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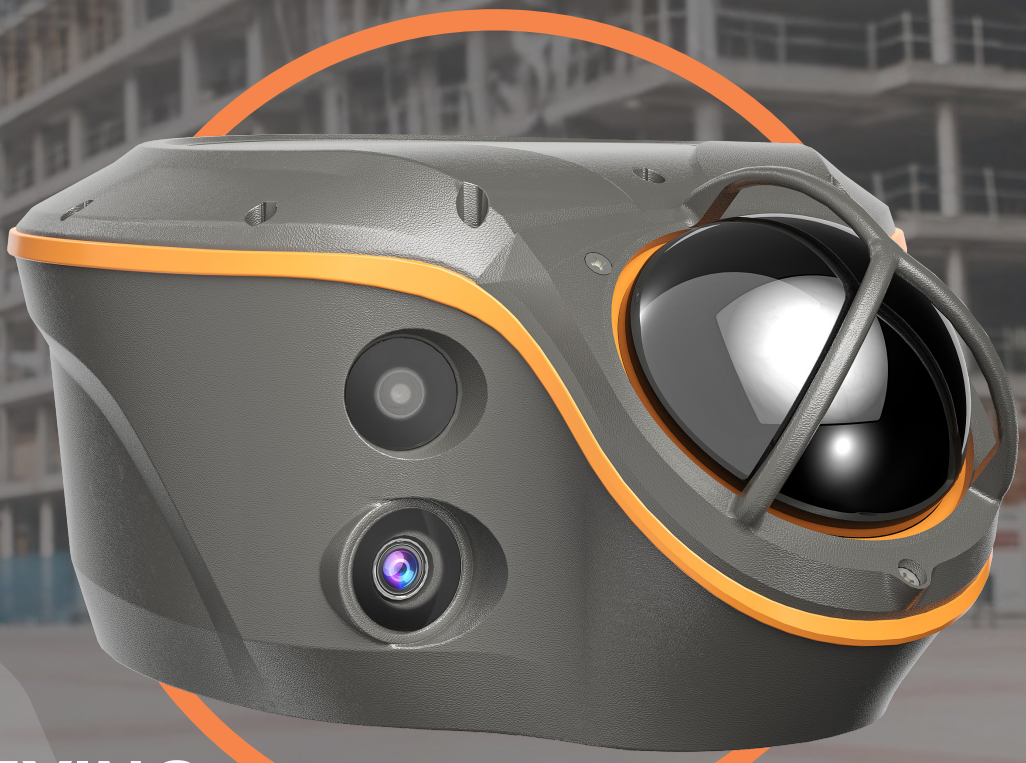
ViLi i100

VERSATILE VISUAL-LiDAR RTK RECEIVER WITH CONSISTENT ACCURACY IN OBSTRUCTION



SURVEYING
& ENGINEERING

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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.

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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 [1]	
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 [2]	
Real time kinematic (RTK)	H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS Initialization time: <10 s Initialization reliability: >99.9%
Post-processing kinematic (PPK)	H: 3 mm + 1 ppm RMS V: 5 mm + 1 ppm RMS
PPP	Support B2b-PPP, E6B-HAS H: 10 cm | V: 20 cm
High-precision static	H: 2.5 mm + 0.1 ppm RMS V: 3.5 mm + 0.4 ppm RMS
Static and rapid static	H : 2.5 mm + 0.5 ppm RMS 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 [3]	With GNSS signal: ±3 cm (2σ) Without GNSS signal: ±5 cm (2σ) @20 m radius Supports seamless SFix initialization, tilt compensation 0-360°
Vi-LiDAR survey	Visual-fusion survey, multiple points per shot, range up to 20 m With GNSS signal: typical accuracy ±5 cm @15 m 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 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 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[4] (according to IEC 60529)
Shock resistance grade	IK08

Hardware	
Size (LxWxH)	208 mm × 162.0 mm × 95.5 mm (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 Scan: ~15 W UHF/ 4G RTK Rover: ~4 W
Operating time on internal battery [5]	SFix / Vi-LiDAR / Point Cloud Scan: up to 5 h UHF/4G RTK Rover: typical 22 h
Quick charge	Supports up to 30 W PD fast charging, full charge in in 5 h

Communication	
Wi-Fi	IEEE 802.11g IEEE 802.11ac VHT80 CH42 & 155
Bluetooth®	5.0 & 4.2 +EDR, backward compatible
Built-in UHF radio	Standard Internal Rx only: 410 - 470 MHz 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) 1 x UHF antenna port (SMA male)
Data formats	RTCM 2.x / 3.x, CMR input/output HCN, RINEX 2.11 / 3.02 NMEA 0183 output, NTRIP client 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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