The AsteRx-m2 UAS is a GNSS receiver specifically designed for straightforward integration into UAS applications providing centimetre-level RTK positioning at less than 1 W (GPS and GLONASS L1/L2). It features standard connections to Pixhawk and ArduPilot and a wide range 6-30 V power input as well as an event marker input to accurately time stamp camera shutter events.

**Key Features**

- Multi-constellation, multi-frequency all-in-view satellite tracking
- Centimetre-level (RTK) position accuracy with or without a real-time datalink
- AIM+ anti-jamming and monitoring system
- Camera shutter synchronisation
- Plug compatible with ArduPilot/Pixhawk
- Easy-to-integrate

**Designed for UAS**

The AsteRx-m2 UAS is designed for easy integration into any system. Standard connectors connect directly to your autopilot (e.g. Pixhawk) and the wide 6-30 V input power range allows you to use the power directly from the vehicle power bus. Event markers can accurately synchronise a camera shutter with GNSS time. The command interface is fully open and an SDK is provided to help create professional custom applications.

**Interference robustness**

The AsteRx-m2 UAS features AIM+, the most advanced on-board anti-jamming technology on the market. It can suppress the widest variety of interferers, from simple continuous narrowband signals to the most complex wideband and pulsed jammers. The RF spectrum can be viewed in real-time in both time and frequency domains.

**No need for ground control points**

The AsteRx-m2 UAS works seamlessly with GeoTagZ software and its SDK library for PPK (Post-processed kinematic) offline processing. This gives RTK accuracy without the need for ground control points or a real-time datalink.

**Ultra-low power design**

The AsteRx-m2 UAS provides RTK positioning at the lowest power consumption of any comparable device on the market. This means longer operation on a single battery charge, smaller batteries and greater usability.
### FEATURES

**GNSS technology**

448 Hardware channels for simultaneous tracking of all visible satellite supported signals:
- GPS: L1, L2, L5
- GLONASS: L1, L2, L3
- Galileo: E1, E5a, E5b, AltBoc
- BeiDou: B1, B2
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- IONOS: L5
- QZSS: L1, L2, L5
- Integrated dual-channel L-band receiver

**Septentrio’s patented GNSS+ technologies**

- AIM+: unique anti-jamming and monitoring system against narrow and wideband interference with spectrum analyser
- IONO+: advanced scintillation mitigation
- APME+: a posteriori multipath estimator for code and phase multipath mitigation
- RAIM (Receiver Autonomous Integrity Monitoring)
- RTK (base and rover)
- SECORX (PPP)
- APME+
- IONO+
- AIM+
- GNSS+ technologies
- Integrated dual-channel L-band receiver
- Receiver control, monitoring, data analysis via Ethernet or USB connectivity.

**Formats**

- Septentrio Binary Format (SBF), fully documented with sample parsing tools
- NMEA 0183, v2.3, v3.01, v4.0
- RINEX (obs, nav) v2.x, v3.x
- RTCM v2.x, v3.x (MSM messages included)
- CMR v2.0 and CMR+ (CMR+ input only)

**UAS interface board**

- Wide range power supply input (6-30 VDC)
- On-board logging on micro-SD card
- Plug compatible with Pixhawk and Ardupilot
- xPPS output (max 100 Hz)
- Event marker for camera shutter synchronisation
- Push-button to start/stop logging on the SD-card.
- LEDs for power, logging and PVT status.

**Connectivity**

- 3 Hi-speed serial ports (LVTTL)
- 1 Full speed USB device port (micro USB with access to internal disk, TCP/IP communication and with 2 extra serial ports)
- General purpose output
- Time and frequency synchronisation inputs
- NTRIP (server, client, caster)
- FTP server, FTP push

### PERFORMANCE

<table>
<thead>
<tr>
<th>Position accuracy</th>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone</td>
<td>1.2 m</td>
<td>1.9 m</td>
</tr>
<tr>
<td>SBAS</td>
<td>0.6 m</td>
<td>0.8 m</td>
</tr>
<tr>
<td>DGNSS</td>
<td>0.4 m</td>
<td>0.7 m</td>
</tr>
<tr>
<td>SECORX-C (PPP)</td>
<td>4 cm</td>
<td>6 cm</td>
</tr>
<tr>
<td>SECORX-D (PPP)</td>
<td>6 cm</td>
<td>9 cm</td>
</tr>
</tbody>
</table>

**Velocity accuracy**

0.03 m/s

**Maximum update rate**

- Position: 100 Hz
- Measurements: 100 Hz

**Latency**

<10 ms

**Time to first fix**

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

**Tracking performance (C/N0 threshold)**

<table>
<thead>
<tr>
<th>Tracking</th>
<th>20 dB-Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>33 dB-Hz</td>
</tr>
</tbody>
</table>

### SUPPORTING COMPONENTS

- Web UI for easy configuration and monitoring via Ethernet or USB connectivity.
- 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 OS.

**Optional accessories**

- Antennas
- GeoTagZ re-processing software and SDK library for aerial mapping

### PHYSICAL AND ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Size</th>
<th>47.5 x 70 x 14.9 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.87 x 2.75 x 0.58 in</td>
</tr>
<tr>
<td>Weight</td>
<td>28 g / 0.987 oz</td>
</tr>
<tr>
<td></td>
<td>10 g / 0.352 oz</td>
</tr>
<tr>
<td>Input voltage</td>
<td>5 V or 6–30 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>930 mW</td>
</tr>
<tr>
<td></td>
<td>All signals all GNSS constellations: 1.1 W</td>
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<tr>
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<td>Connectors: 2 x U.FL</td>
</tr>
<tr>
<td></td>
<td>Antenna supply voltage: 3-5.5 VDC</td>
</tr>
<tr>
<td></td>
<td>Maximum antenna current: 200 mA</td>
</tr>
<tr>
<td></td>
<td>Antenna gain range: passive 0 - 50 dB active</td>
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<tr>
<td>I/O connectors</td>
<td>COM1 6 pins DF13-6P-1.2SDSA (plug compatible with Pixhawk and ArduPilot)</td>
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<td>COM3 4 pins DF13-4P-1.2SDSA</td>
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<tr>
<td></td>
<td>Event-maker 2 pins header</td>
</tr>
<tr>
<td></td>
<td>PPS-Out 3 pins header</td>
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<tr>
<td>Environment</td>
<td>Operating temperature: -40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td>-40°F to +185°F</td>
</tr>
<tr>
<td></td>
<td>Storage temperature: -55°C to +85°C</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>Humidity: 5% to 95% (non-condensing)</td>
</tr>
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**Certification**

RoHS, WEEE

---

1. Optional feature
2. Service subscription required
3. Output rate 20 Hz
4. Open sky conditions
5. RMS level
6. After convergence
7. Baseline < 40 Km
8. 99.9%
9. Including software compensation of sawtooth effect
10. No information available (no almanac, no approximate position)
11. Ephemeris and approximate position known
12. Second connector for alternative external antenna

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septentrio.com

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