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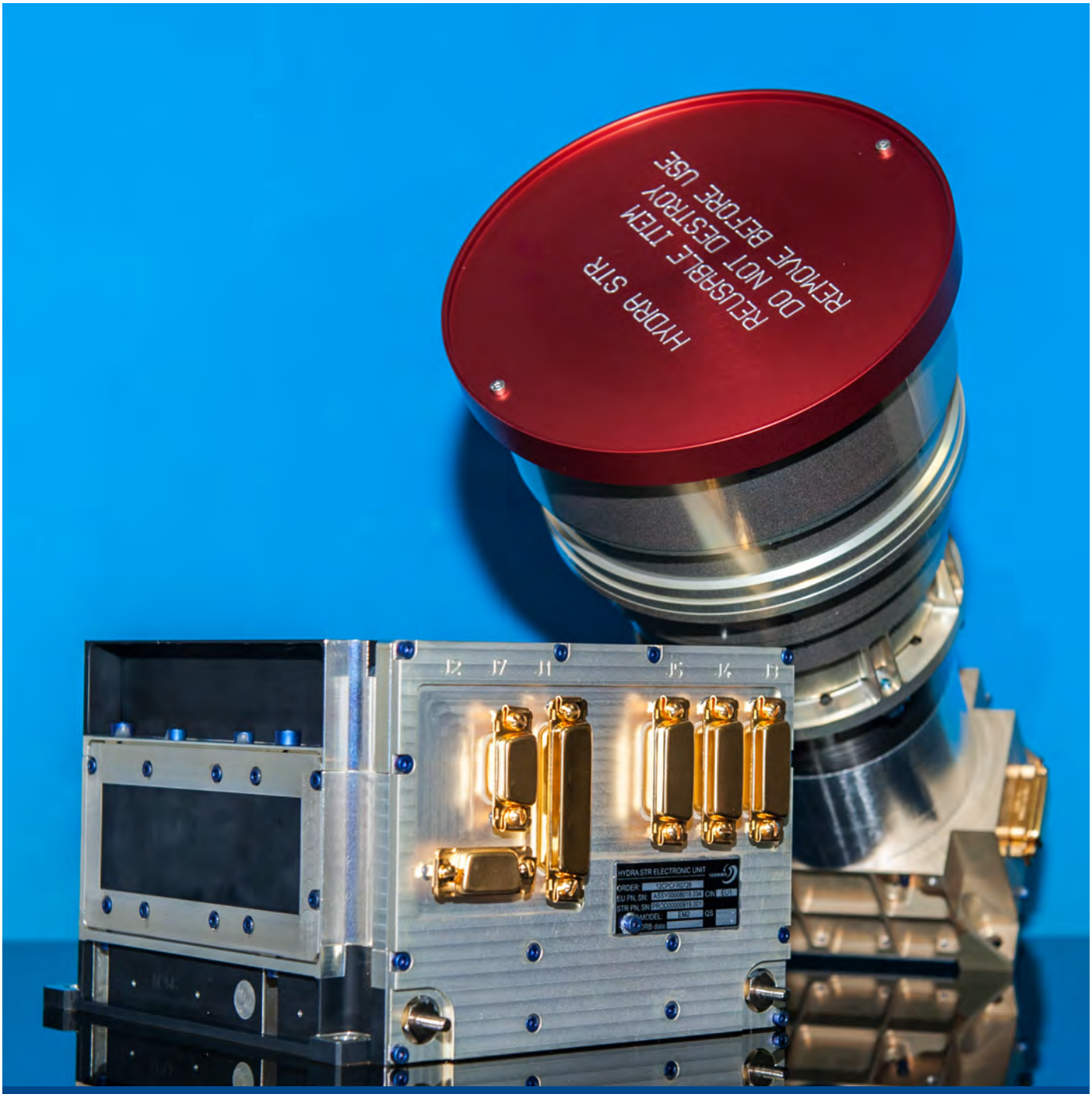

HYDRA-M

TWO HEADS STAR TRACKER

- MODERATE COST
- MICROSAT COMPATIBLE
- MODULAR DESIGN
- INTENDED FOR USE ON A TEMPERATURE REGULATED BASE PLATE

HYDRA-M
TWO HEADS STAR TRACKER

TECHNICAL SPECIFICATIONS			
Optical Heads (OH)		Environmental Characteristics	
Baffle protecting the lens from direct Sun and Earth illumination		Temperatures	
Lens made of Rad-Hard glasses		Full performance	-20°C to +40°C
HAS-2 APS (CMOS) detector		Operating range	-30°C to +50°C
Spacewire interface (MIL 1355) with Electronic Unit		Storage	-40°C to +70°C
Electronic Unit (EU)		Mechanical loads	Random 28 gRMS / Shocks 2000 gSRS
Power Converter supplying the OH and the Processing Unit		Mechanical Interfaces (LEO with 26 Deg SEA)	
Embedded software processing OH's data and computing the attitude		1 Optical Head	Mass 1.4 kg - Dimensions Ø146.5 mm x H283 mm
Embedded Star Catalog		1 Electronic Unit	Mass 1.35 kg - Dimensions 171 x 156 x 65 mm^3
Typical Attitude accuracy in 2-head blended solution		Electrical Interfaces	
BIAS	< 11 arcsec	Typical power consumption	7 W for 1 EU and 2 OH @ 20°C
Thermo-elastic Error	<0.055 arcsec/°C	Electrical Consumption	< 1 W per OH @ 20°C
FOV spatial error @ 20°C ± 3°C	<0.6 arcsec @ 3σ three axes	Head dissipation	0.9W @20°C (no Sun)
Pixel spatial error	<2.4 arcsec @ 3σ three axes	Power supply	21 to 52 Volts
Temporal NEA	<0.8 arcsec/vHz @ 3σ three axes	Output data	MIL1553B
Additional Performance Features		Reliability and Lifetime	
Autonomous Attitude Acquisition in less than 2.5 seconds		1 Optical Head	Level 1: 166 FIT / Level 2: 205 FIT
Attitude tracking up to 3 heads simultaneously	15 Stars per OH	1 Electronic Unit	Level 1: 540 FIT / Level 2: 657 FIT
	Update rate up to 16Hz	LEO 10 years	
Robustness		Qualified Options	
Angular rate determination	Up to 10 deg/s	Baffle with 35 deg Sun Exclusion Angle	
Acquisition from lost in space	Up to 8 deg/s	HYDRA-TC: fully redundant EU version for 2 OH, GEO shielding	
Tracking @ 20°C	Up to 5 deg/s and 8 deg/s2 @16Hz	HYDRA-CP: software hosted into On-Board Computer	
Sun Exclusion Angle	26 deg		
Earth limb Exclusion Angle	18.5 deg		
No performance degradation with full Moon in FOV		Up to 2 OH may be connected to 1 or 2 EU with up to 8m length cable. Single FOV and blended solution attitude data both available.	
Robust to Sun and Earth blooming on one head with two heads operating			
Robust to peak Solar Flare in acquisition and tracking			

FLIGHT PROVEN

› Hydra-M is a small deviation from Sodern's flight proven HYDRA Baseline Active Pixel Sensor (CMOS) star tracker.

AUTONOMOUS

› Maximum performance is independent of the FOV configuration and the satellite orientation and is achieved for a wide range of angular rates.

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