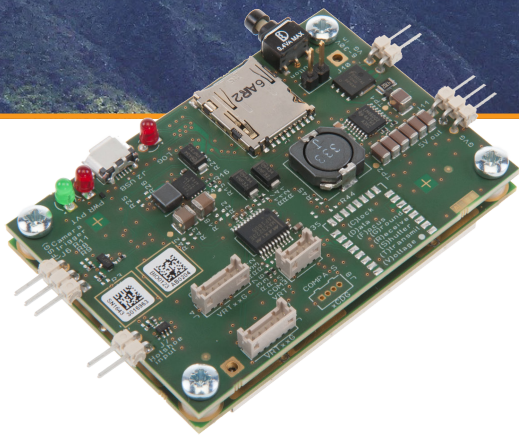


AsteRx-m2 UAS

Centimetre accuracy and easy integration into UAS



The AsterRx-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

Designed for UAS

The AsterRx-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 AsterRx-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 AsterRx-m2 UAS works seamlessly with GeoTagZ software and its SDK library for RPK (ReProcessed Kinematic) offline processing. This gives RTK accuracy without the need for Ground Control Points or a real-time datalink.

Ultra-low power design

The AsterRx-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

Technology

448 hardware channels for simultaneous tracking of all visible satellite signals:

- GPS: L1, L2, L5
- GLONASS: L1, L2, L3
- Galileo: E1, E5a, E5b, AltBoc¹
- BeiDou: B1, B2¹
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM L1, L5
- IRNSS: L5¹
- QZSS: L1, L2, L5

Integrated dual channel L-band receiver

AIM+ interference mitigation unit against narrow and wide band 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)¹

PPP (TerraStar services)^{1,2}

Moving base^{1,3}

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, 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)

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 (LVTTTL)

1 Full speed USB device port (micro USB)

PERFORMANCE

Position accuracy^{3,4,5}

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.3 m	0.7 m
TerraStar C ^{2,6}	4 cm	6 cm

RTK performance^{4,5,7}

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

Velocity accuracy^{4,5}

3 cm/s

Maximum update rates

Position	100 Hz
Measurements only	100 Hz

Latency⁸

< 10 ms

Time precision

xPPS Out ⁹	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ¹⁰	< 45 s
Warm start ¹¹	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

SUPPORTING COMPONENTS

RxTools is 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 & ENVIRONMENTAL

Size	47.5 x 70 x 14.9 mm 1.87 x 2.75 x 0.58 in
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Weight

GNSS OEM board	28 g / 0.987 oz
UAS Interface board	10 g / 0.352 oz

Input voltage

5 V or 6–30 V DC

Power consumption

GPS/GLO L1/L2	930 mW
All Signals all GNSS constellations	1100 mW
All Signals all constellations + L-Band	1200 mW

Antenna

Connectors ¹²	2 x U.FL
Antenna supply voltage	3-5.5V DC
Maximum antenna current	200 mA
Antenna gain range	passive 0 - 50 dB active

I/O connectors

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-maker	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 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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