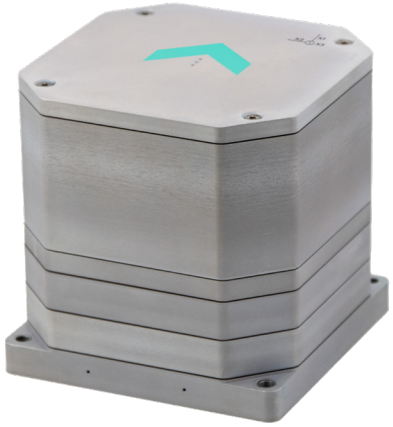
Astrix NS

High accuracy 3-axis space Fiber-Optic Gyroscope



Based on FOG technology mastered by Exail, space qualified and TRL9, Astrix NS addresses the new space industry. Astrix NS offers unrivaled inertial performance and reliability to SWaP ratio at a competitive price.

FEATURES

- ARW at 0.005°/√h (standard performance) and down to 0.0025°/√h (high performance)
- Low SWaP
- Electronic design from space-grade components and components space qualified by Airbus Defense & Space
- Competitive price
- Radiation compatible for GEO and LEO missions including EOR

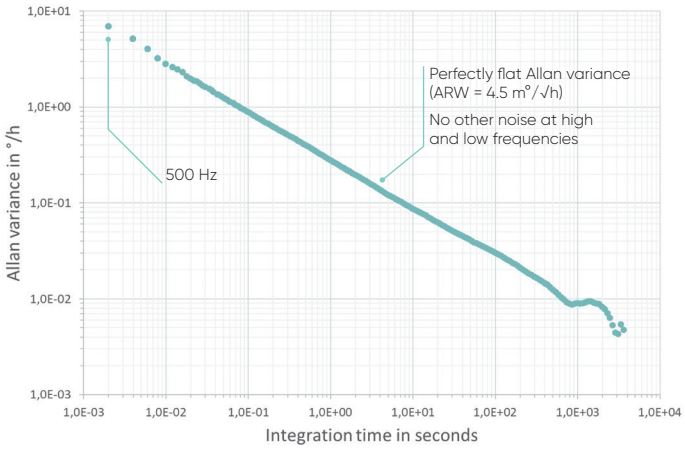
APPLICATIONS

Astrix NS is compatible with missions in Low Earth Orbit and Geostationary Orbit, and beyond, including electric orbit rise.

With its high reliability, Astrix NS is an excellent option for communication satellites, and delivers unrivaled inertial performance for Earth Observation missions. It is also well-suited for constellations requiring compact and accurate equipment produced in volume with short lead times.

BENEFITS

- High reliability from Exail FOG technology and over 20 years' experience in space navigation
- Solid-state technology proven with 6,000,000 + hours of cumulative flight across 58 major spacecraft without incident
- Quick start-up and relevant data availability (< 1 s) allowing a stop&go use of the gyroscope
- No complex and costly recalibration needed during operation
- Pure ARW noise, i.e. no disturbing AWN, no flicker noise (see figure below)



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TECHNICAL SPECIFICATIONS

Performance

Bias stability over 1 h (steady temperature)	< 0.005°/h
Bias knowledge	< 0.2°/h
Scale factor knowledge @ 3σ	< 200 ppm
Scale factor stability over the mission lifetime @ 3σ	< 200 ppm
Orthogonality knowledge	< 175 µrad
Measurement range (full performance)	60°/s qualified - Higher speed on demand
ARW standard performance design	< 0.005°/√h
ARW high performance design	< 0.0025°/√h
No noise other than ARW for FOG technology i.e. no AWN, no flicker noise	

Environment / Operating conditions

Temperature	-35°C to 65°C (operating)
Vibration	25 g sine and 25 g rms random
Shock	2,000 g from 1,000 Hz to 10 kHz
Radiation	> 25 krad at component level i.e. compatible with GEO 15 years with its integrated shielding
Lifetime	7 years LEO or 15 years GEO + EOR

Mechanical interfaces

Mass	1.4 kg
Volume	100 x 100 x 100 mm

Electrical interfaces

Power bus	20 V – 52 V
Start-up and access to relevant data	< 1 s
Communication	2x RS422 / RS485 full duplex
Power	8W (BOL)

FOG TECHNOLOGY

Exail is recognized throughout the world for its pioneering work on the development of the ultimate-performance Fiber-Optic Gyroscope (FOG), a unique technology at the heart of its inertial navigation systems.

The FOG is an extremely high-performance rotation sensing device based on the Sagnac Effect discovered at the beginning of the 20th century.

A fiber-optic gyroscope uses optical waves propagating in a fiber-optic coil to accurately measure a rotation rate. This apparently simple design takes full advantage of the reciprocity principle in the propagation of light which enables a perfect device to be created from imperfect components. Exail is providing FOG products for many challenging applications like submarines, deep-sea AUV, naval force, satellites...

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