

## Leddar sensors for UAV collision avoidance

Providing the right combination of range, spatial awareness and processing efficiency for today's sense-and-avoid solutions



Multi-segment Leddar optical sensors provide vital object/surface detection and positioning over a wide field-of-view, indoor or outdoor.

Most of today's drones fly without much visibility of their surroundings, which represents one of the key challenges for the UAV industry. Outdoor navigation brings a constant threat of collision with structures, objects and people. Indoor navigation, with which GPS and barometric pressure sensors become unreliable, also require constant spatial awareness for the drone to safely and successfully complete its flight mission.

Besides the obvious risk of collision-related damages, the industry realizes that even a few high-profile incidents involving drones risk seriously damaging the industry's public image. These incidents could even push regulatory bodies toward more stringent UAV safety rules and flight restrictions. Therefore, implementing new sense-and-avoid solutions that improve drone's awareness of its environment is a priority for most drone manufacturers.

### Multi-segment Leddar optical sensors

Leddar is an innovative optical sensing technology capable of providing information about a drone's immediate surroundings, including object and surface detection, along with accurate distance information, enabling the development of new navigation solutions for safe and even automated flights.

The multi-segment Leddar is a static optical sensor module that provides a segmented beam and multiple object detection and distance measurements from a single device. Leddar's patented algorithms result in rapid, continuous and accurate detection and ranging—in multiple segments of the beam—for the entire field of view, with optimized power consumption and processing requirements.

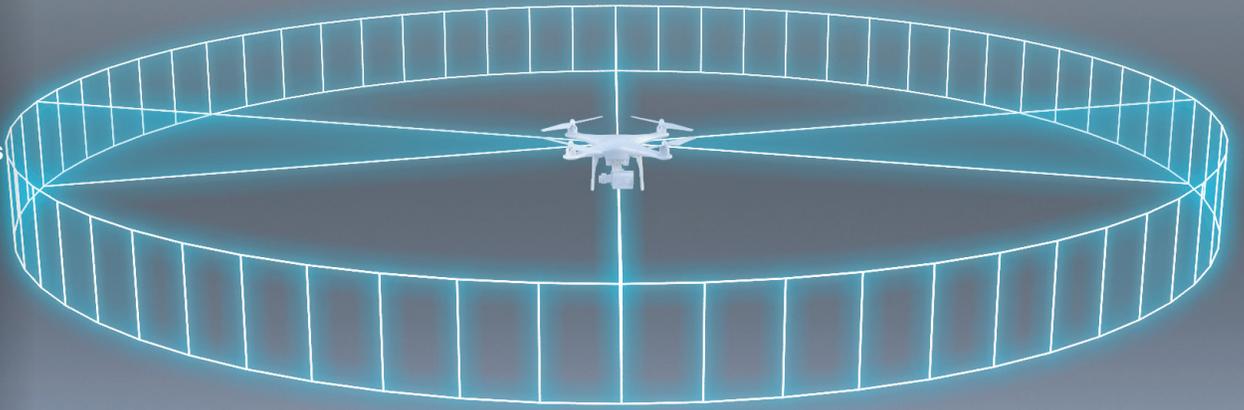
#### Features

- Sensor FoV of 9 to 95°
- Accuracy < 5cm
- Typical range of 10-30m
- Operating temperature of -45° C to + 85° C
- Rapid data acquisition time up to 50 Hz

#### Key benefits

- Reliable, high-range collision avoidance
- Rich spatial awareness
- Enables up to 360° object detection
- Works indoors and outdoors and in all lighting and harsh environmental conditions
- Immune to light, noise, vibrations, wind
- Eye-safe

Combining multi-segment Leddar optical sensors provides UAVs with comprehensive detection and ranging capabilities up to 360°.

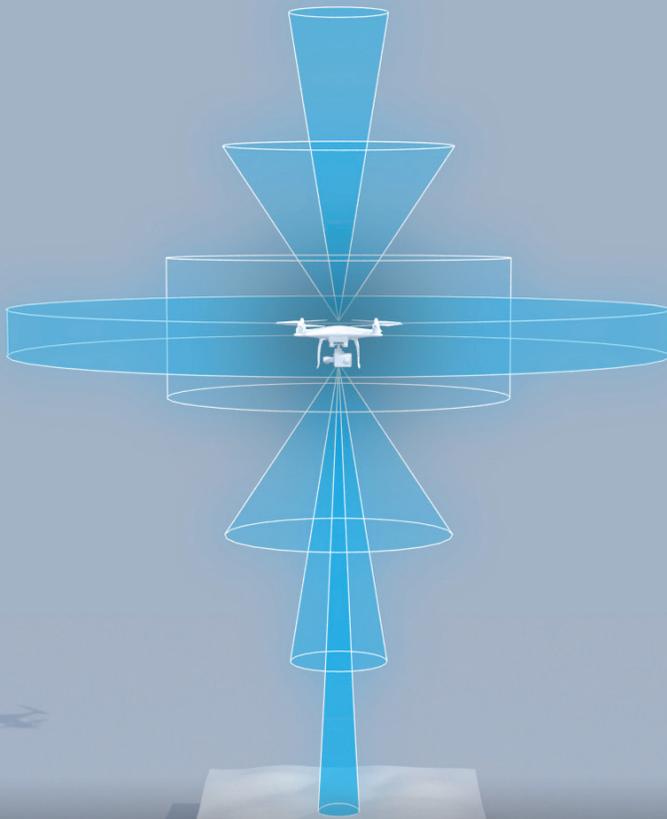


Leddar multi-segment sensors come in fields of view from 9° to 95°. Combining multiple Leddar sensors together makes it possible to provide comprehensive detection and ranging capabilities around the UAV of up to 360°.

### **Leddar: unique capabilities for UAV collision avoidance**

Sensing technologies available today are still far from perfect and most often fall short of the industry's expectations. Sonars (ultrasound sensors) provide very limited ranges of only a few meters and little information with only a single measurement. LIDARs rely on moving parts to scan a specific area and are typically expensive, bulky and fragile. And while camera vision solutions are promising, the technology is still immature, complex, and processing-intensive; it is likely to require a mix with other types of sensors to provide full-proof collision avoidance capabilities.

Stemming from a decade of focused R&D, Leddar sensing technology has already been deployed in many industries and applications. Providing a new solution for short- to mid-range detection and ranging, Leddar sensors enable multiple, simultaneous measurements as well as wide fields of view without any moving parts. They provide simple and efficient solutions for drone spatial awareness and obstacle avoidance, whether indoors or outdoors.



Leddar technology can be leveraged in various configurations to meet the specific requirements of your UAV application.

Ask us about Leddar sensing technologies for drones-UAVs: [leddartech.com/en/contact-us](http://leddartech.com/en/contact-us)