AsteRx-mTM: Compact low-power dual-frequency GPS/GLONASS Receiver

AsteRx-m™ is an ultra low power, smaller than credit card GPS/GLONASS dual-frequency RTK receiver, which is especially designed for integration in hand-held devices, mobile computing platforms and other space-constrained applications requiring high accuracy and low-power consumption.

Unique compact low-power RTK receiver
Measuring only 70 by 48 mm, and providing dual-frequency GPS-only RTK operation at less than 500 mW, and dual-frequency GPS/GLONASS RTK positioning at less than 600 mW, AsteRx-m is designed for applications requiring high accuracy positioning combined with low power and where space is at a premium. AsteRx-m provides full scalability from L1-only positioning to L1/L2 GPS/GLONASS operation.

AsteRx-m is powered by Septentrio’s field-proven GPS/GLONASS/ SBAS receiver architecture built around the 136 channel multi-frequency multiconstellation GReCo3 ASIC, optimized for low power consumption and can offer the same measurement quality and precise positioning modes (single and dual-frequency, SBAS, DGPS, RTK and PPP) as the other members of the AsteRx family.

World-class performance with GNSS+
AsteRx-m hosts a suite of innovative tracking and positioning algorithms specifically designed for demanding industrial environments. These include:

- **APME+** extends Septentrio’s patented multipath mitigation technology to GLONASS and to carrier phase measurements.
- **Track+** for improved tracking under weak signal conditions such as under foliage.
- **Lock+** guarantees exceptionally stable tracking under high vibration conditions resulting in significant higher availability.
- **RTK+** provides extended RTK baselines and faster initialization.

Easy to integrate
AsteRx-m features very low power consumption and is available in a compact OEM board version, making it suitable for in-vehicle as well as portable battery operated applications. The board is fully shielded, to help avoid EMI issues.

Specifically for integration in hand-held devices, 2 antenna connectors are available on the board. Thus the receiver can be connected to an internal antenna, while a connection to a high-grade external antenna for reaching the highest possible accuracy remains possible. Furthermore a compact I/O connector allows integration in slim devices.

AsteRx-m supports 3 serial and 1 USB 2.0 interface. Benefiting from the established AsteRx-family command language and its extended range of output formats, system integration is kept easy.

A comprehensive GNSS SW-toolset
As with all Septentrio GNSS receivers, a comprehensive GNSS SW-toolset is provided (RxTools). It includes an intuitive GUI (RxControl) for receiver configuration and remote control. It also includes various other tools for mission planning, data logging, replay and analysis, reporting, etc.

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Features

- Dual-frequency L1/L2 code/carry tracking of GPS and GLONASS signals.
- 132 hardware channels for simultaneous tracking of all visible satellites in GPS and GLONASS constellations
- GNSS+ pack containing APME+, Lock+ and RTK+, AIM+ and ATrack+
- Positioning modes: stand-alone, SBAS, DGNSS, RTK, PPP
- Includes up to 3 SBAS channels (EGNOS, WAAS, other)
- RAIM included
- Raw data output (code, carrier, navigation data)
- 25 Hz data output rate (user selectable)
- x PPS output (x = 1, 2, 5, 10)
- 1 Event marker
- 2 antenna connectors (internal/external antenna) with automatic external antenna detection
- 3 high-speed serial ports
- 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+
- Includes intuitive GUI (RxControl) and detailed operating and installation manual

Performance

- Position accuracy
  - Standalone: 1.3 m Horizontal, 1.9 m Vertical
  - SBAS: 0.6 m Horizontal, 0.8 m Vertical
  - DGPS: 0.5 m Horizontal, 0.9 m Vertical
- RTK performance
  - Horizontal: 0.6 cm + 0.5ppm
  - Vertical: 1 cm + 1ppm
- Average time to fix: 7 sec
- Velocities
  - Horizontal: 0.8 cm/sec, Vertical: 1.3 cm/sec
- Maximum Update rate: 25 Hz
- Latency: < 20 msec
- Time accuracy
  - 1PPS: 10 nsec
  - Event accuracy: < 10 nsec
- Time to first fix
  - Cold start: < 45 sec
  - Warm start: < 20 sec
  - Re-acquisition: avg 1.2 sec
- Tracking performance
  - C/N0 threshold: 141 dBm
  - Tracking: 26 dB-Hz
  - Acquisition: 33 dB-Hz
- Sensitivity, internal antenna
  - Tracking: -148 dBm
  - Acquisition: -141 dBm
- Dynamics
  - Acceleration: 10 g
  - Jerk: 4g/sec

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