CHCNAV

AA10

PROFESSIONAL AIRBORNE SURVEY LiDAR

MAPPING
& GEOSPATIAL

CHCNAV

THE MOST EFFICIENT & FLEXIBLE ACCURATE WAY TO SURVEY FROM THE SKY

AA10 is a new generation of intelligent aerial surveying system from CHCNAV. It is the result of six years of innovation and three years of product development, powered by CHCNAV's state-of-the-art LiDAR technology. It integrates survey-grade high-precision LiDAR, accurate positioning and orientation system, and a full-frame industrial camera. Combined with CHCNAV's pioneering point cloud & image fusion modeling algorithm, it provides survey-grade, highly efficient, and cost-effective 3D data capturing and processing throughout the entire CHCNAV workflow. A single mission with AA10 allows for fast and accurate acquisition of 3D data, revolutionizing traditional aerial survey techniques and bringing about a new breakthrough in the aerial survey industry.

OUTSTANDING ACCURACY

The AA10 incorporates CHCNAV's high-precision navigation algorithm, the result of more than two decades of development. Combined with the scanner's 5 mm repeated ranging accuracy, the system achieves exceptional absolute accuracy from 2 to 5 cm, even in the most difficult and challenging environments.

STRONG PENETRATION

With the advanced multiple target capability, the AA10 supports up to 8 target echoes for superior vegetation penetration ability. Capturing ground surfaces and generating accurate Digital Elevation Models (DEMs) and Digital Surface Models (DSMs) became easy, even in difficult environments with dense vegetation.

PREMIUM LASER

The AA10 offers long-range measurements up to 800 m, high-speed scanning at 500K points per second, and a continuously rotating mirror that enables scan speeds of up to 250 scans per second, providing greater detail for critical tasks.

DATA FUSION MODELING

High-quality point cloud from AA10 helps to quickly build mesh model and with 45MP internal camera, which provides premium quality image mapping texture, can achieve efficient reconstruction of 3D realistic models.

INDUSTRIAL RELIABILITY

AA10 offer the highest levels of protection and operational performance in any field environment. Survey missions can face unexpected weather surprises, and AA10 are designed to excel in any situation, always ensuring reliable performance.

EFFICIENT WORKFLOW

CHCNAV offer the complete package to add LiDAR solution to user geomatic services. Fully automated reality capture and real-time data view is provided by SmartGo SW and semi-automated point cloud processing using CoPre desktop SW.

LIGHT-WEIGHT

The AA10 LiDAR system is incredibly light and compact, weighing only 1.55 kg. This provides 30 min operation time on drones like DJI M350.

HIGHLY INTEGRATED

Installation of the AA10 is quick and easy thanks to Alphaport's one-click connection to the power source of the UAV.

PREMIUM PERFORMANCE

Flexible UAV setup

AA10 is compact and lightweight LiDAR that can be easily installed on various drones like CHCNAV BB4, or popular DJI Matrice or any 3rd party UAVs.

45MP full-frame camera

To have high-accurate lidar and industrial camera in one solution gives ability to users to generate accurate and realistic 3D models and high-resolution DOM.

Alphaport interface

CHCNAV unique Alphaport interface integrates power supply and connection to drone telemetry without any cables.

Powerful SW

CHCNAV CoPre SW make all necessary processing steps with additional data alignment. Also, it can generate accurate 3D models and DOM.

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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