ThermoTools

English\中文

User Manual

感谢您购买本产品。请在使用前阅读此说明书，阅读后请小心收藏，以备日后查阅。
图片仅供参考，产品以实物为准。
Thanks for buying this product. Please read this manual before use and then carefully collect it for future reference. The pictures are for reference only and the products are subject to the available products.

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Version Update History

Version	Date	Description	Remarks
V1.0.0	2021.03.08	ThermoTools User Manual V1.0.0	First Issue
V1.0.1	2021.04.23	ThermoTools User Manual V1.0.1	Added automatic capture function
V1.0.2	2021.08.06	ThermoTools User Manual V1.0.2	Supplement FAQ

Chapter I Configuration of Software and Hardware

1.1 Software Environment

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

Chapter II Installation Instructions

2.1 Software Installation Steps

1. Double-click or right-click the installation program of ThermoTools_xxxx.exe (xxxx is the version number) to enter the language selection interface, as shown in Figure 2-1.



Figure 2-1 Selecting Language

2. Select a language and click OK to enter the installation wizard interface, as shown in Figure 2-2. Clicking Cancel will end the installation.

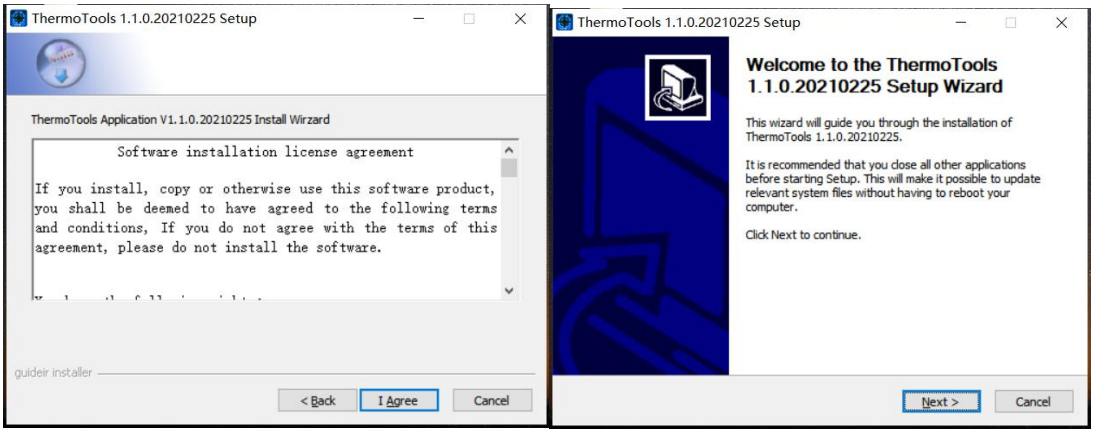


Figure 2-2 Installation Wizard

3. Click “Next” to enter the software installation license agreement interface, as shown in Figure 2-3. Clicking “Cancel” will end the installation.

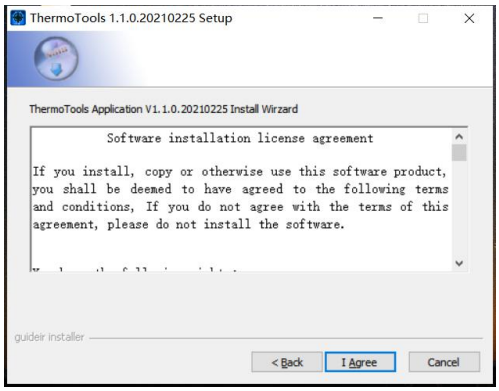


Figure 2-3 Installation License

4. Clicking “Back” will return to the installation wizard interface. Click “I Accept” to enter the installation path selection interface, as shown in Figure 2-4. Clicking “Cancel” will end the installation.

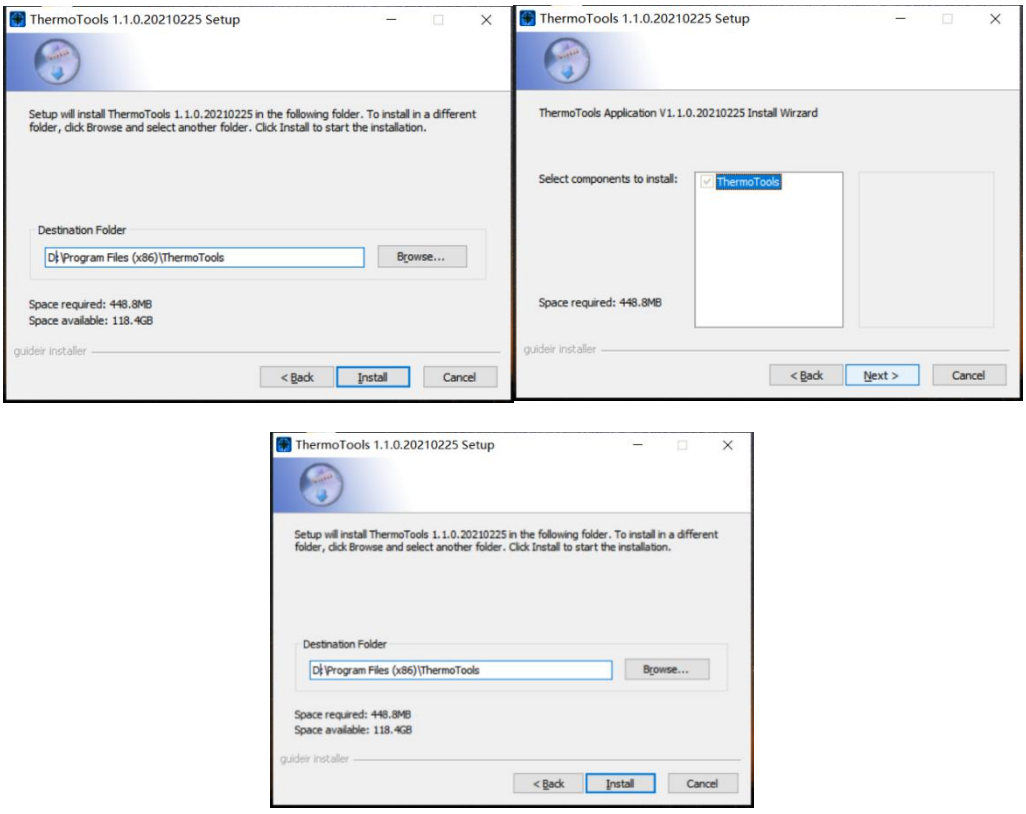


Figure 2-4 Installation Path Selection

5. 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, as shown in Figure 2-5. Click “Cancel” will end the installation.

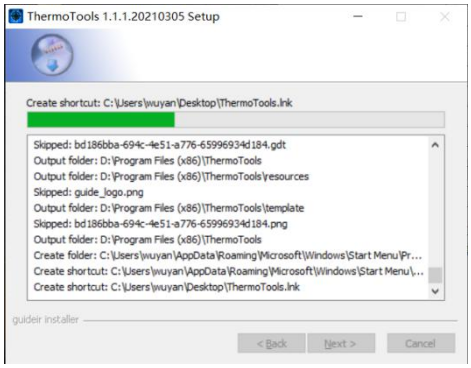


Figure 2-5 Install in Progress

6. Click “Close” when installation is completed, as shown in Figure 2-6.

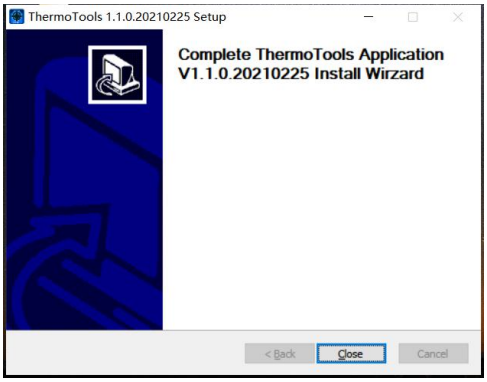


Figure 2-6 Installation Complete

2.2 Common Problems and Solutions for Installation

1. Error 1 may appear when you double-click the shortcut to run the program, prompting “MSVCR120.DLL cannot be found”, as shown in Figure 2-7.

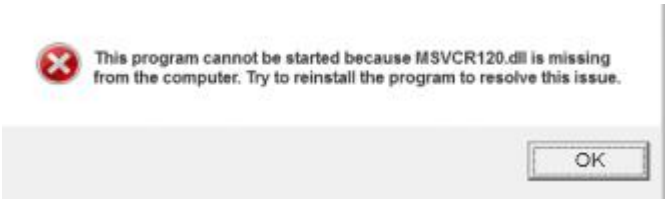


Figure 2-7

Solution: click vc2013_redist.x64.exe in the installation directory “redist” folder to install the runtime library. If any problem is not solved, please solve it according to the solution of Problem 2.

2. Error 2 may appear when you double-click the shortcut to run the program, prompting that “the application cannot start normally (0xc000007b)”, as shown in Figure 2-8.

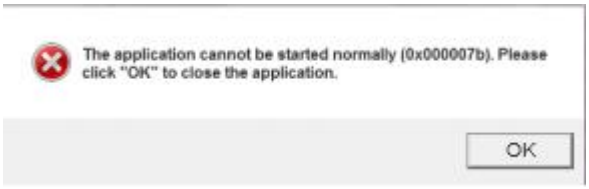


Figure 2-8

Solution: Step 1, unzip DirectXRepair.zip file in the installation directory “redist” folder, as shown in Figure 2-9.



Figure 2-9

Step 2, run DirectX Repair.exe (run DirectX_Repair_win8_win10.exe for Windows 8 or Windows10) to enter the repair interface.

Step 3, click “Detect and Repair” to repair the system DirectX (the computer must be in a networked state). Run the “ThermoTools.exe” after repairing.

Chapter III Operating Instructions

3.1 File

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

3.1.1 Import folder

Data import is to realize the import and display of local folder resource structure directory, as shown in Figure 3-1.

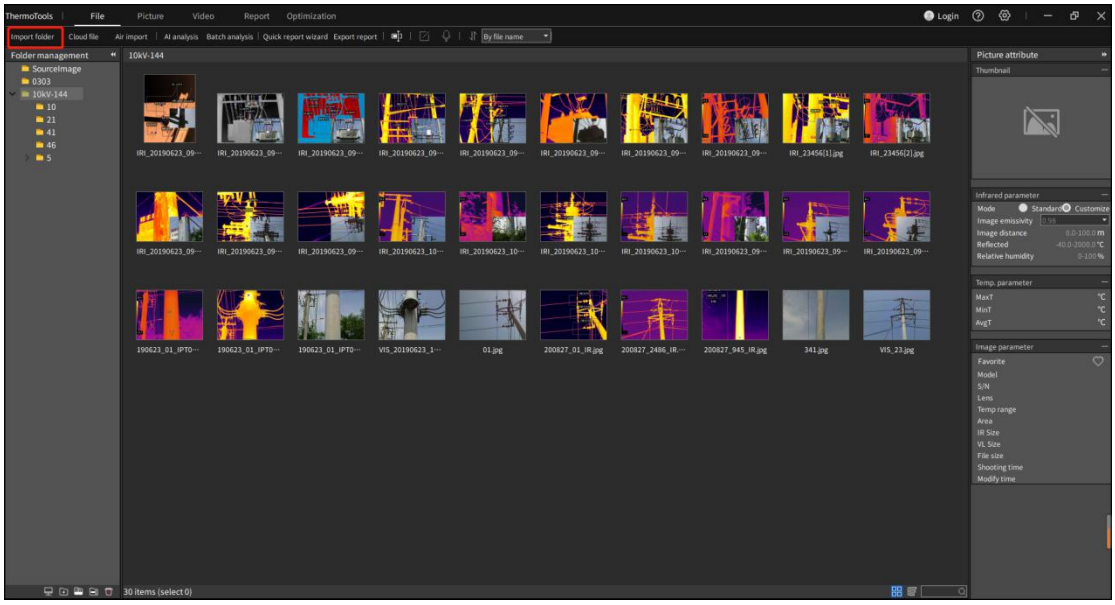


Figure 3-1 Import folder

1. Import folder

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;

At present, it supports up to 20 top-level nodes with up to 100 subfolders under each node, and the middle image display interface displays up to 10,000 images.

2. Import cloud file（Some models support）

Click the【Cloud File】button to import the cloud file after entering the user name and password to log in. The account number of this user name on the device is synchronized, please register in【Settings】–【Cloud Service】of this device;

Select a folder after successful login, click to import cloud file. For an old device, click to select the device operated last time, but if it is a PS/C series device, select the device specified in the list, select the time (by default, query the images uploaded on the same day), click Refresh to refresh the file uploaded by the device, and then you can check the file to be downloaded.

3. Over-the-air import

First, connect the device through WiFi (or directly through the network cable);

Then, select a folder, click “Air import”, and then an over-the-air import interface will pop up.

Fill in the IP address (the default is WiFi address 192.168.42.1, which can be modified according to whether the network cable is directly connected), choose the images or videos to be exported, and click Refresh to see the file list;

Check the files you need to download, as shown in Figure 3-2.

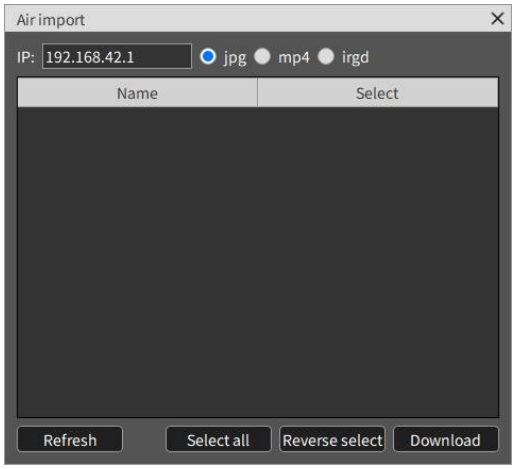


Figure 3-2 Over-the-air Import

3.1.2 File Analysis

1. AI analysis

One or more global IR images can be quickly diagnosed, analyzed and saved intelligently, including fault category, damage degree, reference suggestions and other information, as shown in Figure 3-3.

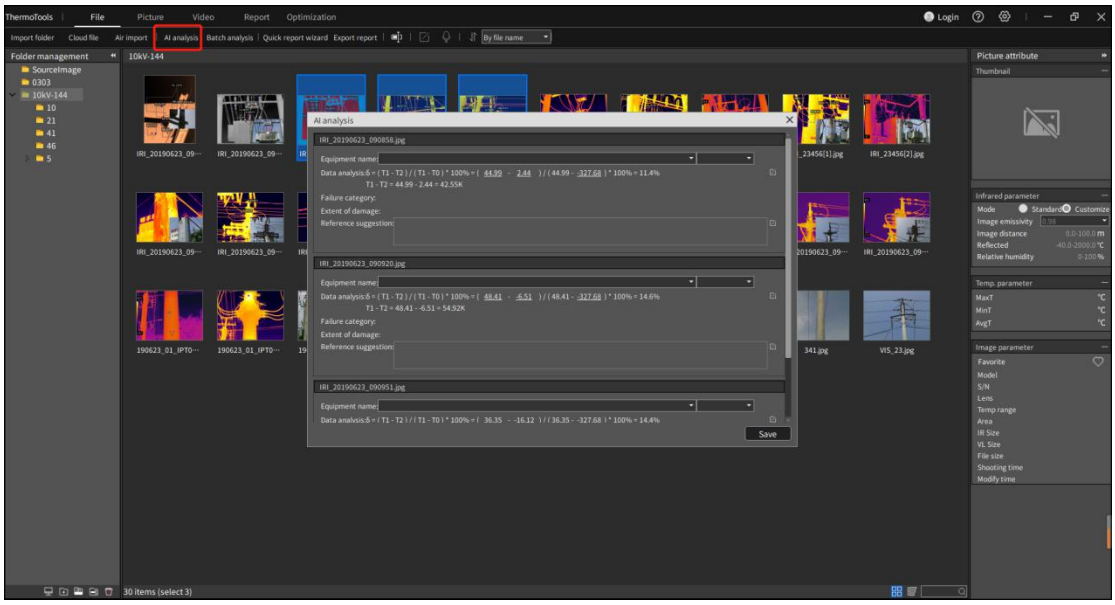


Figure 3-3 AI Analysis

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

Click the Modify button【 】on the right to adjust the analysis results in real time and add reference suggestions; Click save, and you will 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 device in the same period or the same device in different periods, as shown in Figure 3-4.

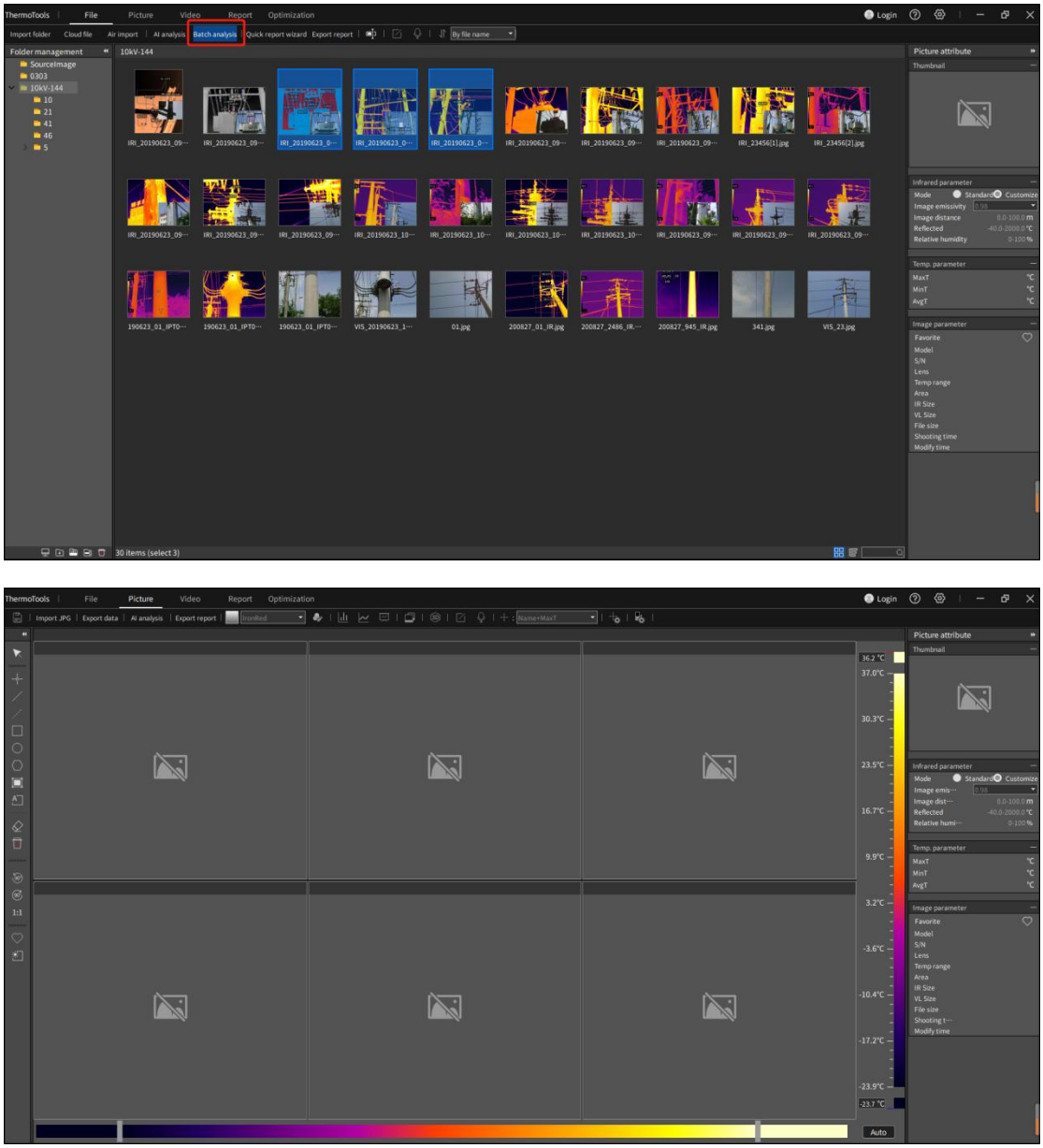


Figure 3-4 Batch Analysis

Select multiple infrared images (only infrared image analysis will be carried out, and the maximum number is 6. Once the number exceeds, the first 6 infrared images will be adopted in the order of selection), 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, as shown in Figure 3-5

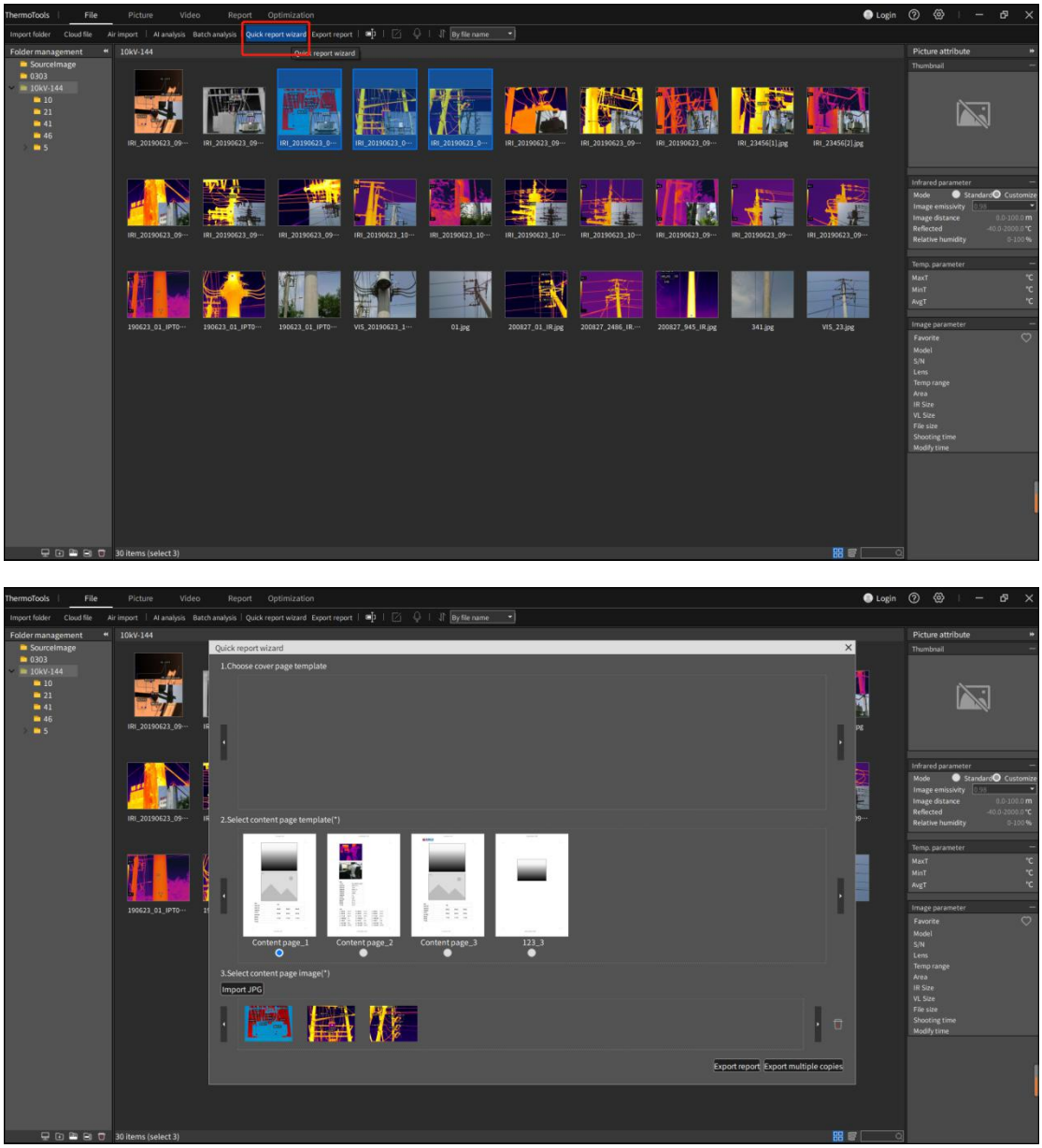


Figure 3-5 Quick Report Wizard

1. Quick report wizard

Select the images that are used to generate the report (up to 20 images are supported);

Click “Quick Report Wizard”, select the cover page template (optional) and the content page image (mandatory); Click Export Report; select save file format and file name of 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 annotation, view voice annotation, 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, as shown in Figure 3-6

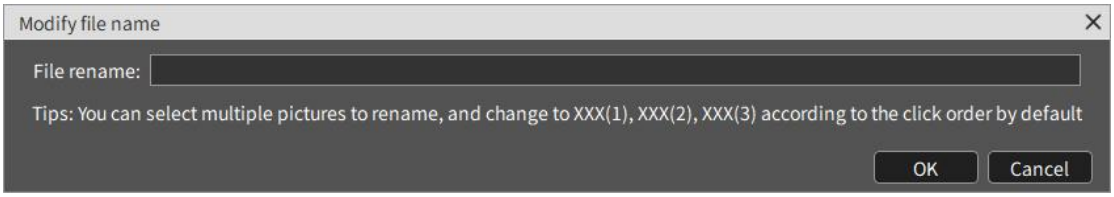
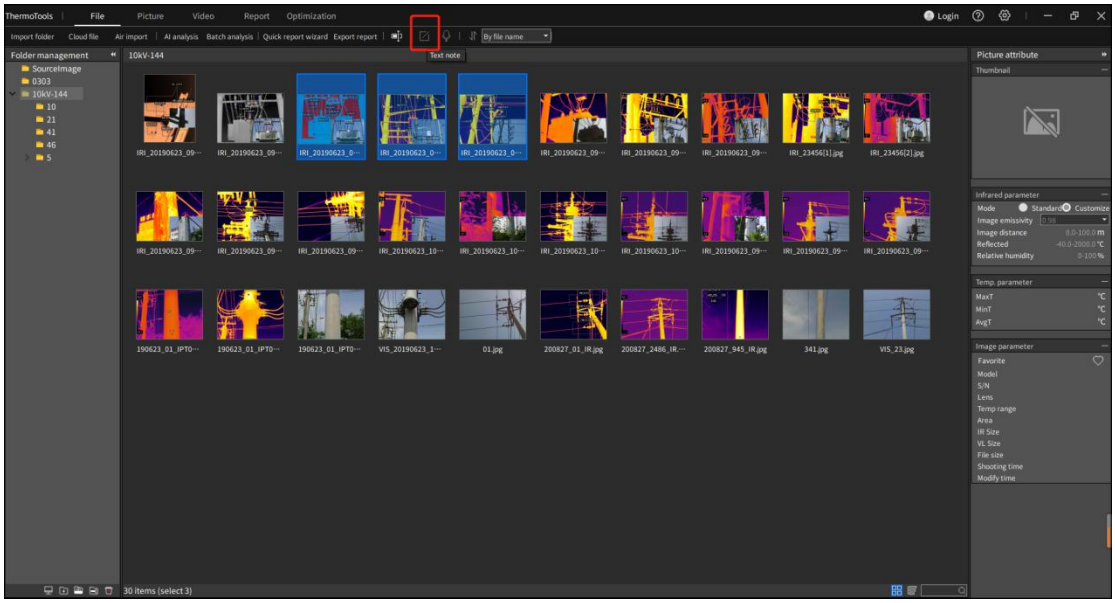


Figure 3-6 Batch Modification of File Names

2. Text annotation

Select an image and click the button【】to modify the text annotation and save them in the image, as shown in Figure 3-7



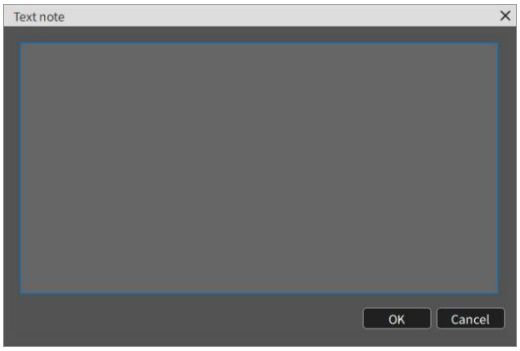


Figure 3-7 Text Annotations

3. Voice annotation

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

4. File sorting

Files are loaded and sorted by file names by default. You can choose one sorting method to sort.

5. File management (list, thumbnail, search)

In file management, you can switch the viewing mode of 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 on your local computer and display the image information of the current folder. You can create, delete and modify folder information, as shown in Figure 3-8.

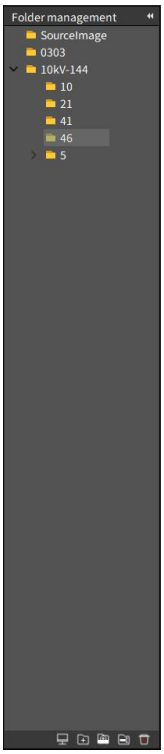


Figure 3-8 File Management

1. New folder

Click New Folder【】 to create a new folder in the currently selected directory structure, and meanwhile a new folder will be created in 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 meanwhile 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 operated, and click Delete Folder【】 (if deleting local source files is associated in 【Settings】–【General Settings】) to delete files in

the local computer.

4. Rename folder

Select the folder to be renamed, and click Rename Folder【】.

3.2 Picture

In “Picture”, users 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, and set custom color bands, edit text annotation information, isotherm analysis and other related functions, as shown in Figure 3-9.

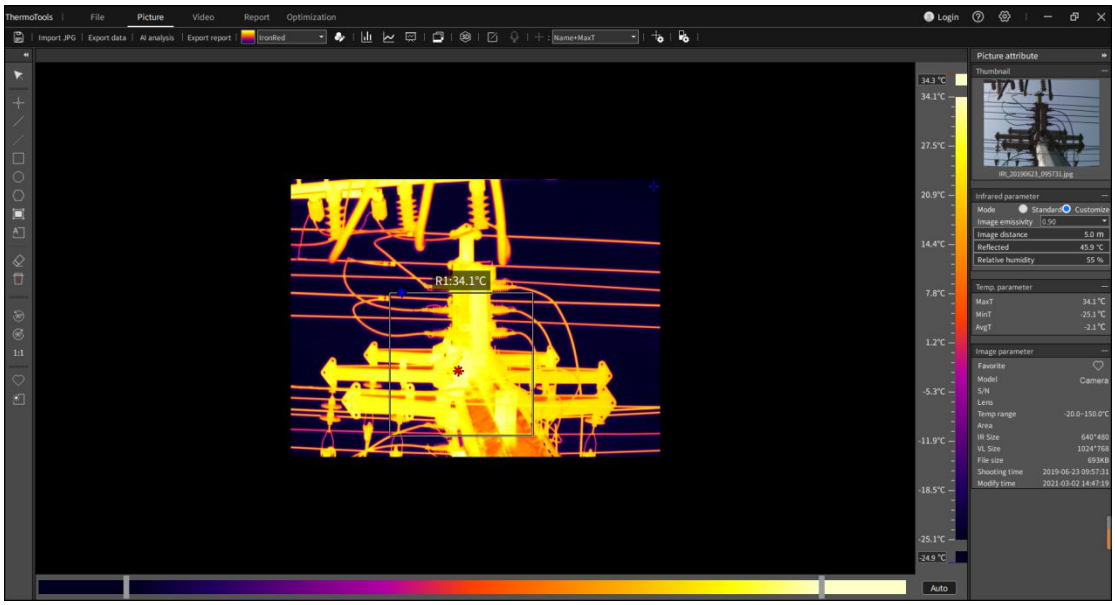


Figure 3-9 Image Analysis

3.2.1 Import and Save Image

Click the “Import Image” button【Import JPG】 to pop up the file manager, select the specific image, and click “OK”. The software will open the selected image, and the image will be displayed in the middle of the interface with 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

On the left toolbar, click the “Draw Line Temperature Scale” button【】 (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 end drawing.

2. Add a point analysis object

In the left toolbar, click the “Draw Temperature Scale” button【】 (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 end drawing.

3. Add a temperature difference line object

Select “Temperature Difference Line”【】 in 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 end drawing.

4. Add a rectangular object

Select “Rectangle” 【】 in 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 end drawing.

5. Add a circle object

Select “Circle”【】 in 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 end drawing.

6. Add a polygon object

Select “Polygon”【】 in 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 polygon. Click the right mouse button to draw the polygon analysis object, as shown in Figure 3-x.

7. Automatic stroke

Select "Auto Stroke"【】 in 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【】 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 end editing.

10. Delete a selected analysis object

Select an analysis object and click【】 to delete the selected analysis object.

11. Delete all analysis objects

Click【】 to delete all analysis objects.

12. Rotate 90° counterclockwise/90° clockwise

Click【】or【】 to rotate the image.

13. 1:1 restore images

Click【】 to restore the zoom-in image.

14. Collection tag

Click【】 to collect the tagged images, which is convenient to search files

according to their collection types.

15. Area dimming

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

3.2.3 Edit Image

1. Lever and Span

In Image Analysis, drag the sliders of Lever and Span below (the slider on the left is the minimum dimming value and the slider on the right is 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 of 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, as shown in Figure 3-10

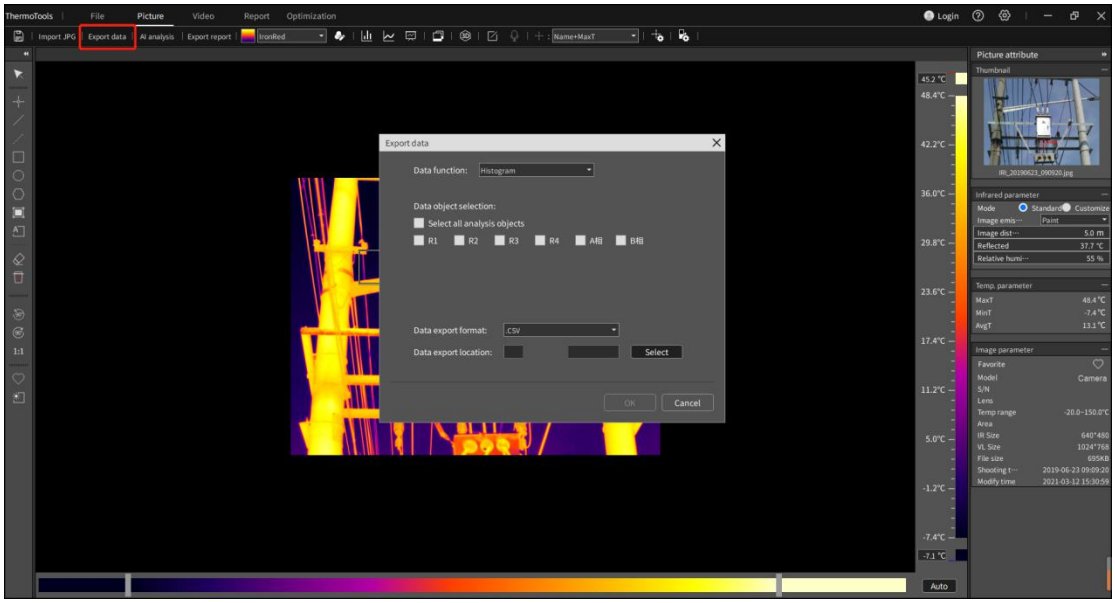


Figure 3-10 Export Data

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

In “Image Analysis”, click “Intelligent Analysis” button, Select the device name to perform intelligent analysis and to generate corresponding intelligent diagnosis fault type, damage degree and reference suggestions. The analysis results can be saved and convenient for importing intelligent analysis results in later report editing, as shown in Figure 3-11 Intelligent Analysis.

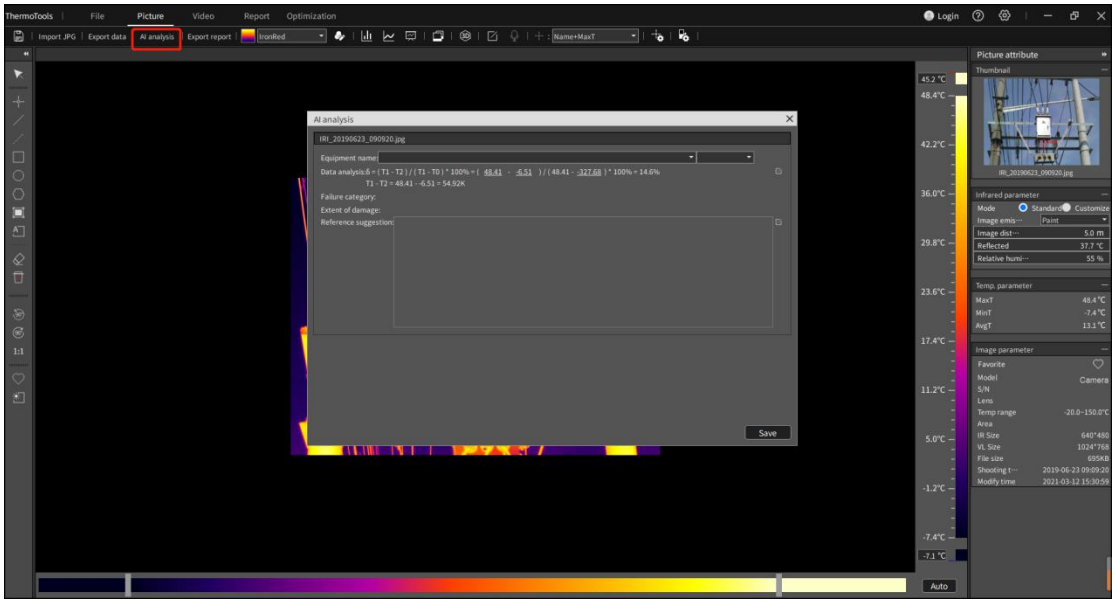


Figure 3-11 Intelligent Analysis

3.2.6 Color Band and Customized Color Band

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

1. Color Band

In “Image Analysis”, click the “Color Band” drop-down box【

】, select the desired color band in the drop-down box, and the image will be superimposed with the new color band.

2. Customize the Color Band

In “Image Analysis”, click the “Custom Color Band” button【
】, and adjust “Hue”, “Saturation” and “Brightness” to adjust the image to the desired pseudo-color state.

3.2.7 Histogram, Graph and Object Data

View the relevant temperature data of the specified analysis object, as shown in Figure 3-12.

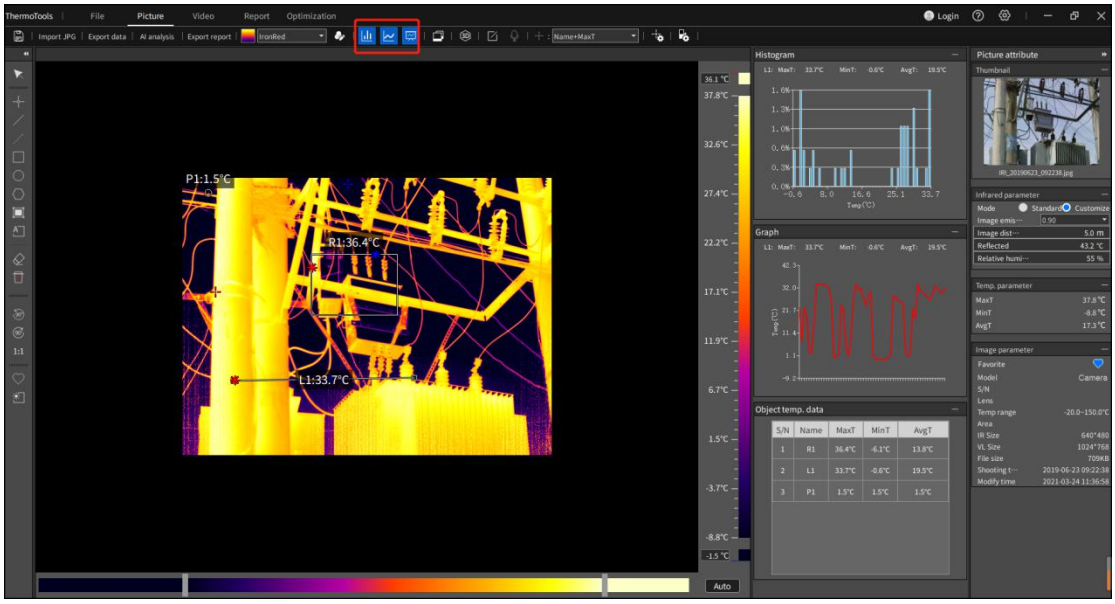


Figure 3-12 Histogram, Line Chart and Object Data

Histogram

Select any non-point analysis object and click the histogram【 】 button on the toolbar, then the histogram 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. Click any bar to display the temperature and percentage represented by the current bar, as shown in Figure 3-13:

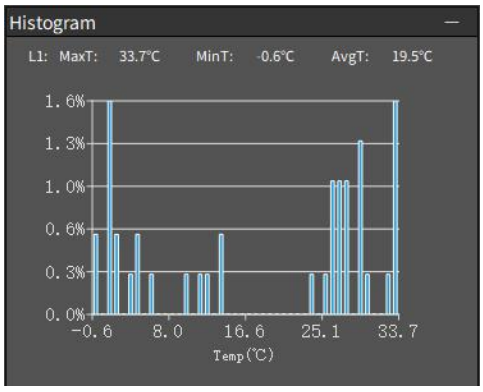


Figure 3-13 Histogram

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, as shown in Figure 3-14:

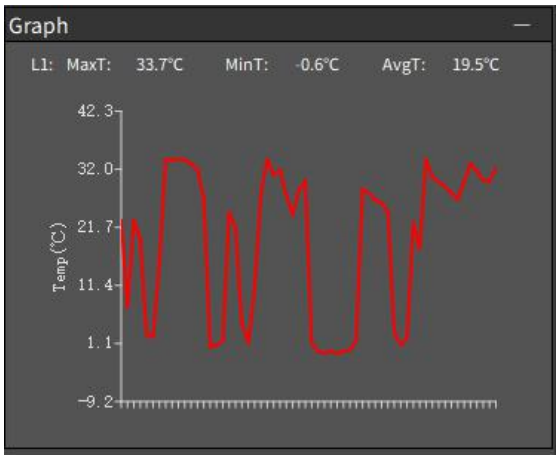
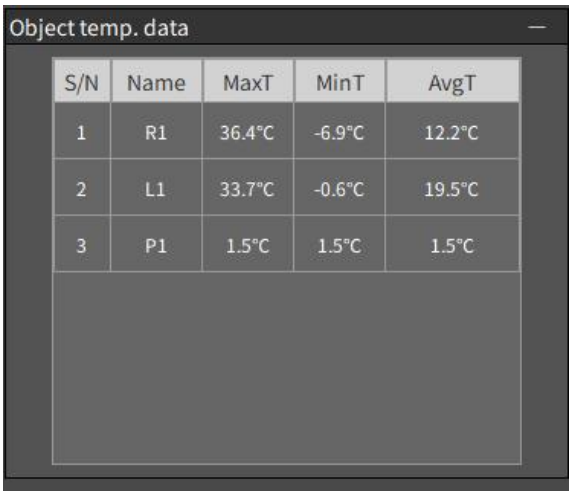


Figure 3-14 Temperature Curve

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, as shown in Figure 3-15:



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

Figure 3-15 Object Data

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. （Some models

support）

Click【 】 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, as shown in Figure 3-16:

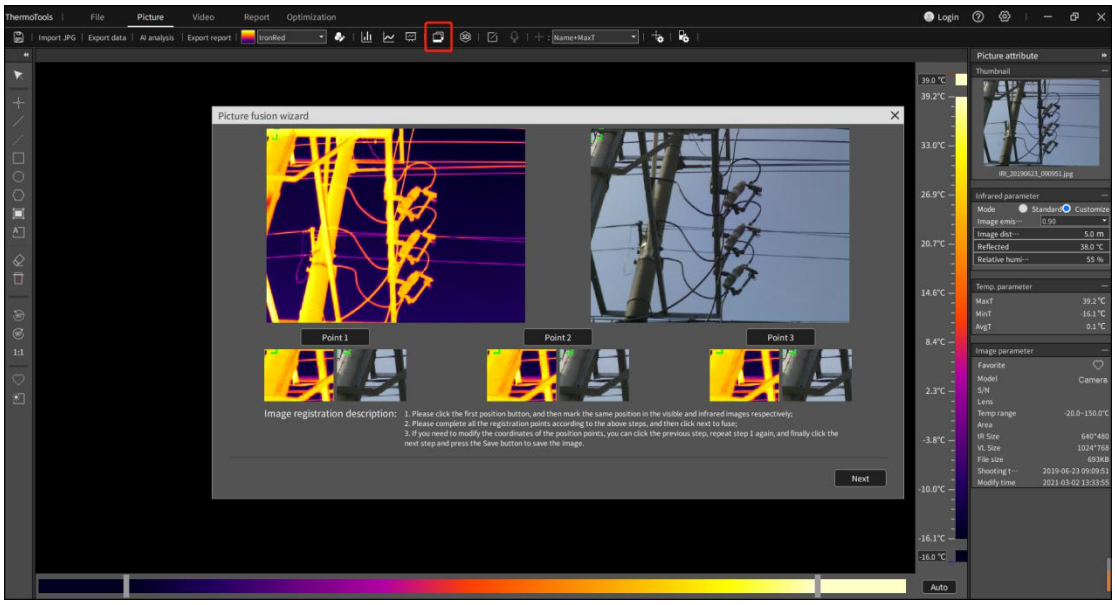


Figure 3-16 Image Fusion Registration

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 in Figure 3-17:

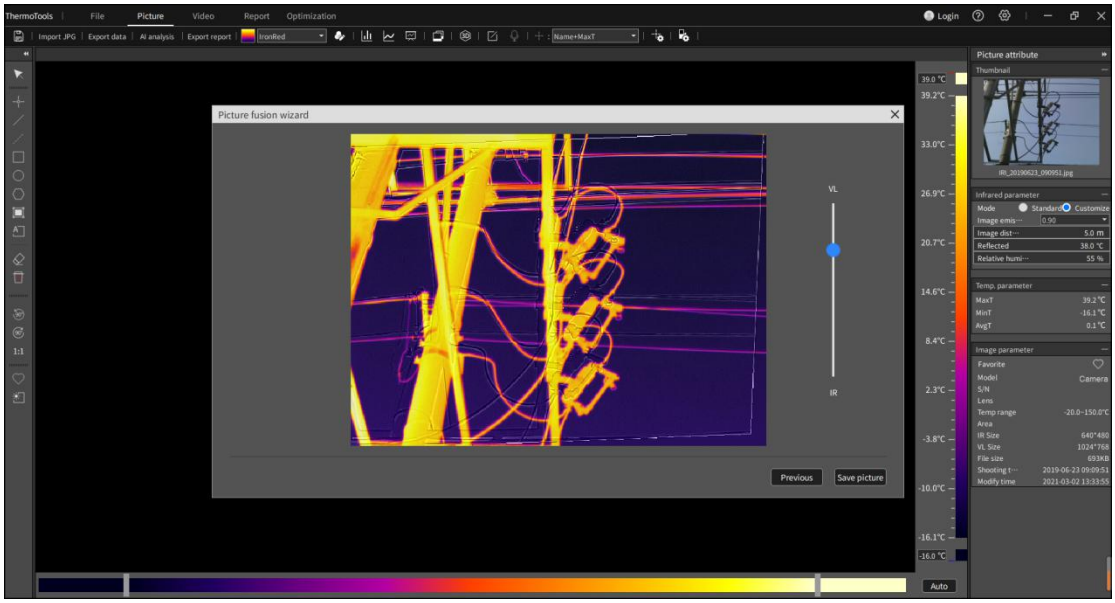


Figure 3-17 Image Fusion

Click the “Back” button to go back to the previous step and re-select the registration point.

Click the “Save Pictuer” 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 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, as shown in Figure 3-18:

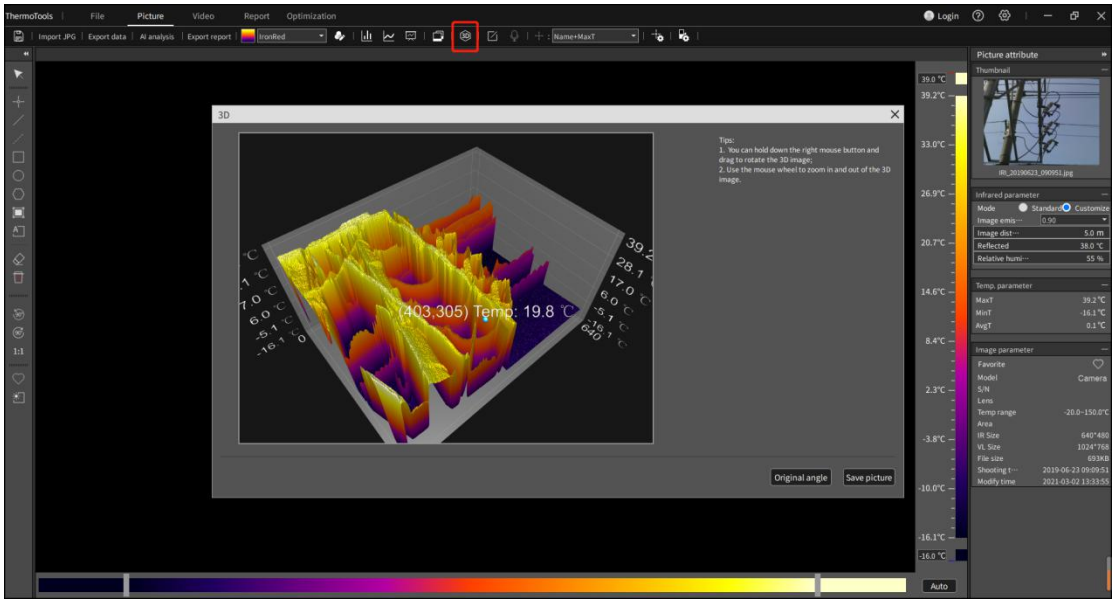


Figure 3-18 3D Mode

Click “Restore View” button to restore the operated 3D image to the original view.

Click “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 “Voice Annotation” to play 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, as shown in Figure 3-19.

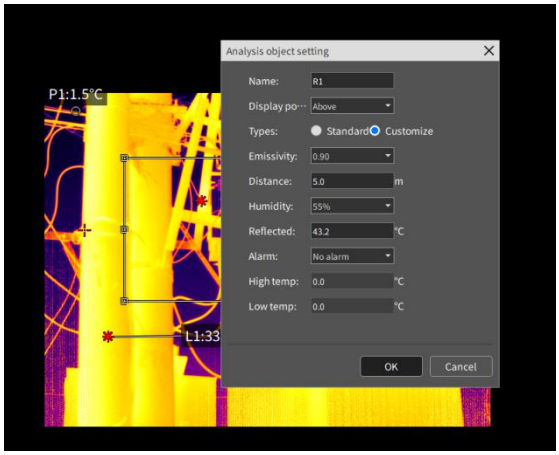


Figure 3-19 Analysis Object Settings

3.2.12 Isotherm Settings

In “Image Analysis”, you can click the “Isotherm Settings” button【 】 to set the relevant information of isotherm, which is convenient for viewing and analyzing the high-temperature and low-temperature areas of the current image, as shown in Figure 3-20.

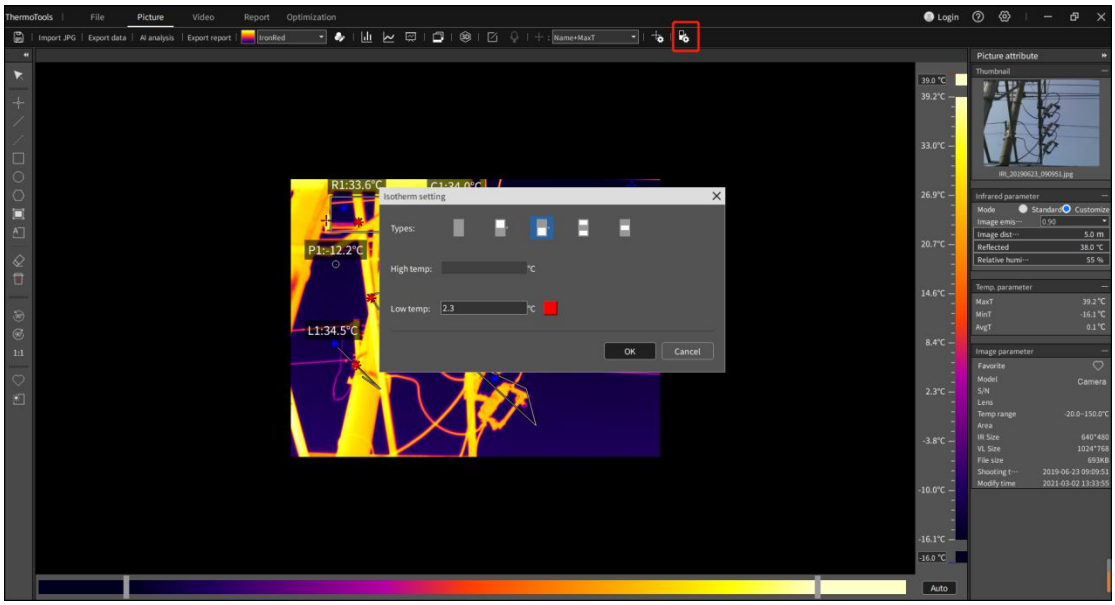


Figure 3-20 Isotherm Settings

High isotherm:

When the selection type is high temperature isotherm, the corresponding high

temperature threshold can be entered and the corresponding filling color can be selected. The area above the threshold will be filled with the selected color in the image.

Low isotherm: 

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

Intra-zone isotherm: 

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

Extra-zone isotherm: 

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

3.2.13 Image Attribute

You can view the parameter information, temperature measurement parameter information and corresponding image properties of the current infrared image, as shown in Figure 3-21.

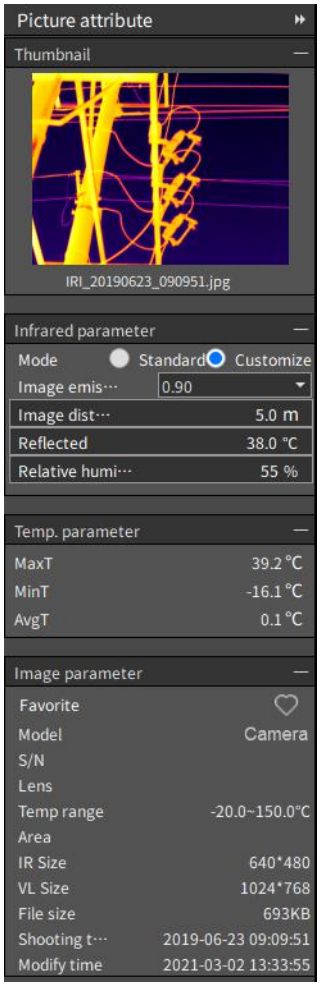


Figure 3-21 Image Properties

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 of 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 infrared images are displayed, as shown in Figure 3-22

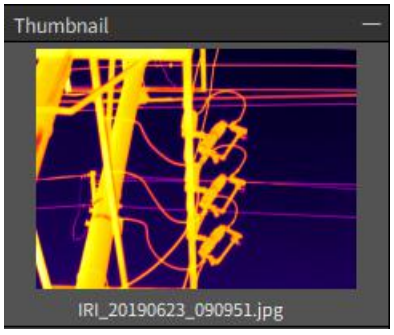


Figure 3-22 Thumbnail

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, as shown in Figure 3-23.

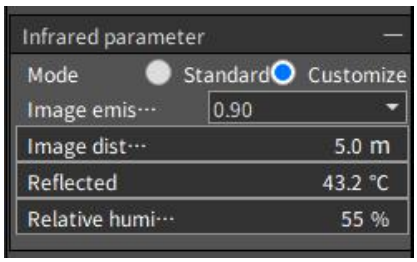


Figure 3-23 Infrared Parameters

3. Temperature measurement parameters

Here is the temperature information of the image, including the highest temperature, lowest temperature and average temperature of the whole image, as shown in Figure 3-24.

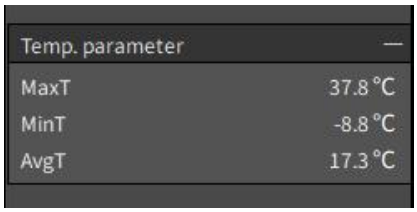


Figure 3-24 Temperature Measurement Parameters

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, as shown in Figure 3-25.

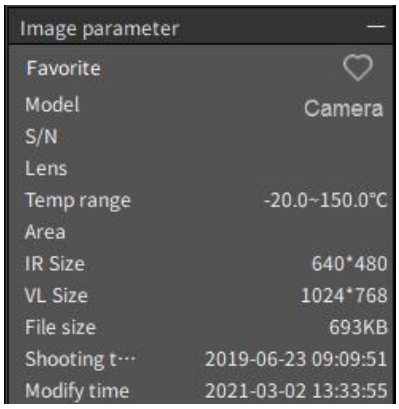


Figure 3-25 Image Parameters

3.3 Video

3.3.1 Connection Mode of Real-Time Video

Please note that ThermoTools supports multiple device connections (such as B series, C/PS series and D series), and the connection methods are as follows: as shown in Figure 3-26.

(Note: The premise of successfully connecting devices is that the push service on the device side needs to be turned on: slide and click【LAN】 on the main interface of the device)

B series device: USB connection. USB driver needs to be installed in advance, and real-time video viewing function is not supported when SD card is inserted;

C/PS series device: LAN connection and AP connection. It is necessary to ensure that the IP on the device side and the IP on the PC side are in the same network segment;

D series device: USB connection and AP connection. When USB connection is used, the PC network connection should be set to “automatically obtain IP address and DNS server address”;

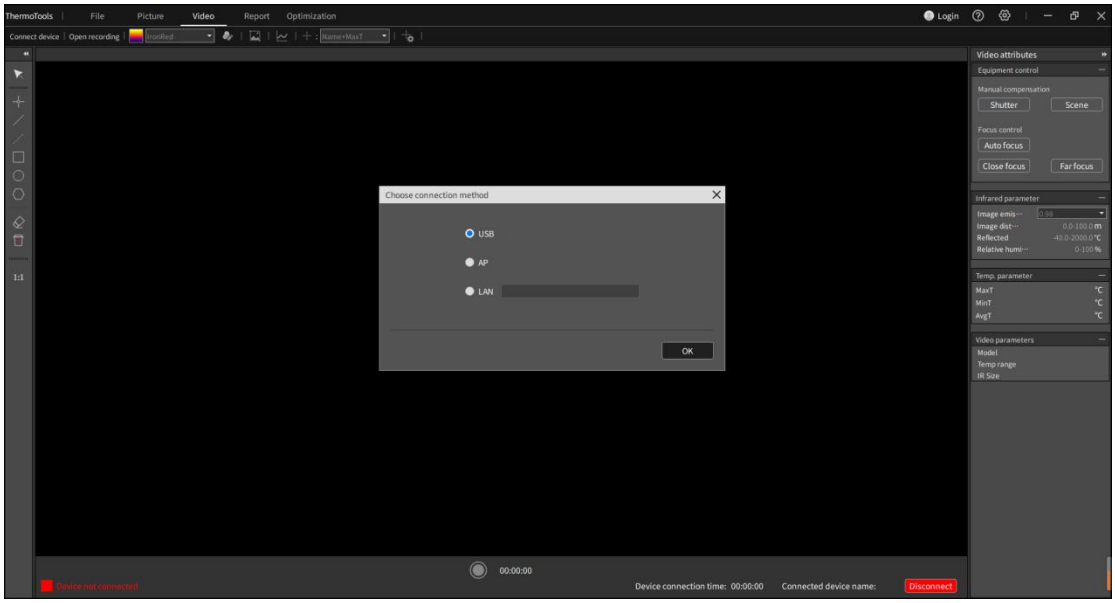


Figure 3-26 Connection Mode Selection

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 “OK” button and wait for the successful connection of the device and play the real-time video, as shown in the figure.

Click “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, as shown in Figure 3-27.

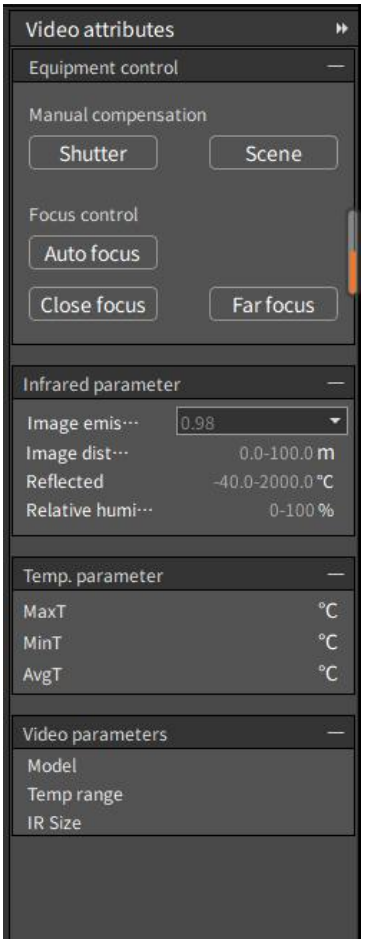


Figure 3-27 Video Parameters

3.3.2 Edit Video

You can edit the currently played video file, as shown in Figure 3-28

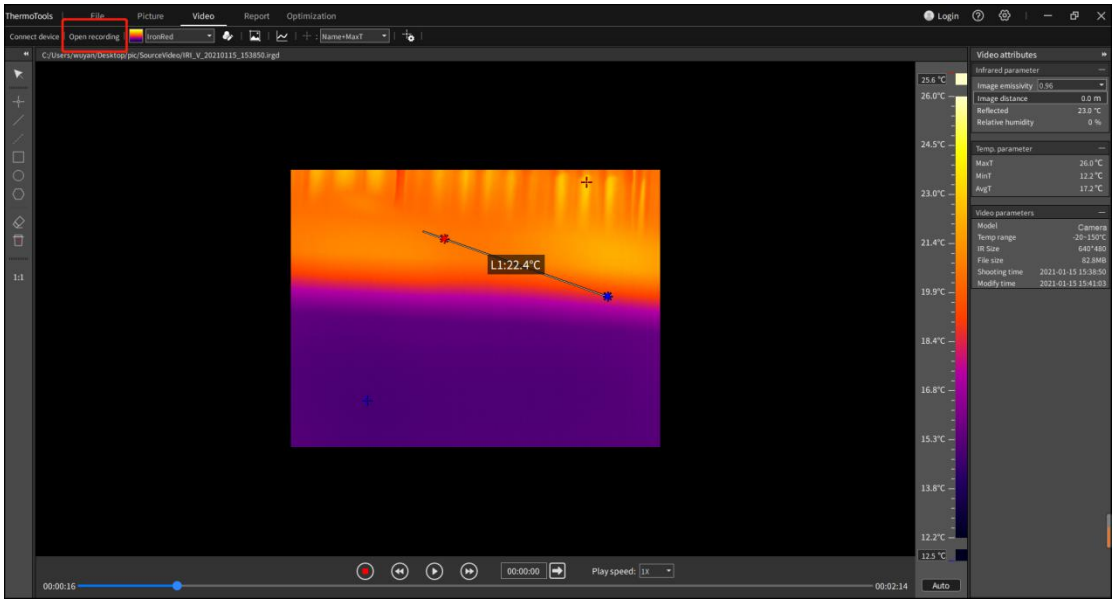
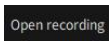


Figure 3-28 Video Play

1. Open the video 

Click “Open Video” to display the file selection box, where you can select “.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 “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 multiples of different gears.

6. Edit image

a. You can choose different color bands 

to change the color of the image.

b. Click the “Custom Color Band” button to change the color of the image by changing “Hue”, “Saturation” and “Brightness”.

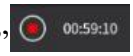
3.3.3 Screenshot and Recording

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 “Stop Recording”

button will end the recording.

3.3.4 Temperature Curve

In the process of 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, as shown in Figure 3-29.

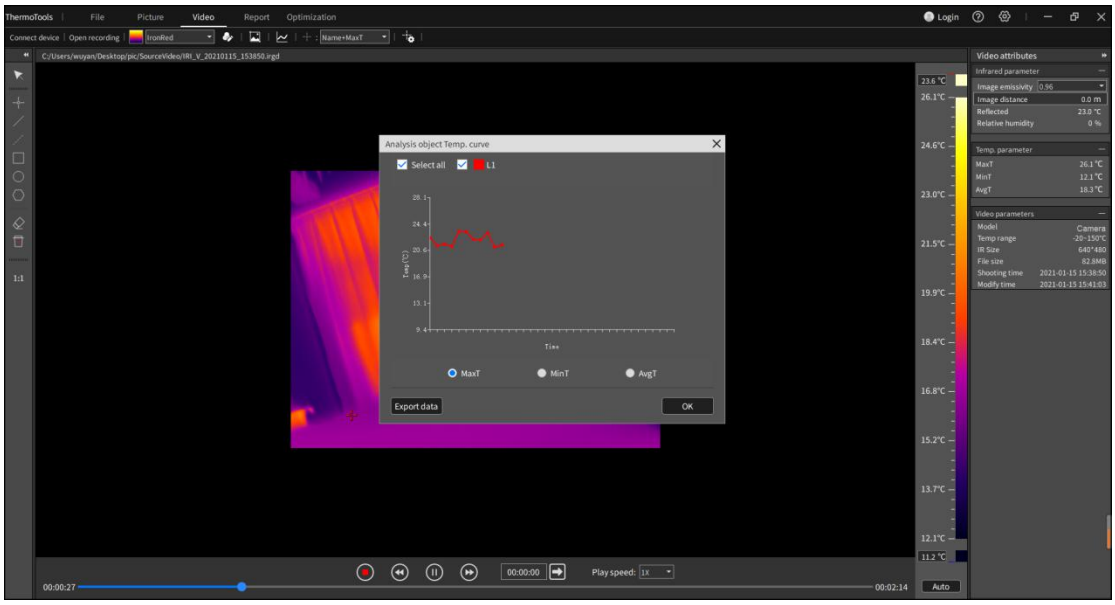


Figure 3-29 Real-time Temperature Curve of Analysis Object

1. 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.
2. Click the “Highest Temperature”, “Lowest Temperature” and “Average Temperature” buttons to display the corresponding temperature curves.
3. Click “Export Data” button to save the current temperature curve information, select “.csv” format to save the current temperature information in 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 on the left to select the “Point”【 】, and then click the left mouse button on the image to draw the point analysis object.

2. Add a line object

Click the toolbar on the left to select the “Line”【】, 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 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”【】, then click the left mouse button on the image, move the mouse position, draw the analysis object of temperature difference line, and release the left button to finish drawing.

4. Add a rectangular object

Click the left toolbar and select the “rectangle”【】, 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 the to select the “Circle”【】, 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”【】, 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 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 the selected 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, as shown in Figure 3-30.

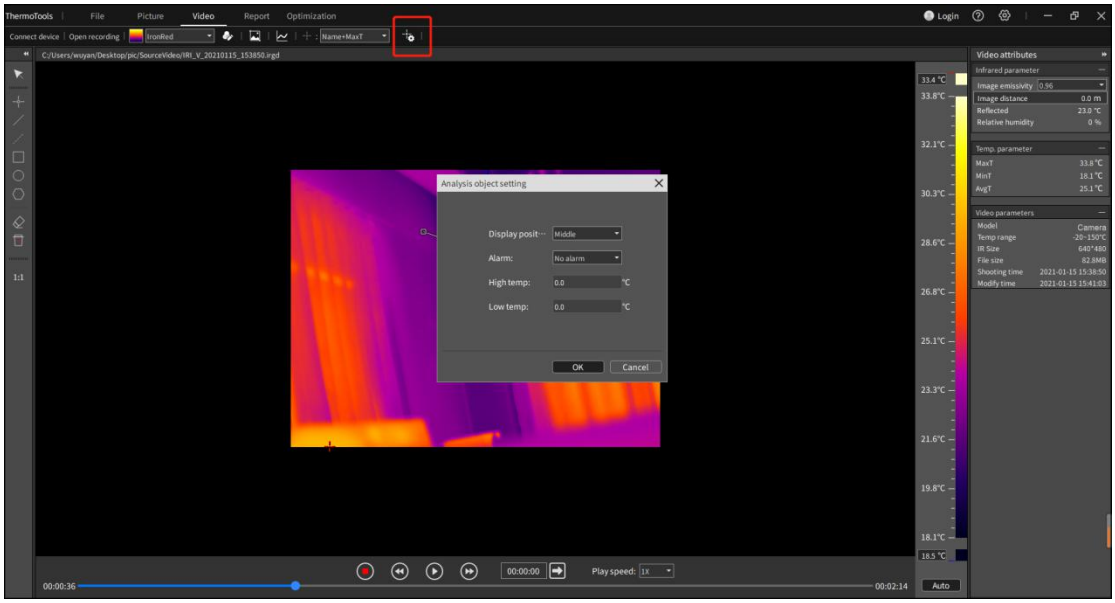


Figure 3-30 Analysis Object Settings

Select an analysis object and click the “Analysis Object Settings” button 【】 to display the “Analysis Object Settings” window.

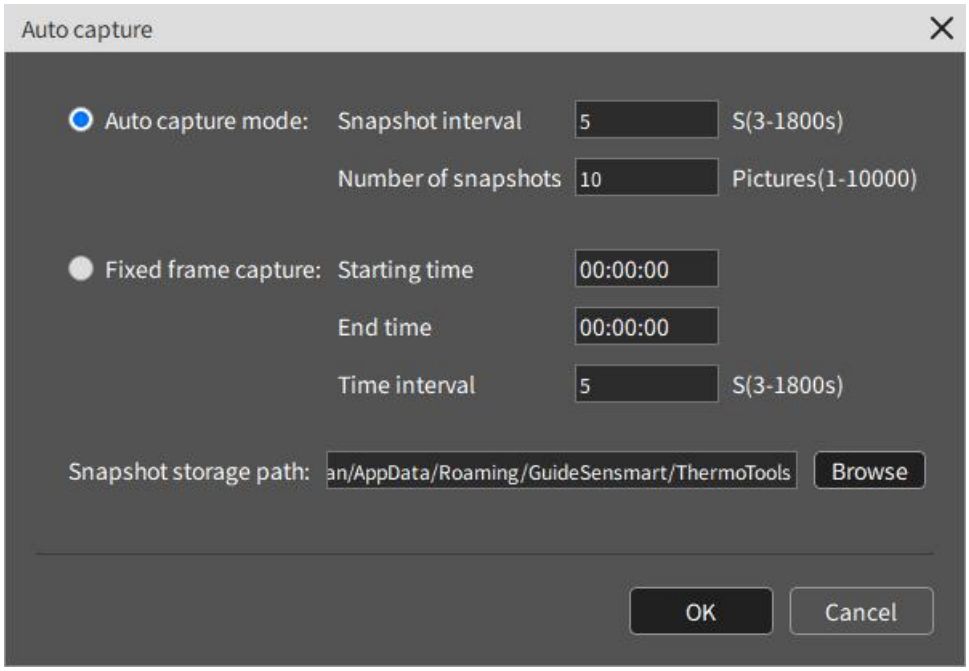
1. Select and change the display position of the analysis object.

2. 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 colors.

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 Auto capture to turn on the automatic capture mode.



3.4 Report

It is allowed to customize and edit report contents and page elements, and save them as Word or PDF files, as shown in Figure 3-31.

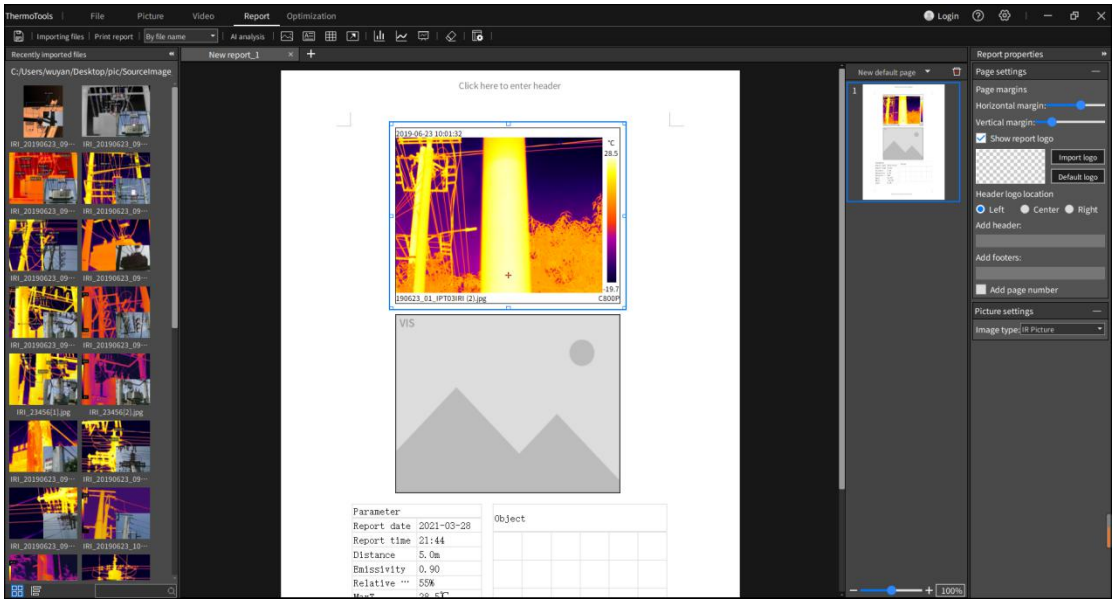


Figure 3-31 Report Edit

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;

It is the report property bar on the right side of the page, where 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



1) Click “Add Image” ,”Add Table” ,”Add Text” ,”Add AI Analysis” AI analysis ,”Add Histogram” ,”Add Temperature Curve” ,”Add Object

Data” in the function menu bar (or click their corresponding shortcut keys) to enter the state of adding report elements;

2) 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.

3) Click “Add Arrow” in the function menu bar to enter the state of adding arrow. Click the left mouse button and slide in the report area to draw the starting point and end point 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, and edit the report content and set its properties, as shown in Figure 3-21

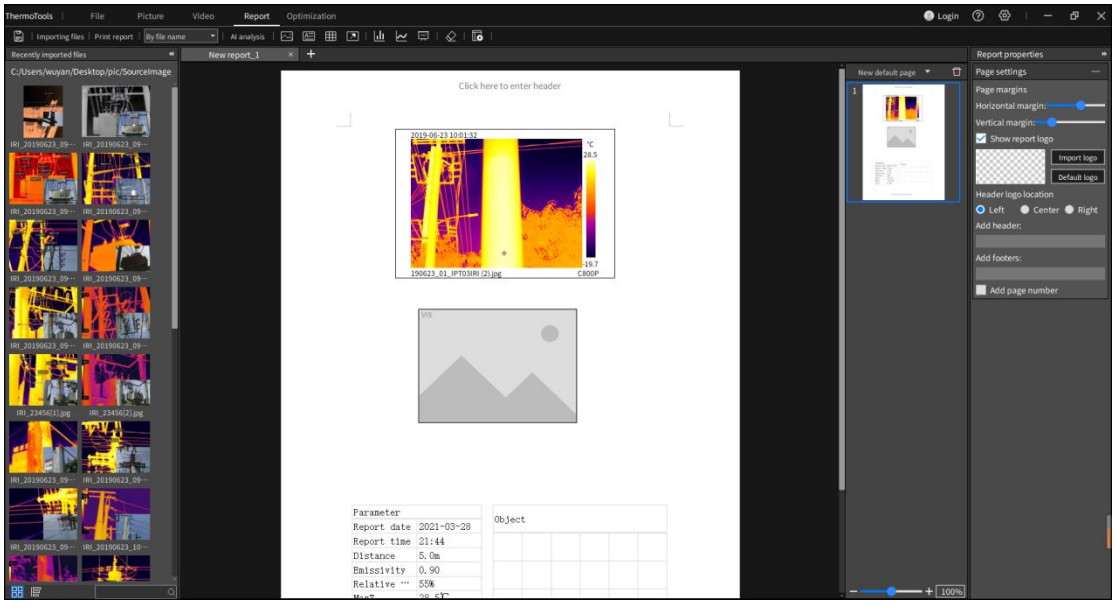


Figure 3-32 Report Element Editing

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, as

shown in Figure 3-33 report properties.

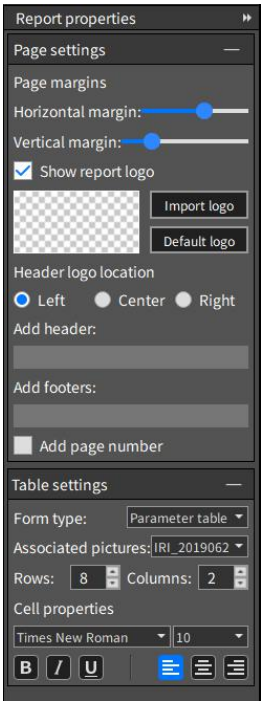


Figure 3-33 Report Property Settings

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 “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 analyzed, 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 Table 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 Images.

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

Set image properties

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

In the “image types”, the image types include “infrared image”, “visible light image” and “ordinary image”. When “Visible Light Image” is selected, the associated infrared image can be selected through “Associated Image”.

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, as shown in Figure 3-34.

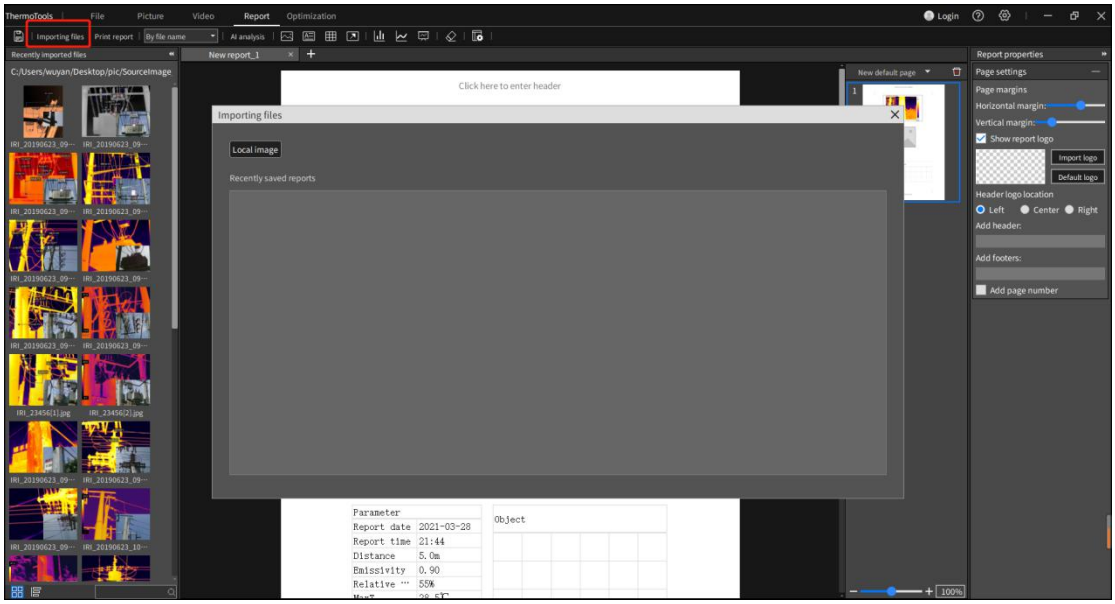


Figure 3-34 Import Images

3.4.6 Create New Report Page

In the right list of the report pages that have been made, you can create new single pages: add default page, add last template page and add template page, as shown in Figure 3-35.



Figure 3-35 New Report Singe 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 single 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. 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 in Figure 3-36.

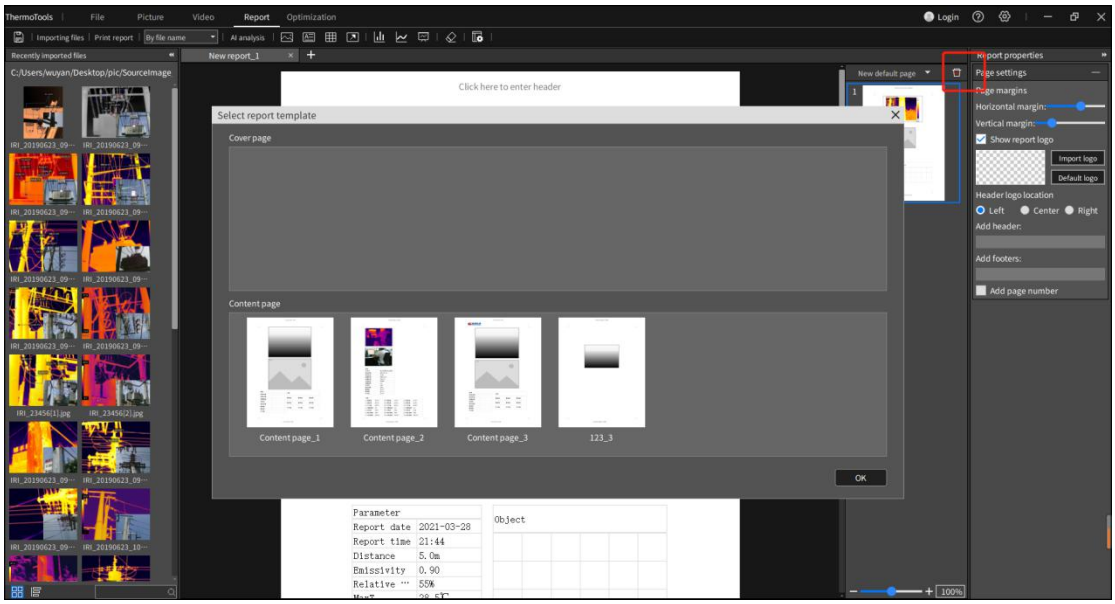


Figure 3-36 Add New Template Page

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 “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

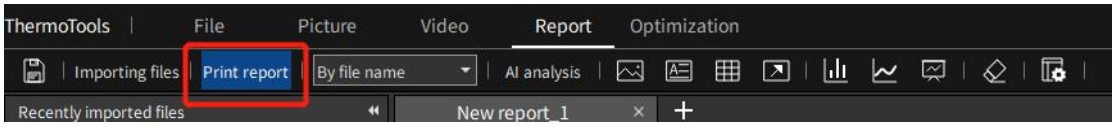
Save the contents of the report being edited.

Click “Save Report” 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 “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.

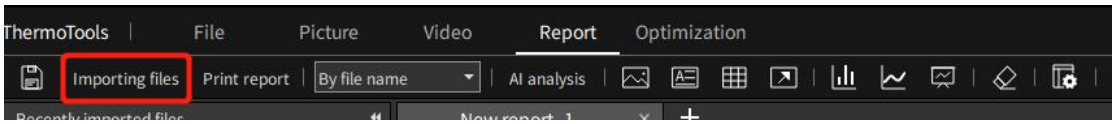


3.4.10 Close Report

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 “Import File” Importing files 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, as shown in Figure 3-37.

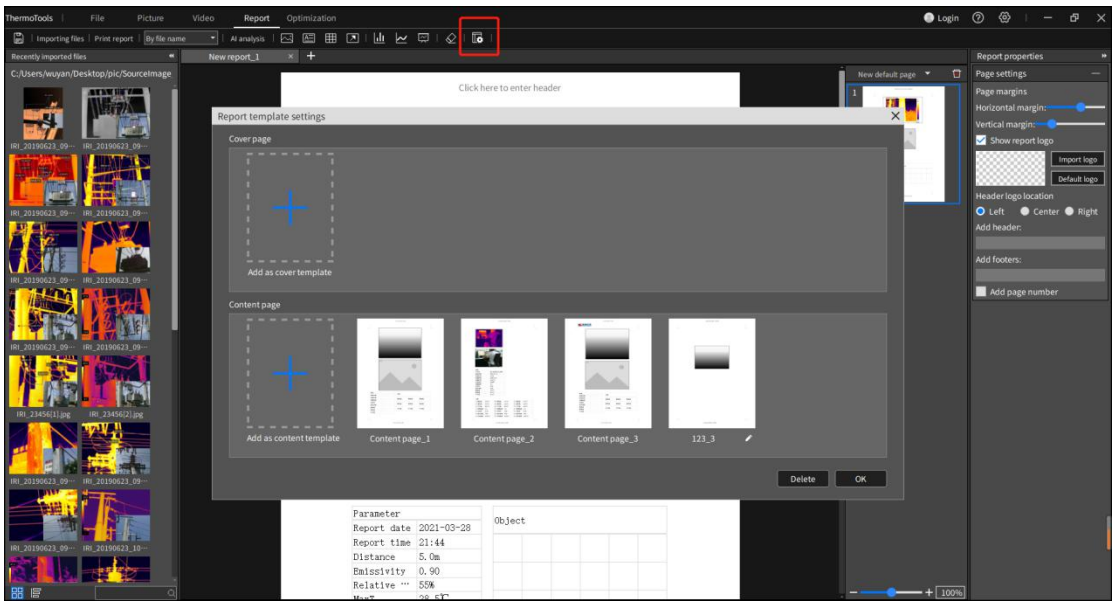


Figure 3-37 New Template

Click “Add this page as template page” 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.

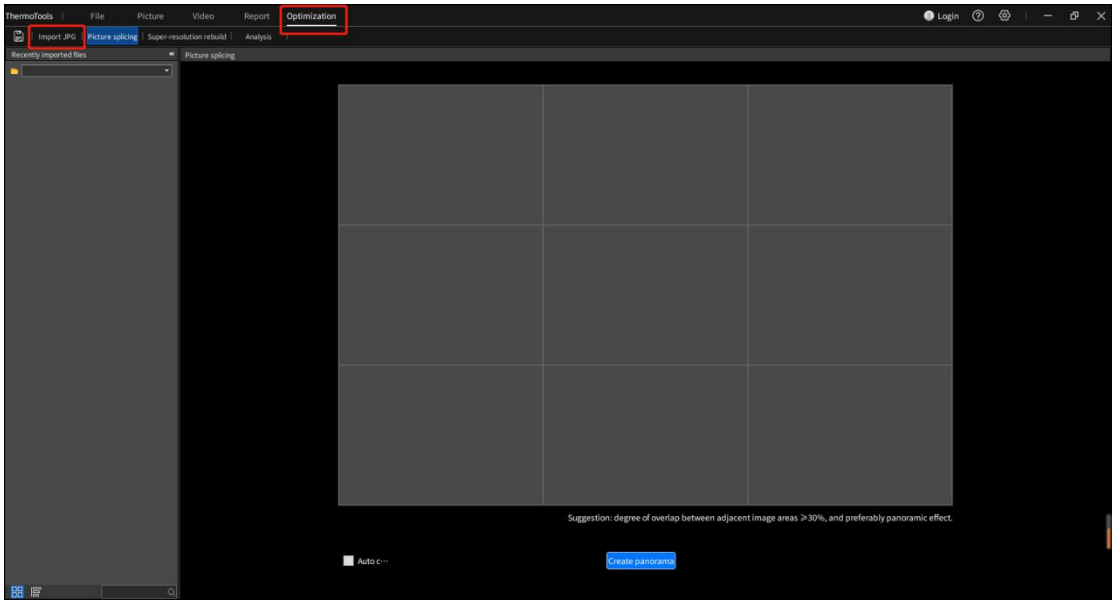
Click Delete to delete a report template. Click to modify the name of the

corresponding template. System template cannot be deleted or its name cannot be modified, but it is allowed to delete manually added custom templates and modify their names.

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 allowed to import images from different folders.



Note:

① Import up to 100 images at a time. Pop-up prompt will be given when exceeding.

② The maximum number of images in a folder is 600. Pop-up prompt will be given when exceeding.

③ Import up to 10 folders. When importing the 11th folder, the first folder will be cleared, other folders will be filled forward in turn, and the latest folder will be imported.

3.5.2 Image Stitching

The image stitching function only supports panoramic stitching 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 in PIR_yymmdd_hhmmss-X.jpg format. Images that have been stitched and saved cannot be stitched again, as shown in Figure 3-38.

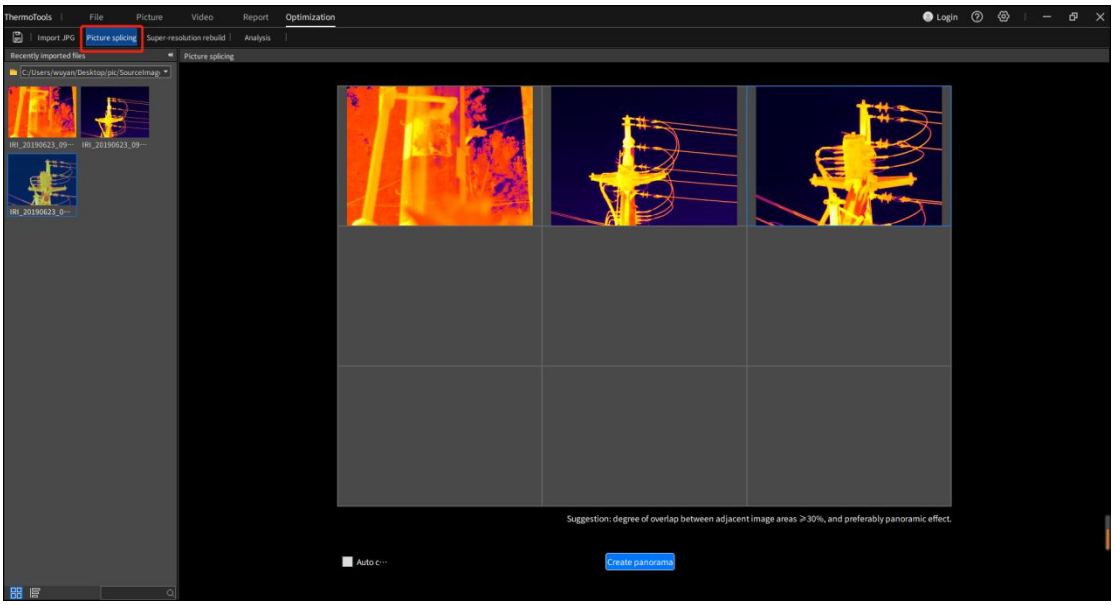


Figure 3-38 Image Stitching

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 Generate Panorama to generate a stitched image. Click “Back” button to return to the Nine Squares interface and adjust the image order to stitch again.

Note:

1. The images in Nine Squares are sorted from left to right and from top to bottom. Discontinuous arrangement is supported, and stitching is performed according to the sequence coincidence degree of 30%.
2. You can drag or change positions of images in Nine Squares.

3. Delete key can be used to delete the selected image in Nine Squares.
4. Stitching images should meet the 30% coincidence degree of each image, otherwise they will not be stitched
5. The stitched image can be scroll wheel zooming out, but does not support zooming in.

3.5.3 Rebuild Super-resolution

Super-resolution Rebuild supports to rebuild and generate an enlarged image (magnified twice) from the original infrared image with an original resolution. This makes the analysis and temperature measurement more accurate, as shown in Figure 3-39.

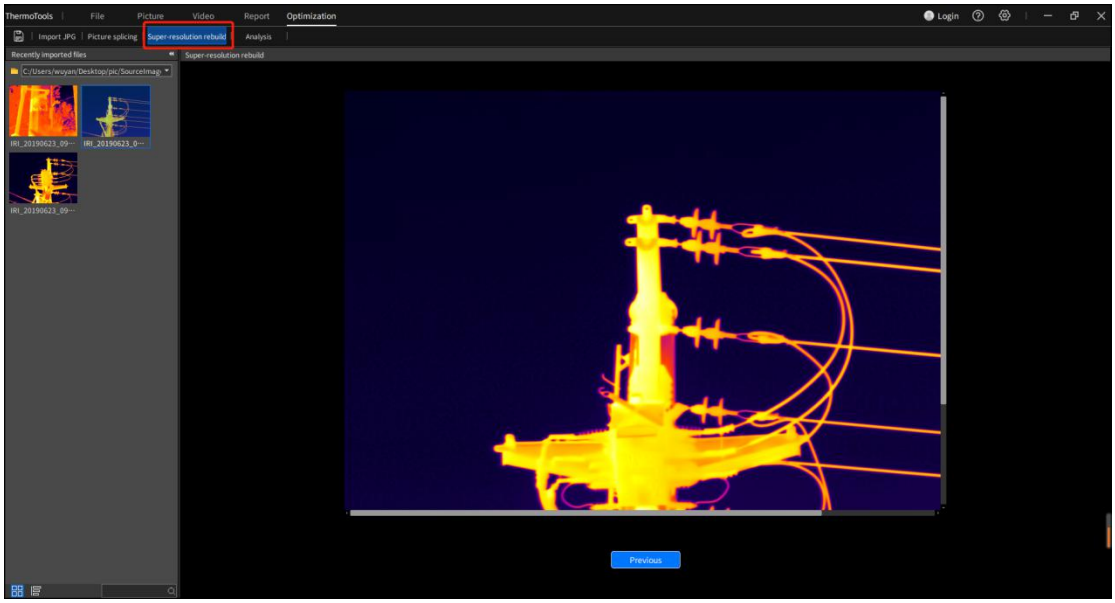


Figure 3-39 Super-resolution Rebuild

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.

Note: the rebuilt image only supports zooming out, not zooming in.

3.5.4 Create Trend Analysis

By selecting 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, as shown in Figure 3-40.

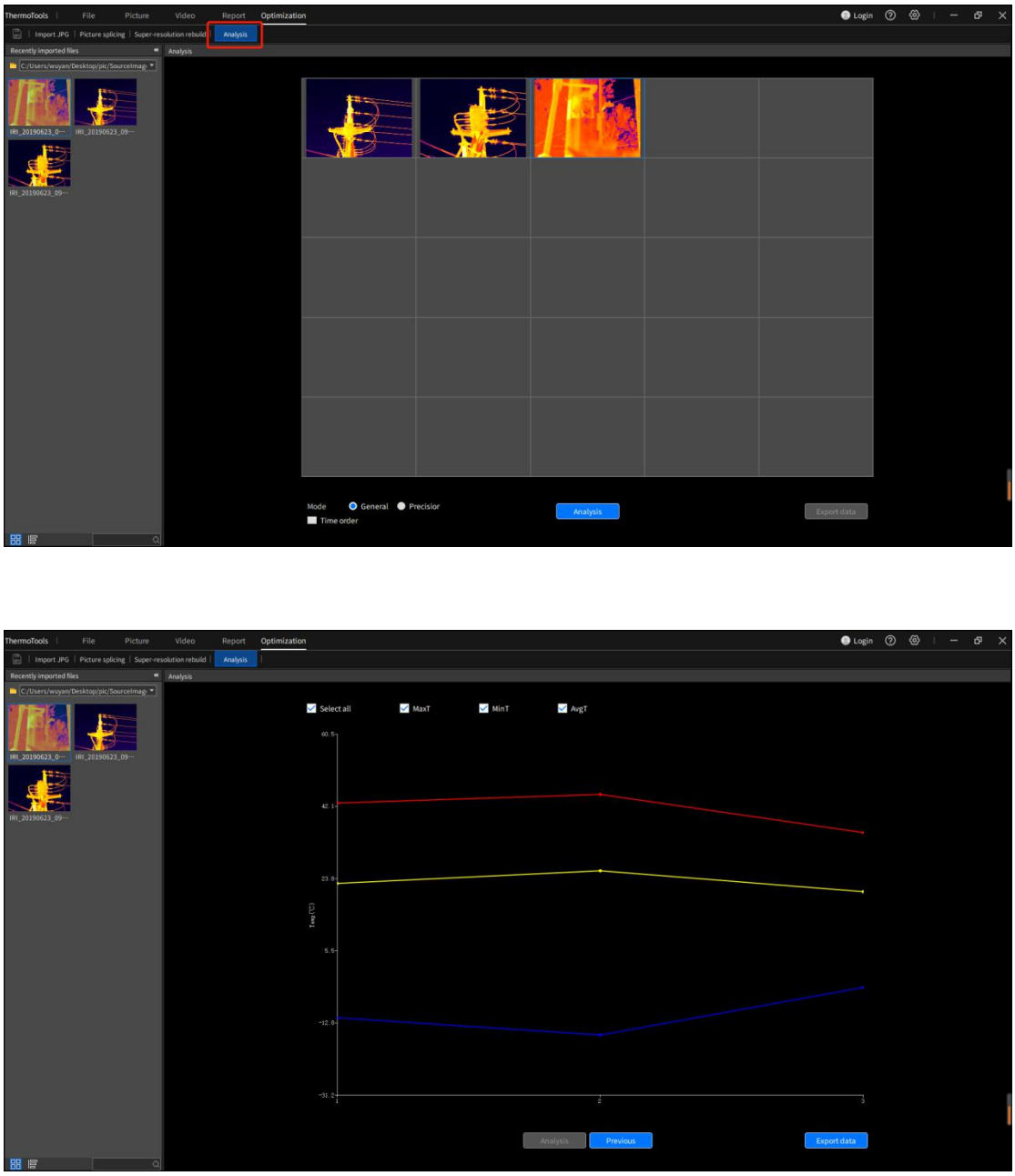


Figure 3-40 Creating Trend Analysis

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 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



Precisior mode: take the highest temperature, lowest temperature and average temperature in local area to draw the trend. Operation method is 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 generating trend chart according to the shooting time of images.

Export data: supports exporting and saving data in .csv or .jpg.

3.6 Cloud Login, Setting and Help

3.6.1 Cloud Login

Log in to the cloud account and download the images uploaded to the cloud from the device to the local system for analysis（Some models support）,as shown in Figure 3-41.

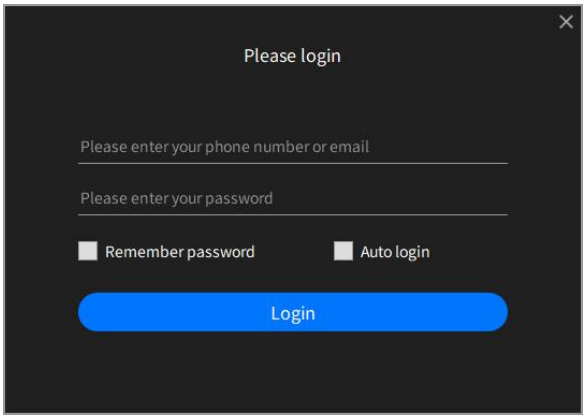


Figure 3-41 Cloud Login

Login: the account is the same as the account number on the device side. Please register in Settings–Cloud Service on the device.

Remember password: after checking the Remember Password, the last login user information will be presented when entering the login interface again.

Automatic login: check the Automatic Login and click to successfully login, the startup software will automatically log in to the cloud account next time.

Exit: click “Exit” to exit the current login account.

Switch users: enter the login page and switch users.

3.6.2 Setting

3.6.2.1 General settings

General parameter settings mainly include four parts: system language, system unit, system parameters and display settings, as shown in Figure 3-42.

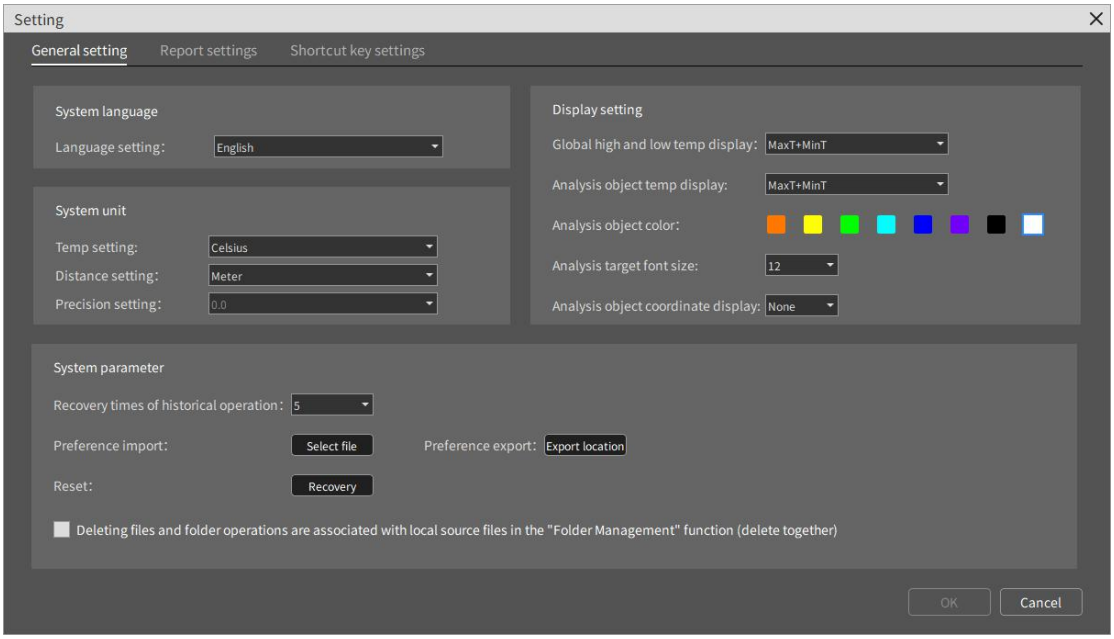


Figure 3-42 General Settings

System language:

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

System unit:

Temperature setting: supporting three units: Celsius, Fahrenheit and Kelvin

Distance setting: supporting meters, inches and yards

Precision setting: supporting 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 direct import next time and configure 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 color: during image analysis and video play, the drawn analysis object frame color 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: during drawing an analysis object, the vertex coordinates and width and height properties of the analysis object can be displayed. Currently, only rectangles are supported.

3.6.2.2 Report Settings

Set related parameters of report page, including report setting and report display setting, as shown in Figure 3-43.

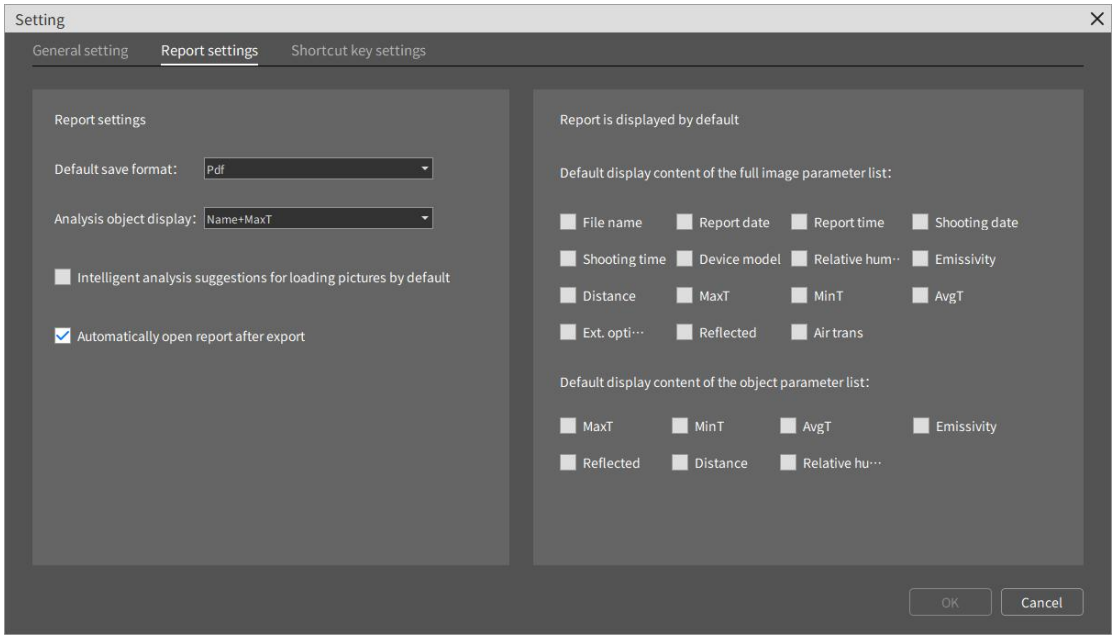


Figure 3-43 Report Settings

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 will be 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: it includes full-view parameter list and object parameter list, which are mainly used for setting display options in report interface and table cell box.

Whole image 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.

The object parameters list includes the highest temperature, lowest temperature, average temperature, emissivity, reflection temperature, measurement distance, relative humidity, atmospheric transmittance and optical transmittance.

3.6.2.3 Shortcut Key Settings

The shortcut keys used in the system will be set, including general settings, menu bar, file management, image toolbar, video toolbar and report editing bar, as shown in Figure 3-44.

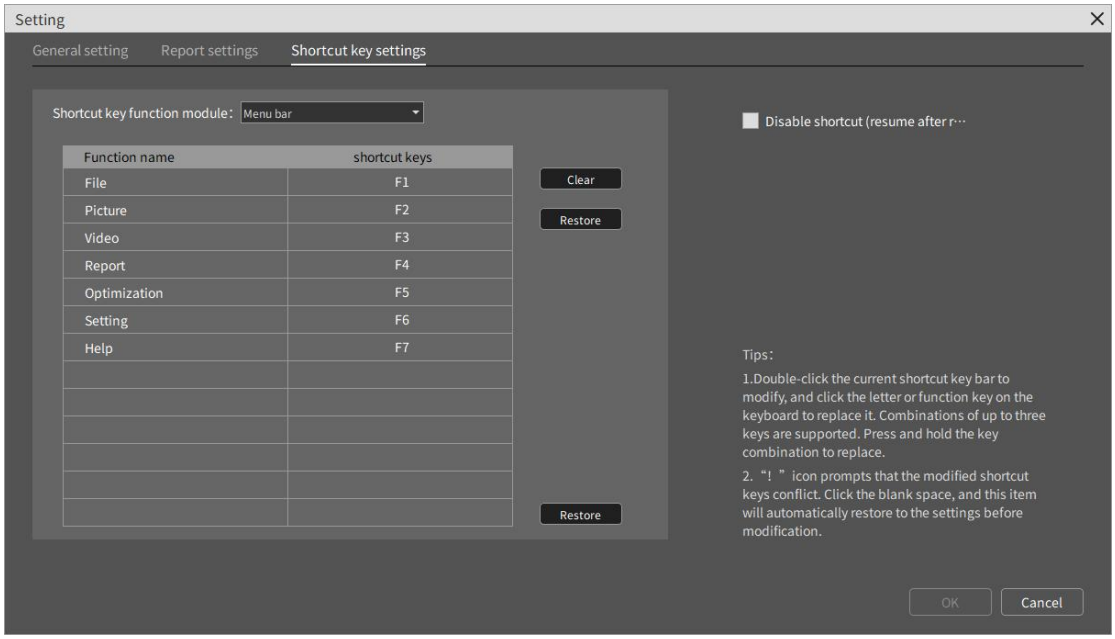


Figure 3-44 Shortcut Key Settings

Some shortcut keys support the functions of modifying, deleting, restoring and restoring default settings. The operation methods are as follows:

Enable editing: double-click to modify shortcut keys.

Modify function: select keyboard keys and switch shortcut keys. If the shortcut keys conflict, it will be restored to the previous setting. Note, punctuation marks, Home and other special characters are not supported.

Delete function: click Delete, and the shortcut keys in editing status will be

cleared.

Restore function: click Restore, and the shortcut key in editing status will be switched to the previous content.

Restore default settings: all shortcut keys will be restored to factory settings.

Disable shortcut keys: shortcut keys will not take effect.

3.6.3 Help

3.6.3.1 Upgrade Description

Upgrade description information, including history and iteration update record of current software version will be displayed.

3.6.3.2 Version Information

Version update information, including native system, software language, installation address, version number and other information will be displayed.

Chapter IV Common Use Problems

4.1 Device Connection Problems

4.1.1 USB Connection

Problem: the corresponding USB connection switch has been enabled on 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 at the computer’s “Network Connection”;

4.1.2 AP Connection

Problem: the corresponding AP connection switch (or WiFi hotspot switch) has been enabled on 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 at the computer’s “Network Connection”;

4.1.3 LAN Connection

Problem: the corresponding LAN connection switch has been enabled on device, 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 at 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 infrared analysis software can restore settings except shortcuts;

2. In the shortcut key setting interface, click “Restore Default Settings” to restore the default settings of shortcut keys;

4.4 Why the picture cannot be opened

1. Make sure that Unicode UTF-8 is selected in "Settings"-"Time and Language"-"Change System Time Zone Settings" in the computer settings to provide global language support.

版本迭代记录

版本	时间	内容	备注
V1.0.0	2021.03.08	ThermoTools 用户手册 V1.0.0	初版发布
V1.0.1	2021.04.25	ThermoTools 用户手册 V1.0.1	增加自动抓图功能
V1.0.2	2021.08.06	ThermoTools 用户手册 V1.0.2	补充常见使用问题解答

第一章 软硬件配置

1.1 软件环境

要求名称	详细要求
运行环境	Microsoft Visual C++2010-2015 x64 Redistributable; DirectX 组件
操作系统	Windows7-Windows10 64 位操作系统
其他软件	PDF、Microsoft office（或者 WPS office）

1.2 硬件环境

要求名称	详细要求
CPU	Intel i3
内存	8G 及以上
显卡	2G 及以上（需支持 OpenGL）
硬盘	40G 以上，安装目录磁盘剩余空间不小于 2G
鼠标、键盘	3 键鼠标、PS/2 键盘
其他	100M 以上网卡

第二章 安装说明

2.1 软件安装步骤

1. 双击或右键打开 ThermoTools_xxxx.exe (xxxx 为版本号)安装程序，进入语言选择界面，如图下图所示。



图 2-1 选择语言

2. 选择好语言，点击“OK”进入安装向导界面，如图所示，点击“Cancel”结束安装。



图 2-2 安装向导

3. 点击“下一步”进入软件安装许可协议界面，如图下图所示，点击“取消”结束安装。



图 2-3 安装许可

4. 点击“上一步”退回安装向导界面，点击“我接受”进入安装路径选择界面，如图 2-4 所示，点击“取消”结束安装。



图 2-4 安装路径选择

5. 点击“上一步”退回软件安装许可协议界面，点击“安装”进入安装进度界面，等待安装完成即可，如图 2-5 所示，点击“取消”结束安装。

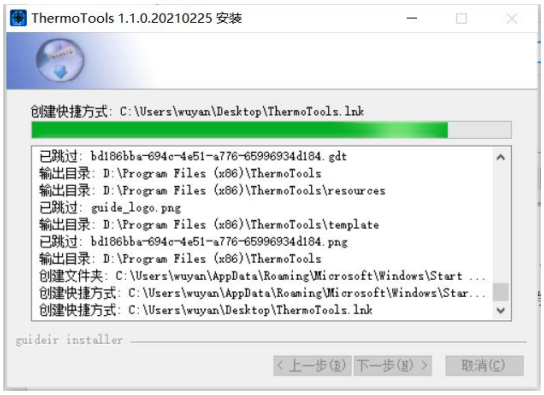


图 2-5 安装中

6. 安装完成后点击“关闭”，如图 2-6 所示。



图 2-6 安装完成

2.2 常见安装问题和解答

1. 双击快捷方式运行程序，如出现错误 1 提示“无法找到 MSVCR120.DLL”，如图 2-7 所示。



图 2-7

解决方案：点击安装目录 redist 文件夹里的 vc2013_redist.x64.exe 安装运行时

库，若任未解决，请按问题 2 的解决方案解决。

2. 双击快捷方式运行程序，如出现错误 2 提示“应用程序无法正常启动（0xc000007b）”，如图 2-8 所示。



图 2-8

解决方案：第一步，解压缩安装目录 redist 文件夹里的 DirectXRepair.zip 文件，如图 2-9 所示。

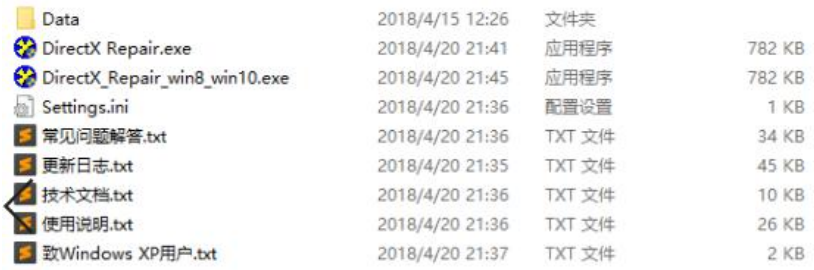


图 2-9

第二步，运行 DirectX Repair.exe (Windows8 或 Windows10 运行 DirectX_Repair_win8_win10.exe)，进入修复界面，如图 2-10 所示。

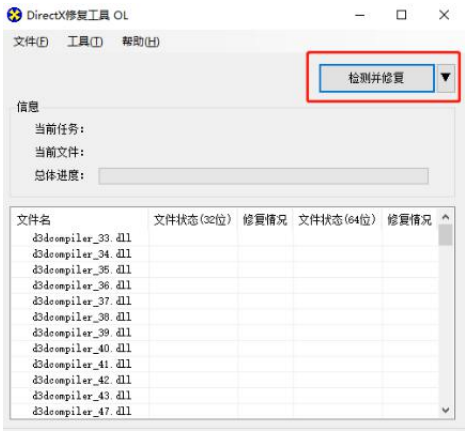


图 2-10

第三步，点击“检测并修复”进行系统 DirectX 修复（电脑必须是

联网状态），修复完成后即可运行“ThermoTools.exe”。

第三章 操作说明

3.1 文件管理

在文件管理中心，用户可以对红外热图进行管理、快速报表的生成等。

3.1.1 数据导入

数据导入实现本地文件夹资源结构目录的导入并展示。如图 3-1

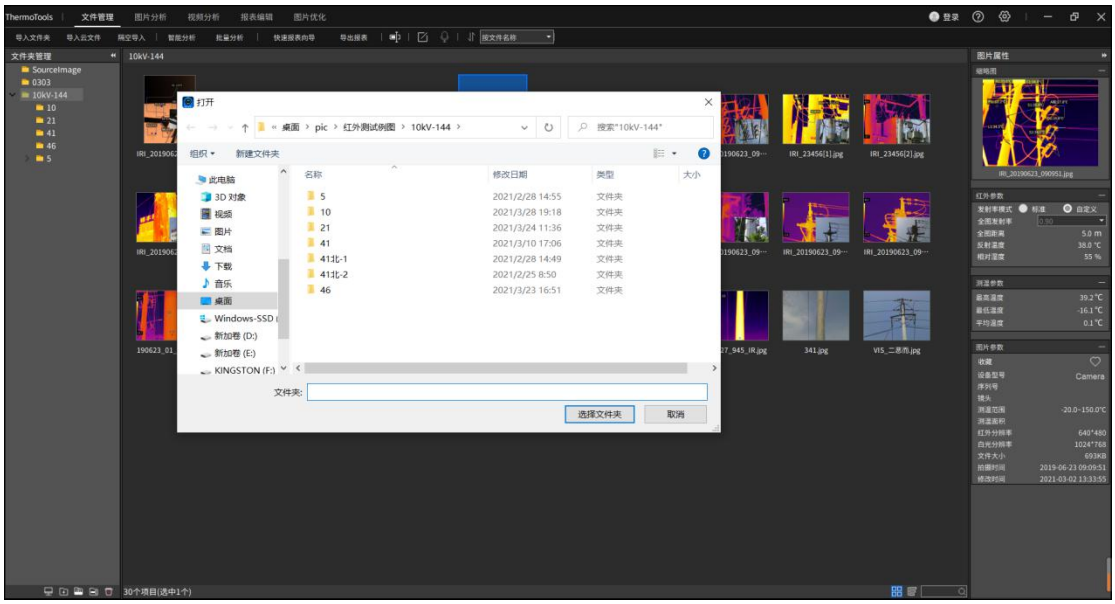


图 3-1 数据导入

1. 导入文件夹

点击菜单栏导入文件夹，选择需要导入的文件夹，即可在左侧文件夹区域显示导入的文件夹；也可以拖拽导入，拖动文件夹到左侧文件夹区域即可导入；

当前最多支持 20 个顶级节点，每个节点下最多 100 个子文件夹，中间图片显示界面最多显示 10000 张图片。

2. 导入云文件（部分设备机型支持）

点击【导入云文件】按钮，输入用户名密码即可登录导入云文件，该用户名设备端账号同步，请于设备端【设置】-【云服务】中注册；

登录成功以后选择一个文件夹，点击导入云文件，如果是老设备，点击选择

最后一次操作的设备，如果是 PS/C 系列设备，选择列表中指定的设备，选择时间（默认查询当天上传的照片），点击刷新，会刷新出设备上传的文件，勾选需要下载的文件即可。

3. 隔空导入

首先通过 wifi（或者通过网线直连）连接设备；

然后选择一个文件夹，点击隔空导入，弹出隔空导入界面；

填写 IP 地址（默认是 wifi 的地址 192.168.42.1，可根据是否网线直连进行修改），选择需要导出的是图片还是视频，点击刷新，即可看到文件列表；

勾选需要下载的文件即可。如图 3-2



图 3-2 隔空导入

3.1.2 文件分析

1. 智能分析

可以对一张或者多张全局红外图像，快速进行智能诊断分析并保存，包括故障类别、损害程度、参考建议等信息。如图 3-3

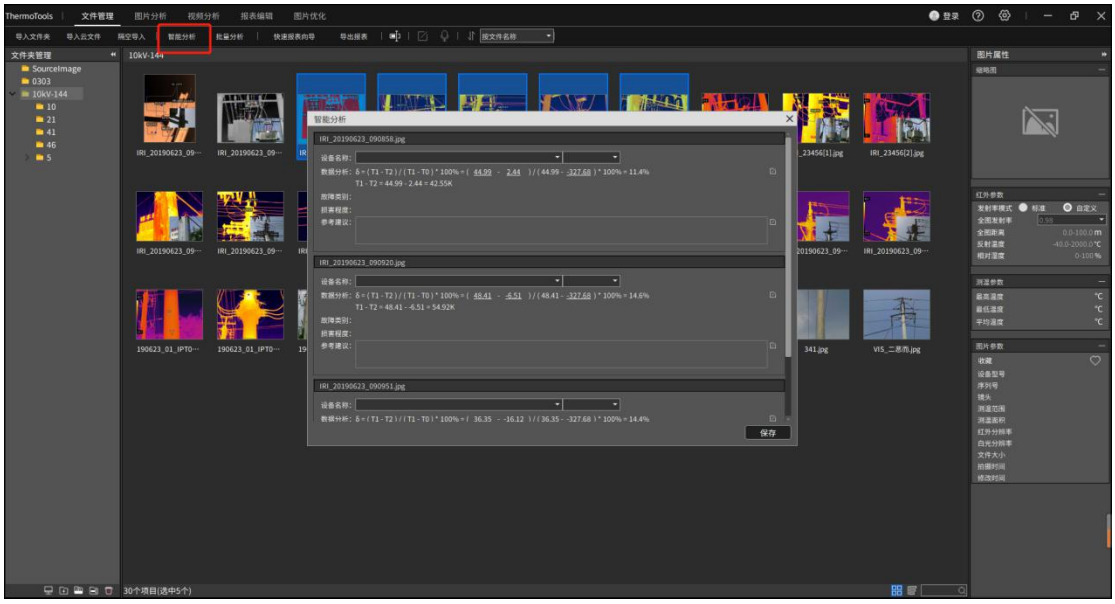


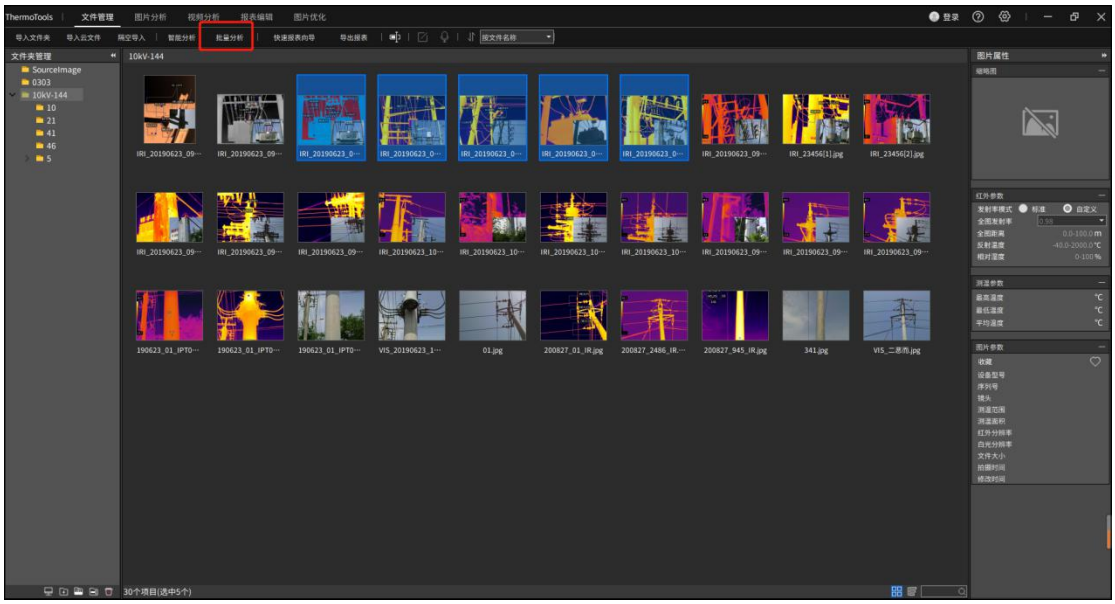
图 3-3 智能分析

选择需要进行智能分析的图片（目前最多支持同时分析三张），点击“智能分析”，根据图片内容选择设备名称，即可得到智能分析结果。

点击右边的修改按钮【 】，可对实时调整分析结果，也可以补充参考建议；点击保存，保存的智能分析结果可以在图片分析界面，或者报表编辑页看到智能分析结果。

2. 批量分析

同时对最多 6 张图同时设置分析对象，查看同一时期设备不同部位，或者同一设备在不同时期拍摄的红外热图进行分析。如图 3-4



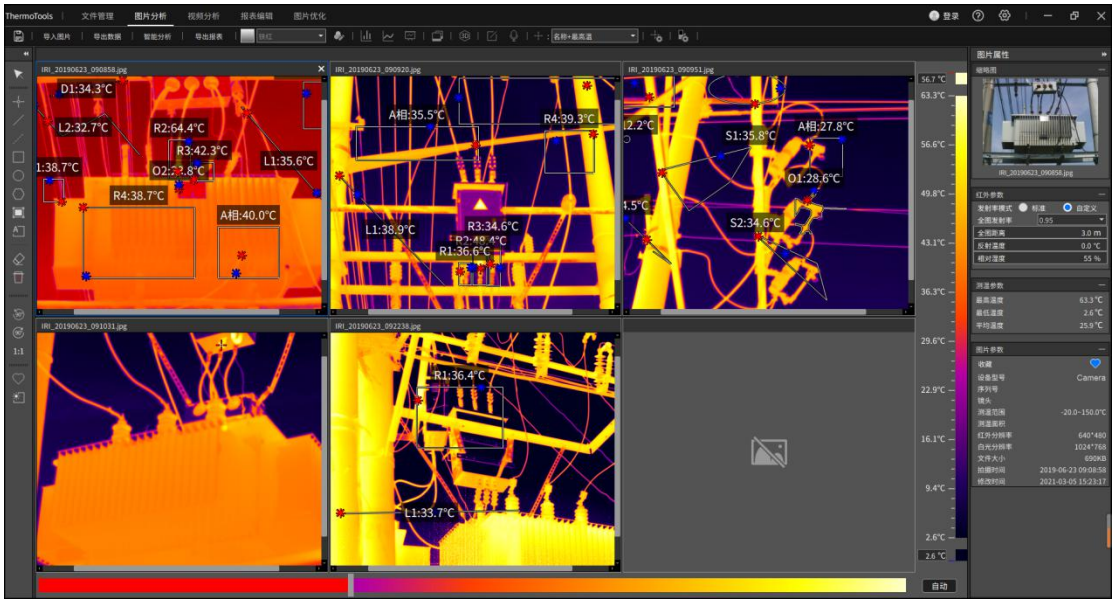


图 3-4 批量分析

选择多张红外图片（只会进行红外图片分析，最多支持 6 张，超过按照选择先后顺序选取前 6 张红外图片），点击“批量分析”，会进入图片批量分析界面，进行分析。

3.1.3 快速报表

根据当前查看的红外图像，快速导出报表内容。如图 3-5

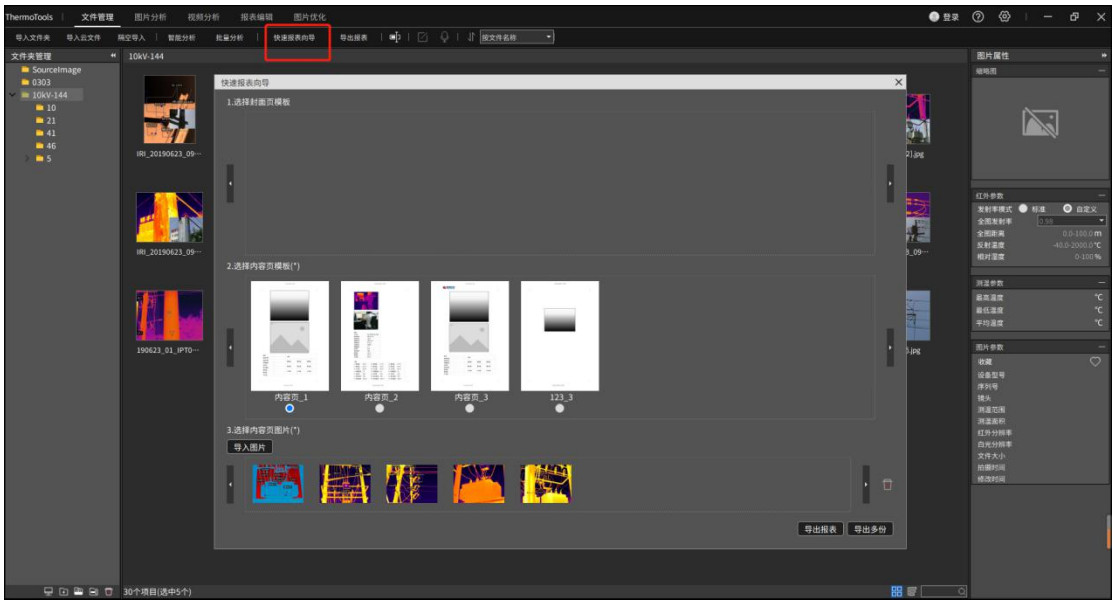


图 3-5 快速报表向导

1. 快速报表向导

选择需要生成报表的图片（最多支持 20 张）；

点击“快速报表向导”，选择封面页模板（可不选择），选择内容页图片（必须选择）；点击导出报表，选择保存文件格式，文件名导出报表；

也可以选择导出多份，按照名字+数字，一张红外图片生成一个报表文件。

2. 导出至报表

选择需要生成报表的图片（也可不选择），点击“导出报表”，进入报表编辑界面，自动新建页面加载选中的图片，然后可以正常进行报表编辑操作。

3.1.4 文件编辑

可以对文件名进行批量重命名、添加文字注释、查看语音注释、按照不同类型排序查看图片。

1. 修改文件名

选择需要修改的图片（也可以选择多张），点击修改文件名按钮【】，输入修改后的名字即可。如图 3-6



图 3-6 批量修改文件名

2. 文字注释

选择图片，点击按钮【】，可修改文字备注，并保存到图片中。如图 3-7

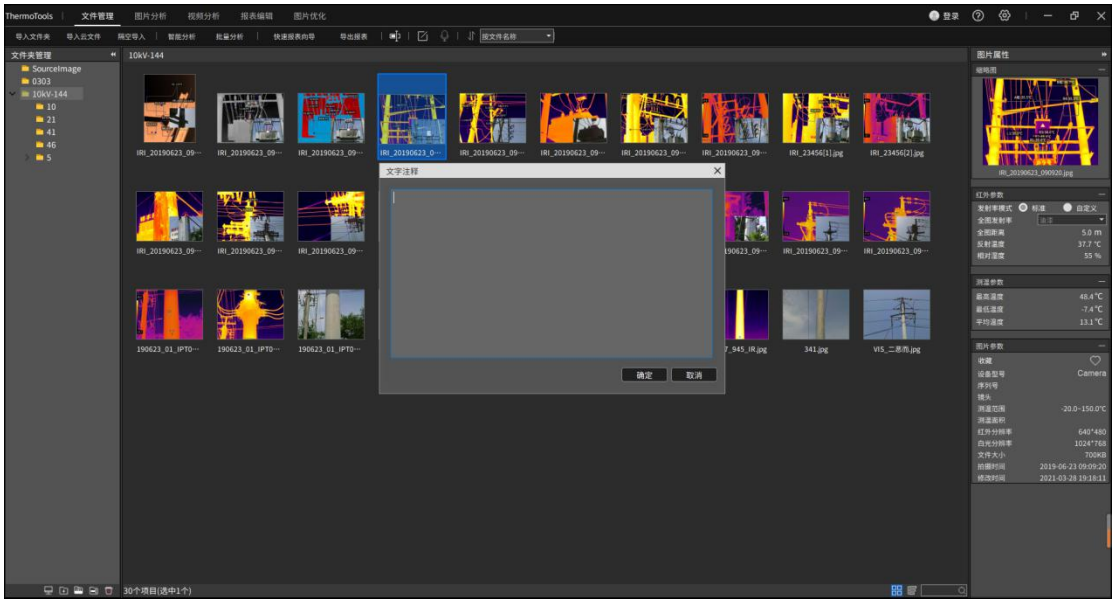


图 3-7 文字备注

3. 语音注释

如果【】可操作，表示该图片有语音注释。点击【】可播放语音信息。再次点击按钮，会停止播放。

4. 文件排序

文件加载默认按照文件名称排序，选择排序方式即可进行排序。

5. 文件管理（列表、缩略图、搜索）

在文件管理可以切换显示图片查看方式：，缩略图或者是列表形式。

搜索框中输入搜索内容，按【Enter】键即可进行搜索。

3.1.5 文件夹管理

可以导入本地计算机中的文件夹，并显示当前文件夹的图片信息。可以新建、删除、修改文件夹信息。如图 3-8



图 3-8 文件管理

1. 新建文件夹

点击新建文件夹【】，会在当前选择的目录结构新增一个文件夹，同时会在本地计算机默认路径新建一个文件夹。

2. 新建子文件夹

选择一个文件夹，点击新建子文件夹【】，会在当前选中文件夹下新建一个文件夹节点，同时会在当前文件夹路径下新建一个文件夹。

3. 删除文件夹（关联本地源文件设置）

选择需要处理的文件夹节点，点击删除文件夹【】（如果在【设置】-【通用设置】中关联了删除本地源文件，可删除本地计算机内的文件。

4. 重命名文件夹

选择需要重命名文件夹，点击重命名文件夹【】即可。

3.2 图片分析

用户在“图片分析”中，可以查看红外图像的相关属性，可以自由添加各种分析对象精准分析。查看相关直方图、温度曲线图、对象数据。并可以设置自定义色带、编辑文字注释信息、等温线分析等相关功能。如图 3-9

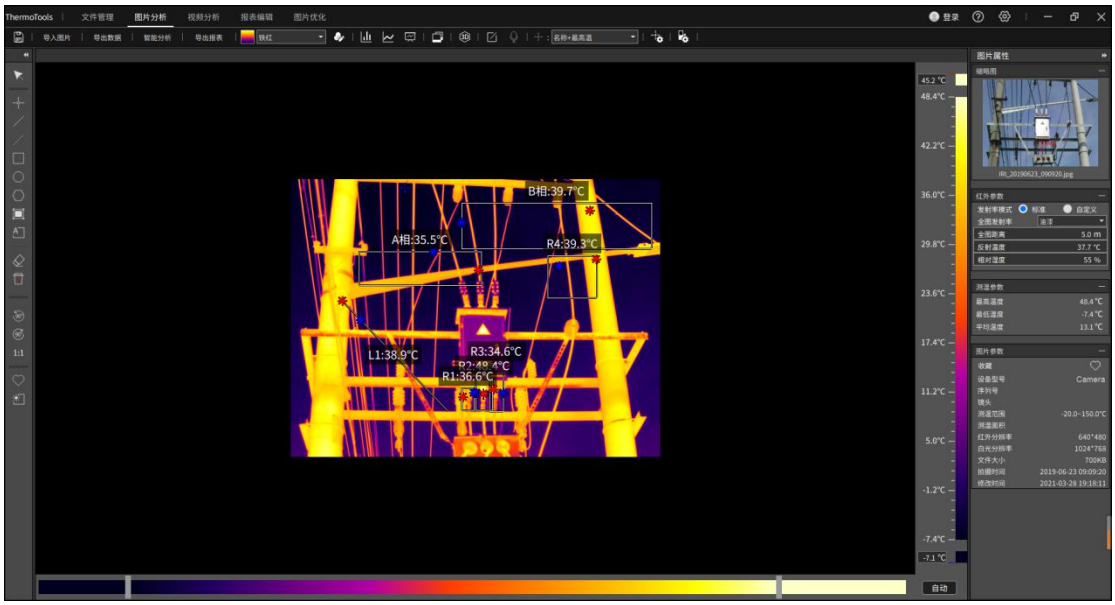
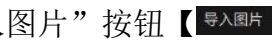


图 3-9 图片分析

3.2.1 导入和保存图片

点击“导入图片”按钮【】，弹出文件管理器，选择需要的图片，点击“确定”按钮。软件将打开选择的图片，图片会以分辨率大小展示在界面中间，且将获取到的图片参数展示在右侧属性栏。

3.2.2 编辑分析对象

16. 添加线分析对象

在左侧工具栏中，点击“画线温标”按钮【】（或使用对应快捷方式键盘【L】），在图像中画线，重复操作可绘制折线温标。当想停止绘制时可将鼠标移出图像区域或点击鼠标右键。

17. 添加点分析对象

在左侧工具栏中，点击“画点温标”按钮【】（或使用对应快捷方式），鼠标移动到图片中想添加温标的区域，按下鼠标左键，松开左键结束绘制。

18. 添加温差线对象

在左侧工具栏选择“温差线”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制温差线分析对象，松开左键结束绘制。

19. 添加矩形对象

在左侧工具栏选择“矩形”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制矩形分析对象，松开左键结束绘制。

20. 添加圆对象

在左侧工具栏选择“圆”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制圆形分析对象，松开左键结束绘制。

21. 添加多边形对象

在左侧工具栏选择“多边形”【】类型，然后在图像上点击鼠标左键生成第一个点，移动鼠标位置点击鼠标左键生成下一个点，以此类推生成多边形的顶

点，点击鼠标右键绘制多边形分析对象，如图 3-x 所示。

22. 自动描边

在左侧工具栏选择“自动描边”【】类型，在图像上点击鼠标左键长按画矩形区域，将自动对区域内的图像进行自动描边画分析对象。

23. A 相/B 相/C 相分析对象

点击【】可快速画出 A 相、B 相、C 相分析对象。

24. 编辑分析对象

选择分析对象，按下鼠标左键，然后移动鼠标位置可改变分析对象位置或者改变分析对象大小，松开鼠标左键结束编辑。

25. 删除选中分析对象

选择分析对象，点击【】，删除选中的分析对象。

26. 删除全部分析对象

点击【】删除所有分析对象。

27. 逆时针旋转 90°/顺时针旋转 90°

点击【】和【】可以对图片进行旋转操作。

28. 1:1 还原图片

点击【】，可以对放大的图像进行还原。

29. 收藏标记

点击【】，可以收藏标记的图像，便于文件按照收藏类型查找。

30. 区域调光

选择分析对象，点击【】可以对非点分析对象进行区域调光。

3.2.3 编辑图像

1. Lever 和 Span

图片分析中，拖动下方 Lever 和 Span 的滑块（左侧滑块为调光最小值，右侧为调光最大值），可将图片的调光区域限制为感兴趣的温度区域。



2. 旋转

图片分析中，点击“逆时针旋转”按钮【】或“顺时针旋转”按钮（【】或使用对应快捷方式），图片会向选择的方向旋转 90 度。

3. 还原

图片分析中，点击“还原图片大小”按钮【1:1】（或使用对应快捷方式），图片会恢复为图片原始分辨率的大小。

4. 区域调光

图片分析中，选中一个分析对象，点击“区域”按钮【】（或使用对应快捷方式），图片的调光最大值与最小值会变为分析对象的最高温与最低温。

3.2.4 导出数据和报表

1.导出数据

“图片分析”中，点击“导出数据”，选择数据所属功能，选择数据对象，选择数据导出格式，选择数据导出位置，将会在选择的路径下生成对应的数据文件。如图 3-10

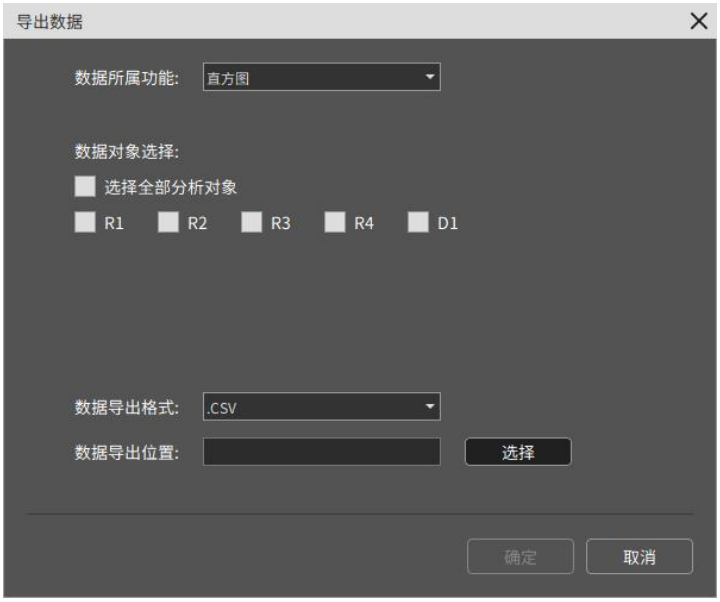


图 3-10 导出数据

2.导出报表

图片分析中，点击“导出报表”按钮，将进入至报表编辑界面，并将该图片用选择的模板生成一张新的报表页。

3.2.5 智能分析

“图片分析”中，点击“智能分析”按钮，通过选择设备名称，可对设备进行智能分析，生成对应的智能诊断故障类型、损害程度、参考建议。可将次分析结果保存，便于后期报表编辑时智能分析结果导入。如图 3-11 智能分析

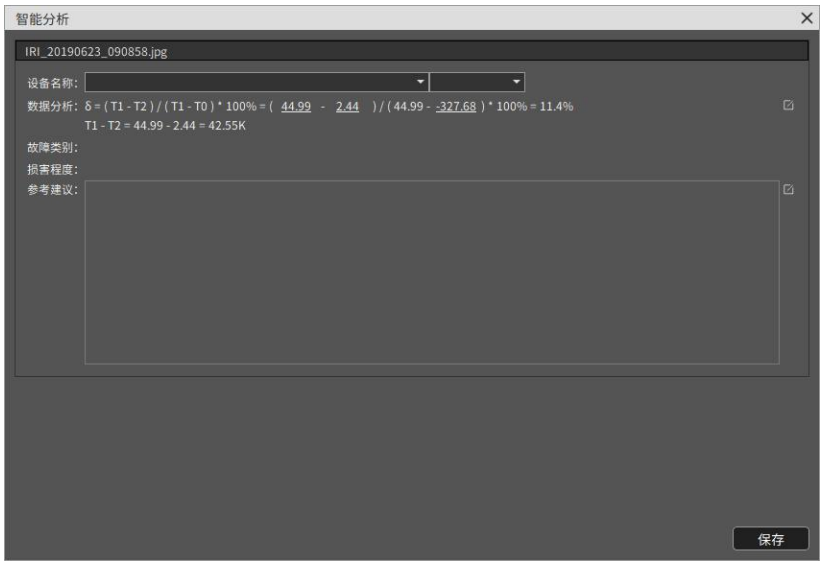


图 3-11 智能分析

3.2.6 色带和自定义色带

通过选择色带类型或者是自定义色带，调节图像伪彩信息。

1.色带

“图片分析”中，点击“色带”下拉框【

】，在下拉框内选择想要的色带，图片会以新的色带进行图片伪彩叠加。

2.自定义色带

“图片分析”中，点击“自定义色带”按钮【】，通过调节“色相”、“饱和度”、“明度”可将图片调整至想要的伪彩状态。

3.2.7 直方图、曲线图和对象数据

查看指定分析对象的相关温度数据。如图 3-12

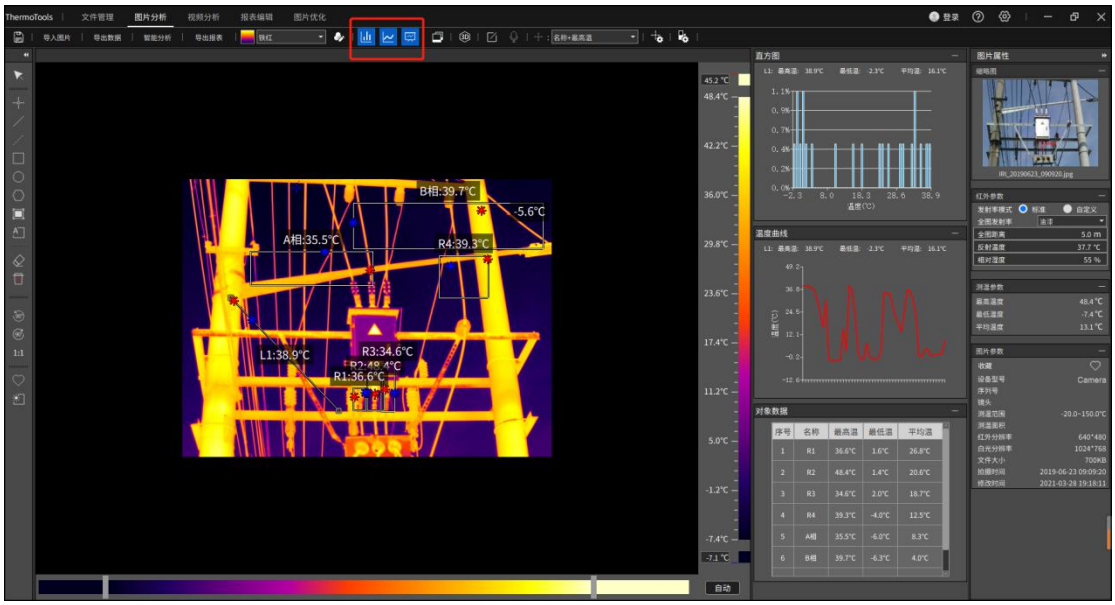


图 3-12 直方图、折线图、对象数据

直方图

选择任意非点分析对象，然后点击工具栏上的直方图【】按钮，图像区域右侧会立刻显示直方图信息，并显示选中分析对象的名称、最高温、最低温和

平均温，点击任意柱状能够显示当前柱状代表的温度和所占百分比。如图 3-13 所示：

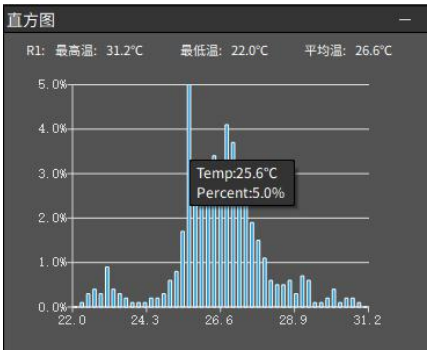


图 3-13 直方图

温度曲线

选择任意线分析对象，然后点击工具栏上的温度曲线【】按钮，图像区域右侧会立刻显示温度曲线信息，并显示选中分析对象的名称、最高温、最低温和平均温。如图 3-14 所示：

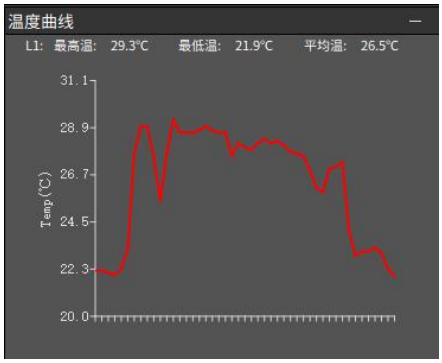


图 3-14 温度曲线图

对象数据

点击工具栏上的温度曲线【】按钮，图像区域右侧会立刻显示图片上所有的分析对象信息，包括分析对象的名称、最高温、最低温和平均温。如图 3-15 所示：



图 3-15 对象数据

3.2.8 图片融合

通过设置可见光以及红外图像的配准点信息，按照融合度范围实现双光融合（部分设备机型支持）。

点击【】按钮，当前图片立即进入图像位置点配准状态，点击“第 X 个位置点”，然后在可见光图像和红外图像上分别选择配准位置。如图 3-16 所示：

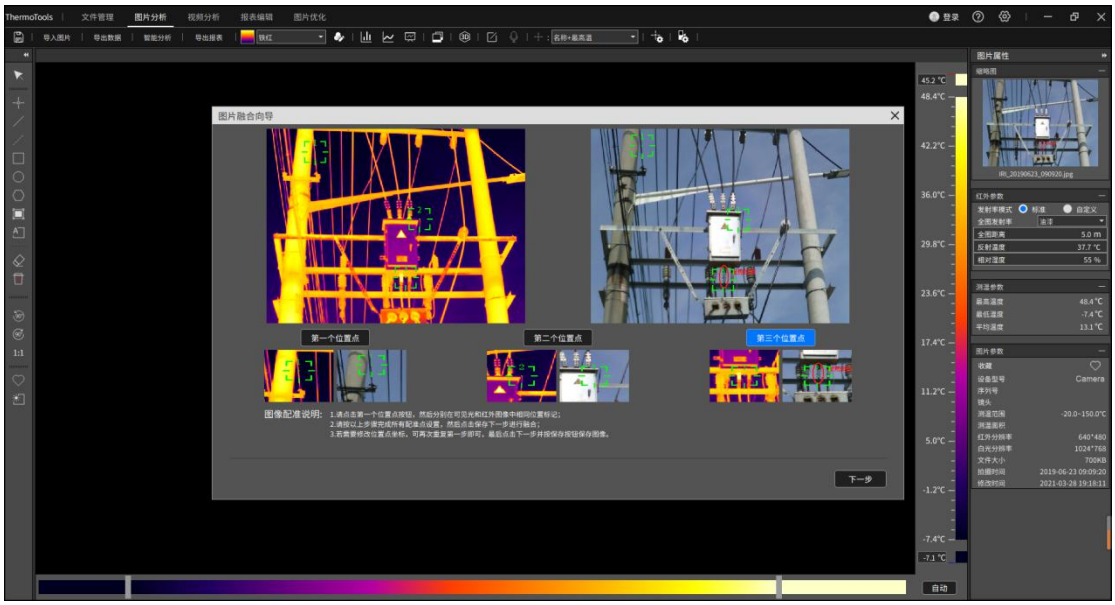


图 3-16 图像融合配准

设置好三个配准位置点后，点击“下一步”按钮立即进入融合图片显示界面，滑动或者点击右边滑条可以调节融合度，融合度范围选择为 1-5，默认融合度为 4。如图 3-17 所示：

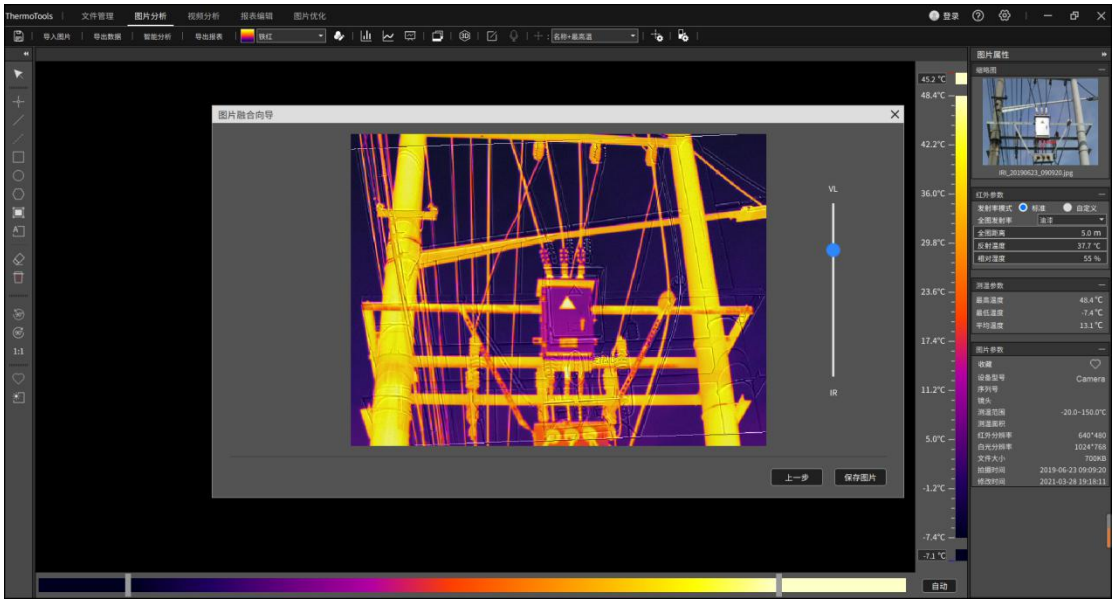


图 3-17 图像融合

点击“上一步”按钮可以退回上一步重新选择配准点。

点击“保存图片”按钮即可保存当前融合图像为 JPG 格式。

3.2.9 3D 模式

点击【】按钮，当前红外图片会直接进入 3D 模式显示，可以更直观查看当前红外图像的温度 3D 分布区域。

鼠标左边点击可以显示选中的点的温度信息，使用鼠标右键可以对 3D 图像进行旋转操作，使用鼠标滚轮可以对 3D 图像进行放大和缩小操作。如图 3-18 所示：

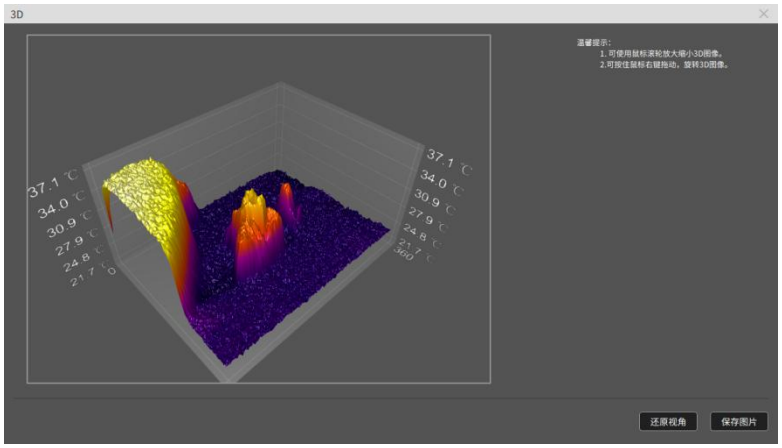


图 3-18 3D 模式

点击“还原视角”按钮可以将进行操作后的 3D 图像恢复到初始视角。

点击“保存图片”按钮即可保存当前 3D 图像为 JPG 格式。

3.2.10 文字注释和语音注释

1.文字注释

“图片分析”中，点击“文字注释”按钮【】，可对红外图片进行备注编辑以及查看。

2.语音注释

“图片分析”中，如图片含有语音注释信息，点击“语音注释”可播放语音注释。

3.2.11 分析对象设置

“图片分析”中，点击“分析对象设置”按钮【】，可自定义设置单个分析对象的名称、显示方位、发射率类型、发射率、距离、湿度、反射温度、报警类型、报警高温阈值、报警低温阈值。使得测温更进准。如图 3-19



图 3-19 分析对象设置

3.2.12 等温线设置

“图片分析”中，点击“等温线设置”按钮【】，设置等温线相关信息，便于当前图像高温、低温区域查看与分析。如图 3-20

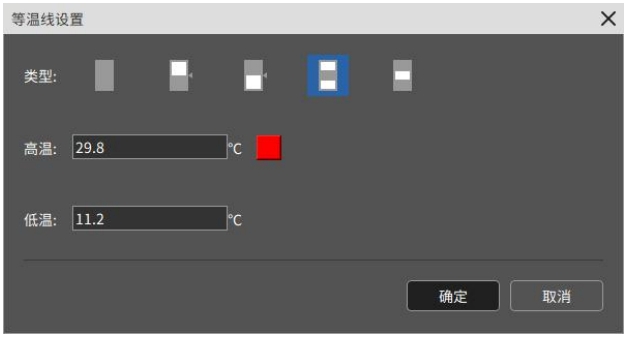


图 3-20 等温线设置

高等温线：

选择类型为高温等温线时可输入对应的高温阈值，并可选择对应的填充颜色，，图片会将高于阈值的区域以选择的颜色填充。

低等温线：

选择类型为低温等温线时可输入对应的低温阈值，并可选择对应的填充颜色，图片会将低于阈值的区域以选择的颜色填充。

区间内等温线：

选择类型为区间内等温线时可输入对应的区间阈值，并可选择对应的填充颜色，图片会将处于阈值之间的区域以选择的颜色填充。

区间外等温线：

选择类型为区间外等温线时可输入对应的高温与低温阈值，并可选择对应的填充颜色，图片会将高于高温阈值的区域以选择的颜色填充并将低于低温阈值的区域以选择的颜色填充。

3.2.13 图片属性

可以查看当前红外图片的参数信息，测温参数信息、对应的图片属性等。如图 3-21

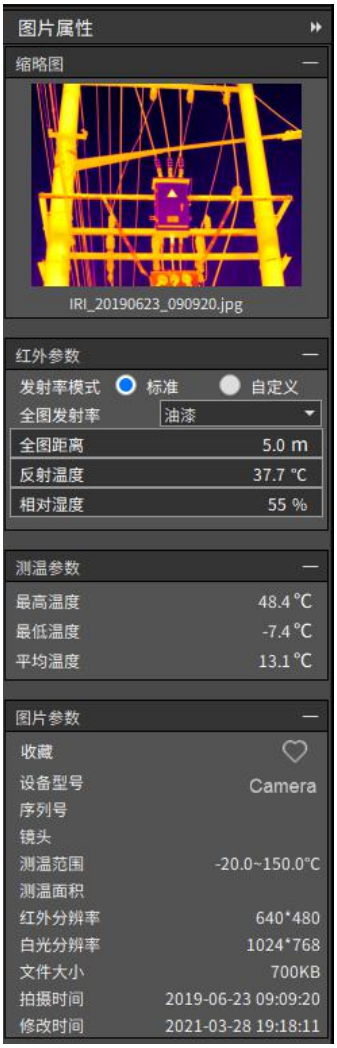


图 3-21 图片属性

1.缩略图

图片若包含可见光图片，或图片同级目录下有以命名规则对应的可见光图片，此处会显示可见光图片，点击此区域会将分析界面的图片与此处对调位置。否则显示红外图片的缩略图。如图 3-22

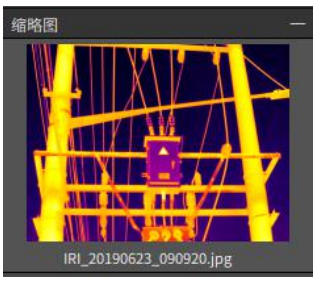


图 3-22 缩略图

2. 红外参数

此处为图片的测温参数，修改此处参数，图片的温度会发生对应的变化。如图

3-23 所示



图 3-23 红外参数

3. 测温参数

此处为图片的温度信息，包含全图最高温、最低温、平均温。如图 3-24 所示



图 3-24 测温参数

4. 图片参数

图片的基本参数信息，包含收藏状态、设备型号、镜头、测温范围、测温面积、红外分辨率、白光分辨率、文件大小、拍摄时间、修改时间。如图 3-25 所示



图 3-25 图片参数

3.3 视频分析

3.3.1 实时视频连接方式

请注意，ThermoTools 支持多款设备连接（如 B 系列、C/PS 系列、D 系列），连接方式如下：如图 3-26 所示

（注意：连接设备成功的前提是设备端的推流服务需要开启：设备主界面上滑动点击【LAN】）

B 系列设备：USB 连接，需提前安装 USB 驱动程序， SD 卡插入状态下不支持实时视频查看功能；

C/PS 系列设备： LAN 连接与 AP 连接，需确保设备端 IP 与 PC 端 IP 在同一网段；

D 系列设备： USB 连接与 AP 连接，USB 连接时 PC 端网络连接需设置为自动获取 IP 地址与 DNS 服务器地址；

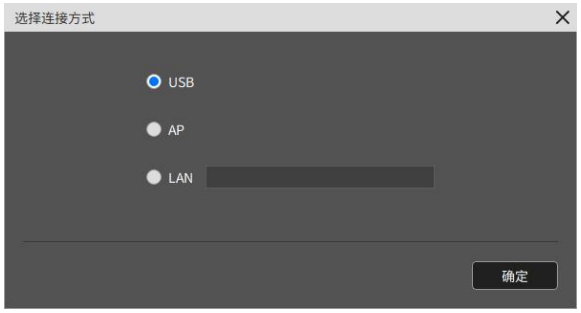


图 3-26 连接方式选择

1. 连接设备

点击“连接设备”按钮，进入连接方式界面，请根据当前设备的物理连接方式选择（LAN 方式连接需要输入设备 IP 地址）；

点击“确定”按钮后等待连接设备成功并播放实时视频，如图所示

点击“断开连接”按钮可停止实时视频播放。

2. 视频属性

视频连接成功或者打开录像文件成功后，视频属性页将显示当前视频相关信息，如图 3-27 所示。



图 3-27 视频参数

3.3.2 编辑录像

可以对当前播放的视频文件进行编辑操作。如图 3-28 所示

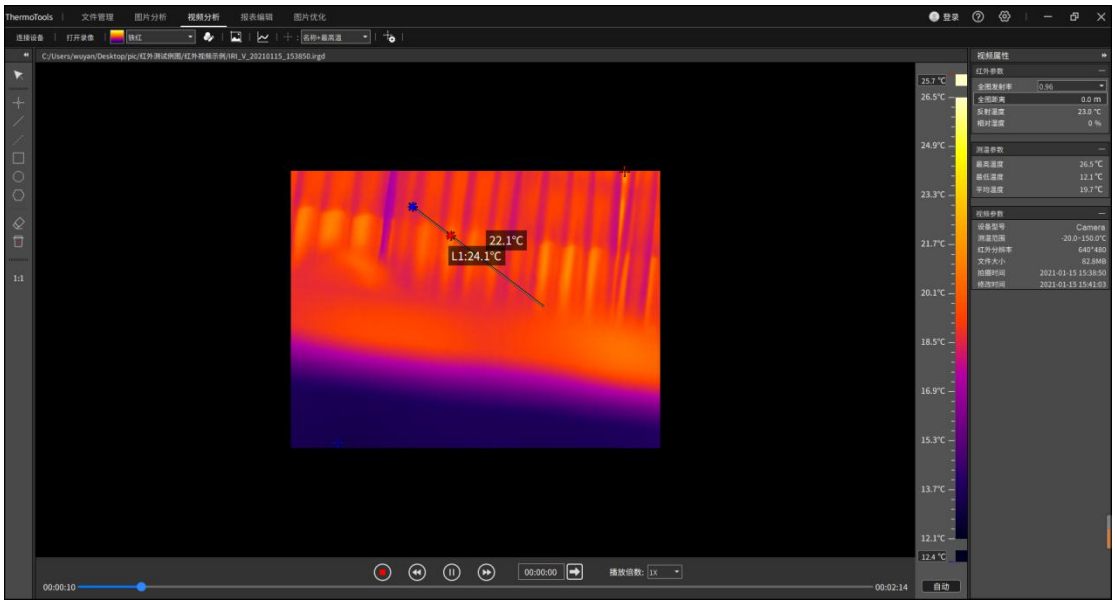


图 3-28 视频播放

1. 打开录像 

点击“打开录像”，显示文件选择弹框，可选择“.irgd”或“.mp4”文件进行播放。

2. 开始/暂停和停止 

在录像文件播放过程中，点击“开始/暂停”按钮控制视频播放或者暂停；点击“停止”按钮停止视频播放。

3. 上一帧  /下一帧 

在录像文件播放过程中，点击“上一帧”按钮跳转到上一帧图像，点击“下一帧”按钮跳转到下一帧图像（上一帧/下一帧操作会暂停视频播放）。

4. 跳转至帧 

在录像文件播放过程中，在时间输入框输入需要跳转的时间点，点击“帧数跳转”按钮，视频将跳转到设置的时间点进行播放。也可以通过点击播放进度条进行跳转。

5. 倍数播放

在录像文件播放过程中，选择不同档位的播放倍数，可调整当前的播放帧率。

6. 编辑图像

a. 选择不同的色带

可以改变图像的颜色。

b. 点击“自定义色带”按钮，可通过改变“色相”、“饱和度”、“明度”来改变图像颜色。

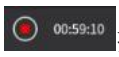
3.3.3 截图拍照和录像

1. 截图拍照

在实时视频和录像文件播放过程中，点击“截图拍照”按钮【】，将保存当前视频的红外图片，格式为 jpg 图像。

2. 录像

在实时视频播放过程中，点击“开始录像”按钮【

】，选择保存的路径及文件名（支持“.mp4”、“.irgd”格式，支持双录），点击“确定”按钮即可进行录像。点击“停止录像”

按钮将结束录像。

3.3.4 温度曲线

在实时视频或录像文件播放过程中（需先画分析对象），可以实时查看分析对象的最高温、最低温、平均温曲线图。点击“温度曲线”按钮，显示当前分析对象温度曲线。如图 3-29 所示

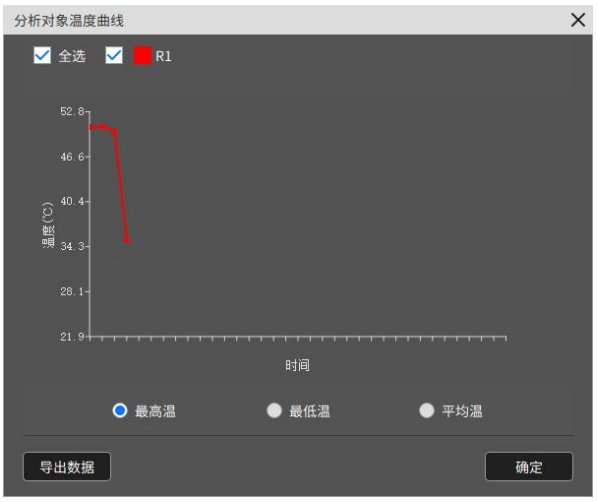


图 3-29 分析对象实时温度曲线

4. 选择分析对象名称，展示对应分析对象的温度曲线，选择“全选”，将展示全部分析对象的温度曲线。
5. 点击“最高温”、“最低温”、“平均温”按钮展示对应的温度曲线。
6. 点击“导出数据”按钮，保存当前温度曲线信息，选择“.csv”格式保存当前温度信息至 csv 文件中，选择“.jpg”格式保存当前温度曲线截图。

3.3.5 编辑分析对象

在查看编辑红外图像时，可以通过添加各种分析对象，设置单个分析对象的参数，进行精准分析。

1. 添加点对象

点击左侧工具栏选择“点”【】类型，然后在图像上点击鼠标左键绘制点分析对象。

2. 添加线对象

点击左侧工具栏选择“线”【】类型，然后在图像上点击鼠标左键生成第一个点，移动鼠标位置点击鼠标左键生成下一个点，以此类推生成折线的顶点，点击鼠标右键绘制线分析对象。

3. 添加温差线对象

点击左侧工具栏选择“温差线”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制温差线分析对象，松开左键结束绘制。

4. 添加矩形对象

点击左侧工具栏选择“矩形”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制矩形分析对象，松开左键结束绘制。

5. 添加圆对象

点击左侧工具栏选择“圆”【】类型，然后在图像上按下鼠标左键，移动鼠标位置，绘制圆形分析对象，松开左键结束绘制。

6. 添加多边形对象

点击左侧工具栏选择“多边形”【】类型，然后在图像上点击鼠标左键生成第一个点，移动鼠标位置点击鼠标左键生成下一个点，以此类推生成多边形的顶点，点击鼠标右键绘制多边形分析对象。

7. 编辑分析对象

选择分析对象，按下鼠标左键，然后移动鼠标位置可改变分析对象位置或者改变分析对象大小，松开鼠标左键结束编辑。

8. 删除选中分析对象

选择分析对象，点击“删除选中”按钮【】，删除选中的分析对象。

9. 删除全部分析对象

点击“删除全部”按钮，【】删除所有分析对象。

3.3.6 分析对象设置

在视频实时播放中，可以对分析对象进行个性化设置。如图所示



图 3-30 分析对象设置

选择分析对象，点击“分析对象设置”按钮【】，显示“分析对象设置”窗口。

1．选择分析对象显示位置，改变分析对象显示的位置。

2．选择报警类型，编辑对应分析对象的报警阀值，当温度达到报警条件时，分析对象会出现红色和原色交替闪烁。

3.3.7 自动抓图

在设备连接实时视频播放或者是打开本地视频播放时，可以开启自动抓图功能，按照多种模式进行自动抓图。

点击【自动抓图设置】按钮，设置自动抓图模式：自动抓图、定帧抓图。

点击，开启自动抓图模式。



3.4 报表编辑

自定义编辑报表内容以及页面元素，并支持保存为 Word 以及 PDF 格式文件。如图 3-31 所示

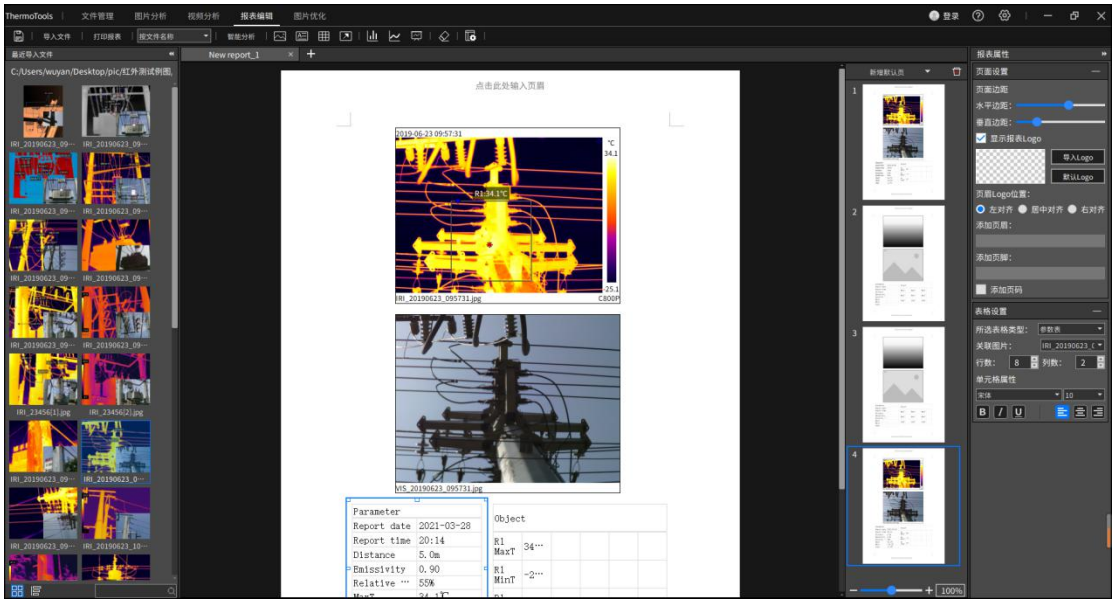


图 3-31 报表编辑

“报表编辑”中，进入报表编辑功能页。页面左侧为图片列表栏，显示文件管理最近打开的文件夹中的图片；

页面中间栏为当前正在编辑的报表文件；页面中间靠右区域是报表单页管理栏，可对一个报表文件中的每张单页进行管理；

页面右侧为报表属性栏，可设置报表页面和报表元素的属性。

3.4.1 新建报表

点击报表文件标题栏的【】按键，添加一个空白报表文件。

3.4.2 添加报表元素



4) 点击功能菜单栏的“添加图片”，“添加表格”，“添加文本”，“添加智能分析”，“添加直方图”，“添加温度曲线”，“添加对象数据”按键或对应的快捷键，进入添加报表元素状态；

5) 将鼠标移动到报表单页区域中的合适位置，点击鼠标左键，将相应的报表元素添加到报表单页中。

6) 点击功能菜单栏的“添加箭头”，进入添加箭头状态，然后在报表单页区域通过点击鼠标左键滑动，绘制出箭头的起点和终点。

3.4.3 编辑报表元素

在报表单页区域中选中某个报表元素，即可选中该报表元素进行拖动，缩放大小，可对报表内容进行编辑和属性设置。如图 3-21 所示

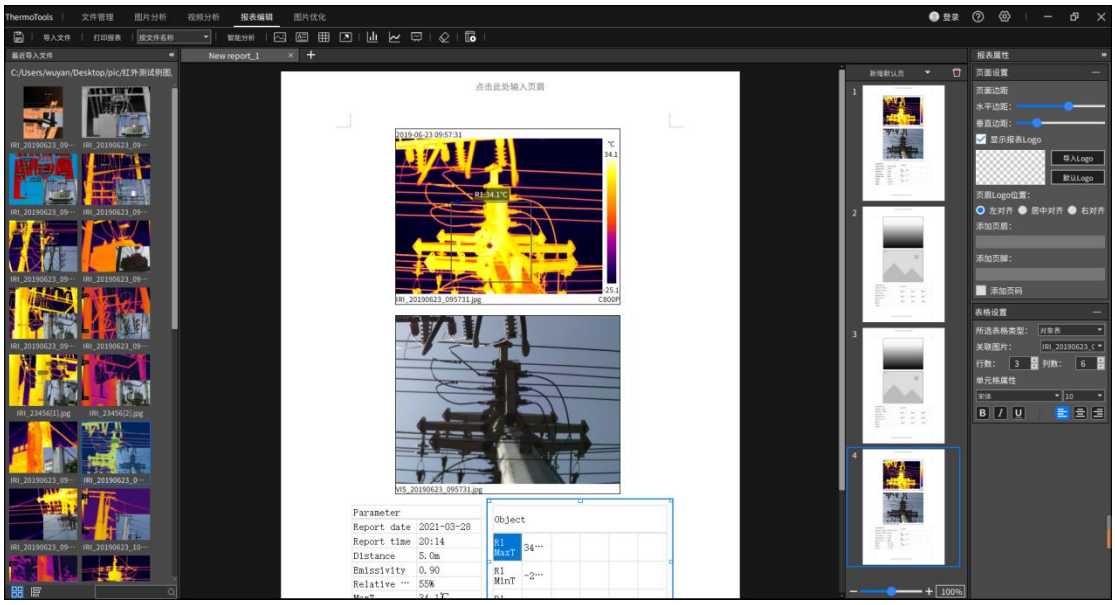


图 3-32 报表元素编辑

3.4.4 报表属性

在报表属性列表中，可以修改页面边距、报表 logo、页眉页脚、表格属性、文本框属性等相关信息。如图 3-33 报表属性

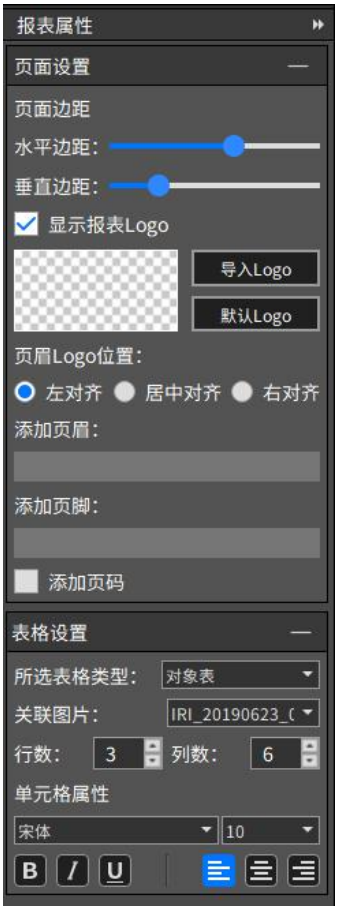


图 3-33 报表属性设置

设置报表页属性

右侧报表属性栏中，可对报表页面基本属性进行设置。

“页面边距”设置可设置报表上下左右边沿的宽度。

“显示报表 logo”将在报表页眉中显示 logo 图片。

“logo 位置”设置 logo 图片在页眉中的位置，logo 位置可设置为左对齐/居中对齐/右对齐。图片区域显示当前 logo 的缩略图。

“导入 logo”按键可导入上一张图片作为报表 logo，点击“默认 logo”可导入系统默认的报表 logo。

“添加页眉”，“添加页脚”编辑框可输入页眉页脚处显示的文本。

“添加页码”将在生成的报表中显示页码。

设置文本属性

选中文本元素时，可在报表属性栏对选中的文本元素进行设置。

可设置的属性包括文本字体，文本字号，粗体，斜体，下划线，文本对齐方

式等。

当选中的文本区域是智能分析结论时，可选择关联的红外图片。若关联的红外图片进行过智能分析，则智能分析的结论会自动填入文本区域。

设置表格属性

选中表格元素时，可在报表属性栏对选中的表格元素进行设置。

“表格类型”组合框可选择当前表格的类型，可选择的类型包括“普通表”，“参数表”，“对象表”。参数表和对象表可通过“关联图片”选择关联的红外图片。

参数表和对象表包含的内容在“设置”-->“报表设置”中进行设置。相关的数据则来源于关联的红外图片。

设置图片属性

选中图片元素时，可在报表属性栏对选中的图片进行设置。

“图片类型”中，图片类型包括“红外图片”，“可见光图片”，“普通图片”。当选择“可见光图片”时，可通过“关联图片”选择关联的红外图片。

3.4.5 导入图片

可导入新的红外图像进行报表内容编辑。

在“报表编辑”中左侧列表中拖入图片导入、或者在本地文件系统中导入需要制作的红外图片制作报表时，此时自动填充与该图片元素关联的其他报表元素，如关联的参数表/对象表/可见光图片/智能分析结论等。如图 3-34 所示

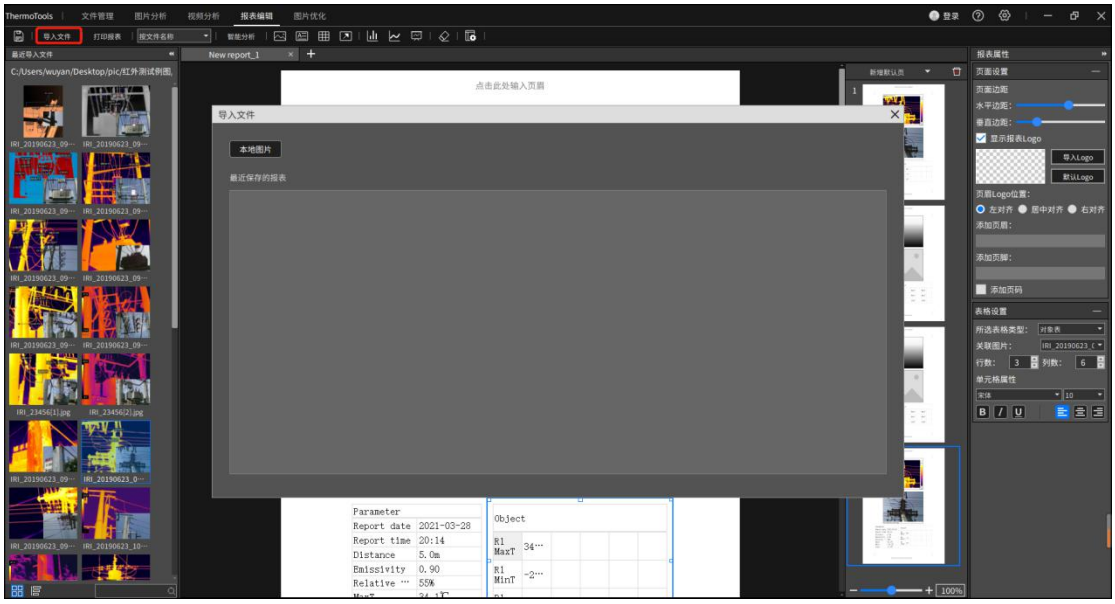


图 3-34 导入图片

3.4.6 新建报表单页

在右侧已制作的报表页列表中，可以新建单页：新增默认页、新增上次模板页、新增模板页。如图 3-35 所示

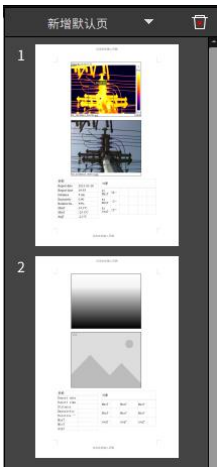


图 3-35 新增报表单页

新增默认页

点击报表单页管理栏中的“新增默认页”按键，将在当前报表文件的末尾追加一个新的报表单页，该报表单页套用默认的报表模板。

新增上次模板页

点击报表单页管理栏中的新增报表页组合框中的“新增上次模板页”，将在

当前报表文件的末尾追加一个新的报表单页，该报表单页套用最近一次使用的报表模板。

新增模板页

点击报表单页管理栏中的新增报表页组合框中的“新增模板页”，显示“选择报表模板”。选择一个页面模板之后，此时将在当前报表文件中添加套用对应模板的报表单页。如图 3-36 所示

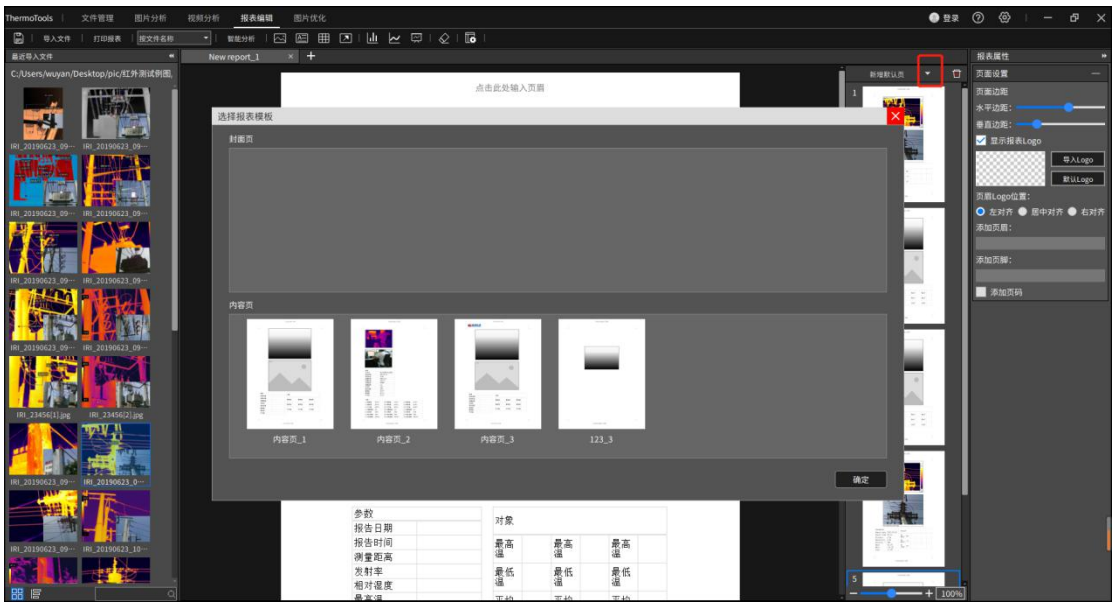


图 3-36 新增模板页

若选择的页面模板是内容页模板，则新的报表单页追加到报表的末尾；

若选择的页面模板是封面页模板，则新的报表单页添加到报表的第一页或替换之前添加过的封面页。

3.4.7 删除报表单页

点击报表单页管理栏中的“删除”按键，可删除当前显示的报表单页。当报表文件中仅包含一张单页时，不可删除此单页。



3.4.8 保存报表

对正在编辑的报表内容进行保存。

点击功能菜单栏的“保存报表”，可以保存当前的报表。支持保存为 pdf 格式和 docx 格式的文件。

点击功能菜单栏的“另存为报表”按键，选择报表保存的路径进行保存。



3.4.9 打印报表

点击功能菜单栏的“打印报表”打印报表按键，弹出打印设置对话框，在对话框中选择打印机，设置打印范围/打印份数等参数，然后点“打印”，按照设置的参数打印出当前报表文件。

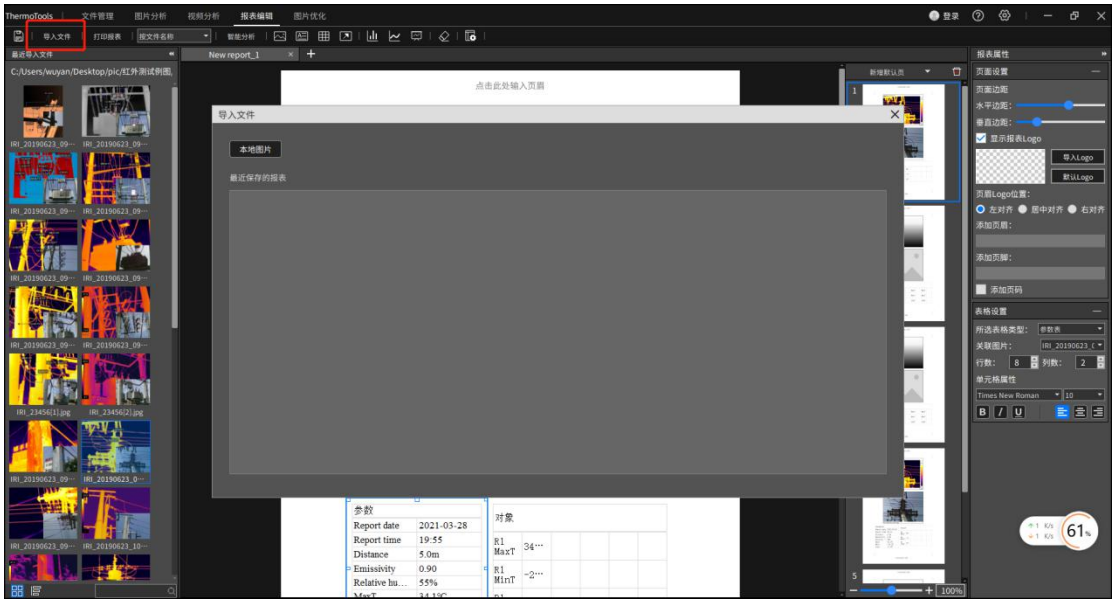


3.4.10 关闭报表

点击报表文件标题栏中某个报表标题右侧的“X”按键，可以关闭对应的报表。

3.4.11 打开历史记录

点击 “导入文件”导入文件按键，可以查看有最近保存报表的历史记录；双击打开该条记录对应的报表文件。



3.4.12 管理报表模板

可以将正在编辑的报表内容以及样式保存作为报表模板进行保存。如图 3-37 所示

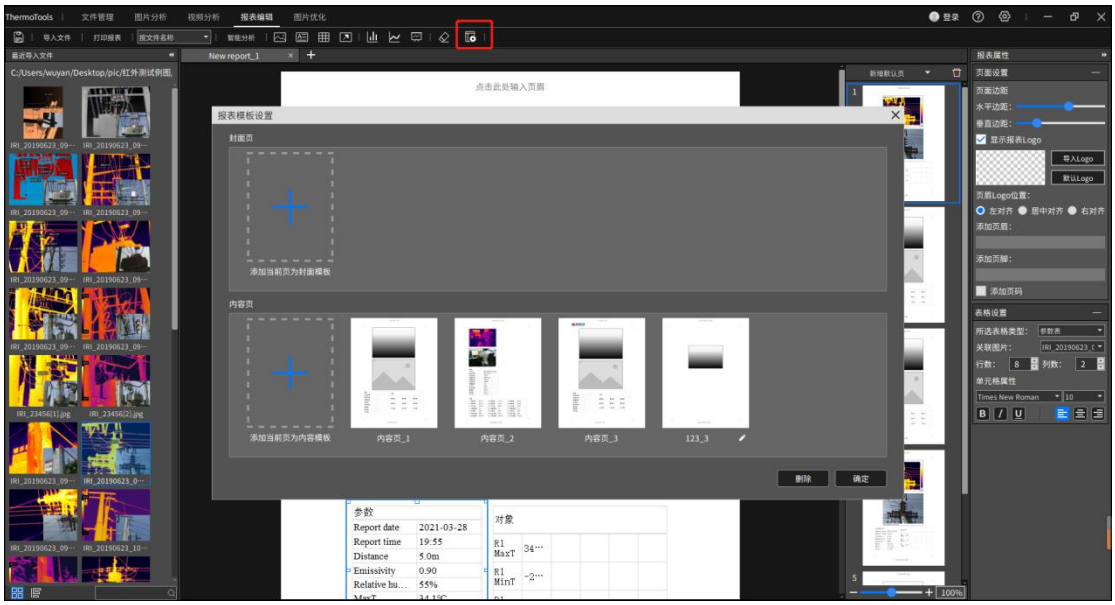


图 3-37 新增模板

点击功能菜单栏的“添加本页为模板页”按键，弹出报表模板设置对话框。

点击“+”按键将当前单页的布局添加为封面页模板或者内容页模板。封面页模板中不可包含红外图片元素，内容页模板中必须包含红外图片元素。

点击“删除”，删除某个报表模板。点击，可以修改对应模板的名称。系

统模板不可删除或修改名称；手动添加的自定义模板可以删除和修改名称。

3.5 图像优化

3.5.1 导入文件、文件编辑

点击“导入图片”按钮，选择需要的图片（支持选择多张图片），将展示在左侧文件管理框中。支持导入来自不同的文件夹的图片。

注：

④ 一次性最多导入 100 张图片。超出后会进行弹窗提示。

⑤ 一个文件夹中的图片最多 600 张。超出后会进行弹窗提示。

⑥ 最多导入 10 个文件夹。导入第 11 个文件夹时，第一个文件夹将被清除，其余文件夹依次向前补位，并导入最新的文件夹。

3.5.2 图片拼接

图片拼接功能仅支持从设备端拍摄的全景拼接图。通过图片拼接功能，实现全景图清晰呈现。

待拼接的图片类型如：PIR_yymmdd_hhmmss-X.jpg 格式命名。其中已拼接并保存的图片不可再次拼接。如图 3-38 所示

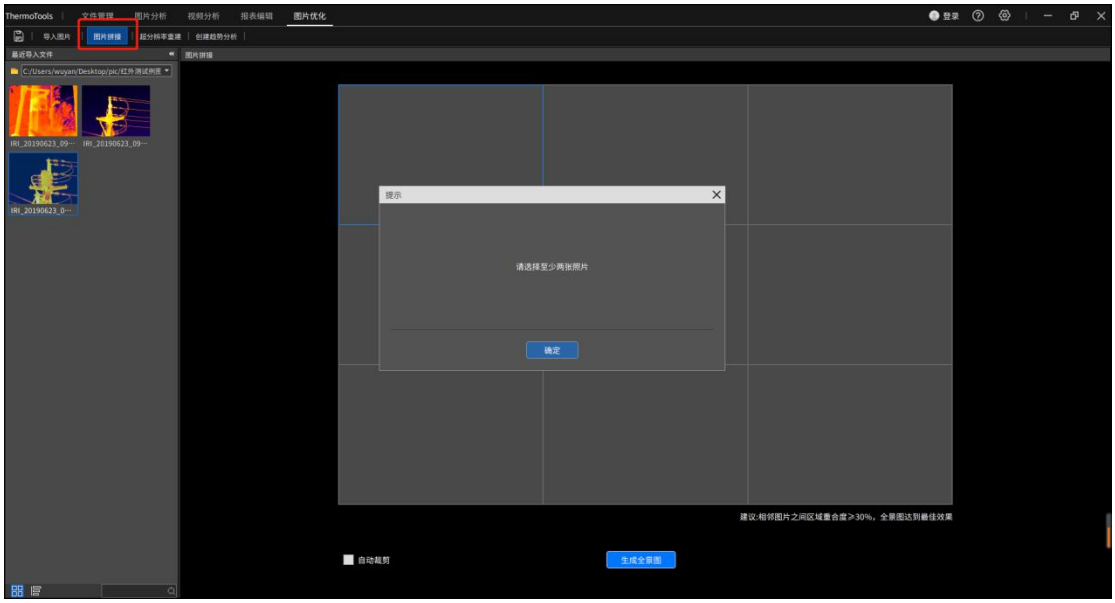


图 3-38 图片拼接

在左侧文件管理框中片，将待拼接的图片拖入九宫格中（注意拖放的顺序），点击生成全景图，将会生成一张拼接后的图片。点击“上一步”按钮可返回九宫格界面，进行图片顺序等调整。再次拼接。

注：

6. 九宫格中的图片以从左到右，从上到下的顺序进行排序，支持不连续排列，按照顺序重合度 30%进行拼接。
7. 九宫格中的图片支持拖拽互换位置
8. 支持 Delete 键删除九宫格中选中的图片
9. 拼接的图片需满足每张图片有 30%的重合度，否则将无法进行拼接
10. 拼接后的图片支持滚轮缩放，不支持放大

3.5.3 超分辨率重建

超分辨率重建，支持将原始红外图片分辨率重建生成一张放大后的图片（放大两倍），使得分析测温更精准。如图 3-39 所示

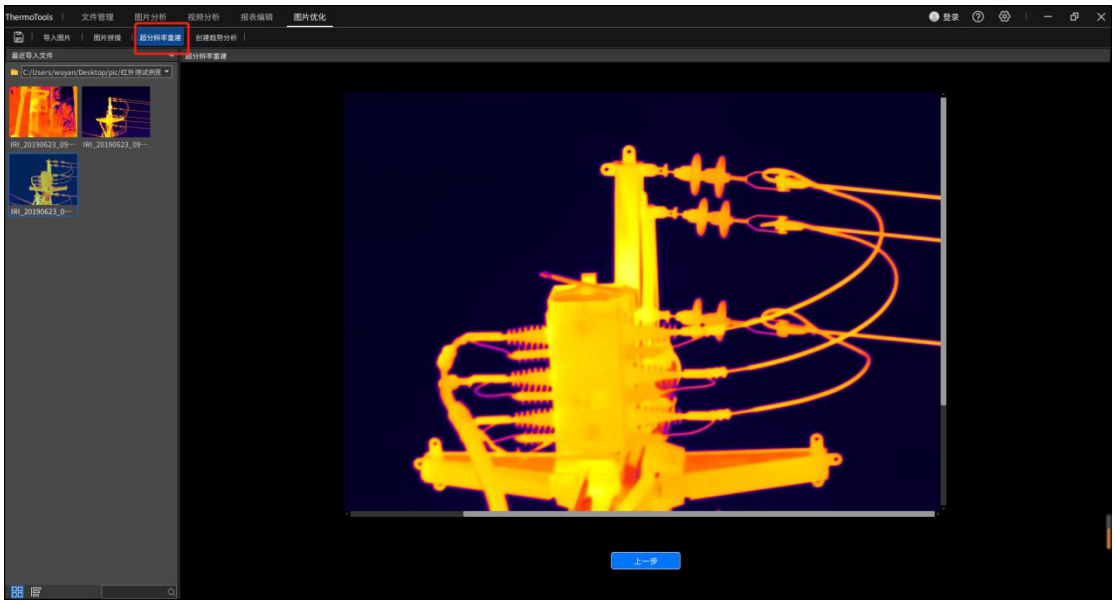


图 3-39 超分辨率重建

将左侧文件管理框中的图片，以拖拽的形式拖入空白处，点击“重建图片”按钮，将会生成一张放大后的图片（放大两倍），显示在界面上。点击“上一步”，可返回原始图片界面，进行图片切换调整，再次重建。

注：重建后的图片只支持缩小，不支持放大

3.5.4 创建趋势分析

通过选择同一时期不同设备，或者同一设备不同时期拍摄的照片，按照最高温、最低温、平均温，创建温度趋势分析图。如图 3-40 所示

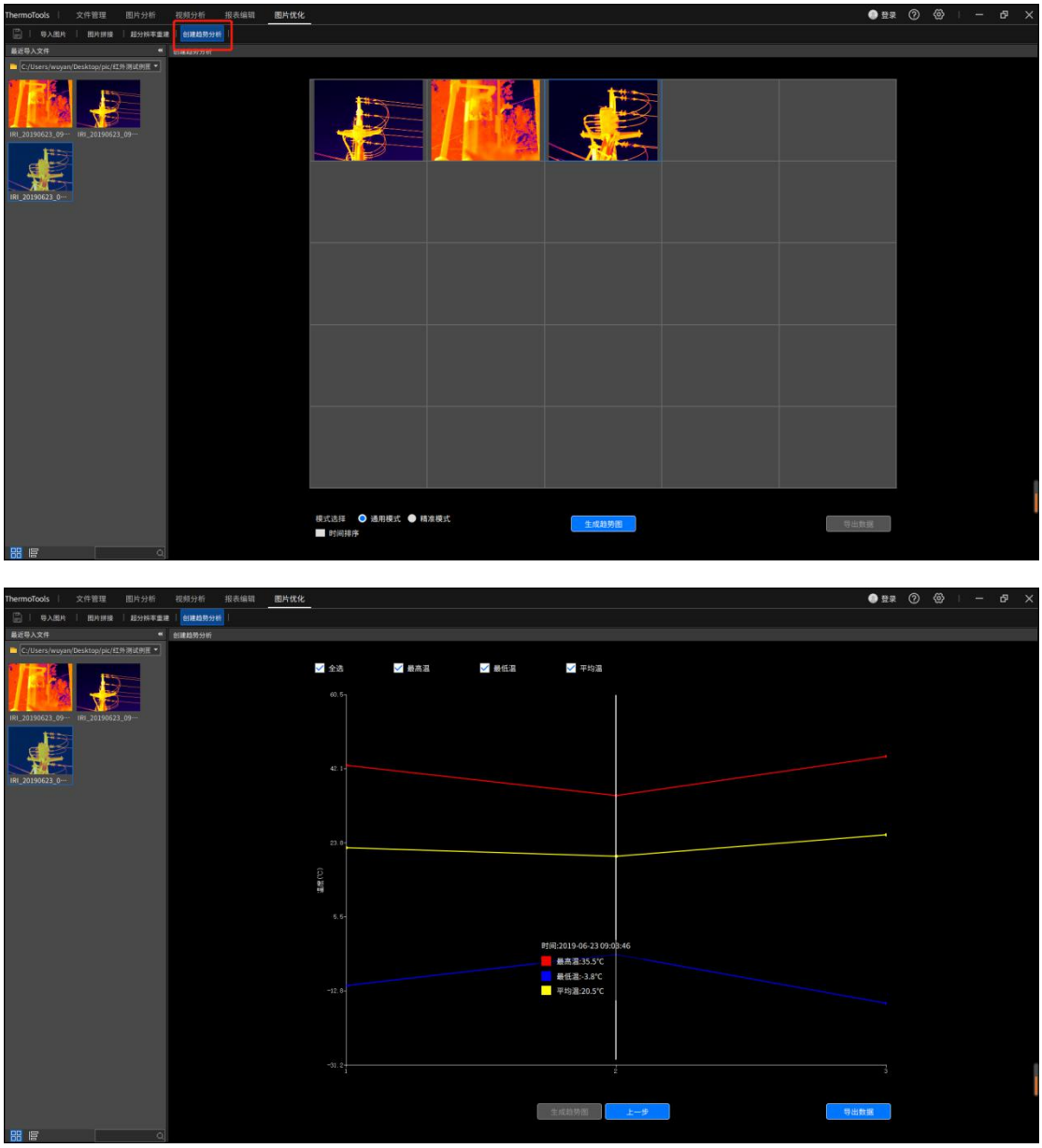


图 3-40 创建趋势分析

将左侧文件管理框中的图片，以拖拽的形式拖入 25 宫格中，若已有图片，将进行替换，点击创建趋势分析按钮，将按照图片排列顺序生成温度趋势图，显示在界面上。点击“上一步”，进行图片切换调整，再次生成趋势。

通用模式：取全图最高温，最低温，平均温绘制趋势

精准模式：取局部区域最高温，最低温，平均温绘制趋势。操作方法如下：

双击需要精准调节的图片，按下左键，拖动鼠标，松开左键，在制定对象上绘制矩形，绘制完成后将会在矩形中描绘出对象框线，若不满意，可重新绘制矩形生成新的描边区域，描边完成后，双击回到 25 宫格界面即可。

时间排序：支持按照图片拍摄时间生成趋势图。

导出数据：支持导出.csv 和.jpg 两种方式保存数据。

3.6 云登陆、设置和帮助

3.6.1 云登陆

登录云账户，可以将设备端上传至云端的图片下载到本机系统中，进行分析。（部分设备机型支持）如图 3-41 所示



图 3-41 云登录

登录：账户与设备端账号一致，请于设备端【设置】-【云服务】中进行注册。

记住密码：勾选记住密码登录以后，再次进入登录界面会显示上次登录的用户信息。

自动登录：勾选自动登录点击登录，登录成功以后启动软件会自动登录云账户。

退出：点击“退出”，可退出当前登录账号。

切换用户：进入登录页面，切换用户。

3.6.2 设置

3.6.2.1 通用设置

常规参数设置，主要包含系统语言、系统单位、系统参数、显示设置四部分。如图 3-42 所示

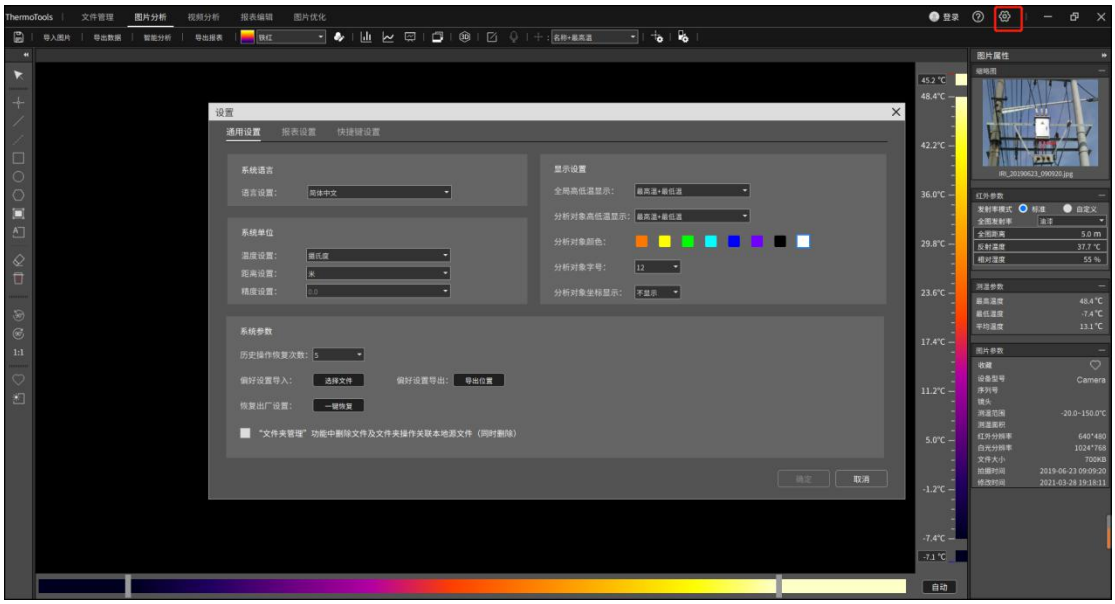


图 3-42 通用设置

系统语言：

切换软件版本的语言类型，主要包含简体中文、英文、波兰文、意大利文、俄文、西班牙文、土耳其语。

系统单位：

温度设置：支持摄氏度、华氏度、开尔文三种单位

距离设置：支持米、英寸、码三种单位

精度设置：支持单精度显示

系统参数：

历史操作次数：当前操作支持的撤销次数，支持 0、5、10、20 四种

偏好设置导入：选择已经保存的设置参数文件导入，将加载预先保存的配置参数

偏好设置导出：将当前设置的参数导出保存在本地，方便下次直接导入，配置

相关参数。注：参数修改需先确定保存后，才会导出最新的修改，否则保存上一次的参数。

恢复出厂设置：将参数还原为出厂时的默认参数

文件夹删除关联本地：若勾选，将在文件管理界面文件夹删除时同时删除本地文件夹及其内容。

显示设置：

全局高低温显示：图像分析及视频播放时，全图区域温度显示类型设置，支持最高温+最低温、最高温、最低温、不显示四种。

分析对象高低温显示：图像分析及视频播放时，分析对象区域温度显示类型设置，支持最高温+最低温、最高温、最低温、不显示四种。

分析对象颜色：图像分析及视频播放时，绘制的分析对象边框颜色设置，包含橙、黄、绿、天蓝、深蓝、紫、黑、白八种颜色。

分析对象字号：图像分析及视频播放时，绘制的分析对象标签字号设置，支持 4、6、8、12、14、18、24 七种字号。

分析对象坐标显示：图像分析绘制分析对象时，可显示分析对象的顶点坐标及宽高属性，目前仅支持矩形。

3.6.2.2 报表设置

设置报表页面的相关参数，主要包括报表设置、报表显示设置两部分。如图 3-43 所示



图 3-43 报表设置

默认保存格式：报表保存时的格式设置，支持 word、pdf 两种格式

分析对象显示：报表页面分析对象显示的类型设置，支持名称+最高温、名称+最低温、名称+平均温、最高温、最低温、平均温、仅名称、不显示八种类型。默认加载图片智能分析建议：若勾选，报表中插入智能分析单元框时，在图像分析界面中进行的智能分析结果将自动填充在该单元框中；若不勾选，则不自动填充。

显示报表 Logo：导出后自动打开报表：若勾选，报表保存成功后，会自动打开该报表；若不勾选，则不自动打开。

报表默认显示：包含全图参数列表及对象参数列表两种，主要用于报表界面，表格单元框中的显示选项设置。

全图参数：包含文件名、报告日期、报告时间、拍摄日期、拍摄时间、设备型号、相对湿度、发射率、测量距离、最高温、最低温、平均温、GPS 数据。

对象参数列表包含最高温、最低温、平均温、发射率、反射温度、测量距离、相对湿度、大气透过率、光学透过率。

3.6.2.3 快捷键设置

主要设置系统中所使用到的快捷键，主要包含通用设置、菜单栏、文件管理、图片工具栏、视频工具栏、报表编辑栏六部分。如图 3-44 所示



图 3-44 快捷键设置

部分快捷键支持修改、删除、还原及恢复默认设置的功能，操作方法如下：

启用编辑：双击修改快捷键。

修改功能：选择键盘按键，切换快捷键，若快捷键冲突项，将还原为上一次的设置。注，不支持标点符号、Home 等特殊字符。

删除功能：点击删除，将会把当前处于编辑状态的快捷键清空。

还原功能：点击还原，将会把当前处于编辑状态的快捷键切换为上一次的内容。

恢复默认设置：将会把所有快捷键恢复到出厂设置。

停用快捷键：快捷键将不生效。

3.6.3 帮助

3.6.3.1 迭代说明

显示迭代说明信息，包含历史以及当前软件版本的迭代更新记录。

3.6.3.2 版本信息

显示版本更新信息。本机系统、软件语言、安装地址、版本号等信息。

第四章 常见使用问题

4.1 设备连接问题

4.1.1 USB 连接

问题：设备打开对应 USB 连接开关，红外分析软件在视频分析界面点击“连接设备”，提示无法连接；

解决：在电脑“网络连接”，确认设备已被识别；

4.1.2 AP 连接

问题：设备打开对应 AP 连接开关（或 WiFi 热点开关），红外分析软件在视频分析界面点击“连接设备”，提示无法连接；

解决：在电脑“网络连接”，确认设备已被识别；

4.1.3 LAN 连接

问题：设备打开对应 LAN 连接开关，红外分析软件在视频分析界面点击“连接设备”，提示无法连接；

解决： 1.设备 IP 设置与电脑 IP 处于同一网段；

2.在电脑“网络连接”，确认设备已被识别；

4.2 如何在受限账户下安装程序

鼠标右键选中安装包，选择以管理员方式运行红外分析软件安装包；若安装过历史红外分析软件，请卸载后再重新安装。

4.3 如何恢复默认设置

1.重启红外分析软件可恢复除快捷方式之外的设置；

2.在快捷键设置界面，可通过点击“恢复默认设置”，来恢复快捷键的默认设置；

4.4 为何图片打不开

1.请确保在计算机设置中，“设置”-“时间和语言”-“更改系统时区设置”中选中 Unicode UTF-8 提供全球语言支持。

