



## Compact multi-constellation GNSS receiver

Model No. XT-GNSS-X5 Board

Xtragen XT-GNSS-X5 Board is a multi-constellation receiver packaged in a low-power surface mount module. With a wide array of interfaces, XT GNSS X5 has been specifically designed for the needs of mass market applications like robotics and autonomous systems. This high-reliability receiver tracks all Global Navigation Satellite System (GNSS) constellations and supports all current and future signals. With Septentrio's unique AIM+ technology for interference mitigation included, Septentrio is now offering a performance benchmark in mass market GNSS positioning.

### KEY FEATURES

- **Small size, big performance**
- **All-in-view satellite tracking: multi-constellation, multi-frequency**
- **Best-in-class RTK performance**
- **OSNMA Support**
- **AIM+ industry-leading anti-jamming, anti-spoofing technology**
- **Industry-leading ultra-low power consumption**
- **Easy-to-integrate**

### BENEFITS

#### No performance compromises

Sized at only 76.9 x 47.5 mm / 3.02 x 1.87 inches, XT GNSS - X5 offers unmatched size to performance ratio. XT GNSS - X5 includes:

- High update rate (>100 Hz) and low latency, both crucial for control systems of autonomous applications
- Reliable centimetre-level positioning
- Full L2 support via P(Y) code

#### No performance compromises

Septentrio's **GNSS+** toolset enables accuracy and reliability in the toughest conditions, allowing you to complete projects with high quality and efficiency. It includes:

- **AIM+** the most advanced anti-jamming, anti-spoofing on board interference mitigation technology on the market (narrow and wide band, chirp jammers).
- **LOCK+** for robust tracking during high vibrations and shocks. **APME+** multipath mitigation to disentangle direct signal and those reflected from nearby structures.
- **IONO+** provides advanced protection against ionospheric disturbances.

## FEATURES

### GNSS technology

448 hardware channels for simultaneous tracking of all visible supported satellite signals:

- GPS: L1C/A, L1P, L2C, L2P, L5
- GLONASS: L1CA, L2CA, L2P, L3 CDMA
- BeiDou: B1I, B1C, B2a, B2b, B2I, B3
- Galileo: E1, E5a, E5b, E5 AltBoc, E6
- QZSS: L1C/A, L1 C/B, L2C, L5
- Navic: L5
- SBAS: Egnos, WAAS, GAGAN, MSAS, SDCM (L1, L5)
- On module L-band

### Septentrio's patented GNSS+ technologies

- AIM+ industry leading anti-jamming, anti-spoofing interference monitoring & mitigation technology
- 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

OSNMA Support 5 constellation RTK (base and rover)

### Protocols

Septentrio Binary Format (SBF)  
NMEA 0183, v2.3, v3.03, V4.0  
RINEX v2.x, v3.x  
RTCM v2.x, v3.x (MSM included)  
CMR v2.0 (out/in), CMR+ (input only)

### Interfaces

Wi-Fi 802.11b/g/n  
Bluetooth v4.2 BR/EDR  
USB Type - C  
SIM Card - 4G VoLTE  
RS232 (Optional)  
RJ45 (Optional)

## PERFORMANCE

### RTK performance

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

### Other positioning modes accuracy

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

### Maximum update rate

Position	100 Hz
Measurements only	100 Hz
Latency	<10 ms

### Time precision

xPPS out	5 ns
Event accuracy	< 20 ns

### Time to first fix

Cold start	< 45 s
Warm start	< 20 s
Re-acquisition	1 s

### Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	33 dB-Hz

## PHYSICAL AND ENVIRONMENTAL

### Package

Type	SMT solderable land grid array
Size	76.9 x 47.5 mm / 3.02 x 1.87 inches

### Electrical

Antenna pre-amplification range	15-50 dB
Antenna bias voltage	3.0-5.5 V
	Build-in current limit (150 mA)
Input voltage	3.3-5.0 VDC
Power consumption	0.6 W typ 1.1 W max

### Environmental

Operating temp	-40 to 85° C -40 to 185° F
Storage temp	-55 to 85° C -67 to 185° F
Humidity	5% - 95% (non-condensing)
Vibration	MIL-STD-810G
Certification	RoHS, WEEE, ISO 9001-2015



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