



OUR CUSTOMERS

Suitable for any Commercial Vessels, Offshore Infrastructure, Yachts, Port Surveillance, Patrol & Crew Boats (Maritime Police/Law Enforcement), Ladar[®] Sensor Suite can be customized to meet the specific situational awareness, maritime surveillance, and safety needs of the customers for a wide variety of applications. It is a versatile digital solution that is well-suited for applications ranging from maritime security and safety, remote operated vessels, autonomous shipping, surveillance of critical energy infrastructure and offshore operations. Easy to install and well positioned in the market of remote sensors, our solution is a highly feasible, attractively priced, and versatile solution for all users across disciplines.

LADAR[®] SENSOR SUITE

Our Ladar[®] Sensor Suite is a smart system that enables real-time, highly accurate surveillance of the ocean surface layer and the water column. Using sensor-based data and presents a visual consolidation of feeds – perfect for swift decision-making.

Multiple inputs from 3 Sensors: Visual, Thermal & Lidar through both cameras results in detection, characterization, classification and tracking of various types of objects such as floating containers, plastic, ice floes, floating debris, mammals, and others.

Utilizing AI to fuse data aggregation systems into a comprehensive object detection system with a user-friendly GUI for mariners. The system can be connected to a decision support system (DSS) for Maritime Autonomous Surface Ships (MASS) Level 1 and beyond.

SOLVING PROBLEMS

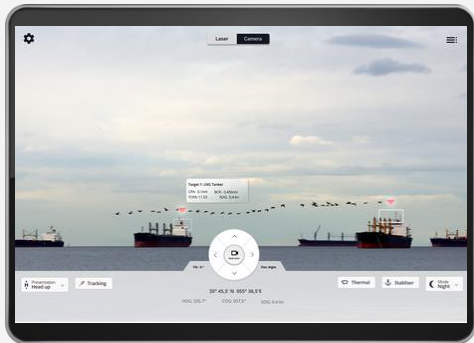
The Maritime Industry loses billions of dollars to collisions/ contact incidents/ security events every year with congestion only expected to increase and thus number of incidents. We look to provide a cutting-edge solution which addresses:

- Potential loss of life at sea
- Environmental Protection;
- High Cost of Incidents;
- Navigational Errors; and
- ISPS/Port Security risks
- Risks around floating energy infrastructure

ABOUT US

At Ladar Limited, we design, develop, and deploy laser and computer vision technological solutions for the maritime and offshore industry. With over 3 decades of experience, our team of maritime executives and technology experts have combined our expertise in with a goal to maximizing efficiency, sustainability, security and safety of commercial shipping and offshore activities using digitalization, automation solutions and sensor system development.

Our drive is to become the leading provider of innovative, laser and computer vision-based systems for worldwide offshore and maritime use.





FEATURES OF THE LADAR[®] SENSOR SUITE

- **Optimized for multiple maritime environments:** ship, ferry, terminals, offshore and harbor/port
- **Multi-sensor combination:** high-definition digital optical, thermal imaging and Lidar
- **Optimized effectiveness** for ship navigation safety and security applications
- **AI/ML** object/hazard detection, identification and alarms
- **Realtime** interactive Graphical User Interface (GUI), and feeding into COLREG module

SPECIFICATIONS	
Detection Range (surface targets)	Digital Optical / Thermal cameras: up to 5 nautical miles
Detection Range (semi-submerged/ submerged targets)	25-700 meters with the Lidar Lasers (depending on height of installation)
Detection depth (submerged target)	Maximum ~5 meters
Azimuth (Pan) scanning range	0 - 120° variable
Azimuth (Pan) scan rate	0 - 100° degrees/sec
Azimuth (Pan) scan repeat time	2.4 sec minimum/full scan
Elevation (Tilt) scan range	Fixed or -45° to +20° degrees
Elevation (Tilt) scan rate	0-100 degrees/sec
Elevation (Tilt) scan repeat time	1.3 sec minimum/full scan
Laser receiver aperture	75 mm, polarized
Laser receiver array	16 elements covering 4.8° (vertically oriented)
Lidar	Laser Product Classification: Class 3 R eye-safe per IEC/EN 60825-1:2014 Channels: 16 Wavelengths: Red (800nm) / IR (950nm) / Blue-green (560nm) Horizontal beam width: 1.4 mrad Vertical beam width: 5 mrad (0.3 deg) x 8 beams Integration time: 0.5 ms min, 20 ms typ
Digital Optical Camera	FOV: 18° x 14°, 1920 x 1080 pixels Angular resolution: 0.1 mrad
Thermal Camera	FOV: 18° x 14° Angular resolution: 0.5 mrad
Power Consumption	50 W (Sensor unit) 230 W (Processing unit)
Operating Voltage	12/24V
Operating Temperature	-50° to 40° C
Dimensions (height x width x length)	35 cm x 26 cm x 23 cm
Weight	5kg (Sensor unit) 2kg (Processing unit)
Operating environment	External (Marine)
Unit housing	Standard IP67, water and dust resistant
External connections	Ethernet
Integrated sensors	IMU, Magnetometer, GNSS
Integration	AIS, Radar and other Nav. Equipment such as COLREG module etc.

