SP100

DATASHEET

Measure quicker and safer with IMU-based tilt compensation.

Capture data with confidence and repeatability—even near tree canopies—with our enhanced Z-Blade™ multi-constellation GNSS processing technology and triple frequency support.

Connect the SP100 to the user-friendly Origin field software.

With an ultra-rugged rover, never worry about challenging physical conditions.

Modern technology for every surveyor

The Spectra Geospatial® SP100 GNSS receiver is everything you need for surveying. With precise, IMU-based tilt compensation, the SP100 gets field work done faster. Combined with Origin field software and Survey Office software, the SP100 helps you handle any surveying project quickly and cost efficiently.

- **Optimal productivity and safety: get more done faster and safer**
  With its highly efficient tilted measurement capability, the SP100 automatically compensates to provide high quality positions—no need to level. Easily capture hard-to-reach points from building corners and fence lines to river boundaries. Survey with complete safety as the IMU-tilt compensation allows you to work on roads and monitor traffic simultaneously.
- **Peak performance: high precision wherever your work takes you.**
  Continue to work with high accuracy anywhere your work takes you—in the city or near trees—thanks to the enhanced Z-Blade GNSS engine, triple frequency GNSS, built-in ionospheric error mitigation, and compatibility with Trimble CenterPoint® RTX correction service.
- **Enhanced resistance: built tough for challenging environments.**
  With a compact, ultra-rugged design, the SP100 is built to withstand challenging physical conditions, ensuring uninterrupted functionality even in dusty, wet, salty, windy, or extremely hot or cold environments.

SPECTRA GEOSPATIAL®

SP100 GNSS RECEIVER

GNSS CHARACTERISTICS

- 672 GNSS channels
- Satellite Tracking:
  GPS: L1C, L1 C/A, L2E (L2P), L2C, L5
  GLONASS: L1C/A, L1P, L2C/A, L2P, L3
  Galileo: E1, E5A, E5B and E5AltBOC, E6 (1)
  BeiDou: B1, B2, B3, B1C, B2A
  QZSS: L1 C/A, L1C, L1S, L2C, L5, LEX/L6
  IRNSS: L5
  SBAS: L1 C/A (EGNOS/MSAS GAGAN/SDCM), L1 C/A and L5 (WAAS)
  L-Band: Trimble RTX® correction service
- Fully independent GNSS signal tracking and optimal data processing
- Compatible with Trimble RTX worldwide correction service
- GNSS multipath signal rejection
- Anti-spoofing capabilities
- Ionospheric mitigation
- LTE Filtering
- Positioning rates 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz
- Data format CMR+, CMRx, RTCM 2.1, RTCM 2.2, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 input and output 24 NMEA outputs, GSOF, RT17, and RT27 outputs

REAL-TIME ACCURACY (RMS) (2)(3)(4)

Real-Time DGPS position

- Horizontal: 25 cm + 1 ppm
- Vertical: 50 cm + 1 ppm

Real-Time Kinematic position (RTK) (Single baseline <30 kms)

- Horizontal: 8 mm + 1 ppm
- Vertical: 15 mm + 1 ppm

Network RTK(5)

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

RTK TILT-COMPENSATED PERFORMANCE(6)

- Horizontal RTK + 8 mm + 0.5 mm/° tilt
- Horizontal RTK + 8 mm + 0.5 mm/° tilt
- IMU bias is monitored in real time against temperature, age and shock

TRIMBLE RTX(7)

- Horizontal 2 cm
- Vertical 3 cm
- Trimble RTX convergence time for specified precisions in Trimble RTX Fast regions < 1 min
- Trimble RTX convergence time for specified precisions in non Trimble RTX Fast regions < 3 min
- Trimble RTX QuickStart convergence time for specified precisions < 5 min

PHYSICAL CHARACTERISTICS

Size

- 13.9 cm × 13 cm (5.5 in × 5.1 in) including connectors

Weight

- 3.06 pounds or 1.38 kg without battery and radio

User interface

- Keypad and LEDs
- WEB UI (accessible via Wi-Fi®) for easy configuration, operation, status, and data transfer

I/O interface

- Lemo (Serial 1) 7-pin Lemo 2-key, Power Input, USB. Optional USB to RS232 serial cable. Receiver supports RNDIS communications over USB
- Wi-Fi b/g/n
- Bluetooth® wireless technology

Integrated radios (optional)

- UHF 403-473 MHz and/or 900 MHz; Rx/Tx
- Channel spacing (450 MHz) 12.5 kHz or 25 kHz spacing available
- Sensitivity (450 MHz) -114 dBm (12 dB SINAD) 450 MHz output power 0.5 W, 2.0 W, depending on the local required licensing
- Frequency approvals (403–473 MHz) Worldwide, depending on the local required licensing

Memory

- 9 GB internal data logging

Environmental characteristics(8)

- Operating -40 °C to +65 °C (-40 °F to +149 °F)
- Storage -40 °C to +75 °C (-40 °F to +167 °F)
- Humidity 100%, condensing
- IP68 Certified per IEC-60529: waterproof/ dustproof (1 m submersion for 1 hour)

Shock and vibration

- Drop: 2 m (6.6 ft) pole drop onto concrete
- Shock non-operating: 75 Gs at 6msec
- Shock operating: 40 Gs at 10msec
- Vibration Mil-Std-810G, FIG 514.6E-1 Cat 24, Mil-Std-202G, FIG 214-1, Condition D

Power characteristics

- Internal, removable Lithium-ion battery, 7.2 V, 2200 mAHr
- Rover 5.5 hours; varies with temperature
- Base station 5.5 hours; varies with temperature (4h with UHF Tx on)
- External DC power 10.8 V-28 VDC, Receiver automatically turns on when connected to external power
- Power consumption
- 3.2 W in rover mode with internal receive radio(9)
- 5.2 W in base mode with internal 0.5 W transmit radio

Standard system components

- SP100 receiver
- Li-Ion battery
- Hard case
- 2 year warranty

Optional system components

- UHF Kit (403-473 MHz 2W TRx)
- UHF Kit (900 MHz 2W TRx)

1. The current capability in the receivers is based on publicly available information. As such, Spectra Geospatial cannot guarantee that these receivers will be fully compatible with a future generation of Galileo satellites or signals.
2. Accuracy and TTFF specifications may be affected by atmospheric conditions, signal obstruction and/or multipath, satellite geometry and corrections availability and quality. High multipath areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.
3. The specifications stated recommend the use of stable mounts in an open sky view, EMI and multipath clean environment, optimal GNSS constellation configurations, along with the use of survey practices that are generally accepted for performing the highest-order surveys for the applicable application including occupation times appropriate for baseline length. Baselines longer than 30 km require precise ephemeris and occupations up to 24 hours may be required to achieve the high precision static specification.
4. Receiver initialisation time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.
5. Network RTK PPM values are referenced to the closest physical base station.
6. The tilt-dependent error component is a function of the quality of the computed tilt azimuth, which is assumed here to be aligned using optimal GNSS conditions. RTK tilt compensated performance is specified up to 30 degrees. You may measure with tilt larger than 30 degrees, though it may affect the accuracy. For best IMU tilt compensated results, perform a pole bias adjustment.
7. RMS performance based on repeatable in field measurements. Achievable accuracy and initialisation 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.
8. Receiver will operate normally to -40 °C, internal batteries are rated from -20 °C to +60 °C (ambient +50 °C).
9. Battery runtime can vary with temperature and data rates.

The SP100 GNSS receiver is available in different configurations and can be purchased as a perpetual or subscription licensed product.

Learn more: spectrageospatial.com

CONTACT INFORMATION:

Americas
4450 Gibson Drive
Tipp City, Ohio 45371 • 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 for the latest product information and to locate your nearest distributor. Specifications and descriptions are subject to change without notice.