



Alpha3D



Mobile mapping solution

Make your work more efficient

Solution Description

Alpha3D

Dominant performance to
make your work more mobile

CHC Navigation offers to geospatial professionals our premium high-performance, vehicle-independent mobile mapping solution to capture mass data in continuously changing world environments on dynamics, enabling them to get work done quickly and more accurately to increase their ROI.

The Alpha3D combines state-of-the-art high-performance hardware, such as long range, ultra-high speed, precise laser scanner, high-resolution HDR panoramic camera in combination with advanced GNSS receiver and high precision IMU, in one instrument with light weight and compact but in same time rugged design. All these features keep Alpha3D as one of most innovative system in market today.

Applications



Roads & Highways



Rail & Infrastructure



Tunnels



Digital city



Infrastructure utilities



Mining



Water



Airports



Public safety

Key Features



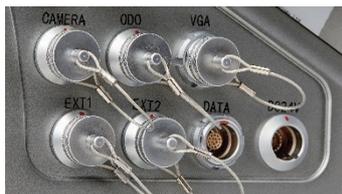
High performance laser scanner

- Long range scanning up to 420m
- Extremely high-speed scanning of 1M points per second
- High point cloud density even on high speed driving
- High quality of point cloud with low range noise



High resolution 360° image

- 30 MP HDR panoramic camera with superb image quality
- Fully calibrated point clouds and panorama images
- You can add additional imagery sensors to get extra information for application needs



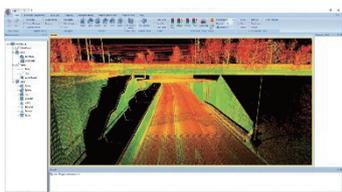
Ready now, thinking about future

- Two RS232 ports for external device connection
- Ready to add 2nd scanner for more density of point cloud
- 2nd GNSS antenna to work on railway or water applications
- Easy-In easy-out SSD hard disc for raster data transfer



Capture and control data easily with CoCapture

- Manage the mission and automatically capture data
- BYOD, device free, any browser based operation
- WiFi or LAN cable connection
- Very simple and intuitive, user-friendly design



CoProcess software to manage scanning projects

- Intuitive user interface with rich functionality
- Semi-automated feature extractions
- Powerful engine can support massive data processing
- Easily export extracted information into CAD or GIS deliverables with our SW plugins



Vehicle-independent platform

Whatever the task is, the Alpha3D is easily mounted on a variety of platforms, including different type of vehicles, trains, railway trolleys and boats, rapidly and efficiently collects the high density, accurate point clouds and powerful images data but also adds extra information from additional sensors, such as high-resolution camera, thermal camera, GPR, echo sounder or extra profiler.



Get new revenue and increase ROI

With Alpha3D users can collect more data faster and reducing time in the field more than 40% compared to traditional surveying instruments. By combination of point clouds and high-resolution images as well as information from additional sensors there is no need to return to site for remeasurement. With multiple type of data measurement professionals can open new industries and applications.

Specifications

General system performance

Number of laser scanners	Single scanner head system, future possible to add 2nd scanner head on additional platform
Typical horizontal accuracy	< 0.030 m RMS
Typical vertical accuracy	< 0.025 m RMS
Accuracy conditions	Without control points, open sky conditions
Control unit	Internal multi-core industrial PC, low power consumption
Field software	CoCapture, browser-based, no installation required
Control interface	BYOD (any tablet or laptop), WiFi or LAN cable connection
Data storage	Removable 2 TB SSD hard disk with USB3 interface
3rd party hardware synchronization	1 x synchronization port for 2nd GNSS antenna 2 x RS232 synchronization ports (NMEA support)
Mounting	Vehicle independent solution, suits for road, rail and water-based application

Laser scanner

Laser class	1 (in accordance with IEC 60825-1:2014)			
Measuring principle	Time of flight measurement, echo signal digitization, online waveform processing			
Effective measurement rate⁽¹⁾	300 kHz	500 kHz	750 kHz	1 MHz
Maximum range, target reflectivity > 80%⁽²⁾	420 m	330 m	270 m	235 m
Maximum range, target reflectivity > 10%⁽²⁾	150 m	120 m	100 m	85 m
Minimum range	1.2 m			
Accuracy⁽³⁾	5 mm			
Precision⁽⁴⁾	2 mm			
Field of view	360° "full circle"			
Scan rate	Up to 1 000 000 points/sec			
Scan speed (selectable)	Up to 250 scans/sec			

Physical

Dimensions of instrument	51.3 × 31 × 67.2 cm 20.08" × 12.2" × 26.37"
Weight of instrument	19.2 kg
Dimensions of battery	62.9 × 49.7 × 35.3 cm 24.4" × 19.29" × 13.78"
Weight of battery	Up to 52 kg (depending on cells type)
Dimensions of optional roof rack extension	72 × 31 × 12 cm 28.34" × 12.2" × 4.72"
Weight of optional roof rack extension	16.6 kg

Imaging system

Camera type	360° Spherical camera, additional adjustable external cameras as option
Number of cameras	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

Positioning and orientation system

GNSS system	Multiple GPS, GLONASS, Galileo, BeiDou, SBAS and QZSS constellation, L-Band, single and dual antenna support
IMU update rate	Standard 200 Hz (user selectable 1 to 1000 Hz)
Gyro bias instability (25°C)	≤0.1 deg/hr, 1σ (max) ≤0.05 deg/hr, 1σ (typical)
Gyro bias offset (25°C)	±2 deg/hr
Gyro scale factor	≤200 ppm, 1σ
Gyro range	±490 deg/sec
Angle Random Walk	≤0.012 deg/√hr
Accelerometer range	±10 g
Accelerometer bias	<0.05 mg
Accelerometer scale factor	250 ppm/°C, 1σ (max), ≤100 ppm/°C, 1σ (typical)
Position accuracy NO GNSS outage	0.010 m RMS horizontal, 0.020 m RMS vertical, 0.005 degrees RMS pitch/roll, 0.017 degrees RMS heading
Wheel sensor (DMI)	Yes, optional

Environmental

Operating temperature	-10 °C to +40 °C
Storage temperature	-20 °C to +50 °C
IP rating	IP64
Humidity (operating)	80%, non-condensing
Maximum vehicle speed for data acquisition	110 km/h (68 mph)
Humidity (operating)	80%, non-condensing

Electrical

Battery type	External battery in protected case, also support direct vehicle power source
Input voltage	24 V DC
Power consumption	Typ. 240 W
Operating time	Up to 8 hrs

(1) Rounded values, selectable by measurement program.

(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.

*Specifications are subject to change without notice.

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Shanghai Huace Navigation Technology Ltd.

599 Gaojing Road, Building D
Shanghai, 201702, China

+86 21 54260273 WWW.CHCNAV.COM

