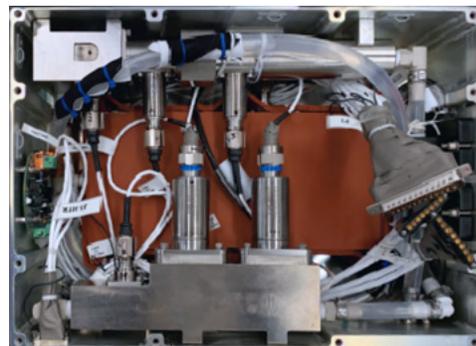




FCI Flow Switch Embarks on Out of This World Mission for Spacesuit Experiment aboard International Space Station

San Marcos, CA — In support of NASA's development of next-generation spacesuit technologies, the reliable, precision Model AS-FS flow switch from FCI Aerospace has been inserted into the Spacesuit Water Membrane Evaporator (SWME) – Spacesuit Evaporation Rejection Flight Experiment (SERFE), which was installed last November aboard the International Space Station (ISS).



SWME - SERFE is designed to evaluate and demonstrate in a microgravity environment a new active thermal control loop (TCL) technology for future mission spacesuits. The new TCL technology circulates cooling water throughout the exploration extravehicular mobility unit (xEMU) to keep the spacesuit's electronics cool and the astronaut comfortable.

NASA will run a total of 25 extra-vehicular activity (EVA) spacewalk simulations with the exploration extravehicular mobility unit's (xEMU) new TCL test article using two FCI Aerospace AS-FS flow switches. They will provide the low level cut-offs for the heater performing the metabolic heat injection to test the system. The two thermal liquid flow switches are used in the heater box to safeguard the heater from a loss of water or flow.

FCI's thermal mass flow switches monitor mass flow directly, and do not require pressure and temperature corrections necessary with volumetric flow sensing. Developed from FCI's proven, high performance aircraft qualified flow switch designs, the Model AS-FS provides a commercial off-the-shelf (COTS) liquid flow switch for faster delivery lead-times at reduced cost.

The AS-FS flow switch operates over a wide set-point range in liquids of 0.01 SFPS to 10 SFPS [0,003 MPS to 3 MPS] or in air from 0.25 SFPS to 1,000 SFPS [0,07 MPS to 305 MPS], which is factory set to the user's specification. Highly reliable, this flow switch features repeatability of ± 2 percent over the full signal range. Response time is 5 seconds to 15 seconds (typical), depending on the user's desired switch point.

Designed for rugged aerospace environments, the Model AS-FS flow switch's standard operation pressure is up to 2000 psig [138 bar(g)], with higher pressure ranges available upon request. The flow

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element is designed for freezing to frying conditions: -65 °F to 350 °F [-54 °C to 175 °C] to meet the demands of deep space exploration.

The wetted portion of the probe is hermetically sealed and is made of all welded Hastelloy C-276 parts for NASA that were easily substituted for the standard 316L stainless steel material. The flow element's heavy-duty construction provides superior corrosion resistance in liquid flow applications. It is available with a flanged mounting with O-ring seal and can be provided with a variety of military electrical connectors.

The electronics are hermetically sealed (welded) in an integral enclosure. 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) (< 1VDC [low flow] or > 17 VDC [high flow]). Electronic hysteresis is included to prevent undesired switching when flow rates are in the vicinity of the set point.

This AS-FS meets multiple rigorous environmental and performance industry standard specifications. They include EMI and lightning protection of the electronics to MIL-STD-461 and RTCA/DO-160, as well as full qualification to MIL-STD-810 and RTCA/DO-160.

FCI's thermal mass AS-FS flow switches are suitable for a wide range of aircraft and spacecraft applications. They have proven themselves for decades in liquid cooling systems, air management systems, cooling fan failure alarms, RAM air flow failure alarming, fuel tank inerting systems, and PACK and bleed air systems.

FCI Aerospace is a world leading manufacturer of standard off-the-shelf and custom built-to-specification flow, level, temperature and pressure sensors with designs that meet and exceed specifications for performance, reliability and quality. FCI is ISO 9001 and AS9100 certified. In addition, FCI's quality program and policies are continuously reviewed and audited by all major airframe manufacturers and contractors.