AsteRx SB3 Pro

Housed multi-frequency GNSS rover receiver

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septentrio

Construction

Automation

Robotics

Precision Agriculture

Logistics

AsteRx SB3 Pro is a multi-frequency GNSS receiver delivering centimeter-level RTK positioning in a rugged enclosure. Its compact and rugged housing is tailored for effortless integration in machine automation applications.

KEY FEATURES

- **All in view, multi-constellation, multi-frequency satellite tracking**
- **Robust and compact IP68 weatherproof housing**
- **AIM+ Interference monitoring and mitigation function**
- **Sub-degree GNSS heading option**
- **GNSS+ algorithms guaranteeing reliable performance**

Rover applications

The AsteRx SB3 Pro is a rover GNSS receiver with best-in-class positioning performance, employing Septentrio's latest multifrequency multi-constellation RTK technology. It delivers robust and reliable positions in challenging environments in both single or dual antenna modes. Its specialized design makes it an easy-to-use, cost-efficient rover receiver.

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, B2I, B3I
- Galileo: E1, E5a, E5b
- QZSS: L1 C/A, L1C, L2C, L5
- NavIC: L5
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

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)

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

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
- GeoTagZ re-processing software and 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 [1,2,8]

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	10 Hz
Measurements	10 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

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	200 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 Class A Part 15

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
[8] Optional feature

BBr 05/2021