

Specifications

Trimble SPS985L GNSS Smart Antenna



Receiver Name

SPS985L GNSS Smart Antenna

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. Rover or Base, and upgradeable to 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
N/A
See Receiver Upgrades below

General

Keyboard and display

LED indicators for satellite tracking, radio link status, WiFi and power monitoring
On/Off key for one-button startup
N/A
N/A

Dimensions (L × W × D)

13.9 cm (5.5 in) Diameter × 13 cm (5.1 in) including connectors

Weight

1.55 kg (3.42 lb) receiver only including radio and battery
Complete system (rover including controller and pole) 3.9 kg (8.6 lbs)

Antenna Options

GA510 (Discontinued)
GA530, Rugged GA530
GA810

NA, inbuilt
N/A
N/A

GA830

N/A

L1/Beacon, DSM 232 (Discontinued)
Zephyr™ Model 2

N/A
N/A

Zephyr Geodetic™ Model 2

N/A

Zephyr Model 2 Rugged

N/A

Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™
(Discontinued)

N/A

Temperature

Operating¹
Storage
Humidity
Waterproof

–40 °C to +65 °C (–40 °F to +149 °F)
–40 °C to +75 °C (–40 °F to +167 °F)
100%, condensing
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 2 m (6.6 ft) pole drop onto concrete
To 115 G, 6msec
To 60 g, 10msec, half-sine
Mil-Std-810G, FIG 514.6D-I, Mil-Std-202G, FIG 214-I, Condition D

Measurements

Advanced Trimble Maxwell™ 6 Custom GNSS 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). 440 channels</p> <p>GLONASS L1/L2C/A, L2P Full Cycle Carrier</p> <p>4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS) QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5</p> <p>Horizontal ± 0.50m (1.6 ft), Vertical ± 0.85m (2.8 ft)</p> <p>0.25 m + 1 ppm RMS (0.8 ft + 1 ppm RMS) 0.50 m + 1 ppm RMS (1.6 ft + 1 ppm RMS)</p> <p>Horizontal <1 m (3.3 ft) Horizontal 0.2 m (0.66 ft), Vertical 0.3 m (1.0 ft) Horizontal 0.1 m (0.33 ft), Vertical 0.15 m (0.5 ft)</p> <p>Horizontal 4cm (0.13 ft) RMS, Vertical 9cm (0.30 ft) RMS 5 minutes in select regions, and within 30 minutes worldwide</p> <p>RTK¹¹ + 10mm(0.03 ft)/min Horiz. + 20mm(0.06 ft)/min Vert. RMS</p> <p>N/A N/A</p> <p>8mm+1 ppm RMS (0.03ft+1 ppm RMS) 15mm+1ppm RMS (0.05ft+1ppm RMS)</p> <p>8mm+0.5ppm RMS (0.03ft+0.5 ppm RMS) 15mm+0.5ppm RMS (0.05ft+0.5ppm RMS)</p> <p>N/A</p> <p>N/A N/A</p> <p>Single/Multi-base typically less than 8 seconds >99.9%</p>
SBAS (WAAS/EGNOS/MSAS) Positioning³	
Accuracy	
Code Differential GPS Positioning²	
Horizontal accuracy	
Vertical accuracy	
OmniSTAR Positioning	
VBS service accuracy	
XP service accuracy	
HP service accuracy	
CenterPoint RTX Positioning	
Accuracy ¹²	
Convergence time for specified precisions ¹²	
xFill Positioning	
xFill accuracy	
Location RTK Positioning	
Horizontal accuracy	
Vertical accuracy	
Real-Time Kinematic (RTK up to 30 km) Positioning²	
Horizontal accuracy	
Vertical accuracy	
Trimble VRS⁹	
Horizontal accuracy	
Vertical accuracy	
Precise Heading	
Heading accuracy	
2 m antenna separation	
10 m antenna separation	
High Precision Static	
Horizontal accuracy	
Vertical accuracy	
Initialization Time	
Regular RTK operation with base station	
Initialization reliability ⁴	

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Power

Internal

Rechargeable, removable 7.4 V, 2.6 Ah Lithium-ion battery in internal battery compartment
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

Power

External

External power input with over-voltage protection on Port 1 (7-pin Lemo 2-key).
Minimum 10.8 V, shutdown optimized for 12V lead acid battery operation

Power over Ethernet (PoE)

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 on Port 1 (Lemo)
Receiver automatically turns on when connected to external power
N/A

Power consumption

3.7 W in rover mode with internal receive radio
5.2 W in base mode with internal 0.5 W transmit radio

Operation Time on Internal Battery

Rover

4 hours; varies with temperature

Base station

450 MHz systems

Approximately 3 hours; varies with temperature⁵

220 MHz systems

N/A

900 MHz systems

Approximately 3 hours; varies with temperature

Regulatory Approvals

FCC Part 15 Subpart B (Class B Device), Part 15.247, 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

CE mark compliance
C-tick mark compliance

RoHS compliant
WEEE compliant

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Communications

Lemo (Serial 1)	7-pin Lemo 2-key, Power Input, USB
Modem 1 (Serial 2)	N/A
Modem 2 (Serial 3)	N/A
Serial 4	
1PPS (1 Pulse-per-second)	N/A
Ethernet	N/A
WiFi	Client or Access Point. Receive corrections
Bluetooth wireless technology	Fully-integrated, fully-sealed 2.4 GHz Bluetooth module ⁶
Integrated radios (optional)	Fully-integrated, fully-sealed internal 403-473 MHz Rx; Internal 900 MHz 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, upgradeable to 2W
220 MHz output power (China only)	N/A
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 using the SCS900 software
Cell phone or GSM/GPRS modem inside controller

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

N/A

Receiver Upgrades

Precision upgrades

Precision Base or Rover

Signal / Constellation upgrades

Feature upgrades

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.

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

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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