

PYROVIEW 640L-PMF

High magnetic field infrared camera for the research of solid matter

- ✓ Precise non-contact temperature measurement between $-20\text{ }^{\circ}\text{C}$ and $500\text{ }^{\circ}\text{C}$ in high magnetic fields
- ✓ Uncooled microbolometer array with 640×480 pixels
- ✓ Spectral range between $8\text{ }\mu\text{m}$ and $14\text{ }\mu\text{m}$
- ✓ Split device: camera head, external evaluation electronics
- ✓ Real-time data acquisition via Ethernet or fiber optic cable
- ✓ Measurement frequency 50 images per second
- ✓ Large dynamic range and 16 bit A/D converter
- ✓ Camera in aluminium housing (IP54)
- ✓ Integration in customized system solutions including hardware and software adjustment



Overview

The infrared camera PYROVIEW 640L-PMF is the world's first IR camera that can measure precisely temperatures without contact in the range from $-20\text{ }^{\circ}\text{C}$ bis $500\text{ }^{\circ}\text{C}$ in permanent magnet field of several Tesla.

The camera is split, so that the small camera head can be placed directly in the magnet field. A connection up to 10 m length to the operation and evaluation unit provides that this electronics can be operated outside the magnet field.

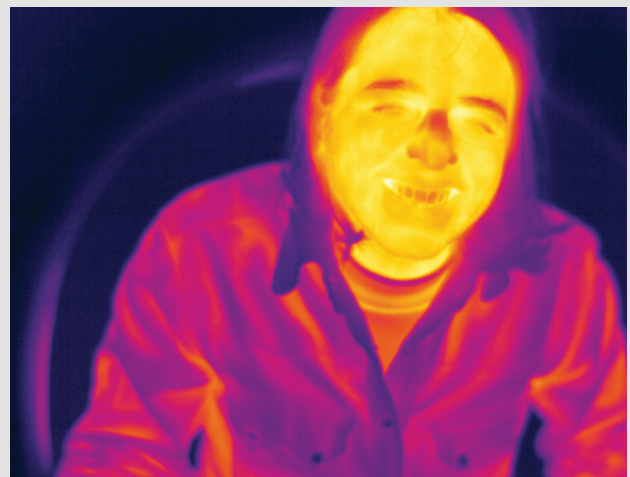
Technical studies on semiconductors, the determination of critical parameters of high field and high temperature super conductors, magnetization measurements, nuclear resonance studies as well as research work in cell biology are application areas of the high magnetic field infrared camera PYROVIEW 640L-PMF.

In continuous operation measured data can be recorded with high thermal and spatial resolution on fixed and moving measurement objects. A Gigabit Ethernet connection with optional optical transmission provides a real-time data acquisition with up to 50 images per second also to far away evaluation and/or visualization technology. The maximum image frequency of 50 Hz is adjusted optimally to the thermal time constant of the infrared array.

The infrared camera is built-in a aluminium compact housing „compact“ with the protection class IP54.

In stand-alone operation without permanent PC connection the camera monitors the process via two programmable, galvanically isolated digital inputs and outputs. All parameters of the stand-alone version have to be programmed once on location.

The modular Windows software PYROSOFT of the camera can be adjusted and extended to process-related requirements. The free software PYROSOFT Compact is delivered with every PYROVIEW infrared camera.



Thermal image in a 3T magnetic field

Made by DIAS Infrared

DIAS Infrared headquartered in Dresden (Germany) develops and manufactures high-quality precision devices as well as system solutions for non-contact temperature measurement. Challenging projects are a welcoming motivation for us. The customers appreciate the robust make, outstanding accuracy, superb reliability and the high service standard of our equipment technology.

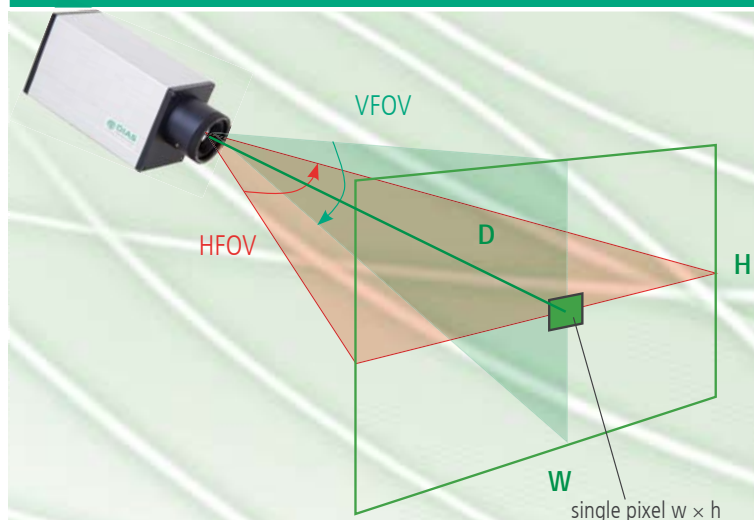
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Technical data	
Spectral range	8 μm to 14 μm
Temperature range ¹	range 1: -20 °C to 120 °C, range 2: 0 °C to 500 °C
Sensor	uncooled microbolometer array (640 × 480 pixels)
Aperture angle (HFOV × VFOV) ^{1,3}	30° × 23°, measurement distance > 20 cm, spatial resolution 0.8 mrad, optional 60° × 47°, measurement distance > 20 cm, spatial resolution 1.6 mrad, optional 18° × 14°, measurement distance > 1.5 m, spatial resolution 0.5 mrad
Measurement uncertainty ²	2 K (object temperature < 100 °C) or 2 % of measured value in °C
NETD ²	< 80 mK (30 °C, 50 Hz, range 1)
Measurement frequency ⁴	internal 50 Hz, selectable: 50 Hz, 25 Hz, 12.5 Hz, ...
Response time	internal 40 ms, selectable: 2 / measurement frequency
Interface	Gigabit Ethernet (real-time, 50 Hz)
Digital inputs	2 galvanically isolated inputs (trigger)
Digital outputs	2 galvanically isolated outputs (alarm)
Connections ³	round plug connector HR10A (12 pin, operating voltage, digital inputs and outputs), round plug connector M12 (A-coded, 8 pin, Gigabit Ethernet)
Power supply	12 V to 36 V DC, typical 10 VA
Weight	approx. 1.6 kg
Housing	camera head: aluminium compact housing IP54, 85 mm (W) × 71 mm (L) × 107 mm (H), without lens and connectors external evaluation electronics: aluminium compact housing IP54, 85 mm (W) × 175 mm (L) × 107 mm (H), without connectors
Operating temperature of the camera	-10 °C to 50 °C
Storage conditions	-20 °C to 70 °C, max. 95 % rel. humidity
Software	control and imaging software PYROSOFT for Windows®, customized modifications on request

¹ Others on request. ² Noise equivalent temperature difference. Specifications for black body radiator and ambient temperature 25 °C. ³ Lens with motor or manual focus. ⁴ Export variant with < 9 Hz available..

Lens variants



HFOV × VFOV	D [m]	W [m]	H [m]	w [mm]	h [mm]
30° × 23°	1	0.5	0.4	0.8	0.8
	3	1.6	1.2	2.5	2.5
0.8 mrad	10	5.4	4.0	8.4	8.4
	30	16.2	12.0	25.2	25.2
60° × 47°	1	1.1	0.9	1.8	1.8
	3	3.4	2.6	5.4	5.4
1.6 mrad	10	11.5	8.6	18	18
	30	34.5	25.8	54	54
18° × 14°	1.5	0.5	0.4	0.8	0.8
	3	1.0	0.7	1.5	1.5
0.5 mrad	10	3.2	2.4	5.0	5.0
	30	9.6	7.2	15.0	15.0

HFOV ... Horizontal Field Of View
VFOV ... Vertical Field Of View
IFOV ... Instantaneous Field Of View (spatial resolution)
D ... Measurement distance

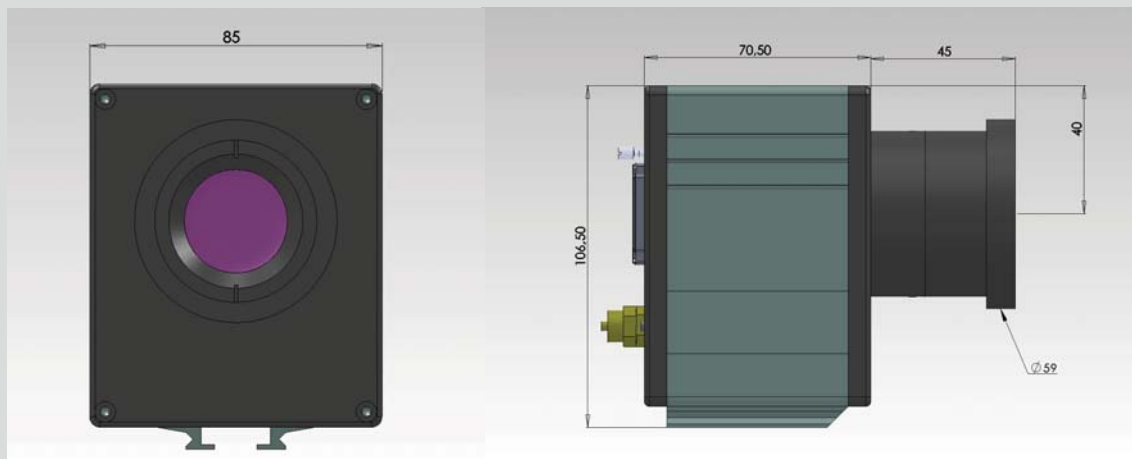
W ... Image width
H ... Image height
b ... Pixel width
h ... Pixel height

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Dimensional drawings

Dimensions PYROVIEW 640L-PMF in compact housing (camera head)



Connectors



Gigabit-Ethernet (LAN)

- Infrared real-time data up to 50 images per second (TCP/UDP)
- Web interface (status and image bar)
- PYROSOFT software
- GigE Vision® compatible
- Configuration for stand-alone operation

➔ Power supply

➔ Trigger 1

➔ Trigger 2

Error signal/

Alarm 1 ➔

Synch signal/

Alarm 2 ➔

Inputs

Outputs

Customized terminal box

(with power supply unit, alarm relay, controller, media convertor,...)

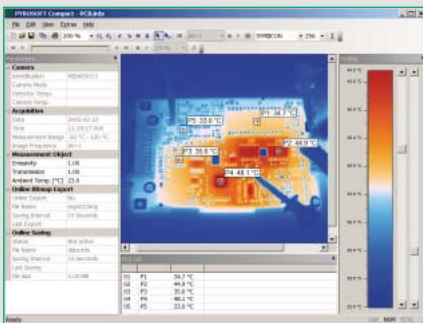
General arrangement: evaluation electronics (left side) and camera head (right side)



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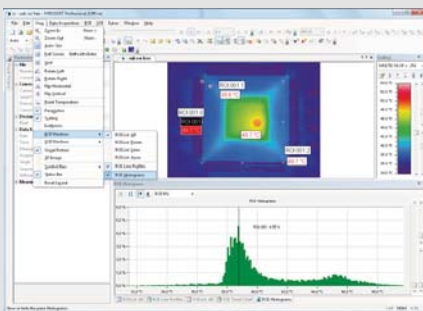
Powerful online and offline software for DIAS infrared cameras

PYROSOFT Compact



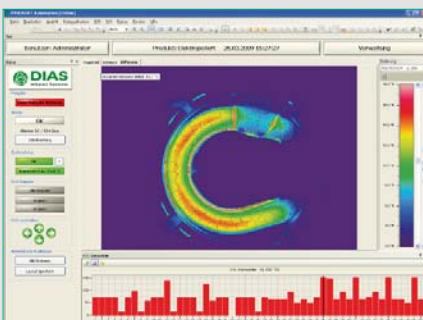
- Online data acquisition of one DIAS infrared camera
- Open and edit archived measured data and sequences
- Bitmap and video export
- Online data storage and online bitmap export
- Definition of regions of interests (ROI): points, lines and rectangle
- Generating of reports in Microsoft® Word format by integrated report function
- Context-sensitive help system (F1 key)
- Included in the scope of delivery of every PYROVIEW infrared camera

PYROSOFT Professional



- Online data acquisition – Analyze, store and export data in real-time
- Open and edit archived measured data and sequences
- Multi document structure for several documents
- Bitmap, video and text export
- Definition of regions of interests (ROI) and values of interests (VOI) with alarm calculation, histogram and trend chart
- Numerous interface possibilities for processes (PROFIBUS, PROFINET, WAGO, TCP-Socket, Text IO)
- Reporting function, context-sensitive help system (F1 key)
- PYROSOFT Professional IO offers optionally a bidirectional data interface via PROFIBUS, PROFINET, WAGO, MODBUS, OPC, TCP Socket to process control systems, controllers and other applications

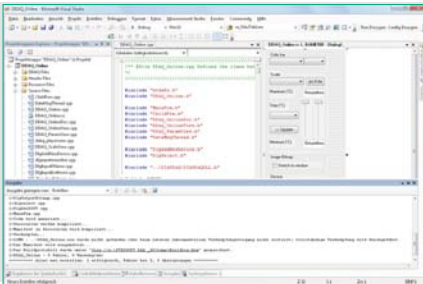
PYROSOFT Automation



DIAS has developed the software PYROSOFT Automation for the integration of infrared cameras in automation processes.

- Comfortable product management with free definable document templates
- Product choice and release control can be made manually or automatically
- Different user levels for operator, tool setter and administrator
- Functionality of PYROSOFT Professional for administrators
- Automatic logging of system messages, measured data and alarms
- Easy to use and configurable user interface for application in fabrication
- Learning functions for automatic adjustment of alarm threshold
- Offline viewer for belated data analysis
- Bidirectional data interface via PROFIBUS, PROFINET, WAGO, MODBUS, OPC, TCP Socket to process control systems, controllers and other applications

PYROSOFT DAO



For users who want to make an integration into their software environment by themselves, we offer an own online and offline DLL interface for DIAS infrared cameras.

- API (DLL) for direct data access under Windows®
- Support for DIAS IRDX file format
- Setting of data acquisition parameters and object properties
- Query of temperature values and camera information
- Functions for displaying of images and palettes as bitmap
- Online and offline function

More software packages are available, for example:

PYROSOFT MultiCam (process software for monitoring up to 8 cameras), PYROSOFT CamZone (software for programming a stand-alone camera), application specific software like PYROSOFT FDS for DIAS fire detection systems.



We are certified for many years according to ISO 9001

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