



RANGER-U120²³

The **RANGER-U120²³** 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 2.4 MHz, the **RANGER-U120²³** 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

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

LASER RANGE

760 m @ 20% reflectivity

SCAN RATE

2,400,000 kHz, up to 15 returns

APPLICATIONS

- UTILITIES MAPPING
- RAILWAY TRACK MAPPING
- AGRICULTURE & FORESTRY MONITORING
- OPEN PIT MINING OPERATIONS
- GENERAL MAPPING

PLATFORM

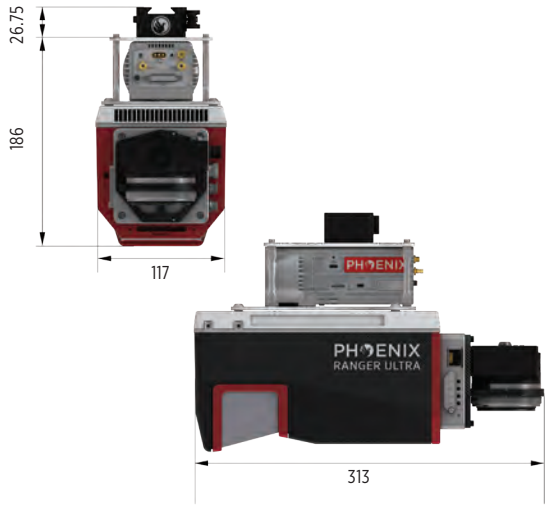
| | |
|-----------------------|---------------------------|
| OVERALL DIMENSIONS* | 242 x 117 x 215 cm |
| OPERATING VOLTAGE | 14-28 V DC |
| POWER CONSUMPTION* | 60W typical |
| OPERATING TEMPERATURE | 0° - 40° C / 32° - 104° F |
| WEIGHT* | 3 kg / 6.5 lbs approx |

* Without Accessories

LIDAR SENSOR

| | |
|--|---|
| LASER PROPERTIES | 1550 nm |
| RANGE MIN | 5 m |
| MAX EFFECTIVE MEASUREMENT RATE | up to 2,000,000 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 P 20% (P 60%) | 760 m (1260 m) |
| PROTECTION CLASS | IP64 dust and splash-proof |
| WEIGHT | 2.0 kg approx |
| POWER CONSUMPTION | 45W typical |

RANGER-U120²³ DIMENSIONS (mm)



RANGE MEASUREMENT PERFORMANCE

| Laser Pulse Repetition Rate PRR ¹⁾ | 150 kHz | 300 kHz | 600 kHz | 1200 kHz | 1800 kHz | 2400 kHz |
|--|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|
| Max. Measuring Range ²⁾³⁾ natural targets $\rho \geq 20\%$ natural targets $\rho \geq 60\%$ natural targets $\rho \geq 80\%$ | 760 m | 550 m | 400 m | 280 m | 230 m | 200 m |
| | 1260 m | 920 m | 670 m | 480 m | 400 m | 350 m |
| | 1430 m | 1050 m | 760 m | 550 m | 450 m | 400 m |
| Max. Operating Flight Altitude AGL ²⁾⁴⁾ @ $\rho \geq 20\%$ @ $\rho \geq 60\%$ | 440 m (1450 ft) | 320 m (1050 ft) | 230 m (750 ft) | 160 m (550 ft) | 130 m (450 ft) | 110 m (360 ft) |
| | 720 m (2350 ft) | 530 m (1750 ft) | 380 m (1250 ft) | 280 m (900 ft) | 230 m (750 ft) | 200 m (650 ft) |
| Max. Number of Targets per Pulse ⁵⁾ | 15 | 15 | 15 | 8 | 5 | 5 |

1) Rounded average PRR.

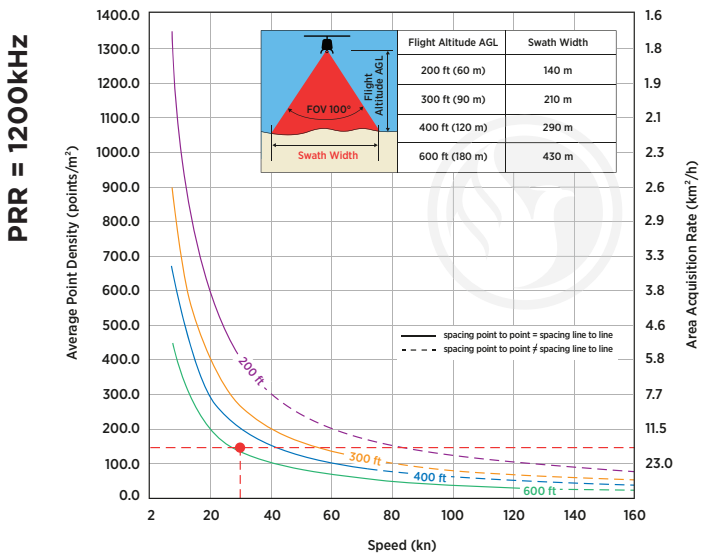
2) Typical values for average conditions and average ambient brightness. In bright sunlight, the max. range is shorter than under an overcast sky.

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.

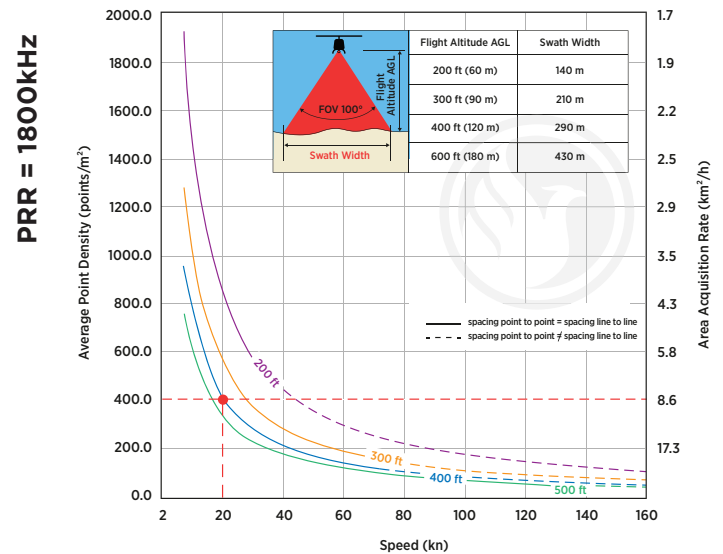
4) Effective FOV 100°, additional roll angle $\pm 5^\circ$.

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-U120²³



| EXAMPLE | RESULTS |
|--|--|
| RANGER-U120 ²³ at 1,200,000 pulses/sec, laser power level 100% Altitude = 600 ft AGL, Speed 30km | Point Density - 150 pts/m ² |



| EXAMPLE | RESULTS |
|--|--|
| RANGER-U120 ²³ at 1,800,000 pulses/sec, laser power level 100% Altitude = 400 ft AGL, Speed 20km | Point Density - 400 pts/m ² |

RANGER-U120²³ CAMERA OPTIONS



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PhoenixLiDAR.com | sales@phoenixlidar.com | USA +1.323.577.3366