

# ARIETIS



ARIETIS is an ITAR free, space qualified, rad-hard gyro. It uses Hi-Rel class 1 components. ARIETIS main applications are either primary gyro or coarse rate sensor in LEO, MEO, GEO, telecom and scientific missions. ARIETIS is developed and qualified as per ESA standard (ECSS), meeting the most stringent quality requirements as per space industry standards. ARIETIS Flight Models will be shipped starting in 2023.

Performance Parameters	Value
Measurement range	3°/s (full performance) 48°/s (limited performance)
Switch-on response tie	≤ 6s
ARW	≤ 0.005°/√hr
Bias stability over 24hr (steady temperature)	≤ 1.5°/hr (1σ)
Bias stability over 1hr (steady temperature)	≤ 0.3°/hr (1σ)
Bias errors (all effects, EOL)	≤ 5°/hr (max, with in flight calibration)
Scale Factor repeatability errors (all effects, EOL)	≤ 1000ppm (1σ)

Design Parameters	Value
EEE components	Hi-Rel class 1 EEE qualified to 50krad TID / 60MeV SEE
Output	Angle increments
Data Interface	RS422 (baseline) Optional analogue output RS485 and CANbus optional
Reliability	≤ 500 FIT at 30°C
Mass	3 kg
Power consumption	≤ 8.5W
Power Interface	28VDC nominal and up to 100 VDC (optional)
In-orbit calibration functionalities	Yes
Temperature range	Qualified to a temperature range of -40°C (-40°F) to +70°C (+158°F)
Vibration profiles during launch	26.2 grms
Lifetime	up to 6 years on ground and 16 years in flight

InnaLabs® Global Headquarters, Blanchardstown Industrial Park, Snugborough Road, Blanchardstown, Dublin 15, Ireland  
T: +353 1 8096200 | F: +353 1 8096202 | E: [contact.sales@innalabs.com](mailto:contact.sales@innalabs.com) | W: [www.innalabs.com](http://www.innalabs.com)

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# ARIETIS-NS



ARIETIS-NS is an ITAR free, space qualified, rad tolerant gyro. It uses automotive quality EEE components that are upscreened by means of radiation testing. ARIETIS-NS is intended for New Space applications, constellations and megaconstellations in both LEO and GEO and for a variety of applications, from Earth Observation to telecom and space exploration. ARIETIS-NS is developed and qualified as per a mix of ESA and IPC standards, allowing InnaLabs® to adapt to customer Product Assurance requirements. ARIETIS-NS Flight Models will be shipped starting in 2022.

Performance Parameters	Value
Measurement range	12°/s
Switch-on response tie	≤ 6s
ARW	≤ 0.005°/√hr
Bias errors (ground BOL)	≤ 3°/hr (3σ)
Bias errors (all effects, EOL)	≤ 5°/hr (max, after in flight calibration)
Scale Factor repeatability errors (all effects, EOL)	≤ 1000ppm (1σ)

Design Parameters	Value
EEE components	mostly COTS EEE screened to: <ul style="list-style-type: none"> <li>• 30krad TID</li> <li>• SEL free till 60MeV</li> <li>• SET behaviour characterised.</li> </ul>
Output	Accumulated angle
Data Interface	RS422 or RS485 (baseline). Different data rate options. CANbus optional
Reliability	≤ 1000 FIT at 30°C
Mass	<1.3 kg for LEO version and <2.3 kg for GEO version
Power consumption	≤ 8W
Power Interface	28VDC nominal
Temperature range	Qualified to a temperature range of -25°C (-40°F) to +65°C (+158°F)
Vibration profiles during launch	18 grms
Lifetime	up to 6 years on ground and 16 years in flight

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# AQUILA Datasheet

## Space Quartz Accelerometer



## General Description

AQUILA is a rad-hard Hi-Rel Accelerometer based on InnaLabs® successful Quartz Pendulum accelerometer products and heritage. As Europe's first designed and manufactured space-grade accelerometer, AQUILA provides high-performance in a space environment with radiations and single events. The primary applications of AQUILA are Navigation, Delta-V monitoring, Fault Detection Isolation and Recovery (FDIR), and Momentum and Vibration monitoring onboard satellites and spacecraft. AQUILA can also be used in land and aerospace applications where high-performance or radiation tolerance is required.

## Principle of Operations

AQUILA is based on Quartz Pendulum accelerometer technology, which is well established for its high performance and use in space applications. AQUILA features an internal temperature sensor that allows the user to carry out temperature calibration and compensation, enhancing the bias, scale factor, and axis misalignment performance over temperature. State-of-the-art manufacturing processes enable InnaLabs® to offer AQUILA at a competitive price.



## How to Order

AQUILA is available to order under the same name from InnaLabs® from our worldwide network of Agents and Distributors.

**Note:** AQUILA is still in development, so qualification and deliveries are expected no earlier than late 2022.

## Features

- Navigation grade performance
- <math><80\mu\text{g}</math> One-year bias composite repeatability
- Radiation hardened (up to 50 krad)
- Resolution <math><1\mu\text{g}</math>
- Analogue current output
- Compact, rugged design
- High stability under temperature changes
- High reliability
- Internal temperature sensor for thermal compensation

## Applications

- Navigation in Space
- Delta-V monitoring
- Control systems



