



AsteRx-i V processes high-quality data, from the dual antenna multi-frequency AsteRx GNSS receiver with IMU measurements to generate an accurate and reliable position and orientation.

Key Features

- ▶ **Reliable and accurate IMU-enhanced GNSS positioning down to the cm level**
- ▶ **Full attitude - heading pitch and roll**
- ▶ **Lightweight, low power and compact**
- ▶ **AIM+ interference monitoring and mitigation system**
- ▶ **High-update rate, low-latency positioning and attitude**

Reliability, availability and accuracy at their best

Septentrio's quad-constellation, multi-frequency, accurate and reliable RTK is further enhanced by a powerful GNSS/INS integration. Benefiting from a GNSS heading initialization, AsteRx-i V provides 3D attitude of the POI (point of interest).

The AsteRx-i V includes Septentrio's GNSS+ suite of positioning algorithms to convert difficult environments into good positioning. It also features AIM+ interference mitigation and monitoring system which can suppress the widest variety of interferers, from simple continuous narrowband signals to the most complex wideband and pulsed jammers.

SWaP matters

Designed around demanding requirements for size, weight and power consumption, the AsteRx-i V is ideal for optical inspection and photogrammetry. Consuming typically 1.5 W and with a weight of less than 50 g, is ideal for UAVs where space and payload are at a premium. The versatility of design and range of connection interfaces extend the AsteRx-i V applicability to automation and robotics and as well as logistics.

Ease of integration

Accompanied by a UAS-tailored carrier board, the AsteRx-i V integrates seamlessly into light UAV and robotics platforms. The IMU offers a simple, bolt-on, plug-n-play solution, designed for easy testing and integration. Septentrio's open interfaces and software tools (webUI, RxTools) make the integration, configuration and control of the AsteRx-i V seem effortless

AsteRx-i V

FEATURES

GNSS technology

The AsteRx-i V supports tracking of the following signals:

- ▶ GPS: L1, L2
- ▶ GLONASS: L1, L2
- ▶ Galileo¹: E1 E5b
- ▶ BeiDou¹: B1, B2
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM (L1)
- ▶ QZSS¹: L1, L2

Septentrio's patented GNSS+ technologies:

- ▶ AIM+ unique anti-jamming and monitoring system against narrow and wideband interference
- ▶ APME+ a posteriori multipath estimator for code and phase multipath mitigation
- ▶ LOCK+ superior tracking robustness under heavy mechanical shocks or vibrations
- ▶ IONO+ advanced scintillation mitigation

RAIM (Receiver Autonomous Integrity Monitoring)

RTK (rover)¹

Formats

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

RTCM v2.x and v3.x (MSM included)

CMR and CMR+ (CMR+ input only)

NMEA 0183 v2.3, v3.01, v4.0 (output only)

Connectivity AsteRx-i V OEM

4 Hi-speed serial ports (LVTTTL)

1 USB device port

xPPS output (max 100 Hz)

2 Event markers

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

Outputs to drive external LEDs

General Purpose Output

Connectivity AsteRx-i V UAS

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

LEDs for power, logging and PVT status

3 Hi-speed serial ports (LVTTTL)

1 Full-speed USB device port (micro USB)

PERFORMANCE

Integrated position accuracy^{2,3}

	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^{2,3,4}

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

RTK accuracy after outage

Outage duration (s)	Position error (m, RMS)
1	0.1
10	0.5
20	2
30	5

Attitude accuracy in RTK mode^{2,3,4}

Heading	0.2 deg
Pitch/Roll	0.05 deg

Velocity accuracy^{2,3,4}

0.02 m/s

IMU performance

Gyroscope Performance

Input range	± 2000 °/s
In-run bias stability	< 10 °/hr
Random walk / noise density	0.21 °/√hr

Accelerometer Performance

Input range	± 16 g
In-run bias stability	0.04 mg
Random walk / noise density	0.14 mg/√Hz

Maximum update rate

Integrated position	200 Hz (beta 50 Hz)
GNSS Measurements only (for post-processing)	2 Hz
IMU Raw data (for post-processing)	200 Hz
Latency	< 20 ms

Time precision

xPPS out	5 ns
Event accuracy	< 20 ns

Time to first fix

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

PHYSICAL AND ENVIRONMENTAL

AsteRx-i V OEM

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%

Connectors

30 pins Hirose DF40 socket
60 pins Hirose DF40 socket for expanded connectivity

AsteRx-i V UAS

Size	47.5 × 70 × 14.9 mm (1.87 × 2.75 × 0.58 in)
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UAS Interface alone (no GNSS)	10 g (0.352 oz)
Input voltage	5 V or 6-30 VDC

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-markers	2 pins header
PPS-Out	3 pins header

IMU

Size	36 × 33 × 9 mm (1.42 × 1.30 × 0.35 in)
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Weight	15 g (0.53 oz)
Input voltage	6-30 VDC

Antenna

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

System power consumption

	AsteRx-i V OEM	AsteRx-i V UAS
GPS/GLO (L1/L2)	1.1 W	1.1 W
All signals	1.4 W	1.4 W
Onboard logging	NA	0.3 W

Environment

Operating temperature	-30 °C to +60 °C (-22 °F to 140 °F)
Storage temperature	-55 °C to +85 °C (-67 °F to 185 °F)
Humidity	5% to 95% (non-condensing)
Vibration	MIL-STD-810G

¹ Optional feature

² Open-sky conditions

³ RMS levels

⁴ Baseline < 40 Km

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NavtechGPS is a U.S. distributor for Septentrio.
Please contact NavtechGPS for U.S. inquiries

