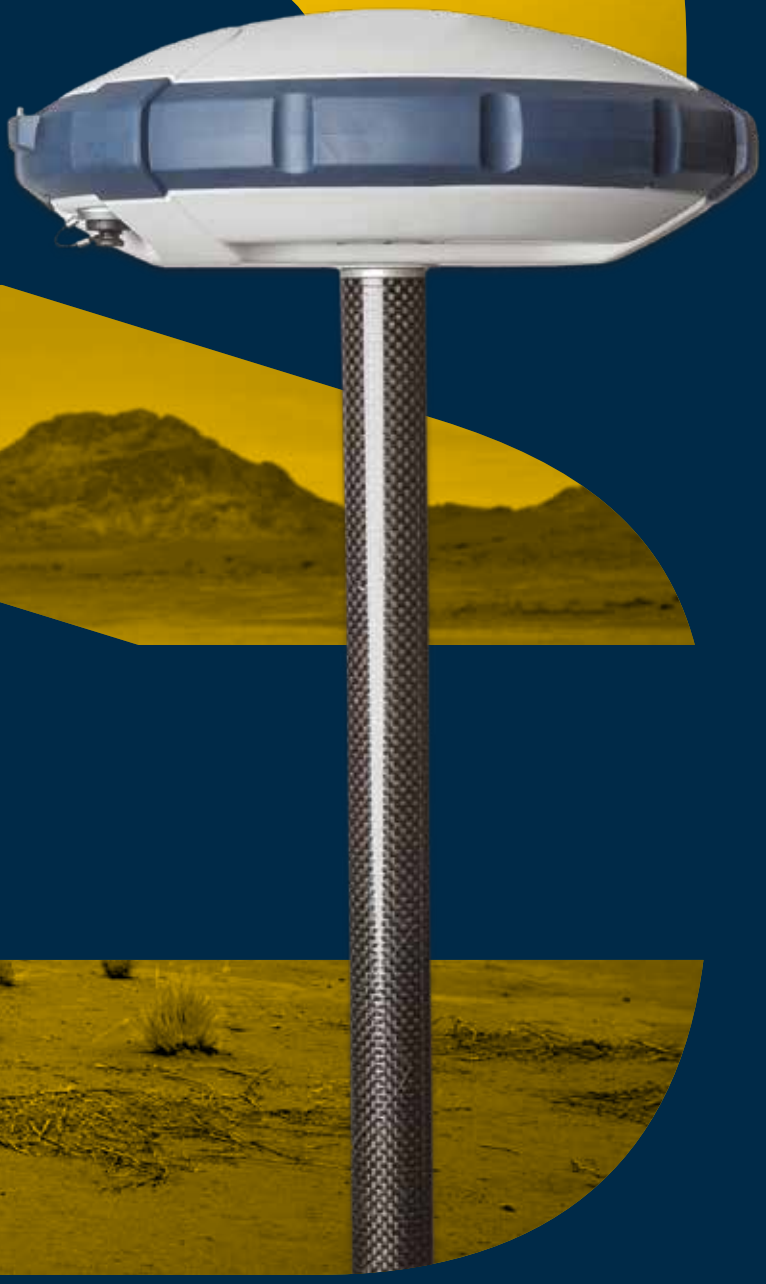
SPECTRA®
GEOSPATIAL

SP60®



www.spectrageospatial.com

SIMPLY VERSATILE

SP60
GNSS RECEIVER

The Spectra Geospatial SP60 is a new generation GNSS receiver offering a high level of flexibility to cover any demand from GIS all the way up to sophisticated RTK and Trimble RTX™ capable solutions.

Combining the unique all-signals-tracking and processing Z-Blade GNSS-centric technology and L-band capability for satellite-delivered Trimble RTX correction services, the SP60 receiver provides the most reliable measurements and the highest possible accuracy under any conditions anywhere in the world.

KEY FEATURES:

- Extended scalability
- Z-Blade GNSS-centric technology
- 240-channel 6G ASIC
- Anti-theft technology
- Long Range Bluetooth
- Trimble RTX correction services

Patented inside-the-rod mounted UHF antenna design

Truly scalable and versatile

Extremely scalable and versatile, SP60 can respond to any type of GIS or surveying job starting with two GIS configurations, to a simple L1 GPS only post-processing solution, all the way up to dual-frequency GNSS network RTK rover. Also, the L-band capable GNSS antenna delivers Trimble RTX positioning in those places where an RTK network is not available. Finally, optional UHF transmit radio or embedded Long Range Bluetooth enable SP60 receivers to be used as a base and rover system. This extended flexibility allows surveyors to start with a simple solution, and through hardware and firmware upgrades, adapt the SP60 to more complex survey jobs.

Unique 6G GNSS-centric technology

Exclusive Z-Blade processing technology running on a next-generation Spectra Geospatial 240-channel 6G ASIC fully utilizes all 6 GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. The unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system; this allows SP60 to operate in GPS-only, GLONASS-only or BeiDou-only mode if needed. Thanks to this unique GNSS technology, SP60 is optimized for tracking and processing signals even in very challenging environments.

OPEN TO 3RD PARTY CONTROLLERS AND APPLICATIONS

With SP60, consumer devices are no longer limited by their internal GPS and can reach mapping grade or even survey-grade accuracy levels. This solution is also open to any application needing to get an accurate position. The SPace application makes integration immediate and straightforward. With SP60 it is now possible to have accurate positions on an Android consumer smart phone or tablet.

TRIMBLE RTX CAPABLE

Trimble RTX correction services offer a wide range of accuracy requirements ranging from better than 4 cm accuracies, up to sub-meter accuracies, without the need of an RTK base station or cellular coverage. Trimble RTX is available via both satellite and cellular/IP delivery. The premium service, CenterPoint® RTX is the most accurate satellite-delivered correction service available today. The SP60, empowered with an L-band GNSS antenna, supports the entire suite of Trimble RTX correction services via satellite delivery and is ideal for operating in areas where there is no network available and a local base and rover set-up is not possible. With the SP60 GNSS receiver and a Trimble RTX correction, achieve high-accuracy positioning nearly anywhere in the world.

BUILT-IN LONG RANGE BLUETOOTH

SP60 integrates powerful Long Range Bluetooth capabilities opening new operating modes for surveyors. Now, the Bluetooth wireless communication can be used as an alternative radio link between base and rover over a few hundred meters range making this solution very attractive for small site surveys. Easier and simpler than UHF radio, and without any need for a license, this can be a very efficient way to quickly setup a short range base rover solution.

THE SPECTRA GEOSPATIAL EXPERIENCE

Survey Pro or FAST Survey field software provides easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. The Survey Office Software provides a complete office suite for data processing and Central cloud computing solution offers a simple to use pathway to data exchange and management. When combined with the most advanced and rugged field data collectors from Spectra Geospatial, SP60 is a very powerful and complete solution.

ANTI-THEFT TECHNOLOGY

Unique anti-theft technology secures SP60 when installed as a field base station in remote or public places and can detect if the product is disturbed, moved or stolen. This technology allows the surveyor to lock the device to a specific location and make it unusable if the device is moved elsewhere. In this case, SP60 will generate an audio alert and block the device from further use. SP60's anti-theft technology provides surveyors with remote security and peace of mind.

ADVANCED DESIGN

In addition to the cutting-edge L-band capable GNSS antenna, and unique Long Range Bluetooth module, the SP60 GNSS receiver design incorporates a number of innovative ideas and enhancements. It features a rugged, impact-resistant housing, easily withstanding 2m pole drops. Waterproof to IP67 standard, it can handle the toughest outdoor conditions. The patented UHF antenna, set inside the fiberglass rod, extends the range of RTK radio performance and provides protection at the same time. All of these enhancements make the design of SP60 GNSS receiver truly unique and powerful.

SPECTRA GEOSPATIAL

SP60

GNSS CHARACTERISTICS
- 240 GNSS channels
  - GPS L1C/A, L1P(Y), L2P(Y), L2C, L1C
  - GLONASS L1C/A, L2C/A, L1P, L2P
  - QZSS L1C/A, L2C, L1Z, L1C
  - BeiDou B1, B2, B1C
  - Galileo E1, E5b
  - SBAS L1C/A
  - L-band MSS
- Support for Trimble RTX™ real-time correction services
- Patented Z-Blade technology for optimal GNSS performance
  - Full utilization of signals from all 6 GNSS systems (GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS)
  - Enhanced GNSS-centric algorithm: fully-independent GNSS signal tracking and optimal data processing, including GPS-only, GLONASS-only or BeiDou-only solution (autonomous to full RTK)
  - Fast Search engine for quick acquisition and re-acquisition of GNSS signals
- Patented SBAS ranging for using SBAS code & carrier observations and orbits in RTK processing
- Patented Strobe™ Correlator for reduced GNSS multi-path
- Up to 10 Hz real-time raw data (code & carrier and position output)
- Supported data formats: ATOM, CMR, CMR+, RTCM 2.1, 2.3, 3.0, 3.1 and 3.2 (including MSM), CMRx and sCMRx (rover only)
- NMEA 0183 messages output

REAL-TIME ACCURACY (RMS) [1][2]

SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Horizontal: < 50 cm
- Vertical: < 85 cm

Real-Time DGPS position
- Horizontal: 25 cm + 1 ppm
- Vertical: 50 cm + 1 ppm

Real-Time Kinematic position (RTK)
- Horizontal: 8 mm + 1 ppm
- Vertical: 15 mm + 1 ppm

GIS accuracy modes
- 30/30
  - Horizontal: 30 cm
  - Vertical: 30 cm
- 7/2 (firmware option needed)
  - Horizontal: 7 cm
  - Vertical: 2 cm

REAL-TIME PERFORMANCE [3]
- Instant-RTK® Initialization
  - Typically 2 sec for baselines < 20 km
  - Up to 99.9% reliability
- RTK initialization range: over 40 km

POST-PROCESSING ACCURACY (RMS) [1][2]

Static & Fast static
- Horizontal: 3 mm + 0.5 ppm
- Vertical: 5 mm + 0.5 ppm

High-Precision Static [4]
- Horizontal: 3 mm + 0.1 ppm
- Vertical: 3.5 mm + 0.4 ppm

Post-Processed Kinematic (PPK)
- Horizontal: 8 mm + 1 ppm
- Vertical: 15 mm + 1 ppm

DATA LOGGING CHARACTERISTICS

Recording interval
- 0.1 - 999 seconds

PHYSICAL CHARACTERISTICS

Size
- 21 x 21 x 7 cm (8.3 x 8.3 x 2.3 in)

Weight
- 930 g (2.08 lb)

User interface
- Five LEDs for Power, Tracking, Bluetooth, Recording, Radio operations

I/O interface
- RS232 serial link
- USB 2.0/UART and USB OTG
- Bluetooth 2.1 + EDR. Long range: Class 1 (17dbm)

Memory
- 256 MB internal memory NAND Flash
- Over a month of 15 sec. raw GNSS data from 14 satellites

Operation
- RTK rover & base
- RTK network rover: VRS, FKP, MAC
- NTRIP, Direct IP
- Post-processing
- Trimble RTX (satellite and cellular/IP)

Environmental characteristics
- Operating temperature: -40° to +41°C / (-40° to +105°F) [5][6]
- Storage temperature: -40° to +85°C / (-40° to +185°F) [7]
- Humidity: 100% condensing
- IP67 waterproof, sealed against sand and dust
- Drop: 2m pole drop on concrete
- Shocks: MIL STD 810 (fig 516.5-10) (01/2000)
- Vibration : MIL-STD-810F (fig 514.5C-17) (01/2000)

Power characteristics
- Li-Ion battery, 7.4 V, 2600 mAh
- Battery life:
  10 hrs (GNSS On, UHF Rx Off)
  8 hrs (GNSS On, UHF Rx On)
- External DC power: 9-28 V

Standard system components
- SP60 receiver
- Li-Ion battery
- Dual battery charger, power supply and international power cord kit
- Tape measure (3.6 m / 12 ft)
- 7 cm pole extension
- USB to mini-USB cable
- 2 year warranty

Optional system components
- SP60 UHF Kit (410-470 MHz 2W TRx)
- SP60 Field Power Kit
- SP60 Office Power Kit
- Data collectors
  - Ranger 3
  - T41
  - MobileMapper 50
- Field software
  - Survey Mobile (Android)
  - SPace control app for 3rd party devices (Android)
  - Survey Pro
  - FAST Survey

1. Accuracy and TTFF specifications may be affected by atmospheric conditions, signal multipath, satellite geometry and correctionsavailability and quality.
2. Performance values assume a minimum of five satellites, following the procedures recommended in the product manual. High multipath areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.
3. Receiver initialization time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.
4. Long baselines, long occupations, precise ephemeris used
5. Internal batteries are rated from -20°C to +48°C
6. At very high temperatures UHF module should not be used in the transmitter mode. With UHF transmitter on radiating 2W of RF power, the operating temperature is limited to + 41°C (+105°F).
7. Without batteries. Batteries can be stored up to +70°C.
8. RMS performance based on repeatable in field measurements. Achievable accuracy and initialization time may vary based on type and capability of receiver and antenna, user's geographic location and atmospheric activity, scintillation levels, GNSS constellation health and availability, and level of multipath including obstructions such as large trees and buildings.

TRIMBLE RTX INITIALIZATION [8]

	Horizontal/Vertical (RMS)	Initialization Std/Fast	GNSS
CenterPoint® RTX	< 4 cm / < 9 cm	< 30 min / < 5 min	L1 + L2
FieldPoint RTX™	10 cm / -	<15 min / < 5 min	L1 + L2
ViewPoint RTX™	< 50 cm / -	< 5 min / -	L1

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