

AlphaAir 15 Pro

Premium Airborne LiDAR System



► Premium Airborne LiDAR System

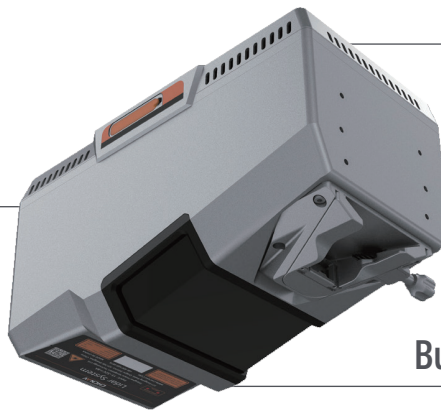
The CHCNAV AlphaAir 15 Pro (AA15P) is a premium airborne LiDAR system for large-area geospatial data capture. With up to 3,200 m range, high-density point clouds, strong vegetation penetration, and support for 100 MP nadir and 300 MP oblique imaging, it delivers efficient topographic mapping, corridor surveying, city-scale 3D modeling, and engineering surveys in complex terrain.



► Main feature

Ultra-Long-Range LiDAR

Up to 3,200 m at $\rho > 80\%$ reflectivity,
typical flight of 500 to 1,200 m AGL.
Up to 2.4 million pts/s



High-Performance Imaging

100 MP medium-format nadir cameras
and 300 MP full-frame oblique cameras
for mapping and textured 3D models

Built for UAVs and Manned Aircraft

Only 2.6 kg with compact dimensions of
245×131×159 mm and airborne pod option.

► Application



Terrain Mapping



City-Scale 3D Reality Modeling

▶ **Ultra-Long Range for Large-Area Survey Efficiency**



Up to 3,200 m range and operating altitudes from 500 to 1,200 m AGL for data capture over areas with large elevation variation. Cover up to 60 km²/h at 600 m AGL on manned aircraft with a point density of 20 pts/m². Laser design with 38% smaller spot size, 50% higher pulse energy, and 107% improved vegetation penetration capability.

▶ **High-Resolution Imaging at High Flight Altitudes**

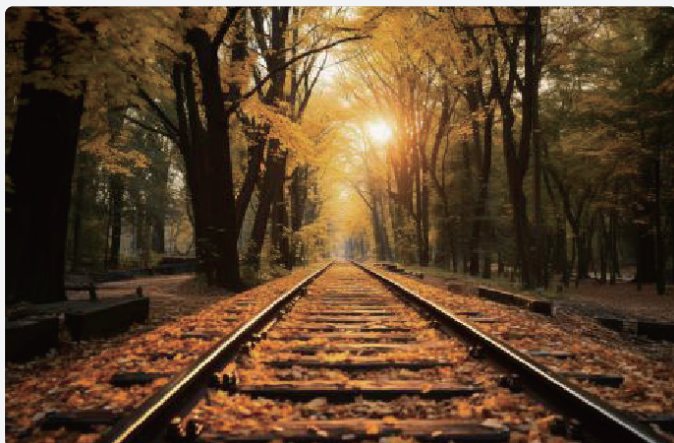


100 MP nadir camera captures ultra-high-definition ground details. 300 MP oblique camera supports realistic 3D reconstruction.

▶ **Flexible Deployment on UAVs and Manned Aircraft**



Weighing only 2.6 kg with compact dimensions of 245x131x159 mm, AA15P supports integration with large fixed-wing UAVs and manned aircraft. Its streamlined airborne pod option enables flexible configurations for professional large-area mapping missions.



Railway Corridor Mapping



Engineering Survey and Design

SPECIFICATIONS

► General system performance

Absolute H accuracy ⁽¹⁾	2 cm ~ 5 cm RMS
Absolute V accuracy ⁽¹⁾	2 cm ~ 5 cm RMS
Weight of instrument	2.6 kg (without camera)
Dimensions of instrument	245mm * 131mm*159mm
Input voltage	DC 24 V (15 ~ 32 V)
Data storage	512 GB (Optional for 1 TB)
Coping speed	80 MB/s (USB 3.0 compatible)
Operating temperature	-20°C ~ +50°C
Typical power consumption	48 W (20°C, 1200 kHz, 250 lines/s)
Max. power consumption	60 W (20°C, 2400 kHz, 600 lines/s)
IP rating	IP64

► Laser scanner

Laser Product Classification	Class 3R (in accordance with IEC 60825-1:2014)
Wavelength	1550 nm
Max. measuring range, @p > 80 % ⁽²⁾	3200m
Minimum range	10 m
Max. measurement rate	2,400,000 meas./sec.
Scan speed (selectable)	50 ~ 600 lines/sec
Accuracy ⁽³⁾ Precision ⁽⁴⁾	15 mm (1σ,@ 150 m) 8 mm (1σ,@ 150 m)
Field of view	75°
Multi-Period capability	Up to 12 zones
Maximum number of targets per pulse ⁽⁵⁾	16
Beam divergence	0.44 mRad (0.025°)

► Positioning and orientation system

GNSS	GPS:L1,L2,L5
	GLONASS:L1,L2
	BEIDOU:B1,B2,B3
	GALILEO:E1,E5a,E5b
QZSS:L1 C/A,L5	
IMU update rate	600Hz
Attitude accuracy after post-processing	0.005° RMS pitch/roll 0.010° RMS heading
Position accuracy after post-processing	0.010 m RMS horizontal 0.020 m RMS vertical

► R10ProS Medium-frame Orthophoto cameras (selectable)

Overall pixel quantity	100 MP
Focal length	35/50 mm (optional)
Sensor size	43.8 mm * 32.8 mm
Photo size	4 : 3 (11648 * 8736)
Min photoing interval	0.5 s
Typical power consumption	15 W
Max. power consumption	17 W

► DG6ProS2 Full-frame oblique cameras (selectable)

Overall pixel quantity	300 MP
Focal length	Front view 40 mm / side view 56 mm
Sensor size	35.9 mm * 23.9 mm
Min photoing interval	0.5 s
Typical power consumption	71 W
Max. power consumption	78 W

Laser Pulse Repetition Rate PRR ⁽⁶⁾	150 kHz	300 kHz	600 kHz	1200 kHz	1800 kHz	2400 kHz
Max. Measuring Range ⁽²⁾						
natural targets p ≥ 10 %	1420m	1050m	775m	560m	465m	405m
natural targets p ≥ 20 %	1890m	1420m	1050m	775m	640m	560m
natural targets p ≥ 80 %	3200m	2480m	1890m	1420m	1190m	1050m
Max. Operating Flight Altitude AGL ⁽²⁾⁽⁷⁾						
@ p ≥ 10 %	885m	650m	470m	340m	280m	240m
@ p ≥ 20 %	1070m	800m	590m	420m	350m	305m
@ p ≥ 40 %	1450m	1100m	820m	600m	490m	430m
Max. Number of Targets per Pulse ⁽⁸⁾	16	16	16	12	10	8

*Specifications are subject to change without notice.

(1) Measured at the Huace experimental site under the following conditions: a. Select a site with distinct angular features and mount it on the CHC's P60. Utilize CHC's planar flight path, maintaining a flight speed of 20 m/s and an AGL of 150 m. Each straight segment in the flight path should not exceed 3.3km, and the data is obtained through PPK processing. b. Check the exposed hard material at the point that conforms to the diffuse reflection model. c. Perform post-processing using CoPre.

(2) Range definition: Defined as the distance where 50% of emitted laser pulses are detectable. When multiple targets are illuminated, pulse energy dispersion may result in reduced range. Test conditions: Conducted under 100 klx ambient light, central field of view, 23 km visibility, using a planar target larger than the laser beam diameter and perpendicular laser incidence. Maximum range verification requires consultation with technical support or authorized partners.

(3) Accuracy is the degree of conformity of a measured quantity to its actual (true) value. The above specifications were achieved under specific test conditions, including ambient temperature of 25 °C, LiDAR point rate of 500 kHz, target reflectivity of 80%, and test distances of 150 m. Performance may vary with environmental and operating conditions. All specifications are provided for reference only.

(4) Precision is the degree to which further measurements show the same results. The above specifications were achieved under specific test conditions, including ambient temperature of 25 °C, LiDAR point rate of 500 kHz, target reflectivity of 80%, and test distances of 150 m. Performance may vary with environmental and operating conditions. All specifications are provided for reference only.

(5) The actual number of echoes depends on the operating environment, with up to 16 echoes supported. Calculation must be performed using CHCNAV CoPre software.

(6) Rounded average PRR.

(7) Effective FOV 75°, additional roll angle ± 5°.

(8) 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.

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