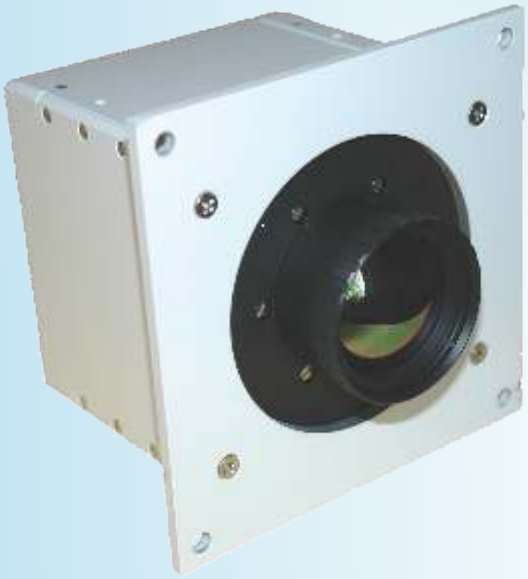
AeroTherm Thermal Camera

OTS Oblique Thermal Sensor



AeroTherm is a thermal infrared single camera, available as cooled or uncooled sensor. It enables monitoring of objects that emit thermal radiation. The airborne thermography is useful for many applications such as

- thermal insulation of objects and cities
- border and industrial plant security
- inspections of pipelines, high voltage power lines and isolators
- water quality monitoring
- management of forest fires and hot spots by improved visibility through smoke and darkness
- surveys of underground steam system
- change detection
- animal detection
- humidity monitoring

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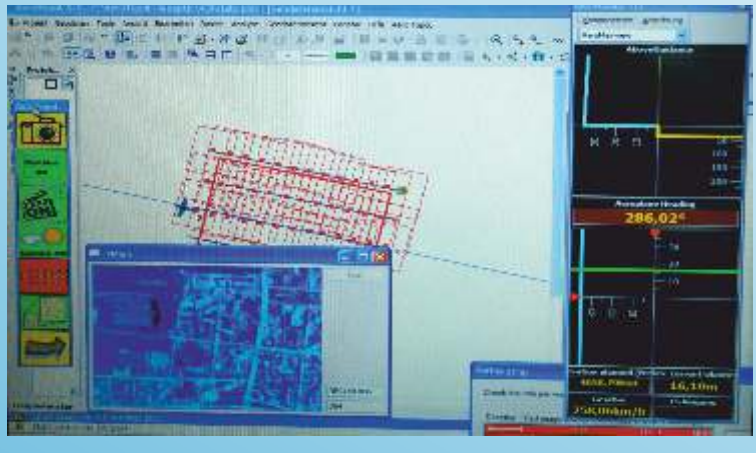
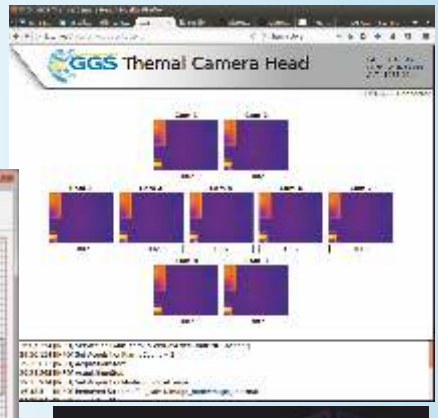
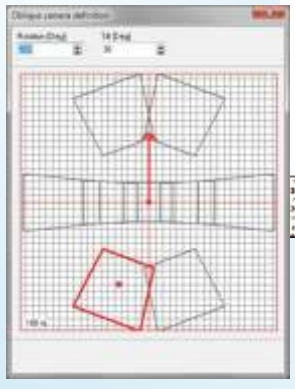
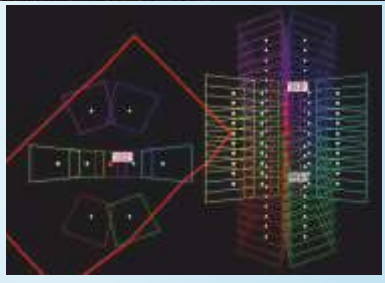
AeroTherm can be fully integrated with AeroTopoL FMS and the AeroStab family. The camera is managed by the AeroTherm Control software via Firewire. Real-time control of the actual data is supported. Other sensors can be used in combination with AeroTherm e.g. LiDAR with AeroScan or RGB imaging with AeroCam.









Aero OTS is our new innovative multi sensor Oblique Thermal System (OTS). Up to 9 thermal cameras based on Flir industrial OEM sensors are joint to a complex and ultra-high resolution system. Five sensors enable a contineous cross-track resolution of 3,200 pixels. Two front sensors and two back sensors deliver interesting oblique data e.g. to monitor facades of urban structures.

The OTS Capture software enables the control of all synchronized sensor heads and can also be accessed via web beside the FMS. OTS capture is interfaced with AeroTopoL and that way mission can be planned and executed as easily as with any single camera.

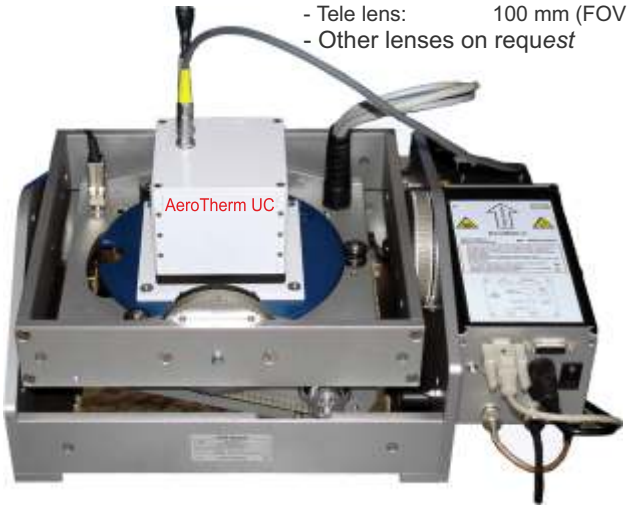
Technical data: **Aero Therm / OTS**

AeroTherm UC

Detector type:	Uncooled microbolometer (Focal Plane Array)
Image format:	640 × 480 pixel
Spectral range:	7.5 µm ... 14 µm
Pixel size	25 µm
Temperature resolution:	NETD < 70mK / with filtering: NETD < 30mK
Measurement range:	2-40°C ... +300°C
Measurement accuracy:	3 ± 1.5 K (0°C-100°C) otherwise ± 2K, ± 2%
Dynamic range:	16 bit
Image rate:	50 Hz (PAL) or 60 Hz (NTSC)
Interfaces	IEEE-1394 (FireWire), RS232
Power supply:	9 VDC - 24 VDC
Brightness/Contrast control:	Auto / Manual
NUC control	Auto / Triggered
Focus:	Auto / Manual
Operating temperature:	-15°C ... +45°C
Storing temperature:	-40°C ... +70°C
Humidity Relative humidity:	10% ... 95%, non-condensing
Shock Operational:	25G, IEC 68-2-29
Vibration Operational::	2G, IEC 68-2-6
Internal protection:	IP54, IEC 529
Dimensions (without lens) :	109 mm × 100 mm × 100 mm
Weight (without lens):	675 g
Radiometric calibration :	-40°C ... +300°C
Lenses:	- Normal lens: 30 mm (FOV 30°×23°)
	- Tele lens: 50 mm (FOV 18°×14°)
	- Tele lens: 100 mm (FOV 9.5°×7.3°)
	- Other lenses on request

AeroTherm SC

Detector type	InSb array, Stirling cooled
Image format	640 × 512 pixel
Spectral range:	2µm ... 5µm
Pixel size	15µm
Temperature resolution	< 20 mK (@ 30°C object temperature)
Measurement range:	-40°C ... +1200°C
Measurement accuracy:	± 2K or ± 2%
Dynamic range:	16 bit
Image rate:	50 Hz (PAL) / 60 Hz (NTSC)
Interfaces:	IEEE-1394 (FireWire), Rs232
Power supply:	9 VDC ... 24 VDC
Spectral filtering:	Integrated wheel for up to 4 different filters
Brightness /contrast control:	Auto / Manual
NUC control	Auto / Triggered
Focus:	Manual
Operating temperature:	-15°C ... +50°C
Storing temperature:	-40°C ... +70°C
Humidity Relative humidity:	10% ... 95%, non-condensing
Shock Operational: :	25G, IEC 68-2-29
Vibration Operational::	2G, IEC 68-2-6
Internal protection:	IP54, IEC 529
Dimensions (without lens):	102 mm × 100 mm × 181.5 mm
Weight (without lens):	approx. 3 kg
Lenses:	- Wide lens: 12.5 mm (FOV 42° × 30.5°)
	- Normal lens: 25 mm (FOV 22° × 16°)
	- Tele lens: 50 mm (FOV 11° × 8°)
	- Tele lens: 100 mm (FOV 5.5° × 4°)
	- Other lenses on request



Aero OTS

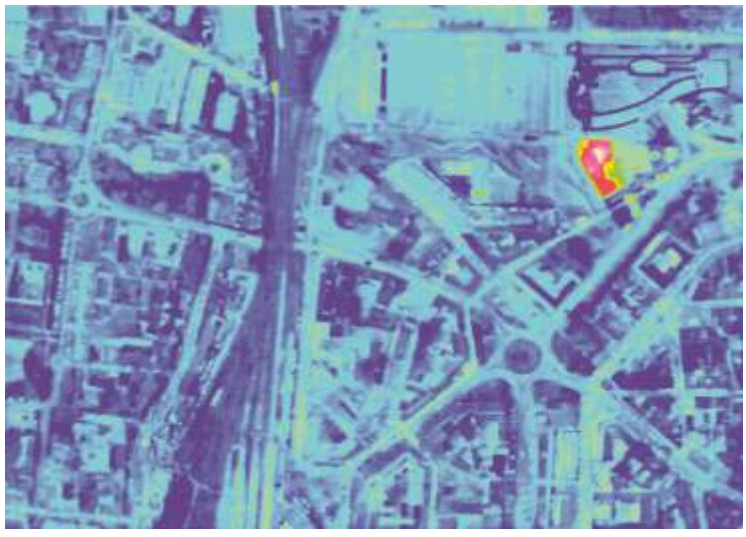
Detector type:	Uncooled VOX microbolometer
Image format:	640 × 512 pixel
Spectral range:	7.5 µm ... 13 µm
Pixel size	17 µm
Temperature resolution:	NETD < 50mK
Measurement range:	-25 to +135°C -40 to +550 °C
Measurement accuracy:	5 ± 1.5 K or ± 5%
Dynamic range:	14 bit
Image rate:	7-5, 30, 50 Hz
Interfaces	Ethernet
Power supply:	12 VDC / 24 VDC
Brightness/Contrast control:	Auto / Manual
NUC control	Auto / Triggered
Focus:	Auto / Manual
Operating temperature:	-15°C ... +50°C
Storing temperature:	-40°C ... +70°C
Humidity Relative humidity:	10% ... 95%, non-condensing
Shock Operational: :	25G, IEC 68-2-29
Vibration Operational::	2G, IEC 68-2-6
Internal protection:	IP54, IEC 529
Dimensions (without lens) :	106 mm × 40 mm × 40 mm
Weight (without lens):	200 g
Lenses:	- Normal lens: 13 mm (FOV 45°×37°)
	- Tele lens: 25 mm (FOV 25°×20°)

Oblique Thermal System:

1-9 camera heads in one thermostated box incl. storage and control CPU, ethernet hub, power supply, USB Interface, interface to AeroTopol FMS. Cameras are mounted:

	Rotation	Tilt
Nadir:	0°	0°
nadir 1 left:	0°	- 18°
nadir 2 left:	0°	- 36°
nadir 1 right:	0°	18°
nadir 1 right:	0°	36°
forward left:	340°	38°
forward right:	20°	38°
backward left:	200°	- 38°
backward right:	160°	- 38°

- OTS Capture software incl. PC, interface to AeroTopoL (TCP/IP), web-broused interface, OTS capture control interface and storage device (USB stick)



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