

## T-Probe – Aircraft Ice and Moisture Detection Probe



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An aircraft sensor that provides pilots and ground personnel detailed, real-time atmospheric ice and water measurements during flight for temperatures ranging from -70 °C to 30°C

### **Background:**

Ice formation on aircraft reduces aircraft handling and has been blamed for a multitude of fatal crashes, especially when allowed to accumulate along flight surfaces. Even a 1mm thick layer of ice is reportedly enough to destabilize an airplane. According to the National Transportation Board, in-flight icing has been blamed for roughly 819 deaths between 1982 and 2000.<sup>1</sup> In April 2007, the FAA issued a proposal for enhanced ice-detection systems to help curb the incidence of aircraft icing accidents.

### **Benefits & Advantages:**

- The T-Probe offers key insight into conditions surrounding super-cooled clouds
- Measures water and ice particles separately in “mixed phase clouds” (ice and super-cooled water) during flight, as opposed to simple “ice/no ice” readings
- Provides quantifiable data regarding the combined ice and water content of clouds over a range of distances
- Readings are sent back to the pilot every tenth of a second for real time weather assessment
- The T-Probe is especially valuable in identifying potential icing conditions during flight

### **Technology Overview:**

Most available aircraft ice sensors make only an “ice/no ice” reading, failing to provide quantifiable data regarding the combined ice and water content of the atmosphere. This is a significant problem in “mixed phase clouds” where small particles of ice and super-cooled water are prevalent. The T-Probe collects and evaporates both water and ice particles from the atmosphere, then sends detailed, accurate measurements regarding the content of both back to the pilot every tenth of a second. The collected data includes a measurement of the difference between ice and water content of the atmosphere. This allows the pilot to more accurately assess the atmospheric conditions and the safety of the airplane.

<sup>1</sup> UCAR, “Steering Clear of Icy Skies: Enhanced Product Helps Guide Aircraft away from Hazardous Icing Conditions,” 2006

### **Intellectual Property:**

T-Probe (Ice and Liquid Sensor System for An Airborne Vehicle)

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