

S56

Long-Range High-Resolution Imaging LiDAR

Revision: 21/11/2025

FIRMWARE VERSION: v1.0

HARDWARE VERSION: S56-20251121

SUMMARY

The S56 is a high-resolution 56-channel solid-state LiDAR sensor that provides dense point-cloud data optimized for mid-range perception with a detection distance of up to 100 meters. With a 120° horizontal field of view and a 35° vertical field of view, it delivers precise 3D recognition of surrounding environments. Built with automotive-grade environmental durability, it operates reliably even in harsh conditions. Its wide coverage and high accuracy make it suitable for various applications such as autonomous robots, industrial automation, smart city infrastructure, and perimeter surveillance.



HIGHLIGHTS

- Enhanced durability and stability with a fixed (solid-state) design
- The sensor offers high detection accuracy and a wide operational temperature range.
- Qualified, robust design for automotive environmental durability.

OPTICAL PERFORMANCE

Range (80% Lambertian reflectivity, 2048 @ 10 Hz mode)	100 m @ >90% detection probability, 100 klx sunlight 120 m @ >50% detection probability, 100 klx sunlight
Range (10% Lambertian reflectivity, 2048 @ 10 Hz mode)	45 m @ >90% detection probability, 100 klx sunlight 55 m @ >50% detection probability, 100 klx sunlight
Minimum Range	0.3 m for point cloud data
Range Accuracy	±3 cm for lambertian targets, ±10 cm for retroreflectors
Precision (10% Lambertian reflectivity, 2048 @ 10 Hz mode, 1 standard Deviation)	0.3 - 1 m: ± 0.7 cm 1 - 20 m: ± 1 cm 20 - 50 m ± 2 cm >50 m: ± 5 cm

Range Resolution	4mm
Vertical Resolution	0.625°
Horizontal Resolution	0.625° (UpSampling 0.21 °)
Field of View	Vertical: 35° Horizontal: 120°
Rotation Rate	10 or 20 Hz (configurable)
# of Returns	1 (strongest)

LASER

Laser Product Class	Class 1 – Eye Safety IEC60825- 1:2014
Laser Wavelength	940nm

LIDAR OUTPUT

Connection	UDP over gigabit Ethernet
Points Per Second	107,520 (56ch-1echo) / 322,560 (56ch-3echo)
Data Rate	5.7Mbps (56ch-1echo) / 17.2Mbps (56ch-3echo)
Data Per Point	Range, intensity, channel, azimuth angle, timestamp
Timestamp Resolution	< 1 µs
Data Latency	< 10 ms

CONTROL INTERFACE

Connection	TCP and HTTP APIs
Time Synchronization	Input sources: • IEEE1588 Precision Time Protocol (PTP); Accuracy: <1 ms error • gPTP; Accuracy: <1 ms error • NMEA \$GPRMC UART message support • External PPS; Accuracy: <1 ms error • Internal 10 ppm drift clock; Accuracy: <20 ppm error Output sources: • Configurable 1 - 60 Hz output pulse
Lidar Operating Modes	Hardware-triggered angle firing (guaranteed fixed resolution per rotation): • x 512 @ 10 Hz or 20 Hz • x 1024 @ 10 Hz or 20 Hz • x 2048 @ 10 Hz
Additional Programmability	Multi-sensor Phase Lock Azimuth Masking Low-power Standby Mode Queryable intrinsic calibration information: • Beam angles • IMU pose correction matrix

MECHANICAL/ELECTRICAL

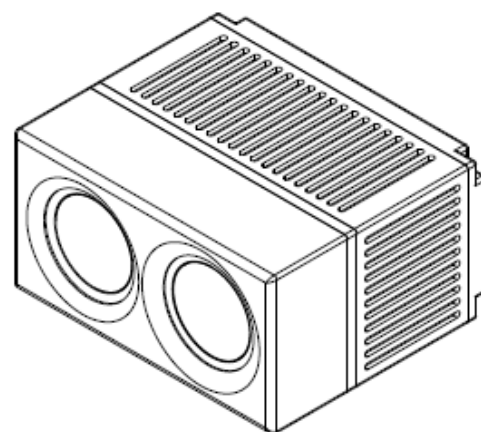
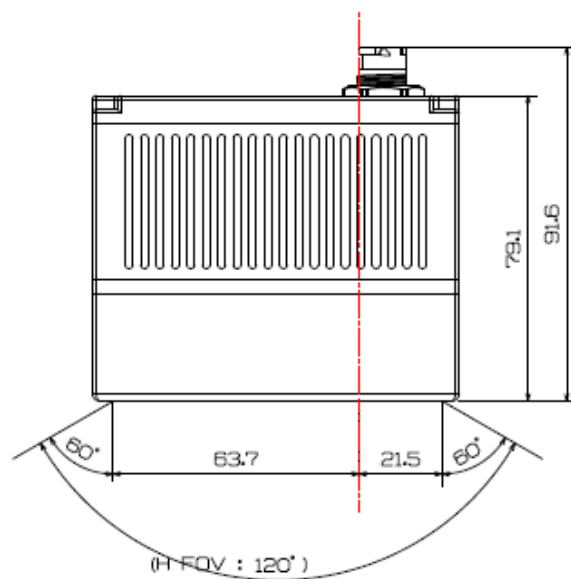
Power Consumption	< 9W (Idle)
Operating Voltage	9 ~ 24V
Connector	Proprietary pluggable connector (Power + data + DIO)
Dimensions	79.1*50*95mm(W*H*D)
Weight	585g

OPERATIONAL

Operating Temperature	- 40°C ~ 85°C
Storage Temperature	- 40°C ~ 105°C
Ingress Protection	TBD
Shock	
Vibration	
Compliance	

SOFTWARE

Sample Drivers	ROS, C++
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ISOMETRIC VIEW

