

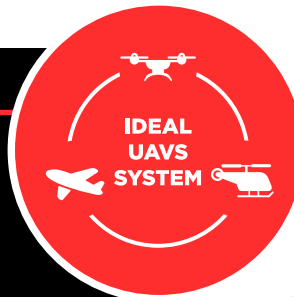
miniRANGER-UAV

The miniRanger is the miniaturized version of our full-sized ultra-high accuracy mapping solution. This extremely compact, aluminum encased system with a 360° field of view and modest operating power requirements will deliver up to five echoes, making it an ideal option for demanding UAS/UAV applications. Operable at subzero temperatures down to -10°C makes this system exceptionally well suited for measuring snowy and icy terrain.



FEATURES

- » Survey-grade (cm-level) accuracy with 250m+ laser range and outstanding intensity calibration
- » IMU and dual-GPS upgrade options for increased accuracy
- » Fully autonomous, can be mounted on any drone
- » Modular upgrade options: Dual LiDAR Sensors, DSLR, GeniCam, GigEVision, thermal, multispectral, hyperspectral and custom sensors
- » Designed by surveyors for surveyors



AERIAL MOUNT

Please contact us for any questions about specifications, cost, and delivery.

✉ info@phoenixlidar.com
www.phoenixlidar.com

☎ 323-577-3366

QUICK SPECS

Absolute Accuracy
10 / 15 mm RMSE @ 50m Range

PP Attitude Heading RMS Error
0.009 / 0.019° IMU options

Weight
3.5kg / 7.7lb (FOG IMU)
2.9kg / 6.4lb (STIM IMU)

Dimensions
26.9 L x 9.9 W x 8.5 H (cm) STIM
30.2 L x 9.9 W x 8.5 H (cm) FOG

Laser Range
250m @ 60% Reflectivity

Scan Rate
up to 100k shots/s, up to 5 returns

APPLICATIONS

- » Agriculture and Forestry
- » Archeology and Cultural Heritage Documentation
- » Construction-Site Monitoring
- » Glacier and Snowfield Mapping
- » Landslide Monitoring

PLATFORM

OVERALL DIMENSIONS (Sensor)	269 x 99 x 85 mm STIM / 302 x 99 x 85 mm FOG
OVERALL DIMENSIONS (Nav Box)	300 x 99 x 85 mm
OPERATING VOLTAGE	12 - 28 V
POWER CONSUMPTION	80 W
WEIGHT (incl. sensor + cabling)	3.5kg (7.7 lbs) FOG IMU / 2.9kg (6.4lb) STIM IMU
OPERATING TEMPERATURE	-10° - +40° C

NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS, GLONASS
SUPPORT ALIGNMENT	Static, Kinematic, Dual-Antenna
OPERATION MODES	Real-time, Postprocessing
ACCURACY POSITION	1cm + 1ppm RMS horizontal

LiDAR SENSOR

LASER PROPERTIES	Class 1 (eye safe), 905nm
RANGE MIN	3 m
LASER BEAM FOOTPRINT	160mm x 50mm @ 100m
MAX EFFECTIVE MEASUREMENT RATE	100,000 meas./s
FIELD OF VIEW	360°
ACCURACY	15 mm one Sigma @ 150m

SCANNER PERFORMANCE

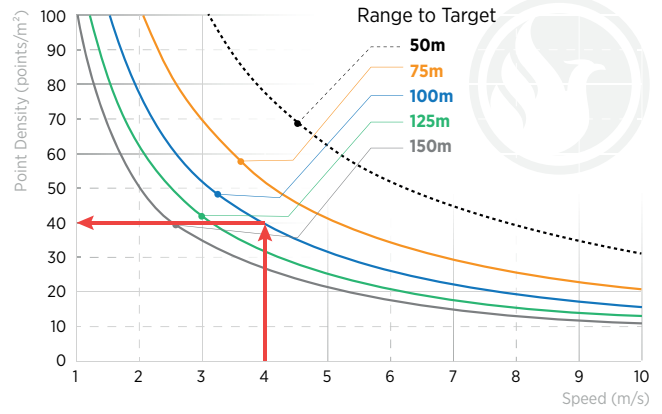
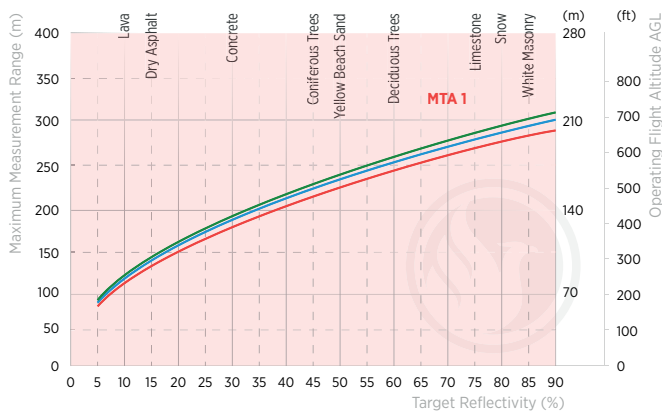
SCANNING MECHANISM	Rotating Mirror
MIRROR SPEED	10-100 scans/sec
ANGULAR STEP WIDTH $\Delta\theta$	$0.05^\circ \leq \Delta\theta \leq 0.5^\circ$ between consecutive laser shots
ANGLE MEASUREMENT RESOLUTION	0.001°
INTERNAL SYNC TIMER	for real-time synchronized time stamping of data



MAX MEASUREMENT RANGE VS TARGET REFLECTIVITY

PRR = 100kHz

PRR = 100kHz



MTA 1

No ambiguity / one transmitted pulse "in the air"

- @ visibility 23km
- @ visibility 15km
- @ visibility 8km

The following conditions are assumed for the Operating Flight Altitude AGL

- target size ≥ laser footprint
- average ambient brightness

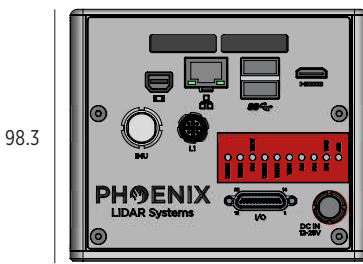
- operating flight altituded given at a FOV of +/-45°

Source: RIEGL Laser Measurement Systems. All specifications are subject to change without notice

TECHNICAL DRAWINGS

Values in millimeters

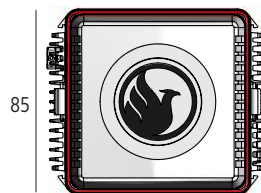
miniRanger Nav Box | Inputs



98.3

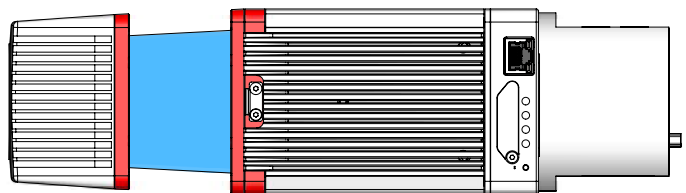
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miniRanger with uIMU | Front and side view



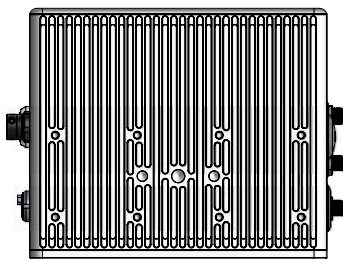
85

98.91



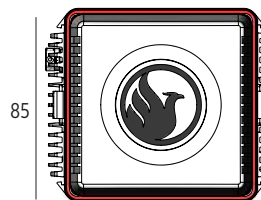
302.46

miniRanger Nav Box | Side Profile



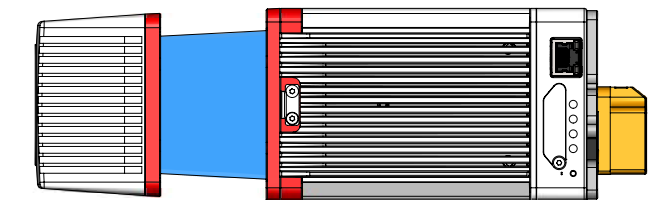
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miniRanger with STIM IMU | Front and side view



85

98.99



269

