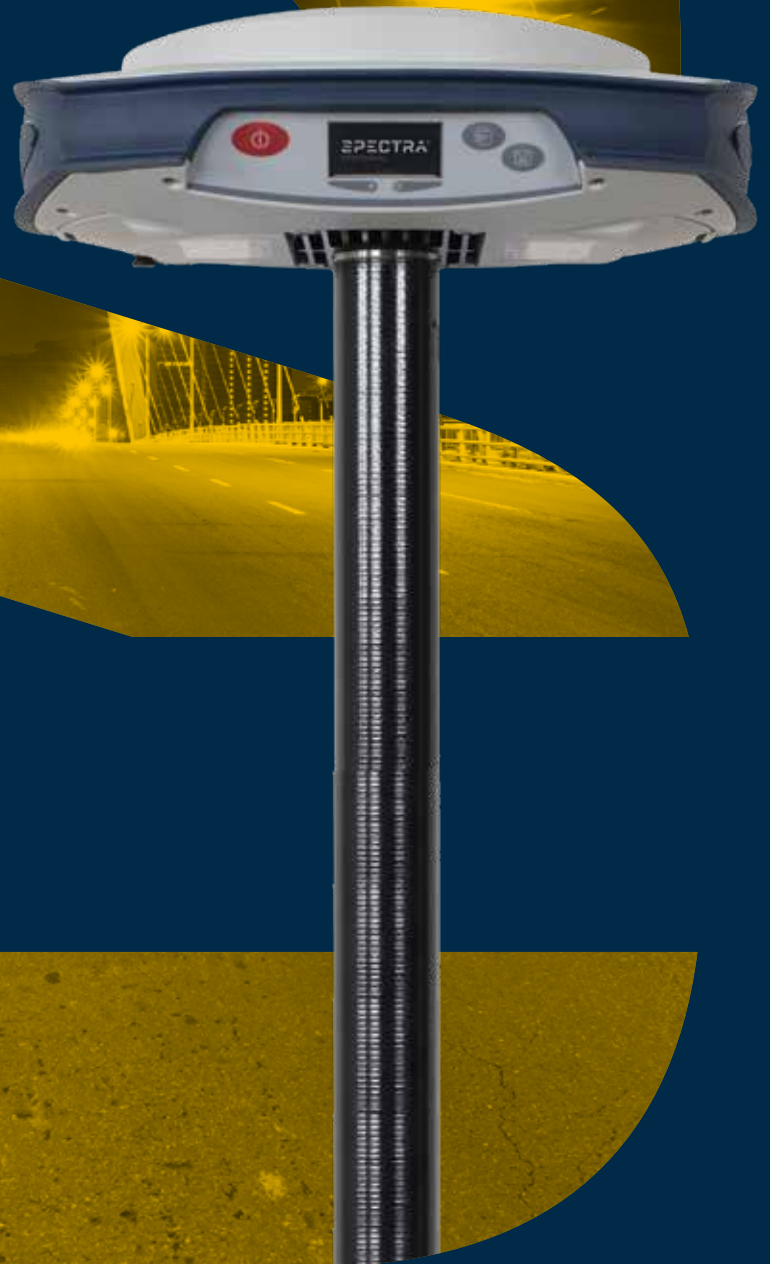


# SP85





# 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 "7G" 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 bridge
- eLevel technology
- 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.



Patented  
inside-the-rod  
mounted UHF  
antenna design



## 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.

## 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 III) B1, B2
  - Galileo E1, E5a, E5b, E5 AltBOC
  - QZSS L1C/A, L1C, L2C, L5
  - IRNSS L5
  - SBAS L1C/A, L5 (WAAS, EGNOS, MSAS, GAGAN, SDCM)
  - L-band MSS
- 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 BeiDou-only solution (Autonomous to full RTK)
- Fast Search engine for quick acquisition and re-acquisition of GNSS 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 only)
- NMEA 0183 messages output

**REAL-TIME ACCURACY (RMS) <sup>(1)(2)(7)</sup>**

**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

**Network RTK <sup>(6)</sup>**

- Horizontal: 8 mm + 0.5 ppm
- Vertical: 15 mm + 0.5 ppm

**POST-PROCESSED KINEMATIC (PPK)**

- Horizontal: 8 mm + 1 ppm
- Vertical: 15 mm + 1 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) <sup>(1)(2)(7)</sup>**

**Static & Fast Static**

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

**High-Precision Static <sup>(5)</sup>**

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

**DATA LOGGING CHARACTERISTICS**

**Recording Interval**

- 0.05 - 999 seconds

**PHYSICAL CHARACTERISTICS**

**Size**

- 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)
- 3.5G quad-band GSM (850/900/1800/1900 MHz) / penta-band UMTS module (800/850/900/1900/2100 MHz)

**Memory**

- 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 bridge
- UHF repeater
- UHF networking

**Environmental Characteristics**

- Operating temperature: -40° to +65°C (-40° to +149°F) <sup>(4)</sup>
- Storage temperature: -40° to +85°C (-40° to +185°F) <sup>(5)</sup>
- 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-Ion 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-Ion 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 TTF 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 PDDP 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 transmitter mode.
- 5 Without batteries. Batteries can be stored up to +70°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.

**CONTACT INFORMATION:**

**Americas**

10368 Westmoor Drive  
Westminster, CO 80021 • USA  
+1-720-587-4700 Phone  
888-477-7516 (Toll Free in USA)

**Europe, Middle East and Africa**

Rue Thomas Edison  
ZAC de la Fleuriaye - CS 60433  
44474 Carquefou (Nantes) • FRANCE  
+33-(0)2-28-09-38-00 Phone

**Asia-Pacific**

80 Marine Parade Road  
#22-06, Parkway Parade  
Singapore 449269 • SINGAPORE  
+65-6348-2212 Phone

Please visit [spectrageospatial.com](http://spectrageospatial.com) for the latest product information and to locate your nearest distributor. Specifications and descriptions are subject to change without notice.