TRIMBLE R10
GNSS SYSTEM

A NEW LEVEL OF PRODUCTIVITY
The first of its kind, the new Trimble® R10 System is designed to help surveying professionals work more effectively. With powerful new technologies like Trimble HD-GNSS, Trimble SurePoint®, and Trimble xFill™ integrated into a new sleek design, this powerful system goes beyond comprehensive GNSS support to ensure surveyors have the ability to collect more accurate data faster and easier—no matter what the job or the environment.

TRIMBLE HD-GNSS PROCESSING ENGINE
A new generation of core positioning technology integrated into the Trimble R10 is the advanced Trimble HD-GNSS processing engine. This ground-breaking technology transcends traditional fixed/float techniques to provide a more accurate assessment of error estimates than traditional GNSS technology, especially in challenging environments. Markedly reduced convergence times as well as high position and precision reliability enable surveyors to collect measurements with confidence while reducing their occupation time.

TRIMBLE SUREPOINT TECHNOLOGY
Simplifying the survey workflow
Trimble SurePoint technology incorporated into the Trimble R10 system provides users with faster measurements, increased accuracy, and greater quality control.

An Electronic Bubble
The Trimble R10 system employs an electronic bubble that appears on the Trimble controller display. With this new eBubble, all measurement information is displayed in one place and users don’t have to switch focus from the controller screen to the pole bubble to check that the pole is plumb.

Rapid, Accurate Measurement
Trimble SurePoint technology displays the eBubble in green when the pole is plumb, clearly indicating that an accurate measurement is possible. The system constantly monitors pole tilt for the user. If a point is measured with pole tilt beyond a user-defined setting, Trimble Access™ software will alert the user and prompt them to accept or discard the point. SurePoint even uses the pole tilt as a controlling input. After a point is measured, tilting the pole causes the system to automatically prepare to measure the next point.

Data Traceability
As insurance that all of your data is traceable, the Trimble R10 can record the pole tilt information for measured points. These records include the pole tilt angle and the distance on the ground represented by that pole tilt angle.

TRIMBLE 360 RECEIVER TECHNOLOGY
Future Proof Your Investment
Powerful Trimble 360 receiver technology in the Trimble R10 supports signals from all existing and planned GNSS constellations and augmentation systems. With two integrated Trimble Maxwell™ 6 chips the Trimble R10 offers an unparalleled 440 GNSS channels. Trimble delivers business confidence with a sound GNSS investment for today and long into the future.

TRIMBLE xFILL TECHNOLOGY
More continuous surveying, less downtime
Continue surveying without interruption when you temporarily lose connection to your base station or Trimble VRS™ network. Leveraging a worldwide network of Trimble GNSS reference stations and satellite datalinks, Trimble xFill works to seamlessly ‘fill in’ for gaps in your RTK or VRS correction stream.

ERGONOMICALLY DESIGNED
Easier Handling and Operation
As the smallest and lightest integrated receiver in its class, the Trimble R10 system is ergonomically designed to provide the surveyor with effortless handling and operation. Designed for ease of use, the progressive design incorporates a more stable center of mass at the top of the range pole, while its sleeker, taller profile provides the durability and reliability for which Trimble is known.

The Trimble R10 receiver incorporates a quick release adapter for simple and safe removal of the receiver from the range pole. Additionally, the quick release adapter ensures a solid, stable connection between the range pole and receiver.

AN INTELLIGENT SOLUTION
Advanced features combined with the powerful technology in the Trimble R10 make this the most intelligent GNSS system on the market today.

Smart GNSS Antenna
Survey with confidence—the Trimble R10 system’s GNSS antenna tracks GNSS and SBAS signal bands. Its Trimble Stealth™ Ground Plane mitigates multipath signals by using electrical resistance to keep unwanted signals from reaching the antenna element.

Smart Battery
A smart lithium-ion battery inside the Trimble R10 system delivers extended battery life and more reliable power. A built-in LED display allows the user to quickly check remaining battery life.

Advanced Communication Capabilities
The Trimble R10 system uses the latest mobile phone technology to receive VRS corrections and connect to the Internet from the field. Then, access Trimble Connected Community to send or receive documents while away from the office. Using WiFi, easily connect to the Trimble R10 system using a laptop or smartphone to configure the receiver without a Trimble controller.

The Trimble system of hardware and software that’s known and trusted
Bring the power and speed of the Trimble R10 system together with trusted Trimble software solutions, including Trimble Access and Trimble Business Center, to get the most complete, intelligent solution. Trimble Access field software provides specialized and customized workflows to make surveying tasks quicker and easier while enabling teams to communicate vital information between field and office in real-time. Back in the office, users can seamlessly process data with Trimble Business Center office software.

The Trimble R10 GNSS system, a new era of surveying productivity beyond GNSS for professional surveyors.
PERFORMANCE SPECIFICATIONS

Measurements:
- Measuring points sooner, faster and in harsh environments with Trimble HD-GNSS technology
- Increased measurement traceability with Trimble SurePoint electronic plumb detection
- Reduced downtime due to loss of radio signal with xFill technology
- Advanced Trimble Maxwell 6 Custom Survey GNSS chips with 440 channels
- Future-proof your investment with Trimble 360 GNSS tracking.
- Satellite signals tracked simultaneously:
  - GPS: L1/C/A, L1C, L2C, L5
  - SBAS: L1/C/A, L5 (For SBAS satellites that support L5)
  - Galileo: GIOVE-A and GIOVE-B, E1, E5a, E5b
  - COMPASS: B1, B2, B3
  - MrnSTAR HP, XP, G2, V5, V5P, V5M, V5P, V5M
- GNSS SyStem:
  - Trimble r10
  - single Baseline <30 km
- Positioning Rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz

POSITIONING PERFORMANCE

- Code differential GNSS positioning
  - Horizontal: 0.25 m + 1 ppm RMS
  - Vertical: 0.50 m + 1 ppm RMS
- SBAS differential positioning accuracy:
  - Typically <5 m 3DRMS

- Static GNSS surveying
  - Horizontal: 3 mm + 0.1 ppm RMS
  - Vertical: 3.5 mm + 0.4 ppm RMS

- Static and Fast Static
  - Horizontal: 3 mm + 0.5 ppm RMS
  - Vertical: 5 mm + 0.5 ppm RMS

- Real Time Kinematic surveying
  - Network RTK:
    - Horizontal: 8 mm + 0.5 ppm RMS
    - Vertical: 15 mm + 1 ppm RMS
  - RTK start-up time for specified precisions:
    - 2 to 8 seconds
  - Trimble xFill:
    - Horizontal: RTK6 + 10 mm/minute RMS
    - Vertical: RTK6 + 20 mm/minute RMS

1 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 survey for the applicable project including occupation times appropriate for baseline length. Baselines longer than 30 km require precise ephemeral and occupations up to 24 hours may be required to achieve the high precision static specification.

2 Depends on WAAS/EGNOS system performance.

3 Network RTK PPM values are referenced to the closest physical base station.

4 Power 11 to 24 V DC external power input with over-voltage protection on Port 1 and Port 2 (7-pin Lemo)

5 Receive will operate normally to –40 °C, internal batteries are rated to –20 °C.

6 RTK refers to the last reported precision before the correction source was lost and xFill started.

7 Initialization is setup in a known coordinate system.

8 May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.

9 Initialization is setup in a known coordinate system.

10 Bluetooth type approvals are country specific.

COMMISSIONING AND DATA STORAGE

- Serial: 3-wire serial (7-pin Lemo)
- USB: supports data download and high speed communications
- USB Modem: fully Integrated, sealed 450 MHz wide band receiver/transmitter with frequency range of 410 MHz to 470 MHz
  - Transmit power: 2 W
  - Range: 3–5 km typical / 10 km optimal
- Cellular: integrated 3.5 G modem, HSUPA 7.2 Mbps (download), GPRS multi-slot class 12, EDGE multi-slot class 12, UMTS/HSDPA (WCDMA/FDD) 850/1900/2100MHz, Quad-band EGSM 850/900/1800/1900 MHz, GMS CSD, 3GPP LTE
- Bluetooth: fully integrated, fully sealed 2.4 GHz communications port (Bluetooth®);
- External communication devices for corrections supported on – Serial, USB, Ethernet, and Bluetooth ports
- Data storage: 4 GB internal memory; over three years of raw observables (approx. 1.4 MB/day), based on recording every 15 seconds from an average of 14 satellites
- CMRx, CMRx2, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 input and output
- 24 NMEA outputs, GSOE, RT17 and RT27 outputs

WebUI:
- Offers simple configuration, operation, status, and data transfer
- Accessible via WiFi, Serial, USB, and Bluetooth

CERTIFICATIONS

Contact your local Trimble Authorized Distribution Partner for more information.

Specifications subject to change without notice.

© 2012, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Navigation Limited, registered in the United States and in other countries. Access, Maxwell, Stealth, SurePoint, VRS, and xFill are trademarks of Trimble Navigation Limited. All other trademarks are the property of their respective owners. PN 022543-544A (10/12)