



Editor Client

User Manual

Legal Information and Symbol Conventions

Legal Information

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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 client is used to view and analyze the temperature information contained in the pictures recorded by the thermal device and generate a report. The radiometric images and JPEG images can be imported to the client, and the client provides image management function, including file classification, adding tags for images, etc. Multiple operations can be performed in the process of temperature measurement data analysis, including configuring measurements, adjusting measurement parameters, setting image display mode, setting color coloration, etc. After image analysis, you can view the measurement results, save the pictures or export the report as required.

1.2 Running Environment

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

- Operating System
 - Microsoft Windows 7 / Windows 8.1 / Windows 10 (32-bit/64-bit operating system)
 - Windows SP3 (32-bit operating system)
 - Windows server (64-bit operating system)
- CPU: i5-4590 or above
- RAM: 4G or above
- Graphics Card: RADEON X700 series 256M or above

1.3 Usage Scene

The topology of the usage scene is as follows:

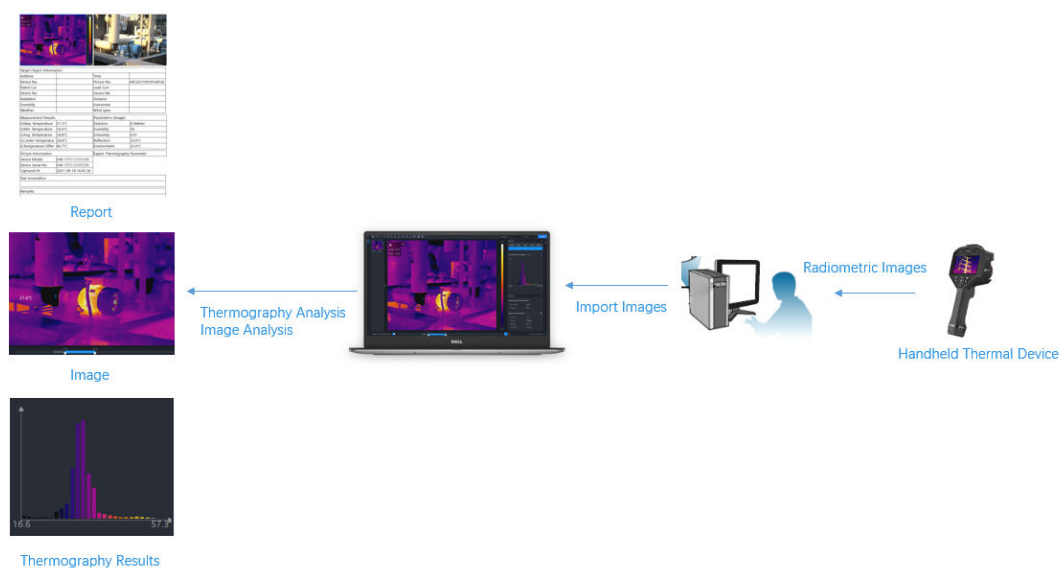



Figure 1-1 Topology

Chapter 2 Software Installation

In this capture, we introduce how to install, uninstall and modify the software.


Install Software

Open the software installation package, and then 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.

After installation, you can select **Create a Desktop Icon** according to your requirement.

Uninstall Software



Note

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


Click  → **Control Panel** → **Procedures and Functions** in the Windows operating system. Right-click the client name and then select **Uninstall/Modify**, and then select **Uninstall** in the pop-up window.

Modify Software




Note

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

If you need to modify the software, you can click  → **Control Panel** → **Functions and Procedures** in the Windows operating system. Right-click the client name and then select **Uninstall/Modify**, and then select **Modify** in the pop-up window.

Chapter 3 Image Management

The client supports image file management. You can create folders and import images to the folder. The imported files can be reused and can be classified, viewed, edited, and sorted by the users, etc.

Click  to enter the image management page. The descriptions of the functions of the image management page are as follows:

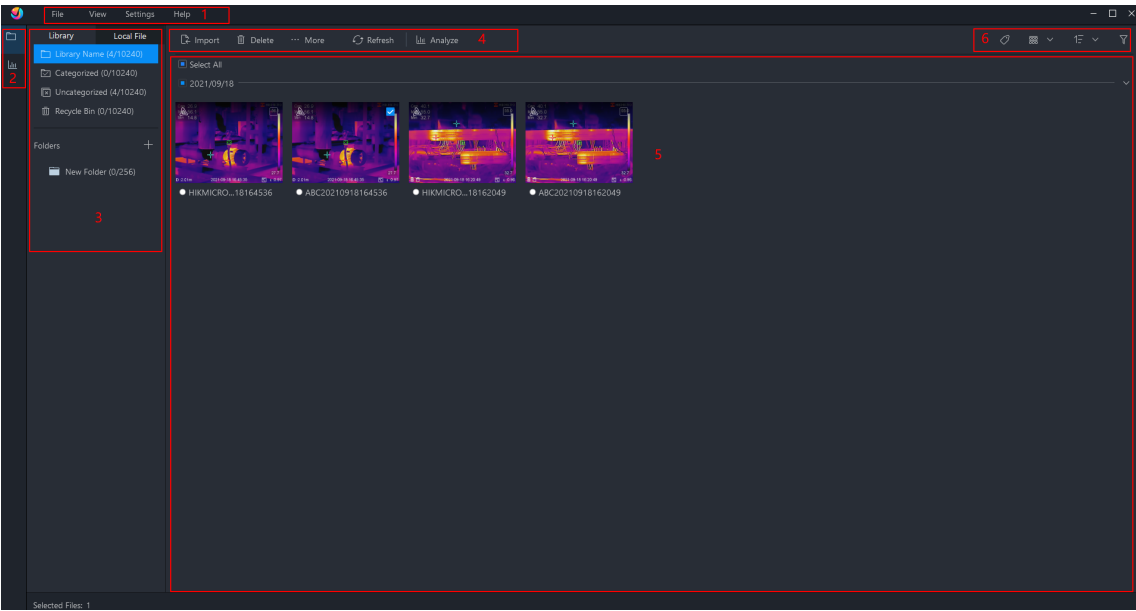


Figure 3-1 Image Management Page


1-Menu Bar

The menu bar includes file management, view switching, client settings and help information.

Note

On the Settings page, you can switch the client language, set the client system parameters, such as unit, picture storage location. For more details, refer to [System Settings](#) .

2-Navigation

You can switch to  image analysis page, and start image analysis.

3-Library, Local File, Categorized, Uncategorized, Recycle Bin, Folders

Library, local file, categorized, uncategorized, recycle bin, folders. Click **Library**, you can enter the library page to manage files. The number in the bracket indicates the number of files inside and the number of files that can be added in total. Managed and unmanaged files will be grouped into the categorized and the uncategorized. Besides, in the **Local File**, you can view images stored on the local PC.

4-Toolbar

The toolbar includes importing, deleting, moving and adding files, renaming the selected file, adding tag, and switching to file analysis page.

5-File Window

Display the files by time, color tag, or name, and you can select or delete the files in this window.

6-Filtering and Sorting Condition

You can add color tags for files, filter files by the remark, color tag, capture time, device name, and image name, and sort files by day/month/year/color tag. The files can also be sorted chronologically or reverse chronologically, or be sorted by color tag.

3.1 Create Library

All files on the client are saved in the library.

After installing and starting the client for the first time, you need to create a library.

In the pop-up window, create a name and select a file location for the library.



Note

- Saving to the C drive or desktop is not recommended.
 - The library location should be an empty folder.
 - On the menu bar, click **Settings** → **Other Settings** view or edit the file location of the library.
-

After creating the library, you can download sample pictures to the library. The sample pictures can be used for image management and analysis.

3.2 Create Folder



A folder is used to classify images. The users can name the folder according to the actual scene, and import images to the folder. Before importing images, you should create the folder.



Note

Up to 256 folders can be added to the client.

Perform one of the following operations to create a folder:

- Click  →  to create a new folder.
 - Click **File** → **Create Folder** to create a new folder.
-



Note

The newly created folder is named **New Folder_No. (0)**. The No. represents the order of creation. The number in the brackets represents the number of images in the folder.

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

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

3.3 Import Image


Before image analysis, you can import images to the folder.

Steps



Note

- The image should be the picture with temperature information, namely the captured picture in the thermal device.
 - Only JPEG format picture is supported.
 - Up to 10240 images can be imported to the software.
-

1. On the  page, click **Import**.
-



Note

You can do one of the following to import images.

- Press shortcuts (Ctrl + O) to import images.
 - In the menu bar, click **File → Import Image** to import images.
 - Drag the images from a local folder to this page to import images.
 - Under the menu bar, click **Local File** to select one or more images, right-click an image, and click **Import to Folder** to import images.
 - Under the menu bar, click **Local File** to select one or more folders, right-click a folder, and click **Only Import to (Library Name)** to import images to the created library.
-


2. Select the image(s) to be imported.

3. Click **OK**.

3.4 Operation for Image

The client supports multiple and flexible image management operations, including moving or adding pictures to a new folder, deleting images, adding tags to images, filtering and sorting images, adding images to the analysis task list, starting image analysis, etc.

Move or Add Image to Folder

For images to be moved, select the image on the upper-right corner of the picture, and then click  **More → Add to/Move to** , and then select the folder to be added/moved to.



Add to

The image will be copied to the new folder, and exist in the old folder.



Move to

The image will be moved to the new folder, and be deleted from the old folder.




- You can select single or multiple images. For selecting multiple images, you can press the Ctrl key and then click the images to be selected, or check the boxes on the upper-right corner of the images one by one.
 - The images can not be moved to the library. The image can not be added to the recycle bin or the library.
-

Delete Image

- Delete single image: Click  on the lower-right corner of the image and then click **Delete** in the pop-up window, to delete the image. The deleted images will be moved to the recycle bin.
 - Batch delete images: Select multiple images and, in the tool bar, click  **Delete**. Click **OK** in the pop-up window to delete the images. The deleted images will be moved to the recycle bin.
-



- In recycle bin, you can recover the image to the folder or delete the images completely.
 - You can perform one of the following operations to select multiple images:
 - Press Ctrl on the keyboard and then click the pictures to select multiple pictures.
 - Click  on the lower-right corner of the images one by one to select multiple images.
-

Add Tag to Image

You can add tags to images for classification according to your requirements. For example, you can add a tag to the image according to the priority of handling, and add a red tag for the image which needs to be handled immediately.

Select the image that needs to be added a tag, and then select the color tag. After adding a tag, the tag will be displayed on the left corner of the picture.


Right-click the image with a tag, and then click **Delete Tag** to delete the added tag.

Image Filtering and Sorting

On the upper-right corner of the client, you can filter the images by time, remark, tag, etc.




For more details about image remark, refer to [***View Image Information***](#) .

On the upper-right corner of the client, select **Day/Monthly/Annually** or **Tag** to classify or sort images. You can also click  to sort images in chronological/reverse chronological order.



Note

The images without capturing time will be displayed on the **Unknown** column.

Add Image to Folder

Right-click the image and select **Add to Analysis Task List**, and the image will be added to the analysis task list. After being added, the image can be viewed on the  page.

Start Image Analysis


Select one or more image(s). Select  **Analyze** to add the selected image(s) to the analysis task list of the  page, and then begin image analysis.

Note

For more details about image analysis, refer to ***Image Analysis*** .

Chapter 4 Image Analysis

After the images are imported to the client, you can analyze the images in the image analysis module. The image analysis process includes configuring temperature measurements, image analysis, and saving or exporting images. By configuring the measurement adjusting measurement and image parameters, the client can calculate the measurement results and generate temperature distribution graphs.

Click . The descriptions of the functions are as follows:

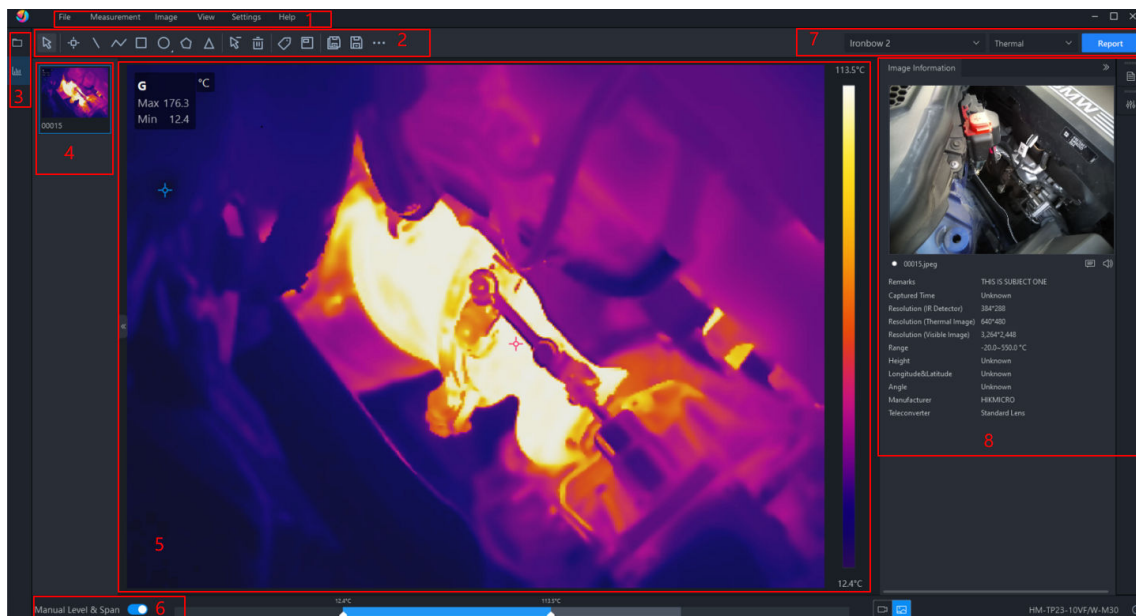


Figure 4-1 Image Analysis

1-Menu Bar

The menu bar includes file and image operation, measurements selecting, image mode (palettes mode and display mode) switching, view switching, report content settings, settings, and help information.

2-Toolbar

Tool bar includes the icons of different measurements, exporting, saving, saving as and editing the color of measurements.

3-Navigation

You can switch to  page to import new images, delete images, etc.

4-Work Set

Before image analysis, the image should be added to the work set. You can switch the image that is being analyzed currently.

5-Image Window

Display the enlarged image. You can draw measurement rules in the window and the temperature will be displayed.

6-Manual Level & Span

You can manually set the thermography range or set the client to automatically adjust the thermography range, namely the difference and range between the minimum temperature and maximum temperature of the environment.

7-Palettes Mode, Color Coloration, and Image Display Mode Switching, and Exporting Report

You can select the maximum temperature, minimum temperature or average temperature to be displayed, and switch the palettes mode, color coloration, and image display mode. You can export the report.

8-Measurement Results, Measurement Parameters, and Image Information

You can view the measurement results, including the temperature of each rule and the temperature distribution graph. You can also set the measurement parameters and view the image information.

4.1 Flow Chart

Follow the flow chart when you first configure and operate the image analysis.

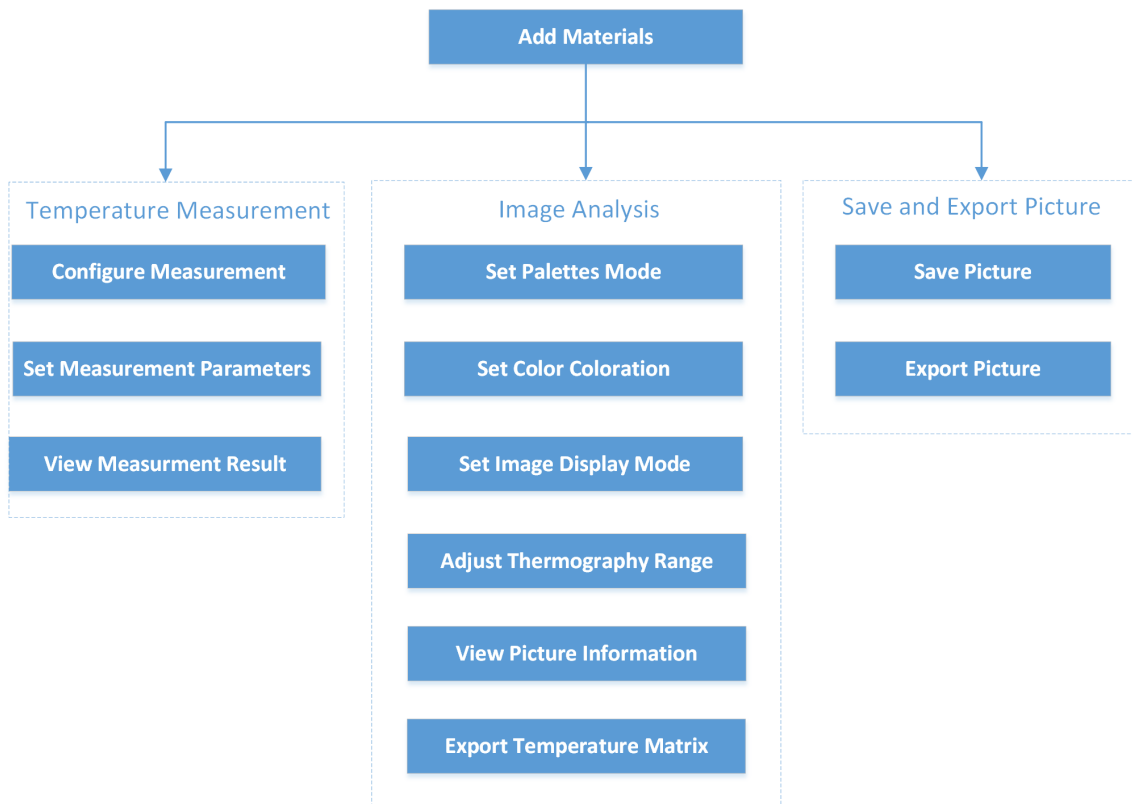


Figure 4-2 Flow Chart

- **Add Image:** Add images to the work set for analysis. For details, refer to [**Add Image to Analysis Task List**](#) .
- **Configure Measurements:** Add the measurement point or draw the measurement area. For details, refer to [**Configure Measurements**](#) .
- **Set Color Coloration:** When the temperature of the object reaches the threshold you set, the color coloration will be triggered. For details, refer to [**Set Color Alarm**](#) .
- **Set Palettes Mode:** Select the palettes mode according to the requirements. For details, refer to [**Set Palettes Mode**](#) .
- **Switch Image Display Mode:** Select the image displaying mode as **Thermal**, **PIP**, **Combination** or **Optical**. For details, refer to [**Switch Image Display Mode**](#) .
- **Set Thermography Range:** Set the thermography range to achieve the best image luminance and contrast ratio. For details, refer to [**Set Thermography Range**](#) .
- **View Measurement Result:** View temperature distribution graphs and measurement point temperature to observe the temperature range and temperature variation. For details, refer to [**View Measurement Results**](#) .
- **View Image Information:** You can view the image information and add text notes. For details, refer to [**View Image Information**](#) .





- **Export Temperature Matrix:** You can export the content of an image as a matrix for further analysis in external software. For details, refer to [Export Temperature Matrix](#).
- **Save Image and Export Report:** You can save or export the modified image, and export the measurement results as a report. For details, refer to [Save and Export Image](#).

4.2 Add Image to Analysis Task List

Before image analysis, the image should be added to the analysis task list.




Note



- Up to 512 images can be added to the analysis task list.
- In , click **Local File**, check one or more images, right-click an image, select **Analyze** to enter the  page immediately.
- Select a folder, check one or more images, right-click an image, and select **Analyze** to enter the  page immediately.
- Double-click an image to enter the  page and you can analyze the image immediately.

Two methods are supported to add the image to the analysis task list:

Directly Drag Image to Analysis Task List

Open the file path of the image in the computer, and directly drag the image to the analysis task list in the  page.

Add Images to Analysis Task List from Folder/Local File

- On the  page, right-click the image and select **Add to Analysis Task List** to add the image to the analysis task list.
- On the  page, click **Local File** to select one or more images, right-click an image, and select **Add to Analysis Task List** to add the image to the analysis task list.

4.3 Temperature Measurement

Temperature measurement refers to the analysis of the temperature information in the image. By setting the measurements, adjusting the measurement parameters, you can view the measurement results calculated by the client, including the temperature and temperature distribution graphs of each measurement and the whole image.

4.3.1 Configure Measurements

The measurements include point measurement, line measurement, and area measurement to meet the requirements of different temperature measurement scenes. You can also set the formula to calculate the delta.

After the images are added to the analysis task list. You can perform one of the following operations to select measurement for drawing:


- Click **Measurement** in the menu bar to select the measurement.
- Select the measurement in the toolbar.




Figure 4-3 Measurements in Tool Bar

Point Measurement

You can customize a measurement point, to view the temperature of this point.

Click  and click on the image to select a point to be viewed, the customized measurement point will be added.


Double-click  to add points continuously on the image.




Note

Move the cursor to the measurement point, the cursor will turn to a cross cursor, and then you can move the location of the measurement point.

Line Measurement





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

Polyline Measurement

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

Area Measurement

Supports adding areas (including rectangle, circle, ellipse, and polygon) for measurement. You can draw different area shapes according the actual scenes. For example, for irregular area, you can select polygon for measurement.

- Click ,  or  on the left panel, and left-click the mouse to draw the area, which will be displayed as a rectangle, circle, or ellipse automatically.
- Click  on the left panel, and then left-click the mouse to draw the first line of the polygon, left-click the mouse again to draw the next line. Right-click the mouse to finish polygon drawing.




Note

- When the cursor turns to a double-sided arrow, you can adjust the size of the area. When the cursor turns to a cross cursor, you can move the location of the area.
 - When you finish drawing area measurement, you can right-click to end drawing.
 - You can double-click the image to view the image on full screen.
-

Set Delta Calculation

After setting the formula, the delta between temperatures will be calculated automatically and you can view the result in the Results window.

In the toolbar, click  and set the following parameters:

Name

Create a name for the delta.



Formula

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


Result


It displays the delta result.

Delete Measurement

- Click  to delete the selected measurement.
- Click  to delete all the measurements.

Edit Measurement

Click  → **Edit Color** or **Measurement** → **Edit Color**, and select the displaying color or the measurement. After a new displaying color is selected, the new drawing measurement will be displayed in the new color, and the old measurements remain unchanged.

Click , and then select the measurement to be edited to adjust the measurements. For example, you can drag the end of the measurement line to stretch or shorten the line. For the rectangle measurement, you can click the angle of the rectangle to enlarge or narrow the rectangle.

Temperature Information Overlay Settings

Click  to open the **Temperature Overlay** window.

Temperature Info Overlay

After it is enabled, you can select temperature information (measurements, max. temperature, etc.) to be displayed over the image and set the position of information.

Position

Select the position as **Top Left** or **Display with Measurement**.

Rules

Check the measurements and temperatures, including max. temperature, delta (the difference between the max. temperature and the min. temperature), and center temperature.



Note

Center temperature is not supported for measurements.

Delta

Check the delta name that needs to be displayed. After checking, the delta name and delta results will be displayed in the top left corner.

Rule IDs of Measurements

Measurements	Rule IDs
Customized Point	P1, P2...
Line	L1, L2...
Rectangle	R1, L2...
Circle	Cr1, Cr2...
Ellipse	Ep1, Ep2...
Polygon	Po1, Po2...

Note

- You can set **Area Measurement Display** to select temperature information type (min. temperature, max. temperature, and average temperature) to be displayed. You can set **Temperature Display Location** to select the location to display the temperature (display on the top-left or display with the measurement). For details, refer to **System Settings**.
- The temperature of each measurement is displayed at the bottom of the image.
- For point measurement, only the average temperature will be displayed.

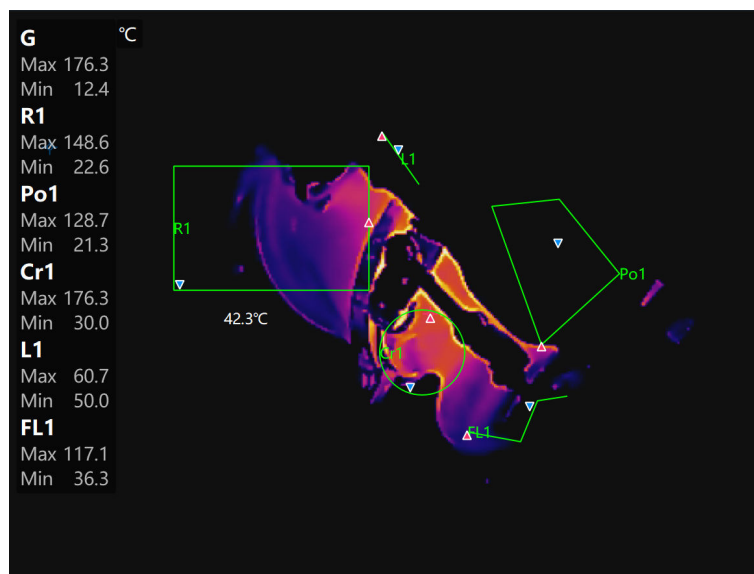



Figure 4-4 Measurements


Apply Measurements to All

Click **Measurement** → **Apply Measurements to All** to apply the measurements of the current image to all the other images.



4.3.2 Set Measurement Parameters

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

Enter the  page. Perform one of the following operations to open the Parameter Configuration window.

- After configuring measurement, right-click the measurement in the image and select **Measurement Attribute** to rename the measurement, set the color of the measurement and configure the measurement parameters.
- After configuring measurement, right-click the measurement in the image and select **Global Measurement Attribute** to rename the measurement, and configure the measurement parameters.
- After configuring measurements, click  on the right panel of the client to enter the Parameter Configuration page. The suffix of the parameter indicates the selected measurement or general parameter.

Note

- You can drag the window to the middle of the client for a convenient view. You can also click  to hide this window.
- For example, if you select the L1 measurement, the suffix of the parameter is L1. If you don't select any measurement, the suffix of the parameter is G, which indicates the general parameter of the current image.
- If you need to configure the parameters of the other measurement, select the measurement in the image, or select the measurement on the right side of the **Measurement Parameter**, and configure the parameters of the new selected measurement.
- If the suffix of measurement parameter is G, click  to apply the general parameters of the current image to other measurements of this image.

Note

In different streaming modes, the parameters that can be set are different.

Range Switchover

The thermography range is restricted to measure the maximum and minimum temperature more accurately.

Humidity

Measure the moisture content in the air.

Emissivity

Every object has emissivity, which can be affected by surface temperature, surface roughness, degree of oxidation, coating, etc. $\text{Emissivity} = \text{Measured Value} / \text{Standard Value}$. The measured value refers to the temperature measured by infrared measurement devices, and the standard value is measured by contact measurement devices. Since any object is impossible to have no reflection at all, this value is generally less than 1.

Atmospheric Temperature

It refers to the actual temperature of the measured environment.

Reflective Temperature

When objects with low emissivity are monitored, the reflective temperature can be significantly affected. The way of measuring reflective temperature: first select the location of the measurement target, and then find the reflecting surface according to your position and the measurement target (referring to the optical light path diagram), and measure its temperature by setting the emissivity as 1. The average temperature of the reflecting surface is the reflective temperature.

Distance

The distance between the object and the thermal device.

Alarm Type

When the max. temperature / avg. temperature / min. temperature is above or below the alarm threshold, or the temperature difference (between the max. temperature and min. temperature) is above or below the alarm threshold, the alarm will be triggered.

Alarm Threshold

When the max. temperature / avg. temperature / min. temperature is above or below the alarm threshold you set, or the temperature difference (between the max. temperature and min. temperature) is above or below the alarm threshold, the alarm will be triggered.

Delta Range

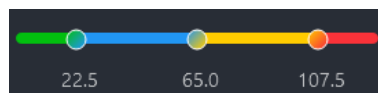


Figure 4-5 Delta Range



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

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


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

4.3.3 View Measurement Results

After configuring the measurements and measurement parameters, you can view the measurement results, including the maximum temperature, minimum temperature, and average temperature of the image and each measurement, and the temperature distribution graph which displays the temperature distribution of each pixel. You can also view temperature differences (delta) after setting the formula for delta calculation.

Enter the  page.
Click  on the right panel of the client to open the window of measurement results.

 **Note**

You can drag the window to the middle of the client for a convenient view. You can also click  to hide this window.

View the Max. Temperature, Min. Temperature and Average Temperature

On the Results window, the maximum temperature, minimum temperature, and average temperature are displayed in the table.

 **Note**

In the measurement results, the measurement with an alarm triggered will be displayed in red. Besides, the measurement will also be marked as red in the image.


Name	Max.	Min.	Avg.
 G	57.3 °C	16.6 °C	34.8 °C

Figure 4-6 Measurement Results

View Temperature Difference (Delta)

 **Note**

You need to set the delta calculation beforehand. For details about setting the delta calculation, refer to **Configure Measurements** .

In the middle of the Results window, you can view the delta result(s). The delta results in different ranges will be displayed in different colors.
Right-click a delta, you can edit or delete the delta.

 **Note**

For details about setting the delta range, refer to [***Set Measurement Parameters***](#) .

View Temperature Distribution Chart

On the Results window, the temperature distribution chart of the selected measurements or the image is displayed.

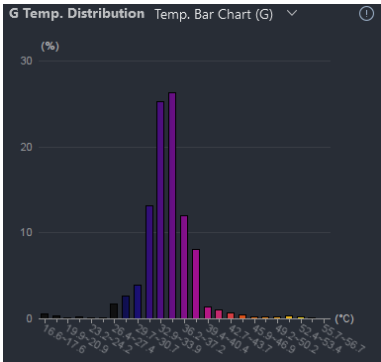


Figure 4-7 Temp. Distribution Chart

4.4 Image Analysis

By image analysis, you can accurately view and recognize the object in the image, the alarm area, and temperature distribution. The image analysis includes setting the palettes mode, setting the color coloration, switching the image displaying mode, and setting the manual level and span, etc.

 **Note**

In the menu bar, click **Image → Apply Image Parameters to All** to apply the parameters of the selected image (including palettes mode, image display mode, and the parameters for advanced editing) to all the other images. For details about advanced editing, refer to [***More Functions***](#) .















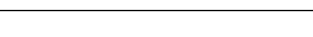
4.4.1 Set Palettes Mode

Palette is a method to transform the display of images from black and white into colorful ones. Since human eyes are not sensitive to the resolution of black and white images, palette processing can transform different grey-scales in the black and white images into different colors according to linear or nonlinear mapping function, thereby enhancing the recognizability of the image boundary, improving the capability of human eyes to identify details of the image and allowing users to obtain information hidden in the grey-scale image that cannot be directly observed by naked eyes. Palettes mode is the color displaying mode of the transformed image, which can be manually set on the client.

Enter the  page.

Click **Image → Palettes Mode** and select the palettes mode.

You can also select palettes mode in the drop-down list of the upper-right corner of the client.

Palettes Mode	Color Style
Black Hot	
Fusion1	
Fusion 2	
Rainbow	
Ironbow 1	
Ironbow 2	
Dark Brown	
Color 1	
Color 2	
Ice Fire	
Rain	
Green Hot	
Red Hot	
White Hot	
Dark Blue	

4.4.2 Set Color Alarm






When the temperature of the object pixel in the video reaches the temperature limit, it will be marked with different colors, to trigger alarms and caution users.

Enter the  page.

Click **Image → Palettes Mode** and select the color coloration type and set the temperature limit.

You can also select color coloration type in the drop-down list of the upper-right corner of the client.

After the settings, the image in the image window will change to incandescent image mode, and when the temperature reaches the alarm limit, the object pixel in the image will be marked with a different color.

Alarm Type	Descriptions	Color
High Temperature Alarm	When the temperature of the object is higher than the maximum temperature, the object turns red. If the luminance of the object increases, the red color turns to shallow.	
Low Temperature Alarm	When the temperature of the object is lower than the minimum temperature, the object turns blue. If the luminance of the object increases, the blue color turns to shallow.	
Interval Alarm	When the temperature of the object is higher than the minimum temperature and lower than the maximum temperature, the object turns yellow. If the luminance of the object increases, the yellow color turns shallow.	
Insulation Alarm	<p>When the temperature of the object is higher than the maximum temperature, the object turns purple. If the luminance of the object increases, the purple color turns shallow.</p> <p>When the temperature of the object is lower than the minimum temperature, the object turns cyan. If the luminance of the object increases, the cyan color turns shallow.</p>	<p>Maximum Temperature Limit</p>  <p>Minimum Temperature Limit</p> 

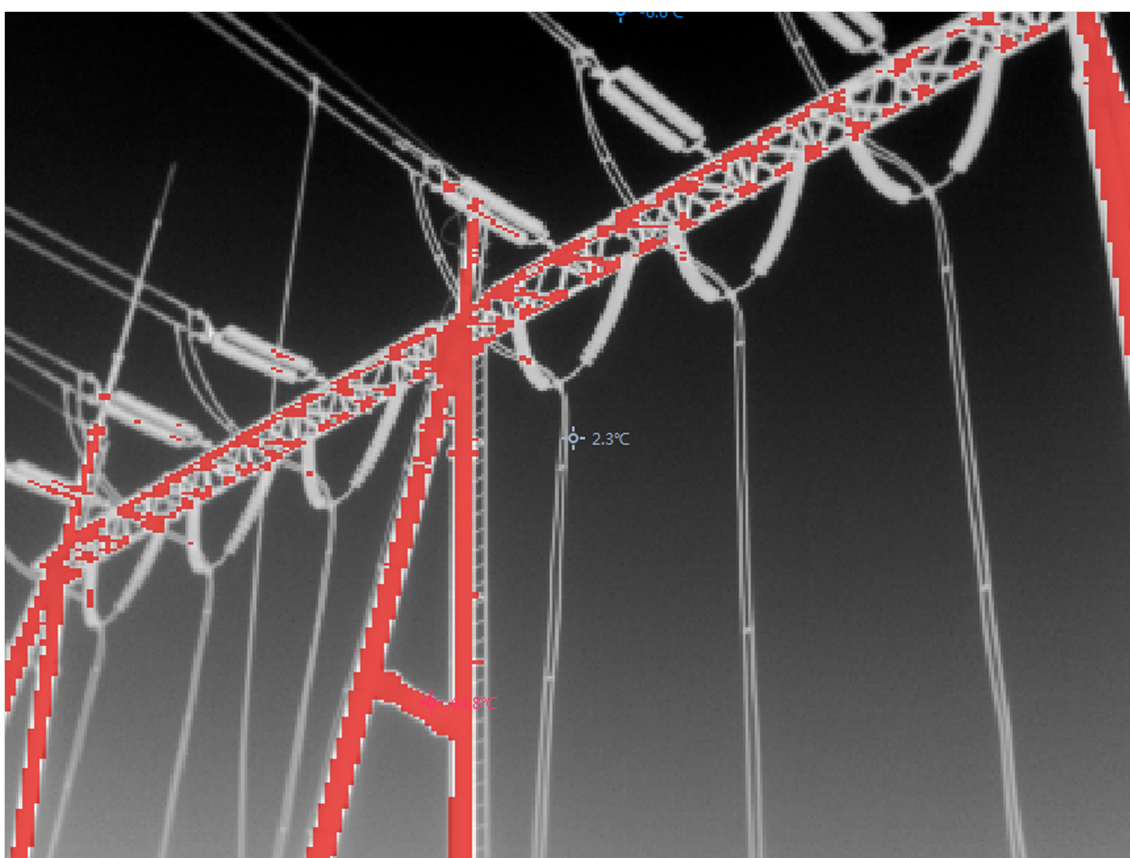


Figure 4-8 High Temperature Alarm



Figure 4-9 Low Temperature Alarm

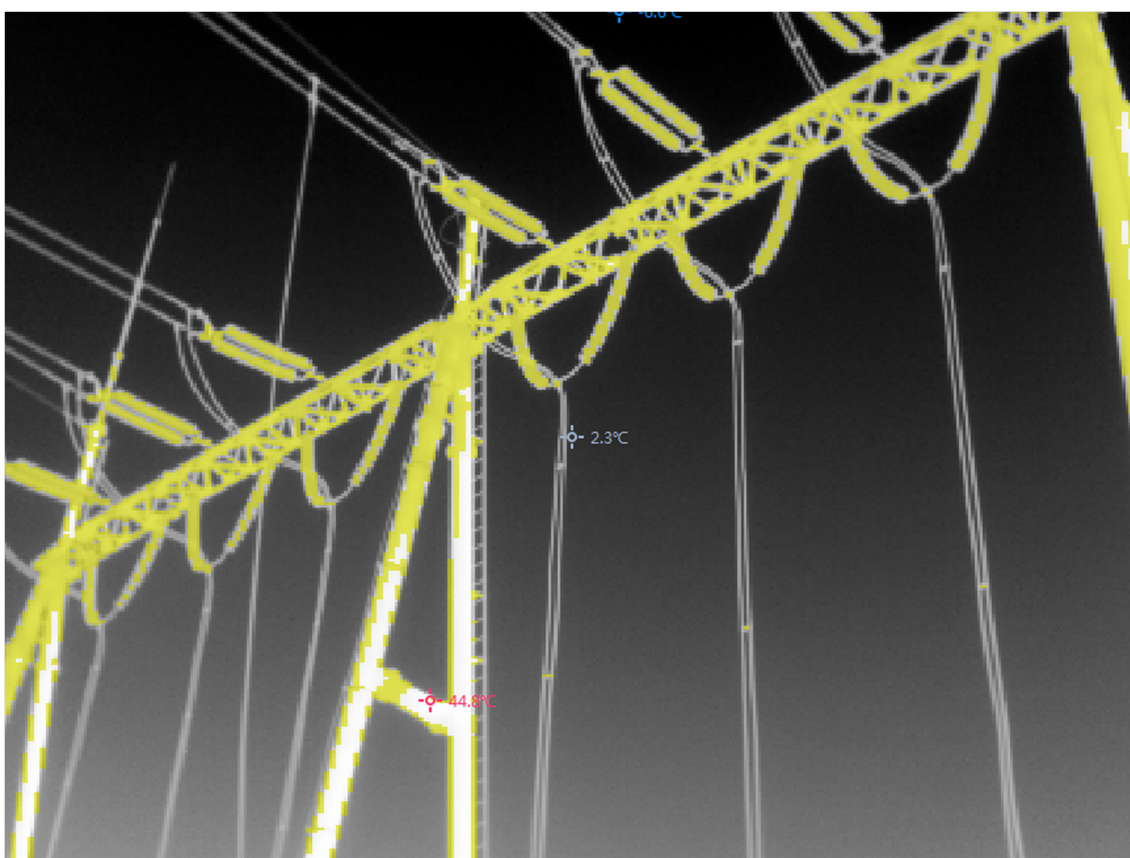


Figure 4-10 Interval Alarm

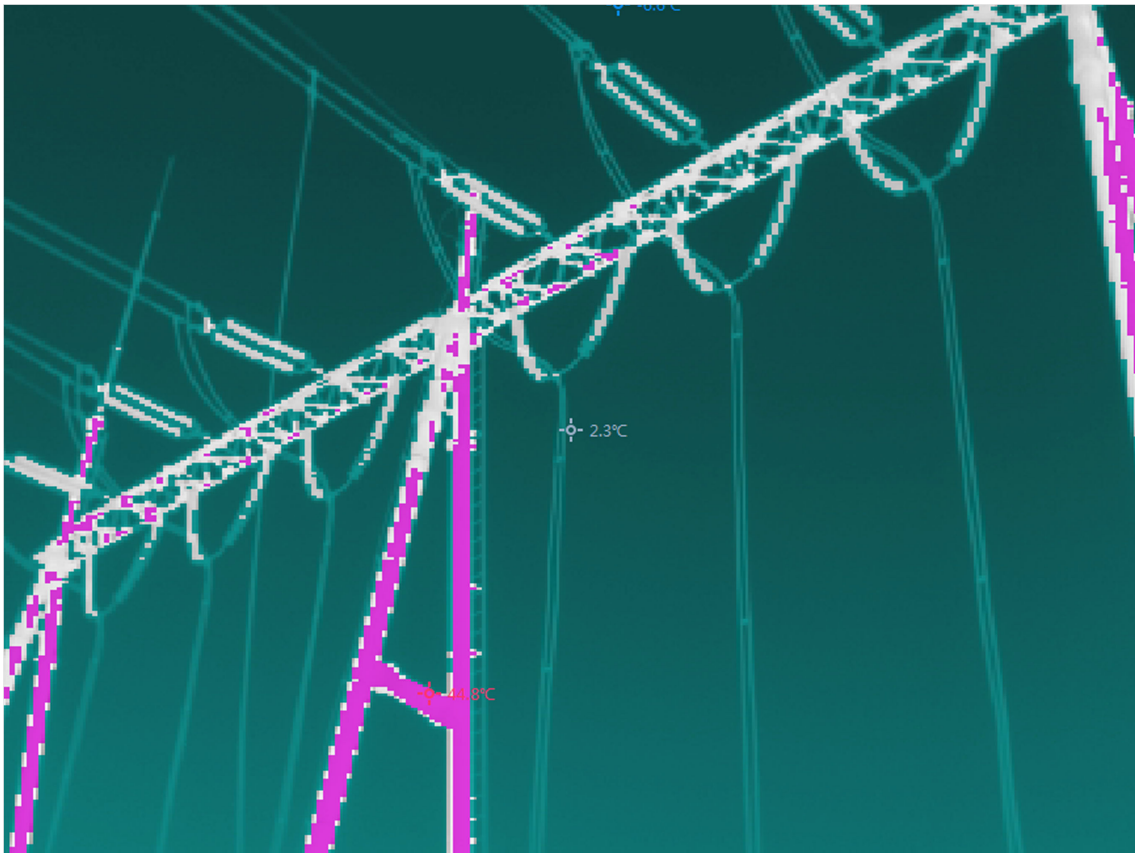


Figure 4-11 Insulation Alarm

4.4.3 Switch Image Display Mode

According to the actual scene, you can switch the image display mode, including thermal, fusion, PIP (picture in picture), and visible.

Enter the  page.

Click **Image → Display Mode** , and then select a different display mode.

You can also select palettes mode in the drop-down list of the upper-right corner of the client.



Note

The display mode differs according to the image type. For example, if the image is captured by a device that only supports the thermal channel. The display mode is the only thermal mode.

Thermal Mode

Thermal imaging is based on the difference of infrared radiation of objects. The thermal device can transfer the infrared radiation distribution emitted naturally on the surface of objects into visible images. Since different objects or different parts of the same object have different thermal

radiation characteristics (e.g. temperature difference and emissivity), different objects can be distinguished because of their differences in thermal radiation. We can monitor the environmental temperature change in time according to the thermal image. The thermal mode has the advantages of wide detection range, low information loss, uninterrupted throughout the day and night, and is not affected by the detection effect.

In the thermal mode, the image resolution is low and the image lacks the sense of hierarchy. Because of the transmission distance, the contrast of different objects in the image is low and blurred.

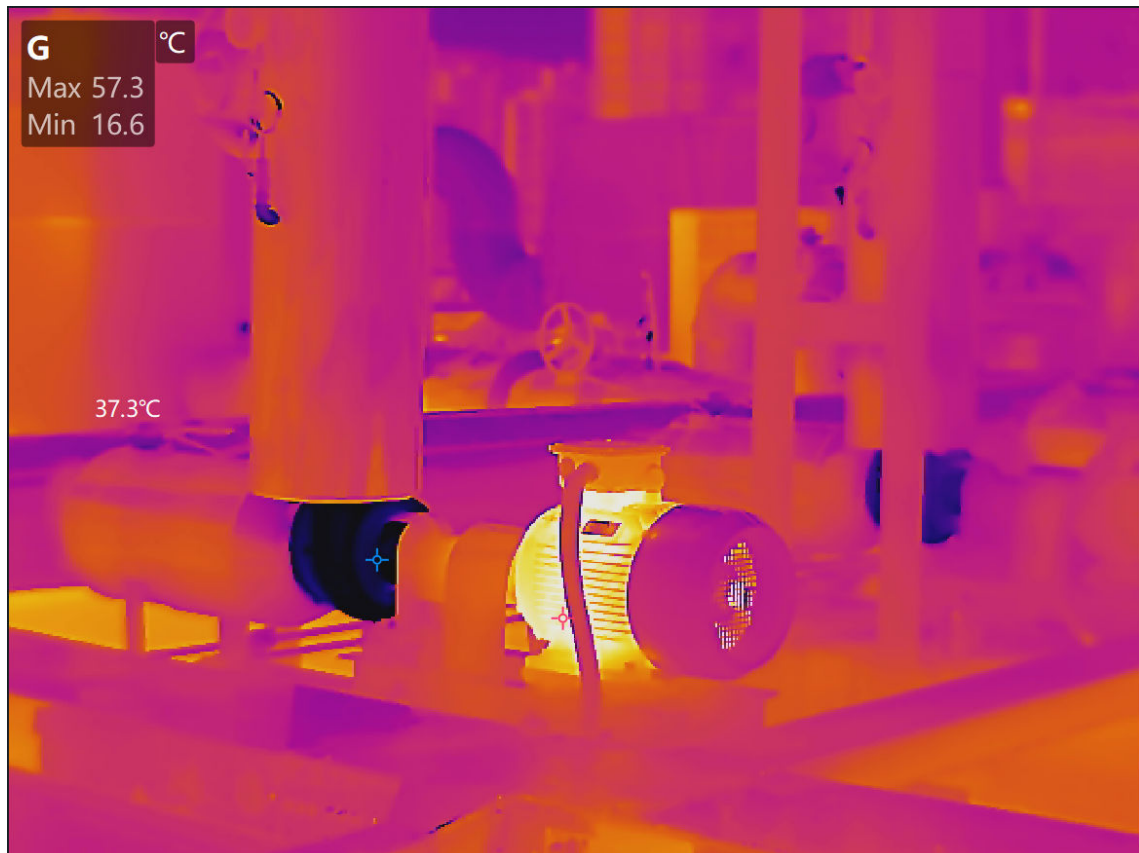


Figure 4-12 Thermal

Fusion Mode

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.

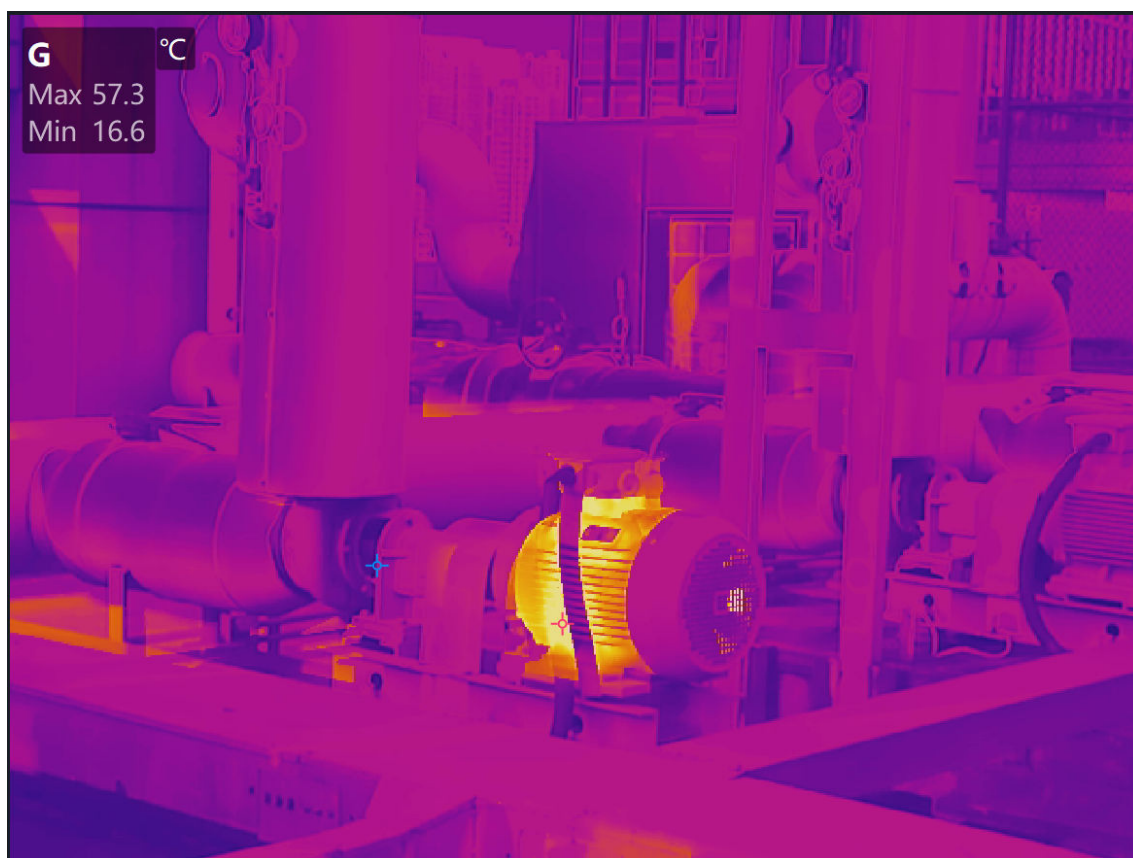


Figure 4-13 Fusion

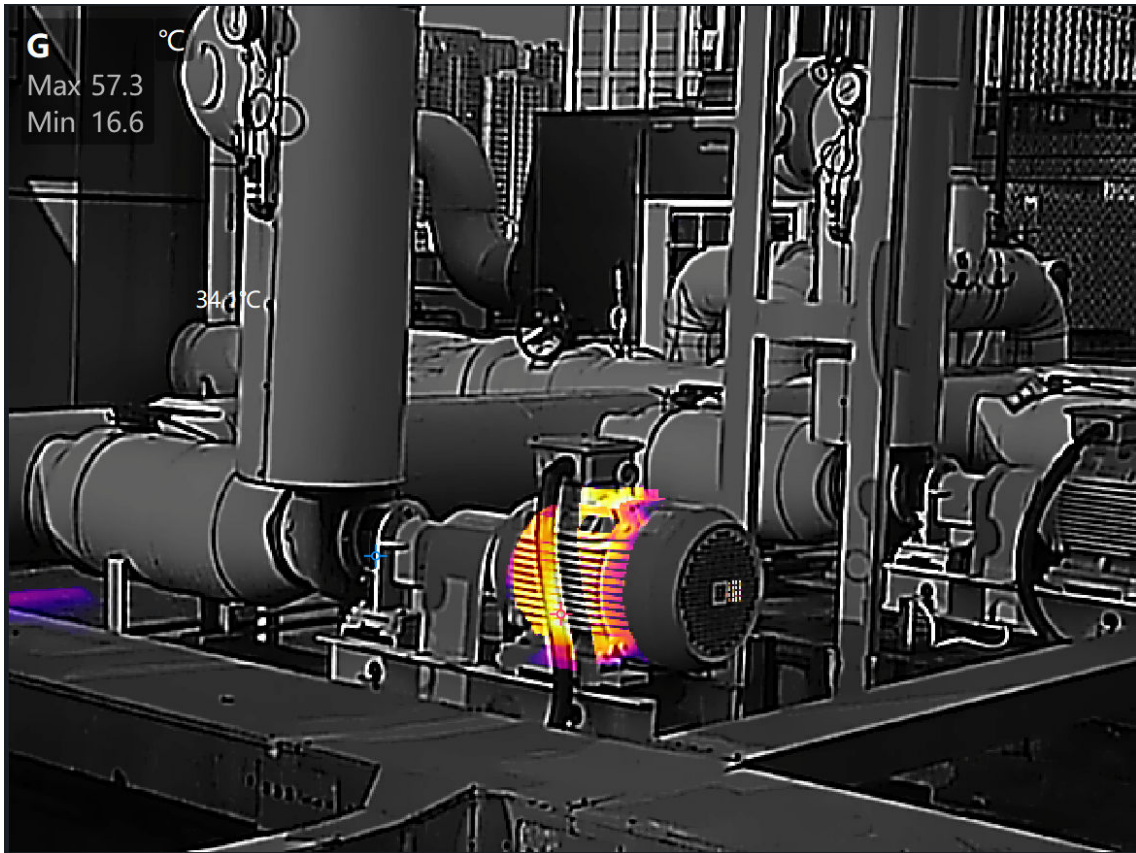


Figure 4-14 Fusion2

PIP Mode

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

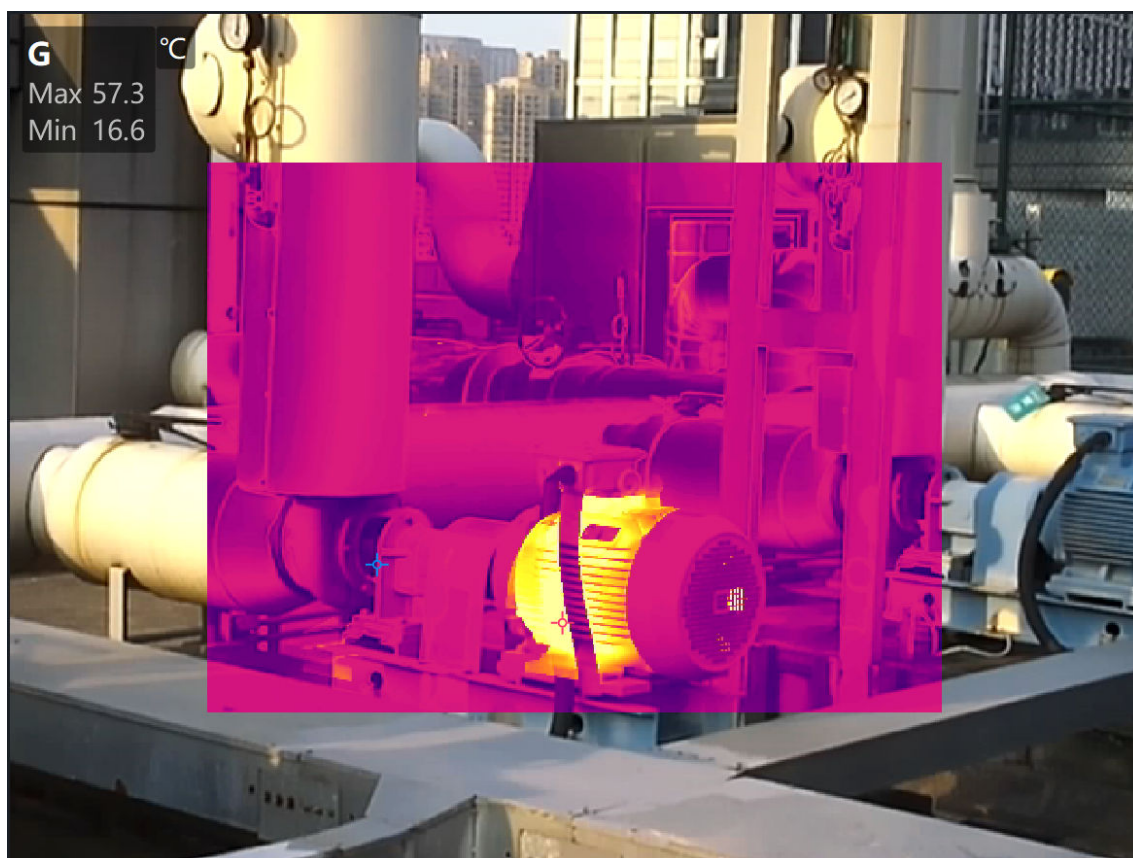


Figure 4-15 Picture in Picture

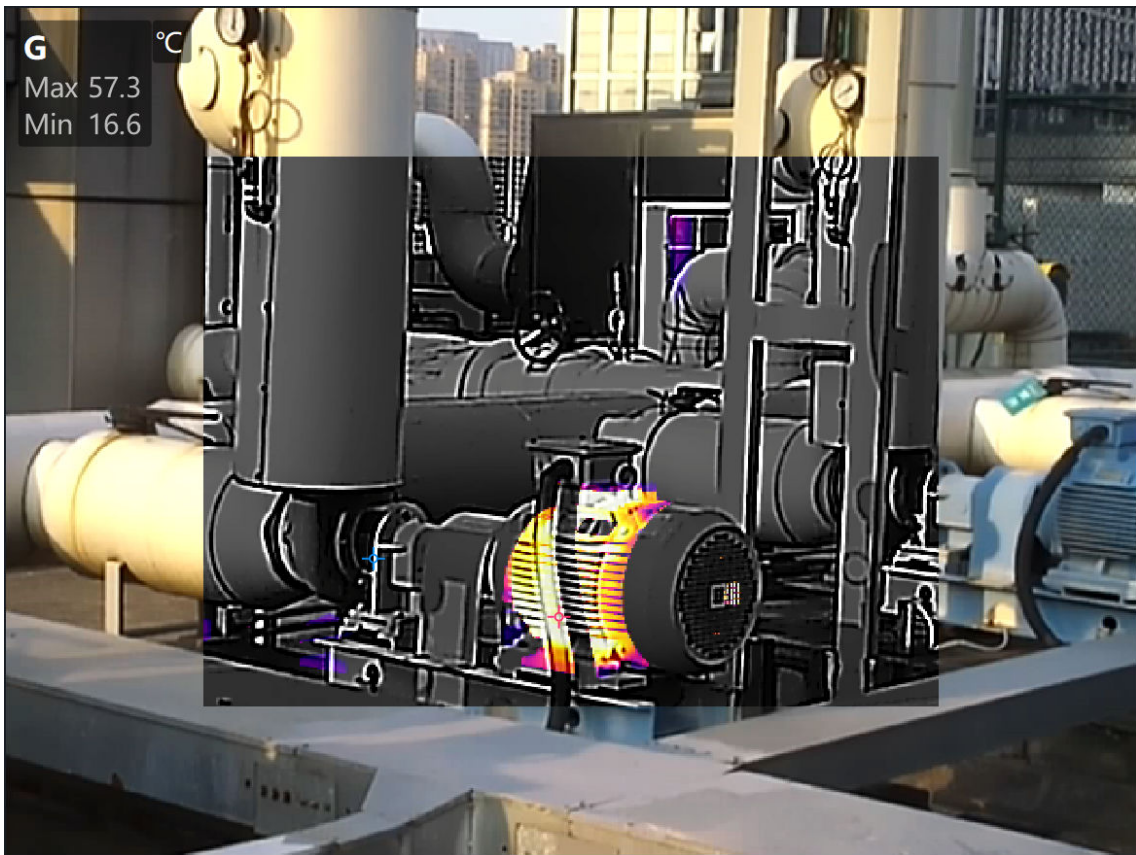


Figure 4-16 Picture in Picture2

Optical Mode

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

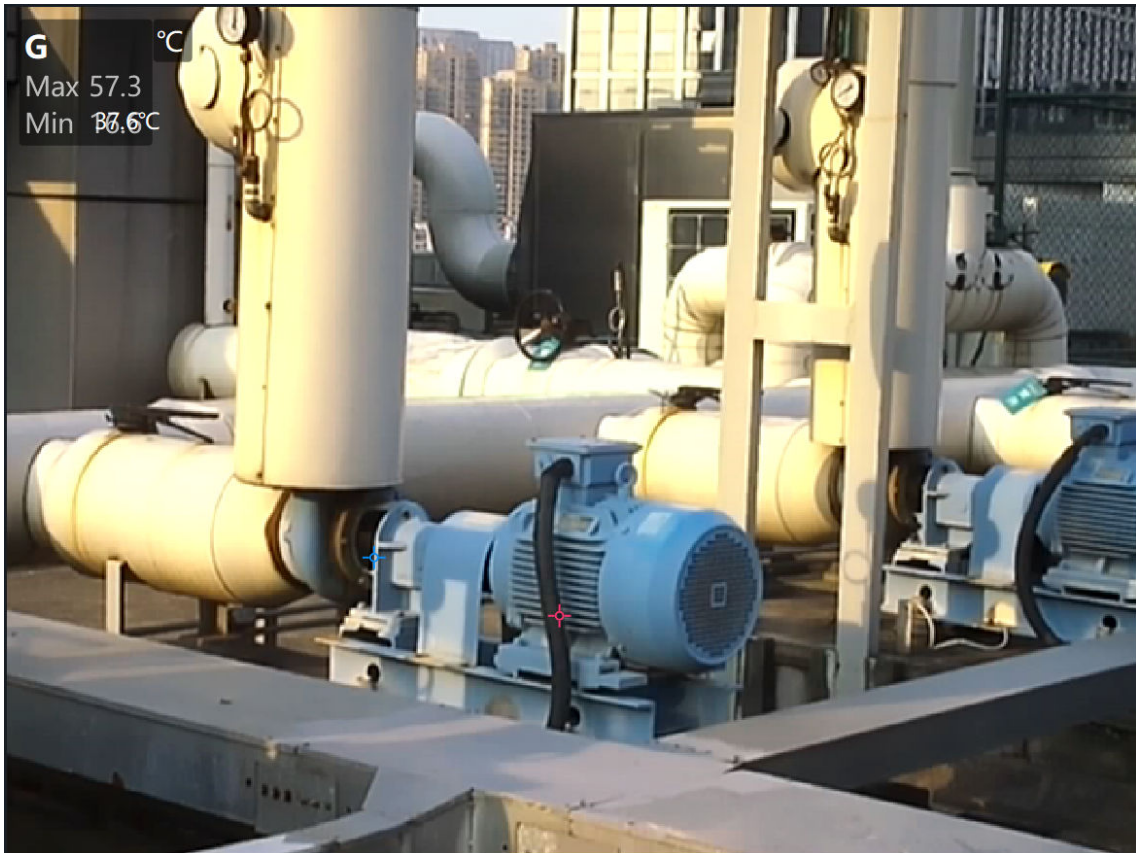


Figure 4-17 Optical



4.4.4 Set Thermography Range

You can manually set the thermography range, namely the difference and range between the minimum temperature and maximum temperature of the environment, to make the monitor the environment temperature accurately.


Note


When the Adjust Thermography Range function is not enabled, in the menu bar, click **Image → Regional Image Enhancement**, and the **Manual Level & Span** will be enabled automatically. After it is enabled, the client will select an appropriate range to make areas drawn by measurements clearer.

On the lower-left panel of the client, you can select to automatically or manually adjust the thermography range by enabling or disabling **Manual Level & Span**. When the function is enabled, the temperature range and two sliders are displayed on the right side.

- Automatically adjust the thermography range: Disable **Manual Level & Span**, the client will automatically adjust the temperature difference and temperature range.
- Manually adjust the temperature difference: Enable **Manual Level & Span**, move the cursor to the slider (the temperature value appears above the slider ), perform one of the following operations to adjust the temperature difference, the minimum temperature and the maximum temperature change accordingly.
 - Drag the slider on the bar to adjust the temperature different.
 - Click the temperature value above the slider and then manually enter the temperature.
 - Click the temperature value above the slider and then scroll the mouse to set the temperature.
 - Click the temperature value above the slider and then click  to set the temperature.

Note

By scrolling the mouse or clicking , the temperature will change by 0.1 °C each time.

- Manually adjust the temperature range: Enable **Manual Level & Span**, move the cursor to the middle of the two sliders (the cursor turns to a hand shape icon ) , and then drag the cursor to adjust its location, to adjust the temperature range according to the actual scene.

The following are two thermal images of a target. To make it easier to analyze the temperature variations, the temperature scale in the right image has been changed to values close to the temperature of the target.



Figure 4-18 Automatic (Manual Level & Span Disabled)

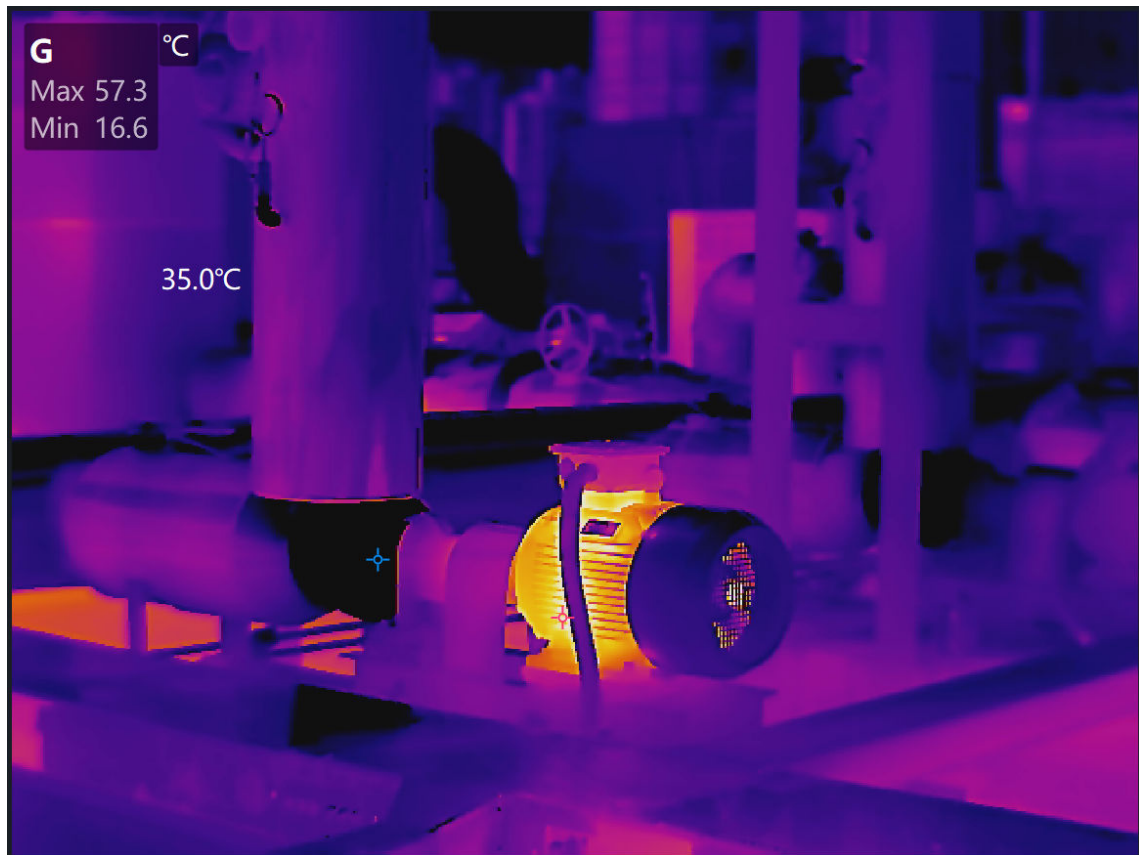




Figure 4-19 Manual (Manual Level & Span Enabled)

 **Note**

After enabling **Manual Level & Span**, click  /  to switch between the thermography range of the camera and the thermography range of the target object.

Thermography Range of Camera

The thermography range which can be adjusted on the client is dependent on the configured thermography range of the camera when it captured the image.

Thermography Range of Target

The thermography range which can be adjusted on the client is dependent on the temperature range of the target when the image is captured.

The calculation of the thermography range which can be adjusted on the client goes like this:

Min. Temperature=Min. Temperature of Object-Difference/2;


Max. Temperature=Max. Temperature of Object+Difference/2;


Difference=Max. Temperature of Object-Min. Temperature of Object.

For example, if the minimum temperature of the object is 20°C, and the maximum temperature of the object is 500°C, then the thermography range which can be adjusted on the client is -220°C to 740°C.


4.4.5 View Image Information

You can view and edit the text remark of the added image on the client. You can also play voice notes if the image was noted with a voice message.


Enter the  page, select the image to be viewed in the analysis task list.

Click  on the right panel of the client to open the image information window.

Note

You can drag the window to the middle of the client for a convenient view. You can also click  to hide this window.

Text Remark

- Click  below the selected image to view text remark in the pop-up dialogue box.
- You can also edit the text and click **Save** to save a new remark.

Note

You can enter at most 200 words.

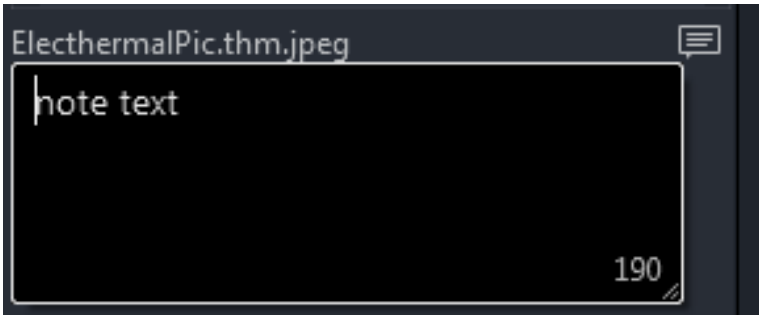




Figure 4-20 Text Remark

Voice Note

Click  to start playing the voice note if the image was noted with a voice message.

View Device Model and Serial No.

Select the image to be viewed in the analysis task list, and then click  to view the device model and serial No. of the device which captured the image.

4.4.6 Export Temperature Matrix

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

On  page, click  → **Export Temp. Matrix** .

Check the information needed in the file.

Matrix of Whole Image

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

Matrix of Measurements

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

Measurement Information

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

Details

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

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

Click **Open File** to view the temperature matrix.



4.5 Save and Export Image

After completing temperature measurement and image analysis for the picture, you can save pictures and export analysis results.

4.5.1 Save Image

After editing a image, you can save its new measurements, palettes mode, text remarks, etc.

On the  page, click  or click **File → Save** to save the modified image information.

On the  page, click  or click **File → Save as**, and enter the image name and select the path to be saved, to save the modified image to the designed path.

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 image exported can not be used for temperature measurement analysis.

1. Enter the  page, and select the image to be exported.
2. Perform one of the following operations to open the window of Export image.
 - Click  →  to export the image.
 - Click **File → Export image** to export the image.

3. Set relevant parameters.

Image Type

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

File Name

You can customize the file name for the thermal and the visible 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.



Chapter 5 Thermography Report

After analyzing the image, you can generate a report and export it to the local PC for further analysis.

5.1 Generate Report

After editing the image, you can generate a report for further analysis and summarizing the temperature or image data.

Steps

1. On the  page, click **Report** in the right corner of the client.
 - On the  page, you can also select one or more images, and right-click on the image, and select **Generate Report**.
 - Under the menu bar, click **Local File**, check one or more folders or files, and right-click on them to select **Generate Report**.
2. Select a template.



Note

After you check **Remember Choice**, when you generate the report for the next time, the default layout will be automatically used. You can change the choice in the **Preferences** area of the Settings page. For details, refer to [System Settings](#) .

3. Click **OK**.
4. Select a page on the left and click an object to set its properties.






Note


For details about setting objects, refer to [Manage Objects in Report](#) .

5. **Optional:** Perform the following operations if needed.

Align Page Content

In the too bar, click  ,  or  to set the content position as left align, central, or right align.

Add Content/Blank Page

- In the toolbar, click  to add a content page or a blank page.
- In the menu bar, click **Content** → **Add New Page** to add a content page or a blank page.
- In the left panel, right-click a page and select **Add New Page** to add a content page or a blank page.

Delete Page


In the left panel, right-click a page and select **Add New Page** to add a content page or a blank page.

Change Template



Note

Changing templates is not supported for the cover page, overview page, and appendix page.

- In the left panel, select a page and click **Change** to select a template. The template of the current page will be changed.
- In the menu bar, click **Content → Change** to select a template. The template of the current page will be changed.
- In the toolbar, click  to select a template. The templates of all pages will be changed.

Save Page as Template

You can create a template by customizing the objects in the page. After customization, you can save it as a template for later use. It will be listed in the content page template area. Up to 16 templates are supported.

- In the menu bar, click **Content → Save as Template**, enter the template name, and click **Save** to save the page as a template.
- In the left panel, select a page and right-click it to select **Save as Template**, enter the template name, and click **Save** to save the page as a template.



Note

If you are customizing a template, you can leave the thermal image object as is without opening any image.

6. Click **Export Report** to export the report in ODT or PDF format to the local PC.

What to do next

Click **Open Folder** to view the exported report on the local PC. Click **Confirm** to continue exporting other reports.

5.2 Manage Objects in Report

A report template contains content placeholders for objects such as thermal image objects, digital photo objects, and temperature result objects. You can set object properties such as the size of a table and display items.




The objects displayed vary with different templates. When a report is generated based on a report template, these objects will be automatically loaded with contents based on the images you select to be included in the report.

- **Set Text Object**
- **Set Thermal Image Object**
- **Set Visible Image Object**
- **Set Measurement Result Object**
- **Set Text Annotation Object**

- **Set Remarks Object**
- Set thermography parameter objects: **Set Parameters (Global) Object** , **Set Parameters (Measurements) Object**
- Set information objects: **Set Device Information Object** , **Set Target Object Information Object**
- Set temp. distribution chart object: **Set Temp. Bar Chart Object** , **Set Temp. Line Chart Object**
- **Set Delta Object**
- **Set Logo Object**





Set Text Object

A text object is used for entering the content about the report if needed.

Parameter	Description
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Content	Enter the content in the Content field.



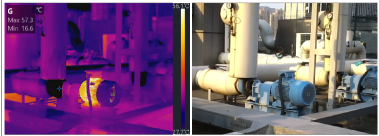
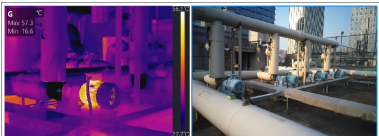
Set Thermal Image Object

An thermal image object can automatically load a radiometric image or a JPEG image when a report is generated.

Parameter	Description
Size	Enter the width and the height to adjust the size of the thermal image.
Type	Select the image type: <ul style="list-style-type: none"> • Target Thermal Image: a thermal image captured when it is not sure whether the target object is normal. In the Select area, click  or  to add or delete the thermal image. • Reference thermal Image: an thermal image captured when it is sure that the target object is normal. In the Select area, click  or  to add or delete the thermal image.
Temperature Information	Palettes: after it is checked, palettes will be displayed on the right side of the thermal image.

Set Visible Image Object





A visible image object is a placeholder for the visible image or the common picture associated with the thermal image.

Parameter	Description
Size	Enter the width and the height to adjust the size of the image.
Type	<p>Select an image type.</p> <ul style="list-style-type: none"> • Auto-Select: an image will be selected automatically according to the thermal image. • Picture: refers to any picture stored on the local PC. In the Select area, click  or  to add or delete the picture. • Visible Image (Alignment): an optical image that is the same as the linked thermal image. When this type is selected, the digital photo (alignment) will be automatically displayed in the object.  <p>Figure 5-1 Visible Image (Alignment)</p> <ul style="list-style-type: none"> • Visible Image (Panorama): a panoramic optical image of the linked thermal image. When this type is selected, the optical image (panorama) will be automatically displayed in the object.  <p>Figure 5-2 Visible Image (Panorama)</p>

Set Measurement Result Object





The measurement result object is a placeholder that automatically loads the temperature measurement result, including temperature difference, max. temperature, and center temperature, when the report is generated.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal Image	Select an thermal image to be linked. After the object is linked, the measurement result of the linked thermal image will be automatically displayed in the object.

Parameter	Description
	 Note If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Display Items	Check measurements and temperatures to be displayed.




Set Text Annotation Object

The text annotation object is a placeholder for which automatically loads the text annotation of the image when the report is generated. For details about the text annotation, refer to [View Image Information](#) .

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal Image	Select an thermal image to be linked. Select an thermal image to be linked. After the object is linked, the text annotation of the linked thermal image will be automatically displayed in the object.  Note If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.
Alignment	Click  ,  or  to set the content position as left align, central, or right align.





Set Remarks Object

Remarks object is used for displaying information about the report. You can double-click the object to edit the content.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Alignment	Click  ,  or  to set the content position as left align, central, or right align.





Set Parameters (Global) Object

A parameters (global) object is a placeholder that automatically displays general parameters associated with the thermal image when a report is created.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal Image	<p>Select an thermal image to be linked. After the object is linked, the general parameters of the linked thermal image will be automatically displayed in the object.</p> <p> Note</p> <p>If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.</p>
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Display Items	Check items to be displayed in the object.





Set Parameters (Measurements) Object

A parameters (measurements) object is a placeholder that automatically displays the parameters of measurements associated with the thermal image when a report is created.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal Image	<p>Select an thermal image to be linked. After the object is linked, the measurement parameters of the linked thermal image will be automatically displayed in the object.</p> <p> Note</p> <p>If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.</p>
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Display Items	Check items to be displayed in the object.





Set Device Information Object

A device information object is a placeholder for displaying the device information associated with the thermal image.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal image	<p>Select an thermal image to be linked. After the object is linked, the device information of the linked thermal image will be automatically displayed in the object.</p> <p> Note</p> <p>If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.</p>
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Display Items	Check items to be displayed in the object.





Set Target Object Information Object

This object is for displaying information about the target for detection, such as the address and weather.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Link Thermal Image	<p>Select an thermal image to be linked. After the object is linked, the target information associated with the linked thermal image will be automatically displayed in the object.</p> <p> Note</p> <p>If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.</p>
Alignment	Click  ,  or  to set the content position as left align, central, or right align.
Display Items	Check items to be displayed in the object.

Set Temp. Bar Chart Object



The temperature bar chart object is a placeholder for displaying the temperature distribution bar chart associated with the thermal image.

Parameter	Description
Size	Enter the width and the height to adjust the size of the graph.
Link Thermal Image	<p>Select an thermal image to be linked. After the object is linked, the bar chart associated with the linked thermal image will be automatically displayed in the object.</p> <p> Note</p> <p>If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.</p>
Link Measurement	<p>Select a measurement to be linked. After the measurement is linked, the object will only display the bar chart of the measurements associated with the linked thermal image.</p> <p> Note</p> <p>If the linked thermal image is changed, the options in the drop-down list will also change.</p>
Bars	Enter an integer to change the number of bars, or click  or  to increase or decrease the bars.

Set Temp. Line Chart Object

A temperature line chart object is a placeholder for displaying the temperature distribution chart associated with the thermal image.

Parameter	Description
Size	Enter the width and the height to adjust the size of the graph.
Link Thermal Image	Select an thermal image to be linked. After the object is linked, the line chart associated with the linked thermal image will be automatically displayed in the object.

Parameter	Description
	 Note If this object is connected to an thermal image object and you delete either this object or the image, you will not be able to recreate the connection.
Link Measurement	Select a measurement to be linked. After the measurement is linked, the object will only display the line chart of the measurements associated with the linked thermal image.  Note <ul style="list-style-type: none"> • If the linked thermal image is changed, the options in the drop-down list will also change. • Only the line measurement and the polyline measurement can be linked.

Set Delta Object

A delta object displays the determination standard based on the delta calculation result.

Parameter	Description
Size	Enter the width and the height to adjust the size of the table.
Delta Range	Enter a value under the bar to adjust the delta range.

Set Logo Object

A logo object is a placeholder for displaying the logo for the report.

Parameter	Description
Size	Enter the width and the height to adjust the size of the logo.
Select	The report is with a default HIKVISION logo. You can click Add and select a customized logo from the local PC.

5.3 Insert/Delete Object

You can insert or delete objects in the report.




Note

Inserting objects is not supported in the cover page, overview page, and appendix page.

- **Insert Text Object**
- **Insert Thermal Image Object**
- **Insert Visible Image Object**
- **Insert Measurement Result Object**
- **Insert Text Annotation Object**
- **Insert Remarks Object**
- Insert thermography parameter objects: **Insert Parameters (Global) Object** , **Insert Parameters (Measurements) Object**
- Insert information objects: **Insert Device Information Object** , **Insert Target Object Information Object**
- Insert temp. distribution chart object: **Insert Temperature Bar Chart Object** , **Insert Temperature Line Chart Object**
- **Insert Delta Object**
- **Insert Logo Object**
- **Delete Object**


Insert Text Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Text** to insert the object.
- In the toolbar, click  to insert the object.


Insert Thermal Image Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Thermal Image** to insert the object.
- In the toolbar, click  to insert the object.


Insert Visible Image Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Visible Image** to insert the object.
- In the toolbar, click  to insert the object.


Insert Measurement Result Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Result** to insert the object.
- In the toolbar, click  to insert the object.


Insert Text Annotation Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Text Annotation** to insert the object.
- In the toolbar, click  to insert the object.


Insert Remarks Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Remarks** to insert the object.
- In the toolbar, click  to insert the object.


Insert Parameters (Global) Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Thermography Parameter → Parameters (Global)** to insert the object.
- In the toolbar, click  → **Parameters (Global)** to insert the object.


Insert Parameters (Measurements) Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Thermography Parameter → Parameters (Measurements)** to insert the object.
- In the toolbar, click  → **Parameter (Measurements)** to insert the object.


Insert Device Information Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Information → Device Information** to insert the object.
- In the toolbar, click  → **Device Information** to insert the object.


Insert Target Object Information Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Information → Target Object Information** to insert the object.
- In the toolbar, click  → **Target Object Information** to insert the object.


Insert Temperature Bar Chart Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Temp. Distribution Chart → Temp. Bar Chart** to insert the object.
- In the toolbar, click  → **Temp. Bar Chart** to insert the object.


Insert Temperature Line Chart Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Temp. Distribution Chart → Temp. Line Chart** to insert the object.
- In the toolbar, click  → **Temp. Line Chart** to insert the object.


Insert Delta Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Delta** to insert the object.
- In the toolbar, click  to insert the object.

Insert Logo Object

Select one of the following:

- In the menu bar, click **Content → Insert Object → Logo** to insert the object.
- In the toolbar, click  to insert the object.

Delete Object

Select one of the following:

- Right-click the object, and click **Delete** to delete the object.
- Select an object, and in the menu bar click **Content → Delete** to delete the object.

Chapter 6 System Settings

You can set the general parameters of the client, including language, temperature unit, distance unit, image management path, etc.

Click **Settings** → **Language** to switch the language.

Click **Settings** → **Option** to enter the system settings page.

Preferences

- If **Default** is selected, click **Change** to change the default layout.
- If **Select Page Everytime** is selected, the **Select Template** window will pop up every time you click **Report** to generate the report.

Temperature Unit

You can switch the temperature unit of the measurement result according to your requirements. Supports Centigrade (°C), Fahrenheit (°F), or Degree Kelvin (K).

Distance Units

You can switch the distance unit according to your requirements. Supports both the Metric system and the Imperial system.

Library Location

You can set the saving path of the created library.

Chapter 7 More Functions

You can view the help information, such as the client version, user manual. On the image management page, you can switch the view to expand or fold all the images. On the image analysis page, you can switch the view to full-screen or restore the default layout of the client. You can also edit the image in advanced mode.

Click **Help** to do the following operations:

Help Information

Click **Help** to do the following operations:

- **View Client Information:** Click **About** to view the name, version, and open source license of the client.
- **View User Manual:** Click **User Manual** to quickly know the functions and operating procedures of the client.
- **Feedback:** Click **Feedback**, and scan the QR code to give your advice or problems about the client.

Expand/Fold the Images

Enter the  page.

- Click **View** → **Expand All** to display all the images in the image window by cards.
- Click **View** → **Fold All** to fold all the images in the image window, and only display the date of the images.



Note

According to your requirements, you can click  to expand the images in current date.

Switch Full Screen/Restore Default Layout

Enter the  image analysis page.

- Click **View** → **Full Screen** to display the image in full-screen.
- Click **View** → **Restore** to restore the default layout of the client.




Advanced Editing

You can adjust parameters like the lightness and sharpness of the image for better analysis.


Enter  page.

Click **Image** → **Advanced Editing** , or in the menu bar click  → **Advanced Editing** .

In the Image Adjustment area, 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 a 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.
Imaging Algorithm	When the Adjust Thermography Range function is not enabled, for different imaging algorithms, the detail enhancement effect is different. <ul style="list-style-type: none"> • Linear: This method is suitable when the difference between the minimum temperature and maximum temperature is large. • Histogram: This method is suitable when the difference between the minimum temperature and maximum temperature is small.

In the Image Enhancement area, set the following parameters as needed.

Parameter	Description
Digital Noise Reduction	Digital noise reduction can remove the noise from a signal to make the image clearer. Select noise reduction mode in the drop-down list.
Noise Reduction	Drag  or enter an integer on the right to adjust the noise reduction level.

Click **OK** to save current settings.

Click **Preview** to preview the effect after setting parameters.

Click **Reset** to restore default settings.

