Trimble R10 MODEL 2 GNSS SYSTEM

PURE, UNINTERRUPTED SURVEYING

Collect more accurate data faster and easier, no matter what the job or the environment, with the Trimble $^{\circ}$ R10 GNSS system.

Trimble 360 Receiver

Powerful Trimble 360 receiver technology in the Trimble R10 supports signals from all existing and planned GNSS constellations and augmentation systems. With the latest and most advanced Trimble GNSS technology, the Trimble R10 offers an unparalleled 672 GNSS channels to future-proof your investment.

The new Trimble R10 also provides improved interference protection to suppress a variety of intentional and unintentional sources of interference, as well as spoofing, for optimal performance in today's increasingly crowded signal frequency spectrum.

Trimble HD-GNSS Processing Engine

The advanced Trimble HD-GNSS processing engine provides markedly reduced convergence times as well as high position and precision reliability while reducing measurement occupation time. Transcending traditional fixed/ float techniques, it provides a more accurate assessment of error estimates than traditional GNSS technology.

Trimble SurePoint

With Trimble SurePoint[™] technology, an electronic level bubble is displayed on the Trimble controller screen, allowing surveyors to maintain focus where it matters most. Full tilt compensation allows the survey pole to be tilted up to 15° when measuring, allowing the Trimble R10 to capture points that would be inaccessible to other GNSS surveying systems.

Trimble CenterPoint RTX

Trimble CenterPoint[®] RTX delivers RTK level precision anywhere in the world without the use of a local base station or VRS[™] network. Survey using satellite or internet delivered CenterPoint RTX correction services in areas where terrestrial based corrections are not available.

Trimble xFill

Leveraging a worldwide network of Trimble GNSS reference stations and satellite datalinks, Trimble xFill® technology seamlessly fills in for gaps in your RTK or VRS correction stream. Maintain centimeter-level accuracy beyond 5 minutes with a CenterPoint RTX subscription.

Smart, Versatile

The Trimble R10 is a versatile solution, loaded with smart features to support any workflow, all day long:

- Integrated cellular modem to receive VRS corrections or operate as a mobile hotspot
- Wi-Fi to connect to a laptop or smartphone to configure the receiver without a Trimble controller
- Bluetooth to connect to an Android or iOS mobile device running supported apps
- 6 GB internal memory to store raw observations
- Smart lithium-ion battery, with built-in battery status indicator
- Improved power management increases battery life and operating time in the field on average by 33%

Key Features

- Advanced satellite tracking with Trimble 360 receiver technology and latest generation Trimble Custom Survey GNSS ASIC with 672 GNSS channels
- Improved protection against sources of interference and spoofed signals
- Support for Android and iOS platforms
- Cutting-edge Trimble HD-GNSS processing engine
- Precise position capture and full tilt compensation with Trimble SurePoint technology
- Trimble CenterPoint RTX provides RTK level precision worldwide without the need for a base station or VRS network
- Trimble xFill technology provides centimeter-level positioning during connection outages
- Sleek ergonomic design for easier handling



PERFORMANCE SPECIFICA	TIONS		
MEASUREMENTS			
	Measuring points sooner and faster with Trimble HD-GN	Measuring points sooner and faster with Trimble HD-GNSS technology	
	Increased measurement productivity and traceability w	ith Trimble SurePoint electronic level bubble and tilt compensation	
	Worldwide centimeter-level positioning using Trimble CenterPoint RTX satellite or internet delivered correction services		
	Reduced downtime due to loss of radio signal or cellular	connectivity with Trimble xFill technology	
	Advanced Trimble Custom Survey GNSS chips with 672	2 channels	
	Future-proof your investment with Trimble 360 GNSS tr	acking	
	Satellite signals tracked simultaneously	GPS: L1C/A, L2C, L2E, L5 GLONASS: L1C/A, L1P, L2C/A, L2P, L3 SBAS: L1C/A, L5 (For SBAS satellites that support L5) Galileo: E1, E5A, E5B, E5 AltBOC, E6 ¹ BeiDou: B1, B2, B3 QZSS: L1C/A, L1-SAIF, L1C, L2C, L5 NavIC (IRNSS): L5	
	CenterPoint RTX, OmniSTAR® HP, XP, G2, VBS correctio	n services	
	WAAS, EGNOS, GAGAN, MSAS		
	Reliable tracking in challenging environments with advanced Low Noise Amplifier (LNA) with 50 dB signal gain to reduce signal tracking effects caused by high power out-of-band transmitters Additional iridium filtering above 1616 MHz allows antenna to be used as close as 20 m of iridium transmitter		
	0	tenna to be used as close as 100 m of Japanese LTE cell tower	
	Digital Signal Processor (DSP) techniques to detect and		
		AIM) algorithm to detect and reject problem satellite measurement	
	Positioning Rates	1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz	
POSITIONING PERFORMAN	CE ²		
CODE DIFFERENTIAL GNSS POS	SITIONING		
	Horizontal	0.25 m + 1 ppm RMS	
	Vertical	0.50 m + 1 ppm RMS	
	SBAS differential positioning accuracy ³	typically <5 m 3DRMS	
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 SURVEY	ING		
Single Baseline <30 km			
	Horizontal	8 mm + 1 ppm RMS	
	Vertical	15 mm + 1 ppm RMS	
Network RTK⁴			
	Horizontal	8 mm + 0.5 ppm RMS	
	Vertical	15 mm + 0.5 ppm RMS	
RTK start-up time for specified precisions⁵		2 to 8 seconds	
TRIMBLE RTX™ TECHNOLOGY (S	SATELLITE AND CELLULAR/INTERNET (IP))		
CenterPoint RTX ⁶			
	Horizontal	2 cm RMS	
	Vertical	5 cm RMS	
	RTX convergence time for specified precisions - Worldwide	< 15 min	
	RTX QuickStart convergence time for specified precisions	<1 min	
	RTX convergence time for specified precisions in select regions (Trimble RTX Fast Regions)	<1min	
TRIMBLE XFILL ⁷			
TRIMBLE XFILL ⁷	Horizontal	RTK ⁸ + 10 mm/minute RMS	

Trimble R10 MODEL 2 GNSS SYSTEM

Weight 3.57 kg (7.86 lb) items above plus range pole, controller & bracket Temperature® Operating -40 °C1 Mumidity 100%.c -40 °C1 Humidity 100%.c -40 °C1 Ingress protection 100%.c -40 °C1 Shock and vibration (Tested and meets the following environmental standards) Non-opination (Tested and meets the following environmental standards) ELECTRICAL Non-opination (Tested and meets the following environmental standards) Non-opination (Tested and meets the following environmental standards) ELECTRICAL Non-opination (Tested and meets the following environmental standards) Non-opination (Tested and meets the following environmental standards) Operating times on internal battery ¹¹ Vibration Mull-STI Power 11 to 24 V DC external power input with over-voltage protection Rechargeable, removable 74 V.3.7 Ah Lithium-ion smart battery with power consumption is 4.2 W in RTK rover mode with internal radio ¹⁰ Operating times on internal battery ¹¹ 450 MHz receive/transmit option (0.5 W) 6.5 hour 450 MHz receive/transmit option		
Weight 112 kg (2.49 lb) with internal battery, internal radio with UHF antenna 3.57 kg (7.86 lb) items above plus range pole, controller & bracket Temperature® Operating -40 °C1 Storage -40 °C1 Ingress protection IP67 du Shock and vibration (Tested and meets the following environmental standards) Non-op Shock and vibration (Tested and meets the following environmental standards) Non-op ELECTRICAL Power 11 to 24 V DC external power input with over-voltage protection Operating times on internal battery ^{at} 450 MHz receive only option 6.5 hour Operating times on internal battery ^{at} 450 MHz receive/transmit option (0.5 W) 6.0 hou Vibration Gellular receive option 6.5 hour COMMUNICATIONS AND DATA STORAGE Supports data download and high speed communications Fully integrated, sealed 450 MHz receives/transmit oprotocols: 3.0 Kg PP LT Radio modern Fully integrated, sealed 450 MHz weeb and receiver/transmitter with Transhit Power 2.W Range 3.5 G modern, HSDPA 7.2 Mbps (download), GPRS multi- 2.W Range 3.5 G modern, HSDPA 7.2 Mbps (download), GPRS multi- UMTS/HSDPA (WCDMA/FDD) 800/850/900/1900/2100 MHz, Qu GPP LT Bluetooth Fully integrated, fully seale		
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Accessible via Wi-Fi, Serial, USB, and Bluetooth SUPPORTED CONTROLLERS		
SUPPORTED CONTROLLERS		
running supported apps	mble Tablet Rugged PC, Android and iOS devices	
CERTIFICATIONS FCC Part 15 (Class B device), 24, 32; CE Mark; RCM; PTCRB; BT SIG		



DATASHEET

Trimble R10 MODEL 2 GNSS SYSTEM

- 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.
 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 percent and a compation that appropriate for basis in a length basis and a first and a first and a second precise of the percent of the precise of the preci

- Nay be affected by atmospheric conditions, signal multipath, obstructions and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
 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. 7 Accuracies are dependent on GNSS satellite availability. xFill positioning without a Trimble CenterPoint RTX Accuracies are dependent on GNSS satellite availability. Kill positioning without a Trimble CenterPoint RTX subscription ends after 5 minutes of radio downtime. Kill positioning with a CenterPoint RTX subscription will continue beyond 5 minutes providing the Trimble RTX solution has converged, with typical precisions not exceeding 6 cm horizontal. 14 cm vertical or 3 cm horizontal. 7 cm vertical in Trimble RTX fast regions. Kill is not available in all regions, check with your local sales representative for more information.
 RTK refers to the last reported precision before the correction source was lost and xFill started.
 Receiver will operate normally to -40 °C. Internal batteries are rated to -20 °C.
 Tracking CPS, GLONASS and SBAS satellites.
 Yaries with temperature and wireless data rate. When using a receiver and internal radio in the transmit mode, it is recommended that an evergnal 6.4 to re binder battery is used.

- is recommended that an external 6 Ah or higher battery is used.
- 12 Varies with terrain and operating conditions. 13 Bluetooth type approvals are country specific

Specifications subject to change without notice.



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