



**Multi-frequency, multi-constellation GNSS positioning and heading receiver, which includes wired and wireless communications in a rugged IP68 housing, for the broadest range of applications.**

## KEY FEATURES

- ▶ **Full-constellation, triple-frequency satellite tracking on both antennas**
- ▶ **Sub-degree GNSS heading & pitch or heading & roll**
- ▶ **Centimetre-level (RTK)**
- ▶ **Septentrio GNSS+ algorithms for reliable performance**
- ▶ **Integrated UHF radio, cellular modem, Bluetooth and Wi-Fi (depending on configuration)**

## BENEFITS

### Consistently accurate now and into the future

The AsteRx-U3 is the most advanced integrated multi-constellation dual-antenna receiver from Septentrio. Its multi-frequency engine can track signals from all Global Navigation Satellite System (GNSS) constellations: GPS, GLONASS, Galileo, BeiDou, NavIC and QZSS – on both antennas. This guarantees you reliable and accurate GNSS positioning now and into the future.

### Reliable centimetre accuracy

Septentrio's knowledge and 20 years of experience in the GNSS industry ensures that the AsteRx-U3 offers the highest possible accuracy, down to the centimetre level. LOCK+ technology maintains tracking during heavy vibrations and IONO+ ensures position accuracy even during periods of elevated ionospheric activity. The AsteRx-U3 offers the very latest in advanced interference mitigation technology AIM+, which filters out ambient intentional and unintentional RF interference.

### Any device, any platform

Use any device with a web browser to operate the AsteRx-U3 without any special configuration software via the Web interface, accessible over Ethernet, Wi-Fi or USB connections.

## FEATURES

### GNSS technology

544 Hardware channels for simultaneous tracking of most visible signals:

- ▶ GPS: L1 C/A, L1C<sup>1</sup>, L2C, L2 P(Y), L5
- ▶ GLONASS: L1 C/A, L2 C/A, L3, L2P
- ▶ BeiDou: B1I, B1C, B2a, B2I, B3I
- ▶ Galileo: E1, E5a, E5b, E5 AltBOC
- ▶ QZSS: L1 C/A, L1C<sup>1</sup>, L2C, L5
- ▶ NavIC: L5
- ▶ SBAS: EGNOS, WAAS, GAGAN, MSAS, SDCM

### Septentrio's patented GNSS+ technologies

- ▶ **AIM+** unique mitigation 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

RTK (base and rover)

Integrated 4-channels L-band receiver

Moving base

GNSS heading & pitch or heading & roll

16 GB internal memory

### Formats

Septentrio Binary Format (SBF), fully documented with sample parsing tools  
 RTCM v2x and 3x (MSM included)  
 CMR 2.0 and CMR+ (CMR+ input only)  
 NMEA 0183, v3.01, v4.0  
 UHF: Satel, Trintalk (450S) Pacific  
 Crest (GMSK, 4FSK, FST)

### Connectivity

3 Hi-speed serial ports (RS232)  
 Ethernet port (TCP/IP and UDP)  
 CAN port  
 High-speed USB  
 1 Event marker  
 xPPS output (max. 100 Hz)  
 Bluetooth<sup>2</sup> (2.1 + EDR/4.0)  
 WiFi<sup>2</sup> (802.11 b/g/n)  
 UHF<sup>2</sup> (410-475 MHz)  
 Cellular modem<sup>2</sup>: LTE CAT4  
 4G LTE CAT4 (B1, B3, B5, B7, B8, B20)  
 3G UMTS/HSDPA/HSUPA (850/900/1900/2100)  
 2G GSM/GPRS/EDGE (850/900/1800/1900)

## PERFORMANCE

### Position accuracy<sup>3,4</sup>

	Horizontal	Vertical
Standalone	1.2 m	1.9 m
SBAS	0.6 m	0.8 m
DGNSS	0.4 m	0.7 m

### RTK performance<sup>3,4,5,6</sup>

Horizontal accuracy	0.6 cm + 0.5 ppm	
Vertical accuracy	1 cm + 1 ppm	
Initialisation	7 s	

### GNSS attitude accuracy<sup>3,4</sup>

	Heading	Pitch/Roll
1 m	0.15°	0.25°
5 m	0.03°	0.05°

### Velocity accuracy<sup>3,4</sup>

0.03 m/s

### Maximum update rate

Position	100 Hz
Position and attitude	50 Hz
Measurements	100 Hz

### Latency<sup>7</sup>

<20 ms

### Time accuracy

xPPS out <sup>8</sup>	10 ns
Event accuracy	< 20 ns

### Time to first fix

Cold start <sup>9</sup>	< 45 s
Warm start <sup>10</sup>	< 20 s
Re-acquisition	avg. 1 s

### Tracking performance (C/N0 threshold)<sup>9</sup>

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

## PHYSICAL AND ENVIRONMENTAL

**Size** 157 x 245 x 45mm

**Weight** 1.5 kg

**Input voltage** 9-48 VDC

**Power consumption** 8 W typical

**Operating temperature** -30° C to +65° C

**Storage temperature** -40° C to +75° C

**Humidity** IEC60721-3-5, Class 5K2

**Dust** MIL-STD-810H, Method 510.7, Procedure I

**Shock** MIL-STD-810H, Method 516.8, Procedure I/II

**Vibration** MIL-STD-810H, Method 514.8, Procedure I

**Corrosion** IEC60068-2-52, Method 2

### Connectors

Antennas	TNC female
COM1/3	M8 6 pins female
USB	M8 4 pins female
I/O	M8 6 pins male
Ethernet	M12 8 pins female
Power	M12 4 pins male
COM2/PPS	M12 8 pins female

### Antenna LNA power output

Output voltage	User selectable 3.3V/5V
Maximum current	150 mA

### Certification

IP68, RoHS, WEEE, CE, ISO 9001-2015



<sup>1</sup> Hardware ready

<sup>2</sup> Optional feature

<sup>3</sup> Open sky conditions

<sup>4</sup> RMS levels

<sup>5</sup> RTK fixed ambiguities

<sup>6</sup> Baseline < 40 Km

<sup>7</sup> 99.9%

<sup>8</sup> Including software compensation of sawtooth effect

<sup>9</sup> No information available (no almanac, no approximate position)

<sup>10</sup> Ephemeris and approximate position known