



USER MANUAL

Sonel ThermoAnalyze3[®] **computer software**

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Due the continuous development of our products, we reserve the right to introduce changes and improvements in the thermal imaging camera and in the software described in this manual without prior notice.

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CONTENTS

1 Configuration of software and hardware	5
1.1 Software environment	5
1.2 Hardware environment.....	5
2 Installation instructions	5
2.1 Software installation	5
2.2 Common installation problems and solutions	6
3 Operating instructions	7
3.1 File	7
3.1.1 Import folder.....	7
3.1.2 File analysis	8
3.1.3 Quick report wizard	9
3.1.4 File edit	11
3.1.5 Folder management	12
3.2 Picture	13
3.2.1 Import and save image.....	13
3.2.2 Edit analysis object	13
3.2.3 Edit image.....	15
3.2.4 Export data and report.....	15
3.2.5 Intelligent analysis (some models support).....	16
3.2.6 Colour band and customized colour band	16
3.2.7 Histogram, graph and object data.....	17
3.2.8 Image fusion	19
3.2.9 3D mode	20
3.2.10 Text annotation and voice annotation	20
3.2.11 Analysis object settings.....	21
3.2.12 Batch analysis object settings	21
3.2.13 Isotherm settings.....	22
3.2.14 Image attribute	23
3.3 Video.....	25
3.3.1 Connection mode for real-time video.....	25
3.3.2 Edit video	27
3.3.3 Screenshots and recording	28
3.3.4 Temperature curves	28
3.3.5 Edit analysis object	29
3.3.6 Analysis object settings.....	30
3.3.7 Auto capture.....	30
3.4 Report	31
3.4.1 Create new report	31
3.4.2 Add report element.....	31
3.4.3 Edit report element.....	32
3.4.4 Report property	32
3.4.5 Import image.....	33
3.4.6 Create new report page.....	34
3.4.7 Delete report page	35
3.4.8 Save report	35
3.4.9 Print report	35
3.4.10 Close report	35
3.4.11 Open history record.....	35
3.4.12 Manage report template	36

3.5	Image optimization	37
3.5.1	Import file and edit file	37
3.5.2	Image stitching	37
3.5.3	Rebuild super-resolution	38
3.5.4	Create trend analysis	39
3.6	Settings and help	41
3.6.1	Settings	41
3.6.2	Help	43
4	Common problems	44
4.1	Device connection problems	44
4.1.1	USB connection	44
4.1.2	AP connection	44
4.1.3	LAN connection	44
4.2	How to install programs under restricted accounts	44
4.3	How to restore default settings	44
5	Manufacturer	44

1 Configuration of software and hardware

1.1 Software environment

Description	Requirements
Operating environment	Microsoft Visual C++2010-2015 x64 Redistributable; DirectX module
Operating system	Windows7–Windows10 64-bit operating system
Other software	PDF, Microsoft office (or WPS office)

1.2 Hardware environment

Description	Requirements
Description	Intel i3
CPU	8G and above
RAM	2G and above (supporting OpenGL)
Graphics card	Above 40G, and the remaining space of the installation directory disk shall be 2G or above
Hard disk	3-key mouse, PS/2 keyboard
Mouse, keyboard	Network card, above 100M

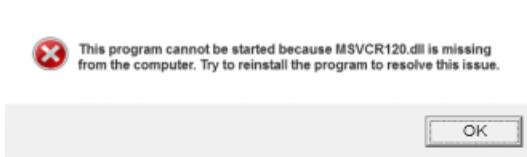
2 Installation instructions

2.1 Software installation

- Double-click or right-click the installation program .exe file to enter the language selection interface.
- Select a language and click **OK** to enter the installation wizard interface. Clicking **Cancel** will end the installation.
- Click **Next** to enter the software installation license agreement interface. Clicking **Cancel** will end the installation. Clicking **Back** will return to the installation wizard interface.
- Click **I Agree** to enter the installation path selection interface. Clicking **Cancel** will end the installation. Clicking **Back** will return to the installation wizard interface.
- Click **Install** to enter the installation progress interface, and wait for the installation to be completed. Clicking **Cancel** will end the installation.
- Click **Close** when installation is completed.

2.2 Common installation problems and solutions

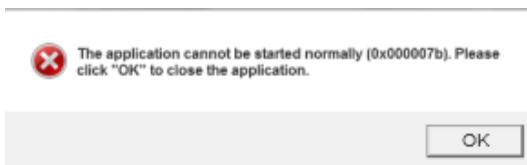
Error 1 may appear when you double-click the shortcut to run the program, prompting “MSVCR120.DLL is missing”.



Solution

Click `vc2013_redist.x64.exe` in the installation directory “*redis*” folder to install the runtime library. If any problem is not solved, please solve it according to the solution in Problem 2.

Error 2 may appear when you double-click the shortcut to run the program, prompting that “*The application cannot be started normally (0xc000007b)*”.



Solution

- Unzip DirectXRepair.zip file in the installation directory “*redis*” folder.

Data	2018/4/15 12:26
DirectX Repair.exe	2018/4/20 21:41
DirectX_Repair_win8_win10.exe	2018/4/20 21:45
Settings.ini	2018/4/20 21:36

- Run *DirectX Repair.exe* (run *DirectX_Repair_win8_win10.exe* for Windows 8 or Windows10) to enter the repair interface.
- Click “*Check and Repair*” to repair the system DirectX (the computer must be in a networked state). Run “ThermoAnalyze3” after the repair.

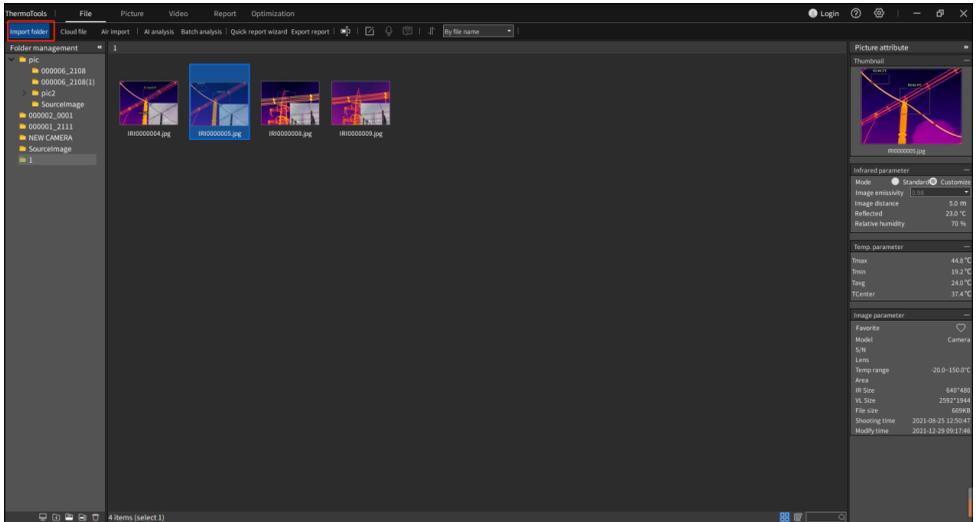
3 Operating instructions

3.1 File

In the document management centre, users can manage IR thermographs and generate quick reports.

3.1.1 Import folder

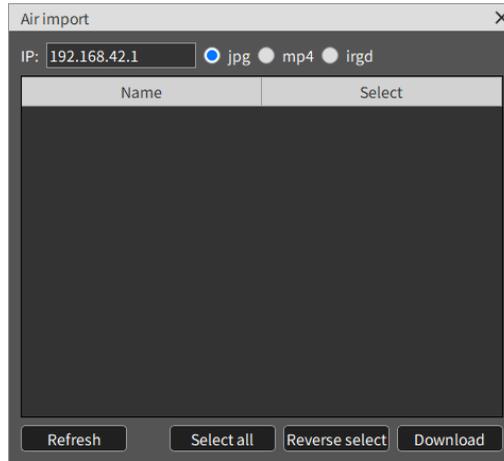
A data import is to achieve the import and display of a local folder resource structure directory, as shown below.



Click **Import Folder** in the menu bar, select the folder to be imported, and the imported folder will be displayed in the left folder area. You may also drag and drop to import, or drag the folder to the left folder area.

3. Over-the-air import

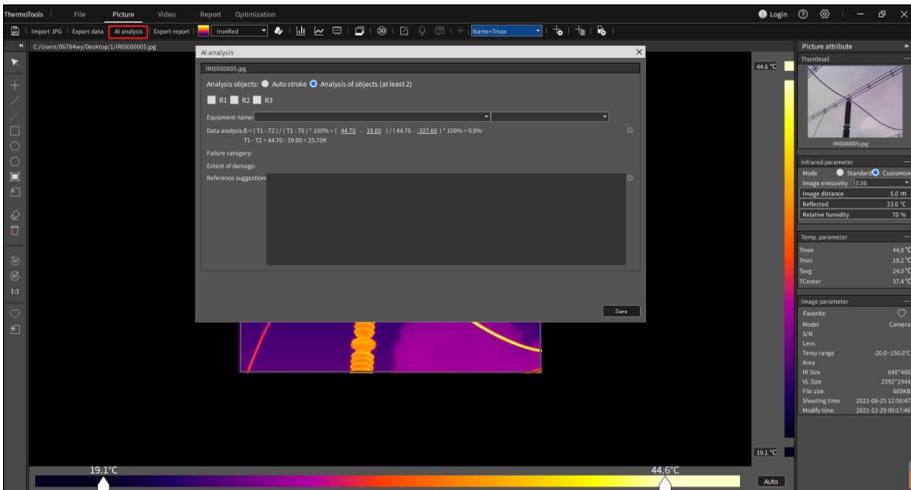
- First connect the file through WiFi (or USB/LAN).
- Now select a folder, click “Air import”, and then an over-the-air import interface will pop up.
- Choose the images or videos to be exported, and click **Refresh** to see the file list.
- Check the files you need to download.



3.1.2 File analysis

1. AI analysis (some models support)

One or more global IR images can be quickly diagnosed, analysed and saved intelligently, including fault category, damage degree, reference suggestions and other information.

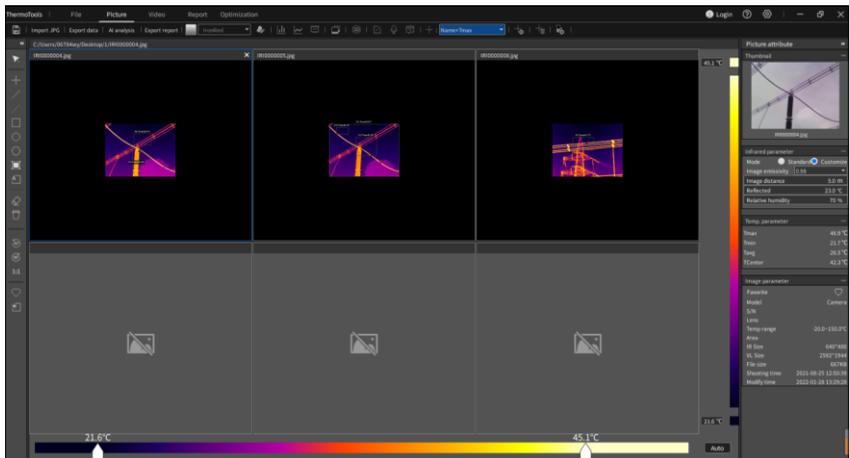
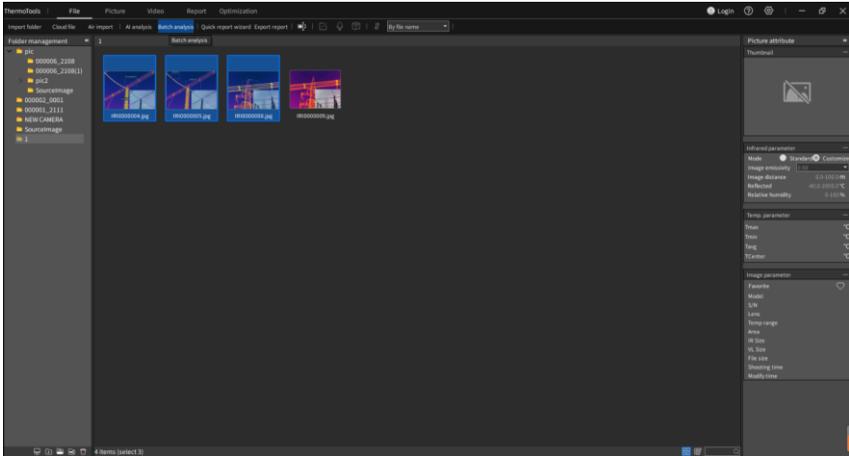


Select the images to be intelligently analysed (up to three images can now be analysed at the same time), click **AI Analysis**, and select the file name according to the specific image to acquire the intelligent analysis results.

Click the  button on the right to adjust the analysis results in real time and add reference suggestions. Click **Save** to see the saved intelligent analysis results in the image analysis interface or report editing page.

2. Batch analysis

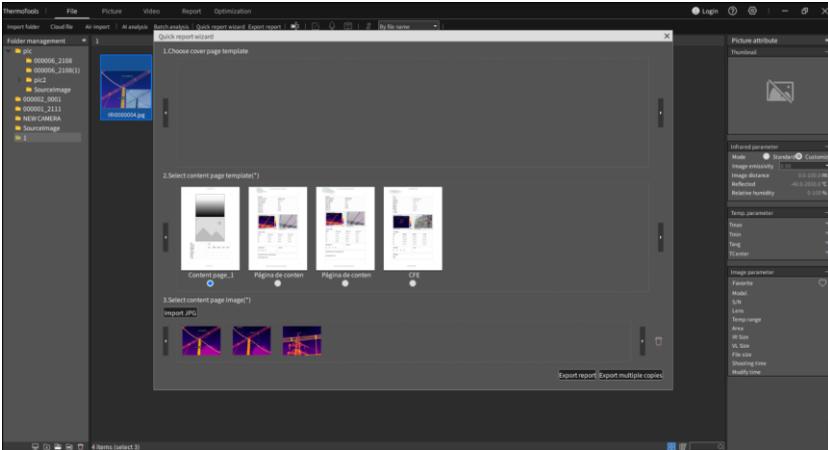
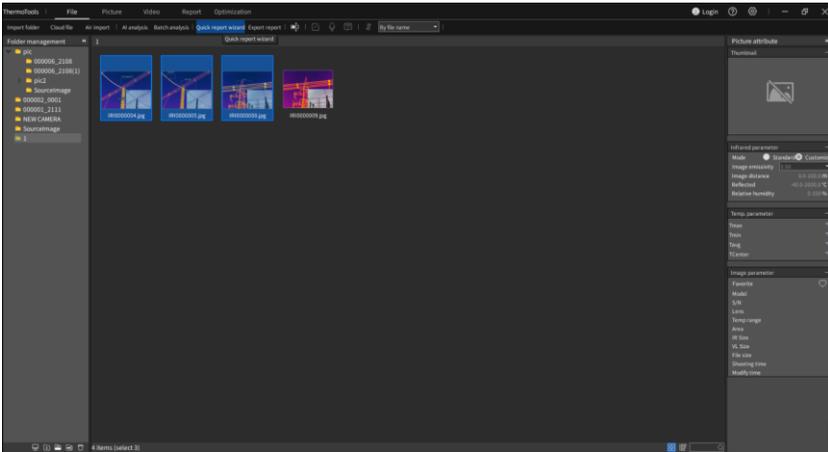
Analysis objects can be set for up to 6 images at the same time. View the analysis of IR thermographs taken by different parts of the file in the same period or the same file in different periods.



Select multiple infrared images (A maximum of 6 infrared image analysis will be carried out. Only the first 6 selected infrared images will be used), and click **Batch analysis** to enter the image batch analysis interface for analysis.

3.1.3 Quick report wizard

Quickly export the report content according to the currently viewed infrared image.



1. Quick report wizard

- Select the images that are used to generate the report;
- Click **Quick Report Wizard**, select the cover page template (optional) and the content page image (mandatory);
- Click **Export Report** - select save the file format and the file name of the export report. You may also choose to export multiple copies. According to the name+number, one infrared image will generate one report file.

2. Export to report

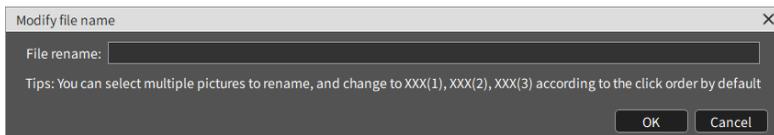
Select the image (optional) to generate the report, click **Export Report** to enter the report editing interface, where a new page will be automatically created to load the selected image, and then the report editing operation can be performed normally.

3.1.4 File edit

You can rename file names in batches, add text annotations, view voice annotations, and view images according to their types.

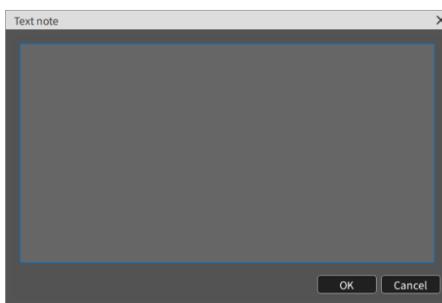
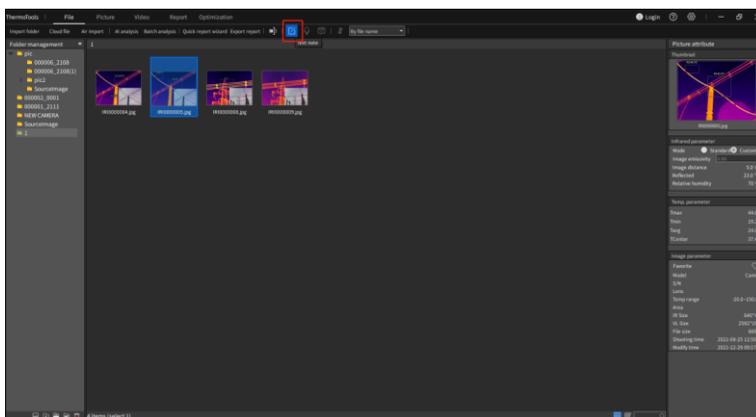
1. Modify file name

Select the image to be modified (multiple images can be selected), click the **Modify File Name**  button, and enter the modified name.



2. Text annotation

Select an image and click the  button to modify the text annotation and save them in the image.



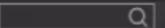
3. Voice annotation

If the  button is operable, it means that the image has voice annotations. Click the  button to play the voice information. Clicking the button again will stop the audio from playing.

4. File sorting

Files are loaded and sorted by file names by default. You can select the sorting method.

5. File management (list, thumbnail, search)

- In file management, you can switch the viewing mode of the display images:   , thumbnail or list.
- Typing the search content in the search box and press **Enter** to search.

3.1.5 Folder management



You can import a folder from your local computer and display the image information of the current folder. You can create, delete and modify the folder information.

1. New folder

Click the New Folder  button to create a new folder in the currently selected directory structure, and at the same time a new folder will be created on the default path of the local computer.

2. Create a new subfolder

Select a folder and click  to create a new folder node under the currently selected folder, and at the same time a new folder will be created under the current folder path.

3. Delete folder (associate local source file settings)

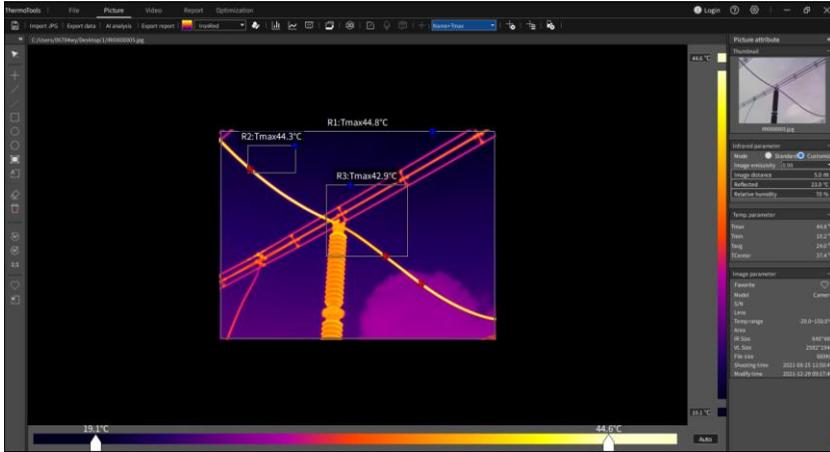
Select the folder node to be used, and click the **Delete Folder**  button (if deleting local source files is associated in **Settings ► General Settings**) to delete files on the local computer.

4. Rename folder

Select the folder to be renamed, and click the **Rename Folder**  button.

3.2 Picture

Here you can view the related properties of infrared images and freely add various analysis objects for precise analysis. View related histograms, temperature curves and object data, or set custom colour bands, edit text annotation information, isotherm analysis and other related functions.



3.2.1 Import and save image

Click the **Import Image** button to pop up the file manager, select the specific image, and click **Open**. The software will open the selected image, and display the image in the middle of the interface at a specific resolution. The acquired image parameters will be displayed in the right property bar.

3.2.2 Edit analysis object

1. Add a line analysis object

Click the **Draw Line Temperature Scale**  button on the left toolbar, (or use the corresponding shortcut keyboard 'L') to draw lines in the image. Repeat the operation to draw the polyline temperature scale. You may move the mouse out of the image area or click the right mouse button to finish drawing.

2. Add a point analysis object

Click the **Draw Temperature Scale**  button on the left toolbar, (or use the corresponding shortcut), move the mouse to the area where you want to add a temperature scale in the image, press the left mouse button and release the left mouse button to finish drawing.

3. Add a temperature difference line object

Select the **Temperature Difference Line**  button on the left toolbar, then press the left mouse button on the image, move the mouse, draw the temperature difference line analysis object, and release the left button to finish drawing.

4. Add a rectangular object

Select the **Rectangle**  button on the left toolbar, then press the left mouse button on the image, move the mouse, draw the rectangular analysis object, and release the left button to finish drawing.

5. Add a circle object

Select the **Circle**  button on the left toolbar, then press the left mouse button on the image, move the mouse, draw the circular analysis object, and release the left button to finish drawing.

6. Add a polygon object

Select the **Polygon**  button on the left toolbar, then click the left mouse button on the image to generate the first point, move the mouse and click the left mouse button to generate the next point, and repeat to generate the vertex of a polygon. Click the right mouse button to draw the polygon analysis object.

7. Automatic stroke

Select the **Auto Stroke**  button on the left toolbar, click the left mouse button on the image and press and draw a rectangular area, so that the image in the area will be automatically stroked to draw the analysis object.

8. Phase A/Phase B/Phase C analysis object

Click the  button to quickly draw the analysis objects of Phase A, Phase B and Phase C.

9. Edit analysis object

Select an analysis object, press the left mouse button, move the mouse to change the position or size of the analysis object, and release the left mouse button to finish editing.

10. Delete a selected analysis object

Select an analysis object and click the  button to delete the selected analysis object.

11. Delete all analysis objects

Click the  button to delete all analysis objects.

12. Rotate 90° counterclockwise/90° clockwise

Click the  or  button to rotate the image.

13. 1:1 restore images

Click the  button to restore the zoom-in image.

14. Collection tag

Click the  button to collect the tagged images, which is convenient when searching files according to their collection types.

15. Area dimming

Select an analysis object and click the  button to perform area dimming on non-point analysis objects.

16. Horizontal flip, vertical flip, diagonal flip

Click the  button to flip the current image horizontally. Click the  button to flip the image vertically. Click the  button to flip the image diagonally.

3.2.3 Edit image

1. Level and span

In Image Analysis, drag the Level and Span sliders (see below, the slider on the left gives the minimum dimming value and the slider on the right gives the maximum dimming value) to limit the dimming area of the image to the temperature area of interest.



2. Revolve

In Image Analysis, click the **Revolve Counterclockwise**  button or “Revolve Clockwise”  button (or use the corresponding shortcut), and the image will be rotated 90° in the selected direction.

3. Restore

In Image Analysis, click the **Restore Image Size**  button (or use the corresponding shortcut), and the image will be restored to its original resolution.

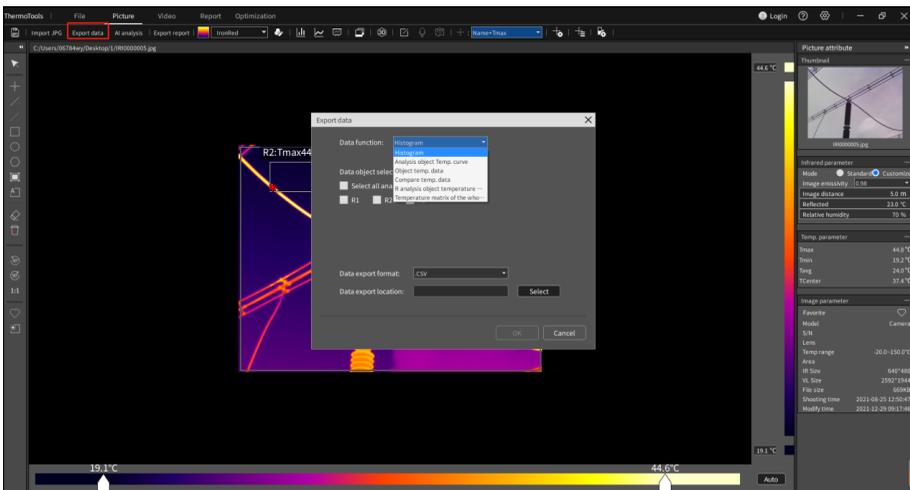
4. Area dimming

In Image Analysis, select an analysis object and click the **Area**  button (or use the corresponding shortcut), and the maximum and minimum dimming values of the image will become the highest and lowest temperatures for the analysis object.

3.2.4 Export data and report

1. Export data

Click **Export Data** in Image Analysis, select the specific data function, data object, data export format and data export location, and the corresponding data file will be generated under the selected path.

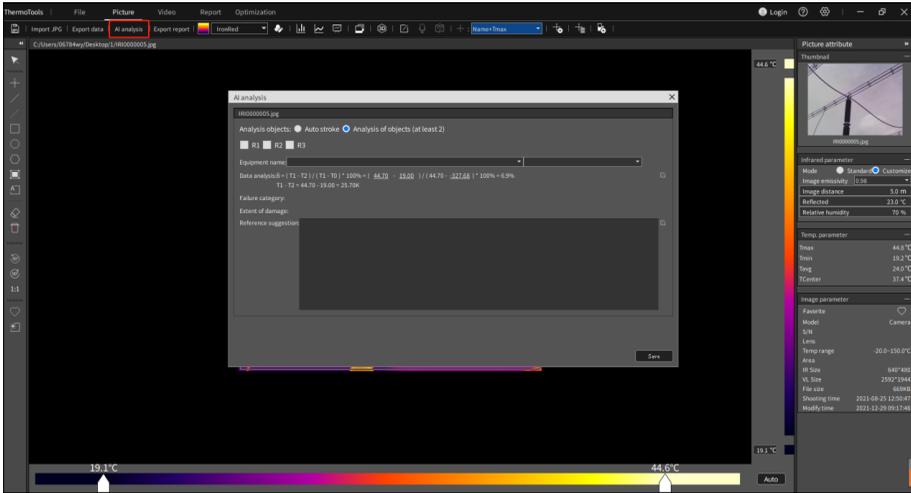


2. Export report

In Image Analysis, click **Export Report** to enter the report editing interface, and use the selected template to generate a new report page.

3.2.5 Intelligent analysis (some models support)

In **Image Analysis**, click the **Intelligent Analysis** button, Select the device name to perform intelligent analysis and to generate the corresponding intelligent diagnosis fault type, damage degree and reference suggestions. The analysis results can be saved, which is convenient for importing intelligent analysis results in later report editing.



3.2.6 Colour band and customized colour band

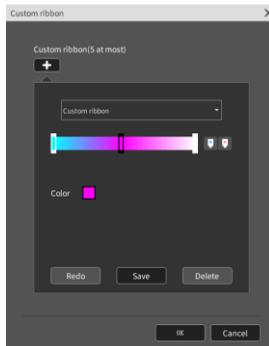
Adjust the pseudo colour information of the image by selecting the colour band type or the custom colour band.

1. Colour band

In **Image analysis**, click the **Colour band**  **IronRed** drop-down box, select the desired colour band in the drop-down box, and the image will be superimposed with the new colour band.

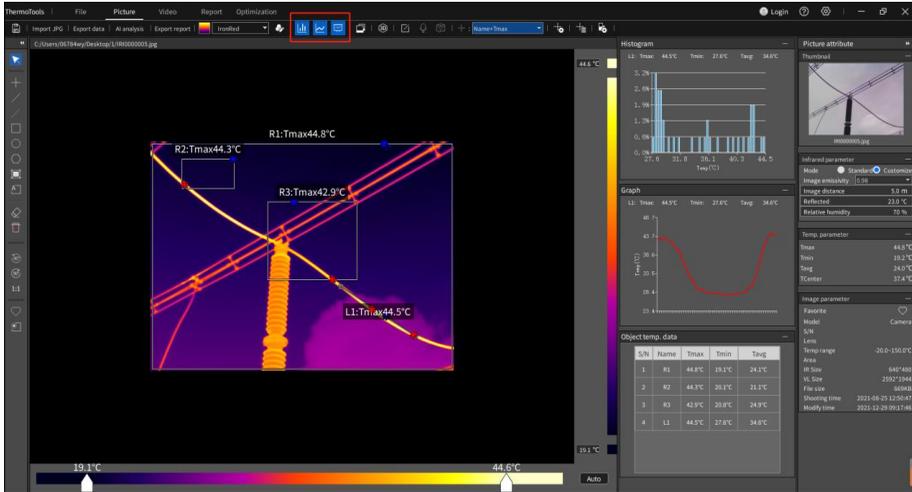
2. Customize the colour band

In **Image analysis**, click the **Custom colour band**  button, and adjust **Hue**, **Saturation** and **Brightness** to adjust the image to the desired pseudo-colour state.



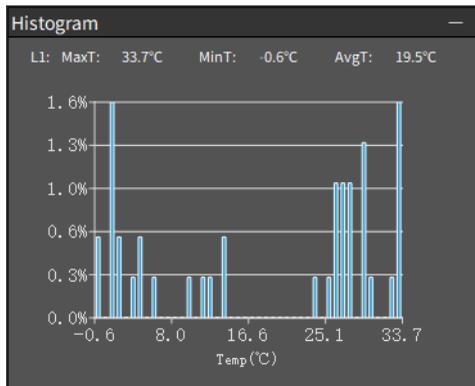
3.2.7 Histogram, graph and object data

View the relevant temperature data of the specified analysis object.



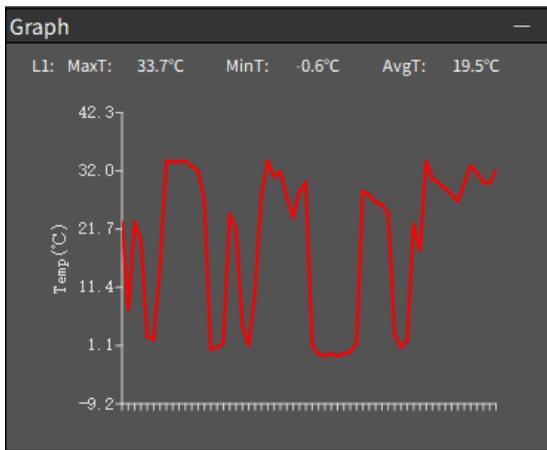
Histogram

Select any non-point analysis object and click the histogram  button on the toolbar to display the histogram information immediately on the right side of the image area, as well as the name, highest temperature, lowest temperature and average temperature of the selected analysis object. Click any bar to display the temperature and percentage represented by the current bar.



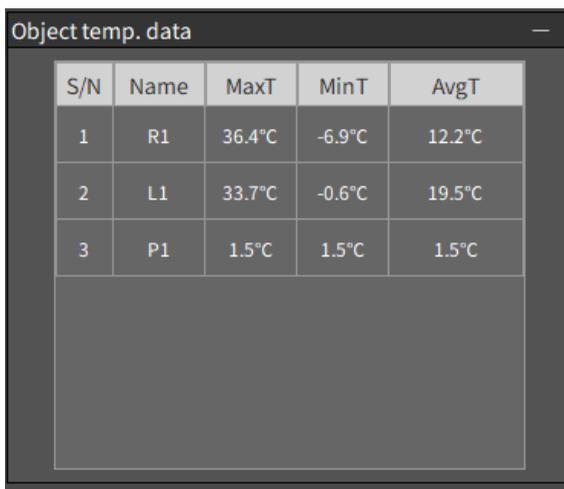
Temperature curve

Select any line analysis object and click the temperature curve  button on the toolbar, then the temperature curve information will be displayed immediately on the right side of the image area, as well as the name, highest temperature, lowest temperature and average temperature of the selected analysis object.



Object data

Click the temperature curve  button on the toolbar, and all the analysis object information in the image will be displayed immediately on the right side of the image area, including the name of the analysis object, the highest temperature, the lowest temperature and the average temperature.



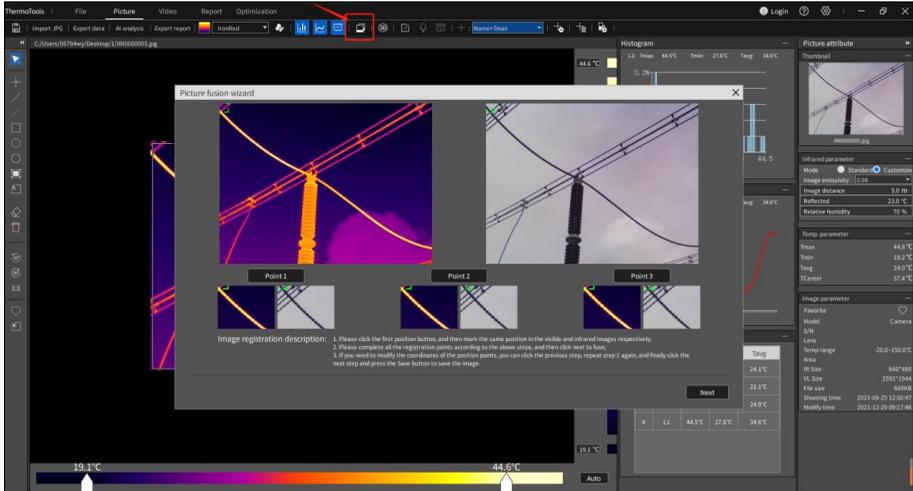
Object temp. data

S/N	Name	MaxT	MinT	AvgT
1	R1	36.4°C	-6.9°C	12.2°C
2	L1	33.7°C	-0.6°C	19.5°C
3	P1	1.5°C	1.5°C	1.5°C

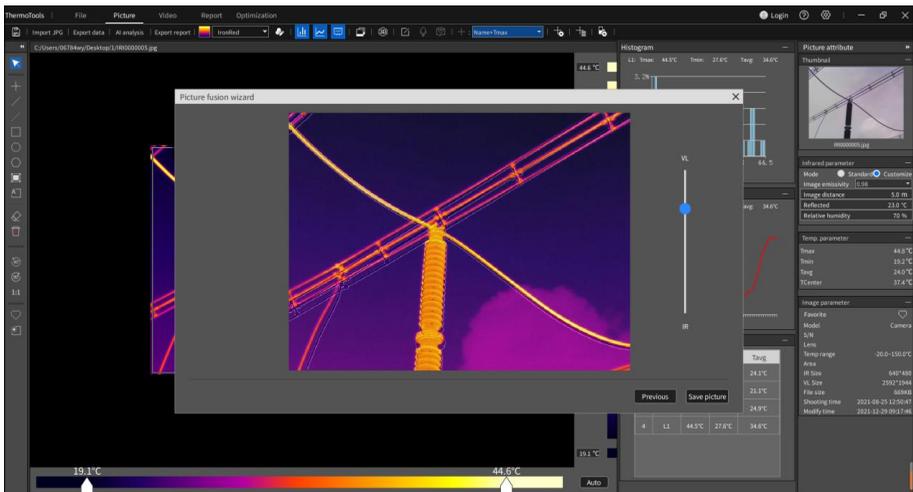
3.2.8 Image fusion

By setting the registration point information of visible light and infrared images, dual light fusion is realized according to the fusion degree range.

Click the  button to let the current image enter the image position point registration state immediately. Click the **Xth position point**, and then select the registration position on the visible light image and infrared image respectively.



After setting the three registration positions, click the **Next** button to enter the fusion image display interface immediately. You can slide or click the right slider to adjust the fusion degree. The fusion degree range is 1-5, and the default fusion degree is 4, as shown below.

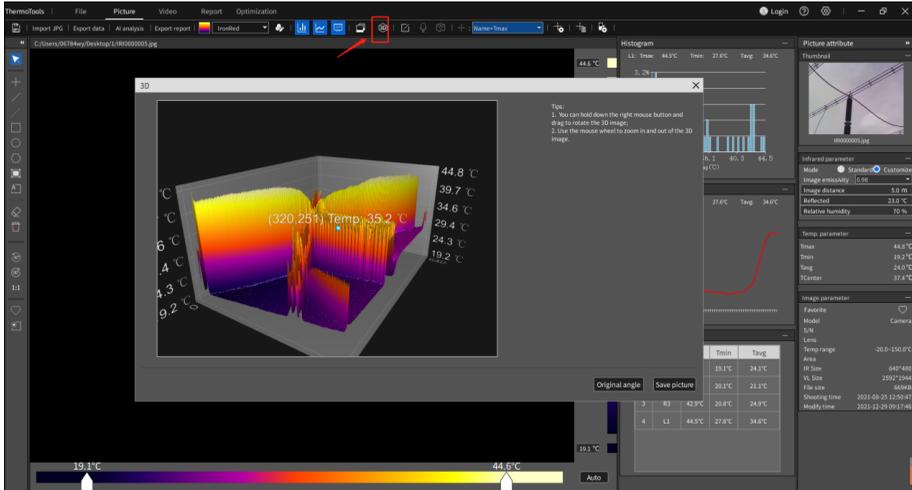


- Click the **Back** button to go back to the previous step and re-select the registration point.
- Click the **Save picture** button to save the current fused image in JPG format.

3.2.9 3D mode

Click the  button, and the current infrared image will be displayed in the 3D mode directly, under which you can view the temperature 3D distribution area of the current infrared image more intuitively.

Click the left mouse button to display the temperature information of the selected point, use the right mouse button to rotate the 3D image, and use the mouse wheel to zoom in and out of the 3D image.



- Click the **Original angle** button to restore the operated 3D image to the original view.
- Click the **Save image** button to save the current 3D image in JPG format.

3.2.10 Text annotation and voice annotation

1. Text annotation

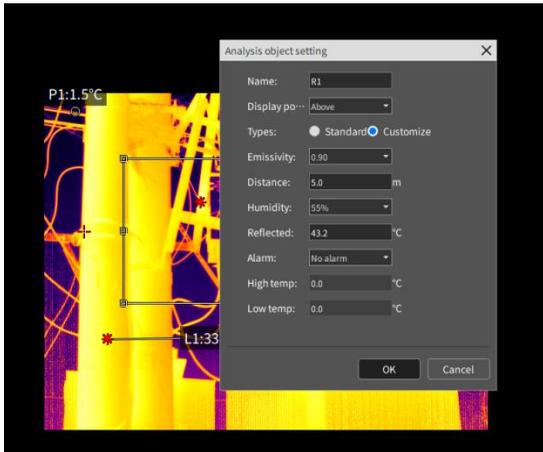
In **Image analysis**, click the **Text annotation**  button to annotate, edit and view the infrared images.

2. Voice annotation

In **Image analysis**, if the image contains voice annotation information, click the **Voice annotation**  button to play the voice annotation.

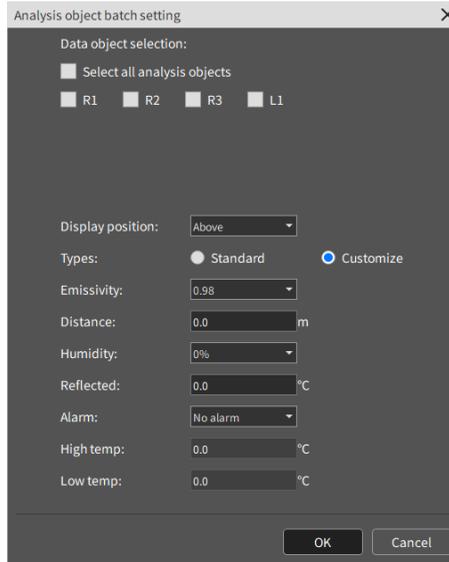
3.2.11 Analysis object settings

In **Image analysis**, you can click the **Analysis object settings**  button to set the name, display orientation, emissivity type, emissivity, distance, humidity, reflection temperature, alarm type, high temperature alarm threshold and low temperature alarm threshold of a single analysis object. This makes the temperature measurement more accurate.



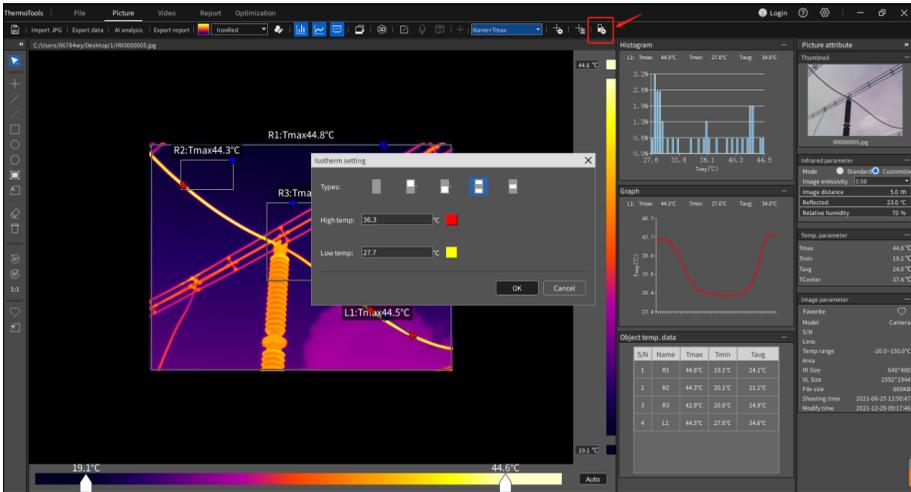
3.2.12 Batch analysis object settings

After the analysis object is selected, use the Ctrl+C and Ctrl+V shortcut keys to copy the analysis object type and corresponding parameter information, or click the  button to set the parameters of the analysis object in batches.



3.2.13 Isotherm settings

In **Image analysis**, you can click the **Isotherm settings**  button to set the relevant information about the isotherm, which is convenient for viewing and analysing the high-temperature and low-temperature areas of the current image.



High isotherm

When the selection type is a high temperature isotherm, the corresponding high temperature threshold can be entered and the corresponding filling colour can be selected. The area above the threshold will then be filled with the selected colour in the image.

Low isotherm

When the selection type is a low temperature isotherm, the corresponding low temperature threshold can be entered and the corresponding filling colour can be selected. The area below the threshold will then be filled with the selected colour in the image.

Intra-zone isotherm

When the selection type is an intra-zone isotherm, you can enter the corresponding interval threshold and select the corresponding filling colour. The image area between the thresholds will then be filled with the selected colour.

Extra-zone isotherm

When the selection type is an extra-zone isotherm, the corresponding high temperature and low temperature thresholds can be entered, and the corresponding filling colour can be selected. The image areas above the high temperature threshold will be filled with the selected colour, and the areas below the low temperature threshold will also be filled with the selected colour.

3.2.14 Image attribute

You can view the parameter information, temperature measurement parameter information and corresponding image properties of the current infrared image.

The screenshot displays a software interface with several panels:

- Picture attribute:** Shows a thumbnail of an infrared image with a yellow and red overlay, labeled "IRI000005.jpg".
- Infrared parameter:** Includes a Mode selector (Standard/Customize), Image emissivity (0.98), Image distance (5.0 m), Reflected (23.0 °C), and Relative humidity (70 %).
- Temp. parameter:** Lists T_{max} (44.8 °C), T_{min} (19.2 °C), T_{avg} (24.0 °C), and T_{Center} (37.4 °C).
- Image parameter:** Shows Favorite, Model (Camera), S/N, Lens, Temp range (-20.0-150.0°C), Area, IR Size (640*480), VL Size (2592*1944), File size (669KB), Shooting time (2021-08-25 12:50:47), and Modify time (2021-12-29 09:17:46).

1. Thumbnails

If the image contains visible light images, or if there are visible light images corresponding to naming rules in the directory at the same level as the images, the visible light images will be displayed here. Click this area to switch the position of the images in the analysis interface with the image here. Otherwise, thumbnails of the infrared images are displayed.



2. Infrared parameters

Here are the temperature measurement parameters of the image. If you modify the parameters here, the temperature of the image will change accordingly.

The screenshot shows the "Infrared parameter" panel with the following settings:

- Mode: Standard Customize
- Image emis...: 0.90
- Image dist...: 5.0 m
- Reflected: 43.2 °C
- Relative humi...: 55 %

3. Temperature measurement parameters

Here is the temperature information related to the image, including the highest temperature, lowest temperature and average temperature for the whole image.

Temp. parameter	
T _{max}	44.8 °C
T _{min}	19.2 °C
T _{avg}	24.0 °C
T _{Center}	37.4 °C

4. Image parameters

Basic parameter information of an image includes collection status, equipment model, lens, temperature measuring range, temperature measuring area, infrared resolution, white light resolution, file size, shooting time and modification time.

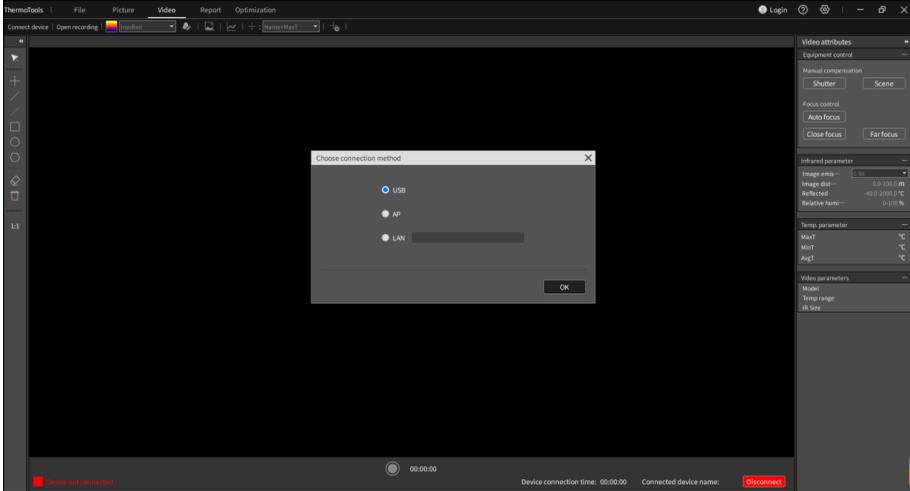
Image parameter	
Favorite	
Model	Camera
S/N	
Lens	
Temp range	-20.0~150.0°C
Area	
IR Size	640*480
VL Size	1024*768
File size	693KB
Shooting t...	2019-06-23 09:09:51
Modify time	2021-03-02 13:33:55

3.3 Video

3.3.1 Connection mode for real-time video

Please note that the analysis software supports multiple device connections, and the connection methods are as follows:

- **USB connection:** install the USB driver in advance, otherwise the real-time video viewing function is not supported when the SD card is inserted,
- **AP connection:** open the AP hotspot on the device side, and connect the PC to the hotspot information on the device side to connect the real-time video of the device,
- **LAN connection:** enter the IP address of the device, make sure that the IP of the device and the IP of the PC are in the same network segment.

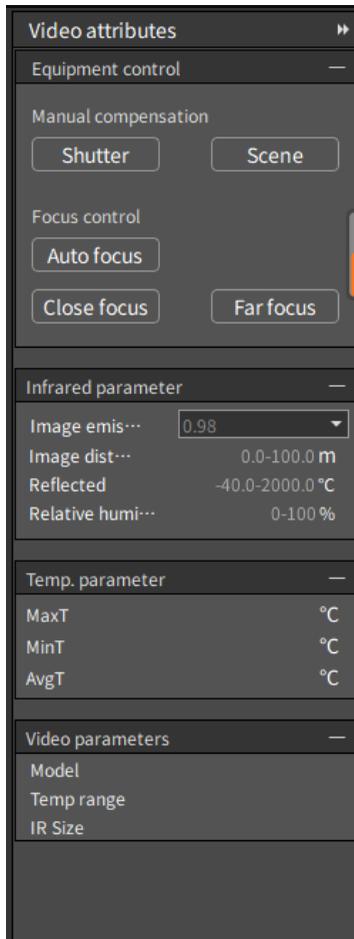


1. Connect device

- Click the **Connect device** button to enter the connection mode interface. Please select according to the current physical connection mode of the device (the IP address of the device needs to be entered for LAN connection).
- Click the **OK** button and wait for the successful connection of the device and play the real-time video, as shown in the figure.
- Click the **Disconnect** button to stop the real-time video play.

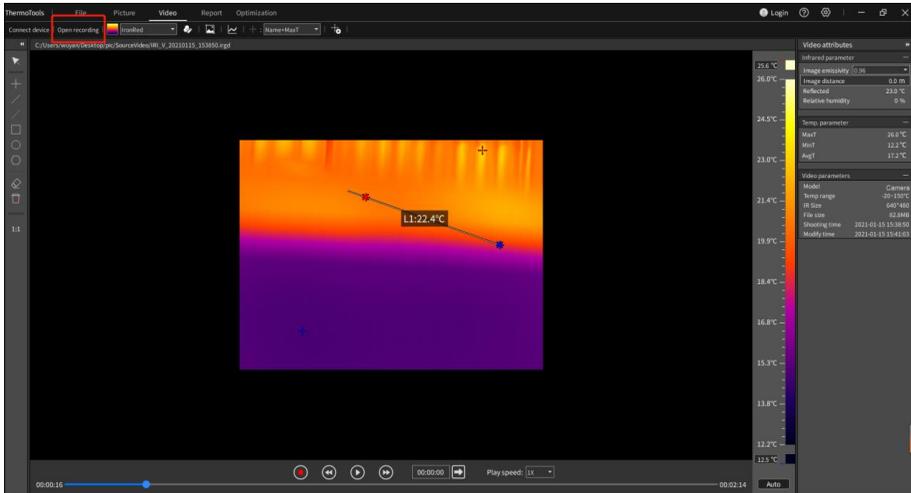
2. Video property

After the video is successfully connected or the video file is successfully opened, the current video related information will be displayed in the video property page.



3.3.2 Edit video

You can edit the currently played video file.



1. Open the video

Click **Open Video** to display the file selection box, where you can select an “.irgd” or “.mp4” file to play.

2. Start/pause and stop

Click the **Start/Pause** button to control the video play or pause during the video file play. Click the **Stop** button to stop the video play.

3. Previous frame / next frame

In the process of playing video files, click the **Previous Frame** button to jump to the previous image, and click the **Next Frame** button to jump to the next image (the previous frame/next frame operation will pause the video play).

4. Jump to frame

In the process of playing the video file, you can enter the time point to be jumped in the time input box and click the **Frame Jump** button, and the video will jump to the set time point for playing. You may also jump the video by clicking the play progress bar.

5. Multiply play

In the process of playing video files, the current playing frame rate can be adjusted by selecting the playing of multiples of different gears.

6. Edit image

a. You can choose different colour bands  to change the colour of the image.

b. Click the **Custom colour band**  button to change the colour of the image by changing **Hue**, **Saturation** and **Brightness**.

3.3.3 Screenshots and recording

1. Screenshot photo

In the process of playing real-time video and video files, click the **Screenshot**  button to save the infrared image of the current video in jpg image format.

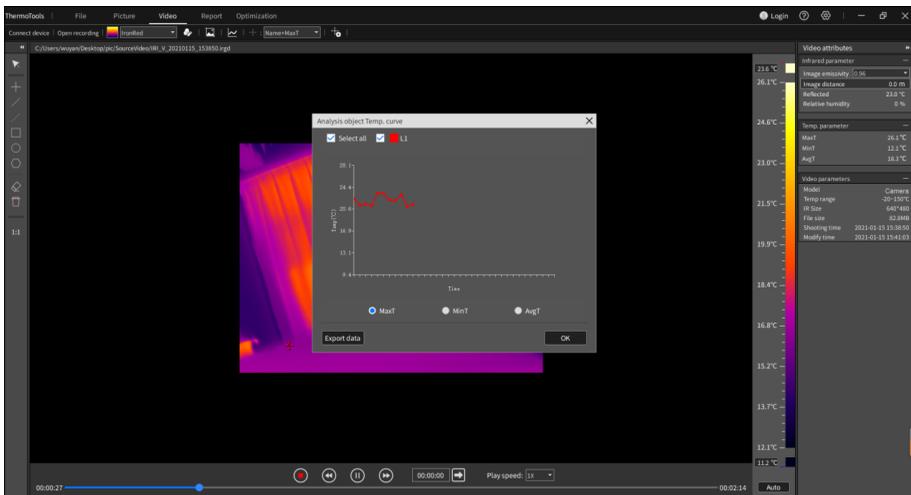
2. Recording

During the real-time video play, click the **start recording**  button, select the saved path and file name (supporting .mp4, .irgd format and double recording), and click the **OK** button to record.

Clicking the **stop recording**  button will end the recording.

3.3.4 Temperature curves

While playing real-time video or video files (draw the analysis object first), you can view the graphs of the highest temperature, lowest temperature and average temperature of the analysis object in real time. Click the **Temperature curve** button to display the current temperature curve of the analysis object.



- Select the name of the analysis object to display the temperature curves of the corresponding analysis objects. **Select all** to display the temperature curves of all analysis objects.
- Click the **Highest temperature**, **Lowest temperature** and **Average temperature** buttons to display the corresponding temperature curves.
- Click the **Export data** button to save the current temperature curve information, select **.csv** format to save the current temperature information in the CSV file, and select **.jpg** format to save the current temperature curve screenshot.

3.3.5 Edit analysis object

When viewing and editing infrared images, you can add various analysis objects, set the parameters of a single analysis object and carry out accurate analysis.

1. Add a point object

Click the toolbar and select the **Point**  button, and then click the left mouse button on the image to draw the point analysis object.

2. Add a line object

Click the toolbar and select the **Line**  button, then click the left mouse button on the image to generate the first point, move the mouse position, and click the left mouse button to generate the next point, and repeat to generate the vertex of a polyline. Click the right mouse button to draw the line analysis object.

3. Add a temperature difference line object

Click the left toolbar and select the **Temperature difference line**  button then click the left mouse button on the image, move the mouse position, draw the analysis object of the temperature difference line, and release the left button to finish drawing.

4. Add a rectangular object

Click the left toolbar and select the **Rectangle**  button, then click the left mouse button on the image, move the mouse position, draw the rectangular analysis object, and release the left button to finish drawing.

5. Add a circle object

Click the left toolbar and select the **Circle**  button, then press the left mouse button on the image, move the mouse position, draw the circular analysis object, and release the left button to finish drawing.

6. Add a polygon object

Click the left toolbar and select the **Polygon**  button, then click the left mouse button on the image to generate the first point, move the mouse position and click the left mouse button to generate the next point, then repeat to generate the vertex of the polygon, and click the right mouse button to draw the polygon analysis object.

7. Edit analysis object

Select an analysis object, click the left mouse button, and then move the mouse position to change the position or size of the analysis object. Release the left mouse button to finish editing.

8. Delete an analysis object

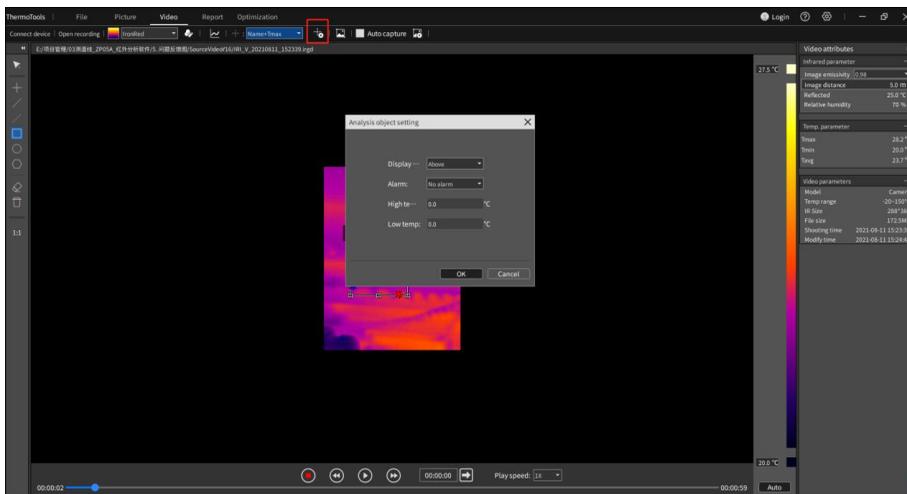
Select an analysis object, and click the **Delete selected**  button to delete the selected analysis object.

9. Delete all analysis objects

Click the **Delete all**  button to delete all analysis objects.

3.3.6 Analysis object settings

In real-time video play, the analysis object can be personalized.

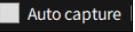


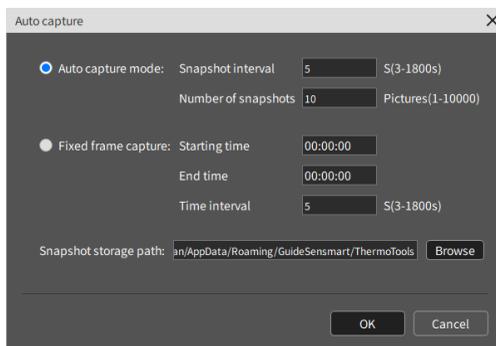
Select an analysis object and click the **Analysis object settings**  button to display the Analysis Object Settings window.

- Select and change the display position of the analysis object.
- Select the alarm type and edit the alarm threshold of the corresponding analysis object. When the temperature reaches the alarm condition, the analysis object will flash alternately in red and primary colours.

3.3.7 Auto capture

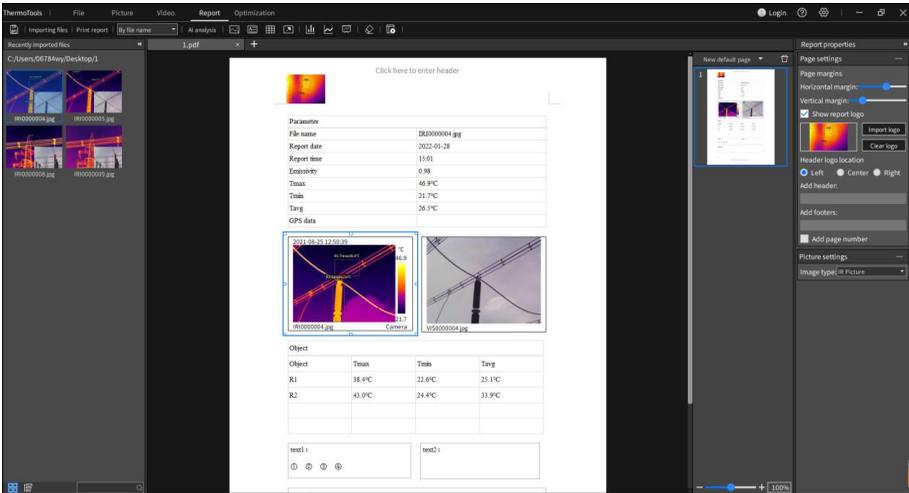
When the device is connected to real-time video playback or when the local video playback is turned on, the automatic capture function can be turned on to automatically capture images according to multiple modes.

Click the **Automatic snapshot settings**  button to set the automatic snapshot mode: automatic snapshot, fixed frame snapshot. Click the  **Auto capture** button to turn on the automatic capture mode.



3.4 Report

It is allowable to customize and edit report contents and page elements, and save them as Word or PDF files.



- In Report Edit, enter the report editing function page. It is the image list bar on the left side of the page and displays the images in the folder recently opened by File Management;
- The middle bar of the page is the report file currently being edited. The right area in the middle of the page is the report single page management bar, where each single page in a report file can be managed.
- In the report property bar on the right side of the page you can set the properties of report pages and report elements.

3.4.1 Create new report

Click the  button in the title bar of the report file to add a blank report file.

3.4.2 Add report element



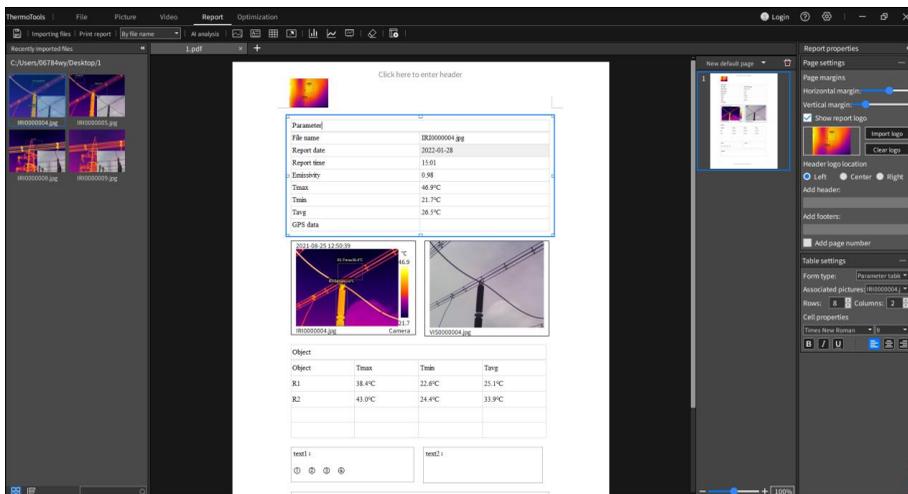
Click the **Add image** , **Add table** , **Add text** , **Add AI analysis** , **Add histogram** , **Add temperature curve** , and **Add object data**  buttons in the function menu bar (or click their corresponding shortcut keys) to enter the state of the added report elements.

Move the mouse to an appropriate position in the report area, and click the left mouse button to add the corresponding report elements to the report.

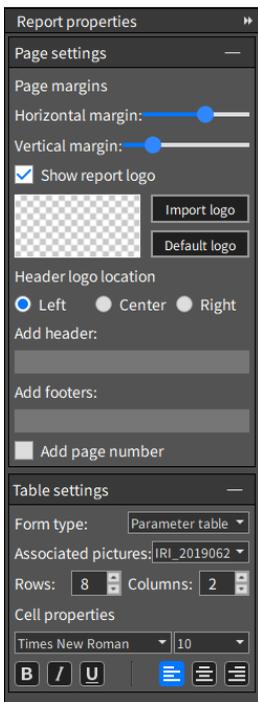
Click the **Add arrow**  button in the function menu bar to enter the state of the adding arrow. Click the left mouse button and slide in the report area to draw the starting and end points of the arrow.

3.4.3 Edit report element

Select a report element in the report single page area, then drag and zoom the report element, edit the report content and set its properties.



3.4.4 Report property



In the report properties list, you can modify page margins, report logo, header and footer, table properties, text box properties and other related information.

Set report page properties

In the right report property bar, you can set the basic properties of the report page.

You can set the distance of the upper, lower, left and right edges of the report in Page Margin Setting.

Show report logo will display the logo image in the report header.

Logo position is used to set the position of the logo image in the header. The logo position can be set as left-aligned/center-aligned/right-aligned. The image area displays the thumbnail of the current logo.

- Click **Import logo** to import the previous image as the report logo, and click **Default logo** to import the system default report logo.
- You can input the text displayed at the header and footer in the **Add header** and **Add footer** edit boxes.
- Add Page Number will display the page number in the generated report.

Set text properties

When a text element is selected, you can set the selected text element in the report property bar.

Properties that can be set include text font, text font size, bold, italic, underline, text alignment, etc.

When the selected text area is the intelligent analysis conclusion, the associated infrared image can be selected. If the associated infrared image has been intelligently analysed, the conclusion of intelligent analysis will be automatically filled in the text area.

Set table properties

When a table element is selected, you can set the selected table element in the report property bar.

You can select the type of the current table in **Form type** combo box, including Ordinary Table, Parameter Table and Object Table. Associated infrared images can be selected from parameter table and object table through **Associated pictures**.

The contents of parameter table and object table are set in **Settings ► Report settings**. The related data comes from the related infrared images.

Set picture properties

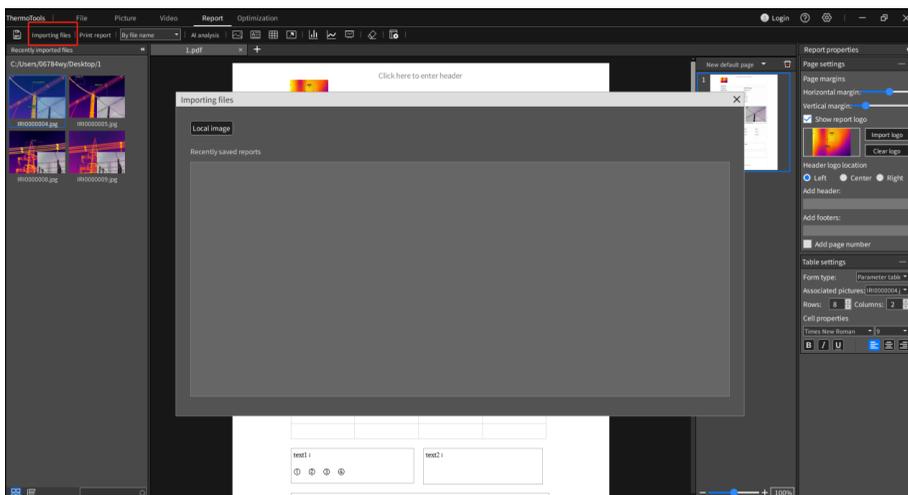
When an image element is selected, you can set the selected image in the report property bar.

In the **image type** field, the image types include **IR (infrared) picture**, **VL (visible light) picture** and **general picture**. When **Visible light picture** is selected, the associated infrared image can be selected through **Associated picture**.

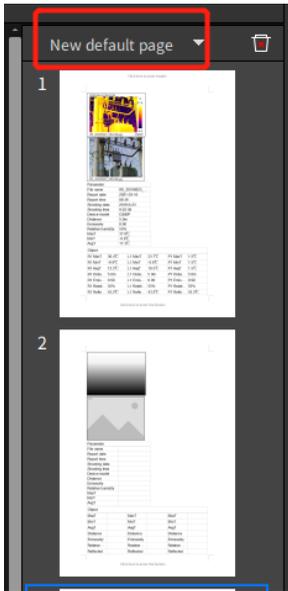
3.4.5 Import image

You can import new infrared images and edit their report contents.

When you drag an image into the list on the left in **Report Edit** or import an infrared image to be made in the local file system to make a report, other report elements associated with the image element, such as the associated parameter table/object table/visible light image/intelligent analysis conclusion, are automatically filled in at this time.



3.4.6 Create new report page



In the list on the right of the report pages that have been created, you can create new single pages: add default page, add last template page and add template page.

New default page

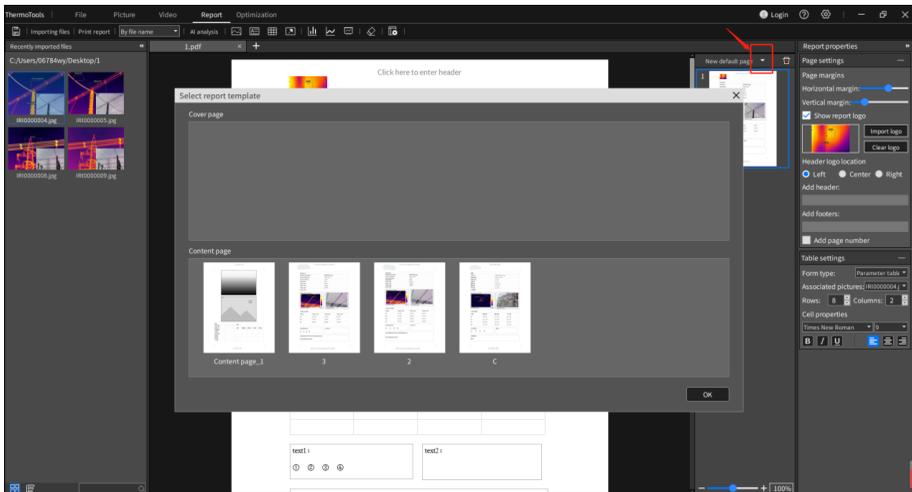
Click **New default page** in the report management bar to add a new report at the end of the current report file. The default report template will be applied to each page of this report.

Add last template page

Click **Add last template page** in the Add Report Page combo box in the report page management bar, and a new report page will be added at the end of the current report file. The latest report template will be applied to the report page.

Add template page

Click **Add template page** in the Add Report Page combo box in the report page management bar to display **Select Report Template** window. After selecting a page template, the report page to which the corresponding template is applied will be added in the current report file, as shown below.



- If the selected page template is a content page template, a new report page is appended to the end of the report.
- If the selected page template is the cover page template, a new report page will be added to the first page of the report or the cover page added before will be replaced.

3.4.7 Delete report page

Click the **Delete**  button in the report management bar to delete the currently displayed report single page. When the report file contains only one single page, this single page cannot be deleted.

3.4.8 Save report

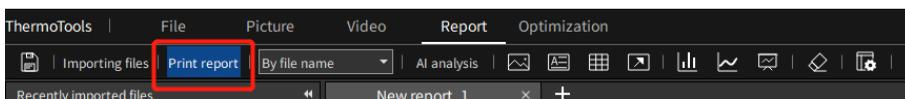
Save the contents of the report being edited.

Click the **Save report**  button in the function menu bar to save the current report. Saving files in PDF or DOCx format is supported.

Click **Save as report** in the function menu bar, and select the path to save the report.

3.4.9 Print report

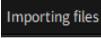
Click the **Print Report**  button in the function menu bar to pop up the print setting dialog box, select a printer in the dialog box, set parameters such as print range number of copies, and then click **Print** to print the current report file according to the set parameters.

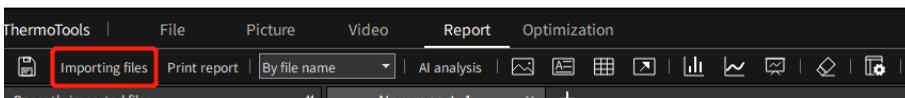


3.4.10 Close report

Click the **X** button on the right side of a report title in the title bar of the report file to close the corresponding report.

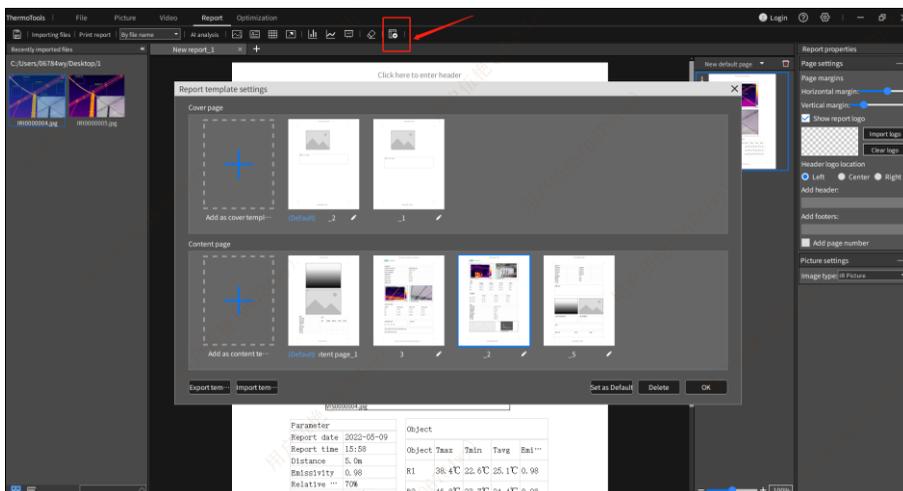
3.4.11 Open history record

Click the **Import file**  button to view the history of the latest saved report. Double-click to open the report file corresponding to this record.



3.4.12 Manage report template

You can save the content and style of the report being edited as a report template.

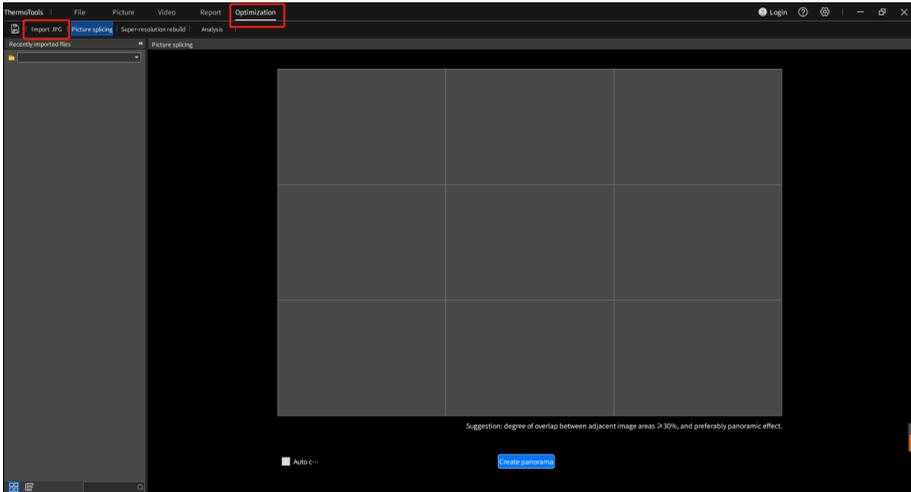


- Click the **Add this page as template page**  button in the function menu bar to pop up the report template setting dialog box.
- Click the **+** button to add the layout of the current single page as the cover page template or the content page template. The cover page template cannot contain infrared image elements, but the content page template must contain infrared image elements.
- Click **Delete** to delete a report template. Click the  button to modify the name of the corresponding template. The system template cannot be deleted and its name cannot be modified, but it is allowed to delete manually added custom templates and to modify their names.
- Select a template content page, click **Import template**, **Export template** to export or import the template made by this software. If you click **Set as default**, you can set this template as the default template.

3.5 Image optimization

3.5.1 Import file and edit file

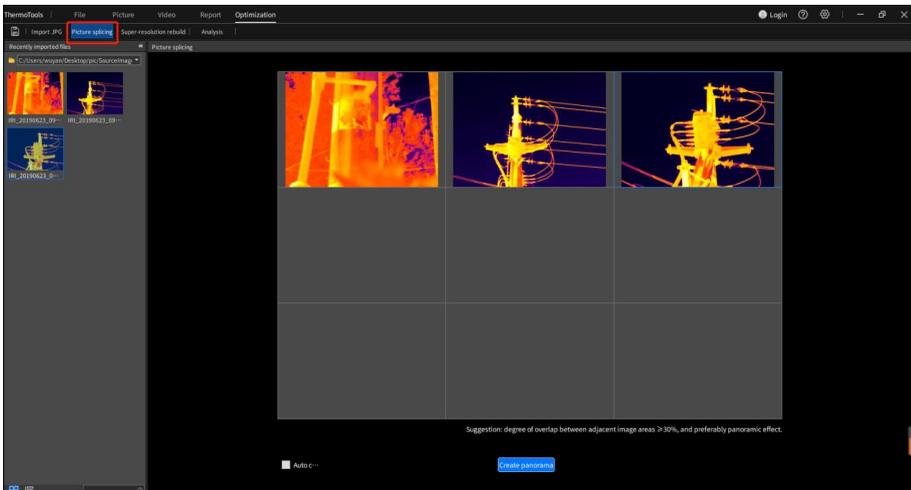
Click the **Import JPG** button and select the required image (multiple images are supported), and they will be displayed in the left file management box. It is allowable to import images from different folders.



3.5.2 Image stitching

The image stitching function only supports panoramic stitching of images taken from the device side. Through the image stitching function, the panorama can be clearly presented.

The type of image to be stitched is named using the **PIR_yymmdd_hhmmss-X.jpg** format. Images that have been stitched and saved cannot be stitched again.



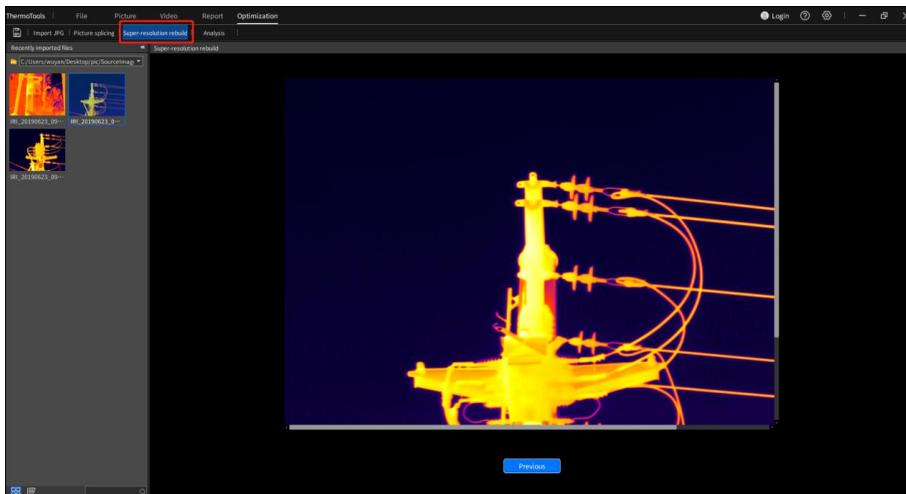
Drag the images to be stitched from the left file management box into the Nine Squares (pay attention to the order of dragging and dropping), and click **Create panorama** to generate a stitched image. Click the **Back** button to return to the Nine Squares interface and adjust the image order to stitch again.



- The images in Nine Squares are sorted from left to right and from top to bottom. A discontinuous arrangement is supported, and stitching is performed according to a 30% sequence coincidence degree.
- You can drag or change positions of images in Nine Squares.
- Delete key can be used to delete the selected image in Nine Squares.
- Stitching images should meet the 30% coincidence degree of each image, otherwise they will not be stitched
- The stitched image can be scroll wheel zoomed out, but does not support zooming in.

3.5.3 Rebuild super-resolution

Super-resolution rebuild supports rebuilding and generating an enlarged image (magnified twice) from the original infrared image with the original resolution. This makes the analysis and temperature measurement more accurate.



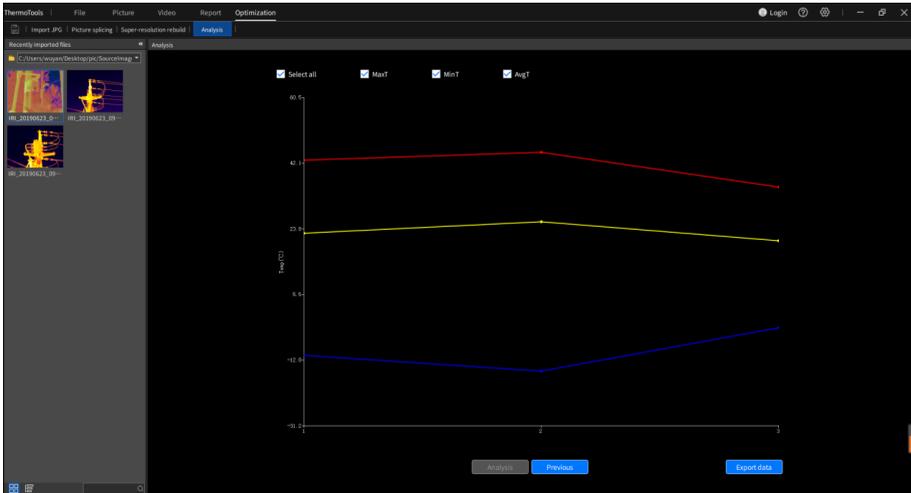
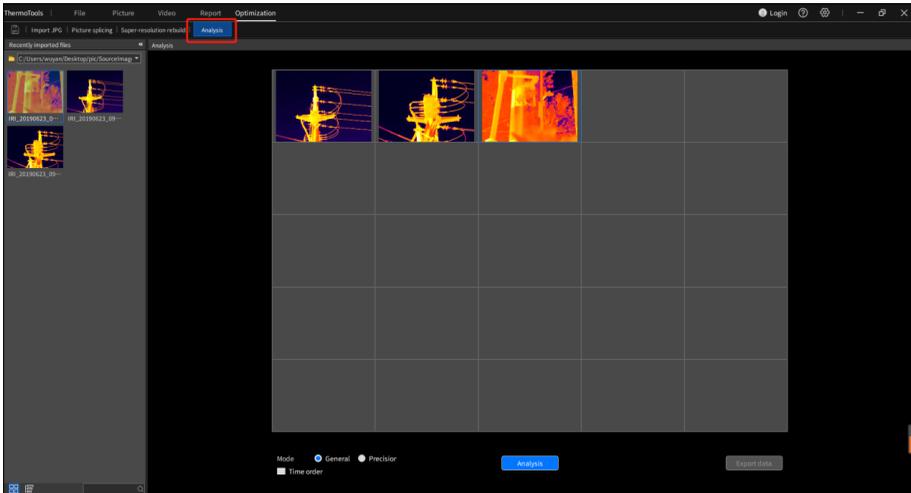
Drag the image in the left file management box into the blank space, and click the **Rebuild image** button to generate an enlarged image (magnified twice) and display it on the interface. Click **Back** to return to the original image interface, switch and adjust images for rebuilding again.



The rebuilt image only supports zooming out, not zooming in.

3.5.4 Create trend analysis

By selecting a different device in the same period, or images taken by the same device in different periods, the temperature trend analysis chart is created according to the highest temperature, lowest temperature and average temperature.



Drag and drop the images in the left file management box into 25 squares. If there have been any images, they will be replaced. Click the **Create trend analysis** button, and the temperature trend analysis chart will be generated according to the order of images and displayed on the interface. Click **Back**, switch and adjust images, and generate the trend again.

General mode

Take the highest temperature, lowest temperature and average temperature of the whole image to draw the trend.



Precision mode

Take the highest temperature, lowest temperature and average temperature in the local area to draw the trend, as follows:

- Double-click the image to be accurately adjusted, press the left button, drag the mouse, release the left key, and draw a rectangle on the formulated object. After drawing, the object frame will be drawn in the rectangle. If you are not satisfied, you can redraw the rectangle to generate a new stroke area. After stroking, double-click to return to the 25-square interface.



Time order

Supports the generating of a trend chart according to the shooting time of the images.

Export data

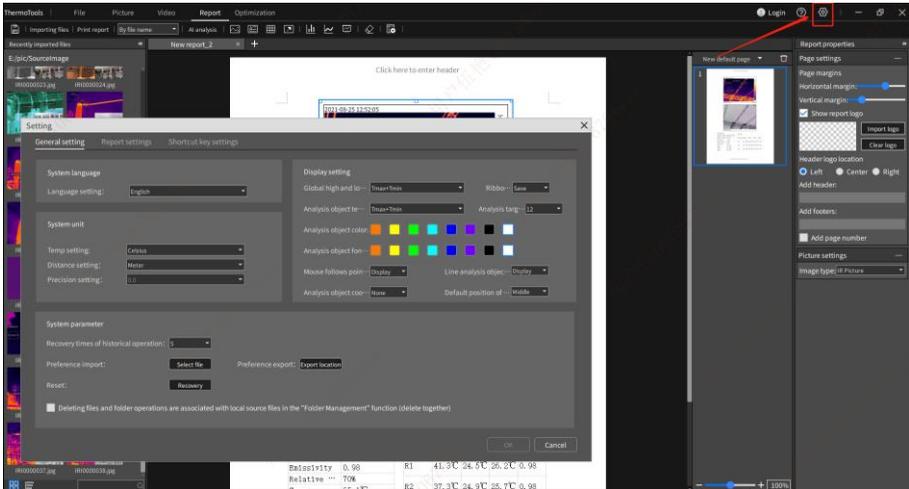
Supports exporting and saving data in .csv or .jpg formats.

3.6 Settings and help

3.6.1 Settings

3.6.1.1 General settings

General parameter settings mainly include four parts: system language, system unit, system parameters and display settings.



System language

You can switch the language categories of the software version, including Simplified Chinese, English, Polish, Italian, Russian, Spanish and Turkish.

System units

Temperature setting: supports three units: Celsius, Fahrenheit and Kelvin.

Distance setting: supports metres, inches and yards.

Precision setting: supports a single precision display.

System parameters

Historical operation times: the number of revocations supported by the current operation, including 0, 5, 10 and 20.

Import preferences: select and import the parameter file with saved settings, and the pre-saved configuration parameters will be loaded.

Export preferences: export and save the currently set parameters locally, so as to facilitate a direct import next time and configure the relevant parameters. Note: The latest modification will be exported only after the parameter modification is confirmed and saved, otherwise the last parameters will be saved.

Restore factory settings: restore the parameters to the factory default parameters.

Folder deletion associated with local: if checked, the local folder and its contents will be deleted at the same time when the file management interface folder is deleted.

Display settings

Global high and low temperature display: during image analysis and video play, the temperature display type setting of the whole image area supports four types: highest temperature+lowest temperature, highest temperature, lowest temperature and no display.

High and low temperature display of analysis object: during image analysis and video play, the temperature display type setting of the analysis object area supports four types: highest temperature+lowest temperature, highest temperature, lowest temperature and no display.

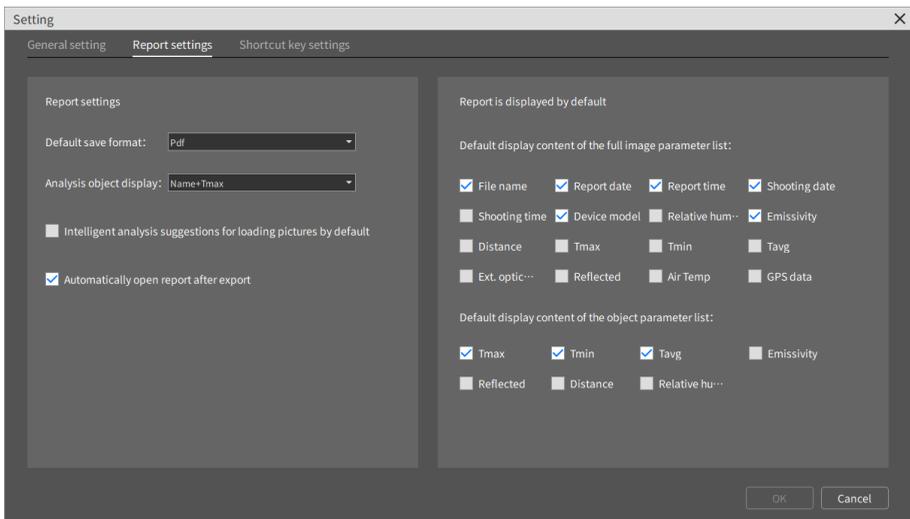
Analysis object colour: during image analysis and video play, the drawn analysis object frame colour settings includes orange, yellow, green, sky blue, deep blue, purple, black and white.

Analysis object font size: during image analysis and video play, the font size settings of the drawn analysis object label support seven font sizes: 4, 6, 8, 12, 14, 18 and 24.

Analysis object coordinate display: while drawing an analysis object, the vertex coordinates and width and height properties of the analysis object can be displayed.

3.6.1.2 Report settings

Set the related parameters of the report page, including report setting and report display setting.



Default save format: when saving the report, the format setting support .doc and .pdf formats;

Analysis object display: the display type settings of analysis objects on the report page support eight types: name+highest temperature, name+lowest temperature, name+average temperature, highest temperature, lowest temperature, average temperature, name only and no display.

Suggestions for loading image intelligent analysis by default: if checked, when the intelligent analysis cell box is inserted into the report, the intelligent analysis results in the image analysis interface being automatically filled in the cell box; If unchecked, it will not be filled automatically.

Show report Logo: automatically open the report after export: if checked, the report will be automatically opened after the report is saved successfully. If not checked, it will not be opened automatically.

Report default display: includes a full-view parameter list and object parameter list, which are mainly used for setting display options in the report interface and table cell box.

Whole report parameters: including file name, report date, report time, shooting date, shooting time, device model, relative humidity, emissivity, measuring distance, highest temperature, lowest temperature, average temperature and GPS data.

4 Common problems

4.1 Device connection problems

4.1.1 USB connection

Problem: the corresponding USB connection switch has been enabled on the device, when clicking "Connect Device" on the video analysis interface of the infrared analysis software, there is a prompt that it cannot be connected.

Solution: Check if the driver is installed on the computer.

4.1.2 AP connection

Problem: the corresponding AP connection switch (or WiFi hotspot switch) has been enabled on the device, when clicking "Connect Device" on the video analysis interface of the infrared analysis software, there is a prompt that it cannot be connected.

Solution: confirm that the device has been identified on the computer's "Network Connection".

4.1.3 LAN connection

Problem: the corresponding LAN connection switch has been enabled on the device, but when clicking "Connect Device" on the video analysis interface of the infrared analysis software, there is a prompt that it cannot be connected.

Solutions:

1. The device IP setting is in the same network segment as the computer IP.
2. Confirm that the device has been identified on the computer's "Network Connection".

4.2 How to install programs under restricted accounts

Right-click to select the installation package, and select to run the infrared analysis software installation package as administrator.

4.3 How to restore default settings

1. Restarting the infrared analysis software can restore the settings, except shortcuts;
2. In the shortcut key setting interface, click "Restore Default Settings" to restore the default settings of the shortcut keys.

5 Manufacturer

The manufacturer of the software and provider of guarantee and post-guarantee services:

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