

## HYDRA-CP



*Hydra-CP means Centralized Processing*

### STAR TRACKER OPTICAL HEAD WITH SOFTWARE HOSTED IN SPACECRAFT'S ON BOARD COMPUTER

- BEST IN CLASS PERFORMANCE
- ENABLE MASS & COST OPTIMIZATION AT PLATFORM LEVEL
- VERSATILE, ROBUST, ACCURATE AND FLIGHT PROVEN SINCE 2014
- INHERITED FROM OUR 50 YEARS OF EXPERIENCES WITH STAR TRACKERS

## STAR TRACKER OPTICAL HEAD WITH SOFTWARE HOSTED

GENERAL DESCRIPTION				
OPTICAL HEAD (OH)				
Baffle protection for direct Sun and Earth illumination				
Lenses made of Rad-Hard glasses				
HAS-2 (CMOS) detector with Thermo-Electric Cooler				
Connected to the spacecraft's processor through MIL1553B or RS422 interface with up to 8 m length cable				
CENTRALIZED SOFTWARE				
Software integrated in the spacecraft processor. Can be made available for any processor				
Operating frequency up to 10 Hz according to host processor performances				
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)	- 30 / + 60		Bias (worst case)	< 11 arcsec
Storage temperature (°C)	- 40 / + 70		Thermo-elastic Error (worst case)	< 0.055 arcsec/°C
Mechanical environment (in/out of plane)	Random 30 gRMS	Shocks 2350 gSRS		
OH size (mm, including baffle)	166 x 160 x 283 (height)		Low Frequency spatial (FOV) error XY / Z @ 3σ	0.6 / 4.6 arcsec
EU size (mm)	No Electronic Unit, centralized software			
OH mass (kg, including baffle)	1.4		High Frequency spatial (Pixel) error XY / Z @ 3σ	3.4 / 27 arcsec
EU mass (kg)	No Electronic Unit, centralized software			
RELIABILITY, AVAILABILITY AND LIFETIME			Temporal noise on XY / Z @ 3σ	2.3 / 18 arcsec
EEE parts class for OH	Level 1, level 2 in option			
EEE parts class for EU	No Electronic Unit, centralized software		Time from lost-in-space (typ)	2.2 s
Reliability for OH (MIL-HDBK-217F method)	190 FIT (lvl 1), 241 FIT in option (lvl 2) @30°C			
Reliability for EU (MIL-HDBK-217F method)	No Electronic Unit, centralized software		Slew rate in Acquisition	5 deg/s
Lifetime (years)	10 in LEO / 18 in GEO		Slew rate in Tracking	8 deg/s
ELECTRICAL INTERFACES			Acceleration in Acquisition	2 deg/s²
OH Power supply (V)	4.5 to 7		Acceleration in Tracking at 10 Hz	2.5 deg/s²
EU Power supply (V)	No Electronic Unit, centralized software		Full Moon in the Field of View	No performance degradation
OH Power consumption (W, typ/max)	0.8 / 1			
EU Power consumption (W, typ/max)	No Electronic Unit, centralized software		Baffle Sun Exclusion Angle	26 deg
EU Output data	No Electronic Unit, centralized software		Baffle Earth Exclusion Angle	18.5 deg
Output rate (Hz)	8 or 10		Solar flare Acquisition/Tracking	Robust

### EXCEPTIONAL ROBUSTNESS

Hydra can survive high mechanical loads and performs under very harsh conditions : High slew rates, temperature, protons, stray-light...

### EMBEDDED FDIR FUNCTIONS

Hydra Star Tracker delivers accurate attitude in any situations thanks to multiple heads autonomous management

### CONTACT

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