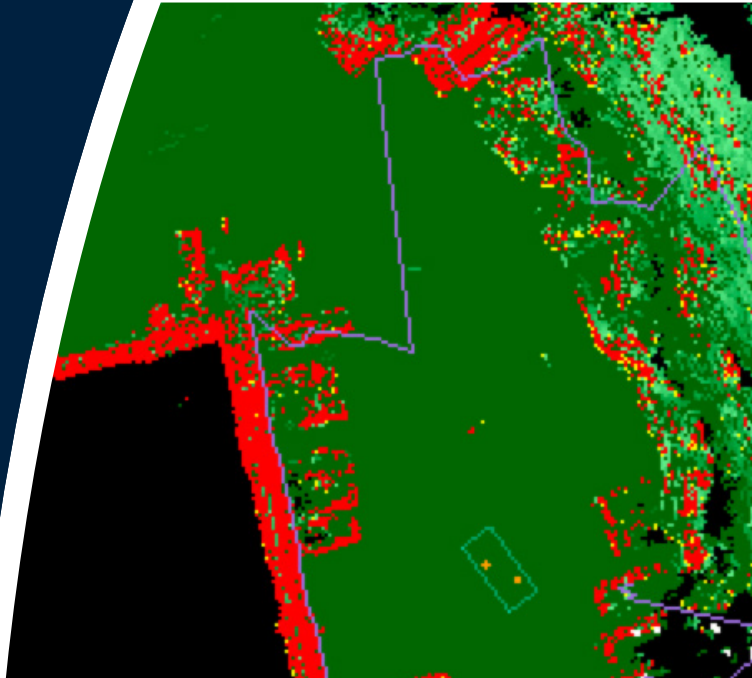


Forecast™ 3D Laser



ASI's Forecast™ 3D obstacle mapping system is a complete laser-based obstacle detection solution, not just a laser scanner. Its output is a full traversability map showing both positive and negative obstacles, suitable for input into any path planning algorithm. Its range, field of view, resolution, and update rate make it a suitable solution for large unmanned vehicles. Units have seen thousands of hours of use in outdoor operational environments for a proven hardware/software solution.

Under the Hood:

Forecast™ algorithms minimize false positives while maximizing detection of small (one-third meter) obstacles. Separate algorithms single out and distinguish negative obstacles. Sensor horizon information is also available. By combining wide spatially referenced areas, variations in vehicle roll and pitch are accounted for without the need for IMU data. The algorithms have been tuned in outdoor environments in rain, snow, and dusty conditions to maximize detection even in the presence of a moderate level of obscurants. Self-diagnostic algorithms detect sensor and processor faults in addition to detecting the sensor horizon and monitoring data quality in real time.

With a useful look-ahead distance of up to 65 meters, and hardened, field-tested packaging, Forecast™ can allow for safe operation of autonomous vehicles in real-world environments.



990 N. 8000 W.
Petersboro, UT 84325
www.asirobots.com

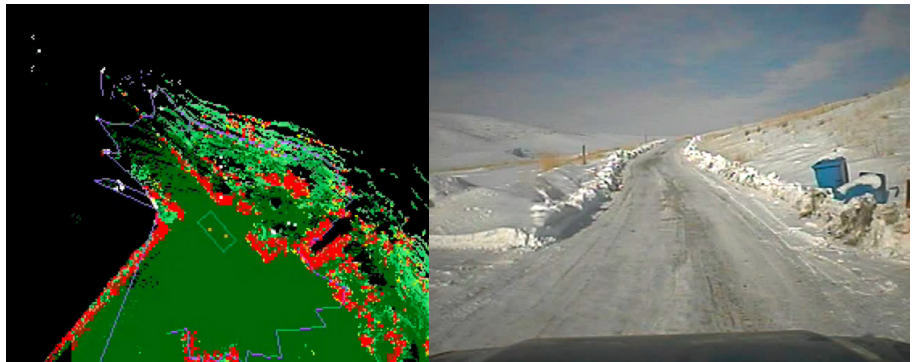
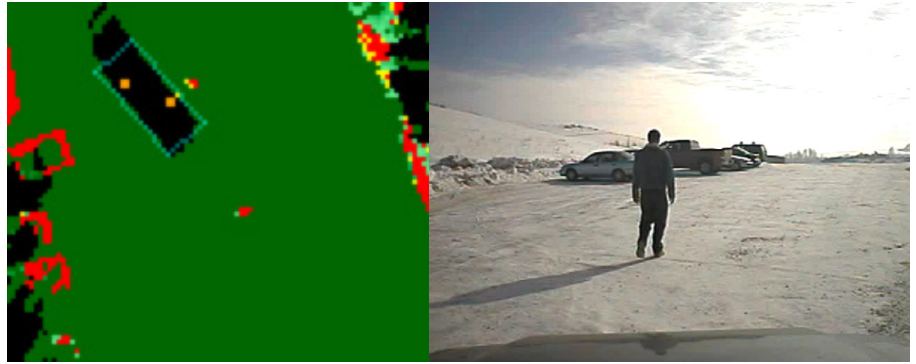
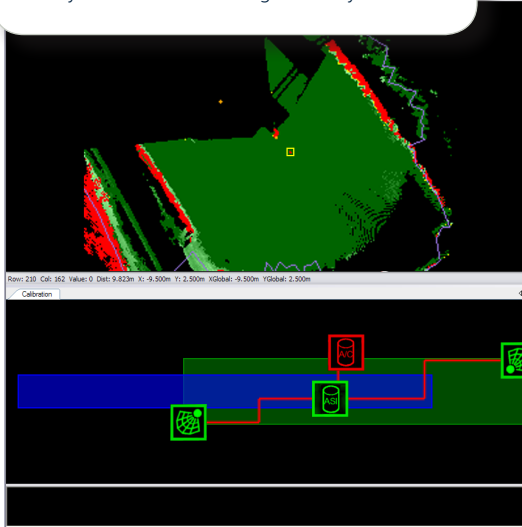
Phone: 435.755.2980
Fax: 435.752.0541
ASI-SMD-BRO-SAL-500-R01.0



Product Features and Specifications

Tools

- Calibration tool allows for precise alignment of sensor data to vehicle using targets and real obstacles
- Visual status indicator for troubleshooting shows which components of the system are functioning correctly



Option	With Sick LMS 151	With Sick LMS 511
Max Range	18 m at 10% rem, 50 m at 40% 270 degree FOV	40 m at 10% rem, 80 m at 40%, 190 degree FOV
Min detection size at max range	1 m	1 m
Min detection size at 15 m	300 mm	200 mm
Vertical drop detection	Out to 30 m	Out to 50 m
Cliff face detection	Out to 50 m	Out to 80 m
Negative obstacle detection	300 mm at 15 m (varies by mounting height)	300 mm at 15 m (varies by mounting height)
Scan rate	1 Hz, 60 rpm	2 Hz, 120 rpm
Rotation rate	0.5 Hz, 30 rpm	1 Hz, 60 rpm
Communication link	UDP over Ethernet	
Output protocol	JAUS, API document available	
Output data	Cost map 0-200, 0.25 m resolution, 600 x 600 grid with both obstacle and near-obstacle classifications	
Environment	Weather sealed (designed to IP66), scanner usable in moderate rain, snow, and light dust	
Operating temperature	-20°C – 50°C	
Storage temperature	-20°C – 70°C	
Power	12–24 V, 30–70 W, 100 W peak	



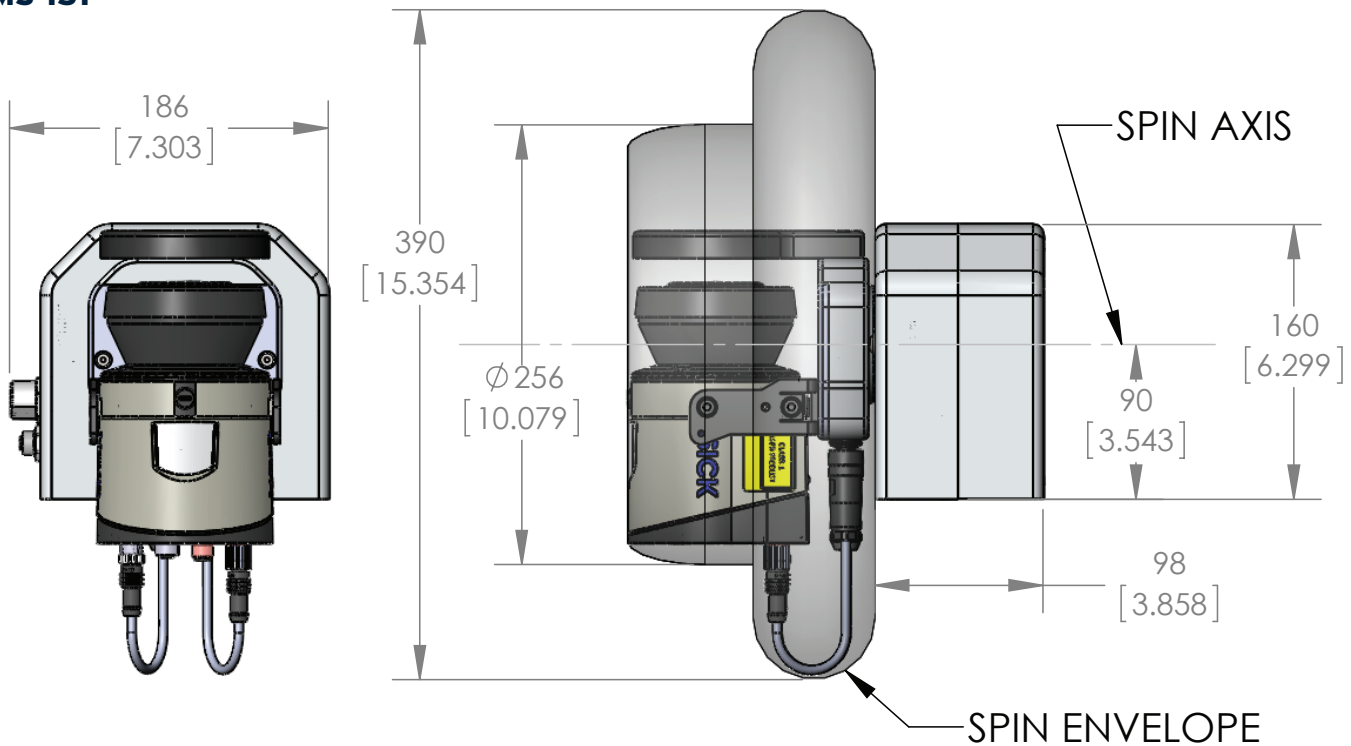
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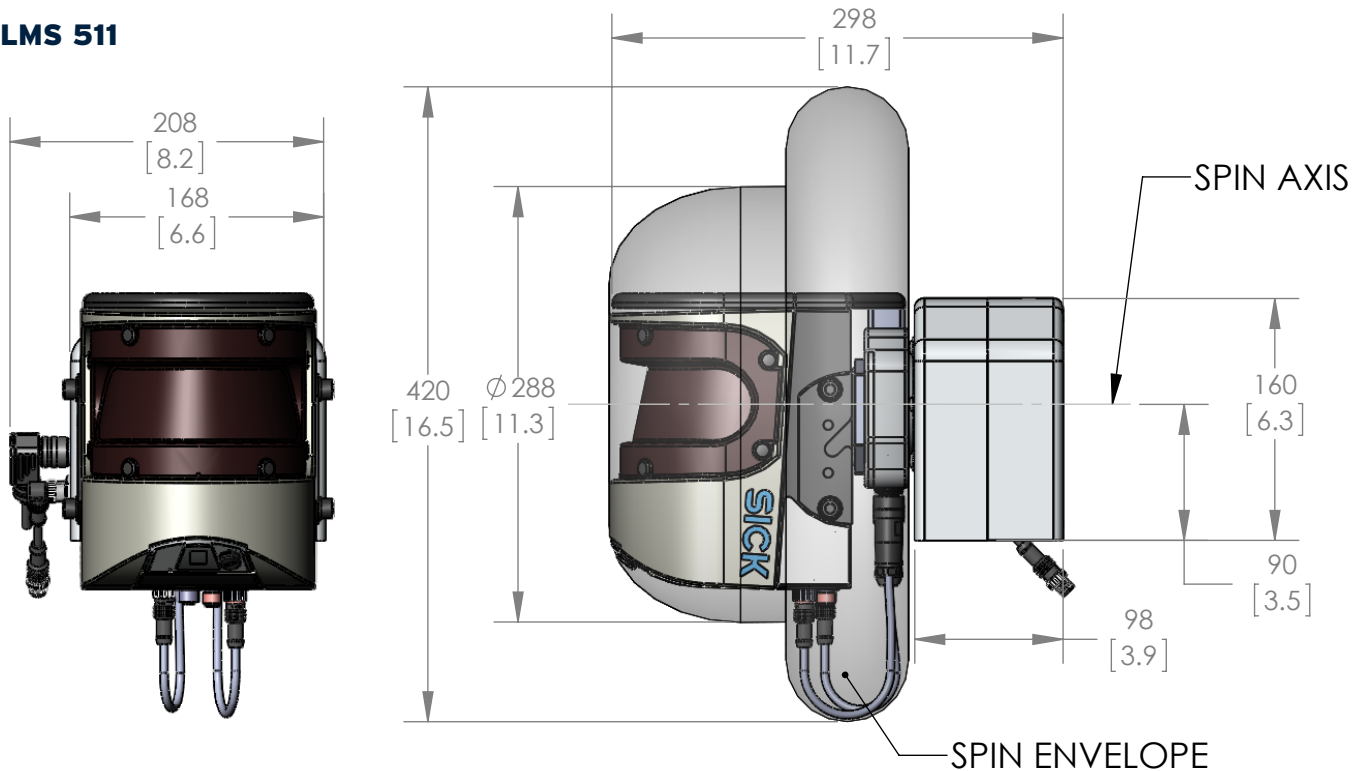
Product Features and Specifications

Dimensions

LMS 151

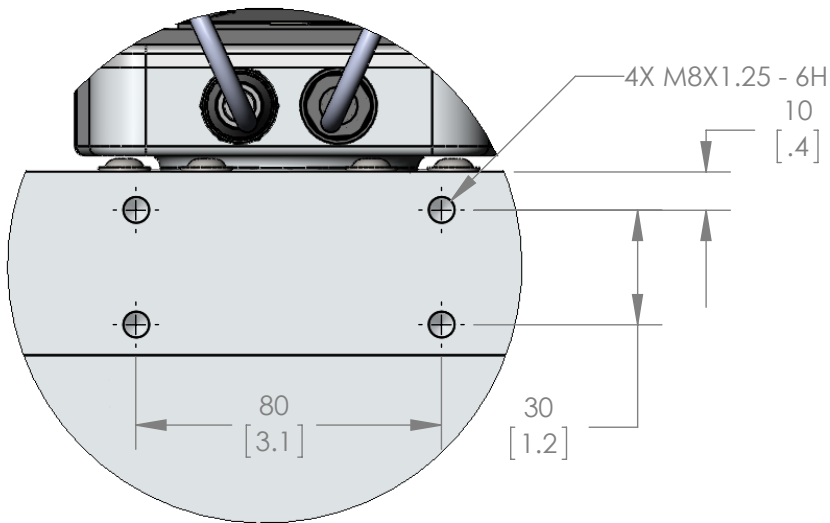


LMS 511



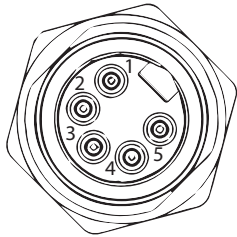
Product Features and Specifications

Mounting



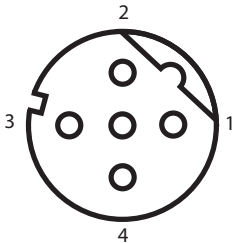
Pinouts

- 1 - +Vin
- 2 - +Vin
- 3 - GND
- 4 - GND
- 5 - NC



PWR
10-28 Volts

- 1 - TX+
- 2 - RX+
- 3 - TX-
- 4 - RX-



ETH