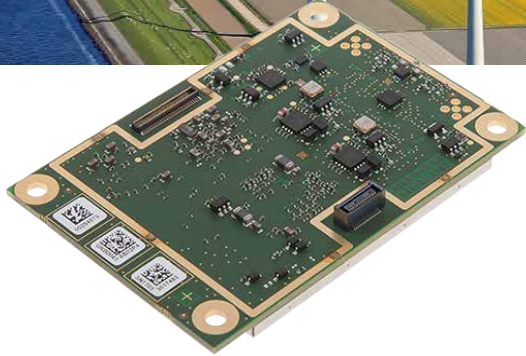


# AsteRx-m2a

Compact low-power, multi frequency heading GNSS receiver



**The AsteRx-m2a is a smaller-than-a-credit-card Heading and RTK receiver. It is ideal for UAS, INS integrations and other industrial applications that require high reliability in positioning combined with low power consumption.**

## Key Features

- ▶ **All-in-view, multi-constellation, multi-frequency satellite tracking**
- ▶ **Sub-degree GNSS Heading and Pitch/Roll precision**
- ▶ **Best-in-class reliable and scalable position accuracy**
- ▶ **AIM+ anti-jamming and monitoring system**
- ▶ **Ultra-compact design with industry leading low power consumption (<1 W)**
- ▶ **Easy to integrate**

## Reliable Heading performance

With dual-antenna input, the AsteRx-m2a provides precise and reliable heading combined with centimeter-level RTK positioning. GNSS heading removes the reliance on vehicle dynamics or magnetic sensors to provide unmatched performance in both static and dynamic conditions.

## Feature rich in a compact Design

Simultaneous multi-constellation, multi-frequency tracking combined with the GNSS+ toolset and high-update rate, low-latency output mean the AsteRx-m2a is ideally suited for any space-constrained industrial application whatever the conditions.

## Interference robustness

The AsteRx-m2a features AIM+: the most advanced on-board interference mitigation technology on the market today. 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.

## Ultra-low power design

The AsteRx-m2a provides both heading and cm-level RTK positioning all for under 1 W—the lowest power consumption of any comparable device on the market today. This means lower heat dissipation, simpler integrations and longer operation on a single battery charge.

## Easy to integrate

The AsteRx-m2a comes with fully-documented interfaces, commands and data messages. The included RxTools software allows receiver configuring, monitoring as well as data logging and analysis. An SDK is provided to help integrators create professional custom applications. The AsteRx-m2a is compatible with GeoTagZ Software and its SDK library for RPK (ReProcessed Kinematic) offline processing.

## FEATURES

### GNSS Technology

448 hardware channels for simultaneous tracking of all visible satellites

- GPS: L1, L2
- GLONASS: L1, L2
- Galileo: E1, E5b
- BeiDou<sup>1</sup>: B1, B2
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1)
- QZSS: L1, L2

RTK (base and rover)<sup>1</sup>

Moving base<sup>1,2</sup>

Heading GNSS attitude

Septentrio's GNSS+ patented technologies:

AIM+ unique anti-jamming and monitoring system against narrow and wideband interference

IONO+ advanced scintillation mitigation

APME+ a posteriori multipath estimator for code and phase multipath mitigation

RAIM (Receiver Autonomous Integrity Monitoring)

LOCK+ superior tracking robustness under heavy mechanical shocks or vibrations

### Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools

NMEA 0183, v2.3, v3.01, v4.0

RINEX v2.x, 3.x

RTCM v2.x and 3.x (MSM messages included)

CMR v2.0 and CMR+ (CMR+ input only)

### Connectivity

4 Hi-speed serial ports (LVTTTL)

1 USB device port

xPPS output (max 100 Hz)

2 Event markers

SDIO interface for logging (covers  $\mu$ SD, SD, eMMC)

Outputs to drive external LEDs

General Purpose Output

## PERFORMANCE

### Position accuracy<sup>3,4</sup>

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.7 m

### RTK performance<sup>3,4,5</sup>

Horizontal accuracy	0.6 cm + 0.5 ppm	
Vertical accuracy	1 cm + 1 ppm	
Initialisation	7 s	

### GNSS attitude accuracy<sup>3,4</sup>

Antenna separation	Heading	Pitch/Roll
1 m	0.15°	0.25°
5 m	0.03°	0.05°

### Velocity accuracy<sup>3,4</sup>

3 cm/s

### Maximum update rates

Position	100 Hz
Position and attitude	50 Hz
Measurements only	100 Hz

**Latency<sup>6</sup>** < 10 ms

### Time precision

xPPS out <sup>7</sup>	5 ns
Event accuracy	< 20 ns

### Time to first fix

Cold start <sup>8</sup>	< 45 s
Warm start <sup>9</sup>	< 20 s
Re-acquisition	avg. 1 s

### Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

## INCLUDING

- RxTools: complete and intuitive GUI tool set for receiver control, monitoring, data analysis and conversion. It is available for both Windows and Linux.
- GNSS Receiver Communication SDK

## OPTIONAL ACCESSORIES

- Antennas
- GeoTagZ re-processing Software and SDK library for UAS applications

## PHYSICAL & ENVIRONMENTAL

**Size** 47.5 × 70 × 7.6 mm  
(1.87 × 2.75 × 0.29 in)

**Weight** 28 g (0.987 oz)

**Input voltage** 3.3 VDC ± 5%

### Power consumption

GPS/GLO L1/L2	1 W
All Signals, all GNSS constellations	1.1 W
Standby power mode	10 mW

### Antenna

Connectors	2 × U,FL
Antenna supply voltage	3 - 5.5 VDC
Maximum antenna current	200 mA
Antenna gain range	15-45 dB

### I/O connectors

30 pins Hirose DF40 socket<sup>10</sup>

60 pins Hirose DF40 socket for expanded connectivity

### Environment

Operating temperature	-40 °C to +85 °C (-40 °F to 185 °F)
Storage temperature	-55 °C to +85 °C (-67 °F to 185 °F)
Humidity	5% to 95% (non-condensing)
Vibration	MIL-STD-810G
Certification	RoHS

<sup>1</sup>Optional feature

<sup>2</sup>Maximum output rate 20 Hz

<sup>3</sup>Open sky conditions

<sup>4</sup>RMS level

<sup>5</sup>Baseline < 40 Km (24.9 mi)

<sup>6</sup>99.9%

<sup>7</sup>Includes software compensation of sawtooth effect

<sup>8</sup>No information available (no almanac, no approximate position)

<sup>9</sup>Ephemeris and approximate position known

<sup>10</sup>Pin compatible with AsteRx-m2 for easy upgrade