CHCNAV

Geospatial

i85

COMPACT AND EFFICIENT LASER IMU RTK GNSS



HIGH-PERFORMANCE GNSS LASER & CAMERA POWER ON TOP

The CHCNAV i85 combines compact design with high performance GNSS technology for daily land surveying. With a 1892 channel GNSS module, advanced IMU, integrated dual cameras, and a laser rangefinder, it ensures reliable positioning in challenging environments, even during high solar activity. Support for PointSky enables real-time centimeter-level accuracy via satellite,without requiring a local base station or NTRIP services. Weighing only 800 g, with IP68 protection and up to 20 hours of battery life, the i85 is built for efficient and dependable RTK work in the field.



Visible Green Laser



The i85 features an industrial-grade green laser with high visibility on various surfaces and a measuring range up to 150 meters [12] . Resistant to ambient light up to 50,000 lux, it ensures clear, accurate targeting even in bright sunlight.

Trusted Precision, Built for the Field



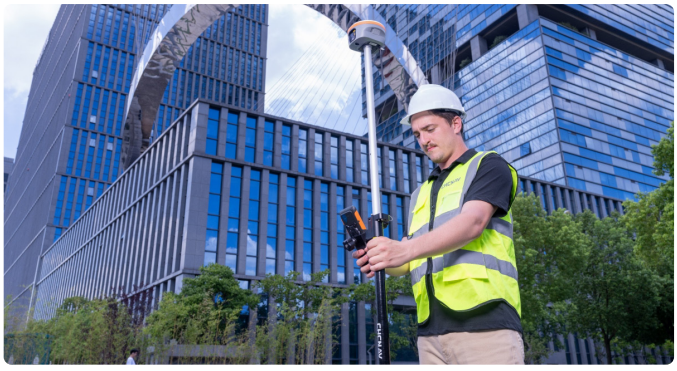
Powered by CHCNAV GNSS and iStar, i85 delivers reliable high-precision positioning. The rigid all-in-one metal design and enhanced IMU ensure stable, high-accuracy laser performance.

Extended-Range Laser Measurement



The i85 combines GNSS and laser ranging to work reliably in obstructed environments. Its high-precision laser enables safe remote measurements in hard-to-reach areas, boosting efficiency by over 50% and cutting survey time to seconds.

PointSky: Untethered Surveying/ No Base Station



The i85 features PointSky, offering real-time centimeter-level accuracy via satellite, without the need for local base stations or NTRIP service. This cuts costs and boosts efficiency: eliminate base station procurement, transport, and setup; save 50% on equipment and setup time; and complete large-scale topographic, cadastral, and staking surveys with one receiver and operator.

Key feature

Laser Survey
Laser rangefinder captures survey-grade 3D coordinates from hard-to-reach points, with a measuring range up to 150 meters.

Extreme GNSS Performance
CHCNAV iStar GNSS engine and advanced GNSS module, 96% fix reliability with 20% improved data quality.

Visual Navigation and Stakeout
GNSS, 200 Hz AUTO-IMU, and visual sensor fusion, powered by a 1.5 GHz processor with adaptive Wi-Fi VPT™ technology.

PointSky
Centimeter-level real-time accuracy, paired with a 1-10 minute convergence time.

Dual-Link
L-band geostationary satellite + internet connectivity coverage.

Smart Auto-Focus



The i85's high-performance processor enables real-time imaging with ultra-low latency. Intelligent autofocus automatically adjusts focus and zoom, assisting point capture with minimal manual input for higher productivity.

Clear Long-Range Shots



With an industry-first true 8 MP HD camera, the i85 enables precise long-range visual targeting. The camera works like a high-definition telescope, keeping distant targets clear and distortion-free for confident point capture.

Use Cases



Topographic Survey



Utility Mapping



Mining Survey



Forestry Survey

SPECIFICATIONS

GNSS Performance[1]

Channels	1892 channels
GPS	L1C/A, L1C, L2C, L5
GLONASS	G1, G2, L1OC*, L2OC*, L3OC*
Galileo	E1C, E5a, E5b, E5AltBoC, E6
BeiDou	B1I, B2I, B3I, B1C, B2a, B2b
QZSS	L1C/A (B), L1C, L2C, L5, L6D/E*
NavIC/ IRNSS	L5
PPP	B2b-PPP, E6B-HAS
SBAS	EGNOS (L1, L5)
L-band	CHCNAV PointSky

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
PointSky[3]	H: 3 cm (CEP95) V: 7 cm (CEP95) Standard < 10 min, Specific regions < 3 min, as fast as < 1 min under optimal conditions Uptime During Interruption: 300 s
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
Visual stakeout[4]	H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS
Rapid laser survey	3 cm within range 5 m 5 cm within range 10 m
Positioning rate[5]	1 Hz, 5 Hz and 10 Hz
Time to first fix[6]	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 + 0.3 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[7] (according to IEC 60529)
Drop	Survive a 2-meter pole-drop
Vibration	Compliant with ISO 9022-36-08 and MIL-STD-810H
Waterproof and breathable membrane	Prevent water vapor from entering under harsh environments.

Communication

Wireless connection	NFC for device touch pairing
Wi-Fi	802.11 b/g/n/ac, 5.8 GHz & 2.4 GHz, access point mode
Bluetooth®	v 4.2, backward compatible
Ports	1 x USB Type-C port (external power, data download, firmware update) 1 x UHF antenna port (SMA male)
DistLink[8]	The new-generation UHF radio data transmission mode of CHCNAV enables GNSS RTK Base all-day operation and long-distance range.
Built-in UHF radio	Standard Internal Tx/Rx: 410 - 470 MHz Transmit Power: 0.5 W, 1 W Protocol: CHC, DistLink, Transparent, TT450, Satel Link rate: 9600 bps to 19200 bps Range: Typical 6 km, optimal up to 15 km with DistLink. Typical 3 km, optimal up to 8 km with other protocols.
Data formats	RTCM 2.x, RTCM 3.x, CMR input / output HCN, RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	8 GB high-speed memory

Hardware

Size (LxWxH)	Φ134 mm x 86 mm (Φ 5.28 in × 3.39 in)
Weight	800 g (1.76 lb)
Front panel	4 LED, 2 physical buttons
Tilt sensor	Calibration-free IMU for pole-tilt compensation. Immune to magnetic disturbances.
Laser sensor	Class 3R, Green[9]

Cameras

Sensor pixels	Dual-camera, global shutter with 2 MP & 8 MP.
Field of view	91°
Video frame rate	30 fps[10]
Features	LandStar software, support Visual Navigation, CAD AR Visual Stakeout, Laser Survey.

Electrical

Power consumption	Typical 2.0 W
Quick charge	Full charge in 4.8 hours
Operating time on internal battery[11]	UHF RTK Rover w/o camera: up to 20 h Laser Survey: up to 15 h Visual Stakeout: up to 15 h UHF RTK Base: up to 7.5 h (DistLink), up to 10 h (other protocols)
External power input	5 V / 2 A

Compliance with Laws and Regulations

International standards	IGS Antenna Calibration, IEC 62133-2:2017+A1, IEC/EN 62368-1:2024, UN Manual Section 38.3, IEC 60825-1:2024

***All specifications are subject to change without notice.**

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(1) Compliant, but subject to availability of BDS ICD, GLONASS, Galileo, QZSS and IRNSS commercial service definition. GLONASS L1OC, L2OC, L3OC, and QZSS L6D/E 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) Supported after the product upgrade in March 2026. Measurement precision, accuracy, reliability and time for initialization are dependent upon various factors including number of satellites, satellite constellation, observation time, atmospheric conditions, multipath, etc. Figures quoted assume normal to favorable conditions. Achievable accuracy and initialization time may vary based on type and capability of receiver and antenna, user's geographic location and atmospheric activity, scintillation levels, GNSS constellation health and availability and level of multipath including obstructions such as large trees and buildings. Please contact CHCNAV for specific regions of use. (4) 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. (5) Compliant and 10 Hz to be provided through future firmware upgrade. (6) Typical observed values. (7) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP68 under IEC standard 60529. (8) Supported after the product upgrade in March 2026. 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. (9) Avoid direct eye contact with beam. (10) Adaptive frame rate, actual frame rate is affected by wireless connection environment. (11) Rechargeable and built-in 7.2 V / 4900 mAh lithium battery. Battery life is subject to operating temperature. (12) Range up to 150 m under favourable conditions (nighttime, high-reflectivity targets). Actual range depends on target reflectivity, ambient light and weather conditions.

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