# AsteRx SB ProConnect/Wireless

**Light and compact ruggedized multi-frequency GNSS receiver**

septentrio

Mining

Automation

Precision Agriculture

Autonomous

The AsteRx SB is an IP68 compliant, multi-constellation, multi-frequency GNSS receiver ideal for rapid integration into machine control or sensor fusion applications. It offers an extensive range of cable and wireless connections for maximum flexibility. The AsteRx SB comes in two forms: the ProConnect variant with multiple hardware cable connections and the Wireless variant.

## KEY FEATURES

- ▶ **Quad-constellation, multi-frequency all-in-view RTK receiver**
- ▶ **Robust and compact IP68 weatherproof housing**
- ▶ **AIM+ interference monitoring and mitigation system**
- ▶ **Base and rover operation**
- ▶ **Bluetooth, WiFi, Ethernet, Serial and USB communications**

## BENEFITS

### Small footprint, high performance
The AsteRx SB offers high-update rate, low-latency scalable positioning accuracy in a light and compact ruggedized housing.

### GNSS+ technology
AIM+ 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 while LOCK+ guarantees robust tracking of rapid signal dynamics during heavy machine vibrations.

### Base or rover, real-time or offline RTK precision
The AsteRx SB offers full flexibility of operation. It can operate in RTK rover or base station mode and, with 16 GB on-board memory, it can log data for monitoring or for offline post processed PPK.

### Easy-to-integrate
The AsteRx SB comes with fully-documented interfaces, commands and data messages. The included RxTools software allows receiver configuration and monitoring as well as data logging and analysis. An SDK is provided to help integrators create professional custom applications.

### Any device, any platform
Use any device with a web browser to operate the AsteRx SB without any special configuration software via the Web UI accessible over WiFi network or USB connection.

## FEATURES

### GNSS technology

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

- GPS: L1, L2, L5:
- GLONASS: L1, L2, L3
- Galileo[1]: E1 BC (CBOC), E5 (a, b, AltBoc)
- BeiDou[1]: B1, B2
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- NavIC[1]: 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)
RTK (base and rover)[1]
PPP (Precise Point Positioning with SECORX)[1,2]
Moving base[1,3]

### Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools
NMEA 0183 v2.3, v3.01, v4.0 (output only)
RINEX[1] (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)[4]
Ethernet port (TCP/IP, UDP, LAN 10/100 Mbps)[4]
Power over ethernet[4]
1 High-speed/full-speed USB device port[4]
1 USB OTG port (with support for external disk)
2 Event markers[1,4]
xPPS output (max. 100 Hz)[4]
Integrated bluetooth (2.1 + EDR/4.0)
Integrated WiFi (802.11 b/g/n)
NTRIP (server, client, caster)
FTP server, FTP push[1], SFTP
2 simultaneous logging sessions
16 GB internal memory

## PERFORMANCE

### Position accuracy [5,6]

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

### RTK performance [5,6,8,9]

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

### Velocity accuracy [5,6]

0.03 m/s

### Maximum update rate

| | |
|---|---|
| Position | 100 Hz |
| Measurements | 100 Hz |

### Latency[10]

<10 ms

### Time precision

| | |
|---|---|
| xPPS out[4,11] | 5 ns |
| Event | < 20 ns |

### Time to first fix

| | |
|---|---|
| Cold start[12] | < 45 s |
| Warm start[13] | < 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.

## MODELS

**AsteRx SB ProConnect:** serial, USB, ethernet, bluetooth and WiFi connections

**AsteRx SB Wireless**: USB, bluetooth and WiFi connections. Powered by USB OTG

## 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]** | 4.5 to 36 VDC |
| **Power consumption[4]** | 1.5 W typical |

### Connectors

| | |
|---|---|
| Antenna | TNC female |
| ETH[4] | ODU 4 pins female |
| COM1/GPIO[4] | ODU 7 pins female |
| PWR/USB/COM2/COM3[4] | 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] Optional feature
[2] Service subscription required
[3] Maximum output rate is 20 Hz
[4] Applicable to the PRO Connect model only
[5] Open sky conditions
[6] RMS levels
[7] After convergence
[8] RTK fixed ambiguities
[9] Baseline < 40 Km
[10] 99.9%
[11] Including software compensation of sawtooth effect
[12] No information available (no almanac, no approximate position)
[13] Ephemeris and approximate position known

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