



## Key Features

- ▶ **cm-level (RTK) position accuracy with or without real-time datalink**
- ▶ **Low and scalable power consumption**
- ▶ **Septentrio GNSS+ algorithms for robust industrial performance**
- ▶ **Camera shutter synchronization**
- ▶ **Plug Compatible with Pixhawk**

**Designed around the custom built GReCo3 GNSS chipset, the AsteRx-m UAS receiver is powered by the latest algorithms for consistently robust and accurate positioning.**

### CM accuracy for less than 700 mW

The AsteRx-m UAS is an ultra-low power – smaller than credit card - RTK receiver for integration in UAS applications requiring high accuracy and low power consumption. The AsteRx-m UAS provides cm-level accurate RTK operation at less than 600 mW with GPS and less than 700 mW with GPS and GLONASS. Reliable submeter accuracy is possible at less than 400 mW. Septentrio's exclusive GeoTagZ software suite provides RTK accuracy without the need for a real-time datalink and easy integration with image processing SW.

### Reliable positioning

AsteRx-m UAS is powered by Septentrio's advanced algorithms to ensure a reliable position in challenging applications: LOCK+ technology to maintain tracking during heavy vibration and IONO+ technology for working under difficult ionospheric conditions.

### Straightforward integration in UAS

The AsteRx-m UAS is designed and built to easily integrate into your system. Standard connectors directly connect to your autopilot (e.g., Pixhawk). The 6-30 V power supply allows you to use the power directly from the vehicle power bus. An event marker is available to accurately synchronize a camera shutter with GNSS time.

The command interface is specifically optimized for M2M communication and sample code is provided to help you set-up.

# AsteRx-m UAS

## FEATURES

### GNSS Technology

Supported signals: GPS (L1, L2), GLONASS (L1,L2)

3 channels for SBAS tracking (EGNOS, WAAS, GAGAN, MSAS, SDCM)

132 hardware channels for simultaneous tracking of all visible satellites in GPS and GLONASS constellations

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

RAIM

DGNSS (base station and rover)

RTK (base and rover) (optional feature)

Moving base positioning (optional feature)

Raw data output (code, carrier, navigation data - optional)

### UAS Interface Board

Wide range power supply input (6-30 V)

On-board logging on Micro-SD card (max 32 GB)

Plug compatible with Pixhawk and Ardupilot

Event marker for camera shutter synchronisation

### Connectivity

3 Hi-speed serial ports (LVTL)

1 Full speed USB (micro USB)

User configurable xPPS output (max 10 Hz)

X PPS Output (x = 1,2,5,10)

### Formats

Highly Compact and fully documented 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+ (CMR+ input)

## PERFORMANCE

### Position accuracy<sup>1,2,3,7</sup>

|            | Horizontal | Vertical |
|------------|------------|----------|
| Standalone | 1.2 m      | 1.9 m    |
| SBAS       | 0.6 m      | 0.8 m    |
| DGPS       | 0.4 m      | 0.9 m    |

### RTK performance<sup>1,2,3,4</sup>

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

### Velocity Accuracy<sup>1,2,3,7</sup>

|  | Horizontal | Vertical  |
|--|------------|-----------|
|  | 0.01 m/s   | 0.015 m/s |

### Maximum Update rate

|                                    |       |
|------------------------------------|-------|
| Position (Standalone, SBAS, DGNSS) | 20 Hz |
| Position (RTK)                     | 10 Hz |
| Measurements                       | 20 Hz |

### Latency

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

### Time accuracy<sup>3</sup>

|                |         |
|----------------|---------|
| xPPS Out       | 10 ns   |
| Event accuracy | < 20 ns |

### Time to first fix

|                         |            |
|-------------------------|------------|
| Cold start <sup>5</sup> | < 45 s     |
| Warm start <sup>6</sup> | < 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

|               |                                                            |
|---------------|------------------------------------------------------------|
| <b>Size</b>   | 47.5 x 70 mm (1.87 x 2.75 in)                              |
| <b>Weight</b> | 27 g (0.95 oz) OEM board<br>10 g (0.352 oz) Interface Card |

**Input voltage** 5 V or 6–30 V DC

### Power Consumption

|                                |        |
|--------------------------------|--------|
| GPS/GLONASS L1 (submeter)      | 0.4 W  |
| GPS/GLONASS L1/L2 (centimeter) | <0.7 W |

**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

### I/O Connectors

|                   |                                                                        |
|-------------------|------------------------------------------------------------------------|
| COM1              | 6 pins DF13-6P-1.25DSA<br>(plug compatible with Pixhawk and ArduPilot) |
| COM2              | 6 pins DF13-6P-1.25DSA                                                 |
| COM3              | 4 pins DF13-4P-1.25DSA                                                 |
| Event-marker      | 2 pins header                                                          |
| PPS-Out           | 3 pins header                                                          |
| Antenna Connector | uFLX                                                                   |

<sup>1</sup> 1 Hz measurement rate

<sup>2</sup> Performance depends on environmental conditions

<sup>3</sup> 1σ level

<sup>4</sup> Baseline: <100 km

<sup>5</sup> No information available (no almanacs, no approximate position)

<sup>6</sup> Ephemeris and approximate position know

<sup>7</sup> Max speed 600 m/s

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