PHOENIX LiDAR SYSTEMS

PRELIMINARY

RANGER ULTRA

The Ranger ULTRA is an airborne laser scanner with an impressive combination of weight, range, accuracy and pulse rate. It is equipped with a unique forward and rear looking FOV designed to minimize laser shadowing and provide geometry on complex vertical structures on a single pass. With its wide field of view of 100 degrees and an extremely fast pulse repetition rate of up to 1.8 MHz, the Ranger ULTRA is perfectly suited for high point density corridor mapping applications such as power line, railway track and pipeline inspection.

FEATURES

- Modular and upgradable for maximum project flexibility, supporting single/dual RGB, and multispectral cameras
- Easily mountable to unmanned platforms (UAVs) and to helicopters, gyrocopters, and other small manned aircrafts
- Operating flight altitude up to 720 m / 2,350 ft
- Scan speed up to 400 lines/second
- 3 faceted mirror (-10, 0, +10°) creates a virtual multilaser for improved mapping of vertical surfaces

VTOL UAV HELI PLANE

QUICK SPECS

Absolute Accuracy
25-50 mm @ 350 m Range

PP Attitude Heading RMS Error
0.010° / 0.019° IMU options

Weight (including AIR NavBox)
3 kg / 6.5 lbs

Dimensions (approx, with AIR NavBox and Quickrelease)
242 x 117 x 215 mm

Laser Range
440 m @ 20% Reflectivity

Scan Rate
1800 kHz, up to 15 returns

APPLICATIONS

- Utilities Mapping
- Railway Track Mapping
- Agriculture & Forestry Monitoring
- Open Pit Mining Operations
- General Mapping

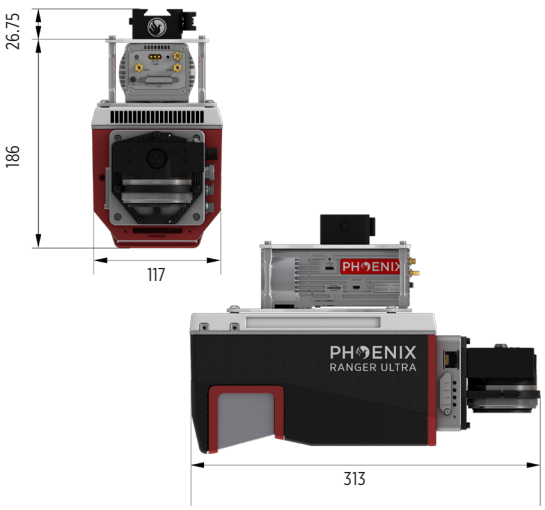
PLATFORM

OVERALL DIMENSIONS (with AIR NavBox)	242 x 117 x 215 mm
OPERATING VOLTAGE	14 - 28V
POWER CONSUMPTION	60W typical
OPERATING TEMPERATURE	0° - 40° C
WEIGHT (including Air NavBox)	3 kg / 6.5 lbs approx

LiDAR SENSOR

LASER PROPERTIES	1550 nm
RANGE MIN	5 m
MAX EFFECTIVE MEASUREMENT RATE	up to 1,500,000 meas./sec
HORIZONTAL FIELD OF VIEW	100°
ACCURACY	10 mm
PRECISION	5 mm
LASER BEAM DIVERGENCE	0.4 mrad
LASER BEAM FOOTPRINT (GAUSSIAN BEAM DEFINITION)	40 mm @ 100 m, 200 mm @ 500 m, 400 mm @ 1000 m
MAX MEASURING RANGE ρ 20% (ρ 60%)	440 m (720 m)
PROTECTION CLASS	IP64 dust and splash-proof
WEIGHT	2.0 kg approx
POWER CONSUMPTION	45W typical

RANGER ULTRA DIMENSIONS (MM)

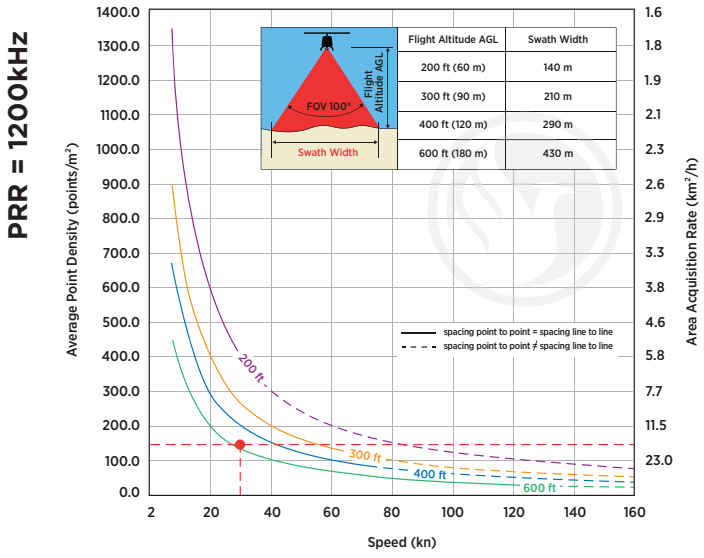


RANGE MEASUREMENT PERFORMANCE

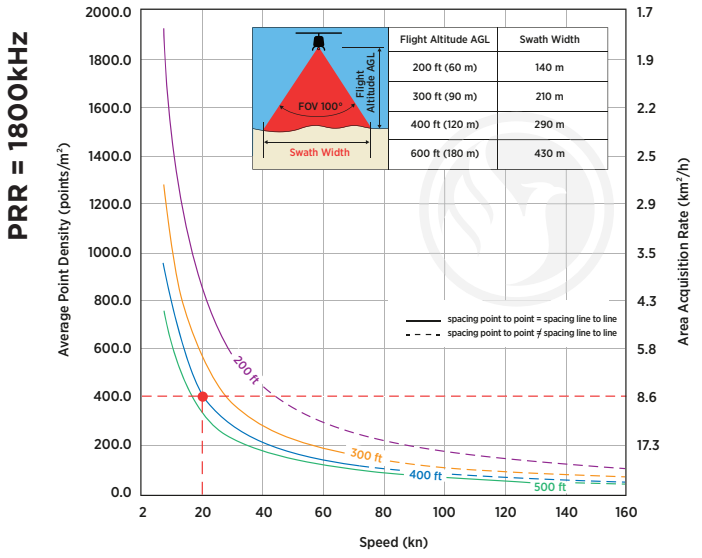
Laser Pulse Repetition Rate PRR [1]	150 kHz	300 kHz	600 kHz	1200 kHz	1800 kHz
Max. Measuring Range [2] [3]					
natural targets ρ ≥ 20%	760 m	550 m	400 m	280 m	230 m
natural targets ρ ≥ 60%	1260 m	920 m	670 m	480 m	400 m
natural targets ρ ≥ 80%	1430 m	1050 m	760 m	550 m	450 m
Max. Operating Flight Altitude AGL [2] [4]					
@ ρ ≥ 20%	440 m (1450 ft)	320 m (1050 ft)	230 m (750 ft)	160 m (550 ft)	130 m (450 ft)
@ ρ ≥ 60%	720 m (2350 ft)	530 m (1750 ft)	380 m (1250 ft)	280 m (900 ft)	230 m (750 ft)
Max. Number of Targets per Pulse [5]	15	15	15	8	5

1) Rounded average PRR.
2) Typical values for average conditions and average ambient brightness. In bright sunlight, the max. range is shorter than under an overcast sky.
3) The 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. Range ambiguities have to be resolved by multiple-time-around processing.
4) Effective FOV 100°, additional roll angle ± 5°.
5) If the laser beam hits, in part, more than one target, the laser's pulse power is split accordingly. Thus the achievable range is reduced.

MAX MEASUREMENT RANGE & POINT DENSITY RANGER ULTRA



EXAMPLE	VUX-120 at 1,200,000 pulses/sec, laser power level 100% Altitude = 600 ft AGL, Speed 30kn	RESULTS Point Density - 150 pts/m²



EXAMPLE	VUX-120 at 1,800,000 pulses/sec, laser power level 100% Altitude = 400 ft AGL, Speed 20kn	RESULTS Point Density - 400 pts/m²

RANGER ULTRA ACCESSORIES

A6klite

A7R IV


A7R4 on Heli-Mount

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

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