

PERFORMANCE SPECIFICATIONS

SATELLITE SIGNALS TRACKED SIMULTANEOUSLY

555 Channels

GPS	L1C/A, L1C, L2C, L2P, L5
GLONASS	L1C/A, L2C, L2P, L3, L5
BeiDou	B1, B2, B3
Galileo	E1, E5A AltBOC, E5a, E5B, E6 ¹
IRNSS	L5
SBAS	L1, L5
QZSS	L1C/A, L1C, L2C, L5, L6
L-band	
TerraStar Correction Services ⁴	

POSITIONING PERFORMANCE²

Hot Start Typically < 10s Cold Start Typically < 15s

High-Precision Static

Horizontal 2.5 mm + 0.1 ppm RMS
Vertical 3.5 mm + 0.4 ppm RMS

Static and Fast Static

Horizontal 2.5 mm + 0.5 ppm RMS
Vertical 5mm + 0.5 ppm RMS

Post Processing Kinematic (PPK / Stop & Go) GNSS Surveying

Horizontal 8mm+1ppm RMS
Vertical 15mm+1ppm RMS
Initialization time Typically 10 minutes for base while 5 minutes for rover
Initialization reliability Typically > 99.9%

Real Time Kinematic(RTK) Surveying

Single Baseline

Horizontal 8mm+1ppm RMS
Vertical 15mm+1ppm RMS

Network RTK

Horizontal 8mm+0.5ppm RMS
Vertical 15mm+0.5ppm RMS
Initialization time Typically 2-10s
Initialization reliability Typically > 99.9%

Code Differential GNSS Positioning

Horizontal 25cm+1ppm RMS
Vertical 50cm+1ppm RMS
SBAS³ 0.50m Horizontal, 0.85m Vertical

COMMUNICATION

Network Communication

Fully integrated, fully sealed internal WCDMA, compatible with GPRS, GSM, 3G, LTE
Wifi frequency is 2.4G, supports the standard protocol 802.11b/g/n
Network RTK (via CORS) range 20-50km

SATEL Internal UHF Radio

Frequency 403-473MHz
Transmitting power 0.1W -1W adjustable
Transmitting speed 9.6Kbps, 19.2Kbps
Supports multiple communication protocol
Working range 3-5km typically, 8-10km optimal

Hi-Target Advanced Internal UHF Radio (Optional)

Frequency 403-473MHz
Transmitting power 1W, 2W, 4W adjustable
Transmitting linkrate 9.6Kbps, 19.2Kbps
Support multiple protocols
Working range 3-5km typically, 8-10km optimal

Advanced External UHF Radio

Frequency 410-470MHz
Transmitting power 5W/35W
Compatible with third party radio
Working Range 8-10km typically, 15-20km optimal

HARDWARE

Physical

Dimensions (W x H) 153mm x 83mm (6.02inch x 3.27inch)
Weight 950g (2.09lb) without internal battery
Operation temperature -40°C ~+75 °C [-40 °F ~+167 °F]
Storage temperature -55°C ~+85 °C [-67 °F ~+185 °F]
Humidity 100%, condensing
Water/dustproof IP67 dustproof, protected from temporary immersion to depth of 1m (3.28ft)
Shock and vibration Designed to survive a 2m(6.56ft) natural fall onto concrete.

Electrical

Power 6V to 28V DC external power input
Power consumption ≤ 3.5W
Automatic switching between internal power and external power
Rechargeable, removable 7.4V, 5000mAh Lithium-ion battery in internal battery compartment

Internal Battery Life

Static more than 12 hours
RTK Rover (UHF/GPRS/3G) 10 hours
RTK base more than 8 hours

I/O Interface

Bluetooth, NFC, standard USB2.0port, TNC antenna connector
RS232 serial port, DC power input (5-pin), MicroSD card port

Tilt Survey System

Allowable pole Tilt 30 degrees

Electronic Bubble

WebUI

SYSTEM CONFIGURATION

System

Data storage 16GB Internal storage+ Internal Micro SD Card memory (Support up to 32GB extension)
Record GNS and Rinex format simultaneously

Data Formats

[1Hz positioning output, up to 50Hz - depends on installed option]
CMR: sCMRx, CMR, CMR+input and output
RTCM: RTCM 2.1, 2.2, 2.3, 3.0, 3.1, 3.2 input and output
Navigation outputs ASCII: NMEA-0183 GSV, AVR, RMC, HDT, VGK, VHD, ROT, GGK, GGA, GSA, ZDA, VTG, GST, PJT, PJK, BPQ, GLL, GRS, GBS
Navigation outputs binary: GSOF

¹Developed under a License of the European Union and the European Space Agency.

²Precision and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions. The specifications stated recommend the use of stable mounts in an open sky view, EMI and multipath clean environment, optimal GNSS constellation configurations, along with the use of survey practices that are generally accepted for performing the highest-order surveys for the applicable application including occupation times appropriate for baseline length. Baselines longer than 30 km require precise ephemeris and occupations up to 24 hours may be required to achieve the high precision static specification.

³GPS only and depends on SBAS system performance. FAA WAAS accuracy specifications are < 5 m 3DRMS.

⁴Available to subscribe for TerraStar-C, RTK ASSIST, requiring additional service fee.

Descriptions and Specifications are subject to change without notice



Surveying the World, Mapping the Future

V90 PLUS

GNSS RTK SYSTEM



AUTHORIZED DISTRIBUTION PARTNER

20J317T

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V90 PLUS

GNSS RTK SYSTEM

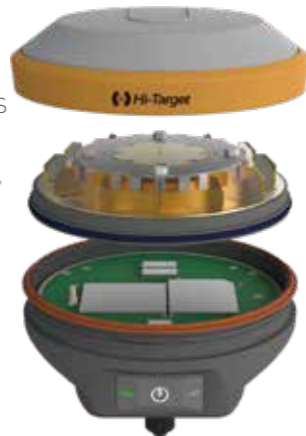
With a hi-tech, fully integrated design, the conveniently sized V90 Plus is one of the most flexible choices for any measuring task. Built-in Linux3.2.0 operating system, pre-loaded multiple smart applications such as tilt surveying, electronic bubble calibration, NFC and voice DIY. The V90 Plus GNSS system provides surveyor industry-leading GNSS operation.

83mm HEIGHT / 153mm DIAMETER / 950g WEIGHT



Multi-constellation Tracking

- 555 tracking channels
- NGS approved full-wave GNSS antenna
- Supports GPS, GLONASS, GALILEO, BEIDOU, QZSS, SBAS



Advanced Novatel OEM board is a compact multi-constellation receiver designed to deliver centimeter accuracy to a variety of applications.

- Supports a wide range of satellite signals
- A large receiving area designed for multipath mitigation
- Air dielectric is light and stable



Smart Application

- Offers tilt survey with a maximum tilt angle of 30 degrees
- Supports electronic bubble
- Intelligent voice assistance guides field operations. Voice can be DIY
- Standard Rinex data and HI-TARGET raw data recorded simultaneously

Optional Transceiver UHF Radio

- The transceiver UHF radio enables switchable working modes between base and rover
- Three types of internal UHF radio provide different frequencies based on users requirements. The SATEL internal UHF radio is compatible with other radios

Multi-network Connection

- Supports GPRS, GSM, WCDMA, 3G, LTE
- Supports WIFI

Powerful Battery

- Powered by high-capacity (5000mAh) Li-ion battery to ensure full day operation

Rugged Design

- IP67 dustproof and waterproof
- Able to survive a 2-meter natural fall onto concrete

Qmini A5

Professional Handeld Controller

The Qmini A5 is a rugged field controller that is designed for data collection and GNSS device control. Based on the Android operating system, it is compatible with Hi-Target professional software and third-party Android software. Combining the physical keyboard with a touchscreen, it can boost efficient field work and provide express solutions for users.

KEY FEATURES

- Android 6.0 OS 2.0GHz 8 core high speed processor
- Professional RTK engine
- An open platform for 3rd party software
- 5500mAh battery providing up to 12 hours continuous operation
- Protection for 1.5m drop to ground to IP65 standards
- High performance spiral antenna

Hardware Configuration	OS: Android 6.0 Processor: 2.0GHz, 8 core Storage: RAM 3G, ROM 32GB, T-Flash Card 128 GB Display: 5.5 inches glare resistant, touchable screen Resolution: 1920*1080, under the sun Camera: 13M Pixels camera, auto focus, highlight LED flash Sensors: G-sensor, electronic compass, barometer
Communication	Cellular network: support 4G, TD-LTE, FDD-LTE, TD-SCDMA, CDMA(EBCD, 2000), WCDMA, GSM(GPRS) Wi-Fi: IEEE 802.11b/g/n, AP, Wapi Bluetooth: 4.0, BLE USB: Type-C, OTG function
Physical	Weight: 320g (within battery) Size: 165mm*85mm*18mm Temperature: -40C ~ +85 C (Operating); -50C ~ +85 C (Storage) Free fall: 1.5m IP67
GNSS Features	GNSS: GPS, GLONASS, BDS, GALILEO, SBAS, 72channels Update rate: 1-5Hz
Power Supply	Battery: Removable 3.7V lithium battery, 5500mAh Duration: 10-12 hours

Hi-Survey Road

Survey Data Collection Software

The Hi-Survey Road is an android software that is designed for all types of land survey and road engineering projects in the field. It is compatible with Hi-Target professional controllers, android phones, tablets and other third-party android devices. It is a sleek and easy-to-use software that supports the operating of big data with build-in tools. With customized industrial application solutions, more possibilities are created for users.



KEY FEATURES

- Various algorithms to achieve high accuracy in corresponding measuring circumstances with a better reliability.
 - ▶ Tilt survey, quasi-dynamic technology, detail survey, timing static survey, etc.
- Express interacting functions to greatly improve the work efficiency.
 - ▶ Cross-projects points selection, QR code scanning, multi-format support, etc.
- Integrated professional measurement functions for engineering applications.
 - ▶ Road functions, DTM surface operations, Google online base map, 3rd party rangefinders, etc.