

CHCNAV

AA9

PROFESSIONAL AIRBORNE
LiDAR+RGB SYSTEM



MAPPING
& GEOSPATIAL

ADVANCED LIDAR+RGB AERIAL SURVEY SYSTEM

The AlphaAir 9 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 AA9 flawlessly integrates high-precision LiDAR, accurate GNSS positioning, IMU orientation and an industrial-grade orthophoto camera. Combined with CHCNAV point cloud and image fusion modeling software, the AA9 provides a survey-grade, efficient and cost-effective approach to 3D data acquisition and processing. The AA9 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 AA9'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 600 m, rapid scanning at 500,000 points per second, and a continuously rotating mirror that enables scanning speeds of 250 scans per second, the AA9 enhances the detail of aerial mapping operations.

ENHANCED VEGETATION PENETRATION

Leveraging advanced multi-target capabilities, the AA9 features up to 6 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 26 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 AA9 supports automated reality capture and live-view of point cloud and images capturing, accessible directly from the UAV controller, enabling informed decision-making throughout the survey operation.

EFFICIENT WORKFLOW

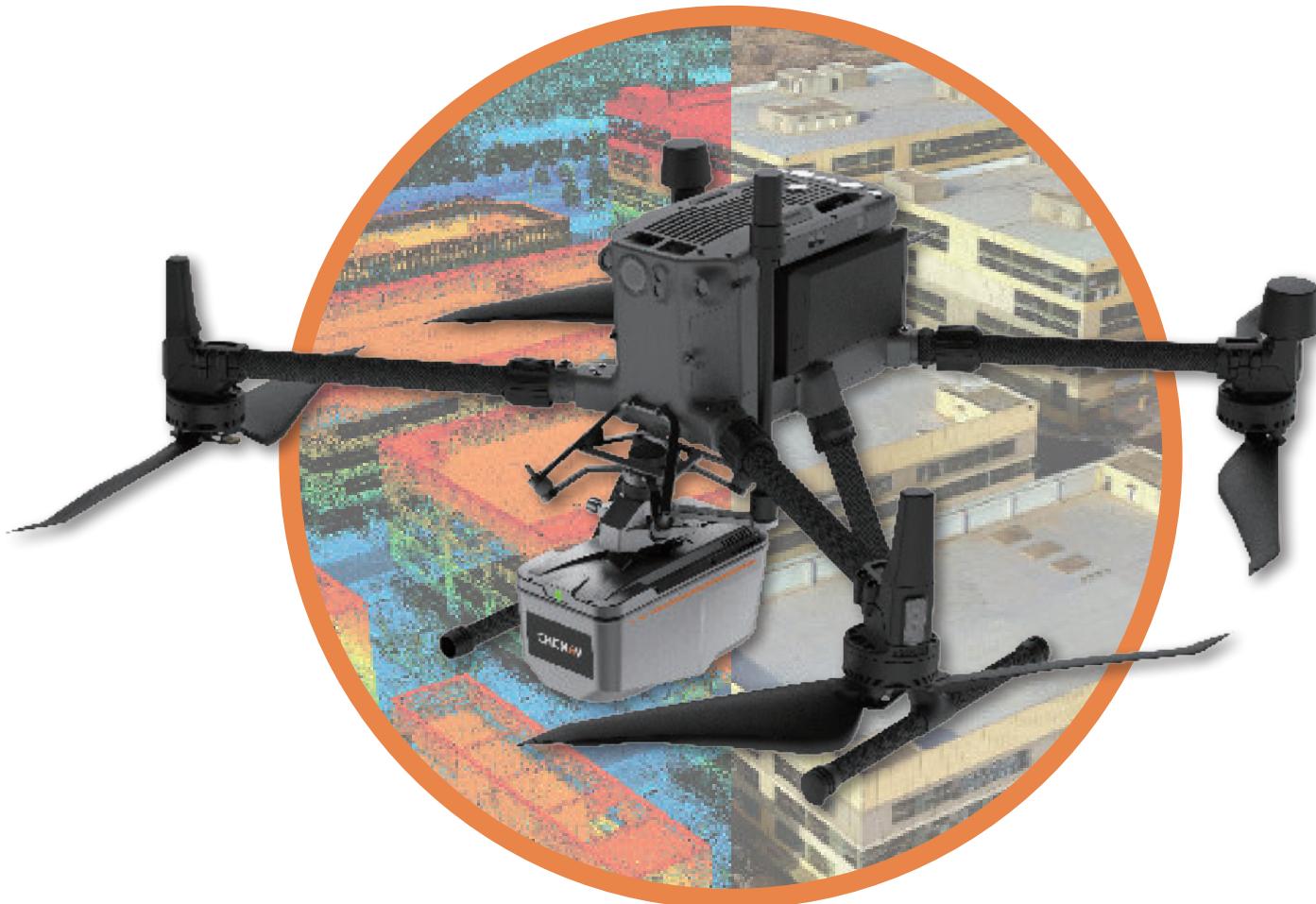
Complementing the solution, CoPre and CoProcess software suite streamlines post-processing and feature extraction with an easy-to-use and efficient data workflow.

DESIGN FOR ANY UAV

The AA9 LiDAR system is impressively lightweight and compact, weighing in at just 1.45 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 AA9 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 AA9 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.

**26MP Half-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		Environmental	
Absolute Hz accuracy	2 cm ~ 5 cm RMS ⁽¹⁾	Operating temperature	-20°C to +50°C
Absolute Z accuracy	2 cm ~ 5 cm RMS ⁽¹⁾	Storage temperature	-20°C to +60°C
Mounting	Quickly install & release design, easily switch between various UAV platforms	IP rating	IP64
Weight of instrument	1.45 kg	Humidity (operating)	80%, non-condensing
Dimensions of instrument	213 mm x 113 mm x 131 mm	Electrical	
Data storage	512 G	Input voltage	DC 24 V (13 ~ 27 V)
Coping speed	80 Mb/s	Power consumption	40 W
Positioning and orientation system		Power source	Depending on UAV battery or by Skyport (DJI M300/M350)
GNSS system	GPS: L1, L2, L5 GLONASS: L1, L2 BEIDOU: B1, B2, B3 GALILEO: E1, E5a, E5b	Equipped software	
IMU update rate	500 Hz	CoPre pre-processing software	Data copy, POS solve, point cloud and images creation, strip adjustment & GCP refine, noise optimization, DOM and 3D model generation
Attitude accuracy after post-processing	0.006° RMS pitch/roll 0.019° RMS heading	CoProcess point cloud processing software	Terrain module, road module, extraction module, volume module
Position accuracy after post-processing	0.010 m RMS horizontal 0.020 m RMS vertical	<small>* 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.</small>	
Imaging system			
Resolution	26 MP		
Focal length	16 mm		
Sensor size	23.5 x 15.7 mm (6252 x 4168)		
Pixel size	3.76 µm		
Min photoing interval	1 s		
FOV	72.3° x 52.2°	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@p> 20% ⁽²⁾	300 m	275 m	215 m
Max.Measuring Range@p> 80% ⁽²⁾	600 m	360 m	280 m
Max.Operating Flight Altitude AGL @p>20%	241 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 6		

© 2023 Shanghai Huace Navigation Technology Ltd. All rights reserved. The CHCNAV and CHCNAV logo are trademarks of Shanghai Huace Navigation Technology Limited. All other trademarks are the property of their respective owners. Revision September 2023.

WWW.CHCNAV.COM | MARKETING@CHCNAV.COM

CHC Navigation Headquarter
Shanghai Huace Navigation Technology Ltd.
577 Songying Road, Qingpu,
201703 Shanghai, China
+86 21 54260273

CHC Navigation Europe
Infopark Building, Sétány 1,
1117 Budapest, Hungary
+36 20 421 6430
Europe_office@chcnav.com

CHC Navigation USA LLC
6380 S. Valley View Blvd, Suite 246,
Las Vegas, NV 89118, USA
+1 702 405 6578

CHC Navigation India
409 Trade Center, Khokhra Circle,
Maninagar East, Ahmedabad,
Gujarat, India
+91 90 99 98 08 02