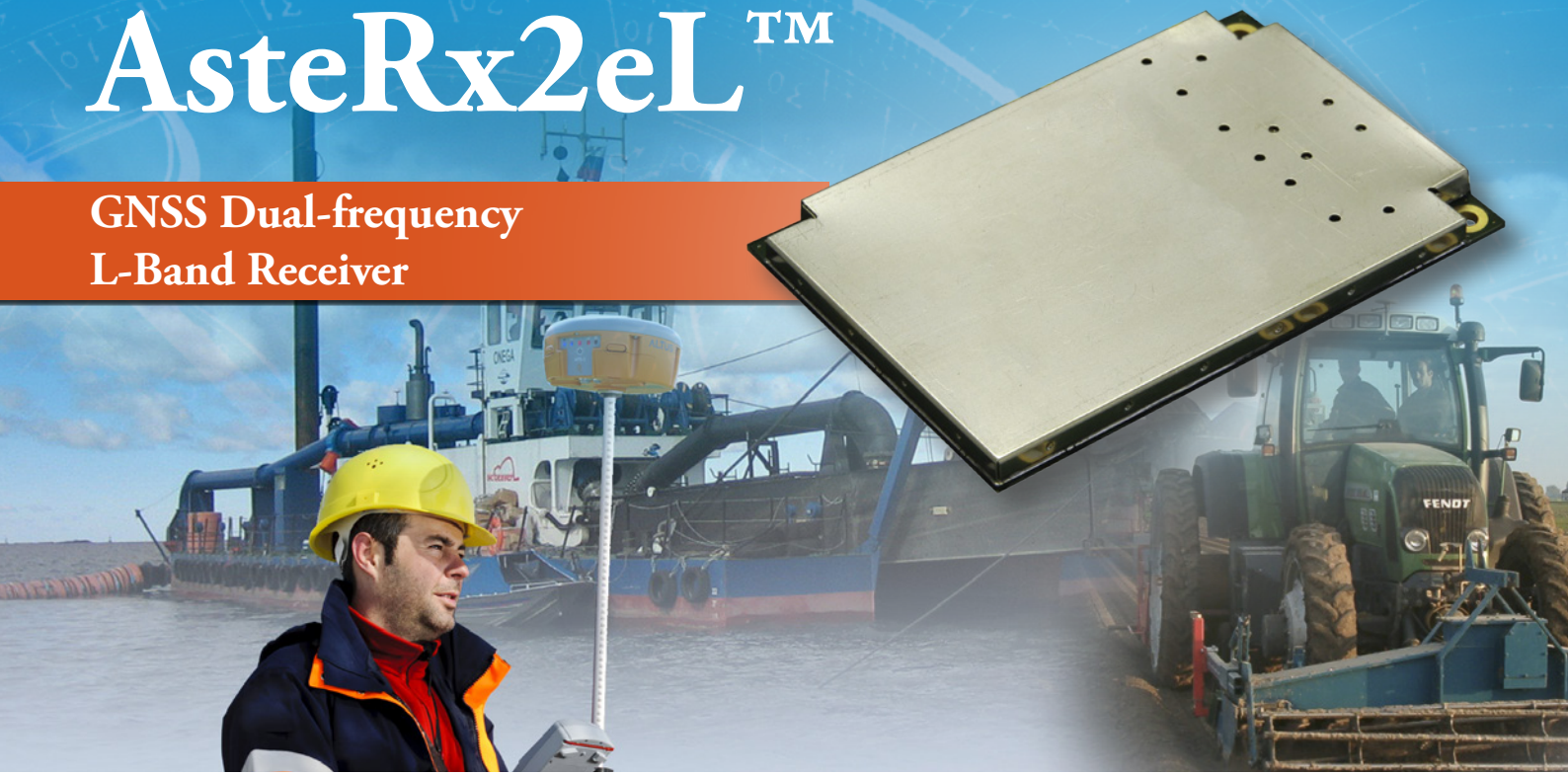
AsteRx2eL™

GNSS Dual-frequency L-Band Receiver



The AsteRx2eL is an all-in-view dual-frequency GPS/GLONASS receiver, featuring an integrated L-band modem to receive GNSS augmentation data transmitted by satellite. Wide-area differential and Precise Point Positioning (PPP) allow precise position calculation anywhere on the globe.

Industrial Receiver with Integrated L-Band support

Offering 136 channels L1/L2 GPS/GLONASS/SBAS and with an integrated L-band modem to receive GNSS augmentation data, transmitted via Inmarsat satellites, the AsteRx2eL provides a high level of flexibility for precise positioning, using corrections from local RTK networks to PPP algorithms that model satellite clock-and orbit errors, enabling dm-level position calculations anywhere on the Earth. PPP techniques are highly suited for use on remote or in sparsely populated areas where fixed infrastructure for providing corrections is absent, or as a complement to RTK in areas where corrections may not be available constantly.

World-class performance with GNSS+

Asterx2eL receivers are equipped with the latest GNSS+™ technology:

- RTK: a novel, multi-system cm-level accurate positioning engine that uses innovative real-time modeling of GNSS errors and a new mixed-mode fixing approach for robust performance and high availability in difficult environments
- AIM+: Unique feature offering protection against in-band interference signals. A spectrum plot allows easy identification of interference.
- APME+: Advanced code and phase multipath mitigation technology
- Track: for robust tracking of weak signals
- Lock: providing stable tracking under high vibration and dynamic conditions
- SPPP: provides ultrafast convergence of the PPP solution

Easy to integrate

The AsteRx2eL is available as an OEM board or in a compact waterproof housing (AsteRx2eL HDC). The board is fully shielded to help avoid EMI issues. The AsteRx2eL interface is fully documented providing the integrator with full flexibility.

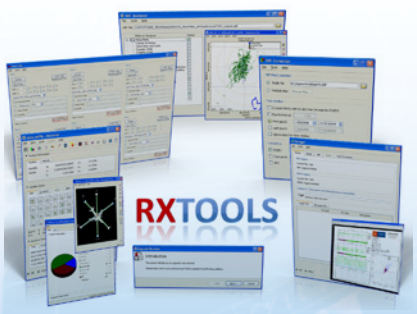
A comprehensive GNSS SW-toolset

The RxTools package includes the intuitive RxControl GUI for receiver configuration and monitoring. Various tools for mission planning, data logging, replay and analysis, reporting, and more are included.

Key Features

- Industrial GPS/GLONASS receiver with integrated L-Band receiver
- cm-level (RTK) and dm-level (PPP) position accuracy
- Septentrio GNSS+ algorithms for robust industrial performance
- Full EMI shielding
- Easy to integrate, fully documented interface language
- A comprehensive GNSS SW-toolset

TERRASTAR® READY



Septentrio
satellite navigation

Versatile OEM Receivers for Demanding Applications

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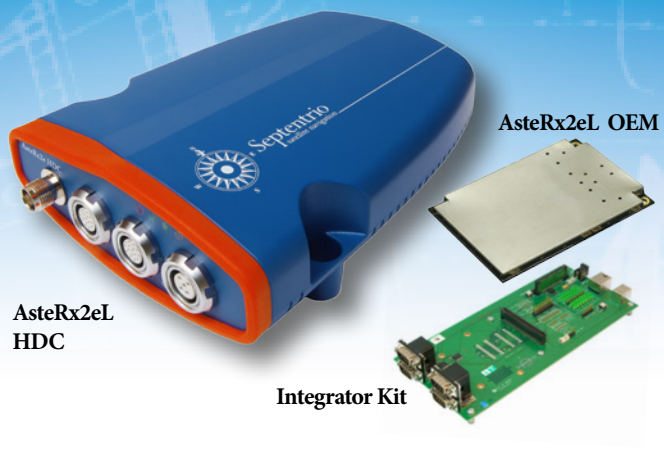

FEATURES

- Dual-frequency L1/L2 code/carrier tracking of GPS and GLONASS.
- 136 hardware channels for simultaneous tracking of all visible GPS and GLONASS satellite signals
- Integrated L-band receiver
- 100 Hz measurements, SBAS, DGPS and SA PV, 25Hz PPP, RTK (user selectable)
- A Posteriori Multipath Estimator technique (APME)
- Differential GPS (base station and rover)
- Real Time Kinematic (base or rover)
- TERRASTAR-M® and TERRASTAR-D® services[18]
- Up to 3 SBAS channels (EGNOS, WAAS, other)
- Innovative and flexible power management under user control
- x PPS output (x = 1, 2, 5, 10)
- 2 Event markers
- RAIM included
- Raw data output (code, carrier, nav data)
- 4 hi-speed serial ports (OEM)
- 3 hi-speed serial ports (HDC)
- 1 Ethernet port
- 1 full speed USB port
- Highly compact and fully documented 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+
- Compact OEM board and housed solutions
- Intuitive RxControl GUI and detailed operating and installation manual included

PHYSICAL AND ENVIRONMENTAL

OEM	
Size	60 x 90 mm
weight	60 g
Input voltage	3-5.5 VDC
HDC (IP65)	
size	130 x 185 x 46 mm
weight	510 g
Input voltage	9-30 VDC
Antenna LNA Power Output	
Output voltage	+ 5 VDC
Maximum current	200 mA

Power consumption	2.9 W typical
Operating temperature	-40 to +85 °C
Storage temperature	-40 to +85 °C
Humidity	5 % to 95 % (non condensing)

Connectors (HDC Housing)	
Antenna	TNC female
Power	ODU 5 pins female
I/O (2 ports)	ODU 16 pins female

PERFORMANCE

Position accuracy[1,2,3,6]	Horizontal	Vertical
Standalone	1.3 m	1.9 m
SBAS	0.6 m	0.8 m
DGPS	0.5 m	0.9 m
TERRASTAR-D®[18]	0.10 m	0.20 m
RTK performance[1,14]		
Horizontal accuracy[3]	0.6 cm + 0.5 ppm	
Vertical accuracy[3]	1 cm + 1 ppm	
Average time to fix[4]	7 sec	
Velocity Accuracy[1,2,3]		
	Horizontal[3]	Vertical[3]
	0.8 cm/sec	1.3 cm/sec
Maximum Update rate	25 Hz	
Latency	< 20 msec	
Time accuracy[3]		
1PPS	10 nsec	
Event accuracy	< 10 nsec	
Measurement precision[1,3,5]		
C/A pseudoranges	5 cm (GPS)[6]	
	0.16 m (GPS)[7,8]	
	7 cm (GLONASS)[6]	
	0.25 m (GLONASS)[7,9]	
GPS P2 pseudoranges[7]	0.1 m	
GLONASS P pseudoranges[7]	0.1 m	
L1 carrier phase	1 mm	
L2 carrier phase	1 mm	
L1/L2 doppler	0.02 Hz	
Time to first fix		
Cold start[10]	< 45 sec	
Warm start[11]	< 20 sec	
Re-acquisition	avg 1.2 sec	
Tracking performance (C/N0 threshold)[12,13,15]		
Tracking	26 dB-Hz	
Acquisition	33 dB-Hz	
Acceleration[16]	10 g	
Jerk[17]	4 g/sec	

1 1 Hz measurement rate
2 Performance depends on environmental conditions
3 1σ level, averaged over 24h
4 Baseline < 20 km
5 C/N0 = 45 dB-Hz
6 Smoothed
7 Non-smoothed
8 Multipath mitigation disabled
9 Multipath mitigation enabled
10 No information available (no almanacs, no approximate position)
11 Ephemeris and approximate position known
12 95%
13 Max speed 600 m/sec
14 Fixed ambiguities
15 Depends on user settings of tracking loop parameters
16 During acquisition
17 During tracking
18 Requires service activation from TERRASTAR®.

OTHER SEPTENTRIO PRODUCTS

AsteRx-m – 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.

AsteRx2e – Compact dual-frequency GPS/GLONASS receiver platform, offering top-quality GPS code and carrier phase data and dual-frequency positioning (including DGPS and RTK) at up to 25 Hz.

AsteRx2eH – A unique single-board dual-frequency multi-antenna GPS/GLONASS receiver in a waterproof aluminum housing, that can be connected to 2 antennas for various machine control, heading and other multi-antenna applications.

AsteRx3 – A Multi-frequency GPS/GLONASS/GALILEO receiver for demanding industrial applications, featuring precise RTK with extended baselines, advanced multipath and interference mitigation and exceptional tracking stability under high vibration conditions.

AsteRxi – IMU assisted Compact Dual-frequency GNSS receiver platform, offering a 50Hz RTK position based on integrated IMU and GNSS measurements. In addition attitude information such as heading, pitch and roll are provided even in shadowed environments where conventional GNSS receivers fail.

PolaRx4 – fully featured high performance GNSS receiver providing network operators and scientific users with high-quality tracking and measurement of all available and upcoming GNSS signals (GPS/GALILEO/GLONASS/COMPASS/SBAS)

PolaRxS – a multi-frequency multi-constellation receiver dedicated to ionospheric monitoring and space weather applications

PolaNt-x – A set of lightweight sturdy high precision antennas for geodetic, survey and machine control applications. Available in single-frequency GPS/GLONASS or multi-frequency GPS/GLONASS/GALILEO/COMPASS/L-Band variant, for use with the PolaRx and AsteRx receiver families.

Chokering MC – A multi-frequency GPS/GLONASS/Galileo L1/L2/E5abAltBOC chokering antenna for use with the PolaRx receiver family

RxTools – A suite of software applications for easy control of PolaRx and AsteRx receivers, and for easy manipulation, analysis and reporting of the data generated with these receivers

RxMobile – A unique intuitive, portable GUI field controller for the Septentrio receivers. RxMobile allows controlling the receiver, monitoring the navigation solution and accessing its functions in the field in the same intuitive way as with RxControl.

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