

## 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 (> 6 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: ASTRO CL and ASTROtir with two different lens options

Size & Mass		
Dimensions	83mm x 80mm x 55mm	For wide field of view
Mass	Without shutter: <545g for the wide field of view <595g for the narrow field of view With shutter: <570g for the wide field of view <615g for the narrow field of view	
Imaging System Design		
Optics	Type: refractive Image circle: 10mm F-number: 1.2 Focal length: <ul style="list-style-type: none"> <li>Narrow FoV: 28.4mm</li> <li>Wide FoV: 8.7 mm</li> </ul>	
Image Resolution	Variable e.g. <ul style="list-style-type: none"> <li>640 x 480 pixel (rectangular image)</li> <li>566 x 566 pixel (square image)</li> <li>Circular image with 589 pixel</li> </ul>	Optional higher resolutions are possible as the detector resolution corresponds to 1280 x 1024 pixels.
Field of View	General options w.r.t. a 10mm image circle are <ul style="list-style-type: none"> <li>Narrow FoV: 20°</li> <li>Wide FoV: 60°</li> </ul> Resulting in FoVs ... ... for a rectangular image with 640x480 pixel resolution <ul style="list-style-type: none"> <li>Narrow FoV: 15,4 x 11,6°</li> <li>Wide FoV: 47.8° x 36.8°</li> </ul> ... for a square image with 566x566 pixel resolution <ul style="list-style-type: none"> <li>Narrow FoV: 13.7 x 13.7°</li> <li>Wide FoV: 42.8° x 42.8°</li> </ul>	
Bit depth	> 14 bit	
Configuration	FPGA for camera control will have capabilities for NUC correction and other features	
Shutter	Optional: modular shutter	
General properties		
Interface	SpaceWire	
Lifetime	6 years (10 years)	
Power	< 7 W	