

AsteRx4 OEM

Multi-frequency dual-antenna receiver



Key Features

- ▶ **544 channels for tracking all known and future signals from GPS, GLONASS, GALILEO, BEIDOU, IRNSS, QZSS and SBAS on both antennas**
- ▶ **Precise and robust heading calculation**
- ▶ **cm-level (RTK) and dm-level (PPP) position accuracy**
- ▶ **Dual L-band channel, support for TERRASTAR and VERIPOS corrections**
- ▶ **Septentrio GNSS+ algorithms for robust industrial performance**

The AsteRx4 OEM is Septentrio's next generation dual antenna receiver built around the new custom built GReCo4 GNSS chipset and powered by the newest algorithms for robust and accurate positioning.

Consistently accurate now and into the future

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

Accuracy scalable to a centimeter

Septentrio's knowledge and experience in the GNSS industry ensures that the AsteRx4 offers you the highest possible accuracy, scalable to a centimeter; LOCK+ technology maintains tracking during heavy vibration of machines; and IONO+ technology assures the accuracy of your position even under difficult ionosphere conditions. The AsteRx4 features special interference mitigation technology which filters out ambient intentional and unintentional RF interference.

Straight forward integration

The AsteRx4 was designed and built to easily integrate into your existing systems. The command interface is specifically optimized for M2M communication and sample code is provided to help you start your integration. You can operate the receiver without any special configuration software via the built-in webserver accessible via network or USB connection.

FEATURES

GNSS Technology

544 hardware channels for simultaneous tracking of all visible satellite signals

Supported signals: GPS (L1, L2, L5), GLONASS (L1,L2,L3), GALILEO (E5ab, AltBoc, E6), BEIDOU (B1, B2, B3), IRNSS (L5), QZSS (L1,L2,L5) (Galileo, Beidou, IRNSS, E6/B3 and AltBoc are optional features)

All-in-view SBAS (EGNOS, WAAS, GAGAN, MSAS, SDCM) (incl. L5 tracking)

Integrated dual channel L-band receiver

100 Hz Raw data output (code, carrier, navigation data) (optional feature)

20 Hz SBAS, DGNSS, PPP and RTK (50Hz available in future firmware upgrade)

A Posteriori Multipath Estimator Technique (APME+), including code and phase multipath mitigation

AIM+/WIMU interference mitigation unit, including chirp jammers (optional feature)

ION+ Advanced scintillation mitigation

RAIM

DGNSS (base station and rover)

RTK (base and rover) (optional features)

TerraStar and VERIPOS services (optional feature)

Moving base positioning (optional feature)

Connectivity

4 hi-speed serial ports (RS232)

Ethernet port (TCP/IP and UDP)

Full speed USB (host and device)

2 Event markers (optional feature)

xPPS output (max. 100 Hz)

Formats

Highly Compact and fully documented Septentrio Binary Format (SBF) output

NMEA v2.30 output format, up to 20 Hz

RTCM v2.2, 2.3, 3.0 or 3.1

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

PERFORMANCE

Position accuracy^{1,2,3}

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGPS	0.4 m	0.9 m
TERRASTAR-D ⁴	6 cm	<10 cm
APEX2 ⁵	6 cm	<10 cm
ULTRA2 ⁵	6 cm	<10 cm

RTK performance^{1,6}

Horizontal accuracy ³	0.6 cm + 0.5 ppm	
Vertical accuracy ³	1 cm + 1 ppm	
Average time to fix ⁷	7 s	

Velocity Accuracy^{1,2,3}

	Horizontal ³	Vertical ³
	0.01 m/s	0.015 m/s

Heading Accuracy^{1,2,3}

	Heading	Pitch/Roll
1m antenna separation	0.1°	0.2°
10m antenna separation	0.01°	0.02°

Maximum Update rate

Position	20Hz (50Hz in future firmware upgrade)
Measurements	100 Hz

Latency

	< 20 ms
--	---------

Time accuracy³

xPPS Out	10 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ⁸	< 45 s
Warm start ⁹	< 20 s
Re-acquisition	avg. 1.2 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

Dynamics

Acceleration	10 g
Jerk	4 g/s

PHYSICAL AND ENVIRONMENTAL

Size 77 x 100 mm

Size (without break off edges) 61 x 82 mm

Weight 55 g

Input voltage 3 – 5.5 V DC

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)

Operating temperature -40°C to +85°C

Storage temperature -40°C to +85°C

Certification RoHS

Antenna LNA Power Output

Output voltage 5 V DC

Maximum current 200 mA

Connectors

I/O Connector SFM-140-02-SM-D

Antenna Connector 2x MMCX

¹ 1-20 Hz measurement rate

² Performance in open sky conditions

³ RMS level

⁴ Requires service activation from TerraStar

⁵ Requires service activation from VERIPOS

⁶ RTK fixed ambiguities

⁷ Baseline <20 km

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

⁹ Ephemeris and approximate position known

Europe

Greenhill Campus
Interleuvenlaan 15G
3001 Leuven, Belgium
+32 16 30 08 00

Americas

Suite 200,
23848 Hawthorne Blvd
Torrance, CA 90505, USA
+1 310 541-8139

Asia-Pacific

Level 901, The Lee Gardens
33 Hysan Avenue
Causeway Bay, Hong Kong
+852 3959 8680

