CHCNAV

AA10

PROFESSIONAL AIRBORNE LiDAR+RGB SYSTEM

MAPPING
& GEOSPATIAL

CHCNAV

ADVANCED LIDAR+RGB AERIAL SURVEY SYSTEM

The AlphaAir 10 is an advanced aerial surveying solution that seamlessly integrates LiDAR and RGB sensors to meet the needs of professional UAV LiDAR mapping and drone photogrammetry. Leveraging CHCNAV's cutting-edge LiDAR technology, the AA10 flawlessly integrates high-precision LiDAR, accurate GNSS positioning, IMU orientation and an industrial-grade full-frame orthophoto camera. Combined with CHCNAV point cloud and image fusion modeling software, the AA10 provides a survey-grade, efficient and cost-effective approach to 3D data acquisition and processing. The AA10 Airborne LiDAR + RGB System accelerates accurate 3D data collection within a single mission and simplifies the process of capturing 3D reality through a streamlined workflow.

PRECISION SCANNING CAPABILITIES

The AA10's high-precision navigation algorithm in conjunction with the CHCNAV scanner provides 5 mm repeated range accuracy and achieves exceptional absolute precision in the range of 2 to 5 cm, even in complex environments.

STATE-OF-THE-ART LIDAR

With the capability of long-range measurements up to 800 m, rapid scanning at 500,000 points per second, and a continuously rotating mirror that enables scanning speeds of 250 scans per second, the AA10 enhances the detail of aerial mapping operations.

ENHANCED VEGETATION PENETRATION

Leveraging advanced multi-target capabilities, the AA10 features up to 8 target echoes, enhancing its ability to penetrate dense vegetation. This feature allows the system to effectively acquire ground surfaces, resulting in accurate Digital Elevation Models (DEMs) and Digital Surface Models (DSMs), even in challenging environments with dense vegetation.

SEAMLESS DATA FUSION

The AA10 accelerates the creation of mesh models by generating high-quality point clouds. Powered by a 45 MP orthographic internal camera, the system provides high resolution image mapping textures for efficient 3D model reconstruction with realistic point cloud colorization.

REAL-TIME DATA VIEW

The AA10 supports automated reality capture and real-time data visualization accessible directly from the UAV controller, enabling informed decision-making throughout the survey operation.

EFFICIENT WORKFLOW

Complementing the solution, CoPre and CoProcess software suite streamlines post-processing and feature extraction with an easy-to-use and efficient data workflow.

DESIGN FOR ANY UAV

The AA10 LiDAR system is impressively lightweight and compact, weighing in at just 1.55 kg and provides a 30-minute operating time when integrated with drones such as the DJI M350. The installation process is simplified with Alphaport's convenient one-click connection to the UAV's power source.

READY FOR ANY WEATHER

The AA10 IP64-rating ensures the system's resilience, allowing it to deliver consistent, reliable performance in varying operating conditions.

PREMIUM PERFORMANCE

Versatile UAV Configuration

Compact and lightweight, the AA10 LiDAR can be easily mounted on a wide range of drones, including the CHCNAV BB4, the popular DJI Matrice, and various third-party UAV platforms.

45MP Full-Frame Camera

The AA10's high-precision LiDAR and industrial-grade cameras enable users to generate accurate and realistic 3D models and high-resolution Digital Orthomosaic (DOM) outputs.

Innovative Alphaport Interface

CHCNAV's exclusive Alphaport interface provides wireless power and drone telemetry connectivity.

Robust Software Capabilities

CHCNAV's CoPre software efficiently handles all essential processing steps, in addition to data alignment and generation of accurate 3D models and DOMs.

SPECIFICATIONS

General system performance	
Absolute Hz accuracy	2 cm ~ 5 cm RMS (1)
Absolute Z accuracy	2 cm ~ 5 cm RMS (1)
Mounting	Quickly install & release design, easily switch between various UAV platforms
Weight of instrument	1.55 kg
Dimensions of instrument	210 mm x 112 mm x 131 mm
Data storage	512 G*2
Coping speed	80 Mb/s

Positioning and orientation system	
GNSS system	GPS: L1, L2, L5 GLONASS: L1, L2 BEIDOU: B1, B2, B3 GALILEO: E1, E5a, E5b
IMU update rate	500 Hz
Attitude accuracy after post-processing	0.006° RMS pitch/roll 0.019° RMS heading
Position accuracy after post-processing	0.010 m RMS horizontal 0.020 m RMS vertical

Imaging system	
Resolution	45 MP
Focal length	21 mm
Sensor size	36 × 24 mm (8184 × 5460)
Pixel size	4.4 μm
Min photoing interval	1 s
FOV	81.2° × 59.5°

Environmental	
Operating temperature	-20°C to +50°C
Storage temperature	-20°C to +60°C
IP rating	IP64
Humidity (operating)	80%, non-condensing

Electrical	
Input voltage	DC 24 V (13 ~ 27 V)
Power consumption	40 W
Power source	Depending on UAV battery or by Skyport (DJI M300/M350)

Equipped software	
CoPre pre-processing software	Data copy, POS solve, point cloud and images creation, strip adjustment & GCP refine, noise optimization, DOM and 3D model generation
CoProcess point cloud processing software	Terrain module, road module, extraction module, volume module

* Specifications are subject to change without notice.
(1) According to CHCNAV test condition :150 m AGL with 8m/s speed. (2) Typical values for average conditions. (3) Accuracy is the degree of conformity of a measured quantity to its actual (true) value. (4) Precision is the degree to which further measurements show the same results.

Laser scanner			
Laser product classification	Class 1 (in accordance with IEC 60825-1:2014)		
Laser Pulse Repetition Rate (PRR)	100 kHz	300 kHz	500 kHz
Max.Measuring Range@ρ> 20% (2)	400 m	275 m	215 m
Max.Measuring Range@ρ> 80% (2)	800 m	480 m	280 m
Max.Operating Flight Altitude AGL @ρ>20%	317 m	218 m	170 m
Laser divergence angle	0.032°		
Minimum range	10 m		
Accuracy (3)	15 mm (1σ,@150m)		
Precision (4)	5 mm (1σ,@150m)		
Field of view	75°		
Max. Effective measurement rate	500 000 meas / sec		
Scan speed (selectable)	50 ~ 250 scans/sec		
Max. Number of return pulses	Up to 8		
Angular resolution	0.001°		

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