

AURIGA-SA



Auriga-SA stands for 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 SINCE 2019
- INHERITED FROM OUR 50 YEARS OF EXPERIENCES WITH STAR TRACKERS

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

GENERAL DESCRIPTION				
OPTICAL HEAD (OH)				
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 15 years in GEO orbit with EOR				
ELECTRONIC UNIT (EU)				
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)	1.5 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 @ 3 σ	9 / 51 arcsec
EU size (mm)	91 x 117 x 25 (height)			
OH mass (g, including baffle)	225		High Frequency spatial (Pixel) error XY / Z @ 3 σ	6.6 / 38 arcsec
EU mass (g)	315			
RELIABILITY, AVAILABILITY AND LIFETIME				
EEE parts class for OH	ECSS Class 3 equivalent and Automotive		Temporal noise on XY / Z @ 3 σ	11 / 70 arcsec
EEE parts class for EU	ECSS Class 3 equivalent and Automotive			
Reliability for OH	230 FIT (FIDES method @20°C)		Time from lost-in-space (typ)	3.8s
Reliability for EU	470 FIT (FIDES method @20°C)			
Lifetime (years)	10 in LEO 400-1200km; 15 in GEO with EOR		Slew rate in Acquisition	0.3 deg/s in baseline Up to 2 deg/s
			Slew rate in Tracking	Up to 3 deg/s
ELECTRICAL INTERFACES				
OH Power supply	Supplied by EU		Acceleration in Acquisition	Up to 1 deg/s ²
EU Power supply (V)	5 V (\pm 5%)		Acceleration in Tracking at 10Hz	Up to 2.5 deg/s ²
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 proven since 2019

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