



Photo courtesy Arplingstone

Ice Detectors 0871PD Series

UTC Aerospace Systems ice detectors do more than just detect the presence of ice—they can be used to calculate ice accretion rate and liquid water content (LWC).

With over 50 years of ice detection experience and innovation, UTC Aerospace Systems continues to be at the forefront of icing technology. Flexible, robust designs detect ice in a wide range of icing environments and have demonstrated their success around the world on both aircraft and ground-based applications.

Operational Considerations

UTC Aerospace Systems ice detectors are designed to meet the demanding aerospace requirements of RTCA DO-160 for environmental conditions. These factors, as well as droplet impingement and unit orientation, should be considered with each installation. Software meets DO-178B, Level A. Hardware development follows DO-254, Level A standards. The unit complies with SAE AS5498.



UTC Aerospace Systems

Ice Detectors

0871PD Series

General Specifications

Connector MS3116F-12-10P

Power Consumption

Sensing Mode 5 Watts max. at 28 VDC

De-icing Mode 430 Watts max. at 28 VDC

Discrete Outputs: Customer-selectable output configuration

Ice Open / Ground

Status Open / Ground

Size

Weight 1.5 lbs. max. (0.68 kg)

Serial Ports

RS-485 (RS-232 available with line level converter)

Benefits & Features

Frequency data allows multiple calculations to be performed

Heated strut and probe provide robust de-icing capability

The small size offers greater flexibility for mounting and installation

Built-in test capability verifies internal electronics are properly functioning

Diagnostic information available to aid failure troubleshooting via serial communications

Compatible with aluminum or composite skin

Customer-selectable configuration of ice outputs

Ice Detection Sensitivity

Sensitive to less than 0.001 inches of ice

Customer-selectable ice signal threshold (typically 0.020 inches)

Theory of Operation

UTC Aerospace Systems ice detectors use a magnetostrictive technology to drive the sensing probe to resonate at its natural frequency. As ice accretes on the probe, a shift in resonance frequency occurs. When the resonance frequency reaches the setpoint, an ice signal is activated and the strut and probe de-ice. The heaters remain on for a predetermined time once ice has debonded from the probe to ensure the ice is removed.

Icing Measurements

The rate of ice accretion on ice detectors and monitored surfaces—for example, wing, tail, engine nacelle, etc.—depends on a complex heat transfer balance dependent on many atmospheric and aircraft parameters. By understanding these relationships, ice detector output can be used to activate ice protection and stall protection. It can also be used to calculate ice accretion rate and liquid water content (LWC).

For additional information:

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