TRIMBLE R5
GNSS RECEIVER

KEY FEATURES

Flexible configurations put you in total control

Rugged, high-performance hardware is **built to last**

Trimble Integrated Surveying Ready

Whether you require a reliable base, a rugged RTK rover or a precision receiver for specialized applications, the modular Trimble® R5 GNSS Receiver gives you the flexibility to do it all. The Trimble R5 is as versatile as it is rugged and precise – ideal for control, measurement, design, stakeout, or as-built work.

ONE RECEIVER, MANY CONFIGURATIONS

Fixed to a tripod, secured on a rover pole, or stowed in a comfortable backpack, the Trimble R5 is light enough and tough enough for the most demanding applications. If security is a concern, the modular GNSS receiver can even be locked inside your vehicle connected to an external antenna. This multi-channel, multi-frequency receiver lets you assemble the optimal solution with the antenna and data link that best fits your needs for the job at hand.

For long-term campaign installations, the Trimble R5 is capable of storing thousands of hours of continuous L1/L2 data on convenient removable media. With the option of a built-in UHF radio modem, the Trimble R5 can receive RTK communications without the need for an external radio.

The flexibility of the Trimble R5 extends beyond the receiver itself – choose from either the TSC3 controller with full keyboard and expansion capabilities or the detachable Trimble CU controller. Couple your controller with Trimble Access™ field software to best meet the needs of your field crews.

Easily transfer your GNSS field data into the office for data processing and analysis using Trimble Business Center Office Software. Trimble field and office software puts the power to manage seamless data flow, field and office efficiency, and a true Integrated Surveying™ solution in your hands.

INDUSTRY LEADING PERFORMANCE

The Trimble R5 is a powerful receiver, featuring advanced Trimble GNSS technology and a high performance RTK engine that delivers the precision and accuracy surveyors demand. With GPS L2C included and the GLONASS option, you can track more satellites and measure more successfully in challenging environments. Reduce downtime caused by loss of lock and the time it takes to re-initialize with advanced technology from Trimble.

With Trimble, you can count on superior tracking of satellites, increased measuring speed, longer battery life and optimal precision in tough GNSS environments.

INTEGRATED SURVEYING BRINGS IT ALL TOGETHER

Bring the power of both GNSS and optical technologies to every job site. With Trimble Integrated Surveying, your Trimble Controller acts as a common point of integration so all data is collected on a single job file. When field work is complete, simply transfer the integrated data to your office software using the communication option that best suits your needs. No additional conversions necessary.

The Trimble R5 can also be used as part of a Trimble I.S. Rover solution. Simply add a prism to the rover pole and connect with a robotic optical system such as the Trimble S6 or S8 Total Station. This integrated solution maximizes the best of both surveying techniques for even greater field efficiency.

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PERFORMANCE SPECIFICATIONS

Measurements
- Trimble R-Track™ technology
- Advanced Trimble Maxwell™ Custom Survey GNSS Chip
- 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
- 72 Channels:
  - GPS L1 C/A Code, L2C, L1/L2 Full Cycle Carrier
  - GLONASS L1 C/A Code, L1 P Code, L2 P Code, L1/L2 Full Cycle Carrier
- 4 SBAS WAAS/EGNOS Channels

POSITIONING SPECIFICATIONS[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 & Fast Static
Horizontal. . . . . .3 mm + 0.5 ppm RMS
Vertical . . . . .5 mm + 0.5 ppm RMS

REAL TIME KINEMATIC SURVEYING[3]

Single Baseline <30 km
Horizontal. . . . . 8 mm + 1 ppm RMS
Vertical . . . . 15 mm + 1 ppm RMS

Network RTK
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%

HARDWARE

Physical
Casing . . . . .Tough, lightweight, fully sealed magnesium alloy
Dimensions (W×H×L). . . . . .13.5 cm × 8.5 cm x 24 cm
(5.3 in x 3.4 in x 9.5 in)
Weight . . . . 1.5 kg (3 lb) with internal batteries, internal radio, internal battery charger, standard UHF antenna. Less than 4 kg (8.8 lb) entire RTK rover including batteries for 7 hours, range pole, controller and bracket
Temperature[5]
    Operating . . . . –40 °C to +65 °C (–40 °F to +149 °F)
    Storage. . . . . –40 °C to +80 °C (–40 °F to +176 °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 1 m (3.3 ft) drop onto concrete. Operating: to 40 G, 10 msec, sawtooth
    Vibration. MIL-STD-810F, FIG.514.5C-1

Electrical
- Power input 10.5 V DC to 28 V DC with over-voltage protection
- Two rechargeable, removable 7.4 V, 2.4 Ah Lithium-Ion batteries in internal battery compartments
- Power consumption:
  - 4.0 W for receiver only (tracking and logging)
  - 4.4 W including internal radio (not receiving CMR)
  - 5.9 W (tracking SV's, logging at 1 Hz, external antenna and RTK in Fixed mode)
- Operating times on internal battery:
  - >10 hours postprocessed
  - 6–8 hours RTK (with two 2.4 Ah batteries)
- Battery charger internal with external AC power adapter; no requirement for external charger
- Power output:
  - 6.5 V to 20 V (Port 1) maximum 50 mA
  - 10.5 V to 28 V (Port 3) maximum 0.5 A
- Compliant with FCC Part 15B (Class B device); IC RSS-210 and RSS-310 certifications, compliant with ICES-003 (Class B device); CE-mark and C-tick mark conformity

Communications and Data Storage
- 2 external power ports, 2 internal battery ports, 3 serial ports
- Integrated USB for data download speeds in excess of 1 megabit per second
- Fully integrated, fully sealed internal UHF radio modem option
- External cell phone support for GSM/GPRS/3G modems for RTK and VRS operations
- 16 NMEA outputs. GSOF and RT17 output
- Dual event marker inputs
- 1 Pulse Per Second Output
- CMRx, CMR+, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 Input and Output
- Data Storage on 256 MB CompactFlash memory at 15 second intervals:
  - 4600 hours of raw observables, GPS + GLONASS with 13 SV average
  - 8900 hours of raw observables, GPS-Only with 8 SV average

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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 Receiver will operate normally to –40 °C, and internal batteries are rated to –20 °C.

Specifications subject to change without notice.

CE

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