RANGER XL

The Ranger XL is a lightweight airborne laser scanner, especially designed for use on UAS and small manned aeroplanes or helicopters. With its wide field of view of 75 degrees and an extremely fast data acquisition rate of up to 1.8 MHz, the Ranger XL is perfectly suited for high point density corridor mapping applications such as power line, railway track and pipeline inspection.

FEATURES

» Easily mountable to unmanned platforms (UAVs) and to helicopters, gyrocopters, and other small manned aircrafts.
» Operating flight altitude up to 1,400 m / 4,600 ft
» Scan speed up to 400 lines/second

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)
5 kg / 11 lbs
Dimensions (with AIR NavBox)
348.5 x 164 x 189 mm
Laser Range
900 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) 352 x 164 x 185 mm
OPERATING VOLTAGE 18 - 34 V DC
POWER CONSUMPTION 75 W
OPERATING TEMPERATURE -10° - +40° C
WEIGHT (including Air NavBox) 4.4 kg / 11 lbs

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 75°
ACCURACY 20 mm
PRECISION 15 mm
LASER BEAM DIVERGENCE 0.35 mrad
LASER BEAM FOOTPRINT (GAUSSIAN BEAM DEFINITION)
35 mm @ 100 m, 175 mm @ 500 m, 350 mm @ 1000 m
MAX MEASURING RANGE ρ 20% (ρ 60%) 900 m (1400 m)
SENSOR CLASSIFICATION IP64 dust and splash-proof
WEIGHT ≤ 3.8 kg (without IMU/GNSS)
POWER CONSUMPTION 65 W
**RANGER XL DIMENSIONS (mm)**

![Ranger XL Dimensions](image)

**RANGER MEASUREMENT PERFORMANCE**

<table>
<thead>
<tr>
<th>Laser Pulse Repetition Rate PRR</th>
<th>150 kHz</th>
<th>300 kHz</th>
<th>600 kHz</th>
<th>1200 kHz</th>
<th>1800 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Measuring Range</td>
<td>1200 m</td>
<td>1900 m</td>
<td>2500 m</td>
<td>3500 m</td>
<td>4500 m</td>
</tr>
<tr>
<td>natural targets P ≥ 20%</td>
<td>850 m</td>
<td>1400 m</td>
<td>2000 m</td>
<td>3000 m</td>
<td>4000 m</td>
</tr>
<tr>
<td>natural targets P ≥ 60%</td>
<td>650 m</td>
<td>1050 m</td>
<td>1500 m</td>
<td>2100 m</td>
<td>2700 m</td>
</tr>
<tr>
<td>Max. Operating Flight Altitude AGL</td>
<td>900 m</td>
<td>1200 m</td>
<td>1600 m</td>
<td>2100 m</td>
<td>2700 m</td>
</tr>
<tr>
<td>Flight Altitude AGL</td>
<td>200 ft</td>
<td>300 ft</td>
<td>400 ft</td>
<td>600 ft</td>
<td>800 ft</td>
</tr>
<tr>
<td>Swath Width</td>
<td>140 m</td>
<td>210 m</td>
<td>280 m</td>
<td>420 m</td>
<td>560 m</td>
</tr>
<tr>
<td>Max. Number of Targets per Pulse</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

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 75°, 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 XL**

**RANGER XL ACCESSORIES**

Nadir PhaseOne

Nadir and Oblique PhaseOne

Heli-Mount

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

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

Copyright ©2019 Phoenix LiDAR Systems. Specifications are subject to change without notice. Other trademarks or registered trademarks are property of their respective owners.