

IRBIS® professional

Thermal image processing software

Users manual

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Errors and modifications reserved.

2. IRBIS® professional - Main Screen

The IRBIS® professional - Main Screen consists of a **Work section** which is limited on top by the **Menu bar** and an **Symbol bar** and limited below by a **Status line**.

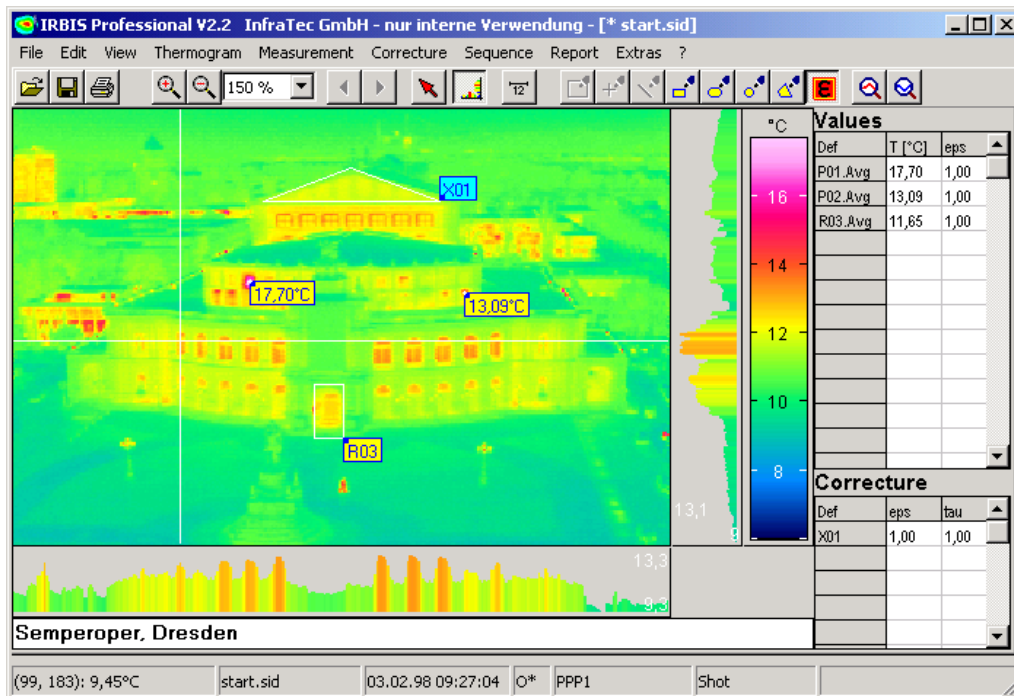


Fig. 1 IRBIS® professional main screen

IRBIS® professional is a graphically orientated software. Even though it can be processed already at a VGA - graphic solution of 640 x 480 at depths of shade of 16 bit (High-Color), it is recommended to use the TrueColor mode (24 bit resp. 32 bit) for optimum display.

2.1. Menu bar

You have access to the functions of the IRBIS® professional via pull-down menus, from which the highest level is displayed as menu bar with the following menu items:

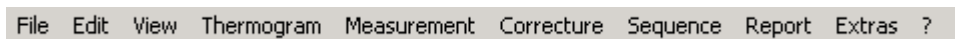


Fig. 2 IRBIS® professional menu bar

File	- Open/Save files
Edit	- Modification of the thermogram
View	- Appearance of IRBIS® professional
Thermogram	- Parameter of the thermogram display
Measuring	- Functions for temperature measurement
Correcture	- Functions for correctures of measuring values
Sequence	- Functions for processing of thermogram sequences
Report	- Functions for creating reports
Extras	- Functions for creating palettes
?	- Help and copyright

Definitions of Temperature Profiles (not accessible via menu)

- Set Profile

After clicking on the icon the cursor will change into cross-lines, as soon as it is located above the thermogram. If the menu selection "**Profiles**" in the menu "**View**" is not activated it will be activated automatically.

In the provided areas right, resp. below the thermogram the vertical, resp. the horizontal temperature profile will be displayed corresponding to the actual cursor position.

During the positioning of the temperature profile you cannot exit the thermogram screen. Moreover you have no access to menu functions. By clicking the left mouse button the cross-lines will be positioned and the definition of the temperature profile is completed.

You can remove the temperature profile display by clicking once more on the button "**Set profile**" on the Symbol bar. Also the deactivating of menu item "**Profiles**" in the menu "**View**" causes an automatic removal of the temperature profile.

Specification of Measuring, resp. Correcture positions (not accessible via Menu)

- Set total image
- Set point
- Set line
- Set rectangle
- Set ellipse
- Set circle
- Set polygon
- Measurement/Correcture

After clicking on the corresponding icon the cursor will change into cross-lines, as soon as it is located above the thermogram. Depending on selected type the measuring area will be positioned as follows:

- **Total Image:** A measuring definition will be set automatically on all temperature pixels.
- **Point:** A measuring position can be specified at any position in the thermogram by left mouse click.
- **Line:** With a left mouse click any start position can be selected. Then you pull with the mouse button depressed to the end of the line.
You can as well activate a context menu with the right mouse button on the icon "Set line", which also allows you to draw **X/Y lines** and **Polygon lines**.
- **X/Y line:** With the left mouse button you can select any starting position. Then you can position a horizontal/vertical line in X or Y direction and complete it with a left mouse click.
- **Polygon lines:** The positioning is made similarly to the polygon, first at the beginning position and then further to target positions, each with a left mouse click. With a right mouse click the positioning will be completed.
- **Rectangle:** With a left mouse click you select the beginning position and pull it with

depressed mouse button diagonal to the opposite final position.

- **Ellipse:** With depressed left mouse button you can create an ellipse in the same way as with a rectangle. For completion release the mouse button.
- **Circle:** With depressed left mouse button you can draw a circle, starting at circle centre with the distance of the radius. For completion release the mouse button.
- **Polygons:** Click left mouse button first on one corner and then on all further ones. Fix position with the right mouse button.
- **Measuring/Correcture:** You can switch between measuring- and correcture definition. In the position "Correcture definitions" (button depressed) the definitions "Total image", "Point" and "Line" are not available.

As long as the definition of the measuring positions is not completed you cannot exit the thermogram screen and have no access to menu functions.

You can modify or delete the specified measuring positions with the menu item **"Measuring positions ..."** in the menu **"Measuring"**.

Automatic Functions "Find maximum" and "Find minimum" (not accessible via Menu).

The temperature maximum resp. -minimum of the complete thermogram will be automatically displayed by clicking on the corresponding button. In case two-dimensional measuring areas have been specified (rectangle, ellipse and polygon) the maximum and minimum values within these areas are displayed simultaneously.

If the maximum appears only on one single pixel, the display of this value appears in a bright yellow area. If there are more pixels with the same measuring value, the display will however be highlighted red.

By relicking on the corresponding button the display of maximum and minimum will be removed from the thermogram.

2.3. Status line

At the lower edge of the IRBIS® professional Main screen there is a status line, which displays information about the actually loaded Thermogram and its image.

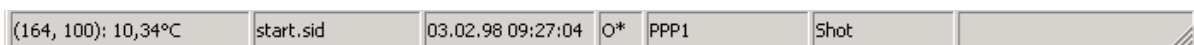


Fig. 4 IRBIS® professional status line

The indication in the above order has the following meaning:

- Cursor position and temperature at cursor position
- Filename
- Date and time of file creation
- File status (O–original file, O*–unsaved modified original file, M–modified loaded file)
- Device range and -spectral range (LW–long wave, KW–short-wave)
- Display mode (see section 6.1 Limits – page 19)

2.8. Temperature Scale

The temperature scale shows the allocation of the temperature of the corresponding color in the used palette.

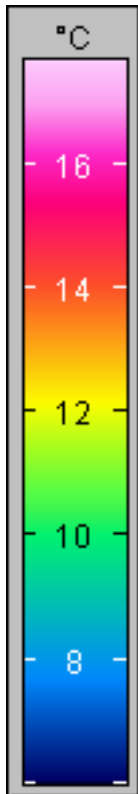


Fig. 8 Temperature scale



Temperature ranges outside the calibration range of the thermograph camera and thus can only be partially evaluated with respect to their radiometric accuracy are marked with an additional light blue bar in the temperature scale.

3. "File" menu

The menu "File" contains all functions for processing of SID- resp. IRB file ⁽¹⁾, functions for exporting as well as printing functions.

3.1. New

(Menu: **File**)

A new thermogram screen will be created with the starting screen of IRBIS® professional. That allows a simultaneous processing of several individual images or thermogram sequences.

3.2. Open

(Menu: **File**)

A SID- resp. IRB file ⁽¹⁾ opens and the Thermogram along with the actual valid other parameters (color range, temperature range selection etc.) are displayed.

3.3. Previous Files

(Menu: **File**)

The according to its name previous file in the actual SID- resp. IRB directory ⁽¹⁾ opens.

3.4. Next

(Menu: **File**)

The according to its name next file in the actual SID- resp. IRB directory ⁽¹⁾ opens.

3.5. Save

(Menu: **File**)

The actual loaded SID- resp. IRB file ⁽¹⁾ is saved under the actual name including the possibility to change temperature parameters and the perhaps by filtering modified image information. The original image dimensions however have to be kept, which means interpolated images cannot be saved as SID- resp. IRB file ⁽¹⁾.

⁽¹⁾ Further user defined camera formats can also be incorporated upon request.

3.6. Save as

(Menu: **File**)

The function is similar to "Save", whereas it is possible to create a new file name.

3.7. Close

(Menu: **File**)

The actual selected thermogram screen can be closed. If you try to close the last thermogram screen in the IRBIS® professional, a message will appear telling you that this is impossible. If you try to close a processed thermogram a message will appear and the file can still be saved before closing.

3.8. Export

(Menu: **File**)

The complete contents of the actual screen or a section previously highlighted with "**Set selection**" can be exported. The following formats are available for exporting files:

- BMP-Format
- JPEG/JPG-Format
- ASCII-Format
- PCX-Format
- TIFF-Format

3.9. Options

(Menu: **File**)

It is possible to adapt individually the appearance and the function of operating tools in the IRBIS® professional via a dialog tab.

Tab " Default "

By selecting the two check tabs "**Autosave ... at finish**" and "**Autosave ... desktop**" will cause a saving of the contents of the actual screen of IRBIS® professional when you exit the program and will appear automatically when you start the program next time.

The representation of the temperature scale can be modified by means of selection between "**Scale division lines ...W/O**" or "**Scale division lines ... With**".

Under "**Decimals at temperature indication**" the number of fractional digits can be determined.

If the check tab "**PCX extension**" under "**Export**" is activated, all thermograms are being interpolated prior to exporting. If the check tab "**Alternate colorbar**" is selected and a color was selected with "...", this color will be used at exportation.

"**Fixed start values**" means that the level and range is determined by numeric inputs, if the check tab is activated. This change is taken over at the next start of the IRBIS® professional.

By selecting "**Point label ... Label**" or "**point Label ... Value**" you can specify whether the label for a measuring position should contain the description or the temperature value.

Tab "Directories"

Here it is possible to specify a work directory or a save directory and export directory by selecting a SID- resp. IRB file ⁽¹⁾ (for details see Page 10), which will be used in the dialogs for loading, saving and exporting of files as standard directory.

Tab "Language"

There is a possibility to switch between German, English, Russian and Spanish during program run. In that case the appropriate character set for that language has to be installed on the computer.

Tab "Global properties"

Under this tab there are different special functions available, e.g. specification of exceeding values from the previous SID- resp. IRB file ⁽¹⁾ (for details see Page 10) at loading with the function "Next/previous file", the standard wavelength, set-ups for warning messages or selection of the procedure at exceeding calibration ranges.

Tab "Comment/Parameter"

In the column "**Comment**" the comment from the IRB- resp. SID file ⁽¹⁾ (for details see Page 10) is used at activated check tab "**from file**". Otherwise any comment can be put in into the input tab.

The column "**Values for parameter line**" allows the selection of parameters. The selection is made in a graphic editor, in which the selected parameters appear on the right hand side and the not selected parameters on the left hand side. The text input under "**Job text**" can be transferred with "**Job**" from the list in the graphic editor to the parameter section of the IRBIS® main screen.

3.10. Properties...

(Menu: **File**)

If you select this menu icon a dialog tab appears with the two tabs "**File**" and "**Camera**". File- and thermographic cameras information of the actual loaded file are displayed on the IRBIS® professional - main screen.

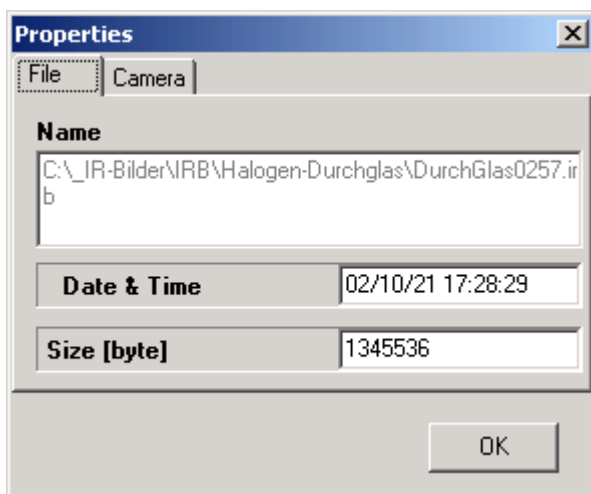


Fig. 9 Dialog "Properties" tab "File"

The tab **"File"** includes the following data for the thermogram:

Name = Location of saving and name of company
Date & Time = Date and time of last modification
Size = File size in bytes

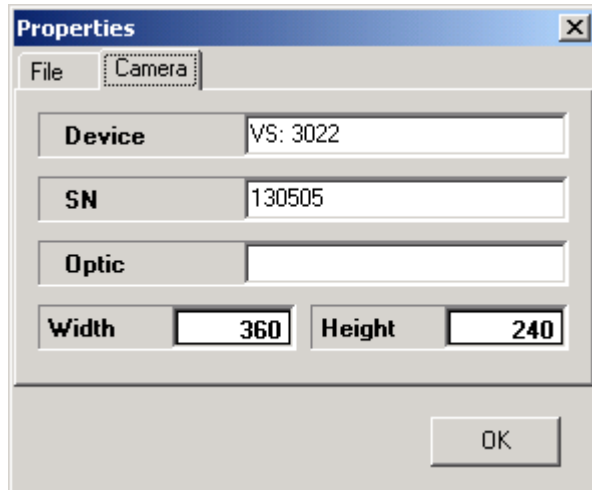


Fig. 10 Dialog "Properties" tab "Camera"

The tab **"Camera"** shows all data of the thermographic camera, with which the thermogram was acquired.

Device = Camera type
SN = Serial number of the thermographic camera
Optical System = Used optical system
Width = Width of thermogram in pixel
Height = Height of thermogram in pixel

3.11. Print

(Menu: **File**)

The contents of the IRBIS® professional screen or alternatively a protocol page will be printed on an actual selected printer with preselected edited form shapes.

"Printer Set-up" selects the printer for printing and allows the set-up of the parameters.

3.12. Exit

(Menu: **File**)

IRBIS® professional closes and the prior to the exit selected set-ups under "Options" will be saved.

4. "Edit" menu

The menu button "Edit" includes all process functions, which however exclude the temperature measuring resp. -correcture, which can be taken to change the image information. In addition marked shapes of displayed screens can be saved in the clipboard.

4.1. Copy into the Clip Board

(Menu: **Edit**)

The contents of the actual screen or a section of it, which had been marked before with the button "Setting: selection" from the **Symbol bar** can be saved in the (Windows) clipboard.

4.2. Filter

(Menu: **Edit**)

The temperature values of the **Thermogram** undergo a filtering with the method of image processing.

For example "Cleaning" uses a two-dimensional median filter in the thermogram, which becomes effective especially in an image with comb like structures or divergent single pixels. This filter step can only be performed once per thermogram.

The following filters from the digital image processing are available:

- Cleaning
- Comb filter
- Soft-focusing light
- Soft-focusing heavy
- Sharpening light
- Sharpening strong

"Original" restores the unfiltered condition. With "Undo" the last filter application can also be reversed.

4.3. Interpolate

(Menu: **Edit**)

The number of lines and columns of the **Thermogram** will each be doubled by interpolation in horizontal and vertical direction. Simultaneously the zoom factor is automatically divided by two in order to keep the original image size.

4.4. Mirroring

(Menu: **Edit**)

The pixels of the **Thermogram** are mirrored on a horizontal resp. vertical axis.

- **"Horizontal"** mirrors the thermogram on a vertical axis in the image centre.
- **"Vertical"** mirrors the thermogram on a horizontal axis in the image centre

4.5. Shift

(Menu: **Edit**)

The pixels of the Thermogram are shifted around with a certain angle in relation to the image centre.

- **"Left 90°"** performs a 90° shift counter clock-wise.
- **"Right 90°"** performs a 90° shift clock-wise.
- **"180°"** performs a 180° shift of the thermogram.

5. "View" menu

The menu "View" includes all functions, which can influence the appearance of the actual screen.

5.1. Zoom

(Menu: **View**)

The zoom factor for displaying the screen image is specified by a list of available values. Moreover you can switch at marked input section between these steps by using the mouse buttons "left" resp. "right".

5.2. Profiles

(Menu: **View**)

Above the menu button "Profiles" in the menu "View" the display of the profiles can be activated resp. deactivated.

5.3. Temperature Scale

(Menu: **View**)

Right next to the Thermogram a temperature scale will be positioned in the Work section, in which the color allocation for the measuring values can be seen.

5.4. Measuring Values

(Menu: **View**)

In addition to the Thermogram two tables are located in the Work section, of which one contains the actual temperature measuring values and the other the at the moment valid correcture values (emissivity level, transmission level).

5.5. Comments

(Menu: **View**)

Below the Thermogram there will be an output section positioned in the Work section, in which the contents of the comments section of the actual SID- resp. IRB file ⁽¹⁾ (for details see Page 10) is displayed.

5.6. Parameters

(Menu: **View**)

In addition to the thermogram there is an input section in the work section, in which the selected parameters under "file - options - tab comments /parameters" are displayed.

5.7. Symbol bar

(Menu: **View**)

With the menu button "Symbol bar" you can activate the symbol bar resp. deactivate it. As default the symbol bar is active.

5.8. Scroll bar

(Menu: **View**)

If you activate the menu button "Scroll bar" scrollbars will appear below and right next to the thermogram scroll bars, which will allow you to shift the thermogram.

5.9. 3D-Visualisation

(Menu: **View**)

If this menu button has been selected the actual loaded thermogram is displayed 3-dimensional in a visualisation window. You can now modify the position and the color allocation of the displayed 3D-image.

To do this you will find right next to the 3D-image the corresponding Control buttons. Under the column "**Position**" you can change the position of the 3D-image. With "**Angle X**" the 3D-image can be turned around the vertical axis. With "**Angle Z**" the 3D-image can be turned around the horizontal axis. Under "**Magnify**" you can change the size of the 3D-image.

In the column "**Colors**" you can change the color specification of the 3D-image. You may chose between the color palettes "**Varioscan**", "**Black/White**", "**Iron**" and "**Blue/Red**". Under "Set-up bar" from the column "Color Selection" you can either chose two or three colors, which will be taken for the coloration of the 3D-image.

By means of the check tab "**Mesh**" under the column "**Mesh**" you can lay a grid net structure on the complete 3D-image.

The display of a line frame ("**Lines**") or a "**Cubes**" around the 3D-image can be made with the column "**Frame**". "**No**" removes the frame.

Further on there are functions available in the menu "**3D-Visualisation**" to "**Copy**", "**Export**" and "**Print**". You can also activate/deactivate in the menu "**Properties**" the "**Panel**" and change the "**Resolution**" of the 3D-image.

5.10. Meas. definitions

(Menu: **View**)

Previously specified measuring definitions can be switched from visible to invisible. The measuring definitions remain always physically unchanged.

5.11. Corr. definitions

(Menu: **View**)

Previously specified correcture definitions can be switched with this menu button from visible to invisible. The correcture definitions remain always physically unchanged.

6. "Thermogram" menu

The menu "Thermogram" contains all functions, which allow you to affect the graphic image of the thermogram.

6.1. Limits

(Menu: Thermogram)

This will determine the way to specify the upper and lower color limits of the value range, which is transformed to the color scale.

"Shot" sets the upper and lower limits for that value range which corresponds to the one, which was set for the temperature range on the thermographic camera during the taking.

"Object" sets the upper and lower limits to that value range, which was reached in the taking itself.

"Range" sets the upper and lower limits to that value range which corresponds to the one, which was set for the temperature measuring range on the thermographic camera during the taking.

"Manual ..." sets upper and lower limits to values, which can be specified manually in the then open Dialog tab Range/Level".

Dialog tab Range/Level

IRBIS® professional allows the display of the thermogram in a temperature range, which can be specified independently of the range, which was specified on the camera during taking the thermogram. Please note however that the reserve of the under- resp. overloading of the digitalisation level (8 resp. 16 bit) of the camera depends on the selected aperture.

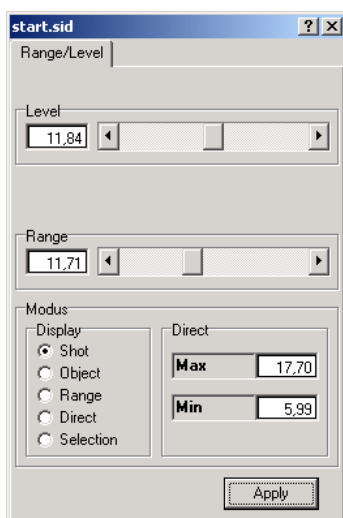


Fig. 11 Dialog "Range/Level"

By selecting one of the 5 alternatives (shot, object, range, direct, manual resp. selection) from the column "Display" an automatic setting of the displayed temperature range can be reached as well as with the menu button "**Limits**" in the menu "**Thermogram**".

It is moreover possible to select the lower limit "min" and the upper limit "max" in the column "Direct" by putting in numeric values and enter with "Apply".

A third possibility for selecting the temperature range is provided by the parameters "Temperature level" (average value of the display range) and "Temperature range" (width of the display range). They can either be put in with numeric values and entered by clicking on "Apply" or changed continuously by means of the scrollbar.

"**Selection**" sets the upper and lower limits to that value range, which was reached in that rectangular part of the image, which was specified before with the button "Set selection " from the **Symbol bar**.

6.2. Palette

(Menu: **Thermogram**)

The color specification of the measuring values for the display of the thermogram is being processed with a preset palette.

- "1 Varioscan"** selects a color palette, which is perfect for the monitor display of the thermograms and for ink jet color printers. This applies as well to the standard palette of the thermographic camera.
- "2 Varioscan Printer"** selects a color palette, which creates an optimum printing quality on color laser printers.
- "3 Iron"** selects a color palette, which corresponds to the tempering color of steel.
- "4 Black->White"** selects a monochromatic color palette with the allocation black =cold and white=hot.
- "5 White->Black"** selects a monochromatic color palette with the allocation white =cold and black=hot..
- "6 Blue->Red"** selects a color palette with the allocation blue=cold over white to red=hot.
- "7 Steps"** selects a color palette, which is comparable with the display of isotherms (10 colors are standardized over the complete temperature range).
- "Open"** allows e.g. to load a manually specified color palette.

"Colors" allows the selection of 16, 64, 128, 220, 256 or a number of steps by numeric input ("Colors ...") for the display of the thermogram (e.g. 16 colors correspond to 16 grey steps depending on the palette or 16 different colors). A prerequisite for the higher resolution is of course that the graphic mode of the graphic card installed in the PC supports at least the corresponding resolution (recommended is High Color = 16 Bit or better).

"Linearity" Depending on the dynamic of the thermographic scene the corresponding temperature scale can be modified in an exponential (positive factor) way or logarithmic (negative factor). By this measure you can highlight areas with small temperature differences in a better way.

6.3. Size/Unit

(Menu: **Thermogram**)

This will specify how the thermogram will be displayed, linear to what physical size and what units are marked on the scale and what are the units of the measuring values output.

"Temperature (°C)" specifies a temperature linear display with the units "Degrees Celsius".

"Temperature (°F)" specifies a temperature linear display with the units "Degrees Fahrenheit".

"Temperature (K)" specifies a temperature linear display with the units "Kelvin".

"Spectral Radiation (W/m²)" specifies a radiation linear display with the units "Watts per square meter".

"Emissivity Level" specifies a display of the actual valid local emissivity levels (value without unit between 0 and 1).

6.4. Isotherms

(Menu: **Thermogram**)

The dialog tab **"Isotherms"** opens for defining 10 isotherms, which can separately be displayed via "Active".

Dialog tab Isotherms

IRBIS® professional allows the display of up to 10 isotherms in the thermogram, which can highlight areas with a certain temperature interval.

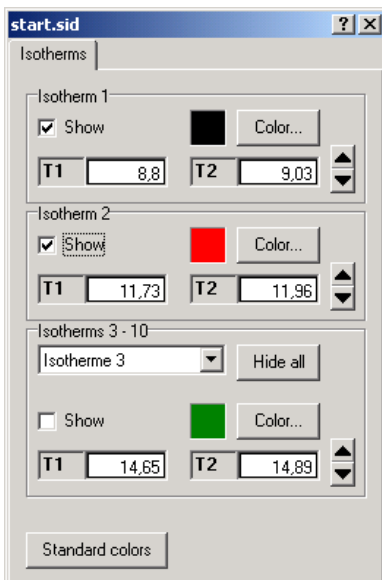


Fig. 12 Dialog "Isotherms"

The isotherms are characterized by a lower (T1) and an upper (T2) temperature limit of the interval to be highlighted as well as by a selectable color. The limits have to be put in into the actually present unit (°C, °F or K) with the menu button "Size/Unit" in the menu "Thermogram", while the isotherm color can be selected with a graphic editor by clicking on "Color ...". In the check tab "Active" it is possible to display resp. to hide the isotherms with the specified parameters. The set-ups will be accepted by clicking on "Apply".

While the parameters of the isotherms 1 and 2 are displayed permanently in the dialog tab you can display in the lower part additionally the parameters of one of the isotherms 3...10.

6.5. Difference Mode

(Menu: **Thermogram**)

The function "Difference" in the menu "Thermogram" has the function of a switch, which can be set resp. reset, and the menu button is marked in the selected condition. When activating the difference image mode the actually loaded thermogram is defined as reference image for the differentiation.

With active differentiation the name of the reference image is displayed in the right section of the status bar and you will see additionally at the right border of the temperature scale a vertical line in the color magenta.

From now on the differences of the single pixels in regards to the reference image are interpreted as measuring results instead of the absolute temperature values. Therefore a monochromatic display of the thermogram appears immediately after activating the differentiation, because in this case the difference for all pixels is zero.

The preselected measuring unit ($^{\circ}\text{C}$, $^{\circ}\text{F}$, W/m^2) will automatically switched over to the corresponding difference unit (K , $^{\circ}\text{R}$, W/m^2). This selection is kept during the active difference image mode and can only be changed after its completion.

In the difference image mode all functions with the exception of "Interpolate", "Shift" and "Reflect" are allowed for processing the actual image (e.g. correctures, filtering). However it is also impossible to define an interpolated, shifted or reflected image as reference image.

Clicking on the corresponding menu button completes the difference image mode.

7. "Measurement" menu

The menu **"Measurement"** includes all functions for the temperature measuring in **Thermogram** and the graphic display of the measuring results.

7.1. Definitions ...

(Menu: **Measurement**)

The Dialog tab **Measuring definitions** is open, in which you can change resp. delete the measuring positions which were specified in the Symbol bar in its properties (e.g. position, allocation to diagrams).

Dialog "Measuring definitions"

This dialog tab serves for creating a name and changing the location of measuring positions and to allocate them to the measuring tables resp. diagrams.

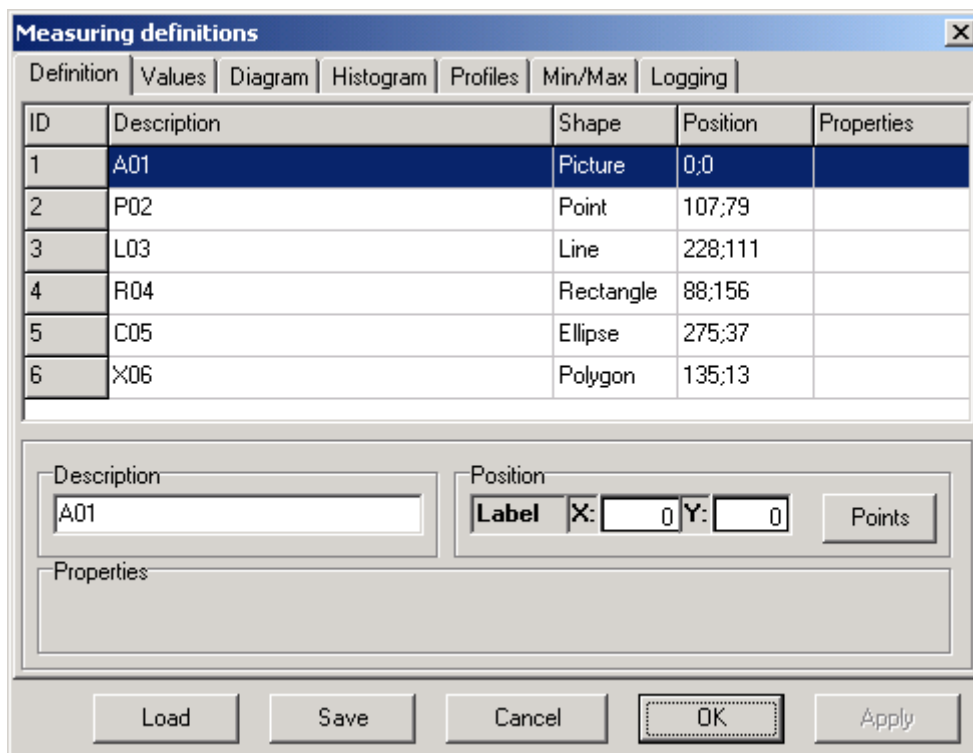


Fig. 13 Dialog tab "Definitions"

The actually specified measuring positions are displayed in lines in a table. There you will find all preset measuring definitions and their edit parameters (description, position) can be modified by means of input buttons. Moreover it is possible in the column "properties" to specify a value for the emissivity of the pixels contrary to all other measuring positions independently of the otherwise specified correcture parameters.

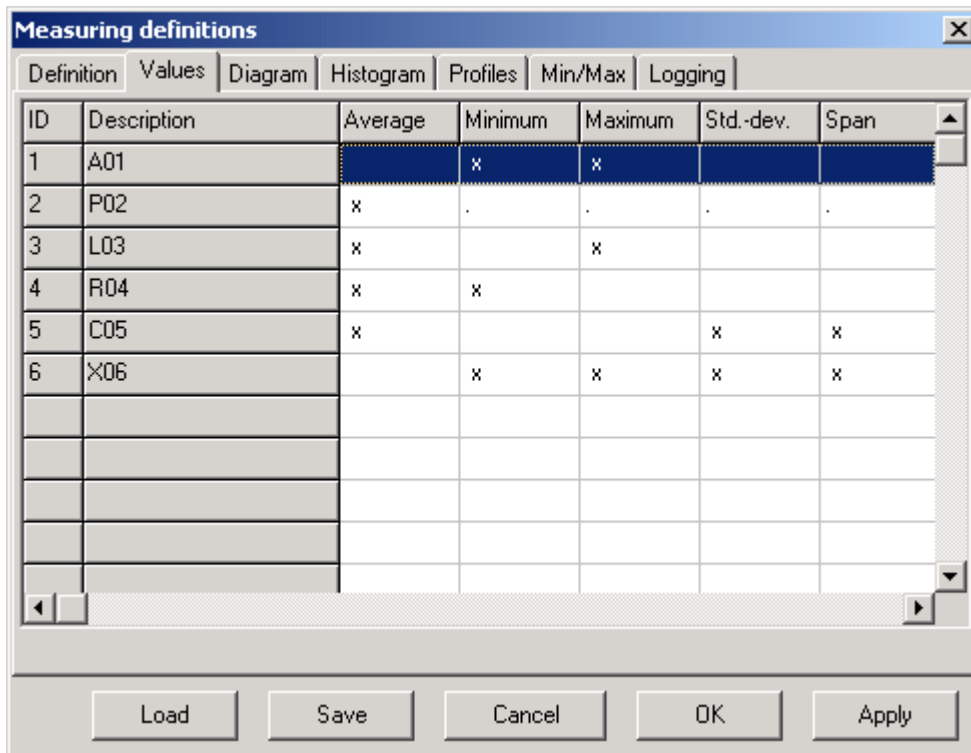


Fig. 14 Dialog tab "Values"

In the **tab "Values"** it is specified what value types are adopted in the **Measuring and Correcture Table** for each defined measuring position.

After set-up a measuring position in the thermogram the average value will be selected first.

While for the measuring position "Pixel" only this type is available you can select additionally also items from the following list for all other measuring positions:

- Minimum
- Maximum
- Standard deviation
- Span width

Clicking on the corresponding table section with the left mouse button makes the setup resp. resetting of a selection. If a selection is active it will be indicated with a "x" in the respective table section.

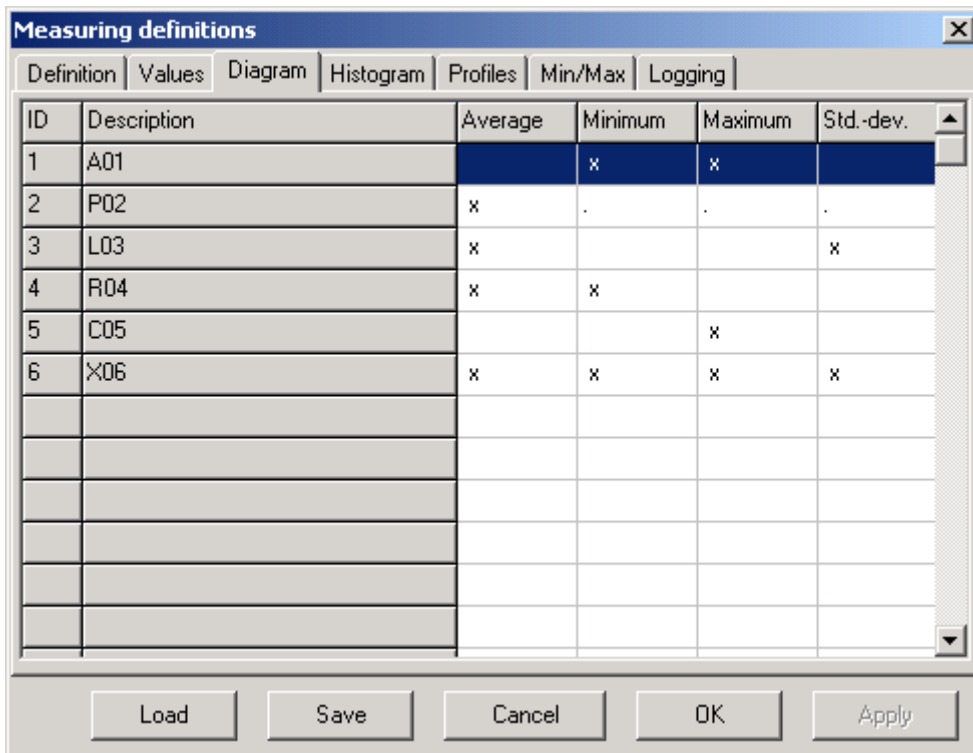


Fig. 15 Dialog tab "Diagram"

In the **tab "Diagram"** every specified measuring position receives a specification of value types, which are displayed at image sequences in the **Time diagram**.

After setting a measuring position in the thermogram the average value will be first selected.

While for the measuring position "Pixel" only this type is available you can select additionally also items from the following list for all other measuring positions:

- Minimum
- Maximum
- Standard deviation
- Span width

Clicking on the corresponding table section with the left mouse button makes the set-up resp. resetting of a selection. If a selection is active it will be indicated with a "x" in the respective table section.

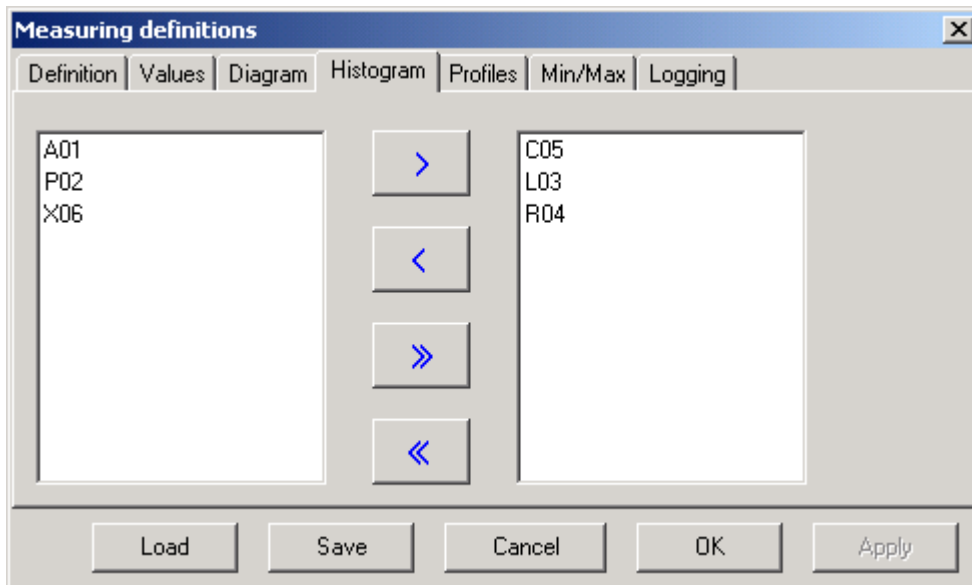


Fig. 16 Dialog tab "Histogram"

In the **tab "Histogram"** every specified measuring position receives a specification for the value types, which are displayed in the **Histogram**.

The selection is made by a graphic editor, in which on the left hand side the not selected and on the right hand side the selected types are indicated. After activating one type it can be shifted by clicking on "<" resp. ">" to the respective other list. By clicking on "<<" or ">>" the complete list can be moved to the respective other side.

In the same way you can select the type for the diagram **"Profiles"**.

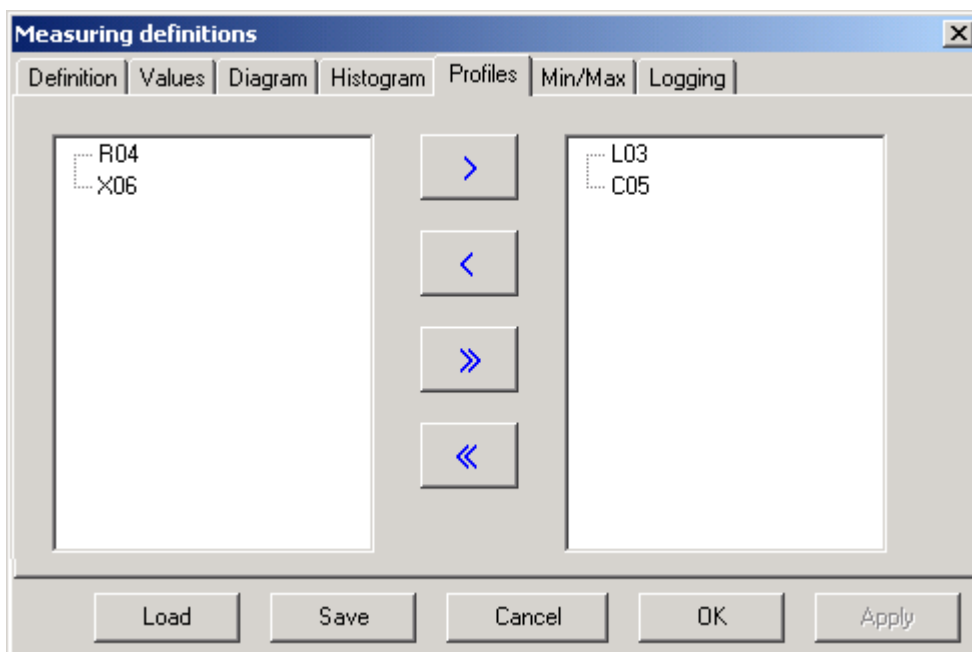


Fig. 17 Dialog tab "Profiles"

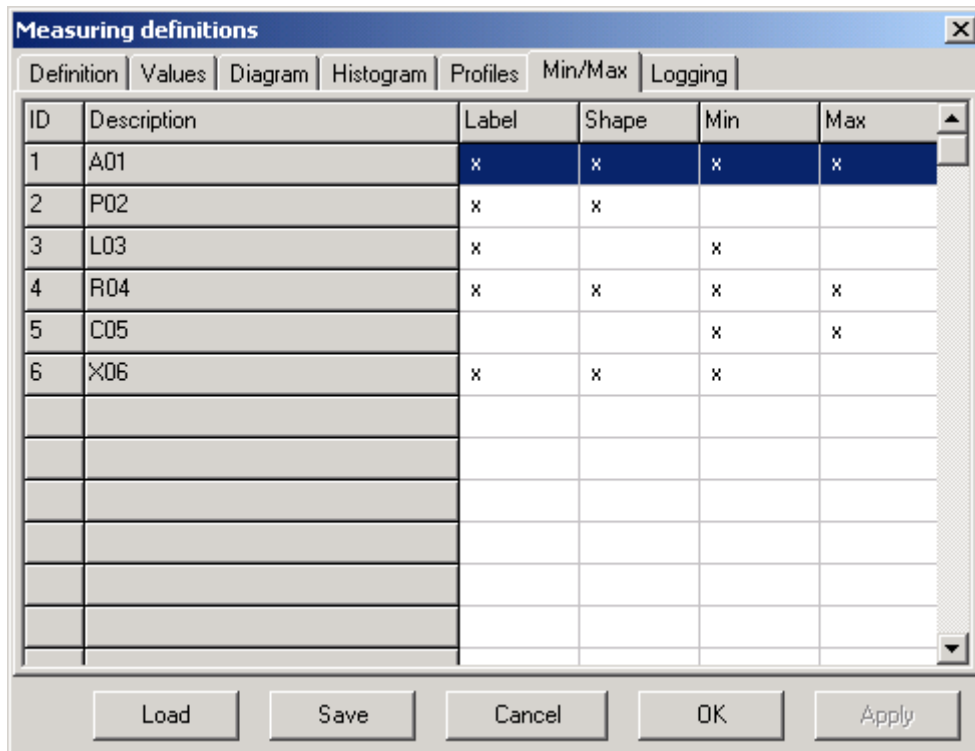


Fig. 18 Dialog tab "Min/Max"

In the **tab "Min/Max"** it is specified how the measuring position will be indicated.

After set-up of a measuring position in the thermogram all descriptions are marked here with a "x".

The detailed meaning of the description is as follows:

- Label** - Label with the indication of a measuring definition
- Shape** - Display of the measuring definition in the thermogram
- Min** - Label of the activated search for minimum in the symbol bar
- Max** - Label of the activated search for maximum in the symbol bar

By removing the marked "x" the display of the corresponding description can be deleted.

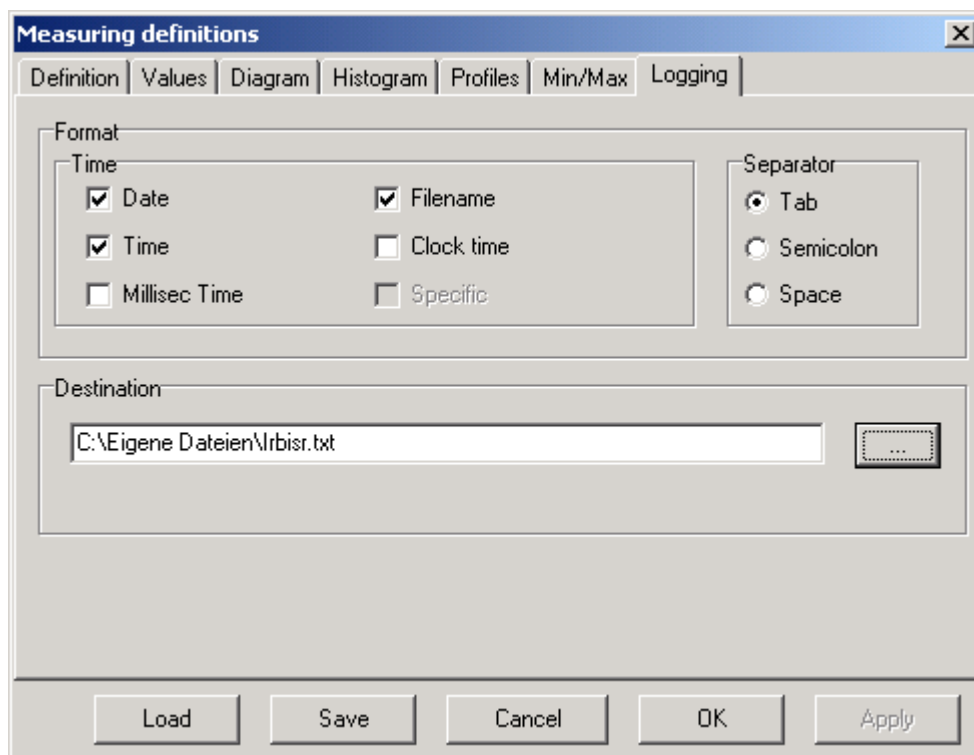


Fig. 19 Dialog tab "Logging"

In the **tab "Logging"** the format of all specified measuring positions can be selected, in which the selected descriptions under "Measuring definitions - tab values " shall be saved in a text file.

"Logging ... Destination" determines the target path where the text file shall be saved.

With the buttons "Load" and "Save" measuring definitions can be loaded and saved. The changes will be updated in the dialog tab "Measuring definitions" with the button "Apply".

7.2. Multiply definitions ...

(Menu: **Measurement**)

A dialog is indicated, which allows the multiplying of measuring definitions.

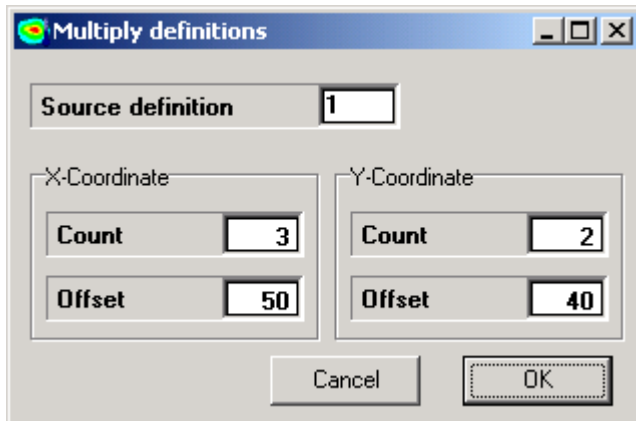


Fig. 20 Dialog "Multiply definitions"

Under **Source definition** you can select what measuring definition shall be multiplied. At "X-coordinate" you specify the **Number** and the **Offset** (distance to the original definition) in pixels in horizontal direction. And at "Y-coordinate" you can select the **Number** and the **Offset** in pixels in vertical direction.

7.3. Measured Values

(Menu: **Measurement**)

A box opens, in which all actual measuring values are displayed. Here you can copy, export and print.

7.4. Log Values

(Menu: **Measurement**)

With this menu item you can save in a text file the measuring definitions as **Values** (average value, minimum, maximum, standard deviation or span width), which were selected under "Measurement – Definitions ... - tab values". The formatting and the location of saving resp. the filename can be specified under "measuring - measuring position - tab recording".

7.5. Profile

(Menu: **Measurement**)

By selecting this menu item a diagram box opens, in which the profile of measuring values can following be displayed above a line or another measuring section (see section 7.1 Definitions ... - tab: profiles – page 27) in the actual thermogram. The automatic display starts immediately after the diagram box opens. The diagram box can then manually be modified, i.e. the diagram dimension, the title and the axes of the diagram can be formatted manually. As an option a legend can be displayed.

7.6. Histogram

(Menu: **Measurement**)

After selecting this menu item a diagram box opens, in which the frequency distribution of measuring values can be following displayed above lines resp. shapes in the actual thermogram. The automatic display starts immediately after the diagram box opens. The diagram box can then manually be modified, i.e. the diagram dimension, the title and the axes of the diagram can be formatted manually. As an option a legend can be displayed.

7.7. Time

(Menu: **Measurement**)

When this menu item is selected a diagram box opens, in which the measuring values over the time can be following displayed. This starts after evaluation of an image sequence, which was selected by the function "Open sequence...". In order to display the course of a curve it is further required to specify the measuring positions (points, rectangles etc.) as well as measuring value types (average value, minimum etc.) in the image, which can be used for the display. By selecting the menu item "Measuring" in the menu "Image sequence" the automatic display is activated, which can then be changed manually. The diagram dimension, the title and the axes can be formatted manually. As an option a legend can be displayed.

7.8. Profile/Time

(Menu: **Measurement**)

When this menu item is selected a diagram box opens, in which the measuring profiles can following be displayed over the time above a line. This starts after evaluation of an image sequence, which was selected by the function "Open sequence...". In order to display the curves it is further required to specify lines as measuring positions, which can be used for the display. By selecting the menu item "Measuring" in the menu "Image sequence" the automatic display is activated, which can then be changed manually. The diagram dimension, the title and the axes can be formatted manually. As an option a legend can be displayed.

Alternatively to the curves it is possible to display the measuring values as a pseudo-3D-relief.

8. "Correcture" menu

The menu "Correcture" includes all functions for the application of correcture algorithms based upon physical radiation (emissivity, reflection, transmission) on the complete thermogram (global) or of correcture definitions (shapes).

8.1. Definitions ...

(Menu: **Correcture**)

In the Dialog tab Correcture definitions all set-ups of the physical radiation properties can be adapted and changed (e.g. emissivity level).

Dialog "Correcture definitions"

Fig. 21 Dialog tab "Global"

In the **tab "Global"** the saved parameters for temperatures from the original data set of the SID- resp. IRB file ⁽¹⁾ (for details see Page 10) can be displayed and modified.

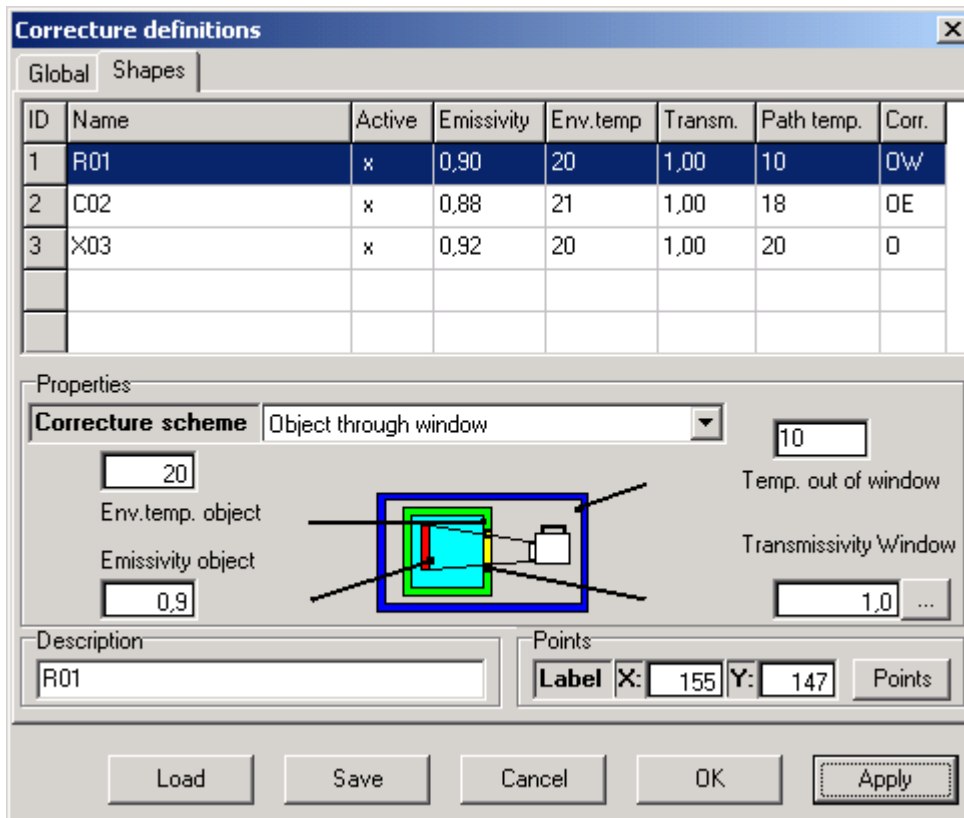


Fig. 22 Dialog tab "Shapes"

The **tab "Shapes"** allows the individual set-up of parameters for prior specified correcture sections. These are displayed in lines in a table. When selecting the respective correcture definition the respective edit parameters (description, position, properties) are displayed and can be modified thereafter.

For the correcture the following models are available based on physical radiation, which will be displayed by their selection as graphic scheme

- Object (1)
- Object with transmission (2)
- Object with window (3)
- Transparent object with transmission (4)
- Transparent object with window (5)
- $\epsilon = f(T)$ (6)

While model (1) presumes ideal permeability of the transmission, models (2) to (5) consider in different ways the attenuation of the radiation, which occurs to the object on its way to the measuring device. Models (2) and (4) assume a homogeneous attenuation over the complete measuring range as has to be considered for example at long distance measurements in the open with short-wave thermographic cameras. Models (3) and (5) however describe the situation, which occurs often at measurements through infrared transparent windows into ovens or vacuum chambers.

If model (6) is selected the proper set-up of the function can be made by opening the dialog with the button "... "Epsilon = f(T)".

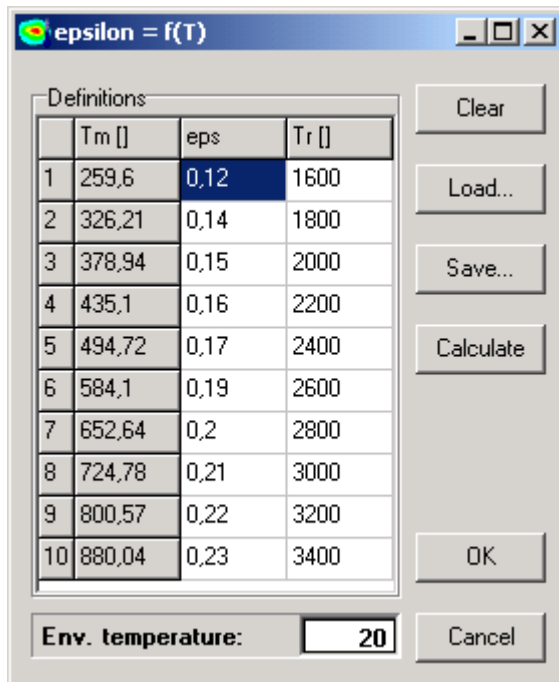


Fig. 23 Dialog "epsilon = f(T)" – Tungsten samples

In the dialog tab "**epsilon = f(T)**" it is possible to perform a temperature depending correcture of the emissivity level. The columns "**Tr[]**" and "**eps**" include the value pair, which contains the actual temperature under consideration of the emissivity level for a certain material. In the column "**Tm[]**" you will find the calculated temperature values, which were computed from "**eps**", "**Tr[]**" and "**Env.temperature**". These are the temperatures which are measured by the camera system at $\varepsilon = 1$.

With the button "**Clear**" all values can be removed from the table.

With "**Load**" you can open an EDF file with temperature depending emissivity level values.

With "**Save**" you can save all actual registered values of the table into an EDF file.

"**Calculate**" determines from the values of "**eps**", "**Tr[]**" and the "**Env.temperature**" the temperature values, which are needed for a temperature depending emissivity level correcture. The registered values (max. 10) represent support factors for the calculation of intermediate values. Intermediate values are interpolated with the support factors.

After clicking on "**OK**" the temperature depending emissivity level correcture will be performed, i.e. the calculated temperature values from column "**Tm[]**" are compared with the ones from the thermogram and corrected with the temperature values of column "**Tr[]**".

This function can even be better demonstrated with an example:
This is an example with a tungsten filament in a halogen lamp.

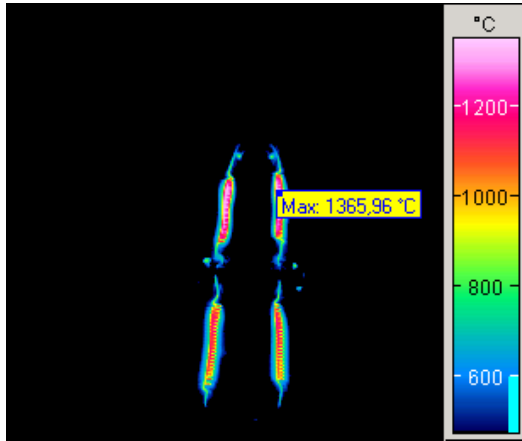


Fig. 24 before correcture

Tungsten filament before the temperature depending emissivity level correcture

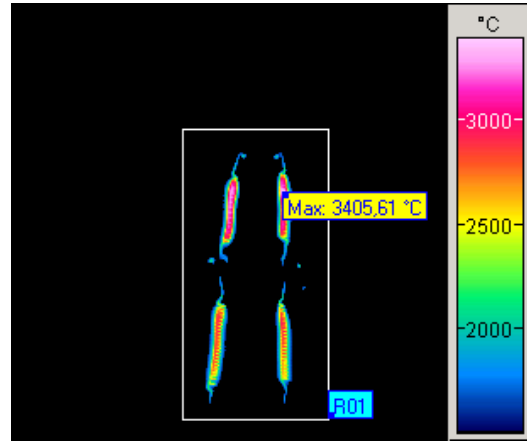


Fig. 25 after correcture

Tungsten filament after the temperature depending emissivity level correcture

The thermogram of the tungsten filament was taken with the thermografic system VarioTHERM™. The thermografic system measures temperatures at $\epsilon = 1$ in the range of appr. 800 °C to 1.400 °C (see Fig. 24). The thermogram was corrected by means of the calculated temperature depending emissivity level values – which are displayed on the previous page. As a result the right thermogram (Fig. 25) was created with the actual temperatures of appr. 1.800 °C to 3.400 °C. The temperatures of the left thermogram were compared with the temperature depending correcture values of tungsten and replaced by the actual valid temperatures.

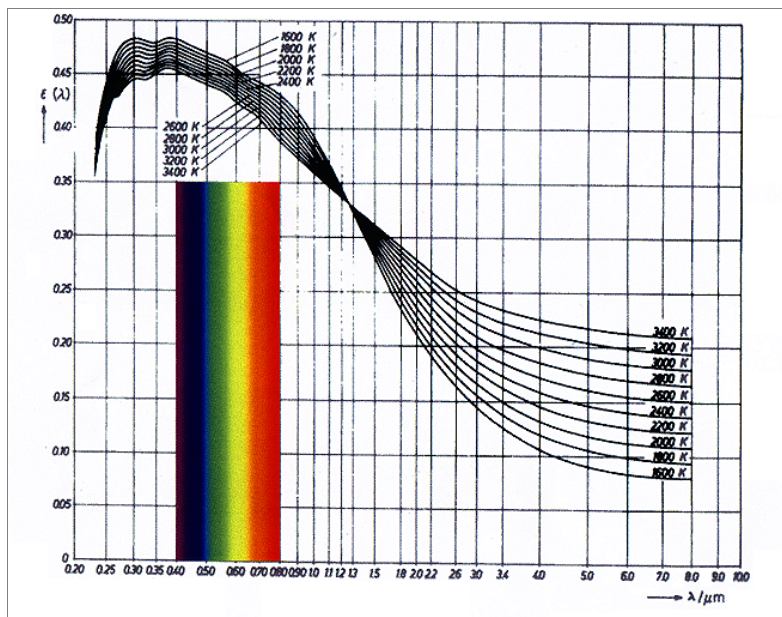


Fig. 26 Emissivity level of tungsten material in dependence of the object temperature and of the spectral range

8.2. Pixel Correcture

(Menu: **Correcture**)

The tab "Pixel emissivity correcture" allows the afterwards matched changing of the emission level for each pixel of the thermogram.

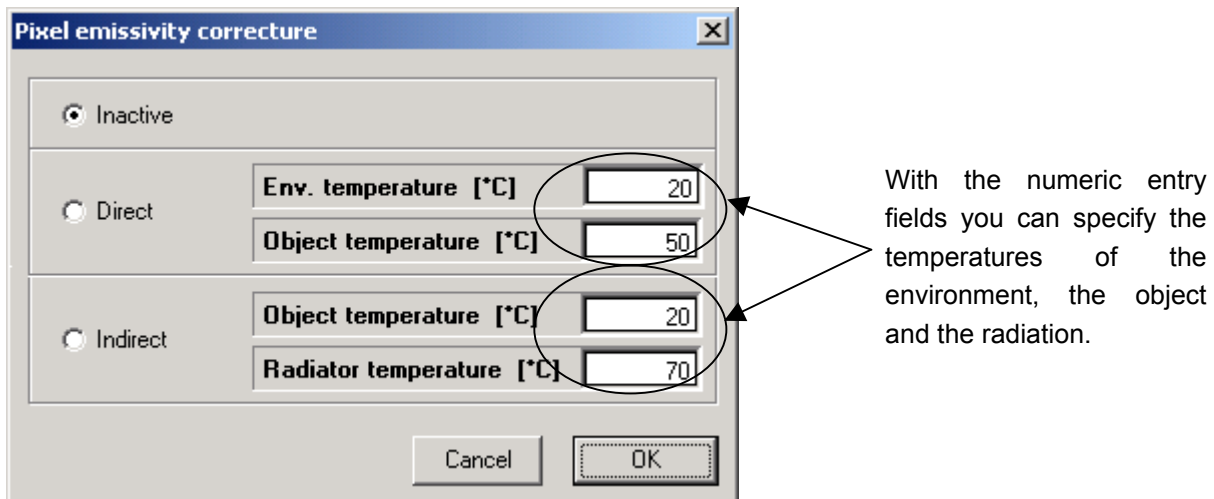


Fig. 27 Dialog "Pixel emissivity correcture"

- Inactive causes the cancellation of the pixel emissivity correcture.

The functions "Direct" and "Indirect" shall each be explained with an example.

- Direct
 - 1) An assembled circuit board in non-operating condition is heated up in a climate chamber to a uniform temperature of (e.g. $T = 50\text{ °C}$), in order to let the resultant temperature of the circuit board ($T = 50\text{ °C}$) be different from the environmental temperature (e.g. $T = 20\text{ °C}$).
 - 2) Because of the different emissivity levels on the circuit board, different temperatures are obtained in the thermogram and each pixel has to be corrected by means of a respective emissivity level correcture on the actual circuit board temperature ($T = 50\text{ °C}$).
 - 3) The resulting emissivity matrix can then be used for the following thermogram.
- Indirect
 - 1) The heat radiation of a homogeneous heat source (e.g. $T = 70\text{ °C}$) is reflected by the assembled circuit board to the thermographic system.
 - 2) The different emissivity levels of the circuit board result in a different reflection of the temperature from the heat source for each pixel.
 - 3) With the function " Pixel emissivity correcture " the emissivity level will be adapted for each pixel until the complete thermogram has reached the temperature of the heat source .
 - 4) The resulting emissivity matrix can then be used for the following thermograms.



Note: For the pixel emissivity correcture the position between thermographic camera and measuring object should not be changed during the total measuring procedure.

If the " Pixel emissivity correcture " is active, the symbol bar will be marked yellow.



Fig. 28 Yellow marked symbol bar

This indicates that the original condition of the thermogram has been changed. Therefore it is not recommended to save it, since the thermogram is no more linked to the absolute temperature scale because of this correcture, which was made during calibration of the system.

8.3. Offset/Factor...

(Menu: **Correcture**)

With this function the displayed temperature can be increased or decreased for each pixel of the thermographic image by a certain value.

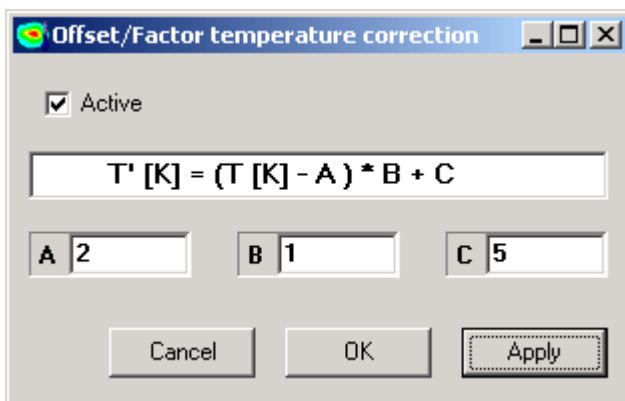


Fig. 29 Dialog "Offset/Factor temperature correction"

Clicking on „Apply“ in the tab „Active“ activates this function.

The calculation of the decrease/increase of the temperatures on the pixels is made with the formula in the tab "Factor/Offset-Correcture".

- The numeric value input under "A" causes the decrease of all temperature values in the thermogram by this value.
- The numeric value input under "B" causes the multiplication of all temperature values in the thermogram with this factor.
- The numeric value input under "C" causes the increase of all temperature values in the thermogram by this value.

If the "Factor/Offset-Correcture" is active, the symbol bar will be marked yellow.

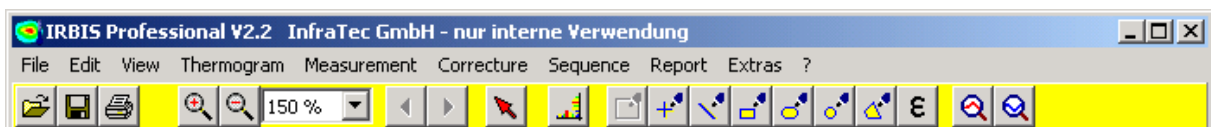


Fig. 30

9. "Sequence" menu

The menu "**Sequence**" includes all functions for the treatment of thermogram sequences as for example arise during the automatic saving.

9.1. Open Sequence ...

(Menu: **Sequence**)

By means of a special dialog tab, SID- resp. IRB files ⁽¹⁾ (for details see Page 10) can be combined to thermogram sequences, existing combinations can be changed resp. abandoned. To do this, single files, file groups or all files of a directory in the display can be taken over resp. removed from the selection of the centre part into the selection in the right part.

Besides the single selection it is also possible to perform a multiple selection by simultaneously depressing the <SHIFT> resp. <CTRL> - keys.

- ">" Take-over of the marked files in the middle selection window in the thermogram sequence
- ">>" Take-over of all files in the directory (middle selection box) into the thermogram sequence
- "<<" Removes all files from the thermogram sequence (right selection box)
- "<" Removes the marked files from the thermogram sequence in the right selection box.

In addition you can restore selected thermogram sequences by saving them with the button "Save" as "Link list" in an external file and reactivate it with "Load".

9.2. Accumulate

(Menu: **Sequence**)

When selecting this menu item the average value will be calculated for each pixel of a thermogram from the total image sequence. The resulting image integration increases the signal-noise ratio and optimises the resulting image quality. The accumulated thermogram can then also be saved.



Note: Please observe that the used thermograms for accumulating are recorded under identical geometrical measuring conditions.

9.3. Measure

(Menu: **Sequence**)

Prior to calling up this function, selected SID- resp. IRB files ⁽¹⁾ (for details see Page 10) from "Open sequence..." are evaluated as temporal sequence. For this purpose the files are loaded in succession, are displayed and the values of the contained measuring values are calculated. Then the diagram display is being updated under consideration of these values.

This function will only be performed if a diagram display was specified before in the menu "**Measure**" with temporal dependency (profile, profile-time).

9.4. Gallery

(Menu: **Sequence**)

A box opens, in which all before selected SID- resp. IRB files ⁽¹⁾ (for details see Page 10) from "Open sequence..." are displayed in reduced size. The actual set-ups of the parameters "**Palette**" and "**Limits**" are valid for the display. The format of the box corresponds to the set-up of the standard printer and the default set-up is the vertical format.

You can copy this gallery display in to a clipboard, export or print it.

With a mouse click on one of the displayed thermograms in the gallery it will be transferred into the working section of the IRBIS® professional and can be processed there.

The gallery box contains a menu, in which you can modify the "**Properties**" of the display type of the gallery.

Title	A title can be created for the gallery via an entry dialog.
Columns count	Alternatively to the automatic order you can specify the number of displayed columns manually.
Show filenames	If this option is selected the corresponding filename will be displayed under each thermogram
Auto arrange	If this option is selected the optimum number of columns for this order will be chosen automatically.
Picture format	Besides an automatic recognition it is possible to specify as display format either 3x2 (VARIOSCAN/VarioCAM) or 1x1 (VarioTHERM).

9.5. Avi ...

(Menu: **Sequence**)

When clicking on this menu item the dialog tab "**AVI Export...**" will be displayed

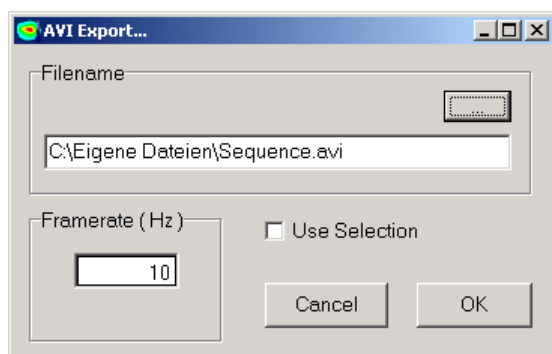


Fig. 31 Dialog "Avi Export..."

Under "**Filename**" the directory and the filename can be specified for the AVI export.

The "**Image rate (Hz)**" shows how many thermograms shall run per second.

If "**Use selection**" is activated only the thermogram range will be considered for the AVI export which was selected under "Set selection" (see section 2.2 Symbol bar – page 4).

After clicking on the "**OK**" button the complete thermogram sequence will be exported as AVI file.

9.6. Convert ...

(Menu: **Sequence**)

After selecting the files for a thermogram sequence they can be saved in a different file format.

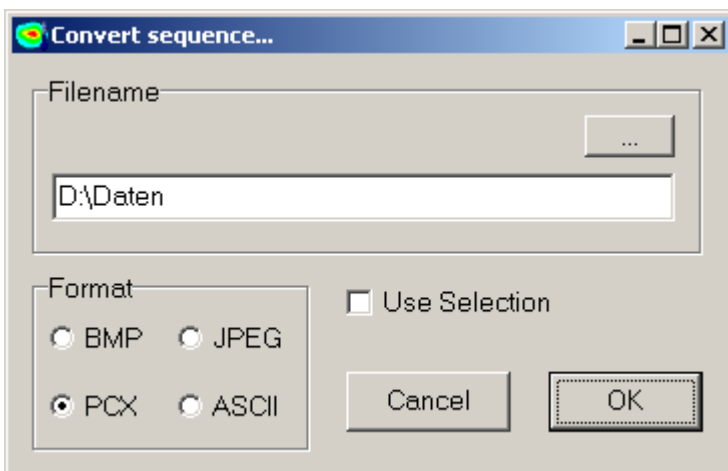


Fig. 32 Dialog "Convert sequence..."

Under "**Filename**" you can specify the directory for the file. With "**Format**" you can chose between the graphic formats **BMP**, **JPEG** or **PCX** and the text format **ASCII**. If "**Use selection**" is activated only the thermogram section will be used for converting, which was selected by "Set selection" (see section 2.2 Symbol bar – page 4).

After clicking on "**OK**" the complete thermogram sequence will be saved in the selected format. The original filename remains valid.

9.7. Replay

(Menu: **Sequence**)

The before selected SID- resp. IRB files ⁽¹⁾ (for details see Page 10) by "Open sequence ..." are loaded in succession and displayed in short sequence. During this run an additional control box opens, which allows you to stop, continue or exit the image sequence.

9.8. Interval

(Menu: **Sequence**)

When selecting this menu item you can specify the run delay for a thermogram sequence in seconds. You can run that under consideration of the delayed time under the menu item "**Replay**" in "**Thermogram**".

9.9. ASCII histogram ...

(Menu: **Sequence**)

If you select "**ASCII histogram**" the dialog "Pixel counter" will appear. The number of pixels can be calculated for a complete thermogram sequence at a certain measuring position between two determined temperatures.

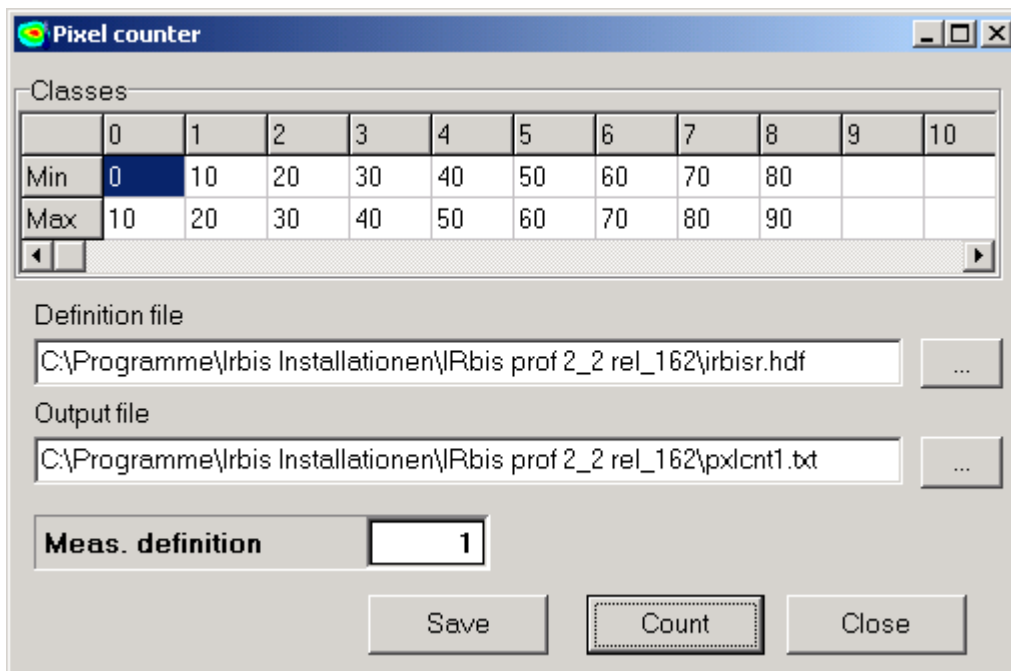


Fig. 33 Dialog "Pixel counter..."

Under "**Classes**" you can put in the temperatures for min. and max. in the table in numeric values, between which the number of pixels shall be calculated.

By numeric input at **Meas. definition** you can select at what previously selected measuring definition the pixels shall be counted.

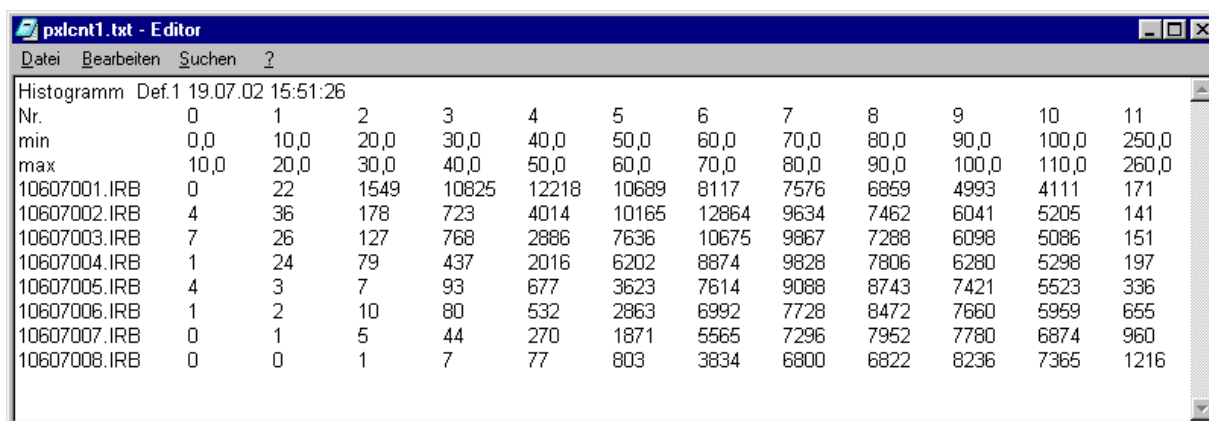
There is moreover the possibility to load the histogram classes from a **Definition file** by means of the button "...".

The **Output file** (text file) is selected by the button "...".

With the button **"Save"** you can save the table of the min- and max-temperatures by specifying a filename in a definition file.

"Count" performs the calculation of the pixels for the specified sections under consideration of all set-ups in this dialog.

As a result you will get for example the following table:

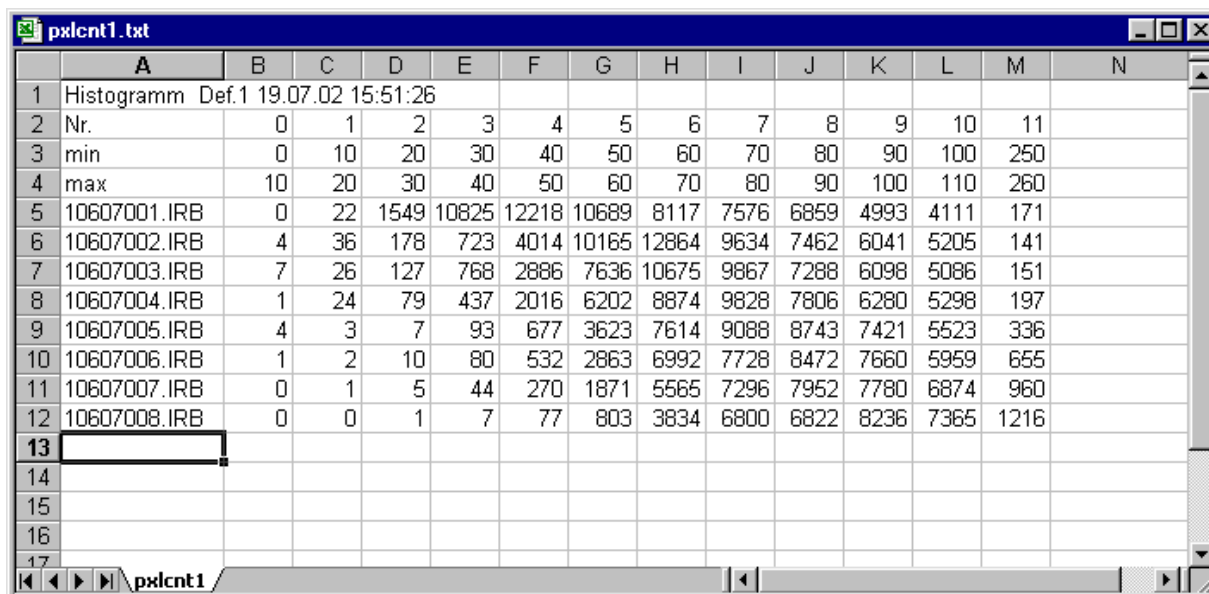


Nr.	0	1	2	3	4	5	6	7	8	9	10	11
min	0,0	10,0	20,0	30,0	40,0	50,0	60,0	70,0	80,0	90,0	100,0	250,0
max	10,0	20,0	30,0	40,0	50,0	60,0	70,0	80,0	90,0	100,0	110,0	260,0
10607001.IRB	0	22	1549	10825	12218	10689	8117	7576	6859	4993	4111	171
10607002.IRB	4	36	178	723	4014	10165	12864	9634	7462	6041	5205	141
10607003.IRB	7	26	127	768	2886	7636	10675	9867	7288	6098	5086	151
10607004.IRB	1	24	79	437	2016	6202	8874	9828	7806	6280	5298	197
10607005.IRB	4	3	7	93	677	3623	7614	9088	8743	7421	5523	336
10607006.IRB	1	2	10	80	532	2863	6992	7728	8472	7660	5959	655
10607007.IRB	0	1	5	44	270	1871	5565	7296	7952	7780	6874	960
10607008.IRB	0	0	1	7	77	803	3834	6800	6822	8236	7365	1216

Fig. 34 Result in a text file

The first line contains the histogram definition, as well as date and time of the creation of this file. The next three lines show the specified histogram classes with its value range. After that the filenames follow, which were selected in the image sequence and the calculated amount of pixels in the respective value range.

It is also possible to import a text file into other programs (here Microsoft® EXCEL):



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Histogramm Def.1 19.07.02 15:51:26													
2	Nr.	0	1	2	3	4	5	6	7	8	9	10	11	
3	min	0	10	20	30	40	50	60	70	80	90	100	250	
4	max	10	20	30	40	50	60	70	80	90	100	110	260	
5	10607001.IRB	0	22	1549	10825	12218	10689	8117	7576	6859	4993	4111	171	
6	10607002.IRB	4	36	178	723	4014	10165	12864	9634	7462	6041	5205	141	
7	10607003.IRB	7	26	127	768	2886	7636	10675	9867	7288	6098	5086	151	
8	10607004.IRB	1	24	79	437	2016	6202	8874	9828	7806	6280	5298	197	
9	10607005.IRB	4	3	7	93	677	3623	7614	9088	8743	7421	5523	336	
10	10607006.IRB	1	2	10	80	532	2863	6992	7728	8472	7660	5959	655	
11	10607007.IRB	0	1	5	44	270	1871	5565	7296	7952	7780	6874	960	
12	10607008.IRB	0	0	1	7	77	803	3834	6800	6822	8236	7365	1216	
13														
14														
15														
16														
17														

Fig. 35 Result in Microsoft® Excel

The structure of the above described text file remains unchanged.

10. "Report" menu

The report generator is a tool for easy documentation of a thermal image evaluation.

Benefits:

1. Automated evaluation/documentation of large image sequences.
2. Individual post-processing of single thermal images by reloading the thermal images into the work area of IRBIS® professional.
3. Accomplishes complex automation requirements in addition to the routine evaluations/documentation of thermograph recordings

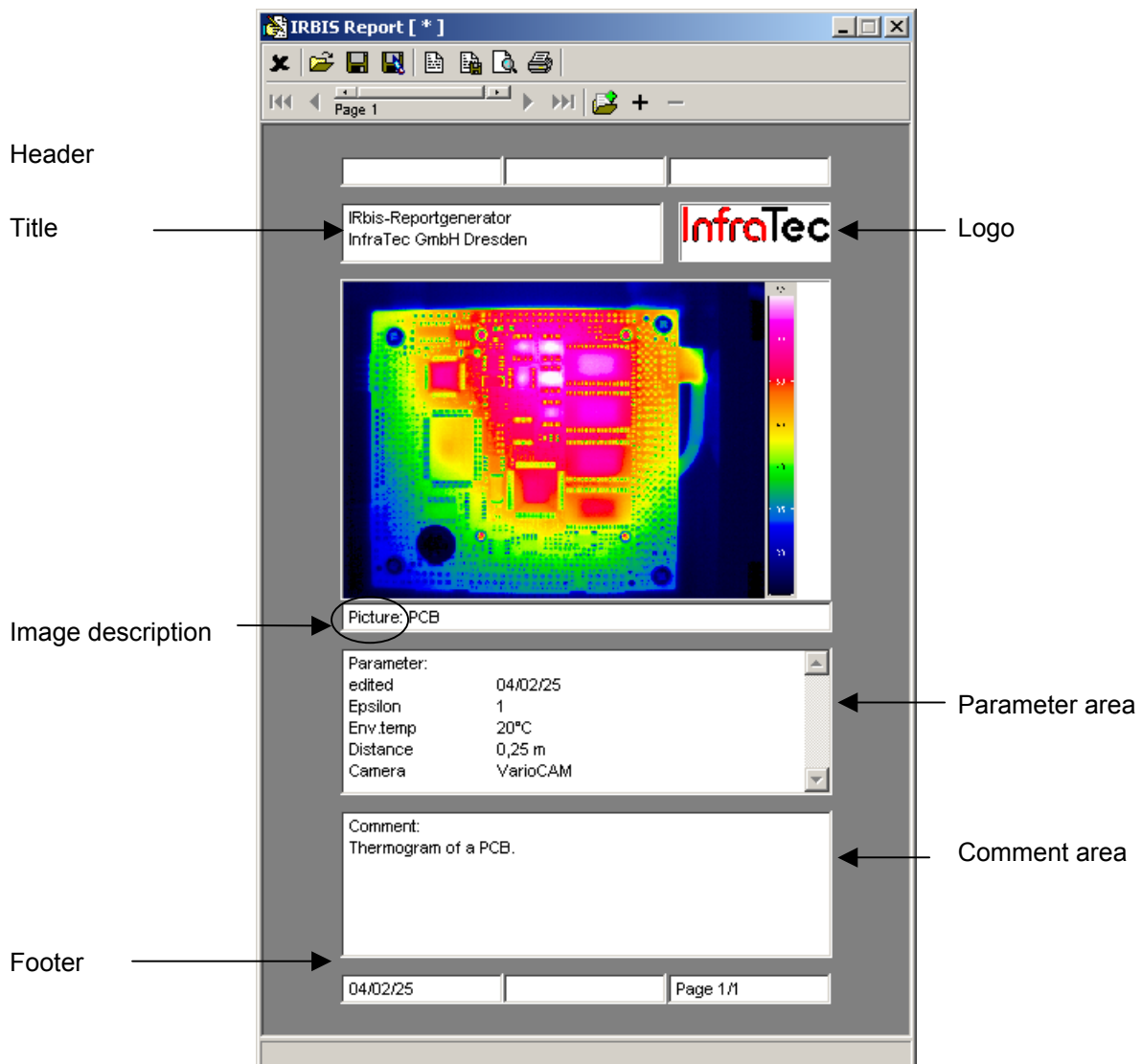


Fig. 36 Report appearance

The parameters previously selected via "File - Options" in the "Comment/Parameters" tab are displayed automatically as text in the parameter area (see Section 3.9 Options – Page 11).

10.1.1. New

(Menu: **Report**)

After selecting this menu option when creating a new report, the **"Report properties dialogue box"** is opened, where the default settings for the new report can be found.

"Report properties" dialogue box

This dialogue box is used to design the report page layout, i.e. the header and footer, the image description, the title, and the comments.

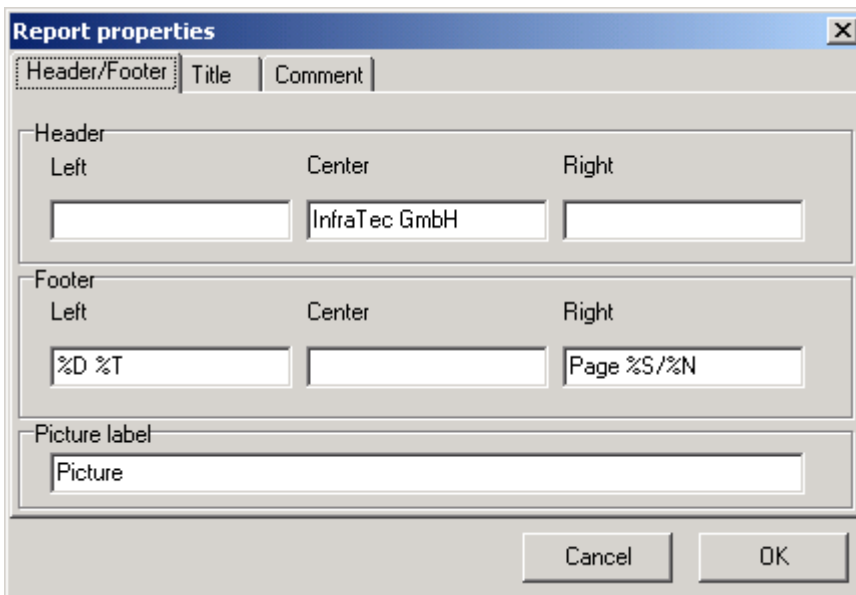


Fig. 37 Report settings – "header/footer"

The **Header/Footer tab** enables the pre-allocation of the text for the header and footer and the image description.

The following parameters can be entered for the header/footer:

- %D = date
- %T = current time
- %S = current page number
- %N = number of pages

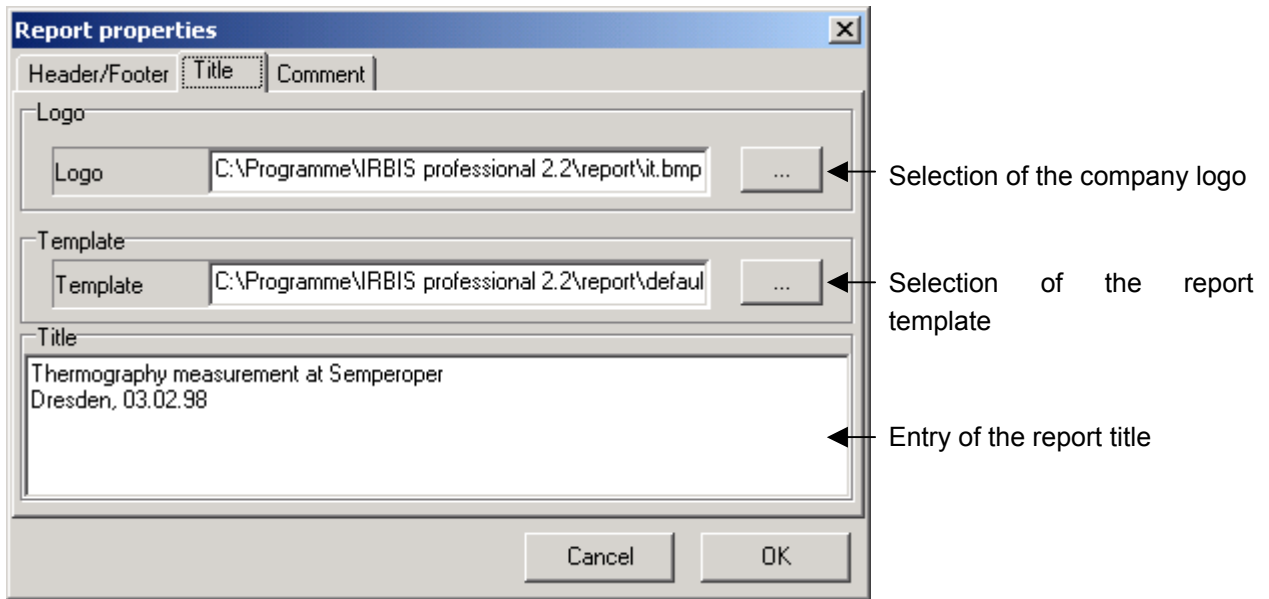


Fig. 38 Report settings – "Title"

The **Title** tab enables the definition of the logo, the report template, and the title.

The logo and the template can be changed by clicking "..." and selecting an appropriate file.

Any text can be entered for the title.

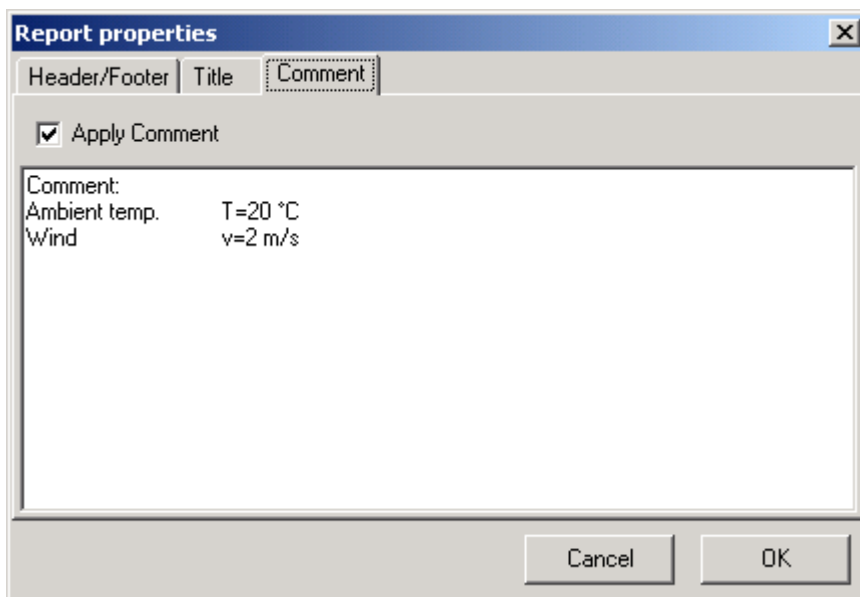


Fig. 39 Report settings – "Comment"

The **Comment** tab permits the adoption of a comment in the comment area of the report window.

The new report is created after clicking the "OK" button.

The Report Window

The report window enables the insertion of thermal images, the entry of image descriptions, and the text formatting of the separate text input fields.

The report window consists of a toolbar, the report work area, and a status line.

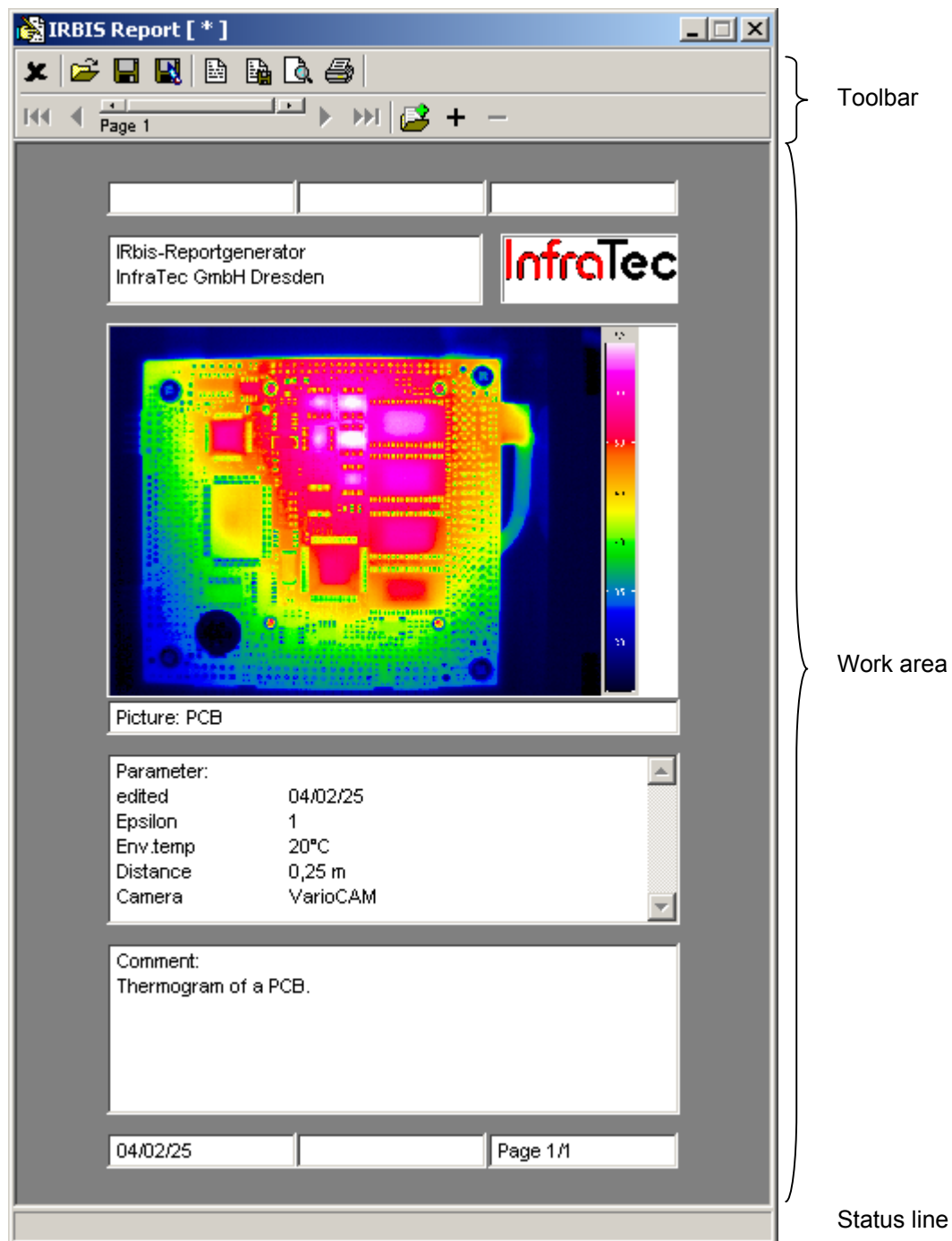


Fig. 40 Report window overview

The symbol bar

If the cursor is hovered over an icon, its function is displayed.
From left to right, the icons in the toolbar mean the following:

1st Row:



Fig. 41 1st row of the toolbar in the report window

- Close** This button closes the report window. If the report has not been saved yet, an appropriate message window is displayed and the report can be saved.
- Open ...** A dialogue for opening a report is displayed, the report is loaded after selecting a file.
- Save** The current report is saved, if there is no filename yet, this can be specified in a save dialogue.
- Save As...** This function is the same as Save, except that a new filename can be specified here.
- Change template** A selection dialogue for changing the report template in the current report is displayed. This contains the available templates with an image icon and a sort description.

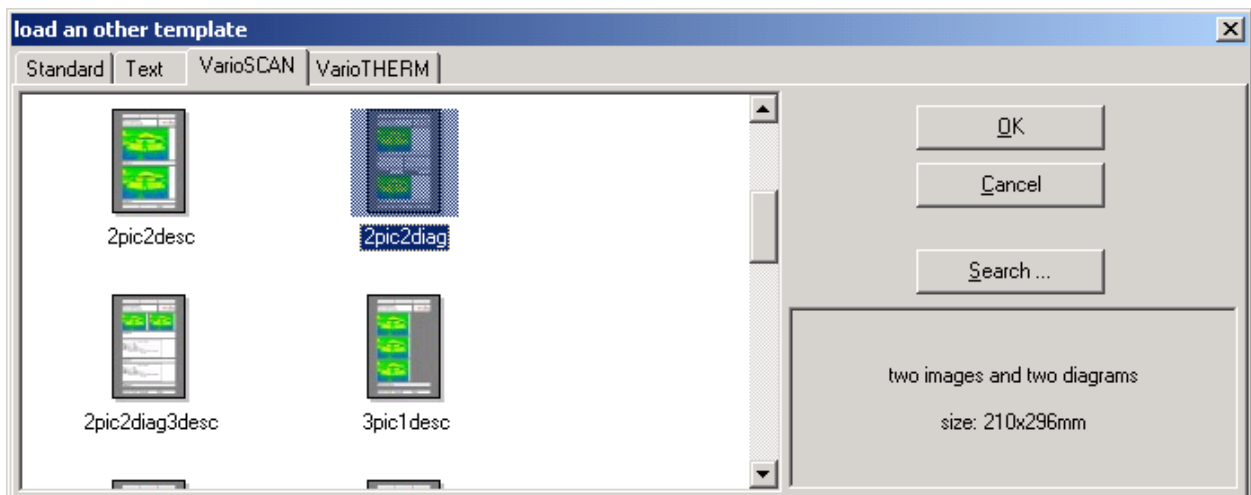


Fig. 42 Dialog for changing the report template

- Save As Template** The current report template can be saved.
- Preview** The current report page can be displayed in a preview window and printed if required.
- Print... [Ctrl+P]** The complete report is printed.

2nd Row:



Fig. 43 2nd row of the toolbar in the report window

First	Navigation to the first page of the report.
Previous	Navigation to the page immediately before the current page.
Scrollbar	Using the scrollbar, you can navigate around the complete report. The current page is displayed underneath the scrollbar.
Next	Navigation to the immediately following page.
Last	Navigation to the last page of the report.
Insert	A new page using the selected template is inserted before the current page in the report.
Append	Using the selected template, a new page is added to the report after the last page.
Delete	The page currently displayed is deleted from the report. This function is disabled if there is only one page in the report.

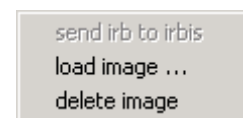
The Report Work Area

Depending on the template loaded, it is possible to load one more images on the current page. This is accomplished by clicking on the image area with the right mouse button – a context menu is then displayed.

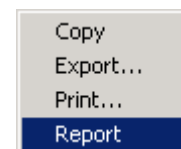
"Send IRB to IRBIS" is only active, if you are dealing with an IRB file for the image and sends the thermal image back to the IRBIS® professional main window.

With **"load image ..."** any BMP or JPEG file can be loaded in to the image area.

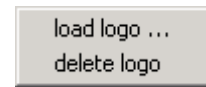
"Delete image" deletes the image in the image area where the context menu was opened.



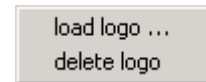
In addition, it is possible to import an IRB image in to the report. For this, a context menu is displayed in the "IRBIS® professional" main window by clicking on the thermal image with the right mouse button. The thermal image is sent to the report using the **"Report"** menu option. If a report template with several image areas is selected, it is possible to select the image area.



You can also send **"Profiles"**, **"Histograms"**, **"Time-Diagrams"** and **"Profile-Time-Diagrams"** to the report. To do this, the respective diagram is created as described in sections 6.5 to 6.8. As soon as the right mouse button is clicked on the respective diagram a context menu will appear. By the menu item **"Report"** you can transfer the respective diagram to the report.



A context menu is displayed when clicking on the **"Logo"** field with the right mouse button where a company logo can be removed or loaded.



Font and point size can be changed using the menu options **"Font"** and **"Point Size"** on the context menu, which is displayed by clicking anywhere in the comment area, parameter area, title area, header, and footer areas with the right mouse button. The "font" and "point size" can be specified in the **"Others"** submenu. A new menu entry is applied in the relevant submenu after specifying the font and point size.



The Status Line

The status line provides detailed information concerning the description of the toolbar buttons when the mouse pointer is located on a button.



Fig. 1 Status line of the report window

10.2. Open ...

(Menu: **Report**)

An existing report can be opened with an open dialogue and selection of a report file. Afterwards, this is displayed in the **report window**.

10.3. Sequence

(Menu: **Report**)

By selecting this menu item you can send a complete thermogram sequence to the report.

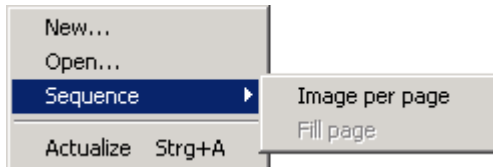


Fig. 44 Context menu to put sequences in report

To do this, you have to select a thermogram sequence (see section: 9.1 Open Sequence ... – page 38), because otherwise this menu item cannot be accessed.

With "**Image per page**" the selected thermogram sequence will be adapted by the report, in order to create a new report page for each image.

With "**Fill page**" you can fill, depending on the amount of images, all image fields of the image sequence of the thermogram into the report pattern. If the report page is full a new report page will be created.

10.4. Actualize

(Menu: **Report**)

If this menu option is selected, the current page in the report is completely refreshed. In doing so, the comment area and the parameter area are updated. In addition, the currently loaded thermal image in the IRBIS® professional main window is inserted into the first image area of the report window.

11. Extras

Here you will find the **Palette editor**, which allows you to create your own color palettes.

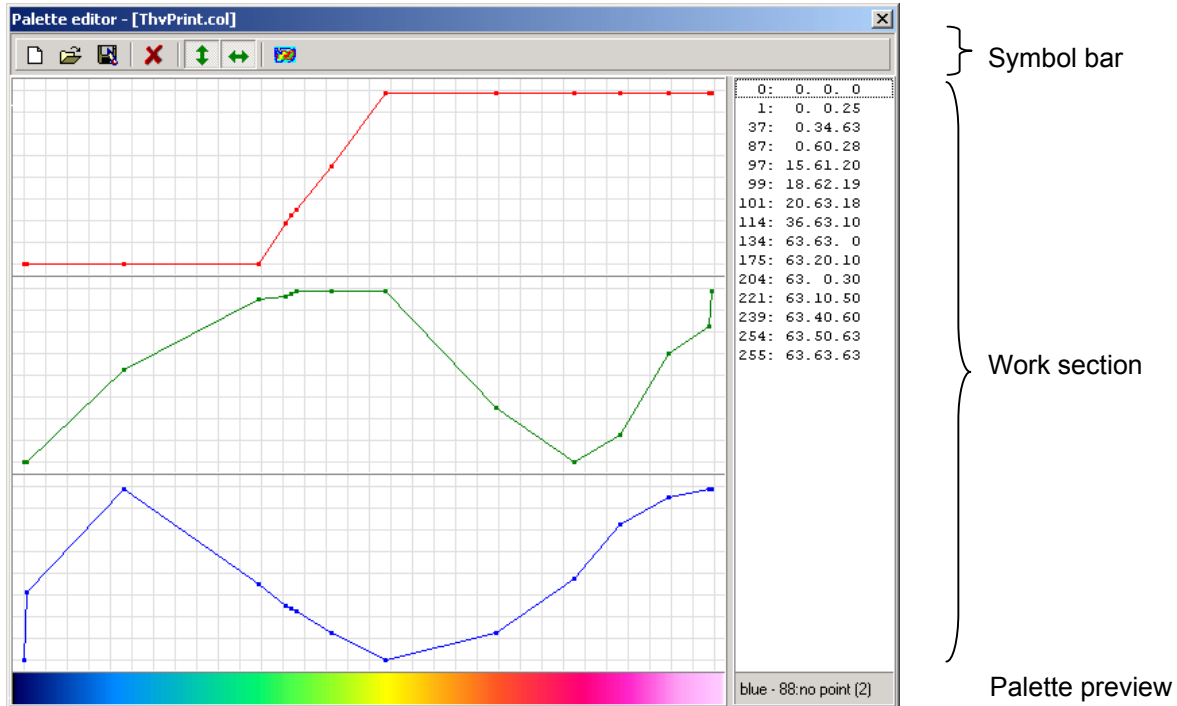


Fig. 45 Dialog "Palette editor"

The Icon bar in the palette editor includes the following functions:

New color palette

The color lines are standardized and as a result the palette preview shows a black/white palette. You may change this you like.

Load color palette

You can load with the Open dialog and Selection of a palette file an existing color palette.

Save color palette...

Creating a new file name for it can save the actual displayed color palette.

Close

The palette dialog closes. If the actual processed color palette has not been saved yet, you can do it now.

Cursor limits up/down

If this button is active you can only move a set point on a color line up or down.

Cursor limits left/right

If this button is active you can only move a set point on a color line left or right.



Note: If "Cursor limits up/down " and "Cursor limits left/right " are active a point can be moved in all directions.

Using the palette

The created color palette can be used in the thermogram with this button, which was loaded into the main screen of the IRBIS® professional.

Alternatively you can also load a saved palette via the menu **"Thermogram – Palette – Open"**.

In the **"Working section"** of the palette editor there are color lines red, green and blue.

They can be modified by set points, which result in a new color palette.

On the right hand side there are the point positions and the intensities of the respective color.

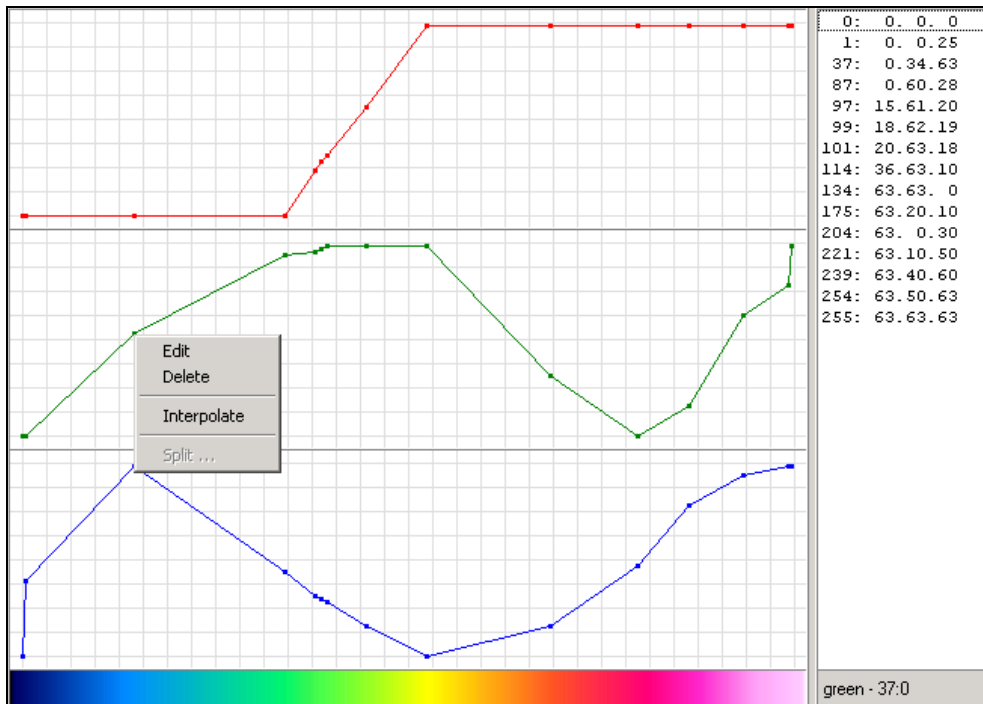


Fig. 46 Palette editor with context menu

With the right mouse button you can select a point and a context menu will appear (see Fig. 46).

The menu item **"Edit"** causes the dialog tab **"Edit point "** to appear.

The actual valid numeric value under **"Point"** shows the horizontal position of the selected point.

At **"red"**, **"green"** and **"blue"** you can specify the color intensity. With the button **"..."** you can also select a color directly from the Windows color palette.

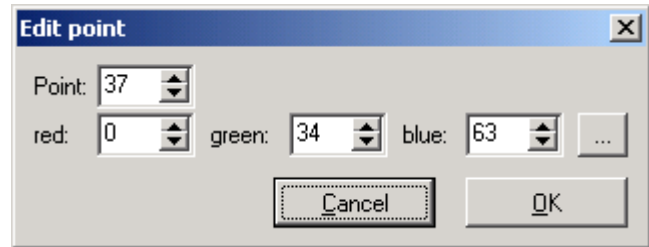


Fig. 47 Dialog "Edit point"

When selecting the context menu **"Delete"** the point – from which the context menu had been called – will be deleted.

After selecting **"Interpolate"** the point will be smoothed between the two adjacent points (converted into a diagonal).

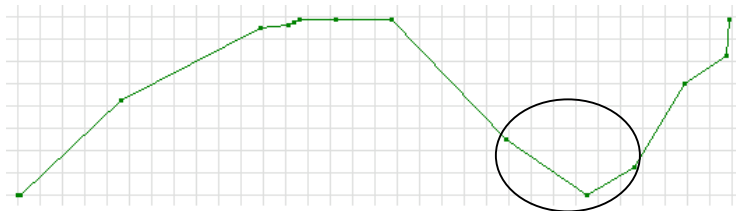


Fig. 48 Palette before interpolation.

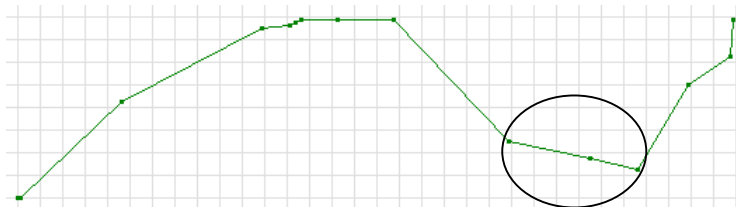


Fig. 49 Palette after interpolation.

"Split" becomes active in the context menu, if you click on one of the color lines with the right mouse button. At this time all other menu items are inactive.

With Sharing you can insert new points between two adjacent points. To do this an input dialog opens which allows you to specify the amount of points to be inserted.

12. "Help" menu

The menu "?" includes functions for the online help and information concerning the copyright.

12.1. Help

(Menu: ?)

The Online help for IRBIS® professional opens. In addition it is possible to display the context related help texts in regards to the menu items and dialog tabs by moving the mouse button above the relevant element (without clicking) and press the F1 key.

12.2. About

(Menu: ?)

Program information and copyright Comments are displayed.