SPECTRA® GEOSPATIAL



SP85 GNSS RECEIVER

The Spectra Geospatial® SP85 is a next generation GNSS receiver that combines decades of GNSS RTK technology with revolutionary new GNSS processing. Featuring the new 600-channel "76" chipset combined with the patented Z-Blade™ technology, the SP85 system is optimized for tracking and processing signals from all GNSS constellations in challenging environments. With unmatched connectivity in the GNSS receiver market, the SP85 offers a unique combination of integrated 3.5G cellular, WiFi and UHF communications with SMS, email and anti-theft technology. These powerful capabilities, packaged in an ultra-rugged housing and patented antenna design, make SP85 an extremely versatile turnkey solution that can be used with unlimited operation time because of the SP85's hot-swappable, dual battery setup.







KEY FEATURES

- Patented Z-Blade[™] technology
- · 600-channel 7G ASIC
- Hot-swappable batteries
- Internal TxRx UHF radio
- · L-band satellite capable GNSS antenna
- 3.5G cellular modem
- · Built-in WiFi communication
- SMS and e-mail alerts
- Anti-theft technology
- Backup RTK
- RTK bridgeeLevel technology
- Trimble® RTX correction services
- Up to 20 Hz update rate









UNIQUE 7G GNSS-CENTRIC TECHNOLOGY

Patented Z-Blade processing technology running on a next generation Spectra Geospatial 600-channel 7G ASIC fully utilizes all 6 GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS and SBAS, in addition to MSS corrections delivered via L-band. Unlike GPS-centric technology which requires a minimum number of GPS satellites for GNSS processing, Z-Blade™ unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system; this allows SP85 to operate in GPS-only, GLONASS-only, Galileo-only or BeiDou-only mode if needed. In addition, SP85 supports RTCM 3.2 Multiple Signal Messages (MSM), a standardized definition for broadcasting all GNSS signals from space, regardless of their constellation. This protects the surveyor's investment well into the future by providing superior performance and improved productivity as new signals become available.

SMS AND EMAIL MESSAGING

SP85 has a unique combination of communication technologies including an integrated 3.5G GSM/UMTS modem, Bluetooth and WiFi connectivity, and optional internal UHF transmit radio, providing unmatched connectivity for the user. The cellular modem may be used for SMS (text message) and e-mail alerts as well as regular Internet or VRS connectivity. SMS (text messages) can be used to monitor and configure the receiver. Likewise, SP85 can use all available RTK correction sources and connect to the Internet from the field using WiFi hotspots, where available. The internal UHF transmit/receive radio allows for quick and easy setup as a local base station. This saves time and increases the surveyor's efficiency, allowing for more productive workflows.

ANTI-THEFT PROTECTION

A unique anti-theft technology secures the SP85 receiver when installed as a field base station in remote or public areas and can detect if the receiver has been 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, the SP85 receiver will generate an audio alert and show an alert message on its display. Additionally, a SMS or e-mail will be sent to the surveyor's mobile phone or computer and provides the receiver's current coordinates to allow tracking of its position and follow for a quick recovery of the receiver. SP85's anti-theft technology provides surveyors with remote security and peace of mind.

TRIMBLE RTX CAPABLE

Trimble RTX correction services offer a wide range of accuracy requirements ranging from better than 2 cm accuracies, up to submeter accuracies, without the need of an RTK base station. Trimble RTX is available for the SP85 GNSS receiver via L-band satellite in regions without cellular infrastructure, and also via cellular/IP delivery. The premium service, CenterPoint® RTX is the most accurate satellite-delivered correction service available today. With the SP85 GNSS receiver and a Trimble RTX correction service, achieve high-accuracy positioning nearly anywhere in the world - even in areas without cellular service, providing truly unmatched connectivity in the field.

THE MOST POWERFUL TOOL FOR RELIABLE FIELD USE

The SP85's rugged housing, created by Spectra Geospatial's engineering design lab in France, incorporates a host of practical innovations. Dual hot-swappable batteries can be easily exchanged in the field as a one hand operation for an interruption-free working day, ensuring surveyors remain productive until the job is done. The impact-resistant fiberglass reinforced casing, designed to withstand 2 metre pole drops and waterproof to IP67, ensures that SP85 can handle the toughest outdoor conditions. The patented UHF antenna, set inside the rugged carbon fiber rod, extends the range of RTK radio performance at the same time as armoring protection. The sunlight-readable display offers instant access to key information like the number of satellites, RTK status, battery charge and available memory. With eLevel technology, the user is able to focus in one place when leveling and measuring as well as automatically store measurements when the receiver is level. These powerful design features combine to make SP85 the most capable, most reliable GNSS receiver, backed by a comprehensive standard 2 year warranty.



THE SPECTRA GEOSPATIAL EXPERIENCE

With the most advanced and rugged field data collectors from Spectra Geospatial, surveyors get maximum productivity and reliability every day. Spectra Geospatial Survey Pro software is specifically tailored for the SP85 GNSS receiver providing easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. Spectra Geospatial Survey Office Software provides a complete office suite for post-processing GNSS data and adjusting survey data, as well as exporting the processed results directly back to the field or to engineering design software packages. Combined with Spectra Geospatial field and office software, SP85 is an extremely powerful and complete solution.





GNSS CHARACTERISTICS

- 600 GNSS channels
 GPS L1C/A, L1P(Y), L2C, L2P(Y), L5
 - GLONASS L1C/A, L1P, L2C/A, L2P, L3 BeiDou (Phase II) B1, B2
 - Galileo E1, E5a, E5b
 - QZSS L1C/A, L1C, L2C, L5
 - IRNSS L5
- SBAS L1C/A, L5 (WAAS, EGNOS, MSAS, GAGAN, SDCM) L-band MSS
- Support for Trimble RTX™ real-time correction services
- Support for Irimble R1X** real-time correction services
 Patented Z-Blade technology for optimal GNSS performance
 Full utilization of signals from all 7 GNSS systems (GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS and SBAS)
 Enhanced GNSS-centric algorithm: fully-independent GNSS signal tracking and optimal data processing, including GPS-only, GLONASS-only, Galileo-only, or BeiDouonly solution (Autonomous to full RTK).
- Fast Search engine for quick acquisition and re-acquisition of GNSS signals
- or toNSS signals

 SBAS ranging for using SBAS code & carrier observations and orbits in RTK processing

 Patented Strobe™ Correlator for reduced GNSS multi-path

 Up to 20 Hz real-time raw data (code & carrier and position
- output)
- Supported data formats: ATOM, CMR, CMR+, RTCM 2.1, 2.2, 2.3, 3.0, 3.1 and 3.2 (including MSM), CMRx and sCMRx (rover
- NMEA 0183 messages output

REAL-TIME ACCURACY (RMS) (1)(2)(7) SBAS (WAAS/EGNOS/MSAS/GAGAN)

- Horizontal: < 50 cmVertical: < 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

Network RTK (6) Horizontal: 8 mm + 0.5 ppm

- Vertical: 15 mm + 0.5 ppm
- **REAL-TIME PERFORMANCE**
- 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)(7)

Static & Fast Static

- Horizontal: 3 mm + 0.5 ppm
 Vertical: 5 mm + 0.5 ppm

High-Precision Static (3)

- Horizontal: 3 mm + 0.1 ppm
 Vertical: 3.5 mm + 0.4 ppm

DATA LOGGING CHARACTERISTICS

Recording Interval

PHYSICAL CHARACTERISTICS

22.2 x 19.4 x 7.5 cm (8.7 x 7.6 x 3.0 in)

Weight• 1.17 kg (2.57 lb)

- User Interface
 Graphical PMOLED display
- WEB UI (accessible via WiFi) for easy configuration, operation, status, and data transfer

- I/O Interface
 RS232 serial link
- USB 2.0/UART Bluetooth 5.0 dual mode
- WiFi (802.11 b/g/n)
 3.56 quad-band GSM (850/900/1800/1900 MHz) / penta-band UMTS module (800/850/900/1900/2100 MHz)

- 4GB internal memory NAND Flash (3.5 GB user data)
 Over two years of 15 sec. raw GNSS data from 14 satellites
- SD/SDHC internal memory card (up to 32GB)

- Operation
- RTK rover & base
 RTK network rover: VRS, FKP, MAC
- NTRIP, Direct IP
- CSD mode
- Post-processing
- RTK bridgeUHF repeater

- UHF networking
 Trimble RTX (satellite and cellular/IP)

Environmental Characteristics

- Operating temperature: -40° to +65°C (-40° to +149°F)(4)
- Storage temperature: -40° to +85°C (-40° to +185°F) (5)
- Humidity: 100% condensing
- IP67 waterproof, sealed against sand and dust
 Drop: 2m pole drop on concrete
 Shock: ETS300 019
 Vibration: MIL-STD-810F

Power Characteristics

- 2 Li-lon hot-swappable batteries, 41.4 Wh (2 x 7.4 V, 2800 mAh)
- Battery life time (two batteries): 10 hrs (GNSS On, and GSM or UHF Rx On)
- External DC power: 9-28 V

Standard System Components

- SP85 receiver
 2 Li-lon batteries
- 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
- Hard case 2 year warranty

Optional System Components

- SP85 UHF Kit (410-470 MHz 2W TRx)
 SP85 Field Power Kit
- SP85 Office Power Kit
- Data collectors
 ST10
- Ranger™ 7
- Ranger™ 3
- T41
- MobileMapper® 60
- MobileMapper® 50
- Field software
- Survey Pro
- Survey Mobile (Android)
- SPace control app for 3rd party devices (Android)
- 1 Accuracy and TTFF specifications may be affected by atmospheric conditions. signal multipath, satellite geometry and corrections availability and quality.
- 2 Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multi-path areas high PDOP values and periods of severe atmospheric conditions may degrade performance.
- 3 Long baselines, long occupations, precise ephemeris used
- 4 At very low temperatures UHF module should not be used in the
- 5 Without batteries. Batteries can be stored up to $+70^{\circ}$ C.
- 6 Network RTK PPM values are referenced to the closest physical base station.
- 7 Receiver initialization time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.

TRIMBLE RTX INITIALIZATION (1)(2)(6)(7)

	Horizontal (RMS)	Initialization	GNSS
CENTERPOINT® RTX	<2 cm	<15 min, <1 min	L1 + L2

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Please visit spectrageospatial.com for the latest product information and to locate your nearest distributor. Specifications and descriptions are subject to change without notice.