Trimble R8s

GNSS SYSTEM

One Receiver Configured for Today Scalable for Tomorrow

Rather than a pre-configured system, the Trimble® R8s GNSS system gives you just the features and benefits you need, in one flexible, scalable system. It's never been easier to build a system tailored to your job.

The Trimble R8s easily integrates with Trimble S-Series total stations and the innovative Trimble V10 imaging rover. Create a complete solution by combining the Trimble R8s receiver with a Trimble controller running Trimble Access™ field software, and Trimble Business Center office software.

Configure and Scale With Ease

With the Trimble R8s, it's easy and simple to build a receiver that is right for the job. Choose the configuration level that suits your needs best, whether it's post-processing, base, rover, or a combination of base and rover functionality. After you've selected a configuration level, additional individual options can be added to further extend the receiver functionality.

The Trimble R8s offers the ultimate in scalability. As your requirements change, the Trimble R8s can adapt. Simply add functionality whenever you need it.

Trimble 360 Technology

Each Trimble R8s comes integrated with powerful Trimble 360 tracking technology that supports signals from all existing and planned constellations, and augmentation systems. Trimble 360 technology can expand the reach of your GNSS rover to sites that were previously inaccessible due to moderate vegetation or other obstructions by taking advantage of the availability of additional satellite signals.

The Trimble R8s includes two integrated Maxwell™ 6 chips and 440 GNSS channels. Capable of tracking a full range of satellite systems, including GPS, GLONASS, Galileo, BeiDou and QZSS.

Communication Options and Remote Access Via Web UI

The Trimble R8s GNSS receiver provides data communication options including an integrated wide-band UHF radio or 3G cellular modem.

Trimble's exclusive Web UI eliminates the need to travel for routine monitoring of base station receivers.

The Complete Solution

Create an industry-leading field solution by pairing the Trimble R8s GNSS receiver with a powerful Trimble controller loaded with our easy-to-use Trimble Access field software.

Trimble Access field software offers the features and capabilities to simplify everyday work. Our streamlined workflow modules such as Roads, Monitoring, Mines, and Tunnels guide crews through common project types, enabling them to get the job done faster. Survey companies can also implement their unique workflows by taking advantage of the customization capabilities available in the Trimble Access Software Development Kit (SDK).

Once you're back in the office, Trimble Business Center enables you to check, process and adjust your data with confidence. No matter what Trimble solution you use in the field, you can trust that Trimble Business Center office software will help you generate industry leading deliverables.

Trimble Mobile App—A New Way to Quickly Collect GNSS Raw Data

The Trimble DL Android app provides a simple and easy to use mobile interface for collecting static GNSS raw data for post-processing purposes without the need of using a Trimble controller or Trimble Access field software. This free of charge app is available through the Google Play Store and operates on Android smart phones and tablets.

Key Features

- One configurable receiver that is scalable for future needs
- Available in post-processing, base only, rover only, or base & rover configurations
- Advanced satellite tracking with Trimble 360 receiver technology
- Includes Trimble Maxwell 6 chips with 440 channels
- Simple integration with Trimble S-Series Total Stations and the V10 Imaging Rover
- Intuitive Trimble Access Field Software and Trimble Business Center Office Software

Trimble R8s GNSS SYSTEM

PERFORMANCE SPECIFICATIONS[1]

Measurements

- Advanced Trimble Maxwell 6 Custom Survey GNSS chips with 440 channels
- Future-proof your investment with Trimble 360 tracking
- High precision multiple correlator for GNSS pseudorange measurements
- Unfiltered, un-smoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response
- Very low noise GNSS carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Signal-to-Noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- 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: E1, E5A, E5B
  - BeiDou (COMPASS): B1, B2
- SBAS: QZSS, WAAS, EGNOS, GAGAN
- Positioning rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz

POSITIONING PERFORMANCE[2]

Code differential GNSS positioning

Horizontal . . . . . 0.25 m + 1 ppm RMS
Vertical . . . . . 0.50 m + 1 ppm RMS
SBAS differential positioning accuracy[3] . . . . . 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

Postprocessed Kinematic (PPK) GNSS surveying

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

Real Time Kinematic surveying

Single Baseline <30 km
Horizontal . . . . . 8 mm + 1 ppm RMS
Vertical . . . . . 15 mm + 1 ppm RMS
Network RTK[4]
Horizontal . . . . . 8 mm + 0.5 ppm RMS
Vertical . . . . . 15 mm + 0.5 ppm RMS
Initialization time[5] . . . . . typically <8 seconds
Initialization reliability[5] . . . . . typically >99.9%

HARDWARE

Physical

Dimensions . . . . . 19 cm x 10.4 cm (7.5 in x 4.1 in), including connectors
Weight . . . . . 1.52 kg (3.35 lb) with internal battery, internal radio and antenna
3.81 kg (8.40 lb) items above plus range pole, controller & internal radio
Operating Temperature[6] . . . . . –40 °C to +65 °C (–40 °F to +149 °F)
Storage Temperature . . . . . –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 10.5 V DC to 28 V DC external power input with over-voltage protection on Port 1 (7-pin Lemo)
- Rechargeable, removable 7.4 V, 2.8 Ah Lithium-ion smart battery
- Power consumption is <3.2 W in RTK rover mode with internal radio and Bluetooth® in use[7]
- Operating times on internal battery[8]:
  - 450 MHz receive only option. . . . . 5.0 hours
  - 450 MHz receive/transmit option (0.5 W) . . . . . 2.5 hours
  - Cellular receive option. . . . . 4.0 hours

COMMUNICATIONS AND DATA STORAGE

- Serial: 3-wire serial (7-pin Lemo) on Port 1; full RS-232 serial (Dsub 9 pin) on Port 2
- Radio Modem[1]: fully Integrated, sealed 450 MHz wide band receiver/transmitter with frequency range of 403 MHz to 473 MHz, support of Trimble, Pacific Crest, and SATEL radio protocols:
  - Transmit power: 0.5 W
  - Range: 3–5 km typical / 10 km optimal[9]
- Cellular[1]: fully integrated, sealed internal GSM/GPRS/EDGE/UMTS/HSPA+ modem option. CSD (Circuit-Switched Data) and PSD (Packet-Switched Data) supported. Global Operation:
  - Penta-Band UMTS/HSPA+ (850/800, 900, 1900, and 2100 MHz)
  - Quad-Band GSM/CSD & GPRS/EDGE (850, 900, 1800, and 1900 MHz)
- Bluetooth: fully integrated, fully sealed 2.4 GHz communications port (Bluetooth)[10]
- External communication devices for corrections supported on Serial and Bluetooth ports
- Data storage: 56 MB internal memory, 960 hours of raw observables (approx. 1.4 MB/day), based on recording every 15 sec from an average of 14 satellites

Data Formats

- CMR, CMR+, CMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 inputs and outputs
- 23 NMEA outputs, GSOF, RT17 and RT27 outputs, supports BINEX and smoothed carrier

WebUI

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

Supported Trimble Controllers[1]

- Trimble TSC3, Trimble Slate, Trimble CU, Trimble Tablet Rugged PC

CERTIFICATIONS

IEC 60950-1 (Electrical Safety); FCC OET Bulletin 65 (RF Exposure Safety); FCC Part 15.105 (Class B), Part 15.247, Part 90; PTCRB (AT&T); Bluetooth SIG; IC ES-003 (Class B); Radio Equipment Directive 2014/53/EU, RoHS, WEEE; Australia & New Zealand RCM; Japan Radio and Telecom MIC

1 Based on Trimble R8s GNSS receiver configuration. Radio frequency settings are country specific.
2 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 time 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.
3 Depends on SBAS system performance.
4 Network RTK PPM values are referenced to the closest physical reference station.
5 May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
6 Receiver will operate normally to –40 °C, internal batteries are rated to –20 °C, optional internal cellular modem operates to –40 °C.
7 Tracking GPS, GLONASS and SBAS satellites.
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. The specified operating times on an internal battery for the cellular receive option are in GSM CSD (Circuit-Switched Data) or GPRS PSD (Packet-Switched Data) mode.
9 Varies with terrain and operating conditions.
10 Bluetooth type approvals are country specific.

Specifications subject to change without notice.

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