MODEL AS-CED

AIRCRAFT QUALIFIED AIR COOLING EFFECT DETECTOR (CED)

FCI's Air Flow Cooling Effect Detector (CED) Applications

- Air management systems (AMS)
- Environmental cooling systems (ECS)
- PACK air systems
- Airborne electronics cooling systems
- Shipboard confined space cooling systems
- Ground vehicle and equipment cart cooling systems

FCI Aerospace Air Cooling Effect Detector (CED)

FCI Aerospace Cooling Effect Detector (AS-CED) for commercial and military aircraft applications provides a unique set of performance features unavailable in other flow sensing technologies. The Cooling Effect Detector (CED) integrates FCI's thermal dispersion technology (TDT) mass flow measurement with an accurate temperature sensing capability in a single sensor to reliably measure the cooling effect of air flow in aircraft ducting. The integral CED electronics are calibrated with the sensor element in FCI's National Institute of Standards Technology (NIST) traceable laboratory to provide a single alarm point over a customer specified cooling effect curve that meets program specific requirements.

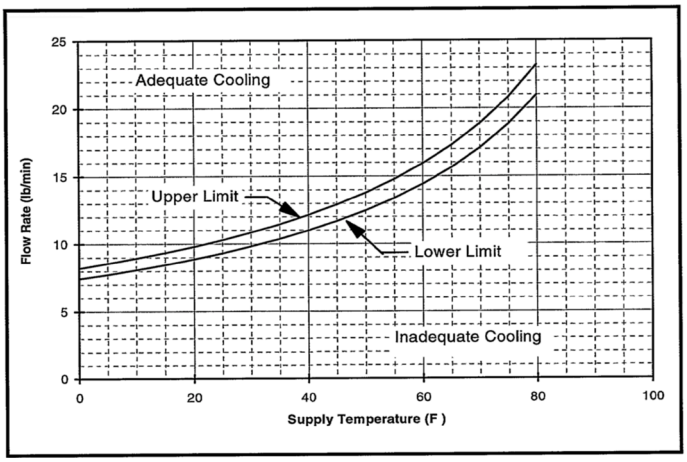
The wetted portion of the probe is hermetically sealed, and made of all welded stainless-steel parts. The element construction provides corrosion resistance and withstands service line pressures up to 2000 psig [138 barg]. The FCI Aerospace CED sensor is suitable for wide ranging media temperature service from -55 to +350 °F [-48 to +177 °C]. It is available with a flanged mounting connection and can be provided with a variety of commercial or military electrical connectors.

The CED electronics are environmentally sealed in an integral nickel-plated aluminum enclosure. Power input is 19-32 VDC per MIL-STD-704. Standard outputs include an open collector (sink/open). Outputs may be specified with "closed" condition for either low cooling effect or with high cooling effect to suit customer signal input requirements. Electronic hysteresis is included to prevent undesired switching when air duct cooling effect rates are close to the value of the set point. Because the cooling induced heat dissipation effect is a logarithm function, FCI Air Cooling Effect Detectors can perform over a remarkably wide cooling effect range with exceptional low cooling effect sensitivity.

FCI's Air Cooling Effect Detector (CED) Features

- No moving parts, no routine maintenance
- Small, compact, and lightweight
- Simple single point installation
- Low flow and temperature sensitivity
- Wide turndown range; 100:1 or more
- Lowest pressure drop
- Extreme temperature, pressure and vibration service
- Highest reliability, 100,000+ hours MTBF
- Corrosion, abrasion and fouling resistant
- Programmable to customer defined flow vs. temperature operational characteristics

Typical Cooling Effect Detector (CED) Operational Requirements Curve:



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Model AS-CED Specifications

- **Service:** Cooling Effect Detection (CED) monitoring of air or gas
- **Material:**
  - Sensor Element: Wetted parts 316 stainless steel, hermetic all welded construction
  - Electronics Enclosure: Environmentally O-ring sealed nickel plated aluminum cover
- **Electrical Connection:** D38999 or compatible
- **Process Connection:** Flanged with O-ring seal
- **Insertion Length:** Per customer requirement
- **Output Options**

  Open Collector

  Flow Signal: Closed, sinking up to 100 mA at < 0.5 Vdc drop
  Low Flow Signal: Open, leakage < 10µa at 30 Vdc

  – OR –

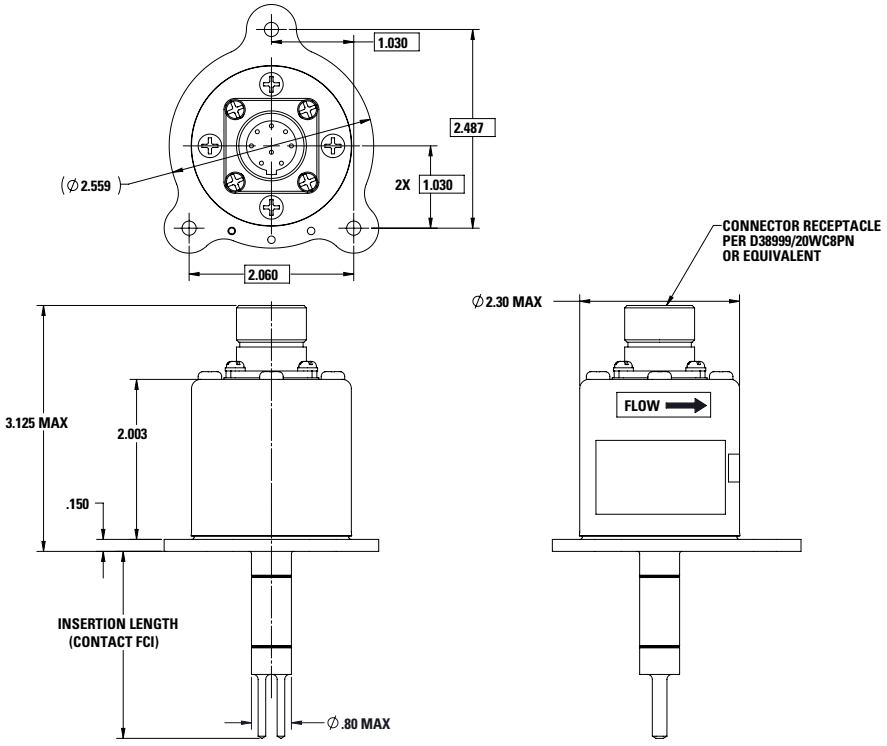
  Flow Signal: Open, leakage < 10µa at 30 Vdc
  Low Flow Signal: Closed, sinking up to 100 mA at < 0.5 Vdc drop
- **Electrical Power Input:** 28 VDC nominal per MIL-STD-704
- **Power Consumption:** 3 watt maximum
- **Weight:** 12.4 oz. [350 g] maximum
- **Operating Pressure:** Standard up to 2000 psig [138 bar(g)]; higher pressures available by request, contact FCI
- **Switch Point:** Factory set to customer requirements; function of flow and temperature

  Cooling Effect Detector (CED) Range

Process Fluid	Flow Range
Air	0.25 SFPS to 1,000 SFPS [0,07 MPS to 305 MPS]

- **Media Temperature Range:** - 55 °F to 350 °F [- 48 °C to 177 °C]
  Electronics: - 40 °F to 185 °F [- 40 °C to 85 °C]
- **Time Response:** 4 to 15 seconds typical, depending on switch point
- **EMI and Lightning Protection:** MIL-STD-461 and RTCA/DO-160
- **Environmental Qualifications:** MIL-STD-810 and RTCA/DO-160
- **Quality Management System Certifications:** ISO9001 and AS9100

Model AS-CED Cooling Effect Detector (CED) Outline Drawing



Visit FCI online at www.FCIAerospace.com | FCI's Quality Management System is ISO9001 and AS9100 Certified

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