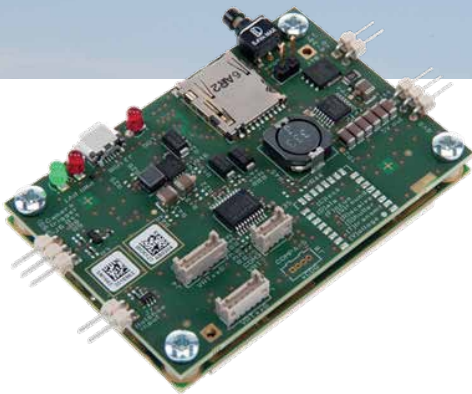


AsteRx-m2a UAS

Centimetre accuracy, heading output with easy integration in UAS



The AsterX-m2a UAS is specifically designed for straightforward integration into UAS applications providing centimetre-level RTK positioning and accurate heading for just over 1 W. It features standard connections to Pixhawk and ArduPilot as well as event marker inputs 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**
- ▶ **Heading output for orientation or INS integrations**
- ▶ **AIM+ anti-jamming and monitoring system**
- ▶ **Camera shutter synchronisation**
- ▶ **Plug compatible with ArduPilot/Pixhawk**

Reliable Heading performance

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

Designed for UAS

The AsterX-m2a 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 powering the receiver directly from the UAS power bus. Event markers can accurately synchronise a camera shutter with GNSS time. The command interface is fully documented and an SDK is provided to help create professional custom applications.

Interference robustness

The AsterX-m2a UAS 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.

No need for Ground Control Points

The AsterX-m2a UAS works seamlessly with GeoTagZ software and its SDK library for RPK (ReProcessed Kinematic) offline processing. This gives RTK accuracy without the need for either Ground Control Points or a real-time datalink.

Ultra low power design

The AsterX-m2a UAS provides RTK positioning at the lowest power consumption of any comparable device on the market. This means lower heat dissipation, simpler integrations and longer operation on a single battery charge.

AsteRx-m2a UAS

FEATURES

GNSS Technology

448 hardware channels for simultaneous tracking of all visible satellites

- GPS: L1, L2
- GLONASS: L1, L2
- Galileo¹: E1, E5b
- BeiDou¹: B1, B2
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1)
- QZSS: L1, L2

RTK (base and rover)¹

Moving base^{1,2}

GNSS Heading

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)

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

xPPS output (max 100 Hz)

2 Event markers for camera shutter synchronisation

Push-button start/stop logging on the SD-card

LEDs for power, logging and PVT status

Connectivity

3 Hi-speed serial ports (LVTTTL)

1 Full-speed USB device port (micro USB)

PERFORMANCE

Position accuracy^{3,4}

	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^{3,4,5}

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

GNSS attitude accuracy^{3,4}

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

Velocity accuracy^{3,4}

3 cm/s

Maximum update rates

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

Latency⁶

< 10 ms

Time precision

xPPS out ⁷	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ⁸	< 45 s
Warm start ⁹	< 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 AND ENVIRONMENTAL

Size 47.5 × 70 × 14.9 mm
(1.87 × 2.75 × 0.58 in)

Weight

GNSS OEM board	28 g (0.987 oz)
UAS Interface board	10 g (0.352 oz)

Input voltage

5 V or 6–30 VDC

Power consumption

GPS/GLO L1/L2	1.1 W
All Signals, all GNSS constellations	1.2 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 connectors¹⁰

COM1	6 pins DF13-6P-1.25DSA (plug compatible with Pixhawk and ArduPilot)
COM2	6 pins DF13-6P-1.25DSA
COM3	4 pins DF13-4P-1.25DSA
Event-markers	2 pins header
PPS-Out	3 pins header

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

¹ Optional feature,

² Maximum output rate 20 Hz

³ Open-sky conditions

⁴ RMS level

⁵ Baseline < 40 km (24.9 mi)

⁶ 99.9%

⁷ Includes software compensation of sawtooth effect

⁸ No information available (no almanac, no approximate position)

⁹ Ephemeris and approximate position known

¹⁰ Pin compatible with AsteRx-m2 UAS for easy upgrade

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