



## XT-GNSS-H

Compact Multi-Constellation GNSS Heading Receiver Board

With dual-antenna input, XT-GNSS-H provides precise and reliable heading combined with centimeter-level RTK positioning. Dual antenna heading capabilities in such a small form factor opens the door to advanced automation and navigation performance in both static and dynamic states, with reduced power consumption. Dual antenna GNSS delivers heading & pitch or heading & roll angles, which are available immediately at start-up, helping initialize inertial sensors which rely on movement for their attitude measurements.

### Key Features

- ✓ Dual antenna support for sub-degree heading & pitch or heading & roll angles
- ✓ All-in-view satellite tracking: multi-constellation, multi-frequency
- ✓ Best-in-class RTK performance
- ✓ OSNMA Support
- ✓ AIM+ industry-leading anti-jamming, anti-spoofing technology
- ✓ Lowest power consumption on the market
- ✓ Standard mosaic footprint enables several application specific solutions based on a single design

## BENEFITS

### Reliable heading performance

With dual-antenna input, XT-GNSS-H board provides precise, reliable and positioning independent heading combined with centimeter level RTK. GNSS heading provides the best performance in both static and dynamic conditions removing the reliance on vehicle movement for INS initialization. It also provides an alternative to magnet-based heading sensors, which can be effected by metal

### Designed for automated assembly

The XT-GNSS-H is a receiver board delivering high-accuracy heading and positioning without the need for any additional components. It is designed for high volume production on automated assembly lines. All interfaces, commands and data messages are fully documented. The RxTools software suite allows convenient receiver configuration, monitoring, data logging and analysis. Offline processing is easy via our SDK library for PPK (Post Processed Kinematic).

### Advanced technologies inside

Patented GNSS+ toolset enables accuracy and reliability in the toughest conditions, allowing you to complete projects with the highest 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: L1, L2
- ✓ GLONASS: E1, E5b
- ✓ BeiDou: L1, L2
- ✓ Galileo: B1, B2, B3
- ✓ QZSS: L1C/A, L1C/B, L2
- ✓ SBAS: Egnos, WAAS, GAGAN, MSAS, SDCM (L1)

### 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  
RTK  
GNSS heading

### Protocols

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

### Connectivity

4 UART (LVTTTL, up to 4 Mbps)  
Ethernet (RMII/MDIO), 10/100 Mbps  
USB device (2.0, HS)  
SDIO (mass storage)  
2 GPIO user programmable  
CAN9  
2 Event markers  
1 Configurable PPS out

## PERFORMANCE

### RTK performance

Horizontal accuracy 0.6 cm + 0.5 ppm  
Vertical accuracy 1 cm + 1 ppm

### 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

### Velocity accuracy

Velocity accuracy 3 cm/s

### GNSS attitude accuracy

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

### Maximum update rate

Measurements only	100 Hz
Standalone, SBAS, DGPS +attitude	50 Hz
RTK + attitude	20 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

### Firmware

Free product lifetime upgrades

## PHYSICAL AND ENVIRONMENTAL

### RTK performance

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

### Electrical

Antenna pre-amplification range 15–35 dB  
Antenna bias voltage 3.0–5.5 V  
Build-in current limit (150 mA)  
Input voltage Power 3.3 VDC  
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, CE, FCC



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