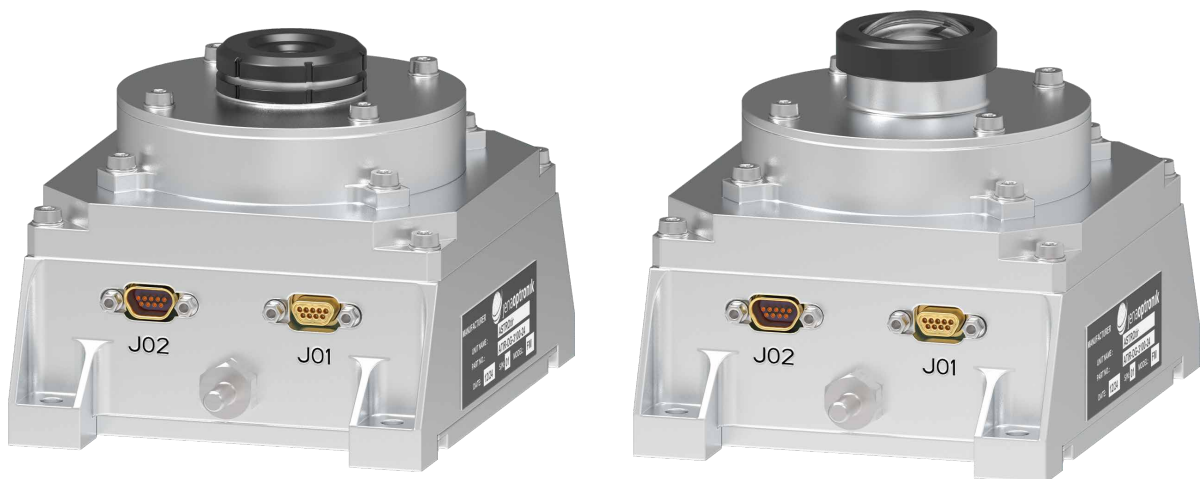


ASTROtir

Compact **thermal infrared camera** for space application.



Jena-Optronik latest development is a long wave thermal infrared camera for space application, which combines compactness and image correction capabilities with long lifetimes (up to 15 years) in geostationary and lower orbits.

Features

- Exchangeable optics to adapt the field of view to customer needs
- Utilizing a state-of-the-art micro-bolometer
- Electrical circuitry allowing small and lightweight infrared (IR) camera
- Regulated power and SpaceWire Interface
- Optional internal shutter for sun protection, correction and calibration
- FPGA-based camera controller with non-uniformity correction, e.g. bad pixel replacement
- Optional image processing implementable

ASTROtir Performance



Size comparison: ASTROtir with two different lens options and ASTRO CL, Jena-Optronik's constellation star sensor (left).

Size & Mass

Width	80 mm box & 104 mm box with I/F feets
Depth	80 mm
Height	77 mm WFOV & 81 mm NFOV
Mass	Without shutter: <545 g for the wide field of view <595 g for the narrow field of view With shutter: <570 g for the wide field of view <615 g for the narrow field of view

Imaging System Design

Optics		
Type	refractive	
Image Circle	14 mm	
F-number	1.2	
Focal Length	Wide FoV: 8.5 mm Narrow FoV: 25 mm	
Image Resolution	Variable e.g. <ul style="list-style-type: none"> 640 x 480 pixel (rectangular image) 566 x 566 pixel (square image) Circular image with 800 pixel in diameter 	Optional higher resolutions are possible as the detector resolution corresponds to 1280 x 1024 pixels.
Frame Rate	10 Fps @ 300 kpxl (kilo pixel)	
Field of View	Viewing angles of the image diagonal of about 10mm are <ul style="list-style-type: none"> Narrow FoV: 21.7° Wide FoV: 64° Resulting in FoVs for a rectangular image with 640x480 pixel resolution <ul style="list-style-type: none"> Narrow FoV: 17.3 x 13.1° Wide FoV: 51° x 38° ... for a square image with 566x566 pixel resolution <ul style="list-style-type: none"> Narrow FoV: 17.5 x 17.5° Wide FoV: 51.2° x 51.2° 	
Bit depth	> 14 bit	
Configuration	FPGA for Camera Control will have capabilities for <ul style="list-style-type: none"> NUC correction Defective pixel correction 	
Shutter	Optional: modular shutter	

General properties

Interface	SpaceWire
Lifetime	5 years to 15 years design lifetime for LEO or GEO
Power	< 7 W