CHCNAV

i90 PRO

IMU-RTK GNSS RECEIVER

SURVEYING & ENGINEERING

CHCNAV

HIGH-PERFORMANCE 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 location. It integrates a state-of-the-art GNSS RTK engine, a calibration-free high-end IMU sensor and advanced GNSS tracking capabilities to dramatically increase RTK availability and reliability.

The i90 Pro automatic pole-tilt compensation boosts survey and stakeout speed by up to 30%. Construction and land surveying projects are achieved with high productivity and reliability pushing the boundaries of conventional GNSS RTK survey.

FULL GNSS POSITIONING

Combining GPS, Glonass, Galileo and BeiDou constellations

The embedded 336-channel GNSS technology takes benefit from all GPS, GLONASS, Galileo and BeiDou signals and provides robust RTK position availability and reliability 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.

HASSLE-FREE IMU-RTK SURVEYING

Dramatically increase RTK availability.

No complicated calibration process, rotation, leveling or accessories are necessary with the i90. Simply rock the range pole a few times to initialize the i90 Pro internal IMU module and enable GNSS RTK survey in difficult field environment.

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. ALWAYS

Boost survey and stakeout speed by 30%.

The i90 Pro 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.

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FULL GNSS L-BAND
IMU RTK

ENABLE GNSS RTK ANYTIME, ANYWHERE

SPECIFICATIONS

GNSS Performance [1]	
Channels	336 channels
GPS	L1C, L1C/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 x W x 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 850/900/1800/1900MHz
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 - 470 MHz Transmit Power: 0.5 W to 2 W Protocol: CHC, Transparent, TT450, SATEL3AS 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

*All 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.

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