

Specifications

Trimble SPS855 GNSS Modular Receiver



Receiver Name

SPS855 GNSS Modular Receiver

Configuration Option

Base and Rover interchangeability
 Rover position update rate
 Rover maximum range from base radio
 Rover operation within a VRS™ network
 Heading and Moving Base operation
 Factory options

Yes, upgradeable to Rover, Base or Rover / Base
 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz
 Unrestricted, typical range 2–5 km (1.2–3 miles) without radio repeater
 Yes
 Yes - option⁷
 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
 24 cm x 12 cm x 5 cm (9.4 in x 4.7 in x 1.9 in) including connectors
 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

Dimensions (L x W x D)
 Weight

Antenna Options

GA510 (Discontinued)
 GA530 (Discontinued), Rugged GA530
 GA810
 GA830
 L1/Beacon, DSM 232 (Discontinued)
 Zephyr™ Model 3
 Zephyr Base Station Model 3
 Zephyr Model 3 Rugged
 Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™
 (Discontinued)

L1/L2/L2C GPS, QZSS, SBAS, RTX, and OmniSTAR
 L1/L2/L2C GPS, QZSS, SBAS, RTX, and OmniSTAR
 L1/L2/L2C GPS, QZSS, Glonass, Galileo, BeiDou, RTX, OmniSTAR, SBAS
 Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS (RTX, OmniSTAR), SBAS
 Not Supported
 Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS (RTX, OmniSTAR), SBAS
 Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS (RTX, OmniSTAR), SBAS
 Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS (RTX, OmniSTAR), SBAS
 Refer to Antenna specification

Temperature

Operating¹
 Storage
 Humidity
 Water Ingress Protection

-40 °C to +65 °C (-40 °F to +149 °F)
 -40 °C to +80 °C (-40 °F to +176 °F)
 MIL-STD 810F, Method 507.4
 IP67 for submersion to depth of 1 m (3.3 ft), dustproof

Shock and Vibration

Pole drop
 Shock – Non-operating
 Shock – Operating
 Vibration

Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface
 To 75 g, 6 ms
 To 40 g, 10 ms, saw-tooth
 Tested to Trimble ATV profile (4.5 g RMS): 10 Hz to 300 Hz: 0.04 g/Hz²
 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

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| | <p>Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multipath error, low-time domain correlation, and high-dynamic response</p> <p>Very low noise carrier phase measurements with <1 mm precision in a 1 Hz bandwidth</p> <p>Trimble EVEREST™ multipath signal rejection</p> <p>MSS Band: CenterPoint RTX and OmniSTAR by subscription</p> <p>Trimble xFill for short gaps in correction messages</p> <p>GPS L1 C/A, L2C, L2E (Trimble method for tracking unencrypted L2P) upgradable to L5. 440 channels</p> <p>Upgradable to GLONASS L1/L2C/A, L2P Full Cycle Carrier</p> <p>Upgradable to Galileo: L1 CBOC, E5A, E5B & E5AltBOC⁸</p> <p>Upgradable to BeiDou: B1,B2,B3. Able to track 3rd generation BeiDou signals</p> <p>4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS/GAGAN)</p> <p>QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5</p> |
| SBAS (WAAS/EGNOS/MSAS) Positioning³ | |
| Accuracy | Horizontal ± 0.50m (1.6 ft), Vertical ± 0.85m (2.8 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) |
| CenterPoint RTX Positioning | |
| Accuracy ¹² | Horizontal 2cm (0.06 ft) RMS, Vertical 5cm (0.16 ft) RMS |
| Convergence time for specified precisions ¹² | 5 minutes in select regions, and within 30 minutes worldwide |
| xFill Positioning | |
| xFill accuracy | RTK ¹¹ + 10mm(0.03 ft)/min Horiz. + 20mm(0.06 ft)/min Vert. RMS |
| 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 | Combined with SPS555H ⁷ |
| 2 m antenna separation | 0.09° RMS |
| 10 m antenna separation | 0.05° RMS |
| High Precision Static | |
| Horizontal accuracy | 3 mm + 0.1 ppm RMS (0.01 ft + 0.1 ppm) |
| Vertical accuracy | 3.5 mm + 0.4 ppm RMS (0.011 ft + 0.4 ppm) |
| Initialization Time | |
| Regular RTK operation with base station | Single/Multi-base typically less than 8 seconds |
| Initialization reliability ⁴ | >99.9% |

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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 and is more than 11.5 VDC
Integrated charging circuitry

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, Maximum 28 VDC

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 temperature⁵

220 MHz systems

Approximately 9 hours; varies with temperature

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.

Radio Directive (RED 2014/53/EU)

FCC OET Bulletin 65

ACMA: AS/NZS 4295 approval

CE mark. RCM mark (AS/NZS CISPR 32)

China CRRC - 220 MHz

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

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Communications

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|-----------------------------------|--|
| 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 |
| Serial 4 | |
| 1PPS (1 Pulse-per-second) | Available on Marine versions |
| Ethernet | Through a multi-port adaptor |
| WiFi | N/A |
| Bluetooth wireless technology | Fully-integrated, fully-sealed 2.4 GHz Bluetooth module ⁶ |
| Integrated radios (optional) | Fully-integrated, fully-sealed internal 403-473 MHz; 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) |
| 220 MHz output power (China only) | 0.5 W, 1.0 W |
| 900 MHz output power | 1.0 W |
| Frequency approvals (902-928 MHz) | USA/Canada |

| | |
|---------------------------------------|--|
| External GSM/GPRS, cell phone support | Supported for direct-dial and Internet-based correction streams – directly using the external SNM940 or using the SCS900 software Cell phone or GSM/GPRS modem inside controller or external SNM940 |
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| Internal MSK Beacon receiver | N/A |
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| Receiver position update rate | 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz positioning |
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| 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, GSOFF, 1PPS Time Tags (Marine version) |

Receiver Upgrades

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|---------------------------------|---|
| Precision upgrades | Location RTK (10/2), (10/10), or (30/30) Precision RTK Base, Rover or Base/Rover |
| Signal / Constellation upgrades | L5 (Triple Frequency), GLONASS, GALILEO, BeiDou GNSS ¹⁰ |

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| Feature upgrades | 28 MB Internal Data Logging option. Moving Base and Heading 2 Watt upgrade for 450 MHz radio |
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Notes

1 Receiver will operate normally to those temperature limits. Internal batteries will operate from -20°C to $+48^{\circ}\text{C}$

2 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, interference 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 SPS555H or other suitable SPS receivers. SPS855 must have Moving base option installed

8 Galileo Commercial Authorization

Developed under a Licence of the European Union and the European Space Agency.

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

10 This Trimble SPS Receiver is capable of supporting existing and planned GNSS satellite signals, including GPS, GLONASS, GALILEO, BeiDou and QZSS, and existing and planned augmentations to these GNSS systems.

11 RTK refers to the last reported precision before the correction source was lost and xFill started

12 Receiver accuracy and convergence time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.

Specifications subject to change without notice.

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