

January 2007

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Trimble SPS880 Extreme Smart GPS Antenna

Highly portable, flexible GPS receiver

The Trimble® SPS880 Extreme Smart GPS Antenna is the simple solution to all your site measurement and stakeout applications. The ability to receive L2C code, L5 carrier signal, and GLONASS means you have a future-proof receiver, able to utilize new satellites as they are launched. The rugged, smart antenna includes an integrated radio, GPS receiver, GPS antenna, and battery in a single, lightweight housing designed for maximum portability, quick setup, and optimal flexibility.

The SPS880 Extreme Smart GPS Antenna offers contractors an easy-to-use, wide area measurement system for a variety of site preparation and grade checking applications. It can be used either as a rover for site measurement and stakeout or as a base station to support site measurement and machine control operations. As a base station, the SPS880 Extreme takes little setup time and only requires a single keystroke each day to start up.

Standard system features

- Small, lightweight design – 1.35 kg (2.97 lb) (integrated radio, GPS receiver, GPS antenna, and battery); 3.71 kg (8.18 lbs) complete system weight (rover including controller and rod)
- The quick setup, high mobility base or rover receiver, is ideal for large jobsites as a rover, and for working on multiple jobsites on a daily or weekly basis
- 72-channel L1/L2/L2C/L5/GLONASS receiver
- Performs all site measurement and stakeout operations within the operating range of the radio
- Internal, removable, smart Lithium-ion battery provides up to 5.5 hours GPS rover operation per battery
- Bluetooth® wireless technology for cable free, no hassle base or rover operation¹
- Simple keypad with on/off key and LED indicators for power, radio, and satellite tracking



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- 20 Hz update rate, which allows measurement from a moving chassis, for example mounted on a site supervisor’s vehicle for increased efficiency on large jobsites⁶

SPS880 Extreme Smart GPS Antenna features

- Full base and rover interchangeability
- Unrestricted range
- Operates within a VRS™ network for conventional base station-free rover capability
- Integrated transmit radio with unlimited range
- Receives L2C code, L5 carrier signal⁷, and GLONASS⁸ for future proof investment as well as for improved satellite coverage in harsh GPS environments
- AutoBase functionality enables startup with a single button push upon subsequent visits to a site

SPS880 Extreme Smart GPS Antenna Specifications

General characteristics	Specifications
Keyboard and display	On/Off key for one button start up
LED indicators	For satellite tracking, radio link reception and power monitoring
Receiver type	Fully-integrated “Smart” GPS antenna

Physical characteristics	Specifications
Dimensions (W × H)	19 cm (7.5 in) × 11.2 cm (4.4 in) including connectors
Weight	1.35 kg (2.97 lb) receiver only including internal battery 3.71 kg (8.18 lbs) complete system weight (rover including controller and pole)
Temperature ²	
Operating	–40 °C to +65 °C (–40 °F to +149 °F)
Storage	–40 °C to +75 °C (–40 °F to +167 °F)
Humidity	100%, condensing
Waterproof	IPX7 for submersion to depth of 1 m (3.3 ft)
Shock and vibration	Tested and meets the following environmental standards:
Shock – non-operating	Designed to survive a 2 m (6.6 ft) pole drop onto concrete
Shock – operating	To 40 G, 10 msec, sawtooth
Vibration	MIL-STD-810F, FIG.514.5C-1

Performance characteristics	Specifications
Measurements	<ul style="list-style-type: none"> • Advanced Trimble Maxwell™ 5 Custom GPS chip • Trimble R-Track™ technology for tracking the new L2C Civil Signal, L5 Signal for GPS modernization, and GLONASS • High-precision multiple correlator for L1, L2, and L5 pseudo-range measurements • Unfiltered, unsmoothed pseudo-range measurements data for low noise, low multipath error, low time domain correlation and high dynamic response • Very low noise L1, L2, and L5 carrier phase measurements with

Performance characteristics	Specifications
	<p><1 mm precision in a 1 Hz bandwidth</p> <ul style="list-style-type: none"> • L1, L2, and L5 signal-to-noise ratios reported in dB-Hz • Proven Trimble low elevation tracking technology • 72 channels L1 C/A Code, L2C, L5C, L1/L2/L5 GLONASS Full Cycle Carrier • SBAS (WAAS/EGNOS/MSAS)
Code differential GPS positioning ³ Horizontal accuracy Vertical accuracy	<p>±(0.25 m + 1 ppm) RMS ±(0.5 m + 1 ppm) RMS</p>
SBAS ⁴ Horizontal accuracy Vertical accuracy	<p>Typically <1 m (3.28 ft) Typically <5 m (16.40 ft)</p>
Real-Time Kinematic (RTK) positioning ³ Horizontal accuracy Vertical accuracy	<p>±(10 mm + 1 ppm) RMS, ±(0.032 ft + 1 ppm) RMS ±(20 mm + 1 ppm) RMS, ±(0.065 ft + 1 ppm) RMS</p>
Initialization time Regular RTK operation with base station	<p>Single/Multi-base minimum 10 seconds + 0.5 times baseline length in km, up to 30 km</p>
RTK operation with Scalable GPS infrastructure Initialization reliability ⁵	<p>Typically <30 seconds anywhere within coverage area (Max and Extreme options only) >99.9%</p>

Electrical characteristics	Specifications
Power	11 to 28 V DC external power input with over-voltage protection on Port 1 (7-pin Lemo)
Battery	Rechargeable, removable 7.4 V, 2.4 Ah Lithium-ion battery in internal battery compartment.
Power consumption	<2.5 W, in RTK mode with internal radio
Rover operation times on internal battery 450 MHz systems 900 MHz systems	<p>Receive only 5.5 hours; varies with temperature Receive only 5.5 hours; varies with temperature</p>
Base station operation times on internal battery 450 MHz systems 900 MHz systems	<p>Approximately 4.2 hours; varies with temperature Approximately 5.5 hours; varies with temperature</p>
Certification	Class B Part 15, 22, 24 FCC certification, Canadian FCC, CE mark approval and C-tick approval

Communications characteristics	Specifications
Communications	Port 1 – 3-wire RS-232 (7-pin 0-Shell Lemo) Port 2 – Full RS-232 (9-pin D-sub) Fully-integrated, fully-sealed 2.4 GHz Bluetooth ⁵
Integrated radios	Fully-integrated, fully-sealed internal 450 MHz, Tx/Rx Fully-integrated, fully-sealed internal 900 MHz, Rx only
450 MHz transmitter radio power output	0.5 W
Receiver position update rate	1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz positioning
Correction data input	CMR, CMR+, RTCM 2.0–RTCM 2.3, RTCM 3.0
Correction data output	CMR, CMR+, RTCM 2.0–2.3
Data outputs	NMEA, GSOE, RT17 and BINEX (optional upgrade)

450 MHz integrated radio capabilities	Base Station Receiver	Rover Receiver
SPS880 Extreme	Transmit and Receive	Transmit and Receive

900 MHz integrated radio capabilities	Base Station Receiver	Rover Receiver
SPS880 Extreme	Receive only, use external Transmit radio	Receive only

Base/Rover operations capability

Receiver	Specifications
SPS880 Extreme	Base and Rover interchangeability

Measured vector baseline length (Rover operational range from base station)

Receiver	Specifications
SPS880 Extreme	Unrestricted (limited to radio operational range). Typically 3 km – 5 km without repeater radio.

Rover operation within a VRS network using cell phone dial up

Receiver	Specifications
SPS880 Extreme	Enabled

Specifications are subject to change without notice.

- Bluetooth type approvals are country-specific. Contact your local Trimble office or representative for more information.
- Receiver will operate normally to -40°C. Bluetooth module and internal batteries are rated to -20°C.
- Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended practices.
- Depends on SBAS system performance.
- May be affected by atmospheric conditions, signal multi-path and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
- Not approved at this time for use under heavy shock/vib situations such as on an ATV.
- The availability of the L2C code and L5 signals on GPS satellites are dependent on the US government GPS satellite modernization program.
- The availability of the GLONASS constellation is dependent on the Russian government.