

Specifications

Trimble SPS852 Modular GPS Receiver



Receiver Name	SPS852 Modular GPS Receiver
Configuration Option	
Base and Rover interchangeability	Yes
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 ⁷
Factory options	See Receiver Upgrades below
General	
Keyboard and display	Vacuum Fluorescent display 16 characters by 2 rows. Invertable 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)	24 cm × 12 cm × 5 cm (9.4 in × 4.7 in × 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	
GA510	L1/L2/L2C GPS, SBAS, and OmniSTAR
GA530	L1/L2/L2C GPS, SBAS, and OmniSTAR
GA810	GPS, Glonass, OmniSTAR, SBAS, Galileo (optimized for OmniSTAR)
L1/Beacon, DSM 232	Not Supported
Zephyr™ Model 2	L1/L2/L2C/L5 GPS, Glonass, OmniSTAR, SBAS, Galileo
Zephyr Geodetic™ Model 2	L1/L2/L2C/L5 GPS, Glonass, OmniSTAR, SBAS, Galileo
Zephyr Model 2 Rugged	L1/L2/L2C/L5 GPS, Glonass, OmniSTAR, SBAS, Galileo
Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™	Refer to Antenna specification
Temperature	
Operating ¹	-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 ² 300 Hz to 1,000 Hz; –6 dB/octave

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Measurements

Advanced Trimble Maxwell™ 6 Custom GPS Chip
High-precision multiple correlator for L1/L2 pseudo-range 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

Signal-to-noise ratios reported in dB-Hz

Proven Trimble low elevation tracking technology

220-channel L1C/A, L1/L2/L2C. Upgradable to L5 and GLONASS L1/L2C/A, L1/L2P Full Cycle Carrier

Trimble EVEREST™ multipath signal rejection

4-channel SBAS (WAAS/EGNOS/MSAS)

Galileo GIOVE-A and GIOVE-B⁸

SBAS (WAAS/EGNOS/MSAS) Positioning³

Accuracy

Better than 5 m 3DRMS (16 ft)

Code Differential GPS Positioning²

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)

Location RTK Positioning

Horizontal accuracy

Location RTK (10/10) or (10/2) 10 cm + 1 ppm RMS (0.32 ft + 1 ppm)

Vertical accuracy

Location RTK (10/10) 10 cm + 1 ppm RMS (0.32 ft + 1 ppm)

Location RTK (10/2) 2 cm + 1 ppm RMS (0.065 ft + 1 ppm)

Real-Time Kinematic (RTK up to 30 km)

Positioning²

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 VRS⁹

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)

Precise Heading

Heading accuracy

When combined with SPS552H⁷

2 m antenna separation

0.09° RMS

10 m antenna separation

0.05° RMS

Initialization Time

Regular RTK operation with base station

Single/Multi-base

typically less than 10 seconds

Initialization reliability⁴

>99.9%

Power

Internal

Integrated internal battery 7.2 V, 7800 mA-hr, Lithium-ion

Internal battery operates as a UPS in the event of external power source failure

Internal battery will charge from external power source as long as source can support the power drain

Integrated charging circuitry

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Power

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 ⁵
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)	7-pin 0S Lemo, Serial 1, 3-wire RS-232
Modem 1 (Serial)	26-pin D-sub, Serial 2, Full 9-wire RS232, using adaptor cable
Modem 2 (Serial)	26-pin D-sub, Serial 3, 3 wire RS-232, using adaptor cable
1PPS (1 Pulse-per-second)	Available on Marine versions
Ethernet	Through a multi-port adaptor
Bluetooth wireless technology	Fully-integrated, fully-sealed 2.4 GHz Bluetooth module ⁶
Integrated radios (optional)	Fully-integrated, fully-sealed internal 410-470 MHz Tx/Rx; Internal 900 MHz Tx/Rx
Channel spacing (450 MHz)	12.5 kHz or 25 kHz spacing available
450 MHz output power	0.5 W, 2.0 W (2.0 W available only in certain countries)
900 MHz output power	1.0 W
Frequency approvals (900 MHz)	USA/Canada (-91) New Zealand/Australia (-92) Australia (-93)

External GSM/GPRS, cell phone support	Supported for direct-dial and Internet-based correction streams – directly using the clip on SNM910 or using the SCS900 software Cell phone or GSM/GPRS modem inside controller
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Internal MSK Beacon receiver

N/A

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

Correction data output

CMR, CMR+, CMRx, RTCM 2.x, RTCM 3

Data outputs

NMEA, GSOF, 1PPS Time Tags (Marine version)

Receiver Upgrades

Location RTK (10/10) or (10/2)
Precision RTK Base, Rover or Base/Rover
L5, Glonass
28 MB Internal Data Logging option

Notes

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 When receiver is combined with an SPS552H or other suitable SPS receivers.

8 Galileo Commercial Authorization

Receiver technology having Galileo capability to operate in the Galileo frequency bands and using information from the Galileo system for future operational satellites is restricted in the publicly available Galileo open Service Signal-In-Space Interface Control document (GAL OS SIS ICD) and is not currently authorized for commercial use.

Receiver technology that tracks the GIOVE-A and GIOVE-B test satellites uses information that is unrestricted in the public domain in the GIOVE A + B Navigation Signals-In-Space Interface Control document. Receiver technology having developmental GIOVE-A and B capability is intended for signal evaluation and test purposes.

9 Networked RTK PPM values are referenced to the closest physical base station

Specifications subject to change without notice.

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