40° to 350+° F (-40° to 177° C)
- **Environmental Temperatures:** -40° to 250° F (-40 to 125° C)

Solution and Benefits: FCI AS-TE & AS-TT Temperature Sensors/Transmitters and AS-PT Pressure Transmitters

- No moving part technology provides maintenance free operation
- Full Commercial and Military qualifications: DO 160F, MIL-STD 810, and others
- Wide Range Aerospace Straight Thread, National Pipe Thread (NPT) and Flange Mounting process connections available
- Stainless Steel wetted parts and enclosures resists corrosive salt water/fog exposure
- Factory Calibrated across wide range in specified Hydraulic fluid to customer's range requirement
- Resistance Element and Transmitter Outputs available
- Proven fixed wing and rotorcraft high reliability: 100,000+ Mean Time Between Failure (MTBF)
- Built under ISO9001 and AS9100 Quality Certification

