CHCNAV

Geospatial

ViLi i100 Visual-LiDAR®

Versatile GNSS Receiver with Consistent Accuracy in Obstruction



STAY FIXED, GET VOLUMES FAST

The ViLi i100 is CHCNAV's flagship Visual-LiDAR GNSS RTK receiver for next-generation of high-precision surveying. With advanced GNSS satellite signal filtering, multi-sensor fusion, SFix 2.0 algorithms, and integrated Vi-LiDAR, it ensures consistent centimeter-level accuracy.

Designed for complex environments, the ViLi i100 enables precise data collection across diverse terrains, enabling users to work confidently even beyond the traditional limits of GNSS.



ENHANCED SFix 2.0 ENGINE

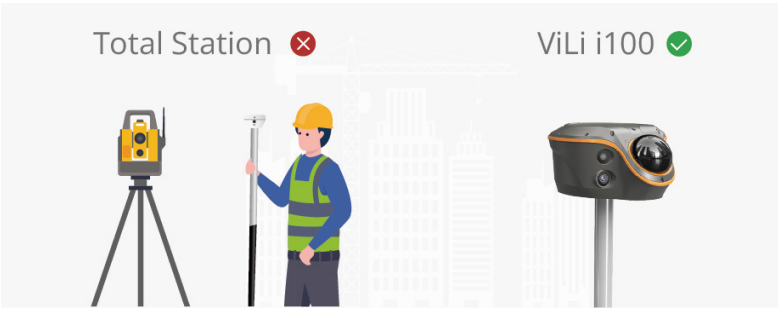


5 cm @20 m in GNSS-denied Areas

Enhanced SFix 2.0 engine ensures 5cm accuracy within 20m even in GNSS-denied areas, using 860,000pts/sec 3D laser data and SLAM-based angular constraints to reconstruct precise positioning without satellites.

Total Station ✕ ViLi i100 ✓

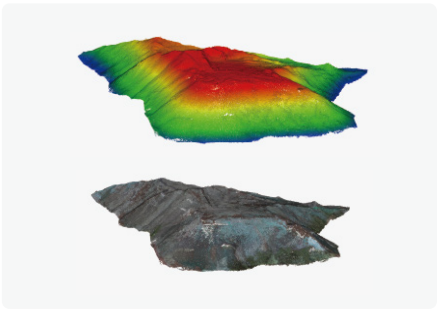
No need Total Station switching, offer a true 'GNSS anywhere' experience, even under eaves, under viaducts or dense construction sites.



3D POINT CLOUD EARTHWORK CALCULATION







99.98% Accuracy

High-precision LiDAR scanning and intelligent LandStar APP filter out noise and enable real-time cut/fill volume calculations directly on site.

Real-time Earthwork

Just scan, define boundary, and get instant earthwork results directly on site.

Non-contact Measurement

No surface contact needed, combining precision, efficiency, and safety in one workflow.

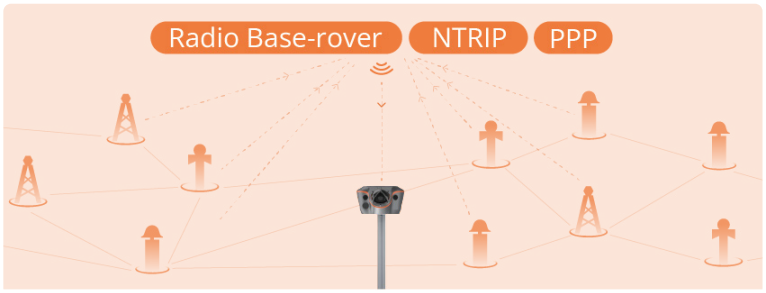
Key feature

SFix 2.0: Reliable 5 cm Accuracy within 20 m in GNSS-Denied Areas.

Real-Time 3D Point Cloud Earthwork Calculation: Accurate, Fast & Safe.

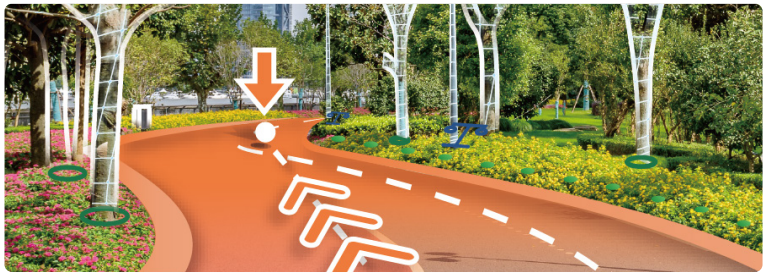
All-in-One Flagship GNSS Receiver with All Conventional Features Involved.

ALL-IN-ONE FLAGSHIP GNSS RECEIVER



All-in-One Flagship, Full Mode Support

All conventional RTK functions and next-gen features in one compact device, LandStar-compatible, with NTRIP, UHF, and PPP for versatile sites.



+50% Efficiency

Dual cameras for CAD+AR visual stakeout accelerate workflows by up to 50%.

Application Scenario



GNSS Signal-Obstructed Areas



GNSS Signal-Denied Areas



Earthwork Calculation

SPECIFICATIONS

GNSS Performance[1]

Channels	1892 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 x 162.0 mm x 95.5 mm (8.19 in x 6.38 in x 3.76 in)
Weight	1.39 kg (3.06 lb)
LiDAR Protection	Standard protective cover
Front panel	2 LED, 1 physical button

Electrical

Battery	7.2 V/ 9900 mAh/ 71.28 Wh
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 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 1h scan on-site or 30h point cloud data storage), expandable to1 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

***Specifications are subject to change without notice.**

(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 20m, error increases ~3cm per additional 10m.

(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.

All test values above are from CHC Navigation internal labs under typical conditions. Actual results may vary due to product differences, software versions, usage, and environmental factors.

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