STAR TRACKER

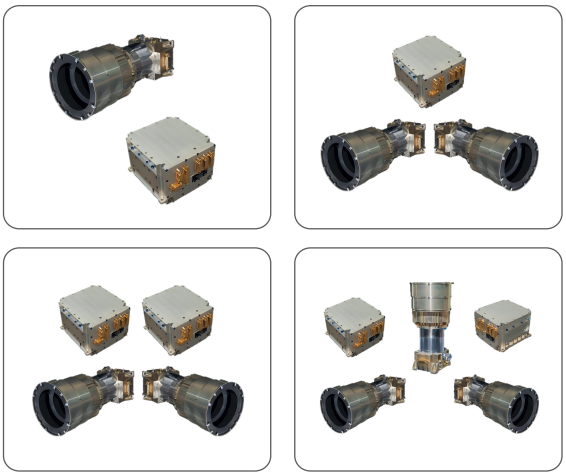
EAGLE EYE

PRODUCT DESCRIPTION

The Eagle Eye star tracker family has been developed by Redwire for high performance missions. The Eagle Eye architecture is modular and highly configurable to enable optimal selection and placement of optical heads and electronic units upon a spacecraft. The Eagle Eye can be configured with one (1) to four (4) optical heads and one (1) to two (2) electronic units with full cross-strapping for maximum redundancy.

The Eagle Eye leverages 50+ years of star tracker heritage and possesses excellent radiation tolerance to enable 10 - 18 years of mission life. The Eagle Eye has earned a reputation for robust service life and can survive high mechanical loads and perform under harsh conditions including high slew rates, wide temperature ranges, proton exposure, and stray light.

Potential Configurations



APPLICATIONS

+ Geosynchronous Equatorial Orbit (GEO) Missions.
+ Low Earth Orbit (LEO) Missions.

PARAMETERS

+ **< 11 Arcsec**
  Bias (Worst Case)
+ **< 0.055 Arcsec / C°**
  Thremo-Elastic Error (Worst Case)
+ **0.6 / 4.6 Arcsec**
  Low Frequency Spatial (FOV) Error XY / Z @3σ
+ **3.4 / 27 Arcsec**
  High Frequency Spatial (Pixel) Error XY / Z @3σ
+ **2.3 / 18 Arcsec**
  Temporal Noise on XY / Z @3σ
+ **2.2 Seconds**
  Time from Lost in Space (Ty P)
+ **5 deg / s**
  Slew Rate in Acquisition
+ **8 deg / s**
  Slew Rate in Tracking
+ **2 deg / s^2**
  Acceleration in Acquisition
+ **8 deg / s^2**
  Acceletation in Tracking at 16 Hz
+ **No Performance Degradation**
  Full Moon in the Field of View
+ **26 deg**
  Baffle Sun Exclusion Angle
+ **18.5 deg**
  Baffle Earth Exclusion Angle
+ **Robust**
  Solar Flare Acquisition Tracking

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MADE IN THE USA
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ADDITIONAL TECHNICAL SPECIFICATIONS

Environmental	
Operating Temperature Range (°C)	-20 to +50
Qualification Range (°C)	-30 to +60
Storage Temperature (°C)	-40 to +70

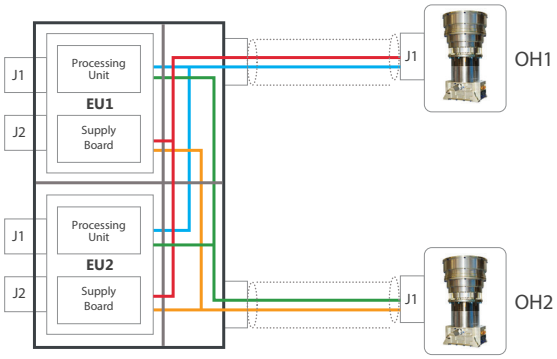
Physical	
OH Size (mm, Including Baffle)	113.1 W x 119 D x 283 H
EU Size (mm)	176.5 W x 158 D x 109 H
OH Mass (kg, Including Baffle)	1.4
EU Mass (kg)	2.9

Reliability	
EEE Parts Class of OH	Level 1 or Level 2
EEE Parts Class of EU	Level 1 or Level 2
Reliability for OH (MIL-HDBK-217F Method)	190 FIT (lvl 1), 241 FIT in Option (lvl 2) @30°
Reliability for EU (MIL-HDBK-217F Method)	512 FIT (lvl 1), 736 FIT in Option (lvl 2) @30°
Lifetime (Years)	10 in LEO, 18 in GEO

Electrical	
OH Power Supply (VDC)	Supplied by EU
EU Power Supply (VDC)	23 to 55
OH Power Consumption (W, Ty P / Max)	0.9 / 1.3 (temp <20 C°) for each OH configured
EU Power Consumption (W, Ty P / Max)	6.2 (temp <20 C°)
EU Output Data	MIL 1553
Output Rate (Hz)	8, 10, 12, 16, 20, or 30

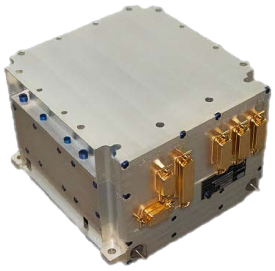
Mechanical	
OH (Random vibe, Shock)	30 gRMS , 2000 g SRS
EU (Random vibe, Shock)	18 gRMS , 1600 g SRS

Radiation		
Optical Head	Radiation Hardness	50 krad
Optical Head	Single Event Latch-up LET Thresold	>60 MeV.cm^2 / mg
Optical Head	Radiation-Induced Loss of Trackting Rate	<3E-5/day on GEO Orbit (Including Solar Flares)
Electronic Unit	Radiation Hardness	30 krad
Electronic Unit	Single Event Latch-up LET Thresold	>60 MeV.cm^2 / mg
Electronic Unit	Radiation-Induced Loss of Trackting Rate	<2E-4/day on GEO Orbit (Including Solar Flares)



Notional 2 OH + 2 EU configuration to illustrate fully redundant layout enabled by cross strapping of Electronic Units and Optical Heads.

Eagle Eye
Optical Head (OH)



Eagle Eye
Electronic Unit (EU)

This product is controlled for export from the United States. Contact Redwire for details.

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DISCOVER@REDWIRESPACE.COM

HERITAGE

Redwire is a new leader in mission critical space solutions and high reliability components for the next generation space economy. With decades of flight heritage combined with the agile and innovative culture of commercial space platform, Redwire is uniquely positioned to assist its customers in solving the complex challenges of the future space missions. For more information, please visit **www.redwirespace.com**

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