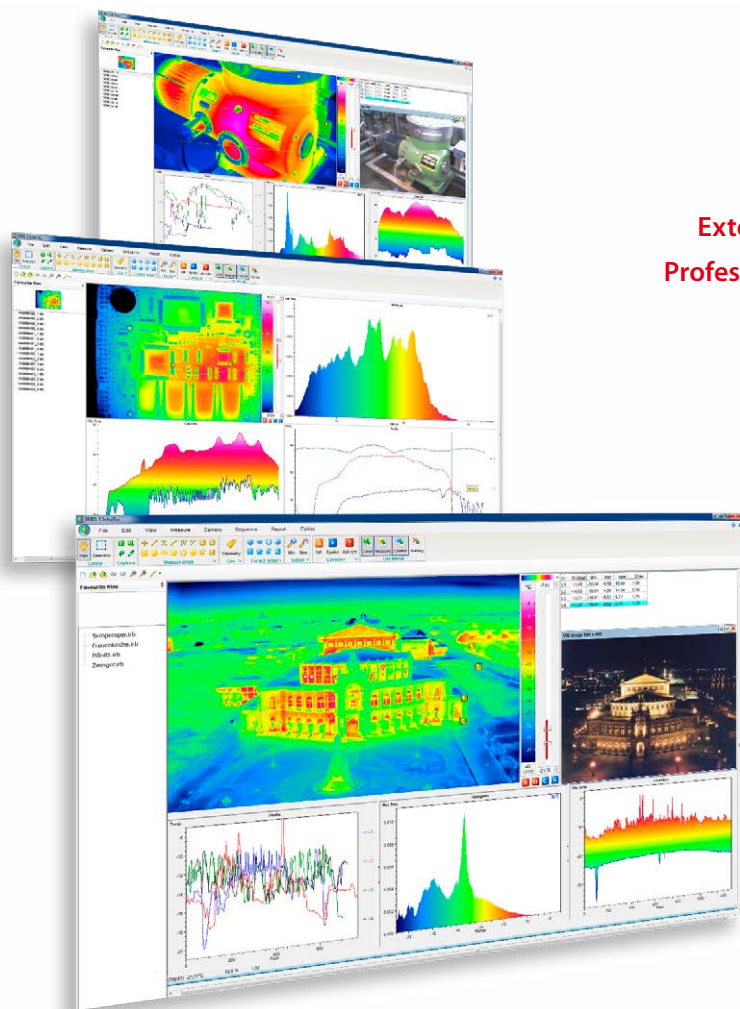


Software Family IRBIS® 3

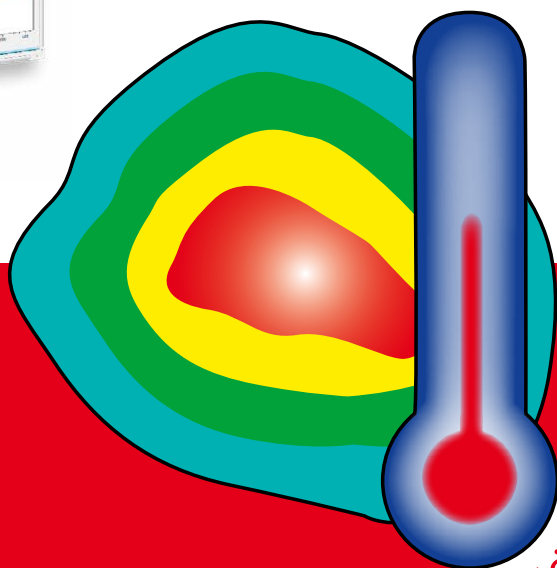
Special Software for Convenient Camera Control
and Editing of Thermographic Images

INFRAtec.



- Numerous analysis functions and tools
- Extensive visual displays of measurement data
- Professional generation of thermography reports
- Modular concept enables an application-specific configuration
- SDK allows to connect infrared cameras in existing systems

www.InfraTec.eu



Guarantees working efficiency

Overview

IRBIS® 3

1 Navigation

The intuitively operating concept as well as the adopted well-known set of icons allows even the unfamiliar user to quickly learn the handling. The user interface can be designed individually and saved as a part of the setup. This allows the user to keep an overview of the operating functions at any time.

2 Favourite Files

The list of favourites clearly arranges all open thermograms and sequences. In combination with a preview image this allows easy and direct access to single thermal images or sequences.

3 Thermogram

Powerful integrated measuring and editing functions facilitate a comprehensive and fast analysis of digital thermograms. Numerous automatic functions for image correction and optimisation support the user in clearly recognising and visualising thermal details of measured objects.

4 Diagrams

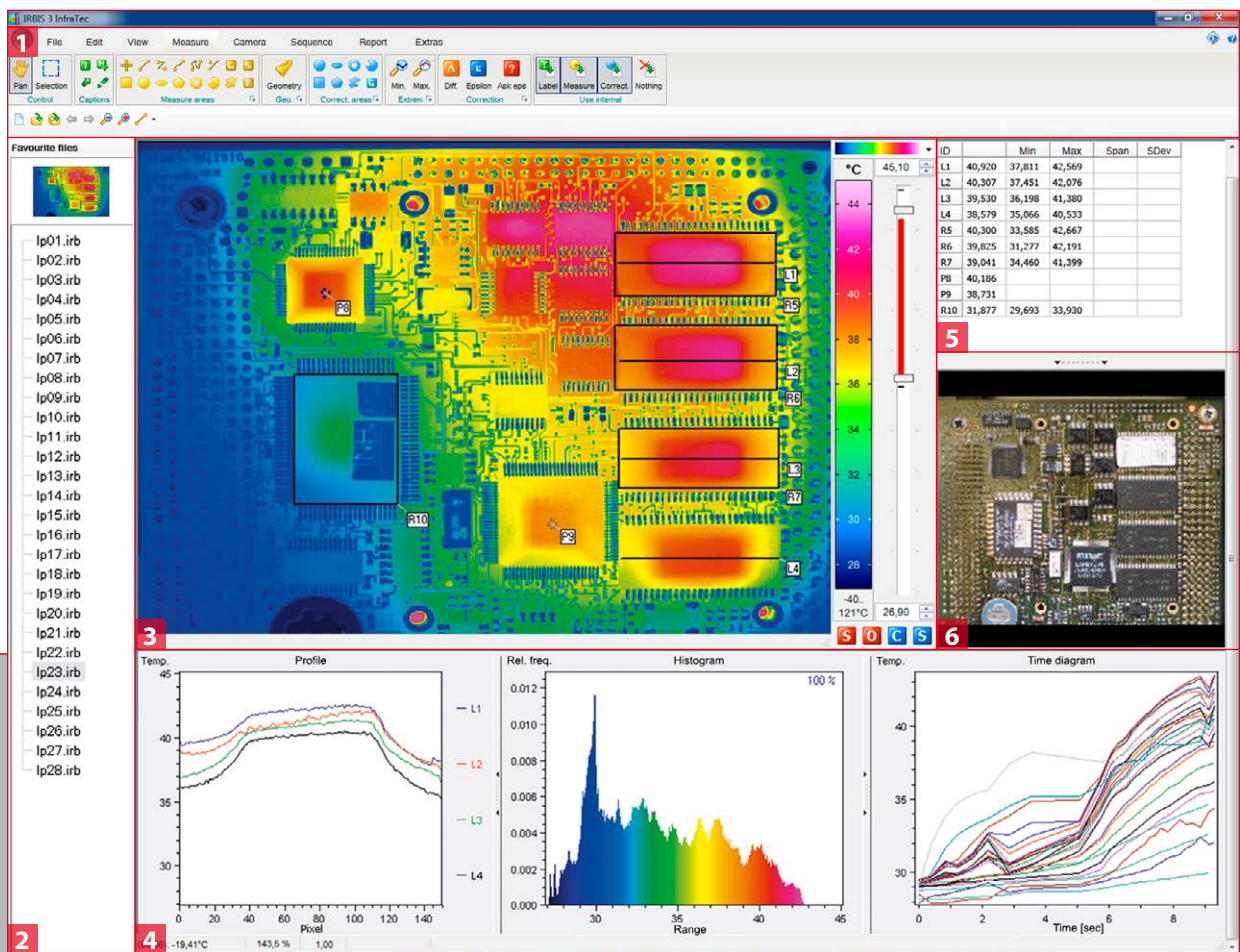
Numerous, graphically attractive, two and three-dimensional diagrams help to swiftly visualise and export temperature data of defined measured areas in individual images or image sequences.

5 Table of Measured Data

User-defined measured data and statistical parameters of thermograms or their partial areas can be presented very clearly in a tabular form that can be designed by the user individually.

6 Visual Image

Visual images that have been recorded parallel either by an external camera or a digital camera integrated inside a thermographic camera may optionally be added to the respective thermogram by just a click of a button or automatically. This serves to clearly allocate measuring scenarios or problem spots.



IRBIS® 3 report

The stand-alone thermography software IRBIS® 3 report is part of the software family IRBIS® 3 and enables time efficient report generation by using variable templates. Even largest amounts of data, as they are generated by the professional thermographer, can become documented as a PDF report in a hassle-free and swift way.

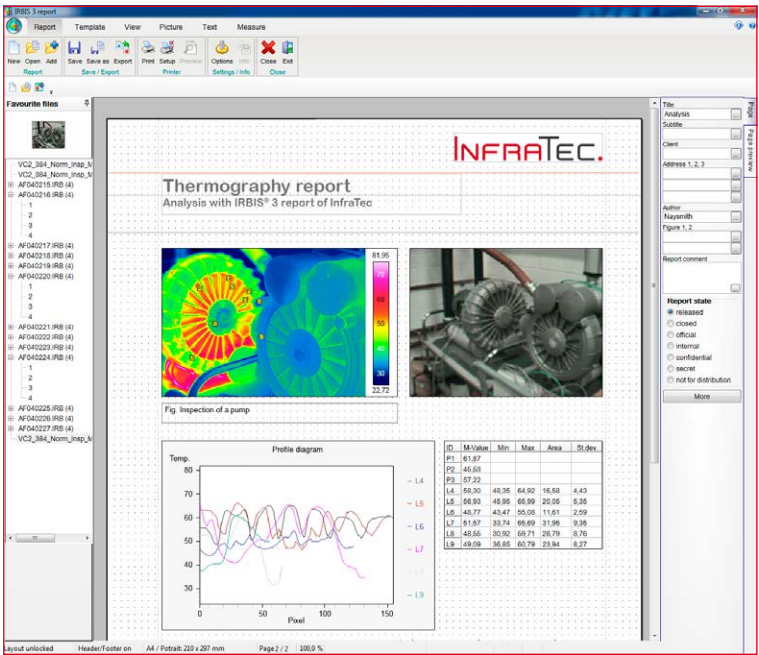
By means of a comprehensive set of analysis tools, measuring scenarios can conveniently and effortlessly be processed, analysed and documented.

Apart from routine analyses of thermographic images, IRBIS® 3 report also meets complex demands for automation.

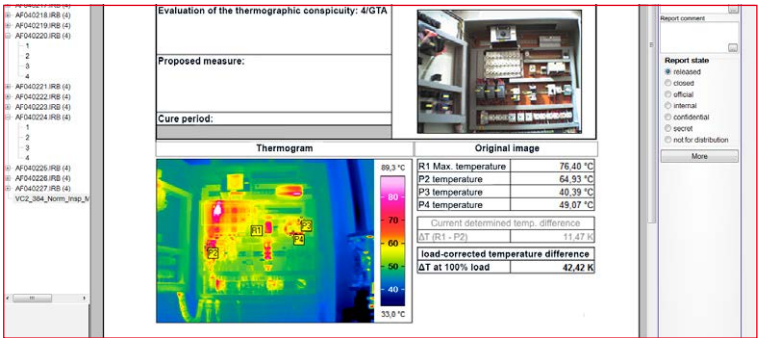
Features of IRBIS® 3 report

- Automated analysis and correction of thermographic images
- Powerful functions and easy handling
- Wide choice in provided report templates in compliance with VdS standard
- Simple setup of individually adjusted report templates
- Storage of report properties in the template
- Completed reports can subsequently be altered and extended
- Deposit of calculation rules using the formula editor
- Automated and manual transfer of camera parameters

Thus IRBIS® 3 report will assist you in solving everyday thermographic jobs professionally with a minimum in time and effort. The professional thermography software IRBIS® 3 report is available for thermography systems offered by InfraTec.



Thermography report, for example pump



Integrated template in compliance with VdS standard

IRBIS® 3 active

The active thermography software IRBIS® 3 active by InfraTec is a modern and universally usable tool for thermographic material testing.

- Comfortable data evaluation possibilities of image sequences
- Algorithms independent of emissivity
- Analysis with different active thermography methods: Quotient method, pulse phase thermography, lock-in thermography
- Storage of input parameters for different test objects
- Online and offline analysis

Analysis Methods of IRBIS® 3 active

- Quotient method: The heat flow of the test object will be analysed by means of incline or decline of the surface temperature.
- Pulse phase thermography (PPT): The temperature curve will be analysed depending on different frequencies ($n = 1, 2, 3, \dots$). One amplitude image and one phase image will be established for each frequency.
- Lock-in thermography (LIT): The sequences of periodical excitation of the test object will be analysed.

Control and Acquisition Software

Each IRBIS® 3 module is based on the extent of functions of the previous level of software.

IRBIS® 3 remote HD

Linking Thermographic Cameras with PCs or Notebooks

- Remote control of the camera-operating functions via a graphic interface
- Real-time visualisation of digitally transferred thermal images
- Storage of real-time thermographic video sequences

IRBIS® 3 control

Data Acquisition from Digital Infrared Thermographic Images

- Time and temperature-controlled acquisition of digital thermographic data up to 10 Hz
- Extensive visualisation and analysis of digitally transferred thermal images
- Numerous online temperature-measuring functions: Identification of measuring spots and measuring areas, global correction of emissivity by area or spot within the online thermal image

IRBIS® 3 online

High-speed Data Collection of Digital Infrared Thermographic Images

- Digital data are collected at the camera's maximum frame rate
- Online differential image mode and temperature profile display
- External trigger option, retrigger, multiple signal sequence, pretrigger
- Freely definable temperature trigger
- Set parameters of measuring areas and thresholds values, alarm function

IRBIS® 3 process

Extension Module for Convenient Process Control

- Permits intensity- or temperature-dependent control of processes via digital or analog inputs and outputs
- Trigger and alarm function for freely definable signal thresholds
- Utilisation of different I/O cards for connecting to the processes
- Individual expansion by specific project solutions

IRBIS® 3 vision

Parallel Recordings of Data Streams

- Parallel recording of data streams from multiple infrared cameras and VIS cameras
- Fully synchronous of data up to eight cameras
- Additional storage of external data, e. g. GPS data

Sequence Editor

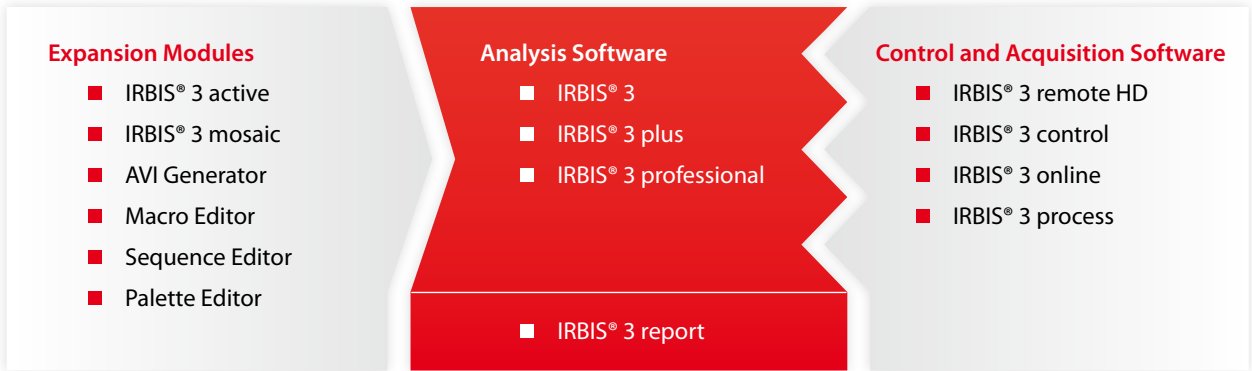
The sequence editor allows to manually or automatically select thermographic data from complex thermal image series as well as to filter image series. These may be stored in the raw image material with respective comments or be reconstructed on their basis.



The New Dimension of Thermography Analysis

The state-of-the art IRBIS® 3 software family designed by InfraTec represents the ideal tool for fast analysis of thermographic image data and for comfortably drafting thermographic reports. Packages of several levels are available with application specific expansion modules. The modular software concept allows for a tailored and application-specific program configuration and facilitates its application in any field.

Software Family IRBIS® 3



IRBIS® 3 Analysis Software

IRBIS® 3 represents a complete and convenient tool for the evaluation of your thermographic data. Multiple functions tailored to your particular needs help you work in a precise and efficient manner in order to achieve convincing report and analysis results.

IRBIS® 3 Expansion Modules

By using IRBIS® 3 expansion modules the software packages IRBIS® 3, IRBIS® 3 plus and IRBIS® 3 professional can be upgraded with useful additional functions.

IRBIS® 3 Control and Acquisition Software

IRBIS® 3 control and acquisition software allows to control the infrared camera directly from the PC or mobile device and acquire data of to-be-monitored processes synchronically.

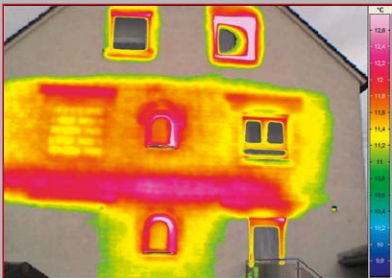
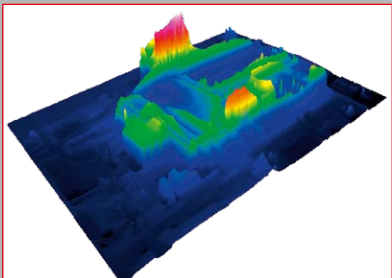


Image merging enables to put a visual photo of an object or a scene with the respective thermal image on each other. Thereby, thermographic information can be visualised directly on the photograph, improving orientation decisively.



The 3D view with OpenGL offers another perspective onto the scene.



By means of isotherms, critical temperature ranges can quickly be localised.

IRBIS® 3

- Merging visual and infrared image
- Manual and automatic temperature range selection
- Temperature profiles along any lines and across any measured areas
- Automatic indication of maximum and minimum temperature mean value
- Global and selective correction of emissivity
- Basic graphic and image-editing functions
- Integrated Word-based report function
- Support for infrared camera file formats of InfraTec's product range
- Multi-lingual user interface
- Image improvement through digital filtering
- And much more

IRBIS® 3 plus

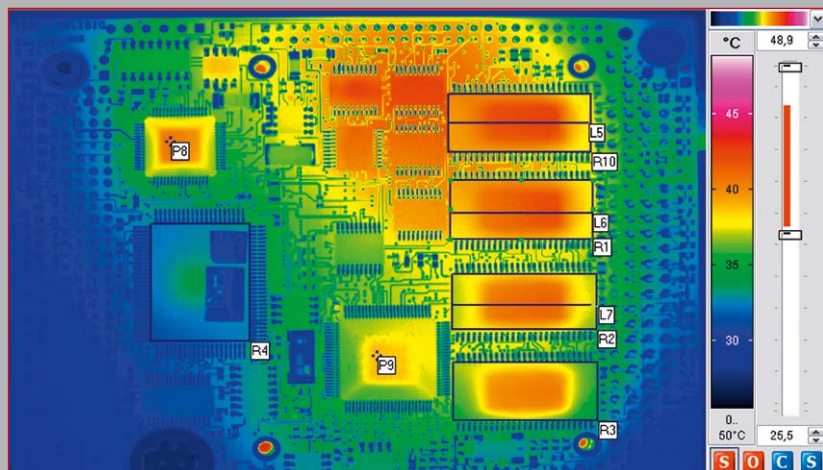
As per IRBIS® 3 and in addition:

- Editing and analysing of thermal image sequences
- 3D temperature profile display
- Pre-defined models for emissivity correction
- Temperature-time-diagram / profile-time-diagram
- Differential image display and differential spot display
- Numerous statistics functions, histogram
- Adoption of GPS coordinates
- AVI Generator – converting of video sequences
- Accumulation of recorded thermographic images
- Export of measuring data (csv, ASCII etc.)
- And much more

IRBIS® 3 professional

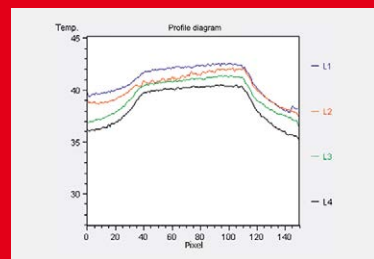
As per IRBIS® 3 plus and in addition:

- Extended and specific models for correcting emissivity, among others for automatically correcting emissivity by pixel
- Geometric measurement within the thermogram
- 3D thermographic images and sequences display
- Expandable for specific experimental setups / SDK
- Parallel analysing of several thermograms
- IRBIS® 3 mosaic, Macro, Sequence and Palette Editor
- And much more

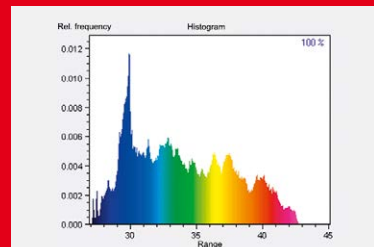


Thermogram of a circuit board with measurement definition

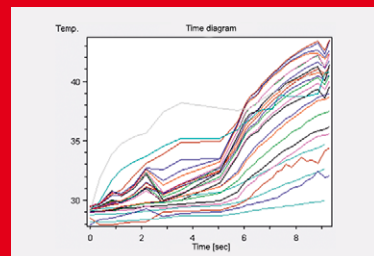
Analysis options of the circuit board thermogram



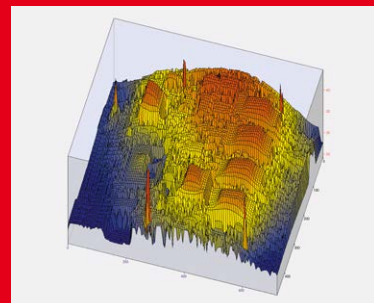
Temperature profiles of the lines defined as L1-L4



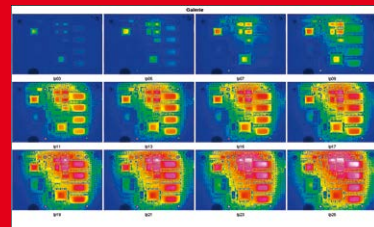
Histogram of the temperature distribution of the total thermogram



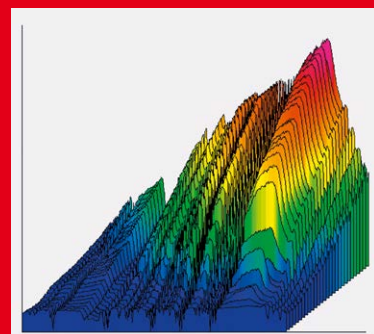
Temperature variation in time of the defined measurement definitions



3D profile of the thermogram



Gallery view of the recorded sequence

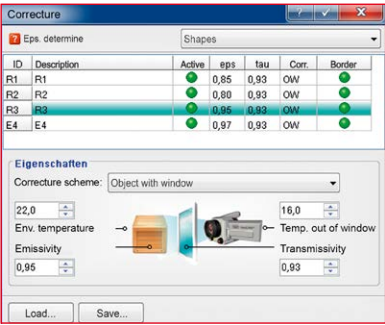


3D temperature profile of line L1 in time

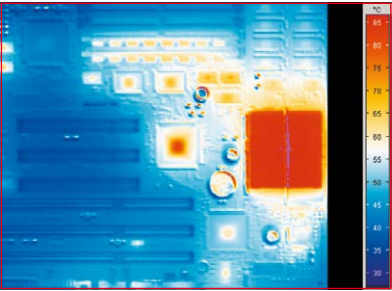
Correction Models

The IRBIS® 3 software family offers various models for correcting the emissivity by means of which thermograms can be corrected globally, with regard to defined partial areas or automatically by pixel.

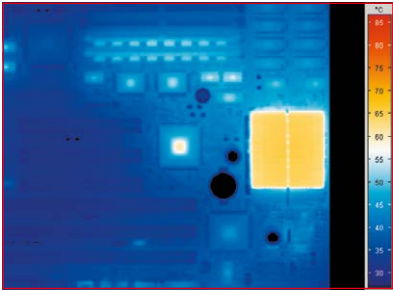
Emissivity correction model, example



Correcting the emissivity by pixel



With correction

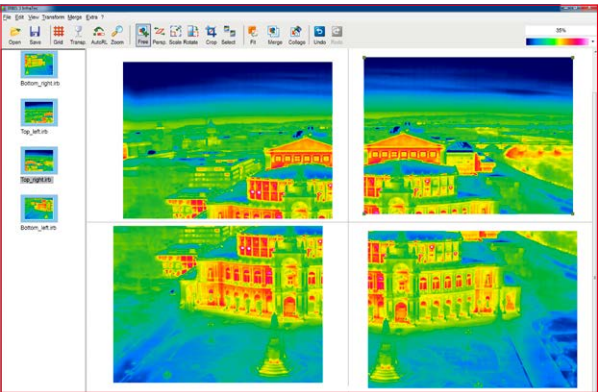


Without correction

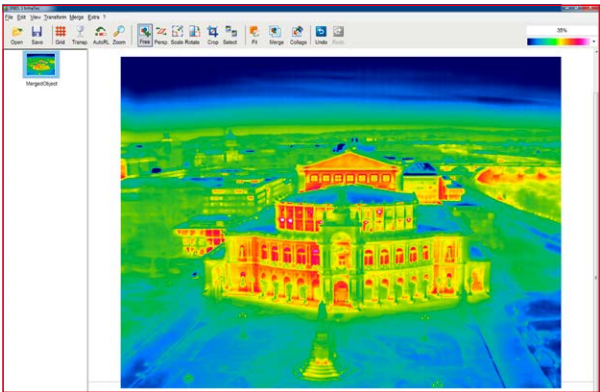
All relevant correction models have been provided in a clearly understandable visual form. With its help the respective measuring situation can be reconstructed. Sources of error – such as interference by radiation from the environment or attenuation properties of the measuring distance – are taken into consideration in calculating the temperature (in the calculation formula) in order to safely avoid faulty measurement. Among others, direct and indirect emissivity correction by pixel is available.

IRBIS® 3 mosaic

Should a measuring scenario consist of several individual images, IRBIS® mosaic will help you to produce quickly and easily a combined image. The software will automatically look for places of geometric overlapping and will put them together. The thermogram resulting therefrom can further be analysed with all its measured data.



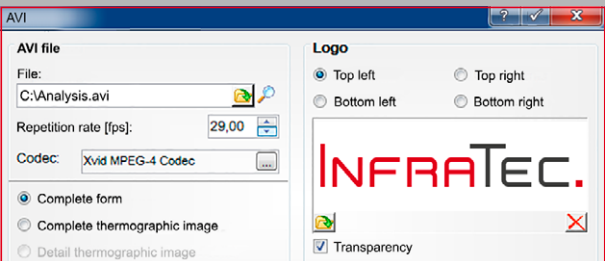
Four individual thermal images



Automatically produced a combined thermogram

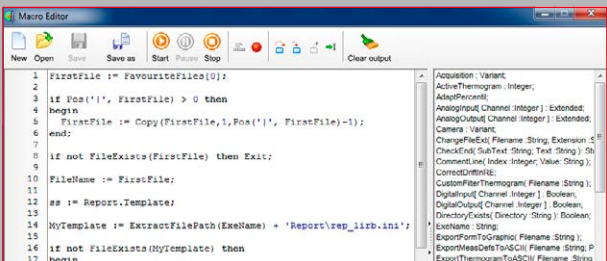
AVI Generator

This module enables the automatic export of thermal image series or several single images into descriptive AVI movies. It is also possible to define a partial area of the thermogram, which is designated by the user, for AVI export. The thereby gained sequences can be played on any commercial media player.



Macro Editor

Extensive sets of commands can be summarised by the user into a macro without any special programming skills. Complex and repetitive analysis processes can therefore be performed in a timesaving and automated way.



Software functions	IRBIS® 3	IRBIS® 3 plus	IRBIS® 3 professional
Analysis Software			
Multi-lingual interface	x	x	x
Change palette selection and temperature display range	x	x	x
Display editing windows simultaneously	1	1	4
Display/add/edit real image	x	x	x
Play/add/edit audio comment	x	x	x
Merging visual and infrared image	x	x	x
Integrated WORD-based report function	x	x	x
Image export/measured data export into WORD, PDF, TIFF, BMP, JPEG, ASCII	x	x	x
Image editing functions (interpolation, rotate, reverse, etc.)	x	x	x
Mirror/distort thermal image	–	–	x
Measured areas (spot, line, polygon, rectangle, circle, ellipse)	x	x	x
Display table of measured data, parameters and comments	x	x	x
Temperature profile diagram	x	x	x
Measured areas (curved line, freehand line, circular ring, segment, freehand)	–	–	x
Image accumulation	–	x	x
Differential image display and differential spot display	–	x	x
Various statistics functions, histogram	–	x	x
Display 3D thermogram	–	–	x
Display/define isotherms	5	10	20
Improve image by digital filtering	3	3	5
Determine emissivity	x	x	x
Correction of emissivity (global, laminar, selective)	x	x	x
Pre-defined models for correcting emissivity	–	x	x
Models for automatically correcting emissivity by pixel	–	–	x
Adoption of GPS coordinates	–	x	x
Geometric measurement within the thermogram	–	x	x
Play, thin out, store image sequences	–	x	x
Temperature-time-diagram/profile-time-diagram	–	x	x
3D temperature profile display	–	x	x
Expansion modules			
IRBIS® 3 active/active online	–	o	o
IRBIS® 3 mosaic – add-in of single thermal images	o	o	x
AVI Generator (add/edit/play)	o	x	x
Macro Editor (setup/edit/activate)	–	o	x
Sequence Editor	–	o	x
Palette Editor (freely defined colour palettes)	o	o	x
Control and acquisition software			
IRBIS® 3 remote HD	o	o	o
IRBIS® 3 online	–	o	o
IRBIS® 3 control	–	o	o
IRBIS® 3 process	–	o	o
IRBIS® 3 vision	o	o	o
Add-on software			
IRBIS® 3 report	o	o	o

Caption: – = not included | o = optionally available | x = included

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