

AsteRx SB Sx

Ruggedized GNSS receiver with integrated corrections



Construction



Logistics



Automation



Precision Agriculture



The AsteRx SB Sx is an IP68 compliant, multi-constellation, multi-frequency GNSS receiver ideal for rapid integration into machine control or sensor fusion applications. It offers the convenience of plug-and-play sub-decimeter accuracy thanks to the integrated PPP-RTK correction service that is active for the whole five-year lifetime.

KEY FEATURES

- ▶ Always-on sub-decimeter accuracy right out of the box, with no additional service subscription or maintenance required
- ▶ Five-year lifetime PPP-RTK corrections included
- ▶ Bluetooth, WiFi, Ethernet, Serial and USB
- ▶ Robust and compact IP68 weatherproof housing
- ▶ AIM+ anti-jamming, anti-spoofing technology
- ▶ Quad-constellation, multi-frequency all-in-view receiver with maximum positioning availability

BENEFITS

Plug-and-play sub-decimeter accuracy

The AsteRx SB Sx is the housed receiver of the SECORX-S product family, which offers plug-and-play sub-decimeter accuracy enabled by the built-in PPP-RTK corrections. No need for selecting, setting-up and maintaining any additional subscription services. PPP-RTK is the latest generation of GNSS correction services, which uniquely combines near-RTK accuracy with quick convergence time.

Small footprint, high performance

The AsteRx SB Sx offers reliable sub-decimeter positioning at a high-update rate with low-latency. Packaged in a light and compact ruggedized housing, it offers optimal performance in challenging environments.

GNSS+ technology

Built-in AIM+ technology can suppress the widest variety of interferers, from simple continuous narrowband signals to the most complex wideband and pulsed jammers. APME+ multipath estimator, unique in its ability to tackle short-delay multipath, enhances measurement quality. LOCK+ guarantees robust tracking of rapid signal dynamics during heavy machine vibrations.

Any device, any platform

Use any device with a web browser to operate the AsteRx SB Sx via the Web UI, accessible over WiFi network or USB connection. No special configuration software needed.

FEATURES

GNSS technology

448 Hardware channels for simultaneous tracking of all visible satellite signals:

- ▶ GPS: L1, L2, L5:
- ▶ GLONASS: L1, L2, L3
- ▶ Galileo: E1 BC (CBOC), E5 (a, b, AltBoc)
- ▶ BeiDou: B1, B2
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- ▶ NavIC: L5
- ▶ QZSS: L1, L2, L5
- ▶ Integrated dual-channel L-band receiver

Septentrio's patented GNSS+ technologies

- ▶ **AIM+** unique anti-jamming and monitoring system against narrow and wideband interference
- ▶ **APME+** a posteriori multipath estimator for code and phase multipath mitigation
- ▶ **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations
- ▶ **IONO+** advanced scintillation mitigation

RAIM (Receiver Autonomous Integrity Monitoring)
PPP-RTK SECORX-S service⁹

Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools
NMEA 0183 v2.3, v3.01, v4.0 (output only)
RINEX (obs, nav) v2.x, v3.x
RTCM v2.x and v3.x (MSM included)
CMR v2.0 and CMR+ (CMR+ input only)

Connectivity

3 Hi-speed serial ports (RS232)
Ethernet port (TCP/IP, UDP, LAN 10/100 Mbps)
Power over ethernet
1 High-speed/full-speed USB device port
1 USB OTG port (with support for external disk)
2 Event markers
xPPS output (max. 100 Hz)
Integrated bluetooth (2.1 + EDR/4.0)
Integrated WiFi (802.11 b/g/n)
NTRIP (server, client, caster)
FTP server, FTP push, SFTP
2 simultaneous logging sessions
16 GB internal memory

PERFORMANCE

PPP-RTK performance¹

Horizontal accuracy <= 10 cm at 2 sigma
Initialisation/convergence <= 60 s
Coverage EU and USA

RTK performance^{1,2,3,4}

Horizontal accuracy 0.6 cm + 0.5 ppm
Vertical accuracy 1 cm + 1 ppm
Initialisation 7 s

Position accuracy^{1,2}

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.7 m

Velocity accuracy^{1,2}

0.03 m/s

Maximum update rate

Position 100 Hz
Measurements 100 Hz

Latency⁵

<10 ms

Time precision

xPPS out⁶ 5 ns
Event < 20 ns

Time to first fix

Cold start⁷ < 45 s
Warm start⁸ < 20 s
Re-acquisition avg. 1 s

Tracking performance (C/N0 threshold)

Tracking 20 dB-Hz
Acquisition 33 dB-Hz

STANDARD SYSTEM COMPONENTS

- ▶ On board Web UI and RxTools desktop software for all receiver controls and monitoring.
- ▶ GNSS receiver communication SDK. Available for both Windows and Linux.
- ▶ Other accessories (cables, mounting brackets, antennas, etc.) are available.

PHYSICAL AND ENVIRONMENTAL

Size 102 x 36 x 111 mm / 4.0 x 1.4 x 4.4 in

Weight 460 g / 1.01 lb

Input voltage 4.5 to 36 VDC

Power consumption 1.5 W typical

Connectors

Antenna	TNC female
ETH	ODU 4 pins female
COM1/GPIO	ODU 7 pins female
PWR/USB/COM2/COM3	ODU 7 pins female
USB OTG	Micro USB

Antenna LNA power output

Output voltage 5 VDC
Maximum current 200 mA

Environment

Operating temperature -30° C to +65° C
-22° F to 149° F
Storage temperature -40° C to +75° C
-40° F to 167° F

Humidity MIL-STD810G, Method 507.5, Procedure I

Dust MIL-STD-810G, Method 510.5, Procedure I

Shock MIL-STD-810G, Method 516.6, Procedure I/II

Vibration MIL-STD-810G, Method 514.6, Procedure I

Certification

IP68, RoHS, WEEE, CE
FCC part 15 Class A
IEC 60950



¹ Open sky conditions

² RMS levels

³ RTK fixed ambiguities

⁴ Baseline < 40 Km

⁵ 99.9%

⁶ Including software compensation of sawtooth effect

⁷ No information available (no almanac, no approximate position)

⁸ Ephemeris and approximate position known

⁹ 5 year lifetime

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