

Model AS-LLS

Aircraft Qualified Liquid Level Sensor



AS-LLS Level Switch

FCI's Level Sensor Applications

- Oil Level Sensor
- Automation of Sight Gauge Level Detection
- Hydraulic Reservoirs
- Fuel Level Detection
- Potable Water Reservoirs
- Collection Sumps
- Waste or Grey Water Reservoirs
- Coolant Reservoirs
- Oil / Water Interface Detection
- Backflow Reservoir Detection

FCI's Level Switch

FCI liquid level switches for commercial and military aircraft applications provide a unique set of performance features unavailable in other level sensing technologies. FCI's unique Thermal Dispersion Technology (TDT) provides no moving part dependability and repeatability for monitoring the presence or absence of liquid at critical level elevations in reservoirs, vessels and gearboxes. They can be applied to sense between liquid / air-gas (i.e. wet-dry) or liquid / liquid (i.e. wet-wet, interface detection). The wetted portion of the probe is hermetically sealed and made of all welded stainless steel parts. The element construction provides excellent corrosion resistance and can withstand up to 2000 psig [138 bar(g)] line pressures. It is flange mounted and can be provided with a variety of military electrical connectors.

The electronics are either hermetically (welded) or environmentally (gasket) sealed in an integral or remote enclosure per customer specifications. Power input is 19-32 VDC per MIL-STD-704. Standard outputs include an open collector (sink), and/or a filtered, buffered op amp (source) [<1 VDC (dry) or >17 VDC (wet)]. The electronics can be specifically configured with other outputs such as relay drivers or digital signals if required by the application.

FCI's Level Switch Features

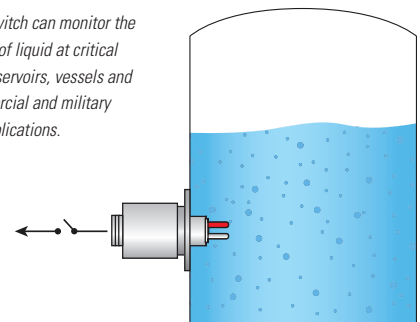
- No Moving Parts, No Routine Maintenance
- Wet / Dry or Wet / Wet Detection
- Simple Installation
- Extreme Temperature, Pressure and Vibration Service
- Corrosion, Abrasion and Fouling Resistant
- Small, Compact and Lightweight
- Analog Design Eliminates DO178B and DO254 Validation
- On Aircraft External Switch Point Adjustment (by FCI Service Personnel)

FCI's Thermal Dispersion Level Sensing Technology Advantage

FCI's sensors detect and signal changes in level condition by monitoring the difference in temperature between a slightly heated temperature sensor and an unheated temperature sensor. The change in temperature difference is a direct indication of the presence or absence of liquid level at the sensor element. The sensor is small, lightweight and rugged. This unique method of detection has no moving parts, resulting in a no maintenance, superior repeatability and highest reliability solution for commercial and military aircraft or marine applications. This is the FCI Thermal Dispersion Technical (TDT) Advantage.

In liquid level sensing applications the temperature difference between the heated and unheated Resistance Temperature Detectors (RTD) is small, when the element is submerged. When the sensing element is uncovered, the heated RTD quickly warms, while the unheated RTD remains the temperature of the process fluid. This rapid increase in temperature difference is detected as a "dry" signal by the controller electronics, and the output from the electronics indicate the change. Once the element is again submerged, the process is reversed; and the heated RTD is quickly cooled, while the unheated RTD remains the temperature of the process fluid. This rapid decrease in temperature difference is detected as a "wet" signal by the electronics, and the output from the controller indicates the return to the covered condition. This technique may be used in any wet / dry or liquid / liquid interface application, because the temperature difference between the heated and unheated RTDs is always different when the element is in contact with immiscible fluids.

FCI's AS-LLS Level Switch can monitor the presence or absence of liquid at critical level elevations in reservoirs, vessels and gearboxes for commercial and military aircraft or marine applications.



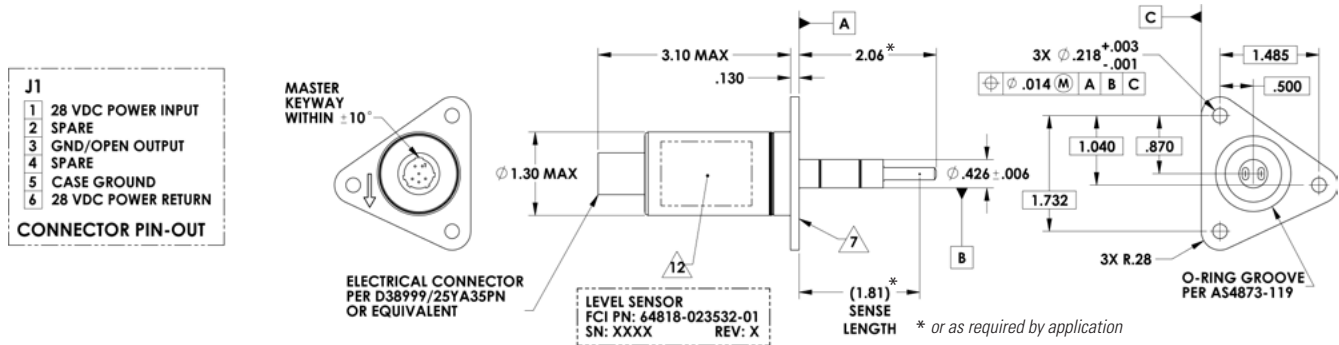
Watch FCI Aerospace's video on Liquid Level Sensing online
www.FluidComponents.com/Aerospace

Model AS-LLS Level Sensor Specifications

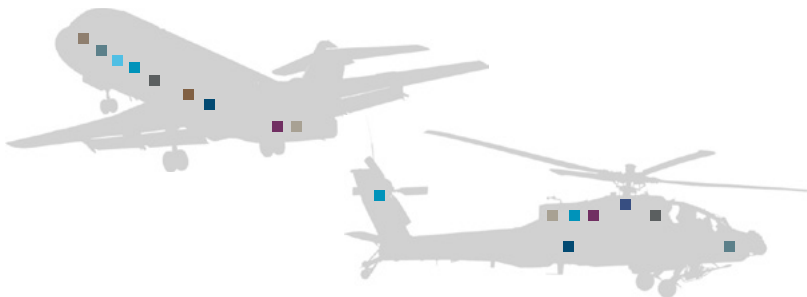
- **Service:** Level switch for liquid/gas and liquid/liquid interfaces
- **Sensor Element Material:** 316 stainless steel all welded construction
- **Electronics Enclosure:** 316 stainless steel; hermetically sealed
- **Electrical Connection:** D38999 or compatible
- **Process Connection:** Flanged with O-ring seal
- **Insertion Length:** Per customer requirement
- **Signal Output Options**
Sourcing output: Wet signal: source 240 mA at 28 VDC; dry signal: source 0 VDC
Open collector output: Wet signal: closed, sinking up to 100 mA at less than 0.5 VDC; dry signal: open, leakage < 10 µA at 30 VDC
- **Electrical Power Input:** 28 VDC nominal per MIL-STD-704
- **Power Consumption:** 50 mA to 85 mA depending on type of output signal(s)
- **Weight:** 8 oz [227g] maximum

- **Proof Pressure:** up to 2,000 psig [138 bar(g)] as required by application
- **Switch Point Adjustment**
Factory set at customer specified switch point
- **Operating Temperature Range**
Sensor Element: -65 °F to 500 °F [-54 °C to 260 °C]
Specify actual requirement
Electronics: -40 °F to 257 °F [-40 °C to 125 °C]
Higher temperatures available optionally
- **Repeatability:** ± 1/8" [3 mm] of liquid level elevation
- **Time Response:** 1-3 seconds typical, depending on fluid type and switch point
- **EMI and Lightning Protection:** MIL-STD-461 and RTCA/DO-160
- **Qualifications:** MIL-STD-810 and RTCA/DO-160
- **Quality Systems Approval:** ISO 9001, AS9100

Model AS-LLS Level Sensor Drawing – Standard Product



Aircraft System Applications



- Gearbox Level and Temperature Detection
- Liquid Cooling Systems
- Fuel Tanks and Refueling Systems
- Generators
- Engine Fuel Controls
- Radar and Electronic Accessory Cooling
- Auxiliary Power Unit (APU)
- Turboshaft Engines
- Potable and Gray Water



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