OPTICAL ICE DETECTOR (OID)

ALL-IN-ONE OPTICAL SENSOR FOR ADVANCED ICE DETECTION

A new set of eyes for the future of aviation

Protecting against ice accumulation on aircraft has been an industry priority for decades. But in recent years, a number of high-profile incidents have demonstrated the urgent need to better detect the environmental conditions that lead to dangerous icing – and develop the ability to differentiate and quantify various icing types to respond to these conditions accordingly.

As a leader in ice detection systems for more than 50 years, Collins Aerospace has been at the forefront of sensor technology for a variety of aircraft platforms. Now, we're introducing optical icing sensors that meet the integration, certification and performance needs of modern aircraft while providing advanced detection capabilities: the Collins Optical Ice Detector (OID).

Our OID detects and differentiates the types of liquid water and ice crystals in the atmosphere surrounding the aircraft and being ingested by the engines that can cause icing. For liquid water conditions, our OID can also determine whether large droplet conditions exist and quantify the liquid water content. These measurement capabilities reduce pilot workload and airline cost while complying with the latest icing regulations to improve aircraft safety.

KEY FEATURES AND BENEFITS

- Detects and differentiates all three types of icing:
  - Standard liquid water (FAA/EASA Appendix C)
  - Large droplet (FAA/EASA Appendix O)
  - Ice crystals (FAA/EASA Appendix D/P)
- Flush-mount design reduces drag and power requirement
- Flexible mounting location reduces integration cost
- Designed in accordance with SAE AS5498A

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Detect, differentiate and quantify icing

KEY FEATURES AND BENEFITS

- Reliably detects/differentiates all conditions within one second
- Large sample volume speeds response time and improves detection threshold
- Velocity-independent measurement
- Continuous measurements with no periodic de-icing required
- Quantifies liquid water content, enabling more efficient ice protection system operation
- Detects the presence of droplets larger than a chosen threshold

SPECIFICATIONS

- 150 W max at 28 VDC (including window heater)
- Size and weight: configuration dependent

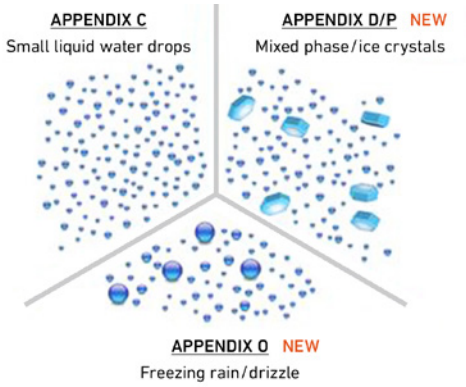
Instead of waiting for the buildup of ice, our OID uses a laser that sends out a series of light pulses into the atmosphere around the aircraft. Combined with temperature data from another source, the reflected backscatter is used to form measurements that detect and differentiate the three types of icing – supercooled small liquid water droplets, supercooled large liquid water droplets (SLD) and ice crystals. Liquid water content (LWC) can also be determined by analyzing the change in reflection intensity as a function of distance. Being able to determine the type and quantity of icing present in the environment is critical to keeping an aircraft flying safely within conditions for which it is certified.

Achieving this capability also delivers operational benefits. Pilots no longer need to make judgment calls on whether to exit potential SLD icing conditions, improving safety and flight efficiency. Detecting ice crystal conditions allows for the optimization of engine performance to save fuel. And by quantifying liquid water content, the OID enables more efficient ice protection system operation; allowing the ice protection system to operate at the optimum periods and power levels.

ALL-IN-ONE DESIGN

Because the OID uses Light Detection and Ranging (LiDAR) technology, it incorporates all the components necessary for advanced ice detection into one sleek package.

Where other methods may require multiple instruments to make all desired measurements (requiring a complicated aerodynamic and thermodynamic analysis to locate), the OID lies flush to the aircraft skin or engine nacelle and can be mounted almost anywhere – reducing drag, power and integration cost.



Call us today to discuss which OID configuration is best suited for your application.

Specifications subject to change without notice.

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