HIKMICRO Studio

User Manual

Legal Information

About this Manual

The Manual includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version of this Manual at the HIKMICRO website (***http:// www.hikmicrotech.com***).
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Symbol Conventions

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

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

Contents

Chapter 1 Introduction

The client is designed to configure and manage devices in a unified and intuitive manner. It provides multiple functionalities, including device management, live view, video recording, real-time temperature information display, history temperature search, device remote configuration, etc.

This user manual describes the functions, configurations and operation steps 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 operations.

Chapter 2 Service Management

The Service is mainly applicable for data storage, data management, and data calculation. With continuous running and processing, it can manage the data, such as event records. It also provides management for user permissions, devices, logs, etc.

- You can view the module running status, and click **Edit Port** to edit its ports. You need to restart the Service to take effect.
- Check **Auto-Launch** to enable launching the Service automatically after the PC started up.

Note

- When exiting the client, you can choose to exit the Service at the same time.
- The Service should run on the same computer with the client.

Chapter 3 Device Management

The client supports thermographic automation cameras. After adding devices, you can perform live view, configure temperature measurements, view real-time temperatures, search history temperatures, etc.

3.1 Activate Devices

For the inactive devices, you are required to create a password to activate them before they can be added to the software and work properly.

Before You Start
Make sure the device to be activated is connected to the network and on the same subnet with the PC where the client runs.

Steps

Note

This function should be supported by the device.

1. On the Maintenance and Management panel on the right side of the client, Click **Device Management → Device** .
2. Click **Online Device** to show the online device list at the bottom of the page.
3. Select one or more inactive devices and click **Activate**.

Note

If multiple devices are selected, only one dialog window will pop up. Usually, the names and passwords of the selected devices are the same.

4. Create a password and confirm the password.

Caution

The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (using a minimum of 8 characters, including at least three kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.
Proper configuration of all passwords and other security settings is the responsibility of the service provider and/or end-user.

5. Click **OK** to activate the device.
6. **Optional:** In the Operation column, click ☑ to edit the network information (including device name, IP address, port number, etc.) for the online device.

3.2 Add Device

The client provides various device adding modes including IP/domain and IP segment. It also supports adding detected online devices.

3.2.1 Add Single or Multiple Online Devices

The client can detect online devices which are in the same network as the PC running the client. You can select a detected online device displayed in the online device list and add it to the client. For detected online devices sharing the same user name and password, you can add them to the client in a batch.

Before You Start
- The device(s) to be added are on the same network as the PC running the client.
- The device(s) to be added have been activated.

Steps
1. In the Maintenance and Management area, click **Device Management → Device** .
2. Click **Online Device** to show the online device list at the bottom of the page.
3. In the **Online Device** area, check one or more online device(s), and click **Add** to open the device adding window.
4. Enter the required information.

   Name

   Create a descriptive name for the device. For example, you can use a nickname that can show the location or feature of the device.

   IP Address

   Enter the device's IP address. The IP address of the device is obtained automatically in this adding mode.

   Port

   The port number of the device is obtained automatically in this adding mode and editing is supported.

   User Name

   Enter the user name of the device(s). By default, the user name is ***admin***.

   Password

   Enter the device password.

   ⚠️**Caution**

   The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (using a minimum of 8 characters, including

at least three kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.

Proper configuration of all passwords and other security settings is the responsibility of the service provider and/or end-user.

Import to Group

Check **Import to Group** to create a group by the device name, and import all the channels of the device to the group.

5. Finish adding the device.
   - Click **Add** to add the device and back to the device list page.
   - Click **Add and New** to save the settings and continue to add other devices.

3.2.2 Add Device by IP Address or Domain Name

If you know the IP address or domain name of the device to add, you can add devices to the client by specifying the IP address (or domain name), user name, password, etc.

Steps
1. In the Maintenance and Management area, click **Device Management → Device** .
2. Click **Add**.
3. Select **IP/Domain** as the adding mode.
4. Enter the required information.

Name

Create a descriptive name for the device. For example, you can use a nickname that can show the location or feature of the device.

IP Address

Enter the device's IP address. The IP address of the device is obtained automatically in this adding mode.

Port

Enter the device port No. The default value is *8000*.

User Name

Enter the user name of the device(s). By default, the user name is *admin*.

Password

Enter the device password.

> ⚠️ **Caution**
>
> The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (using a minimum of 8 characters, including at least three kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.
>
> Proper configuration of all passwords and other security settings is the responsibility of the service provider and/or end-user.

Import to Group

Check **Import to Group** to create a group by the device name, and import all the channels of the device to the group.

5. Finish adding the device.
   - Click **Add** to add the device and back to the device list page.
   - Click **Add and New** to save the settings and continue to add other devices.

3.2.3 Add Devices by IP Segment

If the devices share the same port No., user name and password, and their IP addresses ranges in the same IP segment, you can add them to the client by specifying information like start IP address and the end IP address, port No., user name, and password of devices.

Steps

1. In the Maintenance and Management area, click **Device Management → Device** .
2. Click **Add**.
3. Select **IP Segment** as the adding mode.
4. Enter the required information.

Start IP

Enter a start IP address.

End IP

Enter an end IP address in the same network segment with the start IP.

Port

Enter the device port No. The default value is *8000*.

User Name

Enter the user name of the device(s). By default, the user name is *admin*.

Password

Enter the device password.

⚠ **Caution**

The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (using a minimum of 8 characters, including at least three kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.
Proper configuration of all passwords and other security settings is the responsibility of the service provider and/or end-user.

5. **Optional:** Check **Import to Group** to create a group by the device name, and import all the channels of the device to the group.
6. Finish adding the device.
   - Click **Add** to add the device and back to the device list page.
   - Click **Add and New** to save the settings and continue to add other devices.

3.3 Manage Added Devices

After adding devices to device list, you can manage the added devices including editing device parameters, remote configuration, viewing device status, etc.

Table 3-1 Manage Added Devices

Edit Device	Click 📝 to edit device information including device name, address, user name, password, etc.
Delete Device	Check one or more devices, and click **Delete** to delete the selected devices.
Remote Configuration	On the device list page, click ⚙ in the Operation column to perform remote configuration for a device. For details, refer to the user manual of device.
Refresh Device Information	Click 🔄 to refresh and get the latest device information.

3.4 Group Management

The client provides groups to manage the added resources in different groups. You can group resources into different groups according to the resources' locations.

Example

For example, on the 1st floor, there are 64 cameras mounted. You can organize these resources into one group (named 1st Floor) for convenient management. You can perform operations like live view and do other operations of the devices after managing the resources by groups.

3.4.1 Group Resources

The client provides two methods of adding a group: customizing a group or creating a group by device name. After customizing a group, you need to import resources into this group manually. After creating a group by the device name, the resources of the device will be imported into the group automatically. You can choose one method to group your resources according to actual needs.

Steps

1. In the Maintenance and Management area, click **Device Management → Group** .

2. Add a group.

- **Customize a Group:** Click **Add Group** and create a name for the new group.
- **Create a Group by Device Name:** Click **Create Group by Device Name** and select an added device to create a new group by the name of the selected device. After creating a group by the device name, the resources (such as encoding channels, alarm inputs, alarm outputs, and access points) of the device will be automatically imported to the group.

> **Note**
>
> Up to 256 groups can be added.

3. After adding a group, you need to import resources into the group.

> **Note**
>
> For one resource, it can be added to different groups.

1) Select the type of resources to be imported, and click **Import**.
2) Select the resources to be imported, and click **Import** to import all the selected resources into this group.

4. Optional: After adding a group, perform the following operations.

Expand or Fold Resource List	• Click ▾ / ▾ to expand or fold the resource list in the group. • Right-click a group name and select **Expand All**/**Collapse All** to delete the group.
Search Resource	Enter the keyword and click 🔍 to search target resources.
Remove Resource from Group	Select the resource(s) of a group and click **Delete** to delete the selected resource(s).

Delete Group	• Select a group and click **Delete Group** to delete the group.
	• Hover the cursor over a group and click ⊠ to delete the group.
	• Right-click a group name and select **Delete** to delete the group.
Rename Group	• Hover the cursor over a group and click ☑ to rename the group.
	• Right-click a group name and select **Rename** to rename the group.

3.4.2 Edit Resource Parameters

You can edit parameters of a resource in a group.

Before You Start
Make sure the resources have been imported to the group.

Steps
1. In the Maintenance and Management area, click **Device Management → Group** .
2. Select a group in the group list and click **Encoding Channel**.

   The resources imported to the group will be displayed.
3. In the Operation column, click ☑ .
4. Edit the camera information, including the camera name, the stream type, etc.

   Stream Type

   If **Auto-Change Stream Type** is selected, camera will select a stream type according to its display window size. When the window division number is smaller than 9, the stream type will be main stream, otherwise sub stream.

   Rotation Type

   Select the rotate type for the live view or playback of the camera as desired.

   Protocol Type

   Select the transmission protocol for the camera. You should start live view again to take effect.

   Streaming Protocol

   Select the protocol as RTSP or private for getting stream when live view. You should start live view again to take effect.
5. Click **OK**.
6. **Optional:** Click **Copy to...** to copy the configured parameters to other cameras.
7. **Optional:** Perform the following operations.

Remote Configuration	In the Operation column, click ⚙ to perform remote configuration for a device. For details, refer to the user manual of device.
Update Resource Name	You can update the resource names in a channel.
	Select the resource(s) and click **Update Camera Name** to update the selected camera names.

Note

This function should be supported by the device.

Chapter 4 Live View

For the surveillance task, you can view the live video of the added network cameras on the Main View page. And some basic operations are supported, including picture capturing, manual recording, window division, PTZ control, real-time temperature measurement.

4.1 Live View Toolbar

The live-view toolbar can help you operate and manage the live-view window more conveniently. For example, you can capture picture, record the audio, adjust the volume, and split the window by the one-click of the tools on the toolbar.

Table 4-1 Descriptions of Toolbar

Icon	Function Name	Function Description and Operation
▣	Stop Live View	Stop all the live view cameras.
🔊 / 🔊	Mute/Cancel Mute	Click 🔊 to pop up the volume bar, and click 🔊 to cancel the mute and you can adjust the volume.
		Click 🔇 to pop up the volume bar, and click 🔇 again to set the live-view cameras as mute.
▦	Window Division	Select the different window division mode for live view. Click ▦ to select one window division mode (e.g. 9 window division).
		You can also click **Add** to customize a window division mode.
⛶	Full Screen	Display the live view in full screen. Press **Esc** key to exit full screen mode.

Table 4-2 Description of Icons on Live View Window

Icon	Function Name	Function Description and Operation
▣	Stop Live View	Stop the live view of the current window.
◻	Capture	Manually capture the pictures for the live view window.
▣	Capture Raw Image	Manually capture a raw image during live view.
◉ / ◉	Cap Raw Video	Click ◉ to start recording and click ◉ to stop recording, and automatically save the recording files to the path you have set.

Icon	Function Name	Function Description and Operation
◎ / 🔴	Start Recording/ Stop Recording	Click the first time to start recording and click again to stop recording, and automatically save the recording files to the path you have set.
🖈	Manual Temperature Measurement	Click on the live view image to show the temperature of the selected point. The temperature of the clicked points is displayed on the image, and the display duration is dependent on the device's configuration.
♟	PTZ Control	Start PTZ mode for speed dome. Click and drag in the view to perform the PTZ control. For details, refer to ***PTZ Control*** .
🎤	Two-Way Audio	Start the two-way audio with the device in live view.
🔍	Digital Zoom	Enable the digital zoom function. Scroll the wheel to enlarge the live view image.
⚏	Stream	Select a stream type as needed.

📖ℹ️**Note**

You can also right-click the live video image to enable the functions corresponding to the icons on the live view window.

4.2 Customize Window Division

The client provides multiple kinds of predefined window divisions. You can also customize window divisions as desired.

Steps

1. On the Home page, click **Main View**.
2. At the bottom of the page, click ▦ .
3. Click **Add**.
4. Create a name for the custom division.
5. Enter the window numbers in both horizontal and vertical dimensions.
6. **Optional:** Drag your mouse to select the adjacent windows, and click **Joint** to joint them as a whole window.
7. **Optional:** Select the joint window and click **Restore** to cancel the joint.
8. Click **Save**.

📖ℹ️**Note**

Up to 5 window divisions can be customized.

9. **Optional:** After customizing the window division, perform the following operation.

| **Edit Custom Division** | Click ▦ → **Edit** to edit the division. |
| **Delete Custom Division** | Click ▦ → **Edit** → **Delete** to delete the division. |

4.3 Start Live View

You can start live view after adding the device(s) to the client so that you can get to know the monitored area well. You can start the live view of one camera or all cameras in a group.

Click **Main View** → **Device** . On the left resource list, select the resource(s) and start live view by the following methods.

Method	Description	Operation
Start Live View for One Camera	Start the live view of only one camera in a group.	• Select a camera and drag it to the window. • Double-click the camera in a group. • Move your cursor over the camera name, and click ⊙ .
Start Live View for Camera Group	Start the live view of all cameras in one group synchronously.	• Select a group and drag it to the window. • Double-click the group. • Move your cursor over the group name, and click ⊙ 。

📖**Note**

If the device supports stream encryption, and the stream of its live view is encrypted, you are required to enter a stream key for double verification.

4.4 Measure Real-Time Temperature

During the live view, you can monitor real-time temperatures. By configuring measurements and measurement parameters, you can also monitor temperatures of specific areas and spot.

4.4.1 Configure Measurements

The measurements include point measurement, line measurement, and area measurement to meet the requirements of different temperature measurement scenes.

1. Start the live view.
2. Right-click a live view window and select **Edit Measurement** to open the configuration window.
3. Switch on **Enable ROI Thermometry** or select the detection mode as **Expert Mode** to measure temperature of interested areas or spots.

Note

- The parameters displayed may vary with different devices.
- This function is not supported by handheld devices.
- When the mode is **Normal Mode**, configuring measurements is not supported.

---

4. Create a name for the measurement.
5. Perform one of the following operations to draw measurements.

Note

The maximum number of measurements is determined by the device capability.

Figure 4-1 Measurements

Point Measurement

You can customize a measurement point to view the temperature of this point.
Click ⊹ , and click on the live view image to select a point to be monitored. The customized point will be added.

Line Measurement

Click ╲ , and then draw a line on the live view image.

Area Measurement

Supports drawing areas (including rectangle, circle, ellipse, and polygon) for measurement. You can draw different area shapes as needed. For example, for an irregular area, you can choose to draw a polygon for measurement.

- Click ☐ and left-click the mouse to draw the area, which will be displayed as a rectangle, circle, or ellipse automatically. Right-click the mouse to finish drawing the area.
- Click ⬠ 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 drawing the polygon.

Delete Measurement

Click ▷ to delete the selected measurement.
Click 🗑 to delete all measurements.

Edit Measurement

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

4.4.2 Set Measurement Parameters

You can set different measurement parameters for better temperature monitoring.

Open the measurement configuration window.

Set parameters as needed and click **OK**.

Alarm Type

When the max. temperature / avg. temperature / min. temperature is above or below the alarm temperature or pre-alarm temperature, the alarm will be triggered.

Pre-Alarm Temperature

When the max. temperature / avg. temperature / min. temperature is above or below the pre-alarm temperature, the alarm will be triggered.

Alarm Temperature

When the max. temperature / avg. temperature / min. temperature is above or below the alarm temperature, the alarm will be triggered.

Distance

The distance between the object and the thermal device.

Emissivity

Every object has emissivity, which can be affected by surface temperature, surface roughness, degree of oxidation, coating, etc. Emissivity = Measured Value / 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.

Reflected Temperature

When objects with low emissivity are monitored, the reflected temperature can be significantly affected. The way of measuring reflected 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 reflected temperature.

⌊i⌋Note

Click **Remote Configuration** to perform remote configuration for a device. For details, refer to the user manual of device.

4.4.3 View Real-Time Temperature

During the live view, you can view global temperature information. If you have configured measurements, you can also view temperature information of specific areas or spots.

Enter the **Main View** module and start the live view of the device(s). The real-time temperature line chart will be displayed.
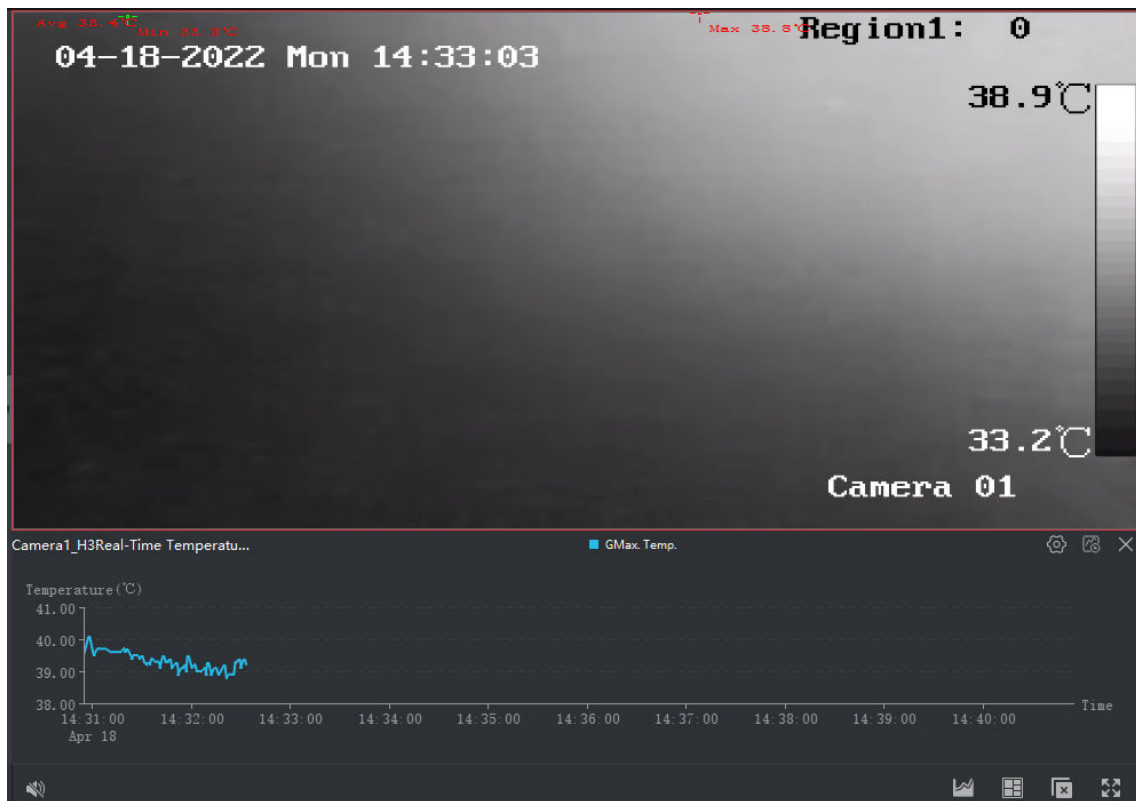
> **Note**
> - If no measurement is configured, the temperature information is global. Under the live view windows, click ⚙ to view the global temperature line chart.
> - If measurements have been configured, under the live view windows, click ⚙ to view the temperature line chart of the measurement(s).
> - Move the cursor over the chart to view temperature details.

Figure 4-2 Real-Time Temperature Line Chart

You can perform the following operations as needed.

- Right-click a live view window, and select **Hide Measurement** to hide measurements on the live view image.
- Right-click a live view window, select **Display Temperature Info.**, and select **Max. Temp.**, **Min. Temp.** or **Avg. Temp.** to display the selected temperature type on the live view image.
- Right-click a live view window and select the **Display Mode**.

  Live View Mode

  The window only display the live view.

  Temperature Mode

The widow display only display real-time temperature information.

📖**Note**

For the same resource, you can display the content under the two modes in two windows respectively at the same time.

• In the lower right corner of the client, click 📈 to hide or display the temperature line chart.
• Click 🔲 to enter **Search History Temperature** module and search history temperature information. For details, refer to ***Search History Temperature*** .

4.5 PTZ Control

The software provides PTZ control for cameras with pan/tilt/zoom functionality. During the PTZ control, you can set preset, patrol, and pattern, and you can also open a new window for controlling the PTZ.

📖**Note**

Some functions should be supported by the device.

4.5.1 PTZ Control Panel

The software provides PTZ control operations via control panel, such as detection, speed, zoom in, zoom out, etc.

Enter the **Main View** module, and select **PTZ Control** to open the PTZ control panel.

The following icons are available on the PTZ control panel.

Table 4-3 Icons on PTZ Control Panel

Icon	Name	Description
	PTZ	Click or hold the left mouse button to turn the PTZ around. Click 🔄 to turn around the PTZ horizontally and continuously; click again to stop turning.
	Speed Control	Drag the slider to adjust the PTZ moving speed.
	Zoom In/Out	Zoom in to view close image for details; zoom out to view a panoramic image.
	Focus +/-	Click **Focus +** move the focal point forward, and click **Focus -** to move the focal point backward.

Icon	Name	Description
	Iris +/-	Used for adjusting the luminance of the image. The larger the iris is, the more the light enters, and the brighter the image will be.
	3D Positioning	Use the left key of mouse to click on the desired position in the video image and drag a rectangle area in the lower right direction, then the dome system will move the position to the center and allow the rectangle area to zoom in. Use the left key of mouse to drag a rectangle area in the upper left direction to move the position to the center and allow the rectangle area to zoom out.
	Auxiliary Focus	Click to focus automatically.
	Lens Initialization	Initialize the lens and focus again for a clear image.
	Light	Click to fill light.
	Wiper	Use the wiper to clear the dust on the camera lens.
	Manual Tracking	For speed dome with auto-tracking function, enable the auto-tracking (via right-click menu) for it and click the icon to manually track the target by clicking on the video.
	Menu	For analog speed dome, click the icon to display its local menu. For detailed operation of the menu, refer to user manual of the speed dome.
	One-Touch Patrol	For speed dome with one-touch patrol function, click the icon and the speed dome starts patrol from the predefined preset No.1 to preset No.32 in order after a period of inactivity (park time). For setting the park time, refer to user manual of the speed dome.
	One-Touch Park	For the speed dome with one-touch park function, click the icon and the speed dome saves the current view to the preset No.32. The device starts to park at preset No. 32 automatically after a period of inactivity (park time). For setting the park time, refer to user manual of the speed dome.
	Enable Manual Lens De-Icing Heater	Enable this function to ensure the camera performance by heating.

Icon	Name	Description
		Note We suggest you enable this function when the environment temperature is under 0 °C, otherwise the high temperature may affect the camera work.
	Manual Face Capture	Click this button, and hold the left mouse button to select a face in the image to capture it. The picture will be uploaded to the server for viewing.
	Synchronize FOV	For thermal cameras, click the icon to synchronize the optical channel's field of view with that of the thermal channel.
	Regional Focus	For speed domes, click the icon and draw a rectangle on the image to optimize the focus effect in this region.
	Regional Exposure	For speed domes, click the icon and draw a rectangle on the image to optimize the exposure effect in this region.

4.5.2 PTZ Control in Window

With the PTZ control direction icons in the live view window, you can make the PTZ scan automatically and move to the direction of the icon.

Right-click a live view window, and select **Open PTZ Control**. The live view window will be divided into 3×3 virtual areas which will not be displayed on the interface. Move the cursor over different areas, the PTZ control icons will be displayed.

Click the central area, the PTZ will scan automatically; click the other areas, the PTZ will move to the direction of the icon, and will move quickly via long pressing the mouse.
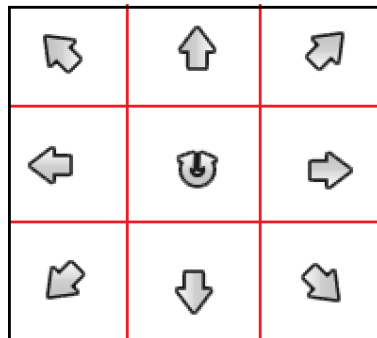
Figure 4-3 PTZ Control in Window

4.5.3 Set Preset, Patrol, and Pattern

PTZ control supports setting and calling a preset, patrol, and pattern.

On the Home Page, click **Main View → PTZ Control** to show the PTZ Control panel.

Task	Definition	Operation
Preset	A preset links the key regions to mobile PTZ position and status. Monitoring people uses it to positioning to key regions rapidly. By sending setting preset command, mobile PTZ records the position and status of zoom, focus, and iris. When executing calling preset command, mobile PTZ rapidly rolls to the set position and resume to set status.	Click 🚩 . How to Set: select a preset from the preset list→turn the camera to a desired position→click 💾 。 Move the cursor over a preset and click ❎ to delete it. How to Call: click ▶ 。
Pattern	By recording pattern, the movement path and the dwell time in a certain position can be recorded precisely. By calling pattern, mobile PTZ starts move totally according to the recorded path.	Click ⤴ . How to Set: click ◉ to start recording a pattern→click the direction buttons to shape the pattern→click ◼ . Move the cursor over a pattern and click ❎ to delete it. How to Call: click ▶ .

Task	Definition	Operation
Patrol	Patrol is the function that users specify a scan track with a group of defined presets. The patrol between two presets is performed with the set speed and time.	⬚i Note Make sure at least two presets have been set. Click 🔄 . How to Set: click ➕ →select presets, and set speed and time→click **OK**. Move the cursor over a patrol and click ✕ to delete it.
		How to Call: click ⊙ .

4.6 Manually Record and Capture

During live view, you can manually record normal/raw videos, and capture normal/raw images, and then view the recorded videos and captured images on the local PC.

⬚i **Note**
You can record raw videos and normal videos at the same time.

4.6.1 Manually Record Video

You can record the live video on the Main View page manually, and store the video files in the local PC.

Steps
1. Open the **Main View** page.
2. Start the live view.

   ⬚i **Note**
   See *Start Live View* for details.

3. Perform one of the following operations to start manual recording.
   - Move the cursor to the live view window to show the toolbar and click ⊙ on the toolbar.
   - Right-click on the live video and click **Start Recording** on the right-click menu.
4. Click 🔴 to stop the manual recording.

⌈i⌉**Note**

- During the manual recording, the icon of the camera turns to ⟐ .
- The saving path of the recorded video files can be set on the **System Configuration → File** page.

The recorded video file is automatically saved to the local PC, and a small window with the saving path information pops up in the lower-right corner of desktop. Click **Open Folder** to open the folder of the recorded file on the local PC.

4.6.2 Manually Record Raw Video

You can record raw videos during live view manually, and store the recorded files on the local PC.

Steps

1. Open the **Main View** page.
2. Start the live view.

⌈i⌉**Note**

See ***Start Live View*** for details.

3. Perform one of the following operations to start recording a raw video.
    - Move the cursor to the live view window to show the toolbar and click ⟐ on the toolbar.
    - Right-click on the live video and select **Start Recording Raw Video**.
4. Click ⟐ to stop recording.

⌈i⌉**Note**

During the manual recording, the icon of the camera turns to ⟐ .

The recorded video file is automatically saved to the local PC, and a small window with the saving path information pops up in the lower-right corner of desktop. Click **Open Folder** to open the folder of the recorded file on the local PC; click **Open File** to further analyzer the raw video. For details about video analysis, refer to ***Thermography Analysis and Report*** .

⌈i⌉**Note**

The saving path of the recorded video files can be set on the **System Configuration → File** page.

4.6.3 View Local Videos

You can view the recorded videos and raw videos stored on your local PC.

Steps

1. Click ☰ **→ File → Open Video File** in the upper-right corner.
2. Select the camera to search the recorded video files.
3. Specify the start time and end time in the lower-left corner for the searching.

4. Click **Search**.

The video files recorded between the start time and end time displays in the thumbnail format on the page.

5. **Optional:** Perform the following operations after the search.

Only Display Normal/Raw Videos	Select **Video/Raw Video**.
Playback	Double-click a normal video file to start local playback.
	During the playback, operations including pause, stop, speed, single frame, digital zoom, volume control, capture, and opening file are supported.
Analyze Recorded Raw Video	Double-click a raw video file to further analyze its temperature information. Before analysis, make sure you have installed relevant component for temperature analysis. For details about video analysis, refer to ***Thermography Analysis and Report*** .
Delete Video File(s)	Select one or multiple video files, and click **Delete**.
Save Video File(s)	Select one or multiple video files, and click **Save as**.

4.6.4 Capture Pictures

You can capture pictures during the live view.

Steps

1. Open the **Main View** page.

2. Start the live view.

Note

See ***Start Live View*** for details.

3. Perform one of the following operations to capture pictures.
   - Move the cursor to the live view window to show the toolbar and click 🔲 on the toolbar.
   - Right-click the live video and click **Capture** on the right-click menu.

The captured picture is automatically saved to the local PC, and a small window with the picture thumbnail and saving path information pops up in the lower-right corner of the desktop. Click **Open Folder** to open the folder of the captured image on the local PC.

Note

The saving path of the captured pictures can be set on the **System Configuration → File** page.

4.6.5 Capture Raw Images

You can capture raw images during the live view.

Steps
1. Open the **Main View** page.
2. Start the live view.

📖**i**Note

See ***Start Live View*** for details.

---

3. Perform one of the following operations to capture raw images.
   - Move the cursor to the live view window to show the toolbar and click ▣ on the toolbar.
   - Right-click the live video and select **Capture Raw Image**.

   The captured picture is automatically saved to the local PC, and a small window with the picture thumbnail and saving path information pops up in the lower-right corner of the desktop. Click **Open Folder** to open the folder of the captured image on the local PC; click **Open File** to further analyzer the raw image. For details about image analysis, refer to ***Thermography Analysis and Report*** .

   📖**i**Note

   The saving path of the captured pictures can be set on the **System Configuration → File** page.

4.6.6 View Captured Images

The normal/raw images captured during the live view are stored on the PC running the software. You can view the captured images if needed.

Steps
1. Click ▤ → **File** → **Open Captured Image** in the upper-right corner.
2. Select the camera to search the captured images.
3. Specify the start time and end time in the lower-left corner for the searching.
4. Click **Search**.

   The images captured between the start time and end time display in thumbnail format on the page.
5. Perform the following operations after the search.

Only Display Normal/Raw Images	Select **Image/Raw Image**.
Preview Image	Double-click a normal image thumbnail to enlarge it for a better view.
Analyze Image	Double-click a raw image to further analyze its temperature information. Before analysis, make sure you have installed relevant component for

temperature analysis. For details about image analysis, refer to ***Thermography Analysis and Report*** .

Delete Image(s)   Select one or multiple captured image(s), and click **Delete**.

Save Image(s)   Select one or multiple captured images, and click **Save as** to save a new copy of the selected image(s).

4.7 More Functions

There are some more functions supported in the live view, including two-way audio, setting stream type, and locking the client.

Two-Way Audio

Two-way audio function enables the voice talk of the camera. You can get not only the live video but also the real-time audio from the camera. If the device has multiple two-way audio channels, you can select a channel to start two-way audio.

⃞ℹ️Note

- The two-way audio can be used for only one camera at one time.
- When a device (channel) has started two-way audio with a client, the new request for two-way audio will be failed.

Adjust Volume

Right-click a live view window and select **Audio On** to adjust the volume. Right-click again and select **Mute** to disable the audio of the live view.

Full Screen

Right-click a live view window and select **Full Screen** to enter the full-screen mode. Right-click again and select **Quit Full Screen** or press **Esc** to exit.

Lock/Unlock Client

At the top of the client, click 🔒 to lock the client.
Click **Unlock** to enter the login password and click **Unlock** to unlock the client.

Edit Resource Name

In the resource list, move the cursor over a camera name, and click ⋯ → **Modify Camera Name** to edit the name.

Remote Configuration

In the resource list, move the cursor over a camera name, and click ⋯ → **Remote Configuration** to perform remote configuration for a device. For details, refer to the user manual of device.

Set Stream Type

Auto-Change Stream Type

Camera selects stream type according to its display window size. When the window division number is smaller than 9, the stream type will be main stream, otherwise sub stream.

Three ways are provided for setting stream type:

- In the resource list, hover the cursor on a camera's name and click ▪▪▪ → **Stream** to select a stream type, or click **Auto-Change Stream Type**.
- Click ⬡ in the live view tool bar and select a stream type.
- Right-click a live view window and click **Stream** to select a stream type for the camera.

ℹ**Note**

This function needs to be supported by device.

Lock Client in Full Screen Mode

Press **Ctrl** and **L** on your keyboard to lock the client after entering the full screen mode. After locking the client, you will be unable to operate the client including the other windows in the current window division mode. Click **Unlock** on the top and enter the login password for the client and click **Unlock** to unlock the client.

Chapter 5 Thermography Analysis and Report

5.1 Image Analysis

5.1.1 Navigation for Image Analysis Page
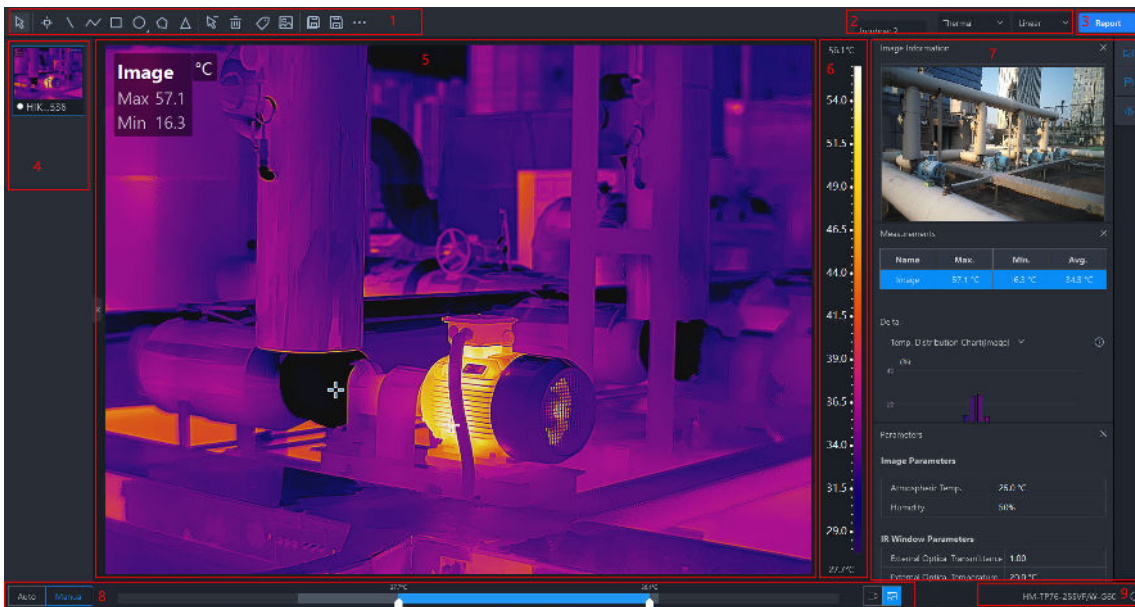
Figure 5-1 Image Analysis Page

No.	Description
1	Toolbar. Including measurement tools, exporting and saving images, editing the color of measurement tools, etc.
2	Select palettes and image display mode.
3	Export the image analysis report.
4	Analysis Task List: Before image analysis, the image should be added to the analysis task list. You can switch the image that is being analyzed currently. Hover the cursor over a thumbnail in the list and click ✖ to remove from the list.
5	Image Window: Displays the enlarged image. You can draw measurement tools in the window and view the temperature results overlaid on the image and displayed in the Measurements pane.

No.	Description
6	Temperature Scale: The temperature scale will change with the adjustment in Level & Span. **[i] Note** Only when the Imaging Algorithm is linear, the scale mark will be displayed on the temperature scale.
7	Image Information, Measurements, and Parameters Pane: You can drag the pane to a position as needed. • [img] Image Information: View the visual image, capture time, image resolution, etc. • [img] Measurements: View temperature measurement results of the whole image or of the selected measurement tool on the image. • [img] Parameters: Configure temperature measurement parameters.
8	Level & Span: You can adjust the temperature scale close to the temperature of the target in Manual/Auto mode.
9	The serial No. and the device model of the device which captured the image.

5.1.2 Add Text Annotation

You can add text annotations to images, for the convenience of filtering images.

1. On the Image Analysis page, select an image and click [img] on the right to open the Image Information panel.

Figure 5-2 Image Information

2. Click 🗩 and enter the text annotation in the box. You can view the entered annotation in the Comments Row.

⌊i⌋Note

The added text annotation will be auto-filled into the text annotation object.

5.1.3 Temperature Measurement Tools

Add a Measurement Tool

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

Do one of the following to select a measurement tool:

- In the menubar, click **Measurement** to select a measurement tool.
- In the tooblar, select a measurement tool.

The following is the description on how to add measurement tools in the toolbar:

Spot

Line

Polyline

Area

Temperature Difference (Delta) Calculation

Spot

Click ⊹ to add a spot measurement tool to the location as needed on the image. Double-click ⊹ to add spots continuously on the image.

Line

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

Polyline

Click ⌇ , and then draw a polyline for measurement on the image. Up to 10 nodes are supported when drawing a polyline.

Area

You can measure temperatures in areas by adding tools including rectangle, circle, ellipse, and polygon. You can draw different shapes according to the actual scenarios. For example, for an irregular area, you can select polygon measurement tool for measurement.

- Click ▢ , ◯ or ◯ , and left-click the mouse to draw an area.
- Click ⬠ , and 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. Up to 10 nodes are supported when drawing a polygon.

Temperature Difference (Delta) Calculation

After setting the formula, the delta between temperatures will be calculated automatically and you can view the delta in the Measurements panel.

[i]**Note**

At least one delta has been added on the image.

In the toolbar, click △ to set the following parameters:

Name

   Create a name for the delta.

Formula (Required)

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

[i]**Note**

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

Edit a Measurement Tool

Move a Measurement Tool
Resize a Measurement Tool
Edit Delta Calculation
Modify Display Color of Measurement Tool

Move a Measurement Tool

In the toolbar, click ⬚ , select a measurement tool on the image and drag it to a new location.

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.
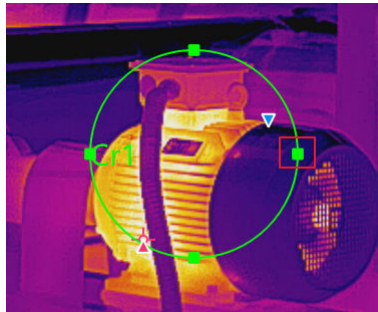
Figure 5-3 Resizing a Measurement Tool

Edit Delta Calculation

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

Modify Display Color of Measurement Tool

If the display color of a measurement tool is similar to the color of the image, making it difficult to distinguish it from the image, you can modify the color of the measurement tool.
1. In the toolbar, click ⬚ .
2. Select a measurement tool on the image.
3. Right-click the measurement tool and select **Measurement Attributes**.
4. In Color, select a color and click **OK**.

ⓘ Note

In the menubar, click **Measurement → Edit Measurement Color** , and in the drop-down list of Default Color, select a color. After the modification, newly added measurement tools and deltas will be displayed in the new color, and the color of those added before remains the same.

Delete a Measurement Tool

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

[i]**Note**

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

Delete One Measurement Tool

- Click [icon] and select a measurement tool on the image to delete it.
- Right-click a measurement tool and select **Delete Measurement**.
- Select a measurement tool on the image, and in the menubar, click **Measurement → Delete Measurement** .

Clear All Measurement Tools

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

Delete Delta

In [icon] Measurements pane, right-click a measurement tool and select **Delete**.

Set Measurement Parameters

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

Measurement Parameters
Configure Measurement Parameters

Configure Measurement Parameters

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

⫯**Note**

- You can drag the window to the middle of the client for a convenient view. 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 Image, which indicates the measurement parameters of the current image.
- If you need to configure the parameters of the other measurement, select the measurement in the image, or select the measurement on the right side of the **Measurement Parameters**, and configure the parameters of the new selected measurement.
- If the measurement parameter is selected as Image, click ▤ to synchronize the measurement parameters of the image to all measurements of the current image.

Measurement Parameters

Atmospheric Temperature

It refers to the actual temperature of the measured environment.

Humidity

Measure the moisture content in the air.

External Optical Transmittance

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

External Optical Temperature

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

Emissivity

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

Distance

The distance between the object and the thermal device.

Reflected Temperature

The reflected temperature will affect temperature measurement results.

Alarm Type/Threshold

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

Delta
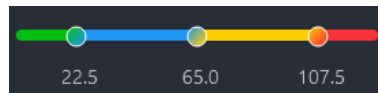
Figure 5-4 Delta

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 Measurements 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.

Calculate Area

Support 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 Measurements pane.
3. In **Area Calculation**, click the value filed to set the pixel pitch, the focal length, and the distance according to actual needs.

   The calculated area is displayed at the bottom of the Measurements pane.

Overlay Measurement Results

After enabled, you can select measurement tools, temperature types, and deltas to be overlaid on the image to view measurement results conveniently.

Steps
1. In the menubar, click 🖻 .
2. In the **Overlay Settings** window, select the position to overlay measurement results.
3. Check the measurement tools, temperature types, and deltas to be overlaid on the image.
4. Click **OK**.

Apply Measurement Tools to All Images in Analysis Task List

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

Do one of the following:
- In the menubar, click **Measurement → Apply Measurements to All** .
- On the Library tab, right click an image in a folder, and select **Apply Measurements to All**.

Apply Image Parameters to All Images in Analysis Task List

When analyzing multiple images at a time, you can apply the image settings to the others in the analysis task list to improve image analysis efficiency.

In the menubar, click **Image → Apply Image Settings to All** , and the settings of the current image (palettes type, image display mode, and advanced settings) will be applied to the others in the analysis task list.

5.1.4 Temperature Alarm Analysis

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

Enable/Disable Alarm Analysis

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

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

   ⓘ Note

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

Change Alarm Color of Measurement Tool

You can change the alarm color of measurement tools. For example, if the alarm color of the measurement tool is close to the color of the image, you can change the color of the measurement tool.

Steps

1. Do one of the following to open the Color settings window:
   - In the menuebar, select **Measurement → Edit Measurement Color** .
   - In the toolbar, click ⋯ **→ Edit Measurement Color** .
2. In **Alarm Color** drop-down list, select an alarm color as needed.

   All old and new measurement tools whose measrement results is above or below alarm thresholds will be displayed in the new alarm color.

Re-tag Images

If you need to reset the tag color of an image set on the device or in the Image Management tab, you can retag the image during image analysis.

In the toolbar, click 🏷 to select a tag color. After selection, the tag color of the image in the Image Management page will also be changed.

5.1.5 Image Editing Tools

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

📖 Note

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

Thermal

Thermal imaging is based on the difference of infrared radiation of objects. The thermal device can transfer the infrared radiation distribution emitted naturally on the surface of objects into visual images. Since different objects or different parts of the same object have different thermal radiation characteristics (e.g. temperature difference and emissivity), different objects can be distinguished because of their differences in thermal radiation. We can monitor the environmental temperature change in time according to the thermal image. The thermal mode has the advantages of wide detection range, 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.

You can do one of the following to set the display mode as Thermal:

- In the menu bar, click **Image → Display Mode → Thermal** .
- In the upper-right corner of Image Analysis page, select **Thermal** in the drop-down list.
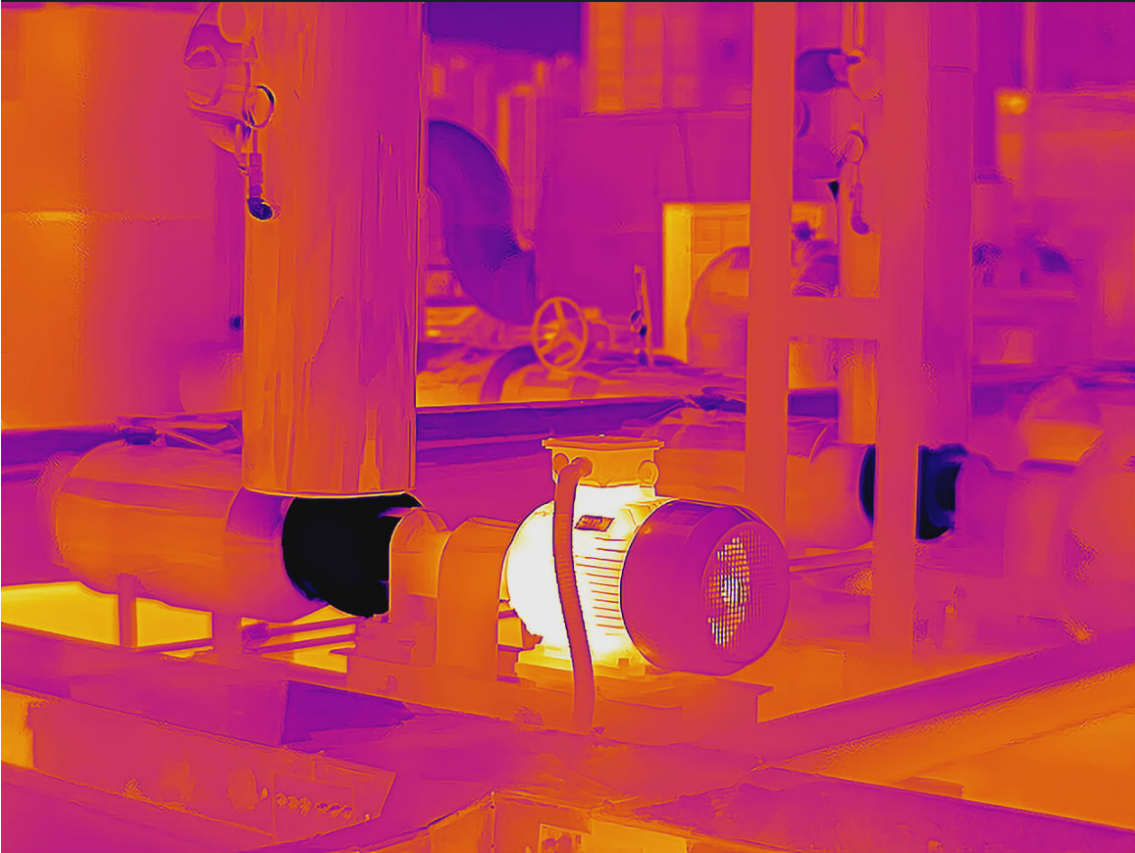
Figure 5-5 Thermal

Fusion

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

You can do one of the following to set the display mode:

- In the menu bar, click **Image → Display Mode → Fusion** .
- In the upper-right corner of Image Analysis page, select **Fusion** in the drop-down list.

📖**Note**

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

- Click 🔍 / 🔍 to zoom in/out the visual image. You can also press the PLUS/MINUS key to zoom in/out the image.
- Click ↑ / ↓ / ← / → to adjust the position of the visual image. You can also press the direction keys on the keyboard to adjust the position.
- Click **Reset** to restore the position of the visual image to the position when the visual image is captured..
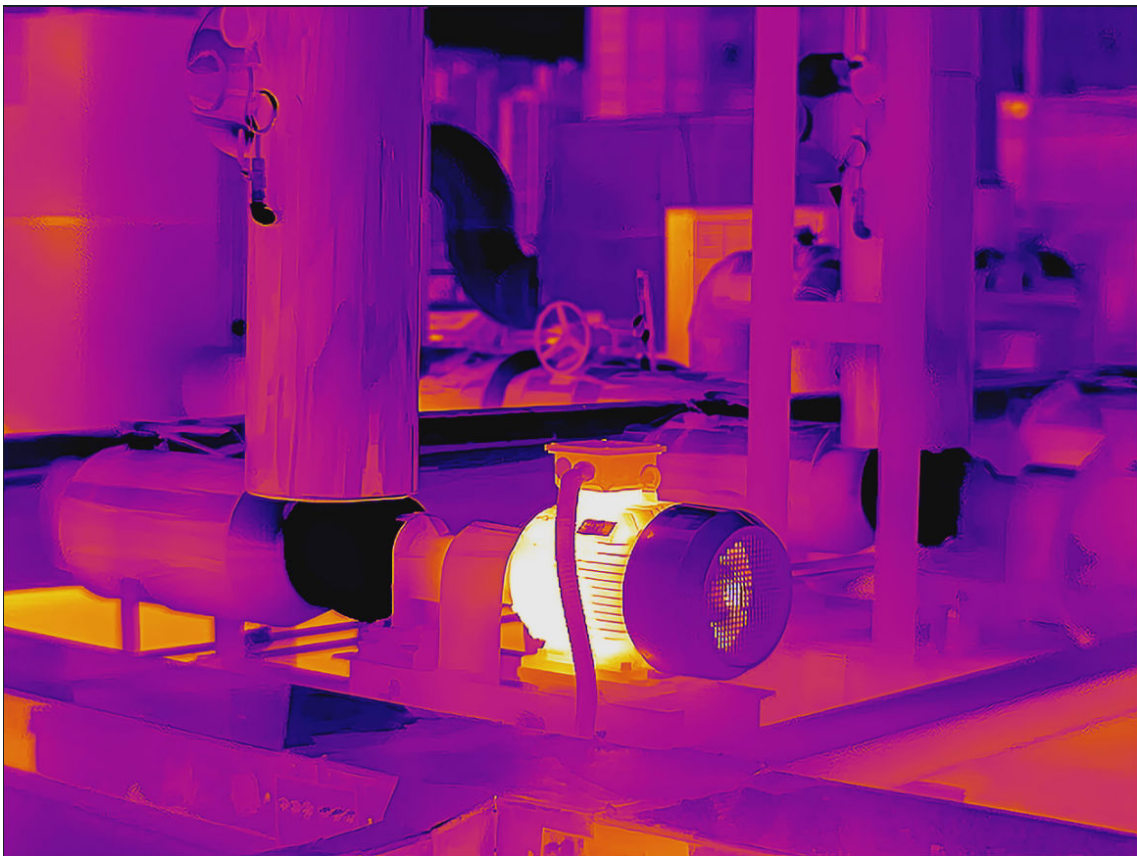
Figure 5-6 Fusion

Blending

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

1. You can do one of the following to set the display mode:

- In the menu bar, click **Image → Display Mode → Blending** .
- In the upper-right corner of Image Analysis page, select **Blending** in the drop-down list.

2. Drag the slider left of right to adjust the thermal/visual balance.
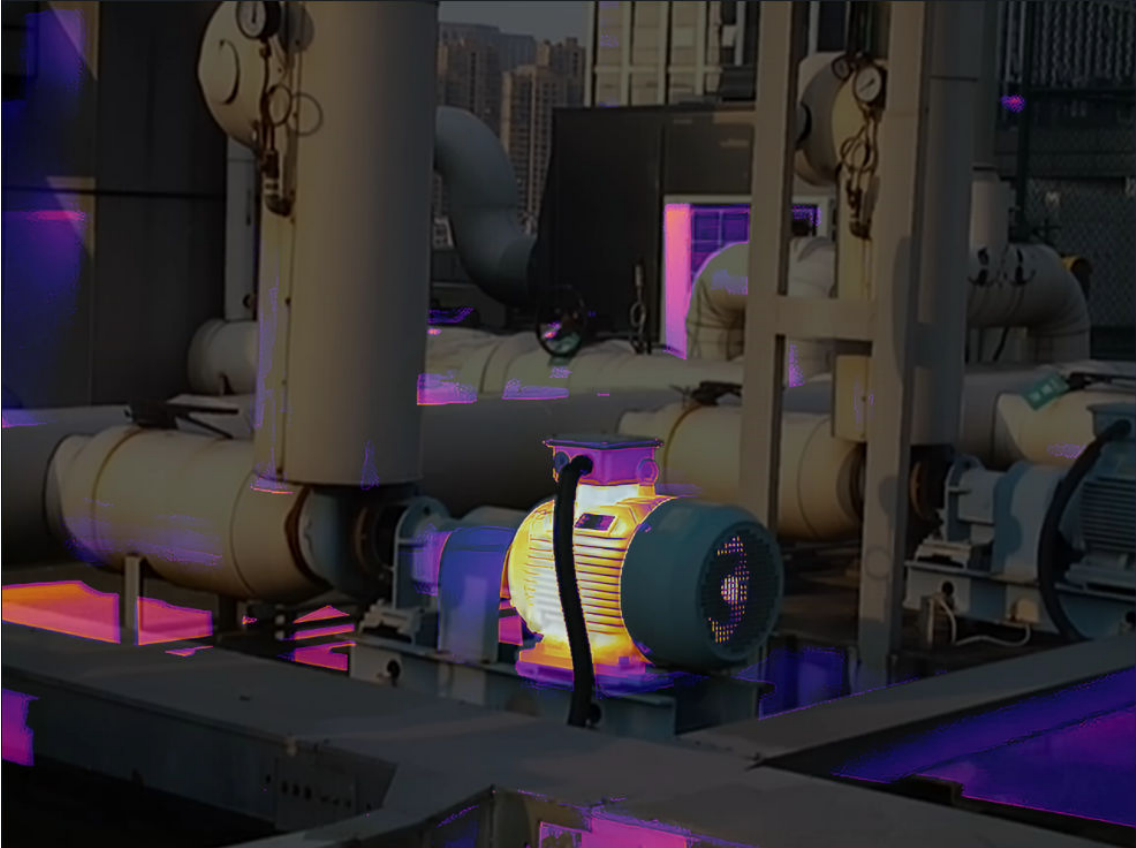
Figure 5-7 Blending

PIP (Picture in Picture)

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

You can do one of the following to set the display mode as Thermal:
- In the menu bar, click **Image → Display Mode → PIP** .
- In the upper-right corner of Image Analysis page, select **PIP** in the drop-down list.
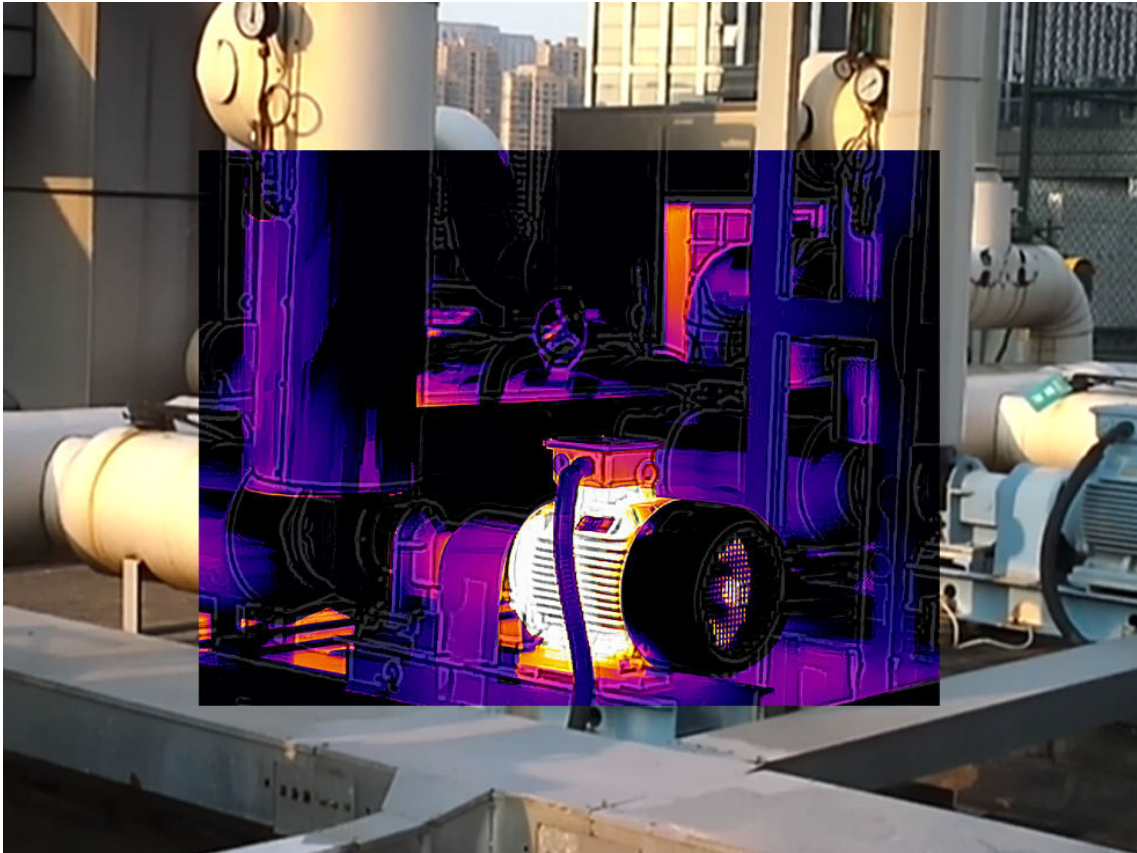
Figure 5-8 Picture in Picture

Visual

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

You can do one of the following to set the display mode as Visual:
- In the menu bar, click **Image → Display Mode → Visual** .
- In the upper-right corner of Image Analysis page, select **Visual** in the drop-down list.
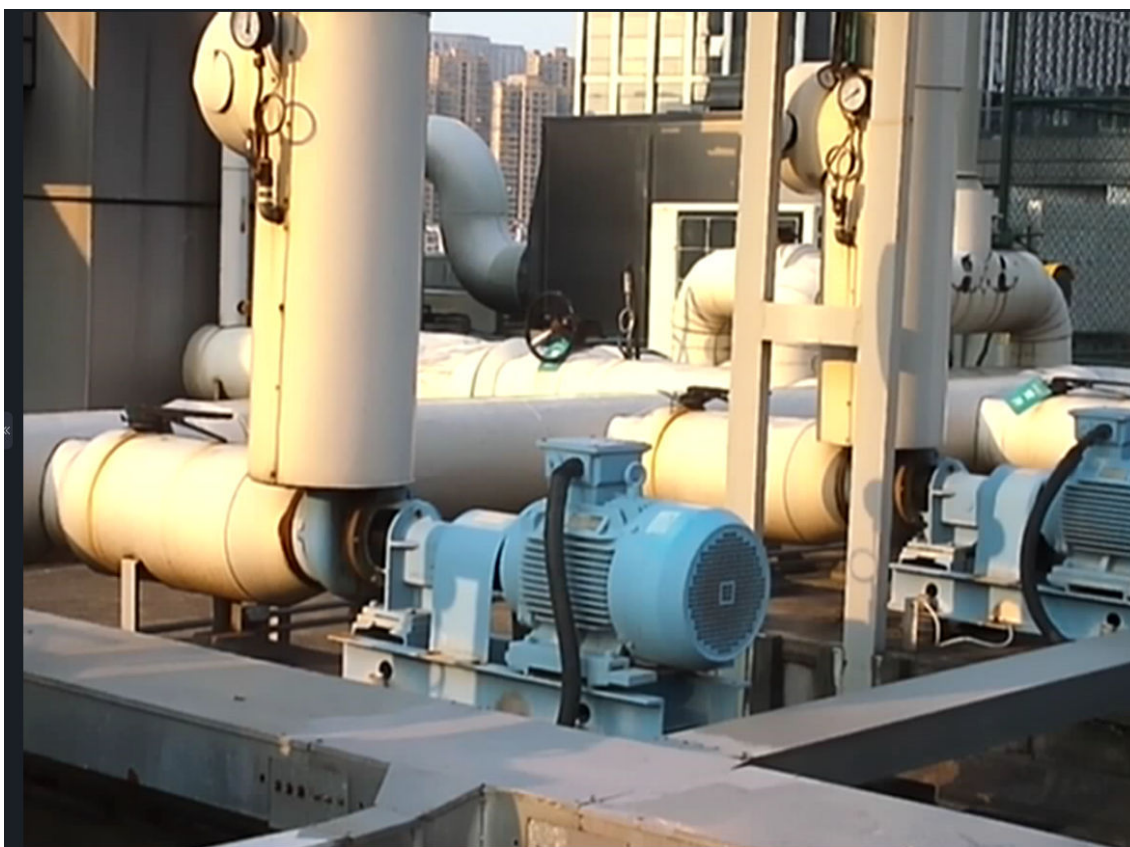
**Figure 5-9 Visual**

Palettes

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.

Set Palettes
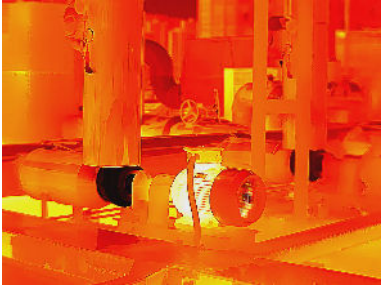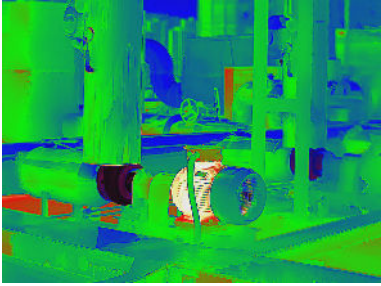
Palettes
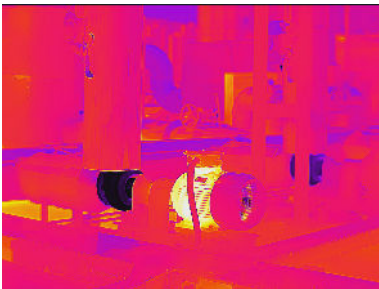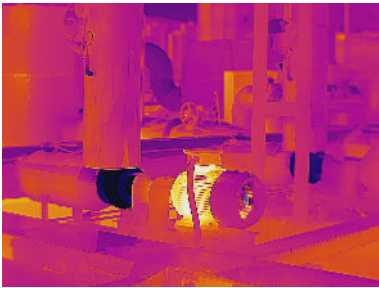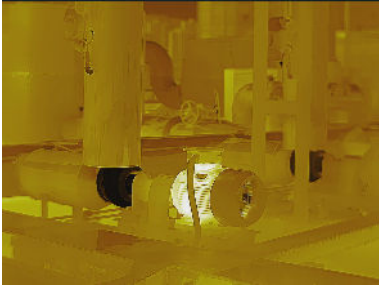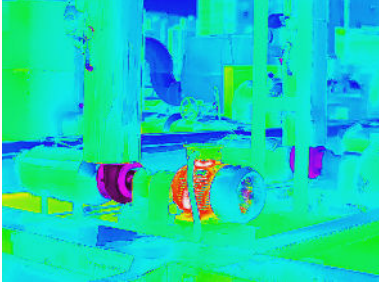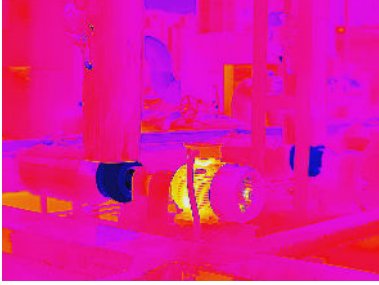
Set Palettes
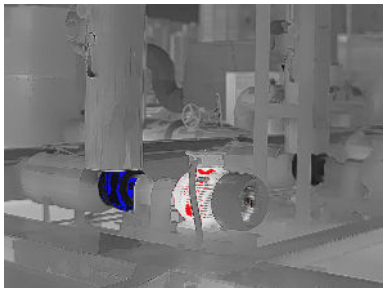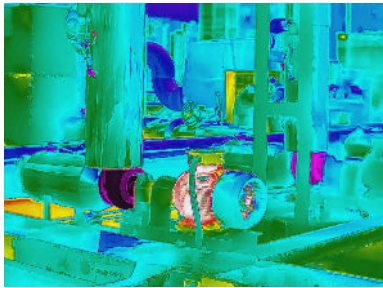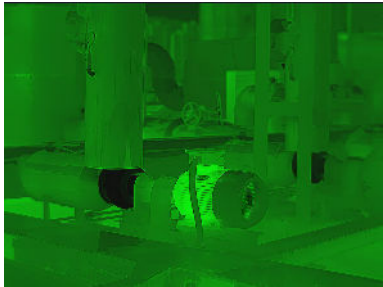
You can do one of the following to set palettes:
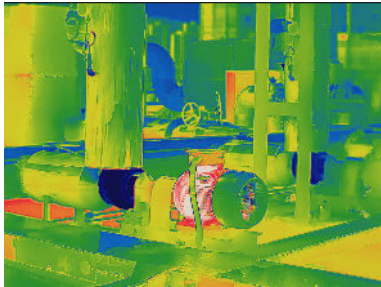
- In the menu bar, click **Image → Palettes Mode** .
- In the upper-right corner of Image Analysis page, select a palette type in Color Alarms in the drop-down list.

Palettes

Palettes	Image Example
Black Hot	
Fusion 1	
Fusion 2	
Rainbow	

Palettes	Image Example
Ironbow 1	
Ironbow 2	
Dark Brown	
Color 1	
Color 2	

Palettes	Image Example
Ice Fire	
Rain	
Green Hot	
Red Hot	

Palettes	Image Example
White Hot	
Dark Blue	

Focus Mode Palettes

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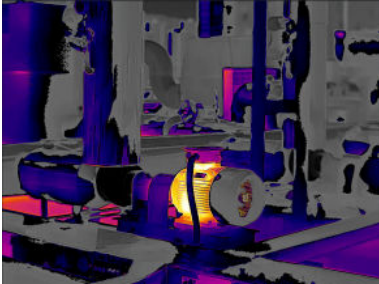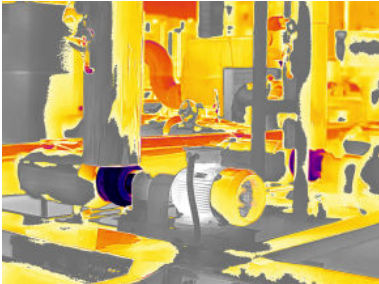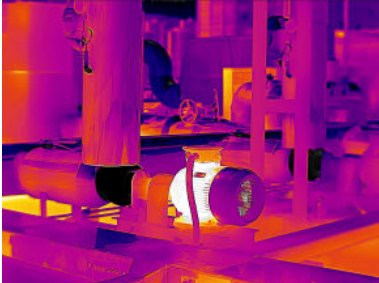
Set Focus Mode Palettes

Focus Mode Palettes

Set Focus Mode Palettes

1. You can do one of the following to set focus mode palettes:

- In the menu bar, click **Image → Display Mode → Focus Mode Palettes** .
- In the upper-right corner of Image Analysis page, select a palette type in Focus Mode Palettes in the drop-down list.

2. On the right side of the focus mode palette's name, set the temperature threshold or the temperature range. After the settings, when the temperature reaches the alarm limit, the object pixel in the image will be marked with a different color.

Focus Mode Palettes

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

Set Color Alarms

Color alarms allow you to mark the targets of certain temperature range with a different color from the rest.

Set Color Alarms

Color Alarms

Set Color Alarms

1. You can do one of the following to set color alarms:

- In the menu bar, click **Image → Palettes Mode** .
- In the upper-right corner of Image Analysis page, select an alarm type in Palettes in the drop-down list.

2. On the right side of the alarm type's name, set the temperature threshold or the temperature range. After the settings, when the temperature reaches the alarm limit, the object pixel in the image will be marked with a different color.

Color Alarms

Color Alarms	Description	Image Example
Above Alarm	Targets with the temperature higher than the set value are displayed in red.	
Below Alarm	Targets with the temperature lower than the set value are displayed in blue.	
Interval Alarm	Targets with the temperature in the set range are displayed in yellow.	
Insulation Alarm	Targets with the temperature out of the section (e.g., 70 °C or 125 °C) are displayed in purple or blue.	

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.

You can do one of the following to change the color distribution:
- In the menubar, click **Image → Imaging Algorithm** , select **Linear/Histogram**.
- In the upper-right corner of Image Analysis page, select a color distribution in the drop-down list.

Table 5-1 Color Distribution

Color Distribution	Description
Linear	Suitable when the temperature span of an image is large. For details about checking the temperature span of an image, refer to ***Table 5-2*** .
Histogram	Suitable when the temperature span of an image is small. For details about checking the temperature span of an image, refer to ***Table 5-2*** .

Advanced Image Editing

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

1. After the image is analyzed or added to the analysis task list, click [icon] to enter the Image Analysis page.
2. Click **Image → Advanced Editing** , or in the menu bar click [icon] **→ Advanced Editing** .
3. Set the following parameters as needed.

Parameter	Description
Brightness	Drag [icon] 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 [icon] 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 [icon] or enter an integer on the right to adjust the sharpness of the image.

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 Level	Drag 🔵 or enter an integer on the right to adjust the noise reduction level.

After setting parameters, 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.

Level and Span

Changing the temperature levels can 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.

Steps
1. Select the Intelligent mode.
   - In the menubar, click **Image → AGC → Auto** .
   - At the bottom of the image, select **Auto**.

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

Manual Level & Span

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

Steps

1. Select the Manual mode.
   - In the menubar, click **Image → AGC → Manual** .
   - At the bottom of the image, select **Manual**.
2. Adjust the temperature scale.
   - At the bottom of the image, drag the sliders to the left or to the right ![icon] to change the top and bottom levels in the temperature scale.
   - Move the cursor to the middle of the two sliders (the cursor turns to a hand shape icon ![icon]), and then drag the cursor to adjust its location to adjust the temperature scale.

![note icon]**Note**

During adjusting, the top and bottom levels of the palette bar beside the image will change at the same time.

Table 5-2 Description for Bars at the Bottom of Image

1	The maximum adjustable temperature range.
	• If you select ![icon] on the right side of the bar, the maximum adjustable temperature range is determined by the measurement range set on the device when the image is captured.
	• If you select ![icon] on the right side of the bar, the maximum adjustable temperature range is calculated by the client.
2	The temperature span of the image (the temperature range between the highest temperature and the lowest temperature of the image).
3	The temperature scale to which you need to pay attention. That is, the temperature scale of the target. The top and bottom levels of the scale is the same as those of the palette bar.
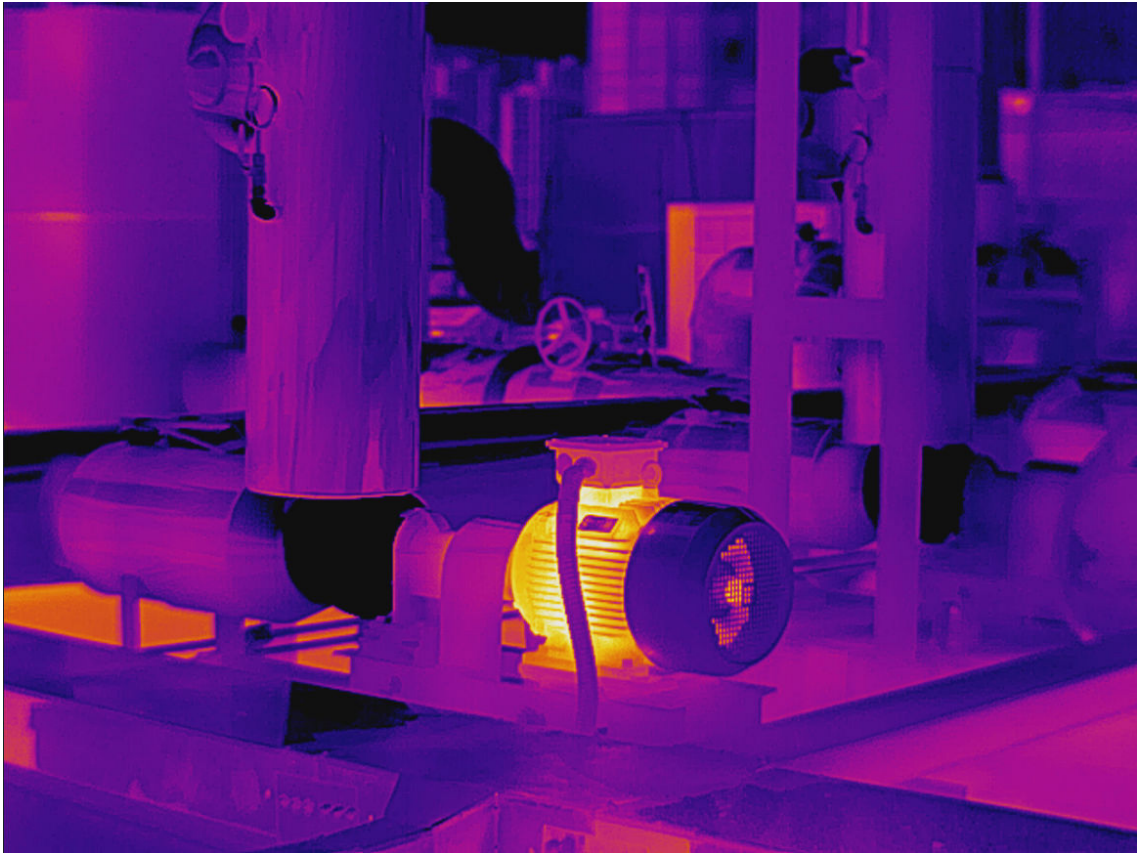
Figure 5-10 Image Example (Manual)

5.1.6 Save/Export Image

Save Image

After the image analysis, you can save the modified image information (measurements, temperature information, text annotation, etc.) for future reference.

- 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.

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

⌊**i**⌋**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 ⋯ → 🖉 in the menu bar to export the image.
   - Click **File → Export image** to export the image.
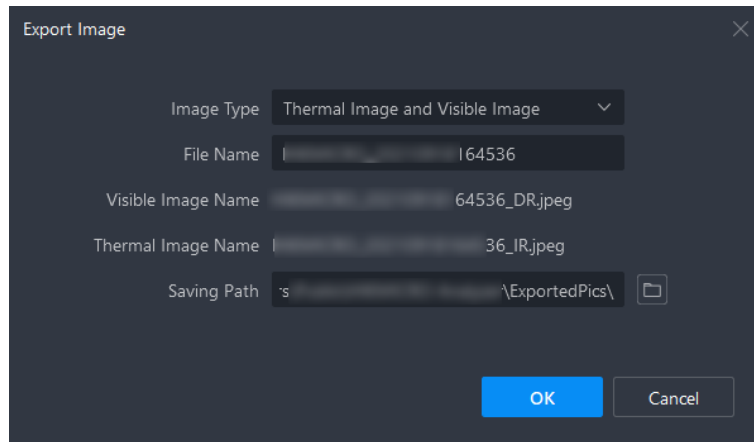
Figure 5-11 Export Image

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.

   ⌊**i**⌋**Note**

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

   File Name

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

   Saving Path

   The image is saved in the default directory, or you can select another saving path.
4. Click **OK** to export the image.

Export Temperature Matrix

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

Steps

1. On 📊 page, click ••• → **Export Temp. Matrix** .

2. Check the information needed in the file.

Matrix of Whole Image

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

Matrix of Measurements

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

Measurement Information

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

Details

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

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

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

5.2 Report Template

You can select from existing templates or customize templates to generate reports and save them to the local PC.

All templates including existing and customized ones for the content page are displayed in the Select Template window.
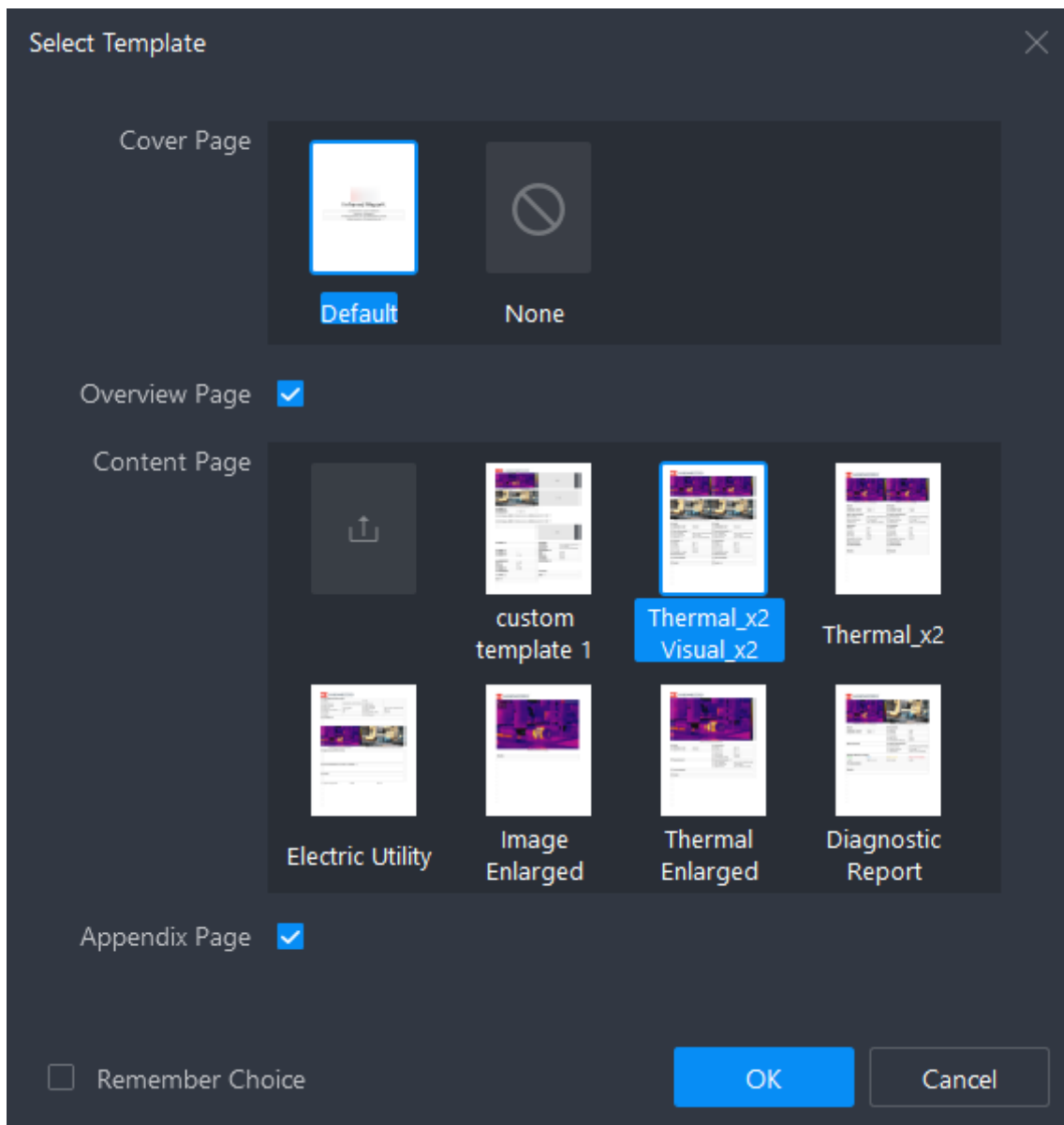
Figure 5-12 Select Template

5.2.1 Select Template

Steps

1. On the Image Analysis page, click **Report** on the top right corner.

   The Select Template window pops up.

2. Select a template as needed.

3. Click **OK** to generate an editable report file.

5.2.2 Import Template

Before You Start
Open the Select Template window. See details in **_Select Template_** .

Steps
1. For the Content Page, click ⬆ .
2. Select a template file from the local PC (template in ART format supported).
3. Click **Open** to import the template.

5.2.3 Use Saved Template

Before You Start
After editing the generated report, you can save the customized content page as a new template for future use. See details in **_Save as Template_** .

Steps
1. On the Image Analysis page, click **Report** on the top right corner.

   The Select Template window pops up.
2. Select a saved customized template, and click **OK** to generate the report.

5.3 Report

You can generate a report file from the image information (temperature information, parameters, text annotations, etc.) and save it to the local PC for comparison, analysis, and summarization of temperature measurement statistics.

🛈**Note**
All images in the task list will be exported as report content.

5.3.1 Generate Report

Before exporting a report, you can generate an editable report file for preview and editing.

Generate Report with Picture Not Analyzed

You can generate an editable report directly with pictures that have not been analyzed.

Generate Report with Picture from Library

Steps
1. Go to ▢ **→ Library** page and perform one of the following operations to generate a report.
   - Check one or multiple images in the library. Right-click the image(s) and select **Generate Report** or **File → Generate Report** .
   - Check one or multiple images in the folder. Right-click the folder/image(s) and select **Generate Report**, or click **File → Generate Report** .
2. Select a template for the report. See details in **_Report Template_** .
3. Click **OK** to generate an editable report.

   ▢**Note**

   For editing the report, see details in **_Edit Report_** .

Generate Report with Local File

Steps
1. Go to ▢ **→ Local File** .
2. Check one or multiple images. Right-click the image(s) and select **Generate Report**.
3. Select a template for the report. See details in **_Report Template_** .
4. Click **OK** to generate an editable report.

   ▢**Note**

   For editing the report, see details in **_Edit Report_** .

Generate Report with Analyzed Picture

You can generate an editable report directly with pictures that have been analyzed.

1. On the Image Analysis page, click **Report** on the top right corner.
2. Select a template for the report. See details in **_Select Template_** and **_Use Saved Template_** .
3. Click **OK** to generate an editable report.

   ▢**Note**

   For editing the report, see details in **_Edit Report_** .

5.3.2 Report Editing Page

You can view the thumbnails, configure the objects, change the template, etc.
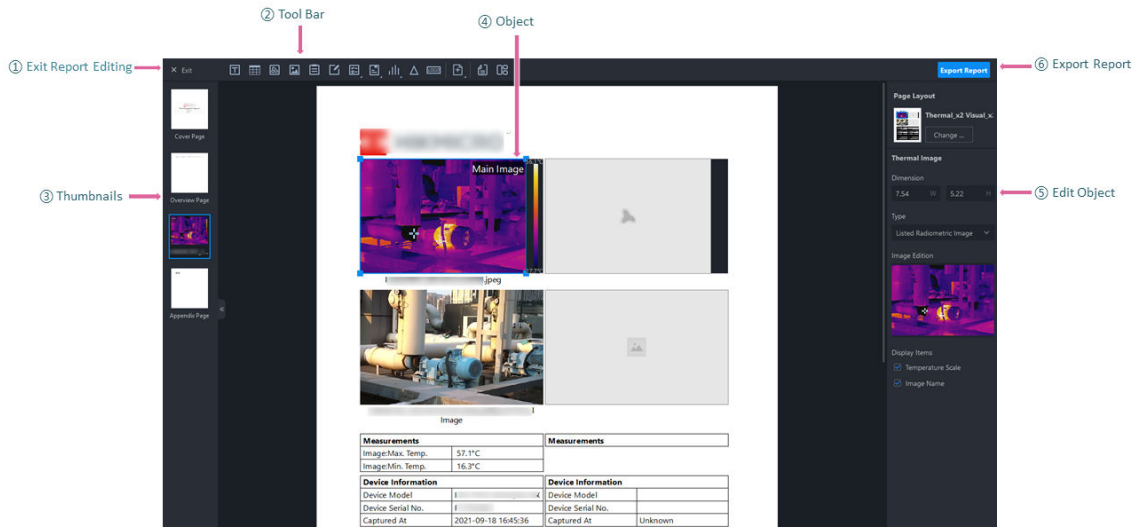
Figure 5-13 Report Editing Page

①: Exit report editing.

ⓘNote

Unsaved data will be lost.

---

②: Click different icons on the tool bar to add different objects, add pages, change template, and configure text property.

③: View the thumbnails of report pages.

④: Drag and move the objects.

⑤: Edit report objects, changes the template, change the page layout, etc.

⑥: Export the report to the local PC.

5.3.3 Edit Report

The report is generated from the template and selected image(s). You can edit, move and add objects in the report.

Add Object

Perform one of the operations to add objects.

- On the menu bar, click **Content → Insert Object** .
- Click the specific object icon on the tool bar.

Icon	Object
⊡	**Text**: general text.
⊞	**Table**: custom table.
▣	**Thermal Image**.
▣	**Visual Image**.
▤	**Measurements**: temperature measurement results.
☑	**Text Annotation**.
▤	**Parameters** (Thermography parameters): ○ Select **Image Parameters**. ○ Select **Measurement Parameters**.
▤	**Information**: ○ Select **Image Information**. ○ Select **Device information**. ○ Select **Environment Information**.
▥	**Temp. Distribution Charts**: ○ Select **Temp. Distribution Bar Chart**. ○ Select **Temp. Distribution Line Chart**.
△	**Delta**.
LOGO	**Logo**.

◯ᵢ Note

Objects cannot be added to the cover page, overview page, or appendix page.

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.

◯ᵢ Note

You can also enter the specific value of size in the object configuration panel on the right.

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.

Thermal Image

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

Steps

1. Click a thermal image 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 for width and height, to adjust the size of the thermal image.
Select Type	Select a thermal image type in the drop-down list. • **Listed Radiometric Image**: Thermal picture captured when the measured object is not for sure in normal condition. Under **Image Edition**, click ⊞ / ☒ to add/delete the thermal image. • **Compared Radiometric Image**: Thermal picture captured when the measured object is in normal condition. Under **Select**, click ⊞ / ☒ to add/delete the thermal image.
Delete/ Change Thermal Image	Hover over the image thumbnail, and click **Delete**/**Select** to delete/change the thermal image. **⬚ Note** If the 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.
Displayed Items	Check **Temperature Scale** to display the scale bar on the right of the thermal image.

Set as Main Image	Right-click the thermal image 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.

The configuration effect can be synchronously previewed on the report.

Visual Image

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

Steps

1. Click an image 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 for width and height, to adjust the size of 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.
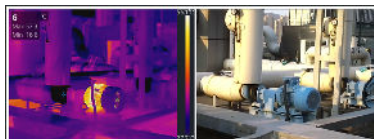
Figure 5-14 Aligned Visual Image

• **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 5-15 Full-Size Visual Image

Link Thermal Image	Select a thermal image from the drop-down list to be linked with the object. The object will be auto-filled with the linked thermal image.

The configuration effect can be synchronously previewed on the report.

Image Information

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

Steps

1. Click the image information object in the report.

   The object configuration pane will be displayed on the right.

2. You can perform the following operations.

   $\boxed{i}$ **Note**

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	Enter the width of the table as needed.
Link Thermal Image	Select an thermal image from the drop-down list to be linked for this object. The object will be auto-filled with the information of the linked thermal image.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content as left aligned, centered, or right-aligned.
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., capture time, etc. will be displayed in this object.

Steps

1. Click the device information object in the report.

   The object configuration pane will be displayed on the right.

2. You can perform the following operations.

   $\boxed{i}$ **Note**

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	Enter the width of the table as needed.

Link Thermal Image	Select an thermal image from the drop-down list to be linked for this object. The object will be auto-filled with the device information of the linked thermal image.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content as left aligned, centered, or right-aligned.
Display Items	Check the items to be displayed in the object as needed.

Environment Information

The information of the measured object including address, device name, weather, etc will be displayed in this object.

Steps

1. Click the Environment 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 width of the table as needed.
Link Thermal Image	Select an thermal image from the drop-down list to be linked for this object. The object will be auto-filled with the environment information of the linked thermal image.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content as left aligned, centered, or right-aligned.
Display Items	Check the items to be displayed in the object as needed.

Image Parameters

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

Steps

1. Click 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 width of the table as needed.
Link Thermal Image	Select an 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.
Select Alignment Mode	Select ▤ , ▥ or ▦ to set the content as left aligned, centered, or right-aligned.
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
Set Size	Enter the width of the table as needed.
Link Thermal Image	Select an 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.
Select Alignment Mode	Select ▤ , ▥ or ▦ to set the content as left aligned, centered, or right-aligned.
Display Items	Check the items to be displayed in the object as needed.

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. Click 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
Set Size	Enter the width of the table as needed.
Link Thermal Image	Select an thermal image from the drop-down list to be linked for this object. The object will be auto-filled with measurement results of the linked thermal image.
Select Alignment Mode	Select ▤ , ▤ or ▤ to set the content as left aligned, centered, or right-aligned.
Display Items	Check the items to be displayed in the object as needed.

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. Click 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 width of the table as needed.
Link Thermal Image	Select an 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.
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. Click 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.

   ☐**i**Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	Enter the width of the table as needed.
Link Thermal Image	Select an 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. ☐**i**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.

Delta

The table of delta ranges and standard values (based on severity results) will be displayed in this object.

Steps
1. Click the Delta object in the report.

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

   ☐**i**Note

   The configuration effect can be synchronously previewed on the report.

Operation	Description
Set Size	Enter the width of the table as needed.

Link Thermal Image	Select an 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.
Link Measurement	Select a measurement to be applied, and the object will be auto-filled with information corresponding to the measurement.
Configure Delta Range	You can edit the delta range names and standard values.

Text Annotation

The text annotation information will be displayed in this object.

Before You Start
For adding text annotations to the thermal image, see details in ***Add Text Annotation*** .

Steps
1. Click the Text Annotation 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 Annotation by default).
Set Size	Enter the width of the table as needed.
Link Thermal Image	Select an thermal image from the drop-down list to be linked for this object. The object will be auto-filled with text annotations of the linked thermal image.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content 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.

General Text

You can enter customized texts as needed in this object.

Steps
1. Click the Text 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
Enter Text	Double-click the object to enter texts. Press Alt + Enter for line breaking in the text object.
Select Font Size	Select a font size as needed.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content as left aligned, centered, or right-aligned.

General Table

You can insert a table and customize the size, and number of lines and columns.

Steps

1. Click the Table object in the report.

The object configuration pane will be displayed on the right.

2. You can perform the following operations.

Operation	Description
Enter Text	Double-click the object to enter texts. Press Alt + Enter for line breaking in the cell.
Set Size	Enter the width of the table as needed.
Select Alignment Mode	Select ▤ , ▥ or ▤ to set the content as left aligned, centered, or right-aligned.
Set Lines and Columns	Enter the specific number of lines and columns as needed. 📖**Note** Up to 20 lines and 10 columns are supported.
Display Items	Check the items to be displayed in the object as needed.

The configuration effect can be synchronously previewed on the report.

LOGO

Steps

1. Click 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.
Add LOGO	Click **Add** to add a picture 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.

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** .

Manage Pages

You can add or delete report pages, or change the order of pages.

Add New Page

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

- Click 🗋 in the tool bar and select a page to be added.
- Click **Content → New Page** and select a page to be added.
- Right-click a page thumbnail on the left, select **New Page**, and select a page to be added.

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**.
- On the menu bar, click **Content → Delete Page** .
- Press the Delete key.

Save Template

You can save your customized page as a template to the PC client or export it as a template to the local PC for future use.

Save as Template

All saved templates on the PC client will be displayed in Content Page in the Select Template window.

Steps

[i]**Note**

16 templates in total are supported.

1. Select a page on the left, and perform one of the following operations to open the Save as Template window.
   - On the menu bar, click **Content → Save as Template** .
   - Right-click the page and select **Save as Template**.

   [i]**Note**
   - Only content pages can be saved as templates.
   - Pictures are not required in the thermal image object for saving the page as a template.

2. Enter a name for the customized template.
3. Click **Save** to save the selected page as a template.

Export Template

Right-click the selected page on the left, and select **Export Template** to export the template file to the local PC. See details in ***Import Template*** on how to import template files to the PC client.

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

Change Template

You can preview the report rendered through the template. If you find the layout unsatisfactory, you can change the template in the page configuration panel on the right. You can change the template for the selected page or all pages.

⎡i⎤Note

The template for the cover page, overview page, and appendix page cannot be changed.

Change Template for Selected Page

Steps

1. Select a page from the thumbnail panel and perform the one of following operations:
  - Click **Change Template** under Page Layout in the page configuration panel on the right.
  - Click **Content → Change Template** .
  - Right-click the page and select **Change Template**.

2. Select a suitable template to replace the one for the current page.

Change Template for All Pages

On the tool bar, click ⊞ , and select a suitable template to replace the one for all pages.

5.3.4 Export Report

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

1. On the report editing page, perform one of the following operations to open the Export Report window.
   - On the top right corner of the page, click **Export Report**.
   - On the menu bar, click **File → Export Report** .
2. Select ODT or PDF as the file format, edit the file name, and configure the saving path.
3. Click **OK** to export the report.

⎡i⎤Note

   - 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.

5.4 Video Analysis

5.4.1 Navigation for Video Analysis Page
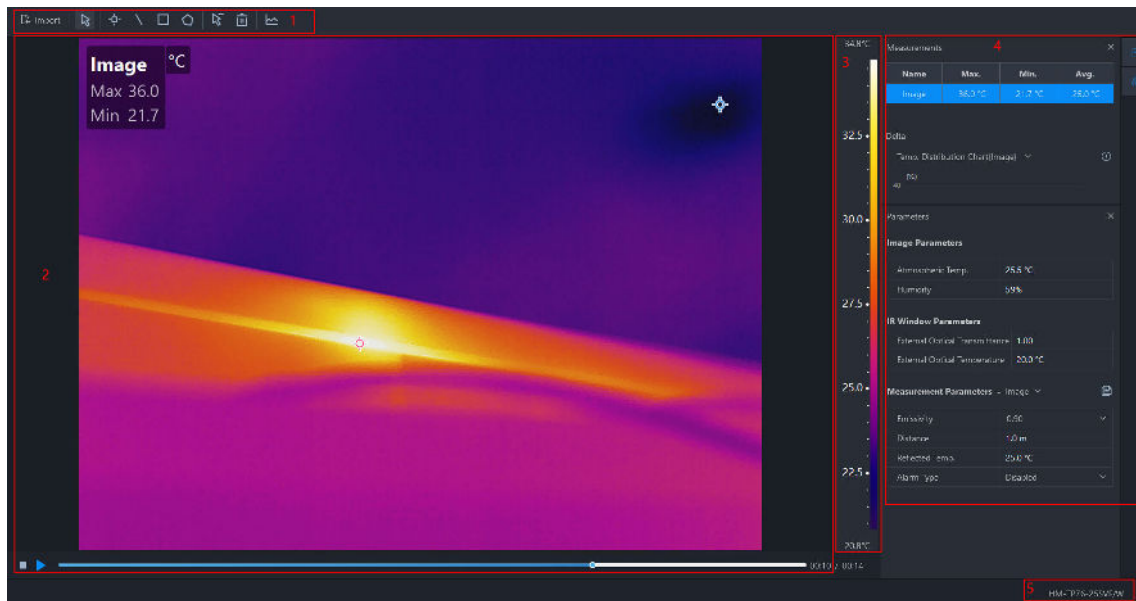
Figure 5-16 Video Analysis Page

No.	Description
1	Toolbar. Including measurement tools, importing radiometric videos, and viewing time-temperature curve.
2	Window for playing video. You can lay out measurement tool on the video image, and view measurement results immediately in the video image or in the Measurements pane.
3	Temperature Scale: Change with the temperature scale of the image.
4	Measurements, and Parameters Pane: You can drag the pane to a position as needed. • 📄 Measurements: View temperature measurement results of the whole image or of the selected measurement tool on the image. • 🎚 Parameters: Configure temperature measurement parameters.
5	The serial No. and the device model of the device which captured the image.

5.4.2 Measurement Tools

Add a Measurement Tool

To measure a temperature, you can use one or more measurement tools (spot, line, etc.). When you add a measurement tool on the video image, the measured temperature will be displayed in the Measurements pane.

Do one of the following to select a measurement tool:

- In the menubar, click **Measurement** to select a measurement tool.
- In the toolbar, select a measurement tool.

The following is the description on how to add measurement tools in the toolbar:

Spot

Click ⊹ to add a spot measurement tool to the location as needed on the video image. Double-click ⊹ to add spots continuously on the video image.

Line

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

Area

You can measure temperatures in areas by adding tools including rectangle, circle, ellipse, and polygon. You can draw different shapes according to the actual scenarios. For example, for an irregular area, you can select polygon measurement tool for measurement.

- Click ▢ , and left-click the mouse and drag to draw a rectangle.
- Click ⬠ , and 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. Up to 10 nodes are supported when drawing a polygon.

Edit a Measurement Tool

Move a Measurement Tool

In the toolbar, click ▧ , select a measurement tool on the video image and drag it to a new location.

Resize a Measurement Tool

1. In the toolbar, click ▧ .
2. Select a measurement tool on the video image.
3. Drag the node on the tool to resize the tool.
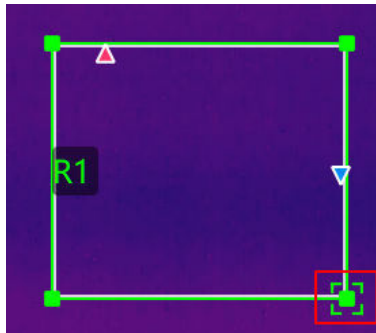
Figure 5-17 Resizing a Measurement Tool

Delete a Measurement Tool

Note

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

Delete One Measurement Tool

- Click ⬚ and select a measurement tool on the image to delete it.
- Select a measurement tool on the image, and in the menubar, click **Measurement → Delete Tool** .

Clear All Measurement Tools

- In the menubar, click **Measurement → Remove All Measurements** .
- In the toolbar, click 🗑 to clear all measurement tools.

Set Measurement Parameters

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

Configure Measurement Parameters

- On the right side of Image Analysis pane, click ⚙ to open the Parameters pane to configure measurement parameters or image parameters.

⬚**i**⬚**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 parameter of the current image will be displayed.
- ◦ If you need to configure the parameters of the other measurement, select the measurement in the image, or select the measurement on the right side of the **Measurement Parameters**, and configure the parameters of the new selected measurement.
- ◦ If the measurement parameter is selected as Image, click ⬚ to synchronize the measurement parameters of the image to all measurements of the current image.

Measurement Parameters

Humidity

Measure the moisture content in the air.

External Optical Transmittance

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

External Optical Temperature

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

Emissivity

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

Distance

The distance between the object and the thermal device.

Reflected Temperature

The reflected temperature will affect temperature measurement results.

Alarm Type / Alarm Threshold

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

Calculate Area

Support calculate the area of the surface enclosed by area measurement tools (rectangle and polygon). The calculation is an estimate of the surface area based on the distance.

⬚**i**⬚**Note**

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

Select an area measurement tool on the video image. In the Measurements pane, click the value filed in **Area Calculation** to set the pixel pitch, the focal length, and the distance according to actual needs.
The calculated area is displayed at the bottom of the Measurements pane.

5.4.3 Temperature Alarm Analysis

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

Enable/Disable Alarm Analysis

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

Steps
1. Click 📄 to open the **Parameters** pane.
2. In **Measurements Parameters**, select an alarm type in the drop-down list.

   📖**Note**

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

5.4.4 Temperature Curve
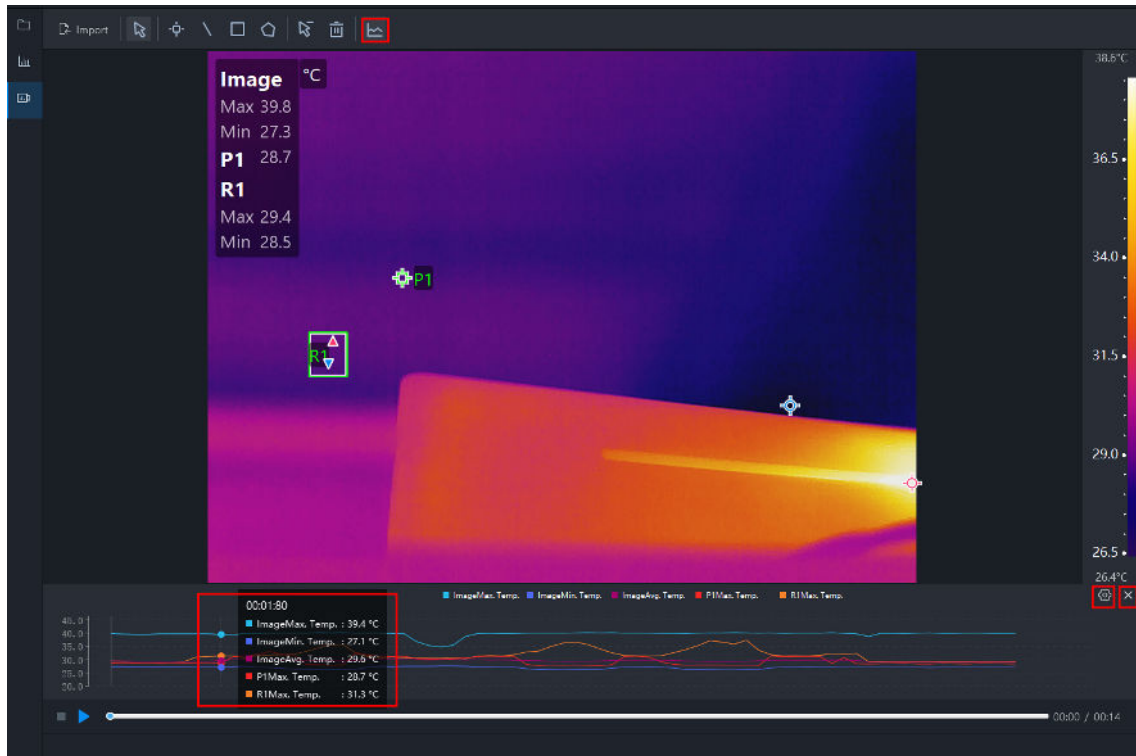
Figure 5-18 Temperature Curve

Enable Temperature Curve

Steps

1. On the tool bar, click ⟋ to enable the temperature curve.
2. Hover over the temperature curve and view the temperature of the image at different time.

Configure Temperature Curve

Steps

1. Click ⚙ on the upper right corner of the temperature curve.

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

   ⓘNote

   Maximum 6 curves can be displayed.
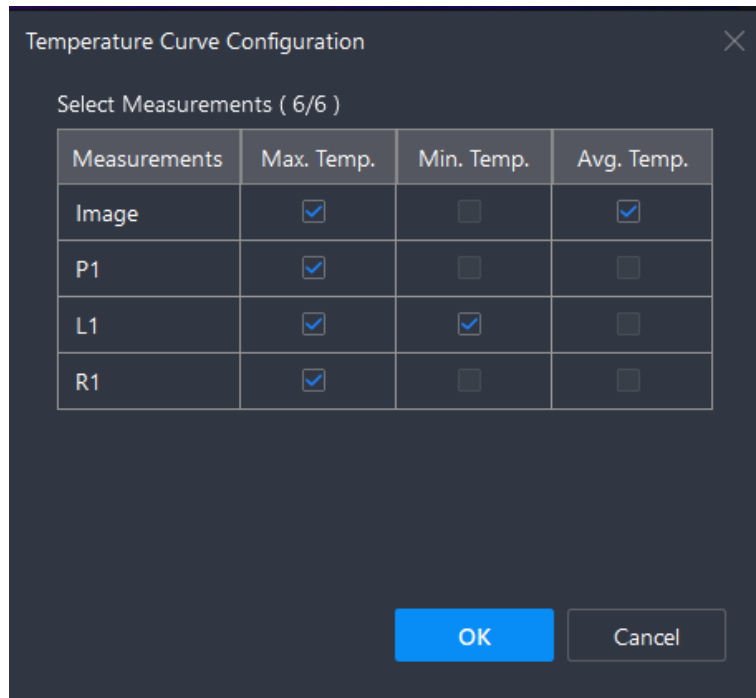
Figure 5-19 Temperature Curve Configuration

3. Click **OK**.

Disable Temperature Curve

Click ⬚ again or click ⊠ on the upper right corner of the temperature curve to hide/close the temperature curve window.

Chapter 6 Alarm Center

The event information received by the client displays in Alarm Center. In the Alarm Center, you can check the detailed information of the real-time and historical events, view the event related video, and so on.

Note

The client will receive alarms (temperature measurement alarm, temperature sudden change alarm, temperature difference alarm, and device offline alarm) uploaded by the device. For details about alarm configuration, refer to the user manual of the device.

6.1 Enable Receiving Event from Devices

Before the client can receive event notifications from the device, you need to arm the device first.

Steps
1. Click ▤ → **Tool** → **Device Arming Control** .
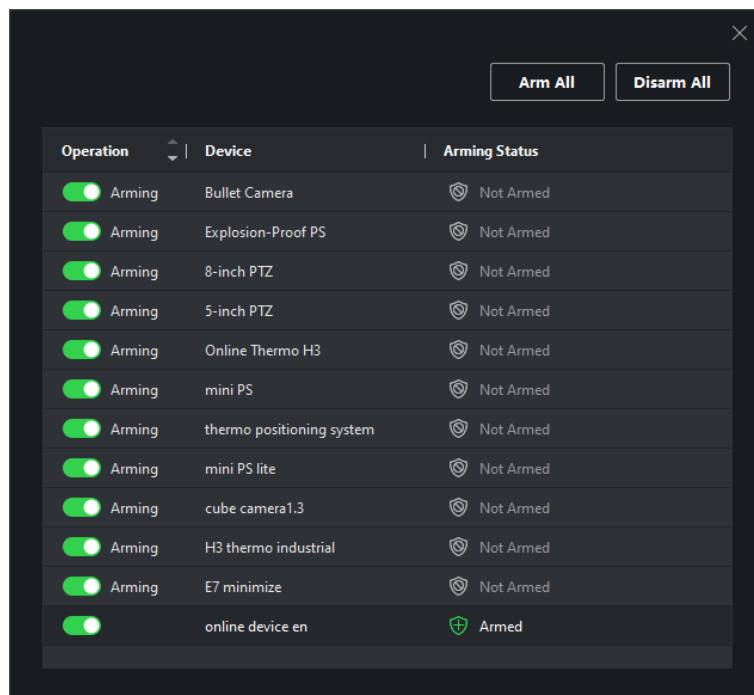
Figure 6-1 Device Arming Control

2. Perform the following operations as needed.

Arm All / Disarm All	Click **Arm All** to arm all the added devices; click **Disarm All** to disarm all the added devices.

Arm/Disarm One Device	Turn on the switch in the Operation column to arm the device; turn off the switch to disarm the device.

Note

The device will be automatically disarmed once it is deleted or disconnected.

6.2 View Real-Time Events

You can view the real-time event information (including event source, event type, event time, event details, etc.) received by the client.

Before You Start
Enable receiving events from devices so that the client can receive events from the device, see ***Enable Receiving Event from Devices*** for details.

Steps
1. Click **Alarm Center → Real-Time Event** .

   The real-time event information (including event source, event type, event time, event details, etc.) will be displayed on the table.

   Note
   - Right-click the table header of the event list to customize the event related items to be displayed on the event list.
   - Up to 1,000 events can be displayed on the event list.

   Event Source

      The resource that triggers the event, such as the device and channel.

   Event Time

      The time when the platform receives the event.
2. **Optional:** Enter keywords in the search box on the upper right to filter the events.
3. Select an event in the event list to view the event details.

   Note
   - The event details include the captured picture, live video, and other event information.
   - To view the captured pictures, you need to configure picture storage in the system configuration. See ***Set Alarm Picture Storage*** for details.
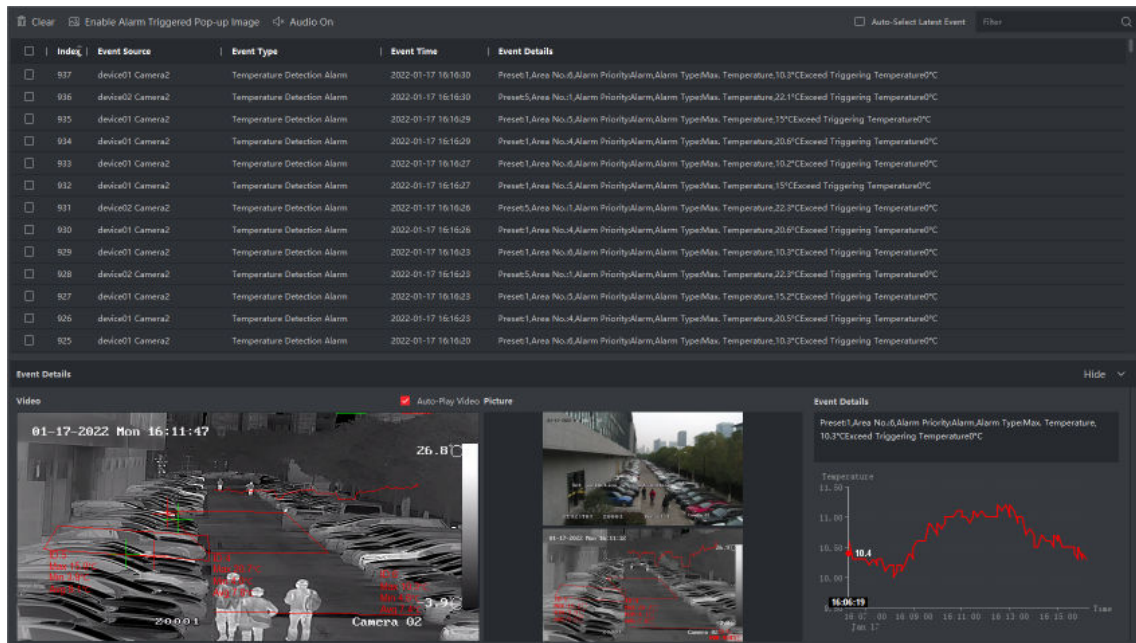
Figure 6-2 View Real-Time Events

4. **Optional:** Perform the following operations if necessary.

Auto-Play Video	Check **Auto-Play Video** to automatically play video when displaying event details.
Select the Latest Event Automatically	Check **Auto-Select Latest Event** to select the latest event automatically and the event details will be displayed.
Clear Events	Click **Clear** to clear the all the events in the event list.
Enable/Disable Alarm Audio	Click **Audio On**/**Mute** to enable/disable the audio of the event.

6.3 Search Historical Events

You can search and view historical events by setting search conditions including the time and resource, and export the searched events.

Steps

1. Click **Alarm Center → Event Search** to enter the event search page.
2. Set the filter conditions.

   Time

   The time when the client receives the event.

   Resource

   The root nodes are the group names, and the child nodes are the channels.

3. Click **Search** to search the events according the set conditions.
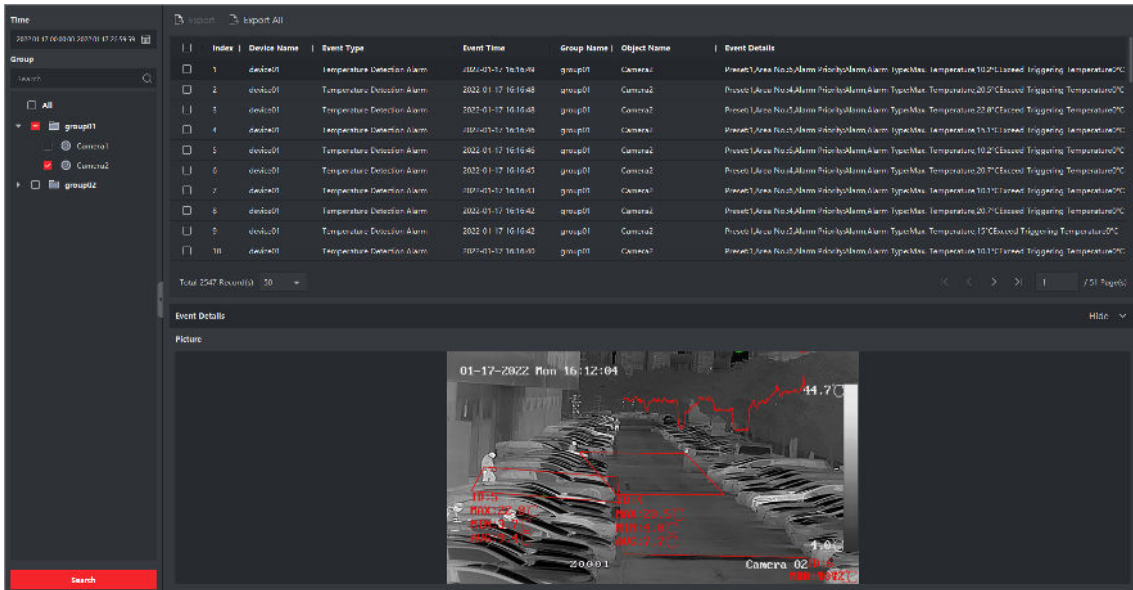
Figure 6-3 Search Historical Events

📖**Note**

Right-click the table header of the event list to customize the event related items to be displayed in the event list.

4. Select an event in the event list to view the captured picture(s).

📖**Note**

To view the captured picture(s), you need to configure picture storage in the System Configuration.

5. **Optional:** Click **Export** or **Export All** to export selected or all events to the local PC.

📖**Note**

You can choose to export all, only logs, or only pictures of the searched content.

6.4 View Pop-up Event Information

If you have enabled event notification and set Alarm Triggered Pop-up Image as its linkage action, a window will pop up when the event happens, showing the event information, related pictures, and related videos.

Go to **Alarm Center → Real-Time Event** , and then click **Enable Alarm Triggered Pop-up Image** to enable the function.
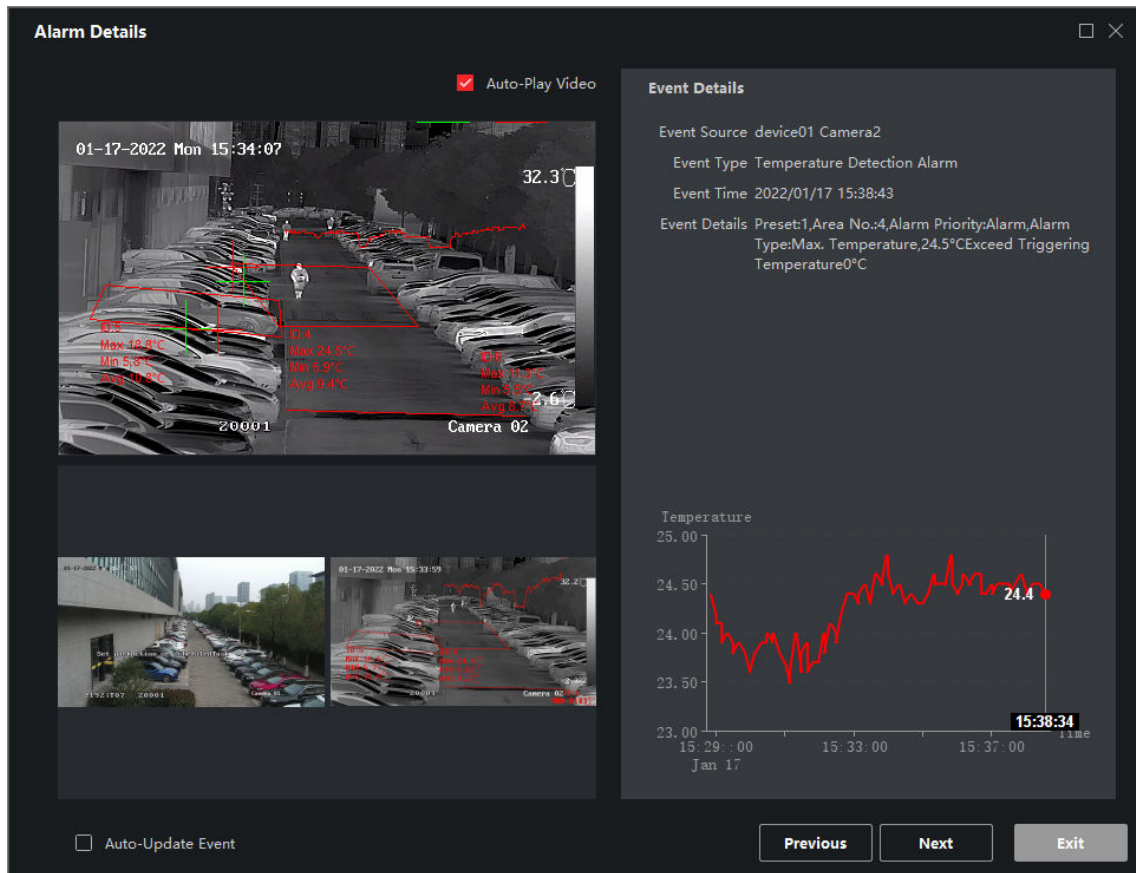
Figure 6-4 The Pop-up Event Information

You can view the event related video footage (from 30 s before the event to the end of the event), the picture captured when the event happens, as well as the event details such as event source, event type, event time, etc.

![Note icon]**Note**

- When the window is not closed, you should click **Next** to view the new event information if a new event is triggered.
- If you have exited the window, when a new event is triggered, the new event information will pop up; if you haven't clear the event information, you can click **Previous** to view the previous event information.

You can check **Auto-Update Event** to enable the window to automatically switch to the latest event information when a new event is triggered.

6.5 Other Functions

You can enable the alarm output function for specific resource.

After the alarm output is enabled, when an alarm or pre-alarm is triggered, the client will caution the user.

Operation: click → **Tool** → **Alarm Output Control** . Select a resource and switch on in the Operation column.
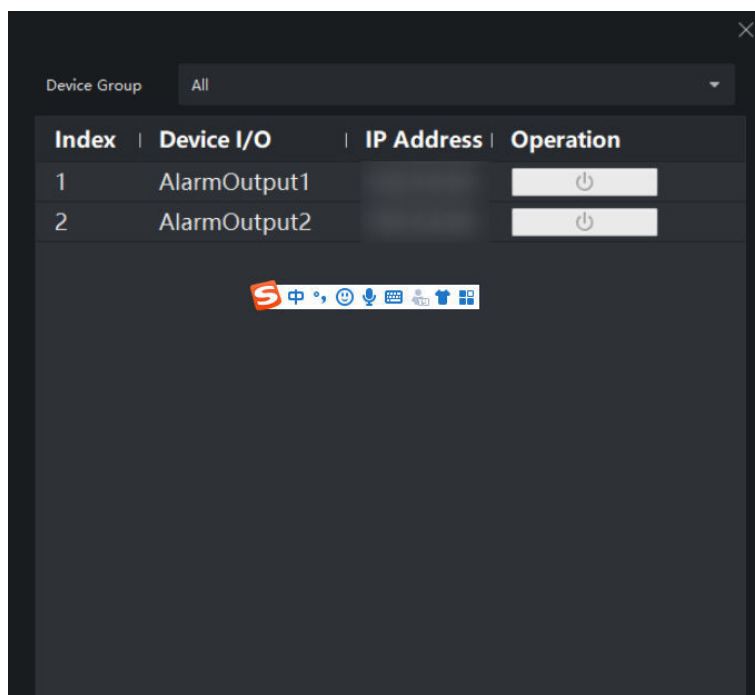
Figure 6-5 Alarm Output

Chapter 7 Search History Temperature

You can search history temperatures according to the comparing variable, camera, temperature type, report type, and temperature measuring time.

Before You Start
Make sure that you have enabled the temperature storage in the system configuration. See ***Set General Parameters*** for details.

Steps
1. Open the **Search History Temp.** page.
2. Set the search conditions.

Comparing Variable

The variable for temperature comparing.

Time

Select a measurement under one camera, and temperature data collected via the selected measurement during two specified time periods will be displayed and compared.

Measurement

Select two measurements under one or two cameras, and temperature data collected via the two measurements during the same time period will be displayed and compared.

Camera

The root nodes are the group names, and the child nodes are the cameras. Under the cameras you can select the measurements, and under the measurements you can select the temperature types to be displayed (max. temperature, min. temperature, and average temperature).

Report Type

You can select the daily/weekly/monthly/annual report where the temperature data collected every minute/hour/day/month will be shown.

Measurement Time

The temperature data collected during this period will be displayed and compared.

 𝐢 **Note**

When the comparing variable is set as **Time**, two time periods need to be specified.

---
3. Click **Search** to display the temperature report on the right.
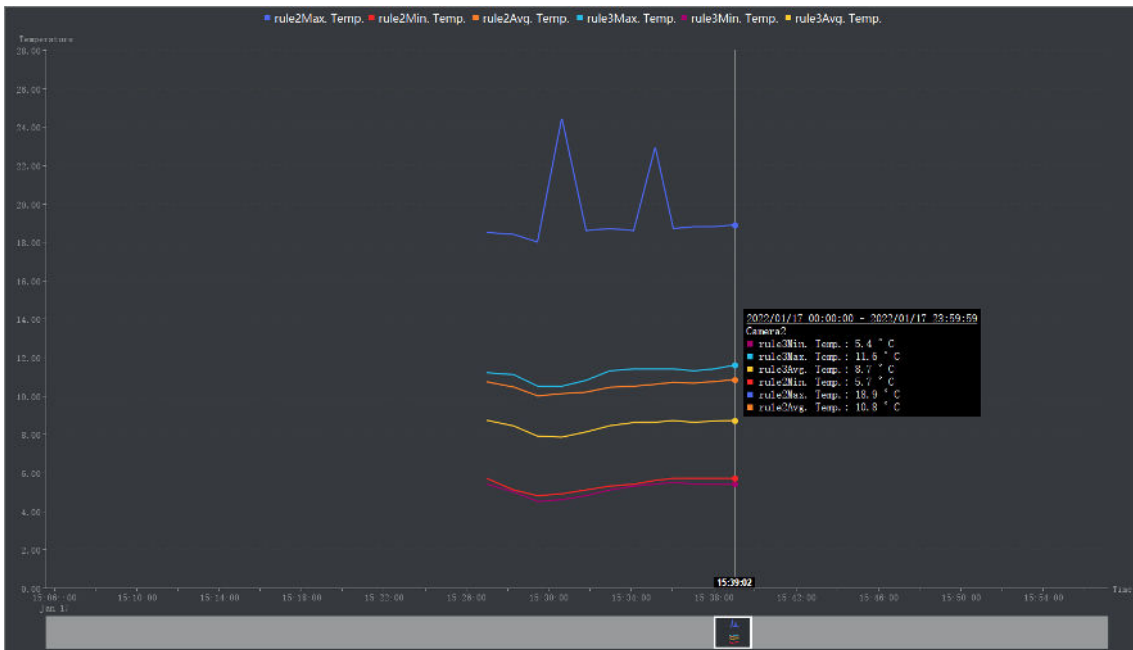
Figure 7-1 History Temperature Report

$\boxed{i}$ **Note**

Up to six temperature curves can be shown. The x coordinates represent the time when the temperature data is collected, and the y coordinates represent the temperatures. Move the cursor along the temperature curve, the corresponding temperature will be shown.

---

4. **Optional:** Drag the two vertical edges of the white rectangular frame left/right to adjust the time range of the report.
5. **Optional:** Click **Export** to export the report in CSV format, or click **Export Original Record** to export the original data in CSV format.

Chapter 8 Log Search

Two log types are provided: operation log and system log. The operation logs refer to the normal operations that the user did on the client, such as adding device, resetting password, etc.; and the system logs record the system information, such as login, logout, locking and unlocking, etc. You can search the log files by conditions including the time and user, and view the log details.

Steps

1. Enter the **Log Management** page.
2. Click ▦ to set the start time and end time.

ⓘ**Note**

The time period should not be longer than 1 month.

3. Select a user to search the log files which are generated when this user operate on the client.
4. Select **Operation Log** and/or **System Log** as the log type(s).
5. Click **Search**.
6. **Optional:** Click ▽ on each table header and select to filter the logs.
7. **Optional:** Click **Back Up Logs** to save the searched logs to the local PC in XML format.

Chapter 9 User Management

To improve the system security, the administrator should create different accounts for different users, and assign different permissions to the users. To avoid multiple people sharing one user account, managing the user accounts periodically is recommended.

9.1 Add User

The super user and administrator can add new users, and assign different permissions for different users if needed.

Steps

1. Enter the **Account Management** page.
2. Click **Add**.
3. Set the account information.

   User Type

   Administrator

   The administrator account has all permissions by default, and can modify the passwords and permissions of all operators and its own.

   Operator

   The operator account has no permission by default and you can assign the permissions manually. An operator can only change the passwords of its own account and the accounts which are added by it.

   User Name

   The maximum length is 16 bytes.

   Password

   Enter the password and confirm.

   ⚠️**Caution**

   The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (8 to 16 characters, including at least two kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.
   Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

4. Check to set permissions for the account.

   Function Permission

The added user will have permissions to the checked functions.

Resource Permission

Select a function permission, and check the corresponding resources on the right; the added user will have permissions to the selected function of the checked resources.

5. **Optional:** Click **Default** to restore the default permission settings of this user.
6. Click **Save**.

ⓘ Note

Up to 50 user accounts can be added for the client software.

9.2 Change User's Password

The administrator can change the operator's password without entering the old password, while the administrator should enter the old password when changing the password of itself.

Before You Start
The user has been added.

Steps
1. Enter the **Account Management** page.
2. Select the user to change the password, and click **Change Password**.

ⓘ Note

3. **Optional:** Enter the old password.
4. Enter the password and confirm the password.

⚠ Caution

The password strength of the device can be automatically checked. We highly recommend you change the password of your own choosing (8 to 16 characters, including at least two kinds of following categories: upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you change your password regularly, especially in the high security system, changing the password monthly or weekly can better protect your product.
Proper configuration of all passwords and other security settings is the responsibility of the installer and/or end-user.

5. Click **OK**.

Chapter 10 System Configuration

You can configure system settings including the alarm sound, file saving path, etc.

10.1 Set General Parameters

You can configure the frequently used parameters, including the maximum mode, network performance, etc.

Steps

1. Select **System Configuration → General** .
2. Set the general parameters.

    Save Data for

    The time for keeping the data. Once exceeded the time, the data will be deleted.

    Save Temperature Data

    After it is enabled and the interval is set, the temperature data collected via the devices will be automatically saved according to the set interval.

    ⌷i̇⌷Note

    Temperature data collected via one device and one measurement every day will occupy about 0.78 MB of storage space on your disk.

    Temperature Unit

    Select the temperature unit to be displayed on the Client as needed.

    ⌷i̇⌷Note

    The new setting will take effect for other modules after restarting the client, but it will take effect immediately in the Event Details column on the Real-Time Event page.

    Maximum Mode

    Select **Maximize** or **Full Screen** as the maximum mode. **Maximize** mode can maximize the display and show the task bar. **Full Screen** mode can display the client in full-screen mode.

    Network Performance

    Set the network conditions to **Normal**, **Better** or **Best**.
3. Click **Save**.
4. Click **Default** to restore the default settings.

10.2 Set Image Parameters

The image parameters that can be configured include the picture type, view scale, play performance, etc.

Steps
1. Click **System Configuration → Image** .
2. Configure the image parameters.

Parameter	Description
Picture Type	The format of the captured picture file. It is **JPEG** by default.
View Scale	The view scale of the video in live view or playback. It can be set as **Full Screen**, **4:3**, **16:9**, or **Original Resolution**.
Play Performance	The play performance of the live video. It can be set as **Shortest Delay**, **Balanced**, or **Fluency**, and is set as **Balanced** by default.
Hardware Decoding	Enable or disable the hardware decoding as needed. **⌈i⌋Note** When the graphics card memory is insufficient or the graphics card performance is poor, it is not recommended to enable the hardware decoding.

3. Click **Save**.
4. Click **Default** to restore the default settings.

10.3 Set File Saving Path

The normal/raw video (manually recorded during live view) and captured normal/raw images are stored on the local PC. The saving path of these files can be set.

Steps
1. Click **System Configuration → File** .
2. Click ⬛ and select a local saving path for the files.
3. Click **Save**.

⌈i⌋Note

The client must restart for the changes of saving paths to take effect.

4. Click **Default** to restore the default settings.

10.4 Set Frame Rate of Raw Video

You can set the frame rate of raw videos recorded during live view.

Steps
1. Click **System Configuration → File** .
2. Set the frame rate of raw videos.

---

[i]**Note**

The frame rate you set should be supported by device capability (go to Device Management module, select the device, and click 🔘 in the Operation column to view the device capability. For details about remote device configuration, refer to the user manual of the device). The frame rate you set will take effect for all devices. If a device capability is exceeded, the raw video recording of the device will be stopped, and you should set the frame rate again.

---

3. Click **Save**.
4. Click **Default** to restore the default settings.

10.5 Set Alarm Picture Storage

The captured pictures triggered by the events on the devices can be saved on the local PC. You can set the picture storage location here manually.

Steps
1. Enter the **System Configuration** page.
2. Click **Storage**.
3. Switch on **Alarm Picture Storage**.
4. Select a disk to save the pictures.
5. Click **Save**.

10.6 Set Alarm Sound

When the event is triggered, the client can give an audible warning to notify the security personnel. You can set the sound of the audible warning in this section.

Steps
1. Click **System Configuration → Alarm** .
2. Click ⬛ and select the audio file from the local PC.
3. Click **Save**.
4. **Optional:** Click **Default** to restore the default settings.

Chapter 11 Operation and Maintenance

You can perform operations in the menu, such as device arming control and alarm output control, to ensure a smooth and convenient usage of the client.

In the upper-right corner of the client, click [icon] and select different items on the menu to perform the following operations.

Open Files

You can open files of captured pictures, videos, and logs saved on the local PC, and search or filter the files.

[i] **Note**

The files of captured pictures and videos can be saved as new copies on the local PC for backup.

Broadcast

Select one or multiple devices to enable the broadcast function of the devices.

Device Arming Control

You can arm and disarm the devices, and view the arming status of devices. See ***Enable Receiving Event from Devices*** for details.

Alarm Output Control

You can enable the alarm output function for devices. After the alarm output is enabled, when an alarm or pre-alarm is triggered, the client will caution the user. See ***Other Functions*** for details.

Play Videos via Player

You can use the player to play the recorded videos stored on the local PC.
Click [icon] on the lower right of the player, and select the video file stored on the local PC to play. During the playback, operations including pause, stop, speed, single frame, digital zoom, volume control, capture, and opening file are supported.

View Help Information

You can view the client user manual, client name, client version, and open source software licenses.