



## PIONEER-360

The **PIONEER-360** is a best-in-class universal survey grade LiDAR mapping system. It is the tool of choice for UAV and Mobile applications where there is no room for compromise in data quality. With a beam divergence of only 0.3 mrad, this system is designed for precision and confidence. The **PIONEER-360** supports selectable pulse repetition rates up to 500 kHz and line scan speeds up to 250 lines/second, allowing it to be optimized for various application and data requirements. A quick release system can accommodate a removable high-resolution, light-weight 61 MP camera.

### FEATURES

- Narrow beam divergence of 0.3 mrad for superior precision and canopy penetration
- Shot-to-shot precision of <1 cm for survey applications
- Scan speed of 250 lines per second for even x-y point distribution at higher vehicle speeds

### QUICK SPECS

Absolute Accuracy	Laser Range
2-3 cm RMSEz @ 100 m <sup>(1)(2)(4)</sup>	290 m @ 20% reflectivity, 200 kHz
Intrastath Precision	Scan Rate
2 cm RMSDz @ 100 m <sup>(1)(2)(3)</sup>	500 kHz, up to 4 returns
Weight (including camera)	
4.9 kg / 10.8 lbs	

### LiDAR SENSOR

RANGE MEASUREMENT PRINCIPLE	Time of Flight
MINIMUM RANGE	1.5 m
MAXIMUM RANGE	290 m @ 20% reflectivity, 200 kHz
PULSE REPETITION FREQUENCY	200 kHz, 500 kHz selectable
BEAM DIVERGENCE (1/E <sup>2</sup> )	0.3 mrad
WAVE LENGTH	1550 nm
LASER SAFETY CLASSIFICATION	Class 1
LASER WEIGHT	3.5 kg
RANGE RESOLUTION	2 mm
INTENSITY RECORDING	12 bits
MAXIMUM NUMBER OF RETURNS	4 (First, Second, Second Last, Last)
RANGE ACCURACY 1 SIGMA	10 mm
PRECISION SINGLE SHOT	5 mm
FIELD OF VIEW	360°
LINES PER SECOND (Scan Frequency)	50 – 250 lines/sec

1) Approximate values based on PLS test conditions.  
 2) Using a 90° downward field of view.  
 3) Range of elevation values on flat surfaces with >20% reflectivity at the laser's wavelength  
 4) Expected RMSEz when following the PLS recommended acquisition & processing workflow and ASPRS check point guidelines

### PLATFORM

OPERATING TEMPERATURE (min/max)	-10° / +40° C
STORAGE TEMPERATURE (min/max)	-20° / +50° C
DIMENSIONS W/O CAMERA	348 x 170 x 150 mm
WEIGHT W/O CAMERA	4.4 kg
OPERATING VOLTAGE	12 - 28 V DC
POWER CONSUMPTION	60 W (typical)

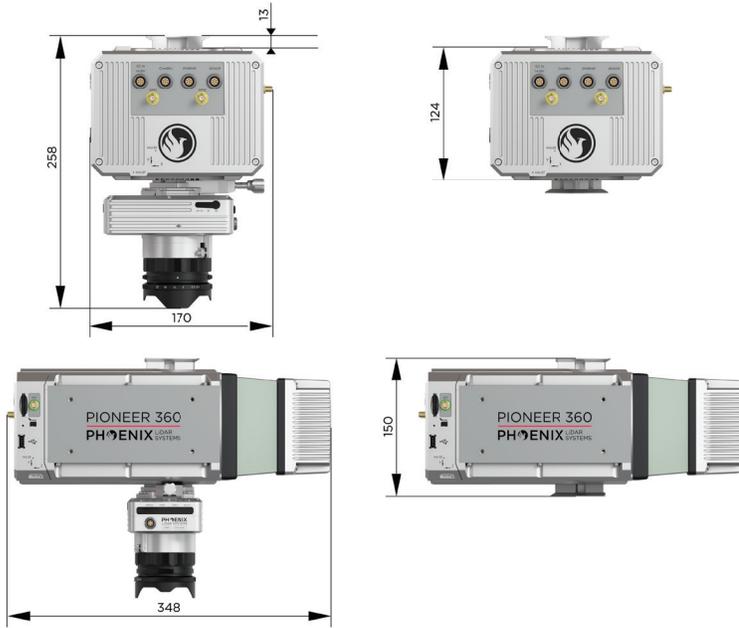
### NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
SUPPORT ALIGNMENT	Kinematic, Single-Antenna or optional Dual-Antenna
OPERATION MODES	Real-time, Post processing optional
ACCURACY POSITION	1 cm + 1 ppm RMS horizontal
IMU GYRO IN-RUN BIAS STABILITY	1.0°/hr to 0.5°/hr options

### APPLICATIONS

- Oil & Gas Surveying
- Construction Site Surveying
- Utilities Mapping
- Open Pit Mining Operations
- Railway Track Mapping
- General Mapping
- Agriculture & Forestry Monitoring

## PIONEER-360 DIMENSIONS (mm)



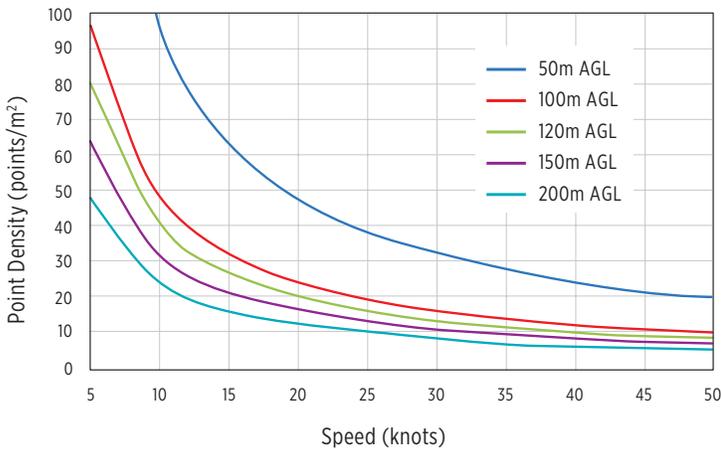
## RANGE MEASUREMENT PERFORMANCE

Laser Pulse Repetition Frequency (PRF)	200 kHz	500 kHz
<b>Maximum Measuring Range <sup>(1)</sup></b>		
@ 10% target reflectivity	205 m	130 m
@ 20% target reflectivity	290 m	185 m
@ 50% target reflectivity	490 m	250 m
<b>Typical Operating Flight <sup>(1)</sup></b>		
@ 10% target reflectivity	130 m	85 m
@ 20% target reflectivity	185 m	120 m
@ 50% target reflectivity	315 m	160 m

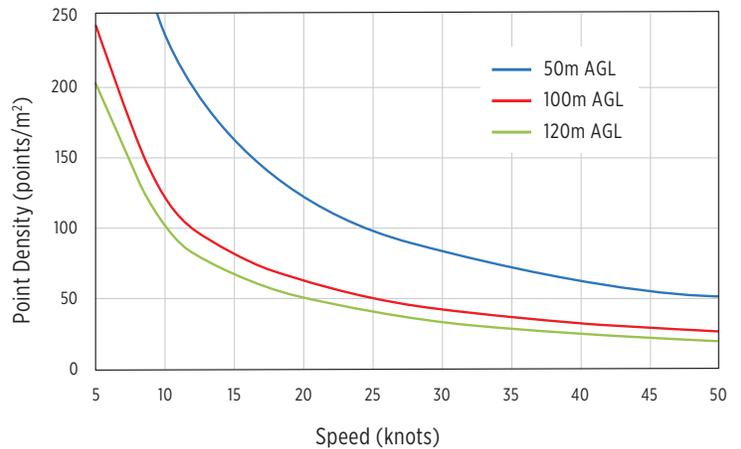
(1) Source Teledyne Optech Incorporated

## SPEED VS. POINT DENSITY

200 kHz Pulse Rate, 90° FOV



500 kHz Pulse Rate, 90° FOV



## PIONEER-360 ACCESSORIES



Wheel Sensor



Ground Vehicle Roof Rack Mount



360° Mobile Camera



61 MP Camera

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

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