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### KEY FEATURES

Advanced wireless technologies for flexibility and cable-free convenience

Trimble R-Track technology for GPS modernization

Base and rover communication options to suit any application

Extremely lightweight and rugged



#### THE FUTURE OF GPS SURVEYING TODAY

The Trimble® R8 GPS system combines industry-leading GPS receiver technology with numerous innovative features designed to improve performance and productivity in the field.

Trimble R8 is a 24-channel, dual-frequency GPS receiver, GPS antenna, and data-link radio combined in one compact unit weighing just 1.3 kg (2.9 lb).

#### AN ADVANCED, HIGH-QUALITY GPS RECEIVER

Trimble R8 is designed to deliver high-quality tracking and performance. Using less than 2.5 W of power, advanced Trimble R-Track technology ensures optimal tracking even in hostile GPS environments. And with the introduction of new L2C signals, which are part of GPS modernization, Trimble R8 will use these signals to provide even more robust tracking. The patented four-point antenna feed of the system's built-in dual-frequency receiver provides sub-millimeter phase-center stability for maximum precision.

The system includes built-in WAAS and EGNOS capability, providing real-time differential positioning without a base station.

#### EASY SETUP AND OPERATION AS A WIRELESS BASE STATION

Trimble R8 offers the option of upgrading the internal 450 MHz radio with transmitting capability, making a 100%-cable-free base station a reality. External radios, cables, and extra tripods are no longer required, so setup and operation is incredibly simple and efficient. Save time and significantly increase productivity as a result.

Trimble R8 GPS systems with this internal radio option are now completely interchangeable as base stations and rovers. Standardize on Trimble R8 and use it as a base station or rover as each survey demands. Trimble R8 increases your flexibility on the job.

The internal radio's transmission range is 3–5 km. For greater range, simply use one of Trimble's external radios as a repeater.

#### CABLE-FREE CONVENIENCE AND SUPERIOR PERFORMANCE AS A ROVER

The Trimble R8 GPS system's performance as a rover is unsurpassed in the surveying industry.

On the rover pole, Trimble R8 with a Trimble controller weighs just 3.6 kg (7.9 lb). Experience less fatigue thanks to the rover's ergonomic design and light weight. Bluetooth® wireless communication between the receiver and controller makes the rover 100% cable free for your convenience.

With Trimble R8 you can choose the communication option that best suits your needs. Use the 450 MHz internal radio option for receiving corrections from a local base station. Alternatively, choose a built-in GSM module for mobile phone communication.

A Trimble R8 rover will work as long and as hard as you do. Extremely low power consumption lets you run the Trimble R8 rover for longer without changing batteries.

A large internal memory of 6 MB lets you conveniently log static or kinematic data for postprocessing. Trimble R8 is also rugged enough for any job. It will withstand a pole drop of up to 2 m (6 ft) onto a hard surface, and is even submersible to 1 m (3 ft).

# TRIMBLE R8 GPS SYSTEM

## PERFORMANCE SPECIFICATIONS

### Measurements

- Trimble R-Track technology for tracking L2 Civil Signal (L2C)
- Advanced Trimble Maxwell™ Custom Survey GPS Chip
- High precision multiple correlator for L1 and L2 pseudorange measurements
- Unfiltered, unsmoothed pseudorange measurements data for low noise, low multipath error, low time domain correlation and high dynamic response
- Very low noise L1 and L2 carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- L1 and L2 Signal-to-Noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- 24 Channels L1 C/A Code, L2C<sup>1</sup>, L1/L2 Full Cycle Carrier, WAAS/EGNOS support

### Code differential GPS positioning <sup>2</sup>

Horizontal . . . . . ±0.25 m + 1 ppm RMS  
Vertical . . . . . ±0.50 m + 1 ppm RMS  
WAAS differential positioning accuracy <sup>3</sup> . . . . . Typically <5 m 3DRMS

### Static and FastStatic GPS surveying <sup>2</sup>

Horizontal . . . . . ±5 mm + 0.5 ppm RMS  
Vertical . . . . . ±5 mm + 1 ppm RMS

### Kinematic surveying <sup>2</sup>

Horizontal . . . . . ±10 mm + 1 ppm RMS  
Vertical . . . . . ±20 mm + 1 ppm RMS  
Initialization time . . . . . Single/Multi-base minimum  
10 sec + 0.5 times baseline length in km, up to 30 km  
Initialization reliability <sup>4</sup> . . . . . Typically >99.9%

## HARDWARE

### Physical

Dimensions (W×H) . 19 cm (7.5 in) × 10 cm (3.9 in), including connectors  
Weight . . . . . 1.31 kg (2.89 lb) with internal battery, internal radio,  
standard UHF antenna. 3.67 kg (8.09 lb) entire RTK rover including  
batteries, range pole, ACU controller and bracket

### Temperature <sup>5</sup>

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

Waterproof . . . . . IPX7 for submersion 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 28 V DC external power input with over-voltage protection on Port 1 (7-pin Lemo)
- Rechargeable, removable 7.4 V, 2.0 Ah Lithium-Ion battery in internal battery compartment. Power consumption is <2.5 W, in RTK mode with internal radio. Operating times on internal battery:
  - 450 MHz receive only 5.5 hours, varies with temperature
  - 450 MHz receive/transmit 3.5 hours, varies with temperature and wireless data rate
  - GSM 3.8 hours, varies with temperature
- Certification Class B Part 15, 22, 24 FCC certification, 850/1900 MHz. Class 10 GSM module. CE Mark approval, and C-tick approval

### Communications and Data Storage

- 3-wire serial (7-pin Lemo) on Port 1. Full RS-232 serial on Port 2 (Dsub 9 pin)
- Fully Integrated, fully sealed internal 450 MHz receiver/transmitter option:
  - Transmit power: 0.5 W
  - Range<sup>6</sup>: 3–5 km typical / 10 km optimal
- Fully Integrated, fully sealed internal GSM option <sup>7</sup>
- Fully integrated, fully sealed 2.4 GHz communications port (Bluetooth) <sup>7</sup>
- External GSM, Cellphone and CDPD modem support for RTK and VRS operations
- Data storage on 6 MB internal memory: 165 hours of raw observables based on recording data from 6 satellites at 15 second intervals
- Data storage on controller with 128 MB memory: Over 3400 hours of raw observables based on recording data from 6 satellites at 15 second intervals
- 1 Hz, 2 Hz, 5 Hz, and 10 Hz positioning
- CMRII, CMR+, RTCM 2.1, RTCM 2.3, RTCM 3.0 Input and Output
- 14 NMEA outputs. GSOF and RT17 outputs. Supports BINEX and smoothed carrier

<sup>1</sup> The availability of L2C code is dependent on the US Government.

<sup>2</sup> Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended survey practices.

<sup>3</sup> Depends on WAAS/EGNOS system performance.

<sup>4</sup> May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.

<sup>5</sup> Receiver will operate normally to -40 °C, Bluetooth module and internal batteries are rated to -20 °C.

<sup>6</sup> Varies with terrain and operating conditions.

<sup>7</sup> Bluetooth and GSM type approvals are country specific. Contact your local Trimble office or representative for more information.

Specifications subject to change without notice.



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