TRIMBLE R6 GNSS SYSTEM

KEY FEATURES

Trimble R-Track satellite tracking technology

Includes Trimble Maxwell 6 chip with **220 channels**

Industry-leading GNSS positioning with **GPS L2C, L5 and QZSS**

Scalable to add capability as your business needs change

Flexible, integrated system design

FLEXIBLE, SCALABLE, READY FOR ANYTHING

Sometimes one size doesn't fit all, and you require a customized solution that can grow with your business. The Answer? The Trimble® R6 GNSS system. It combines advanced GNSS technology with the scalability and freedom to adapt and grow as your business needs change. Featuring Trimble R-Track™ technology, integrated communications choices, and GNSS upgrade options, the Trimble R6 works the way you want it today, but is positioned to offer what you may need tomorrow.

INTEGRATED SYSTEM DESIGN

The Trimble R6 combines a highly integrated and advanced GNSS receiver, precision antenna, long-life battery and integrated communications into a rugged and reliable body.

Integrated communications options provide you the flexibility to choose the type of communications that best fit how your crews work. An integrated cellular modem streamlines operation inside VRS networks while integrated UHF RX or RX/TX streamlines RTK base/rover applications.

GNSS TECHNOLOGY THAT MAKES THE DIFFERENCE

Powered with a Trimble Maxwell™ 6 chip with 220 channels, the Trimble R6 delivers the accuracy and reliability required for precision surveying with superior tracking and RTK performance. With GPS L2C, L5, and the Japanese QZSS included, and GLONASS, Galileo, and BeiDou (COMPASS) upgrade options, you can track more satellites and measure more successfully in challenging environments. Plus, L2C provides more than just additional signals – the advanced signal structure also provides better strength for more reliable satellite tracking.

The third civil GPS frequency L5 provides a higher power level than other frequencies, and uses a larger bandwidth, enabling longer codes. As a result, acquiring and tracking weak signals is much easier.

This advanced tracking and positioning technology from Trimble reduces the time it takes to re-initialize and downtime caused by loss of lock.

ADVANCED TRIMBLE R-TRACK TECHNOLOGY

Integrated into the Trimble R6, Trimble R-Track technology delivers reliable, precise positioning performance. Trimble R-Track with Signal Prediction™ compensates for intermittent or marginal RTK correction signals, enabling extended precision operation after an RTK signal is interrupted.

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

SCALABILITY TO MEET YOUR CHANGING NEEDS

This fully upgradable receiver allows you to choose the level of GNSS support that suits your needs today with the flexibility to upgrade as your requirements evolve.

GPS, L1, L2, L2C, L5 and the Japanese QZSS signals are supported as standard in the Trimble R6. For additional constellation support, add optional GLONASS, GALILEO and BeiDou (COMPASS) support.

THE MOST FLEXIBLE FIELD SOLUTION

For the most flexible field solution, partner the Trimble R6 with a Trimble controller—such as the TSC3, Trimble Tablet Rugged PC, or Trimble CU—featuring Trimble Access™ field software. These rugged controllers bring the power of the office to the field through an intiutive 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. Choose the workflow relevant to your business and begin working. 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 software. Edit, process, and adjust collected data with confidence.

The Trimble R6 GNSS System. Positioned for your business needs today...and tomorrow.

Trimble

TRIMBLE R6
GNSS SYSTEM

PERFORMANCE SPECIFICATIONS
Measurements
- Advanced Trimble Maxwell 6 Custom Survey GNSS chip with 220 channels
- Trimble R-Track technology
- 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[1]: L1C/A, L1P, L2C/A, L2P, L3
  - SBAS: L1C/A, L5 (for SBAS satellites that support L5)
  - Galileo[1]: E1, E5A, E5
  - BeiDou (COMPASS)[1]: B1, B2
- SBAS: QZSS, WAAS, EGNOS, GAGAN
- Positioning rates: 1 Hz, 2 Hz, 5 Hz, and 10 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 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[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%

1 Optional upgrade.
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 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.
3 Depends on SBAS system performance.
4 Network RTK PPM values are referenced to the closest physical base 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 GSM modem operates to -30 °C.
7 Tracking GPS, GLONASS and SBAS satellites. Optional upgrade required for GLONASS.
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) . . . . 19 cm × 10.2 cm (7.5 in x 4.0 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[6]
    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[7] is 3.2 W, in RTK rover mode with internal radio and Bluetooth in use.
- 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 . . . . 4.7 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[9]: 3–5 km typical / 10 km optimal
- Cellular: fully integrated, fully sealed internal GSM/GPRS option
- 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: 11 MB internal memory, 188.6 hours of raw observables (approx. 1.4 MB/day), based on recording every 15 seconds 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

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

Certifications
FCC Part 15 (Class B device), 22, 24, 90; CE Mark; C-Tick; 850/1900 MHz; Class 10 GSM/GPRS module; Bluetooth EPL

Specifications subject to change without notice.

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