DEFENCE AND SPACE
Space Products

ASTRIX NS

The new 3-axis Fiber-Optic Gyroscope for Space

Avionics

Based on FOG technology mastered by Exail (formerly iXblue) and qualified by Airbus Defence and Space, Astrix NS addresses the new challenges of the space industry. It brings high inertial performance and reliability in a compact design and at a very competitive price.

APPLICATIONS

Astrix NS is compatible with missions in low Earth orbits and in geostationary orbits including electrical orbit rising.

Astrix NS is the perfect choice for both telecom satellites with its high reliability and Earth observation satellites with its unrivaled inertial performances.

Astrix NS is also well-suited for constellations that require compact and competitive equipments that can be produced in volume and with short lead time.

FEATURES

- ARW at 0.005°/√h (standard performance) and down to 0.0025°/√h (high performance)
- Compact and lightweight product
- Low-power consumption
- Competitive price
- Electronic design based on automotive components qualified for space operation by Airbus Defence and Space
- Competitive price
- Radiation compatible for GEO and LEO missions including EOR

exail | AIRBUS

TECHNICAL SPECIFICATIONS

Performances	
Bias stability over 1 h (steady temperature)	< 0.02°/h
Bias stability end of life (all effects included)	0.2°/h
Scale factor stability after launch @ 3σ (all effects included)	< 200 ppm
Scale factor linearity @ 3σ	< 200 ppm
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 other noise contributor for FOG technology, i.e. no AWN, no flicker noise and no white noise	

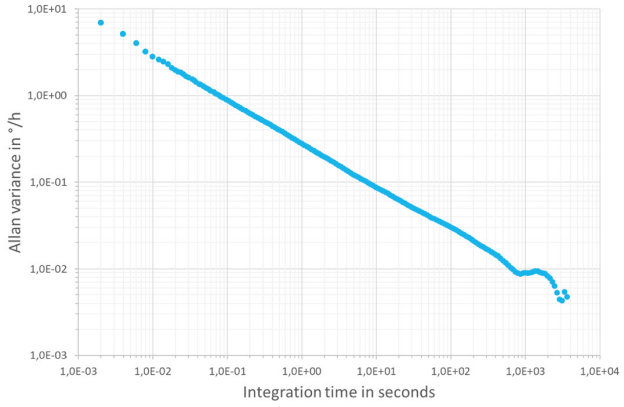
Environment / Operating conditions	
Temperature	-20°C to 65°C (operating)
Vibration	25g sine and 20g rms random
Shock	2 000 g from 1 000 Hz to 10 kHz
Radiation	> 25 krad at component level i.e. compatible with GEO 15 years with its integrated shielding
Lifetime	up to 15 years and compatible GEO, EOR and LEO

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	7 W

BENEFITS

- Highly reliable thanks to the FOG technology and 20 years of experience in space products
- Solid-state technology proven with more than 6 000 000 hours of cumulated flight on more than 40 major satellites without incident
- Quick start-up and relevant data availability (< 1 s) allowing a stop&go use of the gyro
- No complex and costly recalibration needed during operation
- Pure ARW noise i.e. no disturbing AWN, flicker noise or white noise (see figure below)



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 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…

2023-01-31-DS-AstrixNS_cr

Airbus Defence and Space
space.products@airbus.com