CHCNAV

i90 Pro

Survey & Engineering

Info Sv Mode
Power Data Set

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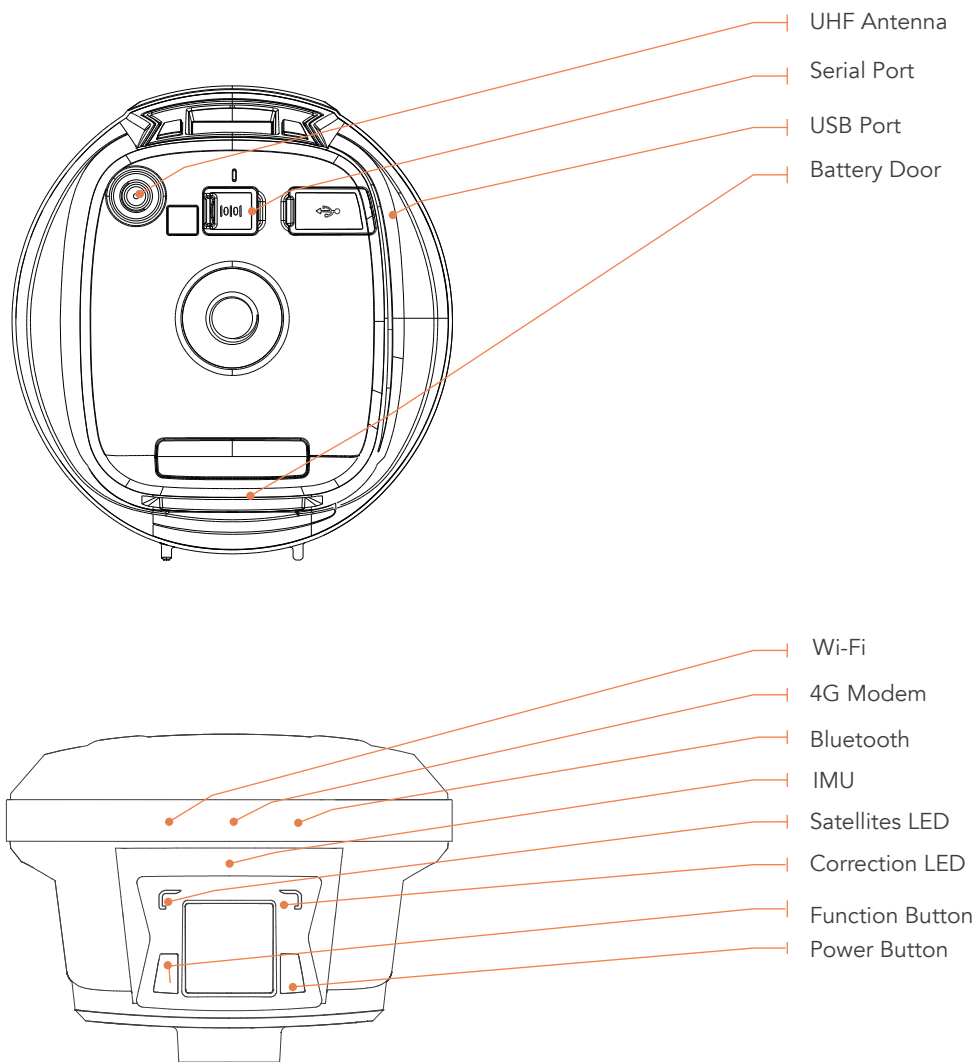1.35

Make your work more efficient

Hardware Description

i90 Pro
IMU-RTK GNSS Receiver

The i90 Pro GNSS receiver combines the latest CHCNAV's IMU-RTK technology and the compatibility with L-Band corrections services to extend RTK positioning, in any locations.

Unlike the standard MEMS-based GNSS receivers, the i90 Pro GNSS IMU-RTK combines state-of-the-art GNSS RTK engine, a high-end calibration-free IMU sensor and advanced GNSS tracking capabilities to dramatically increase RTK availability and reliability.

The i90 automatic pole-tilt compensation boosts survey and stakeout speed by up to 20%. Construction and land surveying projects are achieved with high productivity and reliability pushing the boundaries of conventional GNSS RTK survey

UHF Antenna
Serial Port
USB Port
Battery Door

Wi-Fi
4G Modem
Bluetooth
IMU
Satellites LED
Correction LED
Function Button
Power Button

Core Technology

Multi-constellation tracking

Combine GPS, Glonass, Galileo and BeiDou.

Powered by a 336-channel GNSS core engine, the i90 Pro provides robust and reliable RTK position to any surveying project and positioning application.

L-BAND PPP Corrections

**Compatible with L-Band and RTX™ correction signals.**

Connected to 3rd party L-Band corrections services, the i90 Pro GNSS provides accurate, sub-decimeter positioning in virtually all regions where RTK networks, GSM coverage or traditional GNSS base station are not available.

Extended connectivity
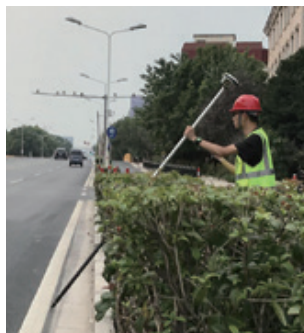
Instant NFC pairing of your controller.

The i90 Pro GNSS combines high-end connectivity modules: Bluetooth, Wi-Fi, NFC, 4G, and UHF radio modem. The 4G modem brings ease of use when working within RTK networks. The internal UHF radio modem allows long-distance base-to-rover surveying up to 5 km.
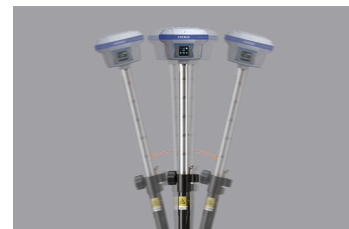
High accuracy. Anywhere

Boost survey and stakeout speed by up to 20%.

The i90 GNSS build-in IMU ensures interference-free and automatic pole-tilt compensation in real-time. 3 cm accuracy is achieved with pole-tilt range of up to 30 degrees.

Specifications

GNSS Performance[1]

Channels	336 channels
GPS	L1 C/A, L2E, L2C, L5
GLONASS	L1C/A, L2 C/A, L3 CDMA
Galileo	E1, E5a, E5b, E5AltBOC, E6
BeiDou	B1, B2, B3
SBAS	L1C/A, L5
QZSS	L1 C/A, L1 SAIF, L2C, L5, LEX
IRNSS	L5
L-BAND	RTX®

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: 2.5 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
Post-processing static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
Code differential	Horizontal: 0.25 m RMS
Autonomous	Horizontal: 1 m RMS Vertical: 1.5 m RMS
Positioning rate	Up to 50 Hz
Time to first fix[3]	Cold start: < 45 s Hot start: < 10 s Signal re-acquisition: < 1 s
RTK tilt-compensated	Additional horizontal pole-tilt uncertainty typically less than 10 mm + 0.7 mm/° tilt

Hardware

Size (L × W × H)	159 mm x 150 mm x 110 mm (6.3 in × 5.9 in × 4.3 in)
Weight	1.26 kg (2.77 lb)
Environment	Operating: -40 °C to +65 °C (-40 °F to +149 °F) Storage: -40 °C to +85 °C (-40 °F to +185 °F)
Humidity	100%
Ingress protection	IP67 waterproof and dustproof, protected from temporary immersion to depth of 1 m
Shock	Survive a 2-meter pole drop
Tilt sensor	Calibration-free IMU for pole-tilt compensation. Immune to magnetic disturbances. EBubble leveling
Front panel	4 status LED 1.46'' OLED Display

Certifications

FCC Part 15 (class B Device), FCC Part 22, 24, 90; CE Mark;
NGS Antenna Calibration; MIL STD 810G, Method 514.7;

Communication

Network modem	Integrated 4G modem LTE (FDD): B1, B2, B3, B4, B5, B7, B8, B20 DC-HSPA+/HSPA+/HSPA/UMTS: B1, B2, B5, B8 EDGE/GPRS/GSM 850/900/1800/1900 MHz
Wi-Fi	802.11 b/g/n, access point mode
Bluetooth®	v4.1
Ports	1 x 7-pin LEMO port (external power, RS-232) 1 x USB Type-C port (data download, firmware update) 1 x UHF antenna port (TNC female)
UHF radio	Standard Internal Rx/Tx: 410 MHz to 470 MHz Transmit Power: 0.5 W to 2 W Protocol: CHC, Transparent, TT450 Link rate: 9600 bps to 19200 bps Range: 5 km under optimal conditions
Data formats	RTCM 2.x, RTCM 3.x, CMR, CMR+, SCMRX input and output HCN, HRC, RINEX 2.11, 3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	32 GB internal memory

Electrical

Power consumption	5 W (depending on user settings)
Li-ion battery capacity	2 x 3400 mAh, 7.4 V
Operating time on internal battery[4]	UHF receive/transmit (0.5 W): 5 h to 8 h Cellular receive only: up to 9 h Static: up to 10 h
External power input	9 V DC to 28 V DC

*Specifications are subject to change without notice.

(1) Compliant, but subject to availability of BDS ICD and Galileo commercial service definition. GLONASS L3, BDS B3 and Galileo E6 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.
(3) Typical observed values.
(4) Battery life is subject to operating temperature.