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# Symbol Conventions

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

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>! Danger</td>
<td>Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.</td>
</tr>
<tr>
<td>! Caution</td>
<td>Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.</td>
</tr>
<tr>
<td>❱ Note</td>
<td>Provides additional information to emphasize or supplement important points of the main text.</td>
</tr>
</tbody>
</table>
Safety Instruction

These instructions are intended to ensure that user can use the product correctly to avoid danger or property loss.

Laws and Regulations

• In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.

Transportation

• Keep the device in original or similar packaging while transporting it.
• Keep all wrappers after unpacking them for future use. In case of any failure occurred, you need to return the device to the factory with the original wrapper. Transportation without the original wrapper may result in damage on the device and the company shall not take any responsibilities.
• Do not drop the product or subject it to physical shock. Keep the device away from magnetic interference.

Power Supply

• Please purchase the charger by yourself. Input voltage should meet the Limited Power Source (12 VDC, or 24 VAC) according to the IEC62368 standard. Please refer to technical specifications for detailed information.
• Make sure the plug is properly connected to the power socket.
• The socket-outlet shall be installed near the equipment and shall be easily accessible.
• DO NOT connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.
• DO NOT touch the bare metal contacts of the inlets after the circuit breaker is turned off. Electricity still exists.
• + identifies the positive terminal(s) of equipment which is used with, or generates direct current.
  - identifies the negative terminal(s) of equipment which is used with, or generates direct current.
• Ensure correct wiring of the terminals for connection to an AC mains supply.

Battery

• Risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions. Il y a risque d'explosion si la batterie est remplacée par une batterie de type incorrect. Mettre au rebut les batteries usagées conformément aux instructions.
• The built-in battery cannot be dismantled. Please contact the manufacture for repair if necessary.
• For long-term storage of the battery, make sure it is fully charged every half year to ensure the battery quality. Otherwise, damage may occur.
• This equipment is not suitable for use in locations where children are likely to be present.
• Improper replacement of the battery with an incorrect type may defeat a safeguard (for example, in the case of some lithium battery types).
• DO NOT dispose of the battery into fire or a hot oven, or mechanically crush or cut the battery, which may result in an explosion.
• DO NOT leave the battery in an extremely high temperature surrounding environment, which may result in an explosion or the leakage of flammable liquid or gas.
• DO NOT subject the battery to extremely low air pressure, which may result in an explosion or the leakage of flammable liquid or gas.

Installation
• Never place the equipment in an unstable location. The equipment may fall, causing serious personal injury or death.
• This equipment is for use only with corresponding brackets. Use with other (carts, stands, or carriers) may result in instability causing injury.

System Security
• You acknowledge that the nature of Internet provides for inherent security risks, and our company shall not take any responsibilities for abnormal operation, privacy leakage or other damages resulting from cyber attack, hacker attack, however, our company will provide timely technical support if required.
• Please enforce the protection for the personal information and the data security as the device may be confronted with the network security problems when it is connected to the Internet. Please contact us when the device might exist network security risks.
• Please understand that you have the responsibility to configure all the passwords and other security settings about the device, and keep your user name and password.

Maintenance
• If the product does not work properly, please contact your dealer or the nearest service center. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
• A few device components (e.g., electrolytic capacitor) require regular replacement. The average lifespan varies, so periodic checking is recommended. Contact your dealer for details.
• Wipe the device gently with a clean cloth and a small quantity of ethanol, if necessary.
• If the equipment is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.
• To reduce the risk of fire, replace only with the same type and rating of fuse.
• The serial port of the equipment is used for debugging only.
• Disconnect the power source during servicing.
Using Environment

- Make sure the running environment meets the requirement of the device. The operating temperature shall be -40°C to 60°C (-40°F to 140°F), and the operating humidity shall be 95% or less, no condensing.
- DO NOT expose the device to high electromagnetic radiation or dusty environments.
- DO NOT aim the lens at the sun or any other bright light.
- The equipment shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the equipment.
- No naked flame sources, such as lighted candles, should be placed on the equipment.
- Provide a surge suppressor at the inlet opening of the equipment under special conditions such as the mountain top, iron tower, and forest.
- Burned fingers when handling the parts with symbol \( \Delta \). Wait one-half hour after switching off before handling the parts.

Emergency

- If smoke, odor, or noise arises from the device, immediately turn off the power, unplug the power cable, and contact the service center.

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Chapter 1 Overview

1.1 Brief Description

Thermal & Optical Bi-spectrum PTZ network camera, integrates the function of the decoder, thermal camera, and the high-definition zoom camera. It performs temperature measurement, dynamic fire source detection and other smart detections in the remote surveillance of the power system, metallurgy system, and petrochemical engineering, and so on. It is equipped with high-sensitivity IR detector and high-performance sensor. The device is able to measure object's temperature at a high accuracy in real time. The pre-alarm system helps you discover unexpected events immediately and protects your property.

1.2 Function

This section introduces main functions of the device.

Fire and Smoke Detection
Device can detect fire source and smoke in the scene and output pre-alarm and alarm to protect the property.

Temperature Measurement
Device can measure the actual temperature of the spot being monitored. The device alarms when temperature exceeds the temperature threshold value.

VCA
Device can do behavior analysis. Multiple rules can be configured for different requirements.
Chapter 2 Device Activation and Accessing

To protect the security and privacy of the user account and data, you should set a login password to activate the device when access the device via network.

*Note*
Refer to the user manual of the software client for the detailed information about the client software activation.

### 2.1 Activate the Device via SADP

Search and activate the online devices via SADP software.

**Before You Start**
Access www.hikvision.com to get SADP software to install.

**Steps**
1. Connect the device to network using the network cable.
2. Run SADP software to search the online devices.
3. Check **Device Status** from the device list, and select **Inactive** device.
4. Create and input the new password in the password field, and confirm the password.

*Caution*
We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including upper case letters, lower case letters, numbers, and special characters) in order to increase the security of your product. And we recommend you reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

5. Click **OK**.

**Device Status** changes into **Active**.

6. Optional: Change the network parameters of the device in **Modify Network Parameters**.

### 2.2 Activate the Device via Browser

You can access and activate the device via the browser.

**Steps**
1. Connect the device to the PC using the network cables.
2. Change the IP address of the PC and device to the same segment.
**Note**

The default IP address of the device is 192.168.1.64. You can set the IP address of the PC from 192.168.1.2 to 192.168.1.253 (except 192.168.1.64). For example, you can set the IP address of the PC to 192.168.1.100.

3. Input **192.168.1.64** in the browser.
4. Set device activation password.

**Caution**

We highly recommend you create a strong password of your own choosing (using a minimum of 8 characters, including at least three of the 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 reset your password regularly, especially in the high security system, resetting the password monthly or weekly can better protect your product.

5. Click **OK**.
6. Input the activation password to log in to the device.
7. **Optional**: Go to **Configuration → Network → Basic → TCP/IP** to change the IP address of the device to the same segment of your network.

### 2.3 Login

Log in to the device via Web browser.

#### 2.3.1 Plug-in Installation

Certain operation systems and web browser may restrict the display and operation of the device function. You should install plug-in or complete certain settings to ensure normal display and operation. For detailed restricted function, refer to the actual device.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Web Browser</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Internet Explorer 10+</td>
<td>Follow pop-up prompts to complete plug-in installation.</td>
</tr>
<tr>
<td></td>
<td>Google Chrome 57+</td>
<td>Click <a href="#">Download Plug-in</a> to download and install plug-in.</td>
</tr>
</tbody>
</table>
|                  | Mozilla Firefox 52+       | Go to **Configuration → Network → Advanced Settings → Network Service** to enable WebSocket or WebSockets for normal view if plug-in installation is not required.
<table>
<thead>
<tr>
<th>Operating System</th>
<th>Web Browser</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac OS 10.13+</td>
<td>Mac Safari 12+</td>
<td>Plug-in installation is not required. Go to Configuration → Network → Advanced Settings → Network Service to enable WebSocket or WebSockets for normal view. Display and operation of certain functions are restricted. For example, Playback and Picture are not available. For detailed restricted function, refer to the actual device.</td>
</tr>
</tbody>
</table>

**Note**
The device only supports Windows and Mac OS system and does not support Linux system.

### 2.3.2 Illegal Login Lock

It helps to improve the security when accessing the device via Internet.

Go to **Configuration → System → Security → Security Service**, and enable **Enable Illegal Login Lock**. **Illegal Login Attempts** and **Locking Duration** are configurable.

**Illegal Login Attempts**

When your login attempts with the wrong password reach the set times, the device is locked.

**Locking Duration**

The device releases the lock after the setting duration.
Chapter 3 Temperature Measurement

When you enable this function, the device measures the actual temperature of the scene. It alarms when temperature exceeds the temperature threshold value.

3.1 Notice

This part introduces the notices of configuring temperature measurement function.

- The target surface should be as vertical to the optical axis as possible. It is recommended that the angle of oblique image plane should be less than 45°.
- The target image pixels should be more than 5 × 5.
- If multiple presets will be taken for temperature measurement, it is recommended to set the patrol time above 20 s.
- Please select line thermography or area thermography for a certain area temperature measurement. The point thermography is not recommended in case of deviation occurred during device movement to affect the accuracy of temperature measurement.

3.2 Thermography Configuration Flow Chart

This part introduces the process of configuring temperature measurement.
3.3 Automatic Thermography

Configure the temperature measurement parameters and temperature measurement rules. The device can measure the actual temperature and output alarms when temperature exceeds the alarm threshold value.
3.3.1 Set Thermography Parameters

Configure the parameters of temperature measurement.

Steps
1. Go to Configuration → Local, enable Display Temperature Info.
   Display Temperature Info.
   Select Yes to display temperature information on live view.

   Display Rule Info. on Capture
   Select Yes to display rule information on the capture.

   Enable Rules to display the rules information on live view.

2. Click Save.
3. Go to Configuration → Temperature Measurement → Basic Settings to configure parameters.
   Enable Temperature Measurement
   Check to enable temperature measurement function.

   Enable Color-Temperature
   Check to display Temperature-Color Ruler in live view.

   Display Temperature Info. on Stream
   Check to display temperature information on the stream.

   Display Max./Min./Average Temperature
   Check to display maximum/minimum/average temperature information on liveview when the temperature measurement rule is line or area.

   Position of Thermometry Info
   Select the position of temperature information showed on the live view.
   • Near Target: display the information beside the temperature measurement rule.
   • Top Left: display the information on the top left of screen.

   Add Original Data on Capture
   Check to add data on alarm triggered capture of thermal channel.

   Add Original Data on Stream
   Check to add original data on thermal view.

   Data Refresh Interval
   It means the refresh interval of temperature information.

   Unit
   Display temperature with Degree Celsius (°C)/Degree Fahrenheit (°F)/Degree Kelvin (K).

   Temperature Range
   Select the temperature measurement range.
Version
View the version of current algorithm.

Reflect Light Filter & Forklift Filter
Enable these functions if there is strong reflective light from the sun or a forklift in the scene. Or it may cause false alarm.

Note
These functions and VCA function are mutually exclusive.

4. Optional: Click Restart to restart the algorithm library.
5. Click Save.

3.3.2 Set Normal Mode
This function is used to measure the temperature of the whole scene and alarm.

Steps
1. Go to Configuration → Temperature Measurement → Basic Settings, and check Enable Temperature Measurement.
2. Refer to Set Thermography Parameters to set the parameters.
3. Go to Configuration → Temperature Measurement → Advanced Settings, and select Normal.
4. Configure the parameters of normal mode.
   Emissivity
   Set the emissivity of your target. The emissivity of each object is different.
   Distance
   The distance between the target and the device.
   Pre-Alarm Threshold
   When the temperature of target exceeds the pre-alarm threshold, and this status keeps more than Filtering Time, it triggers pre-alarm.
   Alarm Threshold
   When the temperature of target exceeds the alarm threshold, and this status keeps more than Filtering Time, it triggers alarm.
   Pre-Alarm Output and Alarm Output
   Check Pre-Alarm Output and Alarm Output to link the pre-alarm or alarm with the connected alarm device.
5. Refer to Set Arming Schedule for setting scheduled time. Refer to Linkage Method Settings for setting linkage method.
6. Click Save.
   The maximum and minimum temperature will be displayed on the live view.
3.3.3 Set Expert Mode

Select the temperature measurement rules from Point, Line, or Area and configure parameters, the device alarms if the alarm rules are met.

Steps
1. Go to Configuration → Temperature Measurement → Basic Settings, check Enable Temperature Measurement.
2. Refer to Set Thermography Parameters to set the parameters.
4. Refer to Set Preset to set a preset.
5. Select and enable the temperature measurement rules. Please refer to Set Thermography Rule for setting the rule.
6. Optional: Click Area’s Temperature Comparison to set the alarm rules and the temperature.
7. Refer to Set Arming Schedule for setting scheduled time. Refer to Linkage Method Settings for setting linkage method.
8. Click Save.

The maximum temperature and thermography rules will be displayed on the liveview.

3.3.4 Set Thermography Rule

Steps
1. Customize the rule name.
2. Select the rule type to Point, Line, or Area. Then draw a point, line, or area on the interface where the position to be measured.
   - Point Please refer to Point Thermography for detailed configuration.
   - Line Please refer to Line Thermography for detailed configuration.
   - Area Please refer to Area Thermography for detailed configuration.
3. Configure the temperature measurement parameters.
Emissivity
   Set the emissivity of the target. The emissivity of the surface of a material is its effectiveness in emitting energy as thermal radiation. Different objects have different emissivity. Refer to *Common Material Emissivity Reference* to search for the target emissivity.

Distance
   The distance between the target and the device.

Reflective Temperature
   If there is any object with high emissivity in the scene, check and set the reflective temperature to correct the temperature. The reflective temperature should be set the same as the temperature of the high emissivity object.

4. Click 🔄 and set the **Alarm Rule**.

   **Alarm Temperature and Pre-Alarm Temperature**
   Set the alarm temperature and pre-alarm temperature. E.g., select Alarm Rule as Above (Average Temperature), set the Pre-Alarm Temperature to 50 °C, and set the Alarm Temperature to 55 °C. The device pre-alarms when its average temperature is higher than 50 °C and alarms when its average temperature is higher than 55 °C.

   **Filtering Time**
   It refers to the duration time after the target temperature reaches or exceeds the pre-alarm temperature/alarm temperature.

   **Tolerance Temperature**
   Set the tolerance temperature to prevent the constant temperature change to affect the alarm. E.g., set tolerance temperature as 3°C, set alarm temperature as 55°C, and set pre-alarm temperature as 50°C. The device sends pre-alarm when its temperature reaches 50°C and it alarms when its temperature reaches 55°C and only when the device temperature is lower than 52°C will the alarm be cancelled.

   **Pre-Alarm Output and Alarm Output**
   When the temperature of target exceeds the pre-alarm or alarm threshold, it triggers the pre-alarm or alarm output of the connected device.

   **Area's Temperature Comparison**
   Select two areas and set the comparison rule, and set the temperature difference threshold. The device alarms when the temperature difference meets the setting value.

5. Click **Save**.
   Click **Live View**, and select thermal channel to view the temperature and rules information on live view.
**Point Thermography**

Configure the temperature measurement rule and click any point in live view to monitor the temperature.

**Steps**
1. Click in the live view and a cross cursor showed on the interface.
2. Drag the cross cursor to desired position.
   
   Go to **Live View** interface to view the temperature and rule of the point in thermal channel.

**Line Thermography**

Configure the temperature measurement rule and monitor the maximum temperature of the line.

**Steps**
1. Click and drag the mouse to draw a line in the live view interface.
2. Click and move the line to adjust the position.
3. Click and drag the ends of the line to adjust the length.
   
   Go to **Live View** interface to view the maximum temperature and rule of the line in thermal channel.

**Area Thermography**

Configure the temperature measurement rule and monitor the maximum temperature of the area.

**Steps**
1. Click and drag the mouse in the liveview to draw the area and right click to finish drawing.
2. Click and move the area to adjust the position.
3. Drag the corners of the area to adjust the size and shape.
   
   Go to **Live View** interface to view the maximum temperature and rule of the area in thermal channel.

**3.4 Manual Thermography**

After enable the manual thermography function of the device, you can click any position on the live view to show the real temperature.

**Steps**
1. Go to **Configuration → Local** and select **Display Temperature Info.** as **Yes.**
2. Go to **Configuration → Temperature Measurement → Basic Settings**.
3. Check **Enable Temperature Measurement.**
4. Click **Save.**
5. Go to live view interface and select thermal channel, click 📊. Click any position on the interface to show the real temperature.

### 3.5 Search History Temperature

You can search the history temperature and generate the temperature/time graphic.

**Before You Start**
Refer to *Set Memory Card* and *Set NAS* to set the storage first.

**Steps**
1. Go to **Configuration → Temperature Measurement → Search History Temperature**.
2. Set the search parameters.
   - **Preset**
     - You can search the highest temperature information in normal mode. Or you can search the temperature information of special presets in expert mode.
   - **Start Time**
     - Set the searching start time.
   - **Display Time Interval**
     - Display the temperature information for every setting time interval.
3. Click **Search** to generate the graphic.
4. Click **Export** to download the graphic.
Chapter 4 Fire and Smoke Detection

The device will trigger and upload alarm when detect the fire source or smoke.

Fire and smoke detection is applied to fire-prevention purposes in scenic region, forest, tunnel and so on. You can configure the fire source detection parameters and smoke detection parameters. When fire source or smoke is detected, the alarm actions will be triggered.

**Note**

Not all models support the smoke detection function, take the actual product for reference.

### 4.1 Fire and Smoke Detection Flow Chart

Introduce the process of configuring fire and smoke detection.

![Fire and Smoke Detection Flow Chart](image)

*Figure 4-1 Fire and Smoke Detection Flow Chart*
4.2 Recommended Scene

This part introduces the recommended scenes of fire source detection and helps you select the appropriate scene.

Fire source detection can be applied to indoor and outdoor monitoring with a maximum detection radius 15 km. To achieve the best monitoring effect, please set the installation place as requirements below.

- The installation place should be the highest position within the detection area. The lens should not be covered during movement to detect the maximum area.
- It is better to choose the installation place with convenient traffic, well-equipped power and internet facilities. E.g. communication tower, watchtower, high-rise roof and so on.

4.3 Detection Mode and Application Scene

Fire and Smoke Detection Mode

Fire or Smoke
The system alarms when device is either triggered by fire source detection or smoke detection.

Fire and Smoke
The system holds when device is triggered by fire source detection or smoke detection. When target is detected by both rules, the system sends two alarms, otherwise, the system sends single alarm.

Double Confirm
The system alarms when device is both triggered by fire source detection and smoke detection.

Specified Fire Source
The system alarms when device is triggered by fire source detection.

Specified Smoke
The system alarms when device is triggered by smoke.

Application Scene
In Application Scene, Short Distance and Long Distance are selectable. Select the scene according to the actual monitoring distance.
4.4 Set the Presets

Please set the presets according to steps below to improve the accuracy of fire detection.

Steps
1. If the presets located in different areas, you can set 6 presets in two areas as the example showed below.

![Diagram showing two areas with preset numbers 1 to 6.

Figure 4-2 Set the Presets for fire detection

2. Divide the scan area into three parts and set a preset every 120°. The black numbers are presets, and the red numbers are scan areas.
3. Set the presets according to the sequence of patrol path: 1->2->3->1->4->5->6->4.

Note
- When set the presets, you should adjust the zoom ratio to view the image of both optical channel and thermal channel clearly.
- The recommended zoom ratio of optical channel and patrol speed shows in the table below.
### Table 4-1 Table of optical channel zoom ratio and patrol speed

<table>
<thead>
<tr>
<th>Focus Distance</th>
<th>16.7-1000 (focus distance)</th>
<th>12.5-775 (focus distance)</th>
<th>15.6-500 (focus distance)</th>
<th>6.7-330 (focus distance)</th>
<th>10-320 (focus distance)</th>
<th>6-240 (focus distance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 km</td>
<td>15</td>
<td>4</td>
<td>20</td>
<td>4</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>10 km</td>
<td>10</td>
<td>5</td>
<td>15</td>
<td>4</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>5 km</td>
<td>7</td>
<td>6</td>
<td>10</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>3 to 5 km</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

The left column is optical ratio, the right columns are speed level.

4.5 Set Fire Detection Parameters

To avoid the potential fire damage, you should configure the fire detection function for certain areas. The detail configuration steps show as below.

**Before You Start**
- The fire detection function can locate the fire source area quickly together with patrol or linear scan. Please refer to *Set Patrol Scan* for configuring patrol. Please refer to *Set the Presets* for presets setting.
- Please refer to *Set Device Position* for locating the fire source position.
- Go to Configuration → Local, set the fire point parameters.

**Locate Highest Temperature Point**
- Click and save to show the position of the highest temperature on the interface.

**Frame Fire Point**
- Click and save to frame the detected fire source.

**Steps**
1. Go to Configuration → Event → Smart Event, select Fire Detection.
2. Check Enable Fire and Smoke Detection.
3. Refer to *Detection Mode and Application Scene* for setting the fire detection mode.
4. Check Display Fire Source Frame on Stream to display a red frame around the fire source on stream when fire occurs.
5. Setting the parameters of fire detection.

**Detection Mode**
by Single Frame
It can quickly detect fire while moving, but have a high false positive rate.
Adjust **Sensitivity during Patrol**. The bigger the value is, the more easily the fire source can be detected, and the false rate is higher.

by Multiple Frame
The system stops to check the doubtful fire source after first detection. It alarms with high accuracy after double checking the fire source on multiple frames, thus the detection speed is slow.
As to the detection sensitivity of this mode, adjust the **Sensitivity during Patrol** for the first detection and **Verification Sensitivity** for the double check.
In this detection mode, **Smoke Auxiliary Detection** can also be used to help verify the fire source.
Check **Cancel Repeated Alarm** and the device alarms only one time if fire source detected in the same place during one day.

Hold-and-Alarm Mode
**Auto** and **Manual** are selectable. The system will stop when it detects the fire source. You can set the duration while it keeps still.

Auto
You can set the dwell time. During the dwell time the camera stays still where it detects the fire source when performing auto scan, patrol, pattern, scheduled task, and park action.

Manual
The device stays still where it detects the fire source, until you manually

Fire Source Zoom Ratio
**Auto**
The optical channel changes its zoom ratio until the thermal channel have the same field of view.

**Manual**
You can set the optical zoom ratio.

**Note**
The settings vary according to different models.

6. **Optional**: you can shield certain areas from being detected in fire source detection. Refer to **Set Fire Source Shielded Region** for details.
7. Refer to **Set Arming Schedule** for setting scheduled time. Refer to **Linkage Method Settings** for setting linkage method.
8. Click **Save**.
4.5.1 Set Fire Source Shielded Region

Steps
1. Go to Configuration → Local, and enable Display Shield Area.
2. Go to Configuration → Event → Smart Event → Fire Source Region Shield.
3. Check Enable Fire Source Detection Shield.
4. Select Drawing Mode, and draw the area you want to shield.
   a. Click the PTZ control buttons to find the area you want to shield from the fire detection.
   b. Click Draw Area, and drag the mouse in the live view to draw the area.
   c. You can drag the corners of the red rectangle area to change its shape and size.
   d. Click Stop Drawing to finish drawing, or click Clear All to clear all of the areas you set without saving them.

Out FOV Select this mode if the shielded area exceeds the current scene.
   a. Click Draw Area, and a red cursor displays in live view.
   b. Select Vertex NO. 1, and adjust the live view image by clicking the PTZ control buttons.
   c. When one corner of the shielded area is on the red cursor, click Set Vertex.
   d. Repeat steps b-c to set other three vertexes.
   e. Click Stop Drawing to finish drawing, or click Clear All to clear all of the vertexes you set.

Note
- Set vertices clockwise or anticlockwise in sequence.
- The pan angle of set area should be from 2 to 80 degrees, and tilt angle should be from 1 to 45 degrees.
- Draw four vertexes again if you want to change the shielded area.

5. Check Display Shield Area to show the shield area on the live view.
6. Click Add to save the fire detection shield, and it will be listed in the Fire Source Detection Shield List area; you can select a region and click Delete to delete it from the list; you can also define the color of the regions.
7. Click Save.

4.6 Set Smoke Detection Parameters

To avoid the potential smoke damage, you should configure the smoke detection function for certain areas. The detail configuration steps show as below.

Steps
1. Go to Configuration → Event → Smart Event, select Fire and Smoke Detection.
2. Check **Enable Fire and Smoke Detection**.
3. Refer to *Detection Mode and Application Scene* for setting the smoke detection mode.
4. Check **Display Smoke Info on Stream** to display the smoke information on stream.
5. Set the **Sensitivity during Patrol** and **Verification Sensitivity** of smoke detection. The higher the value is, the more easily the smoke can be detected, and the false alarm rate is higher.

6. **Optional**: you can shield certain areas from being detected in smoke detection.
   1) Go to **Configuration → Event → Smart Event → Smoke Detection Shield**.
   2) Check **Enable Smoke Detection Shield**.
   3) Click **Draw Area** and drag the mouse in the live view to draw the area. Release the mouse to finish drawing.
   4) You can drag the corners of the red rectangle area to change its shape and size. Or drag the rectangle to the position on your demand.
   5) Click **Stop Drawing**.
   6) Click **Clear All** to clear all of the setting areas.
   7) Set the value of **Active Zoom Ratio** on your demand, and then the shield will only appear when the zoom ratio is greater than the predefined value.
   8) Click **Add** to save the smoke detection shield, and it will be listed in the **Smoke Detection Shield List** area. You can select a region and click **Delete** to delete it from the list. You can also define the color of the regions.
   9) Check **Display Shield Region** to show the shielded area in live view.

7. Refer to **Set Arming Schedule** for setting scheduled time. Refer to **Linkage Method Settings** for setting linkage method.
8. Click **Save**.
Chapter 5 Behavior Analysis

The behavior analysis function is used to detect whether there is any target break the VCA rules. The optical camera will track the target or the device will alarm when the VCA rule is triggered.

5.1 Flow Chart of Behavior Analysis

The process of configuring the behavior analysis function is described below.

5.2 Set VCA Parameters

Steps
1. Go to Configuration → Local → Rules
Enable it to display rules information on live view.

**Display Rules Info. on Capture**
Select Yes to display rules information on the capture.

2. Go to **Configuration → VCA**.
3. Select the camera channel.
4. Go to **Basic Settings** to configure VCA parameters for the channel.

**Display VCA Info. on Stream**
Select to display target info and rule on stream, the information will be added to the video stream, and the overlay will be displayed if you get live view or play back by the VS Player.

**Display Target Info. on Alarm Picture**
Select to display the target information on the alarm picture.

**Display Rule Info. on Alarm Picture**
Select to display the rule information on the alarm picture.

**Snapshot Settings**
Select to upload the picture to the surveillance center when the VCA alarm occurs. You can also set the quality of the picture.

5. Click **Save**.

### 5.3 Configure the Behavior Analysis

This section is the detailed instruction of configuring the behavior analysis rules.

**Steps**
1. Go to **Configuration → VCA**, and select a camera channel to start configuration.
2. Refer to **Set Detection Scenes and Tracking** for detection scene and tracking settings.
3. Refer to **Set Rules** to set the scene rules.
4. Refer to **Set the Scene Auto-Switch** for setting scene patrol.
5. Go to **Configuration → VCA → Camera 02 → Basic Settings**, enable Intelligent Analysis.
6. Click **Save**.

#### 5.3.1 Set Detection Scenes and Tracking

Multiple detection scenes are supported for both channels. You can create scenes and set the tracking parameters for better target monitoring performance.

**Steps**
1. Go to **Configuration → VCA**, and select a camera channel.
2. Click **Scene Configuration** and **New Scene** to create one or more scenes.
3. Select a numbered scene from the navigation bar on the left and enter a **Scene Name**.
4. Check **Track** to enable the target tracking function for the scene.

5. **Optional:** Check **Limited Tracking** and set the auto tracking range.

   The camera channel tracks a target only within the set auto tracking range.
   
   1) Control the PTZ buttons to a desired scene and click **Set Up Limit** to save the position as the scene's upper boundary.
   
   2) Repeat to set the left, right and lower boundaries of the scene.

6. Set other tracking parameters.

   **Tracking Duration**
   
   Set the duration of tracking. If the value is selected as 0, the tracking duration will not be limited.

   **Zooming Ratio**
   
   It is the zoomed-in level when the camera channel is tracking a target.
   
   Go to **Configuration → VCA → Zooming Ratio**, select a scene from the drop-down list, and control the zoom in/out buttons to get a desired zooming level, and save the settings.

   **Post-tracking**
   
   Set the duration of automatic tracking of the target after it stops.
   
   Go to **Configuration → VCA → Advanced Configuration**, and set parameter.

7. Click **Save**.

5.3.2 Set Rules

The device can detect whether there is any target breaking the VCA rules. The optical camera will track the target or the device will alarm when the VCA rule is triggered.

Steps

1. Go to **Configuration → VCA → Scene Configuration → Scene x → Rule**.
2. Click ‹ to add a new rule.
3. Enter the rule name, and click the drop down menu to select **Rule Type**.

**Note**

Each scene can be configured with different rule types. Up to 8 rules can be set for one scene.

**Line Crossing**

If any target move across the setting line, the alarm will be triggered. You can set the crossing direction.

**Intrusion**
If any target intrude into the pre-defined region longer than the set duration, the alarm will be triggered.

**Region Entrance**
If any target enters the pre-defined region, the alarm will be triggered.

**Region Exiting**
If any target exits the pre-defined region, the alarm will be triggered.

4. Set parameters of the rule.
   - **Sensitivity**
     The higher the value is, the more easily the alarm can be triggered.

   **Target Detection**
   You are recommended to select the target as **Human & Vehicle**. In distant view, the device cannot classify the target with pixels less than 10*10. The target will be recognized as human directly. So the selection of this item will not trigger false alarm or missing alarm.

   **Background Interference Suppression**
   Eliminate the environment interference to reduce the false alarm. For example, the wind blows grass.

5. Draw the rules.
   - When the rule type is selected as **Line Crossing**, click to draw a line in the live view. You can drag end points of the line to adjust the position and length.

     **Line Crossing**
     You can set the crossing direction. Bidirectional, A-to-B, or B-to-A are selectable.

   - When the rule type is selected as **Intrusion, Region Entrance, Region Entrance**, click to draw an area in the live view. Right click the mouse to finish drawing.

     **Duration**
     The device performs behavior analysis when the target stays in the detection area for more than set value.

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw three segments of the rule from near to far to cover all of the detection area.</td>
</tr>
</tbody>
</table>

6. Check to enable **Filter by Pixel**. Then Draw max size and min size rectangles to filter the target among human, vehicle, animal, and others. Only the target whose size is between the Max. Size and Min. Size value will trigger the alarm.

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>• You can draw the max. size and min. size rectangles according to the real target in the scene. The recommended size is 1.2 times of the target.</td>
</tr>
<tr>
<td>• The height of the rectangle is a more important factor as it is the main difference to tell apart a human and an animal.</td>
</tr>
<tr>
<td>• Click to copy the same settings to other rules.</td>
</tr>
</tbody>
</table>
5.3.3 Set the Scene Auto-Switch

The device supports patrol tracking for multiple important scenes. The alarm will be triggered if the rule is broken during patrol sequence.

Before You Start
Finish scene settings in advance. See Set Detection Scenes and Tracking for configuration instructions.

Steps
1. Go to VCA → Scene Auto-Switch to configure this function.
2. Set the scene patrol sequence.
   a. Scene Name
      Select a scene name from the drop down list.
   b. Duration
      Set the dwell time of the scene when doing patrol tracking.
3. Click the up, down arrow to adjust the patrol sequence.
4. Click Save.

5.3.4 Set Polling Plan

Both the optical channel and the thermal channels support the behavior analysis. Set the working shift for each channel.

Before You Start
The detection scenes and rules should be configured in advance for both channels.

Steps
1. Go to Configuration → VCA → Camera 01/Camera 02 → Basic Settings → Polling Plan.
2. Select a polling mode.
   a. Auto
      The device automatically activates the optical channel for behavior analysis in daytime and the thermal channel at night.
   b. Manual
      You can manually set the working shifts for the channels.
      i. Select the Polling Mode as Manual.
      ii. Select Optical Channel or Thermal Channel for the drop-down list.
      iii. Drag to draw time bars on the schedule. Click on the drawn bar to adjust the time and the channel.
3. Click **Save**.

### 5.4 Advanced Configuration

Go to **Configuration** → **VCA** → **Advanced Configuration** and configure the parameters.

**Detection Parameters**

**Detection Sensitivity**
- The higher the sensitivity is, the easier the target will be detected.

**Background Update Rate**
- If a detected target remains in the monitoring scene for a certain time, the system will count the target as the background automatically. The greater the value is, the faster the target will be counted as the background.

**Minimum Target Size**
- The system will filter out the object smaller than the minimum target size.

**Displacement Constraint for Target Generation**
- The higher the value is, the slower the target is generated, and the higher accuracy the analysis will get.

**Optical-axis Movement**
- Check the function when the target moves in the direction of camera's optical-axis.
  - When the target is far from the device and the movement is not clear, enable this function to check the move direction.

**Single Alarm**
- The system only sends alarm once for one target triggering. Otherwise, the alarm will be triggered continuously until the target disappears.

**Scene Modes**
- The scene mode is set to be **General** by default. Select **Distant View** when you are far from the targets. Select **Leaves Interfered View** when there are shaking targets in the scene, such as leaves.

Restore Parameters

**Restore Default**
- Click **Restore** to restore the parameters to the default.

**Restart VCA**
- Click **Restart** to restart the VCA function.
Chapter 6 Event and Alarm

This part introduces the configuration of events. The device takes certain response to triggered alarm.

6.1 Set Motion Detection

It helps to detect the moving objects in the detection region and trigger the linkage actions.

Steps
1. Go to Configuration → Event → Basic Event → Motion Detection.
2. Select the channel No.
3. Check Enable Motion Detection.
4. Optional: Highlight to display the moving object in the image in green.
   1) Check Enable Dynamic Analysis for Motion.
   2) Go to Configuration → Local.
   3) Set Rules to Enable.
5. Select Configuration Mode, and set rule region and rule parameters.
   - For the information about normal mode, see Normal Mode.
   - For the information about expert mode, see Expert Mode.
6. Set the arming schedule and linkage methods. For the information about arming schedule settings, see Set Arming Schedule. For the information about linkage methods, see Linkage Method Settings.
7. Click Save.

6.1.1 Normal Mode

You can set motion detection parameters according to the device default parameters.

Steps
1. Select normal mode in Configuration.
2. Set the sensitivity of normal mode. The higher the value of sensitivity is, the more sensitive the motion detection is. If the sensitivity is set to 0, motion detection and dynamic analysis do not take effect.
3. Click Draw Area. Click and drag the mouse on the live video, then release the mouse to finfish drawing one area.
Stop Drawing Stop drawing one area.
Clear All Clear all the areas.

4. **Optional:** You can set the parameters of multiple areas by repeating the above steps.

### 6.1.2 Expert Mode

You can configure the motion detection parameters of day/night switch according to the actual needs.

**Steps**

1. Select expert mode in **Configuration**.
2. Set parameters of expert mode.

#### Day/Night Switch

- **OFF:** Day/Night switch is disabled.
- **Day/Night Auto-Switch:** The system switches day/night mode automatically according to environment. It displays colored image at day and black and white image at night.
- **Day/Night Scheduled-Switch:** The system switches day/night mode according to the schedule. It switches to day mode during the set periods and switches to night mode during the other periods.

---

**Note**

This function is not supported in the expert mode of thermal channel.

**Sensitivity**

The higher the value of sensitivity is, the more sensitive the motion detection is. If the sensitivity is set to 0, motion detection and dynamic analysis do not take effect.
3. Select an **Area** and click **Draw Area**. Click and drag the mouse on the live video, then release the mouse to finish drawing one area.

![Figure 6-2 Set Rules](image)

**Stop Drawing** Finish drawing one area.

**Clear All** Delete all the areas.

4. **Optional**: Repeat the above steps to set multiple areas.

### 6.2 Set Video Tampering Alarm

When the configured area is covered and cannot be monitored normally, the alarm is triggered and the device takes certain alarm response actions.

**Steps**

1. Go to **Configuration → Event → Basic Event → Video Tampering** .
2. Select the channel number.
3. Check **Enable**.
4. Set the **Sensitivity**. The higher the value is, the easier to detect the area covering.
5. Click **Draw Area** and drag the mouse in the live view to draw the area.

**Stop Drawing** Finish drawing.

**Clear All** Delete all the drawn areas.
6. Refer to *Set Arming Schedule* for setting scheduled time. Refer to *Linkage Method Settings* for setting linkage method.

7. Click **Save**.

### 6.3 Set Alarm Input

Alarm signal from the external device triggers the corresponding actions of the current device.

**Before You Start**

Make sure the external alarm device is connected. See *Quick Start Guide* for cable connection.

**Steps**

1. Go to **Configuration** → **Event** → **Basic Event** → **Alarm Input**.
2. Check **Enable Alarm Input Handling**.
3. Select **Alarm Input NO.** and **Alarm Type** from the dropdown list. Edit the **Alarm Name**.
4. Refer to *Set Arming Schedule* for setting scheduled time. Refer to *Linkage Method Settings* for setting linkage method.
5. Click **Copy to...** to copy the settings to other alarm input channels.
6. Click **Save**.
6.4 Set Exception Alarm

Exception such as network disconnection can trigger the device to take corresponding action.

Steps
1. Go to Configuration → Event → Basic Event → Exception.
2. Select Exception Type.
   - HDD Full: The HDD storage is full.
   - HDD Error: Error occurs in HDD.
   - Network Disconnected: The device is offline.
   - IP Address Conflicted: The IP address of current device is same as that of other device in the network.
   - Illegal Login: Incorrect user name or password is entered.
   - Voltage Instable: The power supply voltage is fluctuating.
3. Refer to Linkage Method Settings for setting linkage method.
4. Click Save.

6.5 Set Burning-Prevention

This function is used to close the shutter to prevent the lens from high temperature damage.

Steps
2. Check Enable.
3. Select burning-prevention mode.
   - Lens Movement: The lens move automatically to avoid high temperature damage.
4. Set the protection duration.
5. Click Save.

6.6 Detect Audio Exception

Audio exception detection function detects the abnormal sound in the surveillance scene, such as the sudden increase/decrease of the sound intensity, and some certain actions can be taken as response.

Steps
1. Go to Configuration → Event → Smart Event → Audio Exception Detection.
2. Select one or several audio exception detection types.
Audio Loss Detection
Detect sudden loss of audio track.

Sudden Increase of Sound Intensity Detection
Detect sudden increase of sound intensity. **Sensitivity** and **Sound Intensity Threshold** are configurable.

**Note**
- The lower the sensitivity is, the more significant the change should be to trigger the detection.
- The sound intensity threshold refers to the sound intensity reference for the detection. It is recommended to set as the average sound intensity in the environment. The louder the environment sound, the higher the value should be. You can adjust it according to the real environment.

Sudden Decrease of Sound Intensity Detection
Detect sudden decrease of sound intensity. **Sensitivity** is configurable.

3. Refer to **Set Arming Schedule** for setting scheduled time. Refer to **Linkage Method Settings** for setting linkage methods.
4. Click **Save**.

**Note**
The function varies according to different models.
Chapter 7 Arming Schedule and Alarm Linkage

Arming schedule is a customized time period in which the device performs certain tasks. Alarm linkage is the response to the detected certain incident or target during the scheduled time.

7.1 Set Arming Schedule

Set the valid time of the device tasks.

Steps
1. Click Arming Schedule.
2. Drag the time bar to draw desired valid time.

Note
Up to 8 periods can be configured for one day.

3. Adjust the time period.
   - Click on the selected time period, and enter the desired value. Click Save.
   - Click on the selected time period. Drag the both ends to adjust the time period.
   - Click on the selected time period, and drag it on the time bar.
4. Optional: Click Copy to... to copy the same settings to other days.
5. Click Save.

7.2 Linkage Method Settings

You can enable the linkage functions when an event or alarm occurs.

7.2.1 Trigger Alarm Output

If the device has been connected to an alarm output device, and the alarm output No. has been configured, the device sends alarm information to the connected alarm output device when an alarm is triggered.

Steps
1. Go to Configuration → Event → Basic Event → Alarm Output.
2. Set alarm output parameters.
   - Automatic Alarm For the information about the configuration, see Automatic Alarm.
   - Manual Alarm For the information about the configuration, see Manual Alarm.
3. Click Save.
Manual Alarm

You can trigger an alarm output manually.

Steps
1. Set the manual alarm parameters.
   - **Alarm Output No.**
     Select the alarm output No. according to the alarm interface connected to the external alarm device.
   - **Alarm Name**
     Edit a name for the alarm output.
   - **Delay**
     Select Manual.
2. Click Manual Alarm to enable manual alarm output.
3. Optional: Click Clear Alarm to disable manual alarm output.

Automatic Alarm

Set the automatic alarm parameters, then the device triggers an alarm output automatically in the set arming schedule.

Steps
1. Set automatic alarm parameters.
   - **Alarm Output No.**
     Select the alarm output No. according to the alarm interface connected to the external alarm device.
   - **Alarm Name**
     Custom a name for the alarm output.
   - **Delay**
     It refers to the time duration that the alarm output remains after an alarm occurs.
2. Set the alarming schedule. For the information about the settings, see Set Arming Schedule.
3. Click Copy to... to copy the parameters to other alarm output channels.
4. Click Save.

7.2.2 FTP/NAS/Memory Card Uploading

If you have enabled and configured the FTP/NAS/memory card uploading, the device sends the alarm information to the FTP server, network attached storage and memory card when an alarm is triggered.
Refer to **Set FTP** to set the FTP server.
Refer to **Set NAS** for NAS configuration.
Refer to **Set Memory Card** for memory card storage configuration.

### 7.2.3 Send Email

Check **Send Email**, and the device sends an email to the designated addresses with alarm information when an alarm event is detected.
For email settings, refer to **Set Email**.

**Set Email**

When the email is configured and **Send Email** is enabled as a linkage method, the device sends an email notification to all designated receivers if an alarm event is detected.

**Before You Start**
Set the DNS server before using the Email function. Go to **Configuration → Network → Basic Settings → TCP/IP** for DNS settings.

**Steps**
1. Go to email settings page: **Configuration → Network → Advanced Settings → Email**.
2. Set email parameters.
   1) Input the sender’s email information, including the **Sender’s Address**, **SMTP Server**, and **SMTP Port**.
   2) **Optional**: If your email server requires authentication, check **Authentication** and input your user name and password to log in to the server.
   3) Set the **E-mail Encryption**.
      - When you select **SSL** or **TLS**, and disable STARTTLS, emails are sent after encrypted by SSL or TLS. The SMTP port should be set as 465.
      - When you select **SSL** or **TLS** and **Enable STARTTLS**, emails are sent after encrypted by STARTTLS, and the SMTP port should be set as 25.

   **Note**
   If you want to use STARTTLS, make sure that the protocol is supported by your email server. If you check the **Enable STARTTLS** while the protocol is not supported by your email sever, your email is sent with no encryption.

4) **Optional**: If you want to receive notification with alarm pictures, check **Attached Image**. The notification email has 3 attached alarm pictures about the event with configurable image capturing interval.
5) Input the receiver’s information, including the receiver's name and address.
6) Click **Test** to see if the function is well configured.
3. Click **Save**.
7.2.4 Notify Surveillance Center

Check Notify Surveillance Center, the alarm information is uploaded to the surveillance center when an alarm event is detected.

7.2.5 Trigger Recording

Check Trigger Recording, and the device records the video about the detected alarm event. For device with more than one camera channels, you can set one or more channels to take recordings if needed.
For recording settings, refer to Video Recording and Picture Capture.
Chapter 8 PTZ

PTZ is an abbreviation for pan, tilt, and zoom. It means the movement options of the camera.

8.1 PTZ Control

In live view interface, you can use the PTZ control buttons to control the device panning, tilting, and zooming.

PTZ Control Panel

Click and hold the directional button to pan/tilt the device.

**Note**
- You can set Keyboard Control Speed in Configuration → PTZ → Basic Settings. The speed of pan/tilt movement in live view is based on this speed level.
- You can set Max. Tilt-angle in Configuration → PTZ → Basic Settings to limit tilt movement range.

Click the button, then the device keeps panning.

**Note**
You can set Auto Scan Speed in Configuration → PTZ → Basic Settings. The higher the value you set, the faster the device pans.

Drag the slider to adjust the speed of pan/tilt movement.

**Note**
You can set Manual Control Speed in Configuration → PTZ → Basic Settings.

<table>
<thead>
<tr>
<th>Compatible</th>
<th>The control speed is same as Keyboard Control Speed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>Choose Pedestrian when you monitor the pedestrians.</td>
</tr>
</tbody>
</table>
Non-motor Vehicle | Choose **Non-motor Vehicle** when you monitor the non-motor vehicles.

Motor Vehicle | Choose **Motor Vehicle** when you monitor the motor vehicles.

**Auto** | You are recommended to set it as **Auto** when the application scene of the speed dome is complicated.

To avoid blurred image resulted from fast zoom, you can check **Enable Proportional Pan** in **Configuration → PTZ → Basic Settings**. If you enable this function, the pan/tilt speed change according to the amount of zoom. When there is a large amount of zoom, the pan/tilt speed will be slower for keeping the image from moving too fast on the live view image.

**Zoom in/out**

| ✯ | Click the button, and the lens zooms in. |
| ✽ | Click the button, and the lens zooms out. |

**Note**

- You can set **Zooming Speed** in **Configuration → PTZ → Basic Settings**. The higher the value is, the faster the zooming speed is.
- You can set **Zoom Limit** in **Configuration → Image → Display Settings → Other** to limit the maximum value of the total zoom (digital zoom and optical zoom).
- You can set **Synchronized Zoom** in **Configuration → PTZ → Basic Settings** to synchronize the zoom settings in the optical channel and the thermal channel.

**Focus**

| ✰ | Click the button, then the lens focuses near and the object nearby gets clear. |
| ✢ | Click the button, then the lens focuses far and the object far away gets clear. |

**Iris**

| ☼ | When the image is too dark, click the button to enlarge the iris. |
| ☿ | When the image is too bright, click the button to stop down the iris. |
8.2 Set Preset

A preset is a predefined image position. For the defined preset, you can call the preset No. to view the position.

Steps
1. Click \( \square \) to show the setting panel, and click \( \checkmark \).
2. Use the PTZ control buttons to move the lens to the desired position.
3. Select a preset number from the preset list, and click \( \checkmark \) to finish the setting.

| Note | Some presets are predefined with special command. You can only call them but not configure them. |

4. Repeat the steps above to set multiple presets.

| \( \) Click the button to call the preset. | \( \times \) Click the button to delete the preset. |

| Note | You can delete all presets in Configuration → PTZ → Clear Config. Click Clear All Presets, and click Save. |

What to do next
Go to Configuration → PTZ → Basic Settings to set preset freezing and preset speed. After enabling preset freezing, the live image switches directly from one preset to another, without showing the areas between these two scenes. It also guarantees the masked area will not be seen when the device is moving.

8.2.1 Special Presets

You can call the following presets with special demands to enable corresponding functions.

<table>
<thead>
<tr>
<th>Preset No.</th>
<th>Function</th>
<th>Preset No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Auto Flip</td>
<td>92</td>
<td>Set manual limits</td>
</tr>
<tr>
<td>34</td>
<td>Back to origin</td>
<td>93</td>
<td>Save manual limits</td>
</tr>
<tr>
<td>35</td>
<td>Call patrol 1</td>
<td>94</td>
<td>Remote reboot</td>
</tr>
<tr>
<td>36</td>
<td>Call patrol 2</td>
<td>95</td>
<td>Call OSD menu</td>
</tr>
<tr>
<td>37</td>
<td>Call patrol 3</td>
<td>96</td>
<td>Stop a scan</td>
</tr>
<tr>
<td>38</td>
<td>Call patrol 4</td>
<td>97</td>
<td>Start random scan</td>
</tr>
</tbody>
</table>
### Preset Table

<table>
<thead>
<tr>
<th>Preset No.</th>
<th>Function</th>
<th>Preset No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Day mode</td>
<td>98</td>
<td>Start frame scan</td>
</tr>
<tr>
<td>40</td>
<td>Night mode</td>
<td>99</td>
<td>Start auto scan</td>
</tr>
<tr>
<td>41</td>
<td>Call pattern 1</td>
<td>100</td>
<td>Start tilt scan</td>
</tr>
<tr>
<td>42</td>
<td>Call pattern 2</td>
<td>101</td>
<td>Start panorama scan</td>
</tr>
<tr>
<td>43</td>
<td>Call pattern 3</td>
<td>102</td>
<td>Call patrol 5</td>
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<tr>
<td>44</td>
<td>Call pattern 4</td>
<td>103</td>
<td>Call patrol 6</td>
</tr>
<tr>
<td>45</td>
<td>One-touch patrol</td>
<td>104</td>
<td>Call patrol 7</td>
</tr>
<tr>
<td>46</td>
<td>Call area scan</td>
<td>105</td>
<td>Call patrol 8</td>
</tr>
<tr>
<td>47</td>
<td>Call area scan 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note**

Not all models support the presets above, please take the actual product for reference.

### 8.3 Set Patrol Scan

Patrol scan is a function to automatically move among multiple presets.

**Before You Start**

Make sure that you have defined more than one presets. See [Set Preset](#) for detailed configuration.

**Steps**

1. Click to show the setting panel, and click to enter patrol setting interface.
2. Select a patrol number from the list and click .
3. Click to add presets.

**Preset**

Select predefined preset.

**Speed**

Set the speed of moving from one preset to another.

**Time**

It is the duration staying on one patrol point.

- Delete the presets in patrol.
- Adjust the preset order.

**Note**

A patrol can be configured with 32 presets at most, and 2 presets at least.
4. Click OK to finish a patrol setting.
5. Repeat the steps above to configure multiple patrols.
6. Operate patrols.
   - Call the patrol.
   - Stop patroling.
   - Delete the patrol.
   - Set the patrol.

![Note]
You can delete all patrols in Configuration → PTZ → Clear Config. Click Clear All Patrols, and click Save.

8.3.1 Set One-Touch Patrol

The device automatically adds presets to one patrol path and starts patrol scan.

Steps
1. Set two or more presets except special presets. For setting presets, refer to Set Preset.
   The device will automatically add presets to patrol path No.8.
2. Choose one of the following methods to enable the function.
   - Click .
   - Call patrol path No.8.
   - Select and call preset No.45.

8.4 Set Pattern Scan

The device can move as the recorded pattern.

Steps
1. Click to show the PTZ control panel, and click .
2. Select one pattern scan path that needs to be set.
3. Click to start recording pattern scan.
4. Click PTZ control buttons as demands.

![Note]
Recording stops when the space for pattern scan is 0%.

5. Click to complete one pattern scan path settings.
6. Click to call pattern scan.
   - Stop pattern scan.
Reset pattern scan path.
Delete the selected pattern scan.

**Note**
If you need to delete all the pattern scans, go to Configuration → PTZ → Clear Config, and check Clear All Patterns, and click Save.

### 8.5 Set Linear Scan

The device can perform auto scan in setting area for fire source detection.

**Steps**
1. Go to Configuration → PTZ → Linear Scan.
2. Select the camera channel.
3. Zoom in and zoom out the camera to the appropriate zoom ratio, and click Save Ratio.

**Note**
Click Enable Saved Ratio to set the camera to the saved zoom ratio.

4. Check Enter Area Settings.
5. Set the left/right/up/down limits with the PTZ control panel, and click to confirm settings.
6. Optional: Click Clear to delete the saved scan area.
7. Click Save.
8. Click Call Linear Scan to start linear scan, and click Stop Linear Scan to stop linear scan.

**Note**
When setting the linear scan area, make sure the target area is both included in the optical channel and the thermal channel.

### 8.6 Set Limit

The device can only move within the limited range.

**Steps**
1. Go to Configuration → PTZ → Limit.
2. Select Limit Type.

**Manual Stops**
- It refers to the movement range limit when you control the device manually.

**Scan Stops**
- It refers to the movement range limit when the device scans automatically.
3. Click **Set** and set limits according to the prompt on the live image.
4. **Optional:** Click **Clear** to clear the limit settings of the selected mode.
5. Click **Save**.
6. Check **Enable Limit**.

---

**Note**
Scan limit is only supported by the device that has scan function.

---

Result
The device can only move within the set region after saving the settings.

### 8.7 Set Initial Position

Initial position refers to the relative initial position of the device azimuth. You can set the initial position if you need to select one point in the scene as the base point.

**Steps**
1. Go to **Configuration → PTZ → Initial Position**.
2. Move the device to the needed position by manually controlling the PTZ control buttons.
3. Click **Set** to save the information of initial position.
   - **Call** The device moves to the set initial position.
   - **Clear** Clear the set initial position.

### 8.8 Set Scheduled Tasks

You can set the device to perform a certain task during a certain period.

**Steps**
1. Go to **Configuration → PTZ → Scheduled Tasks**.
2. Check **Enable Scheduled Task**.
3. Select the a task type from the drop-down list and draw a time bar on the schedule table.
4. Click the set time bar and set the action ID and smart event or VCA type.

---

**Note**
Not all task types support the settings of action ID and smart event or VCA function. Please take the actual product for reference.

5. Repeat step 3 and step 4 to set more than one scheduled tasks.
6. **Set Park Time.** During the set task period, if you operate the device manually, the scheduled task will be suspended. When the manual operation is over, the device will continue to perform the scheduled task after the set park time.

   **Note**
   Up to 30 time periods can be configured per day.

7. Click **Save**.

   **Note**
   If you want to clear all scheduled tasks, go to **Configuration → PTZ → Clear Config**, check **Clear All Scheduled Tasks**, and click **Save**.

### 8.9 Set Park Action

You can set the device to perform an action (for example, preset or patrol) or return to a position after a period of inactivity (park time).

**Before You Start**
Set the action type first. For example, if you want to select patrol as park action, you should set the patrol. See **Set Patrol Scan** for details.

**Steps**
1. Go to **Configuration → PTZ → Park Action**.
2. Check **Enable Park Action**.
3. Set **Park Time**: the inactive time before the device starts park action.
4. Select **Action Type** according to your needs.

   **Note**
   The VCA Type varies according to different action types.

5. Select an **Action Type ID**, if you select patrol or preset as action type.
   - When the action type is patrol, action type ID stands for patrol No. When the action type is preset, action type ID stands for preset No.

6. Click **Save**.

### 8.10 Set Combined Path

It offers the option to add multiple types of VCA scanning tasks to one combination path. Setting the combined path as a scheduled task or a park action is convenient to manage multiple VCA functions in different circumstances.
Before You Start

Finish setting the desired actions (Linear Scan and Patrol are available) and VCA functions (Fire Detection is available). See Set Linear Scan, Set Patrol Scan, and Fire and Smoke Detection for configuration instructions.

Steps
1. Go to Configuration → PTZ → Combined Path.
2. Select a channel.
3. Select a path number from the drop-down list.
   - Up to 4 paths are available.
4. Click Add, and set the action type, action No. and VCA type for the added action.
   - Up to 10 actions can be added to one path.
   - You can click ON to manually call the path and OFF to stop it.
5. Click Save.

What to do next
Set the combined path in park action (see Set Park Action) or scheduled task (see Set Scheduled Tasks).

8.11 Set Privacy Mask

Privacy mask enables you to cover certain areas on the live image to prevent certain spots in the surveillance area from being live viewed and recorded.

Steps
1. Go to Configuration → PTZ → Privacy Mask.
2. Adjust the live image to the target scene via PTZ control buttons.
3. Draw the area.
   - Draw Area
     - Click Draw Area, and click on the live view image to determine the boundary of the mask.
   - Stop Drawing
     - Click Stop Drawing after drawing the mask.
4. Click Add.
   - It is listed in Privacy Mask List.
5. Edit Name, Type, and Active Zoom Ratio on your demand.

   Active Zoom Ratio
   - When the actual zoom ratio is less than the set active zoom ratio, the set area can not be covered. When the actual zoom ratio is greater than the set active zoom ratio, the privacy mask is valid. The maximum value of active zoom ratio depends on the camera module.
6. Repeat the steps above to set other privacy masks.
7. Check Enable Privacy Masks.
8.12 Set Device Position

Before You Start
Go to Configuration → PTZ → Basic Settings → PTZ OSD to enable PT Status display.

Steps
1. Go to the setting page: Configuration → PTZ → Position Settings.
2. Select a PT Mode.
   - Manual: Use a direction indicating device to determine the North at the device location, and set the North for the device. For details, see Set Manual Compass.
   - Auto: For the device that has built-in e-compass, the compass can automatically tell the north direction for the device. For details, see Set Auto Compass.
3. Check Installation Angle Calibration to perform angle calibration one time when the device installation is finished.
   It is used for situations where the device is not installed horizontally, to increase the fire source detection accuracy.
4. Set Vandal-proof alarm.
   After enabling the function, the device triggers alarms once its position changes because of shock or vandalism.
   - Sensitivity: The higher the value is, the easier the alarm will be triggered.
   - Upload Vandal-proof Alarm: The device uploads the alarm information when the alarm is triggered.
5. Get the device location information in advance, and input the longitude and latitude of the device manually.
6. Click Save.

What to do next
If you lost direction when operating the device, you can click Point to North to call the north position that is saved in the device.

8.12.1 Set Manual Compass

Use a direction indicating device to determine the North at the device location, and set the North for the device.

Before You Start
Use a direction indicating device to determine the north at the device location.

Steps
1. Select the PT Mode as Manual.
2. Adjust the tilt position of the device to 0 by controlling the up arrow and down arrow on the PTZ panel.
3. Adjust the pan position to show the live view of the north direction by controlling the left arrow and right arrow on the PTZ panel.
4. Click Set as North.

8.12.2 Set Auto Compass

For the device that has built-in e-compass, the compass can automatically tell the north direction for the device.

Before You Start
Electromagnetic interference may affect the accuracy of the e-compass. Use manual compass if electromagnetic interference occurs in the device installation environment.

Steps
1. Select the PT Mode as Auto.
2. Click Calibrate to synchronize the north of the device with that of the e-compass.

8.13 Set Power Off Memory

This function can resume the previous PTZ status of device after it restarting from a power-off.

Steps
1. Go to Configuration → PTZ → Basic Settings.
2. Select Resume Time Point. When the device stays at one position for the set resume time point or more, the position is saved as a memory point. The device returns to the last memory point when it restarts.
3. Click Save.

8.14 Set PTZ Priority

The function can set the PTZ priority of different signals.

Steps
1. Go to Configuration → PTZ → Prioritize PTZ.
2. Set the priority signal and delayed time.
   
   Network
   The network signal controls the device with priority.
   
   RS-485
   The RS-485 signal controls the device with priority.
   
   Delay
It refers to the time interval of PTZ operation controlled by different signals. When the operation with high priority is finished, the low priority signal controls the device after the setting interval.

3. Click **Save**.
Chapter 9 Live View

It introduces the live view parameters, function icons and transmission parameters settings.

### 9.1 Live View Parameters

The supported functions vary depending on the model.

**Note**

For multichannel devices, select the desired channel first before live view settings.

#### 9.1.1 Window Division

- \( \square \) refers to \( 1 \times 1 \) window division.
- \( \square \) refers to \( 2 \times 2 \) window division.
- \( \square \) refers to \( 3 \times 3 \) window division.
- \( \square \) refers to \( 4 \times 4 \) window division.

#### 9.1.2 Window Proportion

- \( \square \) refers to the window size is \( 16 : 9 \).
- \( \square \) refers to the window size is \( 4 : 3 \).
- \( \square \) refers to original window size.
- \( \square \) refers to self-adaptive window size.

#### 9.1.3 Live View Stream Type

Select the live view stream type according to your needs. For the detailed information about the stream type selection, refer to *Stream Type*.

#### 9.1.4 Enable and Disable Live View

This function is used to quickly enable or disable live view of all channels.

- Click \( \square \) to start live view of all channels.
- Click \( \square \) to stop live view of all channels.
9.1.5 View Previous/Next Page

When the number of channels surpasses that of live view window division, this function can switch live view among multiple channels.

Click ← → to switch live view among multiple channels.

9.1.6 Full Screen

This function is used to view the image in full screen mode.

Click ‣ to start full screen mode and press ESC button to exit.

9.1.7 Conduct Regional Focus

You can enable the function to focus on certain area.

Steps
1. Click ‣ to enable regional focus.
2. Drag the mouse on the live view to draw a rectangle as the desired focus area.
3. Click ‣ to disable this function.

9.1.8 Light

Click ‣ to turn on or turn off the illuminator.

9.1.9 Operate Wiper

For the device that has a wiper, you can control the wiper via web browser.

Steps
1. Go to wiper setting page: Configuration → PTZ → Wiper.
2. Select a wiper mode.

- **One Time**
  - The wiper wipes one time when you click 🔄 on live view page.

- **Cycle**
  - The wiper works on schedule at set wiping interval. Click 🔄 on live view to start wiping.
  - **Duration**
    - The schedule in which the wiper is ready to work.
  - **Interval**
    - The interval between two secessive wiping actions.
Auto

Note

Auto mode is only available for device that supports rain-sensing auto wiper.

In auto mode, the wiper works when rain drops on the window.

9.1.10 Lens Initialization

Lens initialization is used on the device equipped with motorized lens. The function can reset lens when long time zoom or focus results in blurred image. This function varies according to different models.

Manual Lens Initialization

Click to operate lens initialization.

Auto Lens Initialization

Go to Configuration → System → Maintenance → Lens Correction to enable this function. You can set the arming schedule, and the device will correct lens automatically during the configured time periods.

9.1.11 Track Manually

In live view, manually select a target for the device to track.

Note

The function may not be supported by certain device models.

Steps
1. Click on the toolbar of the live view page.
2. Click a moving object in the live image.
   The device tracks the target and keeps it in the center of live view image.

9.1.12 Auxiliary Focus

Click to realize automatic focus. This function is subject to the actual device model.

9.1.13 Quick Set Live View

It offers a quick setup of PTZ, display settings, OSD, video/audio and VCA resource settings on live view page.

Steps
1. Click to show quick setup page.
2. Set PTZ, display settings, OSD, video/audio and VCA resource parameters.
   - For PTZ settings, see **Lens Parameters Adjustment**.
   - For display settings, see **Display Settings**.
   - For OSD settings, see **OSD**.
   - For audio and video settings, see **Video and Audio**.
   - For VCA settings, see **Fire and Smoke Detection**, **Temperature Measurement**, and **Behavior Analysis**.

Note
The function is only supported by certain models.

9.1.14 Lens Parameters Adjustment

It is used to adjust the lens focus, zoom and iris.

**Zoom**
- Click , and the lens zooms in.
- Click , and the lens zooms out.

**Focus**
- Click , then the lens focuses far and the distant object gets clear.
- Click , then the lens focuses near and the nearby object gets clear.

**PTZ Speed**
- Slide to adjust the speed of the pan/tilt movement.

**Iris**
- When the image is too dark, click to enlarge the iris.
- When the image is too bright, click to stop down the iris.

9.1.15 Conduct 3D Positioning

3D positioning is to relocate the selected area to the image center.

**Steps**
1. Click to enable the function.
2. Select a target area in live image.
   - Left click on a point on live image: the point is relocated to the center of the live image. With no zooming in or out effect.
   - Hold and drag the mouse to a lower right position to frame an area on the live: the framed area is zoomed in and relocated to the center of the live image.
- Hold and drag the mouse to an upper left position to frame an area on the live: the framed area is zoomed out and relocated to the center of the live image.

3. Click the button again to turn off the function.

9.1.16 De-icing

Click to perform manual de-icing of the device.

9.1.17 Synchronize FOV

Click to synchronize the FOV of optical lens and thermal lens.

9.2 Set Transmission Parameters

The live view image may be displayed abnormally according to the network conditions. In different network environments, you can adjust the transmission parameters to solve the problem.

Steps
1. Go to Configuration → Local.
2. Set the transmission parameters as required.

Protocol

TCP
TCP ensures complete delivery of streaming data and better video quality, yet the real-time transmission will be affected. It is suitable for the stable network environment.

UDP
UDP is suitable for the unstable network environment that does not demand high video fluency.

MULTICAST
MULTICAST is suitable for the situation that there are multiple clients. You should set the multicast address for them before selection.

HTTP
HTTP is suitable for the situation that the third-party needs to get the stream from the device.

Play Performance

Shortest Delay
The device takes the real-time video image as the priority over the video fluency.

Balanced
The device ensures both the real-time video image and the fluency.

**Fluent**

The device takes the video fluency as the priority over real-time. In poor network environment, the device cannot ensure video fluency even the fluency is enabled.

**Auto Start Live View**

- **Yes** means the live view is started automatically. It requires a high performance monitoring device and a stable network environment.
- **No** means the live view should be started manually.

3. Click **OK**.
Chapter 10 Video and Audio

This part introduces the configuration of video and audio related parameters.

10.1 Video Settings

This part introduces the settings of video parameters, such as, stream type, video encoding, and resolution.

Go to setting page: Configuration → Video/Audio → Video.

Note
For device with multiple camera channels, select a channel before other settings.

10.1.1 Stream Type

For device supports more than one stream, you can specify parameters for each stream type.

Main Stream
The stream stands for the best stream performance the device supports. It usually offers the best resolution and frame rate the device can do. But high resolution and frame rate usually means larger storage space and higher bandwidth requirements in transmission.

Sub Stream
The stream usually offers comparatively low resolution options, which consumes less bandwidth and storage space.

Other Streams
Steams other than the main stream and sub stream may also be offered for customized usage.

10.1.2 Video Type

Select the content (video and audio) that should be contained in the stream.

Video
Only video content is contained in the stream.

Video & Audio
Video content and audio content are contained in the composite stream.
10.1.3 Resolution

Select video resolution according to actual needs. Higher resolution requires higher bandwidth and storage.

10.1.4 Bitrate Type and Max. Bitrate

Constant Bitrate
It means that the stream is compressed and transmitted at a comparatively fixed bitrate. The compression speed is fast, but mosaic may occur on the image.

Variable Bitrate
It means that the device automatically adjust the bitrate under the set **Max. Bitrate**. The compression speed is slower than that of the constant bitrate. But it guarantees the image quality of complex scenes.

10.1.5 Video Quality

When **Bitrate Type** is set as Variable, video quality is configurable. Select a video quality according to actual needs. Note that higher video quality requires higher bandwidth.

10.1.6 Frame Rate

The frame rate is to describe the frequency at which the video stream is updated and it is measured by frames per second (fps).

A higher frame rate is advantageous when there is movement in the video stream, as it maintains image quality throughout. Note that higher frame rate requires higher bandwidth and larger storage space.

10.1.7 Video Encoding

It stands for the compression standard the device adopts for video encoding.

**Note**
Available compression standards vary according to device models.
**H.264**

H.264, also known as MPEG-4 Part 10, Advanced Video Coding, is a compression standard. Without compressing image quality, it increases compression ratio and reduces the size of video file than MJPEG or MPEG-4 Part 2.

**H.264+**

H.264+ is an improved compression coding technology based on H.264. By enabling H.264+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.264, H.264+ reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.264+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.

---

**Note**

When H.264+ is enabled, **Video Quality**, **I Frame Interval**, **Profile** and **SVC** are not configurable.

**H.265**

H.265, also known as High Efficiency Video Coding (HEVC) and MPEG-H Part 2, is a compression standard. In comparison to H.264, it offers better video compression at the same resolution, frame rate and image quality.

**H.265+**

H.265+ is an improved compression coding technology based on H.265. By enabling H.265+, you can estimate the HDD consumption by its maximum average bitrate. Compared to H.265, H.265+ reduces storage by up to 50% with the same maximum bitrate in most scenes.

When H.265+ is enabled, **Max. Average Bitrate** is configurable. The device gives a recommended max. average bitrate by default. You can adjust the parameter to a higher value if the video quality is less satisfactory. Max. average bitrate should not be higher than max. bitrate.

---

**Note**

When H.265+ is enabled, **Video Quality**, **I Frame Interval**, **Profile** and **SVC** are not configurable.

**Profile**

This function means that under the same bitrate, the more complex the profile is, the higher the quality of the image is, and the requirement for network bandwidth is also higher.
I-Frame Interval

I-frame interval defines the number of frames between 2 I-frames.

In H.264 and H.265, an I-frame, or intra frame, is a self-contained frame that can be independently decoded without any reference to other images. An I-frame consumes more bits than other frames. Thus, video with more I-frames, in other words, smaller I-frame interval, generates more steady and reliable data bits while requiring more storage space.

SVC

Scalable Video Coding (SVC) is the name for the Annex G extension of the H.264 or H.265 video compression standard.

The objective of the SVC standardization has been to enable the encoding of a high-quality video bitstream that contains one or more subset bitstreams that can themselves be decoded with a complexity and reconstruction quality similar to that achieved using the existing H.264 or H.265 design with the same quantity of data as in the subset bitstream. The subset bitstream is derived by dropping packets from the larger bitstream.

SVC enables forward compatibility for older hardware: the same bitstream can be consumed by basic hardware which can only decode a low-resolution subset, while more advanced hardware will be able decode high quality video stream.

10.1.8 Smoothing

It refers to the smoothness of the stream. The higher value of the smoothing is, the better fluency of the stream will be, though, the video quality may not be so satisfactory. The lower value of the smoothing is, the higher quality of the stream will be, though it may appear not fluent.

10.1.9 Display VCA Info

VCA information can be displayed by Player and Video.

Player

Player means the VCA info can be displayed by the dedicated player provided by the manufacturer.

Video

Video means the VCA info can be displayed by any general video player.
10.2 Audio Settings

It is a function to set audio parameters such as audio encoding, environment noise filtering.

Go to the audio settings page: Configuration → Video/Audio → Audio.

10.2.1 Audio Encoding

Select the audio encoding compression of the audio.

10.2.2 Audio Input

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Note</strong></td>
<td></td>
</tr>
<tr>
<td>• Connect the audio input device as required.</td>
<td></td>
</tr>
<tr>
<td>• The audio input display varies with the device models.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio Input</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LineIn</td>
<td>Set Audio Input to LineIn when the device connects to the audio input device with the high output power, such as MP3, synthesizer or active pickup.</td>
</tr>
<tr>
<td>MicIn</td>
<td>Set Audio Input to MicIn when the device connects to the audio input device with the low output power, such as microphone or passive pickup.</td>
</tr>
</tbody>
</table>

10.2.3 Environmental Noise Filter

Set it as OFF or ON. When the function is enabled, the noise in the environment can be filtered to some extent.

10.2.4 Two-way Audio

It is used to realize the two-way audio function between the monitoring center and the target in the monitoring screen.

**Before You Start**

- Make sure the audio input device (pick-up or microphone) and audio output device (speaker) connected to the device is working properly. Refer to specifications of audio input and output devices for device connection.
- If the device has built-in microphone and speaker, two-way audio function can be enabled directly.
Steps
1. Click Live View.
2. Click on the toolbar to enable two-way audio function of the camera.
3. Click and select , move the slider to adjust the volume.
4. Click , disable the two-way audio function.

10.3 Set ROI

ROI (Region of Interest) encoding helps to assigns more encoding resource to the region of interest, thus to increase the quality of the ROI whereas the background information is less focused.

Before You Start
Please check the video coding type. ROI is supported when the video coding type is H.264 or H.265.

Steps
1. Go to Configuration → Video/Audio → ROI .
2. Check Enable.
3. Select the channel No. according to your need.
4. Select Stream Type.
5. Select Region No. in Fixed Region to draw ROI region.
   1) Click Drawing.
   2) Click and drag the mouse on the view screen to draw the fixed region.
   3) Click Stop Drawing.

   Note
   Select the fixed region that needs to be adjusted and drag the mouse to adjust its position.

6. Input the Region Name and ROI Level.
7. Click Save.

   Note
   The higher the ROI level is, the clearer the image of the detected region is.

8. Optional: Select other region No. and repeat the above steps if you need to draw multiple fixed regions.

10.4 Display Settings

It offers the parameter settings to adjust image features.

Go to Configuration → Image → Display Settings .
For device that supports multiple channels, display settings of each channel is required. The settings for different channels may be different. This part introduces all possible parameters among the channels. Click **Default** to restore settings.

### 10.4.1 Scene Mode

There are several sets of image parameters predefined for different installation environments. Select a scene according to the actual installation environment to speed up the display settings.

### 10.4.2 Image Adjustment

By adjusting the **Brightness**, **Saturation**, **Contrast** and **Sharpness**, the image can be best displayed.

### 10.4.3 Image Adjustment (Thermal Channel)

You can optimize the image display effect of thermal channel by setting background correction and manual correction.

**Background Correction**

Fully cover the lens with an object of uniform temperature in front of the lens, such as foam board or paperboard. When you click **Correct**, the device will take the uniform object as the standard and optimize the image once.

**Manual Correction**

Click **Correct** to optimize the image once.

---

**Note**

It is a normal phenomenon that short video freezing might occur during the process of **Background Correction** and **Manual Correction**.

### Thermal AGC Mode

Choose the AGC mode according to different scenes to balance and improve the image quality.

- Histogram: Choose for scene with obvious WDR and high temperature difference, can improve image contrast and enhance image. E.g. the scene contains both indoor and outdoor scenes.
- Linear: Choose for scene with low temperature difference and the target is not obvious, can improve image contrast and enhance image. E.g. the bird in forest.
- Self-Adaptive: Choose AGC mode automatically according to current scene.
10.4.4 Exposure Settings

Exposure is controlled by the combination of iris, shutter, and gain. You can adjust image effect by setting exposure parameters.

Exposure Mode

Auto
The iris, shutter, and gain values are adjusted automatically.
You can limit the changing ranges of iris, shutter and gain by setting Max. Iris Limit, Min. Iris Limit, Max. Shutter Limit, Min. Shutter Limit and Limit Gain for better exposure effect.

Iris Priority
The value of iris needs to be adjusted manually. The shutter and gain values are adjusted automatically according to the brightness of the environment.
You can limit the changing ranges of the shutter and gain by setting Max. Shutter Limit, Min. Shutter Limit and Limit Gain for better exposure effect.

Shutter Priority
The value of shutter needs to be adjusted manually. The iris and gain values are adjusted automatically according to the brightness of the environment.
You can limit the changing ranges of the iris by setting Max. Iris Limit, Min. Iris Limit and Limit Gain for better exposure effect.

Manual
You need to set Iris, Shutter, and Gain manually.

Slow Shutter
The higher the slow shutter level is, the slower the shutter speed is. It ensures full exposure in underexposure condition.

10.4.5 Focus

It offers options to adjust the focus mode, focus range, and the minimum focus distance.

Focus Mode

Semi-auto
The device focuses once after the PTZ and lens zooming. If the image is clear, the focus does not change when the scene changes.

Manual
You can adjust the focus manually on the live view page.

Focus Range
You can set the focus range to Short, Medium, Long. In Short mode, the focus range of the device is set to the test range. The device can focus more quickly compared to Medium, Long mode.

**Min. Focus Distance**
When the distance between the scene and lens is shorter than the Min. Focus Distance, the lens does not focus.

**Focus Speed**
This function is used to adjust the focus speed and only supported in thermal channel. The higher the value is, the faster the image focus. It is suitable for the image focus from fuzzy to clear. The lower the value is, the slower the image focus. It is suitable for the slightly adjustment of focus.

**Temperature Change Adaption**
Enable this function when the temperature change affect the image focus.

**10.4.6 ABF**
You can enable this function when the device cannot focus rear scene clearly.
Go to Configuration → System → Maintenance → System Service, and enable ABF. Then you can focus manually.

**Note**
Disable ABF function when the image is clear.

**10.4.7 Day/Night Switch**
Day/Night Switch function can provide color images in the day mode and black/white images in the night mode. Switch mode is configurable.

**Day**
- The image is always in color.

**Night**
- The image is always black/white

**Auto**
- The camera switches between the day mode and the night mode according to the illumination automatically.
Scheduled-Switch
Set the Start Time and the End Time to define the duration for day mode.

Note
Day/Night Switch function varies according to models.

10.4.8 Set Supplement Light

Steps
1. Go to Configuration → Maintenance → System Service.
2. Check Enable Supplement Light.
3. Click Save.

10.4.9 BLC
If you focus on an object against strong backlight, the object will be too dark to be seen clearly. BLC (backlight compensation) compensates light to the object in the front to make it clear. If BLC mode is set as Custom, you can draw a red rectangle on the live view image as the BLC area.

10.4.10 WDR
The WDR (Wide Dynamic Range) function helps the camera provide clear images in environment with strong illumination differences.
When there are both very bright and very dark areas simultaneously in the field of view, you can enable the WDR function and set the level. WDR automatically balances the brightness level of the whole image and provides clear images with more details.

Note
When WDR is enabled, some other functions may be not supported. Refer to the actual interface for details.

10.4.11 HLC
When the bright area of the image is over-exposed and the dark area is under-exposed, the HLC (High Light Compression) function can be enabled to weaken the bright area and brighten the dark area, so as to achieve the light balance of the overall picture.
10.4.12 White Balance

White balance is the white rendition function of the camera. It is used to adjust the color temperature according to the environment.

10.4.13 DNR

Digital Noise Reduction is used to reduce the image noise and improve the image quality. Normal and Expert modes are selectable.

**Normal**
- Set the DNR level to control the noise reduction degree. The higher level means stronger reduction degree.

**Expert**
- Set the DNR level for both space DNR and time DNR to control the noise reduction degree. The higher level means stronger reduction degree.

10.4.14 EIS

Increase the stability of video image by using jitter compensation technology.

10.4.15 Defog

You can enable the defog function when the environment is foggy and the image is misty. It enhances the subtle details so that the image appears clearer.

10.4.16 Set Palette

You can select the palette mode to display the thermal grayscale image to colored image.

**Steps**
1. Go to Configuration → Image → Display Settings.
2. Select the thermal channel.
3. Select a palette mode in Image Enhancement according to your need.

**Result**

The live view displays the image with palette.

10.4.17 Set Target Enhancement

You can set the color of the targets in different temperature ranges to identify the target quickly.
Steps
1. Go to Configuration → Image → Display Settings.
2. Select the thermal channel.
3. Click Image Enhancement, select Palette as White Hot or Black Hot.
4. Set the temperature value and color of High Temperature, Interval Temperature, or Low Temperature targets.
   - **Above (be colored)**
     When the target of high temperature needs to be colored, you can set the high temperature color. Target above the setting temperature will be displayed in setting color.
   - **Between (be colored)**
     When the target of an interval temperature needs to be colored, you can set the interval temperature color. Target between the minimum and the maximum temperatures will be displayed in setting color.
   - **Below (be colored)**
     When the target of low temperature needs to be colored, you can set the low temperature color. Target below the setting temperature will be displayed in setting color.
5. Click Save.

10.4.18 Set Palette Range
The live view can display the palettes effect of the specified temperature range.
Select Manual or Auto from By Temp. Range drop down list.

**Auto**
The device detects the max. temperature and min. temperature of the scene automatically and display image of the whole scene with palettes.

**Manual**
In this mode, you can enter the temperature upper limit and lower limit manually. And the live view shows the palettes effect of the desired temperature section more detailed.

10.4.19 Brightness Sudden Change
When the brightness of target and the background is hugely different (the temperature difference of target and background is huge), the system reduces the difference for viewing.

10.4.20 DDE
Digital Detail Enhancement is used to adjust the details of the image. OFF and Normal modes are selectable.
OFF
  Disable this function.

Normal
  Set the DDE level to control the details of the image. The higher the level is, the more details shows, but the higher the noise is.

10.4.21 Mirror

When the live view image is the reverse of the actual scene, this function helps to display the image normally.

Select the mirror mode as needed.

Note
The video recording will be shortly interrupted when the function is enabled.

10.4.22 Video Standard

Video standard is an ability of a video card or video display device that defines the amount of colors that are shown and the resolution. The two most common video standard used are NTSC and PAL. In NTSC, 30 frames are transmitted each second. Each frame is made up of 525 individual scan lines. In PAL, 25 frames are transmitted each second. Each frame is made up of 625 individual scan lines. Select video signal standard according to the video system in your country/region.

10.4.23 Digital Zoom

You can zoom in the image. The larger the zoom size is, the more blurred the image is.

10.4.24 Local Video Output

If the device is equipped with video output interfaces, such as BNC, CVBS, HDMI, and SDI, you can preview the live image directly by connecting the device to a monitor screen.

Select the output mode as ON/OFF to control the output.

10.5 OSD

You can customize OSD (On-screen Display) information such as device name, time/date, font, color, and text overlay displayed on video stream.

Go to OSD setting page: Configuration → Image → OSD Settings.

Select a channel.
Set the corresponding parameters, and click **Save** to take effect.

**Character Set**
Select character set for displayed information. If Korean is required to displayed on screen, select **EUC-KR**. Otherwise, select **GBK**.

**Displayed Information**
Set camera name, date, week, and their related display format.

**Text Overlay**
Set customized overlay text on image.

**OSD Parameters**
Set OSD parameters, such as **Display Mode**, **OSD Size**, **Font Color**, and **Alignment**.

### 10.6 Overlay Picture
Overlay a customized picture on live view.

**Before You Start**
The picture to overlay has to be in BMP format with 24-bit, and the maximum picture size is 128 × 128 pixel.

**Steps**
1. Go to picture overlay setting page: **Configuration → Image → Picture Overlay**.
2. Select a channel to overlay picture.
3. Click **Browse** to select a picture, and click **Upload**.
   - The picture with a red rectangle will appear in live view after successfully uploading.
4. Check **Enable Picture Overlay**.
5. Drag the picture to adjust its position.
6. Click **Save**.

### 10.7 Set Manual DPC (Defective Pixel Correction)
If the amount of defective pixels in the image is comparatively small and accurate correction is needed, you can correct these pixels manually.

**Steps**
1. Go to **Configuration → Image → DPC**.
2. Select the thermal channel.
3. Select manual mode.
4. Click the defective pixel on the image, then a cursor shows on the live view.
5. Click **Up, Down, Left, Right** to adjust the cursor position to the defective pixel position.
6. Click , then click to correct defective pixel.
Note
If multiple defective pixels need to be corrected, click \( \text{after locating a defective pixel. Then after locating other pixels, click } \) to correct them simultaneously.

7. Optional: Click \( \) to cancel defective pixel correction.

10.8 Set Picture in Picture
You can overlay the images of two channels and view the image of two channels at the same time.

Steps
1. Select a channel number.
2. Select the picture in picture mode.
   - **Normal Mode**: Disable picture in picture mode.
   - **Overlay Mode**: Enable picture in picture mode. You can overlay the image of another channel in the current channel.
3. Click \( \text{Save} \).

10.9 VCA Rule Display Settings
The VCA rule display refers to the function that you can customize the displayed overlay information of the VCA rule, which includes the font size and line and frame color.

You can go to **Configuration → Image → VCA Rule Display** to select the desired font size, and set the line and frame color.

10.10 Metadata
Metadata is the raw data that the device collects before algorithm processing. It is often used for the third party integration.

Go to **Configuration → Video/Audio → Metadata Settings** to enable metadata uploading of the desired function for the camera channels.
Chapter 11 Video Recording and Picture Capture

This part introduces the operations of capturing video clips and snapshots, playback, and downloading captured files.

11.1 Storage Settings

This part introduces the configuration of several common storage paths.

11.1.1 Set Memory Card

If you choose to store the files to memory card, make sure you insert and format the memory card in advance.

Before You Start
Insert the memory card to the camera. For detailed installation, refer to Quick Start Guide of the camera.

Steps
1. Go to storage management setting page: Configuration → Storage → Storage Management → HDD Management.
2. Select the memory card, and click Format to start initializing the memory card.
   The Status of memory card turns to Normal from Uninitialized, which means the memory card can be used normally.
3. Optional: Define the Quota of the memory card. Input the quota percentage for different contents according to your need.
4. Click Save.

11.1.2 Set NAS

Take network server as network disk to store the record files, captured images, etc.

Before You Start
Get the IP address of the network disk first.

Steps
1. Go to NAS setting page: Configuration → Storage → Storage Management → Net HDD.
2. Click HDD No.. Enter the server address and file path for the disk.
   Server Address
   The IP address of the network disk.
   File Path
The saving path of network disk files.

**Mounting Type**
Select file system protocol according to the operation system.
Enter user name and password of the net HDD to guarantee the security if **SMB/CIFS** is selected.

3. Click **Test** to check whether the network disk is available.
4. Click **Save**.

### 11.1.3 Set FTP

You can configure the FTP server to save images which are captured by events or a timed snapshot task.

**Before You Start**
Get the FTP server address first.

**Steps**
1. Go to **Configuration → Network → Advanced Settings → FTP**.
2. Configure FTP settings.
   - **Server Address and Port**
     The FTP server address and corresponding port.
   - **User Name and Password**
     The FTP user should have the permission to upload pictures.
     If the FTP server supports picture uploading by anonymous users, you can check **Anonymous** to hide your device information during uploading.
   - **Directory Structure**
     The saving path of snapshots in the FTP server.
3. Click **Upload Picture** to enable uploading snapshots to the FTP server.
4. Click **Test** to verify the FTP server.
5. Click **Save**.

### 11.1.4 Set Cloud Storage

It helps to upload the captured pictures and data to the cloud. The platform requests picture directly from the cloud for picture and analysis. The function is only supported by certain models.

**Steps**

⚠️ **Caution**
If cloud storage is enabled, the pictures are stored in the cloud storage server preferentially.
1. Go to **Configuration → Storage → Storage Management → Cloud Storage**.
2. Check **Enable Cloud Storage**.
3. Set basic parameters.
   - **Protocol Version** The protocol version of the cloud storage server.
   - **Server IP** The IP address of the cloud storage server. It supports IPv4 address.
   - **Serve Port** The port of the cloud storage server. 6001 is the default port and you are not recommended to edit it.
   - **User Name and Password** The user name and password of the cloud storage server.
   - **Picture Storage Pool ID** The ID of the picture storage region in the cloud storage server. Make sure storage pool ID and the storage region ID are the same.
4. Click **Test** to test the configured settings.
5. Click **Save**.

### 11.2 Video Recording

This part introduces the operations of manual and scheduled recording, playback, and downloading recorded files.

#### 11.2.1 Record Automatically

This function can record video automatically during configured time periods.

**Before You Start**
Select **Trigger Recording** in event settings for each record type except **Continuous**. See **Event and Alarm** for details.

**Steps**
1. Go to **Configuration → Storage → Schedule Settings → Record Schedule**.
2. Select channel No.
3. Check **Enable**.
4. Select a record type.

**Note**
The record type is vary according to different models.

**Continuous**
The video will be recorded continuously according to the schedule.

**Motion**
When motion detection is enabled and trigger recording is selected as linkage method, object movement is recorded.
Alarm
When alarm input is enabled and trigger recording is selected as linkage method, the video is recorded after receiving alarm signal from external alarm input device.

Motion | Alarm
Video is recorded when motion is detected or alarm signal is received from the external alarm input device.

Motion & Alarm
Video is recorded only when motion is detected and alarm signal is received from the external alarm input device.

Event
The video is recorded when configured event is detected.

5. Set schedule for the selected record type. Refer to Set Arming Schedule for the setting operation.

6. Click Advanced to set the advanced settings.

Overwrite
Enable Overwrite to overwrite the video records when the storage space is full. Otherwise the camera cannot record new videos.

Pre-record
The time period you set to record before the scheduled time.

Post-record
The time period you set to stop recording after the scheduled time.

Stream Type
Select the stream type for recording.

Note
When you select the stream type with higher bitrate, the actual time of the pre-record and post-record may be less than the set value.

7. Click Save.

11.2.2 Record Manually

Steps
1. Go to Configuration → Local .
2. Set the Record File Size and saving path to for recorded files.
3. Click Save.
4. Click 🎥 to start recording. Click 🎥 to stop recording.
11.2.3 Playback and Download Video

You can search, playback and download the videos stored in the local storage or network storage.

Steps
1. Click Playback.
2. Select channel No.
3. Set search condition and click Search.
   The matched video files showed on the timing bar.
4. Click  to play the video files.
   - Click  to clip video files.
   - Click  to play video files in full screen. Press ESC to exit full screen.

**Note**
Go to Configuration → Local, click Save clips to to change the saving path of clipped video files.

5. Click on the playback interface to download files.
   1) Set search condition and click Search.
   2) Select the video files and then click Download.

**Note**
Go to Configuration → Local, click Save downloaded files to to change the saving path of downloaded video files.

11.3 Capture Configuration

The device can capture the pictures manually or automatically and save them in configured saving path. You can view and download the snapshots.

11.3.1 Capture Automatically

This function can capture pictures automatically during configured time periods.

**Before You Start**
If event-triggered capture is required, you should configure related linkage methods in event settings. Refer to Event and Alarm for event settings.

Steps
1. Go to Configuration → Storage → Schedule Settings → Capture → Capture Parameters.
2. Set the capture type.

**Timing**
Capture a picture at the configured time interval.
Event-Triggered
Capture a picture when an event is triggered.

3. Set the Format, Resolution, Quality, Interval, and Capture Number.
4. Refer to Set Arming Schedule for configuring schedule time.
5. Click Save.

11.3.2 Capture Manually

Steps
1. Go to Configuration → Local.
2. Set the Image Format and saving path to for snapshots.
   JPEG
   The picture size of this format is comparatively small, which is better for network transmission.
   BMP
   The picture is compressed with good quality.
3. Click Save.
4. Click near the live view or play back window to capture a picture manually.

11.3.3 View and Download Picture

You can search, view and download the pictures stored in the local storage or network storage.

Steps
1. Click Picture.
2. Select channel No.
3. Set search condition and click Search.
   The matched pictures showed in the file list.
4. Select the pictures then click Download to download them.

Nota
Go to Configuration → Local, click Save snapshots when playback to change the saving path of pictures.
Chapter 12 Network Settings

12.1 TCP/IP

TCP/IP settings must be properly configured before you operate the device over network. IPv4 and IPv6 are both supported. Both versions can be configured simultaneously without conflicting to each other.

Go to Configuration → Basic Configuration → Network → TCP/IP for parameter settings.

NIC Type

Select a NIC (Network Interface Card) type according to your network condition.

IPv4

Two IPv4 modes are available.

DHCP

The device automatically gets the IPv4 parameters from the network if you check DHCP. The device IP address is changed after enabling the function. You can use SADP to get the device IP address.

Note

The network that the device is connected to should support DHCP (Dynamic Host Configuration Protocol).

Manual

You can set the device IPv4 parameters manually. Input IPv4 Address, IPv4 Subnet Mask, and IPv4 Default Gateway, and click Test to see if the IP address is available.

IPv6

Three IPv6 modes are available.

Route Advertisement

The IPv6 address is generated by combining the route advertisement and the device Mac address.

Note

Route advertisement mode requires the support from the router that the device is connected to.

DHCP

The IPv6 address is assigned by the server, router or gateway.

Manual
Input **IPv6 Address, IPv6 Subnet, IPv6 Default Gateway.** Consult the network administrator for required information.

**MTU**
It stands for maximum transmission unit. It is the size of the largest protocol data unit that can be communicated in a single network layer transaction.
The valid value range of MTU is 1280 to 1500.

**DNS**
It stands for domain name server. It is required if you need to visit the device with domain name. And it is also required for some applications (e.g., sending email). Set **Preferred DNS Server** and **Alternate DNS server** properly if needed.

### 12.1.1 Multicast Discovery
Check the **Enable Multicast Discovery**, and then the online network camera can be automatically detected by client software via private multicast protocol in the LAN.

### 12.2 Port
The device port can be modified when the device cannot access the network due to port conflicts.

⚠️ **Caution**
Do not modify the default port parameters at will, otherwise the device may be inaccessible.

Go to **Configuration → Network → Basic Settings → Port** for port settings.

**HTTP Port**
It refers to the port through which the browser accesses the device. For example, when the **HTTP Port** is modified to 81, you need to enter `http://192.168.1.64:81` in the browser for login.

**RTSP Port**
It refers to the port of real-time streaming protocol.

**HTTPS Port**
It refers to the port through which the browser accesses the device with certificate. Certificate verification is required to ensure the secure access.

**Server Port**
It refers to the port through which the client adds the device.

**WebSocket Port**
TCP-based full-duplex communication protocol port for plug-in free preview.

**WebSockets Port**
TCP-based full-duplex communication protocol port for plug-in free preview. Certificate verification is required to ensure the secure access.

**Note**
- WebSocket Port and WebSockets Port are only supported by certain models.
- For device models that support that function, go to **Configuration → Network → Advanced Settings → Network Service** to enable it.

## 12.3 Port Mapping

By setting port mapping, you can access devices through the specified port.

**Before You Start**
When the ports in the device are the same as those of other devices in the network, refer to **Port** to modify the device ports.

**Steps**
1. Go to **Configuration → Network → Basic Settings → NAT**.
2. Select the port mapping mode.
   - **Auto Port Mapping** Refer to **Set Auto Port Mapping** for detailed information.
   - **Manual Port Mapping** Refer to **Set Manual Port Mapping** for detailed information.
3. Click **Save**.

### 12.3.1 Set Auto Port Mapping

**Steps**
1. Check **Enable UPnP™**, and choose a friendly name for the camera, or you can use the default name.
2. Select the port mapping mode to **Auto**.
3. Click **Save**.

**Note**
UPnP™ function on the router should be enabled at the same time.

### 12.3.2 Set Manual Port Mapping

**Steps**
1. Check **Enable UPnP™**, and choose a friendly name for the device, or you can use the default name.
2. Select the port mapping mode to **Manual**, and set the external port to be the same as the internal port.
3. Click Save.

**What to do next**
Go to the router port mapping settings interface and set the port number and IP address to be the same as those on the device. For more information, refer to the router user manual.

### 12.4 Multicast

Multicast is group communication where data transmission is addressed to a group of destination devices simultaneously.

Go to **Configuration → Network → Basic Settings → Multicast** for the multicast settings.

**IP Address**
- It stands for the address of multicast host.

**Stream Type**
- The stream type as the multicast source.

**Video Port**
- The video port of the selected stream.

**Audio Port**
- The audio port of the selected stream.

### 12.5 SNMP

You can set the SNMP network management protocol to get the alarm event and exception messages in network transmission.

**Before You Start**
Before setting the SNMP, you should download the SNMP software and manage to receive the device information via SNMP port.

**Steps**
1. Go to the settings page: **Configuration → Network → Advanced Settings → SNMP**.
2. Check **Enable SNMPv1**, **Enable SNMP v2c** or **Enable SNMPv3**.

![Note]

The SNMP version you select should be the same as that of the SNMP software.
And you also need to use the different version according to the security level required. SNMP v1 is not secure and SNMP v2 requires password for access. And SNMP v3 provides encryption and if you use the third version, HTTPS protocol must be enabled.

3. Configure the SNMP settings.
4. Click Save.
12.6 Access to Device via Domain Name

You can use the Dynamic DNS (DDNS) for network access. The dynamic IP address of the device can be mapped to a domain name resolution server to realize the network access via domain name.

Before You Start
Registration on the DDNS server is required before configuring the DDNS settings of the device.

Steps
1. Refer to TCP/IP to set DNS parameters.
2. Go to the DDNS settings page: Configuration → Network → Basic Settings → DDNS .
3. Check Enable DDNS and select DDNS type.
   - DynDNS
     Dynamic DNS server is used for domain name resolution.
   - NO-IP
     NO-IP server is used for domain name resolution.
4. Input the domain name information, and click Save.
5. Check the device ports and complete port mapping. Refer to Port to check the device port, and refer to Port Mapping for port mapping settings.
6. Access the device.
   - By Browsers
     Enter the domain name in the browser address bar to access the device.
   - By Client Software
     Add domain name to the client software. Refer to the client manual for specific adding methods.

12.7 Access to Device via PPPoE Dial Up Connection

This device supports the PPPoE auto dial-up function. The device gets a public IP address by ADSL dial-up after the device is connected to a modem. You need to configure the PPPoE parameters of the device.

Steps
1. Go to Configuration → Network → Basic Settings → PPPoE .
2. Check Enable PPPoE.
3. Set the PPPoE parameters.
   - Dynamic IP
     After successful dial-up, the dynamic IP address of the WAN is displayed.
   - User Name
     User name for dial-up network access.
   - Password
Password for dial-up network access.

**Confirm**
Input your dial-up password again.

4. Click **Save**.
5. Access the device.

**By Browsers**
Enter the WAN dynamic IP address in the browser address bar to access the device.

**By Client Software**
Add the WAN dynamic IP address to the client software. Refer to the client manual for details.

**Note**
The obtained IP address is dynamically assigned via PPPoE, so the IP address always changes after rebooting the camera. To solve the inconvenience of the dynamic IP, you need to get a domain name from the DDNS provider (e.g. DynDns.com). Refer to *Access to Device via Domain Name* for detail information.

### 12.8 Accessing via Mobile Client

Hik-Connect is an application for mobile devices. Using the App, you can view live image, receive alarm notification and so on.

**Note**
Hik-Connect service should be supported by the camera.

#### 12.8.1 Enable Hik-Connect Service on Camera

Hik-Connect service should be enabled on your camera before using the service.

You can enable the service through SADP software or Web browser.

**Enable Hik-Connect Service via Web Browser**

Follow the following steps to enable Hik-Connect Service via Web Browser.

**Before You Start**
You need to activate the camera before enabling the service.

**Steps**
1. Access the camera via web browser.
2. Enter platform access configuration interface. **Configuration → Network → Advanced Settings → Platform Access**
3. Select Hik-Connect as the Platform Access Mode.
4. Check Enable.
5. Click and read "Terms of Service" and "Privacy Policy" in pop-up window.
6. Create a verification code or change the old verification code for the camera.

Note
The verification code is required when you add the camera to Hik-Connect service.

7. Save the settings.

Enable Hik-Connect Service via SADP Software

This part introduce how to enable Hik-Connect service via SADP software of an activated camera.

Steps
1. Run SADP software.
2. Select a camera and enter Modify Network Parameters page.
3. Check Enable Hik-Connect.
4. Create a verification code or change the old verification code.

Note
The verification code is required when you add the camera to Hik-Connect service.

5. Click and read "Terms of Service" and "Privacy Policy".
6. Confirm the settings.

12.8.2 Set Up Hik-Connect

Steps
1. Get and install Hik-Connect application by the following ways.
   - Visit https://appstore.hikvision.com to download the application according to your mobile phone system.
   - Visit the official site of our company. Then go to Support → Tools → Hikvision App Store.
   - Scan the QR code below to download the application.

Note
If errors like "Unknown app" occur during the installation, solve the problem in two ways.
• Visit https://appstore.hikvision.com/static/help/index.html to refer to the troubleshooting.
• Visit https://appstore.hikvision.com/, and click Installation Help at the upper right corner of the interface to refer to the troubleshooting.

2. Start the application and register for a Hik-Connect user account.
3. Log in after registration.

12.8.3 Add Camera to Hik-Connect

Steps
1. Connect your mobile device to a Wi-Fi.
2. Log into the Hik-Connect app.
3. In the home page, tap "+" on the upper-right corner to add a camera.
4. Scan the QR code on camera body or on the Quick Start Guide cover.

5. Input the verification code of your camera.

• The required verification code is the code you create or change when you enable Hik-Connect service on the camera.
• If you forget the verification code, you can check the current verification code on Platform Access configuration page via web browser.

6. Tap Connect to a Network button in the popup interface.
7. Choose Wired Connection or Wireless Connection according to your camera function.

| Wireless Connection | Input the Wi-Fi password that your mobile phone has connected to, and tap Next to start the Wi-Fi connection process. (Locate the camera within 3 meters from the router when setting up the Wi-Fi.) |
| Wired Connection    | Connect the camera to the router with a network cable and tap Connected in the result interface. |

8. Tap Add in the next interface to finish adding.

For detailed information, refer to the user manual of the Hik-Connect app.
12.9 Set ISUP

When the device is registered on ISUP platform (formerly called Ehome), you can visit and manage the device, transmit data, and forward alarm information over public network.

Steps
2. Select ISUP as the platform access mode.
3. Select Enable.
4. Select a protocol version and input related parameters.
5. Click Save.
   Register status turns to Online when the function is correctly set.

12.10 Set Open Network Video Interface

If you need to access the device through Open Network Video Interface protocol, you can configure the user settings to enhance the network security.

Steps
2. Check Enable Open Network Video Interface.
3. Click Add to configure the Open Network Video Interface user.
   - Delete: Delete the selected Open Network Video Interface user.
   - Modify: Modify the selected Open Network Video Interface user.
4. Click Save.
5. Optional: Repeat the steps above to add more Open Network Video Interface users.

12.11 Set Alarm Server

The device can send alarms to destination IP address or host name through HTTP, HTTPS, or ISUP protocol. The destination IP address or host name should support HTTP, HTTP, or ISUP data transmission.

Steps
2. Enter Destination IP or Host Name, URL, and Port.

Note
HTTP, HTTPS, and ISUP are selectable. It is recommended to use HTTPS, as it encrypts the data transmission during communication.
4. Click Test to check if the IP or host is available.
5. Click Save.
Chapter 13 System and Security

It introduces system maintenance, system settings and security management, and explains how to configure relevant parameters.

13.1 View Device Information

You can view device information, such as Device No., Model, Serial No. and Firmware Version. Enter Configuration → System → System Settings → Basic Information to view the device information.

13.2 Search and Manage Log

Log helps locate and troubleshoot problems.

Steps
1. Go to Configuration → System → Maintenance → Log.
2. Set search conditions Major Type, Minor Type, Start Time, and End Time.
3. Click Search.
   The matched log files will be displayed on the log list.
4. Optional: Click Export to save the log files in your computer.

13.3 Import and Export Configuration File

It helps speed up batch configuration on other devices with the same parameters.

Steps
1. Export configuration file.
   1) Go to Configuration → System → Maintenance → Upgrade & Maintenance.
   2) Click Device Parameters and input the encryption password to export the current configuration file.
   3) Set the saving path to save the configuration file in local computer.
2. Import configuration file.
   1) Access the device that needs to be configured via web browser.
   2) Click Browse to select the saved configuration file.
   3) Input the encryption password you have set when exporting the configuration file.
   4) Click Import.
13.4 Export Diagnose Information

Diagnose information includes running log, system information, hardware information.

Go to Configuration → System → Maintenance → Upgrade & Maintenance, and click Diagnose Information to export diagnose information of the device.

13.5 Reboot

You can reboot the device via browser.

Go to Configuration → System → Maintenance → Upgrade & Maintenance, and click Reboot.

13.6 Restore and Default

Restore and Default helps restore the device parameters to the default settings.

Steps
1. Go to Configuration → System → Maintenance → Upgrade & Maintenance.
2. Click Restore or Default according to your needs.

| Restore | Reset device parameters, except user information, IP parameters and video format to the default settings. |
| Default | Reset all the parameters to the factory default. |

<i>Note</i>

Be careful when using this function. After resetting to the factory default, all the parameters are reset to the default settings.

13.7 Upgrade

Before You Start
You need to obtain the correct upgrade package.

<i>Caution</i>

DO NOT disconnect power during the process, and the device reboots automatically after upgrade.

Steps
1. Go to Configuration → System → Maintenance → Upgrade & Maintenance.
2. Choose one method to upgrade.

| Firmware | Locate the exact path of the upgrade file. |
Firmware Directory  Locate the directory which the upgrade file belongs to.
3. Click Browse to select the upgrade file.
4. Click Upgrade.

13.8 Set Electric Current Limit
This function can control the power supply current of the device.
Go to Configuration → System → Maintenance → System Service , and select Electric Current Limit type. You can limit the device current to 75% of full current or half the full current for power saving control.

13.9 View Open Source Software License
Go to Configuration → System → System Settings → About Device , and click View Licenses.

13.10 Time and Date
You can configure time and date of the device by configuring time zone, time synchronization and Daylight Saving Time (DST).

13.10.1 Synchronize Time Manually

Steps
2. Select Time Zone.
3. Click Manual Time Sync..
4. Choose one time synchronization method.
   - Select Set Time, and manually input or select date and time from the pop-up calendar.
   - Check Sync. with computer time to synchronize the time of the device with that of the local PC.
5. Click Save.

13.10.2 Set NTP Server
You can use NTP server when accurate and reliable time source is required.

Before You Start
Set up a NTP server or obtain NTP server information.

Steps
2. Select Time Zone.
3. Click NTP.
4. Set Server Address, NTP Port and Interval.

**Note**
Server Address is NTP server IP address.

5. Click Test to test server connection.
6. Click Save.

### 13.10.3 Set DST

If the region where the device is located adopts Daylight Saving Time (DST), you can set this function.

**Steps**
1. Go to Configuration → System → System Settings → DST .
2. Check Enable DST.
3. Select Start Time, End Time and DST Bias.
4. Click Save.

### 13.11 Set RS-232

RS-232 can be used to debug device or access peripheral device. RS-232 can realize communication between the device and computer or terminal when the communication distance is short.

**Before You Start**
Connect the device to computer or terminal with RS-232 cable.

**Steps**
2. Set RS-232 parameters to match the device with computer or terminal.
3. Click Save.

### 13.12 Set RS-485

RS-485 is used to connect the device to external device. You can use RS-485 to transmit the data between the device and the computer or terminal when the communication distance is too long.

**Before You Start**
Connect the device and computer or terminal with RS-485 cable.

**Steps**
2. Set the RS-485 parameters.
3. Click **Save**.

### 13.13 Set Same Unit

Set the same temperature unit and distance unit. When you enable this function, the unit cannot be configured separately in other setting pages.

**Steps**
1. Go to **Configuration → System → System Settings → Unit Settings**.
2. Check **Use Same Unit**.
3. Set the temperature unit and distance unit.
4. Click **Save**.

### 13.14 Security

You can improve system security by setting security parameters.

#### 13.14.1 Authentication

You can improve network access security by setting RTSP and WEB authentication.

Go to **Configuration → System → Security → Authentication** to choose authentication protocol and method according to your needs.

**RTSP Authentication**

Digest and digest/basic are supported, which means authentication information is needed when RTSP request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

**WEB Authentication**

Digest and digest/basic are supported, which means authentication information is needed when WEB request is sent to the device. If you select **digest/basic**, it means the device supports digest or basic authentication. If you select **digest**, the device only supports digest authentication.

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<th>Note</th>
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Refer to the specific content of protocol to view authentication requirements.
13.14.2 Security Audit Log

The security audit logs refer to the security operation logs. You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events. Security audit logs can be saved on device internal storage. The log will be saved every half hour after device booting. Due to limited storage space, you can also save the logs on a log server.

Search Security Audit Logs

You can search and analyze the security log files of the device so as to find out the illegal intrusion and troubleshoot the security events.

Steps

Note

This function is only supported by certain camera models.

2. Select log types, Start Time, and End Time.
3. Click Search.
   The log files that match the search conditions will be displayed on the Log List.
4. Optional: Click Export to save the log files to your computer.

Set Log Server

The log server should support syslog (RFC 3164) over TLS.

Steps

1. Check Enable Log Upload Server.
2. Input Log Server IP and Log Server Port.
3. Click Test to test the settings.
4. Install client certificate.
   1) Click Create to create the certificate request. Fill in the required information in the pop-up window.
   2) Click Download to download the certificate request and submit it to the trusted certificate authority for signature.
   3) Install the signed certificate to the device.
5. Install the CA certificate to the device.
13.14.3 Set IP Address Filter

IP address filter is a tool for access control. You can enable the IP address filter to allow or forbid the visits from the certain IP addresses.

IP address refers to IPv4.

Steps
1. Go to **Configuration → System → Security → IP Address Filter**.
2. Check **Enable IP Address Filter**.
3. Select the type of IP address filter.
   - **Forbidden**: IP addresses in the list cannot access the device.
   - **Allowed**: Only IP addresses in the list can access the device.
4. Edit the IP address filter list.
   - **Add**: Add a new IP address to the list.
   - **Modify**: Modify the selected IP address in the list.
   - **Delete**: Delete the selected IP address in the list.
5. Click **Save**.

13.14.4 Set SSH

SSH is a protocol to ensure security of remote login. This setting is reserved for professional maintenance personnel only.

Steps
1. Go to **Configuration → System → Security → Security Service**.
2. Check **Enable SSH**.
3. Click **Save**.

13.14.5 Set HTTPS

HTTPS is a network protocol that enables encrypted transmission and identity authentication, which improves the security of remote access.

Steps
1. Go to **Configuration → Network → Advanced Settings → HTTPS**.
2. Check **Enable**.
3. Click **Delete** to recreate and install certificate.
   - Create and install self-signed certificate
   - Create certificate request and install certificate

Refer to **Create and Install Self-signed Certificate**

Refer to **Install Authorized Certificate**
4. Click Save.

Create and Install Self-signed Certificate

Steps
1. Check Create Self-signed Certificate.
2. Click Create.
3. Follow the prompt to enter Country/Region, Hostname/IP, Validity and other parameters.
4. Click OK.

Result
The device will install the self-signed certificate by default.

Install Authorized Certificate

If the demand for external access security is high, you can create and install authorized certificate via HTTPS protocol to ensure the data transmission security.

Steps
1. Select Create certificate request first and continue the installation.
2. Click Create.
3. Follow the prompt to input Country/Region, Hostname/IP, Validity and other parameters.
4. Click Download to download the certificate request and submit it to the trusted authority for signature.
5. Import certificate to the device.
   - Select Signed certificate is available, start the installation directly. Click Browse and Install to import the certificate to the device.
   - Select Create the certificate request first and continue the installation. Click Browse and Install to import the certificate to the device.
6. Click Save.

13.14.6 Set QoS

QoS (Quality of Service) can help improve the network delay and network congestion by setting the priority of data sending.

Note
QoS needs support from network device such as router and switch.

Steps
1. Go to Configuration → Network → Advanced Configuration → QoS.
2. Set Video/Audio DSCP, Alarm DSCP and Management DSCP.
Network can identify the priority of data transmission. The bigger the DSCP value is, the higher the priority is. You need to set the same value in router while configuration.

3. Click Save.

13.14.7 Set IEEE 802.1X

IEEE 802.1x is a port-based network access control. It enhances the security level of the LAN/WLAN. When devices connect to the network with IEEE 802.1x standard, the authentication is needed.

Go to Configuration → Network → Advanced Settings → 802.1X, and enable the function.

Set Protocol and EAPOL Version according to router information.

Protocol

EAP-LEAP, EAP-TLS, and EAP-MD5 are selectable

EAP-LEAP and EAP-MD5

If you use EAP-LEAP or EAP-MD5, the authentication server must be configured. Register a user name and password for 802.1X in the server in advance. Input the user name and password for authentication.

EAP-TLS

If you use EAP-TLS, input Identify, Private Key Password, and upload CA Certificate, User Certificate and Private Key.

EAPOL Version

The EAPOL version must be identical with that of the router or the switch.

13.15 User and Account

13.15.1 Set User Account and Permission

The administrator can add, modify, or delete other accounts, and grant different permission to different user levels.

Caution

To increase security of using the device on the network, please change the password of your account regularly. Changing the password every 3 months is recommended. If the device is used in high-risk environment, it is recommended that the password should be changed every month or week.
Steps

1. Go to Configuration → System → User Management → User Management.
2. Click Add. Enter User Name, select Level, and enter Password. Assign remote permission to users based on needs.

   Administrator
   The administrator has the authority to all operations and can add users and operators and assign permission.

   User
   Users can be assigned permission of viewing live video, setting PTZ parameters, and changing their own passwords, but no permission for other operations.

   Operator
   Operators can be assigned all permission except for operations on the administrator and creating accounts.

   Modify  Select a user and click Modify to change the password and permission.

   Delete  Select a user and click Delete.

   Note
   The administrator can add up to 31 user accounts.

3. Click OK.
Chapter 14 Appendix

14.1 Common Material Emissivity Reference

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<thead>
<tr>
<th>Material</th>
<th>Emissivity</th>
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<tbody>
<tr>
<td>Human Skin</td>
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</tr>
<tr>
<td>Printed Circuit Board</td>
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<tr>
<td>Concrete</td>
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<td>Ceramic</td>
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<tr>
<td>Water</td>
<td>0.96</td>
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14.2 Device Command

Scan the following QR code to get device common serial port commands.

Note that the command list contains the commonly used serial port commands for Hikvision thermal cameras.
14.3 Device Communication Matrix

Scan the following QR code to get device communication matrix.
Note that the matrix contains all communication ports of Hikvision thermal cameras.
See Far, Go Further