DATASHEET

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

Trimble

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[1] 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
	GLONASS: L1C/A, L1P, L2C/A, L2P, L3
	SBAS (WAAS, EGNOS, GAGAN, MSAS): L1C/A, L5
	Galileo: E1, E5A, E5B, E5 AltBOC, E6[2]
	BeiDou: B1, B1C, B2, B2A, B2B, 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[3]

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[4]		
	Horizontal	8 mm + 0.5 ppm RMS
	Vertical	15 mm + 0.5 ppm RMS
RTK start-up time for specified precisions[5]		2 to 8 seconds

TRIMBLE RTX CORRECTION SERVICES

CenterPoint RTX[6]			
	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[7]

	Horizontal	RTK[8] + 10 mm (0.03 ft)/min RMS
	Vertical	RTK[8] + 20 mm (0.06 ft)/min RMS

TRIMBLE xFILL PREMIUM[7]

	Horizontal	3 cm RMS
	Vertical	7 cm RMS

CODE DIFFERENTIAL GNSS POSITIONING

	Horizontal	0.25 m + 1 ppm RMS
	Vertical	0.50 m + 1 ppm RMS
	SBAS[9]	typically <5 m 3DRMS

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HARDWARE		
PHYSICAL		
Keyboard and display		
	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	
Dimensions (L × W × D)	269 mm (10.6 in) x 141 mm (5.5 in) x 61 mm (2.4 in)	
Weight	2.05 kg (4.52 lb)	
Temperature[10]		
	Operating	-40 °C to +65 °C (-40 °F to +149 °F)
	Storage	-40 °C to +80 °C (-40 °F to +176 °F)
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		
	Pole drop	Designed to survive a 1.1 m (3.6 ft) pole drop onto a hard surface
	Shock - Non-operating	To 75 g, 6 ms
	Shock - Operating	To 40 g, 10 ms, saw-tooth
	Vibration	IEC 60945 Method 8.7
		Random 6.2 g RMS operating
		9.8 g RMS 24-2000 Hz for 1 hrs each axis survival
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 0-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	6.6 W in rover mode with internal receive radio	
	8.5 W in base mode with internal transmit radio	
	5.7 W in rover mode with internal LTE modem	
	6.1 W in base mode with internal LTE modem	
Operation time on internal battery		
Rover	7 hours 450 MHz UHF receive	
	8.5 hours cellular receive (Internal or Controller via Bluetooth)	
Base station	4.8 hours 2.0 W 450 MHz transmit	
	5.5 hours 0.5 W 450 MHz transmit	
	7.4 hours cellular transmit	
CERTIFICATIONS[11]		
Safety	IEC 62368-1, IEC 60950-1, IEC 62311, IEEE C95.3, UN 38.3, UL 2054	
FCC	Part 15 Subpart B (Class B device), subpart C Section 15.2.47, 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	RED 2014/53/EU, EN 300 113, EN 300 328, EN 301 908, EN 303 413, EN IEC 62368-1, RoHS Directive 2011/65/EU, WEEE Directive 2012/19/EU.	
UKCA	S.I. 2017 No. 1206, S.I. 2016 No. 1091, S.I. 2016 No. 1101.	
ACMA	AS/NZS 4268, AS/NZS CISPR 32	
Communications	PTCRB, Bluetooth SIG	

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COMMUNICATIONS AND DATA STORAGE		
Serial 1 (COM1)	7-pin 0S Lemo, Serial 1, 3-wire RS-232	
Serial 2 (COM2)	26-pin D-sub, Serial 2, 5-wire RS232, using adaptor cable (Selectable) 26-pin D-sub, Serial 2, 4-wire RS422, using adaptor cable (Selectable)	
Serial 3 (COM3)	26-pin D-sub, Serial 3, 3-wire RS232, using adaptor cable (Selectable)	
Serial 4 (COM4)	26-pin D-sub, Serial 4, 4-wire RS422, using adaptor cable (Selectable)	
1PPS (1 Pulse-per-second)	Supported on both Lemo and 26-pin D-sub	
Event In	Supported on Lemo	
USB	USB v2.0 (Supports USB-PD charging)	
Ethernet	Through a multi-port adaptor	
Wi-Fi	Fully-integrated, fully-sealed 2.4 Wi-Fi module	Simultaneous Access Point (AP) and Client modes
Bluetooth wireless technology	Fully-integrated, fully-sealed 2.4 GHz Bluetooth module[6]	
Cellular[12]	Fully-integrated, fully-sealed LTE compliant module	Bands 1:2:3:4:5:7:8:12:18:19:20:28
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	Yes	
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+, CMRx, RTCM 3	
Data outputs	NMEA 0183, GSOF, 1PPS Time Tags	

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 and/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, 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.
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, GNSS constellation health and availability and 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 solution 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.
9 Depends on SBAS system performance.
10 Operating up to +65 °C ambient when the device is powered by external DC supply and the battery is fully charged or is not being charged.
Operating up to +30 °C ambient when the battery is being charged by an external DC supply
Operating up to +48 °C ambient when the device is powered by a USB-PD battery or charger.
11 More certification is available upon request.
12 Verizon is not a supported network in USA.

Specifications subject to change without notice.

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