

**CHCN**AV

# ViLi i100

**VERSATILE VISUAL-LIDAR RTK  
RECEIVER WITH CONSISTENT  
ACCURACY IN OBSTRUCTION**



**SURVEYING  
& ENGINEERING**

# NOW, YOU CAN TRUST EVERY FIX!

The ViLi i100 is CHCNAV's flagship Visual-LiDAR GNSS RTK receiver, built for the next generation of high-precision surveying. It combines advanced GNSS satellite signal filtering, multi-sensor fusion, refined SFix 2.0 positioning algorithms, and integrated Vi-LiDAR technology to deliver consistent, centimeter-level accuracy.

Engineered for consistent accuracy in complex environments, the ViLi i100 supports precise data collection across a variety of terrain conditions, enabling users to work confidently even beyond the traditional limits of GNSS.

## CONFIDENT AND CONSISTENT ACCURACY IN OBSTRUCTION

The ViLi i100 is powered by advanced multi-sensor fusion and integrated 3D laser scanning, setting a new standard for positioning accuracy and reliability. It intelligently analyzes satellite signal paths and automatically filters out those affected by multipath interference from obstructions or reflections. ViLi i100 ensures stable, jump-free positioning with consistent 5 cm absolute accuracy, even in narrow alleys, dense forests, or near high-rise buildings. Once right, always right.

## 3D POINT CLOUD EARTHWORK CALCULATION

With high-precision laser sensing and intelligent LandStar software, the ViLi i100 filters out noise and enables real-time cut and fill volume calculations directly on site. Simply scan, define the boundary, and receive instant results with 99.98% reliable accuracy. No surface contact is required, ensuring precision, efficiency, and safety, all within a single streamlined workflow.

## FAST, CONTACTLESS POINT CAPTURE WITH Vi-LiDAR

Vi-LiDAR technology allows users to capture a scene once and batch-select target points to extract multiple 3D coordinates instantly. There is no need to aim precisely, stay steady, or level the range pole. The ViLi i100 minimizes user error, eliminates the effects of hand tremors, and enables fast, accurate measurements from a safe distance. Its 8 MP telephoto camera provides clear visual feedback even at a range of 15 meters, while maintaining 5 cm accuracy. Data collection remains efficient and straightforward, even in complex environments and hard-to-reach areas.

## ENHANCED SFix 2.0 ENGINE

With enhanced SFix 2.0 engine, the ViLi i100 maintains 5 cm accuracy while moving within 20 meters in GNSS-denied environments. By combining 860,000 pts/sec laser data with SLAM-based angular constraints, it reconstructs precise positioning without relying on satellite signals. Trained on tens of thousands of real-world datasets, the ViLi i100 is optimized to perform reliably in complex and obstructed conditions. It removes the need to switch to a total station, providing a true "GNSS anywhere" experience even in tunnels, under viaducts, or within dense construction zones.

## ALL-IN-ONE FLAGSHIP GNSS RECEIVER FOR EVERY WORKFLOW

The ViLi i100 is a complete GNSS solution that combines standard RTK capabilities with next-generation technologies. Powered by CHCNAV LandStar field software, it supports CORS, UHF base-rover, and PPP modes, allowing it to adapt easily to a wide range of job site conditions. Equipped with dual premium cameras for CAD and AR visual stakeout, it increases field efficiency by up to 50%. Compact yet powerful, the ViLi i100 is built for professionals who demand reliability, versatility, and high performance in a fully integrated device.



NOW, YOU CAN  
TRUST EVERY FIX!



**GNSS Signal-obstructed  
Environments**

Near high-rise buildings.  
Narrow alleys.  
Dense forests.



**GNSS Signal-denied  
Environments**

Under bridges/overpasses.  
Deep trenches or excavations.  
Tight construction corners.



**Earthwork Volume  
Calculation**

Stockpile volume.  
Storage capacity.  
Excavation/backfill measurement.



**Contactless  
Surveying**

Slope/cross-section measurement.  
As-built pipeline survey.  
Hazardous areas.

# SPECIFICATIONS

| GNSS Performance <sup>(1)</sup> |                              |
|---------------------------------|------------------------------|
| Channels                        | 1408 channels with iStar2.0  |
| GPS                             | L1C/A, L1C, L2C, L2P(Y), L5  |
| GLONASS                         | G1,G2,G3                     |
| Galileo                         | E1, E5a, E5b, E6*            |
| BeiDou                          | B1I, B2I, B3I, B1C, B2a, B2b |
| QZSS                            | L1C/A, L1C, L2C, L5          |
| NavIC/ IRNSS                    | L5*                          |
| SBAS                            | L1C/A*                       |

| GNSS Accuracies <sup>(2)</sup>  |  |
|---------------------------------|--|
| Real time kinematic (RTK)       | 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                             | Support B2b-PPP, E6B-HAS<br>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  |
| Autonomous                      | H: 1.5 m RMS   V: 2.5 m RMS  |
| SFix survey <sup>(3)</sup>      | With GNSS signal: ±3 cm (2σ)<br>Without GNSS signal: ±5 cm (2σ)<br>@20 m radius<br>Supports seamless SFix initialization, tilt compensation 0-360°   |
| Vi-LiDAR survey                 | Visual-fusion survey, multiple points per shot, range up to 20 m<br>With GNSS signal: typical accuracy ±5 cm @15 m<br>Without GNSS signal: powered by SFix, reliable in all obstructed scenarios |
| IMU update rate                 | 200 Hz, AUTO-IMU   |
| IMU tilt angle                  | 0-60°  |
| IMU tilt-compensated            | 8 mm + 0.3 mm/° tilt down to 30°   |

| LiDAR              |  |
|--------------------|--|
| Range              | 30 m @ 10% reflectivity<br>70 m @ 80% reflectivity |
| FOV                | H: 360°   V: 90°                                   |
| Eye - Safety Class | Class 1 (IEC60825 - 1:2014)                        |
| Point Frequency    | 860,544 points/second (single - echo mode)         |
| Number of Lines    | 96   |

| Vi-LiDAR Camera       |   |
|-----------------------|---|
| Pixel                 | 8 MP HD telephoto                                 |
| Aperture              | F/2.2   |
| FOV                   | 77.5°(H)* 48.8°(V)                                |
| Optimal Imaging Range | 5 - 20 m  |
| Feature               | Vi-LiDAR contactless survey, AR visual navigation |

| Color Camera |  |
|--------------|--|
| Pixel        | 2 MP, dual-camera                              |
| FOV          | Dual-camera combined FOV<br>130° (H) × 46° (V) |

|         |   |
|---------|---|
| Feature | Wide-angle coloring, true-color point cloud |
|---------|---|

| Bottom Camera |      |
|---------------|------|
| Pixel         | 2 MP |
| FOV           | 90°  |

|         |                    |
|---------|--------------------|
| Feature | AR visual stakeout |
|---------|--------------------|

| Environments           |  |
|------------------------|--|
| Operating temperature  | -20°C to +55°C (-4°F to +131°F)              |
| Storage temperature    | -40°C to +75°C (-40°F to +167°F)             |
| Ingress protection     | IP67 <sup>(4)</sup> (according to IEC 60529) |
| Shock resistance grade | IK08   |

| Hardware         |  |
|------------------|--|
| Size (LxWxH)     | 208 mm × 162.0 mm × 95.5 mm<br>(8.19 in × 6.38 in × 3.76 in) |
| Weight           | 1.39 kg (3.06 lb)  |
| LiDAR Protection | Standard protective cover                                    |
| Front panel      | 2 LED, 1 physical button                                     |

| Electrical  |  |
|---|--|
| Battery   | 7.2V/ 9900mAh/ 71.28Wh   |
| Power consumption                                 | SFix / Vi-LiDAR / Point Cloud<br>Scan: ~15 W<br>UHF/ 4G RTK Rover: ~4 W            |
| Operating time on internal battery <sup>(5)</sup> | SFix / Vi-LiDAR / Point Cloud<br>Scan: up to 5 h<br>UHF/4G RTK Rover: typical 22 h |
| Quick charge                                      | Supports up to 30 W PD fast charging, full charge in 5 h                           |

| Communication          |  |
|------------------------|--|
| Wi-Fi                  | IEEE 802.11g<br>IEEE 802.11ac VHT80 CH42 & 155   |
| Bluetooth <sup>®</sup> | 5.0 & 4.2 +EDR, backward compatible  |
| Built-in UHF radio     | Standard Internal Rx only: 410 - 470 MHz<br>Protocol: CHC, Transparent, TT450  |
| Data storage           | 64 GB internal (up to 1 h scan on-site or 30 h point cloud data storage), expandable to 1 TB   |
| Ports                  | 1 x USB V3.0 Type-C port (data download)<br>1 x UHF antenna port (SMA male)  |
| Data formats           | RTCM 2.x / 3.x, CMR input/output<br>HCN, RINEX 2.11 / 3.02<br>NMEA 0183 output, NTRIP client<br>Post-processing free LAS point cloud output with GEO coordinates |

| Compliance with Laws and Regulations |  |
|--------------------------------------|--|
| International standards              | RE Directive 2014/53/EU, IEC 62133-2:2017, EN 18031-1/-2:2024, IEC 62368-1:2014, IEC 60825-1:2014, FCC Rules and Regulations Part 15, Radio Equipment in JAPAN, UN Manual Section 38.3 |



(1) Compliant, but subject to availability of Galileo, QZSS and IRNSS commercial service definition. Galileo E6, Galileo E6 High Accuracy Service (HAS), IRNSS L5 and SBAS L1C/A will be provided through future firmware upgrade.(2) 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. PPP accuracy is subject to the region, environment, and convergence time. High-precision static requires a minimum of 24 hours of long-term observation and precise ephemeris.(3) Beyond 20 m, error increases ~3 cm per additional 10 m.(4) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP67 under IEC standard 60529.(5) Battery life is subject to operating temperature, environment, and working mode.  
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