

Trimble Water R1

Accuracy for everyone

Professional-level GNSS positioning information for almost any device

The Trimble R1 is a rugged, pocket-sized GNSS receiver that provides sub-meter precision to users of any Bluetooth connected mobile device, including smart phones, tablets, or more traditional integrated data collection tools such as a Trimble handheld computer.

Multiple Constellation Support Provides Global Reach

The R1 supports multiple GNSS constellations, including GPS, GLONASS, Galileo, QZSS and BeiDou, to provide a truly global solution. The R1 receiver includes the ability to utilize Satellite Based Augmentation Services (SBAS), Trimble ViewPoint™ RTX or, Virtual Reference Station (VRS) correction sources to suit the location and business requirements - providing accurate GNSS information almost anywhere on earth.

The Trimble ViewPoint RTX* service provides global sub-meter precision. Corrections are broadcast over a mobile Internet connection for users in coverage areas, or optionally over L-band satellite signals for users in remote locations.

Small and Easy to Use

The small size and light weight of the R1 make it easy for the mobile worker to carry without worrying about bulky equipment. The palm-sized device can easily be carried in a pocket or hung on a belt, using the included belt pouch.

The free GNSS Status app allows configuration of real time corrections and provides status information, conforming to device platform standards (iOS, Microsoft, or Android).

IP65 rated environmental protection, military-spec 810G certified ruggedness, and 10+ hour battery life make the R1 ideal for professional outdoor use.

The Trimble R1 GNSS receiver is easy to use. Simply:

- Install the GNSS Status application on the smart phone, tablet, or Trimble device
- Turn on the R1 receiver and establish a Bluetooth pair with your device
- Configure the receiver with a correction source (e.g. SBAS, RTX)
- Collect data now with high precision!



Compatible with

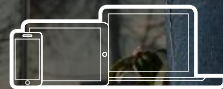


KEY FEATURES



High-sensitivity GNSS Receiver
with on-board processing of all
positioning data

Sub-meter real-time accuracy
Integrated antenna



**Compatible with multiple
devices**

iOS (Apple Certified), Android,
Windows & Windows Mobile
(WEHH)



Rugged

IP65 Environmental Protection
and MIL-STD-810G ruggedness



Connectivity

ViewPoint™ RTX support over
L-band and mobile internet
connection via Bluetooth



GNSS

Sensor type:.....L1/G1 GNSS receiver and antenna
Systems:.....GPS, GLONASS, Galileo, Beidou, QZSS
Channels:.....44-channel, parallel tracking
Correction sources:.....SBAS, ViewPoint RTX, QZSS, VRS SBAS:4-channel,
parallel tracking WAAS, EGNOS, MSAS GAGAN, SBAS ranging
Receiver Protocols:.....NMEA 0183 v4.00, Binary
Update rate:.....1 Hz
Time to first fix:.....45s typically
Reacquisition:.....< 2s
Real time correction protocols:.....CMR,CMR+,CMRx RTCM 2.1, 2.2, 2.3, 3.0,
3.1
SBAS accuracy¹:.....<100 cm
Code DGNSS accuracy (VRS / RTK)¹:.....75cm + 1 ppm HRMS
ViewPoint RTX¹:.....50 cm HRMS
Maximum speed:.....1,850 kph / 1,150 mph / 999 knots
Maximum altitude:.....9,000 m (29,520 ft)

INTERFACES

Port:.....Bluetooth 2.1 + EDR, USB 2.0 (charge/firmware update)
Bluetooth transmission:.....Class 2 (10m), iAP2 and 2.1 EDR
Bluetooth frequency:.....2.400 - 2.485 GHz
Raw measurement data:.....Trimble GSOE, Binary
Communication status LED:.....Bluetooth status, GNSS, Corrected GNSS
Power status LED:.....Charging, charging (full), 3 stage battery status (>50%,
15 - 50%, <15%)

BATTERY AND POWER

Battery Type:.....Integrated Lithium-Ion
Battery Capacity:.....3.7v 15Wh
Battery Life:.....10+ hours
Charging Time:.....5 hours (typical, with supplied charger)
External Antenna Voltage Output:.....3 VDC
External Antenna Input Impedance:.....50 Ohms

ENVIRONMENTAL

Water/Dust Ingress:.....IP65
Operation temperature:.....-20 °C to +60 °C (-4 oF to +140 oF)
Storage temperature:.....30 oC to +70 oC (-22 oF to +158 oF)
Relative humidity:.....95% non-condensing
Shock (non-operating):.....1.2 m (4 ft) to plywood over concrete
Vibration:.....MIL-STD-810G Method 514.5 Procedure I Category 24
Maximum storage altitude:.....12,192m(40,000ft)
Maximum operational altitude:.....9,000 m (29,520 ft)

PHYSICAL

Enclosure Dimensions:.....11.2 x 6.8 x 2.6 cm 4.4x2.7x1in
Weight:.....187g (0.4 lb)
Power Connector:.....Micro-B USB Female
External Antenna Connector:.....SMB Female

INTERNAL ANTENNA

Frequency Range:.....L1, G1, L-Band (1535 MHz - 1610 MHz)

SUPPORTED PLATFORMS

iOS 7, iOS 8, Android (4.1 or greater),
Windows (7 or greater), WEHH (6.5x) .

COMPLIANCE

FCC Part 15 (Class B device), CE Mark, RoHS

ACCESSORIES INCLUDED

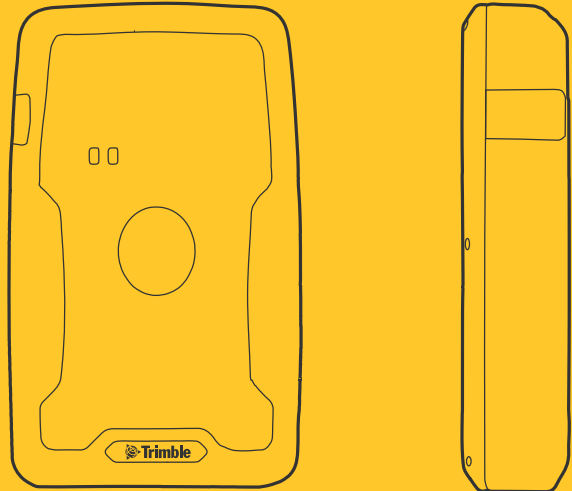
Belt pouch/clip

PURCHASED SEPARATELY

Pole pouch

External antenna Soft Hat for antenna

"Made for iPhone," and "Made for iPad" mean that an electronic accessory has been designed to connect specifically to iPhone or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPhone or iPad may affect wireless performance. iPad, iPhone and Retina are trademarks of Apple Inc., registered in the U.S. and other countries. iPad mini is a trademark of Apple Inc. Accuracy and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended GNSS data collection practices. Specified ViewPoint RTX accuracy is typically achieved within 10 minutes.



Trimble Water R2 GNSS

Versatility in the field. Flexibility for your workflow

Work the way you want with the Trimble R2 GNSS receiver

The Trimble R2 gives you the freedom to select the mobile device of your choice including iOS, Android, and Windows devices. Capable of achieving submeter to centimeter level positioning accuracy the Trimble R2 keeps you working productively in a wide range of water and waste-water utility applications, no matter what your workflow requirements are.

Whether you are capturing GIS field assets, locating buried assets such as pipes and valves, or carrying out precision 3D measurements, the versatile Trimble R2 is purpose-built for utility mapping professionals.

Together with Trimble Unity mobile GIS and workflow software, the R2 is simple to setup and easy-to-use. The Trimble R2 pairs with any Trimble handheld, or consumer smart device across a variety of operating systems and platforms to deliver reliable, high quality, real-time data every time.

A Simple, Rugged System for Everyday Needs

Built to withstand the rigors in the field, the rugged IP65-rated Trimble R2 receiver will work as hard as you do in tough outdoor conditions. Its one-button start up and compact, streamlined form factor make it fast to set up, and it can be operated either mounted on a pole, on a backpack or on a vehicle. The field-swappable battery means all day productivity with no interruptions, and so you stay focused on the job at hand.

Technology to Keep you Productive

The Trimble R2 is capable of tracking the full range of GNSS satellite constellations and augmentation systems, and it comes with an integrated Trimble Maxwell™ 6 chip and 220 channels to provide you with reliable accuracy and positioning performance. You can achieve higher accuracy in real-time with the flexibility to choose correction sources including traditional RTK and VRS networks, as well as Trimble RTX™ correction services delivered by both satellite and Internet.

Trimble has evolved its Floodlight™ satellite shadow reduction technology to ensure the R2 receiver is able to provide reliable, accurate data even in difficult GNSS environments. Equipped with this advanced GNSS technology, you can achieve remarkable improvements to position availability and accuracy when heavy overhead cover, such as tree canopy and buildings, obstructs satellite signals.



Compatible with

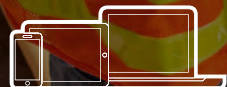


KEY FEATURES



Centimeter accurate positioning

A professional solution for water and waste-water workflows that require sub-meter to centimeter accurate positioning



Compatible with multiple devices

Easily collect data by pairing with devices such as smartphones, tablets or Trimble handhelds



Works with multiple sources

Supports multiple satellite constellations and correction sources for accurate data at any location



Data quality

Trimble Maxwell 6 chip with 220 channels and leading GNSS technology maximizes data quality

CONFIGURATION OPTION

Type:.....Bring Your Own Device external GNSS receiver

MEASUREMENTS

- Advanced Trimble Maxwell 6 custom GNSS chip
- High-precision correlator for L1/L2 pseudo-range measurements
- Unfiltered, unsmoothed pseudo-range data for low noise, low multipath error, low-time domain correlation, and high-dynamic response
- Carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- Trimble EVEREST™ multipath signal rejection
- Proven Trimble low elevation tracking technology
- 220-channel GNSS
- 4-channel SBAS (WAAS/EGNOS/MSAS/GAGAN)

POSITIONING PERFORMANCE⁴

SBAS (WAAS/EGNOS/MSAS/GAGAN)¹

Horizontal accuracy: ±0.50 m (1.6 ft)

Vertical accuracy: ±0.85 m (2.8 ft)

RTX Positioning³

CenterPoint® RTX

Horizontal accuracy:4 cm

Vertical accuracy:9 cm

FieldPoint RTX™: 10 cm Horizontal

RangePoint™ RTX: 30 cm Horizontal

ViewPoint RTX™: 50 cm Horizontal

RTK Positioning²

Horizontal accuracy: 10 mm + 1 ppm RMS (0.033 ft + 1 ppm RMS)

Vertical accuracy: 20 mm + 1 ppm RMS (0.065 ft + 1 ppm RMS)

Network RTK²

Horizontal accuracy: 10 mm + 1 ppm RMS (0.033 ft + 1 ppm RMS)

Vertical accuracy:..... 20 mm + 1 ppm RMS (0.065 ft + 1 ppm RMS)

BATTERY AND POWER

Internal:.....Field replaceable internal battery 7.4 V, 2800 mA-hr, Lithium-ion

External:..... Power input on the Mini-B USB connector, non-charging as per the USB standard 10 W USB adapter

Power consumption:.....4.95 W (VFD 100%), 3.7 W (VFD 12.5%) at 18 V, in rover mode

Operation time on internal battery

Rover: 5 hours; varies with temperature

ENVIRONMENTAL

Temperature

Operating:-20 °C to +55 °C (-4 °F to +131 °F)

Storage: -40 °C to +75 °C (-40 °F to +167 °F)

Humidity:.....100% condensing

Waterproof:..... IP65

Pole drop:.....Designed to survive a 2 m (6.6 ft) drop onto all faces and corners onto concrete (25C)

Shock

Non-operating: To 75 g, 6 ms, saw-tooth

Operating:To 40 g, 10 ms, saw-tooth 100 shock events at 2 Hz rate

Vibration: MIL-STD-810G (Operating), Method 514.6, Procedure I, Category 4, Figure 514.6C-1 (Common Carrier, US Highway

Truck Vibration Exposure) Total Grms levels applied are 1.95 g

MECHANICAL

User interface: LED indicators for receiver status.

On/Off key for one-button startup

Dimensions:.....14.0 cm (5.5 in) diameter x 11.4 cm (4.5 in) height

Weight:..... 1.08 kg (2.38 lb) receiver only

INTERNAL ANTENNA

Frequency Range: L1/L2 (GPS, GLONASS, Galileo, BeiDou, QZSS), MSS (RTX), L1 SBAS

COMMUNICATIONS

USB: 1 USB 2.0 (Type B) device

Wi-Fi: Simultaneous client and access point (AP) modes

Bluetooth wireless technology: Fully-integrated, fully-sealed 2.4 GHz Bluetooth module⁵

Network protocols:.....HTTP (web browser GUI); NTP Server, TCP/IP or UDP; NTRIP v1 and v2

Supported data formats

Correction inputs:..... CMR, CMR+™, CMRx, RTCM 2.x, RTCM 3

Correction outputs: None

Data outputs: NMEA, GSOF

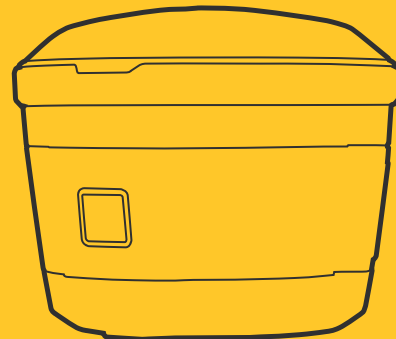
COMPLIANCE

FCC Part 15 Subpart B (Class B Device) and Subpart C; CAN ICES-3(B)/NMB-3(B), RSS-Gen and RSS-210; R&TTE Directive: EN 301 489-1/-3/-5/-17, EN 300 440, EN 300 328, EN 300 330, EN 60950, EN 50371; ACMA Regulatory Compliance Mark (RCM); CE mark compliance: UN ST/SG/AC.10.11/Rev. 3, Amend. 1 (Lithium-ion Battery, charger not included), UN ST/SG/AC. 10/27/ Add. 2 (Lithium-ion Battery, charger not included); C-Tick; WEEE and RoHS compliant.

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1. Depends on SBAS system performance.
2. Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, interference and atmospheric conditions. Always follow recommended practices.
3. CenterPoint RTX accuracy is typically achieved within 5 minutes in select regions, and within 30 minutes worldwide. FieldPoint RTX accuracy is typically achieved within 5 minutes in select regions, and within 15 minutes worldwide. RangePoint RTX and ViewPoint RTX accuracy is typically achieved within 5 minutes worldwide.
4. Receiver accuracy and convergence time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.
5. Bluetooth type approvals are country-specific. For more information, contact your local Trimble office or representative.



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