



Trimble SPS986

GNSS SMART ANTENNA

The ultra-tough Trimble® SPS986 GNSS Smart Antenna offers unmatched reliability for positioning. Ideal for use in a variety of applications, the SPS986 can serve as a GNSS rover system or as a base station for other GNSS operations including machine control.

The most rugged receiver Trimble has ever built, the SPS is faster and scalable, has a longer battery life and incorporates the latest technology to make ag positioning and surveying easier, safer and more productive.

Trimble ProPoint Technology

Trimble ProPoint GNSS technology uses all available signals to provide survey-grade positioning in many areas where other GNSS systems either can't provide a solution at all or produce unreliable error estimates.

Trimble xFill Technology

Trimble xFill™ technology expands site productivity by allowing short excursions into locations where GNSS corrections were not previously available.

Tilt Compensation

Using the Trimble SPS986 GNSS Smart Antenna and Trimble Siteworks Positioning Software it is now possible to capture accurate points while standing, walking or driving the site in a vehicle, while the receiver is not level.

Full GNSS tilt compensation makes Siteworks easier to learn for beginners and saves significant time for more experienced surveyors. Tilt compensation in vehicle mode is designed to capture higher accuracy measurements on steeper slopes from a moving vehicle, and more accurate volume measurements to save time and money on material planning.

- ▶ Easily and safely survey hard to reach areas (corners, traffic lanes, utility flowlines)
- ▶ Faster measurements
- ▶ More efficient stake-outs
- ▶ No magnetic interference

Mount the SPS986 to a vehicle and do site topos, check as-builts, and road center lines in even the roughest site conditions. The SPS986 can withstand high vibration scenarios without interruption or fear of damage.

It has never been so easy to get measuring. Initial site work and topo can even be done base-station-free using satellite-delivered GNSS corrections to the rover.

Applications

With Trimble Siteworks Software, you can:

- ▶ Determine cut/fill on a range pole, utility vehicle or truck
- ▶ Record tilt data when taking measurements
- ▶ Stake out site or road features, utilities, daylight lines and side slopes
- ▶ Measure progress and calculate material stockpile volumes
- ▶ Carry out as-built measurements, grade checks and thickness checks

Using your smartphone, quickly check the health and status of the receiver with the Trimble GNSS Status App. For a more in-depth look, Trimble Web UI can be accessed over Wi-Fi. Setting a new standard for rugged reliability, the SPS986 GNSS Smart Antenna keeps your crews working, not wasting time with GNSS maintenance.

Reliable Base Station

The SPS986 can also serve as a powerful site base station, using integrated Wi-Fi or optional radio to send and receive corrections for rover or machine control work. It is the easiest base station on the market. The SPS986 will automatically establish a connection with the machine radio or GNSS rover and begin transmitting corrections—just put it on the tripod, switch it on and go.

Key Features

- ▶ Compact design with unprecedented strength and durability, easy to use and virtually indestructible
- ▶ Tilt compensation makes positioning easier and more accessible for new users, while saving time and money for experienced users
- ▶ Real-Time Kinematic (RTK) corrections for higher accuracy site measurements
- ▶ Uses more GNSS constellations, satellites and signals to increase productivity and uptime, greater accuracy in difficult conditions (under tree canopy or near buildings)
- ▶ Great flexibility - easily go from carrying case to range pole, tripod, t-bar or vehicle with a single click so you can get going faster.



TRIMBLE SPS986 GNSS SMART ANTENNA

Technical Specifications

Configuration Option		xFill Positioning	
Base and Rover interchangeability	Yes, upgradeable to Rover, Base or Rover / Base	xFill accuracy	RTK ¹¹ + 10mm(0.03 ft)/min Horiz. + 20mm(0.06 ft)/min Vert. RMS
Rover position update rate	1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz	Location RTK Positioning	
Rover maximum range from base radio	Unrestricted, typical range 2–5 km (1.2–3 miles) without radio repeater	Horizontal accuracy	Location RTK (10/10) or (10/2) 10 cm + 1 ppm RMS (0.32 ft + 1 ppm)
Rover operation within a VRS™ network	Yes	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)
Heading and Moving Base operation	Yes - option ⁷	Real-Time Kinematic (RTK up to 30 km) Positioning²	
Factory options	See Receiver Upgrades below	Horizontal accuracy	8 mm + 1 ppm RMS (0.026 ft + 1 ppm RMS)
General		Vertical accuracy	15 mm + 1 ppm RMS (0.05 ft + 1 ppm RMS)
Keyboard and display	LED indicators for satellite tracking, radio link status, WiFi and power monitoring On/Off key for one-button startup	Trimble VRS9	
Dimensions (L × W × D)	13.9 cm (5.5 in) Diameter × 13 cm (5.1 in) including connectors	Horizontal accuracy	8 mm + 0.5 ppm RMS (0.026 ft + 0.5 ppm)
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)	Vertical accuracy	15 mm + 0.5 ppm RMS (0.05 ft + 0.5 ppm)
Temperature		Precise Heading	
Operating ¹	–40 °C to +65 °C (–40 °F to +149 °F)	Heading accuracy	When combined with SPS9867
Storage	–40 °C to +75 °C (–40 °F to +167 °F)	2 m antenna separation	0.09°RMS
Humidity	100%, condensing	10 m antenna separation	0.05°RMS
Waterproof	IP67 for submersion to depth of 1 m (3.3 ft), dustproof	High Precision Static	
Shock and Vibration		Horizontal accuracy	3 mm + 0.1 ppm RMS (0.01 ft + 0.1 ppm)
Pole drop	Designed to survive a 2 m (6.6 ft) pole drop onto concrete	Vertical accuracy	3.5 mm + 0.4 ppm RMS (0.011 ft + 0.4 ppm)
Shock – Non-operating	75 Gs at 6msec	Initialization Time	
Shock – Operating	40 Gs at 10msec	Regular RTK operation with base station	Single/Multi-base typically less than 8 seconds
Vibration	Mil-Std-810G, FIG 514.6E-1 Cat 24, Mil-Std-202G, FIG 214-1, Condition D	Initialization reliability ⁴	>99.9%
Measurements		Power	
- Advanced Trimble Technology Custom GNSS 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) upgradeable to L5, 672 channels - Upgradeable to GLONASS L1/L2C/A, L2P Full Cycle Carrier - Upgrade to Galileo L1 CBOC, E5A, E5B & E5AltBOC8 and BeiDou B1, B2 - Integrated MEM's sensor for eBubble 4-channel SBAS L1 C/A, L5 (WAAS/EGNOS/MSAS/GAGAN) - QZSS: L1 C/A, L1C, L1 SAIF, L2C, L5		Internal	- Rechargeable, removable 7.4 V, 2.8 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 and is more than 11.8 VDC - Integrated charging circuitry
		External	- External power input with over-voltage protection on Port 1 (7-pin Lemo 2-key). Minimum 10.8 V, Maximum 28 VDC, 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
		Power over Ethernet (PoE)	N/A
		Power consumption	- 3.2 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	
SBAS (WAAS/EGNOS/MSAS) Positioning³		Rover	5.5 hours; varies with temperature
Accuracy	Horizontal ± 0.50m (1.6 ft), Vertical ± 0.85m (2.8 ft)	Base station	
Code Differential GPS Positioning²		450 MHz systems	Approximately 4 hours; varies with temperature ⁵
Horizontal accuracy	0.25 m + 1 ppm RMS (0.8 ft + 1 ppm RMS)	900 MHz systems	Approximately 4 hours; varies with temperature
Vertical accuracy	0.50 m + 1 ppm RMS (1.6 ft + 1 ppm RMS)		
Regulatory Approvals			
FCC Part 15 Subpart B (Class B Device), Part 15.247, Part 90			
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 4cm (0.13 ft) RMS, Vertical 9cm (0.30 ft) RM		
Convergence time for specified precisions ¹²	5 minutes in select regions, and within 30 minutes worldwide		

- 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, 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 is transmitting 2.0 W (450 MHz), 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 SPS986 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.
- 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.



Contact your Trimble Ag Reseller today

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