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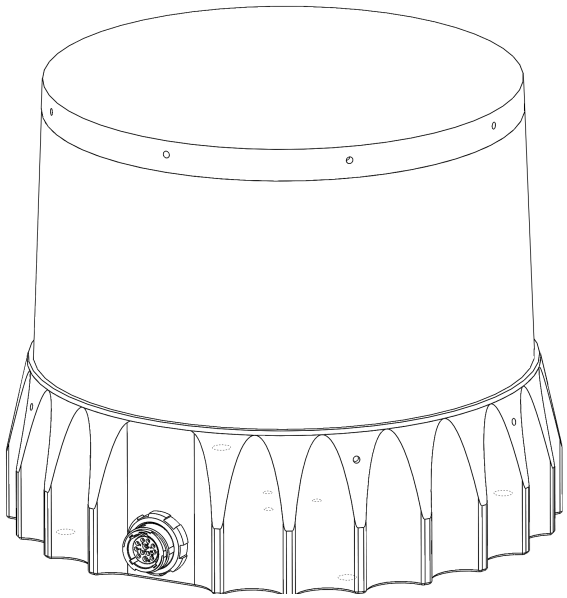
OS2

Long-Range High Resolution Imaging Lidar

SUMMARY
The OS2 offers a market leading combination of range, price, performance, reliability and SWAP. It is designed for indoor/outdoor all-weather environments. As the smallest long-range high-resolution lidar on the market, the OS2 can be directly integrated into vehicle facias, windshield, side mirrors, and headlight clusters.



HIGHLIGHTS

- Fixed resolution per frame operating mode
- Camera-grade ambient and intensity data
- Multi-sensor crosstalk immunity
- Industry leading intrinsic calibration
- Open source drivers

OPTICAL PERFORMANCE

Range (80% Reflectivity)	0.8 m - 240 m @ 80% reflective lambertian target, 100 klx sunlight, >50% detection probability, false positive rate of 1/10,000 0.8 m - 210 m @ 80% reflective lambertian target, 100 klx sunlight, >90% detection probability, false positive rate of 1/10,000
Range (10% Reflectivity)	0.8 m - 120 m @ 10% reflective lambertian target, 100 klx sunlight, >50% detection probability, false positive rate of 1/10,000 0.8 m - 80 m @ 10% reflective lambertian target, 100 klx sunlight, >90% detection probability, false positive rate of 1/10,000
Range Accuracy	Zero bias for lambertian targets, slight bias for retroreflectors
Range Resolution	1.2 cm
Range Repeatability (1 sigma / standard deviation)	SNR >250: ± 1.5 cm; SNR 100: ± 3 cm; SNR 12: ± 10 cm
Vertical Resolution	64 beams
Horizontal Resolution	512, 1024, or 2048 (configurable)
Field of View	Vertical: +11.25° to -11.25 ° (22.5°) - uniform spacing / Horizontal: 360°
Angular Sampling Accuracy	Vertical: ±0.01° / Horizontal: ±0.01°
Rotation Rate	10 or 20 Hz (configurable)
# of Returns	1 (strongest)

LASER

Laser Product Class	Class 1 eye-safe per **[IEC 60825-1:2007 & 2014]**
Laser Wavelength	850 nm
Beam Diameter Exiting Sensor	10 mm
Beam Divergence	0.13° (FWHM)

LIDAR OUTPUT

Connection	UDP over gigabit ethernet
Point Per Second	1,310,720
Data Per Point	Range, intensity, reflectivity, ambient, angle, time stamp
Time Stamp Resolution	10 ns
Data Latency	< 10 ms

IMU OUTPUT

Connection	UDP over gigabit ethernet
Samples Per Second	100
Data Per Sample	3 axis gyro, 3 axis accelerometer
Time Stamp Resolution	10 ns
Data Latency	< 10 ms
Details:	InvenSense MPU9250; datasheet for more details: https://www.invensense.com/download-pdf/mpu-9250-datasheet/

CONTROL INTERFACE

Connection	TCP over gigabit ethernet
Time Synchronization	Input sources: • IEEE1588 precision time protocol • NMEA $GPRMC UART message support • External PPS • Internal 10 ppm drift clock Output sources: • Configurable 1-60Hz output pulse
LIDAR Operating Modes	Hardware triggered angle firing (guaranteed fixed resolution per rotation): • 64 x 2048 @ 10 Hz • 64 x 1024 @ 10 Hz or 20 Hz • 64 x 512 @ 10 Hz or 20 Hz Fixed timing firing: • Configurable measurement period between 50 µsec and 1 second
Additional Programmability	Multi-sensor rotation phase tuning Queryable intrinsic calibration information: • Beam angles • IMU pose correction matrix

MECHANICAL/ELECTRICAL

Power Consumption	14-20 W (22 W peak at startup)
Operating Voltage	22-26 V, 24 V nominal
Connector	Proprietary pluggable connector (Power + data + DIO)
Dimensions	Diameter: 105 mm (3.94 in) Height: 92 mm (4.33 in)
Weight	600 g (21.16 oz)
Mounting	4 M3 screws / 2 locating 3 mm pins

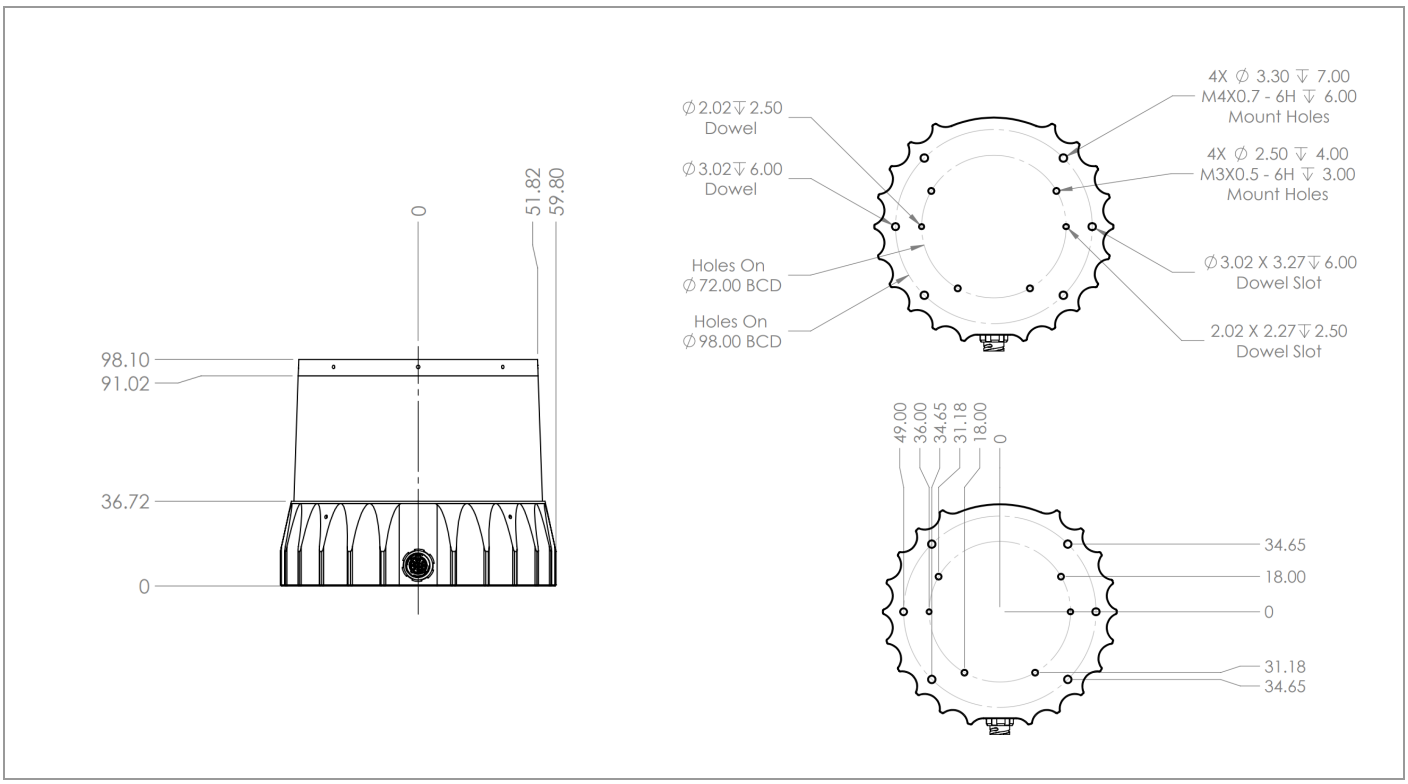
OPERATIONAL

Operating Temperature	-20C to +50C (with Mount)
Storage Temperature	-40C to +105C
Ingress	IP68
Shock	500 m/s2 amplitude, 11 ms duration
Vibration	5 Hz to 2,000 Hz, 3 Grms
Certification	FCC, CE, RoHS

ACCESSORIES

Included Interface Box	PolyCarb/FR4, 100 g, 75 mm x 50 mm x 25 mm (LxWxH), 2 m CAT6 cable, 24 V power adapter, 5 m sensor cable
Optional Mount	Aluminum, 530 g, 110 mm x 110 mm x 20.5 mm (LxWxH), 4x M8 thru holes

EXTERIOR DIMENSIONS



*Specifications are subject to change without notice.

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