Thermal Network Bullet Camera

Web Operation Manual

V2.0.0

Foreword

General

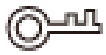
This manual introduces the characteristics, basic configurations, daily operation and maintenance of the thermal camera (hereinafter referred to as "the Camera"). Read carefully before using the device, and keep the manual safe for future reference.

Ports

The Manual is mainly about on the web page, how to operate your Camera. For description of ports such as ports connection and ports debugging, contact technical staffs.

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
 DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
 ESD	Electrostatic Sensitive Devices. Indicates a device that is sensitive to electrostatic discharge.
 ELECTRIC SHOCK	Indicates dangerous high voltage. Take care to avoid coming into contact with electricity.
 LASER RADIATION	Indicates a laser radiation hazard. Take care to avoid exposure to a laser beam.
 TIPS	Provides methods to help you solve a problem or save time.
 NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V2.0.0	• Updated some pictures in the document. • Updated "Smart Thermal"	April 2024

Version	Revision Content	Release Time
V1.0.1	• Updated "Configuring Network". • Updated "Setting Alarm-in". • Updated "Configuring Disarming". • Updated "Configuring IVS". • Updated "Configuring Heat Warning". • Added "Configuring Auto Upload". • Added "Configuring PTZ".	March 2024
V1.0.0	First release.	June 2022

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Statement

About the Manual

To simplify the description, the following conventions are made in this manual for common functions, names, and more.

- This manual is suitable for multiple models of products, and functions and pages vary from models. This manual uses the hybrid camera for example. The monocular camera does not support the functions of the visible channel.
- To protect personal privacy and security, personal information such as faces and license plates appearing in this document has been masked.
- To ensure the security of devices, the IP address, MAC address, serial number and other information appearing in this document have been masked.

About the Format

Format	Description	Example
>	Menu cascade.	Select **Setting** > **Smart Thermal** > **IVS**.
Bold	Page names, control names, specification terms, and more.	Click **Add Excluded Area** to draw an excluded area on surveillance image. Right-click to end drawing.

About the Icon/Button

Icon/Button	Description
	Text box. You can enter numbers, letters, Chinese characters, symbols and other characters.
2	Drop-down box. Click the icon to display the drop-down menu.
2024-03-07 14:43:18	Calendar. Click , and then select the date as needed.
	Click the icon to select the corresponding item. indicates that the item is selected. Click to cancel the selection.
	Click the icon to select the corresponding item.
1 2	Click / to go to the previous or next page.
Go to	Go to the defined page. Enter the page and then press the Enter key.
64	Adjust the value. Click / or drag to adjust the value.
Refresh	Click the button to display the latest configuration.
Default	Click the button to restore the configuration to the factory configuration.

Table of Contents

1 Product Introduction

1.1 Overview

Thermal Network Bullet Camera is based on requirements such as temperature measurement, fire prevention, safety protection and night vision. This product can help you view videos, videotape an object, test temperature, warn the potential fire, track a cold/hot spot and analyze a special behavior. This product is widely used in energy industry, transportation, building, power system, public security, government, enterprises, and other fields (such as science, education, culture and health). You can use the product alone or with other storage devices to provide solutions for safety/intelligence city, production safety, safety protection of residential buildings and public area safety.

1.2 Features

- Safe and stable.
- With a full embedded system, this Camera can implement all-day monitoring in a stable way.
- A long detection distance.
- Wide monitoring range and long detection distance. Used for surveillance of wide range and long distance.
- Strong detection ability.
- With night vision ability, this Camera can clearly distinguish different objects in the dark and can tell camouflage and hidden objects.
- Strong anti-interference ability.
- This Camera can get rid of interference of light intensity under backlight or strong light environment.
- Adaptive capacity to complex environment.
- Applicable to such environment as smoke, smog, rain, snow, and dust which will block your eyes and is very confusing in colors.

1.3 Functions

Live

Table 1-1 Function description

Function	Description
Live	You can view both the visible images and thermal images. You can use thermal images to identify an object, and then use visible images to view more details of the object.
PTZ operation	For cameras with an external PTZ, you can set the PTZ functions such as preset, tour and pattern, to enlarge the surveillance range and identify details of an object.

Function	Description
Voice intercom	For cameras with voice intercom function, you can talk indoors with a person near the outdoor monitor to facilitate problem solution.
Snapshot	During live view, you can capture an abnormal image for further check and handling.
Local recording	During live view, you can record abnormal images for further check and handling.
Real-time reports	For cameras with temperature measurement, you can check the real-time temperature data of your monitoring area.
Real-time spot temperature measurement	For cameras with temperature measurement, you can check the real-time temperature data of any point in your monitoring area.
Additional functions	● Switch video bit stream. ● The visible image will be adjusted to the relevant location when you zoom in or out the thermal image. ● Mark information that you need in the surveillance image. ● Check whether there is any alarm output. ● Magnify part of the surveillance image. Or, scroll the mouse to zoom the whole surveillance image. ● You can adjust focus manually on the web page. ● Set a smart rule. When an alarm is triggered, you can track the target manually. ● Adjust display effect of the surveillance images. ● Enable or disable the intelligent rule display.

Record and Picture

Table 1-2 Description of playback function

Function	Description
Manual recording	When playing back a video, you can record the key information of the previous video for further check and handling.
Planned recording	After you set a recording plan, the system will record automatically.
Video playback and download	● Play back a video to find some valuable video fragments. ● Download the valuable video fragments for further judgment.
Picture playback	Play back the captured pictures to find something valuable.
Recoding linkage	When there is an alarm, the system will take videos automatically.

Report

You need to follow certain rules such as time sequence to check history data of temperature saved in the Camera Micro SD card.

Alarm

- Set prompting mode (sound, for example) based on the alarm type.
- View alarm information.

Account Management

Table 1-3 Function description

Function	Description
Management of user group	● Add, edit or delete an account group. ● Manage user permissions based on user groups.
User management	● Add, edit or delete a user account. ● Set the user permissions.
ONVIF User management	Add, edit or delete an ONVIF user account.
Change password	Change users' password.

Peripheral Management

You can manage your camera's peripheral such as heater and wiper.

Smart Thermal

Table 1-4 Function description

Function	Description
IVS	● Both visible channel and thermal channel have intelligent rules. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot. ● Supports adding detection area and exclusion area. ● You can set the tracking mode in the linked tracking function.
Call Detection	● Available in visible channel. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Smoking Detection	● Available in visible channel. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Fire Warning	● Available in thermal channel. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, audio, alarm light, and snapshot.
Smoke Detection	● Available in visible channel. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Cold/Hot spot tracking	● Available in thermal channel. ● According to different colors, displays cold spots and hot spots of the surveillance scene in real time. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, audio, alarm light, and snapshot.
Picture in picture	● Available in visible channel. ● You can put the thermal image into the visible image.

Function	Description
Thermal map acquisition	● Grasp temperature of every pixel on thermal images. ● You can export the heat map

Event

Table 1-5 Function description

Function	Description
Video detection	● Motion detection and video tampering detection. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Audio detection	● Audio input abnormal detection and intensity change detection. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Temperature alarm	● When temperature satisfies the alarm conditions of temperature testing rules, an alarm is triggered. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Alarm settings	● An alarm is triggered when there is an alarm from an external device. ● When an alarm is triggered, the system performs linkages such as recording, alarm output, sending email, and snapshot.
Abnormality	● SD card error, network disconnection, illegal access, and burning warning. ● When SD card error or illegal access is triggered, the system links alarm output and sending email. ● When network disconnection alarm is triggered, the system links recording and alarm output. ● When the lens is directly to the sunlight and almost burnt, burning warning is triggered.

Temperature Measuring Settings

This function is available on select models.

Table 1-6 Function description

Function	Description
Temperature measuring rules	● Supports measuring spot, line, polygon and ellipse's average temperature, maximum temperature and minimum temperature. ● Supports outputting alarm based on different conditions. ● Supports setting different alarm output conditions to different objects that need to be measured.
Temperature contrast	● Supports temperature contrast of different objects that needs to be measured. ● Supports outputting alarm based on different conditions. ● Supports setting different alarm output conditions to different temperature contrast rules.

Function	Description
Temperature alarm	• When temperature satisfies the alarm conditions of temperature testing rules, an alarm is triggered. • When there is an alarm, the system performs linkage actions such as linkage video recording, alarm output, sending email, PTZ operation and capturing images.
Heat map	Supports outputting real-time heat map information. Then, you can do the further analysis through the heat map tools.
Additional functions	• Supports enabling or disabling temperature testing rules. • Supports enabling or disabling isotherm. • Supports enabling or disabling color code articles.

2 Configuration Flow

For the device configuration flow, see Figure 2-1. For details, see Table 2-1. Configure the device according to the actual situation.

Figure 2-1 Configuration flow

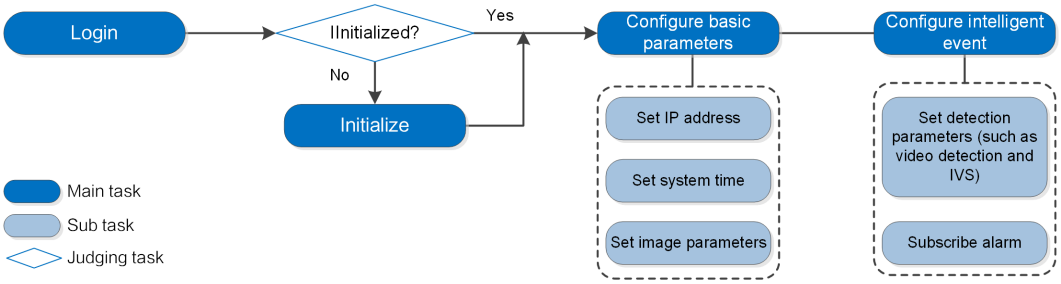


Table 2-1 Description of flow

Configuration		Description	Reference
Login		Open IE browser and enter IP address to log in to the web page, The camera IP address is 192.168.1.108 by default.	"4.1 Introduction to Main Page"
Initialization		Initialize the camera when you use it for the first time.	"3 Device Initialization"
Basic parameters	Camera Parameters	Configure image parameters, encoder parameters, and audio parameters to ensure the image quality.	"8.1 Configuring Local Parameters"
	Date & time	Set date and time to ensure the recording time is correct.	"8.5.1.2 Date & Time"
	IP address	Change IP address according to network planning for the first use or during network adjustment.	"8.3.1 TCP/IP"
	Subscribe alarm	Subscribe alarm event. When the subscribed alarm is triggered, the system will record the alarm on the alarm tab.	"4.5 Subscribing Alarm"
AI	AI rules	Configure the necessary detection rules, such as face detection and IVS.	"5 AI"

3 Device Initialization

3.1 Initialing Device

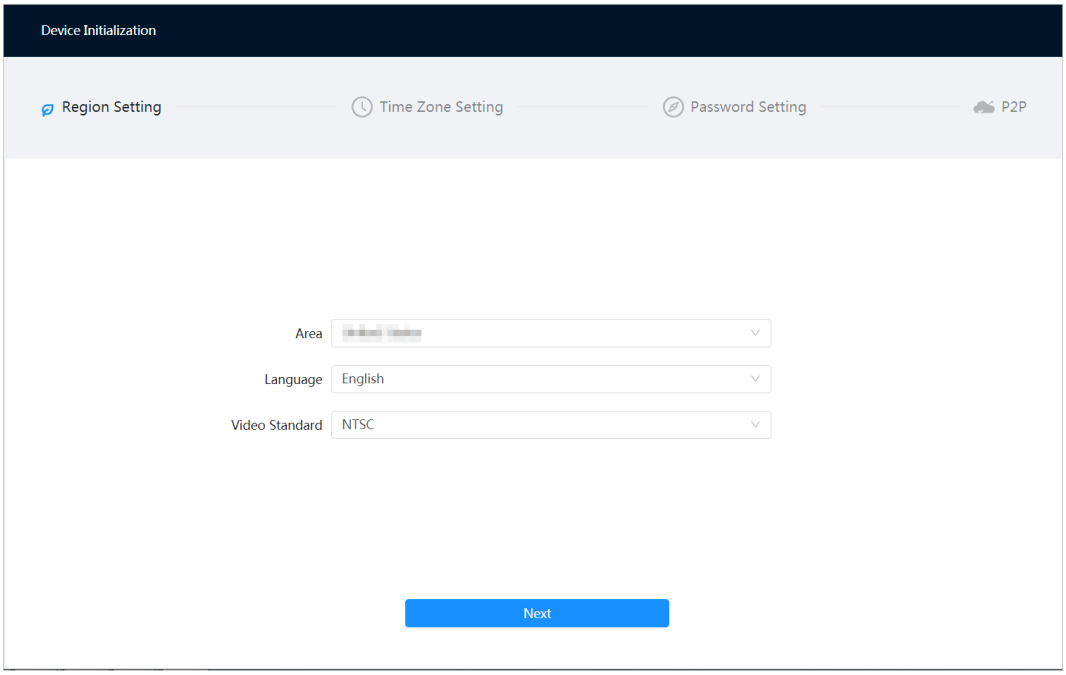
Device initialization is required for the first-time use. This manual is based on the operation on the web page. You can also initialize device through ConfigTool, NVR, or platform devices.

- To ensure the device safety, keep the password properly after initialization and change the password regularly.
- When initializing device, keep the PC IP and device IP in the same network.

Step 1 Open IE browser, enter the IP address of the device in the address bar, and then press the Enter key.

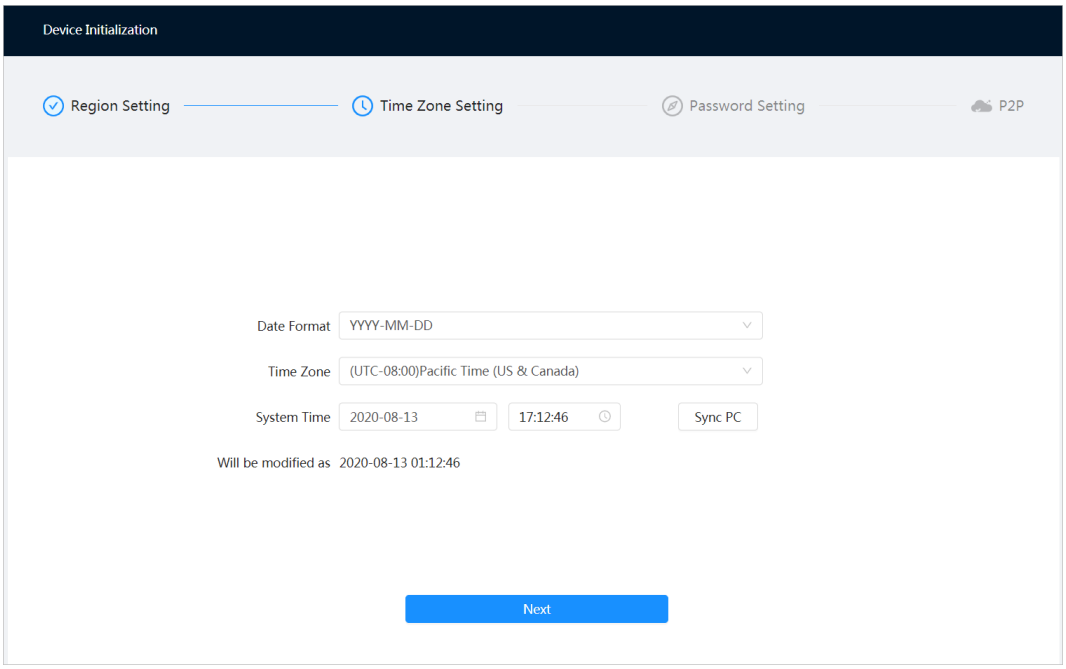
The IP is 192.168.1.108 by default.

Figure 3-1 Region Setting



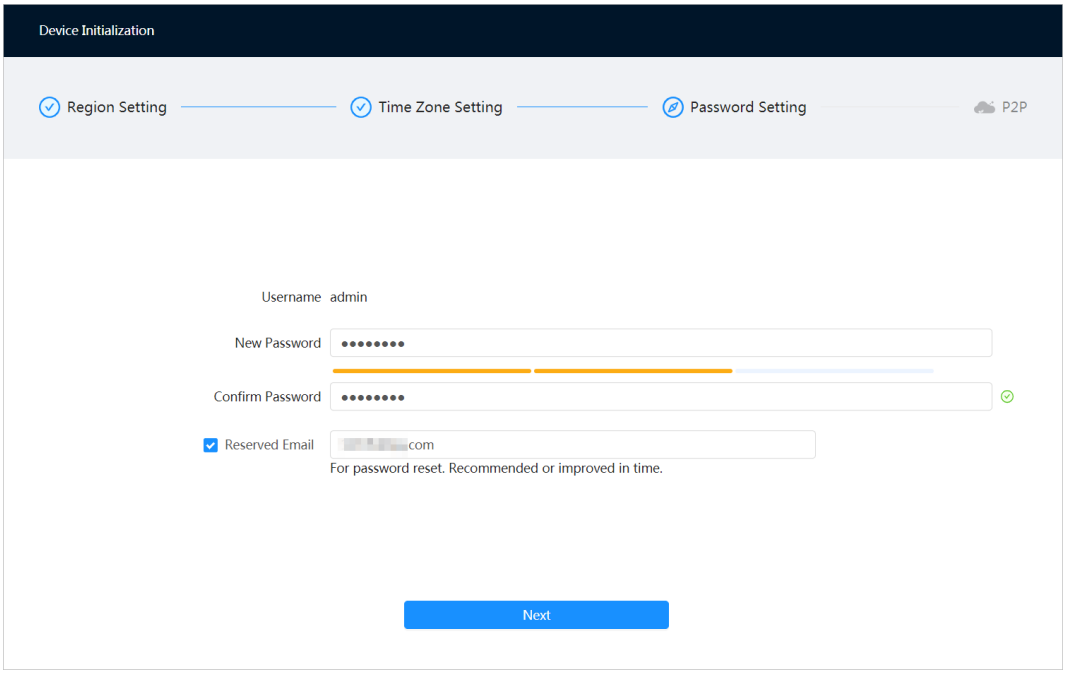
Step 2 Select the area, language, and video standard according to the actual situation, and then click **Next**.

Figure 3-2 Time zone setting



Step 3 Configure the time parameters, and then click **Next**.

Figure 3-3 Password setting



Step 4 Set the password for admin account.

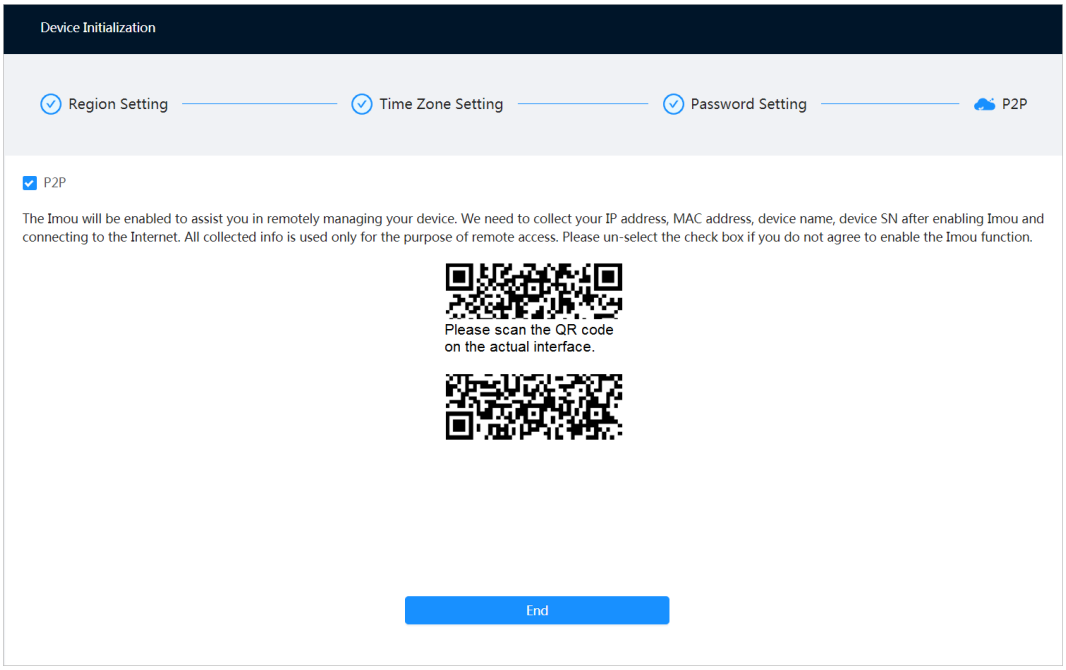
Table 3-1 Description of password configuration

Parameter	Description
Username	The default username is admin.
Password	The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &). Set a high security level password according to the password security notice.
Confirm password	

Parameter	Description
Reserved email	Enter an email address for password resetting, and it is selected by default. When you need to reset the password of the admin account, a security code for password resetting will be sent to the reserved email address.

Step 5 Click **Next**, and then **P2P** page is displayed.

Figure 3-4 P2P



3.2 Changing IP Address

Change Camera IP address and ensure it is fitted to the actual network segment to get the Camera access network.

You can change one or several IP addresses through ConfigTool. You can also log in the web client to modify IP addresses.

3.2.1 Changing One IP Address

When there are only a few Cameras or the login passwords of Cameras are different, you can change only one IP address at one time. This section uses changing IP address on web page as an example.

Step 1 Log in to the web page.

Step 2 Select > **Network** > **TCP/IP**.

Step 3 Configure TCP/IP parameters.

Figure 3-5 TCP/IP

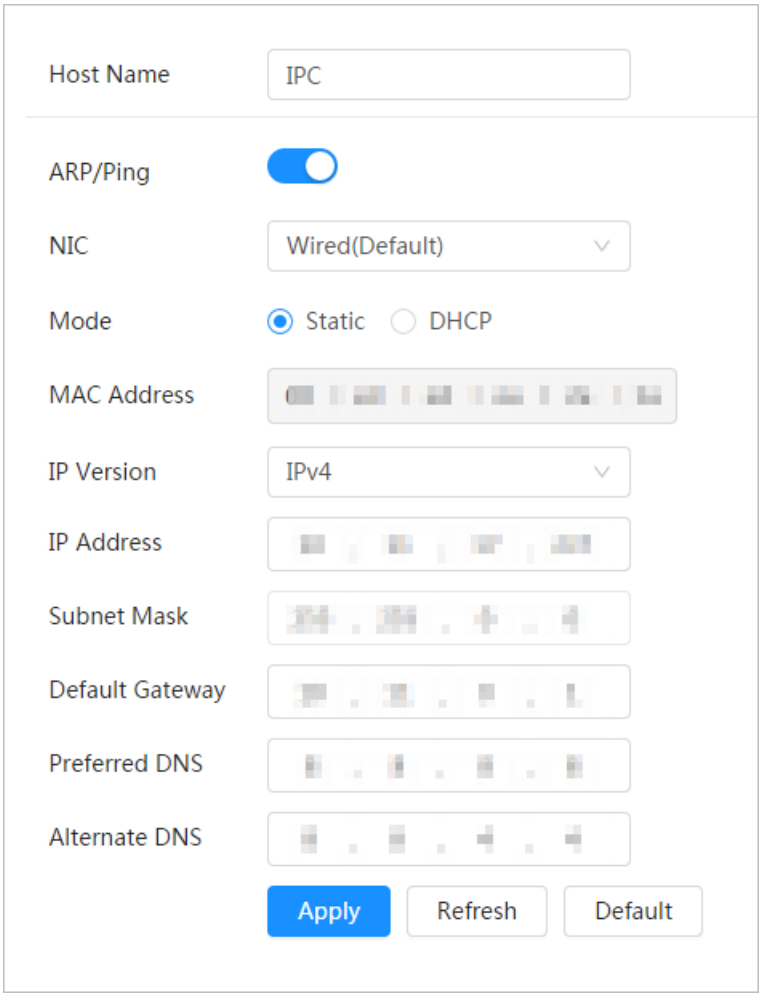


Table 3-2 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.

Parameter	Description
ARP/Ping	Click  to enable ARP/Ping to set IP address service. Get the camera MAC address, and then you can change and configure the device IP address with ARP/ping command. This is enabled by default. During restart, you will have no more than 2 minutes to configure the device IP address by a ping packet with certain length, the server will be turned off in 2 minutes, or it will be turned off immediately after the IP address is successfully configured. If this is not enabled, the IP address cannot be configured with ping packet. **A demonstration of configuring IP address with ARP/Ping.** 1. Keep the camera that needs to be configured and the PC within the same local network, and then get a usable IP address. 2. Get the MAC address of the camera from device label. 3. Open command editor on the PC and enter the following command. Windows syntax arp –s <IP Address> <MAC> ping –l 480 –t <IP Address> Windows example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -l 480 -t 192.168.0.125 UNIX/Linux/Mac syntax arp –s <IP Address> <MAC> ping –s 480 <IP Address> UNIX/Linux/Mac example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -s 480 192.168.0.125 4. Restart the camera. 5. Check the PC command line, if information such as **Reply from 192.168.0.125…**is displayed, the configuration succeeds, and you can turn it off then. 6. Enter http://(IP address) in the browser address bar to log in.
NIC	Select the Ethernet card that need to be configured, and the default one is **Wire**.
Mode	The mode that the camera gets IP: • **Static** Configure **IP Address**, **Subnet Mask**, and **Default Gateway** manually, and then click **Save**, the login page with the configured IP address is displayed. • **DHCP** When there is DHCP server in the network, select **DHCP**, and the camera acquires IP address automatically.
MAC Address	Displays host MAC address.

Parameter	Description
IP Version	Select **IPv4** or **IPv6**.
IP Address	When you select **Static** in **Mode**, enter the IP address and subnet mask that you need. - IPv6 does not have subnet mask. - The default gateway must be in the same network segment with the IP address.
Subnet Mask	
Default Gateway	
Preferred DNS	IP address of the preferred DNS
Alternate DNS	IP address of the alternate DNS

Step 4 Click **Apply**.

3.2.2 Changing IP Addresses in Batches

When there are several Cameras or the login passwords of Cameras are the same, you can modify several IP address at the same time through the ConfigTool.

Prerequisites

- You have obtained the installation package of ConfigTool. To obtain the installation package, you can consult technical support staffs.
- You have achieved network communication between PC (which is with ConfigTool) and the Camera.

Procedure

Step 1 Click Modify IP.

Step 2 Click **Search Settings.**

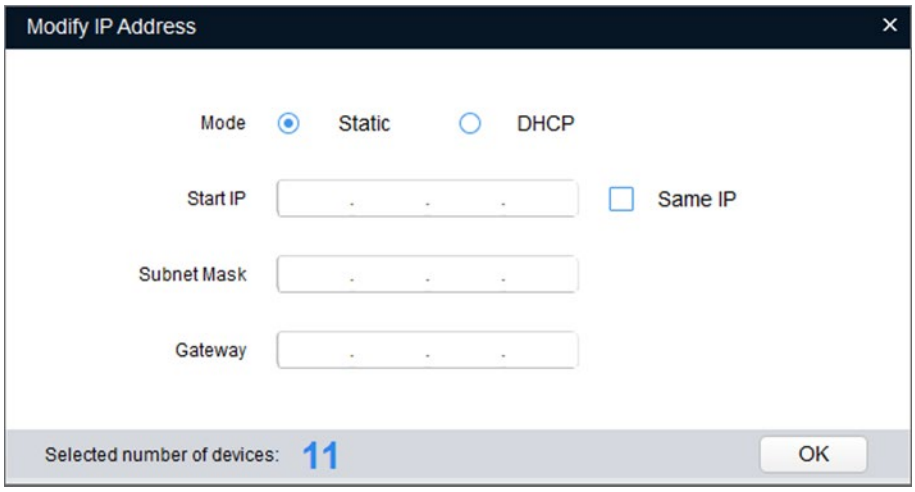
Step 3 Set the network segment of the Camera, admin and password. Then click **Save**.

After the search, the system displays Cameras that have been searched.

Default user name and password are both admin.

Step 4 Select cameras whose IP address needs to be changed and click **Batch Modify IP**.

Figure 3-6 Change IP address



Step 5 Configure IP address.

- DHCP mode: When there is a DHCP server in the network, set the **Mode** as **DHCP** and the Camera obtains IP addresses from the DHCP server automatically.
- Manual mode: Set **Mode** as **Static** and enter **Starting IP**, **Subnet Mask** and **Gateway**. Then, IP addresses of Cameras are incrementally modified from the start IP address.

If you select the **Same IP** checkbox, the IP address of the devices will be set to the same one.

Step 6 Click **OK**.

3.3 Logging in to Web Page

After you have changed the IP addresses, you can log in to the web page of the Camera through a browser to operate, configure and maintain.

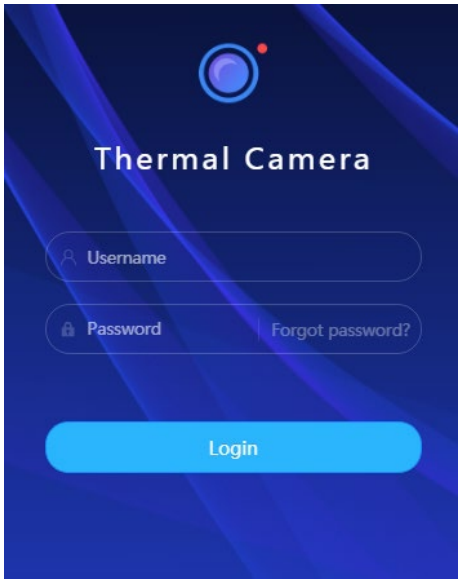
Background Information

To log in to the Camera in a smooth way, you need to make sure that the PC connected to the Camera satisfies the following requirements.

Procedure

Step 1 Open Chrome browser, enter the IP address of the camera (192.168.1.108 by default) in the address bar and press the Enter key.

Figure 3-7 Login



Step 2 Enter the username and password, and then click **Login.**

- The default user is admin. The password is the one that was configured during initial settings.
- It will prompt you to install plug-in for the first system login. Please download and install plug-in according to the prompt.
- Functions of different Cameras might vary, and the actual product shall prevail.

Step 3 Click at the left-upper corner of the page to display the home page.

Related Operations

Click **Logout** on the upper right corner to exit the page.

3.4 Resetting Password

When you need to reset the password for the admin account, there will be a security code sent to the entered email address which can be used to reset the password.

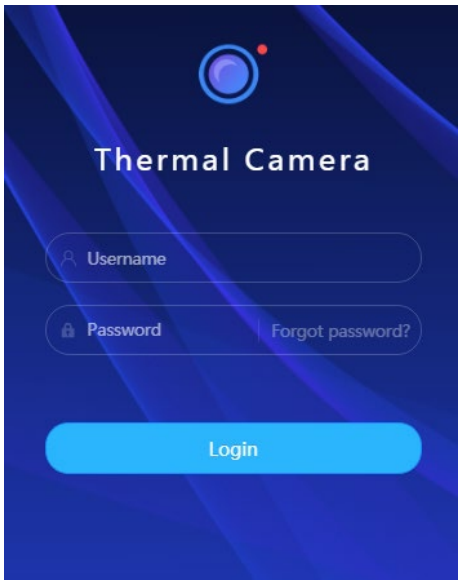
Prerequisites

You have enabled password resetting service. For details, see "3.4 Resetting Password".

Procedure

Step 1 Open IE browser, enter the IP address of the device in the address bar and press Enter.

Figure 3-8 Log in to the Camera



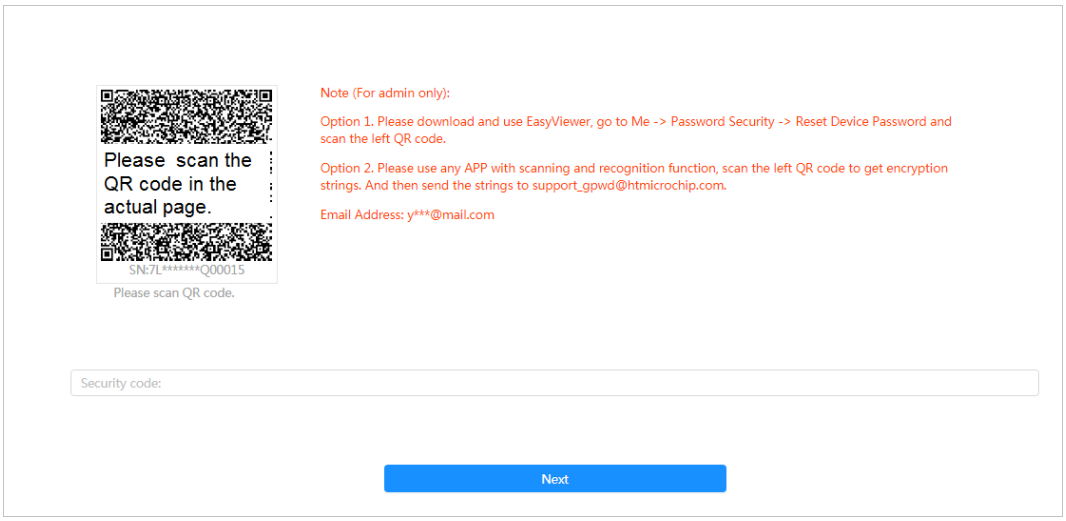
Step 2 Click **Forgot Password?**, and then you can reset the password through the email address that is set during the initialization.

Step 3 Reset the password.

Scan the QR code, and the security code will be sent to the email address you have already fulfilled. Enter the security code.

- Reset the password in time when you receive the security code, because the security code will be invalid within 24 hours.
- If you get security codes twice but do not use them, when you get the security code for the third time, the system will prompt failure. To solve this problem, you need to restore your Camera to default settings or wait 24 hours to get a new one.

Figure 3-9 Reset the password



Step 4 Click **Next**.

Step 5 Enter a new password and confirm it.

The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &). Set a password with high security level according to the prompt of the password's security level.

Step 6 Click **Save**.

The login page is displayed.

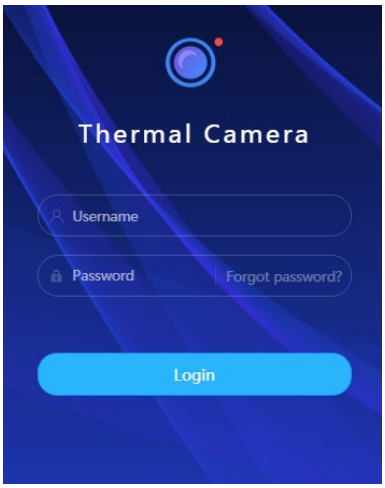
4 Daily Operation

4.1 Introduction to Main Page

Procedure

Step 1 Open Chrome browser, enter the IP address of the camera (192.168.1.108 by default) in the address bar and press the Enter key.

Figure 4-1 Login



Step 2 Enter the username and password, and then click **Login**.

- The default user is admin. The password is the one that was configured during initial settings. For details, see "3.4 Resetting Password".
- It will prompt you to install plug-in for the first system login. Please download and install plug-in according to the prompt.

Step 3 Click at the left-upper corner of the page to display the main page.

Figure 4-2 Main page

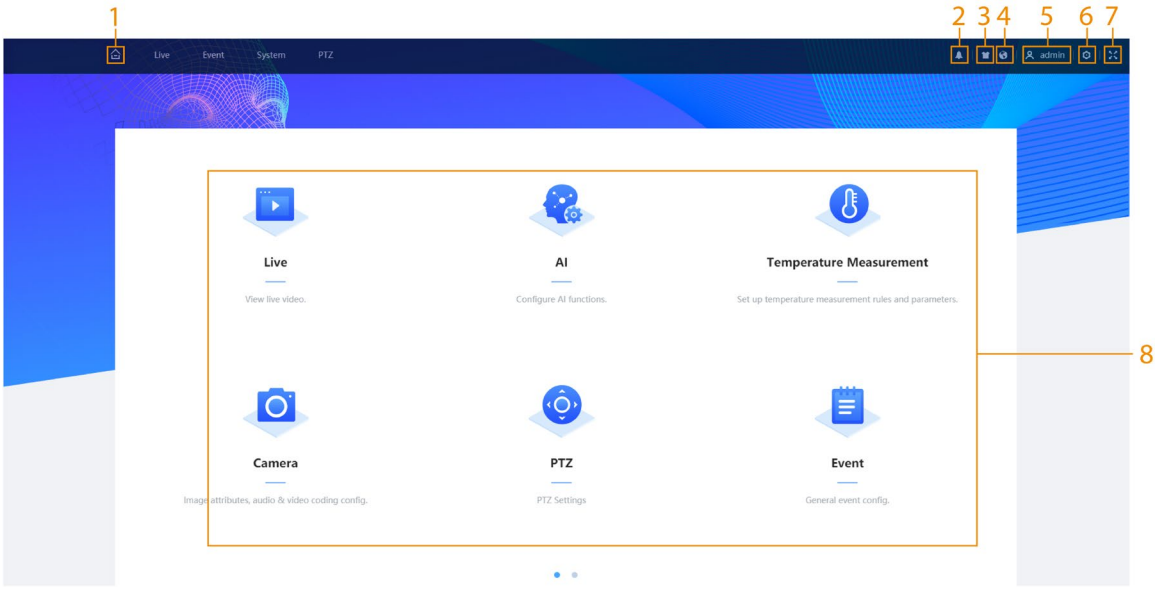


Table 4-1 Description of main page

No.	Name	Description
1		Displays the main page.
2		Subscribe alarm. For details, see "4.5 Subscribing Alarm".
3		Set the skin.
4		Set the language.
5		• Select **Restart**, and the camera restarts. • select **Logout** to go to the login page.  The system will sleep automatically after idling for a period of time.
6		Set the basic parameters.
7		Click  to enter full screen mode, and click  to exit full screen mode.
8	Main page	Click to display more modules. • Live: View the real-time monitoring image. • AI: Configure AI functions of the camera. • Camera: Configure camera parameters, including image parameters, encoder parameters, and audio parameters. • PTZ: Configure the PTZ functions, including preset, tour, scan and pattern. • Event: Configure general events, including alarm linkage exception, video detection, and audio detection. • System: Configure the basic parameters of the system, manage users, peripheral, and maintain and upgrade device. • Record: Play back or download recorded video. • Picture: Play back or download image files. • Security: Check the device security status and set security functions. • Report: Search the AI event report and system report.

4.2 Live

This section introduces the layout of the page and function configuration.

4.2.1 Live Page

Log in to the web page, and the live view page is displayed.

Pages might vary with different models.

Figure 4-3 Live

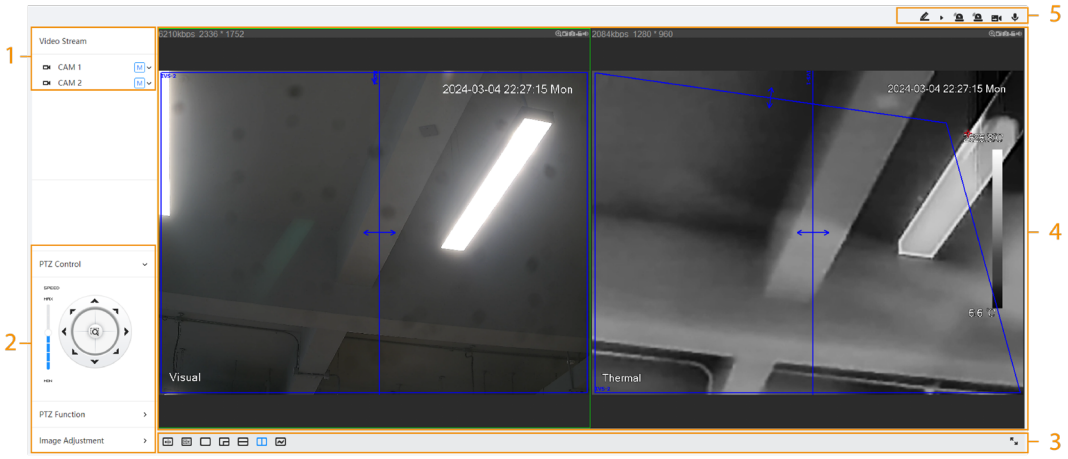


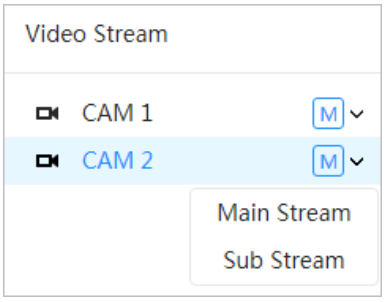
Table 4-2 Description of function bar

No.	Function	Description
1	Channel list	Displays all channels. You can select the channel as needed and set the stream type.
2	Image adjustment	Adjustment operations in live viewing. For details, see "4.2.4 Window Adjustment Bar".
3		
4	Live view	Displays the real-time monitoring image.
5	Live view function bar	Functions and operations in live viewing. For details, see "4.2.3 Live View Function Bar".

4.2.2 Setting Encode

Click , and then select the stream as needed.

Figure 4-4 Encode bar



- **Main Stream**: It has large bit stream value and image with high resolution, but also requires large bandwidth. This option can be used for storage and monitoring. For details, see "8.2.3.1 Configuring Encode Parameter".
- **Sub Stream**: It has small bit stream value and smooth image, and requires less bandwidth. This option is normally used to replace main stream when bandwidth is not enough. For details, see "8.2.3.1 Configuring Encode Parameter".
- M means the current stream is main stream; S1 means the current stream is sub stream.

4.2.3 Live View Function Bar

For the live view function bar, see Table 4-3.

Table 4-3 Description of live view function bar

Icon	Function	Description
	Mark	Click to select the pen color, and then click to mark a target on the video image .
	Force Alarm	Display alarm sound state. Click the icon to enable or disable the alarm sound forcibly.
	Record	Click the icon to record video, and it will be saved to the configured storage path. About viewing or configuring storage path, see "8.1 Configuring Local Parameters".
	Talk	Click the icon to enable or disable the audio take.

4.2.4 Window Adjustment Bar

4.2.4.1 Adjustment

This section introduces the adjustment of image. For details, see Table 4-4.

Table 4-4 Description of adjustment bar

Icon	Function	Description
	AI Rule	Click the icon, and then select **Enable** to display AI rules and detection box; select **Disable** to stop the display. It is enabled by default.
	Optical Axis Calibration	It is used for adjusting lens position during production. Do not click it.
	Window Layout	When view multi-channel image, you can select display layout.
	Real-time Report	Click the icon to display the real-time report.

4.2.4.2 Zoom and Focus

Click **Zoom and Focus** at the lower-left corner of **Live** page to adjust focal length to zoom in or out video image; by adjusting focus manually, automatically or within a certain area, you can change image clarity or correct adjusting errors.

The focus would adjust automatically after zooming in or out.

Figure 4-5 Zoom and focus

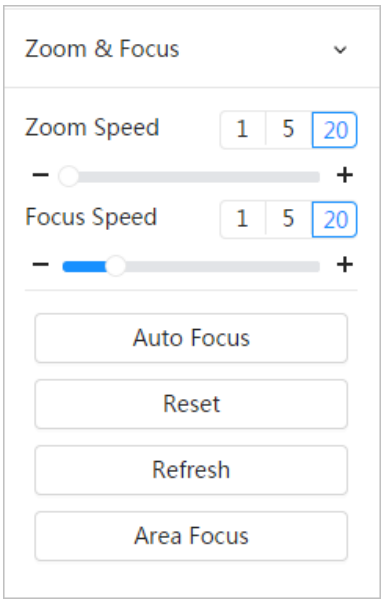


Table 4-5 Description of zoom and focus parameter

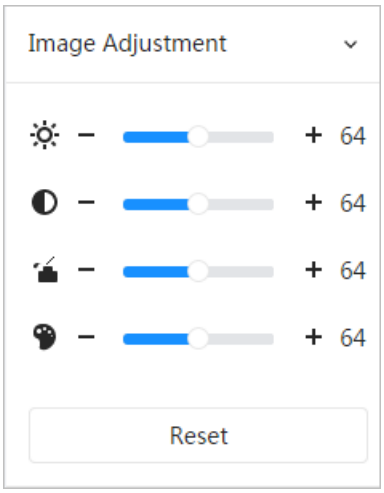
Parameter	Description
Zoom Speed	Changes the focal length of the camera to zoom in or out the image. 1. Set the speed value. The **Zoom Speed** is the adjustment range in one click. The larger the value is, the more the image would zoom in or out in one click. 2. Click or hold + or – button, or drag the slider to adjust zoom.
Focus Speed	Adjusts the optical back focal length to make the image clearer. 1. Set the speed value. The **Focus Speed** is the adjustment range in one click. The larger the value is, the more the adjustment in one click. 2. Click or hold + or – button, or drag the slider to adjust focus.
Auto Focus	Adjusts image clarity automatically. Do not make any other operation during auto focus process.
Reset	Restores focus to default value and corrects errors. You can restore the focus if the image has poor clarity or has been zoomed too frequently.
Refresh	Get the latest zoom setting of the camera.
Area Focus	Focus on the subject of a selected area. Click **Area Focus**, and then select an area in the image, the camera performs auto focus in that area.

4.2.4.3 Image Adjustment

Click **Image Adjustment** at the lower-left corner of **Live** page, and click + or – button, or drag to adjust image parameters, including brightness, contrast, hue, and saturation.

The adjustment is only available on the web page, and it does not adjust the camera parameters.

Figure 4-6 Image adjustment



- (Brightness adjustment): Adjusts the overall image brightness, and changes the value when the image is too bright or too dark. The bright and dark areas will have equal changes.
- (Contrast adjustment): Changes the value when the image brightness is proper but contrast is not enough.
- (Saturation adjustment): Adjusts the image saturation, this value does not change image brightness.
- (Hue adjustment): Makes the color deeper or lighter. The default value is made by the light sensor, and it is recommended.

Click **Reset** to restore focus to default value.

You can restore the zoom if the image has poor clarity or has been zoomed too frequently.

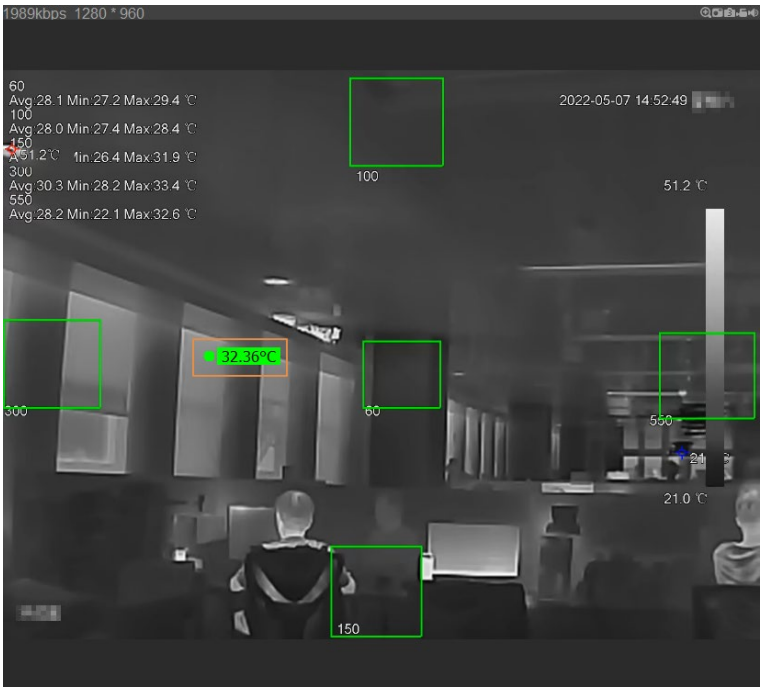
4.2.5 Real-time Spot Temperature Monitoring

View the real-time temperature of any spot on the image.

Only Cameras with temperature-monitoring function support this function, and the actual product shall prevail.

Click any position of the video image and click. Then the real-time temperature of this spot is displayed.

Figure 4-7 Real-time spot temperature monitoring



4.3 Configuring PTZ

You can go to the **PTZ** page through two ways.

- Log in to the main page, and click **PTZ**.
- Log in to the web page, click , and then select **PTZ**.

4.3.1 Configuring Protocol

If you want to control the external PTZ by the Camera, you need to set the PTZ protocol first and then connect PTZ to the Camera.

Step 1 Select > **System** > **Peripheral** > **PTZ**.

Step 2 Configure PTZ parameters.

Figure 4-8 PTZ configuration

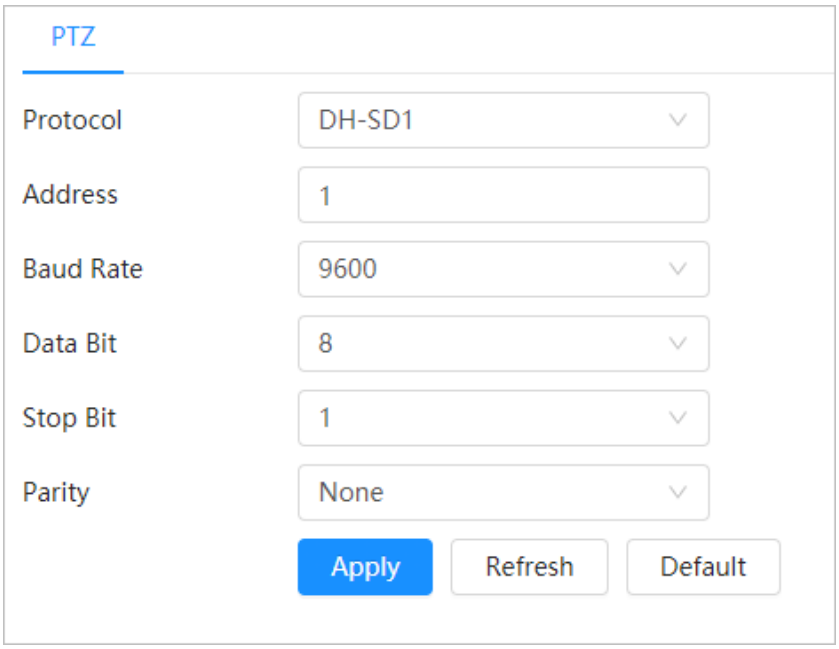


Table 4-6 Parameter description

Parameter	Description
Protocol	Matches with the PTZ protocol.
Address	Enter the corresponding camera address. The address must be the same with the address configured on the PTZ; otherwise the Camera cannot control the PTZ.
Baud rate	Configure camera baud rate.
Data bit	It is 8 by default.
Stop bit	It is 1 by default.
Parity	It is None by default.

Step 3 Click **Apply**.

4.3.2 Configuring PTZ Functions

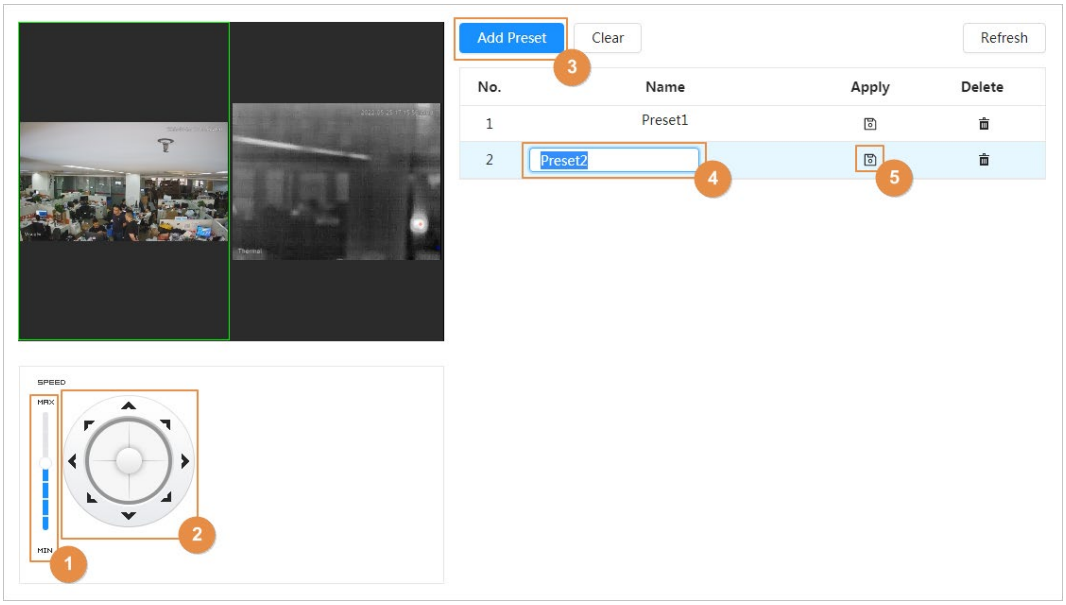
4.3.2.1 Configuring Preset

By configuring presets, the camera can store parameters such as PTZ's horizontal angle, inclination angle, and the lens focal length under the current situation to the Camera. If you need those parameters later, you can quickly adopt them and adjust the PTZ and camera to those locations.

Procedure

Step 1 Select > **PTZ** > **Preset**.

Figure 4-9 Preset



Step 2 Set the speed, and then click the direction button to move the camera to the surveillance direction that you need.

Step 3 Click **Add Preset** to set the current position as a preset.

The added preset is displayed in the list.

Step 4 Click the preset name to edit the name.

Step 5 Click to save the preset.

Related Operations

- Delete a preset: Click to delete the corresponding preset.
- Delete all presets: Click **Clear** to delete all presets.

4.3.2.2 Configuring Tour Group

Configure tour and the PTZ camera repeats performing tours among the configured presets after configuration.

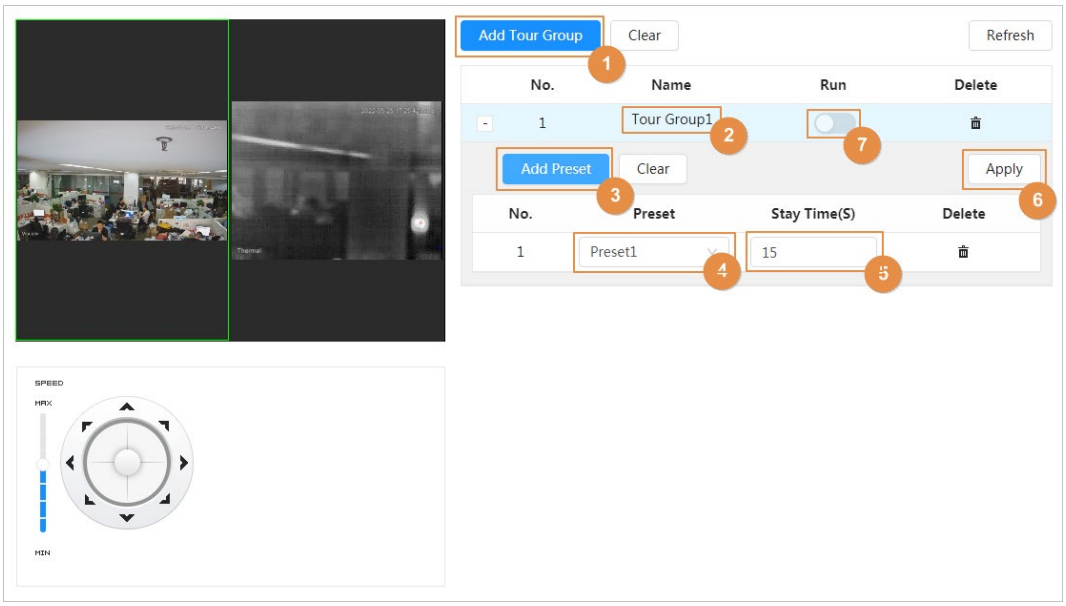
Prerequisites

Configure several presets in advance.

Procedure

Step 1 Select > **PTZ** > **Tour Group**.

Figure 4-10 Tour group



Step 2 Click **Add Tour Group**, and then you can click the group name to edit the name.

Step 3 Select the tour group, and then click **Add Preset** to set the current position as a preset. Repeat the operation to add more presets.

Step 4 Set the stay time. It ranges from 15 s–3600 s.

Step 5 Click **Apply**.

Step 6 Click to start the tour.

- The ongoing tour stops if any operation is made to the PTZ.
- Click to stop the tour.

Related Operations

- Delete a tour group: Click to delete the corresponding tour group.
- Delete all added tour groups: Click **Clear** to delete all added tour groups.

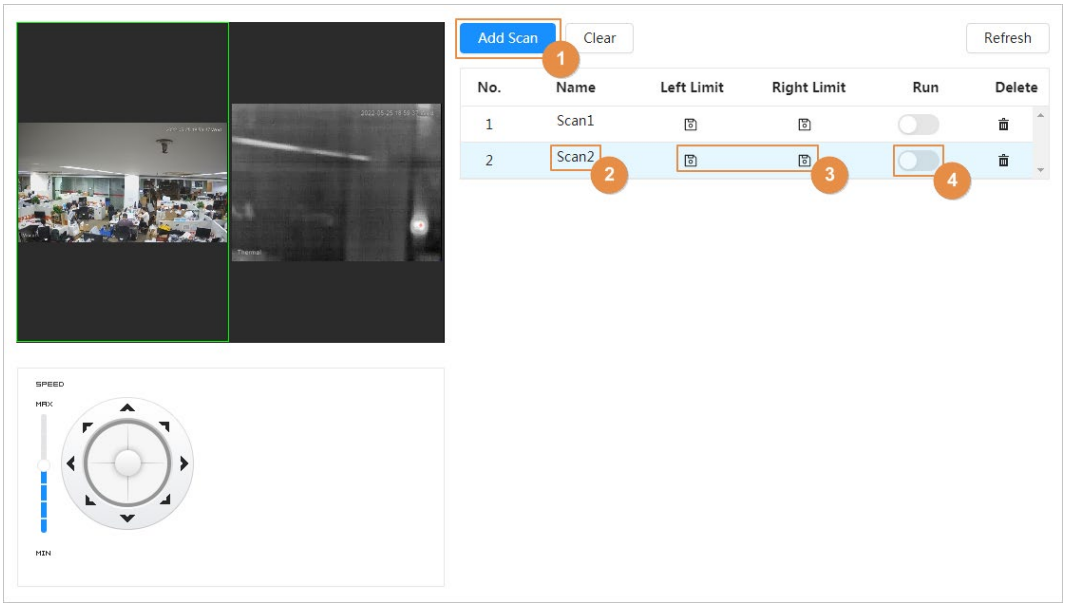
4.3.2.3 Configuring Scan

The camera scans on the horizontal direction between the left and right borders.

Procedure

Step 1 Select > **PTZ** > **Scan**.

Figure 4-11 Scan



Step 2 Click **Add Scan**, and then click the scan name to edit the name.

Step 3 Set the left and right border.

1) Through the direction button, move the camera to the left border that you want and click in **Left Limit**.
2) Through the direction button, move the camera to the right border that you want and click in **Right Limit**.

Step 4 Click to start the scan.

Click to stop the scan.

Related Operations

- Delete a scan: Click to delete the corresponding scan.
- Delete all added scans: Click **Clear** to delete all scans.

4.3.2.4 Configuring Pattern

By configuring pattern, you can record continuously your operation to the PTZ and record the moving pattern of the camera's lens. The Camera will make the location where the recording begins as the beginning point, and move back and forward automatically following the preset movement pattern.

Procedure

Step 1 Select > **PTZ** > **Pattern**.

Figure 4-12 Pattern

Step 2 Click **Add Pattern**, and then click the pattern name to edit the name.

Step 3 Click ▶, and then adjust the direction and speed as needed.

Step 4 Click ⏸ to stop recording.

Step 5 Click to start the pattern.

Click to stop the pattern.

Related Operations

- Delete a pattern: Click 🗑 to delete the corresponding pattern.
- Delete all added patterns: Click **Clear** to delete all patterns.

4.3.3 Controlling PTZ

You can rotate the external PTZ device, zoom image, and adjust iris through PTZ control.

On the **Live** page, click the **PTZ Control** on the lower-left corner to adjust the current video screen.

Figure 4-13 PTZ control

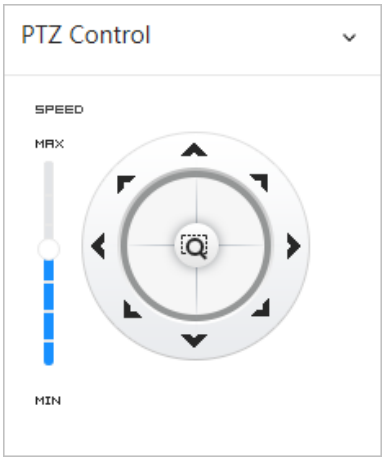


Table 4-7 Description of PTZ control functions

Function	Description
	Control device toward eight directions, including up, down, left, right, left up, right up, left down and right down. Click , and then select an area in the monitor frame, the PTZ will rotate and zoom quickly to the specified area.
	Speed: The speed value changes device rotate speed. The bigger the value is, the faster the device rotates. For example, the rotation with a speed of 8 is much faster than that of 1.

4.3.4 Calling PTZ Function

- PTZ function is available when the camera is connecting with an external PTZ camera.
- You can view the configuration result on the live view of the external PTZ camera.

On the **Live** page, click the **PTZ Function** on the lower-left corner of the page. Before using PTZ function, see "4.3 Configuring PTZ" to configure PTZ function.

Figure 4-14 PTZ function

Table 4-8 Description of PTZ functions

Parameter	Description
Scan	Configure the scan number. Click **Start**, and the device will scan back and forth at a certain speed according to the set boundary. Click **Stop** to finish scan.
Preset	Configure preset number, and then click **View** to position the device to the corresponding point. The preset contains PTZ's horizontal angle, tilt angle, lens focal length and other parameters.
Tour	Configure tour number. Click **Start** and the device automatically rotates back and forth in the order of the set preset points. Click **Stop** to finish tour.
Pattern	Configure pattern number. Click **Start** and the device automatically rotates back and forth according to the set operating record. Click **Stop** to finish pattern. The operation record includes the manual operations that the performed to the PTZ, and the changes in focus and zoom.
Pan	Click **Start**, and then the Camera starts continuous 360° rotation in a horizontal way at a certain speed.

Parameter	Description
Go to	Configure horizontal angle, vertical angel and zoom. Click **Go to** to pinpoint to a point.

4.4 Viewing Report

The report displays the average temperature change of the selected spot, line, and area. This function is only available on cameras supporting temperature measurement.

Prerequisites

You have configured temperature measurement rules. For details, see "5.2.5.1 Configuring Temperature Measurement Rules".

Procedure

Step 1 Log in to the web page, and then select **Report**.

Step 2 Set the conditions for searching and then click **Search**.

The corresponding report is displayed.

4.5 Subscribing Alarm

4.5.1 Alarm Types

For alarm types and preparations of alarm events, see Table 4-9.

Table 4-9 Description of alarm types

Alarm Type	Description	Preparation
Motion Detection	An alarm is triggered when moving object is detected.	Motion detection is enabled. For details, see "5.1.3.1 Configuring Motion Detection".
Disk Full	An alarm is triggered when the free space of SD card is less than the configured value.	The SD card no space function is enabled. For details, see "5.1.2.1 Configuring SD Card Exception".
Disk Error	An alarm is triggered when there is failure or malfunction in the SD card.	SD card failure detection is enabled. For details, see "5.1.2.1 Configuring SD Card Exception".
Video Tampering	An alarm is triggered when the camera lens is covered or there is defocus in video images.	Video tampering is enabled. For details, see "5.1.3.3 Configuring Video Tampering".
External Alarm	An alarm is triggered when there is external alarm input.	The device has alarm input port and external alarm function is enabled. For details, see "5.1.1.1 Setting Alarm-in".
Security Exception	The alarm is triggered when the device detects malicious attack.	Voltage detection is enabled. For details, see "9.1 Security Status".

Alarm Type	Description	Preparation
Audio Detection	An alarm is triggered when there is audio connection problem.	Abnormal audio detection is enabled. For details, see "5.1.4 Configuring Audio Detection".
AI Event	An alarm is triggered when intelligent rule is triggered.	Enable IVS, call detection, smoking detection, and other intelligent functions.
Temperature	When temperature satisfies alarm conditions stipulated by temperature testing rules, an alarm is triggered.	You have enabled temperature alarm. For detailed operations, see "5.2.6 Configuring Temperature Alarm".
Temperature Contrast	When temperature difference satisfies alarm condition you have set, an alarm is triggered.	You have enabled temperature comparison alarm. For detailed operations, see
Hot Spot	When temperature of a hot spot satisfies alarm condition you have set, an alarm is triggered.	You have enabled hot/cold spot tracing. For detailed operations, see
Cold Spot	When temperature of a cold spot satisfies alarm condition you have set, an alarm is triggered.	
Heat	An alarm is triggered when the device detects fire.	Enable fire detection. For details, see ."5.7 Configuring Heat Warning".
Burn Alarm	An alarm is triggered when the lens aims directly to the sun and will be burnt.	Enable burn alarm. For details, see..
Voltage Detection	An alarm is triggered when the device detects abnormal voltage input.	Voltage detection is enabled. For details, see "8.2.3.2.7 Configuring Voltage Information".

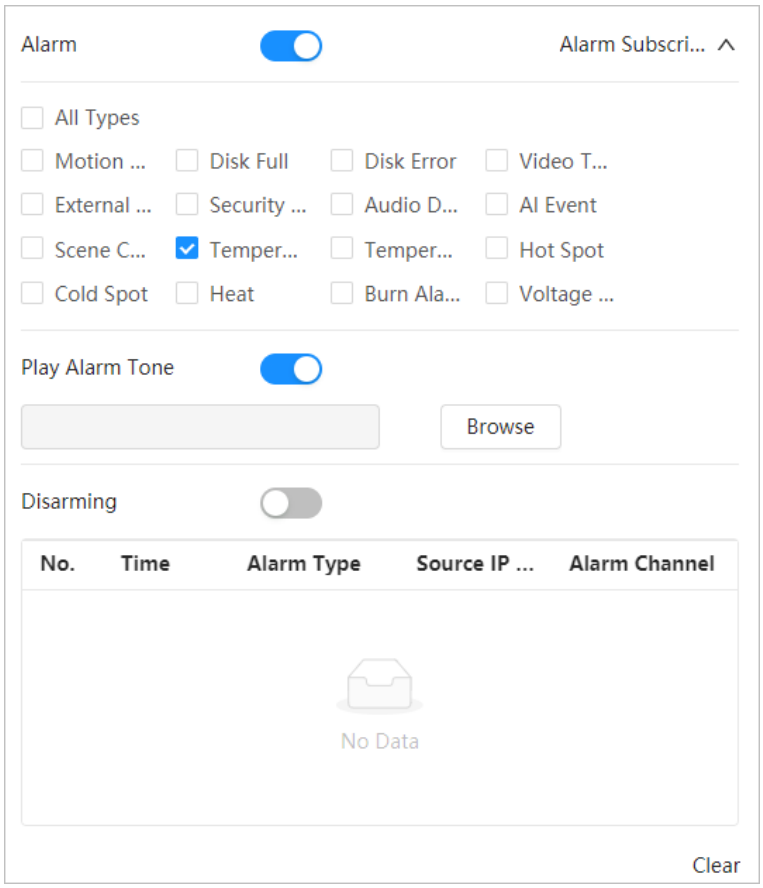
4.5.2 Subscribing Alarm Information

You can subscribe alarm event. When a subscribed alarm event is triggered, the system records detailed alarm information at the right side of the page.

Functions of different devices might be different.

Step 1 Click at the right-upper corner of the main page.

Figure 4-15 Alarm (subscription)



Step 2 Click next to **Alarm**.

Step 3 Select alarm type according to the actual need. For details, see "4.5.1 Alarm Types" .

The system prompts and records alarm information according to actual conditions.

When the subscribed alarm event is triggered and the alarm subscription page is not displayed, a number is displayed on , and the alarm information is recorded automatically. Click to view the details in the alarm list. You can click **Clear** to clear the record.

Step 4 Click next to **Play Alarm Tone**, and select the tone path.

The system will play the selected audio file when the selected alarm is triggered.

5 AI

5.1 Configuring Event

You can go to the **Event** page through two ways.

- Log in to the main page, and click **Event**.
- Log in to the web page, click , and then select **Event**.

5.1.1 Configuring Alarm Linkage

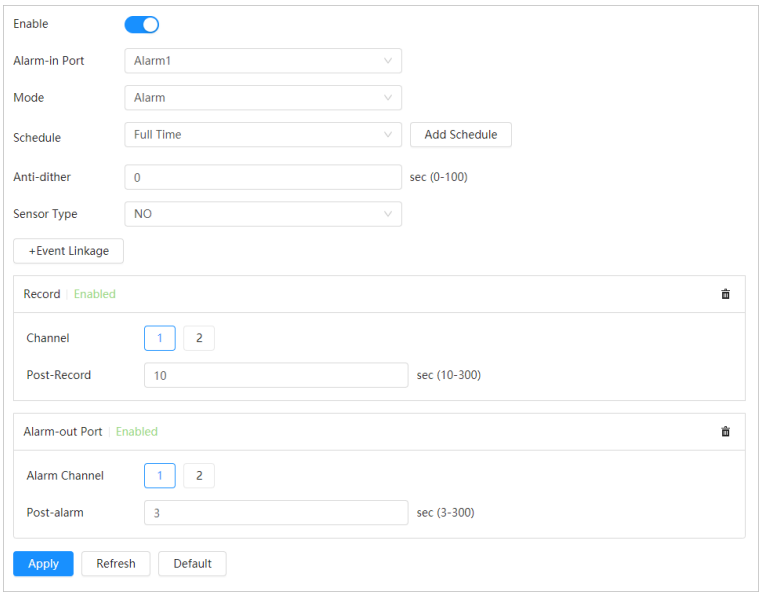
5.1.1.1 Setting Alarm-in

When an alarm is triggered by the device connected to the alarm-in port, the system performs the defined alarm linkage.

Step 1 Log in to the web page, and select > **Event** > **Alarm**.

Step 2 Click next to **Enable** to enable alarm linkage.

Figure 5-1 Alarm linkage



Step 3 Select an alarm-in port.

Step 4 select the alarm mode.

- Alarm: When an alarm is triggered by the device connected to the alarm-in port, the system performs the defined alarm linkage.
  1. Select the schedule and arming periods and alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage". If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add new schedule. For details, see "5.1.1.2.1 Adding Schedule".
  2. Set the anti-dither time and sensor type.
     - Anti-Dither: Only record one alarm event during the anti-dither period.
     - Sensor Type: NO or NC.

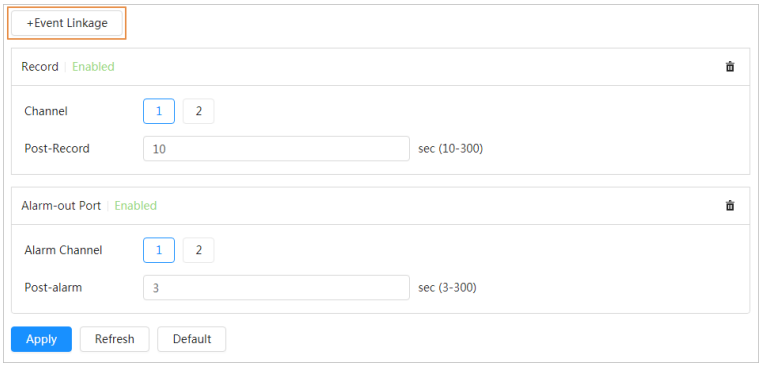
- Arming/Disarming: When the camera is directly connected to a third-party alarm platform, and the alarm-in port generates an alarm signal, the system automatically activates one-click disarming.
  1. Select an alarm-in port and sensor type.
  2. Click  next to **Arming/Disarming** to enable the arming/disarming mode.

Step 5 Click **Apply**.

5.1.1.2 Alarm Linkage

When configuring alarm events, click **Event Linkage**, and then select alarm linkages (such as record, snapshot). When the corresponding alarm is triggered in the configured arming period, the system will alarm.

Figure 5-2 Alarm linkage



5.1.1.2.1 Adding Schedule

Configure arming schedule. The system only performs corresponding linkage actions in the configured period.

Step 1 Click **Add Schedule** next to **Schedule**.

Step 2 Click **Time Plan Table**.

You can add multiple tables, and they will be displayed in the **Schedule** list.

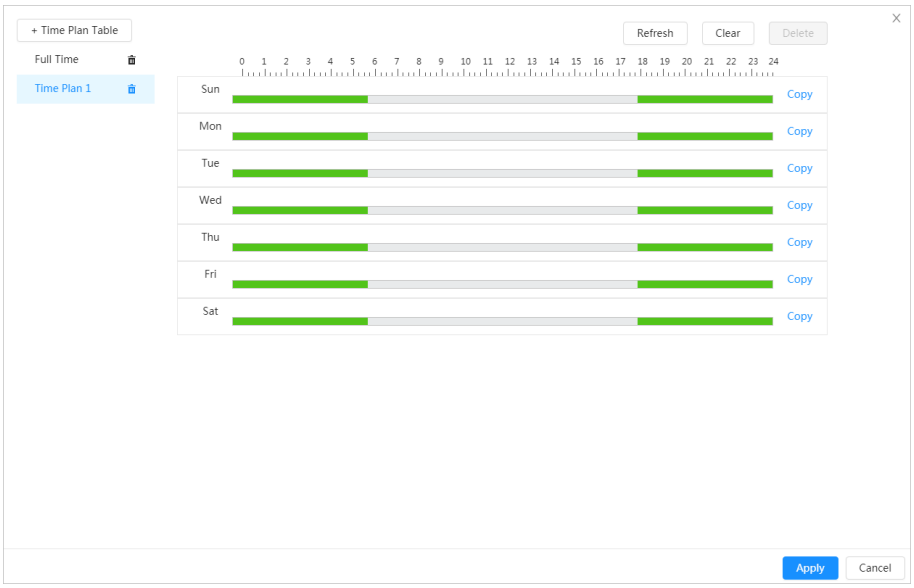
Step 3 Click the table to name to edit the name.

Step 4 Set the arming periods.

Green indicates that the period is armed.

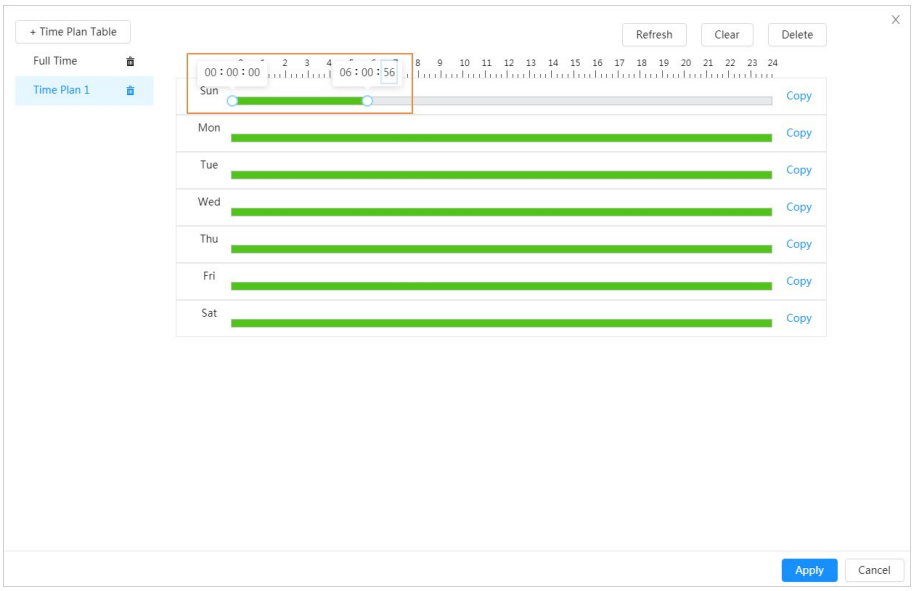
1) Press the left mouse button and drag on the time bar to select the period.

Figure 5-3 Add schedule



2) Click the selected period, enter the specific time in the text box of start time and end time.

Figure 5-4 Set specific time



3) (Optional) Click **Copy**, select the days, and then click **Apply** to copy the current plan to the selected days.

Step 5 Click **Apply**.

5.1.1.2.2 Record Linkage

The system can link record channel when an alarm event occurs. After alarm, the system stops recording after an extended time period according to the **Post-Record** setting.

Prerequisites

- After the corresponding alarm type (**General**, **Motion**, or **Alarm**) is enabled, the record channel links recording. For details, see "6.3 Setting Record Plan".
- Enable auto record mode, the record linkage will take effect. For details, see "6.2 Setting Record Control".

Setting Record Linkage

On the **Alarm** page, select **Event Linkage** > **Record** to enable record linkage, select the channel as needed, and set **Post-Record** to set alarm linkage and record delay.

After **Post-Record** is configured, alarm recording continues for an extended period after the alarm ends.

Figure 5-5 Record linkage

5.1.1.2.3 Snapshot Linkage

After snapshot linkage is configured, the system can automatically alarm and take snapshots when an alarm is triggered.

Prerequisites

After the corresponding alarm type (**General**, **Motion**, or **Alarm**) is enabled, the snapshot channel links capturing picture. For details, see "6.3 Setting Record Plan".

Setting Record Linkage

On the **Alarm** page, select **Event Linkage** > **Snapshot** to enable snapshot linkage, and select the channel as needed.

Figure 5-6 Snapshot linkage

5.1.1.2.4 Alarm-out Linkage

When an alarm is triggered, the system can automatically link with alarm-out device.

On the **Alarm** page, select **Event Linkage** > **Alarm-out Port** to enable alarm-out linkage, select the channel as needed, and then configure **Post alarm**.

When alarm delay is configured, alarm continues for an extended period after the alarm ends.

Figure 5-7 Alarm-out linkage

5.1.1.2.5 Email Linkage

When an alarm is triggered, the system will automatically send an email to users.

Prerequisites

Email linkage takes effect only when SMTP is configured. For details, see "8.3.5 Email".

Figure 5-8 Email linkage

5.1.1.2.6 Audio Linkage

When an alarm is triggered, the system can automatically produce audio for warning.

On the **Alarm** page, select **Event Linkage** > **Audio Linkage** to enable alarm-out linkage, and then set the play count and audio file.

Figure 5-9 Alarm-out linkage

5.1.1.2.7 Warning Light

When an alarm is triggered, the system can automatically produce light for warning.

On the **Alarm** page, select **Event Linkage** > **Warning Light** to enable alarm-out linkage, set the mode, stay time, and then click **time** to set the arming periods.

Figure 5-10 Alarm-out linkage

5.1.2 Configuring Exception

Abnormality includes SD card, network, illegal access, voltage detection, and security exception.

Only the device with SD card has the abnormality functions, including **No SD card**, **Low SD card space**, and **SD card error**.

5.1.2.1 Configuring SD Card Exception

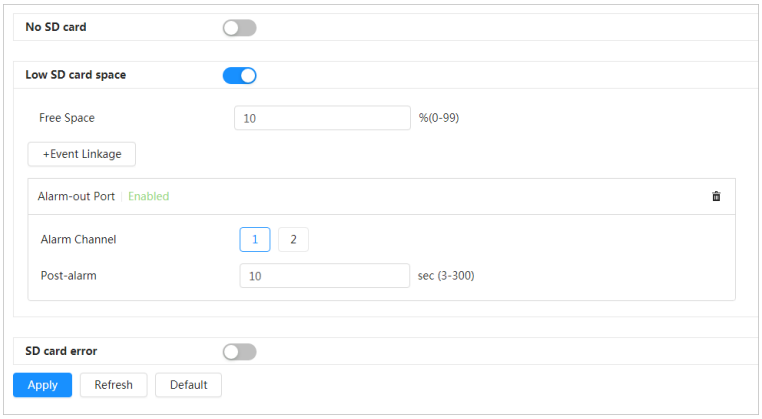
In case of SD card exception, the system performs alarm linkage. The event types include **No SD card**, **Low SD card space**, and **SD card error**. Functions might vary with different models.

Step 1 Select > **Event** > **Exception** > **SD Card Exception**.

Step 2 Click to enable the SD card detection functions.

When enabling **Low SD card space**, set the free space. When the remaining space of SD card is less than this value, the alarm is triggered.

Figure 5-11 SD card exception



Step 3 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

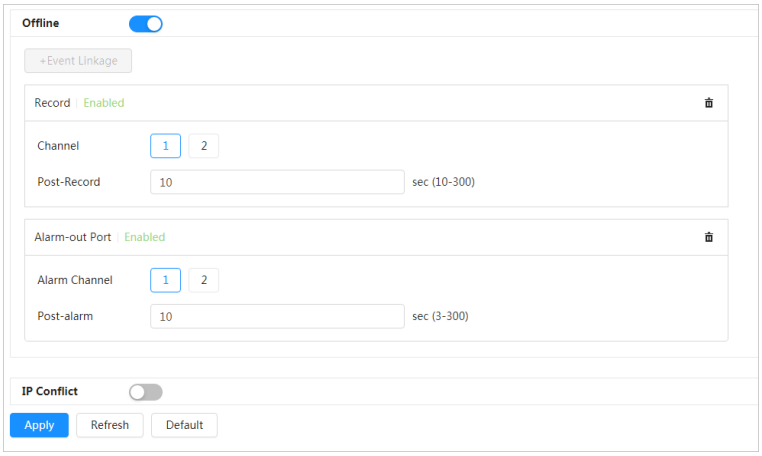
5.1.2.2 Configuring Network Exception

In case of network abnormality, the system performs alarm linkage. The event types include **Offline** and **IP Conflict**.

Step 1 Select > **Event** > **Exception** > **Network Exception**.

Step 2 Click to enable the network detection function.

Figure 5-12 Network exception



Step 3 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.2.3 Configuring Burn Alarm

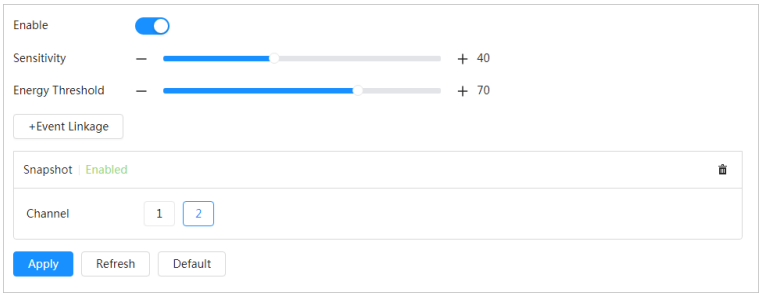
When the lens aims directly to the sun and will be burnt, an alarm is triggered.

Step 1 Select > **Event** > **Exception** > **Burn Alarm**.

Step 2 Click to enable the burn alarm function.

Step 3 Set the sensitivity and energy threshold.

Figure 5-13 Burn alarm



Step 4 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

5.1.3 Configuring Video Detection

Check whether there are considerable changes on the video by analyzing video images. In case of any considerable change on the video (such as moving object, fuzzy image), the system performs an alarm linkage.

5.1.3.1 Configuring Motion Detection

The system performs an alarm linkage when a moving object appears in the image and its moving speed reaches the configured sensitivity.

- If you enable motion detection and smart motion detection simultaneously, and configure the linked activities, the linked activities take effect as follows:
  - When motion detection is triggered, the camera will record and take snapshots, but other configured linkages such as sending emails, PTZ operation will not take effect.
  - When smart motion detection is triggered, all the configured linkages take effect.
- If you only enable motion detection, all the configured linkages take effect when motion detection is triggered.

Step 1 Select > **Event** > **Video Detection** > **Motion Detection**.

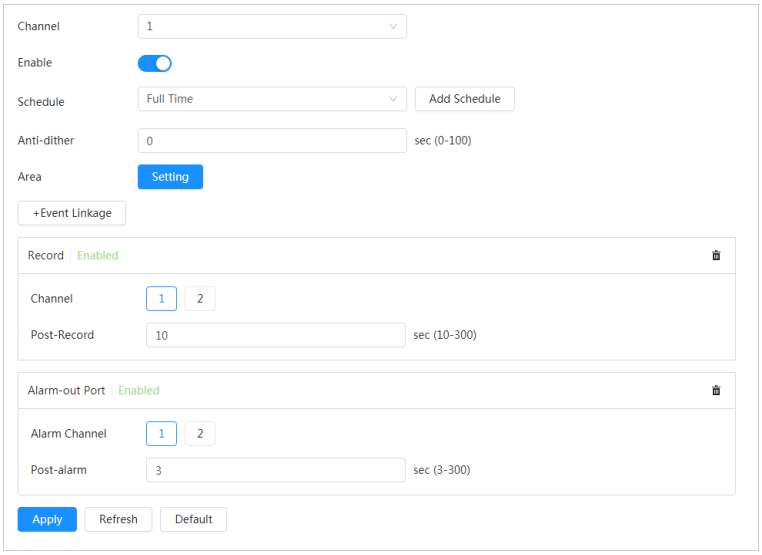
Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click to enable the motion detection function.

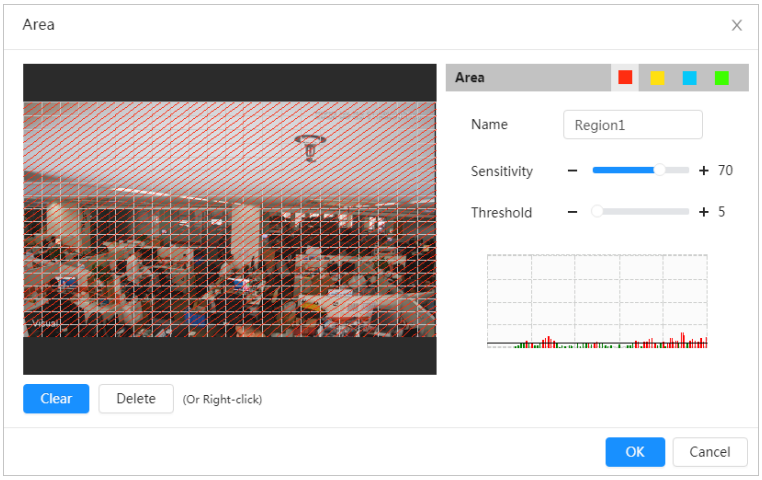
Figure 5-14 Motion detection



Step 4 Set the detection area.

1) Click **Setting** next to **Area**.
2) Select a color and set the region name. Select an effective area for motion detection in the image and set sensitivity and threshold.
   - The whole image is the detection are by default. Select a color to set different detection parameters for each region.
   - Sensitivity: Sensitive degree of outside changes. It is easier to trigger the alarm with higher sensitivity.
   - Threshold: Effective area threshold for Motion Detection. The smaller the threshold is, the easier the alarm is triggered.
   - The whole video image is the effective area for Motion Detection by default.
   - The red line in the waveform indicates that the Motion Detection is triggered, and the green one indicates that there is no motion detection. Adjust sensitivity and threshold according to the waveform.

Figure 5-15 Area



3) Click **OK**.

Step 5 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Anti-dither: After the **Anti-dither** time is set, the system only records one motion detection event in the period.

Step 6 Click **Apply**.

5.1.3.2 Configuring Scene Changing

The system performs alarm linkage when the image switches from the current scene to another one.

Step 1 Select > **Event** > **Video Detection** > **Scene Changing**.

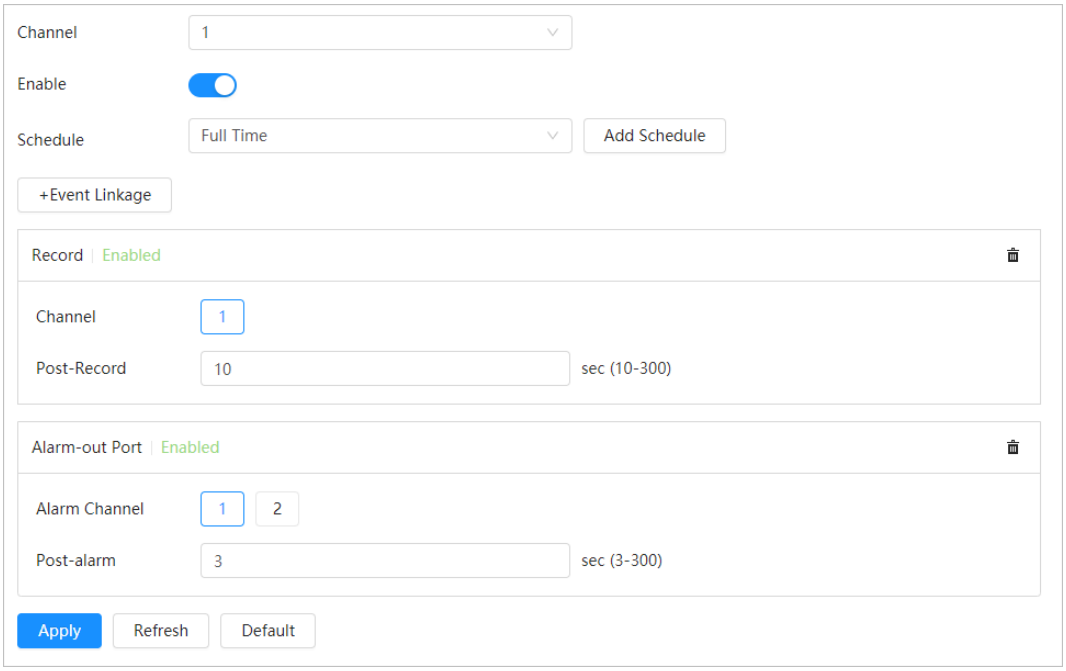
Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click to enable the scene changing function.

Figure 5-16 Scene changing



Step 4 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

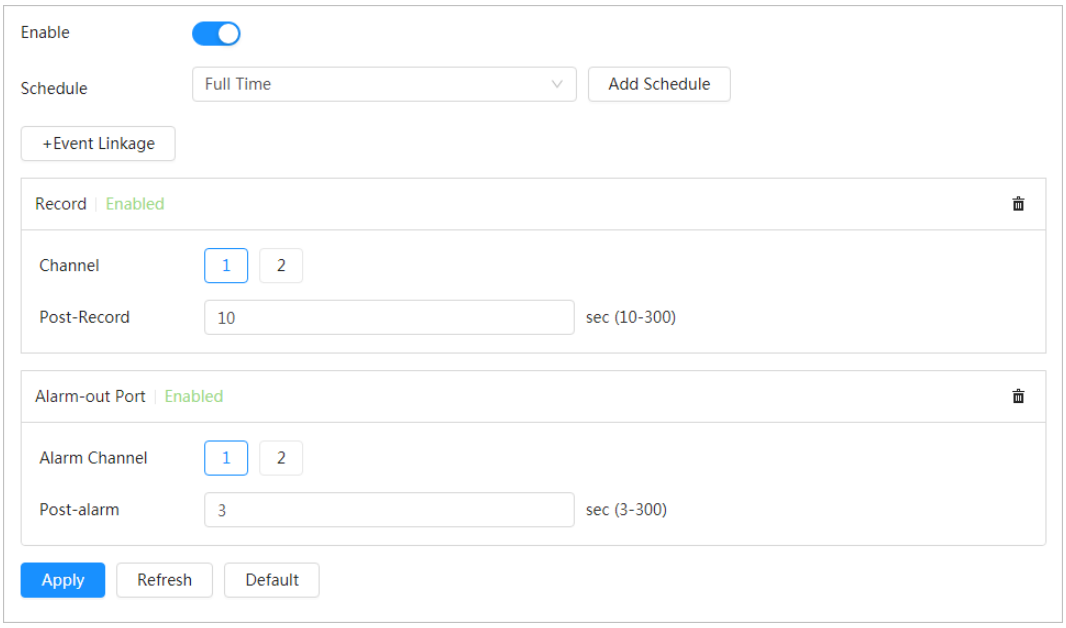
5.1.3.3 Configuring Video Tampering

The system performs alarm linkage when the lens is covered or video output is mono-color screen caused by light and other reasons.

Step 1 Select > **Event** > **Video Detection** > **Video Tampering**.

Step 2 Click to enable the video tempering function.

Figure 5-17 Video tampering



Step 3 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.4 Configuring Audio Detection

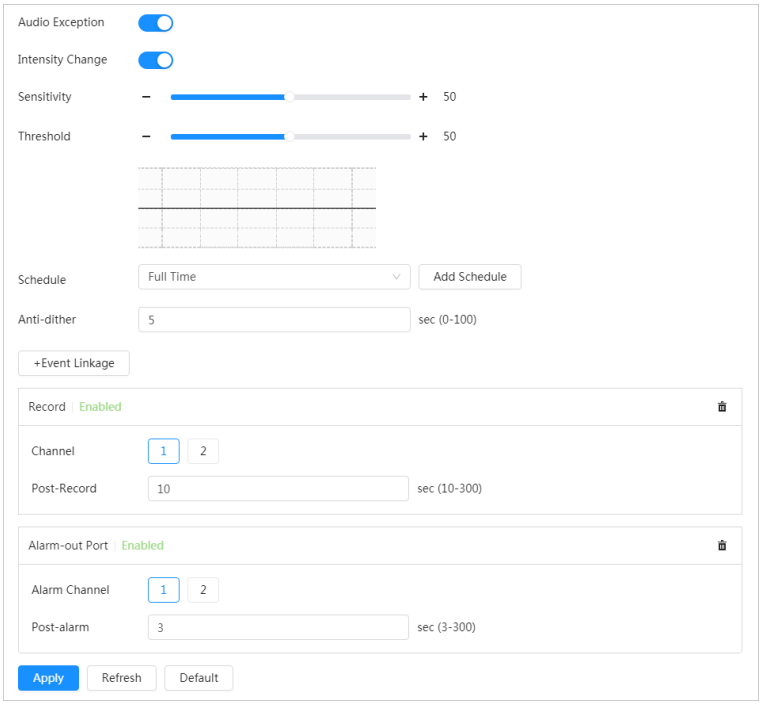
The system performs alarm linkage when vague voice, tone change, or rapid change of sound intensity is detected.

Step 1 Select > **Event** > **Audio Detection**.

Step 2 Set parameters.

- Input abnormal: Click next to **Audio Abnormal**, and the alarm is triggered when the system detects abnormal sound input.
- Intensity change: Click next to **Intensity Change**, and then set **Sensitivity** and **Threshold**. The alarm is triggered when the system detects that the sound intensity exceeds the configured threshold.
  - ◇ It is easier to trigger the alarm with higher sensitivity or smaller threshold. Set a high threshold for noisy environment.
  - ◇ The red line in the waveform indicates audio detection is triggered, and the green one indicates no audio detection. Adjust sensitivity and threshold according to the waveform.

Figure 5-18 Audio detection



Step 3 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 4 Click **Apply**.

5.1.5 Configuring Disarming

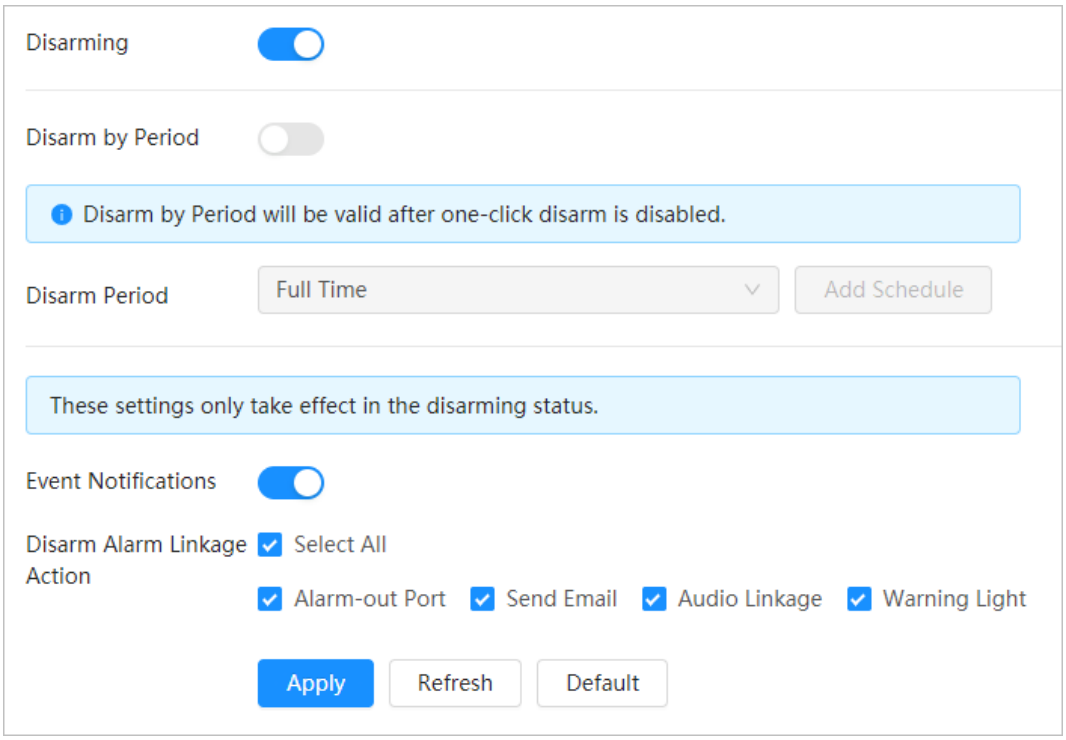
After configuring disarming, the system will not perform any linkage actions, but alarm records will still be generated.

Step 1 Select > **Event** > **Disarming**.

Step 2 Enable or disable disarming as needed.

- Click to enable disarming, and then select the linkage actions.
- Click to disable disarming. and then enable disarming by period and set the disarming period.

Figure 5-19 Disarming



Step 3 (Optional) Enable disarming by period and set the disarming period.

Step 4 (Optional) Set arming periods. For details, see "5.1.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "5.1.1.2.1 Adding Schedule".

Green indicates that the period with disarming enable.

Step 5 (Optional) Enable or disable event notification.

After disabling event notification, all supporting clients, including mobile phone, platform, cloud platforms, cannot receive event messages from the Camera (except for network exception, storage exception, security warning, hardware failures) during the disarming period.

Step 6 Select alarm linkage actions as needed.

You can select the linkage actions from **Alarm-out Port**, **Send Email**, **Audio Linkage**, **Warning Light**.

The system will not perform the selected linkage actions when an alarm is triggered; and perform the unselected linkage actions when an alarm is triggered.

Step 7 Click **Apply**.

5.1.6 Configuring Auto Upload

After enabling the auto upload function, the Camera will automatically report events to third-party clients through HTTP.

Step 1 Select > **Event** > **Auto Upload**.

Step 2 Click to enable the auto upload function.

Step 3 Click **Add**.

You can add 2 servers at most.

Step 4 Configure the server parameters.

Figure 5-20 Auto upload

Table 5-1 Parameters description

Parameters	Description
IP/Domain Name	Enter the IP address of the server where the third-party client is located.
Port	Enter the port number of the server where the third-party client is located.
Path	Enter the event or image upload path.
Event Type	Select the event type according to the situation.
Test	Click **Test** to test whether the connection works normally.

Step 5 Click **Apply**.

On any alarm linkage actions page, select **Event** and **Picture** in **HTTP Upload**, and then click **Apply**. The server will receive the details and pictures of the event.

5.2 Configuring Temperature Measurement

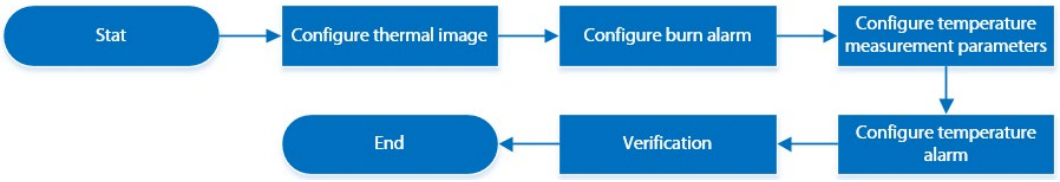
Temperature measurement is available on selected models.

5.2.1 Note

- We recommend that the measuring distance is shorter than 50 m. Long-distance measurement will affect the measurement accuracy because of the humidity and transmissivity of atmosphere, reflection of the sun and heat source.
- For small targets, we recommend you install the Camera facing to the target.

5.2.2 Configuration Flow

Figure 5-21 Configuration flow



5.2.3 Configuring Thermal Channel

Configure a specific scenario where you use the camera, including indoor scenario, outdoor scenario, and adaptive scenario. You can choose a scenario you need, and configure and check the scenario.

Step 1 Select > **Camera** > **Image** > **Image**.

Step 2 Select **2** in **Channel**.

Step 3 Select the working mode.

- Self-adaptive: The camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to Step5.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do Step3–Step5.

Step 4 Select the scene type, profile and colorization.

The image is for reference only, and might differ from the actual page.

Figure 5-22 Image (thermal)

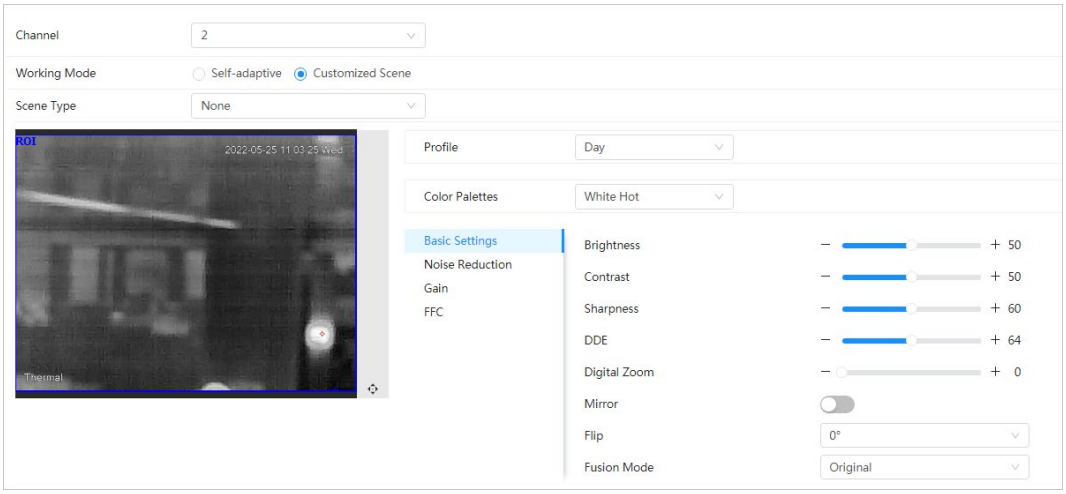


Table 5-2 Description of defog parameters

Parameter	Description
Scene Type	Select the duplicate frame and set the frequently used video parameter as the user-defined scene. Or, you can select the default scene and set the display of the thermal image. • **Low Dynamic**: Thermal images will be displayed based on the configuration of low dynamic scene. • **High Dynamic**: Thermal images will be displayed based on the configuration of high dynamic scene. • **Auto**: Thermal images will be displayed based on the configuration of auto scene • **None**: Do not set the scene.
Profile	**Normal**, **Day** and **Night** can be selected.

Parameter	Description
Colorization	Add color to the thermal image and use color to indicate the temperature. "White glow" is the default color. ● White glow: Lighter when the temperature is higher in gray image. ● Black glow: Lighter when the temperature is lower in gray image. ● Fusion: Color is concentrated on the range of purple- red-yellow. More purple when the temperature is lower and more yellow when the temperature is higher. ● Rainbow: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Golden autumn: Color is concentrated on the range of red-yellow. Redder when the temperature is lower and more yellow when the temperature is higher. ● Midday: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Iron oxide red: Its color range is similar to that of Midday, but its brightness is lower than Midday. ● Amber: It's mainly represented as brown. Brighter when the temperature is higher. ● Boulder: Color is concentrated on the range of purple - red-yellow-green- blue. More purple when the temperature is lower and bluer when the temperature is higher. ● The setting sun: Color is concentrated on the range of blue-red- yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Ice and fire: In color image, high temperature objects show red and low temperature objects show blue. Ice and fire is usually used to give a warning. ● Oil painting: Color is concentrated on the range of purple-blue-green- yellow-red. More purple when the temperature is lower and redder when the temperature is higher. ● Pomegranate: It's mainly represented as wine red. Brighter when the temperature is higher. ● Green jade: It's mainly represented as aquamarine. Brighter when the temperature is higher.

Step 5 (Optional) Configure the advanced parameters.

When the scene cannot meet the scene requirements, configure the advanced parameters manually.

Table 5-3 Advanced parameter description

Classification	Parameter	Description
Basic Settings	Brightness	Change the overall image brightness through linear mode. The bigger the value is, the brighter the image will be, and the smaller the darker.
	Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
	Sharpness	Change the sharpness of image edges. The larger the value, the more obvious the image edge. Do not make the value too large to prevent image noise.
	DDE	Makes the details of the image clear. The bigger the value is, the clearer the details will be.
	Digital Zoom	Enlarge the thermal image according to the zoom time you have set.
	Mirror	Open the mirror image and the monitor image will reverse from left to right.
	Flip	Changes the display direction of the picture, see the options below. ● 0°: Normal display. ● 90°: The picture rotates 90° clockwise. ● 180°: The picture rotates 90° counterclockwise. ● 270°: The picture flips upside down.  For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".

Classification	Parameter	Description
	Fusion Mode	Displays the image with the gray scale information of the visible channel, and marks temperatures with color palettes, which makes the image of the thermal channel clearer. ● **Original**: Displays the image of the thermal channel. ● **Warm Color**: Combines the data of the visible channel and the thermal channel, and displays the image in warm color. ● **Cold Color**: Combines the data of the visible channel and the thermal channel, and displays the image in cold color. ● **Fusion Rate**: It ranges from 0 to 100. The larger the value, the larger the proportion of the visible channel. ● **Dual-lens Calibration Adjustment**: You can adjust the misaligned images through direction keys. ● **Speed**: The moving speed of the lens when adjusting the image.  To get a better fusion effect, keep the distance 3 m between the Camera and the targets.
Noise Reduction	2D NR	Compares one frame to the next and removes any oddity that does not appear in each frame. The larger the value is, the fuzzier the image will be.
	3D NR	Removes the grainy fuzzy appearances of low light images, will handle moving objects without leaving tails behind, and in low light, it makes an image clearer and sharper. ● Basic 3D NR: The module handles noise reduction. ● Advanced 3D NR: The back-end program handles noise reduction.  Generally, you can select **2D NR** and **Basic 3D NR**. If the image is not clear, select **Advanced 3D NR**, and configure the parameters.
Gain settings	Auto Gain	The larger the gain value, the more unstable the image.
	Gain Mode	Low-temperature mode, high-temperature mode and auto mode are contained.
FFC Settings	FFC Mode	Method of correcting the shutter. ● Auto: According to the switch period that you have configured, the shutter will be corrected regularly. ● Manual: Correct the shutter by yourself.
	FFC Period	You can configure this parameter only when **FFC Mode** is set to be **Auto**. Adjust time gap of correcting the shutter automatically.

Classification	Parameter	Description
	Do FFC	Click **Do FFC** to trigger the shutter correcting for this time.

Step 6 Click **Apply**.

5.2.4 Configuring Burn Alarm

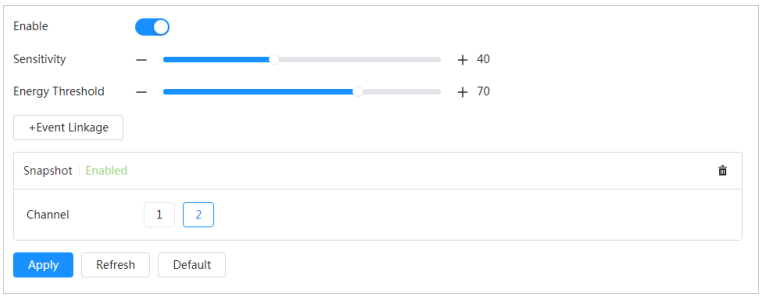
When the lens aims directly to the sun and will be burnt, an alarm is triggered.

Step 1 Select > **Event** > **Exception** > **Burn Alarm**.

Step 2 Click to enable the burn alarm function.

Step 3 Set the sensitivity and energy threshold.

Figure 5-23 Burn alarm



Step 4 Set alarm linkage actions. For details, see "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

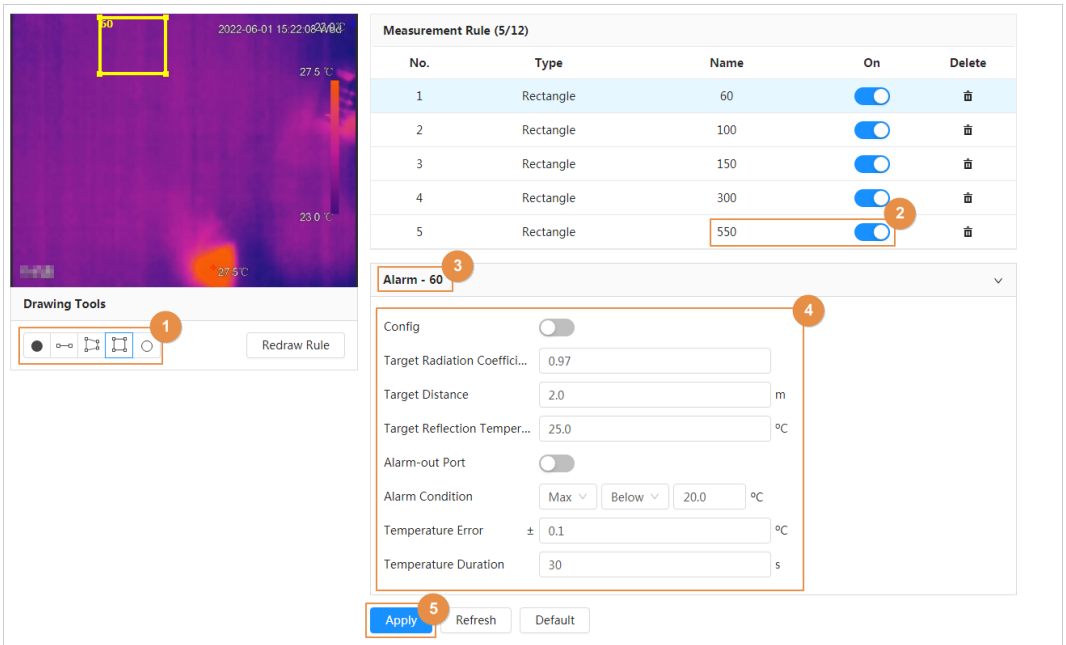
5.2.5 Configuring Temperature Measurement Parameters

Configure temperature measurement rules, and when alarm conditions are met, an alarm will be triggered.

5.2.5.1 Configuring Temperature Measurement Rules

Step 1 Select **Temperature Measurement** > **Rule** > **Parameters**.

Figure 5-24 Configuring parameters



Step 2 Select the drawing tools, including spot, line, polygon, rectangle, and ellipse.

After selecting the tool, the corresponding rule is displayed in **Measurement Rule**. Click the name, and you can edit it; click to disable the corresponding rule.

Step 3 Draw then rules.

- Select spot as the drawing tool, and you can click a position on the surveillance image and a spot is formed.
- Select line, rectangle or ellipse as the drawing tool, and you can hold the left mouse button to draw rules on the surveillance image.
- Select polygon as the drawing tool, and you can hold the left mouse button to draw rules you need on the surveillance image. Right-click to end your drawing.

- Select a rule that you have drawn, and then click **Redraw Rule**, you can delete the rule and draw a new one.
- You can draw 12 rule at most.

Step 4 Select the **Relay-out** checkbox and configure the parameters.

Table 5-4 Description of relay-out parameter

Parameter	Description
Alarm Results	The display items of temperature. ● Select **Measurement Items** as **Spot**, and average temperature and temperature slope will be displayed. ● Select **Measurement Items** as **Line**, **Rectangle**, **Ellipse** or **Polygon**, and maximum/minimum/average temperature, temperature slope and temperature difference are displayed. ● Temperature difference refers to the difference between maximum and minimum temperatures under rules you have set. ● Temperature slope refers to the change rate of the average temperature with the configured rules.
Alarm Condition	Set alarm conditions, covering **Below**, **Match** and **Above**.
Alarm Threshold Temperature	It ranges from –40 °C to +550 °C. You can set this value when you select **Alarm Results** as **Max**, **Min**, **Aver**, or **Temperature Difference**.
Temperature Slope	The temperature difference in each minute. Ranges from –600 °C/min to +600 °C/min. You can set this value when you select **Alarm Results** as **Slope**.
Temperature Error	Set a temperature error value and if the alarm threshold temperature or temperature slope is within the value that you have set, alarms will still be triggered. It ranges from –10 °C to +10 °C.
Duration of Temperature	You can set the duration of abnormal temperature after which alarms will be triggered. It ranges from 0–1000 s.

Step 5 Select an added rule, and then click next to **Config** to configure the parameters of each rule.

If you do not enable **Config**, alarms are triggered according to the global configuration.

Table 5-5 Alarm parameter description

Parameter	Description
Target Radiation Coefficient	Radiation coefficient of targets that are shot by this Camera. Ranges from 0.5–1.
Target Distance	Distance from the camera to targets that are shot. Ranges from 0–10000 m.
Target Reflection Temperature	Temperature of targets that are shot by this Camera. Ranges from -50 °C to 327.7 °C.
Alarm-out Port	Enable alarm out.

Parameter	Description
Alarm Condition	Set the alarm condition: Alarm result + alarm condition + Alarm threshold temperature/temperature slope. ● Alarm result: The display items of temperature. ◇ Select spot as the drawing tool, and average temperature and temperature slope will be displayed. ◇ Select line, rectangle, ellipse or polygon as the drawing tool, and maximum/minimum/average temperature, temperature slope and temperature difference are displayed.  Temperature difference means the difference between maximum and minimum temperatures under rules that you have set; temperature slope means temperature's varying rate under rules you have set. ● Alarm condition: **Below**, **Match** and **Above**. ● Alarm threshold temperature: The temperature that triggers alarm, and it ranges from –40 ℃ to 550 ℃. You can set this value when you select alarm result as **Max**, **Min**, **Average Temperature**, or **Temperature Difference**.
Temperature Error	Set a temperature error value and if the alarm threshold temperature or temperature slope is within the value you have set, linked alarms will still be triggered. Ranges from –10 ℃ to 10 ℃.
Temperature Duration	You can set a lasting time of abnormal temperature after which alarms will be triggered. Ranges from 0–1000 s.

Step 6 Set the anti-dither time.

After the anti-dither time is configured, the system only records one motion detection event in the period.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 8 Click **Apply**.

After configuration, you can view the temperature change under the configured rules on the live image.

5.2.5.2 Configuring Temperature Contrast

Compares temperature of spots, lines or area that you have selected and displays comparison results on the image.

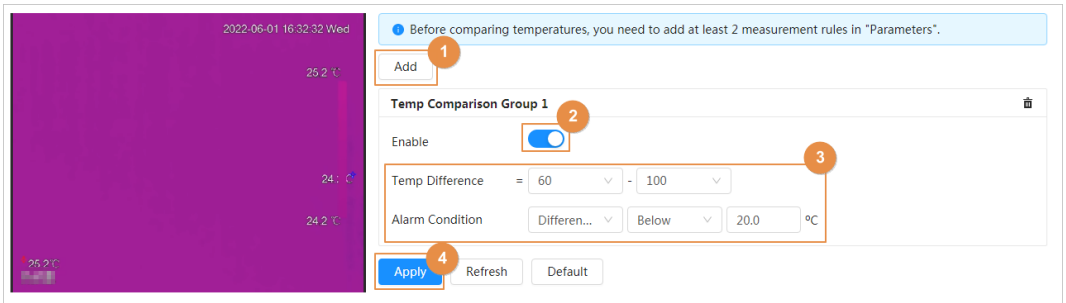
Prerequisites

You have configured at least two temperature measurement rules. For details, see "5.2.5.1 Configuring Temperature Measurement Rules".

Procedure

Step 1 Select **Temperature Measurement** > **Rule** > **Temperature Contrast**.

Figure 5-25 Temperature contrast



Step 2 Click **Add** to add a temperature comparison group.

Step 3 Click to enable the temperature comparison group, and then configure the parameters.

The temperature comparison group is enabled by default.

Table 5-6 Temperature comparison group

Parameter	Description
Temp Different	Select the targets for contrast.
Alarm Condition	Set the alarm condition: Alarm result + alarm condition + Alarm threshold temperature. ● Alarm result: Select from the following three options to determine a standard of triggering an alarm. ◇ Average temperature: Compare average temperatures of two rules. ◇ Maximum temperature: Compare maximum temperatures of two rules. ◇ Minimum temperature: Compare minimum temperatures of two rules. When one of the two rules is a spot, both maximum temperature and minimum temperature are actually average temperature. ● Alarm condition: **Below**, **Match** and **Above**. ● Alarm threshold temperature: The temperature that triggers alarm, and it ranges from –40 °C to 550 °C.

Step 4 Click **Apply**.

After configuration, you can view the temperature contrast results on the live image.

5.2.5.3 Configuring Shield Area

After configuring shield areas, the fixed false alarm sources can be excluded.

This function is only available on some select models.

Step 1 Select **Temperature Measurement** > **Rule** > **Shield Area**.

Step 2 Click **Add** to add a shield area.

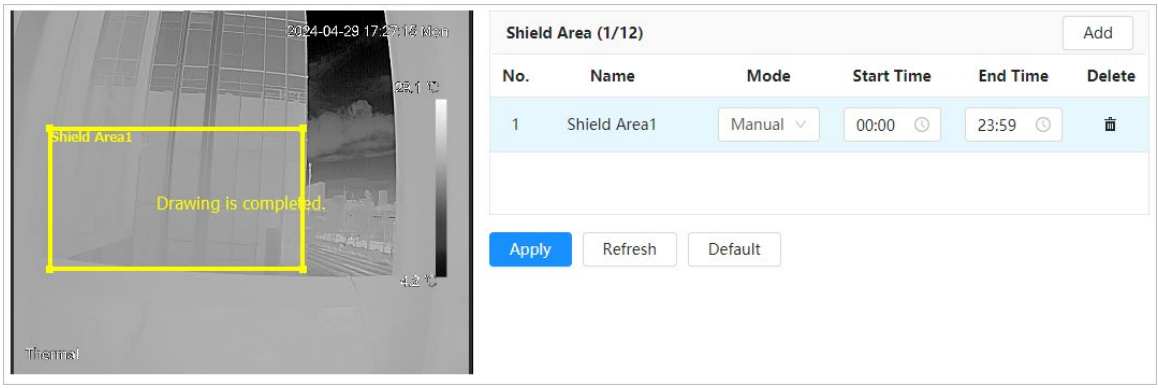
- You can add 12 shield area at most.
- Click to delete the shield area.

Step 3 Double-click the name to modify the shield name.

Step 4 Set the mode.

- Manual: Select **Manual** as the mode, and then set the begin time and end time. The shield time is valid during the configured time.
- Auto: Select **Auto** as the mode, and the shield area takes effect according to the day & night mode of the visible channel. The shield area is valid during the day time (when ICR is in color), and it is not valid during the night time (when ICR switches black and white.

Figure 5-26 Configure shield area



Step 5 Click **Save**.

5.2.5.4 Configuring Global Configuration

You can enable temperature measurement, isotherm and color code.

Background Information

- Temperature Switch: A switch with which you can enable or disable temperature testing rules. Enable the **Temperature Switch** and the temperature testing rules you have set will be displayed on surveillance images.
- Isotherm: Used to highlight an object in images of high brightness. Isotherm is based on median temperature, with highest temperature and lowest temperature as its range. The part of an object whose temperature is higher than floor temperature will be represented in a bright color and the part of an object whose temperature is lower than floor temperature will be represented in a black/white color.
- Color Code: Enable this function, and a color code is displayed on the right side of surveillance images to show change of color between minimum temperature and maximum temperature.

Procedure

Step 1 Select **Temperature Measurement** > **Global Configuration**.

Step 2 Set the parameters.

Figure 5-27 Global configuration

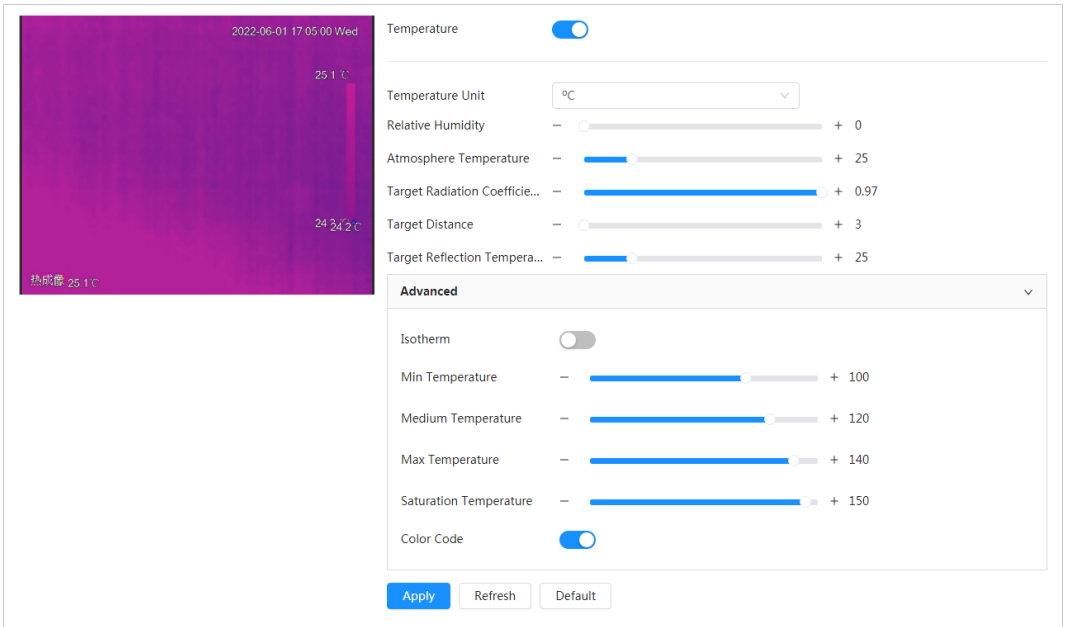


Table 5-7 Global configuration

Parameter	Description
Temperature	Enable the temperature measurement function.
Temperature Unit	Includes °C and °F。
Relative Humidity	Relative humidity of environment, and it ranges from 0 RH–100 % RH.
Atmosphere Temperature	Temperature of the environment, and it ranges from –50 °C to 327.7 °C.
Target Radiation Coefficient	Set radiation coefficient of targets that are shot by this Camera. Ranges from 0.5–1
Target Distance	Distance from the Camera to targets that are shot, and it ranges from 0 m–10000 m.
Target Reflection Temperature	Temperature of targets that are shot by this Camera. Ranges from –50 °C to 327.7 °C.
Isotherm	After enabling this function, make sure that make sure that floor temperature ≤ median temperature ≤ ceiling temperature ≤ saturation temperature.
Min Temperature	• When gain mode is under low-temperature mode, value ranges from –40 °C to 150 °C. • When gain mode is under high-temperature mode, value ranges from –40 °C to 600 °C.
Medium Temperature	• When gain mode is under low-temperature mode, value ranges from –40 °C to 160 °C. • When gain mode is under low-temperature mode, value ranges from –40 °C to 600 °C.
Max Temperature	• When gain mode is under low-temperature mode, value ranges from –40 °C to 160 °C. • When gain mode is under low-temperature mode, value ranges from –40 °C to 600 °C.

Parameter	Description
Saturation Temperature	• When gain mode is under low-temperature mode, value ranges from –40℃ to 160℃. • When gain mode is under low-temperature mode, value ranges from –40 ℃ to 600 ℃.
Color Code	Enable this function, and a color code will be displayed on the right side of the image.

Step 3 Click **Apply**.

5.2.6 Configuring Temperature Alarm

Configure temperature alarm rules, and when alarm conditions are met, an alarm will be triggered.

Prerequisites

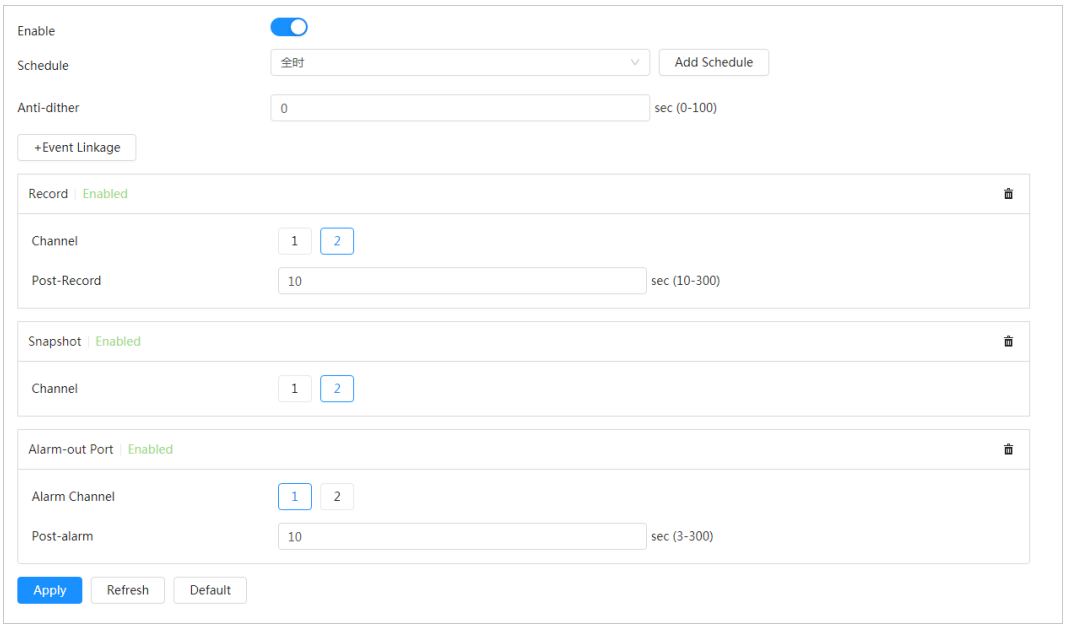
You have configured temperature measurement rules. For details, see "5.2.5.1 Configuring Temperature Measurement Rules".

Procedure

Step 1 Select **Temperature Measurement** > **Temperature**.

Step 2 Click to enable the temperature alarm.

Figure 5-28 Temperature alarm



Step 3 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

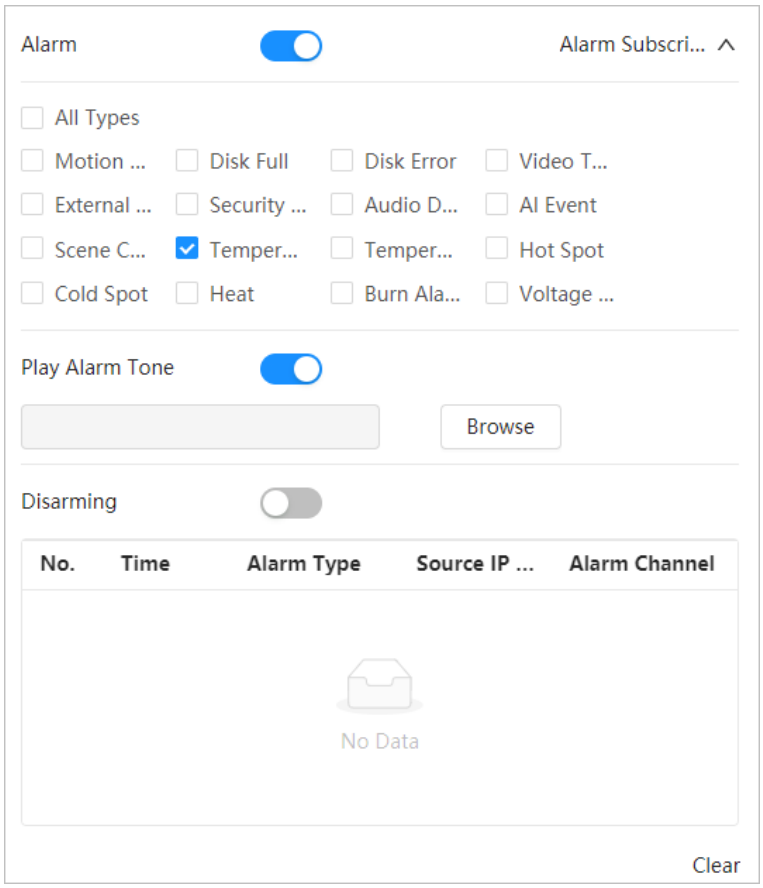
Step 4 Click **Apply**.

5.2.7 Verification

After configuration, enable **Temperature** and **Play Alarm Tone**. When an alarm is triggered, the Camera prompts and records alarm according to the actual situation.

Step 1 Click at the right-upper corner of the main page.

Figure 5-29 Alarm (subscription)



Step 2 Click next to **Alarm**.

Step 3 Select alarm type according to the actual need. For details, see "4.5.1 Alarm Types" .

The system prompts and records alarm information according to actual conditions.

When the subscribed alarm event is triggered and the alarm subscription page is not displayed, a number is displayed on , and the alarm information is recorded automatically. Click to view the details in the alarm list. You can click **Clear** to clear the record.

Step 4 (Optional) Click next to **Disarming** to enable the one-click disarming function.

After enabling disarming, the system will not perform any linkage actions, but alarm records will still be generated.

Step 5 (Optional) Click next to **Play Alarm Tone**, and select the tone path.

The system will play the selected audio file when the selected alarm is triggered.

5.2.8 Isotherm

Stands out the temperature range of the image.

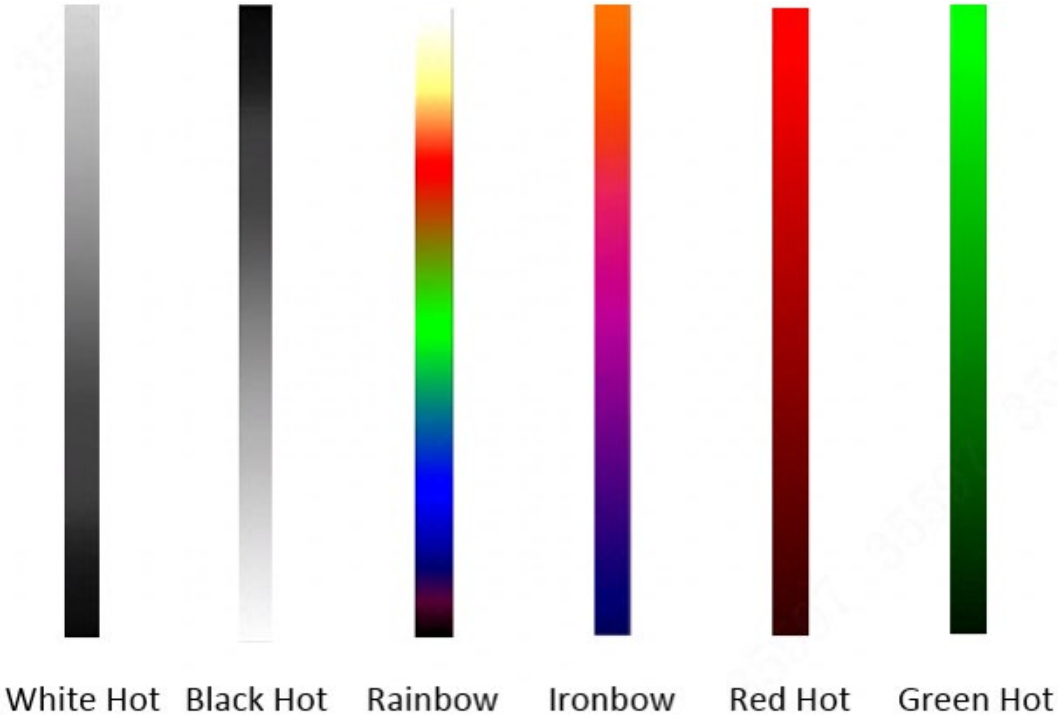
- Isotherm: Used to highlight an object in images of high brightness. Isotherm is based on median temperature, with highest temperature and lowest temperature as its range. The part of an object whose temperature is higher than min limit temperature will be represented in a bright color and the part of an object whose temperature is lower than min limit temperature will be represented in a black/white color. After enabling Isotherm, you have to make sure that min limit temperature <= max limit temperature <= ceiling temperature <= saturation temperature.
- Color Code: Enable this function, and a color code is displayed on the right side of surveillance images to show the change of color between minimum temperature and maximum temperature.

The Camera is equipped with a color palette. Different from the traditional palette, the palette can correspond to the temperature, and different colors correspond to different temperature ranges. Different temperature ranges are displayed in different colors, thus realizing the isotherm display function. There are two types of palettes for displaying different temperatures. You can determine which type of palette to use by the color bars in the image.

Colored palettes

All the colors in the selected palette are used to color the image, but they cannot highlight the temperature. The vertical color bar in the image displays the selected palette.

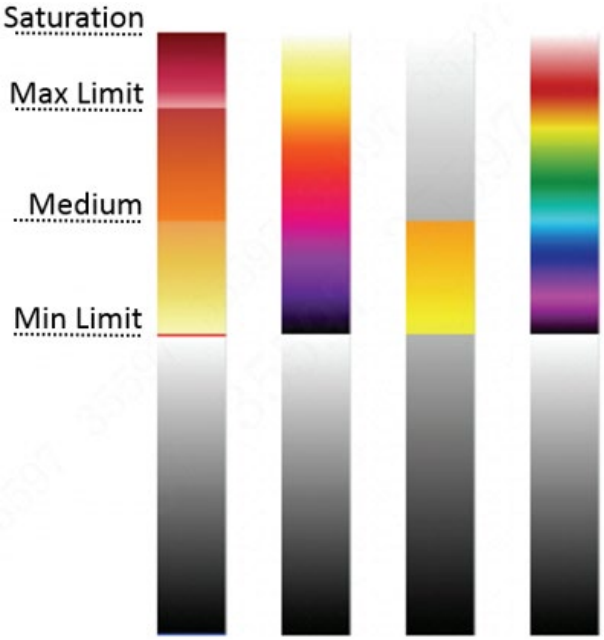
Figure 5-30 Colored palettes



Isotherm palettes

The isotherm palette can be used to isolate the predetermined temperature. The vertical color bar in the image displays the selected palettes and the input temperature standard. When exceeding the configured temperature standard, the target will be highlighted according to the configured color of the tone.

Figure 5-31 Isotherm palettes



For example, you have configured temperature limit for the target, all areas with temperature exceeding this configured threshold will be highlighted with specific colors. After receiving the alarm, you can quickly determine the alarm source through the isotherm image.

Figure 5-32 Isotherm

5.3 Configuring IVS

This section introduces the requirements of scene selection, global configuration and rule configuration.

Requirements of scene selection:

- The target should occupy no more than 10% of the whole image.
- The pixel of the target should be no less than 10×10; the pixel of abandoned object should be no less than 15×15 (CIF image); the width and height of the target should be no more than 1/3 that of the image; it is recommended that the height of the target should be set to 10% of the image

height.

- The brightness difference of the target and the background should be no less than 10 gray levels.
- The target should be continuously present in the image for no less than 2 seconds, and the moving distance should be larger its width and no less than 15 pixels (CIF image) at the same time.
- Try to reduce the scene complexity as much as condition allowed; it is not recommended to use Intelligence Behavior Analysis in scenes with intensive targets, changing lighting conditions or small difference between target temperature and scene temperature.
- For thermal channel, try not to monitor scenes with glass. For visual channel, try not to monitor: scenes with reflective surfaces such as glass, bright ground or water; scenes that disturbed by tree branches, shadows or winged insects; scenes that against light or under direct light exposure. Control image proportion of objects that are with high relative ambient temperature.

5.3.1 Installation Requirements on Perimeter Protection

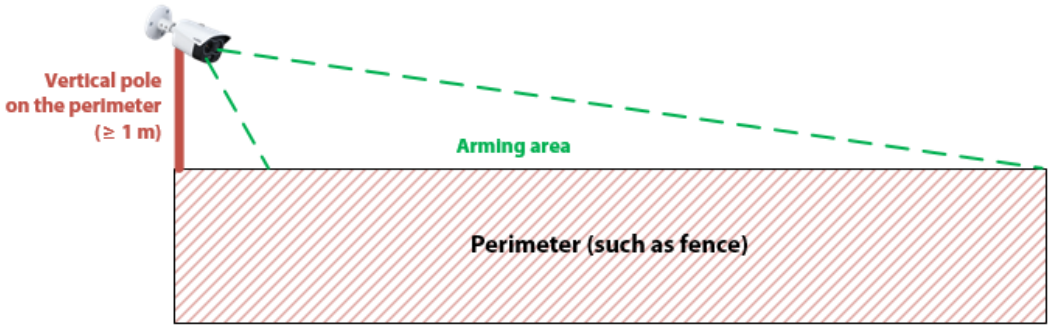
5.3.1.1 Site Selection

- When installing the Camera, keep a depression angle (10°–40°) to avoid obstruction or overlap between the targets caused by parallel view, which can reduce the false alarms and missed alarms.
- The recommended installation height is 3 m–5 m. (In the detection area, we recommended high-point installation rather than low-point installation).
- Install the Camera horizontally and firmly to guarantee the analysis result.
- To get a clearer movement of the target, make the monitoring direction vertical to the moving direction. Make sure that the target is continuously present in the image, and has crossing action. Make sure that there is no obstruction in the detection area, and leave some space at both sides of the rule line, otherwise the target might rush out of the image because of the fast speed.

5.3.1.2 Typical Scenes

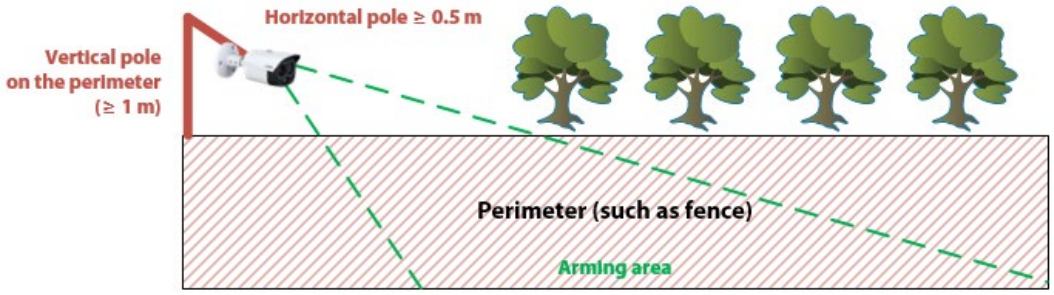
- When there is no obstruction around the perimeter, install a vertical pole (≥ 1 m) on the perimeter, and then install the Camera on the vertical pole.

Figure 5-33 Typical scene (1)



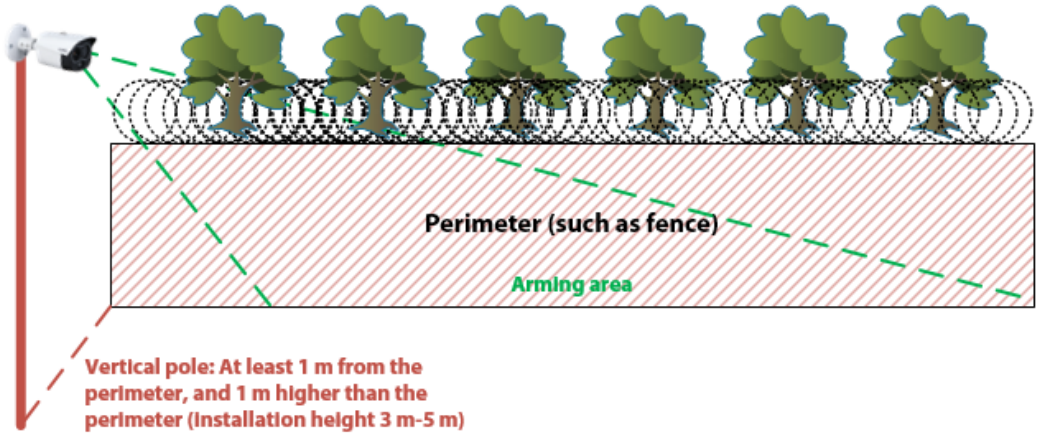
- When there are obstructions (such as trees and vegetation) around the perimeter, install an L pole (horizontal pole ≥ 0.5 m) on the perimeter, and then install the Camera on the L pole.

Figure 5-34 Typical scene (2)



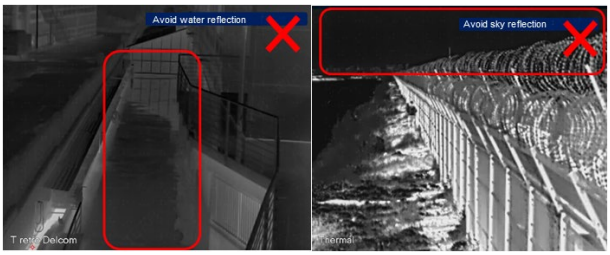
- When there are obstructions (such as trees and vegetation) around the perimeter, and wire netting on the perimeter, install a vertical pole separately. Keep the pole 1 m from the perimeter, and 1 m higher than the perimeter (installation height 3 m-5 m).

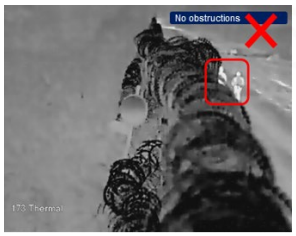
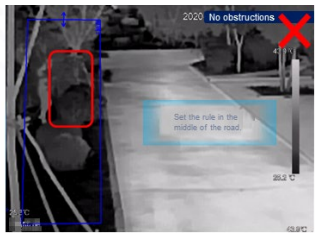
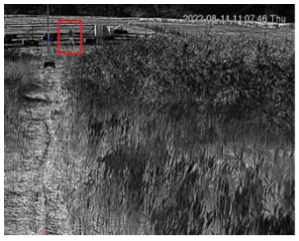
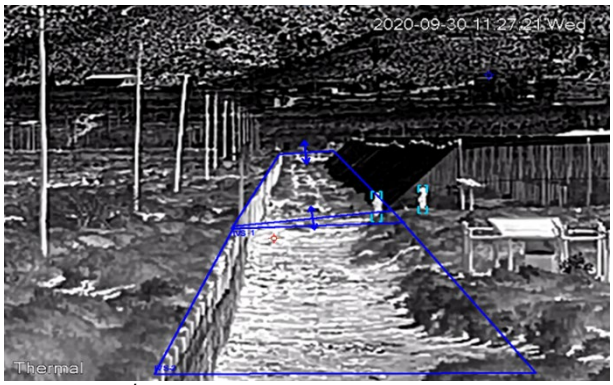
Figure 5-35 Typical scene (3)



5.3.1.3 Scene Confirmation

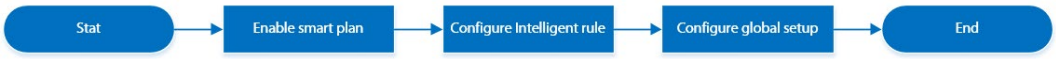
Table 5-8 Scene Confirmation

Item	Standard	Example
Burn Alarm	• To avoid damaging the thermal detector, do not aim the lens at intense radiation sources (such as the sun, molten iron and heat sources) during the storage, installation or operation, and avoid direct sunlight and reflection for outdoor use. • Avoid sky and water reflection.	 Not suitable. The camera lens might be burnt. (×)

Item	Standard	Example
Wide view and no obstructions	• The monitoring scene should be with a wide view. • No obstructions, such as trees, vegetation, and wire netting in the detection area.	  Not suitable. The target is blocked. (×)
Background complexity	• In scenes with complex background, the target is hard to be identified, and the detection distance will be shorter. • The larger the temperature difference between the target and the background, the better the detection result will be.	  Not suitable. False alarm and missed alarm might be caused, and the detection distance will be shorter. (×)
Target size	The maximum width and height of the target should be no more than 2/3 that of the image.	 Not suitable. False alarm and missed alarm might be caused. (×)
Suitable scene	• No sky in the image. • The detection area should be with a wide view and no obstructions. • The background is simple. • Drawing multiple rule boxes from far to near.	 Suitable. (√)

5.3.2 Configuration Flow

Figure 5-36 Configuration flow



5.3.3 Enabling Smart Plan

You need to enable smart plan before intelligent rules function.

We recommend white hot for IVS. For details, see "8.2.1.2 Configuring Thermal Channel".

Step 1 Select **AI** > **AI Config** > **Smart Plan**.

Step 2 Click next to **IVS** to enable IVS of the corresponding channel.

- **CAM1** is the visible channel.
- **CAM2** is the thermal channel.

Step 3 Click **Next**.

5.3.4 Configuring Intelligent Rules

Set rule for IVS, including tripwire and intrusion.

Prerequisites

You have finished global configuration. For details, see "5.3.5 Configuring Global Setup".

Background Information

For the functions and applications of the rules, see Table 5-9. This section uses configuring tripwire as an example.

Table 5-9 Description of IVS functions

Rule	Description	Applicable Scene
Tripwire	When the target crosses tripwire from the defined motion direction, an alarm is triggered, and then the system performs configured alarm linkages.	Scenes with sparse targets and no occlusion among targets, such as the perimeter protection of unattended area.
Intrusion	When the target enters, leaves, or appears in the detection area, an alarm is triggered, and the system performs configured alarm linkages.	

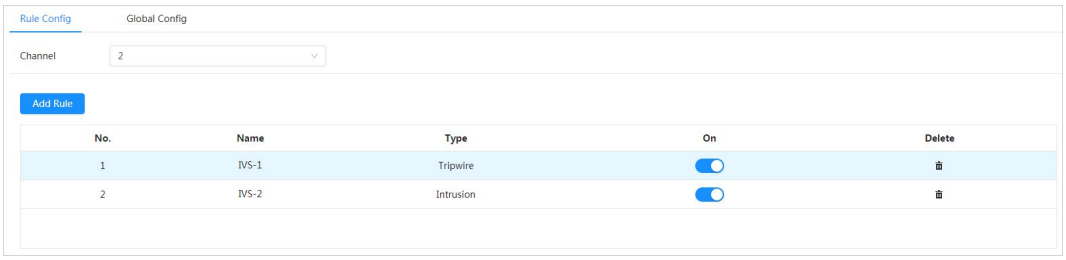
Procedure

Step 1 Click the **Rule Config** tab.

Step 2 Click **Add Rule**, and then select **Tripwire** from the drop-down list.

Click the name, and you can edit the rule name; the rule is enabled by default.

Figure 5-37 Tripwire



Step 3 Click to draw rule line in the image. Right-click to finish drawing.

For requirements of drawing rules, see Table 5-10. After drawing rules, drag corners of the detection area or detection line to adjust the area range.

Figure 5-38 Draw rules

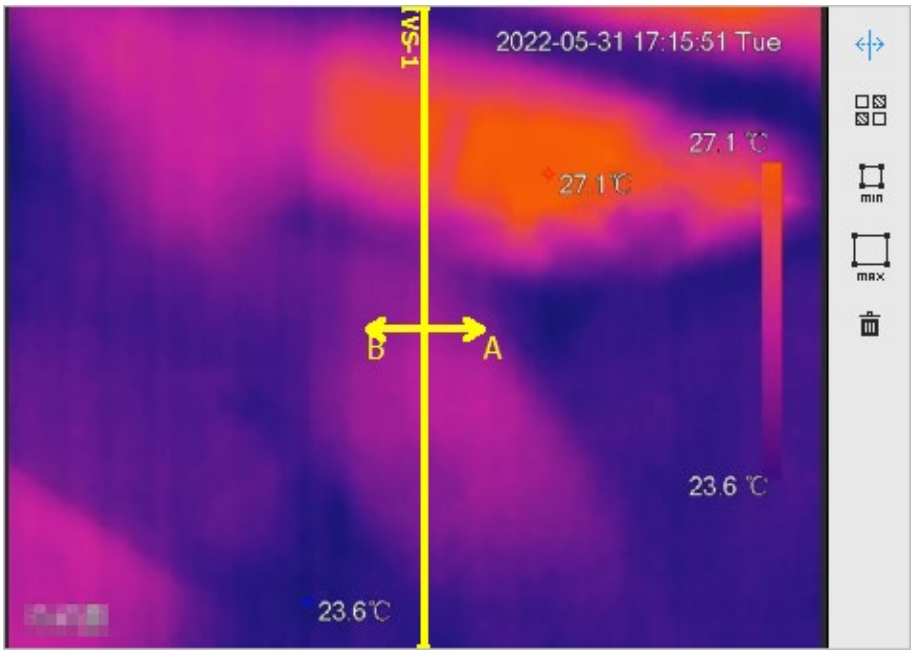


Table 5-10 Description of IVS analysis

Rule	Description
Tripwire	Draw a detection line.
Intrusion	Draw a detection area.

Step 4 (Optional) Draw a rectangle for filtering targets by pixel.

- Click , and then press and hold the left mouse button to draw a rectangle, the pixel size is displayed.
- Click to delete the detection line.

Step 5 (Optional) Filter targets.

- Image size: You can draw one suit of filter boxes (one maximum size + one minimum size) on the image.
  1. Select **Size Filter** in **Size Filter**.
  2. Click to draw the minimum size of the target, and click to draw the maximum size of the target. Only when the target size is between the maximum size and the minimum size, can the alarm be triggered.
- Image size normalization: You can draw two suits of filter boxes on the image from far to near. According to the size of the drawn filter box, the device scales the filter target

proportionally from far to near. This function is only available on the thermal channels.

1. Select **Normalized Size Filter** in **Size Filter**.
2. Select **Width Or Height** or **Width And Height**, click , and then press and hold the left mouse button to draw rectangle 1; click , and then press and hold the left mouse button to draw rectangle 2. The ratio of width and height of rectangle 2 is the same as that of rectangle 1 by default, and you cannot change it.
   - **Width Or Height**: When the target width or height are smaller than the maximum size and larger than the minimum size, and alarm will be triggered.
   - **Width And Height**: When both of the target width and height are smaller than the maximum size and larger than the minimum size, and alarm will be triggered.

- Click to delete all drawn detection lines.
- Click **Copy to all** to copy the configuration to other IVS rules.

Step 6 Configure rule parameters for IVS.

Figure 5-39 Configure rule parameters

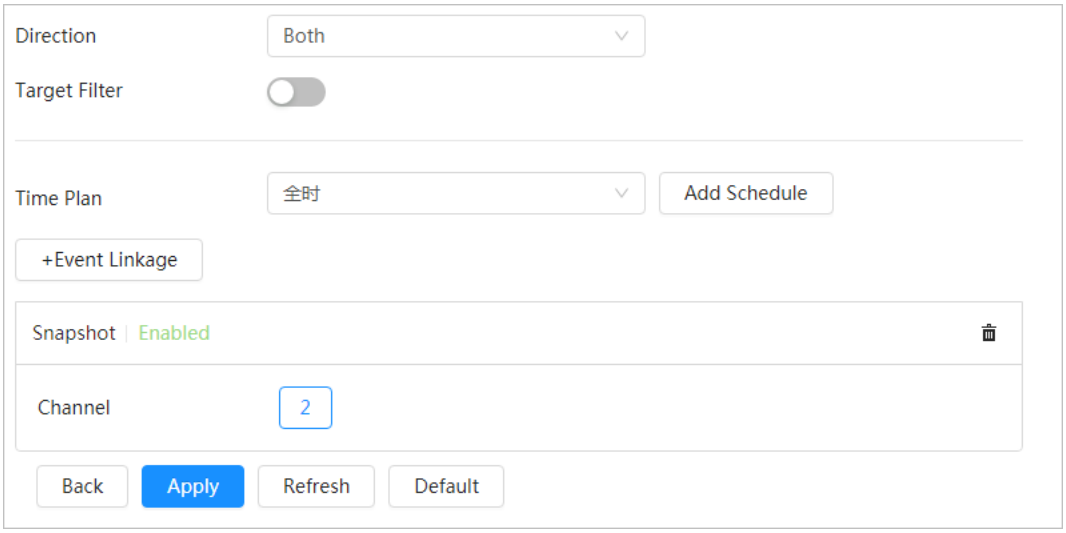


Table 5-11 Description of IVS parameters

Parameter	Description
Direction	Set the direction of rule detection. ● When setting tripwire, select **A->B**, **B->A**, or **A<->B**. ● When setting intrusion, select **Enter**, **Exit**, or **Both**.
Action	When setting intrusion action, select **Appears** or **Cross**.
Target Filter	Click to enable this function. ● When you select **Human** as the alarm target, an alarm will be triggered when the system detects that persons trigger the rule. ● When you select **Motor Vehicle** as the alarm target, alarm will be triggered when the system detects that vehicle triggers the rule.

Parameter	Description
Duration	• For abandoned object, the duration is the shortest time for triggering an alarm after an object is abandoned. • For missing object, the duration is the shortest time for triggering an alarm after an object is missing. • For parking detection, crowd gathering, or loitering detection, the duration is the shortest time for triggering an alarm after an object appears in the area.
Sensitivity	• For fast moving, sensitivity is related to the triggering speed. Lower sensitivity requires faster moving speed to trigger the alarm. • For crowd gathering, sensitivity is related to the alarm triggering time. It is easier to trigger the alarm with higher sensitivity.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 8 Click **Apply**.

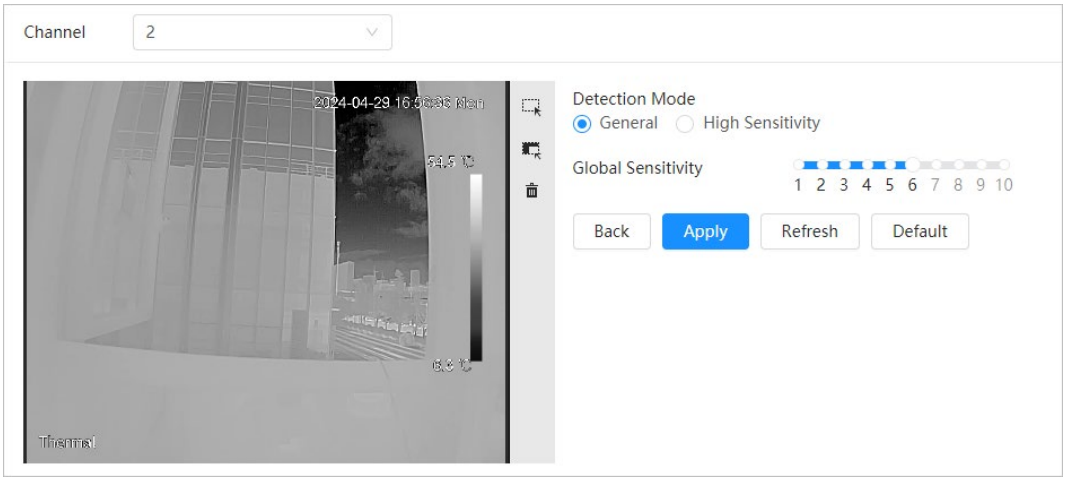
To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.3.5 Configuring Global Setup

Configure global rules for IVS. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered. For the thermal channel, you can also configure the sensitivity.

Step 1 Click the **Global Config** tab.

Figure 5-40 Global configuration



Step 2 Select the channel.

- Select **1** in **Channel** to set the global parameters of visible channel.
- Select **2** in **Channel** to set the global parameters of thermal channel.

Step 3 Add a detection area or an exclusion area.

1) Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.
2) Click to draw an exclusion area on surveillance image. Right-click to finish drawing.

- Select the exclusion area, and then click to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 4 Select the detection mode.

- General: For the short range scene, select general mode, which is better for the classification of human, vehicles, and small targets.
- High Sensitivity: In scene of perimeter detection, when the scene needs to be detected at a distance of 10 times, select the high sensitivity mode.

Step 5 (Optional) Configure the global sensitivity. The higher the value, the easier the actions can be detected.

This step is only available on the thermal channel.

Step 6 Click **Apply**.

5.4 Configuring Call Detection

Configure the rule for calling in the visible channel. When a call action is detected, an alarm is triggered., and the system performs linkages such as recording, alarm output, sending email, and snapshot.

5.4.1 Configuration Flow

Figure 5-41 Configuration flow

5.4.2 Enabling Smart Plan

You need to enable smart plan before intelligent rules function.

Call detection and IVS cannot be enabled at the same time.

Step 1 Select **AI** > **AI Config** > **Smart Plan**.

Step 2 Click next to **Call Detection** to enable the call detection function.

Step 3 Click **Next**.

5.4.3 Configuring Detection Rule

Configure the rule for call detection, such as drawing rules and set linkage actions.

Prerequisites

You have finished global configuration. For details, see "5.4.4 Configuring Global Setup".

Procedure

Step 1 Click the **Rule Config** tab.

Step 2 Click to enable the call detection function.

Step 3 Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.

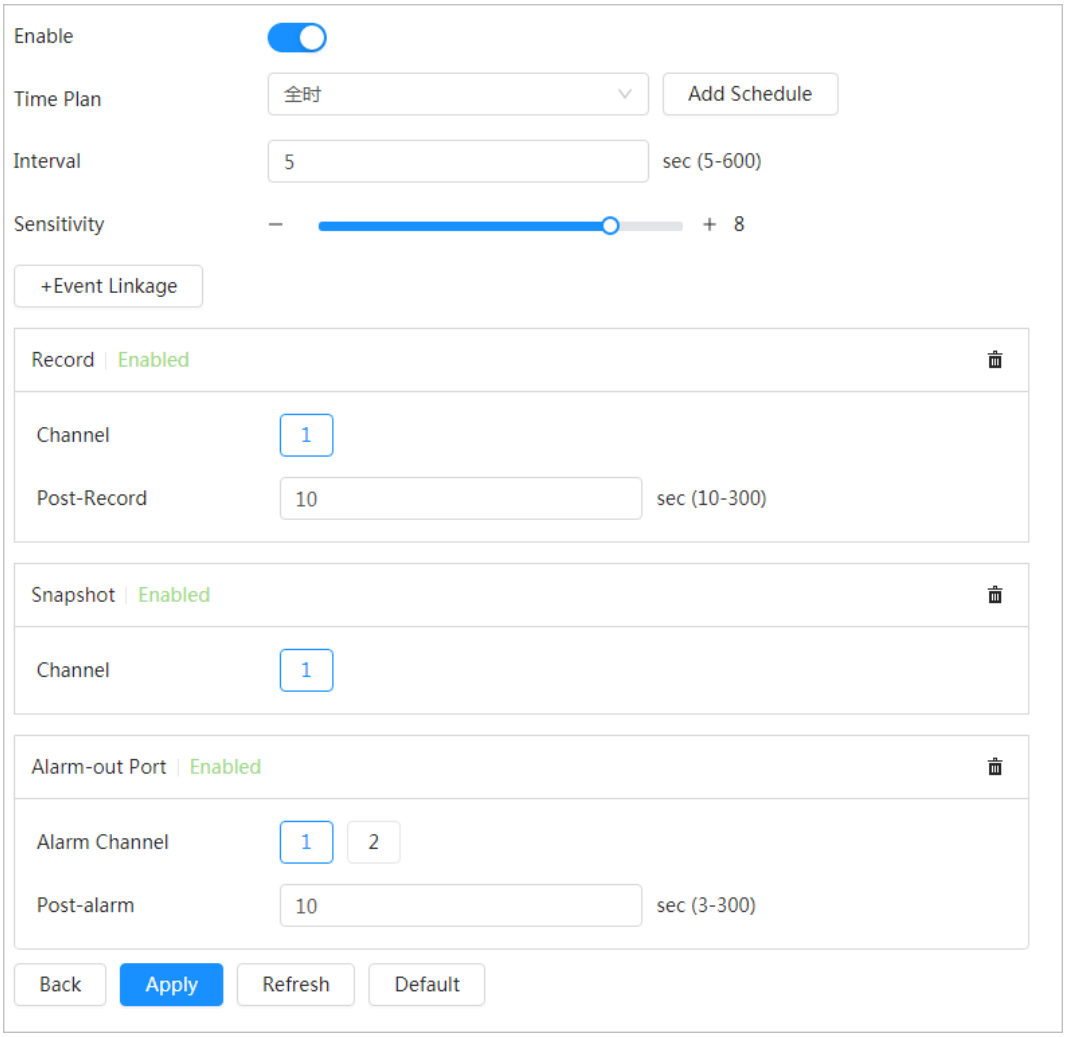
Step 4 (Optional) Click other icons at the right side of the image to filter targets in the image.

- Click to draw the minimum size of the target, and click to draw the maximum size of the target. Only when the target size is between the maximum size and the minimum size, can the alarm be triggered.

Step 5 Set the interval and sensitivity.

- Interval: The time that calling behavior lasts. When the camera detects the calling time beyond the configured value, an alarm is triggered.
- Sensitivity: The larger the value is, the more sensitive the call detection is. However, setting the value too large might cause false alarm.

Figure 5-42 Configure call detection



Step 6 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 7 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.4.4 Configuring Global Setup

Configure global rules for call detection. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered.

Step 1 Click the **Global Config** tab.

Step 2 Add a detection area or an exclusion area.

1) Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.
2) Click to draw an exclusion area on surveillance image. Right-click to finish drawing.

- Select the exclusion area, and then click to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 3 Click **Apply**.

5.5 Configuring Smoking Detection

5.5.1 Configuration Flow

Figure 5-43 Configuration flow

5.5.2 Enabling Smart Plan

You need to enable smart plan before intelligent rules function.

Smoking detection and IVS cannot be enabled at the same time.

Step 1 Select **AI** > **AI Config** > **Smart Plan**.

Step 2 Click next to **Smoking Detection** to enable the smoking detection function.

Step 3 Click **Next**.

5.5.3 Configuring Detection Rule

Configure the rule for smoking detection, such as drawing rules and set linkage actions.

Prerequisites

You have finished global configuration. For details, see "5.4.4 Configuring Global Setup".

Procedure

Step 1 Select **AI** > **AI Config** > **Smart Plan**.

Step 2 Click next to **Smoking Detection** to enable the call detection function.

Step 3 Click **Next**.

Step 4 Click the **Rule Config** tab.

Step 5 Click to enable the call detection function.

Step 6 Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.

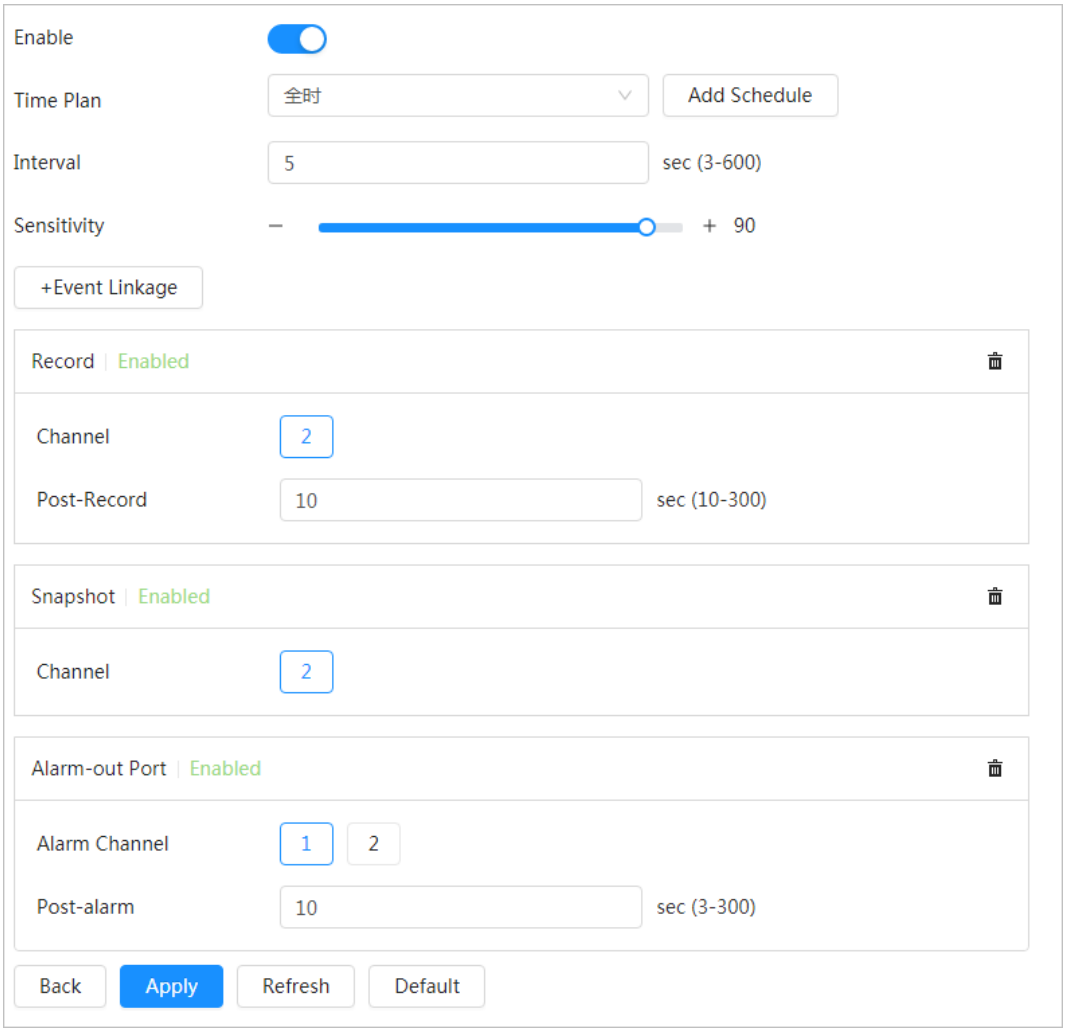
Step 7 (Optional) Click other icons at the right side of the image to filter targets in the image.

- Click to draw the minimum size of the target, and click to draw the maximum size of the target. Only when the target size is between the maximum size and the minimum size, can the alarm be triggered.

Step 8 Set the interval and sensitivity.

- Interval: The time that smoking behavior lasts. When the camera detects the smoking time beyond the configured value, an alarm is triggered.
- Sensitivity: The larger the value is, the more sensitive the smoking detection is. However, setting the value too large might cause false alarm.

Figure 5-44 Configure smoking detection



Step 9 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 10 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.5.4 Configuring Global Setup

Configure global rules for smoking detection. You can draw the detection area and exclusion areas. When the configured rules are triggered in the detection areas (out of the exclusion areas), an alarm will be triggered.

Background Information

Smoking detection and IVS cannot be enabled at the same time.

Procedure

Step 1 Select **AI** > **AI Config** > **Smart Plan**.

Step 2 Click next to **Smoking Detection** in **CAM 2**.

Step 3 Click **Next**.

Step 4 Click the **Global Config** tab.

Step 5 Add a detection area or an exclusion area.

1) Click to draw a detected area on surveillance image. The whole image is the detection area by default, drag corners of the detection area to adjust the area.
2) Click to draw an exclusion area on surveillance image. Right-click to finish drawing.

- Select the exclusion area, and then click to delete the exclusion area.
- An exclusion area takes effect only when it has been drawn in the detection area
- Multiple exclusion areas can be drawn in the detected area.

Step 6 Click **Apply**.

5.6 Configuring Cold Hot Spot

After enabling **Cold Hot Spot**, spot with the highest temperature and spot with the lowest temperature are displayed with different colors.

Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **Cold Hot Spot**.

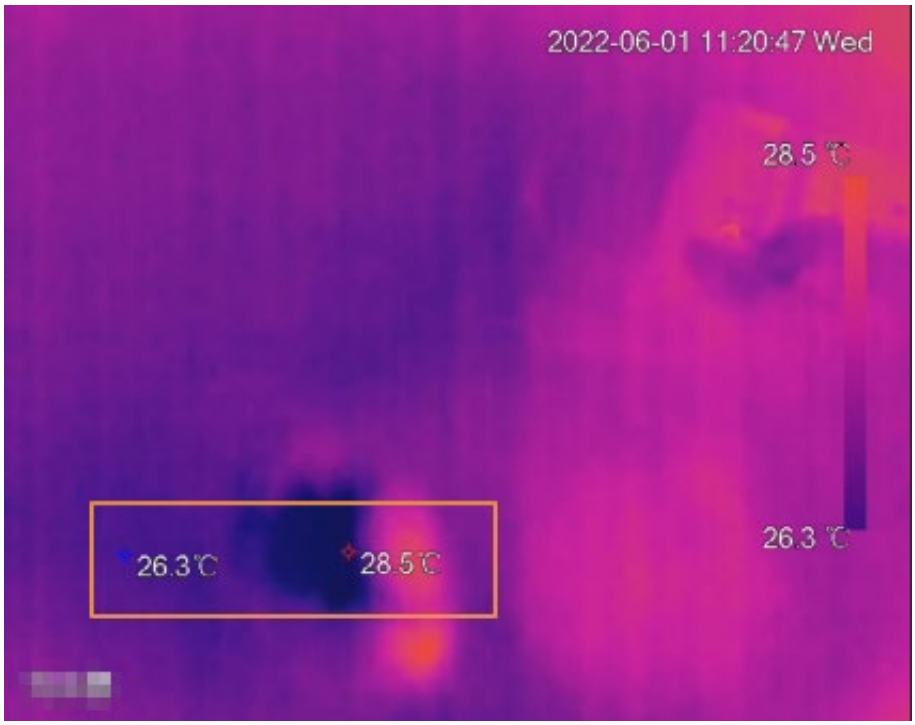
Step 3 Click to enable the function.

Step 4 Select the hot spot color and cold spot color.

- Auto: The hot spot color is red, and the cold spot color is blue by default.
- Manual: You can customize the colors for the hot spot and cold spot.

Step 5 Click **Apply**.

Figure 5-45 Cold hot spot



5.7 Configuring Heat Warning

Configure the heat warning, including heat warning rule, smoke detection rule, and smoke and fire detection mode.

5.7.1 Configuring Heat Warning Rule

When the camera detects a heat point, an alarm is triggered and then system performs linkages such as recording, alarm output, sending email, audio, alarm light, and snapshot.

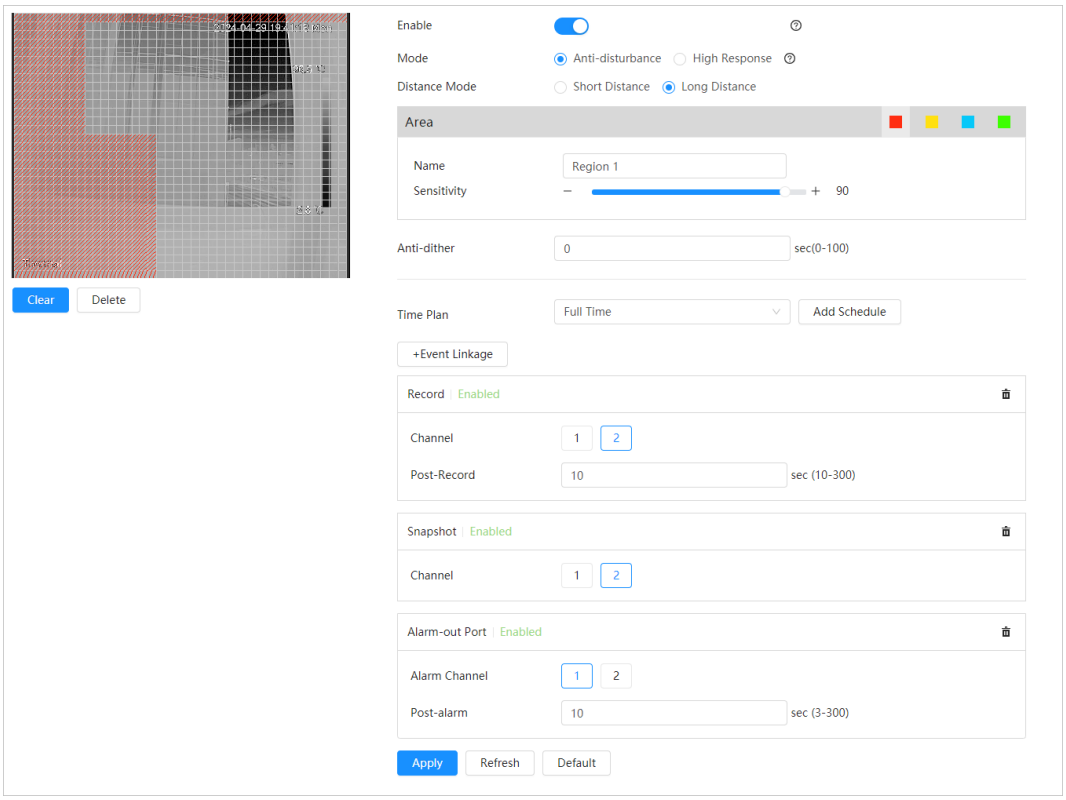
Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **Heat**.

Step 3 Click the **Heat** tab.

Step 4 Click to enable the function.

Figure 5-46 Heat warning



Step 5 Select the heat warning mode as needed.

- Anti-jamming: Detects suspected heat several times. The detection accuracy is higher, but the detection speed is lower.
- High Response: Detects heat quickly, but the detection accuracy is lower.

Step 6 Select the detection mode.

- Short distance: It is suitable for scenarios with high false alarm targets and low detection distance requirements, such as parking lots, warehouses.
- Long distance: It is suitable for forest fire prevention scenarios.

Step 7 (Optional) Filter targets.

When you select **Anti-jamming** in **Mode**, you can filter targets as needed.

- **Visible Engineering Truck Filter**: When engineering vehicles are working, the temperatures of chimney and engine are high, which might cause false alarms. Selecting checkbox can reduce false alarms caused by engineering vehicles and improve detection accuracy. This function is mainly used in scenes with good lighting conditions.
- **Reflection Filter**: The temperature of reflection caused by the smooth planes (such as glass or mirrors) is high, which night cause false alarms. Selecting the checkbox can reduce false alarms and improve detection accuracy.

Step 8 Draw the detection area, and configure the sensitivity.

Click then color in , set the area name, and then drag the mouse on the image.

- The higher the sensitivity is, the easier a fire will be triggered.
- The whole image is the detection area by default. You can draw multiple detection areas.

Step 9 Set the anti-dither period.

The camera only records one alarm event during the anti-dither period.

Step 10 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 11 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.7.2 Configuring Smoke Detection Rule

After configuring smoke detection rule, when the visible channel detects smoke, an alarm is triggered, and the system performs linkages such as recording, alarm output, sending email, audio, alarm light, and snapshot.

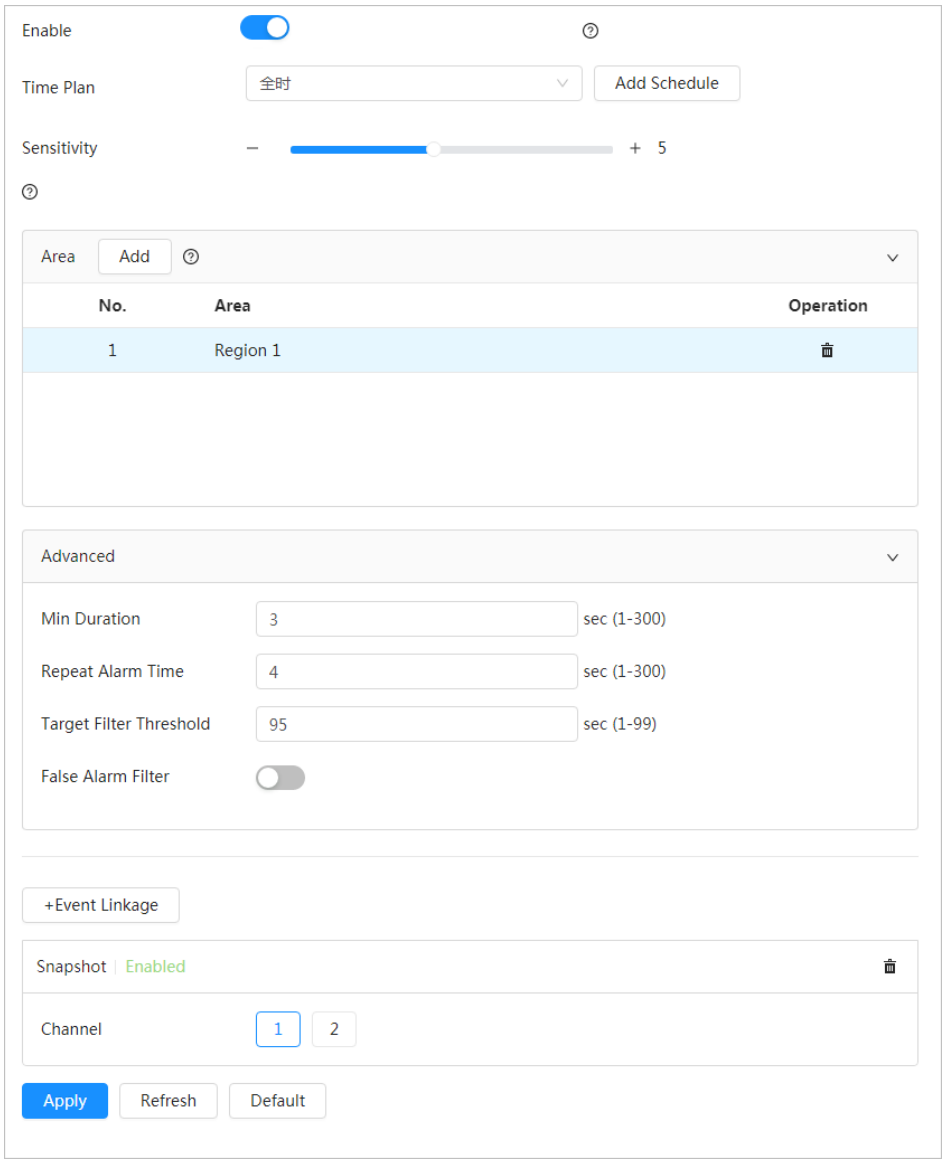
Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **Heat**.

Step 3 Click the **Smoke Detection** tab.

Step 4 Click to enable the function.

Figure 5-47 Smoke detection



Step 5 Click **Add**, draw the detection area on the image, and then set eh sensitivity.

When the camera detects smoke in the detection areas, the target box flashes, which will stop the PTZ operation.

- Only one detection area can be added.
- The larger the value is, the higher the sensitivity will be. The default value is recommended.

Step 6 Configure the advanced parameters.

Table 5-12 Configure advanced parameters

Parameters	Description
Min Duration	When the smoke lasts longer than the configured value, an alarm is triggered.
Repeat Alarm Time	The system will filter the repetitive alarms, and only one alarm will be triggered during the configured period.
Target Filter Threshold	The larger the value is, the easier the static smoke will be detected.
False Alarm Filter	Enable this function , filter the objects causing false alarm, such as water drop and stains.

Step 7 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 8 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.7.3 Configuring Smoke and Fire Detection Mode

Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **Heat**.

Step 3 Click the **Smoke and Fire Detection Mode** tab.

Figure 5-48 Smoke and Fire Detection Mode

Table 5-13 Smoke and fire detection mode

Parameter	Description
Fire or smoke	When the visible channel detects smoke or the thermal channel detects heat, an alarm will be triggered.
Fire Only	When the thermal channel detects heat, an alarm will be triggered.
Smoke Only	When the visible channel detects smoke, an alarm will be triggered.
Fire and Smoke	When the visible channel detects smoke and the thermal channel detects heat at the same time, an alarm will be triggered.

- Fire or smoke: Enable heat detection and smoke detection at the same time. When either of the two is triggered, an alarm is triggered.
- Fire only: When heat detection is triggered, an alarm is triggered.
- Smoke only: When smoke detection is triggered, an alarm is triggered.
- Fire and smoke: Enable heat detection and smoke detection at the same time. When both of the two are triggered, an alarm is triggered.

Step 4 Click **Apply**.

To view alarm information on the alarm subscription tab, you need to subscribe relevant alarm event. For details, see "4.5.2 Subscribing Alarm Information".

5.8 Configuring PIP

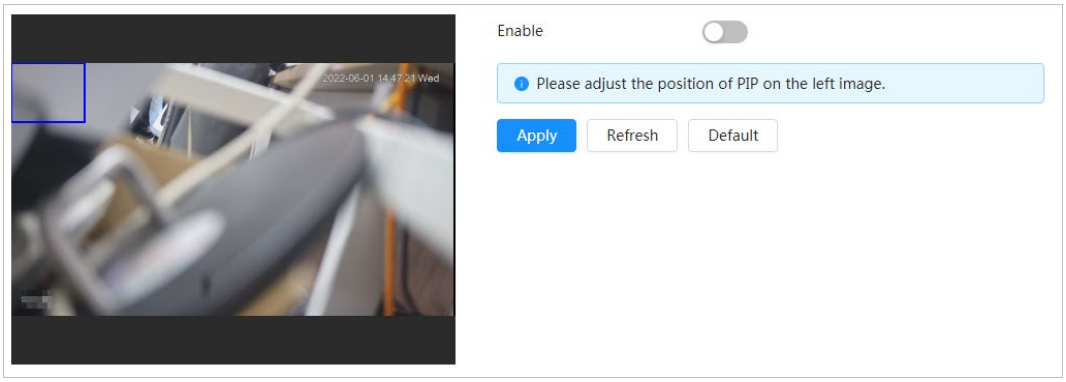
Overlay the thermal image on the visible image.

Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **PIP**.

Step 3 Click to enable the function.

Figure 5-49 PIP



Step 4 Click the blue box on the image, and drag it to adjust the box. You can drag any corner of the box to adjust the size.

Step 5 Click **Apply**.

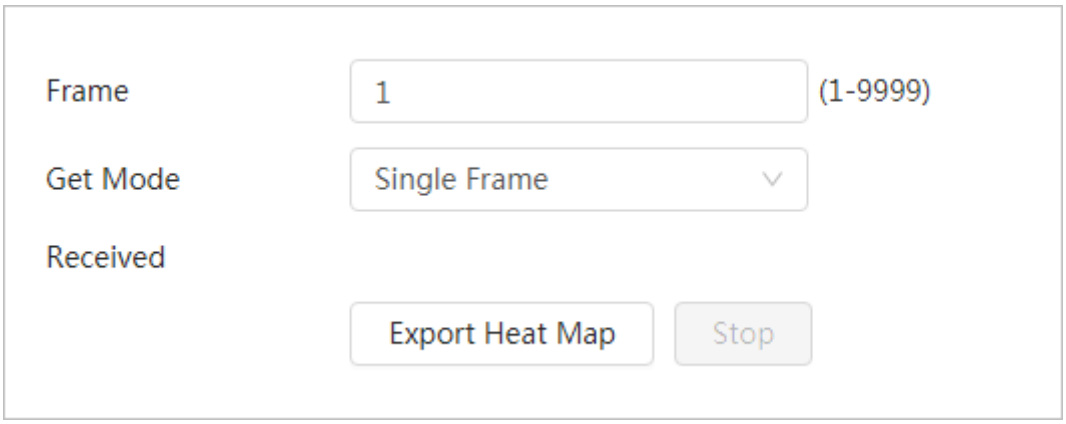
5.9 Configuring Thermal Map Acquisition

Grasp temperature of every pixel on thermal images, and you can export the heat map.

Step 1 Select **AI** > **AI Config** > **Smart Thermal**.

Step 2 Click **Edit** in **Thermal Map Acquisition**.

Figure 5-50 Thermal map acquisition



Step 3 Configure the parameters.

- **Frame**: The frame of the thermal map that you can acquire.
- **Get Mode**
  - Single Frame: Acquires thermal map by single frame. There is interval between the previous frame and next frame.
  - Continuous: Acquires thermal map by continuous frame. There is no interval between the previous frame and next frame.

Step 4 Click **Export Heat Map**.

Thermal map files will be saved under the path that you have configured. For details, see "8.1 Configuring Local Parameters".

6 Record

This section introduces the functions and operations of video playback.

6.1 Playback

6.1.1 Playing Back Video

This section introduces the operation of video playback.

Prerequisites

- This function is available on the camera with SD card.
- Before playing back video, configure record time range, record storage method, record schedule and record control. For details, see "6.2 Setting Record Control", "6.3 Setting Record Plan", and "6.4 Setting Storage".

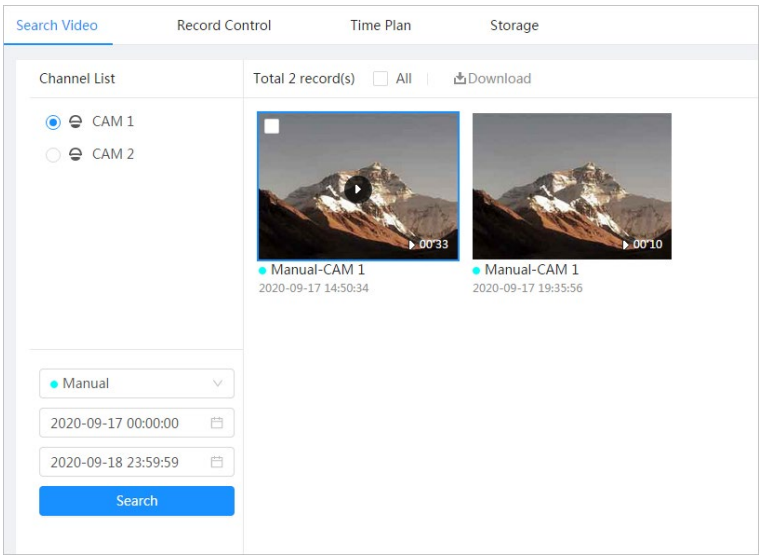
Procedure

Step 1 Select **Record** > **Search Video**.

Step 2 Select the channel, the record type, and record time, and then click **Search**.

- Click **All**, and select the record type from the drop-down list, you can select from **All**, **General**, **Event**, **Alarm**, and **Manual**.
  When selecting **Event** as the record type, you can select the specific event types, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.
- The dates with blue dots indicate there are videos recorded on those days.

Figure 6-1 Search video



Step 3 Point to the searched video, and then click  to play back the selected video.
The video playback page is displayed.

Figure 6-2 Video playback

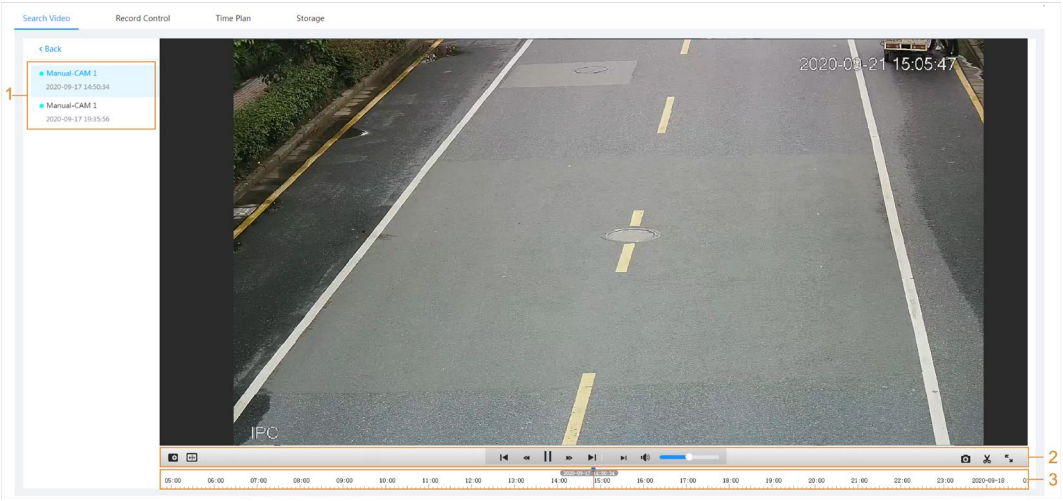


Table 6-1 Description of video playback page

No	Function	Description
1	Recorded video list	Displays all searched recorded video files. Click any files to play back it. Click **Back** at the upper-left corner to go to the **Search Video** page.
2	Digital Zoom	You can zoom video image of the selected area through two operations. ● Click the icon, and then select an area in the video image to zoom in; right-click on the image to resume the original size. In zoom in state, drag the image to check other area. ● Click the icon, and then scroll the mouse wheel in the video image to zoom in or out.
	AI Rule	Click , and then select **Enable** to display AI rules and detection box; select **Disable** to stop the display. It is enabled by default. AI rules is valid only when you enabled the rule during recording.
	Play control bar	Controls playback. ● : Click the icon to play back the previous recorded video in the recorded video list. ● : Click the icon to slow down the playback. ● : Click the icon to stop playing back recorded videos. The icon changes to , click the icon to play back recorded videos. ● : Click the icon to speed up the playback. ● : Click the icon to play back the next recorded video in the recorded video list. ● : Click the icon to play the next frame.

No	Function	Description
	Sound	Controls the sound during playback. ● : Mute mode. ● : Vocal state. You can adjust the sound.
	Snapshot	Click to capture one picture of the current image, and it will be saved to the configured storage path. About viewing or configuring storage path, see "8.2 Configuring Camera Parameters".
	Video clip	Click , and clip a certain recorded video and save it. For details, see "6.1.2 Clipping Video".
	Full Screen	Click , and the image is displayed in full-screen mode; double-click the image or press Esc button to exit full-screen mode.
3	Progress bar	Displays the record type and the corresponding period. ● Click any point in the colored area, and the system will play back the recorded video from the selected moment. ● Each record type has its own color, and you can see their relations in **Record Type** bar

6.1.2 Clipping Video

Step 1 Click .

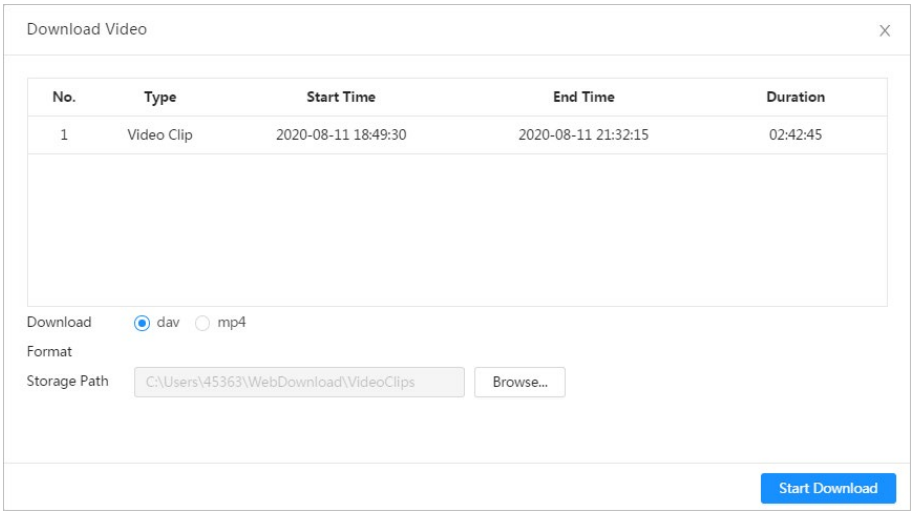
Step 2 Drag the clipping box on the progress bar to select the start time and end time of the target video

Figure 6-3 Clipping video

Step 3 Click **OK** to download the video.

Step 4 Select the download format and storage path.

Figure 6-4 Clipping video



Step 5 Click **Start Download**.

The playback stops and the clipped file is saved in the configured storage path. For details of storage path, see "8.2 Configuring Camera Parameters".

6.1.3 Downloading Video

Download videos to a defined path. You can download a single video, or download them in batches.

- Playback and downloading at the same time is not supported.
- Operations might vary with different browsers.
- For details of viewing or setting storage path, see "8.2 Configuring Camera Parameters".

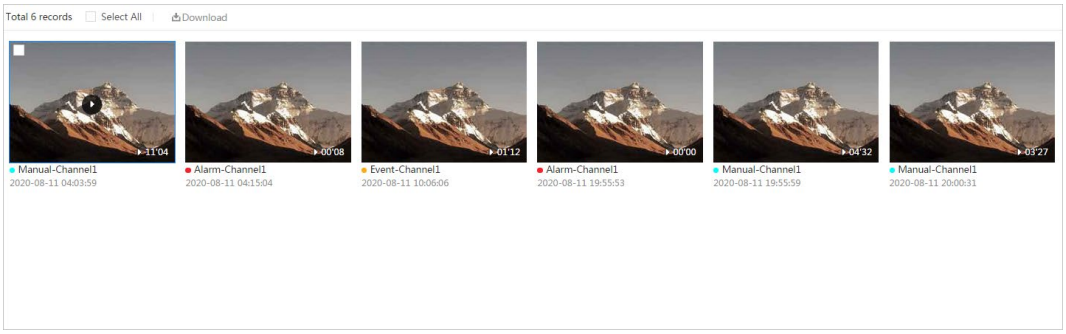
Step 1 Select **Record** > **Search Video**.

Step 2 Select the channel, the record type, and record time, and the click **Search**.

Step 3 Select the videos to be downloaded.

- Select at the upper-right corner of each video file to select one or multiple videos.
- Select next to **Select All** to select all searched videos.

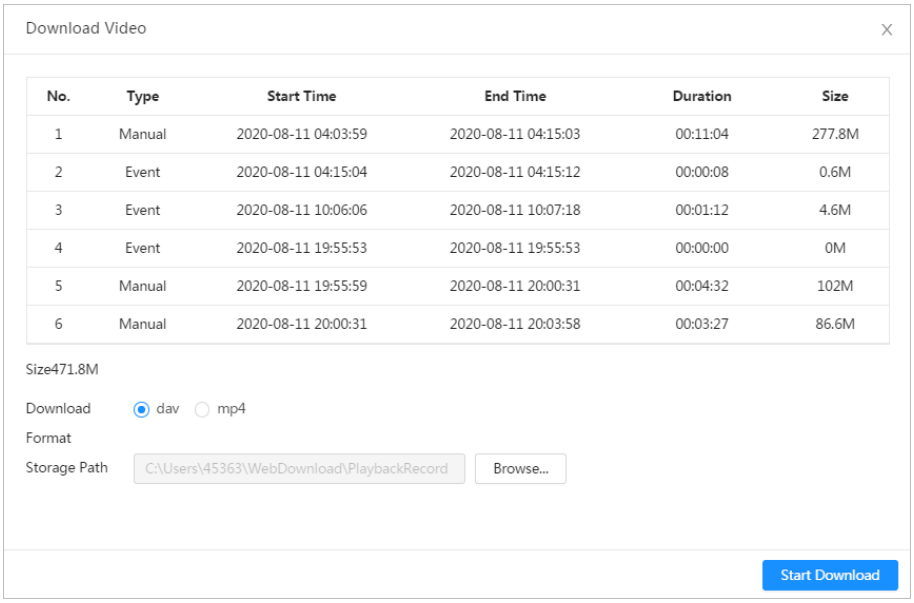
Figure 6-5 Selecting video file



Step 4 Click **Download**.

Step 5 Select the download format and storage path.

Figure 6-6 Downloading video



Step 6 Click **Start Download**.

The downloaded files are saved in the configured storage path. For details of storage path,

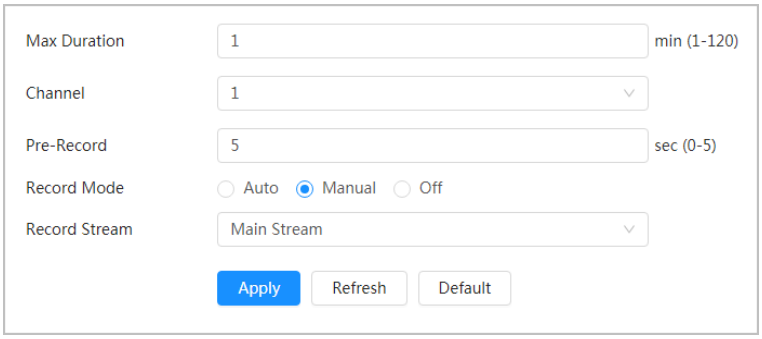
see "8.2 Configuring Camera Parameters".

6.2 Setting Record Control

Set parameters such as pack duration, pre-event record, disk full, record mode, and record stream.

Step 1 Click **Record** in the main page, and then click the **Record Control** tab.

Figure 6-7 Record control



Step 2 Set parameters.

Table 6-2 Description of record control parameters

Parameter	Description
Max Duration	The time for packing each video file.
Pre-Record	The time to record the video in advance of a triggered alarm event. For example, if the pre-event record is set to be 5 s, the system saves the recorded video 5 s before the alarm is triggered. When an alarm or motion detection links recording, and the recording is not enabled, the system saves the video data within the pre-event record time to the video file.
Record Mode	When you select **Manual**, the system starts recording; when you select **Auto**, the system starts recording in the configured time period of record plan.
Record Stream	Select record stream, including **Main Stream** and **Sub Stream**.

Step 3 Click **Apply**.

6.3 Setting Record Plan

After the corresponding alarm type (**Normal**, **Motion**, and **Alarm**) is enabled, the record channel links recording.

Set certain days as holiday, and when the **Record** is selected in the holiday schedule, the system records video as holiday schedule defined.

Step 1 Click **Record** on the main page, and then click the **Time Plan** tab.

Figure 6-8 Time plan

Step 2 Set record plan.

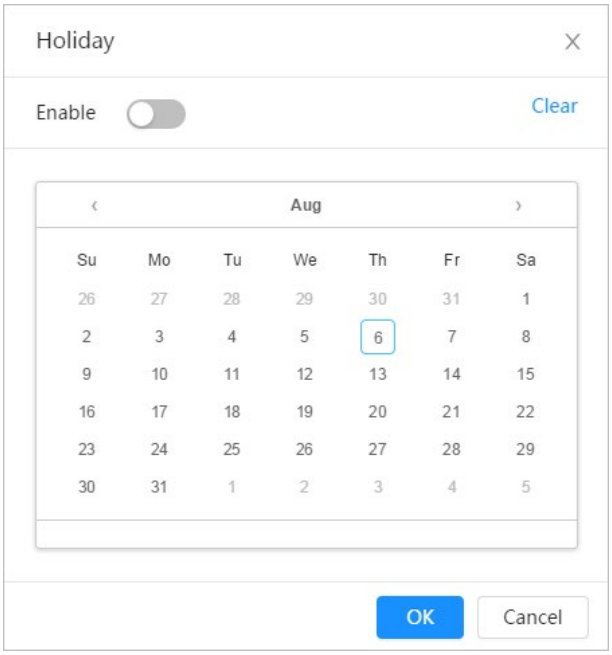
Green represents normal record plan (such as timing recording); yellow represents motion record plan (such as recording triggered by intelligent events); red represents alarm record plan (such as recording triggered by alarm-in). Select a record type, such as **Normal**, and directly press and drag the left mouse button to set the time period for normal record on the timeline.

- Click **Copy** next to a day, and select the days that you want to copy to in the prompt page, you can copy the configuration to the selected days. Select the **Select All** check box to select all day to copy the configuration.
- You can set 6 time periods per day.

Step 3 Click **Apply**.

Step 4 Click **Holiday** to set holidays.

Figure 6-9 Time plan



Step 5 Click to enable the holiday configuration, and select the days that you need to set as holiday

Click **Clear** to cancel the selection.

When holiday schedule setting is not the same as the general setting, holiday schedule setting is prior to the general setting. For example, with holiday schedule enabled, if the day is holiday, the system snapshots or records as holiday schedule setting; otherwise, the system snapshots or records as general setting.

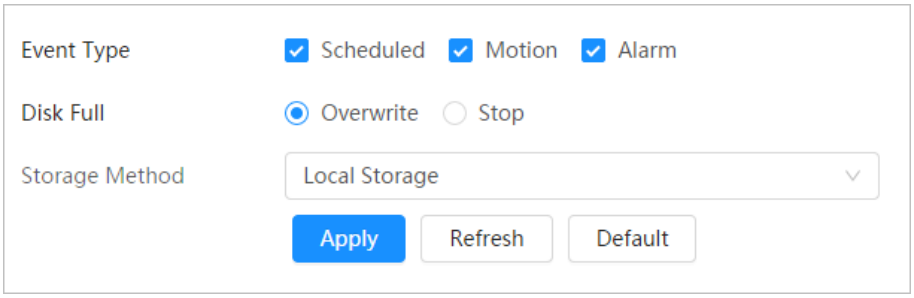
Step 6 Click **OK**.

6.4 Setting Storage

This section introduces the configuration of the storage method for the recorded videos.

Step 1 Select **Record** > **Storage**.

Figure 6-10 Live



Step 2 Select the storage method that you need for different types of recorded videos.

Table 6-3 Description of storage parameters

Parameter	Description
Event Type	Select from **Scheduled**, **Motion Detection** and **Alarm**.
Disk Full	Recording strategy when the disk is full. • **Overwrite**: Cyclically overwrite the earliest video when the disk is full. • **Stop**: Stop recording when the disk is full.
Storage Method	Select from **Local storage** and **Network storage** • **Local storage**: Save the recorded videos in the internal SD card. **Local storage** is displayed only on models that support SD card. • **Network storage**: Save the recorded videos in the FTP server or NAS.

Step 3 Configure network storage parameters. Do this step when selecting **Network storage** in **Storage Method**.

- FTP

Figure 6-11 FTP

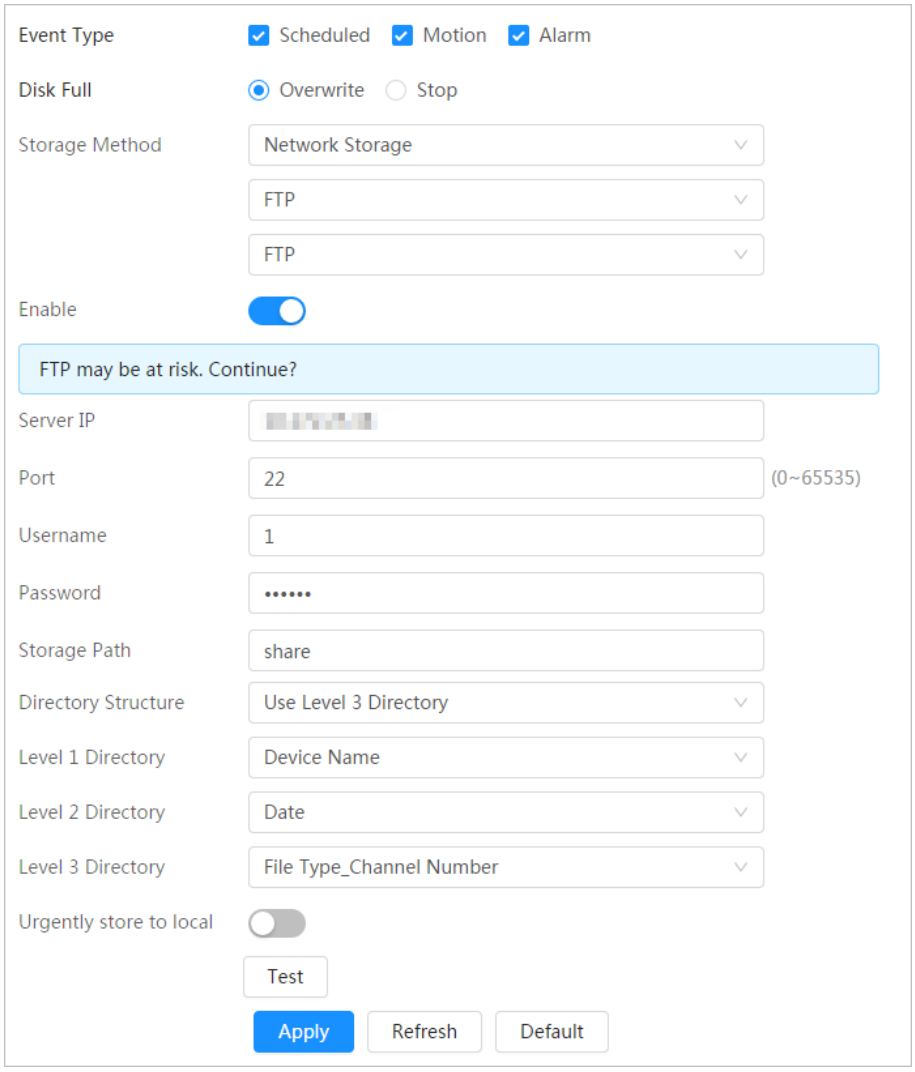


Table 6-4 Description of FTP parameters

Parameter	Description
Server IP	The IP address of the FTP server.
Port	The port number of the FTP server.
Username	The username to log in to the FTP server.
Password	The password to log in to the FTP server.
Storage Path	The destination path in the FTP server.
Directory Structure	Set the directory structure, and you can select **Use Level 1 Directory**, **Use Level 2 Directory**, and **Use Level 3 Directory**
Level 1 Directory	Set the Level 1 directory name, and you can select from **Device name**, **Device IP**, and **Custom**. When you select **Custom**, please enter the custom directory.
Level 2 Directory	Set the Level 2 directory name, and you can select from **File Type**, **Date**, **File Type_Channel Number**, and **Custom**. When you select **Custom**, please enter the custom directory.
Level 3 Directory	

Parameter	Description
Urgently store to local	Click , and when the FTP server does not work, all the files are saved to the internal SD card.

- NAS

Figure 6-12 NAS

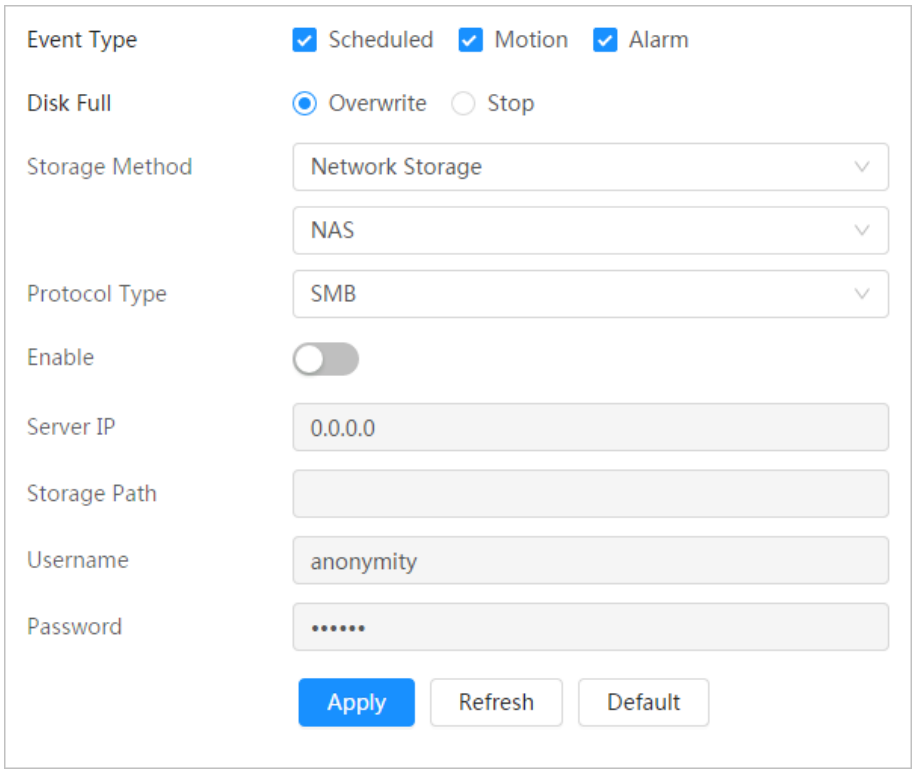


Table 6-5 Description of NAS parameters

Parameter	Description
Server IP	The IP address of the NAS server.
Storage Path	The destination path in the NAS server.
Username	When selecting **SMB** protocol, you are required to enter username and password. Enter them as needed.
Password	

Step 4 Click **Apply**.

7 Picture

This section introduces the related functions and operations of picture playback.

7.1 Playback

7.1.1 Playing Back Picture

This section introduces the operation of picture playback.

Prerequisites

- This function is available on the camera with SD card.
- Before playing back picture, configure snapshot time range, snapshot storage method, snapshot plan. For details, see"7.3 Setting Snapshot Plan".

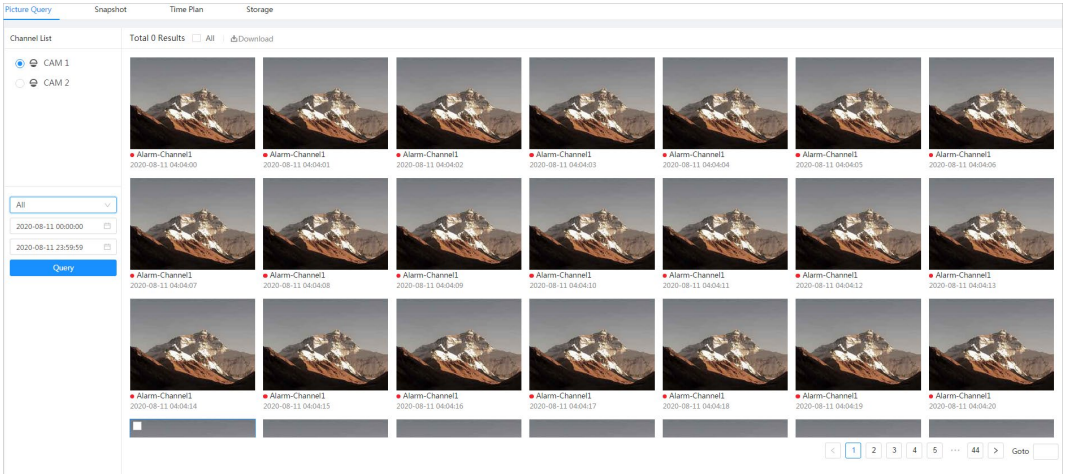
Procedure

Step 1 Select **Record** > **Picture Query**.

Step 2 Select the channel, the snapshot type, and snapshot time, and then click **Search**.

- Click **All**, and select the record type from the drop-down list, you can select from **All**, **General**, **Event**, and **Alarm**.
  When selecting **Event** as the snapshot type, you can select the specific event types, such as **Motion Detection**, **Video Tamper** and **Scene Changing**.
- The dates with blue dots indicate there are snapshots on those days.

Figure 7-1 Picture query



Step 3 Point to the searched picture, and then click  to play back the selected picture.
The picture playback page is displayed.

Figure 7-2 Picture playback

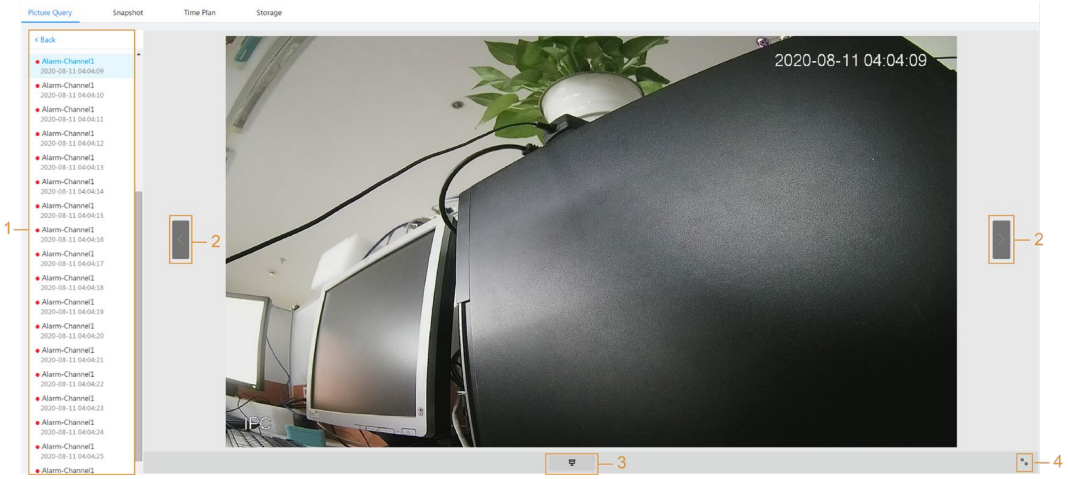


Table 7-1 Description of playback page

No	Function	Description
1	Snapshot list	Displays all searched snapshots. Click any files to play back it. Click **Back** at the upper-left corner to go to the **Picture Query** page.
2	Manual display	• Click to display the previous snapshot in the snapshot list. • Click to display the nest snapshot in the snapshot list.
3	Slide show	Click to display the snapshots list one by one in slide show mode.
4	Full screen	Click , and the snapshot is displayed in full-screen mode; double-click the image or press Esc button to exit full-screen mode.

7.1.2 Downloading Picture

Download pictures to a defined path. You can download a single picture, or download them in batches.

- Operations might vary with different browsers.
- For details of viewing or setting storage path, see "8.2 Configuring Camera Parameters".

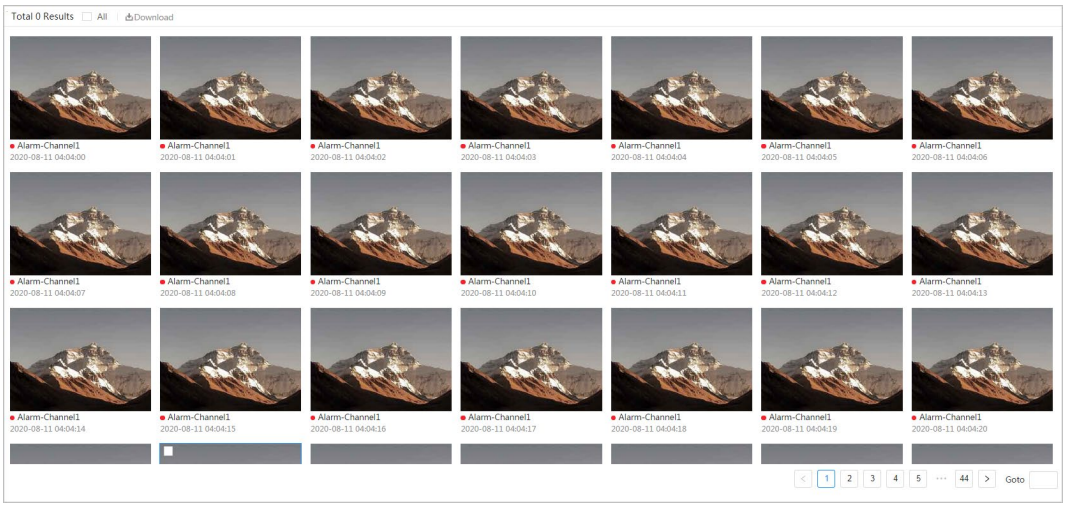
Step 1 Select **Picture** > **Picture Query**.

Step 2 Select the channel, the snapshot type, and snapshot time, and then click **Search**.

Step 3 Select the pictures to be downloaded.

- Select at the upper-right corner of each picture file to select one or multiple pictures.
- Select next to **Select All** to select all searched pictures.

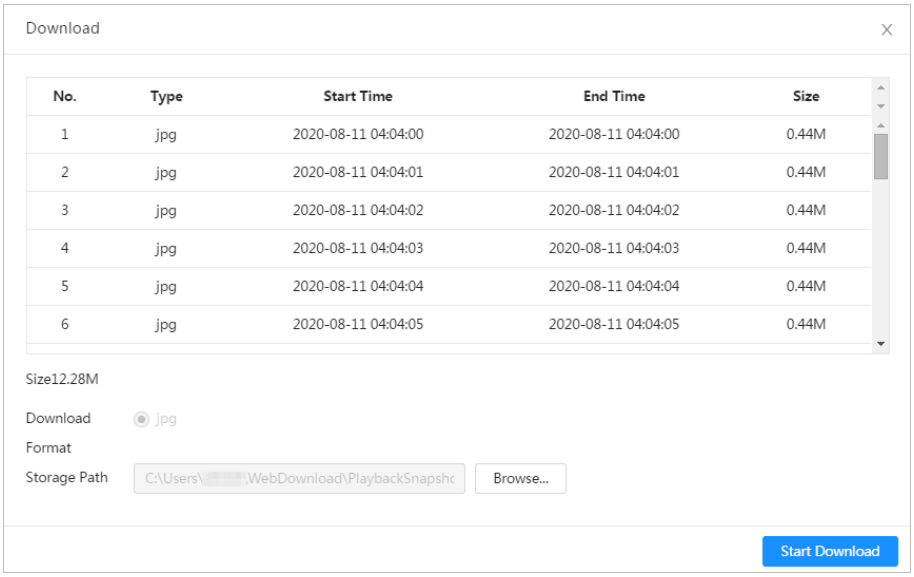
Figure 7-3 Selecting picture file



Step 4 Click **Download**.

Step 5 Select the download format and storage path.

Figure 7-4 Downloading picture



Step 6 Click **Start Download**.

The downloaded pictures are saved in the configured storage path. For details of storage path, see "8.2 Configuring Camera Parameters".

7.2 Setting Snapshot Parameters

Set the snapshot parameters, including type, size, quality and Interval.

Step 1 Select **Picture** > **Snapshot**.

Step 2 Select the channel and set the parameters.

Figure 7-5 Snapshot

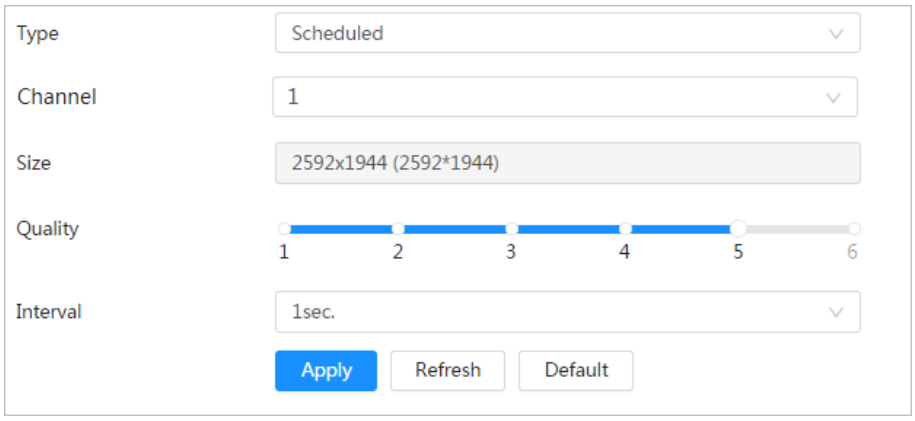


Table 7-2 Description of snapshot parameters

Parameter	Description
Type	You can select from **Scheduled** and **Event**. • **Scheduled**: Capture images in configured period. For details, see • **Event**: Capture images when configured event is triggered, such as **Motion Detection**, **Video Tamper** and **Scene Changing**. Make sure that you have enable the corresponding event detection and the snapshot function.
Size	It is same with the resolution of the main stream.
Quality	Set the quality of the snapshot. The higher the value, the better the quality.
Interval	Set the frequency of snapshot. You can select **Custom** to set the frequency as needed.

Step 3 Click **Apply**.

7.3 Setting Snapshot Plan

According to the configured snapshot plan, the system enables or disables snapshot at corresponding time. For detailed operation, see "6.3 Setting Record Plan".

7.4 Setting Storage

Set the storage method for the snapshot. For detailed operation, see "6.4 Setting Storage".

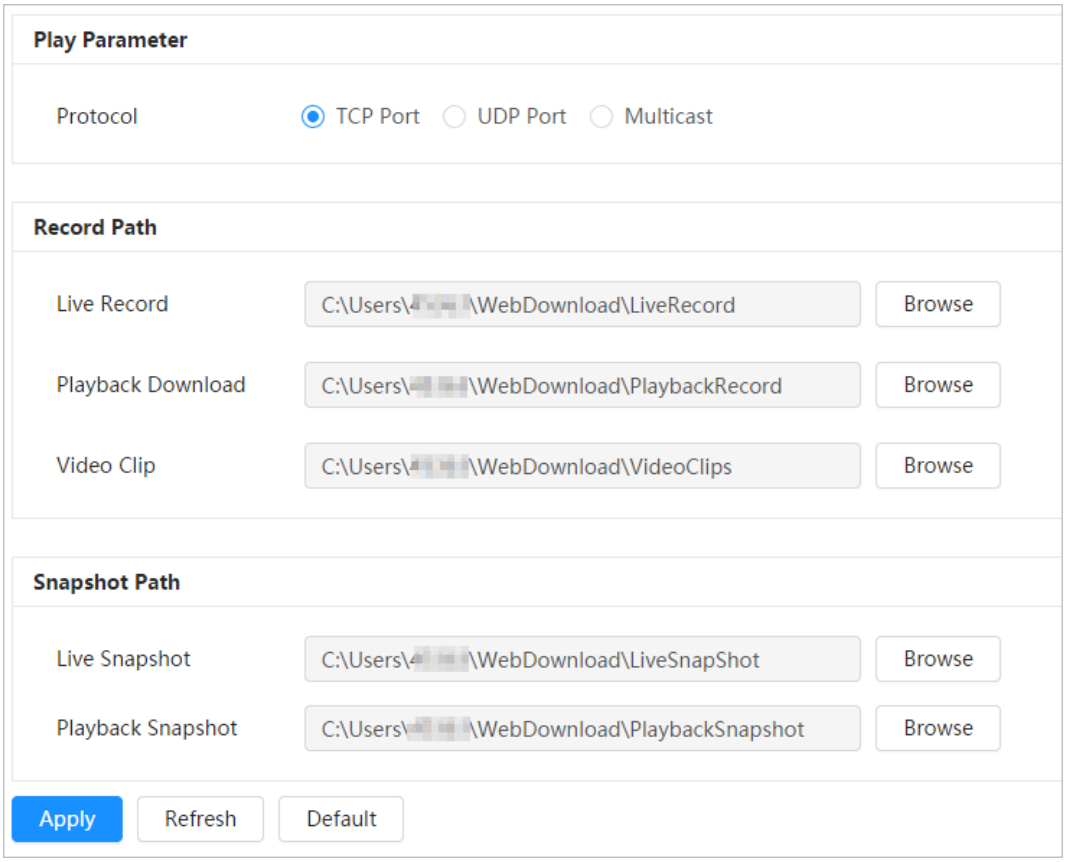
8 Settings

8.1 Configuring Local Parameters

You can select protocol and configure the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Step 1 Select > **Local**.

Figure 8-1 Local



Step 2 Click **Browse** to select the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Table 8-1 Description of local parameter

Parameter	Description	
Protocol	You can select the network transmission protocol as needed, and the options are **TCP**, **UDP** and **Multicast**. Before selecting **Multicast**, make sure that you have set the **Multicast** parameters.	
Live Record	The recorded video of live page. The default path is C:\Users\admin\WebDownload\LiveRecord.	Admin in the path refers

Parameter	Description	
Playback Download	The downloaded video of playback page. The default path is C:\Users\admin\WebDownload\PlaybackRecord.	to the account being used.
Video Clips	The clipped video of playback page. C:\Users\admin\WebDownload\VideoClips.	
Live Snapshot	The snapshot of live page. The default path is C:\Users\admin\WebDownload\LiveSnapshot.	
Playback Snapshot	The snapshot of playback page. The default path is C:\Users\admin\WebDownload\PlaybackSnapshot.	

Step 3 Click **Save**.

8.2 Configuring Camera Parameters

This section introduces the camera setting, including image parameters, encoder parameters, and audio parameters.

You can go to the **Camera** page through two ways.

- Log in to the main page, and click **Camera**.
- Log in to the web page, click , and then select **Camera**.

Camera parameters of different devices might vary.

8.2.1 Configuring Image Parameters

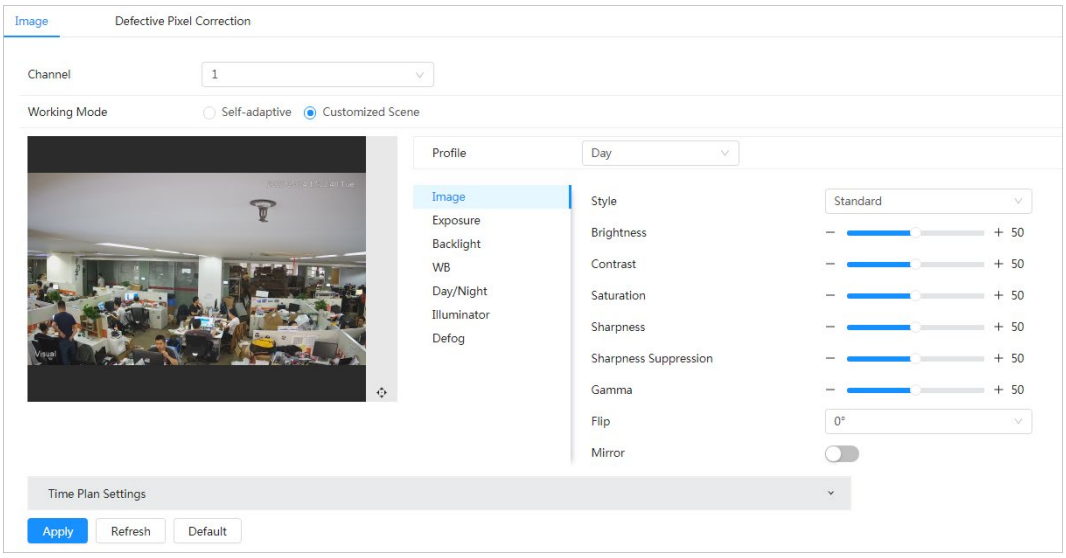
Configure the parameters such as image, exposure, backlight, and WB.

8.2.1.1 Configuring Visible Channel

Configure camera parameters of visible channel to improve the scene clarity, and ensure that surveillance goes properly. Adjust the image parameters to ensure proper surveillance.

Select > **Camera** > **Image** > **Image**, and then select **1** in **Channel**. Select the working mode (self-adaptive or customized scene) and profile (day, night, or general)).

Figure 8-2 Image-Visible



8.2.1.1.1 Configuring Working Mode

Select the working mode as needed, including self-adaptive mode and customized scene mode.

Step 1 Select > **Camera** > **Image** > **Image**

Step 2 Select the working mode.

- Self-adaptive: The camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to Step5.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do Step3–Step5.

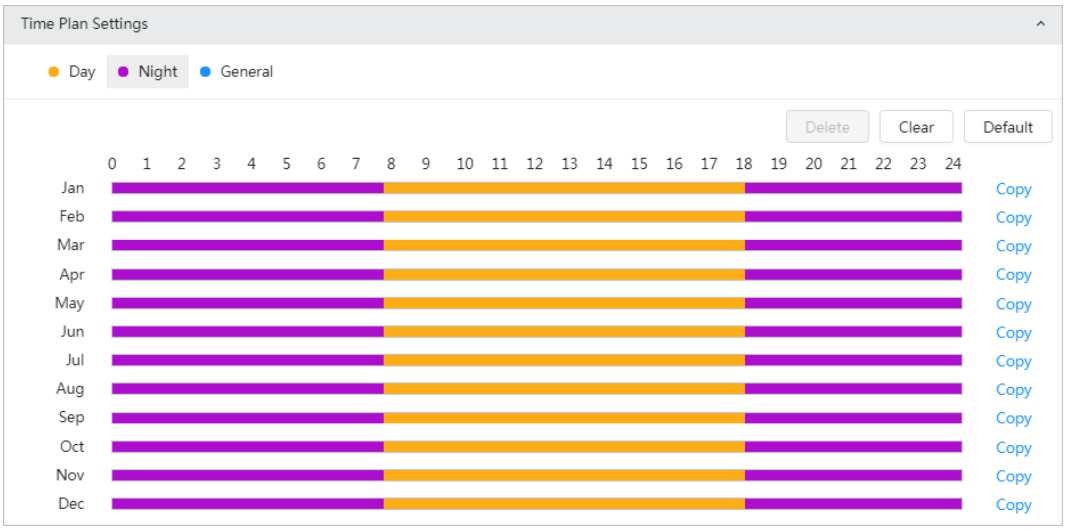
Step 3 Select the profile

You can select the profile from **General**, **Day**, and **Night**.

Step 4 Configure the time plan.

You can configure the time plan for each day of a month.

Figure 8-3 Time plan setting



1) Click **Time Plan Setting** or .
2) Click the profile type, such as **General**, and the drag the mouse on the time bar to set

the period to use general profile. For **Day** and **night**, the operations are the same.

Day profile is set by default, click **Delete** or **Clear**, and then configure the time plan as needed.

3) (Optional) Click **Copy**, select months, and then click **Apply**.
The configured time plan is copied to the selected months.

Step 5 Click **Apply**.

8.2.1.1.2 Configuring Image Parameters

You can configure image parameters as needed, including brightness, contrast, saturation, sharpness, sharpness suppression gamma, flip, and mirror.

Step 1 Select > **Camera** > **Image** > **Image**.

Step 2 Configure image parameters.

Figure 8-4 Image

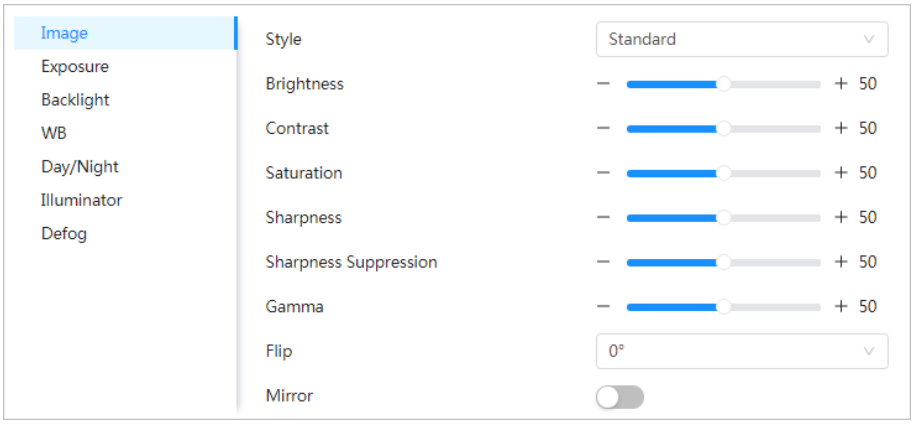


Table 8-2 Description of picture parameters

Parameter	Description
Style	Select the picture style from soft, standard and vivid. • Soft: Default image style, displays the actual color of the image. • Standard: The hue of the image is weaker than the actual one, and contrast is smaller. • Vivid: The image is more vivid than the actual one.
Brightness	Changes the value to adjust the image brightness. The higher the value is, the brighter the image will be, and the smaller the darker. The image might be hazy if the value is configured too big.
Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
Saturation	Makes the color deeper or lighter. The higher the value is, the deeper the color will be, and the lower the lighter. Saturation value does not change image brightness.
Sharpness	Changes the sharpness of image edges. The higher the value is, the clearer the image edges will be, and if the value is set too big, image noises are more likely to appear.

Parameter	Description
Sharpness Suppression	The bigger the value, the stronger the sharpness suppression.
Gamma	Changes the image brightness and improves the image dynamic range in a non-linear way. The higher the value is, the brighter the image will be, and the smaller the darker.
Flip	Changes the display direction of the picture, see the options below. • 0°: Normal display. • 90°: The picture rotates 90° clockwise. • 180°: The picture rotates 90° counterclockwise. • 270°: The picture flips upside down. For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".
Mirror	Click , and the image will display with left and right side reversed.

Step 3 Click **Apply**.

8.2.1.1.3 Configuring Exposure Parameters

Configure iris and shutter to improve image clarity.

Cameras with true WDR do not support long exposure when WDR is enabled in **Backlight**.

Step 1 Select > **Camera** > **Image** > **Exposure**.

Step 2 Configure exposure parameters.

Figure 8-5 Exposure

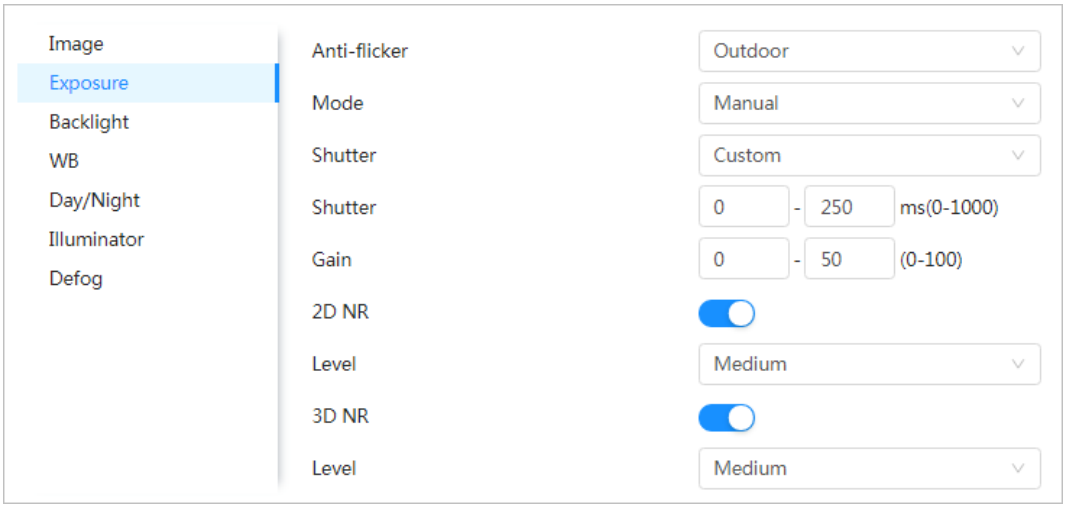


Table 8-3 Description of exposure parameters

Parameter	Description
Anti-flicker	You can select from 50 Hz, 60 Hz and Outdoor. ● 50 Hz: When the electric supply is 50 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. ● 60 Hz: When the electric supply is 60 Hz, the system adjusts the exposure according to ambient light automatically to ensure that there is no stripe appears. ● Outdoor: You can select any exposure mode as needed.
Mode	Device exposure modes. ● Auto: Adjusts the image brightness according to the actual condition automatically. ● Gain Priority: When the exposure range is normal, the system prefers the configured gain range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the gain has reached upper or lower limit, the system adjusts shutter value automatically to ensure the image at ideal brightness. You can configure gain range to adjust gain level when using gain priority mode. ● Shutter priority: When the exposure range is normal, the system prefers the configured shutter range when auto adjusting according to the ambient lighting condition. If the image brightness is not enough and the shutter value has reached upper or lower limit, the system adjusts gain value automatically to ensure the image at ideal brightness. ● Manual: Configure gain and shutter value manually to adjust image brightness. When the **Anti-flicker** is set to **Outdoor**, you can select **Auto**, **Gain priority**, **Shutter priority** or **Manual** in the **Mode** list.
Shutter	When selecting **Shutter Priority** or **Manual** in **Mode**, you can set Shutter. Set the effective exposure time. The smaller the value, the shorter the exposure time will be.
Gain	When selecting **Gain Priority** or **Manual** in **Mode**, you can set Gain. With minimum illumination, the camera increases Gain automatically to get clearer images.
Auto Iris	This configuration is available only when the camera is equipped with auto-iris lens. ● When auto iris is enabled, the iris size changes automatically according to the ambient lighting condition, and the image brightness changes accordingly. ● When auto iris is disabled, the iris stays at full size and does not change no matter how ambient lighting condition changes.

Parameter	Description
3D NR	Works with multi-frame (no less than 2 frames) images and reduces noise by using the frame information between previous and latter frames.
Level	This configuration is available only when the 3D NR is enabled. The higher the level is, the better the result will be.

Step 3 Click **Apply**.

8.2.1.1.4 Configuring Backlight Parameters

You can select backlight mode from Off, BLC, WDR, and HLS.

Step 1 Select > **Camera** > **Image** > **Backlight**.

Step 2 Configure backlight parameters.

Figure 8-6 Backlight

Table 8-4 Description of backlight parameters

Backlight mode	Description
BLC	Enable BLC, the camera can get clearer image of the dark areas on the target when shooting against light. You can enable or disable **Customized** mode. • When you enable **Customized** mode, the system auto adjusts exposure only to the set area according to ambient lighting condition to ensure the image of the set area at ideal brightness. • When you disable **Default** mode, the system adjusts exposure according to ambient lighting condition automatically to ensure the clarity of the darkest area.
WDR	The system dims bright areas and compensates dark areas to ensure the clarity of all the area. The higher the value is, the brighter the dark will be, but the more the noise will be. There might be a few seconds of video loss when the device is switching to WDR mode from other mode.
HLC	Enable HLC when extreme strong light is in the environment (such as toll station or parking lot), the camera will dim strong light, and reduce the size of Halo zone to lower the brightness of the whole image, so that the camera can capture human face or car plate detail clearly. The higher the value is, the more obvious the HLC effect will be.

Step 3 Click **Apply**.

8.2.1.1.5 Configuring White Balance Parameters

WB function makes the image color display precisely as it is. When in WB mode, white objects would always display white color in different environments.

Step 1 Select > **Camera** > **Image** > **WB**.

Step 2 Configure WB parameters.

Figure 8-7 WB

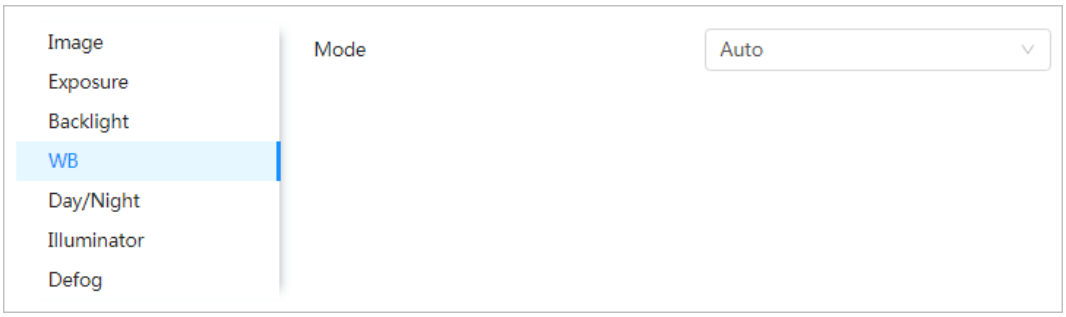


Table 8-5 Description of WB parameters

WB mode	Description
Auto	The system compensates WB according to color temperature to ensure color precision.
Natural	The system auto compensates WB to environments without artificial light to ensure color precision.
Street Lamp	The system compensates WB to outdoor night scene to ensure color precision.
Indoor	The system auto compensates WB to indoor environments to ensure color precision.
ATW	The system auto compensates WB when the camera is tracking targets.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
Manual	Configure red and blue gain manually; the system auto compensates WB according to color temperature.

Step 3 Click **Apply**.

8.2.1.1.6 Configuring Day/Night Parameters

Configure the display mode of the image. The system switches between color and black-and-white mode according to the actual condition.

Step 1 Select > **Camera** > **Image** > **WB**.

Step 2 Configure day and night parameters.

Figure 8-8 Day/Night

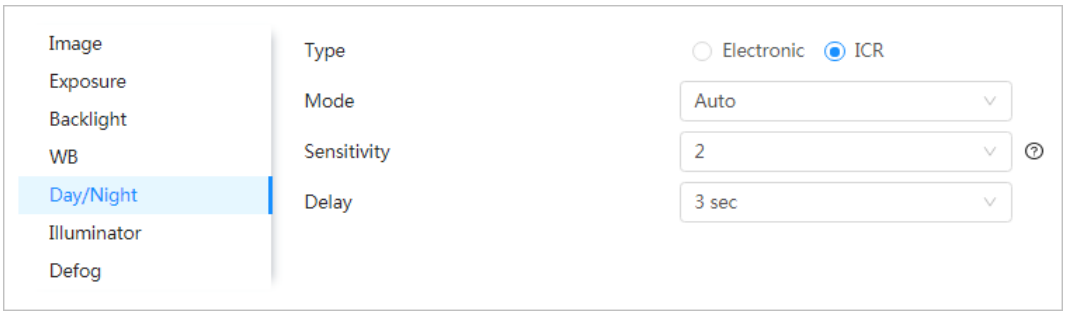


Table 8-6 Description of day and night parameters

Parameter	Description
Type	Select the type from **Electronic** and **ICR**. • ICR: Switch day and night through a light filter. • Electronic: Switch day and night through the image processing methods.
Mode	You can select device display mode from **Color**, **Auto**, and **B/W**. Day/Night configuration is independent from profile management configuration. • **Color**: The system displays color image. • **Auto**: The system switches between color and black-and-white display according to the actual condition. • **B/W**: The system displays black-and-white image.
Sensitivity	This configuration is available only when you set **Auto** in **Mode**. You can configure camera sensitivity when switching between color and black-and-white mode.
Delay	This configuration is available only when you set **Auto** in **Mode**. You can configure the delay when camera switching between color and black-and-white mode. The lower the value is, the faster the camera switches between color and black-and-white mode.

Step 3 Click **Apply**.

8.2.1.1.7 Configuring Illuminator Parameters

This configuration is available only when the device is equipped with illuminator.

Step 1 Select > **Camera** > **Image** > **Illuminator**.

Step 2 Configure illuminator parameters.

Figure 8-9 illuminator

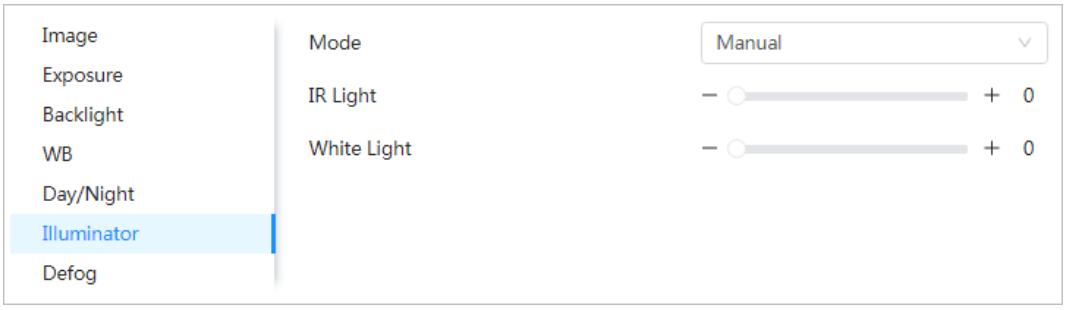


Table 8-7 Description of illuminator parameters

Parameter	Description	
Mode	Manual	Adjust the brightness of illuminator manually, and then the system will supply illuminator to the image accordingly.
	Auto	The system adjusts the illuminator intensity according to the ambient lighting condition.

Step 3 Click **Apply**.

8.2.1.1.8 Configuring Defog Parameters

The image quality is compromised in foggy or hazy environment, and defog can be used to improve image clarity.

Step 1 Select > **Camera** > **Image** > **Defog**.

Step 2 Configure defog parameters.

Figure 8-10 Defog

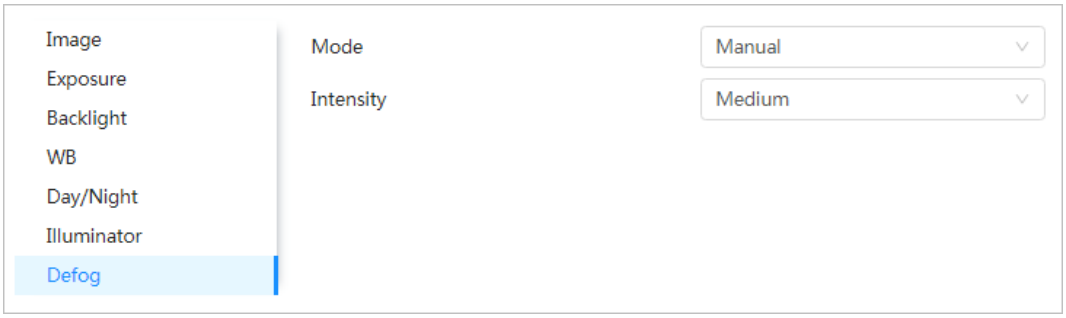


Table 8-8 Description of defog parameters

Defog	Description
Manual	Configure function intensity manually, and then the system adjusts image clarity accordingly. Set the intensity higher when the image is not clear.
Auto	The system adjusts image clarity according to the actual condition.
Off	Defog function is disabled.

Step 3 Click **Apply**.

8.2.1.2 Configuring Thermal Channel

Configure a specific scenario where you use the camera, including indoor scenario, outdoor scenario, and adaptive scenario. You can choose a scenario you need, and configure and check the scenario.

Step 1 Select > **Camera** > **Image** > **Image**.

Step 2 Select **2** in **Channel**.

Step 3 Select the working mode.

- Self-adaptive: The camera will adjust the image according to the environment. If you select **Self-adaptive**, skip to Step5.
- Customized scene: You can select the profile as needed. Select the profile in **Time Plan Setting** and drag the slide block to set certain time as the selected profile. For example, set 8:00–18:00 as day, and 0:00–8:00 and 18:00–24:00 as night. If you select **Customized Scene**, do Step3–Step5.

Step 4 Select the scene type, profile and colorization.

The image is for reference only, and might differ from the actual page.

Figure 8-11 Image (thermal)

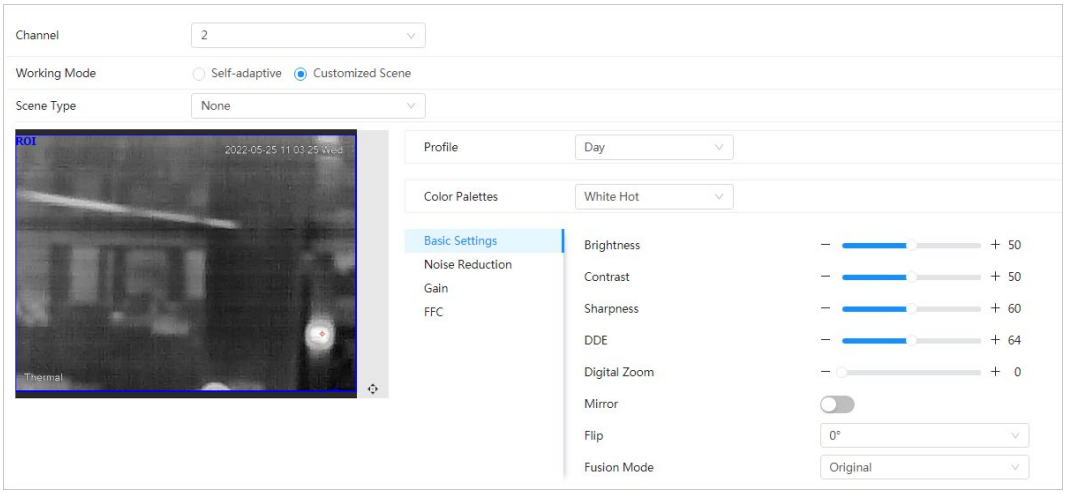


Table 8-9 Description of defog parameters

Parameter	Description
Scene Type	Select the duplicate frame and set the frequently used video parameter as the user-defined scene. Or, you can select the default scene and set the display of the thermal image. • **Low Dynamic**: Thermal images will be displayed based on the configuration of low dynamic scene. • **High Dynamic**: Thermal images will be displayed based on the configuration of high dynamic scene. • **Auto**: Thermal images will be displayed based on the configuration of auto scene • **None**: Do not set the scene.
Profile	**Normal**, **Day** and **Night** can be selected.

Parameter	Description
Colorization	Add color to the thermal image and use color to indicate the temperature. "White glow" is the default color. ● White glow: Lighter when the temperature is higher in gray image. ● Black glow: Lighter when the temperature is lower in gray image. ● Fusion: Color is concentrated on the range of purple- red-yellow. More purple when the temperature is lower and more yellow when the temperature is higher. ● Rainbow: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Golden autumn: Color is concentrated on the range of red- yellow. Redder when the temperature is lower and more yellow when the temperature is higher. ● Midday: Color is concentrated on the range of blue- green-red-yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Iron oxide red: Its color range is similar to that of Midday, but its brightness is lower than Midday. ● Amber: It's mainly represented as brown. Brighter when the temperature is higher. ● Boulder: Color is concentrated on the range of purple - red- yellow-green-blue. More purple when the temperature is lower and bluer when the temperature is higher. ● The setting sun: Color is concentrated on the range of blue- red- yellow. Bluer when the temperature is lower and more yellow when the temperature is higher. ● Ice and fire: In color image, high temperature objects show red and low temperature objects show blue. Ice and fire is usually used to give a warning. ● Oil painting: Color is concentrated on the range of purple-blue-green-yellow-red. More purple when the temperature is lower and redder when the temperature is higher. ● Pomegranate: It's mainly represented as wine red. Brighter when the temperature is higher. ● Green jade: It's mainly represented as aquamarine. Brighter when the temperature is higher.

Step 5 (Optional) Configure the advanced parameters.

When the scene cannot meet the scene requirements, configure the advanced parameters manually.

Table 8-10 Advanced parameter description

Classification	Parameter	Description
Basic Settings	Brightness	Change the overall image brightness through linear mode. The bigger the value is, the brighter the image will be, and the smaller the darker.

Classification	Parameter	Description
	Contrast	Changes the contrast of the image. The higher the value is, the more the contrast will be between bright and dark areas, and the smaller the less. If the value is set too big, the dark area would be too dark and bright area easier to get overexposed. The image might be hazy if the value is set too small.
	Sharpness	Change the sharpness of image edges. The larger the value, the more obvious the image edge. Do not make the value too large to prevent image noise.
	DDE	Makes the details of the image clear. The bigger the value is, the clearer the details will be.
	Digital Zoom	Enlarge the thermal image according to the zoom time you have set.
	Mirror	Open the mirror image and the monitor image will reverse from left to right.
	Flip	Changes the display direction of the picture, see the options below. ● 0°: Normal display. ● 90°: The picture rotates 90° clockwise. ● 180°: The picture rotates 90° counterclockwise. ● 270°: The picture flips upside down.  For some models, please set the resolution to be 1080p or lower when using 90° and 180°. For details, see "8.2.3 Configuring Encode".

Classification	Parameter	Description
	Fusion Mode	Displays the image with the gray scale information of the visible channel, and marks temperatures with color palettes, which makes the image of the thermal channel clearer. • **Original**: Displays the image of the thermal channel. • **Warm Color**: Combines the data of the visible channel and the thermal channel, and displays the image in warm color. • **Cold Color**: Combines the data of the visible channel and the thermal channel, and displays the image in cold color. • **Fusion Rate**: It ranges from 0 to 100. The larger the value, the larger the proportion of the visible channel. • **Dual-lens Calibration Adjustment**: You can adjust the misaligned images through direction keys. • **Speed**: The moving speed of the lens when adjusting the image.  To get a better fusion effect, keep the distance 3 m between the Camera and the targets.
Noise Reduction	2D NR	Compares one frame to the next and removes any oddity that does not appear in each frame. The larger the value is, the fuzzier the image will be.
	3D NR	Removes the grainy fuzzy appearances of low light images, will handle moving objects without leaving tails behind, and in low light, it makes an image clearer and sharper. • Basic 3D NR: The module handles noise reduction. • Advanced 3D NR: The back-end program handles noise reduction.  Generally, you can select **2D NR** and **Basic 3D NR**. If the image is not clear, select **Advanced 3D NR**, and configure the parameters.
Gain settings	Auto Gain	The larger the gain value, the more unstable the image.
	Gain Mode	Low-temperature mode, high-temperature mode and auto mode are contained.

Classification	Parameter	Description
FFC Settings	FFC Mode	Method of correcting the shutter. ● Auto: According to the switch period that you have configured, the shutter will be corrected regularly. ● Manual: Correct the shutter by yourself.
	FFC Period	You can configure this parameter only when **FFC Mode** is set to be **Auto**. Adjust time gap of correcting the shutter automatically.
	Do FFC	Click **Do FFC** to trigger the shutter correcting for this time.

Step 6 Click **Apply**.

8.2.2 Correcting Defective Pixels

When there are a few defective pixels to be corrected, you can correct then manually.

Step 1 Select > **Camera** > **Image** > **Defective Pixel Correction**.

Step 2 Click to enable the function.

Step 3 Select the calibration mode. Generally, you can select **Picture**, and for the image with defective pixels that appears occasionally, select **Video**.

Step 4 Click on the right side of the image.

Step 5 Click a defective pixel in the image, and is displayed near the defective pixel.

Step 6 Roll the mouse wheel to zoom in the image.

Step 7 Click the defective pixel again, and overlaps the defective pixel.

Step 8 Click **Calibration Confirmed**.

Step 9 Click **Setting**.

Step 10 Click **Save**.

To correct multiple defective pixels at the same time, calibrate one defective pixel, repeat Step1–Step8, and then do Step9–Step10.

8.2.3 Configuring Encode

8.2.3.1 Configuring Encode Parameter

Configure video stream parameters, such as compression, resolution, frame rate, bit rate type, bit rate, I frame interval, SVC, and watermark.

Step 1 Select > **Camera** > **Encode** > **Encode**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Configure encode parameters.

Figure 8-12 Encode

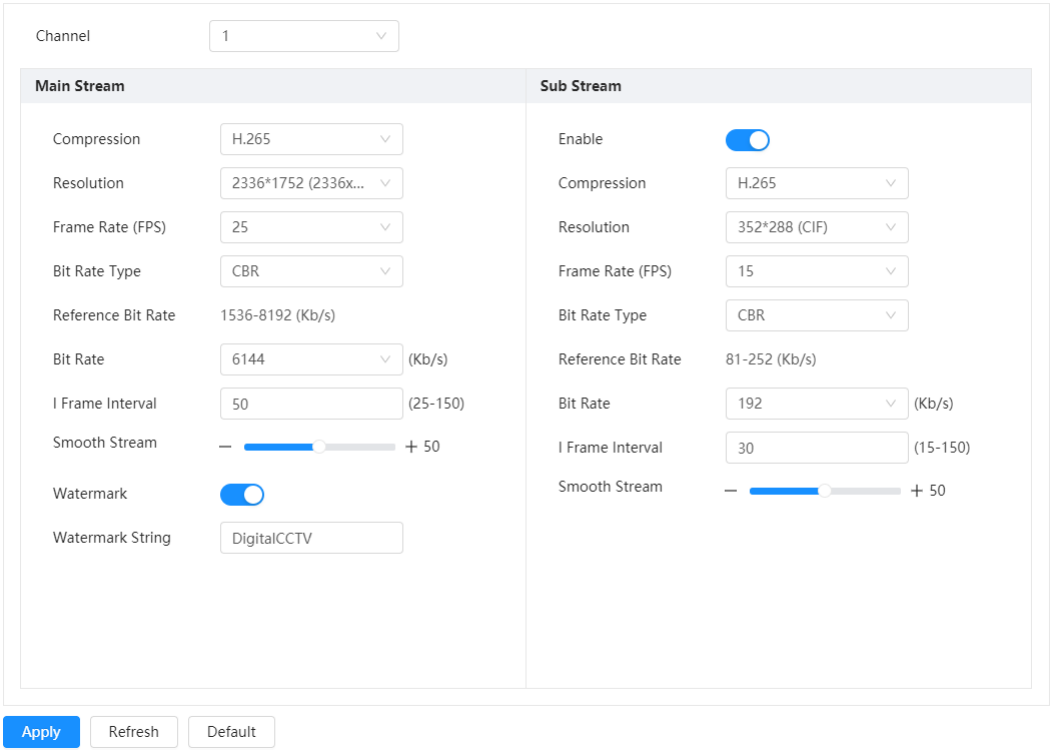


Table 8-11 Description of encode parameters

Parameter	Description
Sub Stream	Click to enable sub stream, it is enabled by default. You can enable multiple sub streams simultaneously.
Compression	Select encode mode. • **H.264**: Main profile encode mode. Compared with H.264B, it requires smaller bandwidth. • **H.264H**: High profile encode mode. Compared with H.264, it requires smaller bandwidth. • **H.264B**: Baseline profile encode mode. It requires smaller bandwidth. • **H.265**: Main profile encode mode. Compared with H.264, it requires smaller bandwidth. • **MJPEG**: When under this mode, the image requires high bit rate value to ensure clarity, you are recommended to set the **Bit Rate** value to the biggest value in the **Reference Bit Rate**.
Resolution	The resolution of the video. The higher the value is, the clearer the image will be, but the bigger the required bandwidth will be.
Frame Rate (FPS)	The number of frame in one second of video. The higher the value is, the clearer and smoother the video will be.

Parameter	Description
Bit Rate Type	The bit rate control type during video data transmission. You can select bit rate type from: • **CBR** (Constant Bit Rate): The bit rate changes a little and keeps close to the defined bit rate value. • **VBR** (Variable Bit Rate): The bit rate changes as monitoring scene changes. The **Bit Rate Type** can only be set as **CBR** when **Encode Mode** is set as **MJPEG**.
Quality	This parameter can be configured only when the **Bit Rate Type** is set as **VBR**. The better the quality is, but the bigger the required bandwidth will be.
Reference Bit Rate	The most suitable bit rate value range recommended to user according to the defined resolution and frame rate.
Bit Rate	This parameter can be configured only when the **Bit Rate Type** is set as **CBR**. Select bit rate value in the list according to actual condition.
I Frame Interval	The number of P frames between two I frames, and the **I Frame Interval** range changes as **FPS** changes. It is recommended to set **I Frame Interval** twice as big as **FPS**.
SVC	Scaled video coding, is able to encode a high quality video bit stream that contains one or more subset bit streams. When sending stream, to improve fluency, the system will quit some data of related lays according to the network status. • 1: The default value, which means that there is no layered coding. • 2, 3 and 4: The lay number that the video stream is packed.
Smooth Stream	The larger the smooth stream value is, the larger the I Frame is.
Watermark	You can verify the watermark to check if the video has been tampered.
Watermark String	

Step 4 Click **Apply**.

8.2.3.2 Configuring Overlay

Configure overlay information, and it will be displayed on the **Live** page.

8.2.3.2.1 Configuring Privacy Masking

You can enable this function when you need to protect the privacy of some area on the image.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click the **Privacy Masking** tab.

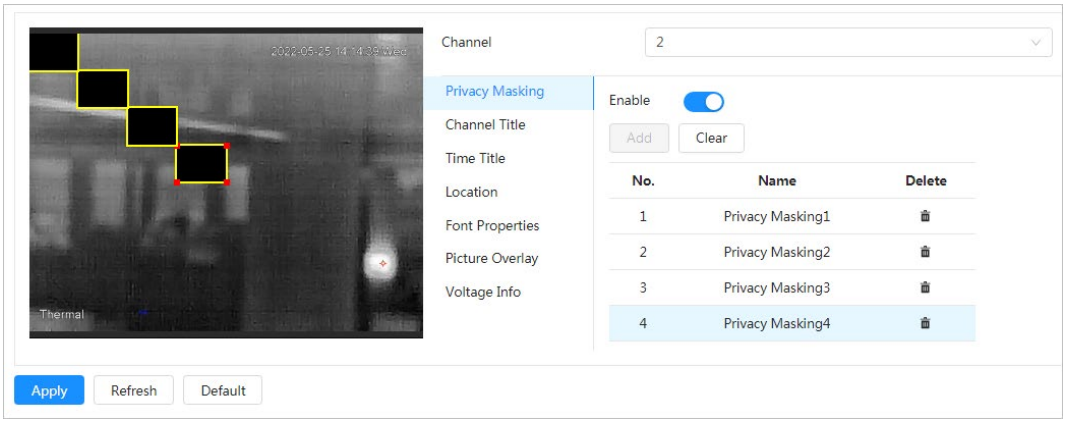
Step 4 Click next to **Enable**.

Step 5 Click **Add**, and then drag the block to the area that you need to cover.

- You can draw four blocks at most.
- Click **Clear** to delete all the area boxes; you can also just select one block, and click to delete it.

Step 6 Adjust the size of the rectangle to protect the privacy.

Figure 8-13 Privacy masking



Step 7 Click **Apply**.

8.2.3.2.2 Configuring Channel Title

You can enable this function when you need to display channel title on the image.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

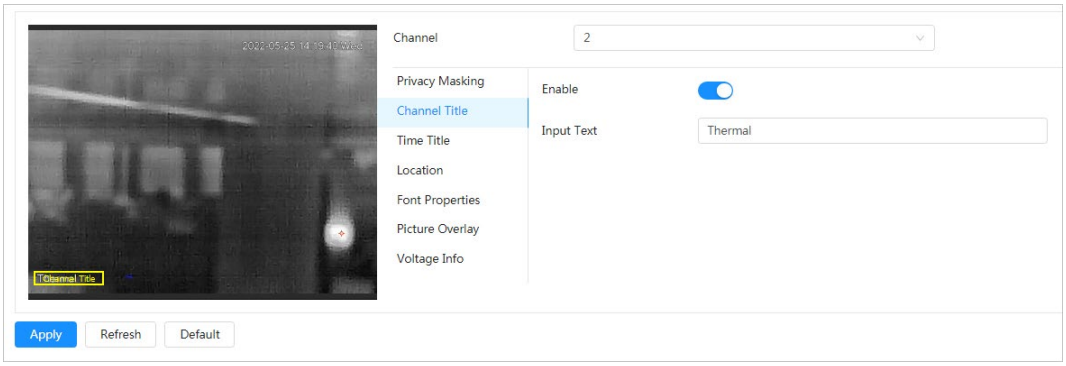
Step 3 Click the **Channel Title** tab.

Step 4 Click next to **Enable**.

Step 5 Enter the title in **Input Texture**.

Step 6 Move the title box to the position that you want in the image.

Figure 8-14 Channel title



Step 7 Click **Apply**.

8.2.3.2.3 Configuring Time Title

You can enable this function when you need to display time on the image.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

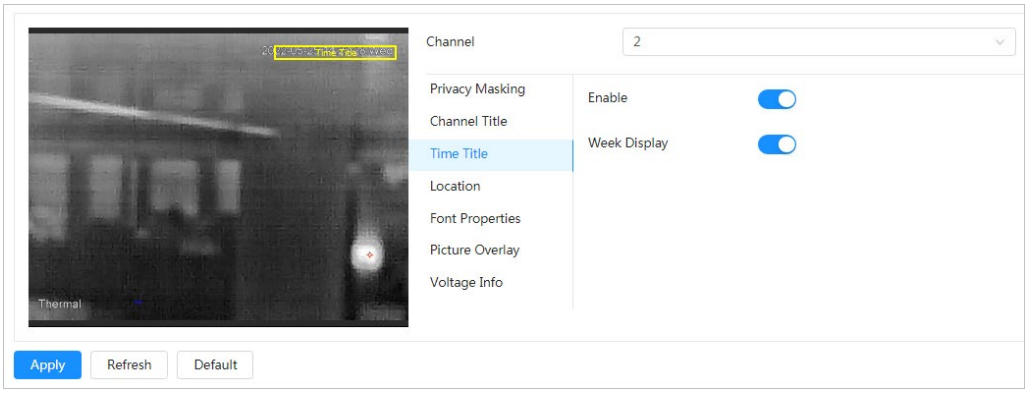
Step 3 Click the **Time Title** tab.

Step 4 Click next to **Enable**.

Step 5 (Optional) Click next to **Week Display**, and then the week information displays on the image.

Step 6 Move the time box to the position that you want in the image.

Figure 8-15 Time title



Step 7 Click **Apply**.

8.2.3.2.4 Configuring Location

You can enable this function if you need to display text on the image.

Text overlay and picture overlay cannot work at the same time, and the IPC that connects to mobile NVR with private protocol would display GPS information as priority.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click the **Location** tab.

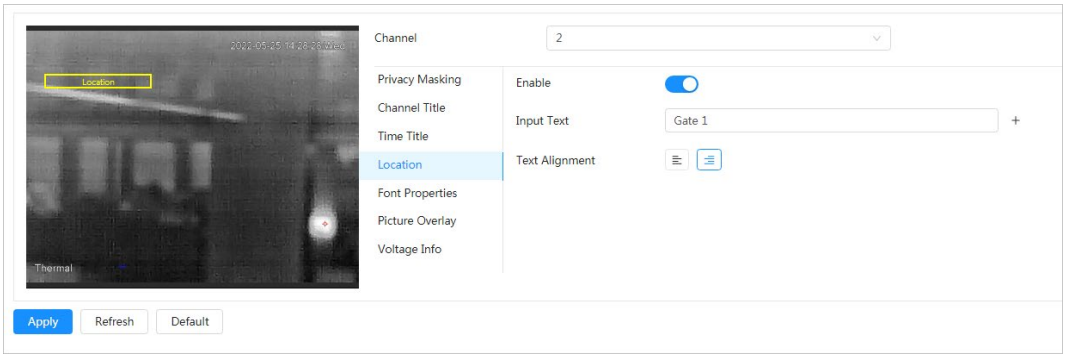
Step 4 Click next to **Enable**.

Step 5 Enter the location information, and then select alignment. The text is displayed on the video image.

Click + to add the text overlay, and you can add 13 lines at most.

Step 6 Move the text box to the position that you want in the image.

Figure 8-16 Location



Step 7 Click **Apply**.

8.2.3.2.5 Configuring Font Properties

You can enable this function if you need to adjust the font size on the image.

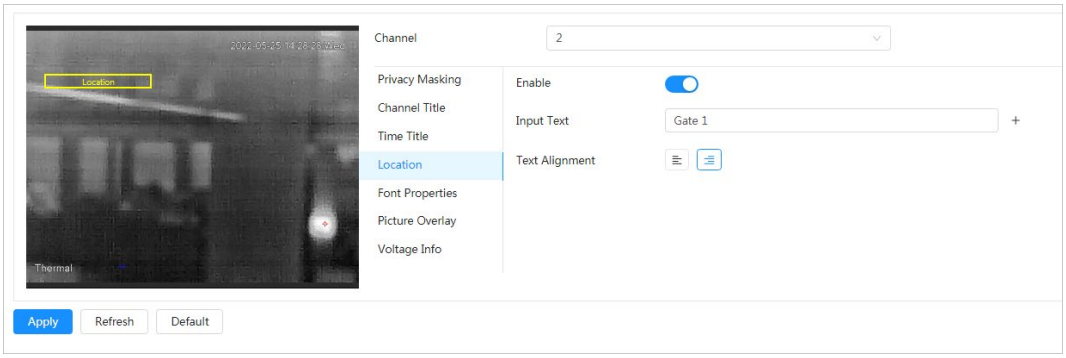
Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Click the **Font properties** tab.

Step 3 Select color and size of the font as needed.

You can customize the color.

Figure 8-17 Font properties



Step 4 Click **Apply**.

8.2.3.2.6 Configuring Picture Overlay

You can enable this function if you need to display picture information on the image.

Text overlay and picture overlay cannot work at the same time.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click the **Picture Overlay** tab.

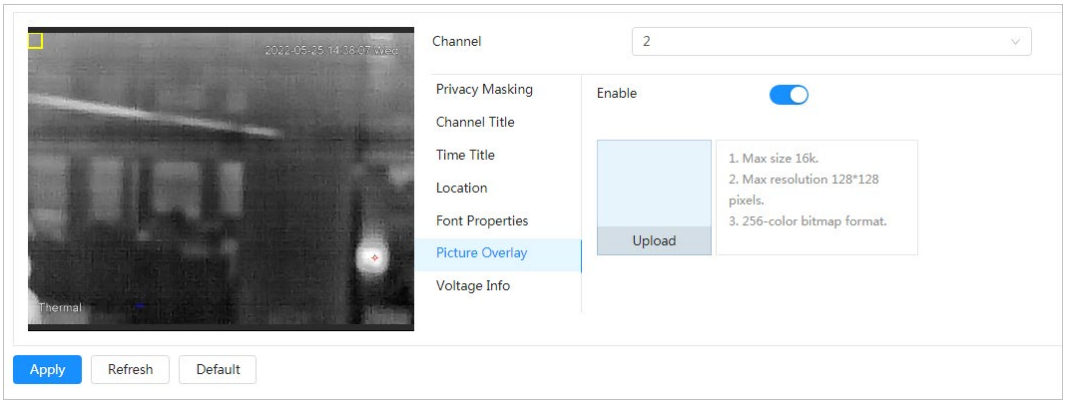
Step 4 Click next to **Enable**.

Step 5 Click **Upload**, and then select the picture to be overlaid.

The picture is displayed on the video image.

Step 6 Move the overlaid picture to the position that you want in the image.

Figure 8-18 Picture overlay



Step 7 Click **Apply**.

8.2.3.2.7 Configuring Voltage Information

After enabling voltage information, the image displays the voltage information when the voltage is abnormal.

Step 1 Select > **Camera** > **Encode** > **Overlay**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

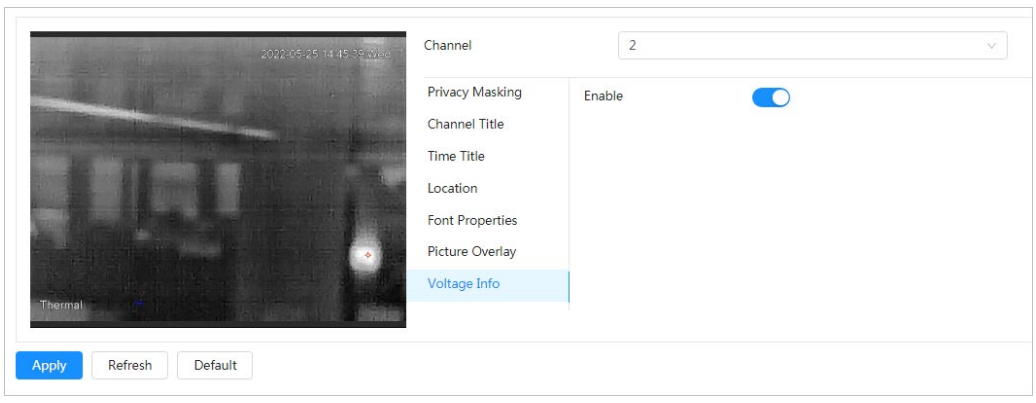
The monocular camera does not support channel selection.

Step 3 Click the **Voltage Info** tab.

Step 4 Click next to **Enable**.

After enabling voltage information, picture overlay will be disabled.

Figure 8-19 Voltage information



Step 5 Click **Apply**.

8.2.3.3 Configuring ROI

Select ROI (region of interest) on the image and configure the image quality of ROI, and then the selected image is display at defined quality.

Step 1 Select > **Camera** > **Encode** > **ROI**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

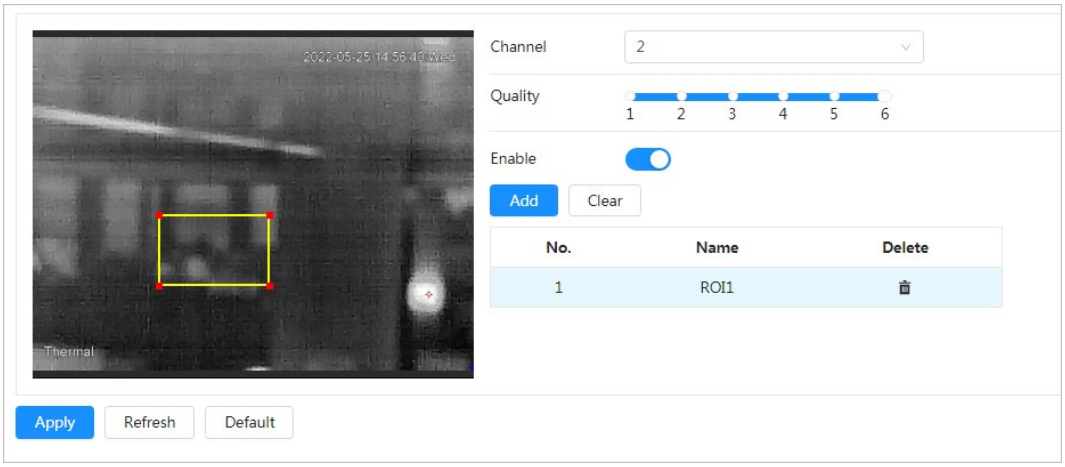
The monocular camera does not support channel selection.

Step 3 Click next to **Enable**.

Step 4 Click **Add**, and then adjust and drag the rectangle on the image, and then configure the image quality of ROI.

- You can draw 4 area boxes at most.
- The higher the image quality value is, the better the quality will be.
- Click **Clear** to delete all the area boxes; select one box, and then click to delete it.

Figure 8-20 ROI



Step 5 Click **Apply**.

8.2.4 Configuring Audio

You can configure audio parameters and alarm audio.

8.2.4.1 Setting Audio Parameters

This section introduces audio parameters, including encode mode, sampling frequency, audio in type, and noise filter.

Step 1 Select > **Camera** > **Audio** > **Audio**.

Step 2 Click next to **Enable** in **Main Stream** or **Sub Stream**.

Please carefully activate the audio acquisition function according to the actual

requirements of the application scenario.

Step 3 Configure audio parameters.

Table 8-12 Description of audio parameters

Parameter	Description
Audio Input Type	You can select audio input type from: • **LineIn**: Requires external audio device. • **Mic**: Not require external audio device.
Audio Encoding	You can select audio encode mode from **PCM**, **G.711A**, **G.711Mu**, and **AAC**. The configured audio encode mode applies to audio and intercom. You are recommended to use the default mode.
Sampling Frequency	Sampling number per second. The higher the sampling frequency is, the more the sample in a second will be, and the more accuracy the restored signal will be.
Noise Filter	Enable this function, and the system auto filters ambient noise.
Microphone Volume	Adjusts microphone volume.
Speaker Volume	Adjusts speaker volume.

Step 4 Click **Apply**.

8.2.4.2 Setting Alarm Tone

You can record or upload alarm audio file. The audio file will be played when the alarm is triggered.

Procedure

Step 1 Select > **Camera** > **Audio** > **Alarm Tone**.

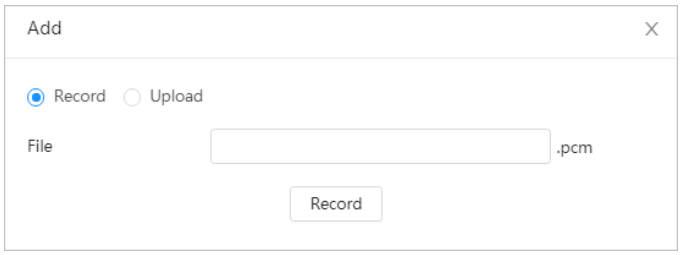
Step 2 Click **Add**.

Step 3 Configure the audio file.

- Select **Record**, enter the audio name in the input box, and then click **Record**.
- Select **Upload**, click **Browse** to select the audio file to be uploaded, and then click **Upload**.

- The camera supports recording audio file in .pcm format only. Recording is only supported by select models.
- You can upload audio files in .pcm, .wav2, .mp3, or .aac format.
- You can edit and delete the recorded and upload files:
  - Edit audio file
    Click to edit the file name.
  - Delete audio file
    Click to delete the file name.

Figure 8-21 Add alarm tone



Related Operations

- Play audio file

  Click to play the file name.

- Download audio file

  Click to download the file name.

8.3 Configuring Network

8.3.1 TCP/IP

You can configure IP address and DNS (Domain Name System) server and so on according to network planning.

Prerequisites

The camera has connected to the network.

Procedure

Step 1 Select > **Network** > **TCP/IP**.

Step 2 Configure TCP/IP parameters.

Figure 8-22 TCP/IP

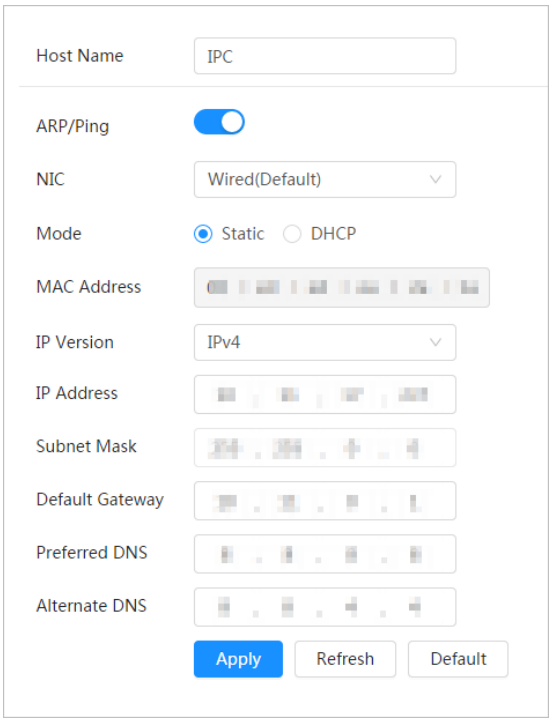


Table 8-13 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name, and the maximum length is 15 characters.
ARP/Ping	Click to enable ARP/Ping to set IP address service. Get the camera MAC address, and then you can change and configure the device IP address with ARP/ping command. This is enabled by default. During restart, you will have no more than 2 minutes to configure the device IP address by a ping packet with certain length, the server will be turned off in 2 minutes, or it will be turned off immediately after the IP address is successfully configured. If this is not enabled, the IP address cannot be configured with ping packet. **A demonstration of configuring IP address with ARP/Ping.** 1. Keep the camera that needs to be configured and the PC within the same local network, and then get a usable IP address. 2. Get the MAC address of the camera from device label. 3. Open command editor on the PC and enter the following command. Windows syntax arp –s <IP Address> <MAC> ping –l 480 –t <IP Address> Windows example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -l 480 -t 192.168.0.125 UNIX/Linux/Mac syntax arp –s <IP Address> <MAC> ping –s 480 <IP Address> UNIX/Linux/Mac example arp -s 192.168.0.125 11-40-8c-18-10-11 ping -s 480 192.168.0.125 4. Restart the camera. 5. Check the PC command line, if information such as **Reply from 192.168.0.125…**is displayed, the configuration succeeds, and you can turn it off then. 6. Enter http://(IP address) in the browser address bar to log in.
NIC	Select the Ethernet card that need to be configured, and the default one is **Wire**.

Parameter	Description
Mode	The mode that the camera gets IP: • **Static** Configure **IP Address**, **Subnet Mask**, and **Default Gateway** manually, and then click **Save**, the login page with the configured IP address is displayed. • **DHCP** When there is DHCP server in the network, select **DHCP**, and the camera acquires IP address automatically.
MAC Address	Displays host MAC address.
IP Version	Select **IPv4** or **IPv6**.
IP Address	When you select **Static** in **Mode**, enter the IP address and subnet mask that you need. • IPv6 does not have subnet mask. • The default gateway must be in the same network segment with the IP address.
Subnet Mask	
Default Gateway	
Preferred DNS	IP address of the preferred DNS
Alternate DNS	IP address of the alternate DNS

Step 3 Click **Apply**.

8.3.2 Port

Configure the port numbers and the maximum number of users (includes web, platform client, and mobile phone client) that can connect to the device simultaneously.

Step 1 Select > **Network** > **TCP/IP**.

Step 2 Configure port parameters.

- 0–1024, 1900, 3800, 5000, 5050, 9999, 37776, 37780–37880, 39999, 42323 are occupied for specific uses.
- Do not use the same value of any other port during port configuration.

Figure 8-23 Port

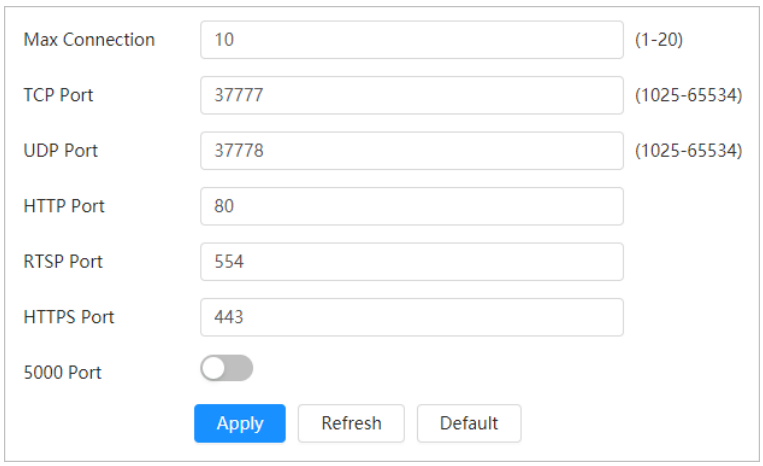


Table 8-14 Description of port parameters

Parameter	Description
Max Connection	The max number of users (web client, platform client or mobile phone client) that can connect to the device simultaneously. The value is 10 by default.
TCP Port	Transmission control protocol port. The value is 37777 by default.
UDP Port	User datagram protocol port. The value is 37778 by default.
HTTP Port	Hyper text transfer protocol port. The value is 80 by default.
RTSP Port	● Real time streaming protocol port, and the value is 554 by default. If you play live view with QuickTime, VLC or Blackberry smart phone, the following URL format is available. ● When the URL format requiring RTSP, you need to specify channel number and bit stream type in the URL, and also username and password if needed. ● When playing live view with Blackberry smart phone, you need to turn off the audio, and then set the codec mode to H.264B and resolution to CIF. URL format example: rtsp://username:password@ip:port/cam/realmonitor?channel=1&subtype=0 Among that: ● Username: The username, such as admin. ● Password: The password, such as admin. ● IP: The device IP, such as 192.168.1.112. ● Port: Leave it if the value is 554 by default. ● Channel: The channel number, which starts from 1. For example, if you are using channel 2, then the channel=2. ● Subtype: The bit stream type; 0 means main stream (Subtype=0) and 1 means sub stream (Subtype=1). Example: If you require the sub stream of channel 2 from a certain device, then the URL should be: rtsp://admin:admin@10.12.4.84:554/cam/realmonitor?channel=21&=1 If username and password are not needed, then the URL can be: rtsp://ip:port/cam/realmonitor?channel=11&=0
RTMP Port	Real Time Messaging Protocol. The port that RTMP provides service. It is 1935 by default.
HTTPS Port	HTTPS communication port. It is 443 by default.
5000 Port	The service port for Windows XP. It is **Off** by default.

Step 3 Click **Apply**.

The configuration of **Max Connection** takes effect immediately, and others will take effect after reboot.

8.3.3 PPPoE

Point-to-Point Protocol over Ethernet, is one of the protocols that device uses to connect to the internet. Get the PPPoE username and password from the internet service provider, and then set up network connection through PPPoE, the camera will acquire a WAN dynamic IP address.

Prerequisites

- The camera has connected to the network.
- You have gotten the account and password from Internet Service Provider.

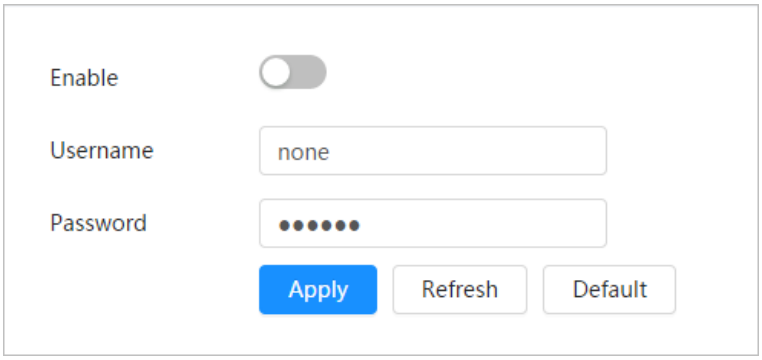
Procedure

Step 1 Select > **Network** > **PPPoE**.

Step 2 Click , and then enter username and password.

- Disable UPnP while using PPPoE to avoid possible influence.
- After making PPPoE connection, the device IP address cannot be modified through web page

Figure 8-24 PPPoE



Step 3 Click **Apply**.

The success prompt box is displayed, and then the real-time WAN IP address is displayed. You can visit camera through the IP address.

8.3.4 DDNS

Properly configure DDNS, and then the domain name on the DNS server matches your IP address and the matching relation refreshes in real time. You can always visit the camera with the same domain name no matter how the IP address changes.

Prerequisites

Check the type of DNS server supported by the camera.

Step 1 Select > **Network** > **DDNS**.

- Third party server might collect your device information after DDNS is enabled.
- Register and log in to the DDNS website, and then you can view the information of all the connected devices in your account.

Step 2 Click to enable the function.

Step 3 Configure DDNS parameters.

Figure 8-25 DDNS

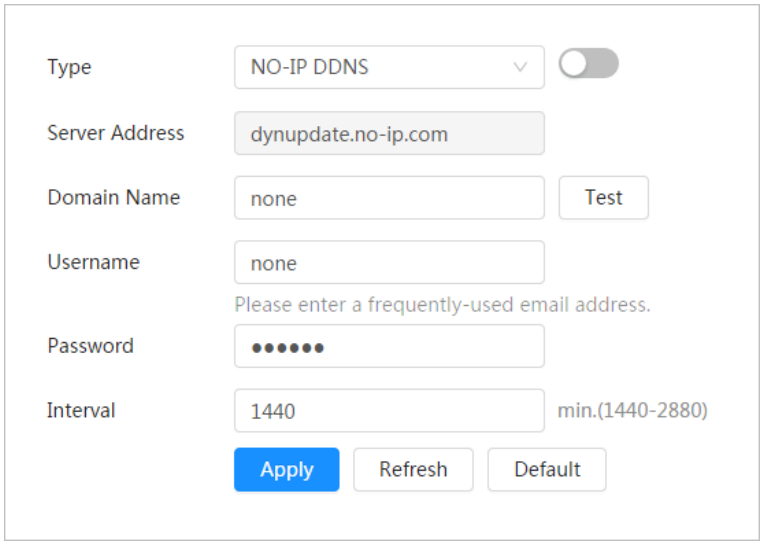


Table 8-15 Description of DDNS parameters

Parameter	Description
Type	The name and web address of the DDNS service provider, see the matching relationship below: ● CN99 DDNS web address: www.3322.org ● NO-IP DDNS web address: dynupdate.no-ip.com ● Dyndns DDNS web address: members.dyndns.org
Server Address	
Domain Name	The domain name you registered on the DDNS website.
Test	Only when selecting **NO-IP DDNS** type, you can click **Test** to check whether the domain name registration is successful.
Username	Enter the username and password that you got from the DDNS server provider. You need to register an account (includes username and password) on the DDNS server provider's website.
Password	
Interval	The update cycle of the connection between the device and the server, and the time is 10 minutes by default.

Step 4 Click **Apply**.

Result

Open the browser on PC, enter the domain name at the address bar, and then press Enter, the login page is displayed.

8.3.5 Email

Configure email parameter and enable email linkage. The system sends email to the defined address when the corresponding alarm is triggered.

Step 1 Select > **Network** > **Email**.

Step 2 Click to enable the function.

Step 3 Configure email parameters.

Figure 8-26 Email

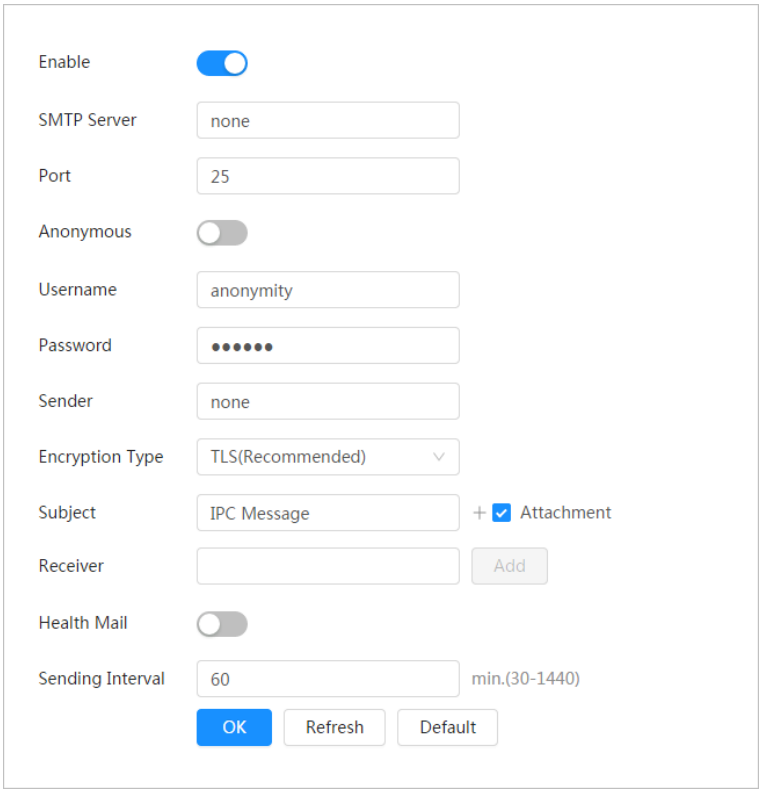


Table 8-16 Description of email parameters

Parameter	Description	
SMTP Server	SMTP server address	For details, see Table 8-17.
Port	The port number of the SMTP server.	
Username	The account of SMTP server.	
Password	The password of SMTP server.	
Anonymous	Click , and the sender's information is not displayed in the email.	
Sender	Sender's email address.	
Encryption Type	Select from **None**, **SSL** and **TLS**. For details, see Table 8-17.	
Subject	Enter maximum 63 characters in Chinese, English, and Arabic numerals. Click + to select title type, including **Device Name**, **Device ID**, and **Event Type**, and you can set maximum 2 titles.	
Attachment	Select the check box to support attachment in the email.	
Receiver	• Receiver's email address. Supports 3 addresses at most. • After entering the receiver's email address, the **Test** button is display. Click **Test** to test whether the emails can be sent and received successfully.	
Health Mail	The system sends test mail to check if the connection is successfully configured. Click and configure the **Sending Interval**, and then the system sends test mail as the set interval.	

For the configuration of major mailboxes, see Table 8-17.

Table 8-17 Description of major mailbox configuration

Mailbox	SMTP server	Authentication	Port	Description
gmail	smtp.gmail.com	SSL	465	You need to enable SMTP service in your mailbox.
		TLS	587	

Step 4 Click **Apply**.

8.3.6 UPnP

UPnP (Universal Plug and Play) is a protocol that establishes mapping relation between local area and wide area networks. This function enables you to visit local area device through wide area IP address.

Prerequisites

- Make sure the UPnP service is installed in the system.
- Log in the router, and configure WAN IP address to set up internet connection.
- Enable UPnP in the router.
- Connect your device to the LAN port of the router.
- Select > **Network** > **TCP/IP**, in **IP Address**, enter the local area IP address of the router or select **DHCP** and acquires IP address automatically.

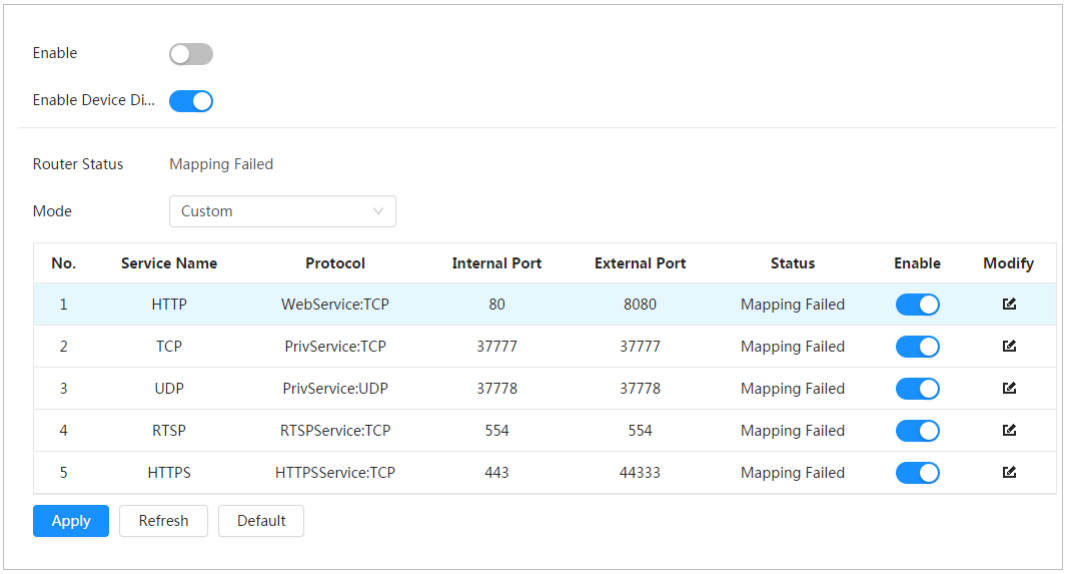
Procedure

Step 1 Select > **Network** > **UPnP**.

Step 2 Click next to **Enable**, and there are two mapping modes: **Custom** and **Default**.

- Select **Custom**, click and then you can change external port as needed.
- Select **Default**, and then the system finishes mapping with unoccupied port automatically, and you cannot edit mapping relation.

Figure 8-27 UPnP



Step 3 Click **Apply**.

Open web browser on PC, enter http:// wide area IP address: external port number, and then you can visit the local area device with corresponding port.

8.3.7 SNMP

SNMP (Simple Network Management Protocol), which can be used to enable software such as MIB Builder and MG-SOFT MIB Browser to connect to the camera and manage and monitor the camera.

Prerequisites

- Install SNMP monitoring and managing tools such as MIB Builder and MG-SOFT MIB Browser.
- Get the MIB file of the matched version from technical support.

Procedure

Step 1 Select > **Network** > **SNMP**.

Step 2 Select SNMP version to enable SNMP.

- Select **V1**, and the system can only process information of V1 version.
- Select **V2**, and the system can only process information of V2 version.
- Select **V3**, and then **V1** and **V2** become unavailable. You can configure username, password and authentication type. It requires corresponding username, password and authentication type to visit your device from the server.

Using **V1** and **V2** might cause data leakage, and **V3** is recommended.

Step 3 In **Trap Address**, enter the IP address of the PC that has MIB Builder and MG-SOFT MIB Browser installed, and leave other parameters to the default.

Figure 8-28 SNMP

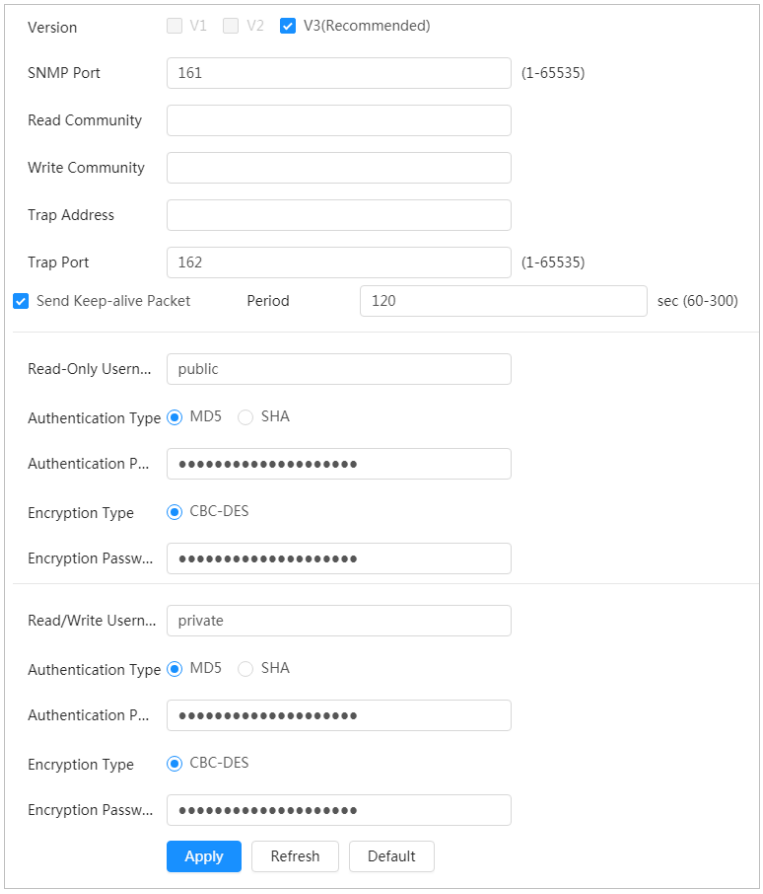


Table 8-18 Description of SNMP parameters

Parameter	Description
SNMP Port	The listening port of the software agent in the device.
Read Community, Write Community	The read and write community string that the software agent supports. You can enter number, letter, underline and dash to form the name.
Trap Address	The target address of the Trap information sent by the software agent in the device.
Trap Port	The target port of the Trap information sent by the software agent in the device.
Send Keep-alive Packet	Select the checkbox, and then set the period. During the configured period, the system checks whether the camera is online.
Read-only Username	Set the read-only username accessing device, and it is **public** by default. You can enter number, letter, and underline to form the name.
Read/Write Username	Set the read/write username access device, and it is **private** by default. You can enter number, letter, and underline to form the name.
Authentication Type	You can select from **MD5** and **SHA**. The default type is **MD5**.
Authentication Password	It should be no less than 8 digits.
Encryption Type	The default is CBC-DES.
Encryption Password	It should be no less than 8 digits.

Step 4 Click **Apply**.

Result

View device configuration through MIB Builder or MG-SOFT MIB Browser.

1. Run MIB Builder and MG-SOFT MIB Browser.
2. Compile the two MIB files with MIB Builder.
3. Load the generated modules with MG-SOFT MIB Browser.
4. Enter the IP address of the device you need to manage in the MG-SOFT MIB Browser, and then select version to search.
5. Unfold all the tree lists displayed in the MG-SOFT MIB Browser, and then you can view the configuration information, video channel amount, audio channel amount, and software version.

Use PC with Windows and disable SNMP Trap service. The MG-SOFT MIB Browser will display prompt when alarm is triggered.

8.3.8 Bonjour

Enable this function, and the OS and clients that support Bonjour would find the camera automatically. You can have quick visit to the camera with Safari browser.

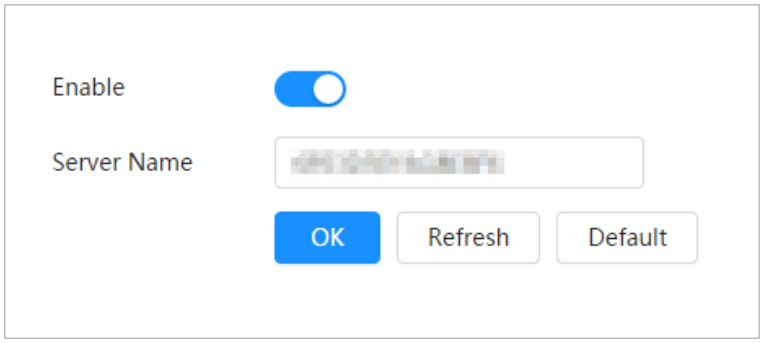
Bonjour is enabled by default.

Procedure

Step 1 Select > **Network** > **Bonjour**.

Step 2 Click , and then configure server name.

Figure 8-29 Bonjour



Step 3 Click **Apply**.

Result

In the OS and clients that support Bonjour, follow the steps below to visit the network camera with Safari browser.

1. Click **Show All Bookmarks** in Safari.
2. Enable **Bonjour**. The OS or client automatically detects the network cameras with Bonjour enabled in the LAN.
3. Click the camera to visit the corresponding web page.

8.3.9 Multicast

When multiple users are viewing the device video image simultaneously through network, it might fail due to limited bandwidth. You can solve this problem by setting up a multicast IP (224.0.1.0–238.255.255.255) for the camera and adopt the multicast protocol.

Procedure

Step 1 Select > **Network** > **Multicast**.

Step 2 Select the channel.

- Select **1** in **Channel** to set the parameters of visible channel.
- Select **2** in **Channel** to set the parameters of thermal channel.

The monocular camera does not support channel selection.

Step 3 Click , and enter IP address and port number.

Figure 8-30 Multicast

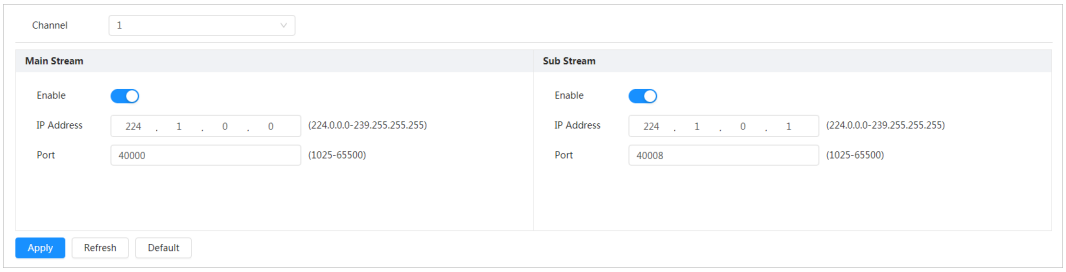


Table 8-19 Description of multicast parameters

Parameter	Description
Multicast Address	The multicast IP address of **Main Stream**/**Sub Stream** is 224.1.2.4 by default, and the range is 224.0.0.0–239.255.255.255.
Port	The multicast port of corresponding stream: **Main Stream**: 40000; **Sub Stream1**: 40016; **Sub Stream2**: 40032, and all the range is 1025–65500.

Step 4 Click **Apply**.

Result

On the **Live** page, select **RTSP** in **Multicast**, and then you can view the video image with multicast protocol.

8.3.10 Register

After you enable this function, when the camera is connected into Internet, it will report the current location to the specified server which acts as the transit to make it easier for the client software to access the camera.

Step 1 Select > **Network** > **Register**.

Step 2 Click , and then configure server name.

Figure 8-31 Register

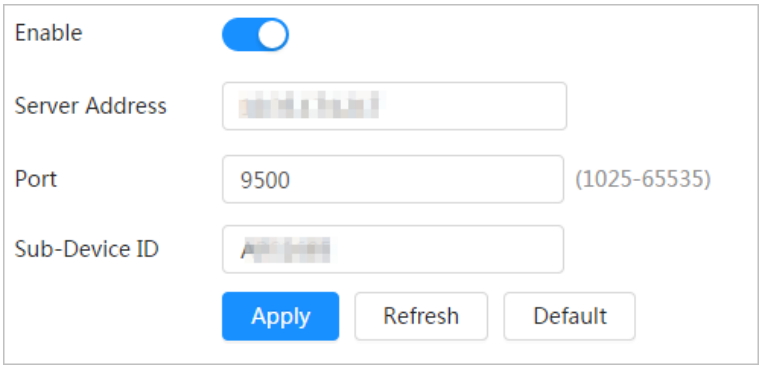


Table 8-20 Description of register parameters

Parameter	Description
Server Address	The IP address or domain name of the server to be registered.
Port	The port for registration.
Sub-Device ID	The custom ID for the camera.

Step 3 Click **Apply**.

8.3.11 QoS

You can solve problems such as network delay and congestion with this function. It helps to assure bandwidth, reduce transmission delay, packet loss rate, and delay jitter to improve experience.
0–63 means 64 degrees of priority; 0 for the lowest and 63 the highest.

Step 1 Select > **Network** > **QoS**.

Step 2 Configure QoS parameters.

Figure 8-32 QoS

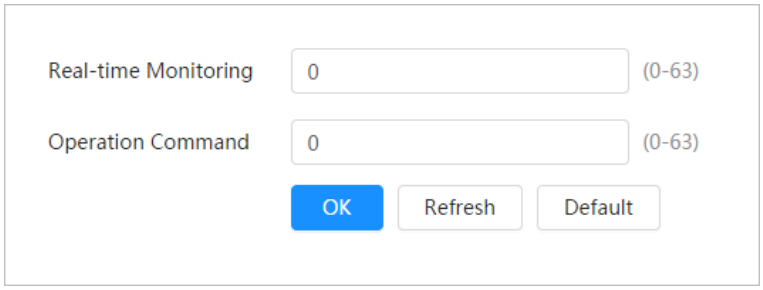


Table 8-21 Description of QoS parameters

Parameter	Description
Real-time Monitor	Configure the priority of the data packets that used for network surveillance. 0 for the lowest and 63 the highest.
Command	Configure the priority of the data packets that used for configure or checking.

Step 3 Click **Apply**.

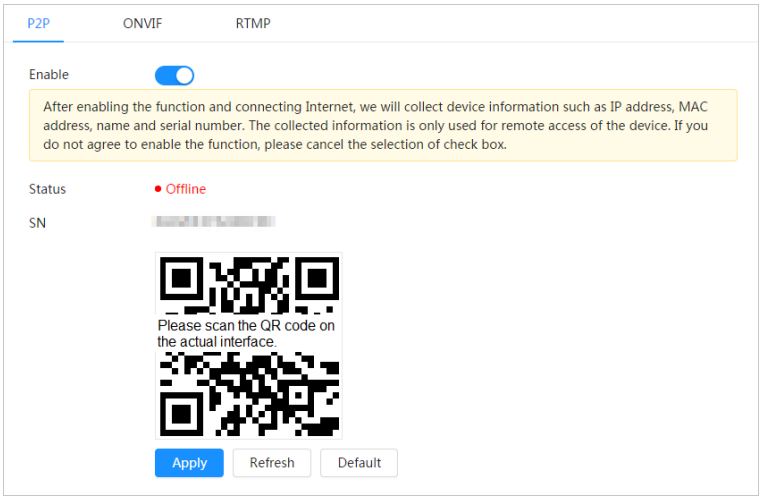
8.3.12 Platform Access

8.3.12.1 P2P

P2P (peer-to-peer) technology enables users to manage devices easily without requiring DDNS, port mapping or transit server.
Scan the QR code with your smart phone, and then you can add and manage more devices on the mobile phone client.

Step 1 Select > **Network** > **Platform Access** > **P2P**.

Figure 8-33 P2P



- When P2P is enabled, remote management on device is supported.
- When P2P is enabled and the device accesses to the network, the status shows online. The information of the IP address, MAC address, device name, and device SN will be collected. The collected information is for remote access only. You can cancel **Enable** selection to reject the collection.

Step 2 Log in to mobile phone client and tap **Device management**.

Step 3 Tap + at the upper-right corner.

Step 4 Scan the QR code on the **P2P** page.

Step 5 Follow the instructions to finish the settings.

8.3.12.2 ONVIF

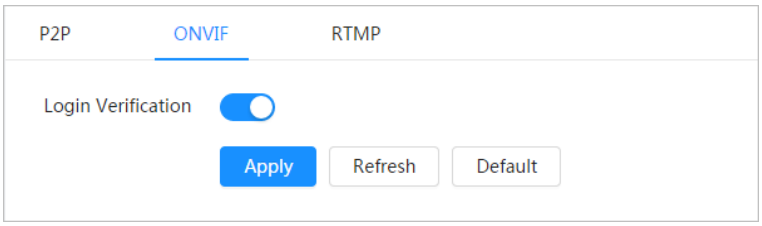
The ONVIF verification is enabled by default, which allows the network video products (including video recording device and other recording devices) from other manufacturers to connect to your device.

ONVIF is enabled by default.

Step 1 Select > **Network** > **Platform Access** > **ONVIF**.

Step 2 Click next to **ONVIF Verification**.

Figure 8-34 ONVIF



Step 3 Click **Apply**.

8.3.12.3 RTMP

Through RTMP, you can access a third-party platform (such as Ali and YouTube) to realize video live view.

- RTMP can be configured by admin only.
- RTMP supports the H.264, H.264 B and H.264H video formats, and the AAC audio format only.

Step 1 Select > **Network** > **Platform Access** > **RTMP**.

Step 2 Click .

Make sure that the IP address is trustable when enabling RTMP.

Step 3 Configure RTMP parameters.

Figure 8-35 RTMP

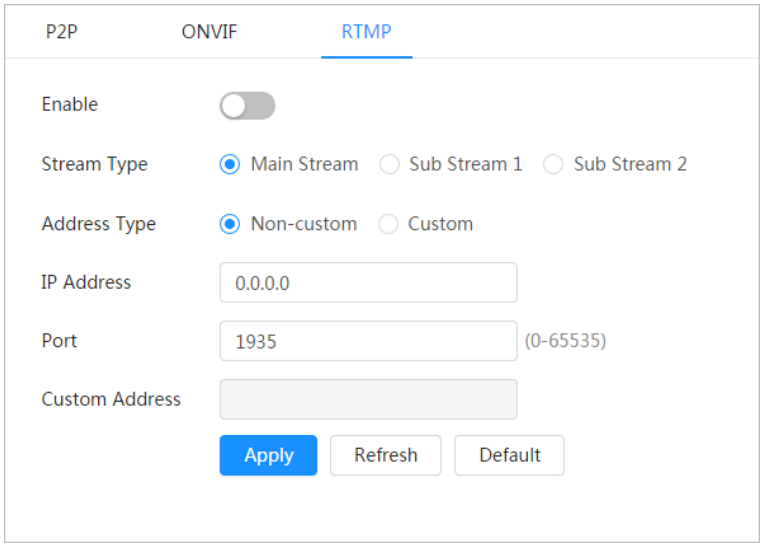


Table 8-22 Description of RTMP parameters

Parameter	Description
Stream Type	The stream for live view. Make sure that the video format is H.264, H.264 B and H.264H, and the audio format is AAC.
Address Type	• **Non-custom**: Enter the server IP and domain name. • **Custom**: Enter the path allocated by the server.
IP Address	When selecting **Non-custom**, you need to enter server IP address and port. • **IP address**: Support IPv4 or domain name. • **Port**: Keep the default value.
Port	
Custom Address	When selecting **Custom**, you need to enter the path allocated by the server.

Step 4 Click **Apply**.

8.3.13 Wi-Fi

The name, status and IP information of current hotspot are displayed in the Wi-Fi information bar. Click **Refresh** after reconnection to make sure that the operating status is displayed in real time. Connecting Wi-Fi hotspot takes some time depending on network signal strength.

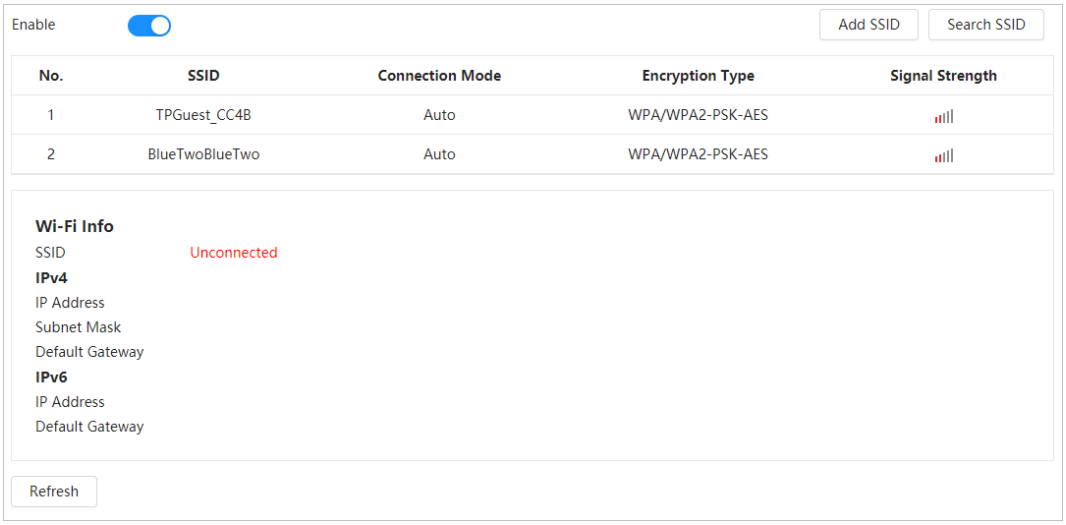
Step 1 Select > **Network** > **Wi-Fi**.

Step 2 Click , and then configure server name.

Step 3 Connect the Camera to wireless network.

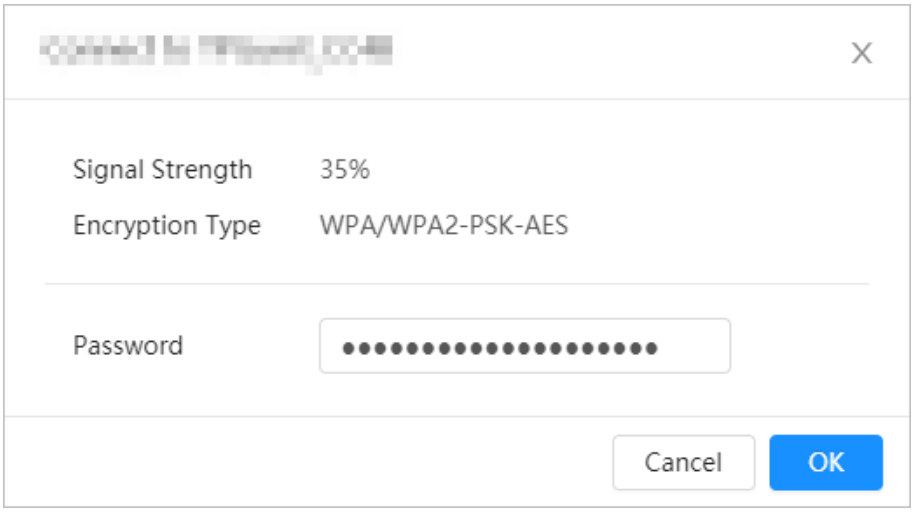
- Search SSID:
  1. Click **Search SSID**.
  2. Click the network than you want to connect to.

Figure 8-36 Wi-Fi configuration



3. Enter the password.
   Click **OK** if password is not required.

Figure 8-37 Connect to Wi-Fi



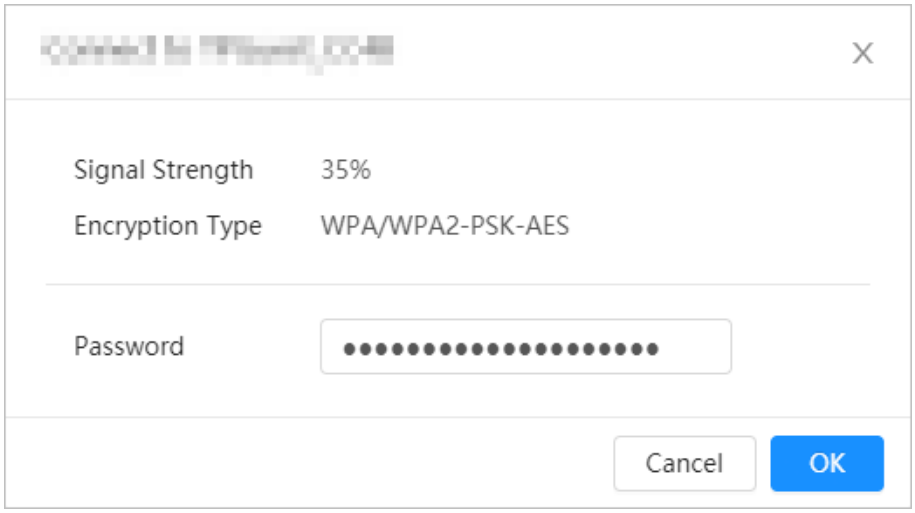
4. Click **OK**.

- Add SSID: You can use this method when the SSID (Service Set Identification) broadcast function of the router is not enabled.
  1. Click **Add SSID**.
  2. Enter a network name, and then click **OK**.

Figure 8-38 Add SSID

3. Enter the password.
   Click **OK** if password is not required.

Figure 8-39 Connect to Wi-Fi



4. Click **OK**.

Step 4 Click **Refresh** to get the connection status.

8.3.14 Basic Service

Configure the IP hosts (devices with IP address) that are allowed to visit the device. Only the hosts in the trusted sites list can log in to the web page. This is to enhance network and data security.

Step 1 Select > **Network** > **Basic Service**.

Step 2 Enable the basic service according to the actual needs.

Figure 8-40 Basic service

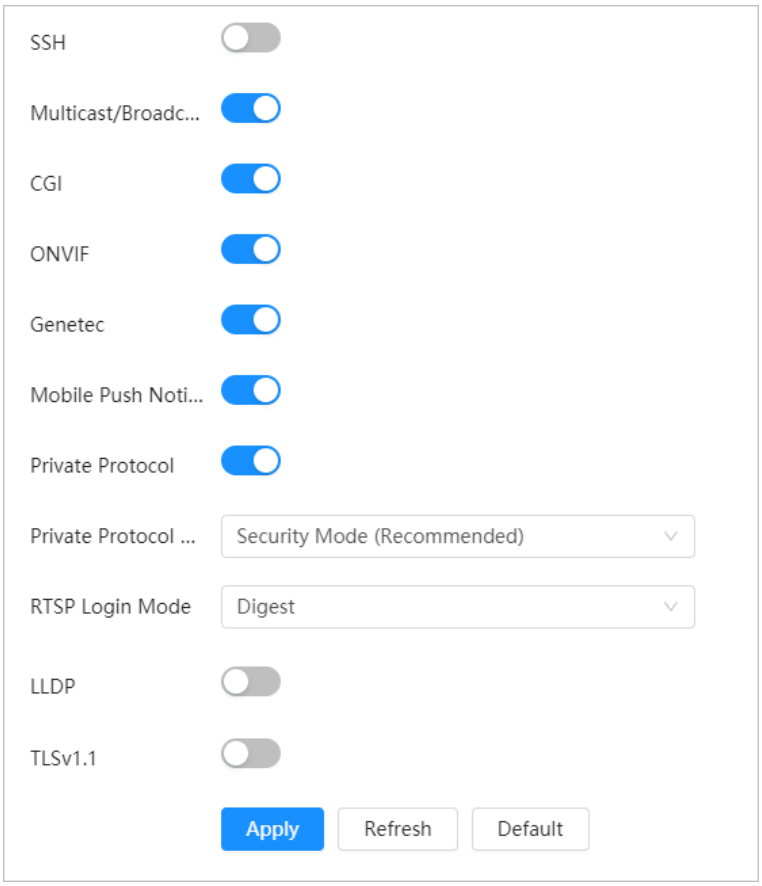


Table 8-23 Description of basic service parameters

Function	Description
SSH	You can enable SSH authentication to perform safety management.
Multicast/Broadcast Search	Enable this function, and then when multiple users are viewing the device video image simultaneously through network, they can find your device with multicast/broadcast protocol.
CGI	Enable the function, and then other devices can access through this service. The function is enabled by default.
ONVIF	
Genetec	
Mobile Push Notification	Enable this function, and then the system will send the snapshot that was taken when alarm is triggered to your phone, this is enabled by default.
Private Protocol Authentication Mode	Select the authentication mode from **Security Mode** and **Compatible Mode**. Security mode is recommended.
RTSP Login Mode	Real Time Streaming Protocol, is to secure transmission of streaming media.
LLDP	After enabling LLDP (Link Layer Discovery Protocol), in cloud O&M system, the camera sends the IP addresses to the App for operation and maintenance management and fault diagnosis. ⚠ We recommend you disable the LLDP service; otherwise, there might be security risks to the device.
TLSv1.1	After enabling TLSv1.1, you can access the camera through TLSv1.1.

Step 3 Click **Apply**.

8.4 Managing Storage

Displays the information of the local SD card. You can set it as read only or read & write; you can also hot swap and format SD card.

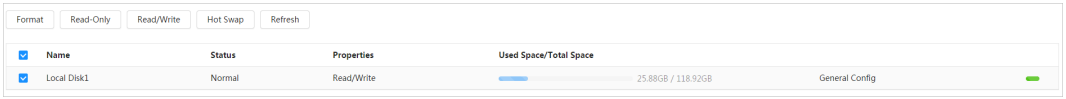
Functions might vary with different models.

Select > **Storage**.

- Click **Read-Only**, and then the SD card is set to read only.
- Click **Read & Write**, and then the SD card is set to read & write.
- Click **Hot Swap**, and then you can pull out the SD card.
- Click **Format**, and you can format the SD card.

When reading SD card on PC, if the SD card capacity is much less than the nominal capacity, you need to format the SD card. Then the data in SD card will be cleared, and the SD card is formatted to be private file system. The private file system can greatly improve SD card multimedia file read/write performance. Download Diskmanager from Toolbox to read the SD card. For details, contact after-sales technicians.

Figure 8-41 Local



8.5 Managing System

8.5.1 General

8.5.1.1 Basic

You can configure device name, language and video standard.

Step 1 Select > **System** > **General** > **Basic**.

Step 2 Configure general parameters.

Figure 8-42 Basic

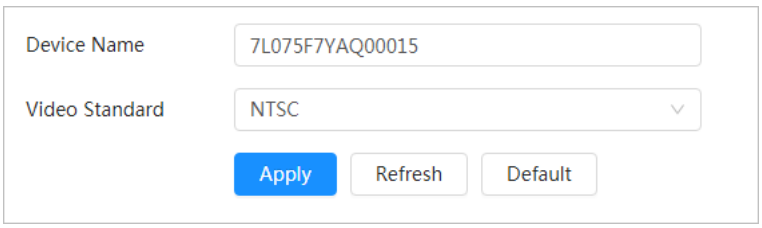


Table 8-24 Description of general parameters

Parameter	Description
Name	Enter the device name.
Video Standard	Select video standard from **PAL** and **NTSC**.

Step 3 Click **Apply**.

8.5.1.2 Date & Time

You can configure date and time format, time zone, current time, DST (Daylight Saving Time) or NTP server.

Step 1 Select > **System** > **General** > **Date & Time**.

Step 2 Configure date and time parameters.

Figure 8-43 Date and time

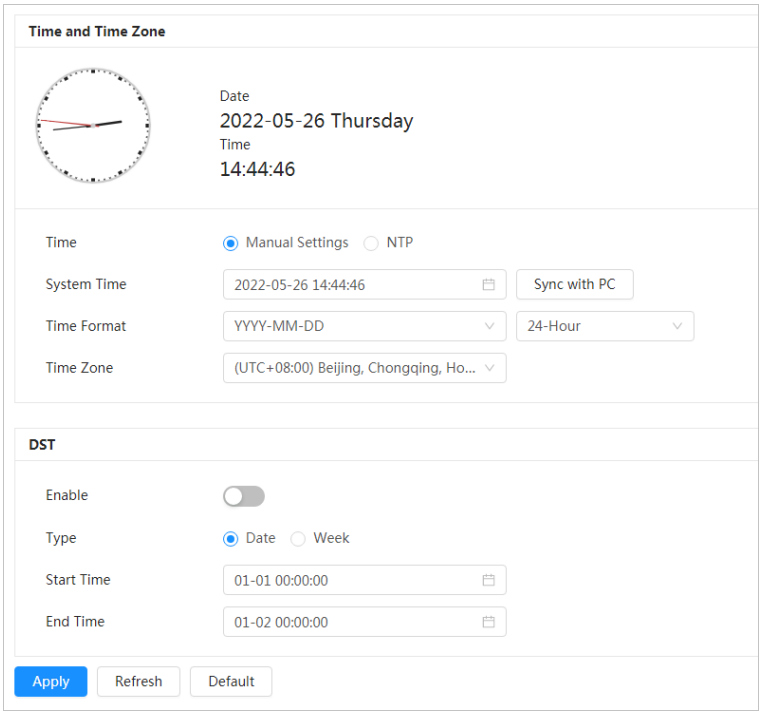


Table 8-25 Description of date and time parameters

Parameter	Description
Date Format	Configure the date format.
Time	• **Manually Setting**: Configure the parameters manually. • **NTP**: When selecting NTP, the system then syncs time with the internet server in real time. You can also enter the IP address, time zone, port, and interval of a PC which installed NTP server to use NTP.
Time Format	Configure the display format of date and time. You can select from **12-Hour** or **24-Hour**.
Time Zone	Configure the time zone that the camera is at.
Current Time	Configure system time. Click **Sync PC**, and the system time changes to the PC time.

Parameter	Description
DST	Enable DST as needed. Click , and configure start time and end time of DST with **Date** or **Week**.

Step 3 Click **Apply**.

8.5.1.3 Positioning System

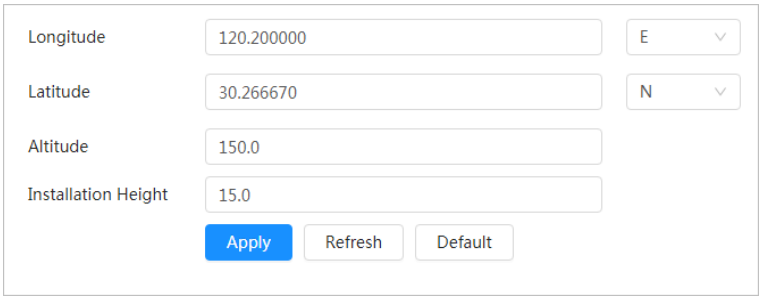
Enter the camera's location information (longitude, latitude, altitude, and installation height) to remind you where your camera locates.

Also, automatically sent to the management platform, the location information can be viewed on the platform to help the platform operator track your camera.

Step 1 Select > **System** > **General** > **Positioning System**.

Step 2 Enter the longitude, latitude, altitude, and installation height of the camera.

Figure 8-44 Date and time



Step 3 Click **Apply**.

8.5.2 Account

You can manage users, such as add, delete, or edit them. Users include admin, added users and ONVIF users.

Managing users and groups are only available for administrator users.

- The max length of the user or group name is 31 characters which consists of number, letter, underline, dash, dot and @.
- The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
- You can have 18 users and 8 groups at most.
- You can manage users through single user or group, and duplicate usernames or group names are not allowed. A user can only be in one group at a time, and the group users can own authorities within group authority range.
- Online users cannot edit their own authority.
- There is one admin by default which has highest authority.
- Select **Anonymous Login**, and then log in with only IP address instead of username and password. Anonymous users only have preview authorities. During anonymous login, click **Logout**, and then you can log in with other username.

8.5.2.1 User

8.5.2.1.1 Adding User

You are admin user by default. You can add users, and configure different authorities.

Procedure

Step 1 Select > **System** > **Account** > **User**.

Step 2 Click **Add**.

Figure 8-45 Add user (system)

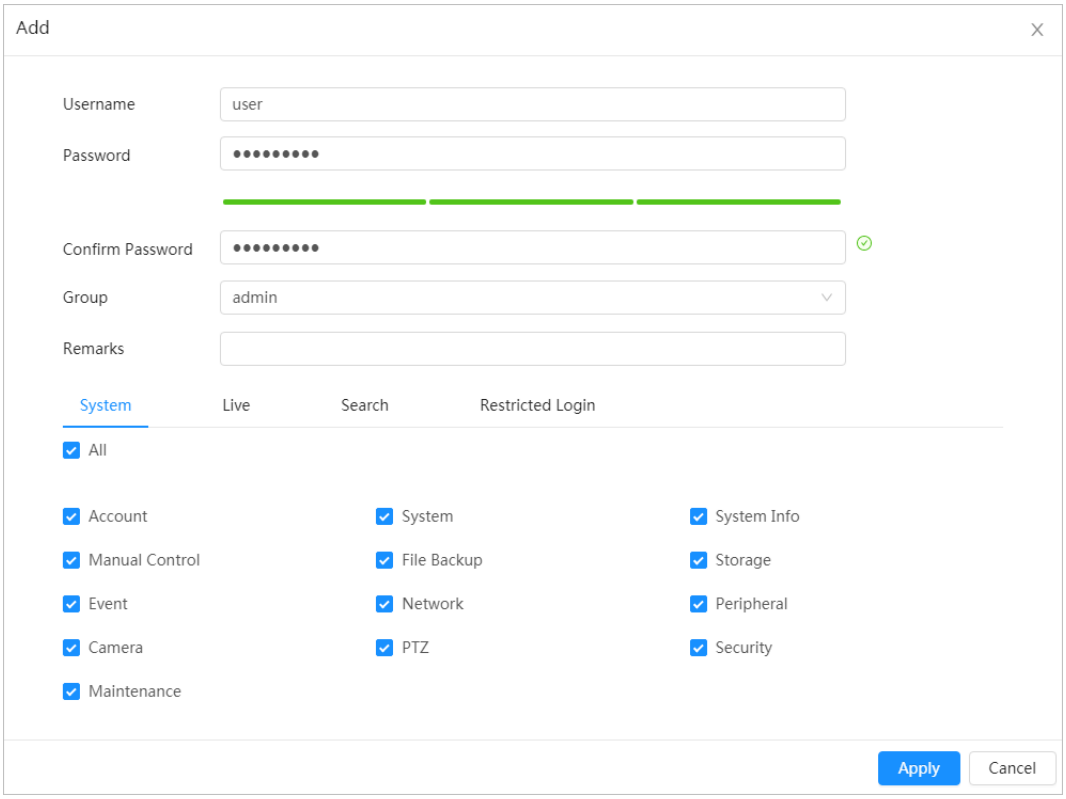
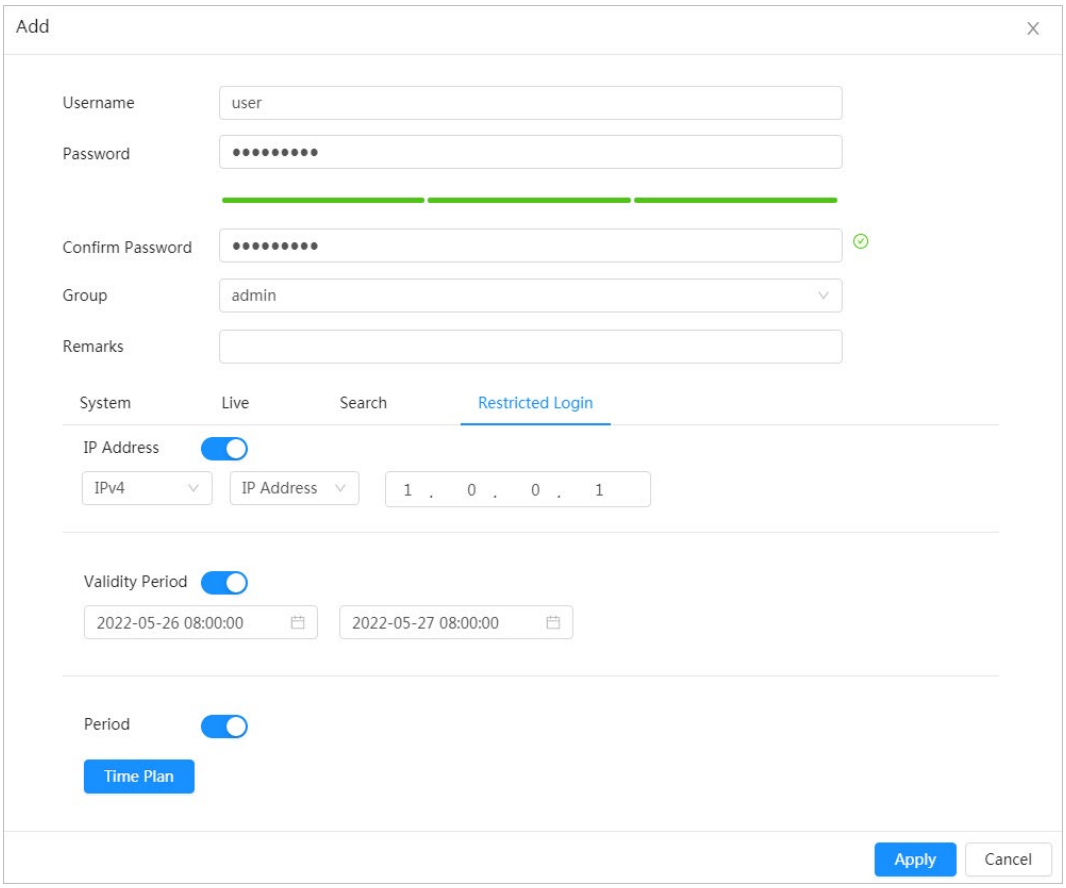


Figure 8-46 Add user (Restricted Login)



Step 3 Configure user parameters.

Table 8-26 Description of user parameters (1)

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter password and confirm it again. The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Confirm Password	
Group	The group that users belong to. Each group has different authorities.
Remark	Describes the user.
System	Select permissions as needed. It is recommended to give fewer permissions to normal users than premium users.
Live	Select the live view permission to be enabled.
Search	Select the playback and snapshot permissions to be enabled.

Parameter	Description
Restricted Login	Set the PC address that allows the defined user to log in to the camera and the validity period and time range. You can log in to web with the defined IP in the defined time range of validity period. ● IP address: You can log in to web through the PC with the set IP. ● Validity period: You can log in to web in the set validity period. ● Time Range: You can log in to web in the set time range. Set as following: 1. Enable **IP Address**, and then select IP type and set the IP address. ● IP Address: Enter the IP address of the host to be added. ● IP segment: Enter the start address and end address of the host to be added. 2. Enable **Validity Period**, and then set the start time and end time. 3. Enable **Period**, and then click **Time** to set the period that allows login. For details, seeStep4 in "5.1.1.2.1 Adding Schedule".

Step 4 Click **Apply**.

The newly added user is displayed in the user name list.

Related Operations

- Edit user information

  Click to edit password, group, memo or permissions.

  For admin user, you can only change the password.

- Click to delete the added users. Admin user cannot be deleted.

  Admin user cannot be deleted.

8.5.2.1.2 Resetting Password

Enable the function, and you can reset password by clicking **Forget password?** on the login page. For details, see "3.4 Resetting Password".

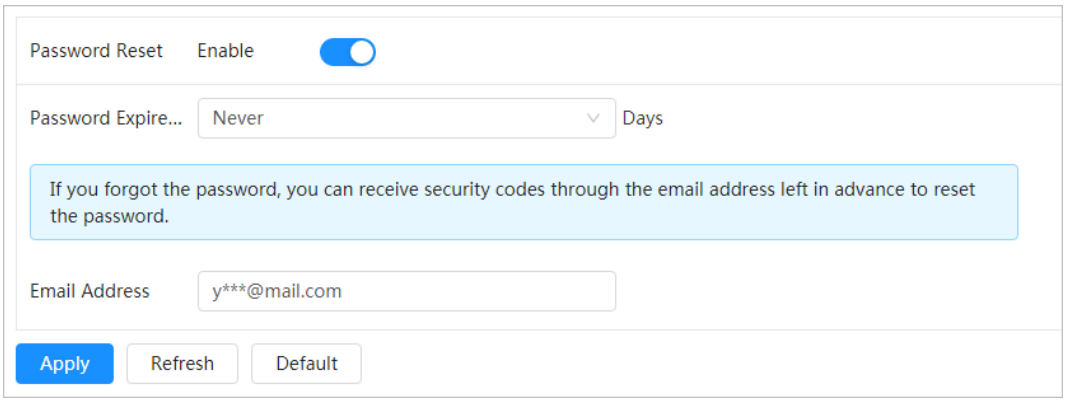
Step 1 Select > **System** > **Account** > **User**

Step 2 Click next to **Enable** in **Password Reset**.

If the function is not enabled, you can only reset the password by resetting the camera.

Step 3 Enter the associated email address.

Figure 8-47 User



Step 4 Click **Apply**.

8.5.2.2 Adding User Group

You have two groups named admin and user by default, and you can add new group, delete added group or edit group authority and memo.

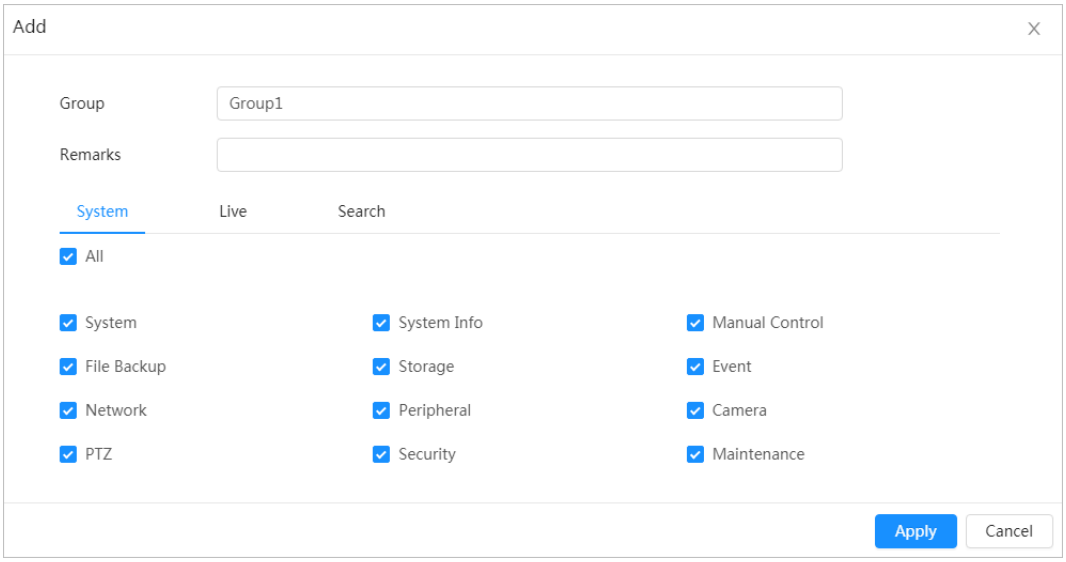
Procedure

Step 1 Select > **System** > **Account** > **Group**.

Step 2 Click **Add**.

Step 3 Enter the group name and memo, and then select group permissions.

Figure 8-48 Add group



Step 4 Click **Apply**.

The newly added group displays in the group name list.

Related Operations

- click to edit password, group, memo or authorities.
- Click to delete the added users. Admin user cannot be deleted.

The admin group and user group cannot be deleted.

8.5.2.3 ONVIF User

You can add, delete ONVIF user, and change their passwords.

Procedure

Step 1 Select > **System** > **Account** > **ONVIF User**.

Step 2 Click **Add**.

Step 3 Configure user parameters.

Figure 8-49 Add ONVIF user

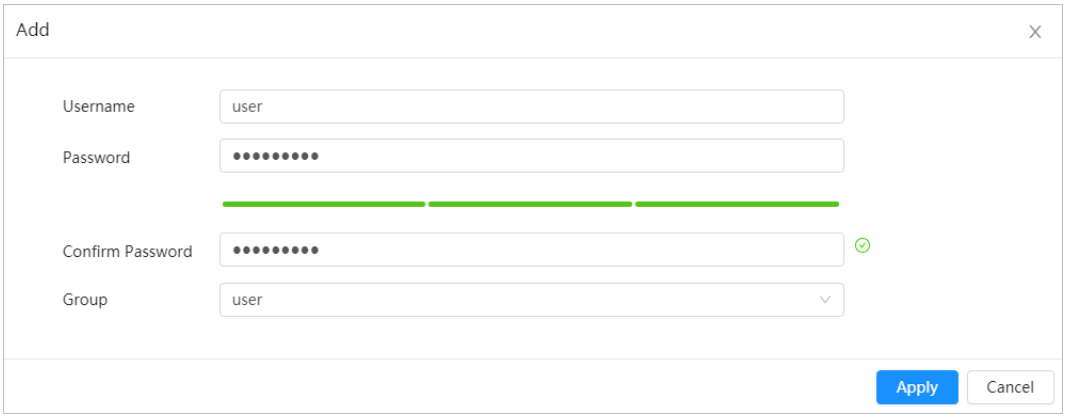


Table 8-27 Description of ONVIF user parameters

Parameter	Description
Username	User's unique identification. You cannot use existed username.
Password	Enter password and confirm it again. The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
Confirm Password	
Group Name	The group that users belong to. Each group has different authorities.

Step 4 Click **OK**.

The newly added user displays in the username list.

Related Operations

- click to edit password, group, memo or authorities.

  For admin account, you can only change the password.

- Click to delete the added users. Admin user cannot be deleted.

  The admin account cannot be deleted.

8.5.3 Peripheral Management

8.5.3.1 Configuring Heater

Step 1 Select > **System** > **Peripheral** > **Heater**.

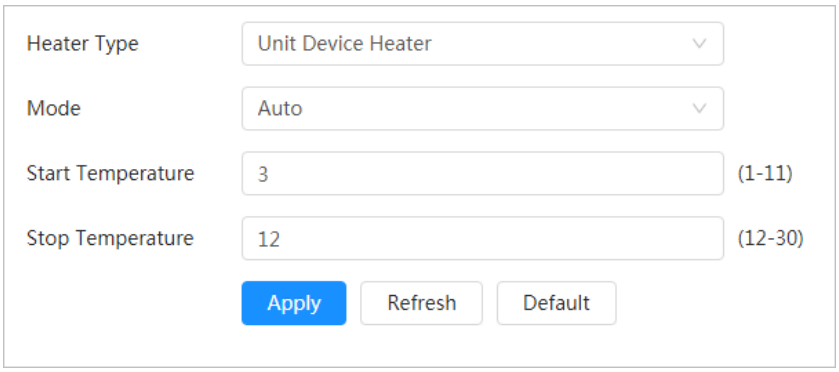
Step 2 Select the heater type to be **Unit Device Heater**.

This is supported by some select models.

Step 3 Set the heating mode.

- **Auto**: Set the start temperature and stop temperature as the temperature range for heater to start, and then click **Apply**. When the sensor temperature is in the range, then heater works automatically.
- **Manual**: When you think it's cold enough and you want to let the camera work in a warm condition, you can select the mode to be **Manual**, click , and then click **Apply**.

Figure 8-50 Heater



Step 4 Click **Apply**.

8.5.3.2 Configuring Serial Port

Set the serial port of the external device.

Step 1 Select > **System** > **Peripheral** > **Serial Port**.

Step 2 Configure parameters.

Figure 8-51 Serial port settings

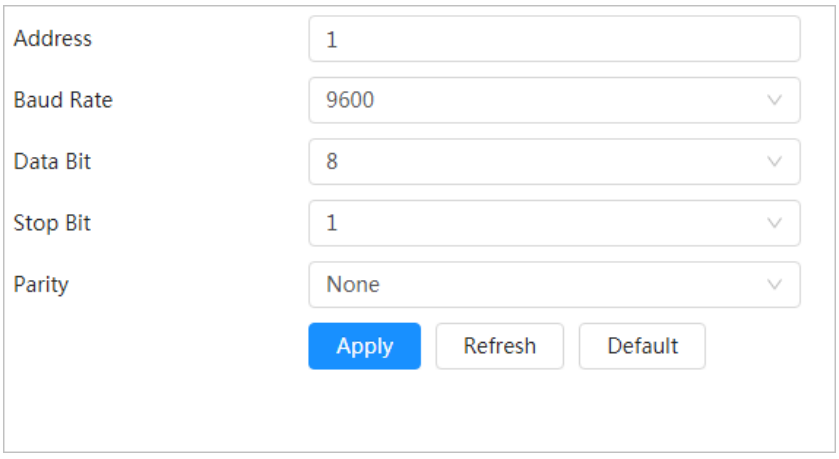


Table 8-28 Description of serial port settings parameters

Parameter	Description
IP Address	Enter the corresponding device address, it is **1** by default. Make sure that the address is the same as the device address; otherwise you cannot control the device.
Baud Rate	Configure device baud rate, it is **9600** by default.
Data Bit	It is **8** by default.
Stop Bit	It is **1** by default.
Parity	It is none by default.

Step 3 Click **Apply**.

8.5.4 Manager

8.5.4.1 Requirements

To make sure the system runs normally, maintain it as the following requirements:

- Check surveillance images regularly.
- Clear regularly user and user group information that are not frequently used.
- Change the password every three months. For details, see "8.5.2 Account".
- View system logs and analyze them, and process the abnormity in time.
- Back up the system configuration regularly.
- Restart the device and delete the old files regularly.
- Upgrade firmware in time.

8.5.4.2 Maintenance

You can restart the system manually, and set the time of auto reboot and auto deleting old files. This function is disabled by default.

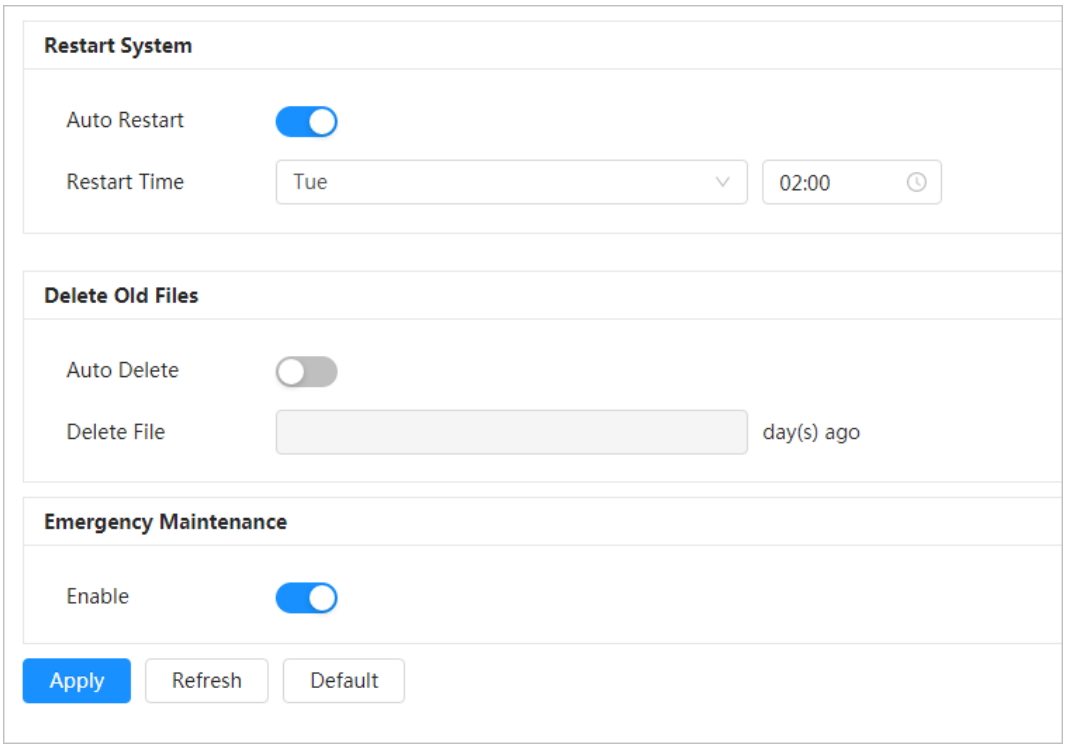
Step 1 Select > **System** > **Manager** > **Maintenance**.

Step 2 Configure auto maintain parameters.

- Restart system:
  Click next to **Auto Reboot** in **Restart System**, and set the reboot time, the system automatically restarts as the set time every week.
- Delete old files
  Click next to **Auto Delete** in **Delete Old Files**, and set the time, the system automatically deletes old files as the set time. The time range is 1 to 31 days.

  When you enable and confirm the **Auto Delete** function, the deleted files cannot be restored. Operate it carefully.
- Emergency maintenance
  Enable AOL, and the system can be recovered with troubleshooting tools.

Figure 8-52 Maintenance



Step 3 Click **Apply**.

8.5.4.3 Import/Export

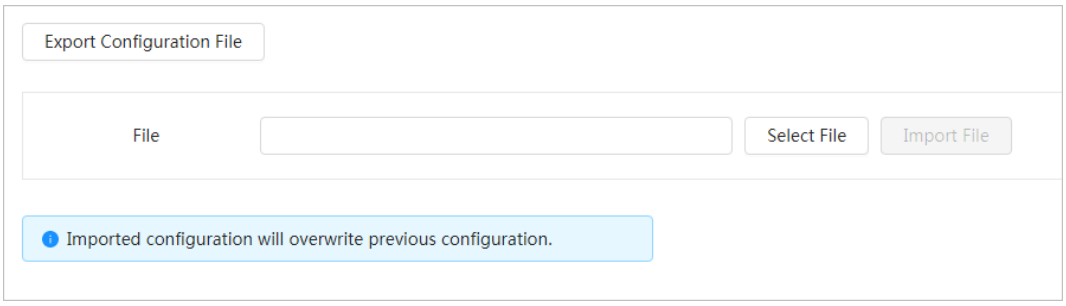
- Export the system configuration file to back up the system configuration.
- Import system configuration file to make quick configuration or recover system configuration.

Step 1 Select > **System** > **Manager** > **Import/Export**.

Step 2 Import and export.

- Import: Select local configuration file, and click **Import File** to import the local system configuration file to the system.
- Export: Click **Export Configuration file** to export the system configuration file to local storage.

Figure 8-53 Import/Export



8.5.4.4 Default

Restore the device to default configuration or factory settings.

This function will restore the device to default configuration or factory setting.

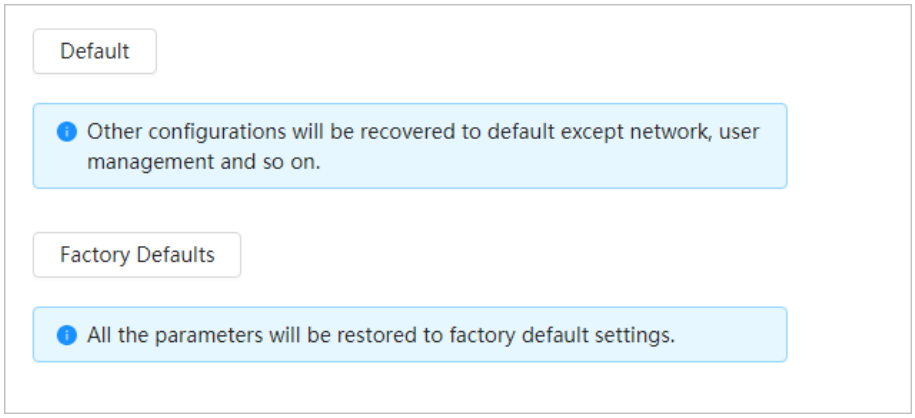
⚠

Be careful when doing operations such as “default” and “factory default”. The operations will result in data loss.

Select > **System** > **Manager** > **Default**.

- Click **Default**, and then all the configurations except IP address and account are reset to default.
- Click **Factory Default**, and all the configurations are reset to factory settings.

Figure 8-54 Default



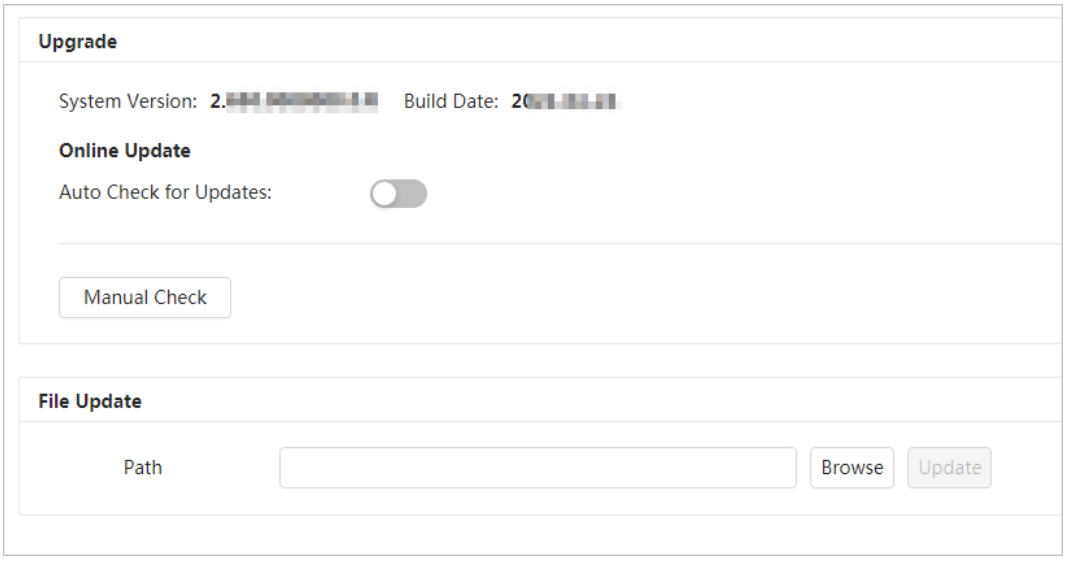
8.5.5 Upgrade

Upgrading to the latest system can refine camera functions and improve stability.

If wrong upgrade file has been used, restart the device; otherwise some functions might not work properly.

Step 1 Select > **System** > **Upgrade**.

Figure 8-55 Upgrade



Step 2 Select an upgrading method you need and upgrade the system.

- File Upgrade
  1. Click **Browse**, and upload upgrade file.
     The upgrade file should be a .bin file.
  2. Click **Upgrade** to start the process.
- Online upgrade

Only when this thermal camera and your computer are both connected to network, can online upgrading be implemented.

Detect your system version.

- Auto detection: Click to enable **Auto Check for Updates**. The version is detected automatically.
- Manual detection: Click **Manual Check**, and the system begins to check the version information.

8.6 Viewing System Information

You can view the information, including version, log and online user, and back up or clear log.

8.6.1 Version

Select > **System Info** > **Version** to view device information such as hardware, system version, and web version.

8.6.2 Online User

Select > **System Info** > **Online User** to view all the current users logging in to web page; select > **System Info** > **Platform User** to view all the platform users accessing the web page.

8.6.3 Legal Information

Select > **System Info** > **Legal Info** to view legal information such as Software License Agreement, Privacy Policy, and Open Source Software Notice.

8.7 Viewing Log

8.7.1 Log

You can view and back up logs.

Step 1 Select > **Log** > **Log**.

Step 2 Configure the start time and end time, and then select the log type.

The start time should be later than January 1st, 2000, and the end time should be earlier than December 31, 2037.

The log type includes All, System, Setting, Data, Event, Record, Account, and Safety.

- **System**: Includes program start, abnormal close, close, program reboot, device closedown, device reboot, system reboot, and system upgrade.
- **Setting**: Includes saving configuration and deleting configuration file.
- **Data**: Includes configuring disk type, clearing data, hot swap, FTP state, and record

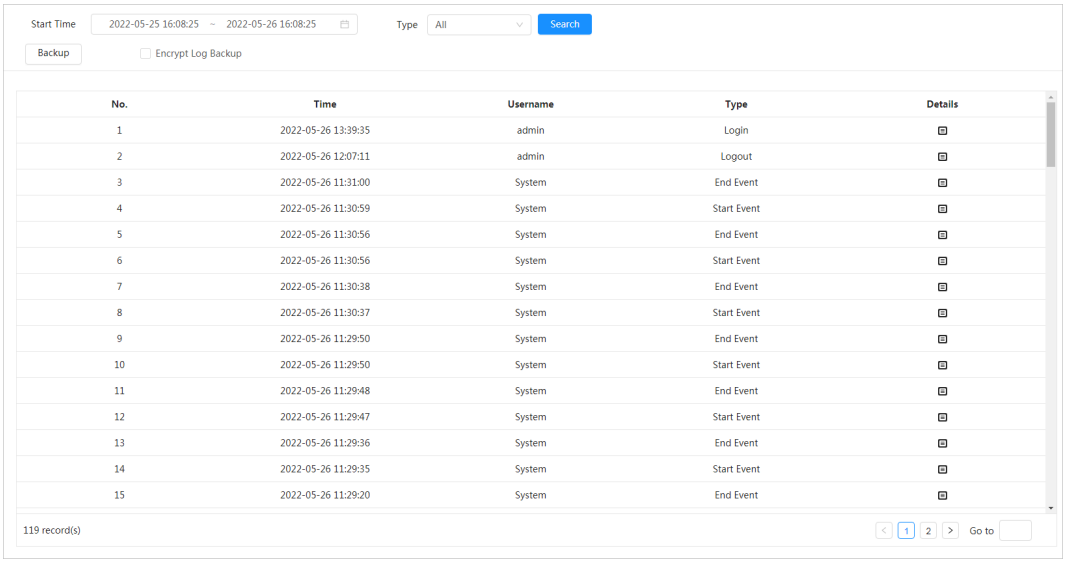
mode.

- **Event** (records events such as video detection, smart plan, alarm and abnormality): includes event start and event end.
- **Record**: Includes file access, file access error, and file search.
- **Account**: Includes login, logout, adding user, deleting user, editing user, adding group, deleting group, and editing group.
- **Security**: Includes password resetting and IP filter.

Step 3 Click **Search**.

- Click or click a certain log, and then you can view the detailed information in **Details** area.
- Click **Backup**, and then you can back up all found logs to local PC.

Figure 8-56 Log



8.7.2 Remote Log

Configure remote log, and you can get the related log by accessing the set address.

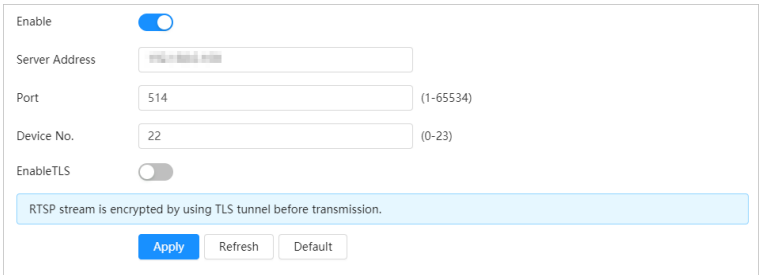
Step 1 Select > **Log** > **Remote Log**.

Step 2 Click to enable remote log function.

Step 3 Set address, port and device number.

Step 4 Click **Apply**.

Figure 8-57 Remote log



9 Security

9.1 Security Status

Background Information

Detect the user and service, and scan the security modules to check the security status of the camera, so that when abnormality appears, you can process it timely.

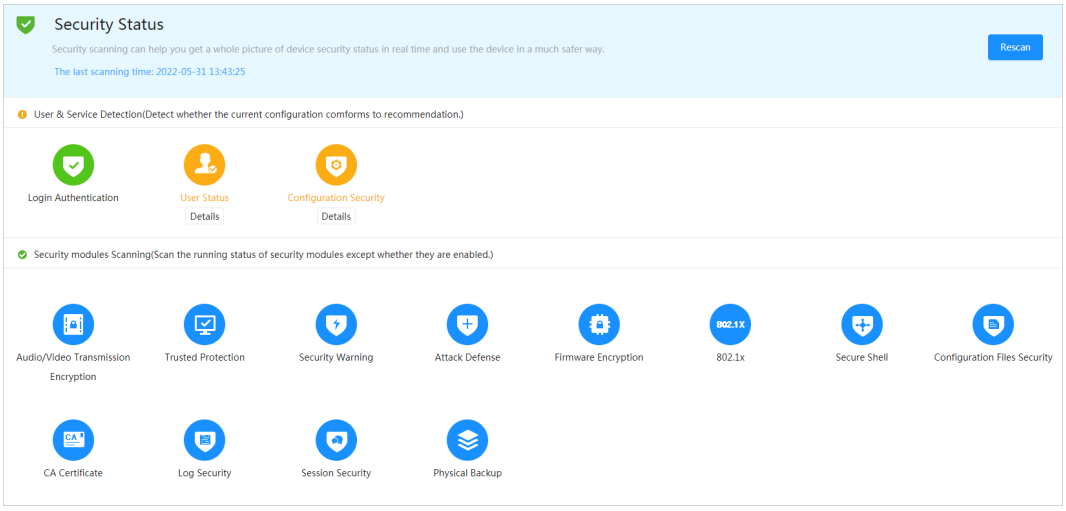
- User and service detection: Detect login authentication, user status, and configuration security to check whether the current configuration conforms to recommendation.
- Security modules scanning: Scan the running status of security modules, such as audio/video transmission, trusted protection, securing warning and attack defense, not detect whether they are enabled.

Procedure

Step 1 Select **Security** > **Security Status**.

Step 2 Click **Rescan** to scan the security status of the camera.

Figure 9-1 Security Status

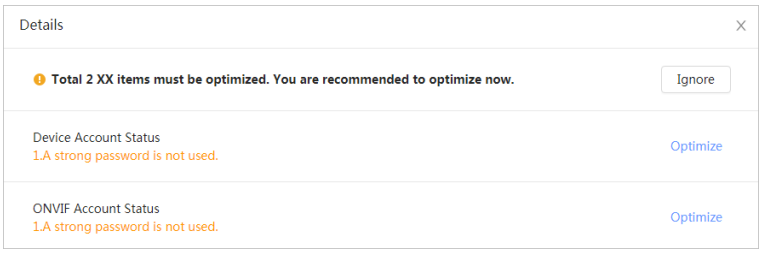


Related Operations

After scanning, different results will be displayed with different color. Yellow indicates that the security modules are abnormal, and Green indicates that the security modules are normal.

1. Click **Details** to view the details of the scanning result.
2. Click **Ignore** to ignore the exception, and it will not be scanned in next scanning.
   Click **Joint Detection**, and the exception will be scanned in next scanning.
3. Click **Optimize**, and the corresponding page is displayed, and you can edit the configuration to clear the exception.

Figure 9-2 Security Status



9.2 System Service

9.2.1 802.1x

Cameras can connect to LAN after passing 802.1x authentication.

Step 1 Select **Security** > **System Service** > **802.1x**.

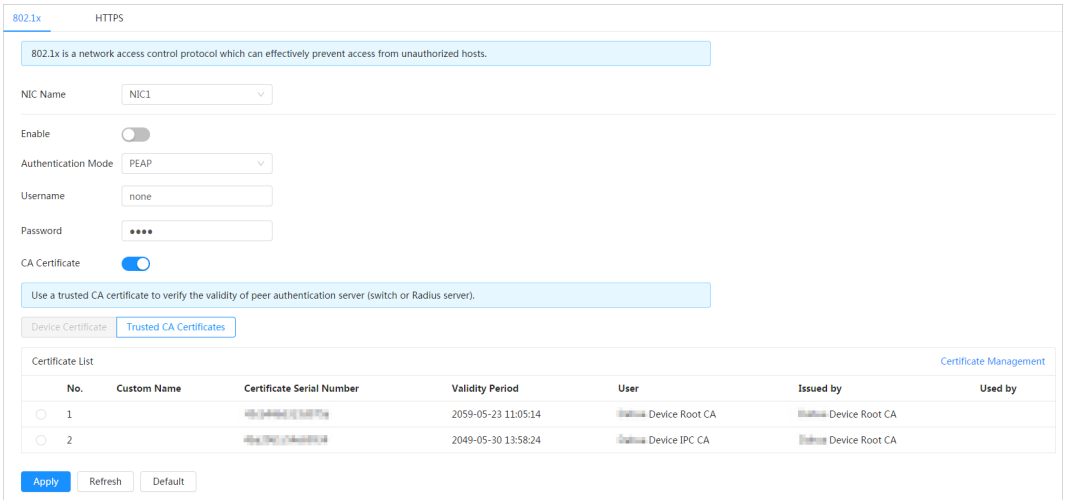
Step 2 Select the NIC name as needed, and click to enable it.

Step 3 Select the authentication mode, and then configure parameters.

- PEAP: Protected EAP protocol.
  1. Select PEAP as the authentication mode.
  2. Enter the username and password that has been authenticated on the server.
  3. Click next to CA certificate, and select the trusted CA certificate in list.

     If there is no certificate in the list, click **Certificate Management** at the left navigation bar. For details, see "9.4.2 Installing Trusted CA Certificate".

Figure 9-3 802.1x (PEAP)

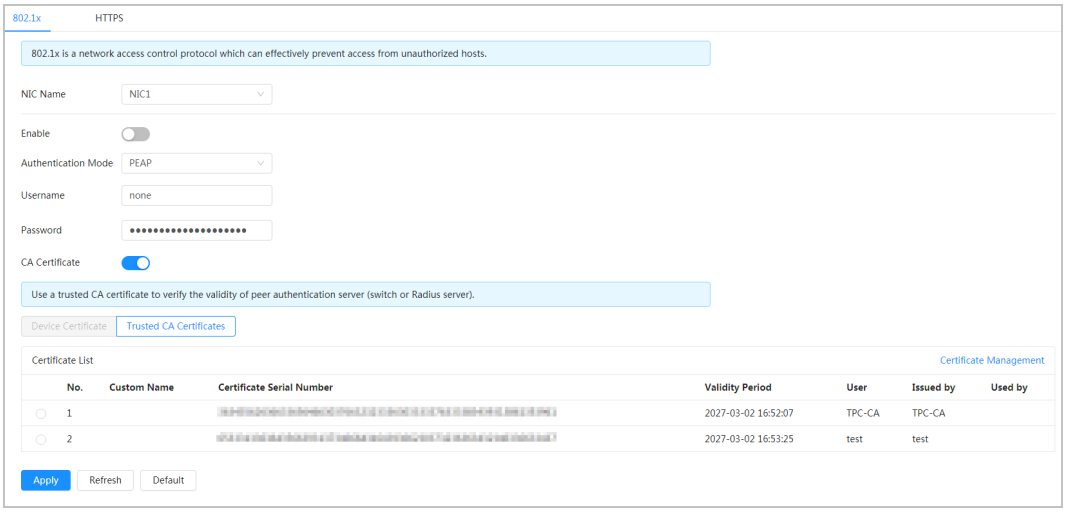


- TLS: Transport Layer Security. It is applied in two communication application programs to guarantee the security and integrity of the data.
  1. Select TLS as the authentication mode.
  2. Enter the username.
  3. Click next to CA certificate, and select the trusted CA certificate in list.

     If there is no certificate in the list, click **Certificate Management** at the left

navigation bar. For details, see "9.4.2 Installing Trusted CA Certificate".

Figure 9-4 802.1x (TLS)



Step 4 Click **Apply**.

9.2.2 HTTPS

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC. The HTTPS can protect page authenticity on all types of websites, secure accounts, and keep user communications, identity, and web browsing private.

Procedure

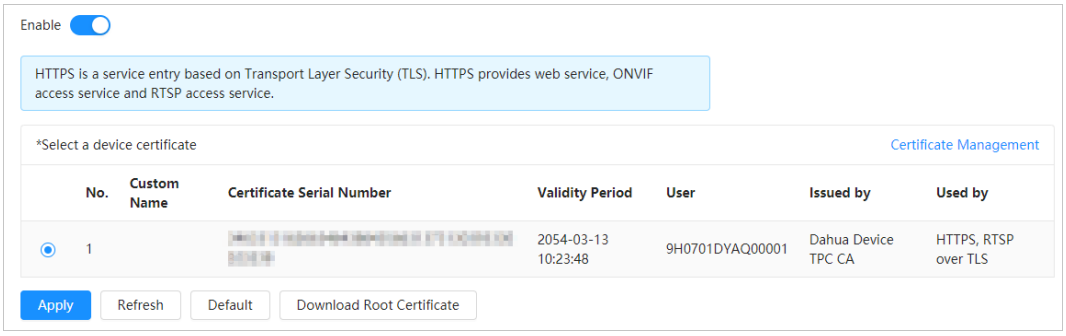
Step 1 Select **Security** > **System Service** > **HTTPS**.

Step 2 Click to enable it.

Step 3 Select the certificate.

If there is no certificate in the list, click **Certificate Management** at the left navigation bar. For details, see

Figure 9-5 HTTPS



Step 4 Click **Apply**.

9.3 Attack Defense

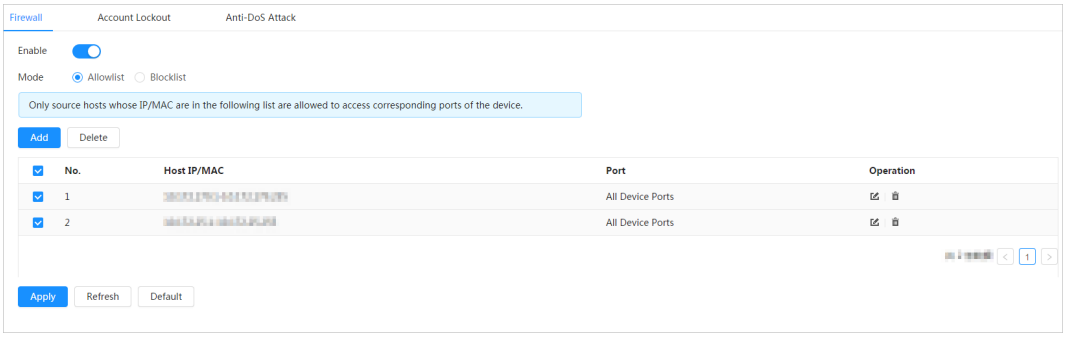
9.3.1 Firewall

Configure firewall to limit access to the camera.

Step 1 Select **Security** > **Attack Defense** > **Firewall**.

Step 2 Click to enable the firewall function.

Figure 9-6 Firewall

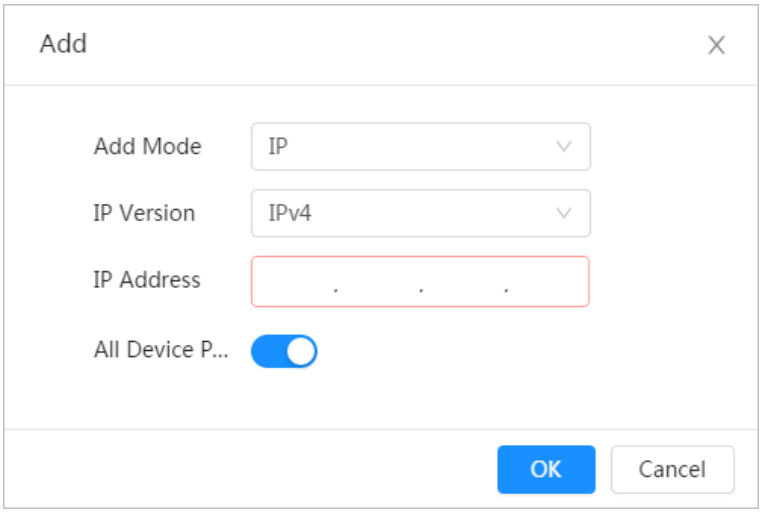


Step 3 Select the mode: **Allowlist** and **Blocklist**.

- **Allowlist**: Only when the IP/MAC of your PC in the allow list, can you access the camera. Ports are the same.
- **Blocklist**: When the IP/MAC of your PC is in the block list, you cannot access the camera. Ports are the same.

Step 4 Click **Add** to add the host IP/MAC address to **Allowlist** or **Blocklist**, and then click **OK**.

Figure 9-7 Firewall



Step 5 Click **Apply**.

Related Operations

- Click to edit the host information.
- Click to delete the host information.

9.3.2 Account Lockout

If you consecutively enter a wrong password more than the configured value, the account will be

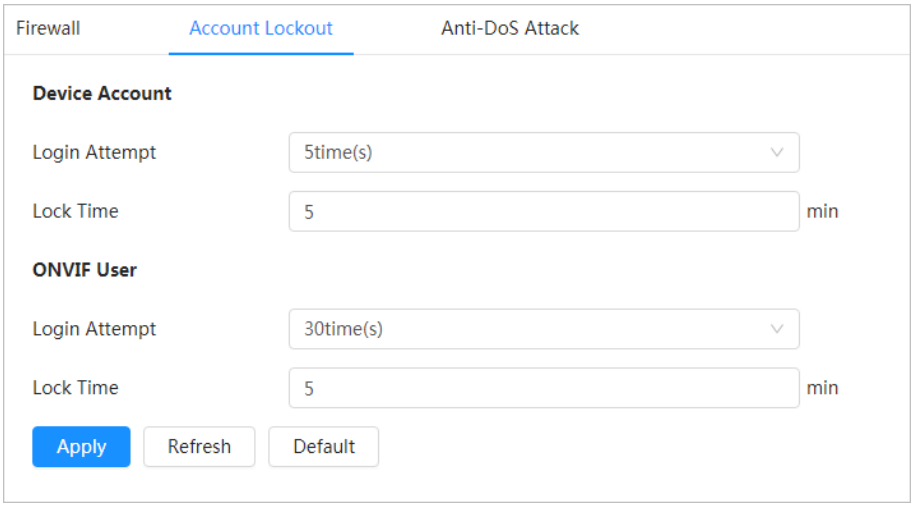
locked.

Step 1 Select **Security** > **Attack Defense** > **Account Lockout**.

Step 2 Configure the login attempt and lock time for device account and ONVIF user.

- Login attempt: Upper limit of login attempts. If you consecutively enter a wrong password more than the configured value, the account will be locked.
- Lock time: The period during which you cannot login after the login attempts reaches upper limit.

Figure 9-8 Account lockout



Step 3 Click **Apply**.

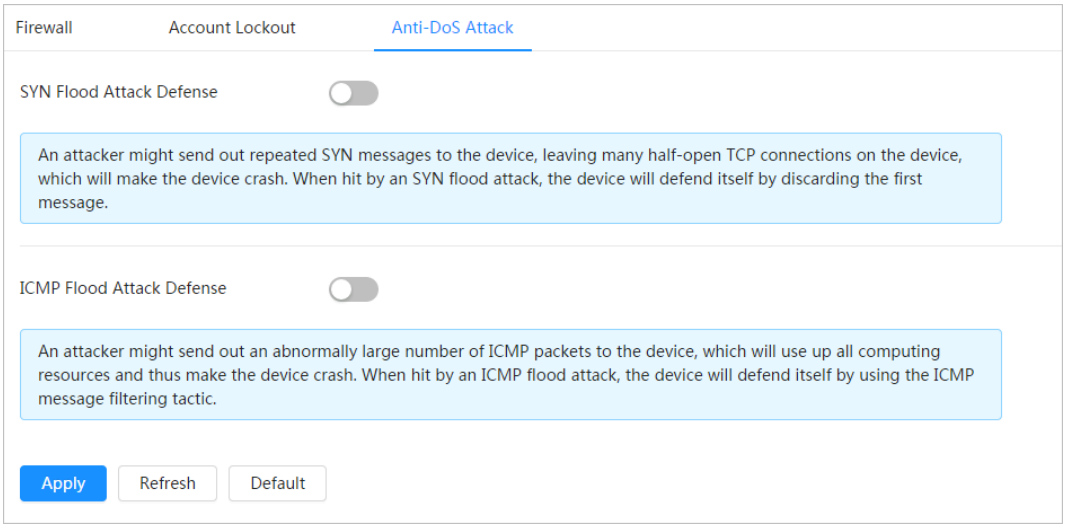
9.3.3 Anti-DoS Attack

You can enable **SYN Flood Attack Defense** and **ICMP Flood Attack Defense** to defend the device against Dos attack.

Step 1 Select **Security** > **Attack Defense** > **Anti-DoS Attack**.

Step 2 Select **SYN Flood Attack Defense** or **ICMP Flood Attack Defense** to defend the device against Dos attack.

Figure 9-9 Anti-DoS attack



9.4 CA Certificate

9.4.1 Installing Device Certificate

Create a certificate or upload an authenticated certificate, and then you can log in through HTTPS with your PC.

9.4.1.1 Creating Certificate

Creating certificate in the device.

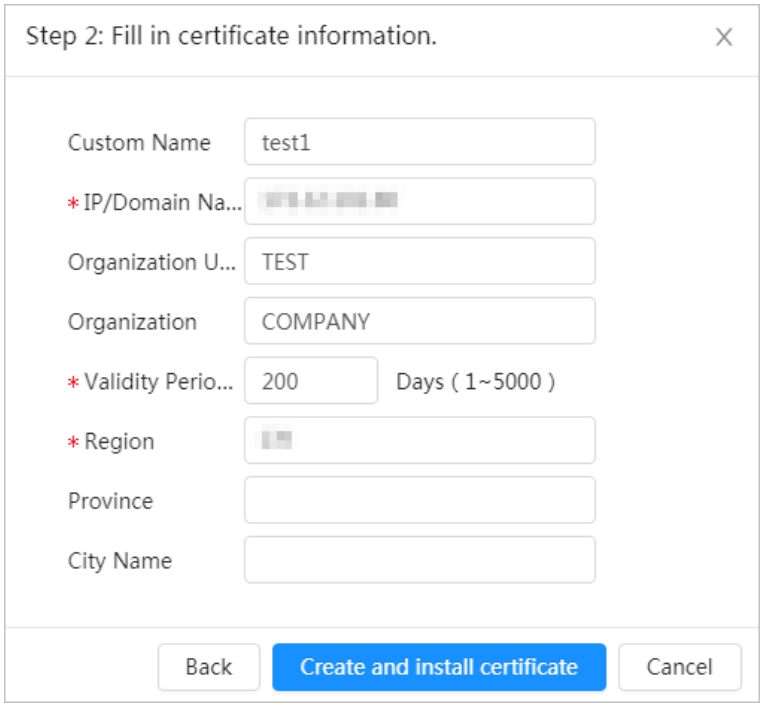
Step 1 Select **Security** > **CA Certificate** > **Device Certificate**.

Step 2 Click **Install Device Certificate**.

Step 3 Select **Create Certificate**, and click **Next**.

Step 4 Enter the certificate information.

Figure 9-10 Certificate information (1)



Step 5 Click **Create and install certificate**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

9.4.1.2 Applying for and Importing CA Certificate

Import the third-party CA certificate to the camera.

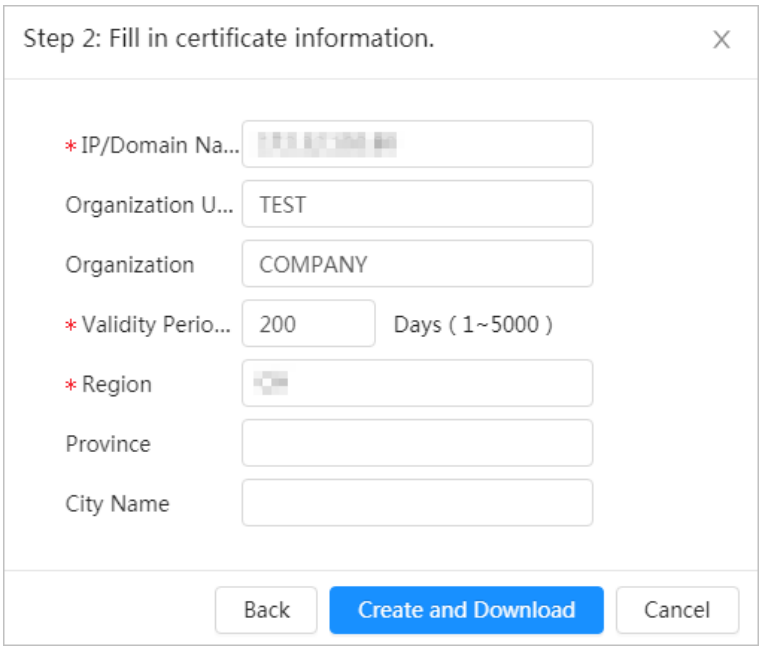
Step 1 Select **Security** > **CA Certificate** > **Device Certificate**.

Step 2 Click **Install Device Certificate**.

Step 3 Select **Apply for CA Certificate and Import (Recommended)**, and click **Next**.

Step 4 Enter the certificate information.

Figure 9-11 Certificate information (2)



Step 5 Click **Create and Download**.

Save the request file to your PC.

Step 6 Apply the CA certificate from the third-party certificate authority.

Step 7 Import the signed CA certificate.

1) Save the CA certificate to the PC.
2) Do Step1 to Step3, and click **Browse** to select the signed CE certificate.
3) Click **Install and Import**.

   After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

   - Click **Recreate** to create the request file again.
   - Click **Import Later** to import the certificate next time.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

9.4.1.3 Installing Existing Certificate

Import the existing third-party certificate to the camera. When apply for the third-party certificate, you also need to apply for the private key file and private key password.

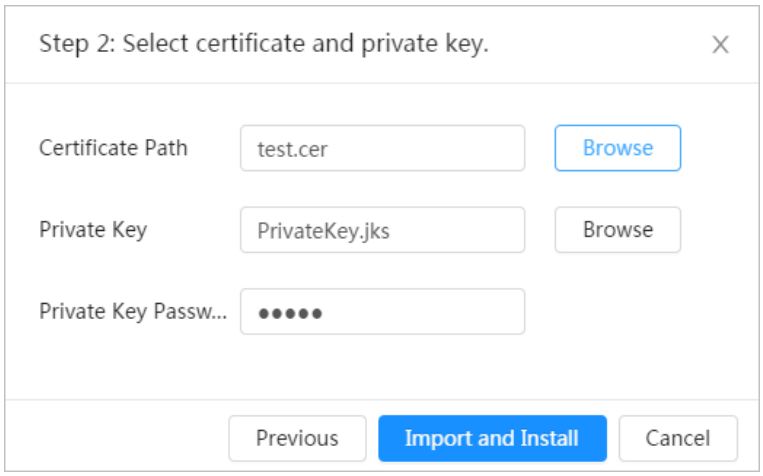
Step 1 Select **Security** > **CA Certificate** > **Device Certificate**.

Step 2 Click **Install Device Certificate**.

Step 3 Select **Install Existing Certificate**, and click **Next**.

Step 4 Click **Browse** to select the certificate and private key file, and enter the private key password.

Figure 9-12 Certificate and private key



Step 5 Click **Import and Install**.

After the certificate is created successfully, you can view the created certificate on the **Device Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

9.4.2 Installing Trusted CA Certificate

CA certificate is a digital certificate for the legal identity of the camera. For example, when the camera accesses the LAN through 802.1x, the CA certificate is required.

Step 1 Select **Security** > **CA Certificate** > **Trusted CA Certificates**.

Step 2 Click **Install Trusted Certificate**.

Step 3 Click **Browse** to select the certificate.

Figure 9-13 Installing trusted certificate

Step 4 Click **OK**.

After the certificate is created successfully, you can view the created certificate on the **Trusted CA Certificate** page.

Related Operations

- Click **Enter Edit Mode**, you can edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

9.5 A/V Encryption

The device supports audio and video encryption during data transmission.

You are recommended to enable A/V Encryption function. There might be safety risk if this function is disabled.

Step 1 Select **Security** > **A/V Encryption**.

Step 2 Configure the parameters.

Figure 9-14 A/V encryption

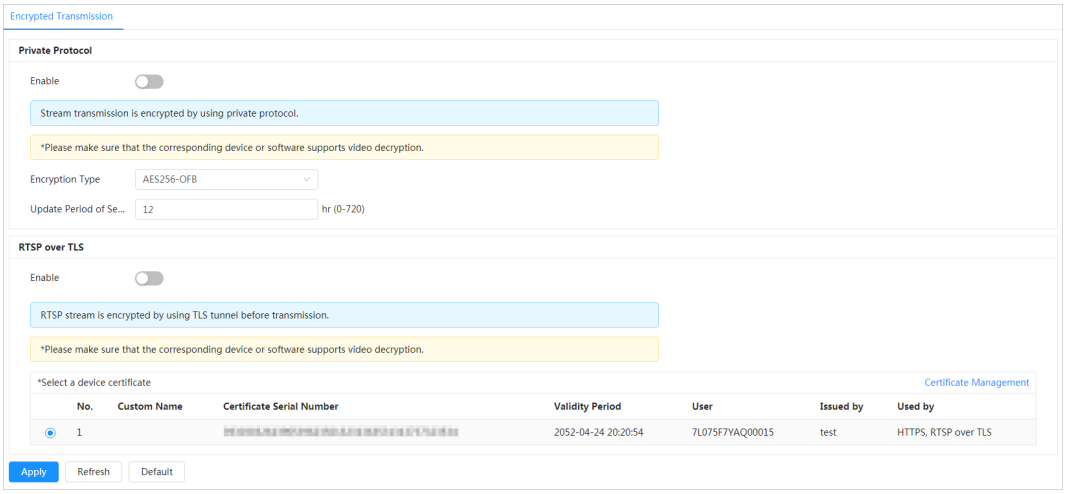


Table 9-1 A/V encryption parameter

Area	Parameter	Description
Private Protocol	Enable	Enables stream frame encryption by using private protocol. There might be safety risk if this service is disabled.
	Encryption Type	Use the default setting.
	Update Period of Secret Key	Secret key update period. Value range: 0–720 hours. 0 means never update the secret key. Default value: 12.
RTSP over TLS	Enable	Enables RTSP stream encryption by using TLS. There might be safety risk if this service is disabled.
	Select a device certificate	Select a device certificate for RTSP over TLS.
	Certificate Management	For details about certificate management, see "9.4.1 Installing Device Certificate".

Step 3 Click **Apply**.

9.6 Security Warning

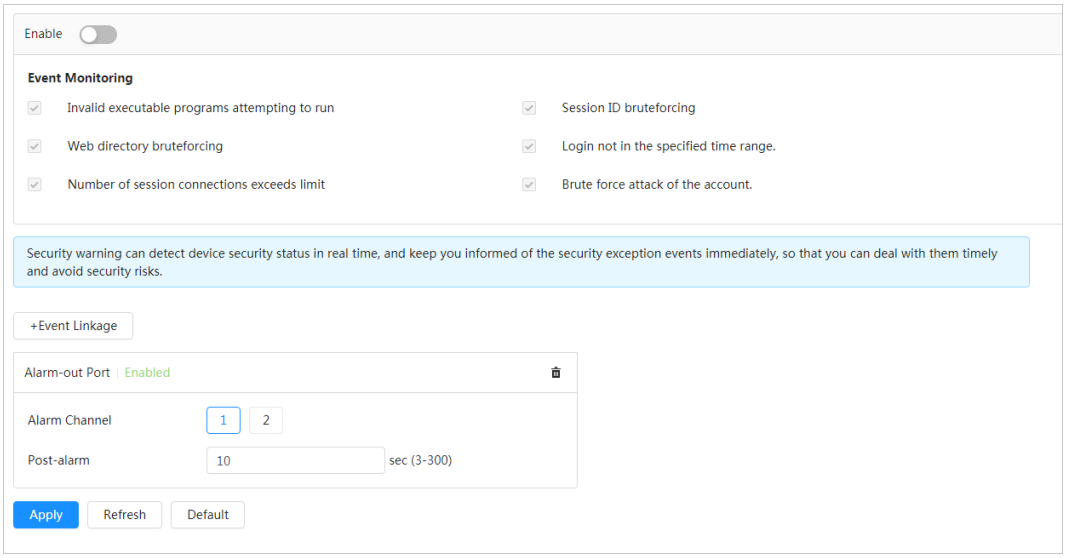
When security exception event is detected, the camera sends a warning to remind you to process it timely, to avoid security risk.

Step 1 Select **Security** > **Security Warning**.

Step 2 Click next to **Enable** to enable security warning.

Step 3 Configure the parameters.

Figure 9-15 Security warning



Step 4 Set arming periods and alarm linkage actions. For details, see "5.1.1.2.1 Adding Schedule" and "5.1.1.2 Alarm Linkage".

Step 5 Click **Apply**.

Appendix 1 Cybersecurity Recommendations

Mandatory actions to be taken for basic device network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:

   - The length should not be less than 8 characters.
   - Include at least two types of characters; character types include upper and lower case letters, numbers and symbols.
   - Do not contain the account name or the account name in reverse order.
   - Do not use continuous characters, such as 123, abc, etc.
   - Do not use overlapped characters, such as 111, aaa, etc.

2. **Update Firmware and Client Software in Time**

   - According to the standard procedure in Tech-industry, we recommend to keep your device (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the device is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
   - We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your device network security:

1. **Physical Protection**

   We suggest that you perform physical protection to device, especially storage devices. For example, place the device in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable device (such as USB flash disk, serial port), etc.

2. **Change Passwords Regularly**

   We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. **Set and Update Passwords Reset Information Timely**

   The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. **Enable Account Lock**

   The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. **Change Default HTTP and Other Service Ports**

   We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

6. **Enable HTTPS**

   We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. **MAC Address Binding**

   We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing

the risk of ARP spoofing.

8. **Assign Accounts and Privileges Reasonably**
   According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.
9. **Disable Unnecessary Services and Choose Secure Modes**
   If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.
   If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:
   - SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
   - SMTP: Choose TLS to access mailbox server.
   - FTP: Choose SFTP, and set up strong passwords.
   - AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.
10. **Audio and Video Encrypted Transmission**
    If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.
    Reminder: encrypted transmission will cause some loss in transmission efficiency.
11. **Secure Auditing**
    - Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
    - Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.
12. **Network Log**
    Due to the limited storage capacity of the device, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.
13. **Construct a Safe Network Environment**
    In order to better ensure the safety of device and reduce potential cyber risks, we recommend:
    - Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
    - The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
    - Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
    - Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.