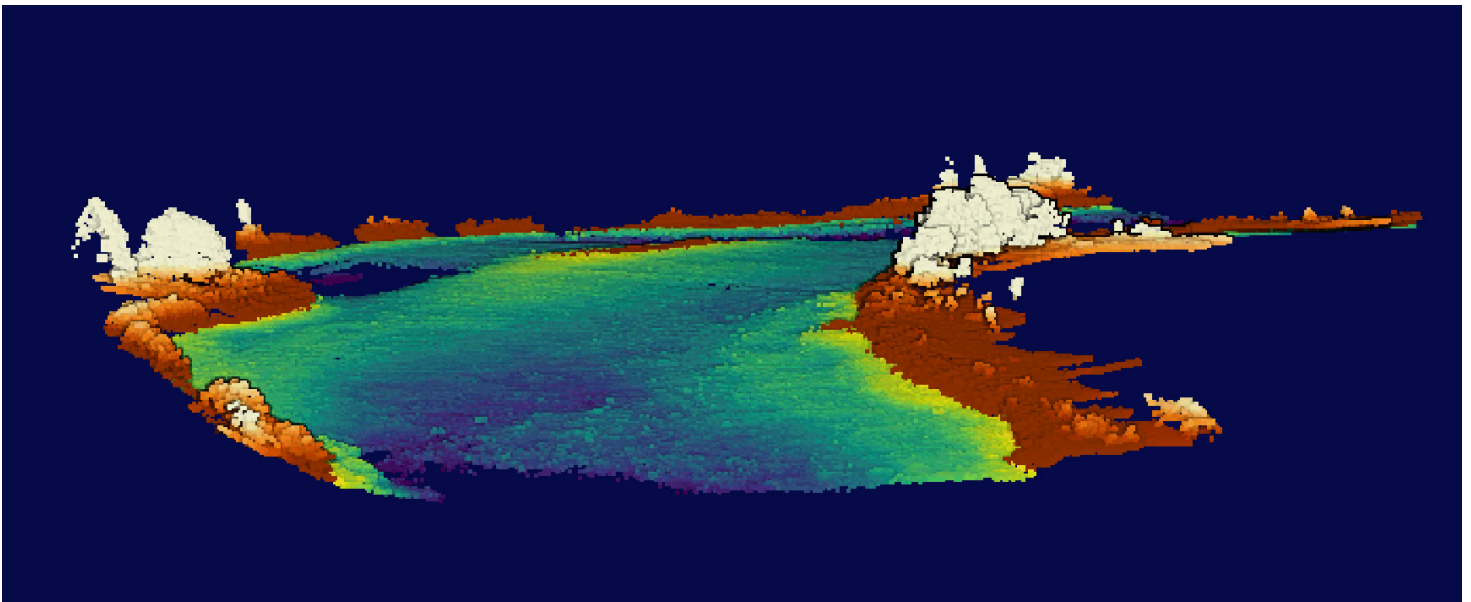


EDGE LIDAR



Specifications and performance



THE EDGE

EDGE 2-in-1 bathymetric lidar system produces high resolution point clouds, producing a range of 100-200 points/m² on a single pass. Above is a 3-D point of the Colorado River, near McCoy, captured in 2023.

Orion Space Solutions, an Arcfield Company created EDGE LiDAR with the vision of providing a unique LiDAR sensor for next-gen bathymetric surveying. This innovative solution combines our knowledge of compact satellite systems with the ability to reduce the size and weight of high-performance sensors. Using novel LiDAR optical capabilities, we give our customers the tools to see beyond the surface. From coastal mapping and surveying to infrastructure inspection and military logistics, the applications of EDGE are numerous and widespread.

The LiDAR's performance in shallow waters is unmatched, providing simultaneous water- and bottom-surface detection with sub-centimeter accuracy and precision. The green (532 nm) wavelength penetrates

through water and provides bottom surface returns greater than 1.5 Secchi depth.

The pulse repetition rate and beam footprint are customizable at time of order. A linear scan pattern gives a near constant point density and the 30° scan angle range maps out a swath width that is ½ the flight altitude.

Point clouds with typical densities of 100-300 points/m² and centimeter-level resolution can be achieved with the combined scanner and LiDAR performance. Orion's expertise in bathymetric lidar spans more than a decade including support and customization of unique lidar applications and award-winning products.

AWARDS AND RECOGNITIONS

2022 JALBTCX Technical Achievement Award

2020 ILMF Lidar Leader Award Finalist - Outstanding Commercial Innovation

SYSTEM INFORMATION

EDGE is a low size, low weight, and low power LiDAR system, which makes it the perfect sensor for small form-factor UAVs. The system is fully autonomous and has its own rechargeable lithium-ion battery that is easily removable, allowing for 90-minutes of flight time. Because of the autonomous nature, EDGE is UAV platform agnostic.

The system includes:

- Internal IMU/GPS (SBG or Applanix)
- Internal downward-pointing camera
- Dual GPS antennas with mounting booms
- Mounting hardware for UAV integration
- Removable USB data storage
- 2 Li-Ion batteries with chargers
- Pelican case for safe storage and transport

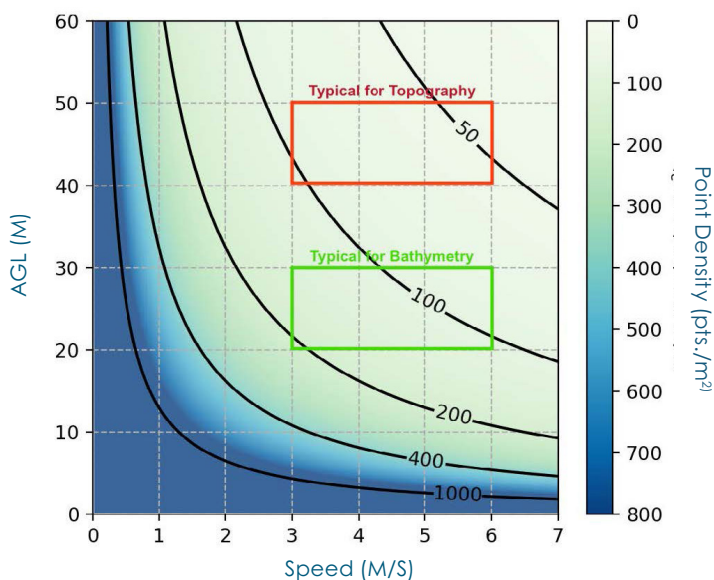
| SCANNER PERFORMANCE | |
|---------------------|---------------------------|
| Scan pattern | Linear cross-track |
| Scan angle range | $\pm 15^\circ = 30^\circ$ |
| Scan rate | 70 Hz |

| EDGE PERFORMANCE | |
|-----------------------|--------------------------|
| Accuracy | 1 cm |
| Precision | 0.5 cm |
| Laser wavelength | 532 nm |
| Altitude | Bathy: 30m Topo: 50m |
| Depth penetration | > 1.5 Secchi Depth |
| Pulse repetition rate | 20 kHz |
| Laser beam footprint | 12 cm at 10 m |
| Laser class | 3R or 3B - design option |

| IMU PERFORMANCE | |
|-------------------|-------|
| Position accuracy | 2 cm |
| Roll/pitch | 0.05° |
| Heading | 0.2° |

| EDGE SPECIFICATIONS | |
|---------------------|--|
| Weight | 5 kgs |
| Dimensions | 27 cm x 23 cm x 19 cm |
| Power supply | Internal Li-Ion Battery – 1.5-hour lifetime |
| Data interface | USB |
| Data volume | 1 GB / 10 minutes |
| Laser class | Class 3R Laser Product according to IEC 60825-1:2007 |
| NOHD for 3R model | 3 m: (Eye safe at > 3 m) distance from observer |

POINT DENSITY PERFORMANCE FOR SINGLE SWATH



MAXIMUM DEPTH PERFORMANCE FROM 25M AGL

