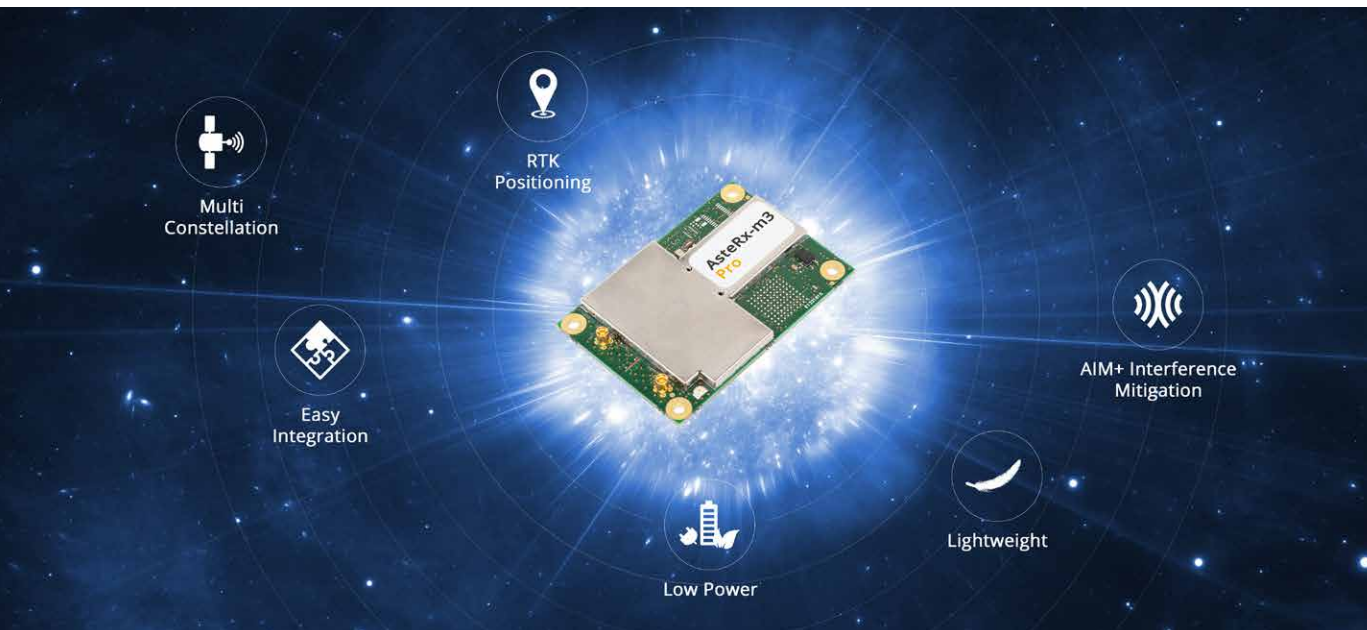


AsteRx-m3 Pro

Compact ultra low-power multi-frequency GNSS rover receiver



Automation



Logistics



UAV



Robotics

The AsteRx-m3 Pro is a compact, high performance, ultra-low power GNSS receiver ideal for integration into robotics and other demanding industrial applications where power and space are at a premium. It incorporates the latest anti-jamming technology and offers unbeatable robustness and reliability.

KEY FEATURES

- ▶ **Reliable and robust centimeter-level (RTK)**
- ▶ **AIM+ industry-leading anti-jamming, anti-spoofing technology**
- ▶ **OSNMA Support**
- ▶ **Industry-leading ultra-low power consumption**
- ▶ **Multi-constellation, multi-frequency satellite tracking**
- ▶ **Easy-to-integrate**

Rover applications

The AsteRx-m3 Pro is a rover GNSS receiver with best-in-class positioning performance, with Septentrio's latest multi-frequency multi-constellation RTK technology. It delivers robust and reliable positions in challenging environment in both single and dual antenna modes. Its specialized design makes it easy to use and cost efficient as a rover receiver.

BENEFITS

State of the art

The AsteRx-m3 Pro is a state-of-the-art GNSS rover receiver designed to deliver reliable and robust position in challenging environments.

The GNSS+ toolset is the technology that allows AsteRx-m3 Pro to deliver reliable positions even GNSS signals are disturbed or when the receiver is subject to shocks and vibrations:

- ▶ **LOCK+** enables robust tracking during high vibrations and shocks
- ▶ **APME+** disentangles direct signal and those reflected from nearby structure
- ▶ **IONO+** provides advanced protection against ionospheric disturbance
- ▶ **AIM+** is the most advanced anti-jamming, anti-spoofing on-board interference mitigation technology on the market (narrow and wide band, chirp jammers).

Ultra-low power design

The AsteRx-m3 Pro 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 improved efficiency.

Easy-to-integrate

The AsteRx-m3 Pro 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, which allows integrators to create professional custom post-processing applications. AsteRx-m3 Pro is compatible with its SDK library for PPK (Post-processed kinematic) offline processing.

FEATURES

GNSS signals

544 Hardware channels for simultaneous tracking of most visible signals:

- ▶ GPS: L1 C/A, L1C, L2C, L2 P(Y), L5
- ▶ GLONASS: L1 C/A, L2C/A, L3, L2P
- ▶ BeiDou: B1I, B1C, B2a, B2b, B2I, B3I
- ▶ Galileo: E1, E5a, E5b
- ▶ QZSS: L1 C/A, L1 C/B, L2C, L5
- ▶ NavIC: L5
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

Septentrio's patented GNSS+ technologies

- ▶ **AIM+** industry leading anti-jamming, anti-spoofing interference monitoring & mitigation technology
- ▶ **IONO+** advanced scintillation mitigation
- ▶ **APME+** a posteriori multipath estimator for code and phase multipath mitigation
- ▶ **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations
- ▶ **RAIM+** (Receiver Autonomous Integrity Monitoring)

OSNMA Support

Formats

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

NMEA 0183, v3.01, v4.0

RTCM v2.x, v3.x (MSM messages included)

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

Connectivity

4 Hi-speed serial ports (LVTTTL)

1 USB device port (TCP/IP communication and with 2 extra serial ports)

xPPS output (max 100Hz)

Ethernet port (TCP/IP, UDP, LAN 10/100 Mbps)

2 Event markers

Outputs to drive external LEDs

General purpose output

NTRIP (client)

SUPPORTING COMPONENTS

Web UI with full control and monitoring functionality.

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.

PERFORMANCE

RTK performance ^{2,3,4}

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

GNSS attitude accuracy ^{1,2,3}

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

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

Velocity accuracy ^{2,3}

0.03m/s

Maximum update rate

Position	10 Hz
Measurements	10 Hz

Latency ⁵

<10 ms

Time precision

xPPS out ⁶	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start ⁷	< 45 s
Warm start ⁸	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

OPTIONAL ACCESSORIES

- ▶ Antennas
- ▶ SDK library for UAS applications
- ▶ Robotics interface board

PHYSICAL AND ENVIRONMENTAL

Size	47.5 x 70 x 9.32 mm
	1.87 x 2.75 x 0.36 in

Weight	27 g / 0.952 oz
---------------	-----------------

Input voltage	3.3 VDC ± 5%
----------------------	--------------

Power consumption

GPS L1/L2	750 mW
GPS/GLO L1/L2	800 mW
All signals, all GNSS constellations	1000 mW

Antenna

Connectors ⁹	2 x MMCX
Antenna supply voltage	3-5.5 VDC
Maximum antenna current	150 mA
Antenna gain range	15-45 dB

I/O connectors ¹⁰

30 Pins Hirose DF40 socket
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, WEEE, CE, FCC
----------------------	---------------------



¹ Optional feature

² Open sky conditions

³ RMS level

⁴ Baseline < 40 Km

⁵ 99.9%

⁶ Including software compensation of sawtooth effect

⁷ No information available (no almanac, no approximate position)

⁸ Ephemeris and approximate position known

⁹ Second connector for heading configuration

¹⁰ Backwards compatible with AsteRx-m2 and AsteRx-m2a for easy replacement

EMEA

Greenhill Campus (HQ)
Interleuvenlaan 15i
3001 Leuven, **Belgium**

Espoo, **Finland**

Americas

2601 Airport Drive,
Suite 360
Torrance, CA 90505, **USA**

septentrio.com/contact

Asia-Pacific

Shanghai, **China**
Yokohama, **Japan**
Seoul, **Korea**

septentrio.com

