# Sodern announces the launch of its new Auriga™ Gyro satellite equipment at the 4S Symposium,

- Available off-the-shelf, Auriga™ Gyro is a ready-to-use and robust hybrid solution for satellite attitude control
- This solution combines the advantages of the proven Auriga™ star tracker with the benefits of a gyro.
- Thanks to the new Auriga™ software, it is now possible to couple the star tracker with a gyro to obtain robustness and continuous information at a competitive price.

On 21 May 2024, Sodern is pleased to announce the launch of the Auriga™ Gyro solution, an Auriga™ star tracker merging gyro data. Sodern has developed a new version of the Auriga™ software library. It now includes the option of using data from any gyro to provide continuous attitude data even in difficult kinematic conditions.

Auriga™, integrated with off-the-shelf high-tech components
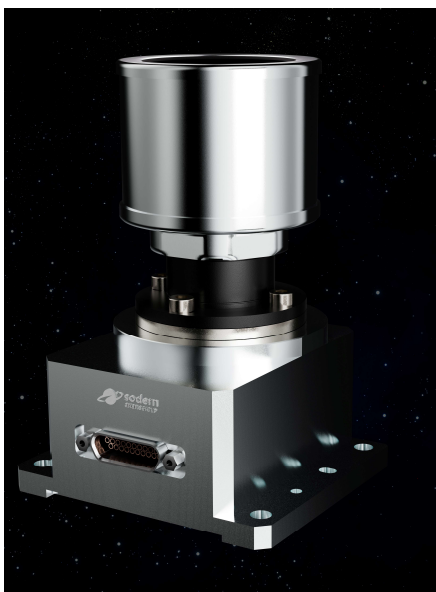
The Auriga™ star tracker is today's reference on the New Space market, with more than 1,200 optical heads (OHs) in flight, which have cumulated more than 27 million hours* of failure-free operation.

This star tracker is integrated with advanced high-tech components, perfectly optimized for smallsats of less than 500kg and New Space projects. With its standardized components, the Auriga™ star tracker is specially designed to meet cost-reduction goals while maintaining an excellent level of flight-proven technical performance and reliability.

Thanks to the new Auriga™ software, it is now possible to couple the star tracker with a gyro to obtain enhanced robustness and continuous information at a competitive price.

Fabien Robert, VP Business Development & Sales, states*: "Auriga™ Gyro augments our satellite equipment range, using the proven technology of the Auriga™ star tracker. We have been marketing Auriga™ since 2019 and have more than 53 satisfied customers.*

However, owing to the diversity of orbits and the duration of launcher and OTV missions, our customers asked us with finding a solution to make attitude control more robust to the problem of the tracker being blinded by the Sun, or inertial unit drift.

The purpose of our Auriga™ Gyro solution is therefore to provide our customers with precise, continuous information for an optimal ADCS. This solution will meet the needs of conventional and agile missions such as Earth observation and the IoT, but will also be of use for new launchers, long lasting missions and/or multi-orbital launches requiring optimal attitude control throughout the mission. We are receiving a growing number of requests to equip this type of launcher and are committed to making our expertise and know-how available to our customers."

Sodern has developed a new version of the Auriga™ software library, which controls the OHs. This library now includes the option of using the angular velocity supplied by any available gyro on-board the satellite.

Auriga™ Gyro is particularly useful for satellites on agile missions such as Earth observation or space surveillance. Auriga™ Gyro could also fit launchers with long-lasting missions.

By coupling the Auriga™ star tracker with a gyro, the kinematic robustness, in other words the ability to withstand rapid rotations, is considerably improved, including the gyro's velocity in the processing carried out by the star tracker.
Moreover, merging data from the star tracker with that from the gyro, enables the coupled equipment to continuously supply an attitude, even when the star tracker is unavailable (blinding, satellite maneuver).

This new software version also includes algorithms to rapidly return to tracking mode after experiencing blinding or after a satellite maneuver, without having to go through an acquisition mode (lost-in-space mode).

If the gyro measurement is unavailable, the star tracker continues to work without interruption.

The solution also has an algorithm for in-flight estimation and correction of errors, notably on the gyro (bias, scale factor, inter-axis misalignment). This allows more precise correction of the errors than on the ground and offers optimal performance.
Coupling with a simple tactical grade gyro (ARW = $0.15°/\sqrt{h}$) enables the robustness of Auriga™ to be significantly improved:
- The lost-in-space mode becomes robust to 4°/s.
- The tracking mode can be maintained at speeds of up to 10°/s and acceleration greater than 10°/s².

The Auriga™ Gyro solution will be on the market as of July 2024.

The development of Auriga™ Gyro was supported by the French space agency CNES under the Pegase program (generic program for improvements to Satcom and platform equipment) and by the program « Plan de Relance France ».

The specifications and information mentioned in this press release are given purely for information and may be modified without notice or any obligation on the part of the manufacturer.

Estimation made in April 2024 according to the data in Sodern's possession at the time of the evaluation.

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About Sodern

Sodern is an equipment manufacturer that combines commitment with expertise. Its customers work in the fields of defense, space and raw materials mining.

Drawing on more than 60 years of innovation, Sodern designs and builds reliable, competitive and high value-added solutions to help its customers meet today's local and global challenges. Sodern provides optronics equipment (star trackers, cameras, etc.) for satellites and spacecraft and for all types of missions: telecommunications, observation, scientific programs, etc., as well as being active in the fields of national sovereignty and security. Sodern is also a pioneer in neutron analysis instruments, used by the mining industry to explore and analyze sub-soils.

Sodern is a subsidiary of the European leader in access to space, ArianeGroup, and employs 450+ highly qualified people. Its 2022 turnover exceeds €80M. Sodern is located in Limeil-Brevannes (94), in France.

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