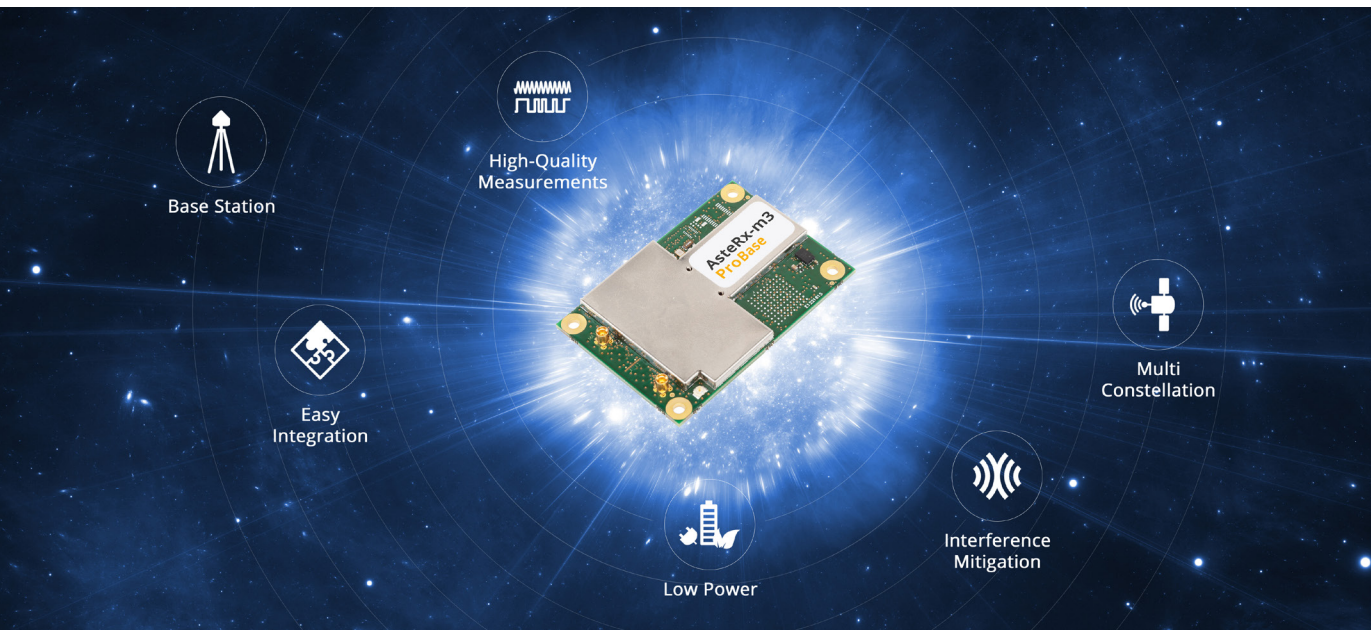


# AsteRx-m3 ProBase

Multi-frequency GNSS base station receiver



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
- ▶ **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, L1C, 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, L1C, 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)

### 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 (LVTTTL)

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  $\mu$ SD, 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<sup>1,2</sup>

|             |                      | 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                           |
|             | <b>Carrier phase</b> |                             |
| All signals |                      | 1 - 1.3 mm                  |

### Maximum update rate

|              |       |
|--------------|-------|
| Position     | 10 Hz |
| Measurements | 10 Hz |

**Latency**<sup>3</sup> < 10 ms

### Time precision

|                       |         |
|-----------------------|---------|
| xPPS out <sup>4</sup> | 5 ns    |
| Event accuracy        | < 20 ns |

### Time to first fix

|                         |          |
|-------------------------|----------|
| Cold start <sup>5</sup> | < 45 s   |
| Warm start <sup>6</sup> | < 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  $\pm$  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<sup>7</sup>

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



<sup>1</sup> 1 $\sigma$  level

<sup>2</sup> C/N0 = 45 dB-Hz

<sup>3</sup> 99.9%

<sup>4</sup> Including software compensation of sawtooth effect

<sup>5</sup> No information available (no almanac, no approximate position)

<sup>6</sup> Ephemeris and approximate position known

<sup>7</sup> Backwards compatible with AsteRx-m2 and AsteRx-m2a for easy replacement

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