PHOENIX LiDAR SYSTEMS

RANGER-LR LITE

The **RANGER-LR LITE** is the new lighter Long Range system configuration of our RANGER Series. Designed for the most demanding mapping applications, the **RANGER-LR LITE** is the ultimate combination of high density, long range LiDAR with a powerful 1,550 nm laser and up to 15 returns that penetrate dense vegetation at high speeds and altitudes in large scan regions. This system is available UAV, manned aircraft, mobile, VTOL and backpack configurations.

FEATURES

- High versitlity payload designed with flexible mounting options
- Survey-grade (cm-level) accuracy with outstanding range capabilities for high altitude and high speed missions
- Imaging Upgrades: High-Res RGB, Thermal, Hyperspectral, and Panoramic cameras.

QUICK SPECS

ABSOLUTE ACCURACY
1.5 - 3.0 cm RMSEz @ 120 m Range (1)(2)(4)

INTRASWATH PRECISION
2 cm RMSDz @ 120 m (1)(2)(3)

PP ATTITUDE HEADING RMS ERROR
0.022° / 0.006° IMU options

WEIGHT
4.15 kg / 9.15 lbs.

DIMENSIONS
23.5 x 18.0 x 18.7 mm

LASER RANGE
1,000m @ 20% reflectivity, 50kHz

SCAN RATE
1,500k shots/s, up to 5 returns

APPLICATIONS

- OIL & GAS SURVEYING
- UTILITIES MAPPING
- RAILWAY TRACK MAPPING
- AGRICULTURE AND FORESTRY MONITORING
- CONSTRUCTION SITE SURVEYING
- OPEN PIT MINING OPERATIONS
- GENERAL MAPPING

PLATFORM

OVERALL DIMENSIONS (Sensor)	32.9 x 16.3 x 17.9 cm
OPERATING VOLTAGE	12 - 28 V
POWER CONSUMPTION	90 W
OPERATING TEMPERATURE	-10° - +40° C
WEIGHT (including Nav Box)	4.15 kg / 9.15 lbs.

LIDAR SENSOR

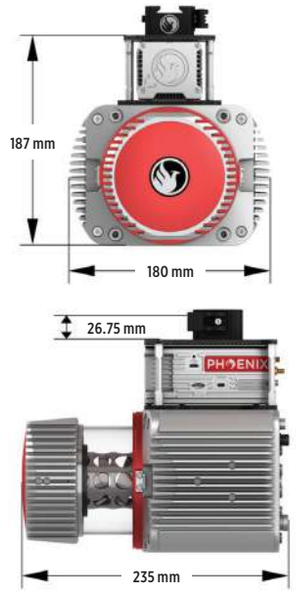
LASER PROPERTIES	1550 nm Class 1 (eye safe)
RANGE MIN	1.5m at 1 MHz PRR
RANGE MAX	1,000 m at 20% reflectivity, 50 kHz PRR
MAX EFFECTIVE MEASUREMENT RATE	1,500,000 shots/s
HORIZONTAL FIELD OF VIEW	360°
ACCURACY	15 mm one Signma @ 150 m
SENSOR CLASSIFICATION	IP64
WEIGHT	3.5 kg w/o fan
POWER CONSUMPTION	90 W

NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
SUPPORT ALIGNMENT	Static, Kinematic, Dual-Antenna
OPERATION MODES	Real-time, Post-processing optional
ACCURACY POSITION	1 cm + 1 ppm RMS horizontal
PP ATTITUDE HEADING RMS ERROR	0.022° to 0.006° IMU options

(1) Approximate values based on PLS test condition. (2) Using a 90° downward field of view.
(3) Range of elevation values on flat surfaces with >20% reflectivity at the laser's wavelength.
(4) Expected RMSEz when following the PLS recommended acquisition & processing workflow and ASPRS check point guidelines.

RANGER-LR LITE DIMENSIONS



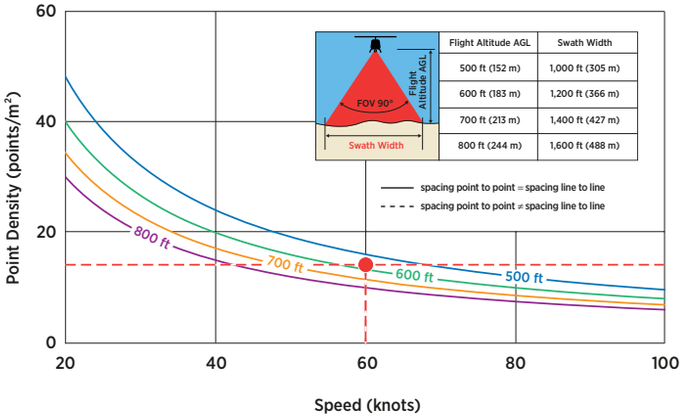
RANGE-LR LITE MEASUREMENT PERFORMANCE

Laser Pulse Repetition Rate PRR [1) 5)]	50 kHz	200 kHz	400 kHz	600 kHz	800 kHz	1200 kHz	1500 kHz
Max. Measuring Range [3) 4)]							
natural targets ρ ≥ 20%	1000 m	600 m	435 m	355 m	310 m	255 m	230 m
natural targets ρ ≥ 60%	1630 m	1000 m	730 m	600 m	525 m	435m	390 m
natural targets ρ ≥ 80%	1845 m	1140 m	830 m	690 m	600 m	500 m	445 m
Max. Operating Flight Altitude AGL [2) 5)]							
@ ρ ≥ 20%	640 m (2110 ft)	390 m (1270 ft)	280 m (920 ft)	230 m (750 ft)	200 m (650 ft)	160 m (540 ft)	150 m (490 ft)
@ ρ ≥ 60%	1050 m (3440 ft)	640 m (2110 ft)	470 m (1540 ft)	390 m (1270 ft)	340 m (1100 ft)	280 m (920 ft)	250 m (820 ft)
Max. Number of Targets per Pulse [6)]	15	15	15	15	11	7	5

1) Rounded values.
2) Setting of intermediate PRR values possible.
3) Typical values for average conditions. Maximum range is specified for flat targets with size in excess of the laser beam diameter, perpendicular angle of incidence, and for atmospheric visibility of 23 km. In bright sunlight, the max range is shorter than under overcast sky.
4) Ambiguity to be resolved by post-processing with RIUNITE software.
5) Flat terrain assumed, scan angle ± 45° FOV.
6) If more than one target is hit, the total laser transmitter power is split and, accordingly, the achievable range is reduced.

MAX MEASUREMENT RANGE & POINT DENSITY RANGER-LR LITE

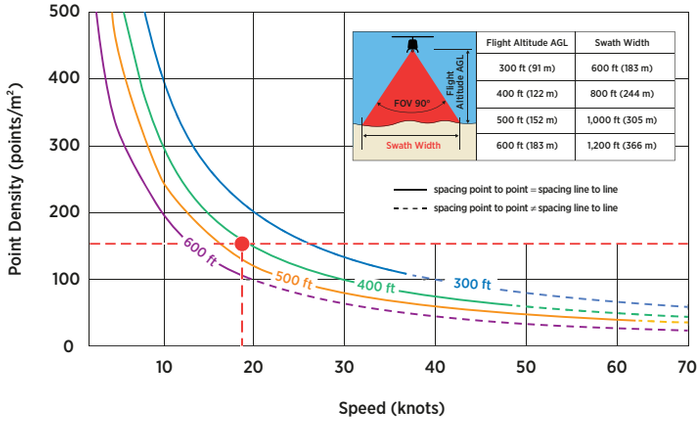
PRR = 600kHz



Flight Altitude AGL	Swath Width
500 ft (152 m)	1,000 ft (305 m)
600 ft (183 m)	1,200 ft (366 m)
700 ft (213 m)	1,400 ft (427 m)
800 ft (244 m)	1,600 ft (488 m)

EXAMPLE		RESULTS
	Ranger-LR at 600k pulses/sec. Range to target = 150 m, speed 60 kn	Point Density - 16 pts/m²

PRR = 1500kHz



Flight Altitude AGL	Swath Width
300 ft (91 m)	600 ft (183 m)
400 ft (122 m)	800 ft (244 m)
500 ft (152 m)	1,000 ft (305 m)
600 ft (183 m)	1,200 ft (366 m)

EXAMPLE		RESULTS
	Ranger-LR at 1,500k pulses/sec Flying height AGL = 122 m, speec 6 m/sec (19 knots)	Point Density - 150 pts/m²

RANGER-LR LITE ACCESSORIES


IXM100


A6KLite


360° Mobile Camera

EXPLORE A PHOENIX LiDAR SYSTEM FOR YOUR TEAM, CONTACT US!

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