



## miniRANGER-2 LITE

The **miniRANGER-2 LITE** is designed to provide survey-grade LiDAR data and imagery (optional) on an ultra-lightweight platform. Packed with options, the **miniRANGER-2 LITE** leverages Phoenix's years of experience and industry leading LiDARMill software platform to provide a seamless user experience. Optional mobile and backpack mounting options along with several imaging sensors provide the flexibility required to address every application. With the photogrammetry package, operators of mid-size multirotors, like the DJI M600 Pro, can now simultaneously acquire survey-grade LiDAR data and high resolution 42 MP RTK photogrammetry at up to 100 m operating flight altitude.

### FEATURES

- » 100 kHz and 200 kHz laser pulse repetition rate (PRR) for greater point density at altitude
- » Includes the new AIR NavBox for increased range & flexibility
- » Significantly lighter (37%) than miniRANGER providing increased range and flexibility
- » Modular and upgradable for maximum project flexibility. Dual LiDAR Sensors, DSLR, GenlCam, GIGEVision, thermal, multispectral, hyperspectral, imaging and custom sensors
- » Multiple IMUs supported to customize the product to your project needs
- » Automated boresighting, strip matching and project validation with Lidarmill

#### MOUNTING OPTIONS



VEHICLE



BACKPACK



UAV

### QUICK SPECS

#### Absolute Accuracy

20 / 30 mm RMSE @ 75m Range

#### PP Attitude Heading RMS Error

0.018°

#### Weight

2.2kg /4.85 lbs.

#### Dimensions

243 x 111 x 85 (mm)

#### Laser Range

290m @ 60% Reflectivity

#### Scan Rate

200k shots/s, up to 5 returns

### APPLICATIONS



» Oil & Gas Surveying



» Utilities Mapping



» Railway Track Mapping



» Agriculture & Forestry Monitoring



» Construction Site Surveying



» Open Pit Mining Operations



» General Mapping

### PLATFORM

OVERALL DIMENSIONS (SENSOR)	243 x 111 x 85 mm
OPERATING VOLTAGE	11 - 34 V DC
POWER CONSUMPTION	-55 W
OPERATING TEMPERATURE	-10° - +40° C
WEIGHT (INCLUDING AIR NAVBOX)	2.2 kg / 4.85 lbs.

### LiDAR SENSOR

LASER PROPERTIES	905nm Class 1 (eye safe)
RANGE MIN	3 m
MAX EFFECTIVE MEASUREMENT RATE	Up to 200,000 meas./sec
HORIZONTAL FIELD OF VIEW	360°
ACCURACY	15 mm
MAX MEASURING RANGE @ 20% (ρ 60%)	170 m (290 m)
SENSOR CLASSIFICATION	IP64
WEIGHT	1.6 kg
POWER CONSUMPTION	18W

### NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
SUPPORT ALIGNMENT	Kinematic, Single-Antenna
OPERATION MODES	Real-time, Postprocessing optional
ACCURACY POSITION	1 cm + 1 ppm RMS horizontal
PP ATTITUDE HEADING RMS ERROR (IMU upgrades available)	0.018°

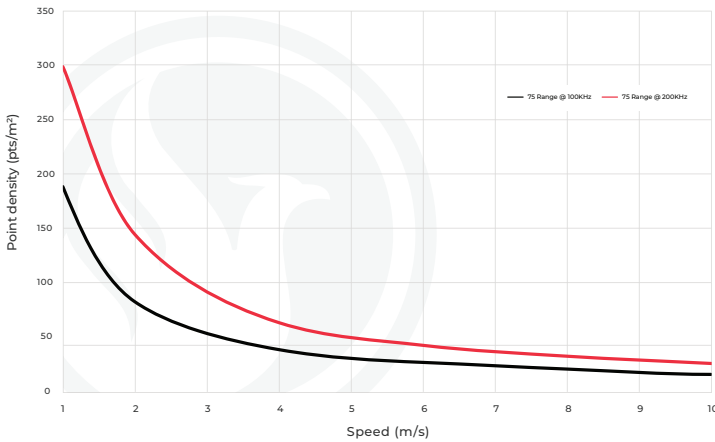
# RANGE MEASUREMENT PERFORMANCE

Laser Pulse Repetition Rate PRR <sup>(1)</sup>	100 kHz	200 kHz
<b>Maximum Measuring Range <sup>(2)</sup></b> natural targets $\rho \geq 20\%$ natural targets $\rho \geq 60\%$ natural targets $\rho \geq 80\%$	170 m 290 m 330 m	150 m 250 m 280 m
<b>Maximum Operating Flight Altitude AGL <sup>(1) (3)</sup></b> @ $\rho \geq 20\%$ @ $\rho \geq 60\%$	100 m (330 ft) 160 m (525 ft)	85 m (280 ft) 140 m (460 ft)
<b>Maximum Number of Targets per Pulse <sup>(4)</sup></b>	5	5

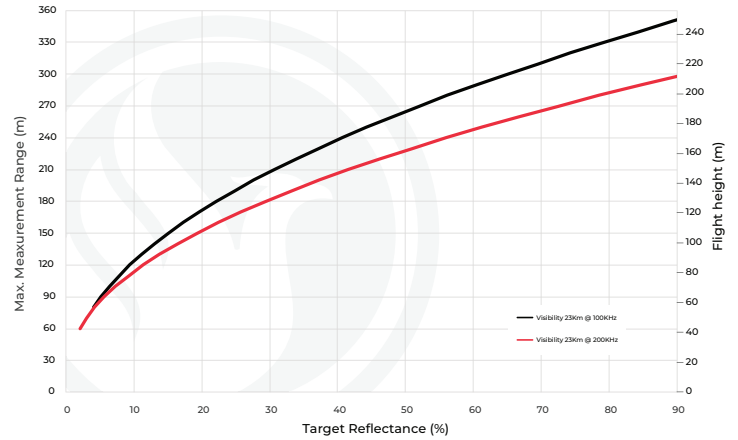
- 1) Rounded values.
- 2) Typical values for average conditions. Maximum range is specified for flat targets with size in excess of the laser beam diameter, perpendicular angle of incidence, and for atmospheric visibility of 23 km. In bright sunlight, the max. range is shorter than under overcast sky.
- 3) Effective FOV 75°, additional roll angle  $\pm 5^\circ$ .
- 4) 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 miniRANGER-2 LITE

Point Density by Flight Speed and Range  
minivux2UAV @100kHz/200kHz PRR



Max Measurement Range  
@100kHz/200kHz



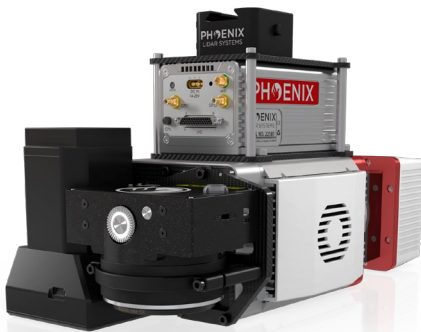
The following conditions are assumed for the Operating Flight Altitude AGL:

- ambiguity resolved by multiple-time-around (MTA) processing and flight planning
- operating flight altitude given at a FOV of +/-45°
- target size  $\geq$  laser footprint
- average ambient brightness

Source: RIEGL Laser Measurement Systems.

## miniRANGER-2 LITE CAMERA OPTIONS

OTHER OPTIONS &  
ACCESSORIES AVAILABLE.  
CONTACT SALES REP



A6k-Lite and Thermal



Single A6k-Lite



Dual A6k-Lite

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

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