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miniRANGER-3 LITE

The **miniRANGER-3 LITE** is designed to provide survey-grade LiDAR data and imagery on an ultra-lightweight platform. Acquire the same level of high accuracy data that the miniRANGER line is known for, now with significantly increased point density. Flexible sensor configuration and a variety of mounting options, including UAV, mobile and backpack, enables surveyors to address nearly any application. With the photogrammetry package, operators of mid-size multirotors can now simultaneously acquire LiDAR data and high resolution 61 MP photogrammetry at up to 100 m operating flight altitude. The **miniRANGER-3 LITE** leverages Phoenix's years of experience and industry leading software platform to provide a seamless user experience.

FEATURES

- 100 kHz, 200 kHz, and 300 kHz laser pulse repetition rate (PRR) for greater point density at altitude
- Flexible mounting to UAVs such as the Freefly Astro Max and DJI M350 with our custom vibration isolator mounts
- Includes the new weight optimized Air NavBox for increased range & flexibility
- Camera options ranging from dual-oblique to high resolution 61 MP



UAV



VEHICLE



BACKPACK



QUICK SPECS

ABSOLUTE ACCURACY
2-3.5 cm RMSEz @ 75 m⁽¹⁾⁽³⁾

INTRASWATH PRECISION
3 cm RMSDz @ 75 m⁽¹⁾⁽²⁾

EXAMPLE ACQUISITIONS:

UAV

- » 75 m AGL, 6 m/s, 90° FOV, 300 kHz
- » Swath Width = 150 m
- » Avg. Density = 83 points/m²
- » Collection Rate = 3.24 km²/hr

PLATFORM

OVERALL DIMENSIONS	Without A6K-Lite: 24 x 13 x 18 cm With A6K-Lite: 30 x 13 x 18 cm
OPERATING VOLTAGE	14 - 28 V DC
POWER CONSUMPTION	Without A6K-Lite: 30 W (typical) With A6K-Lite: 38 W (typical)
OPERATING TEMPERATURE	0° - +40° C
WEIGHT WITH A6K-LITE CAMERA	2.5 kg

LIDAR SENSOR

LASER PROPERTIES	905nm Class 1 (eye safe)
RANGE MIN	2 m
MAX EFFECTIVE MEASUREMENT RATE	Up to 300,000 meas./sec
HORIZONTAL FIELD OF VIEW	360° at 100/200 kHz reduced power, 180° at 200 kHz, 120° at 300 kHz
ACCURACY	15 mm
MAX MEASURING RANGE ρ 20% (ρ 60%)	170 m (290 m)
MAX RETURN	5
SENSOR CLASSIFICATION	IP64
WEIGHT	1.55 kg
POWER CONSUMPTION	18 W

APPLICATIONS



OIL & GAS SURVEYING



UTILITIES MAPPING



RAILWAY TRACK MAPPING



AGRICULTURE & FORESTRY MONITORING



CONSTRUCTION SITE SURVEYING



OPEN PIT MINING OPERATIONS



GENERAL MAPPING

NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
SUPPORT ALIGNMENT	Kinematic, Dual-Antenna
ACCURACY POSITION	1 cm + 1 ppm RMS horizontal
ACCURACY ATTITUDE ⁽⁴⁾	Roll, Pitch 0.003° RMS Heading 0.011° RMS

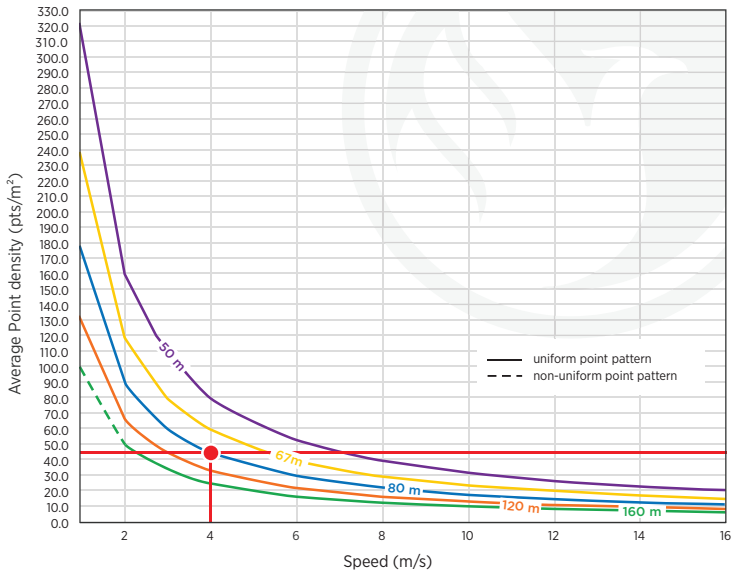
1) Approximate values based on PLS test conditions using a 90° downward field of view.

2) Range of elevation values on flat surface with >20% reflectivity at the laser's wavelength.

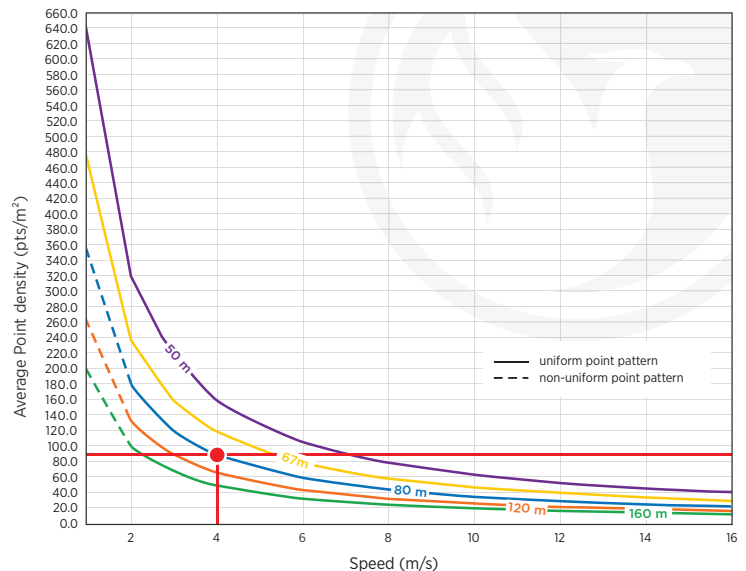
3) Expected RMSEz when following the PLS recommended acquisition & processing workflow and ASPRS check point guidelines.

4) Estimated post processed accuracy with IMU-27.

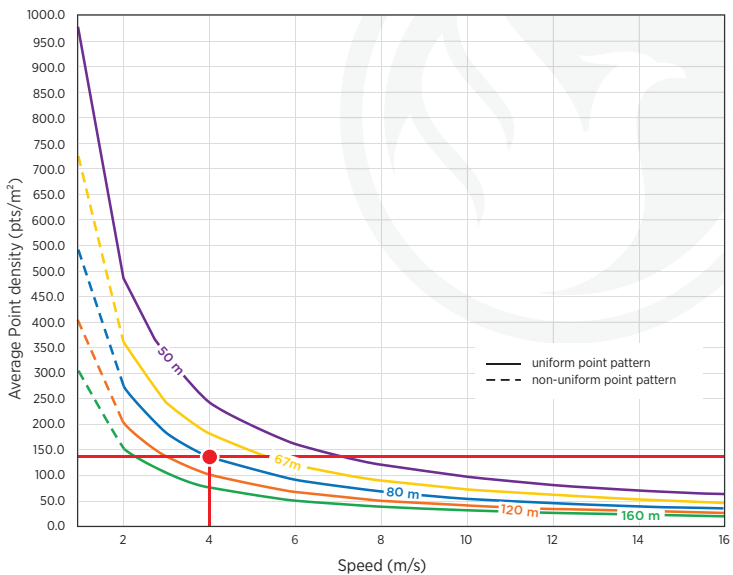
MAXIMUM MEASUREMENT RANGE VS. POINT DENSITY



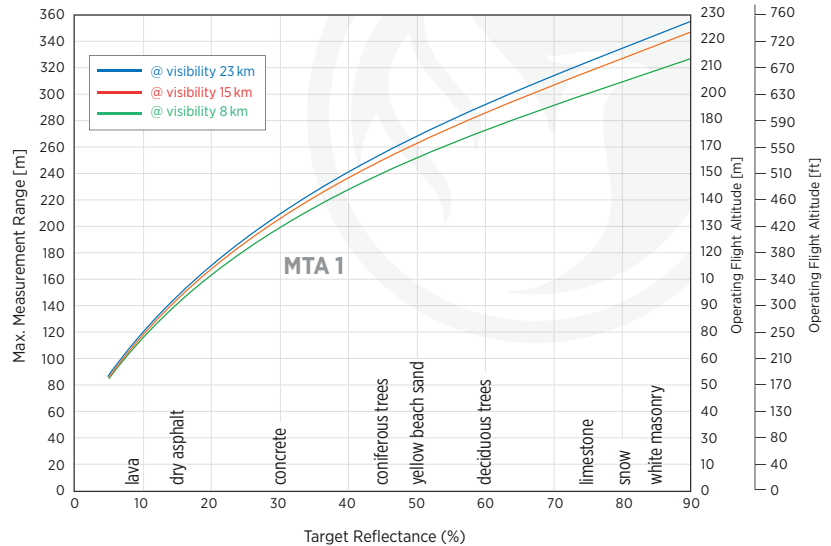
EXAMPLE miniVUX-3UAV at 100,000 pulses/second, range to target = -80 m, speed = 4m/s **RESULTING POINT DENSITY 45 pts/m²**



EXAMPLE miniVUX-3UAV at 2,000,000 pulses/second, range to target = -80 m, speed = 4m/s **RESULTING POINT DENSITY 90 pts/m²**



EXAMPLE miniVUX-3UAV at 300,000 pulses/second, range to target = -80 m, speed = 4m/s **RESULTING POINT DENSITY 135 pts/m²**



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

- operating flight altitude given at a FOV of +/-45°
 - target size ≥ laser footprint
 - average ambient brightness
- Source: RIEGL Laser Measurement Systems.

miniRANGER-3 LITE Integration Options



Sony ILX-LR1 (61 MP)



Single A6K-Lite (24 MP)



Mobile Integration



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

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