Trimble® SPS751 and SPS851 Modular GPS Receivers are ideal for semi-permanent or permanent base station setups, construction rover applications as well as marine based applications.

Now heavy and highway contractors have the ideal base station to support grade checking, site measurement and stakeout. The receivers can be utilized as a rover with a controller in a site supervisors vehicle or on a pole.

**Modular Design Means Flexible Set Up**
The Trimble SPS751 and SPS851 receivers combine the radio and GPS receiver in a single housing. This allows contractors to secure the majority of their investment inside a site trailer or carrying case, protected from the elements and theft, leaving only the antennas outside. The antennas can now be located clear of obstructions and provide maximum radio coverage on site.

**A future-proof investment**
Available in a range of options to suit your construction application and performance requirements, versatile Trimble GPS receivers are a future-proof investment.

The SPS851 Modular GPS Receiver is designed to receive current and future satellite signals. This receiver supports GPS modernization through support of L2C code and can be upgraded to receive GLONASS or L5 GPS signals, protecting your investment well into the future.

The SPS751 is available in three models to suit specific budget and application requirements. All models support GPS modernization through support of L2C code. The SPS751 Basic Rover and Basic Base can be upgraded to the SPS751 Max giving you flexibility to swap between base and rover functionality as work demands.

**Get Connected, Stay Connected**
The SPS751 and SPS851 each contain a built-in powerful web server component that enables increased operational efficiency and flexibility. Using this Internet-enabled base station allows for remote configuration and monitoring, eliminating the need for time-consuming and costly visits to the base station to set up each day or diagnose issues that may arise. Internet base stations can provide corrections to multiple jobsites in the same vicinity or provide corrections to cell phone enabled rovers in areas of radio blackout.

Larger site operations or system integrators can configure and monitor the quality of the system or utilize its multiple modes of operation by accessing the internal web server.

**Improved GPS Performance**
The new Trimble RTK engine improves performance under tree canopy and reduces initialization time after loss of lock, delivering high performance in a variety of measurement conditions. Combined with integrated 450 MHz UHF or license-free 900 MHz radio communications options these features make the receivers easier to use, faster to setup and more productive during measurement and stakeout.
UNIQUE PERFORMANCE SPECIFICATIONS

SPS751 Basic Modular GPS Receiver
- Base and Rover interchangeability: No
- Base only operation: SPS751 Basic Base
- Rover only operation: SPS751 Basic Rover
- Rover position update rate: 1 Hz, 2 Hz
- Rover maximum range from base: 2.4 km (1.5 mile)
- Rover operation within a VRS™ network: No

SPS751 Max Modular GPS Receiver
- Base and Rover interchangeability: Yes
- Rover position update rate: 1 Hz, 2 Hz, 5 Hz, 10 Hz
- Rover maximum range from base: Unrestricted
- Typical range 2 – 5 km (1.2 – 3 miles) without radio repeater
- Rover operation within a VRS network: Yes

SPS851 Modular GPS Receiver
- Upgrade options: L5 GPS Full Cycle Carrier
- Base and Rover Interchangeability: Yes
- Rover position update rate: 1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz
- Rover maximum range from base: Unrestricted
- Typical range 2 – 5 km (1.2 – 3 miles) without radio repeater
- Rover operation within a VRS network: Yes

COMMON PERFORMANCE SPECIFICATIONS

General
- Keyboard and display: VFD display 16 characters by 2 rows
- On/Off key for one button start up
- Escape and Enter key for menu navigation
- 4 arrow keys (up, down, left, right)
- for option scrolls and data entry

Dimensions (L x W x D): 24 cm x 12 cm x 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
- L1/L2/GPS, GLONASS and OmniSTAR operation: Zephyr™ Model 2
- L1/L2/GPS and GLONASS Base Station: Zephyr Geodetic™ Model 2
- Supports legacy Trimble antennas: Zephyr, Zephyr Geodetic, Z+
- Micro-Centered™, Choke ring
- Rugged Micro-Centered GPS L1/L2

Temperature
- Operating: -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
- Waterproof: IP67 for submersion to depth of 1 m (3.3 ft), dustproof

Shock and vibration
- 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 gRMS): 10 Hz-300 Hz: 0.04 g2/Hz; 300 Hz-1,000 Hz: –6 dB/octave

Measurements
- Advanced Trimble Maxwell™ 5 Custom GPS chip
- High-precision multiple correlator for L1/L2 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 carrier phase measurements with <1 mm precision in a 1 Hz bandwidth
- L1/L2 signal-to-noise ratios reported in dB-Hz
- Proven Trimble low elevation tracking technology
- 72-channel L1 C/A code, L1/L2/L2C Full Cycle Carrier. Upgradable to GLONASS L1/L2 Full Cycle Carrier.
- Trimble EVEREST™ multipath signal rejection
- 4-channel SBAS (WAAS/EGNOS/MSAS)

Code differential GPS positioning
- 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)

SBAS (WAAS/EGNOS/MSAS) positioning
- Horizontal accuracy: Typically <1 m (3.3 ft)
- Vertical accuracy: Typically <5 m (16.4 ft)

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)

Real-Time Kinematic (RTK) positioning
- Horizontal accuracy: 10 mm + 1 ppm RMS (0.032 ft + 1 ppm RMS)
- Vertical accuracy: 20 mm + 1 ppm RMS (0.065 ft + 1 ppm RMS)

Initialization time
- Regular RTK operation with base station: Single/Multi-base minimum 10 seconds + 0.5 times baseline length in km, up to 30 km
- RTK operation with Scalable GPS infrastructure: Typically <30 seconds anywhere within coverage area (SPS751 Max and SPS851 only)

Initialization reliability: >99.9%
Power

Internal
• Integrated internal battery 7.2 V, 7800 mAh, Lithium-ion
• Internal battery operates as a UPS in the event of external power source failure
• Internal battery will charge from external power source when input voltage is >15 V
• Integrated charging circuitry

External
• Power input on 7-pin D-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 10.5 V
• Power input on the 26-pin D-sub connector is optimized for Trimble Lithium-ion battery input with a cut-off threshold of 9.5 V
• Power source supply (Internal/External) is hot-swap capable in the event of power source removal or cut off
• 9.5 V to 28 V DC external power input with over-voltage protection
• Receiver will automatically turn on when connected to external power

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 (SPS851 with GPS and GLONASS): 900 MHz systems .......................... Approximately 11 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
• Industry Canada: ICES-003 (Class B Device), RSS-210, RSS-Gen, RSS-310, RSS-119
• R&TTE Directive: EN 301 489-1/-5/-17, EN 300 440, EN 300 328, EN 300 113, EN 60950, EN 50371
• ACMA: AS/NZS 4295 approval
• CE mark compliance
• C-tick mark compliance
• 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 (excludes those with an internal 900 MHz radio)
• WEEE compliant

Communications
Port 1 (7 pin 05 Lemo) ...................................... 3 wire RS-232
Serial 1 .......................................................... Full 9 wire RS-232
Port 2 (26 pin D-sub) ........................................ Full 9 wire RS-232
Serial 3 .......................................................... Full 9 wire RS-232
1PPS (pulse per second) .................................... via adapter cable
USB (On the Go) ............................................ via multi-port adapter
Ethernet ....................................................... via multi-port adapter
Bluetooth ....................................................... Fully-integrated, fully-sealed
2.4 GHz Bluetooth module
Integrated radios (optional) ................................ Fully integrated, fully sealed
internal 450 MHz (UHF) Tx/Rx;
internal 900 MHz Tx/Rx
Channel spacing (450 MHz) .......................... 12.5 kHz or 25 kHz
spacing available
450 MHz output power .................................. 0.5 W, 2.0 W
(2.0 W available only in certain countries)
900 MHz output power .................................. 1.0 W
(2.0 W available only in certain countries)
Frequency approvals (900 MHz) ................. USA/Canada (-10)
New Zealand/Australia (-20)
Australia (+30)

External GSM/GPRS, cell phone support ........... Supported for direct dial and
Internet-based correction streams
Cellular phone or GMS/GPRS modem inside TSC2 controller
Receiver position update rate ........................... 1 Hz, 2 Hz, 5 Hz,
10 and 20 Hz positioning
Correction data input ................................. CMR™, CMR+, RTCM 3, RTCM 2.x
Correction data output ................................ CMR/CMR+,
RTCM 2.x
Data outputs ............................................... NMEA, GSOF, 1PPS Time Tags

Receiver options and upgrades
SPS751 Basic to SPS751 Max ......................... Adds Base/Rover and VRS capability,
high update rate and unrestricted range
SPS851 GLONASS upgrade ......................... Uses GLONASS L1/L2 satellite signals
SPS851 L5 upgrade ........................................... Capable of tracking GPS modernization L5 signals
Internal Data Logging .................................... 2 MB for SPS751 Max
28 MB for SPS851

1 Receiver will operate normally to -40°C. Internal batteries are rated to -20°C.
2 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry,
and atmospheric conditions. Always follow recommended 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.

Specifications subject to change without notice.