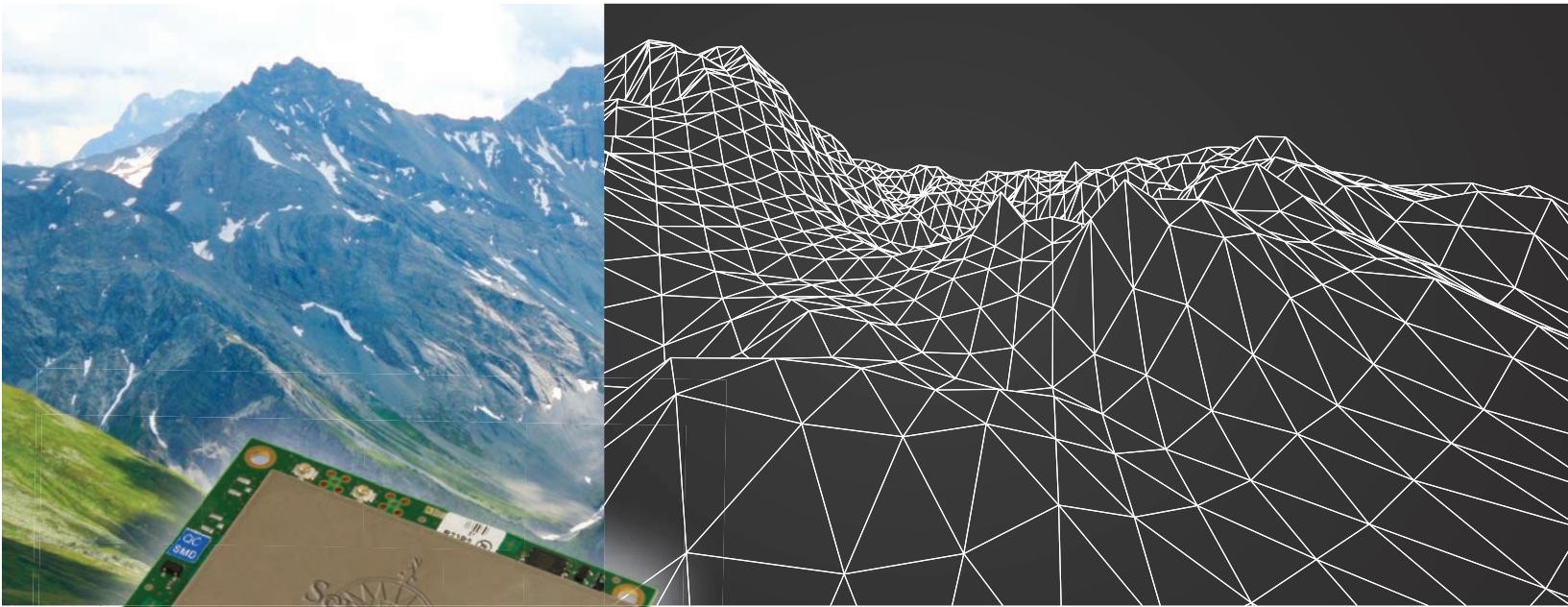


# AsteRx-m

Compact low-power dual frequency GNSS receiver



integrator kit

**Ultra-low power, smaller than credit card GPS/GLONASS dual-frequency RTK receiver, for integration in hand-held devices, mobile computing platforms and other space-constrained applications requiring high accuracy and low-power consumption.**

## Compact RTK receiver

Measuring only 70 x 48 mm, the AsteRx-m provides cm-level dual-frequency GPS RTK operation at less than 500 mW, and dual-frequency GPS/GLONASS RTK positioning at less than 600 mW. It is fully scalable from L1-only positioning to L1/L2 GPS/GLONASS operation.

## World-class performance with GNSS+

AsteRx-m offers innovative tracking and positioning algorithms designed for demanding industrial environments, including:

- APME+ code and phase multipath mitigation technology
- Track+ for robust tracking under weak signal conditions such as under foliage
- RTK+, a novel, multi-system cm-accurate positioning engine using innovative real-time modeling of GNSS errors and a new mixed-mode fixing approach for robust performance and high availability in difficult environments
- GLO+, a special ultra-precise GLONASS bias calibration method to increase accuracy, robustness and compatibility

## Easy to integrate

Two antenna connectors are available: one can be connected to an internal antenna, while connecting a high-grade external antenna remains possible. A compact I/O connector allows integration in slim devices. The board is fully shielded to help avoid EMI issues. An extensive set of commands and data messages provides the integrator with full flexibility.

## A comprehensive GNSS SW-toolset

RxTools provides an intuitive GUI (RxControl) for receiver configuration and remote control. Various tools for mission planning, data logging, replay and analysis, reporting, and more are included.

## Key Features

- ▶ **Unique compact GPS/GLONASS RTK receiver**
- ▶ **Industry leading low power consumption (600 mW at full operation)**
- ▶ **cm-level RTK positioning accuracy**
- ▶ **Special GNSS+ algorithms for solid industrial performance**
- ▶ **Full EMI shielding**
- ▶ **Easy to integrate, incl. extensive and well documented interface language**
- ▶ **A comprehensive GNSS SW-toolset**

## FEATURES

### GNSS Technology

Dual-frequency L1/L2 code/carrier tracking of GPS and GLONASS signals.

132 hardware channels for simultaneous tracking of all visible satellites in GPS and GLONASS constellations

GNSS+ pack containing APME+, Lock+ and RTK+ and ATrack+

Positioning modes : stand-alone, SBAS, DGNSS and RTK

3 channels for SBAS tracking (EGNOS, WAAS, GAGAN MSAS, SDGM)

RAIM

Raw data output (code, carrier, navigation data - optional)

### Connectivity

x PPS output (x = 1, 2, 5, 10)

1 Event marker

2 antenna connectors (internal/external antenna) with automatic external antenna detection

3 Hi-speed serial ports

1 full speed USB port

On-board logging on Micro-SD card (max 32 GB)

### Formats

Highly compact and detailed Septentrio Binary Format (SBF) output

NMEA v2.30 output format, up to 10 Hz

RTCM v2.2, 2.3, 3.0 or 3.1

CMR2.0 and CMR+

Includes intuitive GUI (RxControl) and detailed operating and installation manual

## PERFORMANCE

### Position accuracy<sup>1,2,3,5,7</sup>

|            | Horizontal | Vertical |
|------------|------------|----------|
| Standalone | 1.2 m      | 1.9 m    |
| SBAS       | 0.6 m      | 0.8 m    |
| DGPS       | 0.4 m      | 0.9 m    |

### RTK performance<sup>1,2,3,4</sup>

|                     |                  |  |
|---------------------|------------------|--|
| Horizontal accuracy | 0.6 cm + 0.5 ppm |  |
| Vertical accuracy   | 1 cm + 1 ppm     |  |
| Average time to fix | 7 s              |  |

### Velocity Accuracy<sup>1,2,3,7</sup>

|  | Horizontal | Vertical   |
|--|------------|------------|
|  | 0.01 m/s   | 00.015 m/s |

### Maximum Update rate

|                                    |       |
|------------------------------------|-------|
| Position (Standalone, SBAS, DGNSS) | 20 Hz |
| Position (RTK)                     | 10 Hz |
| Measurements                       | 20 Hz |

### Latency

|  |         |
|--|---------|
|  | < 20 ms |
|--|---------|

### Time accuracy<sup>3</sup>

|                |         |
|----------------|---------|
| xPPS Out       | 10 ns   |
| Event accuracy | < 20 ns |

### Time to first fix

|                         |            |
|-------------------------|------------|
| Cold start <sup>6</sup> | < 45 s     |
| Warm start <sup>7</sup> | < 20 s     |
| Re-acquisition          | avg. 1.2 s |

### Tracking performance (C/N0 threshold)

|             |          |
|-------------|----------|
| Tracking    | 20 dB-Hz |
| Acquisition | 33 dB-Hz |

### Dynamics

|              |       |
|--------------|-------|
| Acceleration | 10 g  |
| Jerk         | 4 g/s |

## PHYSICAL AND ENVIRONMENTAL

### Power dissipation

|                   |             |
|-------------------|-------------|
| GPS L1            | 320 mW      |
| GPS L1/L2         | 490 mW      |
| GPS/GLONASS L1/L2 | 600 mW      |
| Shutdown          | 150 $\mu$ W |

### Input voltage

3.3 V DC  $\pm$  5%

**Size** 47.5 x 70 mm (1.87 x 2.75 in)

**Weight** 27 g (0.95 oz)

### I/O Connector

30 pins Hirose DF40 socket

### Antenna

|                        |          |
|------------------------|----------|
| Connectors             | U,FL     |
| Antenna supply voltage | 3-6 V DC |
| Maximum current        | 200 mA   |
| Detection current      | < 6 mA   |

### Operating temperature

-40°C to +85°C  
(-40 °F to +185 °F)

### Storage temperature

-40°C to +85°C  
(-40 °F to +185 °F)

### Certification

RoHS

<sup>1</sup> 1 Hz measurement rate

<sup>2</sup> Performance depends on environmental conditions

<sup>3</sup> 1 $\sigma$  level

<sup>4</sup> Baseline: <100 km

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

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

<sup>7</sup> Max speed 600 m/s

### Europe

Greenhill Campus  
Interleuvenlaan 15i  
3001 Leuven, Belgium  
+32 16 30 08 00

### Americas

Suite 200,  
23848 Hawthorne Blvd  
Torrance, CA 90505, USA  
+1 310 541 8139

### Asia-Pacific

Level 901, The Lee Gardens  
33 Hysan Avenue  
Causeway Bay, Hong Kong  
+852 3959 8680