Trimble R9s
GNSS RECEIVER

Scalable GNSS Modularity
The Trimble® R9s receiver is a GNSS receiver designed to provide Survey professionals with maximum features and flexibility. The Trimble technologies provided in the Trimble R9s receiver are a unique and comprehensive combination.

Trimble CenterPoint® RTX, Trimble xFill™ and Trimble 360 technologies are integrated into this receiver system to provide Surveyors with an outstanding option for their modular requirements.

Options and Upgrades
The Trimble R9s receiver platform allows you to purchase the options you want, when you want them. Whether you just need a simple receiver for post processing, a base receiver for transmitting RTK corrections, rover for mobile positioning, or a full base and rover capability, the Trimble R9s is scalable to meet your needs. You can also upgrade at anytime which means your technology investment can grow as your needs do.

Trimble CenterPoint RTX
Trimble CenterPoint RTX delivers RTK level precision anywhere in the world without the use of a local base station or Trimble VRS Now™ correction service. Survey using satellite delivered, CenterPoint RTX corrections in areas where terrestrial based corrections are not available. When surveying over a great distance in a remote area, such as a pipeline or utility right of way, CenterPoint RTX eliminates the need to continuously move a base station or maintain connection to cell coverage.

Trimble xFill
Leveraging a worldwide network of Trimble GNSS reference stations and satellite datalinks, Trimble xFill seamlessly fills in for gaps in your RTK or VRS connection stream. In combination with a CenterPoint RTX subscription, survey level precisions are maintained beyond five minutes.

Trimble 360 Receiver
Powerful Trimble 360 receiver technology in the Trimble R9s receiver supports signals from all existing and planned GNSS constellations and augmentation systems. With two integrated Trimble Maxwell™ 6 chips, the Trimble R9s offers an unparalleled 440 GNSS channels. Trimble delivers business confidence with a sound GNSS investment for today and long into the future.

Smart for Many Applications
The Trimble R9s receiver’s compact form factor, low power consumption and powerful feature set make for an ideal combination supporting a wide range of high-accuracy positioning applications, including:
- RTK and RTX rover
- Mobile field base station
- Post Processed data collection

The familiar Trimble web user interface provides full receiver status, configuration, data access, as well as a variety of security levels and access controls.

For simple hands-on configuration, the Trimble R9s receiver offers a seven-button, two line display and status information so that performing in-field configuration is practically effortless. Best of all, no handhelds are required to get datalogging started.

The Trimble R9s is available with an internal radio or with no radio. The radio model includes an internal UHF radio for transmitting and receiving RTK corrections. The no radio model can use a high power external radio for transmitting RTK corrections.

The Trimble R9s integrated lithium-ion battery can provide up to 15 hours of continuous power, easily spanning one days work. With stringent environmental specifications, the Trimble R9s is fully rugged to IP67 for dust and water and meets MIL-STD-810F standards for shock, vibration, humidity and temperature, to keep working even in harsh conditions.

Key Features
- Advanced satellite tracking with Trimble 360 receiver technology
- Cutting-edge Trimble HD-GNSS processing engine
- Convenient front panel display and configuration
- Bluetooth®, Ethernet, serial and USB support
- Data logging internally and to external drive
- Multiple data file formats
- Trimble CenterPoint RTX provides RTK level precision anywhere without the need for a base station or VRS network
- Trimble xFill technology provides seamless RTK coverage during connection outages
SATELLITE TRACKING
- Two advanced Trimble Maxwell 6 GNSS chips for a total of 440 channels
- Measure points sooner and faster with Trimble HD-GNSS technology
- Trimble EVEREST™ multipath signal rejection
- Trimble 360 receiver technology
- 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: L1 C/A, L2 C, L2E, L5
  - GLONASS: L1 C/A, L1 E, L2 C/A, L2 P, L3
  - QZSS: L1 C/A, L2 C/A, L2 P, L5
  - BeiDou: B1, B2, B3, B4
  - CenterPoint RTX
  - QZSS, WAAS, EGNOS, GAGAN, MSAS
- Positioning Rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz

POSITIONING PERFORMANCE

Code Differential GNSS Positioning
- Vertical: 0.25 m + 1 ppm RMS
- Horizontal: 0.50 m + 1 ppm RMS
- SBAS differential positioning accuracy: typically <5 m 3DRMS

Static GNSS surveying
- High Accuracy Static:
  - Vertical: 3.0 mm + 0.1 ppm RMS
  - Horizontal: 3.5 mm + 0.4 ppm RMS
- Static and Fast Static:
  - Vertical: 5.0 mm + 0.5 ppm RMS
  - Horizontal: 5.0 mm + 0.5 ppm RMS

Real Time Kinematic surveying
- Single Baseline <30 km:
  - Vertical: 8.0 mm + 1 ppm RMS
  - Horizontal: 15 mm + 1 ppm RMS
- Network RTK:
  - Vertical: 8.0 mm + 0.5 ppm RMS
  - Horizontal: 15.0 mm + 0.5 ppm RMS

RTK start-up time for specified precisions:
- CenterPoint RTX:
  - Horizontal: 2.0 cm RMS
  - Vertical: 5.0 cm RMS
  - RTX convergence time for specified precisions - Worldwide: <15 min
  - RTX convergence time for specified precisions in select regions (Trimble RTX Fast Regions): <1 min
- Trimble xFill:
  - Horizontal: RTK + 10 mm/minute RMS
  - Vertical: RTK + 20 mm/minute RMS

TRIMBLE RTX™ TECHNOLOGY (SATELLITE AND CELLULAR/INTERNET (IP))

CenterPoint RTX:
- Horizontal: 2 cm RMS
- Vertical: 5 cm RMS
- RTX convergence time for specified precisions:
  - Worldwide: <15 min
  - RTX Fast Regions: <1 min

Trimble xFill:
- Horizontal: RTK + 10 mm/minute RMS
- Vertical: RTK + 20 mm/minute RMS

HARDWARE

Physical
- Keyboard and display: Vacuum fluorescent display 16 characters by 2 rows
- Dimmable. On/Off key for one-button startup
- Dimensions (L x W x D): 24 cm x 12 cm x 5 cm (9.4 in x 4.7 in x 1.9 in)
- Weight: 1.65 kg (3.64 lb) receiver with internal battery and radio
- 1.55 kg (3.42 lb) receiver with internal battery and no radio

ENVIRONMENTAL

Operating
- -40 °C to +65 °C (–40 °F to +149 °F)
- Storage: -40 °C to +80 °C (–40 °F to +176 °F)
- Humidity: MIL-STD 810F, Method 507.4
- Waterproof: IP68 for submersion to depth of 1 m (3.3 ft), dustproof
- Pole drop: Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface

ELECTRICAL

Internal
- Integrated internal battery
- 7.2 V, 7800 mAh, Lithium-ion
- Power input on 7-pin D-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 11.5 V
- Power input on the 26-pin D-sub connector is optimized for Trimble Li-ion battery input with a cut-off threshold of 10.5 V

Operation Time on Internal Battery
- Rover: 13 hours
- Base station: Approximately 11 hours; varies with temperature

INPUT/OUTPUT FORMATS

- Correction Formats:
  - CMR, CMRX, RTCM 2.1, RTCM 2.2, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2
- Observables:
  - RT17, RT27, RTCM 3.x, BINEX
  - Position/Status I/O:
    - NMEA-0183 v2.30, GSOF
    - 1 PPS output

COMMUNICATION AND DATA STORAGE

Lemo (Serial)
- 7-pin D-shell Lemo, Serial 1, 3-wire RS-232
  - Modem 1 (Serial): 26-pin D-sub, Serial 1, 3-wire RS-232, using adapter cable
  - Modem 2 (Serial): 26-pin D-sub, Serial 3, 3-wire RS-232, using adapter cable

Integrated radios (optional)
- Fully-integrated, fully-sealed internal 450 MHz (UHF) Tx/Rx
- External GSM/GPRS, cell phone support
- Internet-based correction streams
  - Receiver position update rate: 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz

Capacity
- 52 MB

External Storage
- USB flash drive or external hard drive

CERTIFICATIONS

IEC 60950-1 (Electrical Safety); FCC OET Bulletin 65 (RF Exposure Safety); FCC Part 15, Class B

Contact your local Trimble Authorized Distribution Partner for more information.

© 2016–2019, Trimble Inc. All rights reserved. Trimble, the Globe & Triangle logo, CenterPoint, and xFill are trademarks of Trimble Inc., registered in the United States and in other countries. CMR, CMRX, EVEREST, Maxwell 6, Trimble RTX andxFill are now trademarks of Trimble Inc. The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. All other trademarks are the property of their respective owners.

PN: D2925S-236D (12/19)

www.trimble.com

NORTH AMERICA
Trimble Inc.
10368 Westmoor Dr
Westminster CO 80021
USA

EUROPE
Trimble Germany GmbH
Am Prime Parc 11
65479 Rauheim
GERMANY

ASIA-PACIFIC
Trimble Navigation
Singapore PTE Limited
3 HarbourFront Place
#13-02 HarbourFront Tower Two
Singapore 099254
SINGAPORE

Contact your local Trimble Authorized Distribution Partner for more information.