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PLANE



HELI

## QUICK SPECS

### INTRASWATH PRECISION <sup>(1)(2)(3)</sup>

6 cm RMSDz @ 750 m

### EXAMPLE ACQUISITIONS:

#### HELICOPTER (HALO-15H)

- » 500 m AGL, 60 knots, 80° FOV, 1600 kHz
- » Swath Width = 840 m
- » Avg. Density = 54 points/m<sup>2</sup>
- » Collection Rate = -90 km<sup>2</sup>/hr

#### FIXED WING (HALO-30H)

- » 1500 m AGL, 120 knots, 80° FOV, 400 kHz
- » Swath Width = 2517 m
- » Avg. Density = 2 points/m<sup>2</sup>
- » Collection Rate = -560 km<sup>2</sup>/hr

# HALO-H SERIES

The HALO series LiDAR scanners are made for high altitude high efficiency mapping. City scale lidar projects are easily achievable with swath widths reaching 5,150 m. Selectable measurement rates up to 1600 kHz and line speed up to 250 per second can be tuned to meet challenging pulse density specification. The HALO-H is available in two different models; the **HALO-15H** and **HALO-30H**. The -15H variant is designed for city and corridor mapping applications. The -30H variant is a general-purpose longer range mapping system and can accommodate greater terrain relief due to its higher maximum flying heights.

## FEATURES

- Up to 1,400,000 shots-per-second on the ground
- Narrow 0.3 mrad beam divergence results in excellent accuracy & precision
- 1030 nm laser wavelength for better measurement probability through various environmental conditions
- Designed for helicopters, pods, and large-diameter camera hatches

## PAYLOAD

<sup>\*</sup>with IMU-32 and Phase One iXM100

OVERALL DIMENSIONS*	51.9 x 21.6 x 24.8 cm
OPERATING VOLTAGE	18 - 28 VDC
POWER CONSUMPTION*	Max. 155 W
OPERATING TEMPERATURE	0° - 40° C / 32° - 104° F
WEIGHT*	-30 kg / 66 lbs

## LiDAR SENSOR

	HALO-15H	HALO-30H
LASER WAVELENGTH	1030 nm	1030 nm
RANGE MAX	2500 m @ 20% reflectivity, 100 kHz	4300 m @ 20% reflectivity, 100 kHz
PULSE REPETITION FREQUENCY	100 - 1600 kHz	100 - 1600 kHz
SCAN SPEED	20 - 250 lines/second	20 - 250 lines/second
MAX RETURN COUNT	Virtually unlimited	Virtually unlimited
BEAM COUNT	4 facet pyramidal mirror	4 facet pyramidal mirror
BEAM DIVERGENCE	0.3 mrad	0.3 mrad
HORIZONTAL FIELD OF VIEW	10° - 80°	10° - 80°
LASER ACCURACY	0.03 m RMS (1200 m range @ 20% reflectivity)	0.03 m RMS (1200 m range @ 20% reflectivity)
LASER SAFETY	CLASS 3B	CLASS 3B

## NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
SUPPORTED ALIGNMENT	Static, Kinematic, Dual-Antenna
OPERATION MODES	Real-time, Post-Processed
ACCURACY POSITION	1 cm + 1 ppm GNSS baseline RMS Horizontal
ACCURACY ATTITUDE <sup>(5)</sup>	
ROLL, PITCH	0.002° RMS
HEADING	0.007° RMS

## APPLICATIONS

GENERAL MAPPING

UTILITIES MAPPING

AGRICULTURE & FORESTRY MONITORING

URBAN MAPPING

(1) Approximate values based on PLS test methods described at

<https://docs.phoenixlidar.com/accuracy-standards-and-quantification>

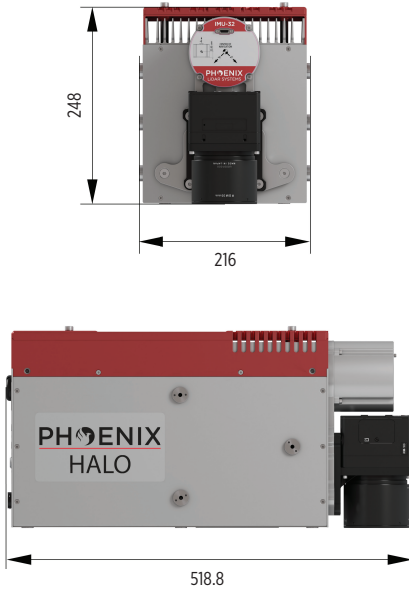
(2) Using a 80° max downward field of view.

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

(4) Flat surfaces with >20% reflectivity at the laser's wavelength.

(5) Estimated post-processed

## DIMENSIONS (mm)

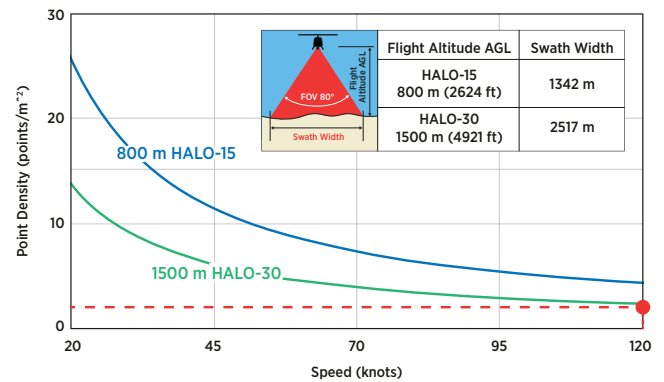
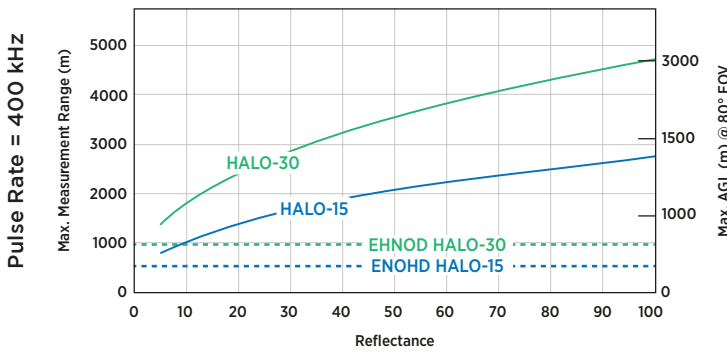


## MEASUREMENT PERFORMANCE

Laser Pulse Repetition Rate PRR	HALO-15H				HALO-30H			
	100 kHz	600 kHz	1000 kHz	1600 kHz	100 kHz	600 kHz	1000 kHz	1600 kHz
<b>MAX. MEASURING RANGE</b>								
natural targets $\rho \geq 20\%$ (e.g. Dry Roads)	2500 m	1185 m	958 m	787 m	4300 m	2038 m	1647 m	1354 m
natural targets $\rho \geq 60\%$ (e.g. Dry Grass)	3950 m	1873 m	1514 m	1245 m	6796 m	3221 m	2604 m	2141 m
<b>MAX. OPERATING FLIGHT ALTITUDE AGL</b>								
@ $\rho \geq 20\%$	1600 m (5249 ft)	759 m (2490 ft)	613 m (2011 ft)	504 m (1653 ft)	2754 m (9035 ft)	1305 m (4281 ft)	1055 m (3461 ft)	867 m (2844 ft)
@ $\rho \geq 60\%$	2530 m (8300 ft)	1200 m (3937 ft)	969 m (3179 ft)	797 m (2615 ft)	4352 m (14278 ft)	2063 m (6768 ft)	1667 m (5469 ft)	1371 m (4498 ft)
NOHD	160 m	60 m	50 m	30 m	280 m	110 m	90 m	70 m
ENOHD	1130 m	430 m	310 m	210 m	1970 m	790 m	600 m	460 m

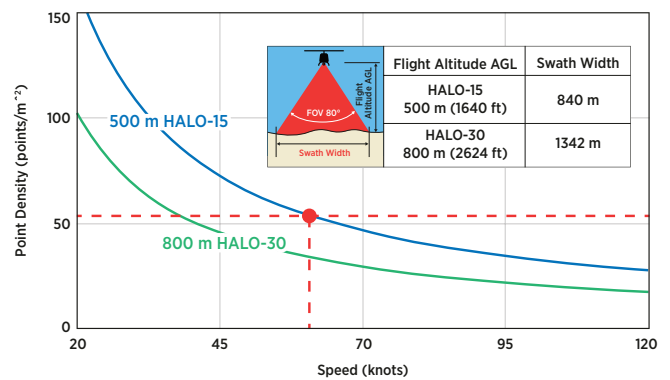
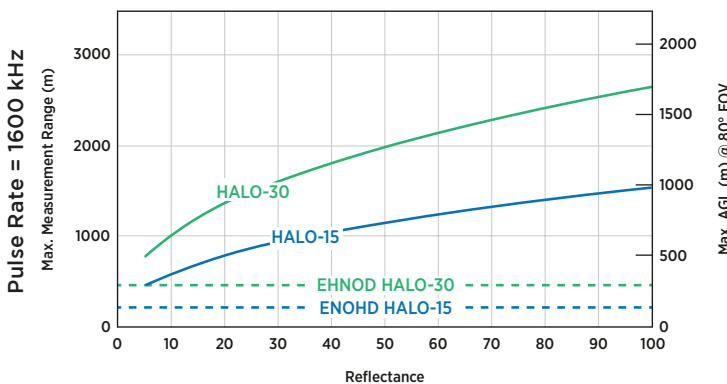
1) 100% laser power 2) 80° field of view 3) NOHD & ENOHD determined for non-overlapping beam footprints.

## RANGE & POINT DENSITY EXAMPLES



**EXAMPLE** HALO-30H - 400 kHz • 80° Field of view • Flying height AGL = 1500 m • Flying speed = 62 m/s (120 knots)

**RESULTS** 2 points/m<sup>2</sup> density  
~560 km<sup>2</sup>/hr collection rate



**EXAMPLE** HALO-15H - 1600 kHz • 80° Field of view • Flying height AGL = 500 m • Flying speed = 31 m/s (60 knots)

**RESULTS** 54 points/m<sup>2</sup> density  
~90 km<sup>2</sup>/hr collection rate



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

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