AsteRx SB3 Pro+

Advanced housed GNSS positioning and heading receiver

Construction

Automation

Robotics

Precision Agriculture

Logistics

AsteRx SB3 Pro+ is the most flexible housed multi-frequency GNSS receiver. It can be used as a rover or a base station with ultra-high update rate and logging functionality. Housed in a ruggedized enclosure it delivers top performance even in the harshest environments.

KEY FEATURES

- **All in view, multi-constellation, multi-frequency satellite tracking**
- **Sub-degree GNSS heading & pitch or heading & roll**
- **AIM+ anti-jamming, anti-spoofing advanced interference mitigation and monitoring technology**
- **Flexibility to be used either as a rover or a base station**
- **GNSS+ algorithms guaranteeing reliable performance**
- **Compact, yet rugged design**

Reliable heading performance

With dual-antenna input, AsteRx SB3 Pro+ provides precise, reliable and positioning independent heading combined with centimeter-level RTK. GNSS heading provides unmatched performance in both static and dynamic conditions removing the reliance on vehicle dynamics or magnetic sensors.

Feature-rich in a compact design

Simultaneous multi-constellation, multi-frequency tracking combined with the GNSS+ toolset and high-update rate, low-latency output mean that AsteRx SB3 Pro+ is ideally suited for any space-constrained industrial application under any conditions.

Ease of integration

The AsteRx SB3 Pro+ integrates seamlessly into any system thanks to fully documented interfaces, commands and data messages. Septentrio's open interfaces and software tools (WebUI, RxTools) make it easy to the integrate, configurate and control the AsteRx SB3 Pro+.

AsteRx SB3 Pro+

FEATURES

GNSS signals

544 Hardware channels for simultaneous tracking of most visible signals:

- GPS: L1 C/A, L1C, L2C, L2 P(Y), L5
- GLONASS: L1 C/A, L2C/A, L3, L2P
- BeiDou: B1I, B1C, B2a, B2b, B2I, B3I
- Galileo: E1, E5a, E5b, E5 AltBOC, E6
- QZSS: L1 C/A, L1C/B, L2C, L5
- NavIC: L5
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

Septentrio's patented GNSS+ technologies

- **AIM+** industry leading anti-jamming, anti-spoofing interference monitoring & mitigation technology
- **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)

Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools

NMEA 0183, v3.01, v4.0

RTCM v2.x, v3.x (MSM messages 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

2 Event markers

FTP server

16 GB internal memory

SUPPORTING COMPONENTS

Embedded Web UI with full control and monitoring functionality.

RxTools, a complete and intuitive GUI tool set for receiver control, monitoring, data analysis and conversion.

GNSS receiver communication SDK. Available for both Windows and Linux.

Optional accessories

- Antennas
- SDK library for UAS applications

PERFORMANCE

RTK performance [1,2,3]

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

GNSS attitude accuracy [1,2]

Antenna separation	Heading	Pitch/Roll
1 m	0.15°	0.25°
5 m	0.03°	0.05°

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

Latency [4]

<10 ms

Time precision

xPPS out[5]	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start[6]	< 45 s
Warm start[7]	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

PHYSICAL AND ENVIRONMENTAL

SWaP

Size	102 x 36 x 118 mm / 4.0 x 1.4 x 4.6 in
Weight	497 g / 1.1 lb
Input voltage	5 to 36 VDC

Power consumption

GPS/GLO L1/L2	1.1 W
All signals, all GNSS constellations	1.3 W
Maximum	2.5 W

Connectors

Antenna	2 x TNC
ETH	ODU 4 pins
COM1/GPIO	ODU 7 pins
PWR/USB/COM2/COM3	ODU 7 pins

Antenna LNA power output on TNC

Output voltage	5 VDC
Maximum current	150 mA

Environmental

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-STD-810G, 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

IP 68, RoHS, WEEE, CE, FCC, IEC 62368-1

[1] Open sky conditions
[2] RMS level
[3] Baseline < 40 Km
[4] 99.9%
[5] Including software compensation of sawtooth effect
[6] No information available (no almanac, no approximate position)
[7] Ephemeris and approximate position known

BBr 02/2025

EMEA
Greenhill Campus (HQ)
Interleuvenlaan 15i
3001 Leuven, **Belgium**

Espoo, **Finland**

Americas
2601 Airport Drive,
Suite 360
Torrance, CA 90505, **USA**

septentrio.com/contact

Asia-Pacific
Shanghai, **China**
Yokohama, **Japan**
Seoul, **Korea**

septentrio.com