

## AURIGA-SA



*Auriga-SA means StandAlone*

### STAR TRACKERS OPTICAL HEAD AND ELECTRONIC UNIT FOR PLUG-AND-PLAY INTEGRATION

- SPECIFICALLY DESIGNED FOR SMALL SATELLITES MISSIONS
- LOW COST, HIGH PRODUCTION RATE, REDUCED WEIGHT AND VOLUME
- GUARANTEED FOR 10 YEARS LIFETIME IN LEO ORBIT
- IN ORBIT DEMONSTRATION PLANNED IN 2019
- INHERITED FROM OUR 50 YEARS OF EXPERIENCES WITH STAR TRACKERS

# AURIGA-SA

## STAR TRACKERS OPTICAL HEAD AND ELECTRONIC UNIT FOR PLUG-AND-PLAY INTEGRATION

GENERAL DESCRIPTION			
<b>OPTICAL HEAD (OH)</b>			
Baffle protection for direct Sun and Earth illumination			
Up to 3 Optical Heads may be connected to 1 Electronic Unit through SpaceWire interface			
Lifetime can be up to 10 years in LEO and GEO orbit with additional shielding			
<b>ELECTRONIC UNIT (EU)</b>			
Embedded software processing OH's data and computing the attitude			
Can perform OH FDIR through autonomous individual OH switch ON/OFF			
Operating frequency is assumed to be 10 Hz operating refresh rate			
Embedded Star Catalog and Algorithms inherited from 50 years of experiences and Hydra Star Tracker			
TECHNICAL SPECIFICATIONS			
ENVIRONMENTAL CHARACTERISTICS		PERFORMANCES AND ROBUSTNESS	
Operating temperature range (°C)	- 20 / + 40	Bias (worst case)	0.017 deg
Storage temperature (°C)	- 30 / + 70	Thermo-elastic Error (worst case)	1 arcsec/°C
Mechanical environment (in/out of plane)	14 / 22 gRMS      2000gSRS @2000 Hz		
OH size (mm, including baffle)	66 x 56 x 94 (height)	Low Frequency spatial (FOV) error XY / Z @ 3σ	9 / 51 arcsec
EU size (mm)	91 x 117 x 25 (height)		
OH mass (g, including baffle)	205	High Frequency spatial (Pixel) error XY / Z @ 3σ	6.6 / 37 arcsec
EU mass (g)	315		
RELIABILITY, AVAILABILITY AND LIFETIME		Temporal noise on XY / Z @ 3σ	11 / 69 arcsec
EEE parts class for OH	ECSS Class 3 equivalent and Automotive		
EEE parts class for EU	ECSS Class 3 equivalent and Automotive	Time from lost-in-space (typ)	< 4s
Reliability for OH	230 FIT (FIDES method @20°C)		
Reliability for EU	470 FIT (FIDES method @20°C)	Slew rate in Acquisition	0.3 deg/s
Lifetime (years)	10 in LEO 400-850km; 6 LEO 1200km	Slew rate in Tracking	Up to 3 deg/s
ELECTRICAL INTERFACES		Acceleration in Acquisition	Up to 1 deg/s <sup>2</sup>
OH Power supply	Supplied by EU	Acceleration in Tracking at 10 Hz	Up to 2.5 deg/s <sup>2</sup>
EU Power supply (V)	5 V (±5%)		
OH Power consumption (W, typ/max)	0.8 / 1.1	Full Moon in the Field of View	No performance degradation
EU Power consumption (W, typ/max)	2.5 / 3.4		
Output data	EU : RS422 UART (115200 baud)	Baffle Sun Exclusion Angle	35 deg
Output rate (Hz)	8 or 10	Baffle Earth Exclusion Angle	22 deg
		Solar flare Acqu/Tracking	Robust

### BEST IN CLASS

Over 50 years of experiences with high quality Star Trackers underlies this small low cost product

### SMART DESIGN

Simple architecture using validated COTS for high volume production

### HIGH ACCURACY AND EXCELLENT ROBUSTNESS

- Fast acquisition and arcsec tracking
- Excellent robustness especially at End Of life and for high detector temperatures conditions in both acquisition and tracking modes
- Auriga-SA Flight in flight proven since 2019

### CONTACT

#### SODERN

Email : sales-department@sodern.fr

Phone : + 33 1 45 95 70 00

#### SODERN

20 Avenue Descartes

94450 Limeil-Brévannes, France

www.sodern.com