AsteRx-m3 ProBase
Multi-frequency GNSS base station receiver

Septentrio

RTK Base Station

Survey & GIS
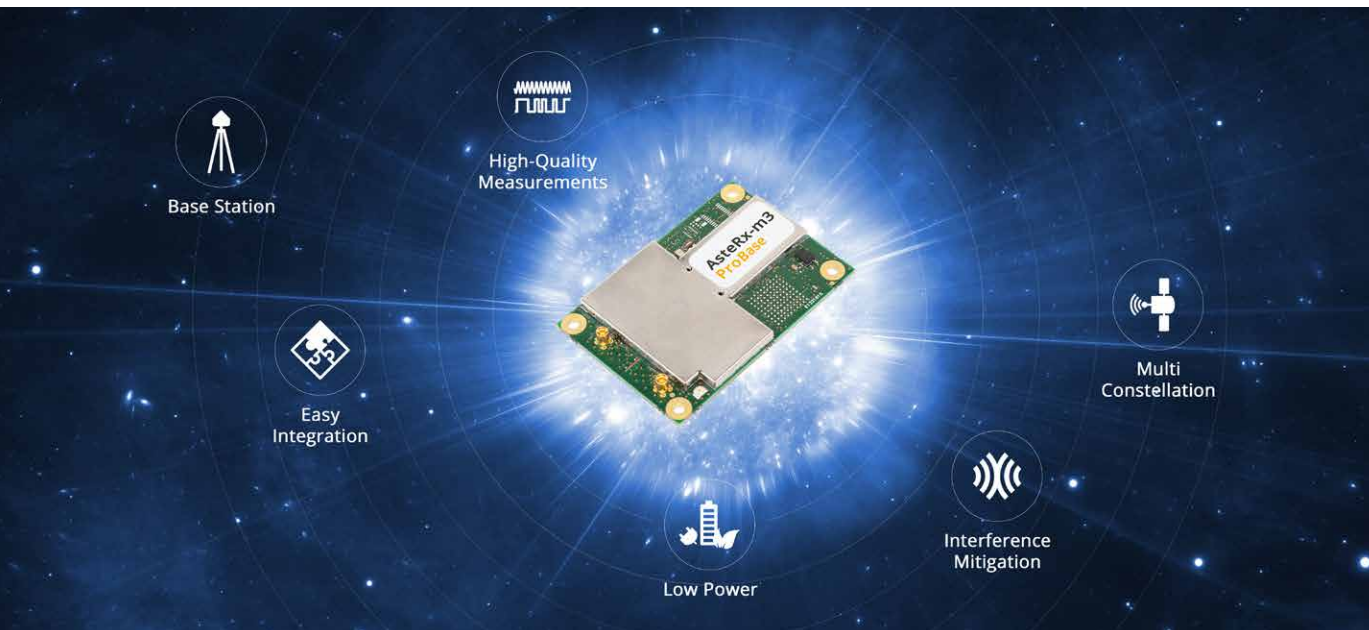
The **AsteRx-m3 ProBase** is a multi-frequency and multi-constellation GNSS receiver designed to operate as a base station for local RTK or to be used for network densification. On top of providing top-quality measurements this receiver offers full configuration flexibility as well as easy monitoring capabilities. It incorporates the latest anti-jamming technology for unbeatable robustness and reliability.

KEY FEATURES

▶ **Robust top-quality measurements for RTK and differential corrections**

▶ **Multi-constellation for best availability**

▶ **Multi-frequency for reliability**

▶ **OSNMA Support**

▶ **AIM+ anti-jamming anti-spoofing system**

▶ **Open interface for full compatibility with all standard data formats**

BENEFITS

High quality real-time GNSS corrections
The AsteRx-m3 ProBase features the latest Septentrio quad constellation GNSS technology for best quality measurements. It generates real time differential and RTK corrections which can be used in GNSS and GNSS/INS products to achieve centimeter-level accuracy.

Interference robustness
ProBase 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.

Septentrio's industry leading APME+ technology aids in achieving the best multipath rejection while IONO+ ensures the best measurements and accuracy even under intense ionospheric activity.

Easy-to-integrate
The AsteRx-m3 ProBase supports multiple standard correction messages for best compatibility when integrating GNSS technology. This multi-signal receiver generates highest quality corrections ensuring reliable positioning accuracy for end-users. The product is easy to integrate and comes with fully documented interfaces, commands and data messages. Raw data logging can easily be set-up with this OEM board and the included RxTools software allows receiver configuration, monitoring and data analysis. An SDK is provided to help integrators create professional custom applications.

AsteRx-m3 ProBase

FEATURES

GNSS signals

544 Hardware channels for simultaneous tracking of most visible signals:

- GPS: L1 C/A, L2C, L2 P(Y), L5
- GLONASS: L1 C/A, L2C/A, L3
- BeiDou: B1I, B1C, B2a, B2I, B3I
- Galileo: E1, E5a, E5b, E5Altboc
- QZSS: L1 C/A, L2C, L5
- NavIC: L5
- SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

Septentrio's patented GNSS+ technologies

- **AIM+** unique anti-jamming and monitoring system against narrow and wideband interference with spectrum analyser
- **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, v2.3, v3.01, v4.0

RINEX (obs, nav) v2.x, v3.x

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

CMR v2.0

Connectivity

4 Hi-speed serial ports (LVTTL)

1 USB device port (micro USB with access to internal disk, 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

1SDIO interface for logging (covers µSD, SD, eMMC)

Outputs to drive external LEDs

General purpose output

NTRIP (server, caster)

FTP server, FTP push, SFTP

OPTIONAL ACCESSORIES

- Antennas
- Robotics interface board

PERFORMANCE

Measurement precision[1,2]

		Unsmoothed pseudorange (cm)
GPS	L1C/A, L2C	16
	L2P	10
	L5	6
GLONASS	L1 C/A, L2 C/A	25
	L3	10
Galileo	E1	8
	E5a, E5b	6
	E5AltBOC	1.5
BeiDou	B1I,B1C, B2I	8
	B2a, B3I	6
NavIC	L5	16
QZSS	L1 C/A, L2C	16
	L5	6
		Carrier phase
All signals		1 - 1.3 mm

Maximum update rate

Position	10 Hz
Measurements	10 Hz

Latency [3]

	<10 ms

Time precision

xPPS out[4]	5 ns
Event accuracy	< 20 ns

Time to first fix

Cold start[5]	< 45 s
Warm start[6]	< 20 s
Re-acquisition	avg. 1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

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.

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

I/O connectors [7]

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

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[1] 1σ level

[2] C/N0 = 45 dB-Hz

[3] 99.9%

[4] Including software compensation of sawtooth effect

[5] No information available (no almanac, no approximate position)

[6] Ephemeris and approximate position known

[7] Backwards compatible with AsteRx-m2 and AsteRx-m2a for easy replacement

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