CHCNAV

i76

EFFICIENT, PALM-SIZED VISUAL IMU-RTK

SURVEYING
& ENGINEERING

CHCNAV

BEYOND VISUAL WITHIN PALM

The i76 Palm Visual RTK is a compact, lightweight surveying tool engineered for precision and user-friendliness in challenging conditions. It features IP68 protection, 2-meter drop resistance, and a robust biomimetic design for enhanced durability. Weighing just 450g, the i76 is 40% lighter and 50% smaller than industry standards. It is equipped with integrated GNSS, IMU, and 95° wide-angle dual cameras, a one-button operation and synchronized LED to significantly improve surveying efficiency. The CAD+AR visual stakeout can enhance the overall project stakeout efficiency by 40%.

The 4th Gen air-medium GNSS antenna of the i76 enhances stability across all GNSS constellations and frequencies, achieving an excellent RTK fixed rate with iStar 2.0 technology, which is particularly effective in regions with high solar activity. Its 5th Gen Ultra-IMU technology improves accuracy by 30%, even when surveying with a 60° range pole tilt. With a powerful battery supporting over 17 hours of continuous use, the i76 is ideal for professionals who value precision, adaptability, and innovation in their surveying work.

EFFICIENT CAD AR STAKEOUT

Enhance project stakeout efficiency by up to 40%.

The i76 significantly enhances stakeout efficiency in construction projects by 40% through integrating CAD base maps with augmented reality (AR) visualization. This combination of GNSS, IMU, AR, and MR technologies offers a comprehensive and intuitive view of site layouts, which facilitates efficient path planning and minimizes unnecessary detours. Its intelligent features anticipate pipeline directions, enhance landscaping tasks, and simplify processes for building foundations. The AR overlay is particularly useful in redline reviews and centerline verifications for road construction, streamlining complex tasks and ensuring precise stakeout. Ideal for various construction scenarios, the i76 provides smart assistance, real-time design overlays, and visualized data, optimizing stakeout operations and simplifying complex construction tasks.

4th GEN AIR-MEDIUM ANTENNA & HYBRID GNSS ENGINE

Achieve an RTK fix rate of over 96% in solar-active regions.

The i76 GNSS excels with its 4th Gen air-medium GNSS antenna and hybrid GNSS engine, optimized for high performance in solar-active and challenging environments. Its 1408 channels and comprehensive tracking of all GNSS constellations ensure exceptional resistance to multipath effects and interference. The iStar 2.0 technology and ionospheric interference suppression further enhances its capabilities, securing an RTK fix rate of over 96% - ideal for areas with high ionospheric activity. In regions lacking GNSS RTK networks or cellular connections, pairing the i76 with CHCNAV iBase extends reliable UHF coverage up to 25 km in standard conditions and 5-8 km in areas with dense foliage or suburban landscapes, ensuring consistent, high-quality data across diverse surveying scenarios.

5TH GEN ULTRA-IMU TECHNOLOGY

Boost Accuracy by 30%.

The i76 integrates a 5th Gen interference-free Ultra-IMU, which operates at 200 Hz, and enhanced by EKF algorithms for optimal measurement accuracy. It features automatic pole tilt compensation that maintains accuracy within 3 centimeters, even with a pole tilt of up to 60 degrees, making tilt measurements not only more reliable but also more user-friendly. The i76 simplifies operations with its “poke-and-measure” functionality, eliminating the need for manual IMU initialization or bubble centering. The IMU remains operational regardless of the range pole's position, whether it is handheld, shoulder-mounted, or placed horizontally.

PALM-SIZED WITH GNSS, IMU AND DUAL CAMERAS

Lightweight excellence, reliable and extended endurance.

The i76 perfectly blends lightweight excellence with rugged durability. This palm-sized receiver, weighing just 450g, is half the size of standard models, significantly improving fieldwork operations. It features advanced integration of GNSS, Auto-IMU, and dual cameras, all unified for a seamless surveying experience. Built to last, the i76 offers IP68 protection and 2-meter drop resistance. Its durable biomimetic structure and sapphire camera lenses are specifically designed to withstand harsh environments and resist impacts and scratches. Enhanced with intelligent cloud-based OTA upgrades for continuous updates and powered by an energy-efficient lithium battery, the i76 ensures over 17 hours of continuous operation, providing reliability and extended endurance in the field.

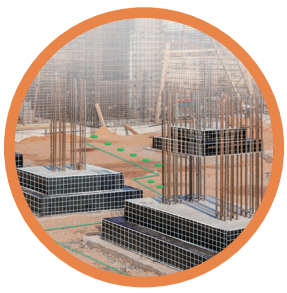
CAD + AR INCREASES THE OVERALL STAKEOUT EFFICIENCY BY 40%

PIPELINES

Smart assistance predicts pipeline direction: +60% efficiency.

LANDSCAPE

No need to repeatedly select points via the interface, +50 % productivity.



FOUNDATION CONSTRUCTION

Construction planning enables tasks to be completed in a single step, +30% efficiency.

ROUTES

AR overlay makes it easy to review redlines and verify centrelines on roads.

SPECIFICATIONS

GNSS Performance [1]	
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
NavIC/ IRNSS	L5
SBAS	L1, L5*

GNSS Accuracies [2]	
Real time kinematics (RTK)	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS Initialization time: <10 s Initialization reliability: >99.9%
Post-processing kinematics (PPK)	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
PPP	Support PPP-B2b H: 10cm | V: 20cm
High-precision static	Horizontal: 2.5 mm + 0.1 ppm RMS Vertical: 3.5 mm + 0.4 ppm RMS
Static and rapid static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
Code differential	Horizontal: 0.4 m RMS Vertical: 0.8 m RMS
Autonomous	Horizontal: 1.5 m RMS Vertical: 2.5 m RMS
Visual stakeout [3]	H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS
Positioning rate [4]	1 Hz, 5 Hz and 10 Hz
Time to first fix [5]	Cold start: < 45 s Hot start: < 10 s Signal re-acquisition: < 1 s
IMU update rate	200 Hz, AUTO-IMU
Tilt angle	0~60°
RTK tilt - compensated	Additional horizontal pole-tilt uncertainty typically less than 8 mm + 0.7 mm/° tilt down to 30°

Environments	
Temperature	Operating: -40°C to +65°C (-40°F to +149°F) Storage: -40°C to +85°C (-40°F to +185°F)
Humidity	100% non-condensation
Ingress protection	IP68[6] (according to IEC 60529)
Drop	Survive a 2-meter pole-drop
Vibration	Compliant with ISO 9022-36-08 and MIL-STD-810G - 514.6-Cat.24.
Waterproof and breathable membrane	Prevent water vapor from entering under harsh environments.

Electrical	
Charging time	Full charge in 4.5 hours
Operating time on internal battery[7]	UHF/ 4G RTK Rover w/o camera: up to 17 h Visual Stakeout: up to 10 h Static: up to 22 h
Charging spec	Type-C 5 V / 2 A

Hardware	
Size (L x W x H)	Φ106 mm x 55.6 mm (Φ 4.17 in × 2.1 in)
Weight	450 g (0.99 lb)
Front panel	2 synchronized LED, 1 button
Tilt sensor	Calibration-free IMU for pole-tilt compensation. Immune to magnetic disturbances.

Cameras	
Sensor pixels	Dual cameras with 2 MP each
Field of view	95° ± 3°
Video frame rate	30 fps
Aperture	F2.4
Features	LandStar software, support Visual Navigation, CAD AR Visual Stakeout.

Communication	
Wireless connection	NFC for device touch pairing
Wi-Fi	Wi-Fi 2.4G 802.11 b/g/n Wi-Fi 5G 802.11ac
Bluetooth®	v 4.2, backward compatible
Ports	1 x USB Type-C port (external power, data download, OTG firmware update) 1 x UHF antenna port (SMA female)
UHF radio	Internal Rx Only: 410 - 470 MHz Protocol: CHC, Transparent, TT450 Link rate: 9600 bps to 19200 bps
Data formats	RTCM 2.x, RTCM 3.x, CMR[8] input / output HCN, RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	8 GB high-speed memory

Compliance with Laws and Regulations	
International standards	IGS Antenna Calibration, IEC 62133-2:2017+A1, IEC 62368-1: 2014, EN 62368-1:2014+A11:2017, UN Manual Section 38.3

*All specifications are subject to change without notice.

(1) Compliant, but subject to availability of BDS ICD, GLONASS, Galileo, QZSS and IRNSS commercial service definition. GLONASS L3, Galileo E6, Galileo E6 High Accuracy Service (HAS), BDS B2b and SBAS L5 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) CHCNAV's VPT™ (Virtual Pole Tip) technology ensures precise alignment of the virtual pole tip with the red point representing the staking out location in the LandStar™ software within acceptable error margins.

(4) Compliant and 10 Hz to be provided through future firmware upgrade.

(5) Typical observed values.

(6) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP68 under IEC standard 60529.

(7) Rechargeable and built-in 7.2 V / 4900 mAh new-energy high-density lithium battery. Battery life is subject to operating temperature and battery cycle life.

(8) Priority is given to the use of RTCM message, if CMR is required, it can be provided through future firmware upgrade.

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