

## PERFORMANCE SPECIFICATIONS

### SATELLITE SIGNALS TRACKED SIMULTANEOUSLY

#### 220 Channels

GPS ..... Simultaneous L1C/A, L2C, L2E, L5  
 GLONASS ..... Simultaneous L1C/A, L1P, L2C/A (GLONASS M only), L2P  
 Galileo ..... Simultaneous E1 BOC, E5A, E5B, E5AltBOC<sup>1</sup>  
 BDS ..... B1, B2  
 SBAS ..... L1 C/A, L5

#### 555 Channels (Optional)

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<sup>4</sup>  
 IRNSS ..... L5  
 SBAS ..... L1, L5  
 QZSS ..... L1C/A, L1C, L2C, L5, L6  
 L-band ..... Up to 5 channels  
 TerraStar Correction Services<sup>4</sup>

### POSITIONING PERFORMANCE<sup>2</sup>

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  
 SBAS<sup>3</sup> ..... 0.50m Horizontal, 0.85m Vertical

### COMMUNICATION

#### Network Communication

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

#### Hi-Target Advanced Internal UHF Radio:

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

#### SATEL Internal UHF Radio (Optional)

Frequency ..... 403-473MHz  
 Transmitting power ..... 0.1W -1W adjustable  
 Transmitting speed ..... 9.6Kbps, 19.2Kbps  
 Support most of radio communication protocol  
 Working range ..... 3-5km typically, 8-10km optimal

#### HI-TARGET External UHF Radio

Frequency ..... 460MHz with 116 channels  
 Transmitting power ..... 5W, 10W, 20W, 30W adjustable  
 Transmitting speed ..... Up to 19.2Kbps  
 Working range ..... 8-10km typically, 15-20km optimal

#### Advanced External UHF Radio (Optional)

Frequency ..... 410-470MHz  
 Transmitting power ..... 5W/25W  
 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 USB2.0 port, TNC antenna connector  
 RS232 serial port, DC power input (5-pin), MicroSD card port

#### Tilt Survey System

#### Electronic Bubble

### 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, GSK, GGA, GSA, ZDA, VTG, GST, PJT, PJK, BPQ, GLL, GRS, GBS  
 Navigation outputs binary: GSOF

<sup>1</sup>Developed under a License of the European Union and the European Space Agency.

<sup>2</sup>Precision 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.

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

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

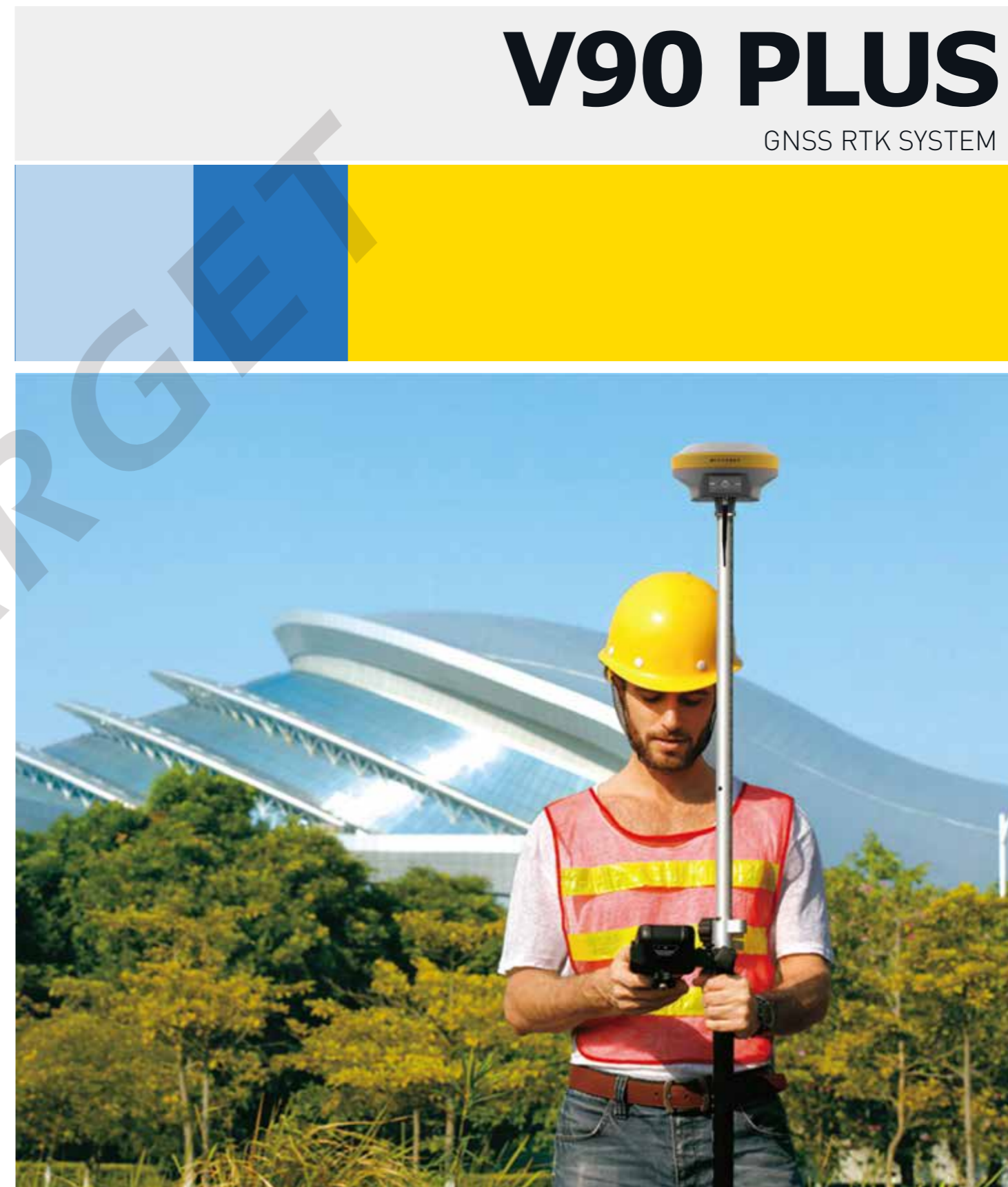
Descriptions and Specifications are subject to change without notice

# HI-TARGET

Surveying the world, Mapping the future.

# V90 PLUS

## GNSS RTK SYSTEM



AUTHORIZED DISTRIBUTION PARTNER

Hi-Target Surveying Instrument Co. Ltd

ADD: Building 13, Tian'An Technology Zone HQ Center, No. 555,  
 North of Panyu RD, Panyu District, 511400 Guangzhou, China.

www.hi-target.com.cn +86-20-28688296 info@hi-target.com.cn



19M120

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83mm HEIGHT / 153mm DIAMETER / 950g WEIGHT

# 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.



### Multi-constellation Tracking

- 220 tracking channels
- NGS approved full-wave GNSS antenna
- Supports GPS, GLONASS, GALILEO, BDS, SBAS



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



Advanced BD970 OEM is a compact multi-constellation receiver designed to deliver centimeter accuracy to a variety of applications.

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### 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 and WCDMA
- 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 3-meter natural fall onto concrete

# iHand30

## Professional Field Controller

The iHand30 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

- Ergonomically designed, lighter and easy to hold.
- Industrial-grade protection that can withstand tough environments.
- Convenient wireless data transmission via Bluetooth, Wi-Fi and 4G.
- Quick charge, with large capacity lithium battery to ensure all day work.

<b>Hardware Configuration</b>	OS: Android 6.0 Processor: 1.5GHz, 4 core Storage: RAM 2G, ROM 16GB (up to 32GB extension Micro-SD) Display: 3.7", 640x480, sunlight readable Camera: 8MP, tag available Sensors: G-sensor, E-compass, barometer, light-field sensor, gyro
<b>Communication</b>	Cellular mode: Dual SIM card, dual stand-by Cellular network: 4G TDD-LTE, FDD-LTE, WCDMA, GPRS Wi-Fi: IEEE 802.11b/g/n, 2.4GHz/5GHz Bluetooth: V2.0/4.0 USB: Type-C, supports OTG NFC
<b>Physical</b>	Weight: 440g(within battery) Size: 208mm*83mm*24mm Temperature: -20C ~ +60C(Operating), -30C ~ +70C(Storage) Free fall: 1.2m IP67
<b>GNSS Features</b>	GNSS: GPS, GLONASS, AGPS, 20 channels Update rate: 1Hz
<b>Power Supply</b>	Battery: Removable 3.7V lithium battery, 5200mAh Duration: 15 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.