電子バブル

仕様 トリンブル**R10 RTK GPS**

主な機能：

水平

垂直

主な特徴：

ブルートゥース

（ブルートゥース®）10

送信電力：2w

15mm 0.5ppm rms

静的GNSS調査

新しいレベルの生産性

指定されたRTK起動時間

垂直

データストレージ

水平

コンパス：B1、B2、B3

電子バブル

スマートGNSSアンテナ

迅速かつ正確な測定

水平

高速で正確な測定

410 MHz~470 MHzの範囲:

垂直

rtk610mm/min rms

静的および高速静的

垂直

仕様

新しいレベルの生産性

ポジショニング

囲まれた450MHzワイドバンド

スマート**gnss**アンテナ

Trimble R10 RTK GPS

性能仕様

衛星信号の追跡
テクノロジー

3.5mm 0.4ppm RMS
検出

サポートL5）

通常<5 m 3drms

3mm 0.1ppm rms

垂直

測定

精度4

衛星信号を追跡
同時に

水平
サポートL5）

3mm 0.5ppm rms

コンパス: b1、b2、b3

精度2

2~8秒

14衛星

位置決め性能

水平	0.25m 1ppm rms
垂直	0.50m 1ppm rms
sbas差動測位 精度2	通常<5 m 3drms

水平
位置決め

静的gnss測量

高精度静的

静的および高速静的

水平

垂直

rtk3

トリンブルxfill5

コミュニケーションと
データーストレージ

水平	3mm 0.1ppm RMS
垂直	3.5mm 0.4ppm RMS
水平	3mm 0.5ppm RMS
垂直	5mm 0.5ppm RMS
水平	8 mm 1 ppm rms
垂直	15mm 1ppm rms
水平	8mm 0.5ppm rms
垂直	15mm 0.5ppm RMS
指定したrtk起動時間 精度4	2 ~8秒
水平	rtk610mm/分rms
垂直	rtk620mm/分rms

パフォーマンス仕様

8 mm 1 ppm RMS

15mm 1ppm RMS

密閉型450MHz広帯域

webui

410 MHz ~470MHz:

rtk620mm/min rms

Trimble XFill5

SBAS差異の位置付け

テクノロジー

（ブルートゥース®）10

ネットワークRTK3

5mm 0.5ppm RMS

同時に

ポジショニングパフォーマンス

0.25m 1ppm RMS

14個の衛星

0.50m 1ppm RMS

8mm 0.5ppm RMS

WebUI

送信電力: 2 w

検出

高精度静的

測定

ブルートゥース

TRIMBLE R10 GNSS SYSTEM

KEY FEATURES

Cutting-edge **Trimble HD-GNSS** processing engine

Precise position capture with **Trimble SurePoint** technology

New **Trimble xFill** technology provides RTK coverage during connection outages

Advanced satellite tracking with **Trimble 360** receiver technology

Sleek ergonomic design for easier handling

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 adaptor for simple and safe removal of the receiver from the range pole. Additionally, the quick release adaptor 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.

Trimble

TRIMBLE R10 GNSS SYSTEM

DATASHEET

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: L1C/A, L1C, L2C, L2E, L5
  - GLONASS: L1C/A, L1P, L2C/A, L2P, L3
  - SBAS: L1C/A, L5 (For SBAS satellites that support L5)
  - Galileo: GIOVE-A and GIOVE-B, E1, E5a, E5B
  - COMPASS: B1, B2, B3
- OmniSTAR HP, XP, G2, VBS positioning
- QZSS, WAAS, MSAS, EGNOS, GAGAN
- Positioning Rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz

POSITIONING PERFORMANCE[1]

Code differential GNSS positioning

Horizontal	0.25 m + 1 ppm RMS
Vertical	0.50 m + 1 ppm RMS
SBAS differential positioning accuracy[2]	typically <5 m 3DRMS

Static GNSS surveying
High-Precision Static

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
Single Baseline <30 km

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

Network RTK[3]

Horizontal	8 mm + 0.5 ppm RMS
Vertical	15 mm + 0.5 ppm RMS
RTK start-up time for specified precisions[4]	2 to 8 seconds

Trimble xFill[5]

Horizontal	RTK[6] + 10 mm/minute RMS
Vertical	RTK[6] + 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 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.
2 Depends on WAAS/EGNOS system performance.
3 Network RTK PPM values are referenced to the closest physical base station.
4 May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
5 Precisions are dependent on GNSS satellite availability. xFill positioning ends after 5 minutes of radio downtime. When using a single base station, xFill requires the location of the base antenna to be within 1 m of the base coordinate in a known global reference frame such as WGS-84. When establishing a single base station using the "Here" key in Trimble Access software, the required accuracy is usually only achieved when the position is augmented with WAAS or EGNOS. VRS subscribers should check with their network administrator that the network is setup in a known coordinate system.
6 RTK refers to the last reported precision before the correction source was lost and xFill started.
7 Receiver will operate normally to –40 °C, internal batteries are rated to –20 °C.
8 Varies with temperature and wireless data rate. When using a receiver and internal radio in the transmit mode, it is recommended that an external 6 Ah or higher battery is used.
9 Varies with terrain and operating conditions.
10 Bluetooth type approvals are country specific.

HARDWARE

Physical

Dimensions (W×H)	11.9 cm x 13.6 cm (4.6 in x 5.4 in)
Weight	1.12 kg (2.49 lb) with internal battery, internal radio with UHF antenna, 3.57 kg (7.86 lb) items above plus range pole, controller & bracket
Temperature[7]	
Operating	–40 °C to +65 °C (–40 °F to +149 °F)
Storage	–40 °C to +75 °C (–40 °F to +167 °F)
Humidity	100%, condensing
Ingress Protection	IP67 dustproof, protected from temporary immersion to depth of 1 m (3.28 ft)
Shock and vibration	Tested and meets the following environmental standards:
Shock	Non-operating: Designed to survive a 2 m (6.6 ft) pole drop onto concrete. Operating: to 40 G, 10 msec, sawtooth
Vibration	MIL-STD-810F, FIG.514.5C-1

Electrical

- Power 11 to 24 V DC external power input with over-voltage protection on Port 1 and Port 2 (7-pin Lemo)
- Rechargeable, removable 7.4 V, 3.7 Ah Lithium-ion smart battery with LED status indicators.
- Power consumption is 5.1 W in RTK rover mode with internal radio.
- Operating times on internal battery[8]:
  - 450 MHz receive only option: 5.5 hours
  - 450 MHz receive/transmit option (0.5 W): 4.5 hours
  - 450 MHz receive/transmit option (2.0 W): 3.7 hours
  - Cellular receive option: 5.0 hours

COMMUNICATIONS AND DATA STORAGE

- Serial: 3-wire serial (7-pin Lemo)
- USB: supports data download and high speed communications
- Radio 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[9]
- Cellular: integrated, 3.5 G modem, HSDPA 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, GSM CSD, 3GPP LTE
- Bluetooth: fully integrated, fully sealed 2.4 GHz communications port (Bluetooth®)[10]
- WiFi: 802.11 b,g, access point and client mode, WEP64/WEP128 encryption
- 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
- CMR+, CMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 input and output
- 24 NMEA outputs, GSOF, RT17 and RT27 outputs

WebUI

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

CERTIFICATIONS

FCC Part 15 (Class B device), 22, 24; R&TTE CE Mark; C-Tick, A-Tick; PTCRB; WFA

Contact your local Trimble Authorized Distribution Partner for more information.

Specifications subject to change without notice.

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