



### KEY FEATURES

Trimble R-Track technology for GNSS support

Advanced receiver technology and proven system design combined

Wireless technologies for flexibility and cable-free convenience

Base and rover communication options to suit any application

An important component of the Connected Survey Site model



The Trimble® R8 GNSS System is a multi-channel, multi-frequency GNSS (Global Navigation Satellite System) receiver, antenna, and data-link radio combined in one compact unit. The Trimble R8 combines advanced receiver technology and a proven system design to provide maximum accuracy and productivity.

#### TRIMBLE R-TRACK TECHNOLOGY FOR COMPREHENSIVE GNSS SUPPORT

Powered by an enhanced RTK engine, Trimble R-Track technology supports the new GPS Modernization signals, L2C and the coming L5<sup>1</sup>. As soon as they are transmitted, these new signals are capable of providing surveying professionals with real field benefits.

With the world's GNSS's in constant development, surveying businesses small and large can be confident that investment in a Trimble GNSS system is protected. Trimble, already proven in GPS technology, will continue to lead the industry in GNSS support.

#### PROVEN SYSTEM DESIGN

From the powerful Trimble field software to the receiver itself, the Trimble R8 GNSS system's overall design has been tried, tested, and proven. As a rover it is rugged, lightweight and cable free for unsurpassed ergonomics in the field. As a base it is flexible and also cable free: use the Trimble R8 as a base or rover according to each job's needs.

The Trimble R8 GNSS system's flexible communication options include:

- An internal 450 MHz radio option for use as a cable-free base station
- An internal GSM/GPRS option for Internet connectivity and use as a rover in a Trimble VRS™ network

Simply choose the Trimble R8 model that best suits your needs.

#### THE ORIGINAL INTEGRATED SURVEYING SOLUTION AND BEYOND

The Trimble R8 GNSS system is designed to support Trimble's original Integrated Surveying™ solution. Combine your GPS and optical data in one job file in powerful Trimble field software such as Trimble Survey Controller™. Transfer the job file seamlessly to your Trimble office software for processing.

The Trimble R8 can also be used as part of a Trimble® IS Rover. Simply add a prism to the rover pole and partner the Trimble R8 with a robotic optical system such as the Trimble® S6 Total Station. This integrated solution enables you to maximize the best of both surveying techniques for even greater efficiency in the field.

**Whenever you're facing a new surveying challenge, your partnership with Trimble places the right tools and techniques, including GNSS technology, at your fingertips. Each Trimble system seamlessly integrates via shared workflows and technologies, making your everyday job site a place where the whole is greater than the sum of its parts: Welcome to the Connected Survey Site.**

1. In addition to GPS Modernization support, Trimble research and development divisions are also already working closely with Galileo teams to ensure delivery of the benefits of this new GNSS in advance of the system being operational.

# TRIMBLE R8 GNSS SYSTEM

## PERFORMANCE SPECIFICATIONS

### Measurements

- Trimble R-Track technology
- Advanced Trimble Maxwell™ Custom Survey GNSS Chip
- High precision multiple correlator for L1, L2, and L5 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, L2, and L5 carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- L1, L2, and L5 Signal-to-Noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- 48 Channels L1 C/A Code, L2C, L1/L2/L5 Full Cycle Carrier, WAAS/EGNOS support<sup>1</sup>

### 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 . . . . . typically <10 seconds  
Initialization reliability<sup>4</sup> . . . . . typically >99.9%

## HARDWARE

### Physical

Dimensions (W×H) . . . . . 19 cm × 11.2 cm (7.5 in × 4.4 in), including connectors  
Weight . . . . . 1.35 kg (2.97 lb) with internal battery, internal radio, standard UHF antenna.  
3.71 kg (8.18 lb) entire RTK rover including batteries, range pole, 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, 2.4 Ah Lithium-Ion battery in internal battery compartment. Power consumption is <3.1 W, in RTK mode with internal radio. Operating times on internal battery:
  - 450 MHz receive only option 5.3 hours, varies with temperature
  - 450 MHz receive/transmit option 3.5 hours, varies with temperature and wireless data rate
  - GSM/GPRS 3.8 hours, varies with temperature
- Certification Class B Part 15, 22, 24 FCC certification, 850/1900 MHz. Class 10 GSM/GPRS 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/GPRS option<sup>7</sup>
- Fully integrated, fully sealed 2.4 GHz communications port (Bluetooth®)<sup>7</sup>
- External GSM/GPRS, Cellphone and CDPD modem support for RTK and VRS operations
- Data storage on 11 MB internal memory: 302 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
- 16 NMEA outputs. GSOF and RT17 outputs. Supports BINEX and smoothed carrier

1 The availability of L2C and the L5 signal is dependent on the US Government.  
2 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended survey practices.  
3 Depends on WAAS/EGNOS system performance.  
4 May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.  
5 Receiver will operate normally to -40 °C. Bluetooth module and internal batteries are rated to -20 °C.  
6 Varies with terrain and operating conditions.  
7 Bluetooth and GSM type approvals are country specific. Contact your local Trimble authorized distribution partner for more information.

Specifications subject to change without notice.



© 2005, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Navigation Limited registered in the United States Patent and Trademark Office and other countries. Integrated Surveying, Maxwell, Trimble Survey Controller, and VRS are trademarks of Trimble Navigation Limited. The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Trimble Navigation Limited is under license. All other trademarks are the property of their respective owners. PN 022543-079B (10/05)



### NORTH AMERICA

Trimble Engineering & Construction Group  
5475 Kellenburger Road  
Dayton, Ohio 45424-1099  
USA  
800-538-7800 (Toll Free)  
+1-937-245-5154 Phone  
+1-937-233-9441 Fax

### EUROPE

Trimble GmbH  
Am Prime Parc 11  
65479 Raunheim  
GERMANY  
+49-6142-2100-0 Phone  
+49-6142-2100-550 Fax

### ASIA-PACIFIC

Trimble Navigation Singapore Pty Limited  
80 Marine Parade Road  
#22-06, Parkway Parade  
Singapore 449269  
SINGAPORE  
+65-6348-2212 Phone  
+65-6348-2232 Fax



[www.trimble.com](http://www.trimble.com)