

AsteRx2: GPS/GLONASS Dual-frequency Receiver family

The AsteRx2 receiver family provides all-in-view dual-frequency GPS/GLONASS receivers for demanding industrial applications. As member of the AsteRx-family of compact OEM boards, AsteRx2 features proven high-quality all-in-view GPS and GLONASS tracking and Septentrio's advanced multipath mitigation algorithm APME, offering excellent measurement quality for high precision positioning, even in challenging environments.

Industrial GPS/GLONASS Receiver

The AsteRx2 receiver family is powered by a next generation L1/L2 GPS/GLONASS/SBAS OEM receiver engine. With its 66 hardware channels it is designed for high-performance dual-frequency applications.

The receiver provides high quality cm-level positioning as well as an extensive set of measurements (raw data, position velocity, time) at up to 20 Hz. Septentrio's A Posteriori Multipath Estimator (APME), unique in its ability to tackle short-delay multipath, further enhances the quality of the measurement and position data generated with the receiver.



Providing extra robustness with GLONASS

Signal blocking by buildings, trees, mountains and other obstructions provide limitations to applicability of GPS in the most challenging professional applications requiring high-precision position data. AsteRx2 tracks GLONASS as well as GPS satellites, and generates high-quality GLONASS measurements, which are used together with GPS measurements for improved availability and accuracy, especially in these challenging environments.

Easy to integrate

AsteRx2 features low power consumption and is available in a compact OEM board version, making it suitable for on-board as well as portable battery operated applications.

An innovative and flexible power management under user control, aids integrators to save power and extend autonomy significantly.

Besides the OEM board the AsteRx2 comes in a compact waterproof plastic housing (AsteRx2 HDC), and a sturdy metal housing (AsteRxDR). Flexible configuration, a powerful command language, a variety of detailed output messages and formats suited for automation, serial and USB2.0 interfaces, all facilitate the work of the system integrator.

As with all Septentrio GNSS receivers, an intuitive GUI - RxControl - can be used with the AsteRx2 for its configuration, for logging

and remote control. Moreover, RxControl includes a host of enhanced visualization features.

RxControl is available both on Windows and Linux platforms, as well as on WindowsMobile for PDA platforms (RxMobile).



ASTERX2 TECHNICAL SPECIFICATIONS

FEATURES

- Dual-frequency L1/L2 code/carrier tracking of GPS and GLONASS signals.
- 66 hardware channels for simultaneous tracking of all visible satellites in GPS and GLONASS constellations
- 20 Hz data output rate (user selectable)
- A Posteriori Multipath Estimator technique (APME)
- Differential GPS (base station and rover)
- Includes up to 3 SBAS channels (EGNOS, WAAS, other)
- Innovative and flexible power management under user control
- x PPS output (x = 1, 2, 5, 10)
- 2 Event markers
- RAIM included
- Raw data output (code, carrier, navigation data)
- Three serial ports (LVTTL - OEM Board, RS232 - AsterX2 HDC)
- 1 full speed USB port
- Highly compact and detailed Septentrio Binary Format (SBF) output
- NMEA v2.30 output format, up to 10 Hz
- RTCM v2.2, 2.3, 3.0 or 3.1
- CMR2.0 and CMR+
- Compact OEM board and housed solutions
- Includes intuitive GUI (RxControl) and detailed operating and installation manual

PERFORMANCE

| | | |
|---|-------------------------------------|--|
| Position accuracy ^{1,2,3,6} | | |
| | Horizontal | Vertical |
| Standalone | 1.3 m | 1.9 m |
| SBAS | 0.6 m | 0.8 m |
| DGPS | 0.5 m | 0.9 m |
| RTK performance ^{1,14} | | |
| | Horizontal accuracy ³ | 1 cm + 1ppm |
| | Vertical accuracy ³ | 2 cm + 2ppm |
| | Average time to fix ⁴ | 7 sec |
| Velocity Accuracy ^{1,2,3} | | |
| | Horizontal ³ | Vertical ³ |
| Standalone | 0.8 cm/sec | 1.3 cm/sec |
| Maximum Update rate | | |
| | | 20 Hz |
| Latency | | |
| | | < 20 msec |
| Time accuracy ³ | | |
| | 1PPS | 10 nsec |
| | Event accuracy | < 10 nsec |
| Measurement precision ^{1,3,5} | | |
| | C/A pseudoranges | 5 cm (GPS) ⁶ 0.16 m (GPS) ^{7,8} 7 cm (GLONASS) ⁶ 0.25 m (GLONASS) ^{7,9} |
| | GPS P2pseudoranges ⁷ | 0.1 m |
| | GLONASS P pseudoranges ⁷ | 0.1 m |
| | L1 carrier phase | 1 mm |
| | L2 carrier phase | 1 mm |
| | L1/L2 doppler | 0.02 Hz |
| Time to first fix | | |
| | Cold start ¹⁰ | < 45 sec |
| | Warm start ¹¹ | < 20 sec |
| | Re-acquisition | avg 1.2 sec |
| Tracking performance (C/N₀ threshold) ^{12,13,15} | | |
| | Tracking | 26 dB-Hz |
| | Acquisition | 33 dB-Hz |
| | Acceleration ¹⁶ | 10 g |
| | Jerk ¹⁷ | 4g/sec |

PHYSICAL AND ENVIRONMENTAL

| | |
|----------------------------------|----------------------------|
| OEM | |
| Size | 60 x 90 mm |
| weight | 60 g |
| Input voltage | +3.3 VDC |
| DR | |
| Size | 285 x 140 x 37 mm |
| weight | 930 g |
| Input voltage | 9-30 VDC |
| HDC | |
| size | 130 x 185 x 46 mm |
| weight | 510 g |
| Input voltage | 7-28 VDC |
| Antenna LNA Power Output | |
| Output voltage | + 3.3VDC |
| Maximum current | 200 mA |
| Power consumption | |
| | 2W typical, 2.5W Max |
| Operating temperature | |
| | -40 to +70 °C |
| Storage temperature | |
| | -40 to +85 °C |
| Humidity | |
| | 5% to 95% (non condensing) |
| Connectors | |
| Antenna | TNC female |
| Power (HDC Housing) | ODU 5 pins female |
| COM1 (HDC Housing) | ODU 10 pins female |
| COM2 (HDC Housing) | ODU 10 pins female |
| Power (Asterx2DR) | ODU 3 pins female |
| COM1 (Asterx2DR) | ODU 7 pins female |
| COM2 (Asterx2DR) | ODU 7 pins female |
| USB (Asterx2DR) | ODU 5 pins female |
| IN (Asterx2DR) | ODU 7 pins female |
| Ethernet (Asterx2DR) | ODU 4 pins female |
| Multi-purpose button (Asterx2DR) | |
| Power button (Asterx2DR) | |

OTHER SEPTENTRIO PRODUCTS

AsterX1 - Compact single-frequency GNSS receiver platform, offering top-quality GPS and Galileo code and carrier phase data and single frequency positioning (including GPS DGPS and L1-RTK) at up to 50 Hz.

PolaRx2eH and PolaRx2e@ - A unique single-board dual-frequency multi-antenna receiver that can be connected to 2, respectively 3 antennas, for various machine control, heading/attitude and other multi-antenna applications.

PolaRx3 - A versatile high-accuracy dualfrequency GNSS receivers for precise positioning and navigation applications. Next to high-quality GPS measurements, it provides GLONASS dual-frequency data as well as modernized GPS (L2C).

PolaRx3G - A high-performance integrated dual-frequency GNSS receiver that provides access to the new and upcoming Galileo signals. The modernized GPS signals are also supported.

PolaRx3TR - A high-performance integrated dual-frequency GNSS Timing/Reference receiver.

PolaNt* - A lightweight precise positioning and survey single or dual-frequency GPS or GPS/GLONASS antenna for use with the PolaRx family.

RxControl - RxControl is an intuitive user interface to configure and control all types of PolaRx receivers and monitor, log and post data remotely.

RxMobile - A unique intuitive, portable GUI field controller for the Septentrio receivers. RxMobile allows controlling the receiver, monitoring the navigation solution and accessing its functions in the field in the same intuitive way as with RxControl.

ASTERX2 PRODUCTS



AsterX2 OEM



AsterX2DR



AsterX2 HDC



Integrator Kit

- 1 Hz measurement rate
- 2 Performance depends on environmental conditions
- 3 1σ level
- 4 Baseline < 20 km
- 5 C/N₀ = 45 dB-Hz
- 6 Smoothed
- 7 Non-smoothed
- 8 Multipath mitigation disabled
- 9 Multipath mitigation enabled
- 10 No information available (no almanacs, no approximate position)
- 11 Ephemeris and approximate position known
- 12 95%
- 13 Max speed 600 m/sec
- 14 Fixed ambiguities
- 15 Depends on user settings of tracking loop parameters
- 16 During acquisition
- 17 During tracking

Specifications subject to change without notice. Some features or specifications may not apply to all models.

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