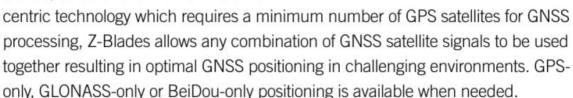# SP80

- Patented Z-Blade technology
- WiFi, SMS and e-mail communication
- Anti-theft technology
- eLevel technology
- Backup RTK and RTK bridge
- Hot-swappable batteries
- Inside-the-rod antenna
- 3.5G cellular modem
- CenterPoint® RTX capable

The Spectra Precision SP80 is a next-generation GNSS receiver that combines decades of RTK technology with revolutionary new GNSS processing. Patented Z-Blade GNSS-centric technology running on a 240-channel 6G ASIC fully utilizes all six GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. Unlike GPS-centric technology which requires a minimum number of GPS satellites for GNSS processing, Z-Blades allows any combination of GNSS satellite signals to be used together resulting in optimal GNSS positioning in challenging environments. GPS-only, GLONASS-only or BeiDou-only positioning is available when needed.

SP80 has a unique combination of communication technologies including integrated Bluetooth and Wi-Fi connectivity, UHF radio and a 3.5G modem. Unique anti-theft technology secures SP80 when installed as a base station. The receiver can be made unusable and can send email and text message alerts if disturbed, moved or stolen.

Designed to withstand 2 m pole drops and with an IP67 rating, the SP80 can handle the toughest outdoor conditions. The patented inside-the-rod antenna design extends the range of the RTK radio. During RTK outages, Backup RTK

automatically switches to a secondary correction source so that there is no loss in productivity. RTK Bridge can save you money as network corrections can be relayed to any rover in the survey job area. Dual hot-swappable batteries can be exchanged in the field for an interruption-free work day. The sunlight-readable displayer offers instant access to key product information to monitor and configure the receiver.

Created by Spectra Precision's engineering design lab in Germany, SP80 is an incredibly reliable, productive and durable solution, supported by its standard 2 year warranty.

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GNSS System

GENERAL

- 240 channels
  - GPS L1C/A, L1P(Y), L2P(Y), L2C, L5
  - GLONASS L1C/A, L2C/A, L3
  - BeiDou B1 (PHASE 2), B2
  - Galileo E1, E5A, E5B
  - QZSS L1C/A, L2C, L1SAIF, L5
  - SBAS (WAAS/EGNOS/MSAS/GAGAN)
- All operation modes
- RTK rover & base
  - RTK network rover: VRS, FKP, MAC
  - NTRIP, Direct IP
  - CSD mode
  - Postprocessing
  - Backup RTK
  - RTK bridge

TECHNICAL SPECIFICATIONS

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

Instant-RTK initialization

Horizontal	8 mm + 0.5 ppm

PHYSICAL

Dimensions (W × H x D)
22.2 cm x 19.4 cm x 7.5 cm
(8.7 in x 7.6 in x 3.0 in)

Weight
1.17 kg (2.57 lb)

Ports
RS232 serial link, USB 2.0/UART,
Bluetooth 2.1 + EDR

User interface
Graphical PMOLED display

ENVIRONMENTAL

Operating temperature
−40 °C to +65 °C (−40 °F to +149 °F)[4]

Storage temperature
−40 °C to +85 °C (−40 °F to +185 °F)[5]

Dust/Water
IP67

Shock/Vibration
2 m pole drop on concrete; MIL-STD-810F

ELECTRICAL

- Dual rechargeable 2 x 7.4 V 2600 mAh Li-Ion, hot-swappable batteries
- Average operating time on internal batteries: 10 hours (GSM or UHF Rx on)
- Power 9 to 28 V DC external power input

Vertical   15 mm + 0.5 ppm
Typically 2 sec
Reliability   up to 99.9%
RTK initialization range   over 40 km

RTX

CenterPoint RTX subscription required
Horizontal   4 cm after 30 min

Postprocessing accuracy (RMS)[1,2]

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

MEASUREMENTS

- Patented Z-Blade technology
  - 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

COMMUNICATIONS AND DATA STORAGE

- 2 GB internal memory (expandable via SD card)
- Over a year of 15 seconds raw GNSS data from 14 satellites
- Up to 20 Hz real-time raw data (code and carrier) and position output
- Recording Interval: 0.05–999 seconds
- WiFi (802.11 b/g/n)
- 3.5 G quad-band GSM / penta-band UMTS module (800/850/900/1900/2100 MHz)
- Optional integrated TxRx UHF radio

Correction formats
- Supported data formats: ATOM, CMR, CMR+, RTCM 2.1, 2.3, 3.0, 3.1, 3.2 (including MSM)
- NMEA 0183 messages output
- Web UI: configure and monitor receiver from a mobile phone or computer using WiFi

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 multipath 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 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.

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