PHOENIX LiDAR SYSTEMS

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# HALO-V SERIES

PLANE HELI

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 pulse rates up to 1600 kHz and line speed up to 250 per second can be tuned to meet challenging pulse density specifications. The HALO-V is available in two different models; the **HALO-15V** and **HALO-30V**. The -15V variant is designed for city and corridor mapping applications. The -30V 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 medium-format gyro stabilizers such as the SOMAG DSM400 and smaller camera hatches

## QUICK SPECS

**INTRASWATH PRECISION** (1)(2)(3)
6 cm RMSDz @ 750 m

**EXAMPLE ACQUISITIONS:**

**HELICOPTER (HALO-15V)**

» 500 m AGL , 60 knots, 80° FOV, 1600 kHz
» Swath Width = 840 m
» Avg. Density = 54 points/m²
» Collection Rate = ~90 km²/hr

**FIXED WING (HALO-30V)**

» 1500 m AGL , 120 knots, 80° FOV, 400 kHz
» Swath Width = 2517 m
» Avg. Density = 2 points/m²
» Collection Rate = ~560 km²/hr

## APPLICATIONS

- GENERAL MAPPING
- UTILITIES MAPPING
- AGRICULTURE & FORESTRY MONITORING
- URBAN AREA 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

## PAYLOAD

| | |
|---|---|
| OVERALL DIMENSIONS | 30.4 x 29.4 x 47.3 cm |
| OPERATING VOLTAGE | 18 - 28 VDC |
| POWER CONSUMPTION | Max. 155 W |
| OPERATING TEMPERATURE | 0° - 40° C / 32° - 104° F |
| WEIGHT | ~15 kg / 33 lbs |

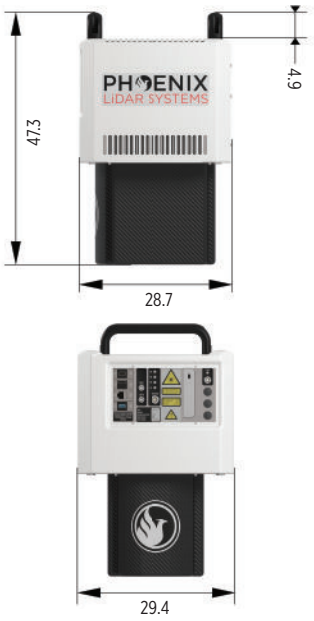
## LiDAR SENSOR

| | HALO-15V | HALO-30V |
|---|---|---|
| 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 (5) | |
| ROLL, PITCH | 0.002° RMS |
| HEADING | 0.007° RMS |

## DIMENSIONS (mm)

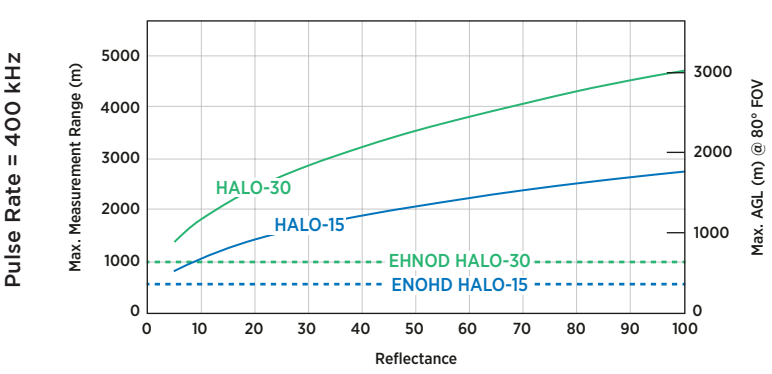


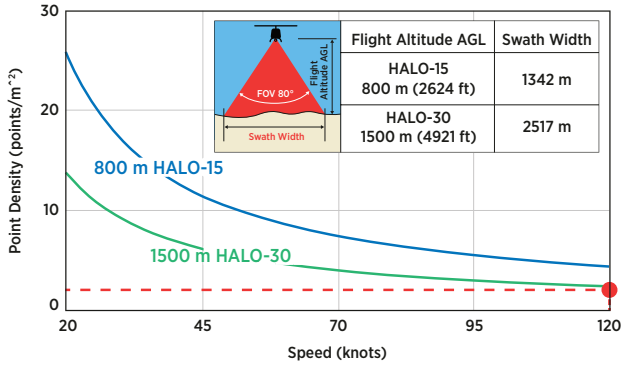

## MEASUREMENT PERFORMANCE

| | HALO-15V | | | | HALO-30V | | | |
|---|---|---|---|---|---|---|---|---|
| Laser Pulse Repetition Rate PRR | 100 kHz | 600 kHz | 1000 kHz | 1600 kHz | 100 kHz | 600 kHz | 1000 kHz | 1600 kHz |
| **MAX. MEASURING RANGE** | | | | | | | | |
| natural targets ρ ≥ 20% (e.g. Dry Roads) | 2500 m | 1185 m | 958 m | 787 m | 4300 m | 2038 m | 1647 m | 1354 m |
| natural targets ρ ≥ 60% (e.g. Dry Grass) | 3950 m | 1873 m | 1514 m | 1245 m | 6796 m | 3221 m | 2604 m | 2141 m |
| natural targets ρ ≥ 80% (e.g. Snow) | 4454 m | 2111 m | 1707 m | 1403 m | 4906 m | 3632 m | 2935 m | 2413 m |
| **MAX. OPERATING FLIGHT ALTITUDE AGL** | | | | | | | | |
| @ ρ ≥ 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) |
| @ ρ ≥ 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 |

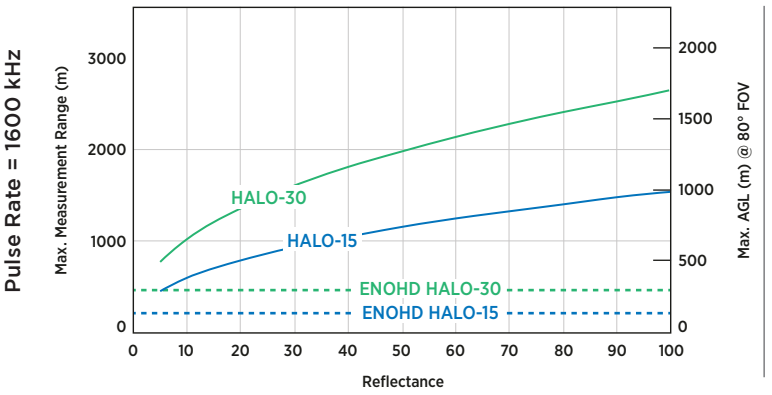
1) 100% laser power 2) 80° field of view 3) NOHD & ENOHD determined for non-overlapping beam footprints.

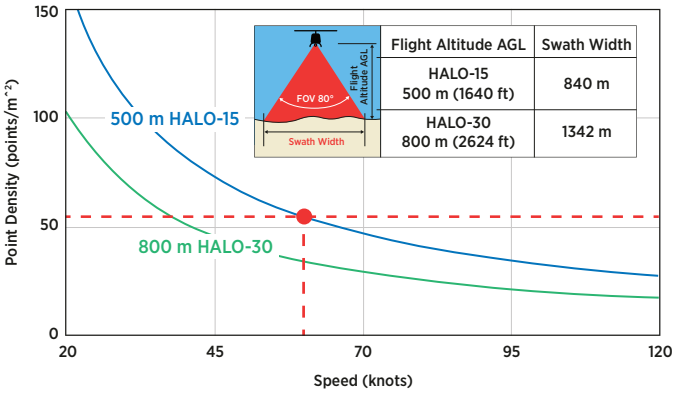
## RANGE & POINT DENSITY EXAMPLES




**EXAMPLE** **HALO-30V** - 400 kHz • 80° Field of view • Flying height AGL = 1500 m • Flying speed = 62 m/s (120 knots) **RESULTS** 2 points/m² density ~560 km²/hr collection rate




**EXAMPLE** **HALO-15V** - 1600 kHz • 80° Field of view • Flying height AGL = 500 m • Flying speed = 31 m/s (60 knots) **RESULTS** 54 points/m² density ~90 km²/hr collection rate

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

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

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