ASTROtir

Compact thermal-infrared camera for space applications

Jena-Optronik is developing a thermal infrared camera for specific space applications. The camera combines compactness with long lifetimes in geostationary and lower orbits.

The new camera development ASTROtir uses a micro-bolometer as detector. These kind of detectors for thermal infrared radiation do not require any active cooling, which allows developing small and compact cameras.

Thermal infrared cameras work independently from the illumination by the sun.

The ASTROtir camera is designed for special space based application. Among these are:

- Relative navigation e.g. Formation Flying of satellite constellations, Approach and docking to a space object or satellite
- Inspection of near satellite objects
- Surveillance of satellite surroundings
- Image generation for various applications e.g. Earth Observation, Detection of hot objects in Earth’s atmosphere of on its Ground

Mission Scenarios

- Imaging for formation flying and relative navigation independent from sun Illumination
- Space Situational Awareness sensor: image generation of nearby surrounding objects
- Approach and docking as well as fly-by observation to a space object
- Support of planetary or lunar landing Scenarios
- Detection and tracing of hot objects on Earth and within Earth atmosphere

The development profits from our expertise, which we gained in the area of space optics & electronics over the last years. Especially our contributions to ESA’s Sentinel missions in the frame of the Copernicus Program helped us to gain experience and capabilities in the infrared wavelength range, which we use within the development of ASTROtir.

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