

## Configuration Option

Base and Rover interchangeability . . . . . Yes, upgradeable to Rover, Base or Rover / Base

Rover position update rate . . . . . 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz

Rover maximum range from base radio . . . . . Unrestricted, typical range 2–5 km (1.2–3 miles) without radio repeater

Rover operation within a VRS™ network . . . . . Yes

Heading and Moving Base operation . . . . . Yes – option

Factory options . . . . . See Receiver Upgrades below

## General

Keyboard and display . . . . . Vacuum Fluorescent display 16 characters by 2 rows. Invertible 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 x W x D) . . . . . 24 cm x 12 cm x 5 cm (9.4 in x 4.7 in x 1.9 in) including connectors

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

## Antenna Options

AG-25 . . . . . L1/L2/L2C GPS, SBAS, and OmniSTAR L1/Beacon, DSM 232 . . . . . Not Supported

Zephyr™ Model 2 . . . . . L1/L2/L2C/L5 GPS, GLONASS, Galileo, BDS, OmniSTAR, SBAS

Zephyr Geodetic™ Model 2 . . . . . L1/L2/L2C/L5 GPS, GLONASS, Galileo, BDS, OmniSTAR, SBAS

Zephyr Model 2 Rugged . . . . . L1/L2/L2C/L5 GPS, GLONASS, Galileo, BDS, OmniSTAR, SBAS

Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™ . . . Refer to Antenna specification

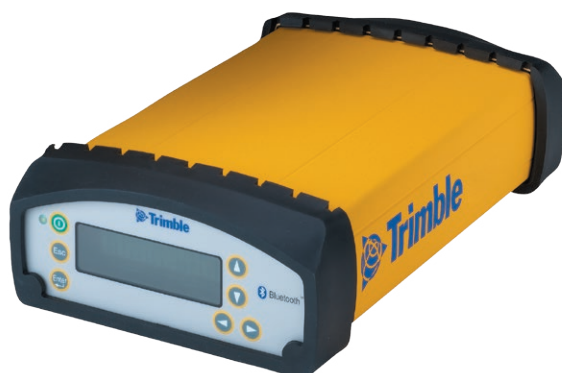
## Temperature

Operating<sup>1</sup> . . . . . –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 . . . IP67 for submersion to depth of 1 m (3.3 ft), dustproof



## Shock and Vibration

Pole drop . . . . . Designed to survive a 1 m (3.3 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 . . . . . Tested to Trimble ATV profile (4.5 g RMS):  
10 Hz to 300 Hz: 0.04 g/Hz<sup>2</sup>  
300 Hz to 1,000 Hz: –6 dB/octave

## Measurements

- Advanced Trimble® Maxwell™ 6 Custom GPS Chips
- 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
- Trimble EVEREST™ multipath signal rejection
- L-Band: OmniSTAR VBS, HP, XP, G2 by subscription
- GPS L1 C/A, L2C, L2E (Trimble method for tracking unencrypted L2P) upgradable to L5. 440 channels
- Upgradeable to GLONASS L1/L2C/A, L2P Full Cycle Carrier
- 4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS)
- QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5

## SBAS (WAAS/EGNOS/MSAS) Positioning<sup>3</sup>

Accuracy . . . . . Better than 5 m 3DRMS (16 ft)

## Code Differential GPS Positioning<sup>2</sup>

Horizontal accuracy . . . . . 0.25 m + 1 ppm RMS (0.8 ft + 1 ppm RMS)

Vertical accuracy . . . . . 0.50 m + 1 ppm RMS (1.6 ft + 1 ppm RMS)

## OmniSTAR® Positioning

VBS service accuracy . . . . . Horizontal <1 m (3.3 ft)

XP service accuracy

Horizontal . . . . . 0.2 m (0.66 ft)

Vertical . . . . . 0.3 m (1.0 ft)

HP service accuracy

Horizontal . . . . . 0.1 m (0.33 ft)

Vertical . . . . . 0.15 m (0.5 ft)

## Real-Time Kinematic (RTK up to 30 km)

### Positioning<sup>2</sup>

Horizontal accuracy . . . . . 8 mm + 1 ppm RMS (0.026 ft + 1 ppm RMS)

Vertical accuracy . . . . . 15 mm + 1 ppm RMS (0.05 ft + 1 ppm RMS)

### Trimble VRS™ Technology<sup>7</sup>

Horizontal accuracy . . . . . 8 mm + 0.5 ppm RMS (0.026 ft + 0.5 ppm)

Vertical accuracy . . . . . 15 mm + 0.5 ppm RMS (0.05 ft + 0.5 ppm)

## Initialization Time

Regular RTK operation with base station . . . . . Single typically less than 8 seconds

Initialization reliability<sup>4</sup> . . . . . >99.9%



## Power

### Internal

- Integrated internal battery 7.2 V, 7800 mA-hr, 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
- 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
  - Power input on the 26-pin D-sub connector is optimized for Trimble lithium-ion battery input with 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 over Ethernet (PoE) . . . . . N/A  
 Power consumption . . 6.0 W in rover mode with internal receive radio  
 8.0 W in base mode with internal transmit radio

## Operation Time on Internal Battery

- Rover . . . . . 13 hours; varies with temperature  
 Base station
- 450 MHz systems . . . . . Approximately 11 hours; varies with temperature<sup>5</sup>
  - 900 MHz systems . . . . . Approximately 9 hours; varies with temperature

## Regulatory Approvals

- FCC: Part 15 Subpart B (Class B Device) and Subpart C, Part 90
- Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- Canadian RSS-310, RSS-210, and RSS-119. Cet appareil est conforme à la norme CNR-310, CNR-210, et CNR-119 du Canada.
- R&TTE Directive: EN 301 489-1/5/17, EN 300 440, EN 300 328, EN 300 113, EN 60950, EN 50371
- ACMA: AS/NZS 4295 approval
- CE mark compliance
- C-tick mark compliance
- UN ST/SG/AC.10.11/Rev. 3, Amend. 1 (Lithium-ion Battery)
- UN ST/SG/AC. 10/27/Add. 2 (Lithium-ion Battery)
- RoHS compliant
- WEEE compliant

## Communications

- Lemo (Serial 1) . . . . . 7-pin 0S Lemo, Serial 1, 3-wire RS-232
- Modem 1 (Serial 2) . . . . . 26-pin D-sub, Serial 2, Full 9-wire RS232, using adaptor cable
- Modem 2 (Serial 3) . . . . . 26-pin D-sub, Serial 3, 3 wire RS-232, using adaptor cable
- 1PPS (1 Pulse-per-second) . . . . . Available
- Ethernet . . . . . Through a multi-port adaptor
- WiFi . . . . . N/A
- Bluetooth wireless technology . . . . . Fully-integrated, fully-sealed 2.4 GHz Bluetooth module<sup>6</sup>
- Integrated radios (optional) . . . . Fully-integrated, fully-sealed internal 403-473 MHz Tx/Rx; Internal 900 MHz Tx/Rx
- Channel spacing (450 MHz) . . . . . 12.5 kHz or 25 kHz spacing available
- Sensitivity (450 MHz) . . . . . -114 dBm (12 dB SINAD)
- 450 MHz output power . . . . . 0.5 W, 2.0 W (2.0 W available only in certain countries)
- 900 MHz output power . . . . . 2.0 W
- Frequency approvals (902-928 MHz) . . . . . USA/Canada
- External GSM/GPRS, cell phone support . . . . Supported for direct-dial and Internet-based correction streams
- Receiver position update rate . . . . . 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz positioning
- Correction data input . . . . .CMR™, CMR+™, CMRx™, RTCM 2.x, RTCM 3 (require Rover upgrade)
- Correction data output . . . . . CMR, CMR+, CMRx, RTCM 2.x, RTCM 3 (require Base upgrade)
- Data outputs . . . . .NMEA, GSOE, 1PPS Time Tags (Marine version)

## Receiver Upgrades

- Precision upgrades . . . . . Precision RTK Base, Rover or Base/Rover, L5
- Feature upgrades . . . . . 2 Watt upgrade for 450 MHz radio

1 Receiver will operate normally to those temperature limits. Internal batteries will operate from -20 °C to +48 °C.  
 2 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended survey practices.  
 3 Depends on SBAS system performance.  
 4 May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.  
 5 If your receiver has the 2.0 W upgrade, you will experience reduced battery performance compared to the 0.5 W solution.  
 6 Bluetooth type approvals are country specific. For more information, contact your local Trimble office or representative.  
 7 Networked RTK PPM values are referenced to the closest physical base station.

Specifications subject to change without notice.



רח' אודם 14, ת.ד. 7042 פ"ת ■ 03-9243352 :טל ■ 03-9243358 :פקס  
[www.hypertech.co.il](http://www.hypertech.co.il) ■ [sales@hypertech.co.il](mailto:sales@hypertech.co.il)



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