CHCNAV

AU20

MULTI-PLATFORM HIGH-END LiDAR SOLUTIONS

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MAPPING & GEOSPATIAL

CHCNAV

FLEXIBLE AND EFFICIENT LIDAR SOLUTIONS

The AlphaUni 20 is a cost-effective and multi-platform mobile mapping system. It is the result of six years of innovation and product development powered by CHCNAV's state-of-the-art LiDAR technology. In airborne scenarios, the AU20 delivers superior data and improves survey efficiency thanks to its exceptional vegetation penetration capability, extended measurement range, high accuracy, and data density. The AU20's unique, flexible installation design, coupled with CHCNAV's LiDAR technology, ensures the best combination of point cloud density, accuracy, and quality. The system provides accurate point cloud and immersive panoramic imagery optimized for a variety of applications, including road surfaces, highway maintenance, and asset management through vehicle-based surveying. Mobile mapping has never been more flexible with the AU20, democratizing the reality capture industry and making it accessible to all.

OUTSTANDING ACCURACY

The AU20 incorporates CHCNAV's high-precision navigation algorithm, the result of more than two decades of research. Combined with the scanner's remarkable 5 mm repeated ranging accuracy, the system achieves exceptional absolute accuracy of 2 to 5 cm, even in the most difficult and demanding environments.

MULTI-PLATFORM DESIGN

The AU20 follows CHCNAV's proven flexible multi-platform LiDAR design concept. It can be mounted on manned and unmanned aircraft for airborne scanning and on a variety of land vehicles such as cars, boats and trains for mobile mapping. It can also be conveniently mounted on a backpack for narrow area mapping.

PREMIUM LASER

The AU20 offers long-range survey capabilities up to 1450 m, high-speed scanning at 2M points per second, and a continuously rotating mirror that enables scan speeds of up to 200 scans per second, providing greater detail for critical tasks.

EFFICIENT WORKFLOW

CHCNAV offers a complete solution for adding LiDAR surveying to users' geomatics services. Fully automated reality capture and real-time mission monitoring is provided by SmartGo software and intelligent point cloud processing by CoPre desktop software.

INDUSTRIAL RELIABILITY

All Alpha family systems offer the highest levels of protection and operational performance in any field environment. Survey missions can face unexpected weather surprises or site conditions, and our solutions are designed to excel in any situation, always ensuring reliable performance.

STRONG PENETRATION

With its advanced multi-target capability, the AU20 supports up to 16 target echoes for superior vegetation penetration ability. Capturing ground surfaces and generating accurate Digital Elevation Models (DEMs) and Digital Surface Models (DSMs) is made easy, even in difficult environments with dense vegetation.

LIGHT-WEIGHT

The AU20 LiDAR system is incredibly light and compact, weighing only 2.82 kg. Combined with the latest car mount kit, which includes a Ladybug5+, the total weight is only 10.7 kg.

HIGHLY INTEGRATED

Installation of the AU20 is quick and easy thanks to Alphaport's one-click connection to the power source and camera.

MOST FLEXIBLE INSTALLATION

Airborne setup

AU20 can be easily installed on any aerial platform (drone, helicopter, or airplane) with payload capacity of up to 2.6 kg.

Simple vehicle setup

For road measurements and special tasks, switching to vehicle mode takes just 5 minutes, regardless of car type.

Advanced car kit

Practical mobile mapping system combining accurate LiDAR data with immersive panoramic imagery and SLAM.

Backpack survey

The backpack setup enables survey in narrow streets or on steep slopes, where cars cannot go, and drones cannot fly.

SPECIFICATIONS

General system performance

Absolute Hz & V accuracy	< 0.025 m RMS @ 30 m range < 0.050 m RMS @ 150 m range
Accuracy conditions	Without control points, UAV survey with 7 m/s speed, car survey wihout DMI with 9.7 m/s speed
Mounting	Multi-platform, quickly install & release design, easily switch between airborne, vehicle and backpack mode
SLAM	AlphaPano vechicle installation platform which include panoramic camera and SLAM scanner integration for optimised position in challenging for trajectory environment
Weight of instrument (1)	2.82 kg / 3.12 kg (with C5 camera) 10.97 kg AlphaPano vechicle platform
Dimensions of instrument	262.3 × 141.5 × 161 mm
Data storage	512 G (Optional for 1 T)
Coping speed	80 Mb/s

Positioning and orientation system

GNSS system	Multiple GPS, GLONASS, Galileo, BeiDou, SBAS and QZSS constellation, L-Band
IMU update rate	600 Hz
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

Environmental

Operating temperature	-20 °C to +50 °C
Storage temperature	-20 °C to +65 °C
IP rating	IP64
Humidity (operating)	80%, non-condensing

Imaging system UAV

Resolution	45 MP
Focal length	21 mm / 35 mm
Sensor size	36 mm x 24 mm (8184 x 5460)
Pixel size	4.4 μm
Min photoing interval	1 s
FOV	81.2*59.5 / 53.4*37.8
Airborne optional camera setup	Calibrated Sony 7 RIV (7952 x 5304, 61 MP, 10 fps)

AlphaPano Imaging system

Camera type	360° Spherical camera, additional adjustable external cameras as option
Numbers of camera	6 sensors
CCD size	2048 × 2448, 3.45 μm pixel size
Lens	4.4 mm
Resolution	30 MP (5 MP × 6 sensors), 10 FPS JPEG compressed
Coverage	90% of full sphere
High Dynamic Range (HDR)	Cycle 4 gain and exposure presets
Dimensions of AlphaPano	530 x 214.5 x 592 mm (With installed AU20)

Electrical

Input voltage	24 V (Range 15 - 27 V)
Power consumption	60 W
Power source	Depending on UAV battery. External battery in for car setup, also support direct vehicle power source

Equipped software

CoPre Intelligent Processing SW	Data copy, POS process, Adjust & Refine, Generate point cloud
CoProcess Efficient Feature Extraction SW	Terrain module, Road module, Volume module

Laser scanner

Laser product classification	Class 1 (in accordance with IEC 60825-1:2014)								
Laser pulse repetition rate PRR	100 kHz	200 kHz	300 kHz	400 kHz	500 kHz	800 kHz	1 MHz	1.5 MHz	2 MHz
Max. range, @ρ >80% (2)	1450 m	1320 m	1220 m	1120 m	1000 m	790 m	706 m	576 m	500 m
Max. range, @ρ >20% (2)	750 m	660 m	610 m	560 m	500 m	395 m	353 m	288 m	250 m
Max.Operating Flight Altitude AGL, @ρ >20% (3)	530 m	467 m	431 m	396 m	354 m	354 m	279 m	204 m	177 m
Laser product classification	0.032°								
Minimum range	1.5 m								
Accuracy (4)	15 mm (1σ,@ 150 m range) 5 mm (1σ,@ 30 m range)								
Precision (5)	5 mm (1σ,@ 150 m)								
Multi-Period capability	Up to 7 zones								
Field of view	360°, selectable								
Scanning mechanism	rotating mirror								
Max. effective measurement rate	2 000 000 meas./sec (depending on the mode)								
Scan speed (selectable)	10 - 200 scans/sec								
Return numbers	Up to 16								
Angular resolution	0.001°								

* Specifications are subject to change without notice.
(1) Weight calculated with & without camera. (2) Typical values for average conditions.(3) Flat terrain assumed, scan angle ±45° FOV. (4) Accuracy is the degree of conformity of a measured quantity to its actual (true) value. (5) Precision is the degree to which further measurements show the same results.

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