



# 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.

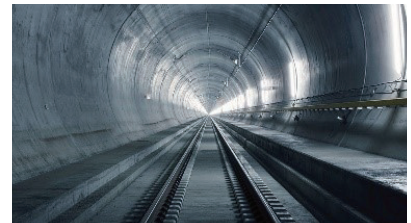
## Applications



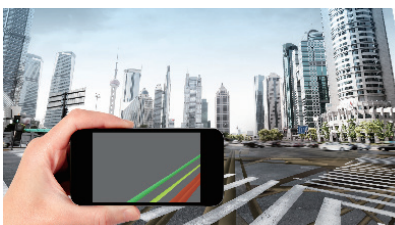
Roads & Highways



Rail & Infrastructure



Tunnels



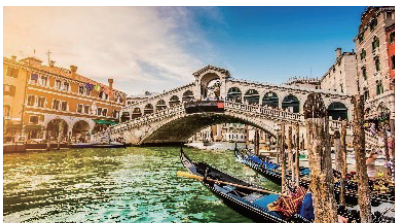
Digital city



Infrastructure utilities



Mining



Water



Airports



Public safety

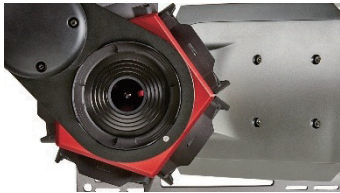


# Key Features



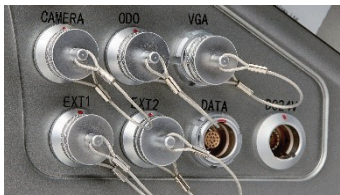
## High performance laser scanner

- 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



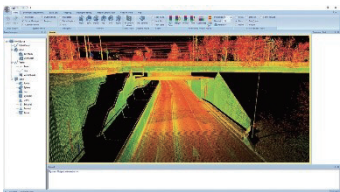
## Ready now, thinking about future

- 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

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.

# Specifications

## General system performance

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

## Laser scanner

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

## Physical

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

## Imaging system

<b>Camera type</b>	360° Spherical camera, additional adjustable external cameras as option
<b>Number of cameras</b>	6 sensors
<b>CCD size</b>	2048 × 2448, 3.45 μm pixel size
<b>Lens</b>	4.4 mm
<b>Resolution</b>	30 MP (5 MP × 6 sensors), 10 FPS JPEG compressed
<b>Coverage</b>	90% of full sphere
<b>High Dynamic Range (HDR)</b>	Cycle 4 gain and exposure presets

## Positioning and orientation system

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

## Environmental

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

## Electrical

<b>Battery type</b>	External battery in protected case, also support direct vehicle power source
<b>Input voltage</b>	24 V DC
<b>Power consumption</b>	Typ. 240 W
<b>Operating time</b>	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.

© 2018 Shanghai Huace Navigation Technology Ltd. All rights reserved. The CHC and CHC logo are trademarks of Shanghai Huace Navigation Technology Limited. All other trademarks are the property of their respective owners.

– Revision October 2018

Shanghai Huace Navigation Technology Ltd.

599 Gaojing Road, Building D  
Shanghai, 201702, China

+86 21 54260273 WWW.CHCNAV.COM

