

Specifications

Trimble SPS985 GNSS Smart Antenna



Receiver Name

SPS985 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, 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

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

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
GA530
GA810

L1/Beacon, DSM 232
Zephyr™ Model 2
Zephyr Geodetic™ Model 2
Zephyr Model 2 Rugged
Zephyr, Zephyr Geodetic, Z-Plus, Micro-Centered™

NA, inbuilt
N/A
N/A

N/A
N/A
N/A
N/A
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

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Measurements

	<p>Advanced Trimble Maxwell™ 6 Custom GNSS chips</p> <p>High-precision multiple correlator for GNSS pseudorange measurements</p> <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>L-Band: OmniSTAR VBS, HP, XP, G2 by subscription</p> <p>GPS L1 C/A, L2C, L2E (Trimble method for tracking unencrypted L2P) upgradable to L5. 440 channels</p> <p>Upgradeable to GLONASS L1/L2C/A, L1/L2P Full Cycle Carrier</p> <p>Upgradeable to Galileo: L1 CBOC, E5A, E5B & E5AltBOC⁸</p> <p>Upgradeable to BeiDou: B1, B2</p> <p>4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS)</p> <p>QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5</p>
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)
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	When combined with SPS985 ⁷
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 8 seconds
Initialization reliability ⁴	>99.9%
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

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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 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 over Ethernet (PoE)

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

4.6 hours; varies with temperature

Base station

450 MHz systems

Approximately 3.5 hours; varies with temperature⁵

900 MHz systems

Approximately 3.5 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
Japan MIC

RoHS compliant
WEEE compliant

Communications

Lemo (Serial)

7-pin Lemo 2-key, Power Input, USB

Modem 1 (Serial)

N/A

Modem 2 (Serial)

N/A

1PPS (1 Pulse-per-second)

N/A

Ethernet

N/A

WiFi

Client or Access Point. Receive or transmit corrections

Bluetooth wireless technology

Fully-integrated, fully-sealed 2.4 GHz Bluetooth module⁶

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

Sensitivity (450 MHz)

-114 dBm (12 dB SINAD)

450 MHz output power

0.5 W, upgradeable to 2W

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

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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 (require Rover upgrade)

Correction data output

CMR, CMR+, CMRx, RTCM 2.x, RTCM 3 (require Base upgrade)

Data outputs

NMEA, GSOF

Receiver Upgrades

Location RTK (10/2), (10/10), or (30/30)
Precision RTK Rover, Base or Rover/Base, xFill
L5, GLONASS, GALILEO, BeiDou GNSS¹⁰
1 GB Internal Data Logging. Moving Base and Heading
2 Watt upgrade for 450 MHz radio

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 SPS985 with Moving Base installed or other suitable SPS receivers.

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

Specifications subject to change without notice.

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