AsteRx-m2

Compact low-power multi frequency GNSS receiver

septentrio

The **AsteRx-m2 is a compact, high-performance, ultra-low power GNSS receiver ideal for integration in UAS, handheld devices and other demanding industrial applications where power and space are at a premium. It incorporates the latest in anti-jamming technology and offers unbeatable robustness and reliability.**

Key Features

▸ **Best-in- class reliable and scalable position accuracy**

▸ **AIM+ anti-jamming and monitoring system**

▸ **Industry-leading ultra-low power consumption**

▸ **All-in-view multi-constellation, multi-frequency satellite tracking**

▸ **Easy-to-integrate**

Feature Rich

The GNSS+ toolset means that the AsteRx-m2 comes into its own in difficult conditions:

▸ Lock+ for robust tracking during high vibrations and shocks

▸ APME+ to disentangle direct signal and those reflected from nearby structures

▸ IONO+ provides advanced protection against ionospheric disturbance

The AsteRx-m2 also features time synchronisation for high-precision timing applications and L-Band tracking for PPP positioning using TerraStar. Two electronically identical antenna connectors support both passive and active antennas.

Interference Robustness

The AsteRx-m2 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.

Ultra-low power Design

The AsteRx-m2 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.

Easy to Integrate

The AsteRx-m2 comes with fully-documented interfaces, commands and data messages. The included RxTools software allows receiver configuration and monitoring as well as data logging and analysis. An SDK is provided to help integrators create professional custom applications. The AsteRx-m2 is compatible with GeoTagZ Software and its SDK library for RPK (ReProcessed Kinematic) offline processing.

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, AltBoc [1]
- BeiDou: B1, B2 [1]
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- IRNSS: L5 [1]
- 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)

Connectivity

4 Hi-speed serial ports (LVTTL)

1 USB device port

xPPS output (max 100Hz)

2 Event markers

SDIO interface for logging (covers μSD, SD, eMMC)

Outputs to drive external LEDs

General Purpose Output

Time and Frequency synchronisation inputs

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
Initialisation	7 s

Velocity accuracy [4,5]

3 cm/s

Maximum update rates

Position	100 Hz
Measurements only	100 Hz

Latency [8]

< 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, 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.

Optional accessories

▶ Antennas

▶ GeoTagZ re-processing Software and SDK library for aerial mapping

PHYSICAL & ENVIRONMENTAL

Size

47.5 x 70 x 7.6 mm

1.87 x 2.75 x 0.29 in

Weight

28 g / 0.987 oz

Input voltage

3.3 VDC ± 5%

Power consumption

GPS/GLO L1/L2	770 mW
All Signals all GNSS constellations	950 mW
All Signals all constellations + L-Band	1050 mW
Shutdown power mode	10 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 to 50 dB active

Auto-detection of external antenna

I/O connectors

30 pins Hirose DF40 socket [13]

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

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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
13 Backwards compatible with AsteRx-m for easy upgrade

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