Specifications

Trimble SPS855 GNSS Modular Receiver

Receiver Name	**SPS855 GNSS Modular Receiver**
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[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 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	
GA510 (Discontinued)	L1/L2/L2C GPS, QZSS, SBAS, RTX, and OmniSTAR
GA530 (Discontinued), Rugged GA530	L1/L2/L2C GPS, QZSS, SBAS, RTX, and OmniSTAR
GA810	L1/L2/L2C GPS, QZSS, Glonass, Galileo, BeiDou, RTX, OmniSTAR, SBAS
GA830	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS (RTX, OmniSTAR), SBAS
L1/Beacon, DSM 232 (Discontinued)	Not Supported
Zephyr™ Model 3	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS(RTX, OmniSTAR), SBAS
Zephyr Base Station Model 3	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS(RTX, OmniSTAR), SBAS
Zephyr Model 3 Rugged	Triple Frequency GNSS (GPS, QZSS, Glonass, Galileo, BDS), MSS(RTX, OmniSTAR), SBAS
Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™ (Discontinued)	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
Water Ingress Protection	IP67 for submersion to depth of 1 m (3.3 ft), dustproof

Shock and Vibration

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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/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

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

MSS Band: CenterPoint RTX and OmniSTAR by subscription

Trimble xFill for short gaps in correction messages

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

Upgradeable to Galileo: L1 CBOC, E5A, E5B & E5AltBOC[8]

Upgradeable to BeiDou: B1,B2,B3. Able to track 3rd generation BeiDou signals

4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS/GAGAN)

QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5

SBAS (WAAS/EGNOS/MSAS) Positioning[3]

Accuracy	Horizontal ± 0.50m (1.6 ft), Vertical ± 0.85m (2.8 ft)

Code Differential GPS Positioning[2]

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	RTK11 + 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) Positioning[2]

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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[9]	
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%
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 temperature[5]

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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

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
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

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	Cell phone or GSM/GPRS modem inside controller or external SNM940
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 (require Rover upgrade)
Correction data output	CMR, CMR+, CMRx, RTCM 2.x, RTCM 3 (require Base upgrade)
Data outputs	NMEA, GSOF. 1PPS Time Tags (Marine version)

Receiver Upgrades

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]
Feature upgrades	Up to 52 MB Internal Data Logging (32 MB default). Moving Base and Heading
	2 Watt upgrade for 450 MHz radio

Notes

1 Receiver will operate normally to -40°C. The internal battery will operate from −10° C to +50° C. All temperatures listed are ambient.
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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