AsteRx-m

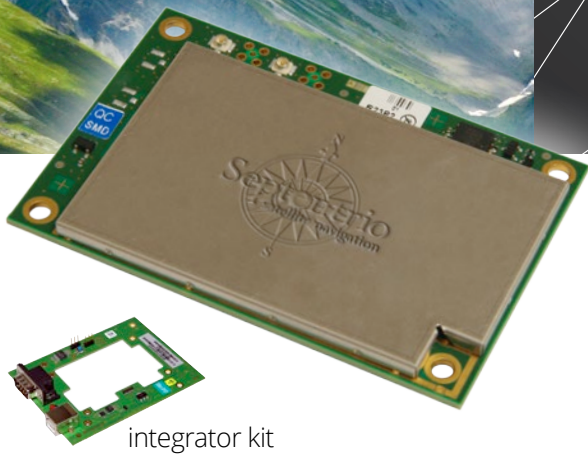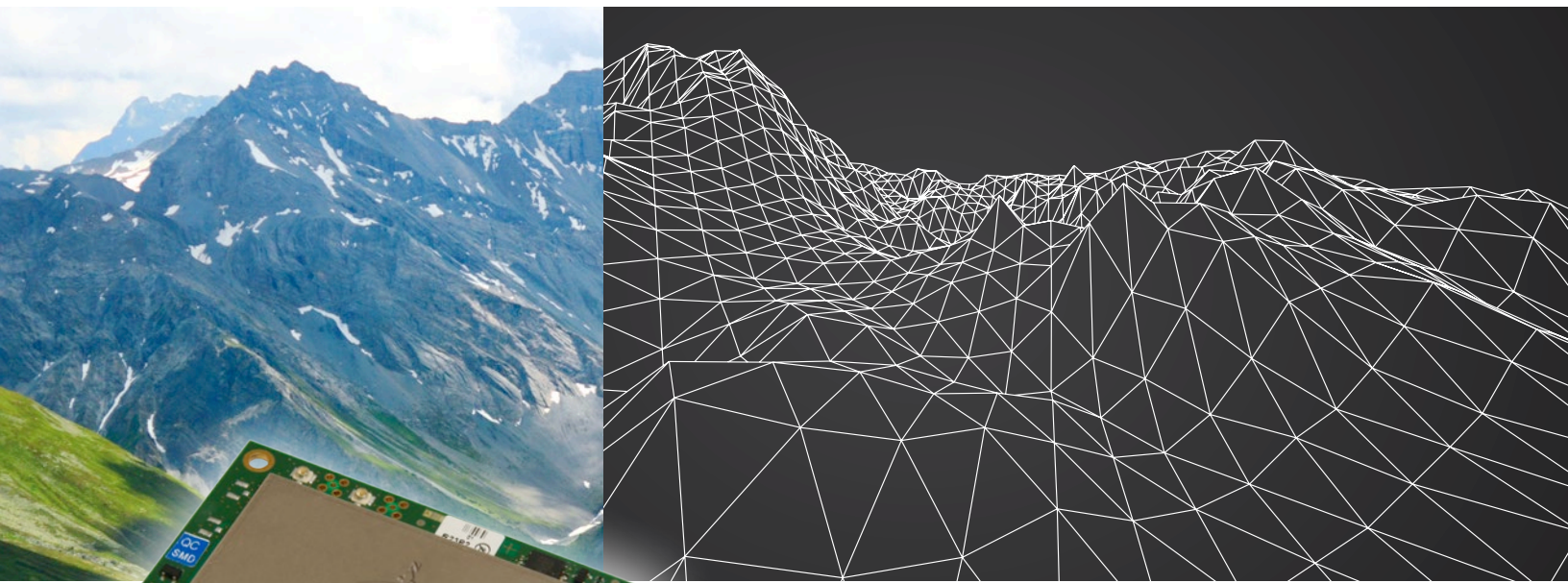**Compact low-power dual frequency GNSS receiver**

septentrio.

integrator kit

Key Features

▶ **Unique compact GPS/GLONASS RTK receiver**

▶ **Industry leading low power consumption (600mW 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**

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 70mm 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.

AsteRx-m

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+, AIM+ and ATrack+

Positioning modes : stand-alone, SBAS, DGNSS, RTK, PPP[14]

Includes up to 3 SBAS channels (EGNOS, WAAS, other)

RAIM included

Raw data output (code, carrier, navigation data)

25 Hz data output rate (user selectable)

Connectivity

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

1 Event marker

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

3 high-speed serial ports

1 full speed USB port

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[1,2,3,5]

	Horizontal	Vertical
Standalone	1.3 m	1.9 m
SBAS	0.6 m	0.8 m
DGPS	0.5 m	0.9 m

RTK performance[1,10]

Horizontal accuracy[3]	0.6 cm + 0.5 ppm
Vertical accuracy[3]	1 cm + 1 ppm
Average time to fix[7]	7 sec

Velocity Accuracy[1,2,3]

	Horizontal[3]	Vertical[3]
	0.8 cm/s	1,3 cm/s

Maximum Update rate

25Hz

Latency

< 20 msec

Time accuracy[3]

1PPS	10 nsec
Event accuracy	< 10 nsec

Time to first fix

Cold start[6]	< 45 sec
Warm start[7]	< 20 sec
Re-acquisition	avg 1.2 sec

Tracking performance (C/N0 threshold)[8,9,11]

Tracking	26 dB-Hz
Acquisition	33 dB-Hz

Sensitivity, internal antenna

Tracking	-148 dBm
Acquisition	-141 dBm

Dynamics

Acceleration[12]	10 g
Jerk[13]	4 g/sec

PHYSICAL AND ENVIRONMENTAL

Power dissipation

GPS L1	320 mW
GPS L1/L2	490 mW
GPS/GLONASS L1/L2	600 mW
Shutdown	150 µW

Input voltage	3.3 VDC +/- 5%
Size	47,5 x 70 mm
Weight	40 g

I/O Connector	30 pins Hirose DF40 socket

Antenna

Connectors	U.FL
Antenna supply voltage	3-6 VDC
Maximum current	200 mA
Detection current	< 6 mA

Operating temperature	-40 to +85 °C
Storage temperature	-40 to +85 °C
Certification	RoHS

[1] 1 Hz measurement rate

[2] Performance depends on environmental conditions

[3] 1σ level

[4] Baseline < 100 km

[5] Smoothed

[6] No information available (no almanacs, no approximate position)

[7] Ephemeris and approximate position known

[8] 95%

[9] Max speed 600 m/sec

[10] Fixed ambiguities

[11] Depends on user settings of tracking loop parameters

[12] During acquisition

[13] During tracking

[14] Requires Veripos or TERRASTAR® corrections. L-band demodulator not included

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