HIKMICRO Analyzer

User Manual V2.0.1

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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.

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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.

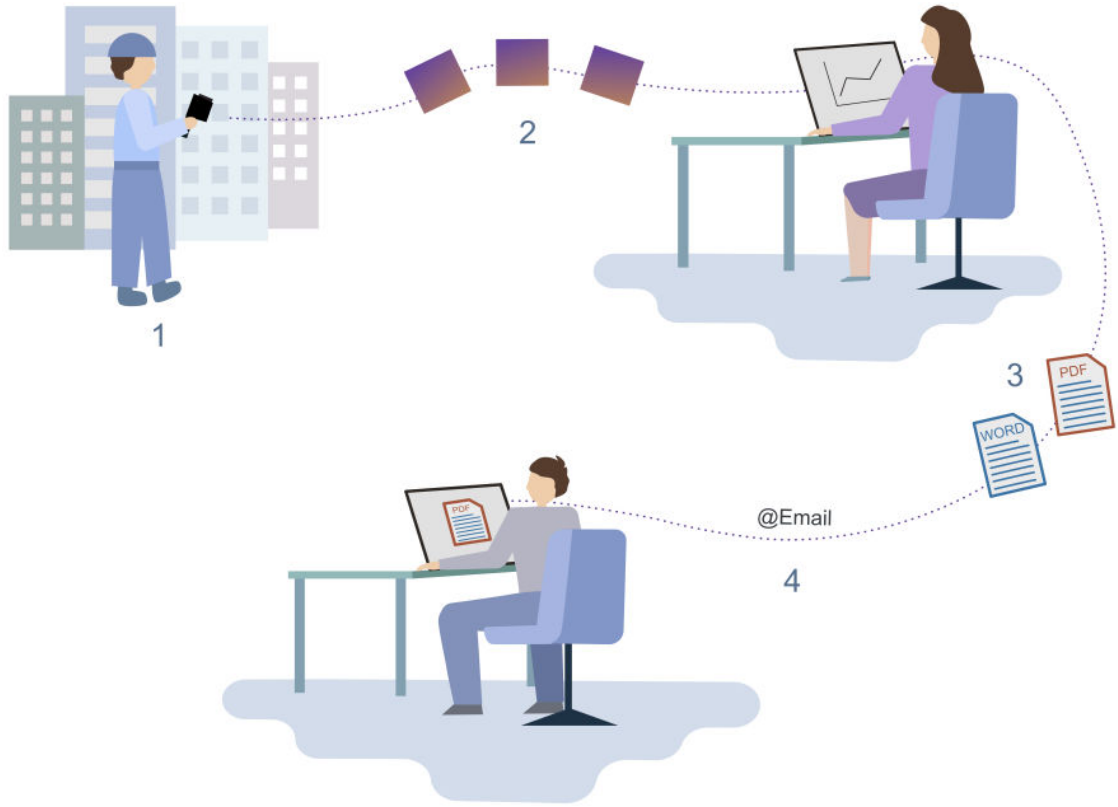


Figure 1-1 Workflow of File Analysis

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: 8G or above
- Graphics Card: RADEON X700 series 256M or above

1.4 Application Interface

After launching the client, the library interface will be displayed. At the top of the interface, click **Library**, **Analysis**, **Report**, or **Live** to switch to the corresponding interfaces.

Table 1-1 Introduction to Main Client Interfaces

Name	Overview
Library	Select **Library** at the top of the client interface. The library is used to import and manage local images, radiometric videos, and other analysis materials. For library management, see ***File Management*** .
Analysis	The main window for image and video analysis. After importing files from the library to the **Task List**, you can switch to the **Analysis** tab to begin analysis. The analysis tab offers tools like image editing, temperature measurement parameter settings, etc. See ***Image and Video Analysis*** for more information.
Report	The window for generating and editing reports. Analysis files in the **Task List** can be quickly converted into reports using report templates. Users can further edit the generated report preview and export reports in different formats. See ***Generating Report of Images*** for details. **Note** Radiometric video analysis results cannot be used to generate reports.
Live	The tab for connecting to thermal imagers or cameras for real-time analysis. During analysis, you can set device frame rates, add temperature measurement tools, capture images, and record videos. See ***Live Analysis*** for details.

1.4.1 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.

1.4.2 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.

1.4.3 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.

1.4.4 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.

Chapter 2 Installation, Upgrade and Basic Settings of 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, check **Create a Desktop Icon**, **Open RV and HRV Files with HIKMICRO Analyzer by Default**, **Open JPEG Files with HIKMICRO Analyzer by Default** as needed.

2.2 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**, **Open RV and HRV Files with HIKMICRO Analyzer by Default**, **Open JPEG Files with HIKMICRO Analyzer by Default** as needed.

2.3 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.

2.4 Software 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.

2.4.1 Switch Languages

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

2.4.2 Set Units

Steps
1. In the top-right corner, click **> Measurement** .
2. Select the preferred units for temperature, distance and area.
3. Save the settings.

2.4.3 Change Appearance Theme

Go to > **Preference** > **Appearance Theme** to change the theme between **Dark** and **Bright**. It takes effect after clicking **Save**.

2.4.4 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**.

2.4.5 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.

2.4.6 View and Edit Shortcut Keys

View and edit the shortcut keys for the function in different tabs.

Steps

1. Enter shortcut key management page: **Settings** > **Preference** > **Shortcut Keys** .
2. In the list, select one to be modified.
3. Press the keys on your keyboard. Single key and a key combination are supported.

Figure 2-1 Rules of Shortcut Keys

- Modifier keys as *Ctrl*, *Alt*, and *Shift* are optional, while the X is required.
- The X could be one key of the following types: alphabet keys, numeric keys, symbol keys such as !@#$%^&*(), function keys from F1 to F12, and navigation keys as ↑↓←→.

4. Check if the shortcut keys of function are updated in the list.
5. Save the settings.

Note

When a shortcut key conflict occurs, the client handles it according to the following two rules:

- Scope of Effect. The scope of a shortcut key refers to the functional module or window where it takes effect. If the scopes of the shortcut keys differ, the client responds to the shortcut key according to the current focus (active window). If the scopes are the same, the shortcut key priority rule is applied.
- Priority. A shortcut key set later in time has higher priority. If multiple shortcuts share the same scope, the client executes the one with the highest priority.

Result

If you want to restore to the default shortcut keys, click **Reset**.

2.5 Software Maintenance

The client provides log and dump file for troubleshooting.

Log Files

Log files record the running and operation data of the client software.
When troubleshooting is needed, go to **Settings > Maintenance > Log Path** to get the log saving path. Download the logs and send them to the technical support team for problem analysis.

Dump Files

A dump file is a snapshot of a computer's memory at a specific moment—typically when a system, application, or process crashes or encounters a critical error. It captures the state of the operating system, running processes, loaded modules, and memory contents, providing crucial diagnostic data for troubleshooting.
After enabling **Save Dump File**, Windows creates a dump file for troubleshooting when the client crashes. Go to **Settings > Maintenance > Dump File Path** to get the dump file saving path. Download the file and send it to the technical support team for problem analysis.

Note

User Account Control confirmation is required to enable/disable the saving dump file function.

2.6 User Help

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

2.6.1 View User Manual

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

2.6.2 Error Codes and Troubleshooting Guide

The client provides the causes and handling methods for common error codes. Users can click on the error code hyperlink to jump to the corresponding section of the guide.

Note

If the encountered error code is not included in the document, or if the issue remains unresolved after following the guide, please record the error code and contact our customer service or technical support for assistance.

2.6.3 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 3 File Management

3.1 Navigation for File Management Page

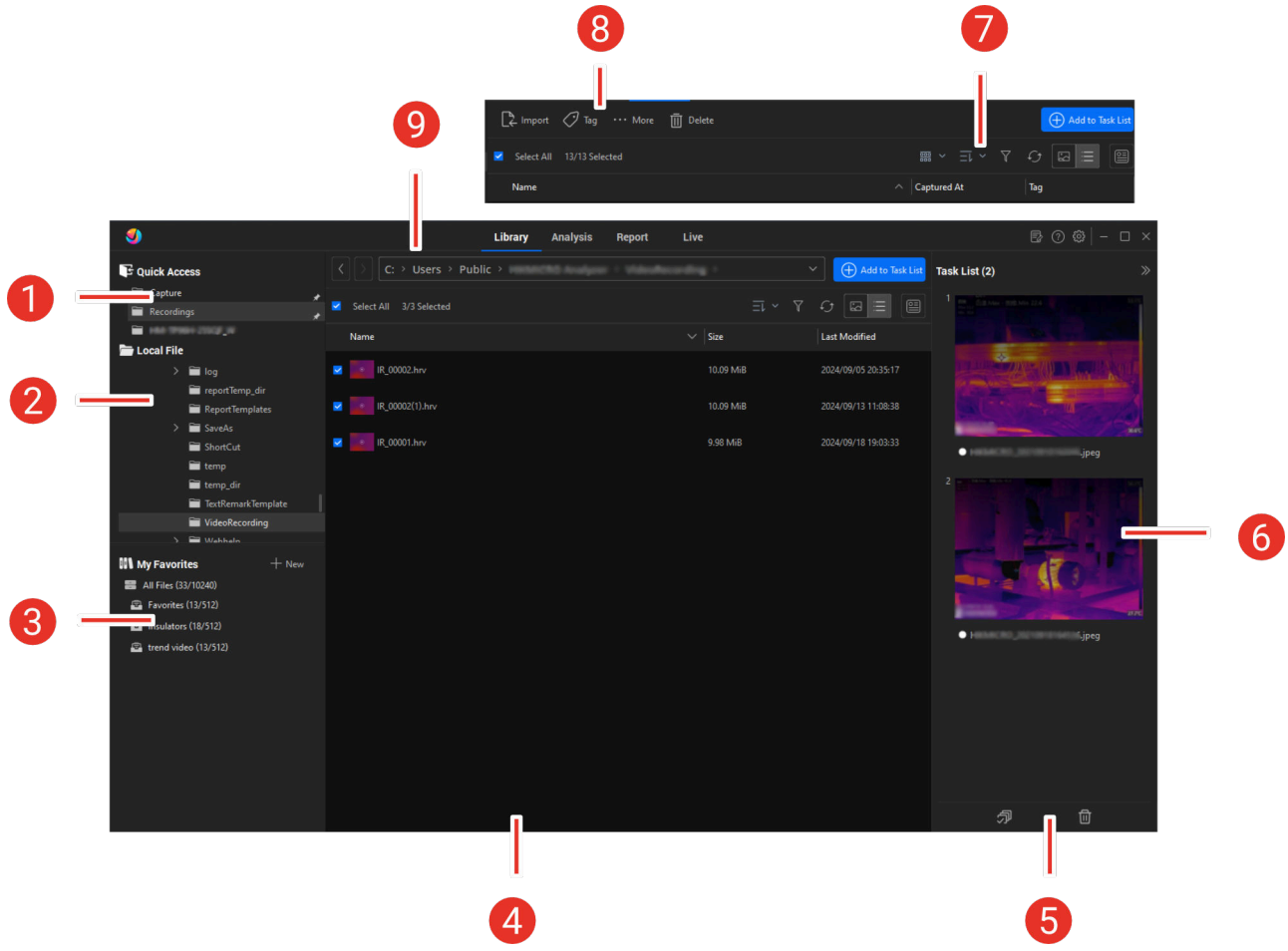


Figure 3-1 File Management Page

1. Quick access folders. **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 folders. You can view the files stored on the local PC and import them to **My Favorites**. See ***Import File*** .
3. My favorites folders. 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. See ***My Favorites Management*** and ***Favorites Management*** for details.
4. Files. View the files in the selected folder.
5. Operation buttons of the task list. The operations works on all files in the task list.

6. Task list. You can add files to the task list for file analyzing and report generating later.
7. File display toolbar, including file sorting, filtering, refreshing, display mode switch (big icons or list), and viewing image info.
8. Favorite folder toolbar, including file importing, color tag settings, etc.
9. Path of quick access and local file folders in local PC.

3.2 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 and filter files in local file, add files to HIKMICRO Analyzer **Task List**, or import files to **My Favorites**, etc.
See *View and Filter Files* for the instructions about viewing and filter files.

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**.

3.3 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.

3.3.1 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.

3.3.2 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**.

3.3.3 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.

3.4 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.

3.4.1 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.

3.4.2 Rename Favorites

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

3.4.3 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.

3.5 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.

3.6 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.

3.7 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.

3.8 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.

3.9 View and Filter Files

In **Favorite**, **Quick Access**, and **Local File** folders, operations such as sorting and filtering based on different conditions are supported to help users quickly locate the required files.

- Files can be displayed in either icon tile or list view. Click to switch. In list view, you can drag the title column to adjust the column width.
- For file categorization and sorting, please refer to ***File Categorization and Sorting*** .
- For file filtering, please refer to ***Filter Files*** .
- Select a file and click . The right-side interface will then display its basic information, including capture time, file name, text note attached or not, asset ID, etc.

3.9.1 File Categorization and Sorting

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

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 is 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, 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 categorization is not available in local folders and quick access folders.

File Sorting

Click to select a sorting condition. The files will be sorted in ascending/descending order by capture time, size, name or tag.

Note

Sort by size is only available in local and quick access folders, while sort by tag in favorite folders.

3.9.2 Filter Files

Set conditions to filter out required files in local, quick access and favorite folders and display.

Steps

1. Click to open the filter panel.
2. Set filter conditions. You can set one or multiple filter conditions.

Time Range

Filter files whose **Capture Time** falls within the set time range.

File Name

Enter a keyword to filter files whose names contain the keyword.

Tag

Refers to color tags.

Text Note

Text note refers to the user comments added to the image when the capture was made. You can select **With Comments** to filter images with text notes; or select **No Comments** to filter images without text notes; or enter a note keyword to filter images whose text notes contain the keyword.

The text note of an image can be modified during analysis. See *View and Modify Image Annotations* for details.

Device Model

Search for images captured by devices whose **Device Model** contains the entered keyword.

The **Device Model** can be viewed in the image information.

Asset ID

Search for images whose **Asset ID** contains the entered keyword.

The Asset ID is the ID or information of the detected object added by QR code scanning or manual input when the capture was made. The Asset ID can be viewed on the image information page.

3. Click **Filter** to filter out the target files.

Note

- When filtering within a favorite folder, files meeting the requirements in its subfolders can be filtered out simultaneously. When filtering within a local or quick access folder, files in its subfolders can not be filtered out.
- The filtering conditions remain unchanged when switching between folders of the same type—such as among local folders—and the filter is applied automatically upon folder change.

4. **Optional:** Click **> Reset** to reset the filter conditions.

Chapter 4 Image and Video Analysis

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

The main procedure is as follows.

1. Add images and videos to be analyzed to the task list. See ***Add Video/Image to Task List*** for details.

   Note

   If a file is set to open by default with this client, you can directly launch the client and enter analysis by opening the file.
2. Adjust the window layout when necessary. See ***Window Layout Adjustment*** for instructions.
3. Use tools to analyzer the images and videos.
   - To analyze a thermal image, see ***Image Analysis*** for instructions.
   - To analyze a radiometric video, see ***Video Analysis*** for instructions.
   - For trend video creation and analysis, see ***Create and Analyze Trend Videos*** for instructions.
4. Save and export modified images and videos. See ***Saving and Exporting Files*** for instructions.
5. Generate a report for radiometric images, see ***Generating Report of Images*** for instructions.

   Note

   Only radiometric images and groups support report generating.

4.1 Add Video/Image to Task List

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

4.1.1 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**.

4.1.2 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**.

4.1.3 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.

Auto Grouping

The task list offers the auto grouping function. All radiometric images in the task list are grouped following the set method from top down.

- Click , set a grouping method and save to proceed.
- Click to ungroup all.

Note

Adjust the image order before auto grouping. Image order adjustment within a group is not allowed now.

Create/Ungroup an Image Group Manually

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**.

4.2 Image Analysis

Image analysis includes viewing image information, image settings, temperature measurement parameters and tool settings, chart analysis and export of temperature results, viewing and modifying image annotations, and synchronizing temperature measurement parameters/tools across multiple thermal images.

Table 4-1 Image Analysis Features

Feature	Description
View Image Information	Includes visual image (if available), file type, resolution, device measurement range, instrument model, capture time, etc. See *Navigation for Analysis Tab (Image)* for function location.
Adjust Image for Better Observation	Includes display mode switching, palette settings, level and span settings, isotherm, color distribution, image rotation, image resizing, advanced image editing, etc. See *Image Editing Tools* for details.
Set Basic Temperature Measurement Parameters	Basic measurement parameters include atmospheric temperature and humidity. IR window parameters refer to germanium windows or other optical components added externally to the thermal camera/ imager lens. Optical transmittance and temperature can be modified. See *Navigation for Analysis Tab (Image)* for function location and *Modify Temperature Measurement Parameters* configuration details.
Set Measurement Tools and the Parameters	Measurement tools refer to points, lines, polylines, rectangles, ellipses, or polygons drawn on the image to detect max/min/ average/center temperatures within the area. Emissivity, measurement distance, and reflected temperature can be set independently for each tool. See *Add Measurement Tool* to add tools, and *Modify Temperature Measurement Parameters* for parameter settings. Delta tool can be set to calculate temperature differences between measurement tools, images, or constants, with font colors indicating delta range levels. See *Add Measurement Tool* for adding a delta. Measurement area calculation. See *Calculate Area* . Measurement tool and information overlays can be added and adjusted freely. See *Set Measurement Overlays* for details.
View Measured Values and Charts, and Export the Results	View max/min/average/center temperatures of images or measurement tools in **Measured Temp.** window. To open the window, see *Window Layout Adjustment* for details. View 3D view of measurement tools or images, and export images or CSV data.

Feature	Description
	View temperature histograms and line charts of measurement tools or images, and export chart images or CSV data. Export the temperature matrix of the entire image in CSV format. See *View and Export Measurement Results* for details.
Manage Image Annotations	Image annotations include color tags, fault ratings, tag notes, text notes, picture notes, voice notes, and etc. See *View and Modify Image Annotations* for instructions. • Color tag: Configured in client favorite folders. Can be modified during analysis. • Fault rating: Applies to images captured in inspection mode with pre-configured rules. Can be modified during analysis. • Text note: User-added text during capture. Can be modified during analysis. • Voice note: User-recorded audio during capture. Playback supported. • Tag note: Text tags added during capture (requires a tag note template). Can be modified during analysis. • Picture note: Additional visual images about the target. View-only. • Sketch note: User-drawn graphics during capture. Can be shown/hidden in client.
Image and Measurement Settings Synchronization	Synchronize image and temperature parameters and measurement tools across thermal images in a task list for efficient batch updates. See *Apply Image Parameters to All Images in Task List* and *Apply Measurement Tools to All Images in Task List* for details.

4.2.1 Navigation for Analysis Tab (Image)

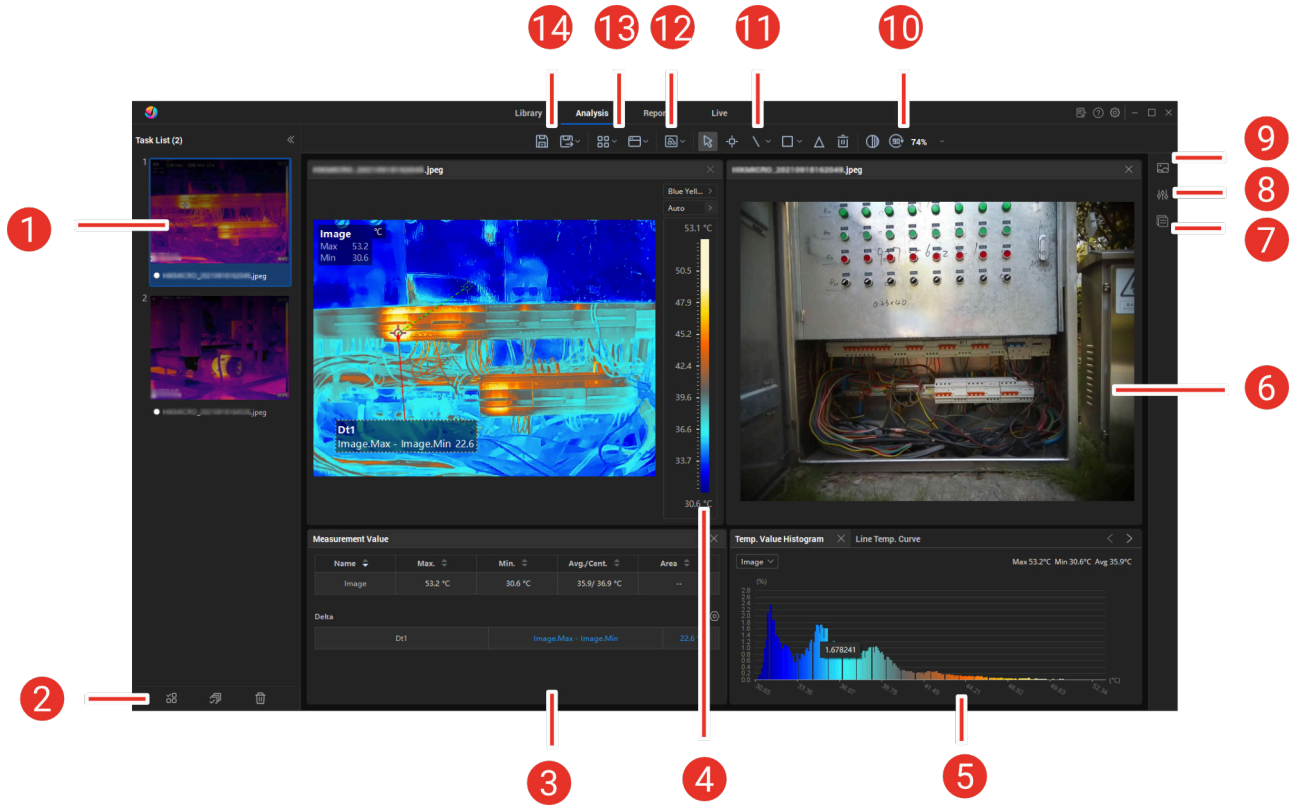


Figure 4-1 Analysis Tab (Image)

1. Task list. Radiometric images, videos, image groups, trend videos, etc., can be added to the list for analysis or report generating. See ***Add Video/Image to Task List*** for instructions. The main window area displays the images and information of the selected file in the list.
2. Operation buttons of the task list. The operations works on all files in the task list, for example, auto grouping, batch operation, and clear the list.
3. Temperature value window. It displays the measured temperatures in the image and measurement tools. To open the window, see ***Window Layout Adjustment*** for details.
4. Palette setting tools. There are mainly 4 palette types, the common palettes and their reversed versions, isotherm, condensation, and insulation. See ***Palettes and Reversed Palettes***, ***Set Isotherm***, ***Insulation***, ***Condensation Detection***, ***Level and Span***, and ***Color Distribution*** for details.
5. Temperature chart window. Temperature distribution and line chart are available for the entire image or the configured measurement tools. To open the window, see ***Window Layout Adjustment*** for details.
6. Visual image and 3D view window. If the radiometric image has a visual image attached, you can add a visual image window. To open the window, see ***Window Layout***

Adjustment for details. For the details of 3D view window, see *View and Export 3D Thermal View* .

7. Annotation panel. View and change the notes attached to the radiometric images. See *View and Modify Image Annotations* for details.
8. Temperature analysis panel. Change measurement parameters, such as, atmospheric temperature and humidity, target emissivity, reflected temperature, distance, on this panel. See *Modify Temperature Measurement Parameters* for details.
9. File information panel. It displays the capture time, resolution, device and other information of the file.
10. Advanced editing, image rotation and resizing tools. See *Advanced Image Editing* , and *Rotate and Resize Image* for details.
11. Measurement analysis tools. Use these tools to add and edit different types of measurements, clear all measurements, etc. See *Add Measurement Tool* for details.
12. Display mode. If the radiometric image has a visual image attached, thermal, fusion, PIP, blending, visual are switchable. See *Set Display Mode* for details.
13. Quick layouts and windows. You can apply quick layout options or arrange the window layouts freely. See *Window Layout Adjustment* for instructions.
14. Saving and exporting files and data.

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.

4.3 Video Analysis

4.3.1 Navigation for Analysis Tab (Video)

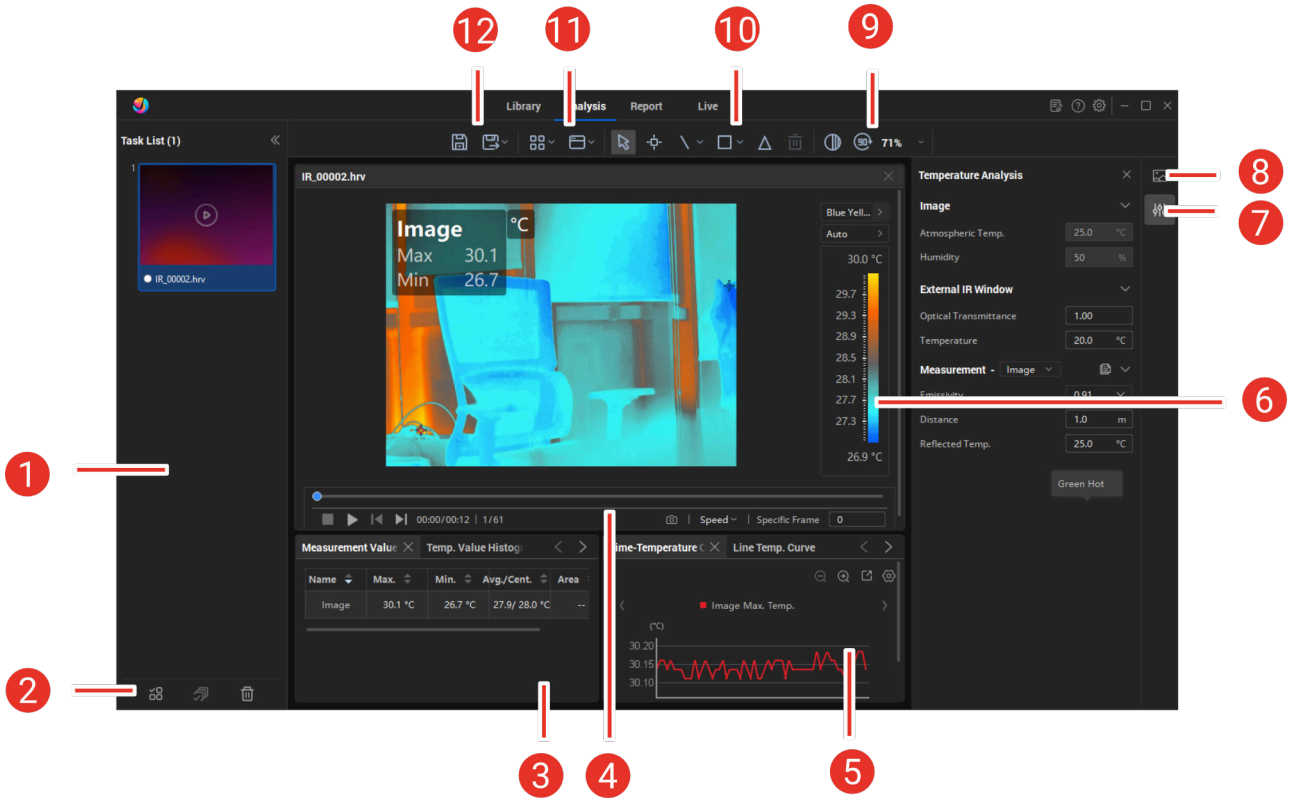


Figure 4-2 Radiometric Video Analysis

1. Task list. Radiometric images, videos, image groups, trend videos, etc., can be added to the list for analysis or report generating. See ***Add Video/Image to Task List*** for instructions. The main window area displays the images and information of the selected file in the list.
2. Operation buttons of the task list. The operations works on all files in the task list, for example, auto grouping, batch operation, and clear the list.
3. Temperature value window. It displays the measured temperatures in the image and measurement tools. To open the window, see ***Window Layout Adjustment*** for details.
4. Playback controls. For the playback of a radiometric video, see ***Radiometric Video Playback and Settings*** for details. For the playback of a trend video, see ***Create and Play Trend Videos*** .

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.

5. Temperature chart window. Temperature curve changes with the playback progress. The temperature curves are configurable, see *Viewing Time-Temperature Curve for Video/Live Stream* and *View Temperature Distribution Histogram and Temperature Line Chart* for instructions. The chart window can be opened via the layout tool in the tool bar, see *Window Layout Adjustment* for details.
6. Palette setting tools. There are mainly 4 palette types, the common palettes and their reversed versions, isotherm, condensation, and insulation. See *Palettes and Reversed Palettes* , *Set Isotherm* , *Insulation* , *Condensation Detection* , *Level and Span* , and *Color Distribution* for details.
7. Temperature analysis panel. Change measurement parameters, such as, atmospheric temperature and humidity, target emissivity, reflected temperature, distance, on this panel. See *Modify Temperature Measurement Parameters* for details.
8. File information panel. It displays the capture time, resolution, device and other information of the file.
9. Advanced editing, image rotation and resizing tools. See *Advanced Image Editing* , and *Rotate and Resize Image* for details.
10. Measurement analysis tools. Use these tools to add and edit different types of measurements, clear all measurements, etc. See *Add Measurement Tool* for details.
11. Quick layouts and windows. You can apply quick layout options or arrange the window layouts freely. See *Window Layout Adjustment* for instructions.
12. Saving and exporting files and data.

4.3.2 Radiometric Video Playback and Settings

Radiometric video supports multiple playback controls. Snapshots can be saved during playback.

Playback Controls

-  , button from left to right: Stop, Play/Pause, Previous Frame, Next Frame.
- **Specific Frame**: Enter frame number in the text box and press Enter to jump to the frame.
- **Playback Speed**: Adjust playback rate.
- Progress Bar: Drag the blue dot to adjust playback position.

Saving Snapshots

In the playback control area, click  to capture a snapshot.
The captured images are saved in **Capture** folder in **Quick Access** in **Library**.

Playback Shortcut Keys

Shortcut Key	Function
Space	Play/Pause
← (Left Arrow)	Previous Frame
→ (Right Arrow)	Next Frame
F4	Save Snapshot (Capture)

4.4 Create and Analyze Trend Videos

A trend 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 a trend videos, please refer to *Create and Play Trend Videos* .

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

4.4.1 Create and Play Trend Videos

Steps

1. Create trend videos.
   1) Put the images that need to be generated as a trend 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 a trend video is generated.

      Note

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

4.5 Saving and Exporting Files

Saving refers to preserving modifications made during analysis at the original or specified location. Exporting refers to saving files in other supported formats or saving only user-specified data. Different file types support different saving and exporting operations.

Table 4-2 Saving and Exporting Operations for Different File Types

File Type	Operations
Radiometric Images, Image Groups	Supports saving. When saving grouped images, modifications are saved to each individual image. Supports batch save as. Each image in the group will be saved as an individual file. During batch export from the task list, each image in the group will be saved in the required format. Refer to ***Save Image*** and ***Export Image*** for operations.
Radiometric Videos	Supports saving to the original path or saving to other storage locations. Supports exporting to MP4 and HRV format videos, with frame range settings (start frame and end frame). Does not support batch export. Refer to ***Save / Export Video*** for operations.
Trend Videos	Supports saving via the icon on the toolbar. When saving a trend video, modifications are saved to each individual image, and no video file is generated during this process. Trend videos do NOT support batch save as from the task list. Does NOT support batch export.
Other Images	Analysis, saving, and exporting are NOT supported.

Note

Due to client protocol upgrades, radiometric images or radiometric videos saved or exported using client version V1.7.2 and later cannot be viewed or analyzed with earlier client versions.

4.5.1 Save Image

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

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

Save One Image

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

Note

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

Batch Save

Click at the bottom of Task List and select **Batch Save** to save all the modified image information.
Click at the bottom of Task List and select **Batch Save As** to save all the modified images to the designed path.

Note

The Batch Save and Save As functions apply exclusively to individual radiometric images in the task list. Image groups, radiometric/trend videos, and normal images are excluded from batch operations

4.5.2 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.
- Click **> Batch Export** in the Task List to export all radiometric images.
- 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. Click **> Export Image** in the Task List to open the setting window.

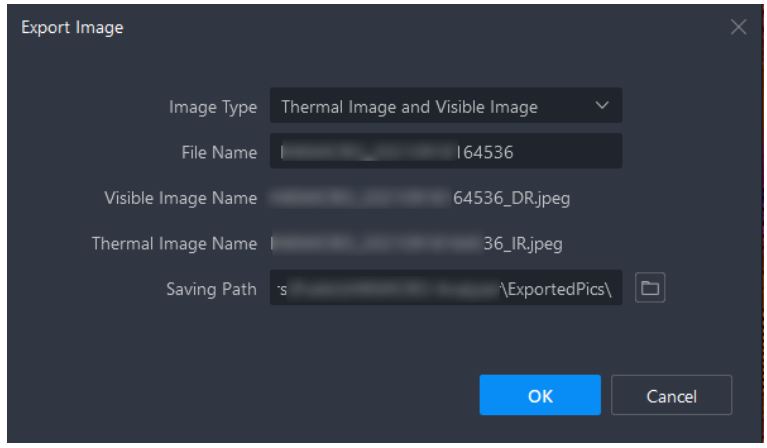


Figure 4-3 Export Image

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.

4.5.3 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 the 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**.

Chapter 5 Analysis Tools and Operations

5.1 Window Layout Adjustment

The layout of **Analysis** and **Live** can be adjusted to meet different image and data display requirements.

- The client has several built-in commonly used layouts, which users can apply quickly. Image analysis, video analysis, and Live analysis can independently apply different **Quick Layout**. For more information, refer to ***Quick Layout*** .
- The client supports free layout for most windows. Users can add or remove windows, adjust window size and position. For more information, please refer to ***Free Layout*** .

Note

Window layouts are automatically saved per session (separately for image/thermal video/ Live analysis) and restored upon reopening.

5.1.1 Quick Layout

Quick Layout refers to several commonly used window layouts built into the client software, which users can apply directly.

In the **Analysis** and **Live** tabs, click ⊞ in the toolbar to show the quick layout options. Click to select and apply.

Note

The supported quick layout modes differ for image analysis, video analysis, and Live analysis. Please refer to the client interface for details.

5.1.2 Free Layout

Users can freely add different types of information windows and adjust their positions and sizes.

Adding and Removing Information Windows

1. In the analysis tab, click the toolbar icon ⊟ to open the list of supported windows for addition.
2. Click to select the required information window.
3. Newly added image windows are added by default to the right side of the main window (the thermal image window); chart and table windows are added below the main window by default. Additional windows of the same type will be stacked as tabs.
4. Unneeded windows can be closed by clicking the ✕ at the top-right corner.

Adjusting Window Position

Left-click on the window header you want to reposition and drag it to adjust its position. The layout indicator helps you locate where to place it.

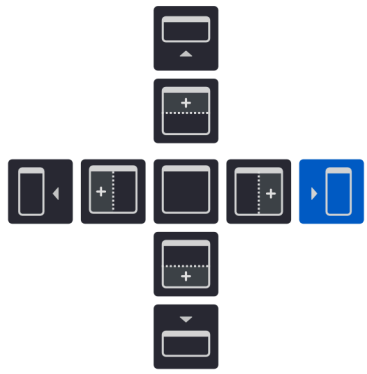


Figure 5-1 Layout Indicator

- To detach a window from the software interface: Drag the window header to any place where no layout indicator appears, then release the mouse.
- To adjust window position within the main software interface: Drag its header to the adjacent window of the target area until the layout indicator appears. Align your cursor with the indicator's position, then release to lock the window in the shaded preview zone.

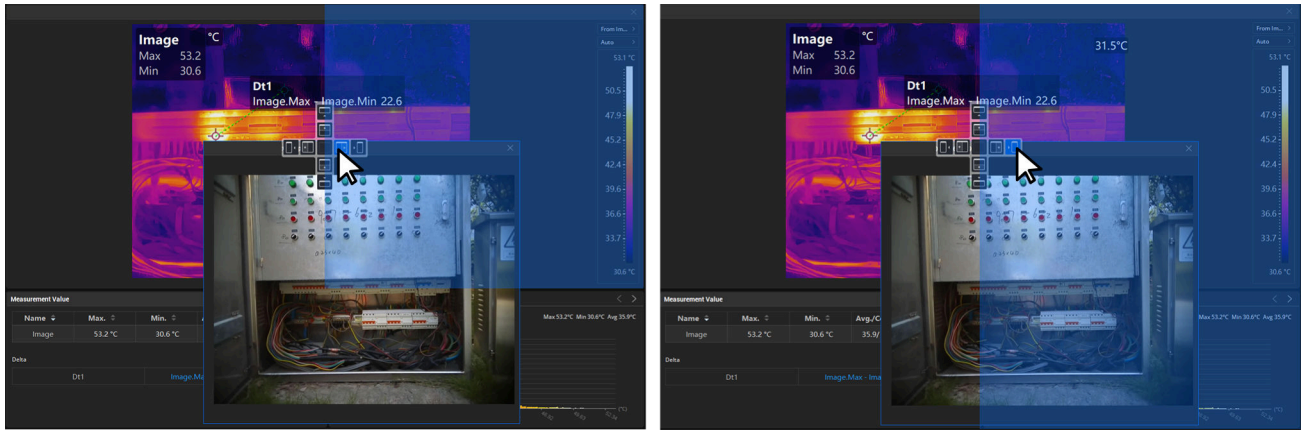


Figure 5-2 Window Position Adjustment

Resizing Windows

Move your mouse to the edge of the window. When the edge turns blue and the cursor changes to ⇹, drag to adjust that edge's position.

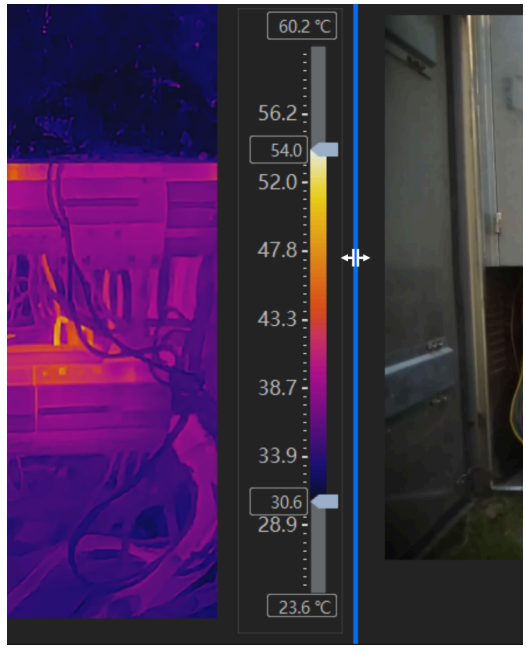


Figure 5-3 Selecting and Dragging Window Edges

5.2 Shield Regions and the Influence

A shield region refers to an area where temperature information collection is disabled during image or video capture by the device. The client supports identifying and marking shield regions in images, videos, and live analysis.

Shield Region Identification

In the client, shield regions are displayed as polygonal areas (with up to 10 sides) outlined in red and filled with gray transparent shading. Multiple shield regions may exist within a single frame.

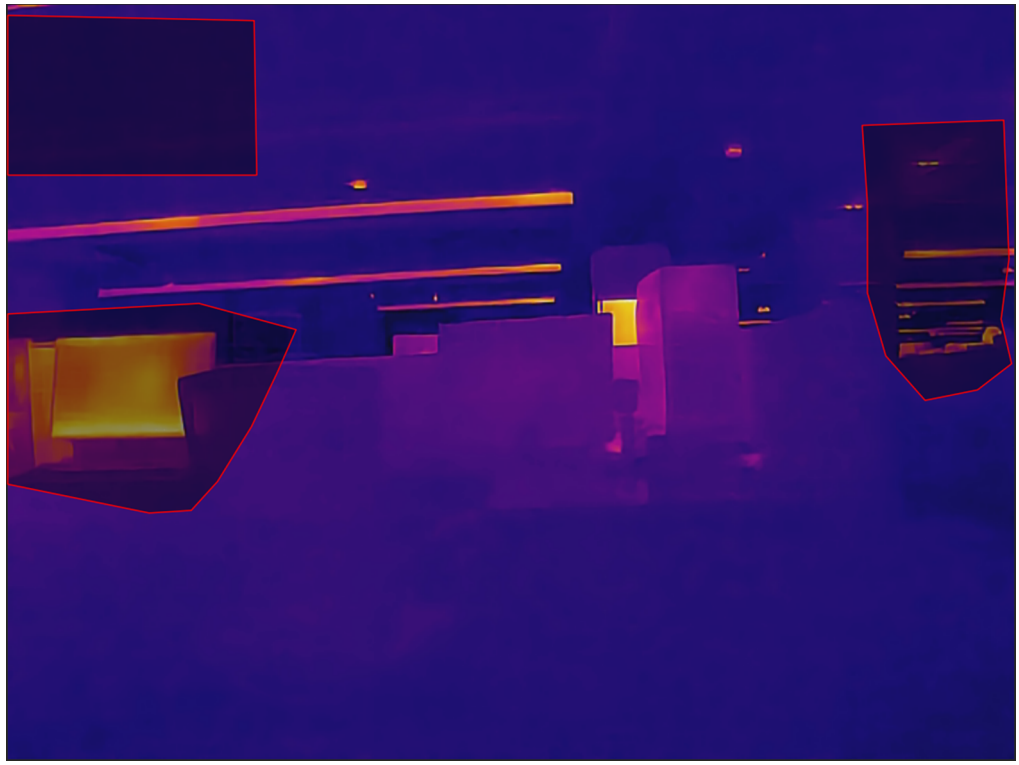


Figure 5-4 Shield Region Example (3 regions)

Shield Region Influence

Temperature information within shield regions is excluded during analysis. Therefore, when adding measurement tools, ensure they do not overlap with shield regions. Shield regions are view-only in the client and cannot be modified.

5.3 Image Editing Tools

In **Analysis** tab, image editing is primarily completed through the palette bar area on the right side of the thermal image. Using the top toolbar, you can also set the image mode, adjust advanced parameters like image sharpness and contrast, and modify image size and orientation. Through image editing, you can view the image with more details and clearer temperature distribution.

Note

Tools for image, video, and live streams editing are different. Refer to the actual software interfaces for details.

Figure 5-5 Image Editing Tools - Top Toolbar

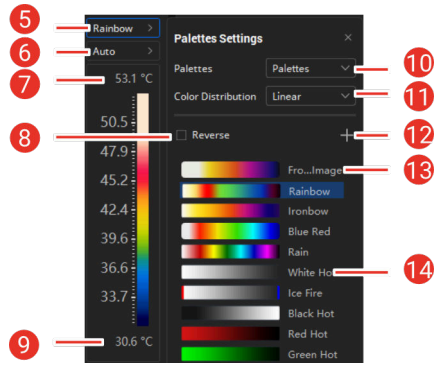


Figure 5-6 Image Editing Tools - Palette Settings

1. Display mode. When the thermal image has a visual image attached, you can choose to view the image in a pure thermal, visual or mixed ways. See ***Set Display Mode*** for more instructions.
2. Advanced image editing. It provides the parameters such as brightness, contrast and sharpness. See ***Advanced Image Editing*** for more instructions.
3. Rotate the image.
4. Resize the image. See ***Rotate and Resize Image*** for more instructions.
5. Palette settings. It shows the palette type of the current image/video/live stream. Click on it to open palette settings panel.
6. Level and span mode. Auto and manual are selectable. See ***Level and Span*** for more instructions.
7. Top of the temperature scale. When manual level and span mode is in use, the top scale value is user-adjustable.
8. Reverse palettes. Check the box to inverse the temperature-color relation of the selected palette type. See ***Palettes and Reversed Palettes*** for more instructions.
9. Bottom of the temperature scale. When manual level and span mode is in use, the bottom scale value is user-adjustable.
10. Palette types. There are 4 main types, custom and built-in palettes, isotherm, condensation, and insulation. See ***Palettes and Reversed Palettes*** , ***Set Isotherm*** , ***Insulation*** , and ***Condensation Detection*** for more instructions.
11. Color distribution. It stands for the relations of colors and temperatures. Linear and histogram are selectable. See ***Color Distribution*** for more information.
12. Import other palettes. Acceptable file format is *gpl. See ***Palettes and Reversed Palettes*** for more instructions.

13. Non-built-in palettes. If the thermal image in analysis has a non-built-in palette type, the palette can be read and displayed normally. Its name will be **From Image** displayed on top of the list.
14. Built-in palette types.

Note

For the images, videos, and live streams with low thermal resolutions, super resolution function is available to improve image quality and offers more details. See ***Super Resolution*** for more instructions.

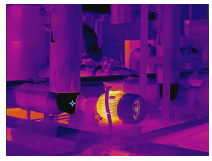
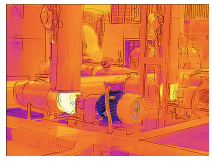
5.3.1 Set Display Mode

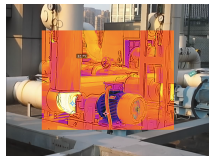
For images taken by a camera that has both thermal and visual channel, they are allowed to display in thermal, fusion, PIP, blending, or visual mode.

In the toolbar of the **Analysis** tab , click to select a display mode.

Note

Radiometric videos, trend videos and live streaming only have thermal mode available

Mode	Sample	Description
Thermal		Thermal image only.
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. **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.

Mode	Sample	Description
Blending		In blending mode, 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. **Note** Select **Blending**and drag the slider left of right to adjust the thermal/visual level.
PIP		In PIP (picture in picture) mode, a visual image is in background, and the thermal image is in the center of the image. Select **PIP** in the drop-down list. If needed, and click **Adjust Thermal View** to resize and move the radiometric image according to the instructions on the interface.
Visual		Visual image only.

5.3.2 Palettes and Reversed Palettes

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 palette tool on the right of the thermal image, click **Palettes** field on the top to show **Palette Settings** panel. Hover your mouse to a palette type in the list to preview the effect. Click on a palette type to save the change.
The Client supports multiple built-in palettes and one custom palette. For the custom palette, the client can read it from a thermal image or from an independent palette file (*.gpl).

- Import an independent palette file (*.gpl) through the **+** on the top right of the palette list. The new palette is displayed on the top of the list with the name **From File**. Thermal images in the task list can use the palette.
- If the original thermal image/video has non-built-in palette type, the software is able to read the type and display it on top of the list with the name **From Image**. The from-image palette is not available for other images and videos in the task list.

Reverse Palettes

Reversing a palette is to inverse the 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.
Check **Reverse** at the top left of the palette list to use the function.

5.3.3 Set Isotherm

Isotherm is a palette mode which assigns differentiated colors to specific temperature ranges for quickly identifying abnormal or special temperature areas in the image. Up to three isotherm temperature segments can be set, each with either solid color or palette filling.

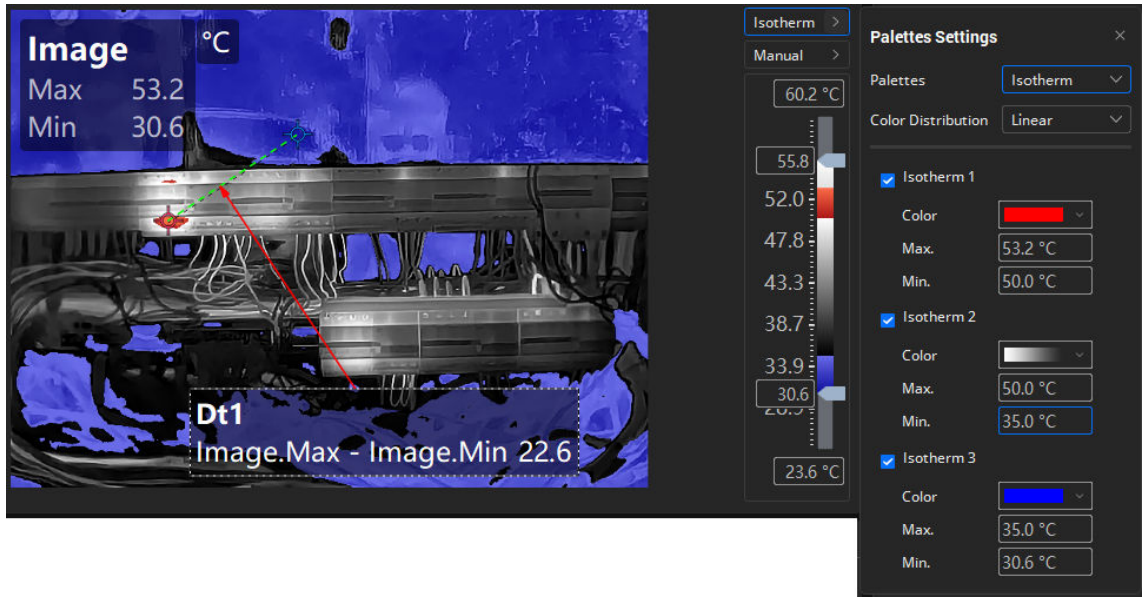


Figure 5-7 Isotherm Settings

On the right side of the thermal imaging image, open the **Palette Settings** page and select **Isotherm** from the **Palette** drop-down list. Three isotherms segments will appear on the settings page.

Check the required number of isotherms and set the **Color**, **Max.**, and **Min.** for each isotherm segment.

Note

- The color of each isotherm segment can be set as a solid color or palette fill.
- Temperature ranges of isotherms can overlap. When overlapping occurs, the priority order for effective isotherm segments is: Isotherm 3 > Isotherm 2 > Isotherm 1

5.3.4 Insulation

Insulation is commonly used to detect the thermal insulation performance of buildings. It is recommended to use indoor thermal images for insulation performance analysis.

Steps

1. In the palette bar area on the right side of the thermal image, open **Palette Settings**, and select **Insulation** from the **Palette** drop down list.
2. After setting the **Indoor Temp** and **Outdoor Temp**, the client will analyze the insulation performance of the surfaces in the image.
3. If an area whose insulation performance is lower than the set **Insulation Level**, the area with insulation anomalies will be displayed in cyan on the image.

   Note

   A higher Insulation Index value indicates higher demands for insulation performance. It is recommended to set the Insulation level between 60 to 80.

5.3.5 Condensation Detection

The function is to detect object surface relative humidity (RH). Areas exceeding the configured threshold will be highlighted in green on the thermal image.

Steps

1. In the palette bar area on the right side of thermal image, open **Palette Settings**, then select **Condensation** from the **Palette** drop-down list.
2. Set the alarming RH threshold in **Alarm Threshold**. Surfaces exceeding the threshold will be rendered with green palette.
3. **Optional:** Adjust ambient temperature and RH parameters as required.
   - When **Use Local Parameters** is disabled, the system calculates results using **Environmental Temp** and **Relative Humidity** from **Temperature Analysis** (device environment parameters when taking the thermal images, read-only).
   - When **Use Local Parameters** is enabled, the system uses the following **Environmental Temp** and **Relative Humidity** (user configured target object environment parameters) for calculation.

5.3.6 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 and 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 and Span*** . Besides, in Manual mode, if you move or resize this area measurement tool, the image effect will change at the same time.

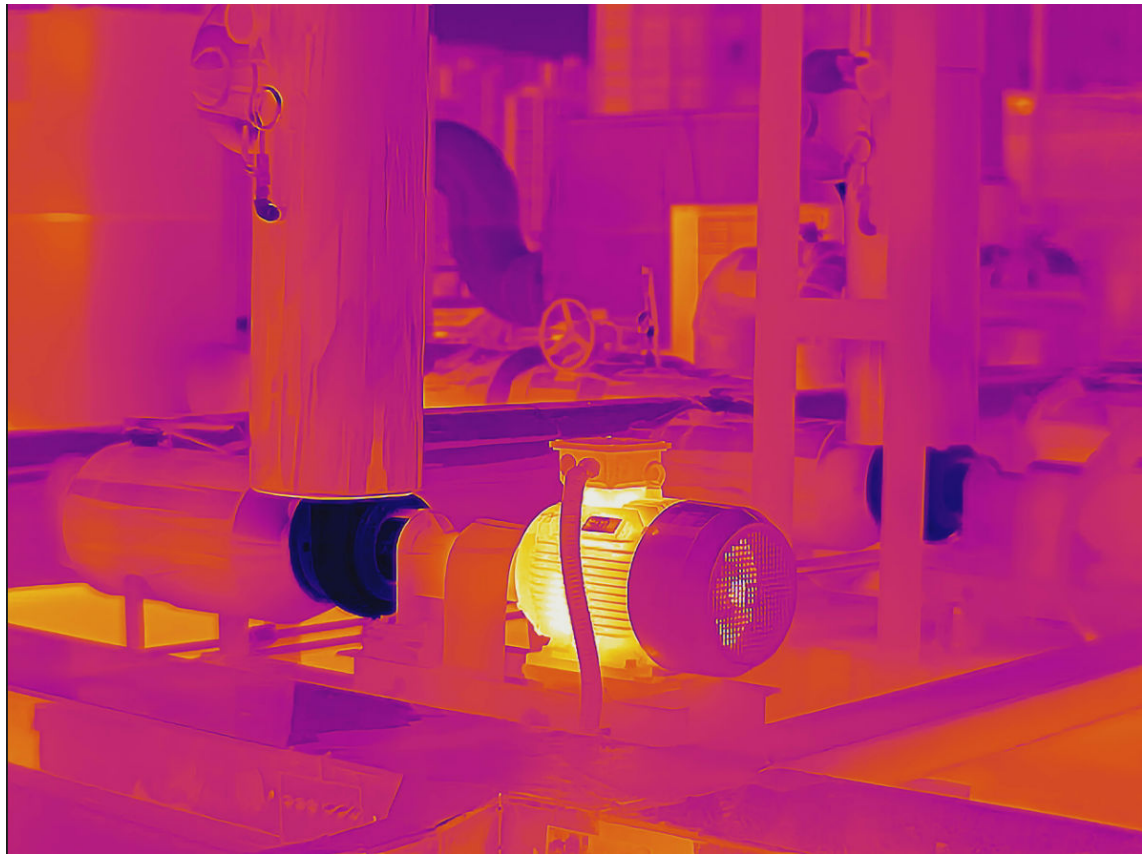


Figure 5-8 Image Example (Auto)

Manual Level and Span

You can manually adjust the top and bottom value for the selected palette, and the range of the temperature scale as well.

Steps

1. Select **Manual** from the drop down list.

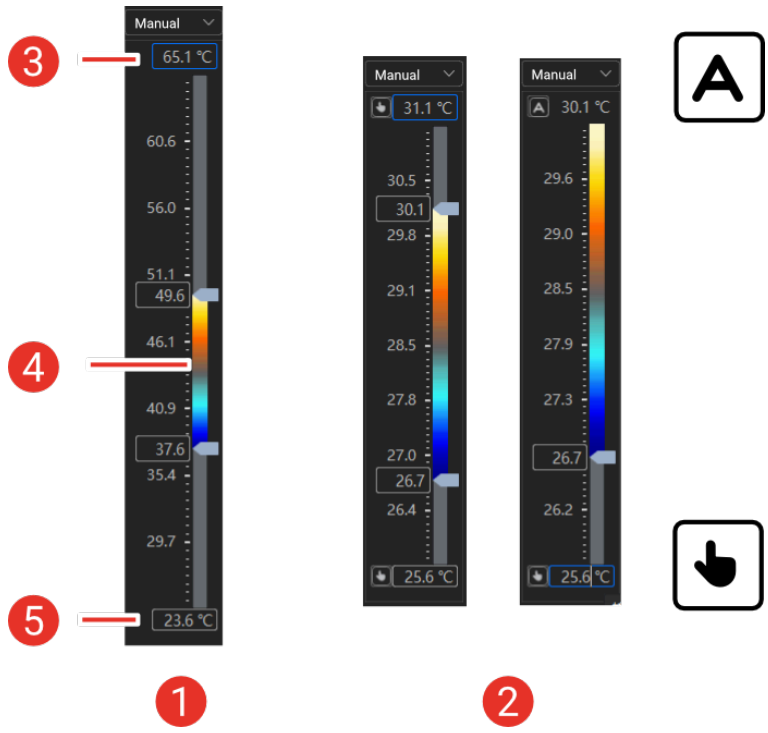


Figure 5-9 Manual Adjustment

2. Adjust temperature range of the palette.
   - Drag the sliders at the ends of the palettes up and down or input desired values into the corresponding fields.
   - Hover the cursor on the palette bar (4), and drag the whole bar up and down to adjust the palette range on the scale.
   - For the thermal videos and live streams (2), semi-auto mode is supported. The end of the range is auto controlled by the client when it is in A mode, and the other is manually adjustable when it is in mode. Click on the icons to switch modes.
3. **Optional:** Adjust the range of temperature scale. Click on the fields (3 and 5), and input desired values.

5.3.7 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.

On the **Palette Settings** panel, select a mode from the **Color Distribution** drop-down list.

Table 5-1 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.

5.3.8 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 trend 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.

5.3.9 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.

Note

The set measurement tools will be cleared after rotation.

Resize the Image

- **Fit to Window**: The image size will be auto-adjusted to the window size.
- **Fixed Size**: Slide the cursor to adjust the size. The image size will not change following the window size.

5.3.10 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.

5.3.11 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.

5.4 Temperature Measurement Tool

By adding/editing/deleting measurement tools, adjusting temperature measurement parameters, you can analyze the measurement results of the images, videos, live stream and specific areas in the materials. Using the area calculation tool, you can calculate the area of a specific tool. Additionally, the client supports batch application of measurement tools to all thermal images in the **Task List**, greatly improving analysis efficiency.

- To set a measurement tool, see ***Add Measurement Tool*** .
- To edit a measurement tool, see ***Edit a Measurement Tool*** .
- To delete a measurement tool, see ***Delete a Measurement Tool*** .
- To adjust temperature measurement parameters, see ***Configure Temperature Measurement Parameters*** .
- To calculate rule area, see ***Calculate Area*** .
- When previewing or exporting materials, you can add and modify the content and position of the overlay information on the image. For setup, see ***Set Measurement Overlays*** .
- To apply measurement tools to all images in the task list, see ***Apply Measurement Tools to All Images in Task List*** .

5.4.1 Add Measurement Tool

Measurement tools include points, lines, polylines, rectangles, ellipses, polygons and delta tools. Add one or more measurement tools on the image for temperature analysis. Measurement results are displayed in an independent measurement results table window or overlaid on the image.

Figure 5-10 Measurement Tool Toolbar

Note

Up to 32 measurement tools can be added in total.

Add Measurement Tool

Click on a tool in the toolbar to start drawing on the image. You can keep drawing the same type tools until you press the **ESC** key or click the tool icon again.

Table 5-2 Drawing Methods of Measurement Tools

Tool Type	Drawing Method
Point	Click , then click anywhere on the image to add a measurement point.
Line	Click \ , then drag the mouse anywhere on the image to draw a straight line.
Polyline	Click \ to expand the list, select to enter drawing mode. Left-click on the image to add nodes of the polyline, right-click to end drawing. **Note** Up to 10 nodes are allowed.
Rectangle	Click , left-click on the image and drag the mouse to draw a rectangle.
Ellipse/Circle	Click to expand the list, select , then left-click on the image and drag the mouse to draw an ellipse. **Note** Hold the **Shift** key while drawing to create a circle.
Polygon	Click to expand the list, select , then left-click on the image to add nodes of the polygon. Right-click to end drawing. **Note** Up to 10 nodes can be added.

Note

The client supports entering different tool drawing states through shortcut keys. Go to the shortcut key page to view and modify. See *View and Edit Shortcut Keys* for instructions.

Add Delta Tool

Delta tools are used to calculate temperature differences. For example, the difference between the highest temperature measured by a point measurement tool and the lowest temperature measured by a line measurement tool.

Click △ on the toolbar, and set relevant parameters in **Delta Tool Settings**.

Select Measurement

Set the calculation formula. Select the measurement tool and temperature type.

Note

- **Constant** refers to a custom temperature value that must be manually entered.
- **Image** refers to the temperature of the image (highest, lowest, average, and center temperature).

Result

Displays the calculated temperature difference.

Note

- Up to 4 delta tools can be set.
- The temperature difference results between measurement tools are also displayed on the image as dashed connecting lines. However, when **Constant** or **Average Temperature** are selected, dashed lines will not be displayed.
- Right-click the dashed connecting line to edit or delete the delta tool.

5.4.2 Edit a Measurement Tool

Move a Measurement Tool
Resize a Measurement Tool
Edit Delta Calculation
Modify Content and Style of Measurement Tool Overlay

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.

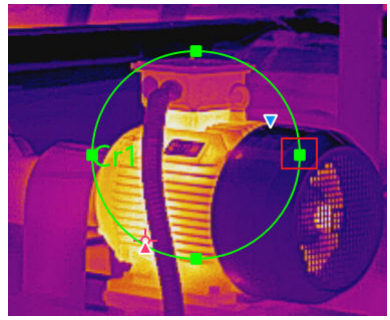


Figure 5-11 Resizing a Measurement Tool

Edit Delta Calculation

In the **Measurement Value** window, you can right click a delta and select **Edit** to edit the delta.
Go to > **Add Measured Temp.** to open the **Measurement Value** window.

Modify Content and Style of Measurement Tool Overlay

The client supports adjusting the tool color, position and size of overlaid texts, making it easier to highlight the key content. See ***Set Measurement Overlays*** for instructions.

5.4.3 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

- Right-click on a measurement tool in image 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

The way of deleting one measurement tool also applies to deleting a delta.
Another way is that in the **Measurement Value** window, right-click on one delta, and select **Delete**.
Go to > **Add Measured Temp.** to open the **Measurement Value** window.

5.4.4 Modify Temperature Measurement Parameters

In **Temperature Analysis** panel on the right side of the **Analysis** and **Live** tabs, adjust parameters, such as, **Atmospheric Temp.**, **Humidity**, **Emissivity**, and **Distance** to refine the measurement accuracy.

Temperature Measurement Parameters

Atmospheric Temp.

Air temperature of the environment where the target is located.

Humidity

Relative humidity of the environment where the target is located.

External IR Window - Transmittance

Required when external optical components (e.g., germanium windows) are attached to the imaging device.

External IR Window - Temperature

Required when external optical components (e.g., germanium windows) are attached to the imaging device.

Emissivity

Adjust based on the type of observed target.

Distance

Distance between the imaging device and the observed target.

Reflected Temp.

Required when high-temperature objects exist in the scene and low-emissivity targets reflect their radiation. Set to the temperature value of the high-temperature object.

Configuring Temperature Parameters

The client allows users to set the parameters for the image/video/live stream as a whole, or set the parameters for a specific measurement tool.

- Set Parameters for a Tool
  - After setting a measurement tool, right-click the tool area in the image and select **Tool Parameters** set its distance, emissivity and reflected temperature.
  - In **Temperature Analysis** panel on the right side of the **Analysis** and **Live** tabs, select a tool from **Measurement** drop-down list, and set its distance, emissivity and reflected temperature.
- Set Parameters for Image

- Right-click any area on the image (except the area in measurement tools) and select **Measurement Parameters** to configure the image parameters.
- In **Temperature Analysis** panel on the right side of the **Analysis** and **Live** tabs, select *Image* from **Measurement** drop-down list, and set its distance, emissivity and reflected temperature.
  The **Atmospheric Temp.** and **Humidity** are also parameters for the image.

Note

- Click to **Reset** the parameters to the default.
- **Atmospheric Temp.** and **Humidity** are not changeable for videos.

5.4.5 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

Steps
1. Select an area measurement tool on the image.
2. Open the **Temperature Analysis** pane on the right.
3. In **Area Calculation**, click the value filed to set the distance to the set area tool.
   Check the result in **Measurement Value** window. Go to **> Add Measured Temp.** to open the **Measurement Value** window.

5.4.6 Set Measurement Overlays

Measurement overlay refers to the measurement tools, parameters, measurement results, arrows, and other information displayed on thermal images, videos and live stream. Under specific circumstances, you can adjust the position, size, color, arrow visibility of the overlay, etc.

Adjusting Overlay in Analysis and Live Tabs

Overlay information in the analysis and live window is mainly divided into two types: **Display in Top-Left** and **Display with Measurements**. Switch between them via **Settings > Image Overlay > Location** .

Note

- Overlay location settings apply to images (including live snapshots) and live stream analysis, but not to radiometric videos (including videos recorded during live stream analysis).
- For the radiometric videos, measurement results only display in the top-left corner. Measurement tool names and colors can be modified via the **Overlay Settings** in the right-click menu.

Display in Top-left

Measurement parameters and results are displayed in a vertical list starting from the top-left corner of the image.

- Select a non-tool area. Use **Overlay Settings** in the right-click menu or double-click the top-left info box to configure overlay items such as measurement parameters.
  Select a non-tool area. Use **Top-left Overlay Settings** in the right-click menu to adjust size (scaling), font color, and background color.
- Select a tool area. Use **Tool Overlay** in the right-click menu to configure specific tool overlay items, such as modifying tool names/colors and setting displayed temperatures/parameters.
- Click **Reset** to return to default settings.

Note

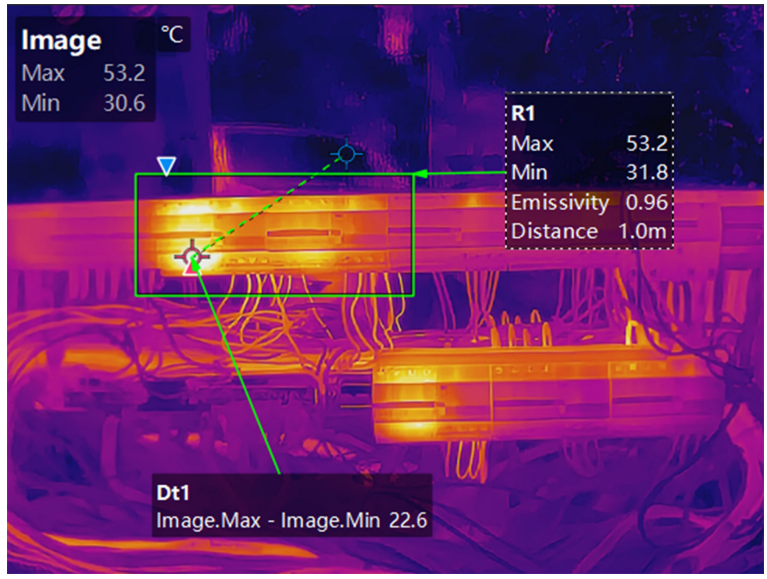
Parameters and results related to the entire image are displayed in the top-left info box by default and cannot be moved.

Display with Measurements

Measurement parameters and results are displayed around the measurement tool. Info box size, background, color, and position are adjustable.

Adjusting Display Items and Color

- Double-click the overlay info box or select a tool area and use **Tool Overlay** in the right-click menu to open settings.
- In settings, configure tool name/color, overlay content items, size (scaling), text/background color, arrow visibility (auto-generated when a info box is far from the related tool), and arrow color.
- Click **Remember** to apply modified settings to future tools.
- Click **Reset** to restore to the default settings.



Adjusting Info Box Position

- Click and drag the info box to adjust its position. If **Show Arrow** is enabled, an indicator arrow is auto-generated when the info box is far from the tool.
- The client supports restoring overlays to default positions.
  In non-tool areas, use **Restore All to Default Overlay Position** in the right-click menu.
  For a specific tool, use **Restore to Default Overlay Position**.

Adjusting Overlay for Exported Images/Videos

Exported images and materials generally retain preview overlay content and effects (except for some effects). Additionally, you can overlay time, temperature scale, compass and GPS info, etc. Configure via **Settings > Image Overlay > Overlay on Exported Image/Video** .

Note

Arrows are not displayed when opening saved/exported images with standard photo viewers or video players. Arrows are only visible when opening radiometric images in this client.

5.4.7 Apply Measurement Tools to All Images in Task List

When analyzing multiple images at a time, you can apply the measurement tools, parameters and delta ranges of 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.

5.5 View and Export Measurement Results

Measurement results are displayed as data or charts in independent windows. The system also supports exporting images and temperature data for further analysis.

5.5.1 View Temperature Measurement Results

Open the **Measurement Value** window to view measured result data of images and measurement tools in the image, video and live stream.

The **Measurement Value** window can be opened via > **Add Measured Temp.** in the toolbar.

The **Name** column displays images or specific temperature tools set on the images.

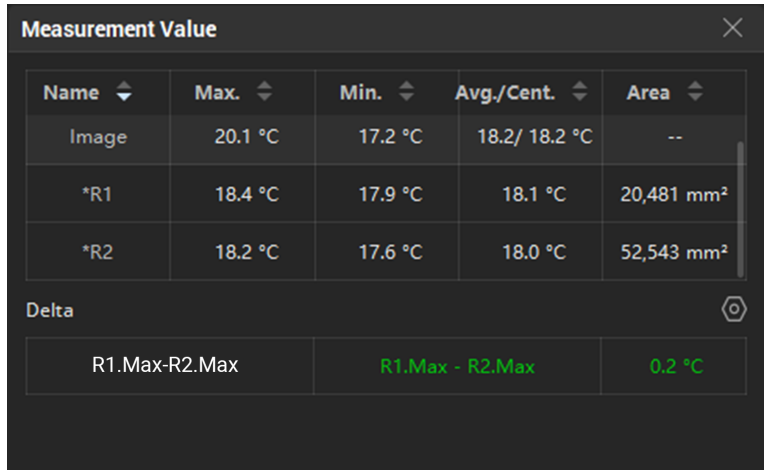


Figure 5-12 Temperature Measurement Results

When delta tools are set, the **Delta** section displays the delta name, formula, and the result.

The delta ranges can be configured via in the upper-right corner. The formula and result are displayed in the color corresponding to the set ranges.

Note

During video analysis (including live stream analysis), measurement results update dynamically.

5.5.2 View Temperature Distribution Histogram and Temperature Line Chart

Temperature distribution histogram displays the pixel percentage of different temperatures across the entire image or within set measurement tools. Temperature line chart shows temperature values at different points along a straight or polyline tool. The charts update dynamically during video and live stream playing.

Open Chart Windows

1. In the analysis tab, click the toolbar icon to open the list of supported windows for addition.
2. In the drop-down list, select **Add Temperature Distribution Bar Chart** or **Add Temperature Line Chart**. A chart window will appear below the thermal image. Multiple charts are displayed as tabs by default. For layout adjustments, refer to ***Window Layout Adjustment*** .
3. Select the corresponding measurement rule or area for the histogram/line chart from the dropdown in the chart window's top-right corner.

Temperature Distribution Histogram

The X-axis represents temperature values, while the Y-axis indicates the distribution percentage within the entire image or selected measurement tool. Hovering the cursor displays the current percentage value.

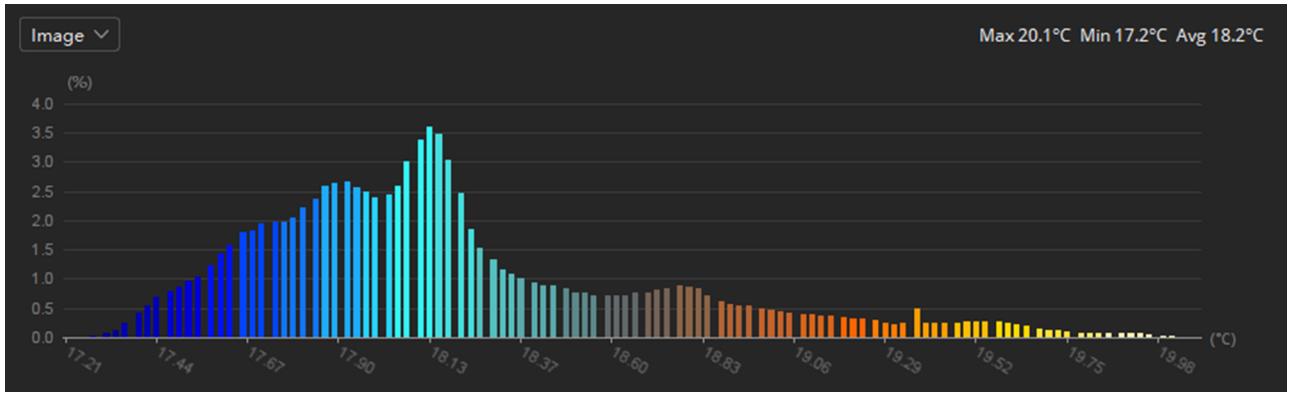
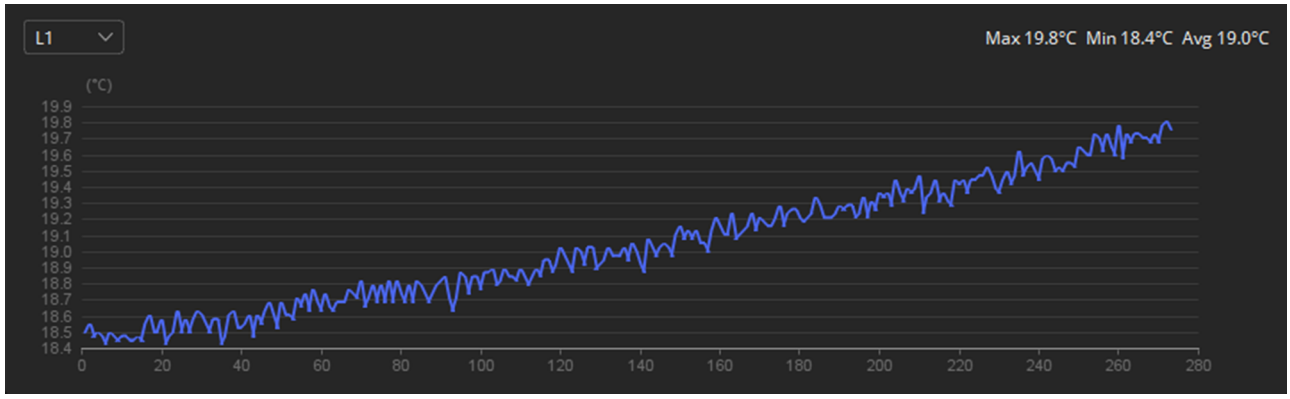


Figure 5-13 Temperature Distribution Histogram

Temperature Line Chart

The X-axis indicates relative distance along the measurement path (where 0 denotes the starting point), while the Y-axis displays temperature values; hovering the cursor reveals the exact temperature reading.



Note

Points corresponding to cursor position are marked with blue dots on the image's line/ polyline tool.

Figure 5-14 Temperature Line Chart

Export Charts

Right-click the chart area and select **Export Image** or **Export CSV File**.

- Chart Image: JPEG format (non-editable)
- CSV File: Temperature data for each indexed point.

5.5.3 View and Export 3D Thermal View

The client supports generating, viewing, and exporting 3D View images or data for images and their measurement tool areas. These charts enable users to observe temperature distribution patterns and dynamic changes in targets with enhanced clarity and intuitive visualization.

Generating 3D View Images

In a 3D View visualization, the X-axis corresponds to the horizontal pixel count of the image or selected tool area, the Y-axis to the vertical pixel count, and the Z-axis to the temperature value at each pixel.

Note

For 3D View rendering settings, go to > **3D View** to configure.

Follow these steps to generate a 3D View image:

1. In the analysis tab, click the toolbar icon to open the list of supported windows for addition.
2. Select **Add 3D View** from the dropdown list to open the window. The window is displayed by default to the right of the thermal image.

3. Click the dropdown box in the upper-left corner of the 3D View panel and select the area (Image/Tool) for which to generate the 3D View.
4. Hover the mouse over the generated 3D View image, and drag to rotate the 3D image for better all-around observation of temperature distribution.

Note

The generated 3D View dynamically updates during video and live stream playing.

Export 3D View

The client supports copying, exporting 3D View images, and exporting 3D View tables (in CSV format).
Right-click on the 3D View image, then select **Export Image**, **Export CSV File**, or **Copy Image** to proceed.

5.5.4 Viewing Time-Temperature Curve for Video/Live Stream

The client supports viewing time-temperature curves for radiometric videos, trend videos, and live analysis. The time-temperature curve represents the temperature change in a video or stream or on certain measurement tool over time.

Opening the Time-Temperature Curve Window

1. In the task list of **Analysis** tab, select one radiometric video or trend video, or connect the thermal imager/camera to Live analysis.
2. In the analysis tab, click the toolbar icon to open the list of supported windows for addition.
3. In the dropdown list, select **Add Time-Temperature Curve**. The new window is displayed below the thermal image by default.
4. Configure the temperature curve displayed in the chart.

Configuring and Viewing the Time-Temperature Curve

1. Click the icon in the upper-right corner of the temperature curve to open the settings window.
2. Check the temperature curves you want to display (maximum temperature, minimum temperature, average temperature, and delta). Up to 32 curves are allowed.

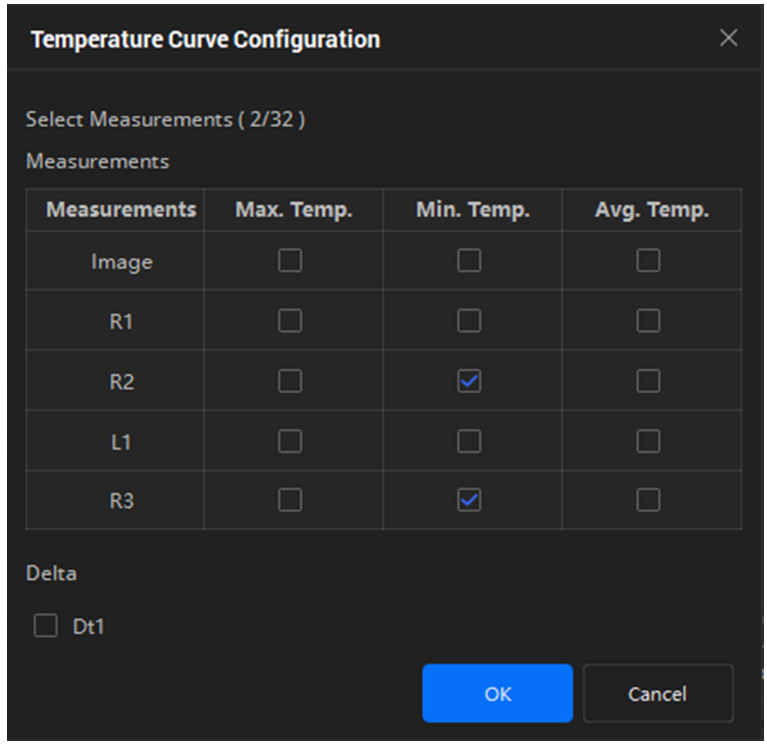


Figure 5-15 Temperature Curve Configuration

3. Adjust the time range displayed in the chart. Use the mouse wheel or click the icon to zoom. Place the cursor at the left/right edge of the window below the curve and drag left/right to view temperature change trends over different time periods.
4. Hover the mouse over the temperature curve and move it to view the temperature at different time points on the curve.

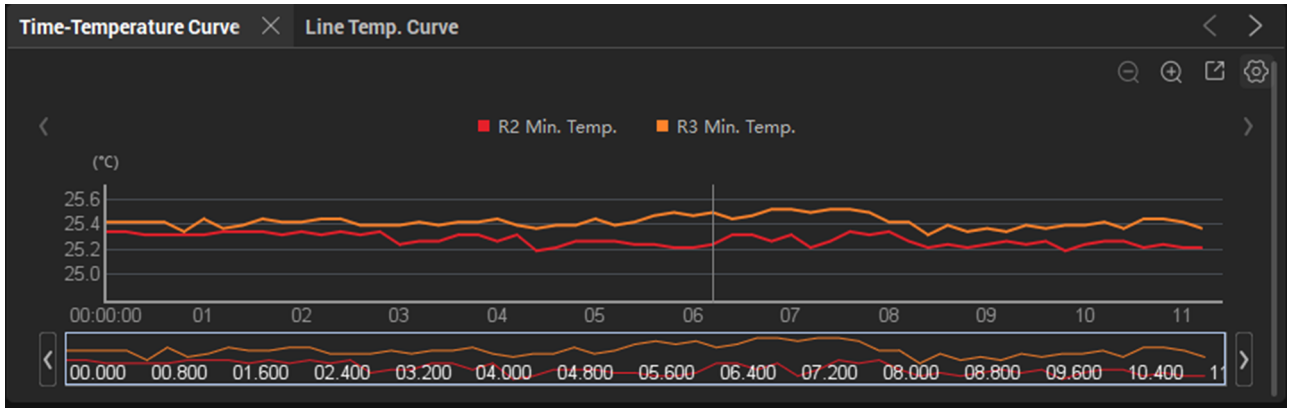


Figure 5-16 Time-Temperature Curve

Export Image and Data

The time-temperature curve can be exported as an image or CSV format data for saving.

- Export Image: Right-click anywhere on the chart and select **Export Image** to save it as a JPG format image. Image editing is not supported.
- Export Data: Click the icon in the upper-right corner of the chart to open the **Export Max./Min./Avg.** window. Set the parameters and click **OK** to export.

  Data Orientation

  The arrangement of data in the CSV table.

  Vertical: Exported data for each frame is arranged from top to bottom in chronological order.

  Horizontal: Data for each frame is arranged from left to right in chronological order.

  Select Measurements/Delta

  Check the image or measurement tool results you want to export.

  Select Frames

  Set the video frames covered by the exported data.

  All: Exports the check data from all frames of video.

  Custom: Export the check data from the selected frames (from the **Start Frame** to the **End Frame**).

5.5.5 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. Right-click on the image and select **Export Temp. Matrix**.

   Note

   Note that clicking on a tool area and a non-tool area are different.
   - Tool area: Export the temperature matrix of the selected tool. The tool name will be added to the default file name for file identifying.
   - Non-tool area: Export the temperature matrix of the whole image.
2. Edit the file name, and select the file location. Click **OK** to export the file in CSV format.
3. Click **Open File** to view the temperature matrix.

5.5.6 Export Temperature Matrix of Video

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

Steps

1. Right-click on the image and select **Export Temperature Value**.

Note

Note that clicking on a tool area and a non-tool area are different.

- Tool area: Export the temperature matrix of the selected tool (except the polygons and ellipses).
- Non tool area: Export the temperature matrix of the image frames.

2. Select the export type as **Temperature Matrix**.
3. Select the video frames.
4. Click **OK**.
5. 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.

5.6 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.

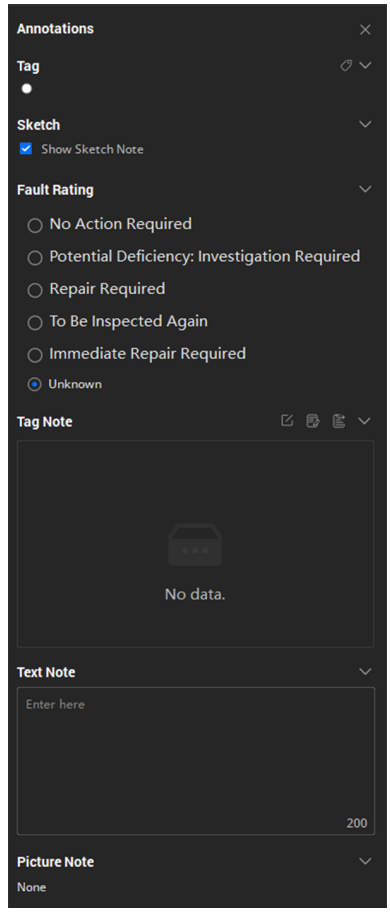


Figure 5-17 Annotation

Table 5-3 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*** .
Sketch Note	During image capture, graphics annotated on the device via freehand sketching are termed Sketch Notes. Check the **Show Sketch Notes** to display the sketch layer. If a thermal image has no sketch attached, the option is grayed out.
Text Note	Text note is the text that the user adds to the image. View and edit in the text box under **Text Note**.

Annotations Type	Descriptions
	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. **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.

5.6.1 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 One Image*** .
On the right side of the Analysis page, click . For how to configure tag note, refer to ***Tag Note Template Management*** .

5.6.2 Set Tag Note

Set Tag Note for One Image

Set the tag note content and template for one image in Annotations panel. Click to save settings to the image.

- : Edit tag note content. After editing, click **Save**.
- : 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 and select **Apply Tag Note Template** 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.

Chapter 6 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, and adjust the image order and grouping in the task list. See ***Add and Organize Thermal Images*** for details.

   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.
   - Select template from the report home page ⌂ .
     - Select **New Report** to start from scratch.
     - Click **Template Library** to open page and report templates library. Select one template to start.
       For more functions on templates, see ***Report Template*** for details.
     - Click **Use Last Template** to start with last-time used template.

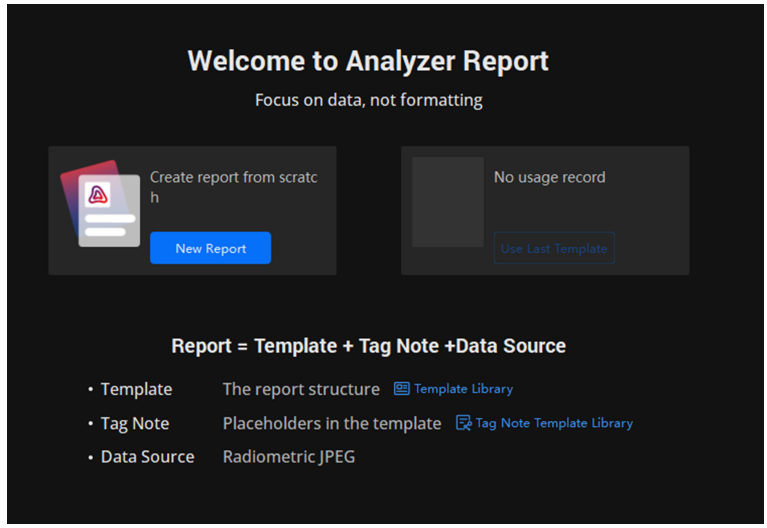


Figure 6-1 Report Home Page

- In report editing page, click ⊕ to select a template to create a new report. Or click ⌂ to go back to report home page and create a report by other ways.

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.

6.1 Add and Organize Thermal Images

Before generating a report, you generally need to add the required thermal images to the task list. If you need to directly generate a report file using images according to the report template, adjust the image order and groups in advance.

Steps

1. Add images to the report task list. The following two methods are available.

- In Library tab, select one or more images from **Local File**, **Quick Access**, or **Favorite** folders, right-click, and select **File Processing > Generate Report** to directly enter the **Report** page.
- If there are images on the task list, click the **Report** tab on top to enter the report page.

2. Adjust the order of images and groups on the task list. Right-click to select an image or group, then drag it up or down to adjust the order.

   If you need to use a report template to batch generate image analysis pages, the order of images or groups on the task list determines the sequence of image analysis pages in the report.
3. **Optional:** Group images. Manual grouping and auto grouping are supported. See ***Images Groups*** for details.

   If a page in the report template requires adding multiple thermal images for comparative analysis, the images must be grouped for proper quick generation.

6.2 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.

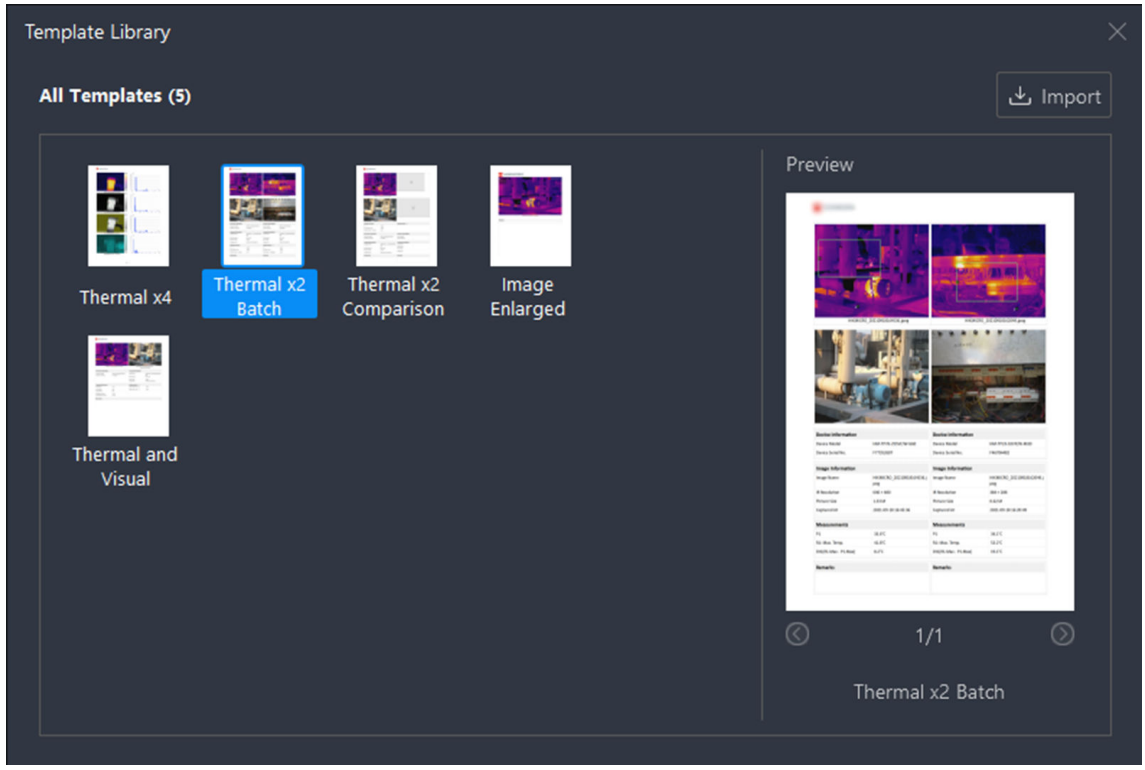


Figure 6-2 Select Template

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 as a report template, or select to save typical pages as page templates.

- To save a report template: select from the toolbar, enter a template name, and save the file.
- To save a page template: right click on a page thumbnail from the page preview, select **Save as Template**, and enter a template name to save the file.

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 overwrite 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 in the report, the first page will be saved in the report template.

Managing Templates

Go to **Template Library** from the report home page to rename and delete non system templates via the right-click menu.

6.2.1 Import Template

Steps

1. In the **Template Library** from the report home page, click **Import**.
2. Select a template file (*.odt and *.art) from the local PC.
3. Click **Open** to import the template.

Note

- Up to 64 templates (default template included) are allowed.
- For reports generating using an *.odt template, in-software previewing and editing is not supported.

6.2.2 Export Template

1. Select **Template Library** from report home 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**.

6.3 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.

6.3.1 Report Editing Interface Navigation

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

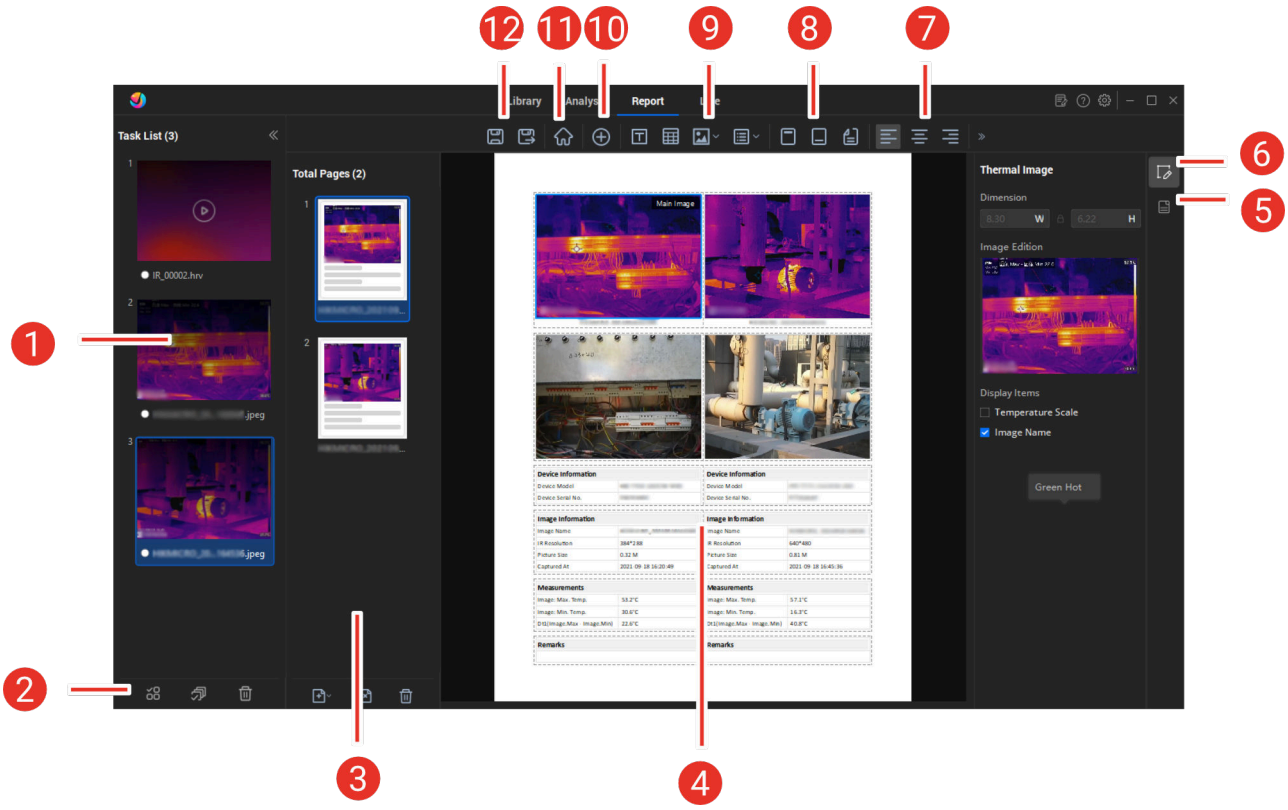


Figure 6-3 Report Editing Page

1. Task list. The task list content (except for videos) will be synchronized on the Library, Analysis, and Report page. Images in the task list can be added to the report preview by mouse dragging and dropping.
2. Operation buttons of the task list. The operations works on all files in the task list, for example, auto grouping, batch operation, and clear the list.
3. Report overview. You can view the thumbnails of report pages, and drag them to adjust the order. Adding and deleting pages, and change and export page template are supported with the right-click menu or the operation buttons below.
4. Report page preview. In the page preview, you can add content objects, such as, images, information tables, headings, etc., and linking them to thermal images and parameters. You can drag to move the objects. See ***Edit Object*** for details.
5. Linked property settings. After selecting a thermal image, its related properties and parameters can be synchronized to the corresponding cells in the tables.
6. Object details settings. Set the object size, display items, table style, column and row number, and linked thermal image, etc.
7. Content alignment and page zoom in/out tools.
8. Report header, footer, and document property tools. The settings works on the entire report.
9. Content object tools including image and image information, measurement parameters, results and charts. See ***Edit Object*** for details.

10. New report.
11. Report home page.
12. Export report file and save report template. See ***Export Report*** and ***Report Template*** for details.

Shortcut Keys

Go to **Settings > Shortcut Keys** to view and edit the shortcut keys for report editing. See ***View and Edit Shortcut Keys*** for details.

6.3.2 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 below 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.

6.3.3 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.

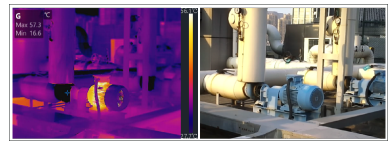


Figure 6-4 Aligned Visual Image

- **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.

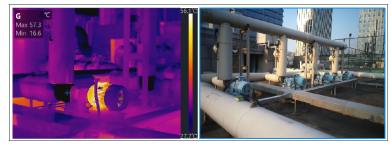


Figure 6-5 Full-Size Visual Image

- **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.

6.3.4 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** .

6.3.5 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**.

6.4 Export File

6.4.1 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. In the toolbar of report page, click .
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.

6.4.2 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 7 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 *Viewing Time-Temperature Curve for Video/Live Stream* and *Export Temperature Matrix of Video* .

7.1 Navigation for Live Tab

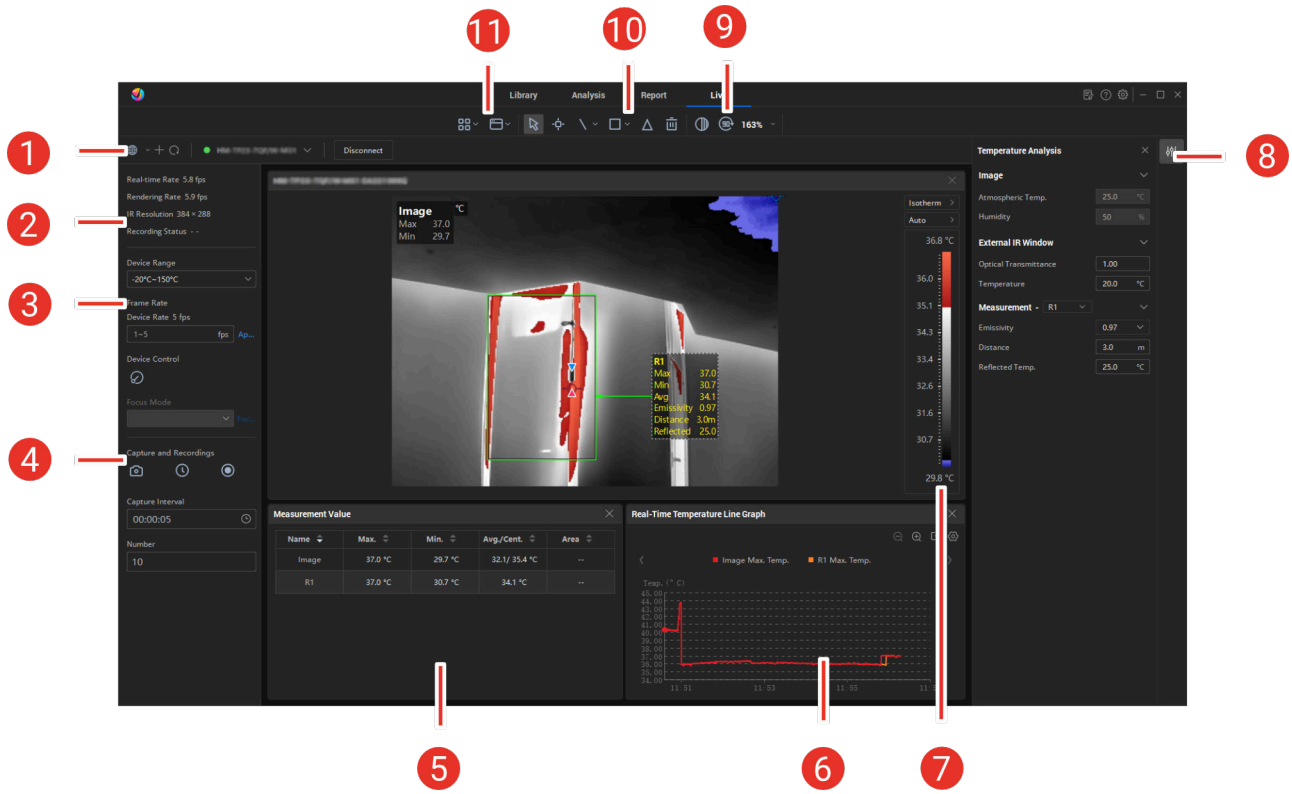


Figure 7-1 Live Tab

1. Device connection controls. See ***Connect Camera via USB*** or ***Connect Camera via Network*** for instructions.
2. Device status. After connecting to a device, it displays device real-time frame rate, rendering rate, IR resolution, etc.
3. Device settings. Setting device functions such as, frame rate, temperature range, manual image calibration, are allowed. See ***Set Device Parameters*** for instructions.
4. Capture and recordings. Capturing snapshots manually or by schedule, and recording videos are allowed. See ***Capture Images*** , and ***Record Video*** for instructions.
5. Temperature value window. It displays the measured temperatures in the image and measurement tools. To open the window, see ***Window Layout Adjustment*** for details.
6. Real-time temperature curve window. It show the real-time temperatures of featured points in image or measurement tools in graphics. For the curve settings, see ***Viewing Time-Temperature Curve for Video/Live Stream*** and ***View Temperature Distribution Histogram and Temperature Line Chart*** . The window can be opened by the window layout tools in the toolbar, see ***Window Layout Adjustment*** for instructions.
7. Palette setting tools. There are mainly 4 palette types, the common palettes and their reversed versions, isotherm, condensation, and insulation. See ***Palettes and Reversed***

Palettes, *Set Isotherm*, *Insulation*, *Condensation Detection*, *Level and Span*, and *Color Distribution* for details.
8. Advanced editing, image rotation and resizing tools. See *Advanced Image Editing*, and *Rotate and Resize Image* for details.
9. Measurement analysis tools. Use these tools to add and edit different types of measurements, clear all measurements, etc. See *Add Measurement Tool* for details.
10. Quick layouts and windows. You can apply quick layout options or arrange the window layouts freely. See *Window Layout Adjustment* for instructions.

Note

- 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.
- 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.

Shortcut Keys in Live Analysis

Go to **Settings > Shortcut Keys** to view and edit shortcut keys. See *View and Edit Shortcut Keys* for more information.

7.2 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.

7.3 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/imager, 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)

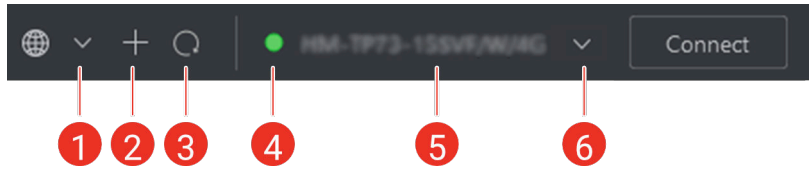


Figure 7-2 Network Connection Bar

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**.
7. Enable **Network Access** on your device.

   Note

   For new devices whose network access function is disabled by default, when the client detects its disabled status, it will send an on-screen prompt for you to enable the function quickly.
8. 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, user name, 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.

7.4 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.

7.5 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 the 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**.

7.6 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 the client version (V1.7.2) or later can not be played or analyzed in earlier client versions.

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