HIKMICRO Analyzer

User Manual

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Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
Danger	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
Note	Provides additional information to emphasize or supplement important points of the main text.

Contents

Chapter 1 Overview

This user manual provides the operation guide of the client. To ensure the properness of usage and stability of the client, refer to the contents below and read the manual carefully before installation and operation.

1.1 Introduction

The HIKMICRO Analyzer client is used to view the temperature information contained in thermal images and radiometric videos, and perform temperature measurement data analysis.

File Analysis

Thermal Images

Thermal images taken by a thermal camera can be imported to the client for file management and analysis.

The client provides file management functions including file tagging, categorization, etc. In addition, file analysis can be performed, including image editing and temperature measurement data analysis. Multiple operations can be performed for the analysis, including configuring measurement tools, adjusting measurement parameters, switching image display mode, setting color alarms, etc. After the analysis, you can view the measurement results and charts, and save the images or export the report as required.

Radiometric Videos

Radiometric videos recorded by a thermal camera can also be imported to the client for analysis. You can obtain the measurement results by configuring measurement tools, adjusting measurement parameters, etc. At the same time, the time-temperature curves and temperature distribution histograms will be displayed for you to check the temperature changes and distributions.

Live View & Analysis

A thermal camera can be connected to the client for live view, and the real-time temperature measurement analysis can be performed for the live view image. You can obtain the measurement results by configuring measurement tools, adjusting measurement parameters, etc.

1.2 Workflows

This section introduces the brief workflows of file analysis and live analysis.

File Analysis

1. Use your device to take thermal images and videos.
2. Import the files into the HIKMICRO Analyzer client for analysis.
3. Generate a thermography report in PDF format, or in ODT format for further editing (not available for videos).
4. Save the report or share it with other people via e-mail.

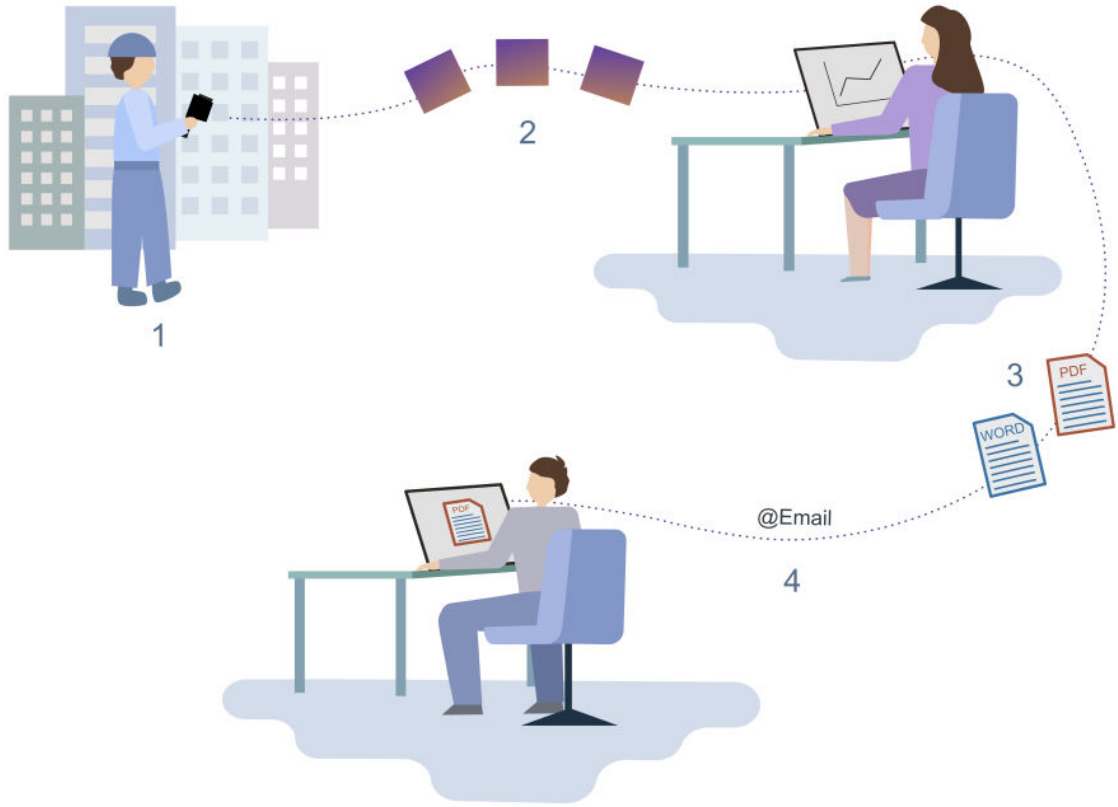


Figure 1-1 Workflow of File Analysis

Live Analysis

1. Connect your thermal camera to the client via USB or network, configure the device parameters and check the live view.
2. Set the image display mode, configure the temperature measurement tools to view the real-time measurement results.
3. Capture images and record videos during live view and save the measurement results, charts and data records after analysis.

1.3 Running Environment

The followings are the recommended running environments for installing the client.

- Operating System
  - Microsoft Windows 7 / Windows 10 / Windows 11 (64-bit operating system)
  - Windows server (64-bit operating system)
- CPU: i5-4590 or above
- RAM: 4G or above
- Graphics Card: RADEON X700 series 256M or above

Chapter 2 Install Software

2.1 Software Installation

Open the software installation package, and then double-click to run the setup, click **I agree to the terms in License Agreement** in the pop-up window. Select **One-Click Installation** or **Customize** according to your requirement.

One-Click Installation

The software is installed in the path by default: C:\Program Files.

Customize Installation

Click and select the installation path.

Install WinCap

WinCap driver is used to search online devices that are in the same LAN network segment with your device. If you need to connect your device to the client software by network connection for live streaming, make sure that WinCap is installed in your PC.

The software installation wizard automatically check on your system to see if the driver has been installed. Please check **Install WinCap** as the software suggests.

After installation, you can check **Create a Desktop Icon** as needed.

Chapter 3 Upgrade Software

3.1 Software Upgrade

Before You Start

An earlier version has been installed.

Before upgrading the software, please make sure you have stopped running the software.

Steps

1. Open the software installation package, and then double-click  to run the setup.
2. Click **Upgrade** in the pop-up window.

Note

- The software will be upgraded to the same path of the earlier version.
- If you need to connect your device to the client software by network connection for live streaming, please check **Install WinCap** as the upgrade wizard suggests. WinCap driver is used to search online devices that are in the same LAN network segment with your device.

What to do next

After upgrade, check **Create a Desktop Icon** as needed.

Chapter 4 Uninstall Software

4.1 Uninstall or Modify Software

Before You Start

Before uninstalling or modifying the software, please make sure you have stopped running the software.

Steps

1. Click **> Control Panel > Procedures and Functions** in the Windows operating system.
2. Right-click **HIKMICRO Analyzer** and then select **Uninstall/Modify**, or simply double-click **HIKMICRO Analyzer**.
3. In the pop-up window, select:
   - **Uninstall**.
   - **Modify**.

   A prompt will pop up after the uninstallation or modification is completed.

Chapter 5 User Interface

This chapter describes the application pages and some system settings.

5.1 Application Pages

After starting the HIKMICRO Analyzer, you are presented with the Library tab. On the top, you can click **Library**, **Analysis**, **Report**, and **Live** to switch between the tabs.

5.1.1 Library

On the top, select **Library** tab. In Favorites Library, click **All Files**, the center pane displays all files that have been imported to the client. When you right-click a file, you can quickly locate the folder where you have saved the images on your computer. When you click a favorites folder you have created in the left pane, the images grouped in that folder will be displayed in the center pane.

5.1.2 Analysis

On the top, select **Analysis** tab. In this page, you can edit and analyze images and videos for more accurate temperature information. In the right pane, you can view the image/video information, configure temperature parameters, and check temperature measurement results. You can click **Report** to select a template and generate the report for images.

5.1.3 Report

On the top, select the **Report** tab. In Report, you can generate a report for images in Task List. After generating the report, you can edit the report, change the report template, etc. You can also export the report to the local PC.

5.1.4 Live

On the top, select **Live**. On this tab, you can connect a thermal camera that supports radiometric infrared-video streaming to start live view. During live view, you can capture images, lay out measurement tools on the live video, and view the measured results of every video frame.

5.2 Settings

In the Settings window, you can switch the display language, the display temperature unit and the distance display unit.

Note

Some settings require a restart of HIKMICRO Analyzer before a change takes effect.

5.2.1 Switch Languages

In the top-right corner, click > **Preference** to select a system language.

5.2.2 Switch Temperature Display Unit

Steps

1. In the top-right corner, click > **Measurement** .
2. In Temperature Unit, select a temperature unit.

5.2.3 Switch Distance Display Unit

Steps

1. In the top-right corner, click > **Measurement** .
2. In Display Unit, select a unit.

5.2.4 Switch Area Display Unit

Steps

1. In the top-right corner, click > **Measurement** .
2. In the Area Unit, select a unit.

5.2.5 Set GPS Format

In Image Information panel, if an image contains GPS information, the GPS information will be displayed as the setting.

Steps

1. In the top-right corner, click > **Preference** .
2. Select the display format.
3. Click **Save**.

5.2.6 Hardware Acceleration

Hardware acceleration uses the graphics card of the PC to speed up the image processing of thermal images and videos, so as to improve operation fluency.

The client software checks the hardware of your PC to see if the function is supported. If supported, the function is ON by default.

You can turn off the function from **Settings > Preference > Hardware Acceleration** when necessary.

Note

A gray toggle button means that the function is not supported by your PC.

5.3 User Help

You can view the user manual and version information of HIKMICRO Analyzer, and give us your feedback.

5.3.1 View User Manual

On the top-right corner, click to view the manual.

5.3.2 View Client Information

In the top-right corner, click **> About** to view the client version, technical support e-mail and open source licenses, etc.

Chapter 6 File Management

6.1 Navigation for File Management Page

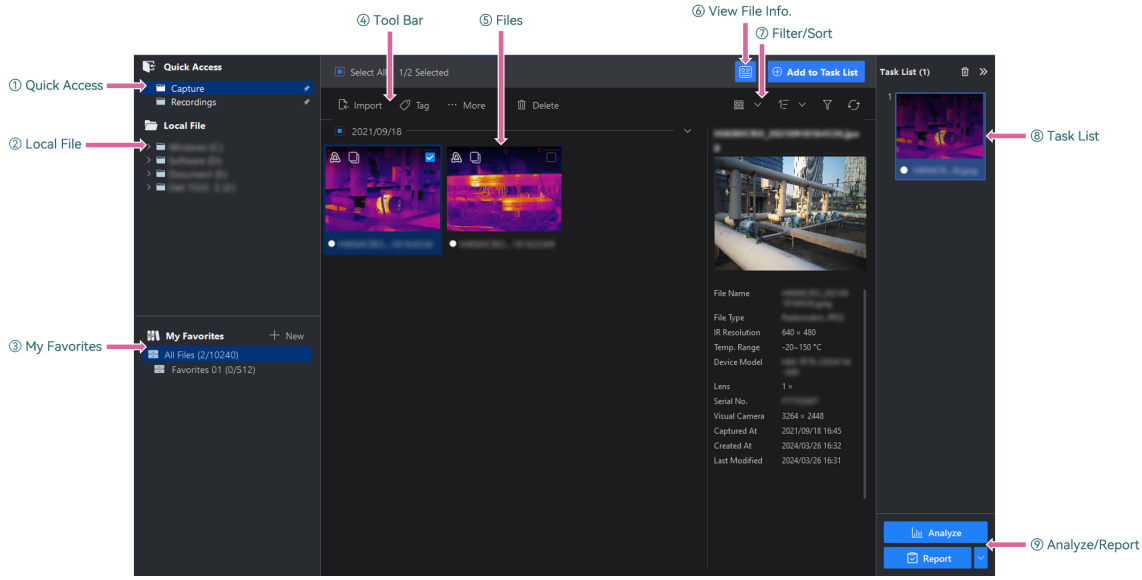


Figure 6-1 File Management Page

①: **Quick Access**. **Capture** and **Recordings** are the 2 default folders in **Quick Access**, used to store the images and videos from video analysis and live analysis. You can also pin other folders to **Quick Access**. See ***Local File and Quick Access*** for the details.

②: **Local File**. You can view the files stored on the local PC and import them to **My Favorites**. See ***Import File*** .

③: **My Favorites**. You can manage the imported image and video files in **My Favorites** folders. The number in the brackets represents the number of files imported and the maximum number of files that can be imported.

④: Tool bar. You can perform operations including importing files, adding tags, deleting files, renaming files, moving files, etc.

⑤: Files. View the files in the selected folder.

⑥: View file info. Click to view the detailed information of the selected file.

⑦: Filter/sort. You can filter and sort files by different conditions.

⑧: Task list. You can add files to the task list for file analyzing and report generating later.

⑨: Analyze/report.

6.2 Local File and Quick Access

Local file and quick access supports quickly locate, access, and browse folders on local PC.

Local File

Local files are folders on local PC. You can view files in local file, add files to HIKMICRO Analyzer **Task List**, or import files to **My Favorites**, etc.

Quick Access

Quick access contains **Capture** and **Recordings** folder by default. You can manually set local folders to **Quick Access**.

- **Capture**: Stores images captured in **Live** analysis and videos analysis. The path can be modified in > **Location** > **Captured Images in Analysis and Live** .
- **Recordings**: Stores videos recorded in **Live** analysis. The path can be modified in > **Location** > **Recorded Video in Live** .
- Pin/Unpin a folder: Right click on a folder, and select **Pin to Quick Access**/**Unpin from Quick Access**.

6.3 My Favorites Management

My Favorites shows all files imported to the client and you can navigate to any specific favorites folder. For files imported from your local computer or any connected network sharing, you can perform operations including viewing details, categorizing, editing, sorting, adding tags, etc.

6.3.1 Create My Favorites

When you open the client for the first time after installation, you need to set the path for My Favorites.

In the pop-up window, select a folder for saving files.

Note

- Saving to the C drive or desktop is not recommended.
- The folder for saving files should be an empty folder.
- You can view or edit the folder path. See details in *Change Location of My Favorites* .

After setting the path for My Favorites, sample pictures will be automatically downloaded to My Favorites and can be used for subsequent material managing, material analyzing, and report generating.

6.3.2 Change Location of My Favorites

You can view or edit the folder saving path of My Favorites.

Steps

1. On the menu bar, click .
2. Click **Location**.
3. Under **My Favorites**, click to select a folder path, or edit the default path manually.
4. Click **Save**.

6.3.3 View Details of My Favorites

Right-click **All Files** and select **View Details** to view the basic information, including the creating time, latest editing time, library capacity, and the number of existing files in the library.

6.4 Favorites Management

Create and name the favorites according to different usage scenarios. You can import files to different favorites for categorization in My Favorites.

Go to **Library > My Favorites > All Files** to view the list of favorites.

6.4.1 Create Favorites

In My Favorites, create favorites (folders) to categorize files.

On the **Library** page, click beside **My Favorites** to create a folder.

Note

- Up to 32 Favorite folders can be created and up to 512 files can be imported to a single favorite folder. Up to 10240 files in total are allowed in My Favorites.
- A **Sample Favorites** folder is created by default and sample images will be imported to this folder automatically.

6.4.2 Rename Favorites

Right-click the favorites name and select **Rename** to rename it.

6.4.3 Delete Favorites

Right-click the favorites name and select **Delete** to delete it.

Note

You can find the files in the deleted favorite folder in **All Files** folder.

6.5 Import File

Before analysis, you can import files to My Favorites or specific Favorites folder(s) for file categorization and management.

Files in the following formats can be imported: *.jpeg, *.jpg, *.hrv, and *.rv. You can import up to 10,240 files in total to the client.

Configure the **Import Mode** as required before importing files.

Steps

1. (Optional) Configure the **Import Mode**. **Copy**, **Cut** and **Index** are selectable.

   Click ⚙ on the upper right of the client, and then click **Import Mode** to configure the import mode for the images and videos separately.

Import Mode	Descriptions
Copy	Copy the files to My Favorites with the original files untouched.
Cut	Move the files to My Favorites and the original files will be deleted.
Index	Add the file indexes to My Favorites. Changes are made to source files directly.

2. On the **Library** page, import files by one of the following operations.
   - Select **All Files** or a specific Favorites folder and click **Import**. Select the files and click **Open** to import them to the client.
   - Select the files/folders in **Local File**. Right-click the files/folders and select **Import to Favorites**, and select the target favorites for importing.
   - Open a local folder on your PC with Explorer, select and drag the files to **All Files** or a specific Favorites folder.

   Note

   When **My Favorites** or a specific Favorites folder is empty, you can click the empty area on the right or drag the files to this area to import files.

6.6 Rename File

Choose one of the following ways to rename the file.

- Right-click the file you want to rename and click **Rename**.
- Check the file you want to rename. Click ··· **More > Rename** .

Note

The file name in local PC will not be modified after it is renamed.

6.7 Delete File

You can delete a single file or batch delete multiple files.

Note

Deleting a file under **All Files** will also delete the original file; deleting a file under a specific Favorites will only remove the file from the Favorites folder.

- Delete single file:
  - Hover over the file and click on the lower-right corner of the file, and then click **OK** in the pop-up window.
  - Right-click the file and select **Delete**, and then click **OK** in the pop-up window.
- Batch delete files:
  Select multiple files as needed and click **Delete** in the tool bar, and then click **OK** in the pop-up window.

6.8 Add Color Tag to File

For a file without a color tag, you can add a tag to the file; for a file already with a color tag, you can change the tag.

You can add tags to files for classification as needed. For example, according to the handling priority, you can add a red tag to the file which needs to be processed immediately.
Select one or multiple file(s) to be tagged, hover over **Tag** in the tool bar, and select a color tag. The added tag will be displayed under the file.
Right-click the file with a tag, and then click **Reset Tag** to reset the added tag.

6.9 File Categorization and Sorting

You can categorize and sort files by capture time, tag, etc.

Note

The set condition of file categorization and sorting takes effect for all the folders in **My Favorites**.

File Categorization

The files in **My Favorites** can be categorized by **Capture Time** (Annually/Monthly/Daily), **Tag**, **Asset ID**, and **Fault Rating**. On the upper-right corner of the client, click to set the categorization condition.
The file category name, such as the specific year/month/day, is displayed to the left of the category divider line. You can click on the checkbox on the left to select all the files in this category, or click on the right to collapse this category.

Capture Time

You can select **Annually/Monthly/Daily** to categorize the files.

Tag

Categorize the files according to their color tags.

Refer to ***Add Color Tag to File*** for setting color tags.

Asset ID

The asset ID (or asset number) is the ID or specific information of the observed target. It is added manually or by scanning QR code when the thermal image was taken by the device. File categorization by asset ID is used to view images of the same asset or target at different times and states for analysis and comparison.

For an image with an asset ID or asset number, you can view the ID or number in the **Image Info** area.

Fault Rating

Fault rating is the fault level tag added when the device captures images during an inspection process.

Fault rating can be modified during thermal image analysis. Refer to ***View and Modify Image Annotations*** for the details.

Note

No name or **Unknown** will be displayed by the category divider line for the files without the specific category information.

File Sorting

On the upper-right corner of the client, click to select **Capture Time**, **Tag** or **Name** to sort the files. The files will be sorted in ascending/descending order by capture time, tag or name.

6.10 File Filtering

Set different conditions to filter files.

6.10.1 Filter Files by Time Range

Steps

1. On the top right corner, click to open the filtering panel.
2. Select specific time range.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

6.10.2 Filter Files by Tag

Steps

1. On the top right corner, click to open the filtering panel.
2. Select the tag color.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

6.10.3 Filter Files by Text Annotation

Steps

1. On the top right corner, click to open the filtering panel.
2. Select from **All**, **No Comments**, or **With Comments**.

   Note

   - If you select **All** or **With Comments**, you can enter key words for fuzzy search. Voice annotation is not supported.
   - Refer to for text annotations.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

6.10.4 Filter Files by Name

Steps

1. On the top right corner, click to open the filtering panel.
2. Enter the key word for the file name.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

6.10.5 Filter Files by Device Model

Steps

1. On the top right corner, click to open the filtering panel.
2. Enter device model in **Device Model**.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

6.10.6 Filter Files by Asset ID

Steps

1. On the top right corner, click to open the filtering panel.
2. Enter the asset ID in **Asset ID**.
3. Click **Filter** to search for the target files.
4. **Optional:** Click **> Reset** to reset the filter condition.

Chapter 7 Image and Video Analysis

You can analyze radiometric images and videos, and generate reports for the images.

Note

Video files are not supported for generating reports.

7.1 Add Video/Image to Task List

Before analysis, images and videos should be added to the task list.

Note

Up to 512 videos and images can be added to the task list.

7.1.1 Add from Local File

Add one or more analysis files (images or videos) from local file to task list.

Select File

Select one or more files. Multiple files can be selected as follows:

- Check the checkbox on the file.
- Left click and drag the mouse to choose multiple files contiguously.
- Hold the Ctrl key and left click to select multiple scattered files; Hold the Shift key and left click on the first and the last file to select a file series.

Add to Task List

- Add to task list only: Right click and select **File Processing > Add to Task List** ; or click **Add to Task list** at the top right corner of the client.
- Add to task list and open the first file in analysis window: Right click and select **File Processing > Analyze** .
- Add all the files in a folder to task list: in the local file list, right click on a folder and select **Add All to Task List** or **Analyze All**.

7.1.2 Add from My Favorites

Add one or more analysis files (images or videos) from my favorites to task list.

Select File

Select one or more files. Multiple files can be selected as follows:

- Check the checkbox on the file.
- Hold the Ctrl key and left click to select multiple scattered files.
- Check the checkbox at the left end of the category line, and select all files.

Add to Task List

- Add to task list only: Right click and select **File Processing > Add to Task List** ; or click **Add to Task List**.
- Add to task list and open the first file in analysis window: Right click and select **File Processing > Analyze** .
- Add all the files in a favorites to task list: Right click a favorite folder and select **Add all to Task list** or **Analyze All**.

7.1.3 Images Groups

The images in task list supports grouping, and a group contains up to 4 images.

Influence of Image Groups

- Influence to measurement and image parameter synchronization in task list:
  - Select a thermal image and synchronize the parameters or measurements. The parameters and measurements of the first image of the image groups and individual thermal images in the task list are synchronized.
  - Select a group and synchronize the parameters or measurements. The parameters and measurements of the non-grouped thermal images in the task list are synchronized according to the first image of the selected group; Other thermal image groups in the task list synchronize parameters and measurements of the corresponding images in the selected group according to the image order.
- When generating a report, if the report template contains a page with the same thermal image number as in a group, you can quickly import images by group.

Note

When there are image groups in task list, and user-defined report template are used. Based on the file grouping in the task list, the client automatically matches the images groups to the page templates with corresponding number of images.
If the number of images in a group does not correspond to the page template in the report template, the client selects the page template according to the principle of displaying pictures in the group as many as possible. For example, if there is a 3-image group in task list, and there are only 4-image and 2-image page templates in the report, the client will choose the 4-image page template for the group.

Create/Ungroup an Image Group

1. Select files you want to group in task list. Images or groups are allowed. Up to 4 images are allowed in one group. Hold the Shift key and left click to select continuously, and hold the Ctrl key and left click to select one by one.
2. Select **Group** from right-click menu. The number of images in the group is shown in the upper left corner of the group thumbnail.
3. View images in group. Select a group, and click **Previous**, **Next** in the lower right corner of the preview window.
4. Ungroup. Select a group, right click and select **Ungroup**.

7.2 Image Analysis

7.2.1 Navigation for Analysis Tab (Image)

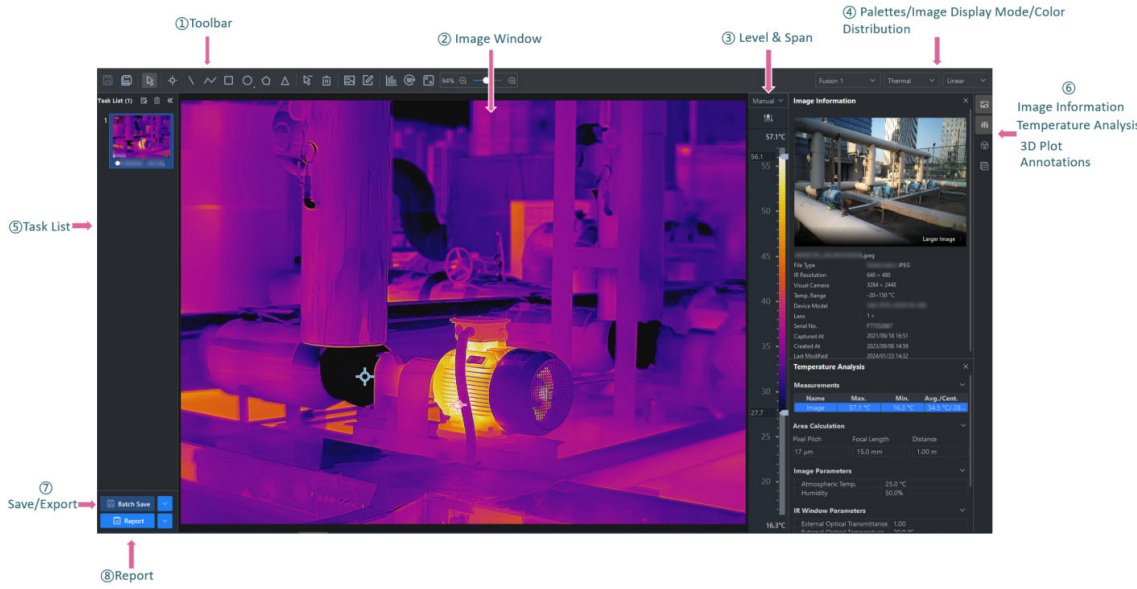


Figure 7-1 Analysis Tab (Image)

①: Including measurement tools, exporting and saving images, editing the color of measurement tools, rotating the image, zooming in/out the image, etc. Refer to ***Analysis Tools and Operations*** for instructions.

②: Displays the enlarged image. You can draw measurement tools on the image and view the temperature results overlaid on the image and displayed in the Temperature Analysis pane.

③: The temperature scale will change with the adjustment in Level & Span. You can switch the Auto/Manual mode at the top of the temperature scale. Only when the Imaging

Algorithm is linear, the scale mark will be displayed on the temperature scale. Refer to ***Level and Span*** for more information.

④: Set palettes, image display mode, and color distribution. For details, refer to ***Palettes and Reverse Temperature Scale*** , ***Focus Mode Palettes*** , ***Set Color Alarms*** , and ***Color Distribution*** .

⑤: Before image analysis, the image should be added to the task list. You can switch the image that is being analyzed currently. Hover the cursor over a thumbnail in the list and click to remove from the list.

⑥: After opening the pane, you can drag it to a position as needed.

- Image Information: View the visual image, capture time, image resolution, etc.
- Temperature Analysis: Configure temperature measurement parameters, and view temperature measurement results of the whole image or of the selected measurement tool on the image.
- 3D Plot: This function is only supported by image and rectangle tool. The 3D temperature distribution plot is generated based on the positions and temperatures of pixels. The values of X axis and Y axis represent the positions of pixels, and the values of Z axis represents the temperatures of pixels. You can right-click the model to export/copy it for further use. For setting the 3D plot, go to > **3D Plot** .
- Annotations: configure the notes for an image. For details, refer to ***View and Modify Image Annotations*** .

⑦: Batch save/export the images in the task list.

⑧: Generate the image analysis report.

Note

If the thermal image is captured when the device is in burning-prevention mode (device shutter is closed to prevent the detector from damage caused by unexpected high temperature targets), there will be a prompt reminding users of this situation.

7.2.2 View and Modify Image Annotations

Image annotations are various text, tags, voice and other additional information attached to the thermal image on the thermal image. In Analysis tab, you can view and modify some of the information.

In **Analysis** tab, select a file in the task list, and open annotations through on the right side of the window.

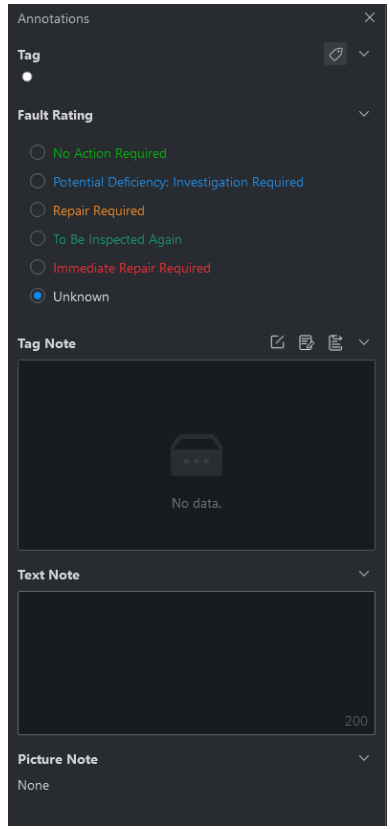


Figure 7-2 Annotation

Table 7-1 Picture Annotations

Annotations Type	Descriptions
Color Tag	Tag is the color annotation added when the file is managed in **My Favorites**. During file analysis, modifications through is supported. For information about how to add tags, refer to ***Add Color Tag to File*** .
Text Note	Text note is the text that the user adds to the image. View and edit in the text box under **Text Note**. **Note** Saved text note are automatically read by the text note object in the report.
Voice Note	Voice note is the voice content that the user adds to the image. If an image has a voice note displayed in the**Text Note**, click 00:05 to play voice content.

Annotations Type	Descriptions
	Note If an image does not contain this content, the relevant button is not displayed.
Tag Note	When you need to quickly add standardized text content to multiple images, you can use tag note. The analysis report can link tag notes of images. Before using tag note, you need to create a tag note template. If an image has tag note information, you can modify it during analysis. You can save tag notes on an image as a template. The client supports batch application of tag note templates to all thermal images in task list. Tag notes of images in task list can be modified by batch. For information about how to create and manage tag note, refer to *Create and Use Tag Note Template* . For information about how to add and modify image tag note, refer to *Set Tag Note* .
Fault Rating	Fault rating is the content added when the device takes pictures of the inspected objects during inspection. It can be modified during analysis. When an analysis report is generated, the fault rating is displayed in the overview page.
Picture Note	Picture note is images taken with the visual lens of device during thermal image capture. If a thermal image has such picture notes, they can be viewed in **Picture Note**. Click **Larger Image** in the lower right corner to enlarge the image.

Create and Use Tag Note Template

When the report requires a large amount of extra information, you can add and configure the tag note. This feature is currently supported by images only.

Tag Note Template Management

1. On the top right corner of the client, click to open the **Tag Note Template Settings** window.

Note

There will be a default template file named General.json.

2. On the top right corner of the window, click **New** to create a new template. Enter the template name and click **Confirm**.
   The created template will be displayed in the template list.
3. Select the created template and click **Edit** on the right.

Icon	Function
	Add new Category.
/ /	Set the category type as single-choice, multi-choice or txt.
	After setting the category type, add choices or text for the corresponding category. For single-choice or multi-choice category, you can select a choice and click / to move the choice up/down.
a|b	Select a category, choice, or text, and click a|b to edit the content; or double-click the category, choice, or text to edit the content.
	Click to add fault rating. The category of fault rating cannot be edited.

4. After the template is configured, click **Save**. The saved template can be used for image analysis.

Note

For added and default templates, you can delete them or rename them.
Tag note templates can be imported or exported as needed.

Local Management of Tag Note Template

The default template and newly-added template will be saved to the path (Public \HIKMICRO Analyzer\TextRemarkTemplate). You can also add and configure templates via any text editor on the local PC.
Template files which are in JSON format and comply with relevant protocols will be automatically read by the client, and the template list will be refreshed after you re-open the Tag Note Template Settings window, or add/delete/import any template(s).

Image Tag Note Configuration

On the Analysis page, you can select an added template for the current image, or directly configure a tag note for the image specifically. With the specifically configured tag note for the image, if you want to replace it with another existing template, the configured tag note information will be overwritten and lost. See details in *Set Tag Note for a Single Image* .
On the right side of the Analysis page, click . For how to configure tag note, refer to *Tag Note Template Management* .

Set Tag Note

Set Tag Note for a Single Image

In Annotations panel, supports setting the tag note content and template of a single image. Click to save settings to the image.

- : Edit tag note content. After editing, click **Save**. For details about editing tag note, refer to
- : Change the tag note template. For details about tag note management, refer to *Create and Use Tag Note Template* .

Set Tag Note Template for All Images

In Task List, click to select a template, and click **OK**. All images in task list will use the same tag note template.

Modify Tag Notes for Multiple Images

Use the import/export function from **> Edit Tag Note in Bulk** to modify the tag notes of all images in the task list with one tag note template.

1. Go to **> Edit Tag Note in Bulk > Export to CSV File** .
2. Select a tag note template, set the **Export Location**, and confirm the exporting.
3. Open the exported file, edit contents and save the change.

   Note

   - Adding and deleting tag columns are allowed.
   - Do NOT change the content or the name of **Path(Path)** column. Otherwise, importing file may fail.
   - Do NOT change file format when saving it after editing.
4. Go to **> Edit Tag Note in Bulk > Import from CSV File** to select the edited file, and confirm the importing.

   Note

   After importing, the multiple choice and single choice tags are converted to text.

7.2.3 View Temperature Distribution Chart (Image)

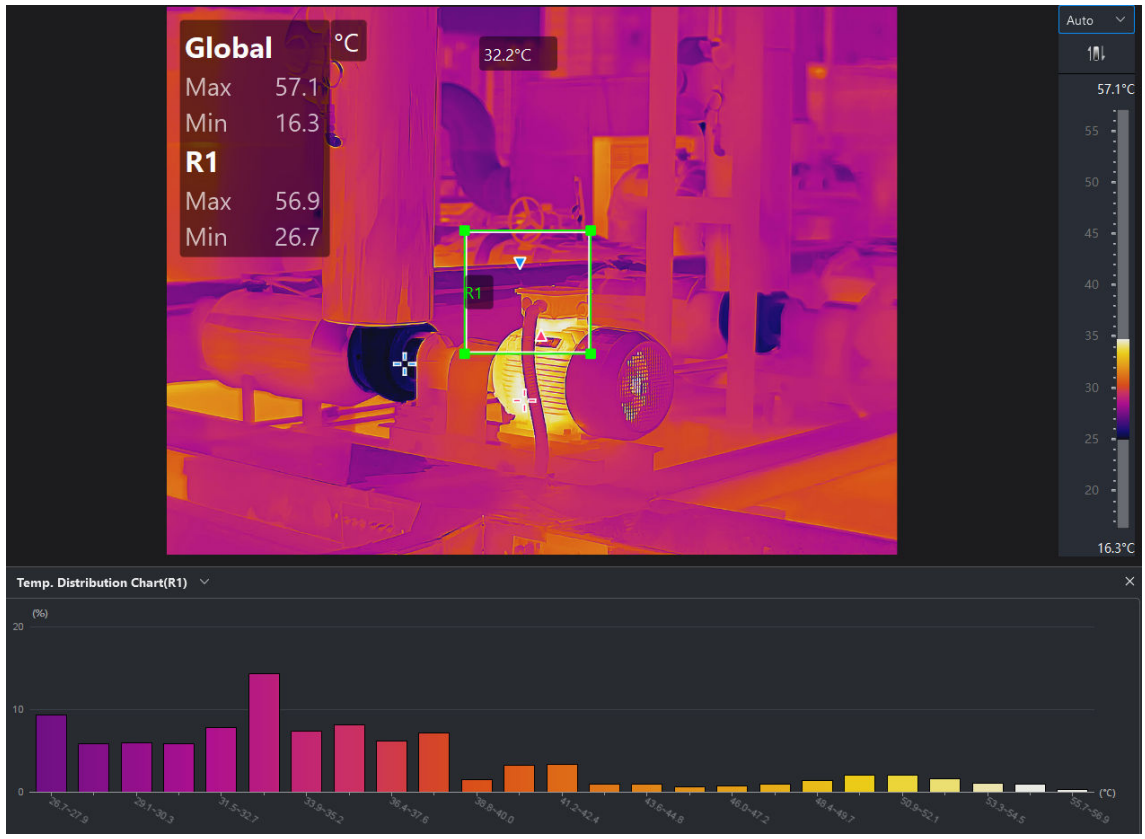


Figure 7-3 Temperature Distribution Chart

Display Temperature Distribution Chart

Steps

1. In the toolbar, click to display the temperature distribution chart.
2. Drag the top edge of the chart to adjust its height.
3. Hover on the chart to view the percentage of pixels of different temperature ranges.

Temperature Chart (Image)	Click on the image (except tools) to view the chart of the image.
Temperature Chart (Tool)	Click a tool on the image to view the chart of the tool.

4. Right-click on the chart and select **Export Picture** or **Export CSV File** to save it in different formats.

7.2.4 Save/Export Image

Note

Due to protocol upgrade, saved/exported images by this client version (V1.7.2) or later can not be viewed or analyzed in earlier client version.

Save Image

After the image analysis, you can save the modified image information (measurement tools, temperature information, tag note, condensation alarm, etc.) for future reference.

The operations of saving one image and saving all the images are as follows.

Note

When you save an image group, all images in the group are saved independently.

Save

On the Task List, select an image, and click in the toolbar to save the modified image information.
On the Task List, select an image, and click in the toolbar and select **Save As**. Then you can enter the image name, select the path and saving file format.

Batch Save

Click Batch Save to save all the modified image information.
Click on the left of the Batch Save , and select **Batch Save As** to save all the modified images to the designed path.

Export Image

After editing and analyzing the image, you can export images, to make it a backup file in your PC or share it with third parties.

Steps

Note

- The exported image can not be used for image analysis.
- In the bottom-left corner, click **> Batch Export** to export images in a batch.
- When exporting an image group, each image in the group will be exported according to the settings.

1. In Analysis tab, select the image to be exported in the task list.
2. In the toolbar, click **> Export Image** to export the image.

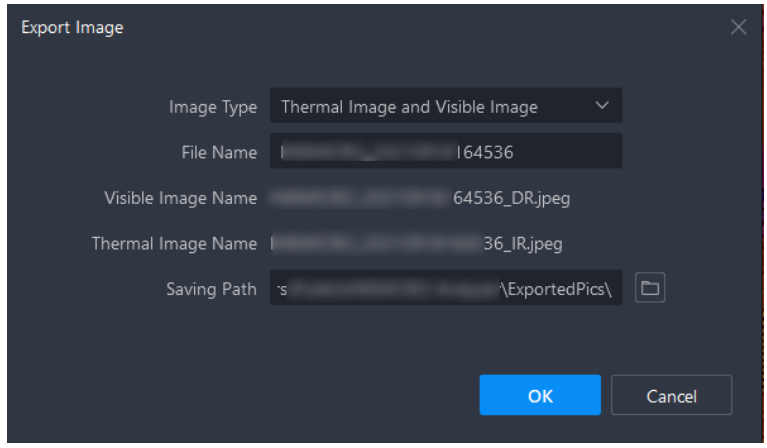


Figure 7-4 Export Image

3. Set relevant parameters.

Image Type

You can export both thermal images and visual images, or you can select either one kind of them to export.

Note

The image types that can be exported are subject to device.

File Name

You can customize the file name for the thermal and the visual image(s) simultaneously.

Saving Path

The image is saved in the default directory, or you can select another saving path.

4. Click **OK** to export the image.

Export Temperature Matrix of Image

You can export the temperature matrix of an image or a measurement in a CSV file for further analysis.

Steps

1. In the toolbar, click > **Export Temp. Matrix** .

Note

Right-click a measurement tool, and select **Export Temp. Matrix** to export the temperature matrix of the selected tool.

2. Check the information needed in the file.

Matrix of Whole Image

Temperature values of all pixels corresponding to the resolution of the camera module will be included in the exported file.

Matrix of Measurements

Temperature values of all pixels of the measurement(s) will be included in the exported file.

Measurement Information

General parameters or parameters of measurements will be included in the file, including distance and emissivity.

Details

Measurement results of the image or measurements will be included in the file, such as average temperature and Min. temperature.

3. Create a name for the file, and select the file location. Click **OK** to export the file in CSV format.
4. Click **Open File** to view the temperature matrix.

7.2.5 Exit Image Analysis

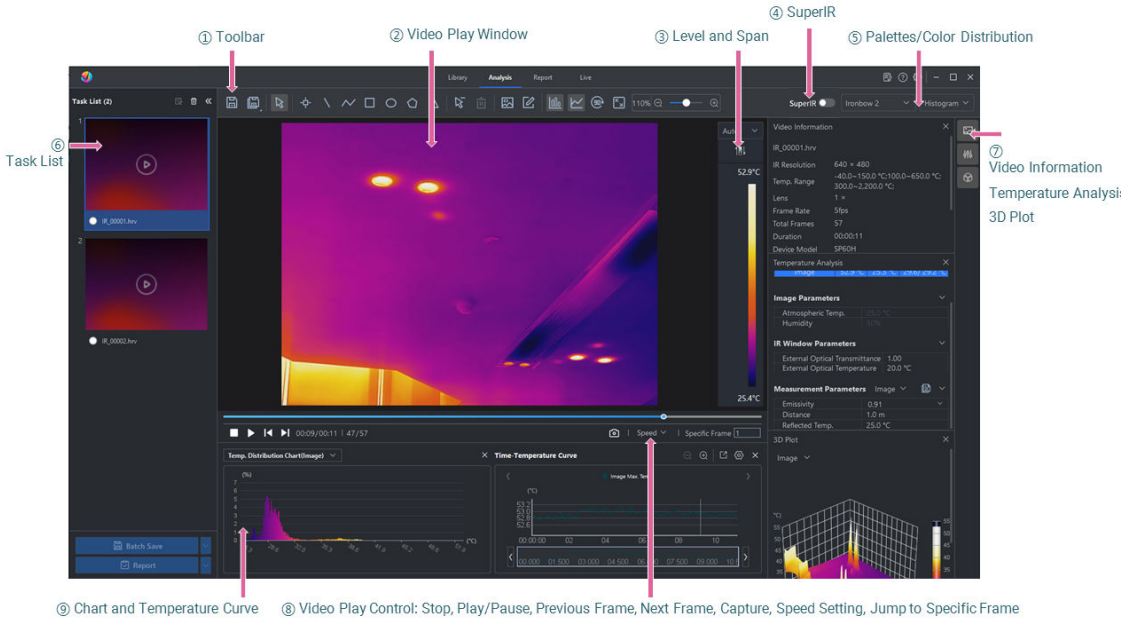
To exit **Analysis**, you can click **Library**/**Report** tab on the top to switch to the Library or Report tab.

Note

If you need to export the report, click **Report** on the top-right corner. See details in .

7.3 Video Analysis

7.3.1 Navigation for Analysis Tab (Video)



①: Toolbar. Saving and exporting, measurement tools, advanced image settings and overlay, viewing chart and temperature curve, image rotating and size control importing, etc. For details, refer to ***Save / Export Video***, ***Add Measurement Tools***, ***Edit a Measurement Tool***, ***Delete a Measurement Tool***, ***Advanced Image Editing***, ***Overlay Measurement Results***, ***View Temperature Distribution Chart / Time-Temperature Curve***, and ***Rotate and Resize Image***.

②: Video play window.

③: Level & Span. Changes with the temperature scale of the video image. For details, refer to ***Level and Span***.

- Only when the Imaging Algorithm is linear, the scale mark will be displayed on the temperature scale.

④: SuperIR. When IR resolution of a device is lower than 256×192, the client offers an option to turn on SuperIR. The function adopts super resolution technology to improve display, see ***Super Resolution*** for more details.

⑤: Set palettes and color distribution. For details, refer to ***Palettes and Reverse Temperature Scale***, ***Focus Mode Palettes***, ***Set Color Alarms***, and ***Color Distribution***.

⑥: Task list. Before video analysis, you can add videos to the task list. You can move the cursor to a thumbnail, and click to delete it from the list. For details about adding files to the task list, refer to ***Add Video/Image to Task List***.

⑦: After opening the pane, you can drag it to any position as needed.

- Video Information: View the resolution, temperature range, etc.
- Temperature Analysis: Configure temperature measurement parameters (the values of atmospheric temp. and humidity are the same as those of the device and are not editable, and for other parameters, refer to ***Set Measurement Parameters***), and view temperature measurement results.
- 3D Plot: This function is only supported by image and rectangle tool. The 3D temperature distribution plot is generated based on the positions and temperatures of pixels. The values of X axis and Y axis represent the positions of pixels, and the values of Z axis represents the temperatures of pixels. You can right-click the model to export/copy it for further use. For setting the 3D plot, go to **> 3D Plot** .

⑧: Play control. You can play the video at different speeds (when it is greater than x1, and if the PC performance is not good enough, it will auto skip video frames). During video playing or after pausing the video, you can lay out measurement tools on the video image, and view measurement results immediately on the video image and in the Temperature Analysis pane.

⑨: Chart and temperature curve window. Refer to ***View Temperature Distribution Chart / Time-Temperature Curve*** for more details.

Note

If the video is recorded when the device is in burning-prevention mode (device shutter is closed to prevent the detector from damage caused by unexpected high temperature targets), there will be a prompt reminding users of this situation.

7.3.2 Shortcut Keys

Table 7-2 Video Analysis

Shortcut Key	Function
space bar	Play/pause the video.
←(back arrow)	Previous video frame.
→(forward arrow)	Next video frame.
F4	Capture an image.

7.3.3 Create and Analyze Finger Videos

A finger video is a user composed collection of thermal images captured by the same device. It can be played like a video according to the shooting time.

To create and play the Finger Videos, please refer to ***Create and Play Finger Videos*** .

The analysis of Finger Videos is similar to the radiometric video analysis, please refer to *Video Analysis* .

Create and Play Finger Videos

Steps

1. Create finger videos.
   1) Put the images that need to be generated as a finger video into the same folder in the **Library** (Both **Local File** and **My Favorites** are supported).
   2) In the **Library**, drag the folder to the **Task List**. Then the video is generated.

      Note

      If the folder contains images that are inconsistent with the requirements, they will be deleted in the generated finger video. Up to 512 thermal images can be included in one finger video.
      The number in the upper left corner of the finger video's thumbnail in the task list represents the image number of the video.
      The image series of the finger video follows the capture time order.
2. Play finger videos.
   1) Switch to the **Analysis** page, and select the finger videos in the **Task List**.
   2) Set **Playback Speed**.
   3) Click to control the play of finger videos, you can also input a number in **Jump To** to jump to the interested image.

7.3.4 View Temperature Distribution Chart / Time-Temperature Curve

You can view the temperature distribution chart / time-temperature curve changing with video playing.

For details about enabling temperature distribution chart, please refer to *View Temperature Distribution Chart (Image)* .

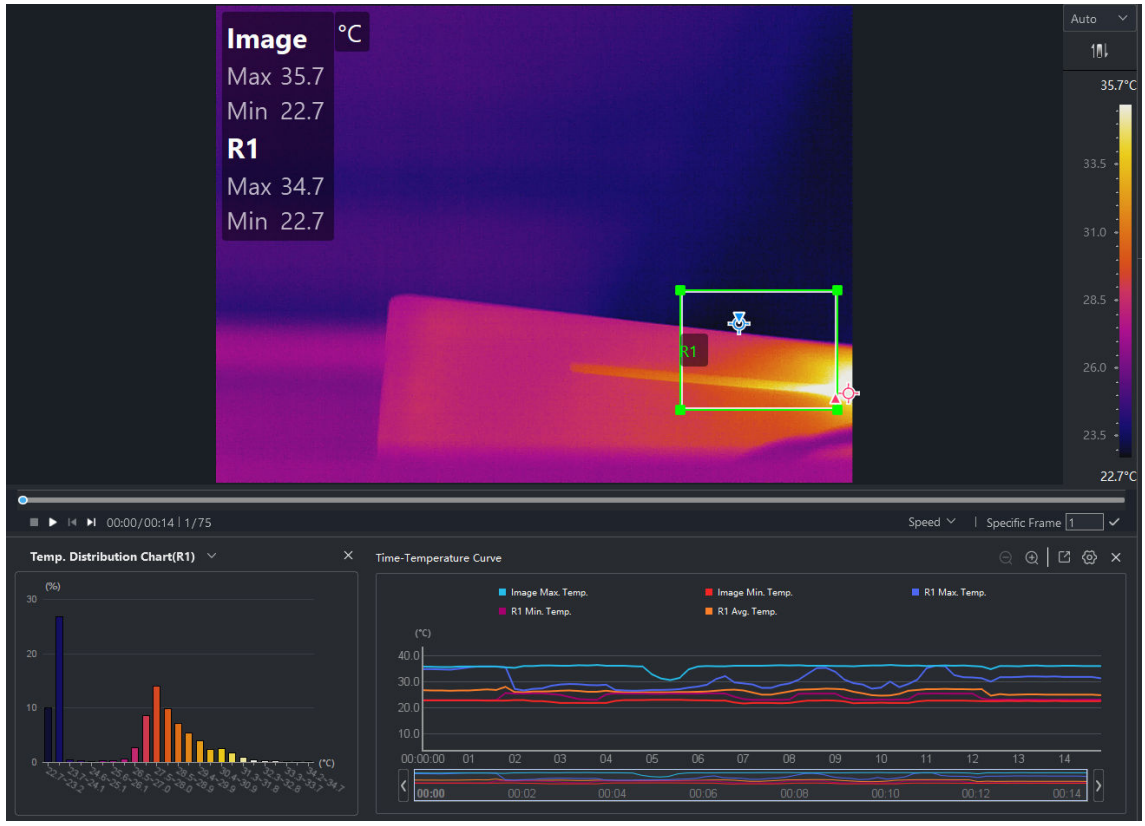


Figure 7-6 Temperature Distribution Chart / Time-Temperature Curve

Note

Drag the top edge of the chart area up and down to adjust its height.

Enable Temperature Curve

Steps

1. On the toolbar, click to enable the temperature curve.

   The curve will be displayed below the video play window.
2. Drag the top edge of curve area up and down to adjust its height.
3. (If no measurement tool configured) hover over the temperature curve and view the temperature of the image at different time.

Note

- (If measurement tool configured) select a measurement on the image to view the curve of this measurement. If you adjust or move the measurement, the curve will change at the same time.
- You can drag left and right the progress bar below the curve to view more details; can also scroll the mouse wheel or click to zoom in/out the curve.
- Click a video frame on the curve, and the video will jump to the selected video frame.

4. **Optional:** Click again or click in the top-right corner of the curve to close the curve.

Note

When you open the curve next time, the curve will be displayed directly.

Configure Temperature Curve

Steps

1. On the top-right corner of the temperature curve, click .

   The temperature curve configuration window pops up.
2. Check the curve(s) to be displayed as needed (max. temperature, min. temperature, average temperature, max. temperature of spot measurement, or delta).

Note

- Maximum 32 curves can be displayed.
- For spot measurement tool, only max. temperature can be selected.

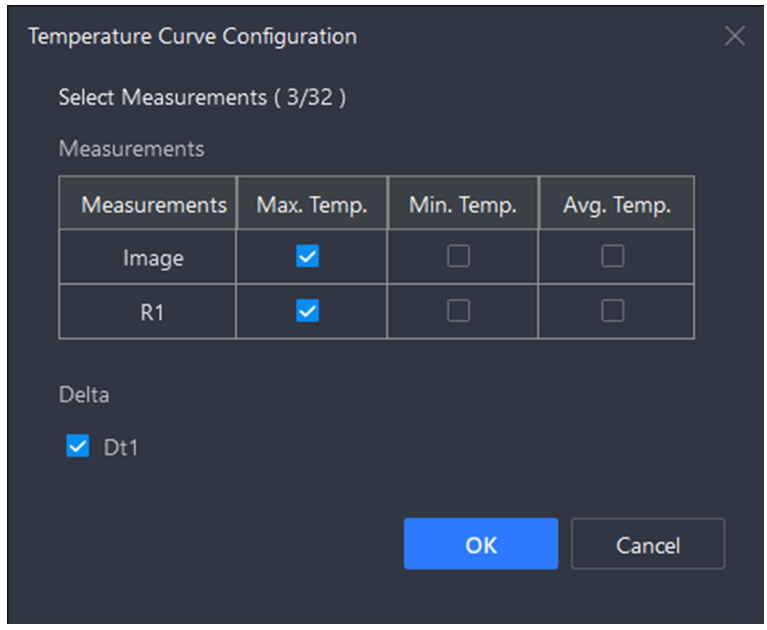


Figure 7-7 Temperature Curve Configuration

3. Click **OK**.

View Measurement Results of a Specified Video Frame

You can view the temperature measurement results of a specific video frame.

View Results

In the **Specific Frame**, enter a number and press the Enter key, the specified video frame will be displayed, and the temperature measurement results will show in Temperature Analysis.
Click / , or press the back/forward arrow keys on the keyboard to view the results of the previous/next video frame.

Export Image

Right-click on the curve image, and select **Export Image** to save the diagram as a picture.

Export Measured Temperatures at Max./Min./Avg.

You can export the max./min./avg. temperature of specified/all video frames, or of a measurement in a CSV file for further analysis.

Steps

1. In the toolbar, click > **Export Max./Min./Avg.** .

   Note

   - Right-click a measurement tool, and select **Export Temperature Value** to export the max./min./avg. temperature of the selected tool.
   - In the top-right corner of the curve, you can also click to open the Export Max./Min./Avg. window.

2. Select the export type as **Max./Min./Avg.**.
3. Select the data orientation.
4. Select the max./min./avg. temperature of image and measurement tool.

   Max./Min./Avg. of Image

   Max./min./avg. temperature of all pixels corresponding to the camera's IR resolution will be included in the exported file.

   Max./Min./Avg. of Measurements

   Max./min./avg. temperature of all pixels of the selected measurement tools will be included in the exported file.

5. Select the video frames.
6. Click **OK**.

7. Create a name for the file, and select the file location. Click **OK** to export the file in CSV format.

What to do next
Click **Open File** in the pop-up window to view the exported file.

7.3.5 Export Temperature Matrix of Video

You can export the temperature matrix of specified/all video frames, or of a measurement in a CSV file for further analysis.

Steps

Note
This function is not supported by polygon measurement.

1. In the toolbar, click > **Export Temperature Value** .

   Note
   Right-click a measurement tool, and select **Export Temperature Value** to export the temperature matrix of the selected tool.
2. Select the export type as **Temperature Matrix**.
3. Select the measurement.

   Matrix of Image

   Temperature values of all pixels corresponding to the resolution of the camera module will be included in the exported file.

   Matrix of Measurements

   Temperature values of all pixels of the measurement will be included in the exported file.
4. Select the video frames.
5. Click **OK**.
6. Create a name for the file, and select the file location. Click **OK** to export the file in CSV format.

What to do next
Click **Open File** in the pop-up window to view the temperature matrix.

7.3.6 Capture an Image

During video analysis, you can capture images which will be saved to the local PC.

Click to capture an image.

The captured images are saved in **Capture** folder in **Quick Access** in **Library**.

7.3.7 Save / Export Video

After video analysis, you can save video information (measurement tool, measurement results, etc.) for later use.

Note

- The Save and Save As functions are available for .hrv videos and not available for .rv videos.
- After operation, click **Open File** in the pop-up window to view the saved and exported videos.
- Due to protocol upgrade, videos saved/exported by this client version (V1.7.2) or later can not be played or analyzed in earlier client versions.

Save Video

Select a video in the task list, and in the toolbar click to save the video.

Save As Video

Select a video in the task list, and in the toolbar **> Save As** . Set the file name and location, and click **OK**.

Export Video

Select a video in the task list. In the toolbar, click **> Export Video** . Set the export type and video frames to be exported and click **OK**. Set the file name and location, and click **OK**.

7.3.8 Exit Video Analysis

Click other tabs on the top to switch to another page, or exit the PC client directly.

Chapter 8 Generating Report of Images

You can generate a report file of one or more thermal images, including content such as image information, measurement parameters and results, and save it to the local PC for further comparison and analysis.

Procedure of generating a report is as follows.

1. Select thermal images to be included in the report.
   You can select images from **Quick Access** or **Local File** in **Library** (see ***Generate Report with Library Images*** . Or select from **My Favorites** (see ***Generate Report with Task List Images*** for instructions).

   Note

   - If you need to compare thermal images in one report page, it is recommended to create image groups in **Task List**, then select a template (page template or report template) with page(s) that include the exact number of thermal images as that in the groups. See ***Images Groups*** for instructions.
     For example, if you want to quick generate a page of 2 thermal images, create a 2-image group, and use the **Thermal x2 Comparison** system template for report generating.
   - Videos are not allowed to generate a report.
2. Select a template for the images and groups.
   - There are 4 system page templates in the client software. Users can create a blank report, add images and contents freely, then export the report as a report template for future use. Saving customized page templates is also supported.
   - When previewing and editing a report, you can change page template for a page. See ***Change Template for Selected Page*** for instructions.
   - More functions on templates, see ***Report Template*** .
3. Preview and edit your report. There are multiple tools for editing.
   - Style tools: adding and editing cover page, overview page, header and footer, document property, and setting content alignment.
   - Content organization tools: organizing all contents with titles of different headings and tables. Texts, images, and predefined content objects (for example, measurement result table) are all allowed to insert in table cells.
   - Predefined content objects: there are multiple predefined content objects for quick image adding and data linking. Available content objects categories are **Picture**, **Information**, **Temperature Measurement**, and **Temp. Distribution Charts**.

Note

For predefined content objects organized in a table, adding rows and columns are allowed. You can input text or link document property or other image-related items.

- More functions on editing a report, see ***Edit Report*** .

4. Save and export your report. PDF and OTD format are supported. See ***Export File*** for instructions.

8.1 Generate Report with Library Images

Select images from the Library to generate a report.

1. In the Library page, select a method to generate the report:
   - Select one or multiple images in **Quick Access**, **Local File** or **My Favorites**, right-click and select **File Processing > Generate Report** .
   - Select one or multiple images in **Quick Access**, **Local File** or **My Favorites**, right-click and select **Add to Task List**. Click **Report** at the bottom of the task list.
2. Select a template. See details in ***Report Template*** .
3. Click **OK** to generate a report.

Note

For report editing on the client, see details in ***Edit Report*** .

8.2 Generate Report with Task List Images

Select images from task list to generate a report.

Select a method to generate the report:

- On the Analysis page, click **Report** on the bottom left corner. Select a template (refer to ***Report Template***) and click **OK**. All images and image groups from the task list will be applied to the report.
- You can also select the **Report** tab, and click and select one of the following ways on the top left corner to generate a report.
  - **Select Existing Template**:
    1. Select a template (refer to ***Report Template***) and click **OK**.
    2. Drag image(s) and image group(s) from the task list to the report overview pane to generate the report, or click **Add All Images** to generate a report of all images and groups.
  - **Batch Process & Export**:
    Select a template (refer to ***Report Template***) and click **OK**. The Export Report window will pop up and the generated report will be ready to export. See details in ***Export Report*** .

Note

› For **Batch Process & Export**, the generated report cannot be edited on the client. After the report is exported, click **OK** to stay in the client or click **Open Folder** to open the folder where the report is.

› For **Batch Process & Export**, the images will be auto-filled into all thermal image objects on each page in the exported report.

◦ **Generate Blank Report**:
A blank page will be generated in the report overview pane. You can customize the content as needed.

Note

See *Images Groups* for the influence of image group in reporting generating.

8.3 Report Template

You can select from existing system templates, import or create more templates for reports.

All templates including system and customized ones are stored in **Template Library**.

System Page Templates

There are 4 system page templates in the software. You can see them in template selecting page: **Thermal x2 Batch**, **Thermal x2 Comparison**, **Image Enlarged**, and **Thermal and Visual**.

- The first two page templates (**Thermal x2 Batch** and **Thermal x2 Comparison**), containing 2 thermal images each, works better with 2-image groups.
- **Thermal and Visual** has one thermal image. It works better with a single image.
- **Image Enlarged** has no thermal image. A thermal image linking to this page template will be converted into a non-radiometric one.

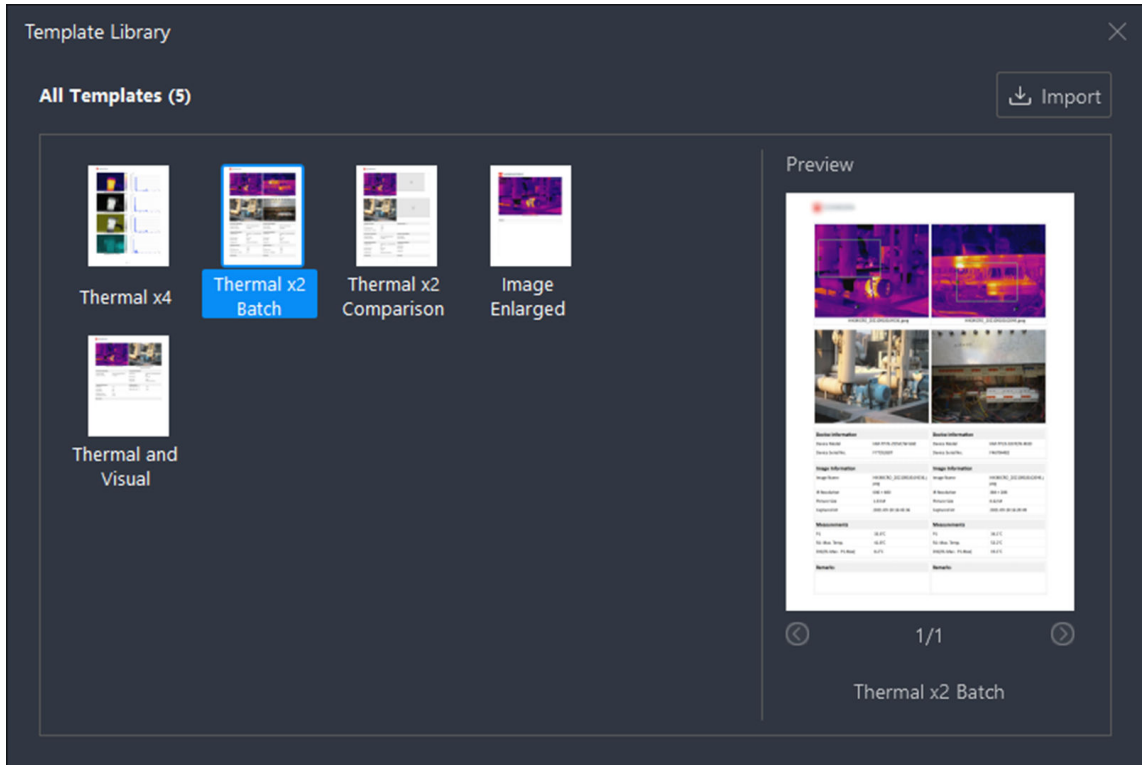


Figure 8-1 Select Template

Importing Templates

The software allows importing templates. See ***Import Template*** for instructions.
The non system templates in the **Template Library** are allowed to export and sent to other users. See ***Export Template*** for instructions.

Saving Page Template and Report Template

After finishing editing a report (see ***Edit Report*** for instructions), you can export the whole file a report template, or select to save typical pages as page templates.

- To save a report template: select ··· at the upper right corner, select **Save as Template** and enter a template name.
- To save a page template: right click on a report page from **All Page(s)**, select **Save as Template**, and enter a template name.

Note

- Names of new templates are not allowed to duplicate the system ones. If you set a name that is the same as an existing non-system one, it will rewrite the former one.
- When saving a report template, it only contains 1) pages without thermal images (for example, cover page, overview page), and 2) pages with different number of thermal

images, one page for each number. If there are several pages contains the same amount of thermal images, the first page will be saved in the report template.

Managing Templates

Go to **Template Library** (upper right corner) to rename and delete non system templates.

8.3.1 Import Template

Steps

1. In the **Template Library**, click **Import**.
2. Select a template file (Only support * .art format) from the local PC.
3. Click **Open** to import the template.

Note

Up to 64 templates (default template included) are allowed.

8.3.2 Export Template

1. Tap **Template Library** in the upper right corner of the page.
2. Select one customized template (Both report template and page template are supported), then right-click the template. Built-in templates are not supported to be exported.
3. Select **Export Template** , set the name of the file and click **Save**.

Note

- Only content pages can be exported as templates.
- Pictures are not required in the thermal image object for exporting the page as a template.

See details in *Import Template* on how to import template files to the PC client.

8.4 Edit Report

The report is generated from the template and selected image(s). You can edit objects, add or delete report pages, customize text property, change template, etc.

8.4.1 Report Editing Interface Navigation

You can view the thumbnails, configure the objects, change the template, etc.

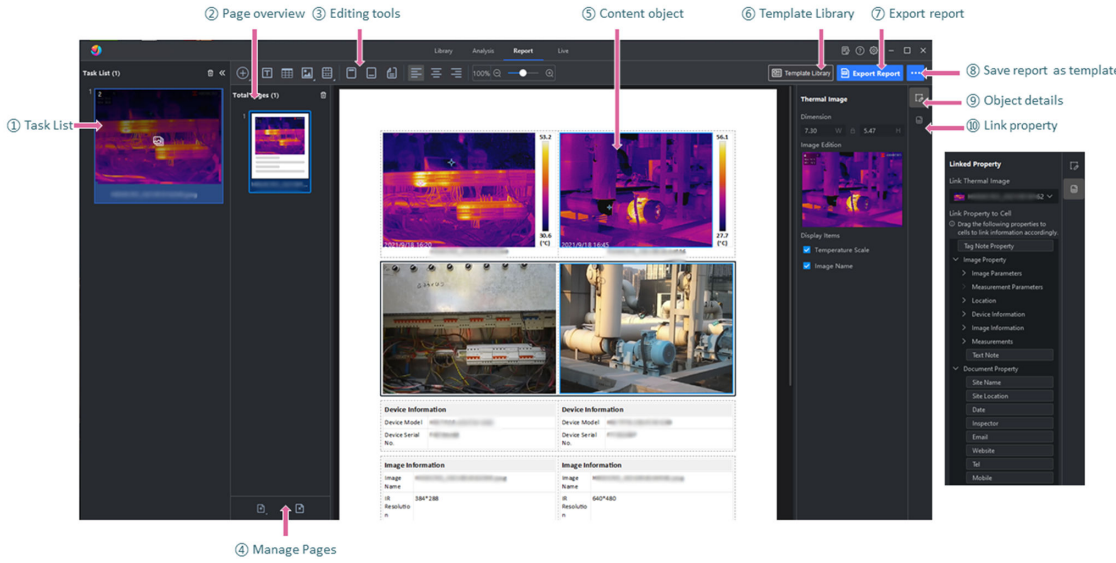


Figure 8-2 Report Editing Page

①: Task list. The task list content (except for videos) will be synchronized on the Library, Analysis, and Report page.

②: Report overview. You can check the thumbnails of report pages.

③: Editing tool bar. You can add objects, configure header, configure text property, zoom in/out report pages, etc.

④: Manage pages. You can add new pages, and delete pages.

⑤: Report content object. You can drag to move the objects.

⑥: Template library. View and manage templates in system.

⑦: Export report. Select a format and save it to your PC.

⑧: Save report as template. Save your report as a template for future use.

⑨ and ⑩: Editing object. Switch between **Object Details** and **Linked Property** to configure the object information (object size, type, display items, etc.) and linked properties.

Note

The **Linked Property** configuration pane is available even when no object is selected.

Shortcut Keys

Shortcut Key	Function
Ctrl + C	Copy selected cell(s).
Ctrl + V	Paste selected cell(s).
Ctrl + X	Cut selected cell(s).
Ctrl + Alt + C	Add a content page.
Ctrl + Alt + B	Add a blank page.
Alt + P	Editing document property.
Alt + H	Editing header.
Alt + G	Jump to a page.
Ctrl + scroll	Zoom in/out pages.

8.4.2 Manage Pages

You can add or delete report pages, change page order, edit document property, adding header and footer for your report.

Add New Page

Perform one of the following operations to add a new page.

Note

Up to 512 content pages, 1 cover page, and an overview page can be added.

- Click  in the bottom left corner, or right-click a page thumbnail on the left and select **New Page** to add different types of pages. Cover page, content page, blank page and overview page are available.
  - Cover page and overview page type has predefined editable content objects. See ***Edit Cover Page*** and ***Edit Overview Page*** for instructions.
  - When adding a content page, select a page template from library. See ***Report Template*** for more information.
  - When adding a blank page, you can add and edit content objects freely. See ***Edit Object*** for more information.
- You can also generate new content pages by dragging images and image groups from the task list to the report overview area or non-thermal-image-object area.

Change the Order of Pages

In the list of page thumbnails on the left, you can drag the pages to change the order of pages.

Delete Page

Steps

1. Select a thumbnail page to be deleted on the left, and perform the following operations to delete the current page.
   - Right-click the thumbnail and select **Delete Page**.
   - Click below to delete the selected page.
   - Press the Delete key.
   - Click above to delete all pages.

Edit Cover Page

Cover page has 3 default objects, Logo, Title and report information table. The table links 4 document properties automatically. All contents are adjustable.

Steps

Note

The property table is included by default on the cover page, which cannot be resized, repositioned, or deleted.

1. Click to select the Logo of cover page. Change a logo picture and resize it from the **Object Details** on the right pane.
2. Edit the title.
   1) Double-click on the title to change the title text.
   2) Change title font size from the **Object Details** on the right pane.
3. Edit report information table on the cover page.
   1) In the tool bar, click to open the **Document Property** page. Enter value for each key.

      Cell contents of the information table linking to the document property will be synchronously updated.
   2) Click on a table cell, set the row number, column number, and display or hide table border/table header from **Object Details** on the right pane.
   3) Double click on an added cell to input text. Or link it with other document properties by dragging a desired item from the **Linked Property** pane (on right) into the cell.

Note

A cell is only allowed to input text before linking to a property. To remove a linked property from a cell, right click on the cell and select **Remove Linked Property**.

4. Other operations: Click on an object or a cell, and select , , or to adjust alignment.

Edit Overview Page

The overview page has a default title and a summary table. For the summary table, you can set the number of columns, set text alignment, and link table cells with different properties.

Steps

Note

The summary table object is included by default on the overview page, which cannot be resized, repositioned, or deleted.

1. Edit the title.
   1) Double-click on the title to change the title text.
   2) Change title font size from the **Object Details** on the right pane.
2. Select the summary table object.

   The object configuration pane will be displayed on the right.
3. You can perform the following operations.

   Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Number of Columns	Enter the number of columns. Up to 9 columns are allowed.
Set Text Alignment	Select , , or to set the content as left-aligned, centered, or right-aligned.
Link Property	To link a cell with property, select the object or a cell, and then drag a property from the configuration pane to the specific cell. To remove the linked property, select the cell, and right-click the cell and select **Remove Linked Property**. Note • After the cell is linked with a property, the linked content cannot be edited. • To update the linked information, click **Update Linked Content**.

4. **Optional:** Refresh the overview page.
   1) Right click the overview page thumbnail at left side.
   2) Click **Refresh**.

Configure Header

You can configure one or multiple headers in different formats and of different contents.

1. Click in the tool bar or double-click the header area on the report page to open the header configuration window.
2. Check left, middle, and/or right header as needed.
3. Select picture or text as the header format, and select a specific picture or enter the text accordingly.

   Note

   - Header in text format cannot exceed 200 characters.
   - When you select the picture format, you can click **Add New** to import pictures from the local PC.
   - You can preview the header(s) displayed in real time.
4. Click **OK** to save the header configuration. The configured header(s) will be displayed in the report.

   Note

   Header(s) will not be applied to the cover page in the client or on the local PC.
   When you edit the report in the client, the displayed header position is only for reference. The actual header of the exported report will be displayed at the page break position.

Configure Footer

You can configure one or multiple footers of different contents.

1. Click in the tool bar or double-click the footer area on the report page to open the footer configuration window.
2. Check left, middle, and/or right footer as needed.
3. Select text or page as the footer format, and enter specific texts or select the page No. style accordingly.

   Note

   - Footer in text format cannot exceed 200 characters.
   - You can preview the footer(s) displayed in real time.
4. Click **OK** to save the footer configuration. The configured footer(s) will be displayed in the report.

Note

Footer(s) will not be applied to the cover page in the client or on the local PC.
When you edit the report in the client, the displayed footer position / page No. is only for reference. For text footer, the actual footer of the exported report will be displayed at the page break position; for page No. footer, the actual page No. of the exported report will be displayed with the total pages at the right of page breaks.

Set Page Size of Report

On the top right corner of the client, click > **Preference** . Under **Page Size of Report**, select a page size in the drop-down list.

The page size setting will be applied to the Report page in the client and the exported report on the local PC.

8.4.3 Edit Object

Objects included in the report vary by the template selected. Information related to the selected image(s) will be automatically filled into the corresponding objects. You can edit the existing objects, including changing the linked thermal image, setting the image type, customizing texts, etc.

Note

For objects that can be linked with thermal images, you can view the thermal image No. from the drop-down list of Link Thermal Image.

Add Object

Click the specific object icon on the tool bar.

Note

Objects cannot be added to the cover page or overview page.
Supports displaying the temperature information overlay in the thermal image object and measurements object (set from **Settings > Report Overlay**).
Supports entering texts directly without adding objects.

Icon	Object
	Custom Table For report layout, only one object is allowed in each text row; if multiple objects are needed in one row, you can add a custom table object for nesting.

Icon	Object
	For specific custom table object editing, refer to ***Custom Table*** .
	Title. There font levels adjustable from **Object Details** on the right pane.
	Thermal For specific thermal image object editing, refer to ***Thermal Image*** .
	Visual For specific visual image object editing, refer to ***Visual Image*** .
	Logo For specific Logo object editing, refer to ***Logo*** .
	Information • Image Information For specific image information object editing, refer to ***Image Information*** . • Device Information For specific device information object editing, refer to ***Device Information*** . • Text Note For specific text note object editing, refer to ***Text Note*** . • Tag Note For specific tag note object editing, refer to ***Tag Note*** .
	Temperature Measurement • Measurements For specific measurements object editing, refer to ***Measurements*** . • Image Parameters For specific image parameters object editing, refer to ***Image Parameters*** . • Measurement Parameters For specific measurement parameters object editing, refer to ***Measurement Parameters*** . • Delta For specific delta object editing, refer to ***Delta*** . **Note** Up to one delta object is allowed for each page.
	Temp. Distribution Charts • Temp. Distribution Bar Chart

Icon	Object
	For specific temp. distribution bar chart object editing, refer to *Temp. Distribution Bar Chart* . • Temp. Distribution Line Chart For specific temp. distribution line chart object editing, refer to *Temp. Distribution Line Chart* .

Move/Adjust Object

You can move and adjust the object in the report.

Select an object in the report. You can perform the following operations:

- Drag the object to the position where needed.
- Drag the four corners of an image object to adjust its size; drag the two sides of a table object to adjust its width.

Note

You can also enter the specific value of size in the object configuration panel on the right.
The size of pictures, logos, and tables inserted in cells is auto controlled by the system.

Copy/Cut Report Object

Report objects can be copied or cut to other places in the report or other softwares (like Word).

Right click the object in the report and select **Cut**/**Copy**, or press keyboard shortcuts **Ctrl** + **C** or **Ctrl** + **X** to copy or cut the selected object.

Note

When copying or cutting an object, its format will also be included. For example, the font size and alignment would be included when copying or cutting a text; the image name will be included when copying or cutting a picture.

Custom Table

You can insert a custom table object, of which you can edit the number of lines and columns, configure the content, link cells with property, etc.

Steps

Note

For cells that have not been linked property, supports inserting image-type objects (e.g., *Thermal Image* and *Visual Image*) and table-type objects (e.g., *Device Information* and *Measurements*).

1. Select the general table object in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Hide Table Border	Check/uncheck **Hide Table Border** to hide/show the border of the table. When it is checked, the border will be represented by dotted lines on the client.
Set Text/Object Alignment	Select , or to set the object as left aligned, centered, or right-aligned.
Set Rows and Columns	Enter the specific number of rows and columns as needed. **Note** • Up to 20 rows and 10 columns are supported. • You can select a cell, and right-click to insert or delete a row or column.
Display Items	Check **Table Header** to be displayed in the object as needed. After it is checked, you can double click the table header to enter texts as needed. Press Alt + Enter for line breaking.
Enter Text in Cell	Select a cell which has not been linked with property, and double-click the cell to enter texts. Press Alt + Enter for line breaking in the cell.
Link Cell with Property	To link a cell with property, select the object or a cell, and then drag a property from the configuration pane to the specific cell. To remove the linked property, select the cell, and right-click the cell and select **Remove Linked Property**. **Note** After the cell is linked with a property, the linked content cannot be edited.

Insert Object into Cell	Select a cell which has not been linked with property, right-click the cell and select **Insert Picture** / **Insert Table**.

Thermal Image

Thermal images added to the analysis task list will be automatically displayed in the Thermal Image object.

Steps

1. Select a thermal image in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width and height, to adjust the size of the image. The width and height can only be changed uniformly. • Select the object and drag one of the 4 corners to uniformly scale the image.
Delete Thermal Image	To delete the image, hover over the image thumbnail and click **Delete**. **Note** If an object is already linked with a thermal image, When you delete the linked thermal image or the object linked with the thermal image, the linkage will be deleted as well, which cannot be undone.
Change Thermal Image	To change the image, hover over the image thumbnail and click **Select** to select a different image, or drag an image from the task list to the target object. **Note** • If you drag the image to other positions, e.g., the report overview area or a non thermal image object area in the report, a new content page for the image will be generated. See details in ***Add New Page*** . • Batch dragging images to batch change thermal images is not supported. When you drag multiple images, multiple content pages will be generated accordingly no matter which position you drag the images to.

Set Object Alignment	Select , or to set the object as left aligned, centered, or right-aligned.
Display Items	Check **Temperature Scale** to display the scale bar on the right of the thermal image. Check **Image Name** to display the image name below the thermal image.
Set as Main Image	Right-click the thermal image object and select **Set as Main Image**. After it is set as the main image, the thermal image will be displayed as the thumbnail of the current page on the left for preview.
Edit Thermal Image	Double-click on a thermal image or right-click and select **Edit** to start editing. See ***Image Analysis*** for instructions. Click **Save** after finishing editing.

Visual Image

Visual images and regular images linked with thermal images will be displayed in the Visual Image object.

Steps

1. Select the visual image object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width and height, to adjust the size of the image. The width and height can only be changed uniformly. • Select the object and drag one of the 4 corners to uniformly scale the image.
Select Type	Select an image type in the drop-down list. • **Auto-selection**: The object will be auto-filled with the picture linked with the thermal image. • **Other Image**: You can add regular pictures from the local PC. Click to add a picture. Hover over the added picture and click to delete the picture. • **Aligned Visual Image**: When you select this type, the object will be auto-filled with the corresponding aligned visual image to the linked thermal image.

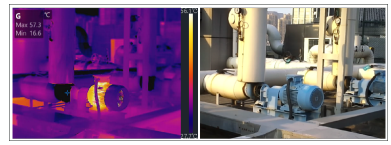


Figure 8-3 Aligned Visual Image

- **Full-Size Visual Image**: When you select this type, the object will be auto-filled with the corresponding full-size visual image to the linked thermal image.

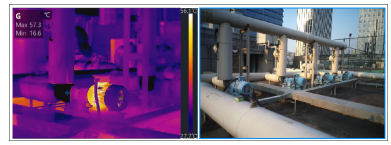


Figure 8-4 Full-Size Visual Image

- **Picture Note**: Visual images attached to a thermal image. The content of the images may be different from the thermal image. Picture notes are taken when device captures a thermal image, and are not allowed to change in the software. If a thermal image has no such picture notes attached, no the image area remains blank.

Link Thermal Image	When you select **Auto-selection**, **Aligned Visual Image**, **Full-Size Visual Image**, or **Picture Note**, you can link a thermal image with the object. Select a thermal image from the drop-down list and the object will be auto-filled with the visual image linked with the thermal image.
Upload Image	When you select **Other Image** as the image type, you can click **Add** or double-click the object to upload a local image file.
Set Object Alignment	Select , or to set the object as left aligned, centered, or right-aligned.
Display Items	Check **Image Name** to display the image name below the image.

Logo

Steps

1. Select the logo object in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Operation	Description
Set Size	Enter the specific value of width and height of the logo as needed. The width and height can only be changed uniformly.

Set Object Alignment	Select , , or to set the object as left aligned, centered, or right-aligned.
Add Logo	Click **Add** to upload a picture as the logo from the local PC. **Note** • After the logo is added, you can hover over added picture and click **delete** or **Select** to delete or change the logo. • If you have deleted or changed the logo, you can click **Reset** to restore the default logo.

The configuration effect can be synchronously previewed on the report.

Image Information

The image name, IR resolution, picture size, and capture time will be displayed in this object.

Steps

1. Select the image information object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width. • Select the object and drag one of the 2 sides to adjust the width.
Set Text/Object Alignment	Select , , or to set the content as left aligned, centered, or right-aligned.
Link Thermal Image	Select a thermal image from the drop-down list to be linked with this object. The object will be auto-filled with the linked thermal image information. **Note** The thermal image information cannot be edited.
Display Items	Check the items to be displayed in the object as needed.

Device Information

The information of the capture device including device model, device serial No., etc. will be displayed in this object.

Steps

1. Select the device information object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width. • Select the object and drag one of the 2 sides to adjust the width.
Set Object/Text Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Link Thermal Image	Select a thermal image from the drop-down list to be linked with this object. The object will be auto-filled with the linked thermal image device information. **Note** The linked information cannot be edited.
Display Items	Check the items to be displayed in the object as needed.

Text Note

The text note information will be displayed in this object.

Before You Start

For adding text note to the thermal image, see details in .

Steps

1. Select the Text Note object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Edit Object Title	You can edit the object title (Text Note by default).
Set Size	• Enter the specific value for width. • Select the object and drag one of the 2 sides to adjust the width.
Set Text/ Object Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with text notes of the linked thermal image. **Note** The linked information cannot be edited.

Tag Note

Tag note objects are used to replenish the corresponding information about the thermal images.

Steps

1. Select the tag note object in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Change Table Style	Change table style by **Hide Table Border** and **Table Title** check boxes.
Set Text/Object Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Edit Table Title	Double click on the table head to enter edit mode.
Link Thermal Image	Select a thermal image from the drop-down list to be linked with this object. The table will be auto-filled with the linked thermal image tag note information.

Note

The linked tag note in table cannot be edited. The table auto refills as the linked image changes.

Measurements

The measurements of parameters for the global image and parameters for measurement tools including the severity, the maximum temperature, the minimum temperature, the center temperature, etc. will be displayed in this object.

Steps

1. Select the measurements object in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Change Table Style	Change table style by **Hide Table Border** and **Table Title** check boxes.
Set Text Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Edit Table Title	Double click on the table head to enter edit mode.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The table will be auto-filled with measurement results of the linked thermal image. **Note** The linked measurement result cannot be edited. The table auto refills as the linked image changes.

Image Parameters

The parameters for the global image including the distance, humidity, atmospheric temperature, etc. will be displayed in this object.

Steps

1. Select the Image Parameters object in the report.

   The object configuration pane will be displayed on the right.

2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width. • Select the object and drag one of the 2 sides to adjust the width.
Set Text/Object Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with parameters for the global image of the linked thermal image. **Note** The linked information cannot be edited.
Display Items	Check the items to be displayed in the object as needed.

Measurement Parameters

The parameters for measurement tools including emissivity, distance, etc. will be displayed in this object.

Steps

1. Click the Measurement Parameters object in the report.

   The object configuration pane will be displayed on the right.

2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Change Table Style	Change table style by **Hide Table Border** and **Table Title** check boxes.
Set Text/Object Alignment	Select , or to set the content as left aligned, centered, or right-aligned.
Edit Table Title	Double click on the table head to enter edit mode.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with parameters for measurement tools of the linked thermal image.

Note

The linked information cannot be edited. The table auto refills when the linked image changes.

Display Items	Check the items to be displayed in the object as needed.

Delta

The table of delta ranges and standard values (based on severity results) will be displayed in this object. The result of measurement delta configured in a thermal image in the report page will turn to the corresponding color according to the set range and standards.

Before You Start

The thermal images in the page should contain delta tools, and the measurement delta result should be displayed in table.

Steps

1. Select the Delta object in the report.

   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

Note

The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width. • Select the object and drag one of the 2 sides to adjust the width.
Set Text/Object Alignment	Select , , or to set the content as left aligned, centered, or right-aligned.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with severity results of the linked thermal image. **Note** The linked information cannot be edited.
Configure Delta Range	You can edit the delta range names and standard values.

Temp. Distribution Bar Chart

The temperature distribution bar chart of the linked thermal image will be displayed in this object for further analysis.

Steps

1. Select the Temp. Distribution Bar Chart object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note
   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width and height, to adjust the size of the object. • Select the object and drag one of the 4 corners to uniformly scale the object.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with the temperature distribution bar chart of the linked thermal image.
Link Measurement	Select a measurement to be applied, and the object will be auto-filled with information corresponding to the measurement.
Set Object Alignment	Select , or to set the object as left aligned, centered, or right-aligned.
Number of Bars	Enter a specific number for bars, or click or to increase or decrease the number of bars.

Temp. Distribution Line Chart

The temperature distribution line chart of the linked thermal image will be displayed in this object for further analysis.

Steps

1. Select the Temp. Distribution Line Chart object in the report.
   The object configuration pane will be displayed on the right.
2. You can perform the following operations.

   Note
   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	• Enter the specific value for width and height, to adjust the size of the object. • Select the object and drag one of the 4 corners to uniformly scale the object.
Link Thermal Image	Select a thermal image from the drop-down list to be linked for this object. The object will be auto-filled with the temperature distribution line chart of the linked thermal image.
Link Measurement	Select a measurement to be applied, and the object will be auto-filled with information corresponding to the measurement. Note • If you change or delete the linked thermal image, the linked measurement will be changed as well. • You can only link line measurement and polyline measurement.
Set Object Alignment	Select , or to set the object as left aligned, centered, or right-aligned.

8.4.4 Delete Object

Steps

1. Perform one of the following operations to delete the selected object.
   - Select an object, right-click the object, and select **Delete Object**.
   - Select an object and click **Content > Delete Object** .

8.4.5 Change Template for Selected Page

Steps

1. Right-click a page.
2. Select **Change Template**.
3. Select a suitable template to replace the current one.
4. Click **Save**.

8.5 Export File

8.5.1 Export Report

After editing and previewing the report on the client, you can export it to the local PC for comparison, analysis, and summarization of temperature measurement statistics. You can perform operations including editing report file name, setting saving path, exporting report as PDF or editable ODT file, and opening the folder of the exported file.

1. On the top right corner of the report editing page, click **Export Report**.
2. Select ODT or PDF as the file format, edit the file name, and configure the saving path.
3. Click **OK** to export the report.

Note

- The report will be named by the export date, month, and year by default. For reports exported on the same day, you can choose to replace the previous file, or go back to manually change the report name.
- In the prompt on export success, you can click **Open Folder** to view the exported report in the local PC or click **OK** to stay on the report editing page.
- You can edit the exported ODT file on Microsoft Word.

8.5.2 Export Single Object

For table-type objects in the report (Report Information, Summary Table, General Table, Image Information, Device Information, Text Note, Tag Note, Measurements, etc.), you can export them independently as CSV files.

1. Select a table-type object in the report, right-click the object and select **Export CSV File**.
2. Edit the file name and saving path as needed.
3. Click **OK** to export the CSV file.

Note

- The file will be named by the export date, month, and year by default. For files exported on the same day, you can choose to replace the previous file, or go back to manually change the file name.
- In the prompt on export success, you can click **Open File** to view the exported file on the local PC.

Chapter 9 Analysis Tools and Operations

9.1 Temperature Measurement Tools

9.1.1 Add Measurement Tools

To measure a temperature, you can use one or more measurement tools in the toolbar (spot, circle, line, etc.). When you add a measurement tool to the image, the measured temperature will be displayed in the right Temperature Analysis pane. The tool setup will be saved to the image file and the measured temperature results will be available for creating your thermography report.

Add Measurement Tools

Click on a tool icon to draw one tool on image. Or double click on an icon to draw tools continuously.

Spot

Click to add a spot measurement tool to the location as needed on the image.

Line

Click , and then draw a line for measurement on the image.

Polyline

Click , and then click on image to add nodes for a polyline. Up to 10 nodes are supported.

Rectangle

Click , and left-click on the image and drag the mouse to draw a rectangle.

Circle/Ellipse

Click , and left-click on the image and drag the mouse to draw an ellipse. Holding **Shift** during drawing a circle.

Polygon

Click , and left-click on the image to add nodes of the polygon. Right-click on the image to finish. Up to 10 nodes are supported.

Temperature Difference (Delta) Calculation

After setting the formula, the delta between temperatures will be calculated automatically and you can view the delta in the Temperature Analysis pane.
In the toolbar, click to set the following parameters:

Name

Create a name for the delta.

Formula (Required)

Select measurements and temperatures for the expression to calculate the delta.

Note

The dotted line between two measurement tools will not always be displayed on the image. For example, if a temperature type selected in a delta is average temperature, the dotted line will not be displayed.

9.1.2 Edit a Measurement Tool

Move a Measurement Tool

- In the toolbar, click , select a measurement tool on the image and drag it to a new location.
- Press arrow keys on the keyboard to adjust the location of a tool.

Resize a Measurement Tool

1. In the toolbar, click .
2. Select a measurement tool on the image.
3. Drag the node on the tool to resize the tool.

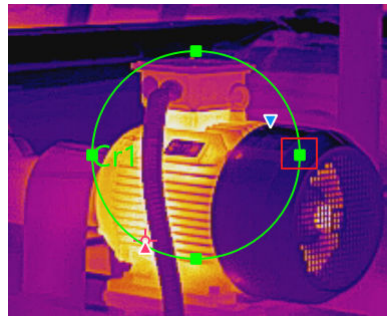


Figure 9-1 Resizing a Measurement Tool

Edit Delta Calculation

In the Temperature Analysis pane, you can right click a delta and select **Edit** to edit the delta.

Modify Display Color of Measurement Tool

If the display color of a measurement tool is similar to the color of the image, making it difficult to distinguish it from the image, you can modify the color of the measurement tool.

1. In the toolbar, click .
2. Select a measurement tool on the image.
3. Right-click the measurement tool and select **Measurement Property**.
4. In Color, select a color and click **OK**.

9.1.3 Delete a Measurement Tool

You can delete measurement tools one by one and remove all measurement tools.

Note

After deleting a measurement tool, if a delta calculation is related with the deleted tool, the delta will also be deleted.

Delete One Measurement Tool

- Click and select a measurement tool on the image to delete it.
- Right-click a measurement tool and select **Delete Measurement**.
- Select a measurement tool and press the Delete key on the keyboard.

Clear All Measurement Tools

- Right-click any location on the image (except locations within measurement tools) and select **Remove All Measurements**.
- In the toolbar, click to remove all measurement tools.

Delete Delta

In Temperature Analysis pane, right-click a measurement tool and select **Delete**.

9.1.4 Shortcut Keys of Measurement Tools

Table 9-1 Short Keys of Adding Tools

Tool Type	Add One Tool	Add Tools Continuously
Spot	Ctrl + Q	Shift + Ctrl + Q
Line	Ctrl + W	Shift + Ctrl + W
Polyline	Ctrl + E	Shift + Ctrl + E
Rectangle	Ctrl + R	Shift + Ctrl + R

Tool Type	Add One Tool	Add Tools Continuously
Circle/Ellipse	Ctrl + T	Shift + Ctrl + T
Polygon	Ctrl + Y	Shift + Ctrl + Y
Exit Drawing	Esc	Esc

Table 9-2 Short Keys of Editing Tools

Shortcut Key	Function
↑(up arrow)	Move up a measurement tool.
↓(down arrow)	Move down a measurement tool.
←(left arrow)	Move left a measurement tool.
→(right arrow)	Move right a measurement tool.
Delete	Delete a measurement tool.

9.1.5 Set Measurement Parameters

Different measurement parameters can be adjusted to obtain thermal images for better monitoring effect.

Measurement Parameters

Configure Measurement Parameters

Configure Measurement Parameters

- After configuring measurement, right-click the measurement in the image and select **Measurement Property** to rename the measurement, set the color of the measurement and configure the measurement parameters.
- Right-click any area on the image (except the area in measurement tools) and select **Image Measurement Property** to configure the image parameters.
- On the right side of Analysis page, click to open the Parameters pane to configure measurement parameters or image parameters.

  Note
  - You can drag the window to the middle of the client for a convenient view.
  - For example, if you select the L1 measurement, the suffix of the parameter is L1. If you don't select any measurement, the suffix of the parameter is Image, which indicates the measurement parameters of the current image.
  - If you need to configure the parameters of the other measurement, select the measurement in the image, or select the measurement on the right side of the

Measurement Parameters, and configure the parameters of the new selected measurement.

- If the measurement parameter is selected as Image, click to synchronize the measurement parameters of the image to all measurements of the current image.

- Click to reset the measurement parameters.

Measurement Parameters

Atmospheric Temperature

It refers to the actual temperature of the measured environment.

Humidity

Measure the moisture content in the air.

External Optical Transmittance

The transmission of any external lenses or windows used in front of the camera.

External Optical Temperature

The temperature of any external lenses or windows used in front of the camera.

Emissivity

Every object has emissivity, which can be affected by surface temperature, surface roughness, degree of oxidation, coating, etc.

Distance

The distance between the object and the thermal device.

Reflected Temperature

The reflected temperature will affect temperature measurement results.

Alarm Type/Threshold

When the max. temperature / avg. temperature / min. temperature is above or below the alarm threshold, the alarm will be triggered. The alarm measurement tool will be displayed in the alarm color for further analysis. For details about temperature alarm analysis, refer to *Temperature Alarm Analysis* .

Delta Range

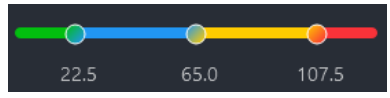


Figure 9-2 Delta Range

The upper and lower limits of the delta range correspond to the temperature measurement range of the device. The range from the lower limit to the first value indicates that the temperature is normal; the range from the first value to the second indicate the need for inspection; the range from the second value to the third indicate

the need for maintenance after the operation stops; the range from the third value to the upper limit indicates the need for immediate maintenance.

After setting the values, the temperature difference result in the Temperature Analysis window will be displayed according to the color of the range in which the delta result is.

For example, the value of the first range on the left is set to 22.5, if the delta is less than or equal to 22.5, then the delta result will be displayed in green font color.

9.1.6 Alarm Analysis

Temperature Alarm Analysis

When the measurement results of a measurement tool is above or below the alarm threshold you set, the measurement tool will be displayed in the alarm color you set, so that you can easily analyze an abnormal temperature.

Enable/Disable Alarm Analysis

After enabled, when the measurement results of a measurement tool is above or below the alarm threshold you set, the measurement tool will be displayed in corresponding alarm color you set. At the same time, the measurement results of the measurement tool in the Temperature Analysis pane will be displayed in red.

Steps

1. Click to open the **Temperature Analysis** pane.
2. In **Measurement Parameters**, select an alarm type in the drop-down list.

   Note

   In the drop-down list, you can select **Disabled** to disable this function.
3. Set the alarm threshold.

9.1.7 Calculate Area

The client supports calculate the area of the surface enclosed by area measurement tools (rectangle, polygon, circle, and ellipse). The calculation is an estimate of the surface area based on the distance.

Before You Start

Make sure you have added an area measurement tool to the image. For details about adding measurement tools, refer to ***Add Measurement Tools***

Steps

1. Select an area measurement tool on the image.

2. Open the Temperature Analysis pane.
3. In **Area Calculation**, click the value filed to set the distance to the set area tool.
   The calculated area is displayed in the table below.

9.1.8 Overlay Measurement Results

Select measurement tools, temperature types, and deltas to be overlaid on the preview image and exported images/videos.

Steps

1. Set to display measurement tools, delta, and location of measured temperatures.
   1) In the toolbar, click .
   2) Enable the function.
   3) Check the measurement tools, temperature values, and deltas to be overlaid on the image.

      Note

      The settings takes effect for current image or video in analysis.
   4) Click **OK**.
   5) **Optional:** If you need to display the measured temperature values on image, go to **Settings > Preference > Preview Window Overlay** to turn on **Measured Temp.**.
   6) **Optional:** If you need to display the measured temperature next to the measurement tool, go to **Settings > Preference > Preview Window Overlay** to turn on **Display with Measurement**.

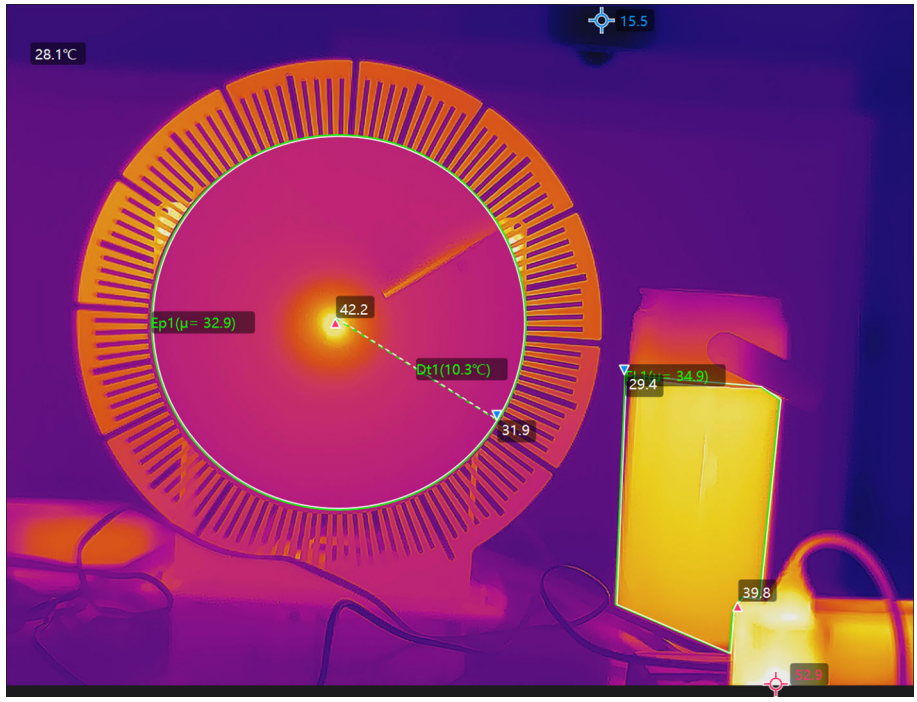


Figure 9-3 Overlay in Preview Window

- In preview window, the red cross marks the point of highest temperature in the image, the blue cross marks the point of lowest temperature in the image, the gray cross marks the center point in the image, the red triangle marks the point of highest temperature in the measurement tool, and the blue triangle marks the point of lowest temperature in the measurement tool. The dotted line marks a delta tool.
- Measured temperature values displays at the upper left corner, and next to the measurement tools. μ means the average temperature. The settings take effect for all preview windows in **Analysis** and **Live** tab.

2. Set the Overlay information in saved and exported images/videos.
   1) Go to **Settings > Image Overlay** .
   2) Enable the function.
   3) Check the measurement tools, temperature values, and deltas to be overlaid on the image/video.
   4) Click **OK**.

9.1.9 Apply Measurement Tools to All Images in Task List

When analyzing multiple images at a time, you can apply the measurement tools laid out on an image to the others in the task list to improve image analysis efficiency.

On the **Task List** tab, right click an image or a group and select **Apply Measurements to All**.

- When you select a thermal image to start applying, all individual thermal images and the first image in each group will be synchronized.
- When you select an image group to start applying, all individual thermal images will be applied with the measurement settings of the first image in the group, and the settings of images in other groups are synchronized according to the image order in selected group.

9.2 Image Editing Tools

You can edit images (via setting image display mode, palettes, etc.) to make it easier to analyze the image.

Note

The display mode available is relied on the image type. For example, if the image is captured by a device that only supports the thermal channel, then the display mode is only the thermal mode.

9.2.1 Set Display Mode

For images taken by a camera that has both thermal and visual channel, they are allowed to display in thermal, fusion, PIP, blending, or visual mode.

Note

Radiometric videos, finger videos and live streaming only have thermal mode available.

Thermal

Thermal imaging is based on the difference of infrared radiation of objects. The thermal device can transfer the infrared radiation distribution emitted naturally on the surface of objects into visual images. Since different objects or different parts of the same object have different thermal radiation characteristics (e.g. temperature difference and emissivity), different objects can be distinguished because of their differences in thermal radiation. We can monitor the environmental temperature change in time according to the thermal image. The thermal mode has the advantages of wide detection range, and low information loss, uninterrupted throughout the day and night, and is not affected by the detection effect. In the thermal mode, the image resolution is low and the image lacks the sense of hierarchy. Because of the transmission distance, the contrast of different objects in the image is low and blurred.

In the top-right corner of Analysis tab, select **Thermal** in the drop-down list.

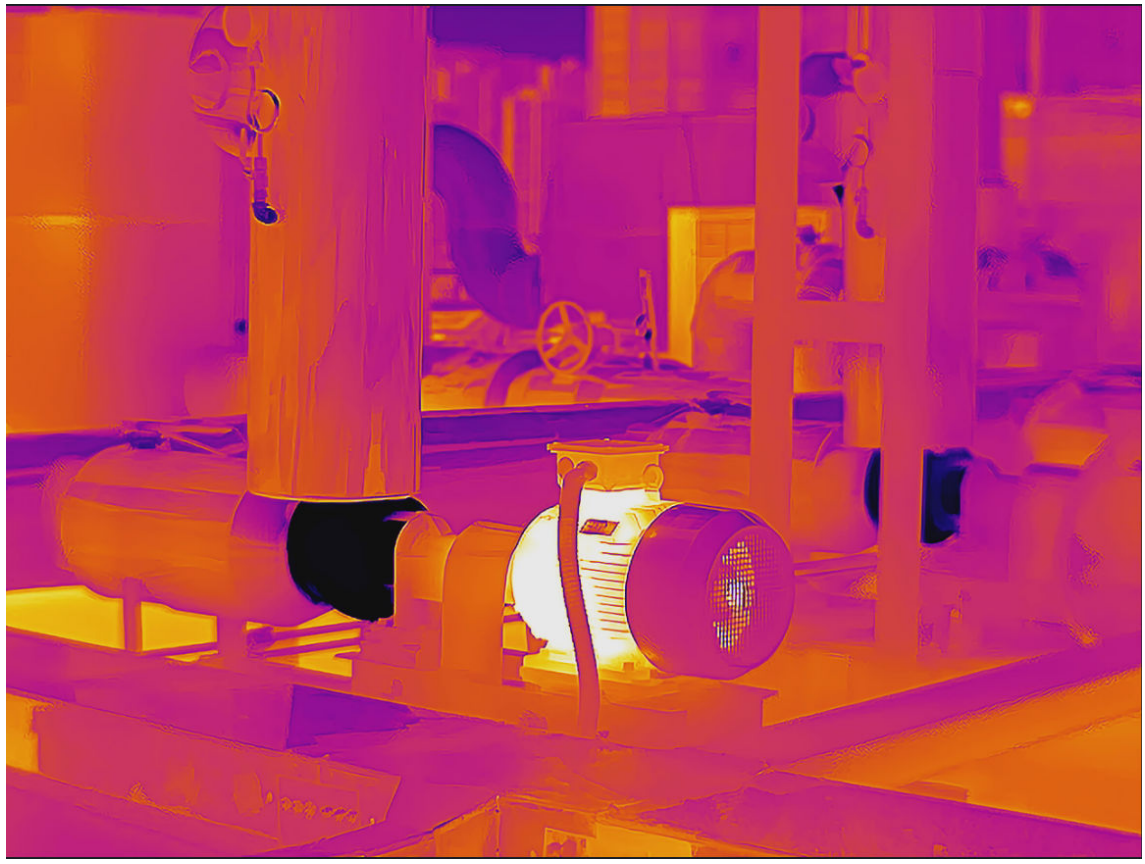


Figure 9-4 Thermal

Fusion

In the fusion mode, the thermal image and the optical image are combined to make the image boundary clear, so that it can not only continuously detect the temperature of the environment of the object, but also distinguish the shape of the object in the environment.

In the upper-right corner of Analysis page, select **Fusion** in the drop-down list.

Note

If necessary, click **Adjust Fusion Alignment** to align the visual image with the radiometric image.

- Click / to zoom in/out the visual image. You can also press the PLUS/MINUS key to zoom in/out the image.
- Click / / / to adjust the position of the visual image. You can also press the direction keys on the keyboard to adjust the position.
- Click **Reset** to restore the position of the visual image to the position when the visual image is captured.

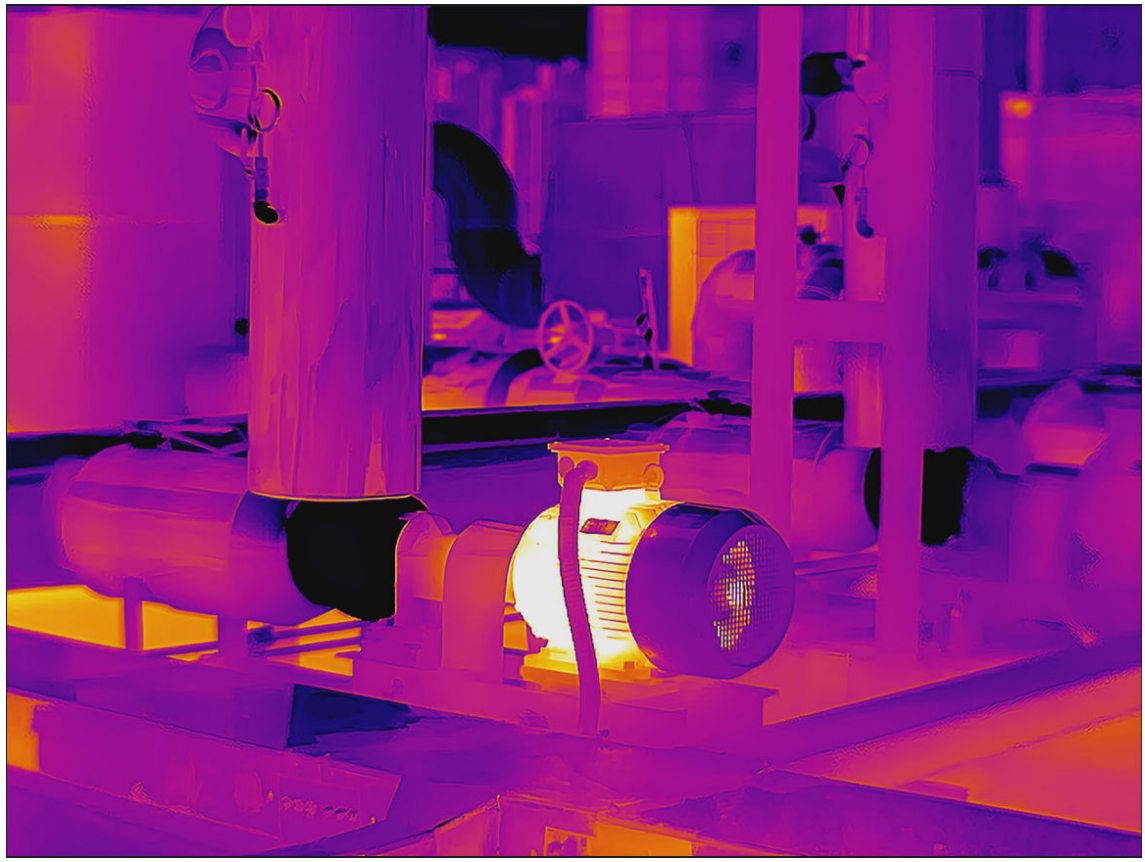


Figure 9-5 Fusion

Blending

You can adjust the visible light ratio. If the image in Thermal mode is not clear, you can increase the ratio of visible light so as to get more details for making accurate decisions.

1. In the upper-right corner of Analysis page, select **Blending** in the drop-down list.
2. Drag the slider left of right to adjust the thermal/visual level.

Figure 9-6 Blending

PIP (Picture in Picture)

In PIP (picture in picture) mode, an optical image is the background of the image, and the thermal image is in the center of the image. When the thermal device is one-channel, we cannot only view the actual environment but also view the temperature changes in the environment in PIP mode.

In the upper-right corner of Image Analysis page, select **PIP** in the drop-down list. If needed, you can click **Adjust Thermal View** to resize and move the radiometric image according to the instructions on the interface.

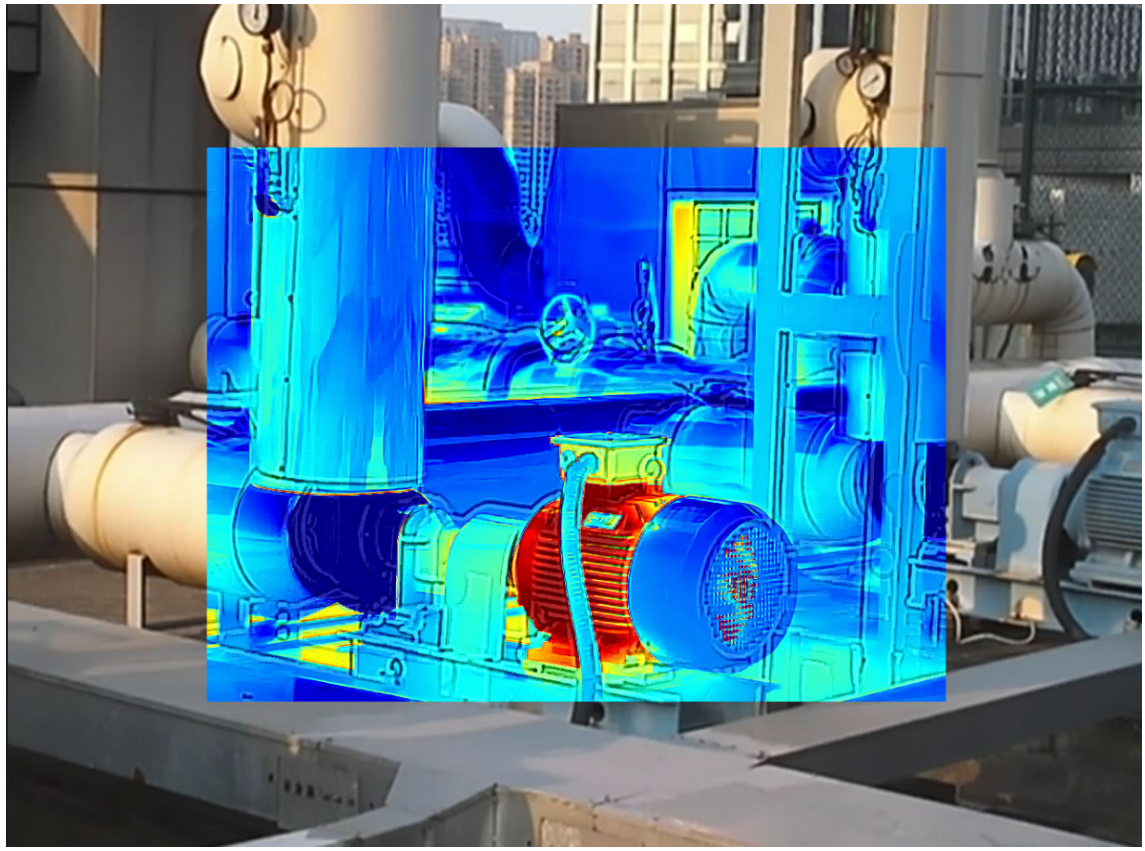


Figure 9-7 Picture in Picture

Visual

In this mode, the image is close to the true color of the real environment or object. In the thermal mode, it is difficult to distinguish the shape of the object. You can switch to optical mode to draw the measurements (area), and then switch to thermal mode to view the temperature information in the measurement area.

In the upper-right corner of Analysis page, select **Visual** in the drop-down list.

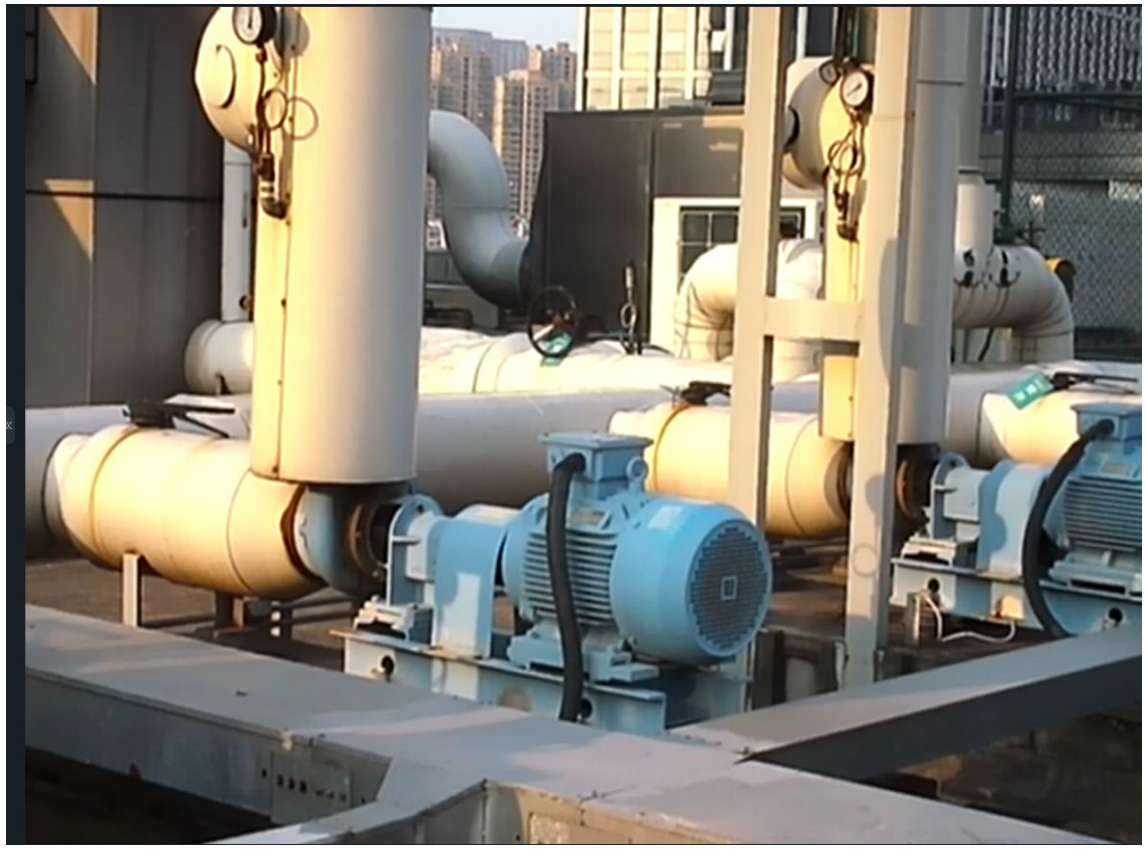


Figure 9-8 Visual

9.2.2 Palettes and Reverse Temperature Scale

Palettes contain the correspondence between image temperature and color. The Client displays different colors according to the selected palette and image temperature. Selecting a proper palette can provide more image details.

Set Palettes

In the upper-right corner of the Analysis page, select a palette type in **Palettes** in the drop-down list. After the selection, the image will regenerate according to the selected color combination.

The Client supports multiple built-in palettes and one custom palette. For custom palette:

- Import one custom palette file (*.pal) through **From File** in the palettes group to use for different images. After you import it, the new palette is displayed in **Other Palettes**.
- If the imported image or video has a non-built-in palette, its palette will be displayed in **Other Palettes**. The palette is only available to this imported image or video, and is not available to others in the **Task List**.

Reverse Temperature Scale

Reverse temperature scale is to convert colors corresponding to high-temperature and low-temperature in palettes. For example, the high-temperature area displays white and the low-temperature area displays black after selecting the **White Hot** palette. When you set the reverse temperature scale, the high-temperature area displays black hot and the low-temperature area displays white hot.
In the Analysis page, click  on the upper-right corner to set the reverse temperature scale.

9.2.3 Focus Mode Palettes

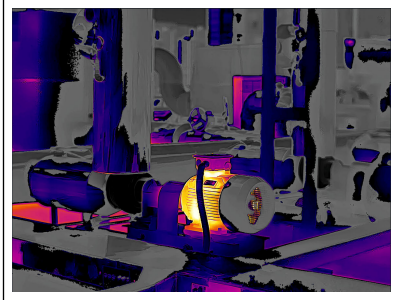
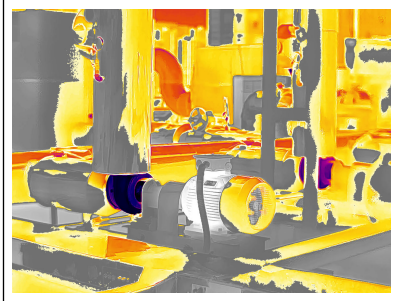
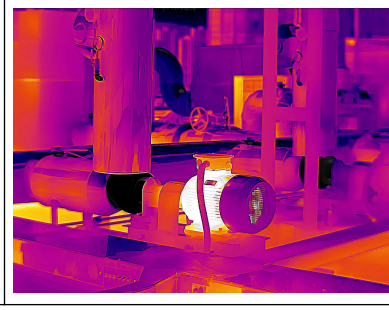
Focus mode palettes allows to mark the targets of certain temperature range with fusion palettes and the others with white hot palettes.

Set Focus Mode Palettes
Focus Mode Palettes

Set Focus Mode Palettes

1. In the upper-right corner of Analysis page, select a palette type in Focus Mode Palettes in the drop-down list.
2. On the right side of the focus mode palette's name, set the temperature threshold or the temperature range. After the settings, when the temperature reaches the alarm limit, the object pixel in the image will be marked with a different color.

Focus Mode Palettes

Focus Mode Palettes	Description	Image Example
Above Focus	Set the temperature threshold, and the targets with the temperature higher than the set value are displayed with fusion palettes.	
Below Focus	Set the temperature threshold, and targets with the temperature lower than the set value are displayed with fusion palettes.	
Interval Focus	Set the temperature range (e.g., 90 °C to 150 °C), and targets with temperatures in the range are displayed with fusion palettes.	

9.2.4 Set Color Alarms

When the temperature or humidity of a pixel in the image reaches the set parameter threshold or is within the set parameter range, it will be marked with different colors to remind the user to pay attention to the highlighted area.

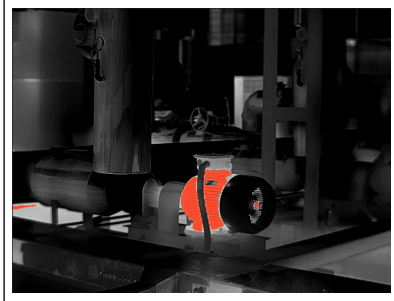
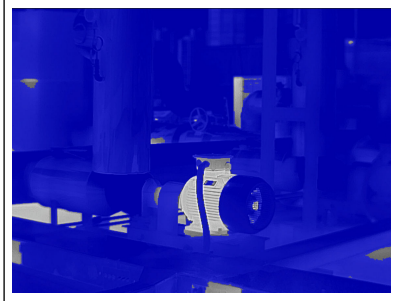
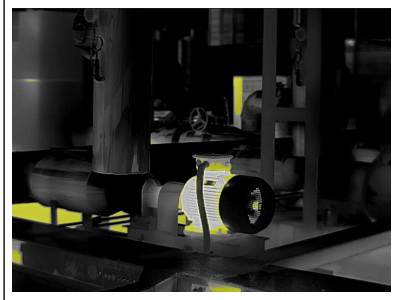
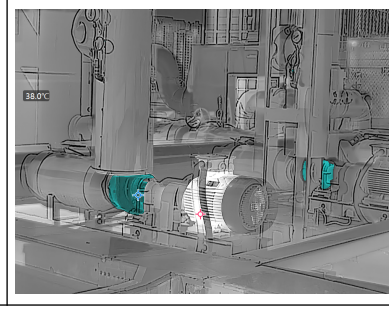
Set Color Alarms

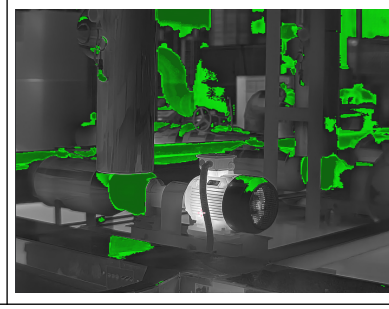
Color Alarms

Set Color Alarms

1. In the upper-right corner of Analysis page, select an alarm type from **Palettes > Color Alarm** drop-down list.
2. Click the drop-down list to set the parameters of the selected alarm type.

Color Alarms

Color Alarms	Description	Image Example
Above Alarm	Click the drop-down list to set the **Upper Temp. Threshold**. Targets with the temperature higher than the set value are displayed in red.	
Below Alarm	Click the drop-down list to set the **Lower Temp. Threshold**. Targets with the temperature lower than the set value are displayed in blue.	
Interval Alarm	Click the drop-down list to set the Upper and Lower Temp. Threshold. Targets with the temperature in the set range are displayed in yellow.	
Insulation Alarm	Click the drop-down list. After setting the indoor temp. and outdoor temp., the Client will calculate the insulation level based on the built-in algorithm. If the result is lower than the set insulation level, the insulation abnormal area will be displayed in cyan on the screen.	

Color Alarms	Description	Image Example
	Note The higher insulation level means the higher the demand for insulation effect. It is recommended to set the insulation level between 60 and 80.	
Condensation Alarm	Surface where the relative humidity exceeds the set threshold will be color marked.	

Condensation Alarm Analysis

Condensation alarm marks the surface where the relative humidity exceeds the set threshold.

Note

Before setting condensation alarm, the color alarm type of the image should condensation alarm.

In Temperature Analysis panel, you can set the alarm threshold in Condensation Alarm.

If the ambient temperature and relative humidity have been configured on the device which captured the image, and you check **Use Local Parameters**, the client will auto read the two parameters for condensation alarm analysis. If they are not set on device, the atmospheric temperature and humidity in Image Parameters will be used for condensation alarm analysis.

9.2.5 Level and Span

Changing the temperature levels makes it easier to analyze a temperature anomaly. There are three modes for adjusting the levels and span, including Auto and Manual. The following chapters will describe how to use these modes.

Auto Level and Span

In this mode, the Client will automatically calculate the temperature scale for best contrast and brightness of the image.

At the top of the temperature scale, select **Auto** in the drop-down list.

Note

- If the image effect in this mode does not meet your need, you can select **Manual** to manually adjust the temperature scale. For details, refer to ***Manual Level & Span*** .
- In Auto mode, right-click an area measurement tool (including rectangle, circle, ellipse, and polygon), and select **Regional Image Enhancement**. The client will automatically calculate the temperature scale of the area, and switch to **Manual** mode where you can further adjust the temperature scale manually. For details, refer to ***Manual Level & Span*** . Besides, in Manual mode, if you move or resize this area measurement tool, the image effect will change at the same time.

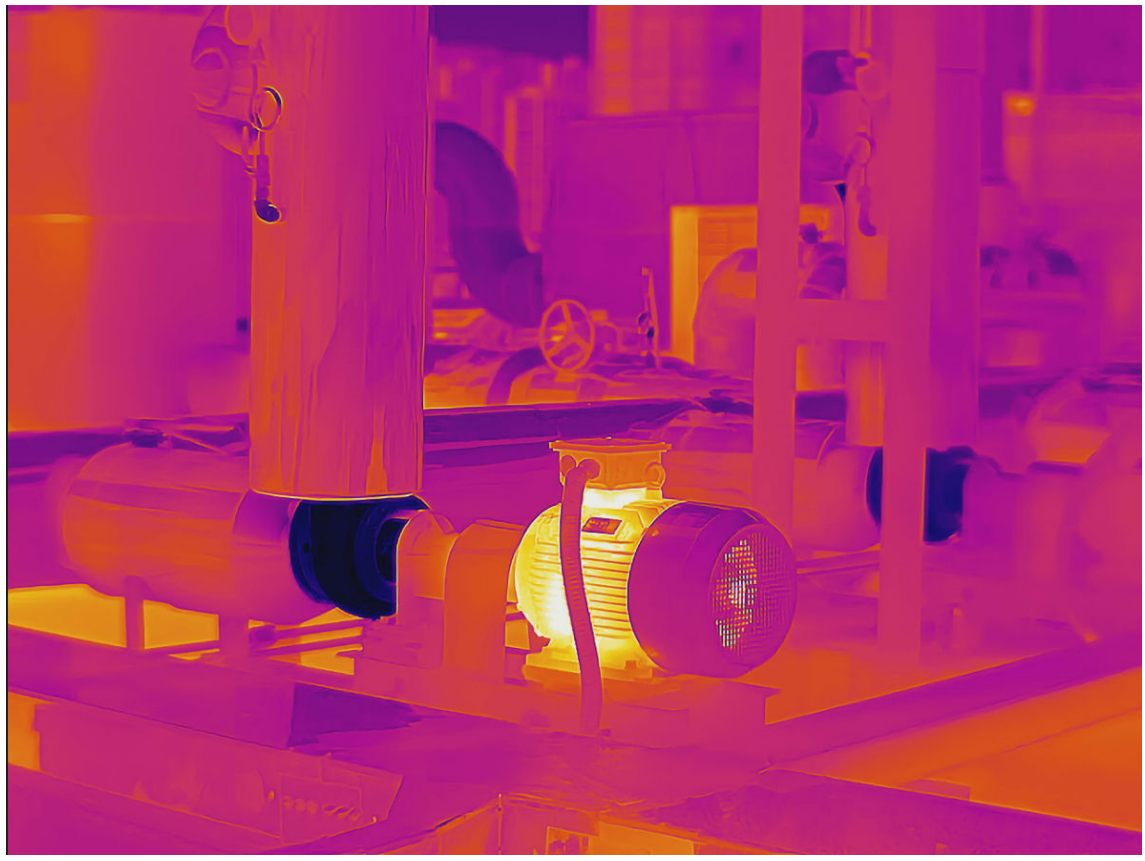


Figure 9-9 Image Example (Auto)

Manual Level & Span

You can manually adjust the top and bottom levels in the temperature scale. If you change the temperature scale to values close to the temperatures of the object, it is easier to find an abnormal temperature.

Steps

1. At the top of the temperature scale, select **Manual** in the drop-down list.
2. Adjust the temperature scale.
   - Drag the sliders up and down to change the top and bottom levels in the temperature scale.
   - Move the cursor to the middle of the two sliders (the cursor will turn to a hand shape icon), and then drag the cursor to adjust its location to adjust the temperature scale.

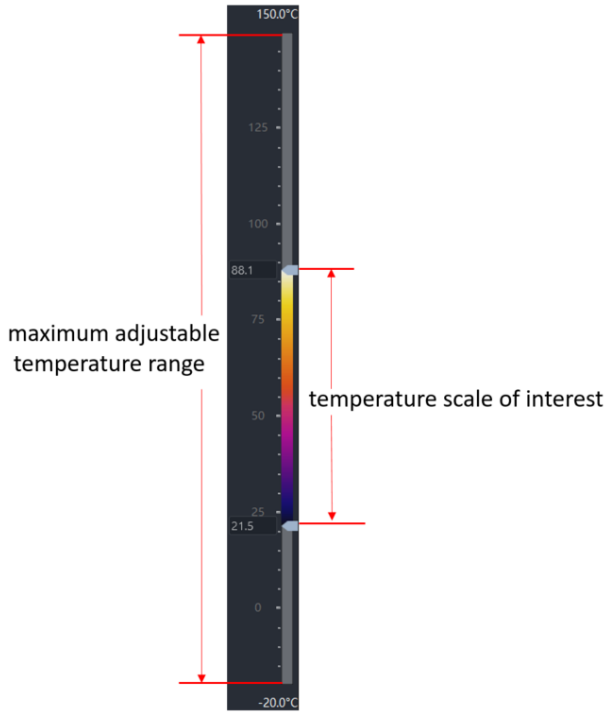


Figure 9-10 Temperature Scale

- Maximum adjustable temperature range: Determined by the measurement range set on the device when the image is captured, or calculated by the software according to the image's highest and lowest temperatures. Go to > **Measurement** to set the temperature range for Level & Span.
- Temperature scale of interest: That is, the temperature scale of the target. The top and bottom levels of the scale are the same as those of the palette bar.

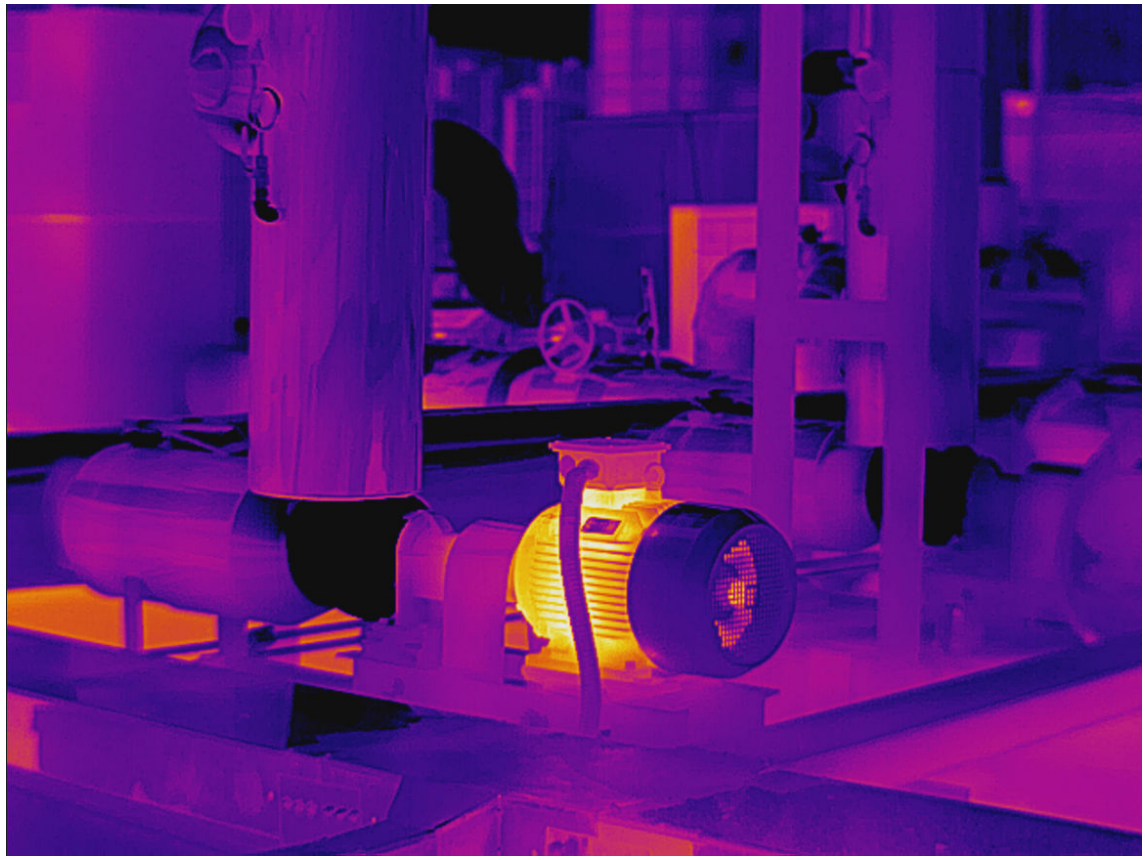


Figure 9-11 Image Example (Manual)

9.2.6 Super Resolution

The client supports SuperIR super resolution technology to offer clearer image and videos with more details.

- For the thermal images imported to the client, the client automatically processes them with SuperIR technology. As a result, images tend to look better in client than on the device.
- For the radiometric videos and finger videos in the client, if the IR resolution is lower than 256×192, **SuperIR** switch displays in toolbar.

  Note

  When a radiometric video is exported to an MP4 file, the **SuperIR** effect is retained. The effect is not retained when you export the file to other formats.
- For device connecting to the client for live analysis, if its IR resolution is lower than 256×192, **SuperIR** switch displays in toolbar.

Note

The **SuperIR** effect is not retained in the captured thermal images or videos during live analysis.

9.2.7 Color Distribution

You can change the distribution of colors in an image. A different color distribution allows you to analyze the image more easily and thoroughly.

In the upper-right corner of Analysis page, select a color distribution in the drop-down list.

Table 9-3 Color Distribution

Color Distribution	Description
Linear	Applicable when the temperature span of an image is large.
Histogram	Applicable when the temperature span of an image is small.

9.2.8 Advanced Image Editing

You can adjust image parameters like brightness, contrast, sharpness, etc. for better analysis.

1. In the toolbar, click .
2. Select the image adjustment mode.
3. In Manual mode, set the following parameters as needed.

Parameter	Description
Brightness	Drag or enter an integer on the right to adjust the brightness of the image.
Contrast	Contrast is the brightness level difference between the brightest area and the darkest area in an image. The greater the contrast is, the larger the difference will be. Drag or enter an integer on the right to adjust the contrast of the image.
Sharpness	Sharpness describes the clarity of detail in the image. The greater the sharpness is, the clearer the image will be. Drag or enter an integer on the right to adjust the sharpness of the image.

After setting the parameters above, do the following as needed.

- Click **OK** to save current settings.
- Click **Preview** to preview the effect of edited parameters.
- Click **Reset** to restore default settings.

9.2.9 Rotate and Resize Image

You can rotate or resize the image according to your need.

Rotate the Image

In the toolbar, click **Rotate** once, and the image will rotate 90 degrees.

Resize the Image

Click , switch to the **Fit to Window** mode. The image size will be auto-adjusted to the window size.
Click , switch to the **Fixed Size** mode. During adjustment, the image size will not change following the window size.

9.2.10 Apply Image Parameters to All Images in Task List

When analyzing multiple images at a time, you can apply the selected image's parameters to the other images in the Task List (except Other Image) to improve image analysis efficiency.

Select one image or one group in the **Task List**, and right-click to select **Apply Image Settings to All** to batch set the image parameters in the **Task List**.

- Select one thermal image and synchronize parameters. The parameters of the first thermal image for all non-grouped thermal images and grouped thermal images in the **Task List** are synchronized.
- Select one group and synchronize parameters. When you select an image group to start applying, all individual thermal images will be applied with the parameter settings of the first image in the group, and the settings of images in other groups are synchronized according to the image order in selected group.

Chapter 10 Live Analysis

After connecting your device to the client, you can view live image, conduct real-time measurement, capture snapshots and record videos for further analysis.

Note

Live analysis requires the support of your device. When connecting with a USB cable, your device should support UVC real-time streaming protocol. When connecting device to client by network, your device should support wired or wireless network connection.

Main steps of Live analysis are as follows:

1. Connect your device to client by USB cable or network.
   For USB connection, refer to *Connect Camera via USB* .
   For network connection, refer to *Connect Camera via Network* .
2. After connecting, set device parameters to get clear image and fluent streaming. Refer to *Set Device Parameters* .
3. Adjust image and measurement settings, and check real-time measurement results. Operations are similar to that in video analysis, refer to *Video Analysis* for instructions.

   Note

   - If you need the client software to save the image and temperature measurement settings for the future connection of the same device, enable **Remember Live Settings** from **Settings > Preference** .
   - Click **Restore to Default** at top right corner of the window to recover the image and measurement settings to client default.
4. Save snapshots, videos and diagrams, etc., for further analysis.
   - For capturing snapshots, refer to *Capture Images*
   - For recording videos, refer to *Record Video* .
   - For exporting diagram images and data, refer to *View Temperature Distribution Chart / Time-Temperature Curve* and *Export Temperature Matrix of Video* .

10.1 Navigation for Live Tab

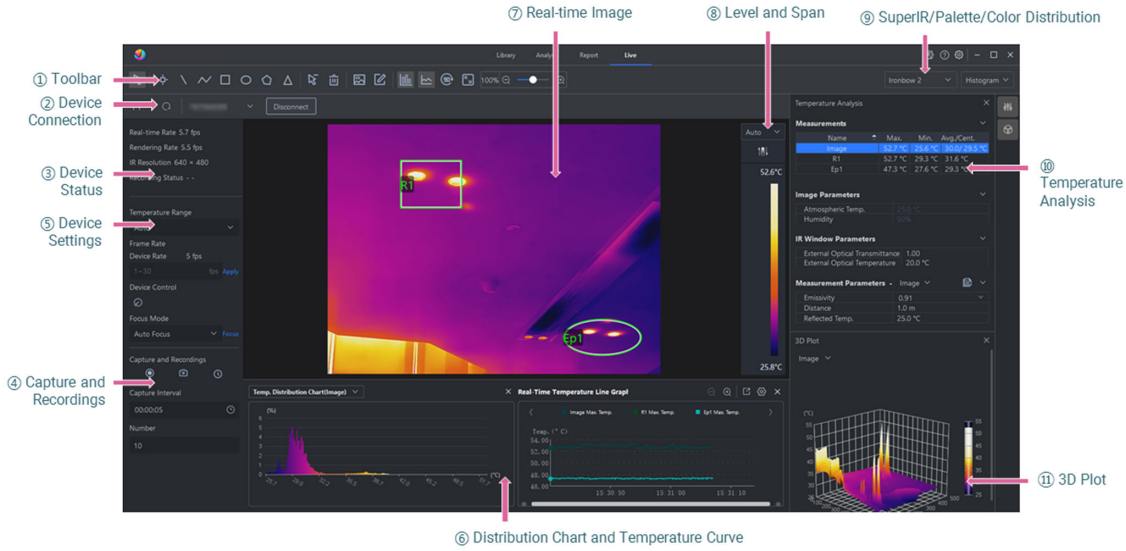


Figure 10-1 Live Tab

①: Toolbar, including measurement tools, time-temperature curve, temperature distribution chart, image capturing, image rotating, etc. For details about measurement tools, refer to ***Add Measurement Tools*** , ***Edit a Measurement Tool*** , and ***Delete a Measurement Tool*** . For details about advanced editing, refer to ***Advanced Image Editing*** . For overlay settings, refer to ***Overlay Measurement Results*** . For live image resizing, refer to x ***Rotate and Resize Image*** .

②: Device connection controls. See ***Connect Camera via USB*** or ***Connect Camera via Network*** for instructions.

③: Device status. After connecting to a device, it displays device real-time frame rate, rendering rate, IR resolution, etc.

④: Capture and recordings. Capturing snapshots manually or by schedule, and recording videos are allowed. See ***Capture Images*** , and ***Record Video*** for instructions.

⑤: Device settings. Setting device functions such as, frame rate, temperature range, manual image calibration, are allowed. See ***Set Device Parameters*** for instructions.

⑥: Distribution chart and temperature curve. See ***View Temperature Distribution Chart / Time-Temperature Curve*** for instructions.

⑦: Real-time image. If the device enters burning-prevention mode (device shutter closed to prevent the detector from damage caused by unexpected high temperature targets) during live streaming, there will be a prompt reminding users of this situation.

⑧: Level and span. It can be manually adjusted, or automatically controlled by the client. For details, please refer to ***Level and Span*** .

⑨: SuperIR/Palette/Color Distribution. When IR resolution of a device is lower than 256×192, the client offers an option to turn on SuperIR. The function adopts super resolution technology to improve display, see ***Super Resolution*** for more details. See ***Palettes and Reverse Temperature Scale*** , ***Focus Mode Palettes*** , ***Set Color Alarms*** , and ***Color Distribution*** for palette and color distribution settings.

⑩: Temperature analysis. Configure temperature measurement parameters (the value of atmospheric temp. and humidity are the same as those of device and are not editable, and for other parameters, refer to ***Set Measurement Parameters***), and view temperature measurement results.

⑪: 3D plot. This function is only supported by image and rectangle tool. The 3D temperature distribution plot is generated based on the positions and temperatures of pixels. The values of X axis and Y axis represent the positions of pixels, and the values of Z axis represents the temperatures of pixels. You can right-click the model to export/copy it for further use. For setting the 3D plot, go to > **3D Plot** .

Note

You can drag **3D Plot** and **Temperature Analysis** pane to a position as needed.

10.2 Shortcut Keys

Table 10-1 Live

Shortcut Key	Function
Ctrl + F10	Start/stop recording.
Ctrl + R	Rotate the image.
F4	Capture an image.
Enter	Apply the frame rate setting to the device.

10.3 Connect Camera via USB

You can connect a thermal camera that supports radiometric infrared-video streaming to the PC via USB. After connecting the camera, you can perform operations such as live view, image capturing, and temperature measurement.

Prepare for Streaming

1. Connect the camera to a USB port of your PC with supplied USB cable. Keep the camera ON.
2. Select **USB Cast Screen** in camera pop-up menu.

Note

- For camera of early firmware version, turn on USB cast screen from setting menu (see user manual of your camera). Otherwise, streaming may fail.
- It is recommended to connect with USB 3.0 port and cable if your PC and device support the function. Comparing to USB 2.0, USB 3.0 allows higher frame rate settings to ensure smoother streaming for certain high IR resolution model. If your camera supports USB 3.0, follow the prompts on client to change USB port.

Start Streaming on Client

1. In the top-left corner, click > **USB Connection** .
2. Click **Select Device** to view detected device list. Click **Refresh** and wait if no device is detected.
3. Select a device and click **Connect** to start live view.

   Note

   During live view, if you switch to other tabs, choose **Background** to keep streaming in background.
4. Click **Disconnect** to stop live view.

Note

- The client is able to detect multiple USB devices, but only streams from one device at a time.
- If one device is streaming, avoid plugging/unplugging other USB terminals on the PC.
- Avoid refreshing the device list frequently.

10.4 Connect Camera via Network

You can connect a thermal camera by wired or wireless network to start live view, record videos, etc.

Note

Only one thermal camera can be connected at a time in this way.

Prepare for Streaming

- Connect your camera and PC to the same LAN network segment in wired or wireless way.

  Note

  For a handheld camera, DHCP is enabled by default, in which IP address for the camera is automatically assigned by routers or switch. View the IP address of the camera from its menu **Settings > Device Settings > Device Information** .

To view and edit the IP address of your PC, take Windows10 as an example, go to **Settings > Network & Internet > Status > Connected Internet > Property** .

- For activated camera that has been connected to the Client or mobile APP via the network, the login password set during camera activation should be obtained in advance.
- The WinCap driver has been installed in the PC. For more information, please refer to *Software Installation* and *Software Upgrade* .

First-Time Network Connection (Camera not Activated)

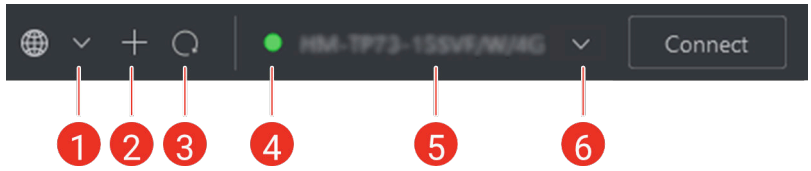


Figure 10-2 Network Connection Bar

1. Click (1) in the upper-left corner of the live panel, and select **Network Connection**.
2. Click (6) to open the online camera list and view the detected cameras.

   Note

   If you can not find your camera in the list, click **Refresh** (3).
3. Select the camera based on the model and serial number, and then click **Activation**.
4. Input and confirm the login password as required.
5. Click **Advanced Settings** to modify the **IP Address**, **Subnet Mask**, and **Gateway**, or check **DHCP** to have the router dynamically assign these parameters.

   Note

   - If the activation succeeds but the **Advanced Settings** configuration fails, the Client will automatically switch to DHCP mode to ensure network access.
   - If a fixed IP address is required, you can try resetting the device and reactivating it to set advanced parameters.
6. Click **Activate**. After successful activation, you can click **Connect** to start live view.

Quick Connect to the Last Connected Camera

The model name (5) of the last connected camera is displayed in the camera name bar. The color of the dot (4) indicates the connection status.

- The green dots means that the camera is online and has been automatically logged in. You can click **Connect** to start live view.
- For dots of other colors, you can hover the mouse over the model name (5) to view the camera's IP address, model name, serial number, and connection status.

Connect to Other Online Cameras

1. Open the online camera list (6).
2. Select the camera you need to connect to and click **Connect**.
3. Input the login password and click **OK** to start live view.

Note

- The Client automatically save the login password of the camera based on the serial number. Start the live view without re-inputting the password, if the camera has been successfully connected to the Client before.
- Automatic login to the camera is not supported after switching computer accounts.
- If you forget the password, click **Forgot Password** in the pop-up window to view the guidance.

Manual Input Network Parameters to Login to an Activated Camera

1. Click ⊞ (2) to open the manual connection window.
2. Input the camera's IP address, port, username, and password, and click **OK** to login and connect to the camera for live view.

Note

If you forget the password, click **Forgot Password** in the pop-up window to view the guidance.

10.5 Set Device Parameters

The client is allowed to set some of the camera parameters. Available parameters vary according to the connection method and camera models.

Set camera parameters on left of **Live** tab.

Temperature Range

Set a proper **Temperature Range** for measurement on the left according to your targets. Supported ranges are different on different models.
Select **Auto** if the option is available.

Device Frame Rate

The real-time camera rate and client rendering rate are displayed in the camera status area on left.
You can change the camera frame rate by entering a value in the text field under **Device Rate** and click **Apply**. The real-time rates turns to numbers around the set value gradually after successful applying.

Note

- Make sure the frame rate configuration function is ON on camera. Otherwise, changing frame rate from client is not allowed. Refer to user manual of your camera for how to turn on the function.
- Avoid frequent frame rate applying.
- The camera real-time rate displayed may be sightly different from the set rate due to influences like network condition.
- It is recommended to connect with USB 3.0 port and cable if your PC and device support the function. Comparing to USB 2.0, USB 3.0 allows higher frame rate settings to ensure smoother streaming for certain high IR resolution model. If your camera supports USB 3.0, follow the prompts on client to change USB port.

Manual Image Calibration

Due to its own limitations, a thermal camera need to calibrate the image from time to time to ensure the imaging effect and temperature measurement accuracy. Normally, the camera calibrates image automatically. You can also click on the left to calibrate image one time.
A prompt of "Image calibrating..." appears in screen when the camera is in this process.

Focus

The function is only available for cameras that support auto focus. Available focus mode varies according to camera models.
Select a **Focus Mode** on left and operate according to the following instructions.

Auto Focus

Focus on the center area or a user-selected area.

- In this mode, click **Focus** on right, and the camera focuses the center area once.
- Right-click on any place in image, and select **Focus** in the right-click menu, the camera focuses on the selected area once.
- Right-click on a measurement tool (circle, ellipse, rectangle, or polygon) in image, and select **Focus on Tool** in the right-click menu, the camera focuses on the tool area once.

Continuous Autofocus

In this mode, the camera decides the focusing area according to the observation scene. It refocuses when the observation scene changes.

Users can not change focusing area in this mode.

Laser-Assisted Focus

In this mode, click **Focus** on right, and the camera emits a laser beam to measure the distance to the center area of the scene. The camera focuses precisely according to the distance.

Caution

When using laser-assisted focus, make sure there is no human staying at the focusing area to avoid possible injury caused by exposure to laser beam.

10.6 View Temperature Distribution Chart / Time-Temperature Curve

During live view, you can view real-time temperature distribution chart and time-temperature curve.

- Enabling and settings of temperature distribution chart is similar to that in video analysis, please refer to ***Display Temperature Distribution Chart*** .
- For real-time temperature curve, see ***Hide/Show Temperature Curve*** , ***Configure Temperature Curve*** and ***Export Measured Temperatures at Max./Min./Avg.*** for more details.

10.6.1 Hide/Show Temperature Curve

You can view the temperature curve data within 6 hours at most.

Steps

1. On the toolbar, click to enable the temperature curve.

   The curve will be displayed below the video play window.
2. Drag the top edge of curve area up and down to adjust its height.
3. (If no measurement tool configured) hover over the temperature curve and view the temperature of the image at different time.

   Note

   - (If measurement tool configured) select a measurement on the image to view the curve of this measurement. If you adjust or move the measurement, the curve will change at the same time.
   - You can drag the slide below the curve to view earlier data.
   - You can also scroll the mouse wheel or click to zoom in/out the curve.
4. **Optional:** Click again or click in the top-right corner of the curve to close the curve.

   Note

   The history curve data will be cleared. When you open the curve next time, new curve will be generated.

What to do next

- Right-click curve image and select **Export Image** to save a curve picture in your PC.
- For details about curve configuration, please refer to *Configure Temperature Curve* .
- When the curve data reached limit, please reopen the curve to clear the data and then new curve will be drawn.

10.6.2 Export Measured Temperatures at Max./Min./Avg.

You can export the max./min./avg. temperature of all video frames, or of a measurement in a CSV file for further analysis.

Steps

1. In the top-right corner of the curve, click .
2. Select data orientation.
3. Select measurements.
4. Click **OK**.
5. Set a file name, and select the file location.
6. Click **OK** to export the data in CSV format.

What to do next

Click **Open File** in the pop-up window to view the temperature matrix.

10.7 Capture Images

During live view, you can capture images and save them to the local PC.

Note

- The resolution of the captured image is determined by the IR resolution of the device, for example, 256×192.
- Due to protocol upgrade, images captured by this client version (V1.7.2) or later can not be viewed or analyzed in earlier client versions.

Capture One Snapshot

On the left, click to capture images.

Scheduled Capture

1. Set **Capture Interval** and **Number** in **Capture and Recordings** on the left.
2. Click **Schedule** to start capturing.
   In device status area on left, it displays the capturing status, captured number, and capture count down.
   It stops when set number of images are captured. Or click **Stop** to end the schedule.

View Captured Images

View the saved images in **Capture** folder in **Quick Access** in **Library**.

10.8 Record Video

During live view, you can record videos in .hrv format, and save them to the local PC.

On the left, click , set the video recording frame rate in the pop-up window, and click **OK** to start recording.

Click to stop recording.

View the saved videos in **Recordings** folder in **Quick Access** in **Library**.

Note

- The recorded video resolution is dependent on the camera's IR resolution.
- If SuperIR function is enabled in recording, the effect will not be saved in the recorded video.
- Due to protocol upgrade, videos recorded by this client version (V1.7.2) or later can not be played or analyzed in earlier client versions.

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