AsteRx-U

Multi-constellation, dual antenna GNSS receiver

septentrio

Key Features

- **544 channels for tracking all known and planned signals from GPS, GLONASS, Galileo, BeiDou, IRNSS, QZSS and SBAS on both antennas**
- **Precise and solid heading calculation**
- **cm-level (RTK) and sub dm-level (PPP) position accuracy**
- **Dual L-band channel with support for TerraStar corrections**
- **Septentrio GNSS+ algorithms for solid performance**
- **Integrated cellular modem, Bluetooth and Wi-F i optional UHF radio**

The AsteRx-U is an all-in-one multi-frequency GNSS receiver with UHF radio, Wi-Fi, Bluetooth and a L-Band receiver combined with spectrum analyser for the broadest range of applications.

Consistently accurate now and into the future

The AsteRx-U is powered by the AsteRx4: the most advanced multi-constellation dual-antenna receiver from Septentrio. Its multi-frequency engine can track all current and planned Global Navigation Satellite System (GNSS) constellations - GPS, GLONASS, Galileo, BeiDou, IRNSS and QZSS – on both antennas. This guarantees you reliable and accurate GNSS positioning now and into the future.

Centimeter scalable accuracy

Septentrio's knowledge and experience in the GNSS industry ensures that the AsteRx-U offers you the highest possible accuracy, scalable to a centimetre. LOCK+ technology maintains tracking during heavy vibration and IONO+ ensures position accuracy even under periods of elevated ionospheric activity. The AsteRx-U MARINE offers the very latest in special interference mitigation technology which filters out ambient intentional and unintentional RF interference.

Any device, any platform

Use any device with a web browser to operate the AsteRx-U without any special configuration software via the Web UI accessible over Wi-Fi network or USB connection.

AsteRx-U

FEATURES

GNSS Technology

544 hardware channels for simultaneous tracking of all visible satellite signals

Supported signals: GPS (L1, L2, L5), GLONASS (L1,L2,L3), GALILEO (E1, E5ab, AltBoc, E6), BEIDOU (B1, B2, B3), IRNSS (L5), QZSS (L1,L2,L5) (Galileo, Beidou and IRNSS, are optional features)

All-in-view SBAS (EGNOS, WAAS, GAGAN, MSAS, SDCM) (incl. L5 tracking)

Integrated dual channel L-band receiver

100 Hz Raw data output (code, carrier, navigation data) (optional feature)

20 Hz SBAS, DGNSS, PPP and RTK (50 Hz available in future firmware versions)

A Posteriori Multipath Estimator Technique (APME+), including code and phase multipath mitigation

AIM+/WIMU interference mitigation unit, including chirp jammers

ION+ Advanced scintillation mitigation

RAIM

DGNSS (base station and rover)

RTK (base and rover) (base is an optional feature)

Use of TerraStar services (optional feature)

Moving base RTK positioning (optional feature)

8 GB Internal Memory

Connectivity

3 hi-speed serial ports (RS232)

Ethernet port (TCP/IP and UDP)

Full speed USB

2 Event markers

xPPS output (max. 100 Hz)

Integrated Bluetooth (2.1 + EDR/4.0)

Integrated Quadband Cellular Modem (EDGE, 2G, 3G, 3.5G)

Integrated Wi-Fi (802.11 b/g/n)

(optional) Integrated UHF (406-470 MHz)

Formats

Highly Compact and fully documented Septentrio Binary Format (SBF) output

NMEA v2.30 output format, up to 20 Hz; NMEA 4.0; NMEA 3.01

RTCM v2.2, 2.3, 3.0 or 3.1

CMR2.0 and CMR+ (CMR+ input only)

UHF: Pacific Crest (GMSK, 4FSK, FST), SATEL, Trimtalk (450S_P, 450S_T)

PERFORMANCE

Position accuracy[1,2,3]

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.9 m
TerraStar-D[4]	6 cm	<10 cm

RTK Performance[1,2,3,5,6]

Horizontal accuracy[3]	0.6 cm + 0.5 ppm
Vertical accuracy[3]	1 cm + 1 ppm
Average time to fix[6]	7 s

Velocity Accuracy[1,2,3]

Horizontal	Vertical
0.01 m/s	0.015 m/s

Heading Accuracy[1,2,3]

	Heading	Pitch/Roll
1m antenna separation	0.1°	0.2°
10m antenna separation	0.01°	0.02°

Maximum Update rate

Position	20 Hz (50 Hz in future firmware version)
Measurements	100 Hz

Latency

< 20 ms

Time accuracy

xPPS Out	10 ns
Event accuracy	< 20 ns

Time to first fix

Cold start[7]	< 45 s
Warm start[8]	< 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

Size	164 x 157 x 54 mm
Weight	1.5 kg
Input voltage	9–36 V DC
Power Consumption	7 W Typical
Operating temperature	-30 °C to +65 °C
Storage temperature	-40 °C to +75 °C
Humidity	MIL-STD810G, Method 507.5, Procedure I
Dust	MIL-STD-810G, Method 510.5, Procedure I
Shock	MIL-STD-810G, Method 516.6, Procedure I/II
Vibration	MIL-STD-810G, Method 514.6, Procedure I

Connectors

Antennas	TNC female
Power	LEMO 4 pins female
USB/ETH	LEMO 16 pins female
PPS-OUT	LEMO 5 pins female
Serial 2	LEMO 9 pins female
Serial 1 and 3, USB-host	LEMO 14 pins, female
Events/GPIO	LEMO 7 pins, female

Antenna LNA Power Output

Output voltage	5 V DC
Maximum current	200 mA

Certification

IP67, RoHS, CE
FCC Class B Part 15
IEC60945

[1] 1-20 Hz measurement rate

[2] Performance in open sky conditions

[3] RMS level

[4] Requires service activation from TerraStar

[5] RTK fixed ambiguities

[6] Baseline: < 40 km

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

[8] Ephemeris and approximate position known

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