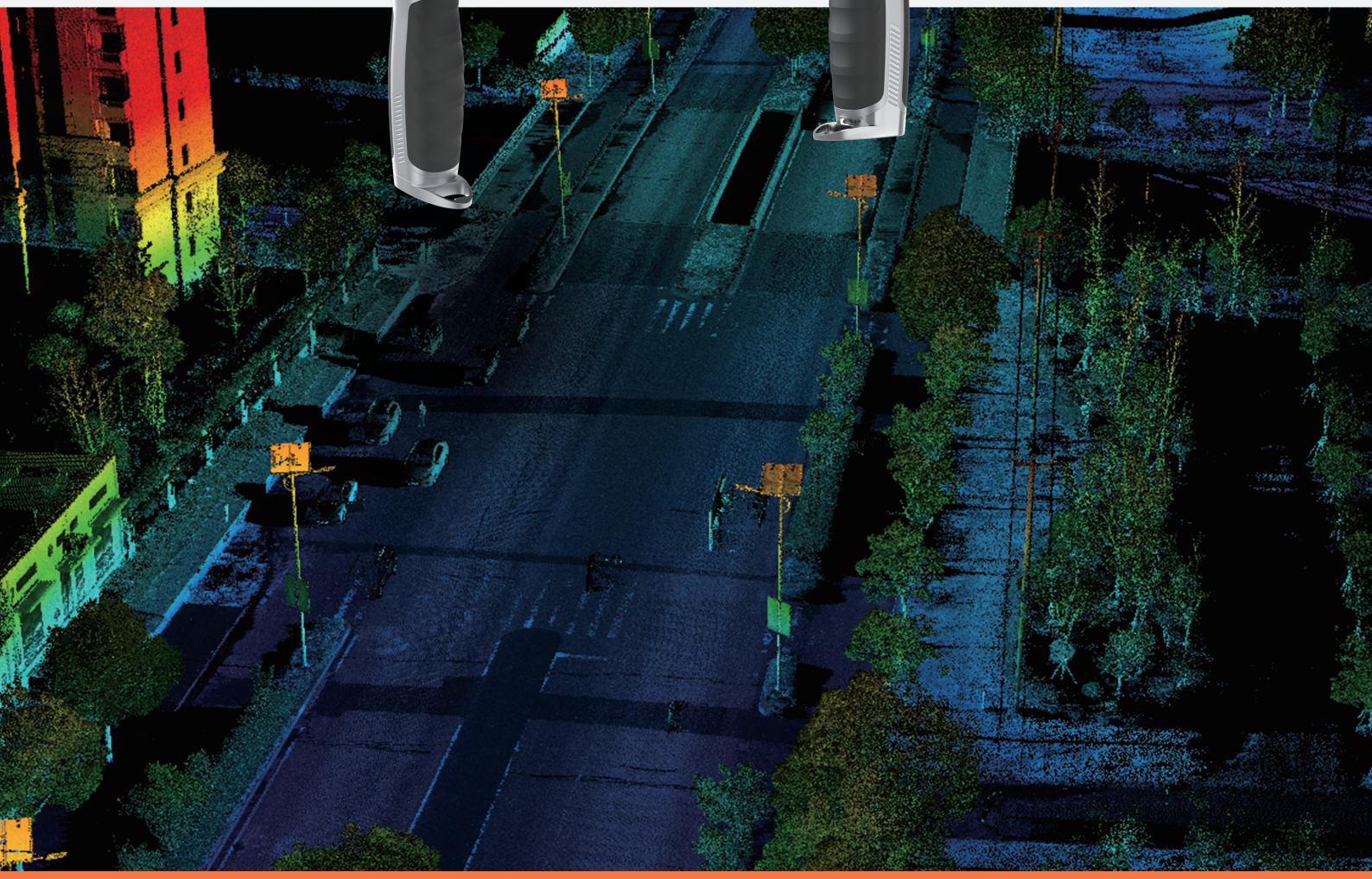
CHCNAV

Geospatial

# RS10

## Handheld SLAM 3D Laser Scanner + GNSS RTK System





# RS10 Surveying System

The RS10 brings a new approach to geospatial surveying by integrating GNSS RTK, laser scanning, and visual SLAM technologies into a single platform, delivering high-precision, loop-free surveying and a completely new field experience.



# High-Precision RTK and Laser SLAM Integration, Unmatched Accuracy

**3 cm**

20 Years of CHCNAV RTK expertise delivering < 3 cm accuracy even in challenging environments



**5 cm**

Full-scenario SLAM performance, achieving 5 cm absolute accuracy

# Real-Time SLAM Processing




**1.2 T**
Embedded data computing power

**13,000 m²**
Continuous, uninterrupted SLAM processing

**No Post-processing**
Copy point cloud results straight from the RS10

# Post-processing for Secondary Refinement

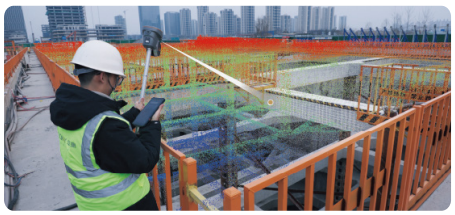
**Twice**
Secondary refinement processing

**2 cm**
Point cloud thickness

**1 cm**
Relative accuracy

# Innovative SFix and Vi-LiDAR Technology





## SFix Technology
## Survey Anywhere, Even Without GNSS

Innovative SFix combines LiDAR ranging with SLAM angular constraints, achieving 5 cm precision within 1 minute without satellites signals.

## Vi-LiDAR Technology, Contactless Surveying

Performs precise target measurements like a total station, achieving 5 cm accuracy within 15 m.

# Ready for RTK Users




Operates in rover mode with CHCNAV LandStar™ software for easy use and minimal training.

# Application Scenario


Road surveying


Underground Information acquisition


Stockpile measurement


Old community redevelopment


As-Built surveying


Topographic surveying


Energy facility surveying


Forestry asset management

# SPECIFICATIONS

## General System Performance

| | RS10(16 lines) | RS10(32 lines) |
|---|---|---|
| Absolute accuracy | H: < 5 cm RMS(1)<br>V: < 5 cm RMS(1) | H: < 2 cm RMS(1)<br>V: < 2 cm RMS(1) |
| Relative accuracy | <1cm | |
| Power supply mode | Lithium battery, supports hot-swapping and portable charger | |
| Working time from a single battery(2) | 1 h | |
| Data storage | 512 GB | |
| Field of view | 360° × 270° | |
| Weight | 1.9 kg (including RTK and battery) | 1.7 kg (including RTK and battery) |
| Loop-free data acquisition | Yes | |
| Real-time accuracy assessment | Yes | |

## Laser Scanner

| | RS10(16 lines) | RS10(32 lines) |
|---|---|---|
| Laser product classification | Class 1 eye safe | |
| Range | 0.05 to 120 m | 0.5 to 300 m |
| Channel | 16 | 32 |
| Point cloud thickness | 2 cm | 1 cm |
| Range capability | 80 m @10% reflectivity (Channels 5 to 12)<br>50 m @10% (Channels 1 to 4, 13 to 16) | 80 m @10% reflectivity |
| FOV (Horizontal) | 360° | |
| Horizontal angle resolution | 0.18° (10 Hz) | |
| FOV (Vertical) | 30° (-15° to +15°) | 40.3° (–20.8° ~ +19.5°) |
| Max. effective measurement rate | 320 000 pts/sec | 640 000 pts/sec |
| Max. Number of return pulses | 2 | 3 |
| Selectable scan speed | 10 Hz | |
| Wavelength | 905 nm | |

## GNSS Performance(3)

| | |
|---|---|
| Channels | 1408 channels with iStar2.0 |
| GPS | L1C/A, L2C, L2P(Y), L5 |
| GLONASS | L1, L2, L3* |
| Galileo | E1, E5a, E5b, E6* |
| BeiDou | B1I, B2I, B3I, B1C, B2a, B2b |
| QZSS | L1C/A, L1C, L2C, L5, L6* |
| NavIC/ IRNSS | L5* |
| PPP | B2b-PPP |
| SBAS | EGNOS (L1, L5) |

## Electrical

| | |
|---|---|
| Input voltage | 9-20 V DC |
| Power consumption | < 30 W |
| Battery capacity | 24.48 Wh |

## Intelligent Battery

| | |
|---|---|
| Real time kinematic (RTK)(4) | H: 8 mm + 1 ppm RMS<br>V: 15 mm + 1 ppm RMS<br>Initialization time: <10 s<br>Initialization reliability: >99.9% |
| Post-processing kinematic (PPK) | H: 3 mm + 1 ppm RMS<br>V: 5 mm + 1 ppm RMS |
| PPP | H: 10 cm \| V: 20 cm |
| High-precision static | H: 2.5 mm + 0.1 ppm RMS<br>V: 3.5 mm + 0.4 ppm RMS |
| Static and rapid static | H: 2.5 mm + 0.5 ppm RMS<br>V: 5 mm + 0.5 ppm RMS |
| Code differential | H: 0.4 m RMS \| V:0.8 m RMS |
| Visual-assisted positioning | Yes |

## IMU

| | |
|---|---|
| IMU update rate | 200 Hz |
| Auto initialization | Yes |
| 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 |

## Environments

| | |
|---|---|
| Operating temperature | 3 |
| Resolution | 15 MP (5 MP*3) |
| Sensor size | 2592 (H) × 1944 (V) |
| Pixel size | 2.0 μm |
| FOV | 210°×170° |

## Camera

| | |
|---|---|
| Operating temperature | -20 °C to +60 °C |
| Storage temperature | -20 °C to +60 °C |
| Ingress protection | IP64 (5) (according to IEC 60529) |
| Humidity (operating) | 80%, non-condensing |

## Camera

| | |
|---|---|
| SmartGo software | Data acquisition control, real-time point cloud display, etc |
| CoPre intelligent processing software | POS process, Adjust & Refine, Generate point cloud, modeling, etc |
| CoProcess efficient feature extraction software | Building feature extraction, road feature extraction, volume calculation, etc |
| LandStar field survey APP | Topographic survey, Point stakeout, Line stakeout, Elevation check, Facade survey |

***Specifications are subject to change without notice.**
(1) According to CHCNAV test condition.
(2) Typical observed values.
(3) Compliant, but subject to availability of BDS ICD, GLONASS, Galileo, QZSS and IRNSS commercial service definition. GLONASS L3, Galileo E6, QZSS L6 and IRNSS L5 will be provided through future firmware upgrade.
(4) Accuracy and reliability are determined under open sky, free of multipaths, optimal GNSS geometry and atmospheric condition. Performances assume minimum of 5 satellites, follow up of recommended general GPS practices.
(5) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP64 under IEC standard 60529.

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**CHC Navigation Headquarter**

577 Songying Road, Qingpu,
201703, Shanghai, China
Marketing@chcnav.com
+86 21 54260273

**CHC Navigation Europe Kft**

Office Campus, Building A, 6/B Gubacsi Street,
Budapest 1097, Hungary
Europe_office@chcnav.com
+36 20 510 6723