

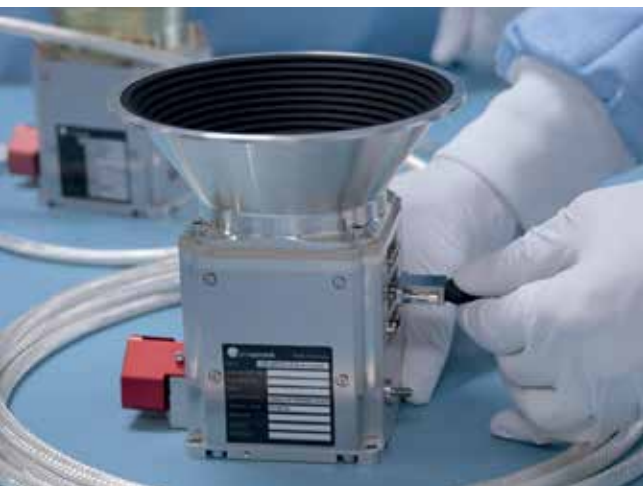
ASTROhead

Optical head for visible range space imaging applications

This compact and light-weight space camera for the visible range was designed drawing from Jena-Optronik's heritage from the successful ASTRO star sensor series.

While adopting new, state-of-the-art APS detector chip technology to reduce size and weight, maximum use was made of heritage technology. This guarantees durability, reliability, performance, and affordability of this versatile camera right from the start.





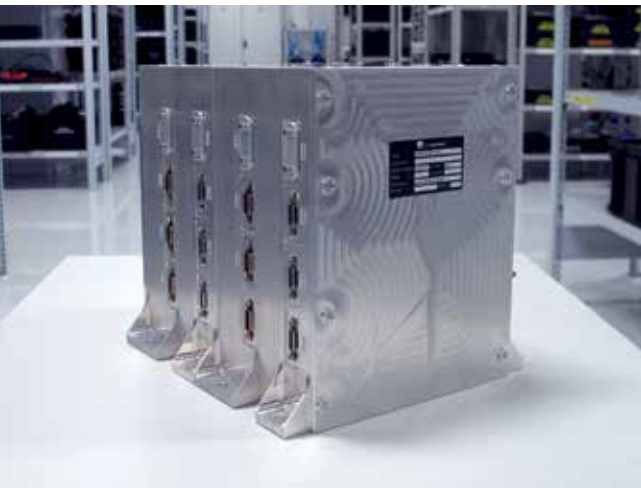
ASTROhead

Visible range camera with grayscale image output

Data output		
	Full frame images, compressed or uncompressed	up to 4Hz
	ROIs / windows	frame rate depends on the ROI/window size
	Pre-processed images (e.g. binning, thresholding, star lists, centroids)	Star sensing algorithms also available to run on customer furnished computer.
Specification		
Detector	AMS Sensors FaintStar	APS CMOS technology
Detector Resolution	1024 x 1024 pixels	
Optics	<ol style="list-style-type: none"> refractive, focal length 30.5mm, f/1.3, FOV 19.5 deg (full cone) refractive, focal length 8.4 mm, f/8.0, FOV 67.8 deg (full cone) Further optics /FoVs available on request	rad-hard glass material circular rad-hard glass material circular
Mass	ASTROhead 26deg SEA baffle 85 deg SEA baffle	approx. 0,9 kg approx. 0,2 kg approx. 0,1 kg
Dimension	80 x 80 x 88 mm ³	without baffle, excluding alignment cube
Operational I/F	SpaceWire	Either connection to S/C or multiple Optical heads can be connected to the controller (see below)
Power I/F	5V (28V on request)	Either connection to S/C or multiple Optical heads can be connected to the controller (see below)
Power consumption	0,9 W typical	
Reliability	215 FIT @+35°C	MIL-STD-217-F2
Temperature range		
Operational	-30 °C ... +60 °C	
Non-operational	-40 °C ... +70 °C	

Controller

Multiple optical heads connect to the redundant controller box



Data output		
Star Sensing	Attitude calculation from star centroides Data fusion from multiple OHs Acquisition support between multiple heads	
Navigation Space Situational Awareness	Delivery of synchronized images from multiple optical heads Stereo imaging and 3D coordinate output Pose estimation and 3D output	optional optional
Inspection	Storage and output of multiple images	
Specification		
Dimension	194 x 172 x 181 mm ³	Fully redundant
Mass	4.3 kg	Fully redundant
Data (external)	SpaceWire	Other I/F available on request
Data (internal)	SpaceWire for data exchange between ASTROheads and controller	connection of up to 4 ASTROheads per controller (fully redundant), optional more units with additional SpaceWire Router
Power I/F	28V nominal	Input voltage range can be tailored to customer needs
Power consumption	13 W typical	end of life, with 4 ASTROheads, cold redundancy
Reliability	924.2 FIT @+35°C	MIL-STD-217-F2
Temperature range		
Operational	-30 °C ... +60 °C	
Non-operational	-40 °C ... +70 °C	



ASTROhead

Optical head for visible range space imaging applications

ASTROhead is useable as visible range camera for

- Navigation
- Inspection
- Star sensing
- Space Situational Awareness

ASTROhead delivers

- Full frame images, compressed or uncompressed
- ROIs / windows
- Pre-processed images, e.g. binning, thresholding, star lists, centroids

ASTROhead stand-alone version available

- Camera S/W libraries available to run on S/C on-board computer
- Star identification software libraries based on ASTRO star sensor heritage available to run on S/C on-board computer to allow star sensing based on the ASTROhead image output

Fully redundant controller box available connecting up to four ASTROhead

- S/W for delivering synchronized full frame images available for later stereo processing
- Multiple ASTROheads connecting to a dedicated controller box makes it a fully autonomous star tracker system with data fusion and acquisition support between the different optical heads

ASTROhead highlights

- Radiation hard design for > 18 years GEO life time
- Lightweight: < 1 kg w/o baffle
- Space qualified heritage optics design for 19 deg and 68 deg field of view available, further designs upon request
- Compact size
- Low power consumption