



Marine



Offshore Operations



Precision Agriculture

The AsteRx4 OEM is an advanced multi-constellation dual antenna receiver from Septentrio. Its triple frequency engine can track all Global Navigation Satellite System (GNSS) constellations on both antennas.

It supports current and future signals as they become available and is powered by the most advanced algorithms, including Septentrio's advanced interference mitigation (AIM+), guaranteeing you reliable and accurate GNSS positioning into the future.

KEY FEATURES

- ▶ 544 channels for tracking all known and planned signals from GPS, GLONASS, Galileo, BeiDou, NavIC, QZSS and SBAS on both antennas
- ▶ Precise and solid heading calculation
- ▶ Centimetre-level (RTK) and sub decimetre-level
- ▶ Dual L-band channel with support for corrections
- ▶ Septentrio GNSS+ algorithms for robust industrial performance

BENEFITS

Consistently accurate now and into the future

The AsteRx4 is the most advanced multi-constellation, dual-antenna receiver from Septentrio. Its triple-frequency engine can track all Global Navigation Satellite System (GNSS) constellations – GPS, GLONASS, Galileo, BeiDou, NavIC, QZSS and SBAS – on both antennas. It supports current and planned signals as they become available – guaranteeing reliable and accurate GNSS positioning now and into the future.

Accuracy scalable to a centimetre

Septentrio's knowledge and experience in the GNSS industry ensures that the AsteRx4 offers you the highest possible accuracy, scalable to a centimetre. LOCK+ technology maintains tracking during heavy machine vibration and IONO+ ensures position accuracy even under periods of elevated ionospheric activity. The AsteRx4 offers the very latest in interference mitigation technology to filter out ambient interference.

Straightforward integration

The AsteRx4 was designed with ease of integration in mind. The command interface is specifically optimised for M2M communication and sample code is provided to kick start your integration. You can operate the receiver without any special configuration software via the built-in webserver accessible via a network or USB connection.

FEATURES

GNSS technology

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

- ▶ GPS: L1, L2, L5
- ▶ GLONASS: L1, L2, L3
- ▶ Galileo¹: E1, E5ab, AltBoc, E6
- ▶ BeiDou¹: B1, B2, B3
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- ▶ NavIC: L5¹
- ▶ QZSS: L1, L2, L5, L6

Septentrio's patented GNSS+ technologies

- ▶ **AIM+** interference mitigation unit against narrow system against narrow and wideband interference with spectrum analyser
- ▶ **IONO+** advanced scintillation mitigation
- ▶ **APME+** a posteriori multipath estimator for code and phase multipath mitigation.
- ▶ **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations.

RAIM (Receiver Autonomous Integrity Monitoring)

RTK (base and rover)¹

Integrated dual-channel L-band receiver PPP^{1,2}

Moving base^{1,3}

Heading GNSS attitude¹

Formats

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

RTCM v2x and 3x (MSM included)

CMR2.0 and CMR+ (CMR+ input only)

NMEA 0183, v2.3, v3.01, v4.0 (output only)

Connectivity

4 hi-speed serial ports (LVTTLS RS232)

Ethernet port (TCP/IP and UDP)

Full speed USB (device)

2 Event markers¹

xPPS output (max. 100 Hz)

PERFORMANCE

Position accuracy^{4,5}

	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^{4,5,6,7}

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

GNSS attitude accuracy^{4,5,7}

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

Velocity accuracy^{4,5}

0.03 m/s

Maximum update rate⁸

Position	100 Hz
Position and attitude	50 Hz
Measurements	100 Hz

Latency⁹

<10 ms

Time accuracy¹⁰

xPPS out ¹⁰	10 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ¹¹	< 45 s
Warm start ¹²	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)¹³

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

PHYSICAL AND ENVIRONMENTAL

Size 76.4 x 100 mm / 3.03 x 3.93 in

Size (without break off edges) 61 x 88.5 mm / 2.4 x 3.48 in

Weight 55 g / 1.94 oz

Input voltage 3 - 5.5 VDC

Operating temperature -40° C to +85° C
-40° F to 185° F

Storage temperature -40° C to +85° C
-40° F to 185° F

Certification RoHS

Antenna LNA power output

Output voltage	5 VDC
Maximum current	200 mA

Connectors

I/O connector	SFM-140-02-SM-D
Antenna connector	2x MMCX

Power consumption

1.6 W (GPS/GLO L1/L2)
1.8 W (GPS/GLO L1/L2 dual-antenna)
2.6 W (All signals)
3.0 W (All signals dual-antenna)

Certification

RoHS, WEEE



¹ Optional feature

² Service subscription required

³ Maximum output rate is 20 Hz

⁴ Open sky conditions

⁵ RMS levels

⁶ RTK fixed ambiguities

⁷ Baseline < 40km

⁸ If combined with MARINESTAR max. 10 Hz

⁹ 99.9%

¹⁰ Including Sawtooth compensation

¹¹ No information available (no almanac, no approximate position)

¹² Ephemeris and approximate position known

¹³ Max. speed 600 m/s

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