Trimble R750
GNSS RECEIVER

KEY FEATURES
► Trimble® Maxwell™ 7 GNSS ASIC
► Advanced satellite tracking with Trimble 360 receiver technology
► Trimble ProPoint™ GNSS positioning engine. Engineered for improved accuracy and productivity in challenging GNSS conditions
► Convenient front panel display and configuration
► Wi-Fi and 4G LTE connectivity
► Bluetooth®, Ethernet, serial and USB support
► 8 GB internal memory
► Data logging internally and to external drive
► USB-C PD charging
► Support for RTK level precision Trimble CenterPoint® RTX corrections technology
► Trimble xFill™ correction outage technology

Learn more:
geospatial.trimble.com/trimble-r750
## PERFORMANCE SPECIFICATIONS

### GNSS MEASUREMENTS
- **Advanced Trimble Maxwell 7 Custom GNSS Chips with 336 channels**
- **Trimble EVEREST™ Plus multipath signal rejection**
- **Constellation agnostic, flexible signal tracking and improved positioning** in challenging GNSS environments with Trimble ProPoint GNSS technology
- **High-precision multiple correlator for GNSS pseudorange measurements**
- **Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multipath error, low time domain correlation, and high-dynamic response**
- **Very low noise carrier phase measurements with <1 mm precision in a 1 Hz bandwidth**
- **MSS Band (2-channels):** Trimble CenterPoint RTX correction service and OmniSTAR® by subscription
- **Reduced downtime due to loss of cellular connectivity with Trimble xFill technology**

Signals tracked simultaneously:
- GPS: L1C/A, L1C, L2C, L2E, L5
- SBAS (WAAS, EGNOS, GAGAN, MSAS): L1C/A, L5
- Galileo: E1, E5A, E5B, E5a, BOC, E6
- BeiDou: B1, B1C, B2, B2A, B3
- QZSS: L1C/A, L1S, L1C, L2C, L5, L6
- NavIC (IRNSS): L5
- L-band: CenterPoint RTX

Positioning rates: 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz, 50 Hz

### POSITIONING PERFORMANCE

#### STATIC GNSS SURVEYING
- **High-Precision Static**
  - Horizontal: 3 mm + 0.1 ppm RMS
  - Vertical: 3.5 mm + 0.4 ppm RMS
- **Static and Fast Static**
  - Horizontal: 3 mm + 0.5 ppm RMS
  - Vertical: 5 mm + 0.5 ppm RMS

#### REAL TIME KINEMATIC SURVEYING
- **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

**RTK start-up time for specified precisions**
- 2 to 8 seconds

#### TRIMBLE RTX CORRECTION SERVICES
- **CenterPoint RTX**
  - Horizontal: 2 cm (0.06 ft) RMS
  - Vertical: 5 cm (0.16 ft) RMS
- **RTX convergence time for specified precisions in Trimble RTX Fast regions**
  - < 1 min
- **RTX convergence time for specified precisions in non RTX Fast regions**
  - < 3 min

#### TRIMBLE xFILL
- **Horizonal**: RTX + 10 mm (0.03 ft)/min RMS
- **Vertical**: RTX + 20 mm (0.06 ft)/min RMS

#### TRIMBLE xFILL PREMIUM
- Horizontal: 3 cm RMS
- Vertical: 7 cm RMS

### CODE DIFFERENTIAL GNSS POSITIONING
- **Horizonal**: 0.25 m + 1 ppm RMS
- **Vertical**: 0.50 m + 1 ppm RMS
- **SBAS**: typically <5 m 3D RMS
### HARDWARE

#### PHYSICAL

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyboard and display</td>
<td>Display 32 characters by 4 rows, On/Off key for one-button startup, Escape and Enter keys for menu navigation, 4 arrow keys (up, down, left, right) for option scrolls and data entry</td>
</tr>
<tr>
<td>Dimensions (L x W x D)</td>
<td>269 mm (10.6 in) x 141 mm (5.5 in) x 61 mm (2.4 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>2.05 kg (4.52 lb)</td>
</tr>
</tbody>
</table>

#### Temperature

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>-40 °C to +65 °C (-40 °F to +149 °F)</td>
</tr>
<tr>
<td>Storage</td>
<td>-40 °C to +80 °C (-40 °F to +176 °F)</td>
</tr>
</tbody>
</table>

#### Humidity

93% humidity at 40 °C for a duration of 3 hours (IEC-60945 Method 8.3)

#### Ingress Protection

IP67 for temporary submersion to depth of 1 m (3.3 ft), dustproof

#### Shock and vibration

<table>
<thead>
<tr>
<th>Type</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pole drop</td>
<td>Designed to survive a 1.1 m (3.6 ft) pole drop onto a hard surface</td>
</tr>
<tr>
<td>Shock - Non-operating</td>
<td>To 75 g, 6 ms</td>
</tr>
<tr>
<td>Shock - Operating</td>
<td>To 40 g, 10 ms, saw-tooth</td>
</tr>
<tr>
<td>Vibration</td>
<td>IEC 60945 Method 8.7</td>
</tr>
<tr>
<td></td>
<td>Random 6.2 g RMS operating</td>
</tr>
<tr>
<td></td>
<td>9.8 g RMS 24-2000 Hz for 1 hrs each axis survival</td>
</tr>
</tbody>
</table>

#### ELECTRICAL

**Internal**

- Integrated internal battery 7.26 V, 6700 mAh, Lithium-ion
- Internal battery operates as a UPS during an ext power source failure
- Internal battery will charge from external power source as long as source can support the power drain and is more than 12.5 VDC
- Integrated charging circuitry

**External**

- Power input on 7-pin O-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 11.5 V, Maximum 28 VDC
- Power input on the 26-pin D-sub connector has a cut-off threshold of 10.5 V
- Power source supply (Internal/External) is hot-swap capable in the event of power source removal or cut off
- DC external power input with over-voltage protection
- Receiver automatically turns on when connected to external power

#### Power consumption

<table>
<thead>
<tr>
<th>Mode</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rover</td>
<td>6.6 W in rover mode with internal receive radio</td>
</tr>
<tr>
<td></td>
<td>8.5 W in base mode with internal transmit radio</td>
</tr>
<tr>
<td></td>
<td>5.7 W in rover mode with internal LTE modem</td>
</tr>
<tr>
<td></td>
<td>6.1 W in base mode with internal LTE modem</td>
</tr>
<tr>
<td>Base station</td>
<td>4.8 hours 2.0 W 450 MHz transmit</td>
</tr>
<tr>
<td></td>
<td>5.5 hours 0.5 W 450 MHz transmit</td>
</tr>
<tr>
<td></td>
<td>7.4 hours cellular transmit</td>
</tr>
</tbody>
</table>

#### Operation time on internal battery

<table>
<thead>
<tr>
<th>Mode</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rover</td>
<td>7 hours 450 MHz UHF receive</td>
</tr>
<tr>
<td></td>
<td>8.5 hours cellular receive (Internal or Controller via Bluetooth)</td>
</tr>
<tr>
<td>Base station</td>
<td>4.8 hours 2.0 W 450 MHz transmit</td>
</tr>
<tr>
<td></td>
<td>5.5 hours 0.5 W 450 MHz transmit</td>
</tr>
<tr>
<td></td>
<td>7.4 hours cellular transmit</td>
</tr>
</tbody>
</table>

#### CERTIFICATIONS

**Safety**

IEC 62368-1, IEC 60950-1, IEEE C95.3, UN 38.3, UL 2054

**FCC**

Part 15 Subpart B (Class B device), subpart C Section 15.247, Part 90, Part 22/24/27, part 2, KDB 447498 D01

**Canada**

ICES-003 (Class B), RSS-GEN, RS-102, RSS-247, RSS-130/132/133/139/199.

**EU**


**UKCA**


**ACMA**

AS/NZS 4268, AS/NZS CISPR 32

**Communications**

PTCRB, Bluetooth SIG
### COMMUNICATIONS AND DATA STORAGE

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial 1 (COM1)</strong></td>
<td>7-pin 0S Lemo, Serial 1, 3-wire RS-232</td>
</tr>
<tr>
<td><strong>Serial 2 (COM2)</strong></td>
<td>26-pin D-sub, Serial 2, 5-wire RS232, using adapter cable (Selectale)</td>
</tr>
<tr>
<td><strong>Serial 3 (COM3)</strong></td>
<td>26-pin D-sub, Serial 2, 4-wire RS422, using adapter cable (Selectable)</td>
</tr>
<tr>
<td><strong>Serial 4 (COM4)</strong></td>
<td>26-pin D-sub, Serial 4, 4-wire RS422, using adapter cable (Selectable)</td>
</tr>
<tr>
<td><strong>1PPS (1 Pulse-per-second)</strong></td>
<td>Supported on both Lemo and 26-pin D-sub</td>
</tr>
<tr>
<td><strong>Event In</strong></td>
<td>Supported on Lemo</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>USB v2.0 (Supports USB-PD charging)</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>Through a multi-port adapter</td>
</tr>
<tr>
<td><strong>Wi-Fi</strong></td>
<td>Fully-integrated, fully-sealed 2.4 GHz Bluetooth module</td>
</tr>
<tr>
<td></td>
<td>Simultaneous Access Point (AP) and Client modes</td>
</tr>
<tr>
<td><strong>Cellular</strong></td>
<td>Fully-integrated, fully-sealed LTE compliant module</td>
</tr>
</tbody>
</table>

### NETWORK PROTOCOLS

- **HTTP (web browser GUI)**: HTTP, HTTPS
- **NTP Server**: Yes
- **TCP/IP or UDP**: Yes
- **NTRIP**: NTRIP v1 and v2, Client Server and Caster modes
- **mDNS/UPnP Service discovery**: Dynamic DNS, mDNS/uPnP Service discovery
- **Dynamic DNS**: Yes
- **eMail alerts**: Yes

### INTEGRATED UHF RADIO

- **450 MHz**: Fully-integrated, internal 403-473 MHz, 12.5 kHz or 25 kHz spacing configurable by Trimble
- **Channel spacing (450 MHz)**: -114 dBM (-12 dB SINAD)
- **Transmit Power (450 MHz)**: 0.5 W, 2.0 W (2.0 W available only in certain countries)

### CELLULAR SUPPORT

- **Internet-based correction streams**: (IBSS, VRS, NTRIP)
  - Internal LTE modem
  - Connected smartphone
  - Connected Trimble Controller [Trimble Access™]
- **Remote access**: Using DynDNS and appropriate service

### SUPPORTED DATA FORMATS

- **Correction inputs**: CMRx, CMR+, CMR, RTCM 2.x, RTCM 3
- **Correction outputs**: RTCM 2.x, CMR, CMR+, CMR+, RTCM 3
- **Data outputs**: NMEA 0183, GSOF, 1PPS Time Tags

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1. Challenging GNSS environments are locations where the receiver has sufficient satellite availability to achieve minimum accuracy requirements, but where the signal may be partly obstructed by or reflected off of trees, buildings, and other objects. Actual results may vary based on user's geographic location and atmospheric activity.

2. The current capability in the receivers is based on publicly available information. As such, Trimble cannot guarantee that these receivers will be fully compatible with a future generation of Galileo satellites or signals.

3. 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, and the use of survey techniques that are generally accepted for performing 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.

4. Networked 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. RMS performance based on repeatable in field measurements. Achievable accuracy and initialization time may vary based on type and capability of receiver and antenna, user’s geographic location and atmospheric activity, scintillation levels, satellite constellation and health and availability, level of multipath including obstructions such as large trees and buildings. Average initialization times when using GPS, GLONASS, Galileo, and BeiDou.

7. Accuracies are dependent on GNSS satellite availability, xFill positioning without an xFill Premium subscription ends after 5 minutes of radio downtime. xFill Premium will continue beyond 5 minutes providing the receiver has converged with typical precisions not exceeding 3 cm horizontal, 7 cm vertical. xFill is not available in all regions, check with your local sales representative for more information.

8. RTK refers to the last reported precision before the correction source was lost and xFill started.


10. Operating up to +45 °C ambient when the device is powered by external DC supply and the battery is fully charged or is not being charged.

11. More certification is available upon request.

12. Version is not a supported network in USA.

Specifications subject to change without notice.