TRIMBLE R8 GNSS SYSTEM

KEY FEATURES

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

Includes Trimble Maxwell 6 chips with **440 channels**

Unmatched GNSS tracking performance

Web user interface and remote configuration

Base and rover communications **options to suit any application**

THE INDUSTRY LEADING TOTAL GNSS SOLUTION

The Trimble® R8 GNSS system has long set the bar for advanced GNSS surveying systems. Through advanced Trimble 360 tracking technology and a comprehensive set of communication options integrated into a flexible system design, this integrated GNSS system delivers industry-leading performance. For surveyors facing demanding RTK applications, the Trimble R8 is an invaluable GNSS partner.

TRIMBLE 360 RECEIVER TECHNOLOGY

Future-proof your investment

Powerful Trimble 360 receiver technology integrated in the Trimble R8 supports signals from all existing and planned GNSS constellations and augmentation systems providing unmatched GNSS tracking performance. With this leading-edge technology, it is now possible for surveyors to expand the reach of their GNSS rovers into areas that were previously too obscured, such as under trees and in dense urban areas.

With two integrated Trimble Maxwell™ 6 chips, the Trimble R8 offers an unparalleled 440 GNSS channels. Also capable of tracking carrier signals from a wide range of satellite systems, including GPS, GLONASS, Galileo, BeiDou (COMPASS), and QZSS, the Trimble R8 provides a robust solution for surveyors.

The CMRx communications protocol in the Trimble R8 provides unprecedented correction compression for optimized bandwidth and full utilization all of the satellites in view, giving you the most reliable positioning performance.

Designed with the future in mind, Trimble 360 technology is optimized to receive future planned signals as the number of available satellites continues to grow. With Trimble 360 technology, the Trimble R8 delivers business confidence with a sound GNSS investment for today and long into the future.

FLEXIBLE SYSTEM DESIGN

The Trimble R8 combines the most comprehensive feature set into an integrated and flexible system design for demanding surveying applications. Connect directly to the controller, receive RTK network corrections, and connect to the Internet via comprehensive communication options. With a built-in transmit/receive UHF radio, the Trimble R8 enables ultimate flexibility for rover or base operation. As a base station, the internal NTRIP caster provides you customized access[1] to base station corrections via the Internet.

Trimble's exclusive Web UI™ eliminates travel requirements for routine monitoring of base station receivers. Now you can assess the health and status of base receivers and perform remote configurations from the office. Likewise, you can download post-processing data through Web UI and save additional trips out to the field.

AN INDUSTRY LEADING FIELD SOLUTION

If you're seeking the industry leading field solution, pair the Trimble R8 GNSS receiver with one of our powerful Trimble controllers, such as the Trimble TSC3, Trimble CU or Trimble Tablet Rugged PC featuring Trimble Access™ field software. These rugged controllers bring the power of the office to the field through an intuitive Windows-based interface.

Trimble Access field software offers numerous features and capabilities to streamline the flow of everyday surveying work. Streamlined workflows such as Roads, Monitoring, Mines, and Tunnels— guide crews through common project types and allows crews to get the job done faster with less distractions. Survey companies can also implement their unique workflows by taking advantage of the customization capabilities available in the Trimble Access Software Development Kit (SDK).

Need to get data back to the office immediately? Benefit from real-time data sharing via Trimble Access Services, now available with any valid Trimble Access maintenance agreement.

Back in the office, seamlessly transfer your field data using Trimble Business Center. Edit, process, and adjust collected data with confidence.

The Trimble R8 GNSS system—the industry leader for GNSS surveying applications.

---

1 Cellular modem required.

TRIMBLE R8
GNSS SYSTEM

PERFORMANCE SPECIFICATIONS
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, unsmoothed 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[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 FastStatic
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[3]
Horizontal . . . . .8 mm + 0.5 ppm RMS
Vertical . . . . 15 mm + 0.5 ppm RMS
Initialization time[4] . . . . .typically <8 seconds
Initialization reliability[4] . . . . typically >99.9%

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 time appropriate for baseline length. Baselines shorter 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 SBAS system performance.
3 Network RTK PPM values are referenced to the closest physical reference station.
4 May be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
5 Receiver will operate normally to –40° C, internal batteries are rated to –20° C, optional internal cellular modem operates to -40° C.
6 Tracking GPS, GLONASS and SBAS satellites.
7 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.
8 Varies with terrain and operating conditions.
9 Bluetooth type approvals are country specific.

HARDWARE
Physical
Dimensions (W×H) . . . . 19 cm × 10.4 cm (7.5 in x 4.1 in),
including connectors
Weight . . . . .1.52 kg (3.35 lb) with internal battery, internal radio with UHF antenna
3.81 kg (8.40 lb) items above plus range pole, controller, and bracket
Temperature[5]
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
Water/dustproof .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 V DC to 28 V DC external power input with over-voltage protection on Port 1 (7-pin Lemo)
- Rechargeable, removable 7.4 V, 2.6 Ah Lithium-Ion battery. Power consumption[6] is 3.2 W in RTK rover mode with internal radio and Bluetooth in use.
- Operating times on internal battery:[7]
  - 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 on Port 2 (Dsub 9 pin)
- Radio modem: fully Integrated, fully sealed internal 450 MHz receiver/transmitter option:
  - Transmit power: 0.5 W
  - Range[8]: 3–5 km typical/10 km optimal
- Cellular: 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®)[9]
- 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 input and outputs
- RTCM: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 input and outputs
- Other outputs: 23 NMEA outputs, GSOF, RT17 and RT27 outputs, supports BINEX and smoothed carrier

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

Supported Trimble Controllers
- Trimble TSC3 controller, Trimble CU controller, Trimble Tablet Rugged PC

Certifications
FCC Part 15 (Class B device), Part 15.247 and Part 90; ICES-003, RSS-210 and RSS-119; CE Mark; C-Tick; Bluetooth EPL

Specifications subject to change without notice.

TRIMBLE AUTHORIZED DISTRIBUTION PARTNER

®Trimble.