



Assured PNT

Septentrio solutions for defense and security



“At Saronic, we develop advanced Autonomous Surface Vessels (ASVs) for critical naval and maritime missions. Septentrio's technology enhances our autonomous capabilities with superior redundancy and reliability, ensuring secure and robust operations in the harshest environments. We value our partnership with Septentrio and their world-class technologies.”

Doug Lambert, Co-Founder and Head of Engineering at Saronic Technologies



“Each year hundreds of millions of passengers rely upon Saab's air traffic management systems to get where they are going safely. Most of these systems rely upon GPS/GNSS for positioning and time synchronization. With so much at stake, Saab is proud to offer industry leading anti-spoofing and anti-jamming capabilities using Septentrio equipment. Our recent collaboration at JammerTest showcased just how effective we can be together.”

Robert Brown, Saab Air Traffic Management Director of Portfolio, Sales, and Strategy

Why Septentrio?

Learn more about Septentrio
septentrio.com/en/company/why-septentrio



Your partner in Assured PNT

Assured Positioning, Navigation and Timing (A-PNT) in denied or limited GNSS conditions.



Proven market-leading Anti-Jamming and Anti-Spoofing (AJAS) Resilience shown in several Navigation Warfare (NAWWAR) testing events organized by civil and defense agencies including US Department of Homeland Security (DHS) & JammerTest in Norway where GNSS is tested in realistic and advanced jamming/spoofing scenarios.



Best-in-class reliable, highly accurate positioning is ideal for mission-critical operations and essential for success.



Robust device security, data integrity, and system security through mechanisms including authentication, secure boot, secure interfaces, TLS, HTTPS, and secure updates.



Choose the form factor that suits your needs: modules, OEM boards, rugged boxes, GNSS only or GNSS/INS. Septentrio designs and owns all the key components of its receivers, from the silicon chipset to the embedded software.

Best-in-class anti-jamming technology

Jamming is a “white noise” RF interference that can knock out GNSS signals for several hundred meters on land. In the air, unhindered powerful jamming signals could have a reach of hundreds of kilometers.

AIM+ anti-jamming technology and algorithms suppress the widest variety of jammers from simple continuous narrow-band signals to the most complex wideband and pulsed transmissions.



Integrated spectrum analyzer in Septentrio's Web UI

Septentrio receivers come with built-in spectrum analyzer allowing interference monitoring in both frequency and time domains.

Excellent results compared to competition were achieved at the **JammerTest** in Norway, where live interference testing took place over a 5-day period.

In areas of navigational warfare (NAVWAR) under contested GNSS conditions a resilient receiver is key to assured PNT and successful critical missions.

Septentrio receiver



Competition



At the JammerTest in Norway Septentrio receivers demonstrated **99,5%** positioning availability under various forms of jamming.



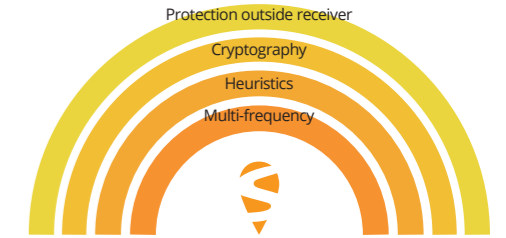
Learn more about AIM+ Anti-jamming & Anti-spoofing technology
septentrio.com/resilience

Spoofing awareness and mitigation

During a spoofing attack fake GNSS signals are transmitted into the target receiver. Such an attack is even more dangerous than jamming because the risk lies not only in a halted mission, but hijacked navigation with high-risk consequences including a planned collision or captivity.

Since there are different types of spoofing, **AIM+ anti-spoofing** technology protects Septentrio receivers on multiple levels:

- **Multi-frequency technology** for effective fallback and spoofing mitigation
- **Advanced anomaly recognition** for the best spoofing detection on the market
- **Cryptography** for satellite signal authentication, including Galileo OSNMA



During a live spoofing attack at the JammerTest in Norway a Septentrio receiver in car stayed on track along the coastal road (orange track in each image), while competitor receivers (blue, green, red track) were spoofed and show erroneous positions. See full **test report**.

Septentrio Products



mosaic-X5

High-precision lower power GNSS module



mosaic-T

GNSS module for time & frequency synchronization



AsteRx-m3 Pro+

Dual antenna rover & base board receiver



AsteRx SB3 Pro+

Housed high-performance GNSS receiver with ultra-high update rate & logging functionality. Rover & base use possible.



AsteRx SBi3 Pro+

The most flexible boxed GNSS/INS solution, offering full access to raw GNSS & INS data. Multiple antenna configurations possible.

Signals	GPS, GLONASS, BeiDou, Galileo, NavIC, QZSS, SBAS, on module L-band
Supported bands	L1/L2/L5/E6
Communications	4 Hi-speed serial ports (LVTTTL), USB, ethernet, event markers Secure IP communication TLS1.3
Size	31 x 31 x 4 mm 1.29 x 1.29 x 0.15 in
Weight	6.8 g / 0.24 oz
Power consumption	0.6 W*
Operational Temperature	-40°C to +85° -40°F to +185°F
IP rating	-
Vibration	MIL-STS-810G
Humidity	5% - 95% (non-condensing)
Dust	-
Shock	-
AJAS resilience	Yes
OSNMA authentication	Yes
E6,+ Full L2 via P(Y) code	Yes
Fugro Atomichron™	No

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Dust	-
Shock	-
AJAS resilience	Yes
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Fugro Atomichron™	Yes

Signals	GPS, GLONASS, BeiDou, Galileo, NavIC, QZSS, SBAS
Supported bands	L1/L2/L5/E6
Communications	4 Hi-speed serial ports (LVTTTL), USB, ethernet, event markers Secure IP communication TLS1.3
Size	47.5 x 70 x 9.32 mm 1.87 x 2.75 x 0.36 in
Weight	27 g / 0.952 oz
Power consumption	0.75 - 1W*
Operational Temperature	-40°C to +85° -40°F to +185°F
IP rating	-
Vibration	MIL-STS-810G
Humidity	5% - 95% (non-condensing)
Dust	-
Shock	-
AJAS resilience	Yes
OSNMA authentication	Yes
E6,+ Full L2 via P(Y) code	Yes
Fugro Atomichron™	No

Signals	GPS, GLONASS, BeiDou, Galileo, NavIC, QZSS, SBAS
Supported bands	L1/L2/L5/E6
Communications	3 Hi-speed serial ports (RS232), USB, ethernet, event markers Secure IP communication TLS1.3
Size	47.5 x 70 x 9.32 mm 1.87 x 2.75 x 0.36 in
Weight	490 g / 17.3 oz
Power consumption	1.3 W*
Operational Temperature	-30° C to +65° C -22° F to +149° F
IP rating	IP68
Vibration	MIL-STD-810G, Method 514.6, Procedure I
Humidity	MIL-STD-810G, Method 507.5, Procedure I
Dust	MIL-STD-810G, Method 510.5, Procedure I
Shock	MIL-STD-810G, Method 516.6, Procedure I/II
AJAS resilience	Yes
OSNMA authentication	Yes
E6,+ Full L2 via P(Y) code	Yes
Fugro Atomichron™	No

Signals	GPS, GLONASS, BeiDou, Galileo, QZSS, SBAS
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E6,+ Full L2 via P(Y) code	Yes
Fugro Atomichron™	No

Possible applications



Assured PNT



Robotics



UAV



Mapping



Timing



Logistics



Marine



Infrastructure

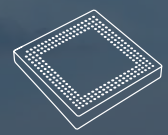
*depends on configuration



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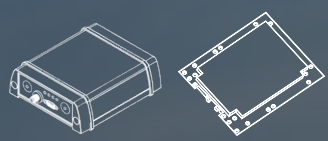
part of **HEXAGON**

Accurate



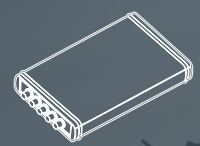
mosaic
GNSS receiver
module

Resilient



AsteRx
OEM & enclosed
GNSS receivers

Reliable



PolaRx
Reference
receivers

Available



Software
GNSS software
solutions

EMEA
Greenhill Campus (HQ)
Interleuvenlaan 15i
3001 Leuven, **Belgium**

Espoo, **Finland**

Americas
2601 Airport Drive,
Suite 360
Torrance, CA 90505, **USA**

septentrio.com/contact

Asia-Pacific
Shanghai, **China**
Yokohama, **Japan**
Seoul, **Korea**

septentrio.com



Septentrio AssuredPNT brochure v2.
Specifications subject to change without notice.
Certain features and specifications may not apply to all models.
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