

# AsteRx SB3 ProBase

Housed multi-frequency GNSS base station receiver



The AsteRx SB3 ProBase is a multi-frequency and multi-constellation GNSS receiver designed to operate as a base station for local RTK or to be used for network densification. On top of providing top-quality measurements this receiver offers full configuration flexibility as well as easy monitoring capabilities. It incorporates the latest anti-jamming technology for unbeatable robustness and reliability. Its compact and rugged housing is tailored for easy deployment in a wide range of environments.

## KEY FEATURES

- ▶ Robust top-quality measurements for RTK and differential corrections
- ▶ Multi-constellation for best availability
- ▶ Multi-frequency for reliability
- ▶ [AIM+](#) anti-jamming anti-spoofing system
- ▶ Open interface for full compatibility with all standard data formats

## BENEFITS

### High quality real-time GNSS corrections

The AsteRx SB3 ProBase features the latest Septentrio quad constellation GNSS technology for best quality measurements. It generates real time differential and RTK corrections which can be used in GNSS and GNSS/INS products to achieve centimeter-level accuracy.

### Interference robustness

ProBase features [AIM+](#), the most advanced on-board anti-jamming technology on the market. It can suppress the widest variety of interferers, from simple continuous narrowband signals to the most complex wideband and pulsed jammers. The RF spectrum can be viewed in real-time in both time and frequency domains.

Septentrio's industry leading [APME+](#) technology aids in achieving the best multipath rejection while [IONO+](#) ensures the best measurements and accuracy even under intense ionospheric activity.

### Easy-to-integrate

The AsteRx SB3 ProBase supports multiple standard correction messages for best compatibility when integrating GNSS technology. This multi-signal receiver generates highest quality corrections ensuring reliable positioning accuracy for end-users. The product is easy to integrate and comes with fully documented interfaces, commands and data messages. Raw data logging can easily be set-up and the included RxTools software allows receiver configuration, monitoring and data analysis.

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## FEATURES

### GNSS signals

544 Hardware channels for simultaneous tracking of most visible signals:

- ▶ GPS: L1 C/A, L2C, L2 P(Y), L5
- ▶ GLONASS: L1 C/A, L2 P, L2 C/A, L3
- ▶ BeiDou: B1I, B1C, B2a, B2I, B3I
- ▶ Galileo: E1, E5a, E5b, E5AltBoc
- ▶ QZSS: L1 C/A, 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 with spectrum analyser
- ▶ **IONO+** advanced scintillation mitigation
- ▶ **RAIM+** (Receiver Autonomous Integrity Monitoring)

### Formats

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

### 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  
 NTRIP (server, caster)  
 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.

## PERFORMANCE

### Measurement precision <sup>1,2</sup>

		Unsmoothed pseudorange (cm)
GPS	L1 C/A, L2C	16
	L2P	10
	L5	6
GLONASS	L1 C/A, L2 C/A	25
	L3	10
Galileo	E1	8
	E5a, E5b	6
	E5AltBOC	1.5
BeiDou	B1I, B1C, B2I	8
	B2a, B3I	6
NavIC	L5	16
QZSS	L1 C/A, L2C	16
	L5	6
All signals	Carrier phase	1 - 1.3 mm

### Maximum update rate

Position	10 Hz
Measurements	10 Hz

### Latency <sup>3</sup>

<10 ms

### Time precision

xPPS out <sup>4</sup>	5 ns
Event accuracy	< 20 ns

### Time to first fix

Cold start <sup>5</sup>	< 45 s
Warm start <sup>6</sup>	< 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	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 Class A Part 15  
 IEC 62368-1



<sup>1</sup> 1σ level

<sup>2</sup> C/N0 = 45 dB-Hz

<sup>3</sup> 99.9%

<sup>4</sup> Including software compensation of sawtooth effect

<sup>5</sup> No information available (no almanac, no approximate position)

<sup>6</sup> Ephemeris and approximate position known



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