**KEY FEATURES**

- Highly flexible base or rover receiver for construction site measurement applications and system integrators
- Separate antennas and receiver for maximum radio coverage and security on the job site
- Integrated license-free 900 MHz or 450 MHz UHF radio for base and rover tasks
- Rapid daily base station setup with a single button push using AutoBase™ technology
- Internet enabled base station via Ethernet or GSM/GPRS phone
- Supports GPS and L2C Modernized GPS signals
- Trimble SPS851 can be upgraded with GLONASS or L5 signals
- Integrated battery that also acts as a UPS power supply
- 1PPS output for time synchronization with other devices

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**FLEXIBLE GPS RECEIVER FOR PRECISE POSITIONING**

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.

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**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.
TRIMBLE SPS751 AND SPS851 MODULAR GPS RECEIVERS

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
GLONASS L1/L2 .................................................................. Yes
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 ......................................................... LCD 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
1.55 kg (3.42 lb) receiver
with internal battery and radio
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 gRMS; 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 L11 C/A code, L1/L2 Full Cycle Carrier: Upgradeable 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 <10 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
- 9.3 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 (SPS551 with GPS and GLONASS):
- 450 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
- RTTE 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
- TÜV 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 OS Lemo)
- Serial 1 ............................................. 3 wire RS-232
- Port 2 (26-pin D-sub)
- Serial 2 ............................................. Full 9 wire RS-232
- Serial 3 ............................................. 3 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
- 450 MHz output power ......................... 0.5 W, 2.0 W
- 900 MHz output power ......................... 1.0 W
- 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 connection

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, GSO, 1PPS Time Tags

Receiver options and upgrades

SPS751 Basic to SPS751 Max ................. Adds Base/Receiver 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

Specifications subject to change without notice.

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NORTH AMERICA
Trimble Construction Division
5475 Kellogg Road
Dayton, OH 45424
USA
800-538-7800 (Toll free)
+1-513-245-5154 Phone
+1-513-233-3441 Fax

EUROPE
Trimble GmbH
Am Prime Parc 11
65479 Raunheim
GERMANY
+49-6142-2100-0 Phone
+49-6142-2100-550 Fax

ASIA-PACIFIC
Trimble Navigation
Singapore PTE Ltd.
80 Marine Parade Road, H22-06
Parkway Parade
Singapore, 449269
SINGAPORE
+65 6348 2212 Phone
+65 6348 2232 Fax

www.trimble.com

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