

AsteRx SB ProDirect

Housed GNSS positioning and heading receiver



Logistics



Construction



Robotics



Automation



Precision Agriculture



AsteRx SB ProDirect is a multi-constellation, multi-frequency GNSS receiver with dual antenna GNSS heading functionality. 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**
- ▶ **Sub-degree GNSS heading & pitch or heading & roll**
- ▶ **AIM+ Interference monitoring and mitigation function**
- ▶ **GNSS+ algorithms guaranteeing reliable performance**
- ▶ **Compact, yet rugged design**

Reliable heading performance

With dual-antenna input, AsteRx SB ProDirect 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 SB ProDirect is ideally suited for any space-constrained industrial application under any conditions.

Ease of integration

The AsteRx SB ProDirect 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 integrate, configure and control AsteRx SB ProDirect.

AsteRx SB ProDirect

FEATURES

GNSS technology

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

- ▶ GPS: L1, L2
- ▶ GLONASS: L1, L2
- ▶ Galileo¹: E1, E5b
- ▶ BeiDou¹: B1, B2
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1)
- ▶ QZSS¹: L1, L2

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

RTCM v2.x and v3.x (input only)

CMR and CMR+ (input only)

NMEA 0183 v2.3, v3.01, v4.0 (output 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
- ▶ GeoTagZ re-processing software and SDK library for UAS applications

PERFORMANCE

Position accuracy^{5,6}

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

RTK performance^{3,4,5}

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

GNSS attitude accuracy^{3,4}

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

Velocity accuracy^{3,4}

0.03 m/s

Maximum update rate

Position	100 Hz
Position and attitude	50 Hz
Measurements only	100 Hz

Latency⁶

<10 ms

Time precision

xPPS out ⁷	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ⁸	< 45 s
Warm start ⁹	< 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

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 Optional feature

² Maximum output rate 20 Hz

³ Open sky conditions

⁴ RMS level

⁵ Baseline < 40 Km

⁶ 99.9%

⁷ Including software compensation of sawtooth effect

⁸ No information available (no almanac, no approximate position)

⁹ Ephemeris and approximate position known

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