Traffic PTZ Network Camera Web 5.0

User's Manual



ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD. V1.0.0

Foreword

General

This manual introduces the installation, functions and operations of the Traffic PTZ Network Camera (hereinafter referred to as "the Camera"). Read carefully before using the device, and keep the manual safe for future reference.

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.
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
V1.0.0	First release.	November 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.

Interface Declaration

This manual mainly introduces the relevant functions of the device. The interfaces used in its manufacture, the procedures for returning the device to the factory for inspection and for locating its faults are not described in this manual. Please contact technical support if you need information on these interfaces.

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.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, and comply with the guidelines when using it.

Transportation Requirements



- Pack the device with packaging provided by its manufacturer or packaging of the same quality before transporting it.
- Avoid heavy stress, violent vibration, and immersion during transportation.
- Transport the device under allowed humidity and temperature conditions. Refer to the technical parameters for requirements on the transporting temperature and humidity of the device.

Storage Requirements



- Store the device under allowed humidity and temperature conditions. Refer to the technical parameters for requirements on the storing temperature and humidity of the device.
- Avoid heavy stress, violent vibration, and immersion during storage.

Installation Requirements

 **DANGER**

- Make sure that the power is off when you connect the cables, install or disassemble the device.
- For devices with earthing systems, make sure they are grounded to avoid being damaged by static electricity or induced voltage, and prevent electrocution from occurring.
- All installation and operations must conform to local electrical safety regulations.
- Use accessories suggested by the manufacturer, and installed by professionals.
- Do not block the ventilator of the device, and install the device in a well-ventilated place.
- Do not expose the device to heat sources or direct sunlight, such as radiator, heater, stove or other heating equipment, which is to avoid the risk of fire.
- Do not place the device in explosive, humid, dusty, extremely hot or cold sites with corrosive gas, strong electromagnetic radiation or unstable illumination.
- Avoid heavy stress, violent vibration, and immersion during installation.

 **WARNING**

Safe and stable power supply is a prerequisite for proper operation of the device.

- Make sure that the ambient voltage is stable and meet the power supply requirements of the device.
- Prevent the power cord from being trampled or pressed, especially the plug, power socket and the junction from the device.
- For devices that can be powered by multiple supplies, do not connect them to two or more kinds of power supplies; otherwise, the device might be damaged.

- Refer to the specific user's manual for the power requirements of single device.



It is recommended to use the device with a lightning protector for better lightning-proof effect.

Operation Requirements



A suitable operating environment is the foundation for the device to work properly. Confirm whether the following conditions have been met before use.

- Use the device under allowed humidity and temperature conditions. Refer to the technical parameters for requirements on the operating temperature and humidity of the device.
- Use the device on a stable base.
- Do not let any liquid flow into the device to avoid damage to internal components. When liquid flows into the device, immediately disconnect the power supply, unplug all cables connected to it, and contact after-sales service.
- Do not plug or unplug RS-232, RS-485 and other ports with the power on, otherwise, the ports will be easily damaged.
- Back up data in time during deployment and use, in an effort to avoid data loss caused by abnormal operation. The company is not liable for data security.
- The company is not responsible for damages to the device or other product problems caused by excessive use or other improper use.

Maintenance Requirements.



- Contact professionals for regular inspection and maintenance of the device. Do not disassemble or dismantle the device without a professional present.
- Use accessories suggested by the manufacturer, and maintain the device by professionals.

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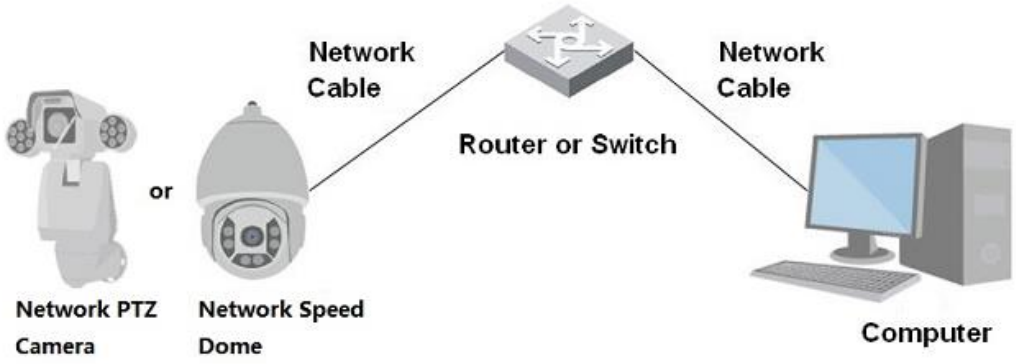
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1 Overview

1.1 Introduction

The Camera is a combination of traditional camera and network technology. Users can remotely connect to the Camera through the network for configuration and management.
Before accessing the PTZ Camera through the network, you need its IP address, which can be searched for by Config Tool.

Figure 1-1 Connected through network router or switch



1.2 Functions

Functions might be different depending on the models.

1.2.1 Basic functions

Real-time Monitoring

- Live view.
- When watching the live view, you can enable audio, and talk to people in the monitoring area to quickly process exceptions.
- Adjust the image to the proper position by PTZ.
- Take a snapshot or three snapshots of the exceptional monitoring image for subsequent viewing and processing.
- Record the monitoring image with exceptions for subsequent viewing and processing.
- Configure coding parameters and adjust live view.

Recording

- Auto recording as scheduled.
- Play back recorded videos and images.
- Download recorded videos and images.
- Link recordings when alarms are triggered.

Account Management

- Add, edit and delete user groups, and manage user authorities by user group.
- Add, edit and delete users, and configure user authorities.
- Change user password.

1.2.2 AI Functions

Alarm

- Set alarm prompt mode and tone by alarm type.
- View alarm message.

Video Detection

- Supports motion detection, video tampering detection, defocus detection and scene changing detection.
- When an alarm is triggered, the system performs linkages such as video recording, alarm output, email sending, PTZ operation and snapshot.

Audio Detection

- Detects audio input exception and audio intensity change.
- When an alarm is triggered, the system performs linkages such as video recording, alarm output, email sending, PTZ operation and snapshot.

Panorama Linkage

Panorama camera serves as the main camera to view the panoramic images; detail camera serves as the subordinate camera to view the detailed images.

Alarm Setting

- Alarms are triggered when an external alarm input device outputs alarms.
- When an alarm is triggered, the system performs linkages such as video recording, alarm output, email sending, PTZ operation and snapshots.

Exception Processing

- Supports SD card exception detection and network exception detection.
- When a SD card exception is detected the system performs linkages such as alarm output and email sending.
- When a network exception is detected, the system performs linkages such as video recording and alarm output.

Illegal Parking and ANPR Capture

- Supports dual PTZ; Panorama Camera and Detail Camera can be adjusted remotely to realize flexible deployment.
- Supports illegal parking capture, A/B/C/D illegal parking capture. You can configure the number, time, and type of snapshots to form an effective law enforcement evidence chain.
- Supports the following traffic event detection: ANPR, crossing solid white or yellow line, wrong-

way driving, illegal lane change, vehicle queue jumping, vehicle in lane, disobeying the lane direction sign, speeding, trucks in prohibited area, driving slow, driver not wearing seatbelt, and traffic congestion.

- Supports motor vehicle attribute recognition, including vehicle type, vehicle color, vehicle logo, vehicle series, license plate, license plate color and more.

2 Configuration Flow

Configure the device as needed.

Figure 2-1 Configuration flow

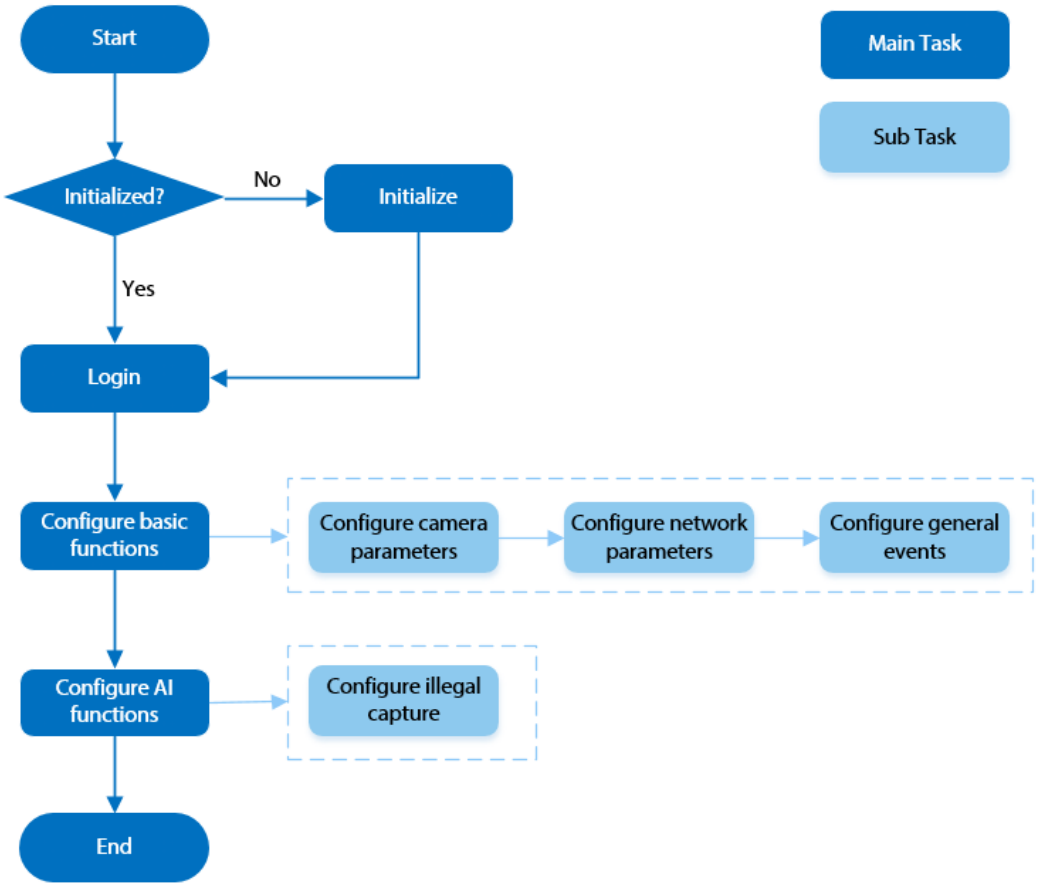


Table 2-1 Flow description

Configuration	Description	Reference
Login	Open the browser and enter the IP address to log in to the webpage. The camera IP address is 192.168.1.108 by default.	"4.1 Device Login"
Initialization	Initialize the camera when you use it for the first time.	"3 Device Initialization"
Configure basic functions	Configure camera parameters, network parameters, general events and more.	"4 Setting"
Configure AI functions	Configure detection rules for AI events.	"8 AI"

3 Device Initialization

Device initialization is required for the first-time use. This manual is focused on the operation on the webpage. You can also initialize the device through ConfigTool, NVR (Network Video Recorder), or platforms such as DSS Pro.

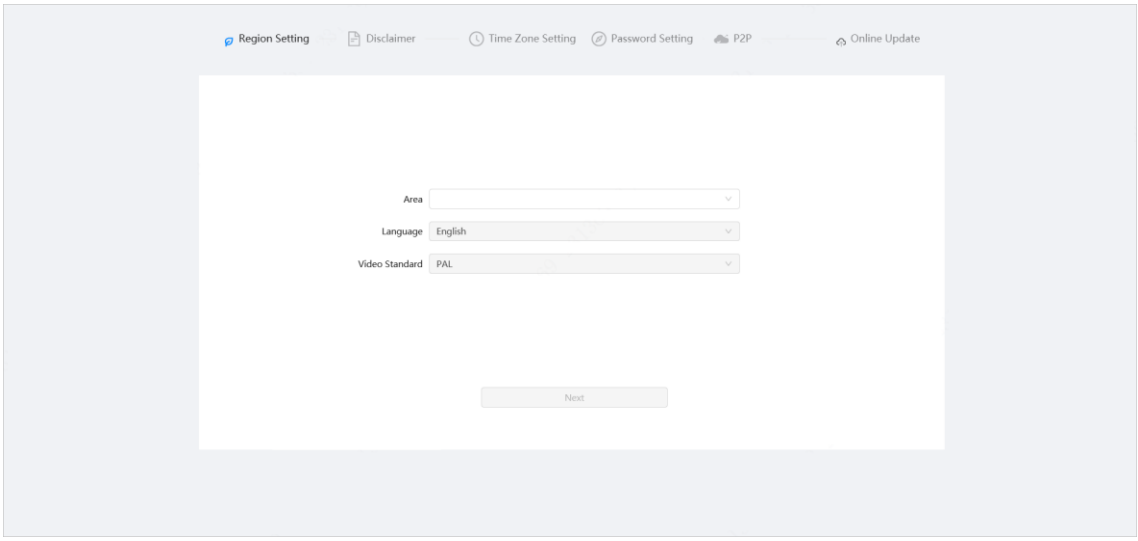
- To ensure device safety, protect your password after initialization and regularly change it.
- When initializing the device, keep the computer IP and device IP on the same network.
- We recommend you use Internet Explorer or Google Chrome.

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

The IP is 192.168.1.108 by default.

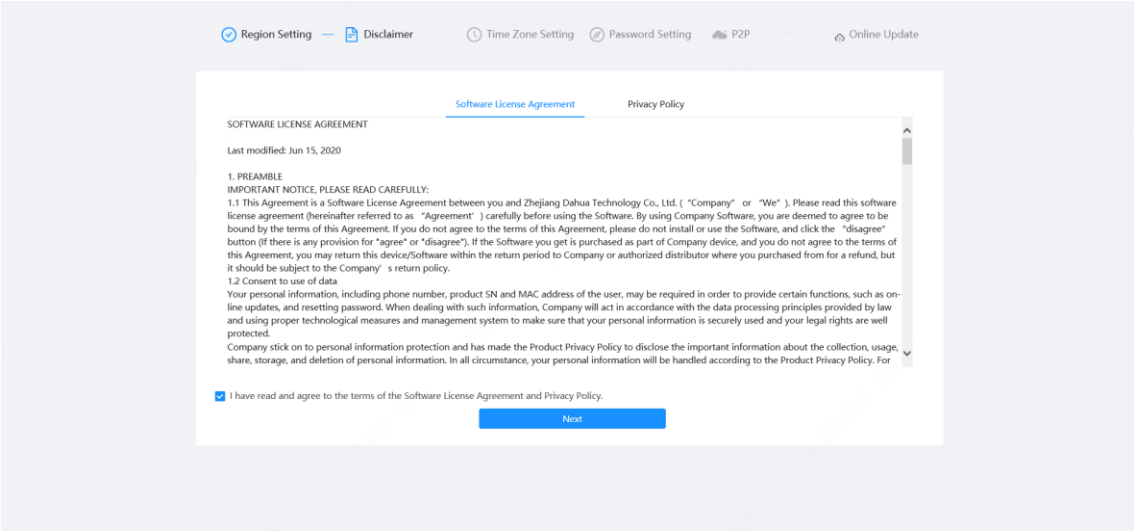
Step 2 Select the area, language, and video standard according to the actual situation, and then click **Next**.

Figure 3-1 Region setting



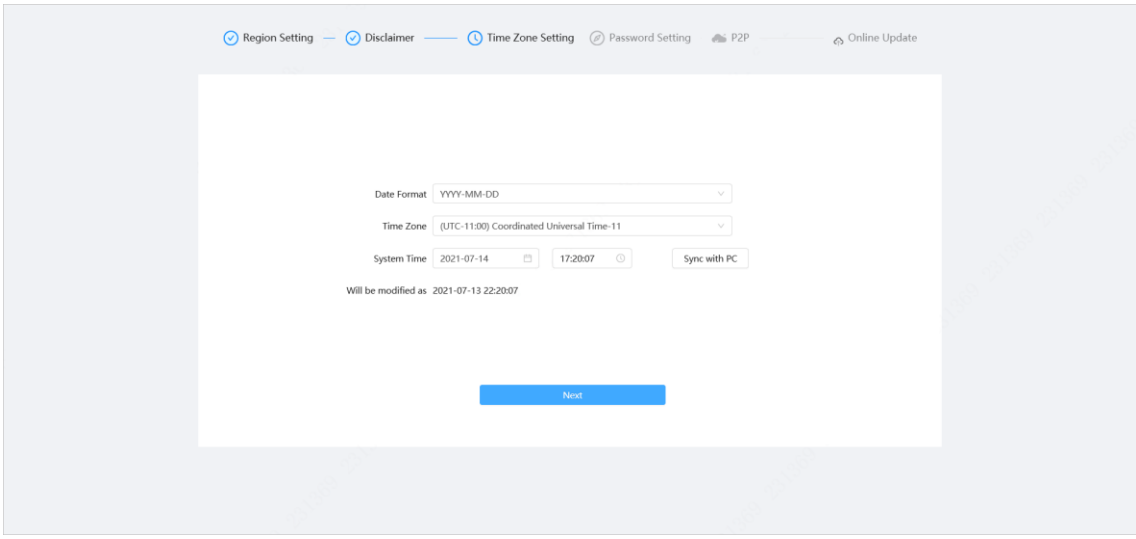
Step 3 Select the **I have read and agree to the terms of the Software License Agreement and Privacy Policy** check box, and then click **Next**.

Figure 3-2 Disclaimer



Step 4 Configure the time parameters, and then click **Next**.

Figure 3-3 Time zone setting



Step 5 Set the password for admin account.

Figure 3-4 Password setting

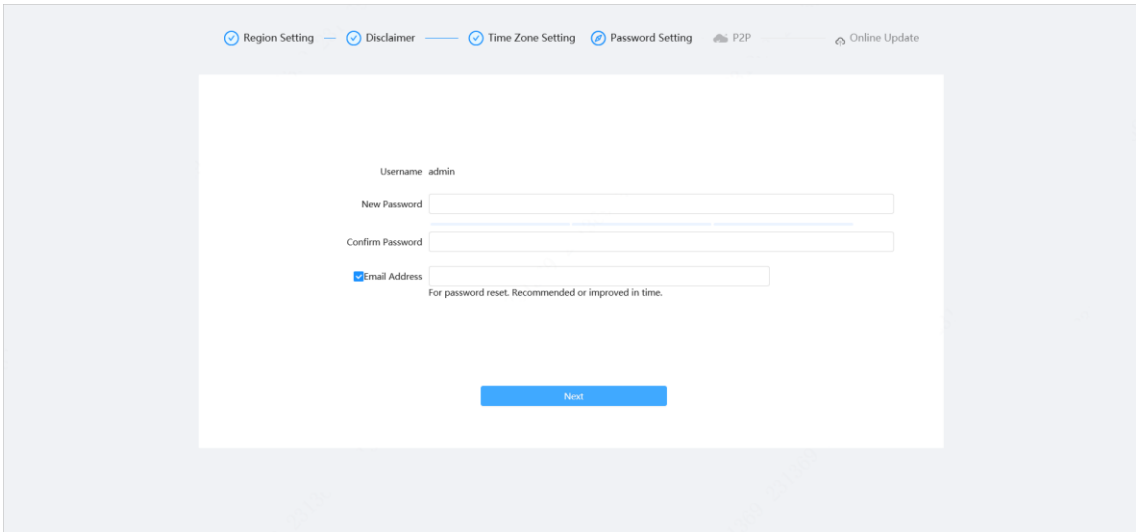
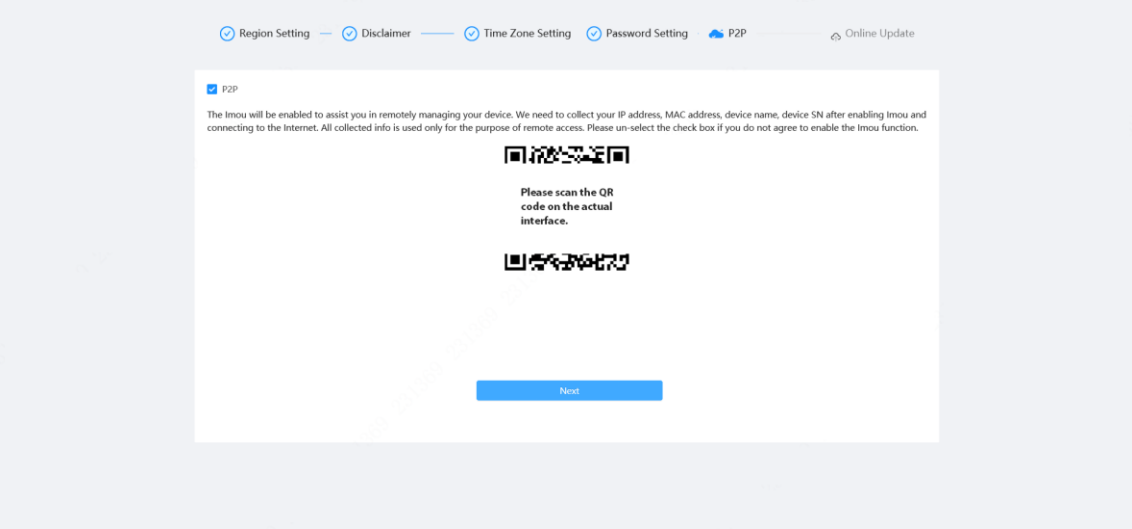


Table 3-1 Description of password configuration

Parameter	Description
Username	The default username is admin.
New 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	
Email Address	Enter an email address for password reset. It is selected by default. When you need to reset the password of the admin account, a security code for password reset will be sent to the reserved email address.

Step 6 Click **Next**, and the **P2P** page is displayed.

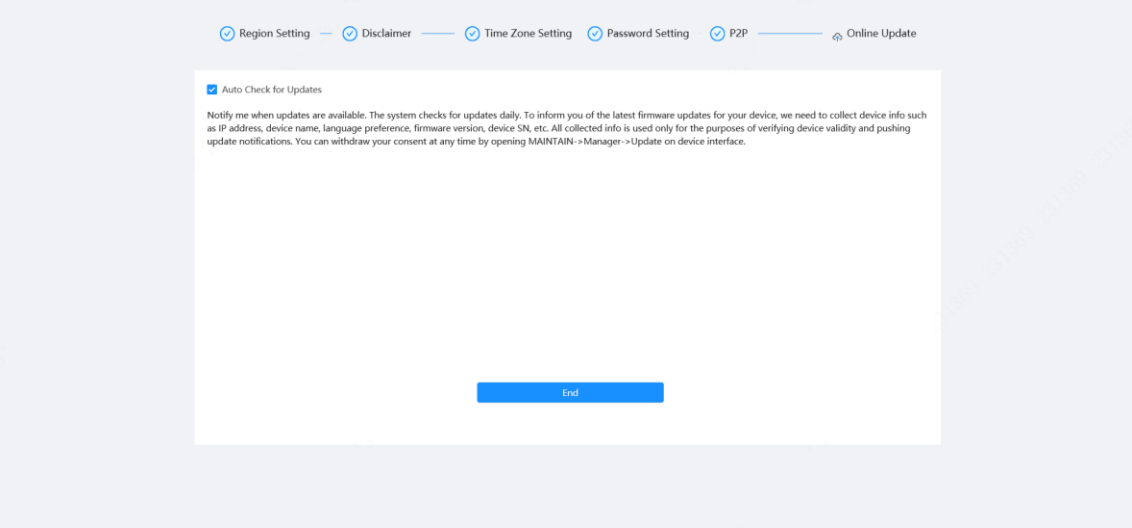
Figure 3-5 P2P



Step 7 Click **Next**, and the **Online Update** page is displayed.

Click**End** to complete initialization.

Figure 3-6 Online update



4 Setting

This chapter introduces the basic settings of the Camera, including the configuration of local parameters, camera, network, PTZ, event, storage, system information, log, and more.
You can configure the camera, event and system through two methods. This section uses method 1 as an example.

- Method 1: Click , and then select the corresponding item.
- Method 2: Click the corresponding icon on the home page.

4.1 Device Login

Log in to the device webpage through a browser.

Prerequisites

- You need to initialize the Camera before logging in to the webpage. For details, see"3 Device Initialization".
- When logging in to the webpage, keep the computer IP and device IP on the same network.

Procedure

Step 1 Open the browser, enter the device IP address (192.168.1.108 by default) in the address box, and then press the **Enter** key.

Step 2 Enter the username and password.
The username is admin by default.

Click **Forgot password?** to reset the password through the email address that is set during the initialization. For details, see "4.8.2.2 Resetting Password".

Figure 4-1 Login

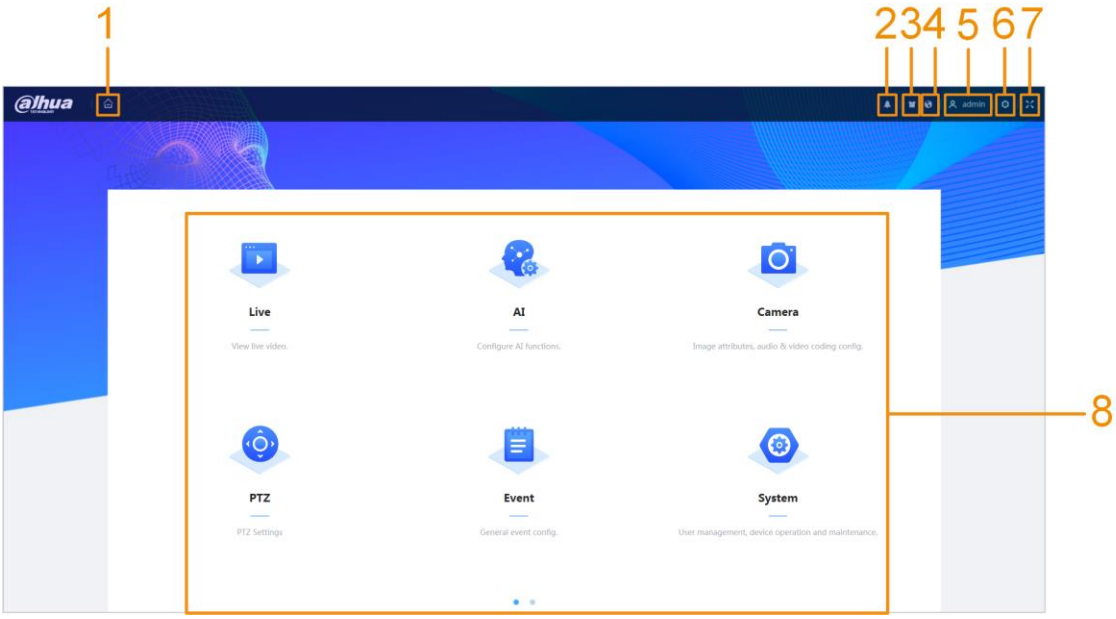


Step 3 Click**Login**.

The **Live** page is displayed. For details, see"5.1 Live Page".

Click on the left-upper corner of the page to display the home page.

Figure 4-2 Home page



For first-time login, you need to install the plug-in. Follow the on-screen instructions to complete download and installation.

Table 4-1 Description of home page

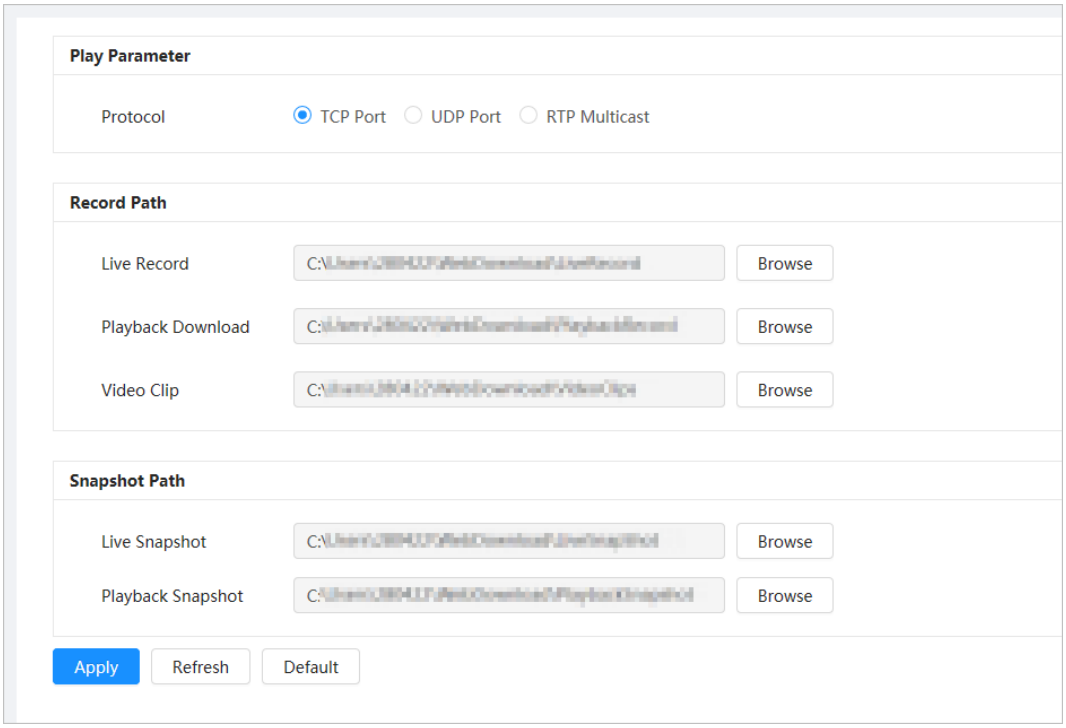
No.	Button	Description
1		Display the home page.
2		Subscribe to alarm. For details, see "4.6.1.3.2 Subscribing Alarm Information".
3		Set the skin.
4		Set the language.
5		• Click and select **Restart**, and the camera restarts. • Click and select **Logout** to go back to the login page.
6		Configure the basic parameters. For details, see "4 Setting".
7		• Click the button to enter full screen mode. • Click  to exit full screen mode.
8	Main modules	The home page includes the following modules. Click on the bottom of the page to switch between different modules. • Live: View the real-time monitoring image. The live view page supports multi-channel display. • AI: Configure AI functions of the camera. • Camera: Configure camera parameters, including image parameters, encoder parameters and audio parameters. • PTZ: Configuring PTZ functions. • Event: Configure alarm linkage parameters of general events. • System: Configure basic system parameters, manage users and peripherals, maintain and upgrade the system. • Security: Check the device security status and set security functions. • Record: Configure record functions, play back or download recorded videos. When playing back multi-channel recordings, you can choose channel No. to play back. • Picture: Configure picture functions, play back or download image files. When playing back multi-channel images, you can choose channel No. to play back. • Report: Search the AI event report and system report.

4.2 Local

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 4-3 Local



Step 2 Configure play parameters.

Protocol: Network transport protocol type, supporting TCP (Transmission Control Protocol) port, UDP (User Datagram Protocol) port and multicast.

Before selecting **Multicast**, you need to configure multicast parameters in advance. For details, see "4.4.9 Multicast".

Step 3 Click **Browse** to select the storage path for live snapshot, live record, playback snapshot, playback download, and video clips.

Table 4-2 Description of local parameter

Parameter	Description	
Protocol	You can select the network transmission protocol from **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 to the account being used.
Playback Download	The downloaded video of playback page. The default path is C:\Users\admin\WebDownload\PlaybackRecord.	
Video Clips	The clipped video of playback page. C:\Users\admin\WebDownload\VideoClips.	

Parameter	Description	
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 4 Click **Apply**.

Click **Refresh** to refresh the parameters of the current page. Click **Default** to restore the default parameter values.

4.3 Camera

This section introduces camera configuration, including configuring image parameters, encoder parameters, and audio parameters.

Camera parameters might differ depending on the device.

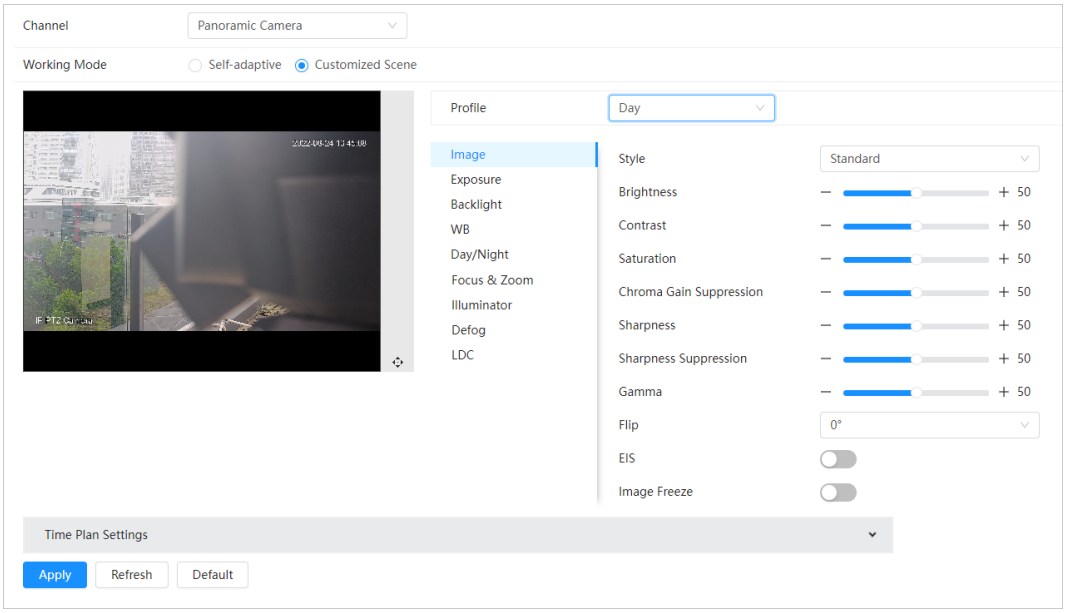
4.3.1 Setting Image Parameters

Configure image parameters according to the actual situation, including image, exposure, backlight, white balance, Day/Night, and more.

4.3.1.1 Page Layout

Configure camera parameters to improve the scene clarity, and ensure that surveillance goes well. Camera supports two working modes: self-adaptive and customized scene. You can select 9 configuration file types, and then set the configuration parameters and effects under the corresponding type.

Figure 4-4 Camera conditions



4.3.1.2 Configuring Operating Mode

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

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then select the working mode on the top of the page.

- Self-adaptive: The Camera automatically matches the appropriate configuration file type according to different environments.
  If you select**Self-adaptive**, go straight toStep5.
- Customized scene: The Camera monitors according to the settings of the profile type at different times.
  If you select**Customized scene**, go straight toStep3.

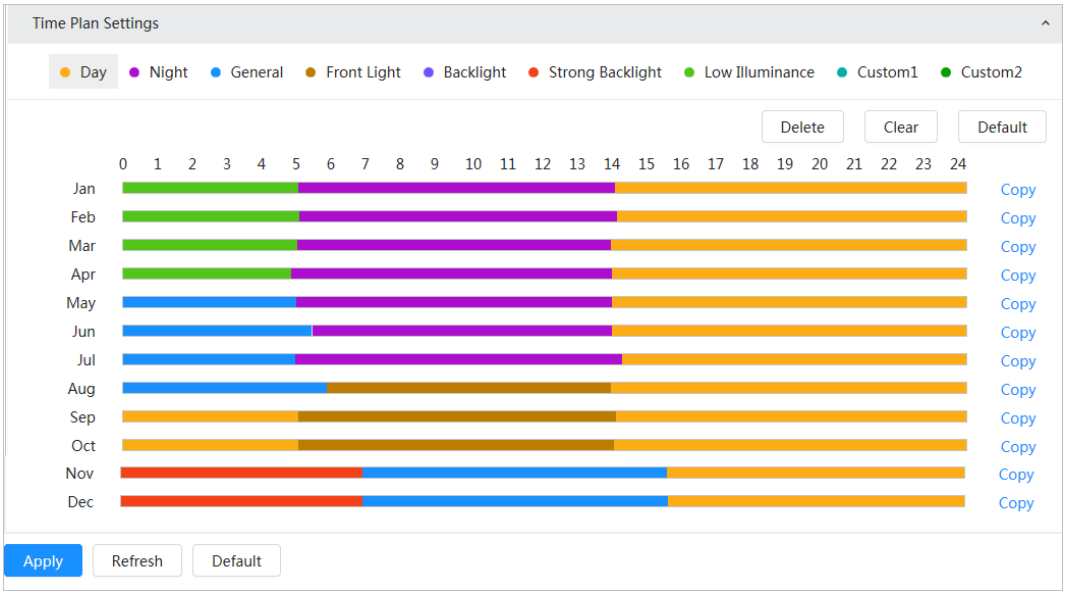
Step 3 Select configuration file type.

You can select 9 configuration file types, including **general**, **Day**, **Night**, **General**, **Front Light**, **Backlight**, **Srong Backlight**, **Low Illuminance**, **Custom 1** and **Custom 2** to set and view the configuration parameters and effects under the corresponding type.

Step 4 Set time plans.

Support setting daily schedule by month.

Figure 4-5 Time plan settings



1) Click **Time Plan Settings** or to open time plan.
2) Select the file type, for example**general**, and then left-drag on the timeline to set the time period using **general** type.
   In the same way, you can set up separate time periods when applying other file types.

   Time period is set as **Day** and **Night** by default. Please click **Delete** or **Clear** before you start setting time period.
3) (Optional) Click**Copy**, select a month, then click**Apply**.
   Time plan for the current month can be quickly copied to other months.

Step 5 Click **Apply**.

4.3.1.3 Adjusting Picture

You can configure picture parameters as needed. The actual parameters of the camera can be adjusted here.

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **Image**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure parameters.

Figure 4-6 Picture

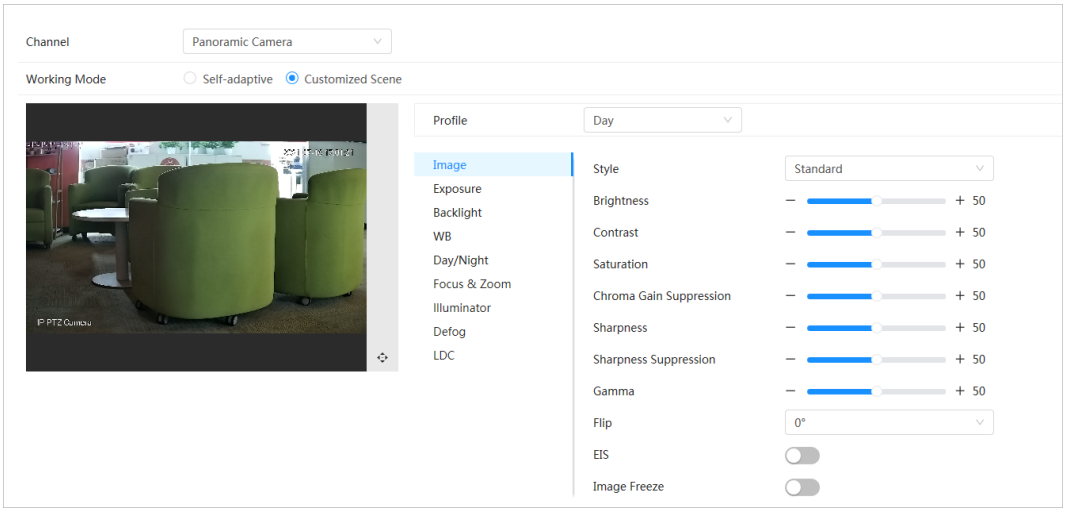


Table 4-3 Description of picture parameters

Parameter	Description
Style	Select the image style from soft, standard and vivid. • Standard: Default image style, displaying the actual color of the image. • Soft: The hue of the image is weaker than the actual one, and the contrast is smaller. • Vivid: The image is more vivid than the actual one.
Brightness	Change the overall brightness of the image. The higher the value, the brighter the image. The image might be hazy if the value is configured too high.
Contrast	Changes the contrast of the image. The higher the value, the greater the contrast between the bright and dark areas. If the value is set too big, the dark area will be too dark and the bright area will more vulnerable to overexposure. The picture might be hazy if the value is set too small.
Saturation	Makes the color stronger or lighter. The higher the value, the deeper the color. Saturation value does not change image brightness.
Chroma Gain Suppression	Reduces the image color and prevents it from being too strong. The higher the value, the stronger the effect. This parameter takes effect only when the Camera is in an environment with low luminance.
Sharpness	Changes the sharpness of image edges. The higher the value, the clearer the picture edges. If the value is too big, the image noise is more likely to appear.
Sharpness Suppression	Change the sharpness NCT level of the Camera. The bigger the value, the stronger the sharpness CNT. This parameter takes effect only when the Camera is in an environment with low luminance.

Parameter	Description
Gamma	Changes the image brightness and contrast in a non-linear way. The higher the value, the brighter the picture.
Flip	Change the display direction of the image. • Normal: The normal display of the image. • Reflection: The image flips up and down.
EIS	Electronic image stabilization (EIS) is used to effectively solve the problem of image shaking, thus presenting clearer images. It is **Off** by default. • This parameter takes effect only when the Camera is in an environment with low luminance. • This function is available on select models. • Optical image stabilization and electronic image stabilization cannot be enabled at the same time.
Image Freeze	After enabling this function, the image at the called preset is displayed directly if you call a preset or tour, and no image during the rotation of the camera is displayed.

Step 3 Click **Apply**.

4.3.1.4 Exposure

Configure iris and shutter to improve image clarity.

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

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **Exposure**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure parameters.

Figure 4-7 Exposure

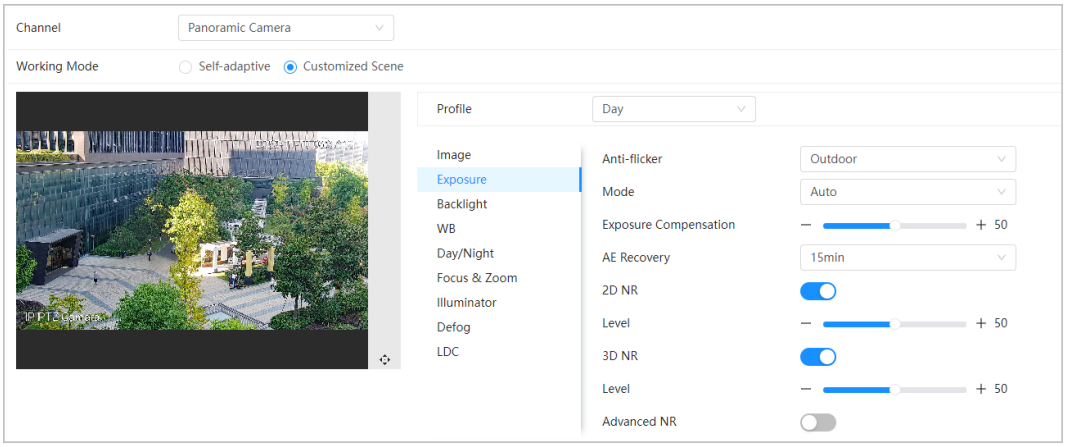


Table 4-4 Description of exposure parameters

Parameter	Description
Anti-flicker	You can select **50Hz**, **60Hz**, or **Outdoor** from the list. • **50Hz**: When the electric supply is 50 Hz, the system adjusts the exposure according to ambient light automatically to ensure that stripes do not appear. • **60Hz**: When the electric supply is 60 Hz, the system adjusts the exposure according to ambient light automatically to ensure that stripes do not appear. • **Outdoor**: If you select **Outdoor**, the exposure mode can be set to **Gain Priority**, **Shutter Priority**, **Iris Priority**. Different devices support different exposure modes.
Mode	Set the exposure modes. You can select from **Auto**, **Manual**, **Iris Priority**, **Shutter Priority** and **Gain Priority**. The **Auto** mode is selected by default. • **Auto**: Exposure is automatically adjusted according to scene brightness if the overall brightness of images is in the normal exposure range. • **Manual**: You can adjust the **Gain**, **Shutter**, and **Iris** value manually. • **Iris Priority**: You can set the iris to a fixed value, and the Camera will adjust the shutter value. If the image brightness is not enough and the shutter value has reached its upper or lower limit, the system adjusts gain value automatically to ensure the image is at an ideal brightness. • **Shutter Priority**: You can customize the shutter range. The Camera automatically adjusts the aperture and gain according to the scene brightness. • **Gain Priority**: Gain value and exposure compensation value can be adjusted manually.
Gain	If you select **Gain Priority** or **Manual**, you can set the gain range to automatically increase the gain of the Camera when the illumination is low, thus obtaining a clear image.
Shutter	Set the effective exposure time. The smaller the value, the shorter the exposure time.
Shutter range	If you select **Shutter Priority** or **Manual**, and select **Shutter** as **Custom**, you can set the shutter range in ms unit.
Iris	You can set the camera luminous flux. The larger the iris value, the brighter the image.
Exposure Compensation	You can set the exposure compensation value. The value ranges from 0 to 100. The higher the value, the brighter the image.
Exposure adjustment speed	You can set the exposure adjustment speed. The value ranges from 0 to 100.
Upper gain threshold	You can set the upper gain threshold of exposure. The value ranges from 0 to 100.

Parameter	Description
Low-speed shutter	In a low luminance environment, snapping pictures by expending the automatic exposure time effectively reduces image noise, but pictures of moving objects might be blurred.
Lower threshold of low-speed shutter	You can set the lower threshold of the camera low-speed shutter. The lower the value, the faster the shutter.
AE Recovery	Automatic exposure is an automated digital camera system that adjusts the aperture and/or shutter speed, based on the external lighting conditions for images and videos. If you have selected an **AE Recovery** time, the exposure mode will be restored to the previous mode after you adjust the iris value. There are 5 options: Off, 5 min, 15 min, 1 hour, and 2 hour.
2D NR	Average the pixel of a single frame image with other pixels to reduce image noise. The higher the level, the lower the noise, and the blurrier the image.
3D NR	Reduce the noise of multiple-frame (at least two frames) images by using inter-frame information between two adjacent frames in a video. The higher the level, the lower the noise, and the larger the trailing smear.
Level	Noise reduction grade. The value ranges from 0 to 100. The larger the value, the less the noise.
Advanced NR	You can suppress noise in the time-domain and space-domain based on the video filter method.
Time domain grade	You can set the time domain grade. The value ranges from 0 to 100.
Space domain grade	You can set the space domain grade. The value ranges from 0 to 100.

Some models do not support advanced noise reduction, time domain grade, or space domain grade.

Step 3 Click **Apply**.

4.3.1.5 Backlight

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

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **Backlight**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then select a backlight mode from the list.

Figure 4-8 Backlight mode

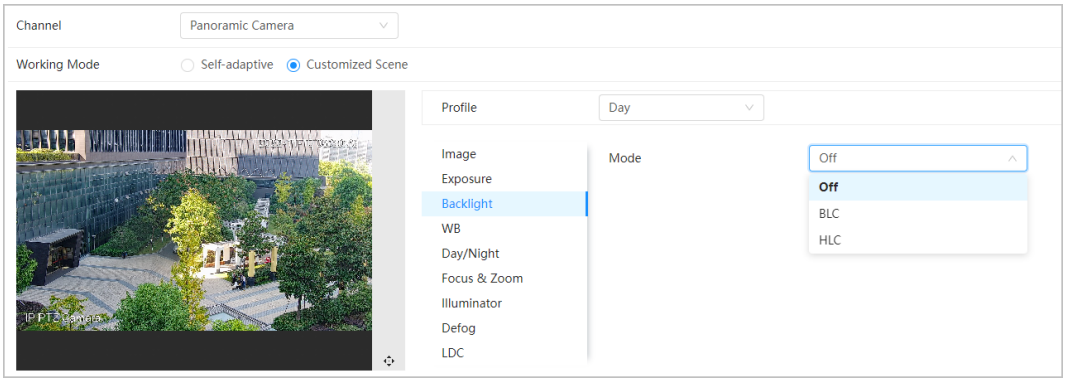


Table 4-5 Description of backlight parameters

Parameter	Description
BLC	After enabling BLC, the camera can get a clearer image of the dark areas on the target when shooting against light. You can select default mode or customized mode. • When in default mode, the system adjusts exposure according to ambient lighting conditions automatically to ensure the clarity of the darkest area. • When in customized mode, the system automatically adjusts exposure only to the set area according to ambient lighting conditions to ensure the image of the set area is at its ideal brightness.
WDR	The system dims bright areas and compensates for dark areas to ensure the clarity of all areas. The higher the value, the stronger the darkness, but the more intense the noise. There might be a few seconds of video loss when the device is switching to WDR mode from other modes.
HLC	Enable HLC when extremely strong light is in the environment (such as a toll station or parking lot), and then the camera will dim strong lights, and reduce the size of Halo zone to lower the brightness of the whole image, so that the camera can capture human faces or car plate details clearly. The larger the value, the more obvious the HLS effect.

Step 3 Click **Apply**.

4.3.1.6 White Balance

White balance function makes the image color display precisely as it is. When in WB mode, white objects are displayed in a white color depending on the environment.

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **WB**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure White Balance Mode.

Figure 4-9 White balance

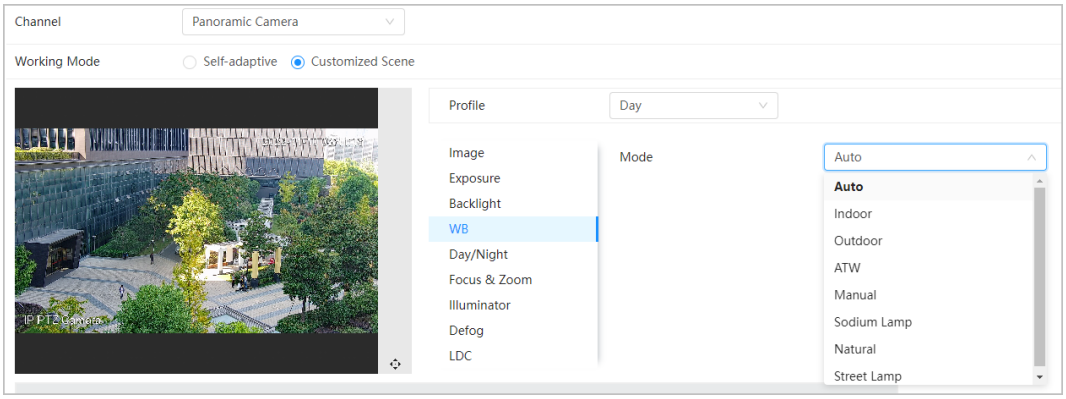


Table 4-6 Description of white balance parameters

Parameter	Description
Auto	The system compensates WB according to color temperature to ensure color precision.
Indoor	The system compensates WB for the general situation of indoor lighting to ensure color precision.
Outdoor	The system auto compensates WB to most outdoor environments with natural or artificial light to ensure color precision.
ATW	When the device is tracked, the system automatically compensates WB to ensure color precision.
Manual	Configure red gain and blue gain manually. The system automatically compensates WB according to color temperature.
Sodium Lamp	The system compensates WB to sodium lamp to ensure color precision.
Natural Light	The system automatically compensates WB to environments without artificial light to ensure color precision.
Street Lamp	The system compensates WB to outdoor night scenes to ensure color precision.

Step 3 Click **Apply**.

4.3.1.7 Day/Night

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

Step 1 Click  on the upper-right corner of the page, and then select **Camera** > **Image** > **Day/Night**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure parameters.

Figure 4-10 Day/Night mode

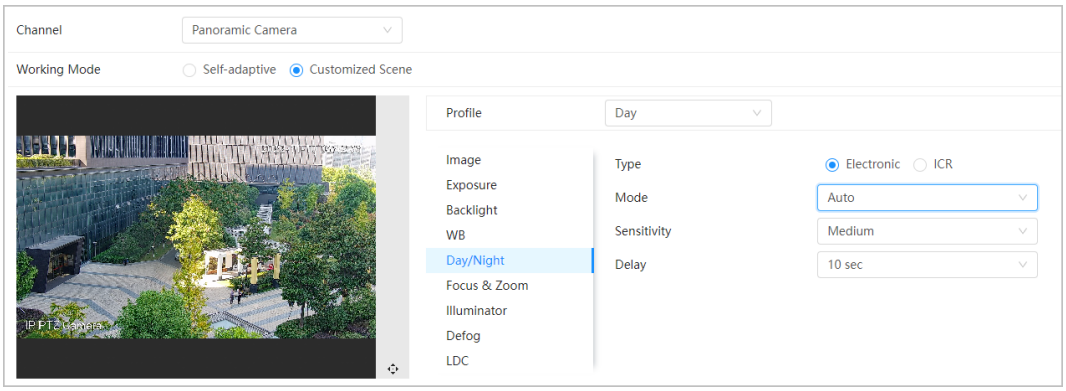


Table 4-7 Description of Day/Night mode parameters

Parameter	Description
Type	Select the type from **Electronic** and **ICR**.

Parameter	Description
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 the image in color. • **Auto**: The system switches between color and black-and-white according to actual conditions. • **B/W**: The system displays black-and-white image.
Sensitivity	This configuration is available only when you set **Auto**as **Mode**.You can configure camera sensitivity when switching between color and black-and-white mode. The higher the sensitivity, the easier for the switch to be triggered.
Delay	This configuration is available only when you set **Auto** as **Mode**.You can configure the delay when camera switching between color and black-and-white mode. The lower the value, the faster the camera switches between color and black-and-white mode.

Step 3 Click **Apply**.

4.3.1.8 Focus & Zoom

Focus & zoom (digital zoom) refers to capturing a part of the image to magnify it. The higher the magnification, the blurrier the images.

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **Focus & Zoom**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure focus & zoom parameters.

Figure 4-11 Focus & Zoom

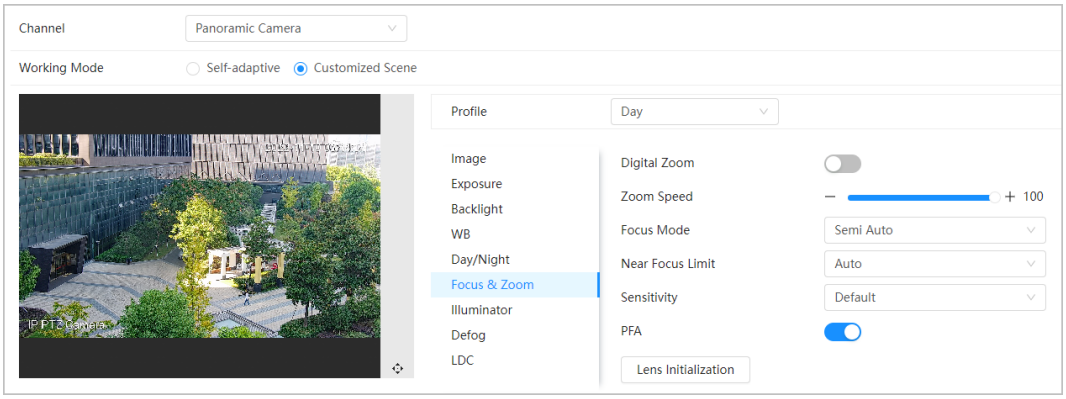


Table 4-8 Description of focus & zoom parameters

Parameter	Description
Digital Zoom	Click to enable **Digital Zoom** function.You can use the digital zoom to continue zooming operation even if the optical zoom is at its maximum value.
Zoom Speed	Adjust the zoom speed of the camera. The larger the value, the faster the zoom speed.

Parameter	Description
Focus Mode	Set focus mode. • **Auto**: Once there is any movement or change of the object on the video image and the image turns blurry, the Camera will focus again automatically. • **Semi-Auto**: The Camera will focus automatically when you click **Focus** or **Zoom**. It will also focus automatically when a preset change or the PTZ switch is detected. • **Manual**: The Camera cannot focus automatically. You need to adjust the focus manually.
Near Focus Limit	Set the near focus limit of the Camera. If the focus limit is too small, the Camera might focus on its dome. By changing the focus limit, the focus speed can be changed.
Sensitivity	Trigger the focusing sensitivity of the Camera. The higher the sensitivity, the easier to trigger focus.
PFA	After enabling **PFA**, when moving the picture, the Camera automatically focuses for a clear picture.
Lens Initialization	Click this button, and then the lens will be initialized automatically. The lens will be extended to calibrate the zoom and focus.

Step 3 Click **Apply**.

4.3.1.9 Illuminator

This configuration is available only when the device is equipped with illuminator. Common fill lights are classified into infrared IR lights, white light, laser lights, and full-spectrum lights. Different device models support different types of fill lights.

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **Illuminator**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure illuminator mode.

Figure 4-12 Illuminator

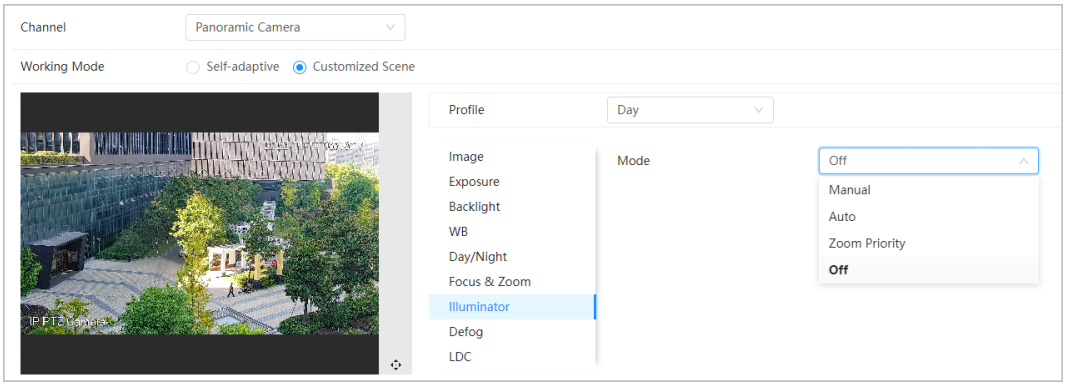


Table 4-9 Description of illuminator parameters

Parameter	Description
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. Some devices support setting the brightness upper limit and sensitivity of the illuminator. • Sensitivity: The higher the sensitivity setting, the higher the brightness can turn on the illuminator when the actual scene darkens. When the actual scene becomes bright, a higher brightness is required to turn off the illuminator. • Brightness upper limit: If the fill light is too bright, the center of the picture may be overexposed, and then the actual image cannot be seen clearly. We recommend you adjust the brightness upper limit according to the actual scene. The value range is 0-100, and the default is 100.
Priority	The system adjusts the illuminator intensity automatically according to the change of the ambient light. You can configure light **Compensation** manually to fine-tune the brightness of the fill light. • When the ambient light turns darker, the system turns on the low beam lights first. If the brightness is still not enough, it turns on the high beam lights. • When the ambient light turns brighter, the system dims high beam lights until they are off, and then the low beam lights. • When the focus reaches a certain wide angle, the system will not turn on high beam light in order to avoid over-exposure in short distance.
Off	Illuminator is off.

Step 3 Click **Apply**.

4.3.1.10 Defog

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

Step 1 Click  on the upper-right corner of the page, and then select **Camera** > **Image** > **Defog**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list, and then configure illuminator mode.

Figure 4-13 Defog

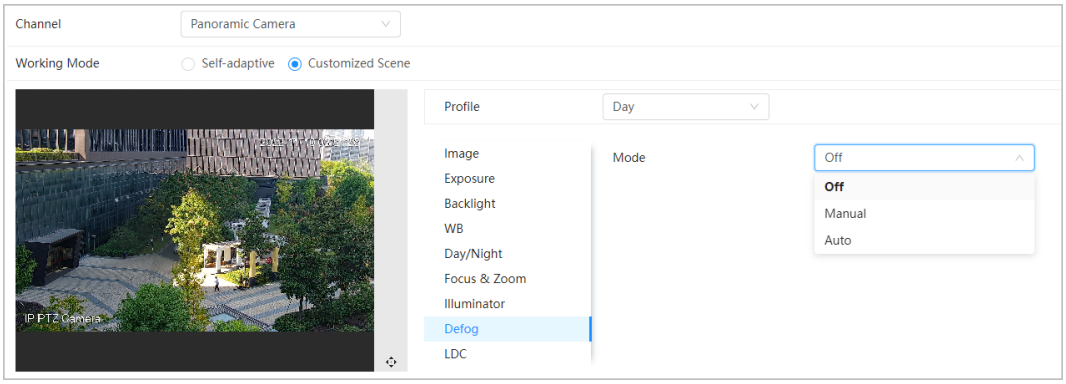


Table 4-10 Description of defog parameters

Defog	Description
Manual	Configure function intensity and atmospheric light mode manually, and then the system adjusts image clarity accordingly. Atmospheric light mode can be adjusted automatically or manually.
Auto	The system automatically adjusts image clarity according to the actual condition.
Off	Defog function is disabled.

Step 3 Click **Apply**.

4.3.1.11 LDC

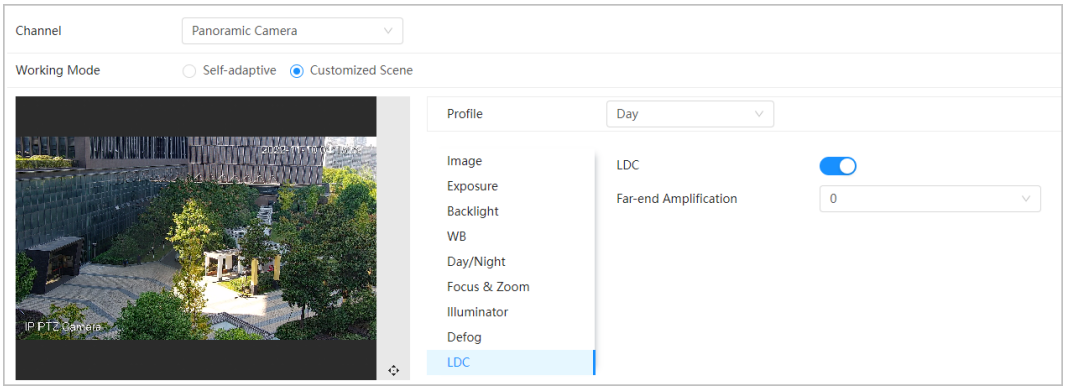
Due to the particularity of the product, some objects (such as roads) in the panoramic splicing devices are distorted. The distortion can be improved by enabling the LDC function, but part of the image perspective will be lost after this function is enabled.

Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Image** > **LDC**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Enable **LDC** function, and then set **Far-end Amplification**.

Figure 4-14 LDC



Step 4 Click **Apply**.

4.3.2 Setting Encode Parameters

This section introduces video parameters, such as video, snapshot, overlay, ROI (region of interest),

and path.

Click **Default**, and the device is restored to default configuration. Click **Refresh** to view the latest configuration.

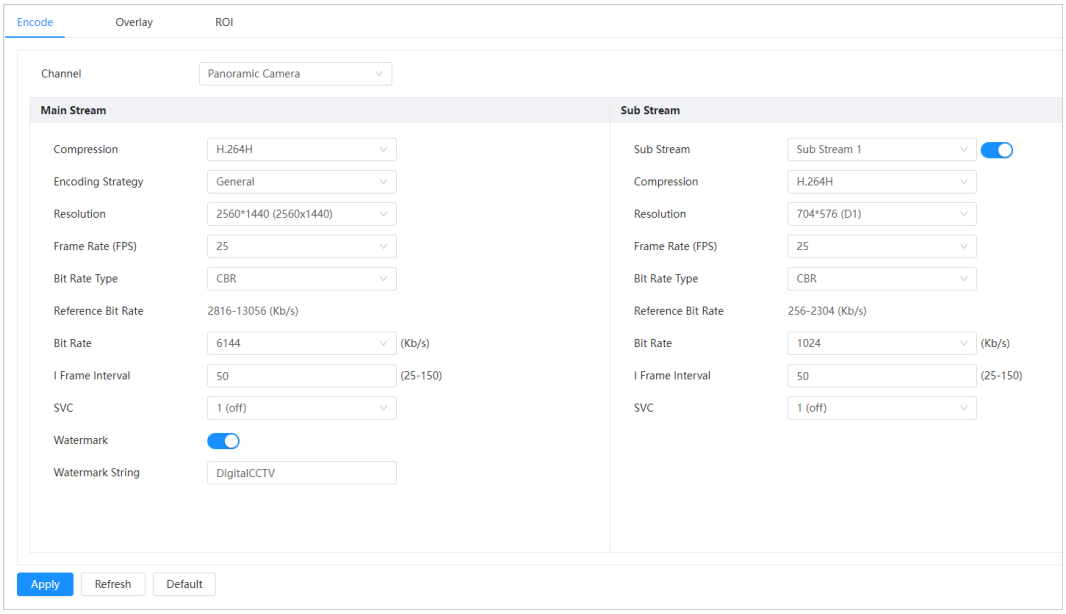
4.3.2.1 Encode

Configure video stream parameters, such as compression, resolution, frame rate, bit rate type, bit rate, I frame interval, SVC (Scalable Video Coding), and watermark.

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

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Figure 4-15 Encode



Step 3 Configure encode parameters.

Table 4-11 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.

Parameter	Description
Compression	Select encode mode. • **H.264**: It includes **H.264B** (baseline profile encode mode), **H.264** (main profile encode mode) and **H.264H** (high profile encode mode). Under the same image quality, the bandwidth of the three decreases in turn. • **H.265**: Main profile encode mode. Compared with H.264, it requires smaller bandwidth. • **MJPEG**: Under this mode, the image requires high bit rate value to ensure clarity, we recommend you set the **Bit Rate** value to the biggest value in the **Reference Bit Rate**.
Encoding Strategy	Select the encoding strategy. When you enabling smart codec, it can improve video compressibility and save storage space. After smart codec is enabled, the device would stop supporting the third bit stream, ROI, and smart event detection.
Resolution	The resolution of the video. The higher the value, the clearer the image, but the bigger the required bandwidth.
Frame Rate (FPS)	The number of frame in one second of video. The higher the value, the clearer and smoother the video.
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 the monitoring scene changes. The **Bit Rate Type** can only be set as **CBR** when **Encode Mode** is set as **MJPEG**.
Quality	You can configure this parameter when the **Bit Rate Type** is set as **VBR**.The better the quality, but the bigger the required bandwidth.
Reference Bit Rate	The most recommended suitable bit rate value range according to the defined resolution and frame rate.
Max Bit Rate	You can configure this parameter when the **Bit Rate Type** is set as **VBR**.You can select the value of the **Max Bit Rate** according to the **Reference Bit Rate** value, and then the bit rate changes as the monitoring scene changes, but the **Max Bit Rate** keeps close to the defined value.
Bit Rate	You can configure this parameter when the **Bit Rate Type** is set as **CBR**.Select bit rate value in the list according to actual condition.

Parameter	Description
I Frame Interval	The number of P frames between two I frames, and the **I Frame Interval** range changes as **FPS** changes.We recommend you set **I Frame Interval** twice as big as **FPS**.
SVC	SVC (Scaled Video Coding) means encoding a high quality video bit stream that contains one or more subset bit streams. When sending stream, the system will quit some data of related lays according to the network status to improve fluency. • 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.
Watermark	You can verify the watermark to check whether the video has been tampered.
Watermark String	

Step 4 Click **Apply**.

4.3.2.2 Overlay

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

4.3.2.2.1 Channel Title

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

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

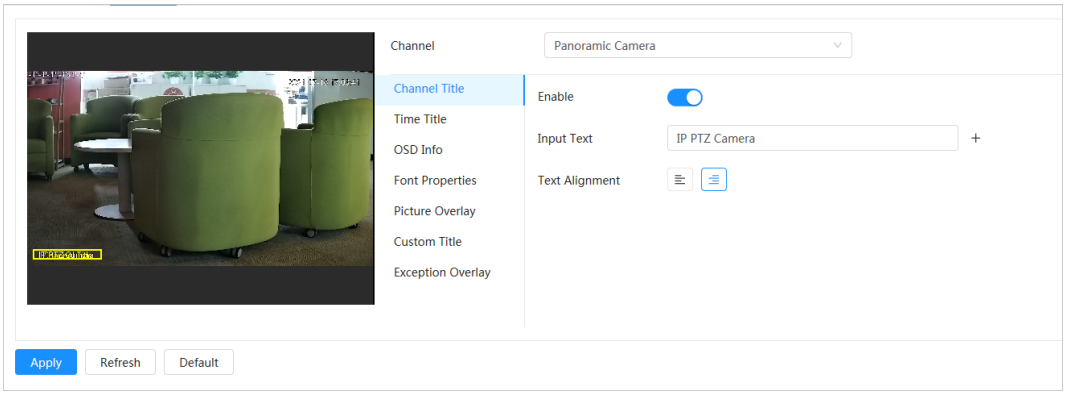
Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the channel title function.

Step 4 Configure channel title, and then select the text alignment.

Click + to add the channel title. You can add 1 line at most.

Figure 4-16 Channel title



Step 5 Move the title box to the position that you want in the image.

Step 6 Click **Apply**.

4.3.2.2.2 Time Title

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

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

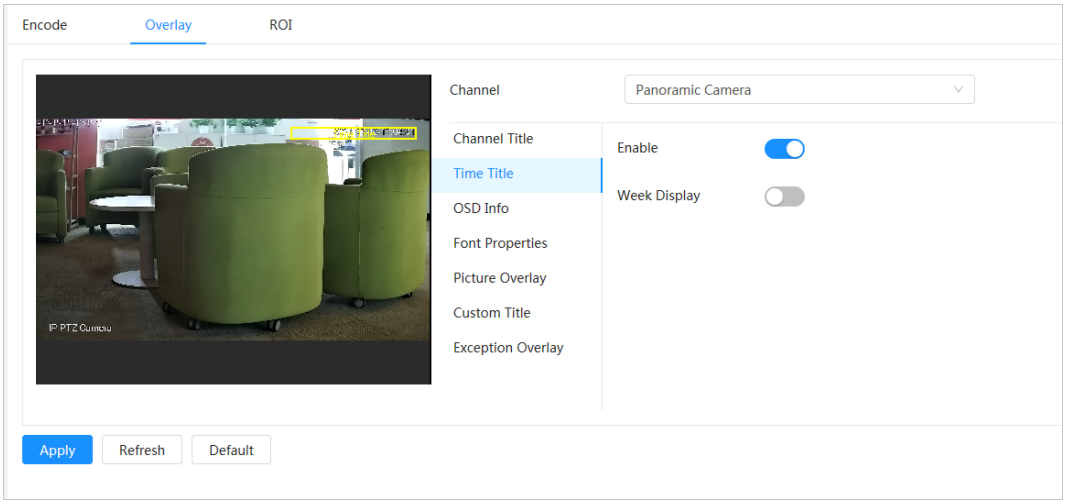
Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the time title function.

Step 4 (Optional) Select **Week Display** to display the day of week in the video image.

Step 5 Move the time box to the position that you want in the image.

Figure 4-17 Time title



Step 6 Click **Apply**.

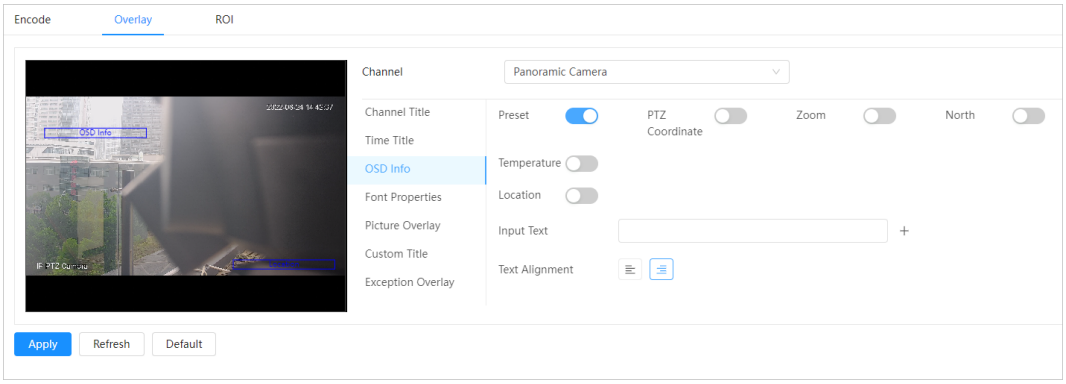
4.3.2.2.3 OSD Information

If you want to represent information such as preset dots, PTZ\geography location, zoom and touring pattern on the image, you can enable this function.

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

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Figure 4-18 OSD info



Step 3 Configure OSD information.

Table 4-12 Description of OSD information parameter

Parameter	Description
Preset	After enabling, the preset name is displayed on the image when the camera turns to the preset, and it will disappear 3 s later.

Parameter	Description
PTZ Coordinate	After enabling, the PTZ coordinates information is displayed on the image.
Zoom	After enabling, the zoom information is displayed on the image.
North	After enabling, the north direction is displayed on the image. When you enable the due north orientation function, the system will prompt you to restart the PTZ.
Temperature	After enabling, the temperature information is displayed on the image.
Location	After enabling, the geographical location is displayed in the text.
Input Text	Enter the text, and then the text is displayed on the image. You can add up to 13 lines of text.
Text Alignment	Set the alignment mode of the displayed information on the image.

Step 4 Move the OSD box to the position that you want on the image.

Step 5 Click **Apply**.

4.3.2.2.4 Font Properties

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

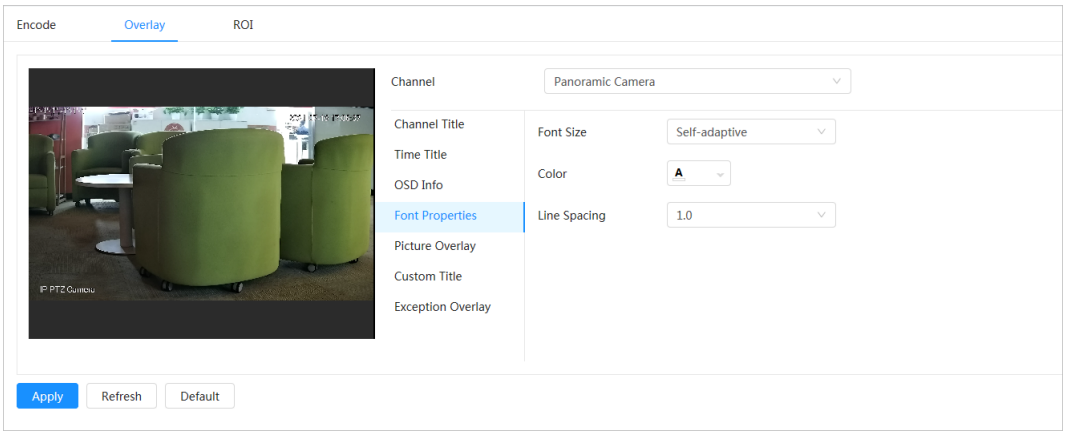
Step 1 Select > **Camera** > **Encode** > **Overlay** > **Font Properties**.

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Select the font size and color.

You can set the RGB value to customize the font color.

Figure 4-19 Font properties



Step 4 Set the line spacing.

Step 5 Click **Apply** to complete the settings.

After saving the settings, the font properties in the video image change color and size accordingly.

4.3.2.2.5 Picture Overlay

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

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

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

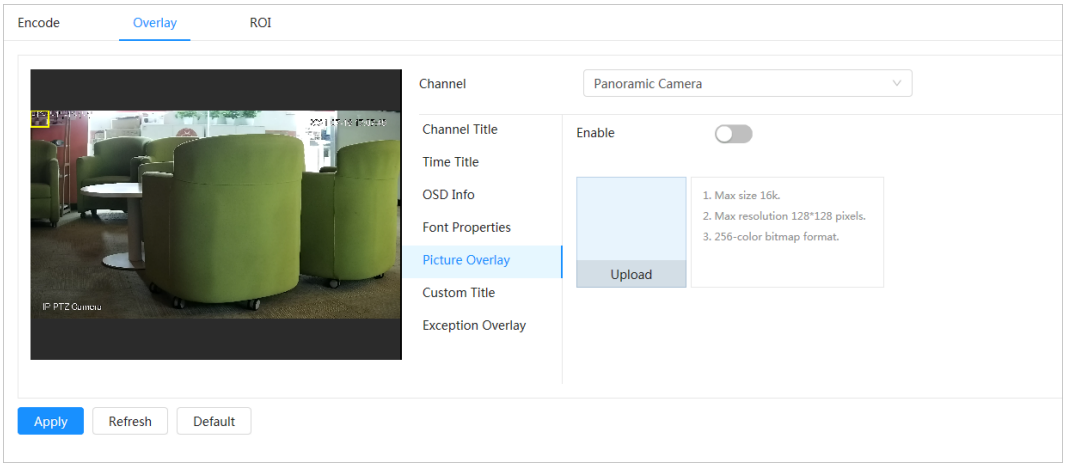
Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the picture overlay function.

Step 4 Click **Upload** to select the overlaid picture.

The picture show in the **Picture Preview**.

Figure 4-20 Picture overlay



Step 5 Move the overlaid picture to the position you want in the image.

Step 6 Click **Apply**.

4.3.2.2.6 Custom Title

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

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

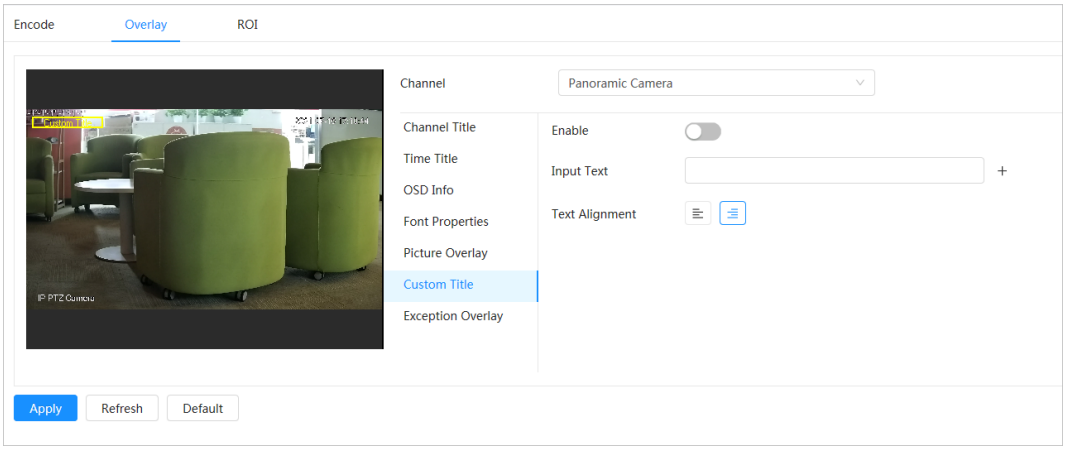
Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the custom title function.

Step 4 Enter the custom title text, and then select the text alignment.

Click + to add the custom title text. You can add 1 line at most.

Figure 4-21 Custom title



Step 5 Move the custom box to the position that you want in the image.

Step 6 Click **Apply**.

4.3.2.2.7 Exception Overlay

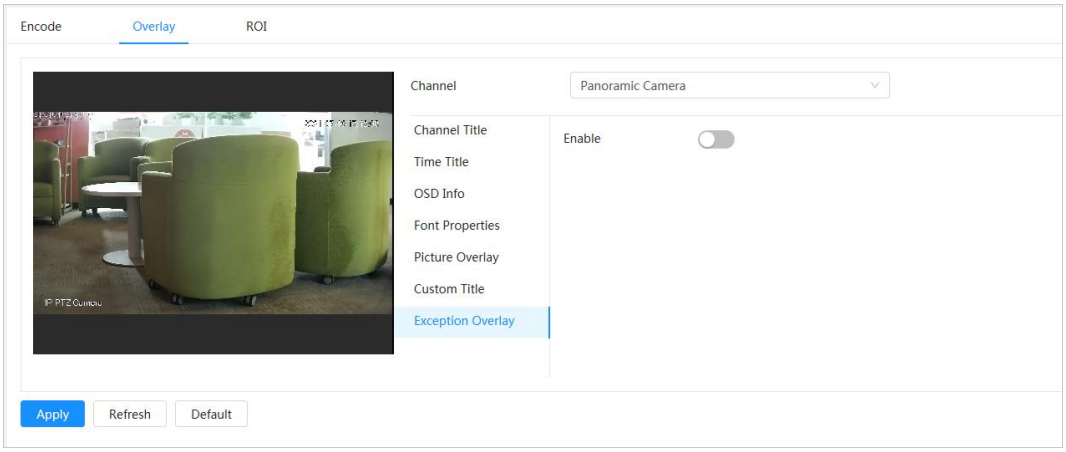
You can enable this function to display the overlaid exceptional information of the Camera on the image.

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

Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the exception overlay function.

Figure 4-22 Exception overlay



Step 4 Click **Apply**.

4.3.2.3 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**.

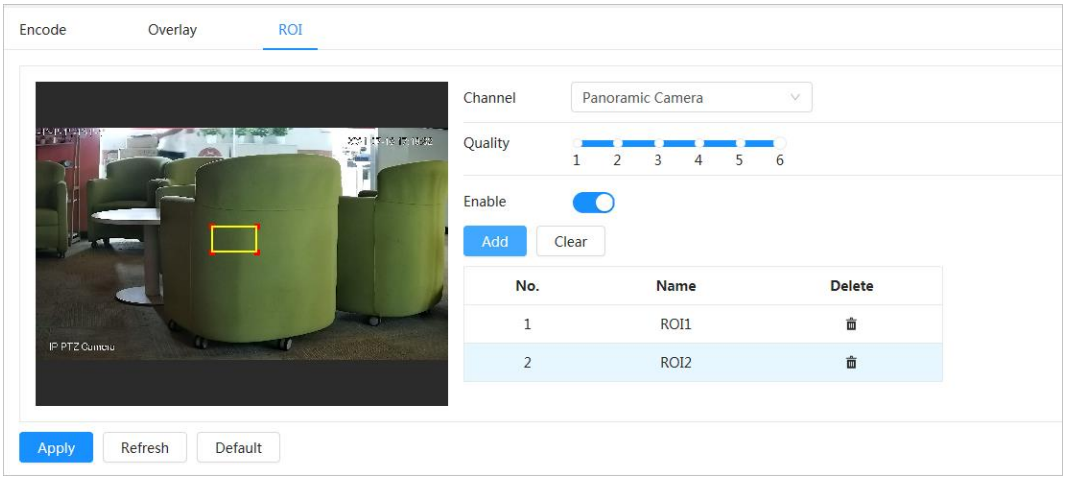
Step 2 Select the camera that needs to be configured from the **Channel** drop-down list.

Step 3 Click to enable the ROI function.

Step 4 Click **Add**, draw an area 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, the better the quality.
- Click **Clear** to delete all the area boxes; select one box, and then click to delete it.

Figure 4-23 ROI



Step 5 Click **Apply**.

4.3.3 Audio

You can configure audio parameters and alarm audio.

The function is available on select models.

4.3.3.1 Configuring Audio Parameters

Configure the noise filter and sampling frequency of the Camera. When enabling audio encoding, the network stream contains both audio and video, otherwise, it is only video stream.

You need to click on the upper-right corner of the page, and then select **Camera** > **Encode** > **Encode** to enable the video stream of Sub Stream before enabling the audio.

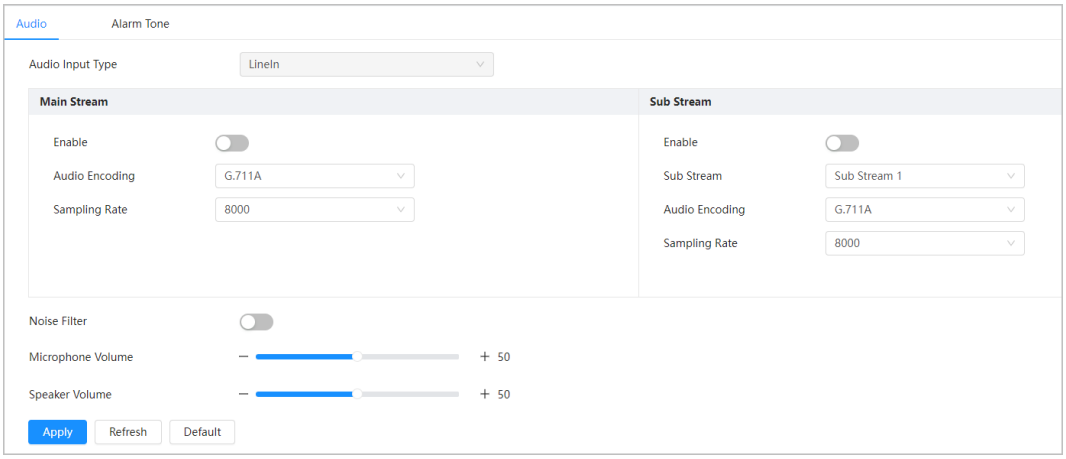
Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Audio** > **Audio**.

Step 2 Select **Main Stream** or **Sub Stream** to enable audio encoding.

For the cameras with multiple channels, select the channel number.

Please carefully activate the audio acquisition function according to the actual requirements of the application scenario.

Figure 4-24 Audio



Step 3 Configure audio parameters.

Table 4-13 Description of audio parameters

Parameter	Description
Audio Encoding	Configure audio encoding. The configured audio encode mode applies to both audio and intercom. The default value is recommended.
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 automatically filters ambient noise.
Microphone Volume	Adjusts microphone volume.
Speaker Volume	Adjusts speaker volume.

Step 4 Click **Apply**.

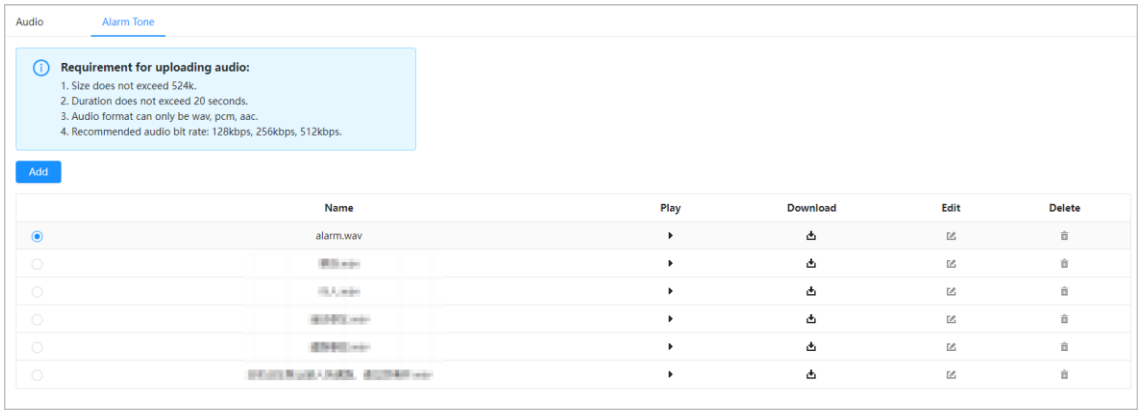
4.3.3.2 Configuring Alarm Tone

You can set the alarm audio to be played when an alarm is triggered. For some devices, you can record or upload alarm audios.

Procedure

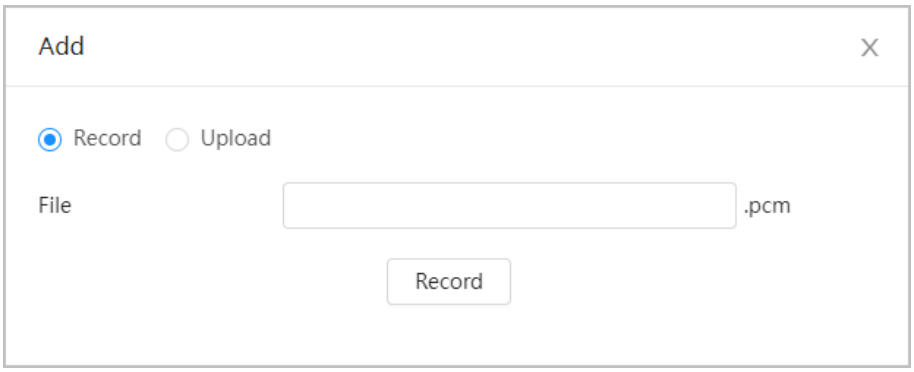
Step 1 Click on the upper-right corner of the page, and then select **Camera** > **Audio** > **Audio**.

Figure 4-25 Alarm audio



Step 2 Click **Add**.

Figure 4-26 Add audio file



Step 3 Configure the audio file.

- Select **Record**, enter the audio file name, and then click **Record**.
  Click **Stop** to complete recording.
- Select **Upload.**, click **Browse**, select the audio file to be uploaded, and then click **Upload.**

- The format of recorded audio is .pcm. Audio recording is only supported by some devices.
- Audio file in the format of .wav can be uploaded.
- You can edit and delete recorded or uploaded audio.
  - Click to edit audio file.
  - Click to delete audio file.

Step 4 Select the audio file that you need.

Related Operations

- Play audio: Click to play the alarm audio.
- Download audio: Click to download the alarm audio to local storage. The audio is saved to the default download path of the browser.

4.4 Network

This section introduces network configuration.

4.4.1 TCP/IP

You can configure IP address and DNS (Domain Name System) server and other information according to network planning to ensure the Camera is properly connected to other devices in the network.

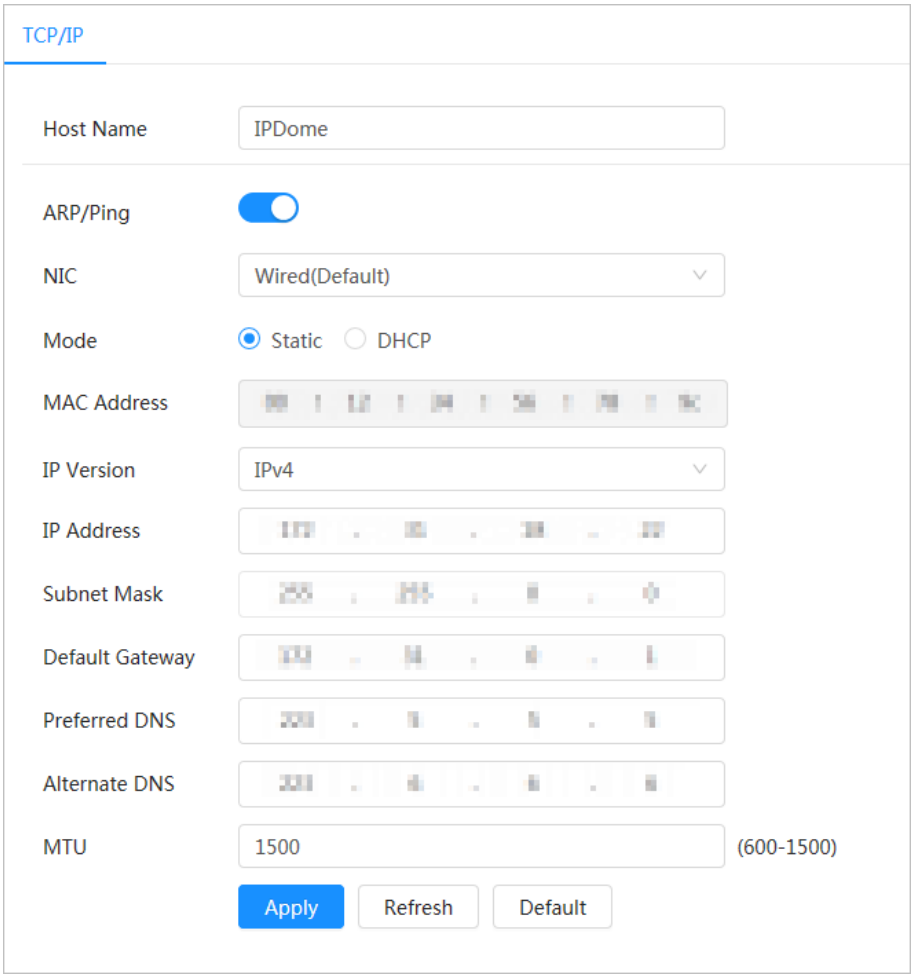
Prerequisites

The Camera has connected to the network.

Procedure

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

Figure 4-27 TCP/IP



Step 2 Configure TCP/IP parameters.

Table 4-14 Description of TCP/IP parameters

Parameter	Description
Host Name	Enter the host name. The maximum length is 15 characters.
ARP/Ping	Click to enable ARP/Ping to set the IP address service. Obtain the camera MAC address, and then you can change and configure the device IP address with ARP/ping command. This function 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, and then 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 function is not enabled, the IP address cannot be configured with ping packet.
NIC	Select the Ethernet card that need to be configured. The default NIC 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 then the camera acquires IP address automatically.
MAC Address	Displays host MAC address.
IP Version	Select **IPv4** or **IPv6**.
IP Address	When you select **Static** as **Mode**, enter the IP address and subnet mask. • IPv6 does not have a subnet mask. • The default gateway must be on 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**.

Related Operations

Configuring IP address with ARP/Ping

1. Keep the Camera that needs to be configured and the computer 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.

Figure 4-28 Edit 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

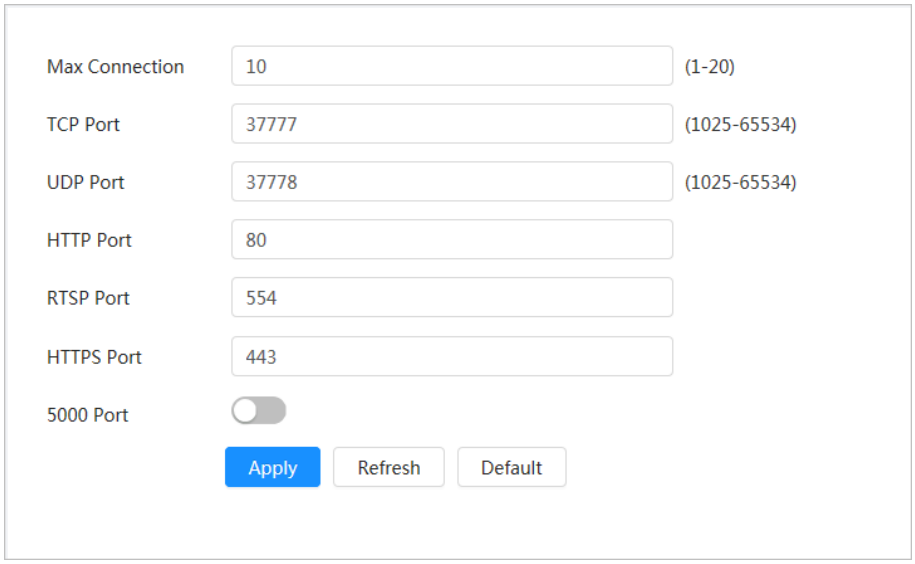
4. Restart the Camera.
5. Check the computer command line, if information such as **Reply from 192.168.0.125…**is displayed, the configuration succeeds, and you can turn it off then.
6. Enter http://(IP address) in the browser address bar to log in.

4.4.2 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** > **Port**.

Figure 4-29 Port



Step 2 Configure port parameters.

- The configuration of **Max Connection**, **RTSP Port**, **HTTPS Port** take effect immediately, and others will take effect after reboot.
- 0–1024, 1900, 3800, 5000, 5050, 9999, 37776, 37780–37880, 39999, 42323 are occupied for specific uses, please do not use them.
- Do not use the same value of any other port during port configuration.

Table 4-15 Description of port parameters

Parameter	Description
Max Connection	The maximum 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.

Parameter	Description
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 requires 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 as default (554). • 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
HTTPS Port	Hyper Text Transfer Protocol over Secure Socket Layer communication port. It is 443 by default.

Step 3 Click **Apply**.

4.4.3 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.

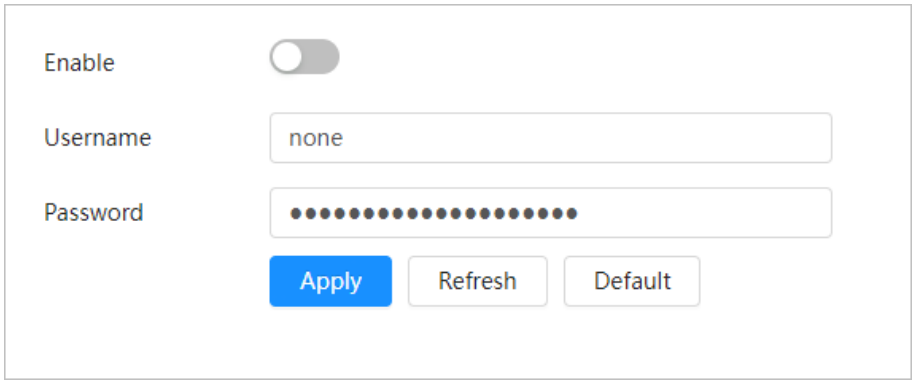
Prerequisites

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

Procedure

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

Figure 4-30 PPPoE



Step 2 Click , and then enter username and password.

- Disable UPnP while using PPPoE.
- After making PPPoE connection, the device IP address cannot be modified through webpage.

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.

4.4.4 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

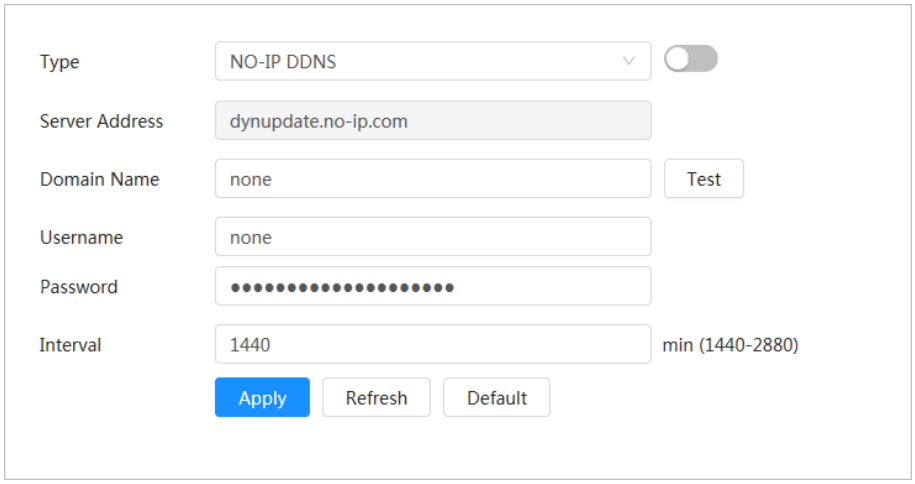
Check the type of DNS server supported by the camera.

Procedure

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.

Figure 4-31 DDNS



Step 2 Click to enable the function.

Step 3 Configure DDNS parameters.

Table 4-16 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	You can click **Test** to check whether the domain name registration is successful when selecting **NO-IP DDNS** type.
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. The interval time is 10 minutes by default.

Step 4 Click **Apply**.

Result

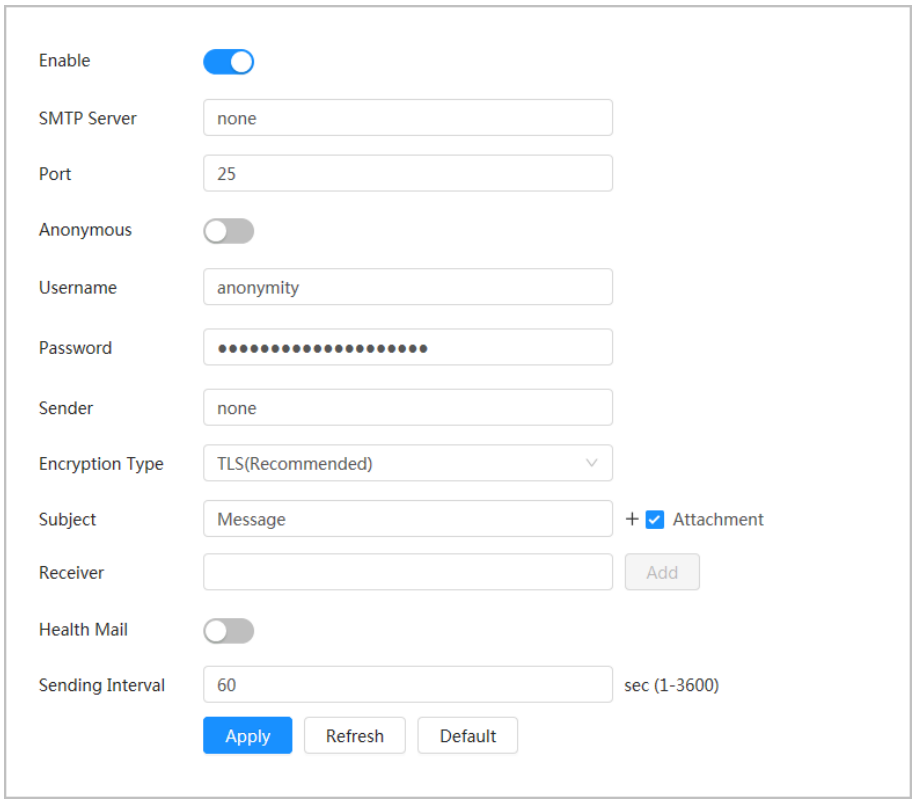
Open the browser on computer, enter the domain name at the address bar, and then press **Enter**, the login page is displayed.

4.4.5 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**.

Figure 4-32 Email



Step 2 Click to enable the function.

Step 3 Configure email parameters.

Table 4-17 Description of email parameters

Parameter	Description	
SMTP Server	SMTP server address.	For details, see Table 4-18.
Port	The port number of the SMTP server.	
Username	The account of the SMTP server.	
Password	The password of the SMTP server.	
Anonymous	Click , and then the sender's information is not displayed in the email.	
Sender	The email address of the sender.	
Encryption Type	Select from **None**, **SSL (Secure Sockets Layer)** and **TLS (Transport Layer Security)**. For details, see Table 4-18.	
Subject	Enter maximum 63 characters in Chinese, English, and Arabic numbers. Click + to select title type, including **Device Name**, **Device ID** and **Event Type**. You can set maximum 2 titles.	
Attachment	Select the checkbox to support attachment in the email.	
Receiver	• Receiver's email address. Supports 3 addresses at most. • After entering the receiver's email address, click **Test** to test whether the emails can be sent and received successfully.	
Health Mail	The system sends test mail to check whether the connection is	

Parameter	Description
Sending Interval	successfully configured. Click , configure the **Sending Interval**, and then the system sends test mail according to the set interval. Sending interval of health mail ranges from 1 second to 3,600 seconds.

Table 4-18 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	
Sina	smtp.sina.com	SSL	465	
		None	25	
126	smtp.126.com	None	25	
163	smtp.163.com	SSL	465/994	• You need to enable SMTP service in your mailbox. • The password should be "Authentication Password". Password for email login is invalid. Authentication password: Authentication password is obtained when the SMTP service is enabled.
		TLS	25	
		None	25	
QQ	smtp.qq.com	SSL	465	• **None** cannot be selected for authentication. • You need to enable SMTP service in your mailbox. • The password should be "Authentication Password". Password for email login is invalid. Authentication password: Authentication password is obtained when the SMTP service is enabled.
		TLS	587	

Step 4 Click **Apply**.

4.4.6 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.

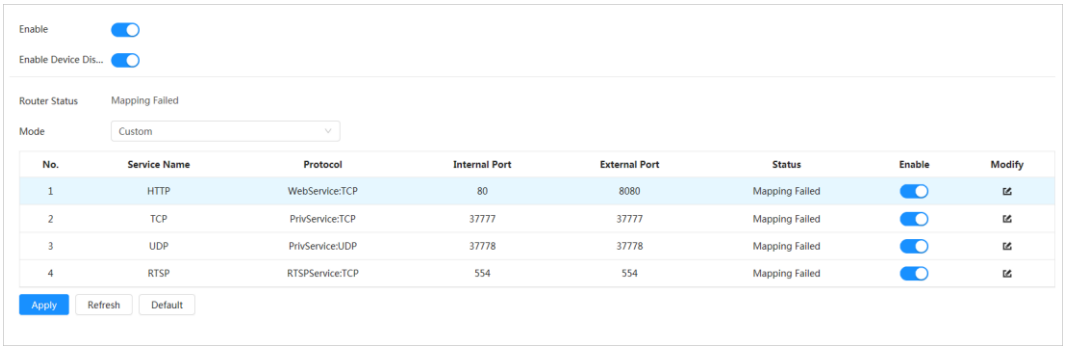
Prerequisites

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

Procedure

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

Figure 4-33 UPnP



Step 2 Click to enable the function. 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. You cannot edit mapping relation.
- Select **Enable Device Discovery** to search for the device through the computer's online neighbors. The device name is the serial number.

Step 3 Click **Apply**.

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

4.4.7 SNMP

SNMP (Simple Network Management Protocol) 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**.

Figure 4-34 SNMP (1)

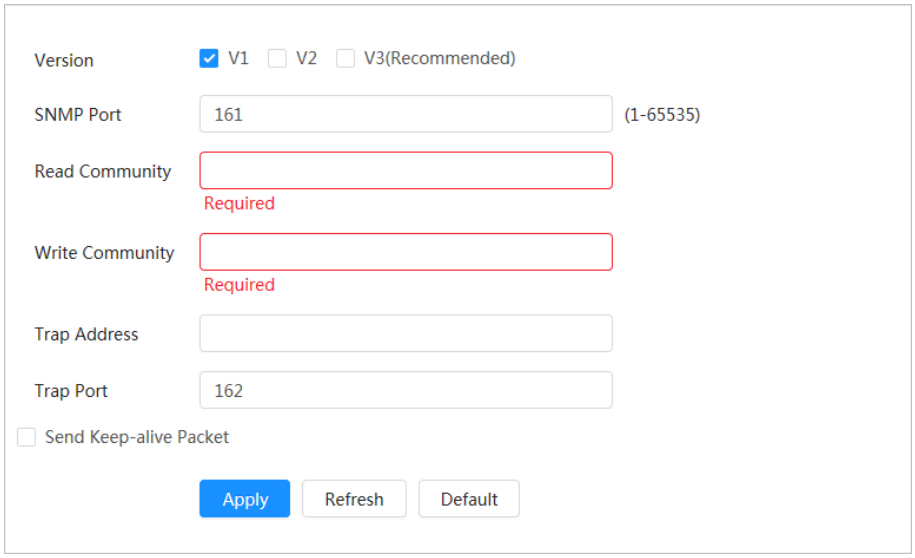
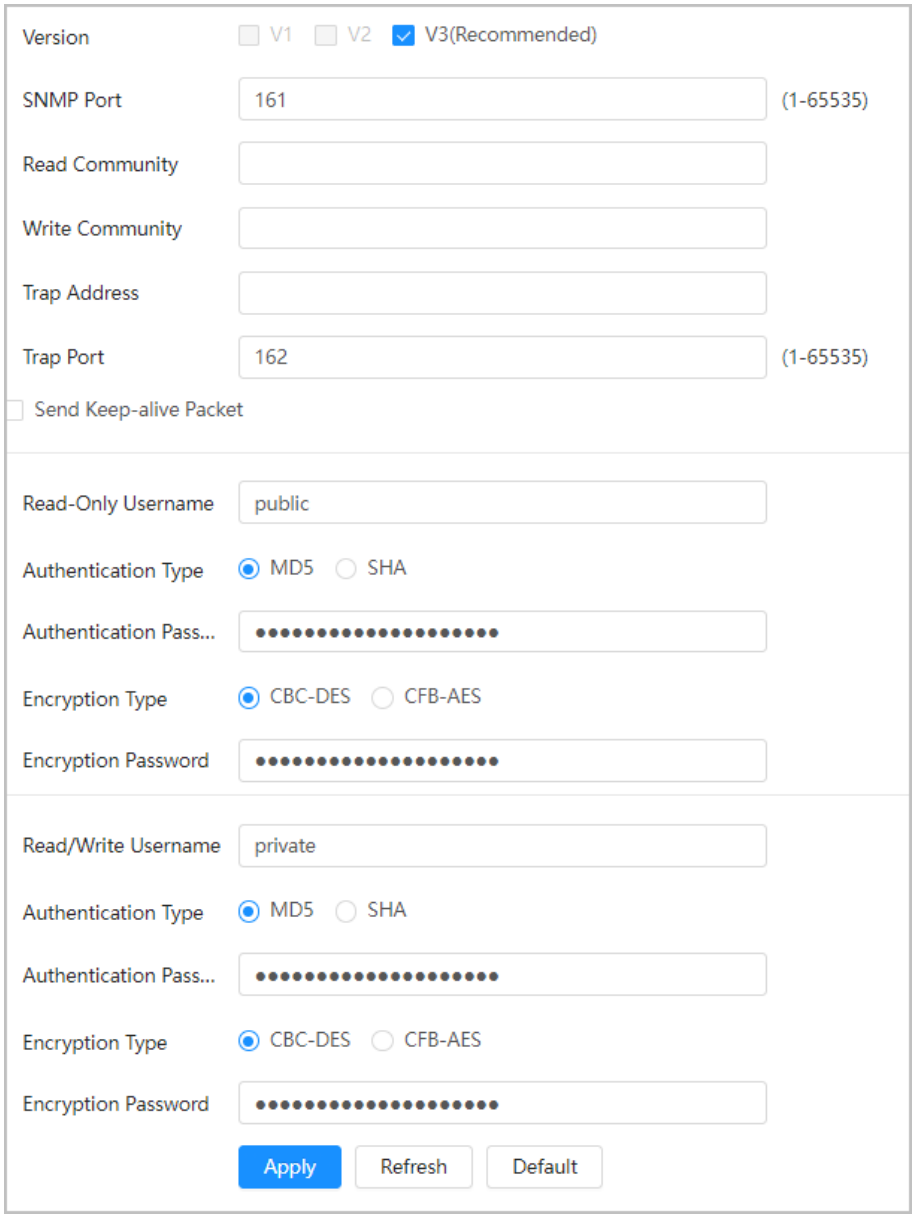


Figure 4-35 SNMP (2)



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 (Recommended)**, and then **V1** and **V2** become unavailable. You can configure the 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 then leave other parameters as default.

Table 4-19 Description of SNMP parameters

Parameter	Description
SNMP Port	The listening port of the software agent in the Camera.
Read Community	The read and write community string that the software agent supports. You can enter number, letter, underline and dash to form the name.
Write Community	
Trap Address	The target address of the trap information sent by the software agent in the Camera.
Trap Port	The target port of the trap information sent by the software agent in the Camera.
Read-only Username	Set the read-only username accessing device. 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. 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 computers with Windows and disable SNMP Trap service. The MG-SOFT MIB Browser will display prompts when alarm is triggered.

4.4.8 Bonjour

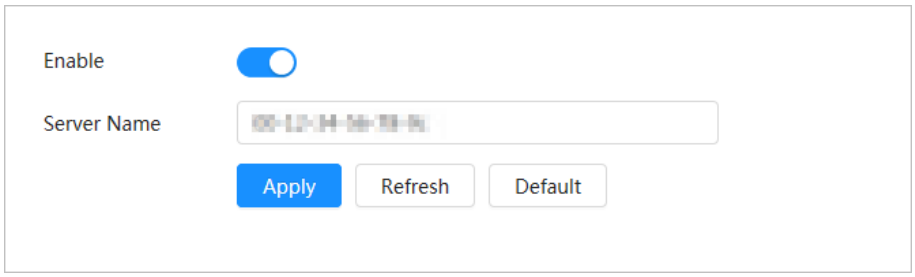
Enable this function, and then the OS and clients that support Bonjour will find the camera automatically. You can have quick visit to the camera with Safari browser.

Bonjour is enabled by default.

Procedure

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

Figure 4-36 Bonjour



Step 2 Click , and then configure the server name.

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.

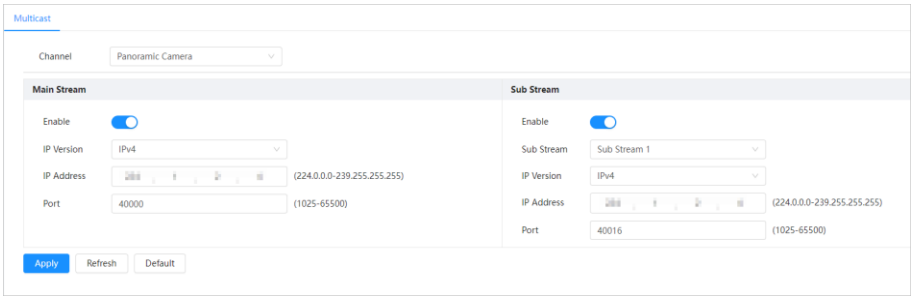
1. Click **Show All Bookmarks** in Safari.
2. Enable **Bonjour**, and then the OS or client automatically detects the network cameras with Bonjour enabled in the LAN.
3. Click the camera to visit the corresponding webpage.

4.4.9 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.

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

Figure 4-37 Multicast



Step 2 Click , select the IP version, and then enter the IP address and port number.

Table 4-20 Description of multicast parameters

Parameter	Description
IP Version	Select IPv4 or IPv6 address format.
IP 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 range of multicast port is 1025–65500. • Single-channel device: The multicast port of corresponding stream: **Main Stream**: 40000; **Sub Stream 1**: 40016; **Sub Stream 2**: 40032. • Multi-channel device: 1. Channel 1: The multicast port of corresponding stream: **Main Stream**: 40000; **Sub Stream 1**: 40016; **Sub Stream 2**: 40032. 2. Channel 2: The multicast port of corresponding stream: **Main Stream**: 40048; **Sub Stream 1**: 40064; **Sub Stream 2**: 40080. 3. Channel 3: The multicast port of corresponding stream: **Main Stream**: 40096; **Sub Stream 1**: 40112; **Sub Stream 2**: 40128. 4. Channel 4: The multicast port of corresponding stream: **Main Stream**: 40144; **Sub Stream 1**: 40160; **Sub Stream 2**: 40176.

Step 3 Click **Apply**.

Result

- On the webpage, click , and then select **Local**. In the **Play Parameter** area, select **Protocol** as **Multicast.**
- Click **Live** on the home page to monitor the video image of corresponding stream in a multicast form on the **Live** page.

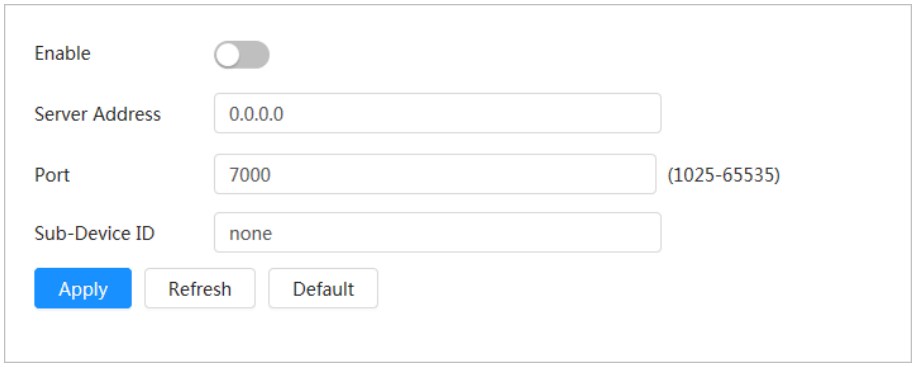
4.4.10 Auto Registration

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** > **Auto Registration**.

Figure 4-38 Register



Step 2 Click , and then configure the server name.

Table 4-21 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**.

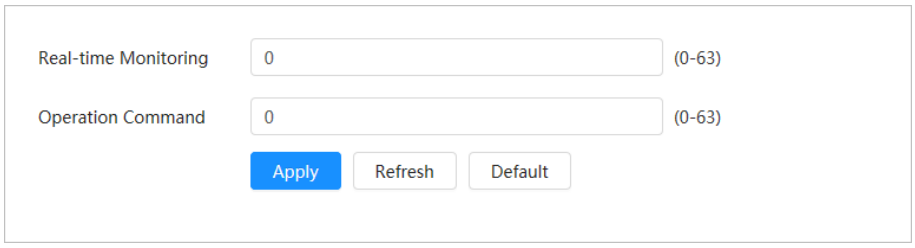
4.4.11 QoS

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**.

Figure 4-39 QoS



Step 2 Configure QoS parameters.

Table 4-22 Description of QoS parameters

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

Step 3 Click **Apply**.

4.4.12 Platform Access

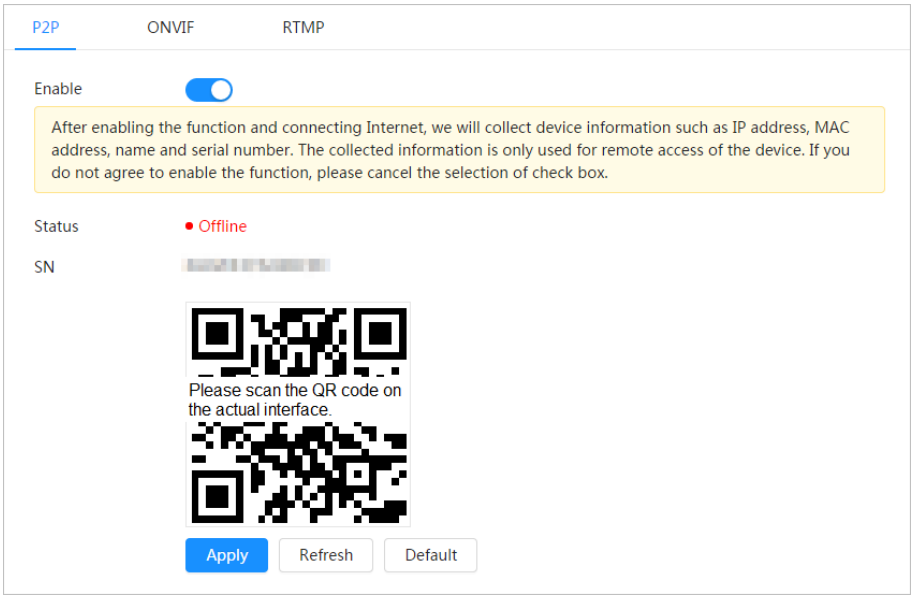
4.4.12.1 P2P

P2P (Peer-to-Peer) technology enables you to manage devices easily without requiring DDNS, port mapping or transit server.

Scan the QR code with your smartphone, and then you can add and manage more devices on the mobile phone client.

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

Figure 4-40 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 then tap **Device management**.

Step 3 Tap **+** on the upper-right corner of the mobile phone.

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

Step 5 Follow the instructions to finish the settings.

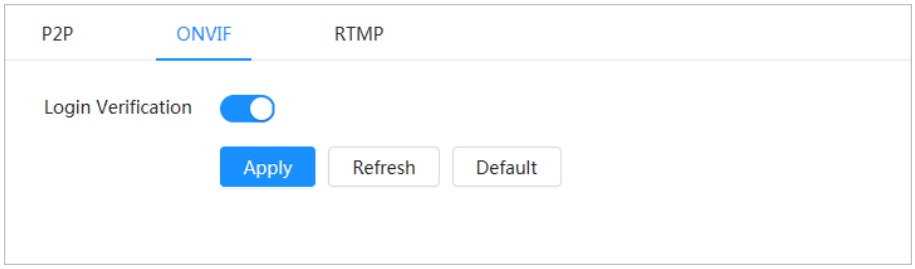
4.4.12.2 ONVIF

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**.

Figure 4-41 ONVIF



Step 2 Click to enable the function.

Step 3 Click **Apply**.

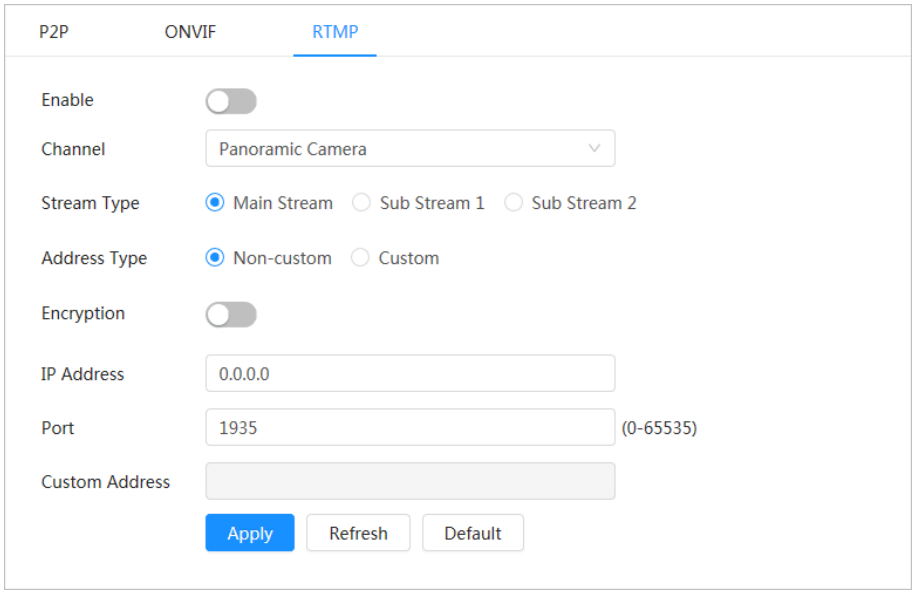
4.4.12.3 RTMP

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 (Advanced Audio Coding) audio format only.

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

Figure 4-42 RTMP



Step 2 Click to enable the function.

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

Step 3 Configure RTMP parameters.

Table 4-23 Description of RTMP parameters

Parameter	Description
Channel	Select the camera channel for which RTMP function is enabled.

Parameter	Description
Stream Type	The stream for live view. Make sure that the video format is H.264, H.264 B or 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.
Encryption	Click to enable the live video encryption function.
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.

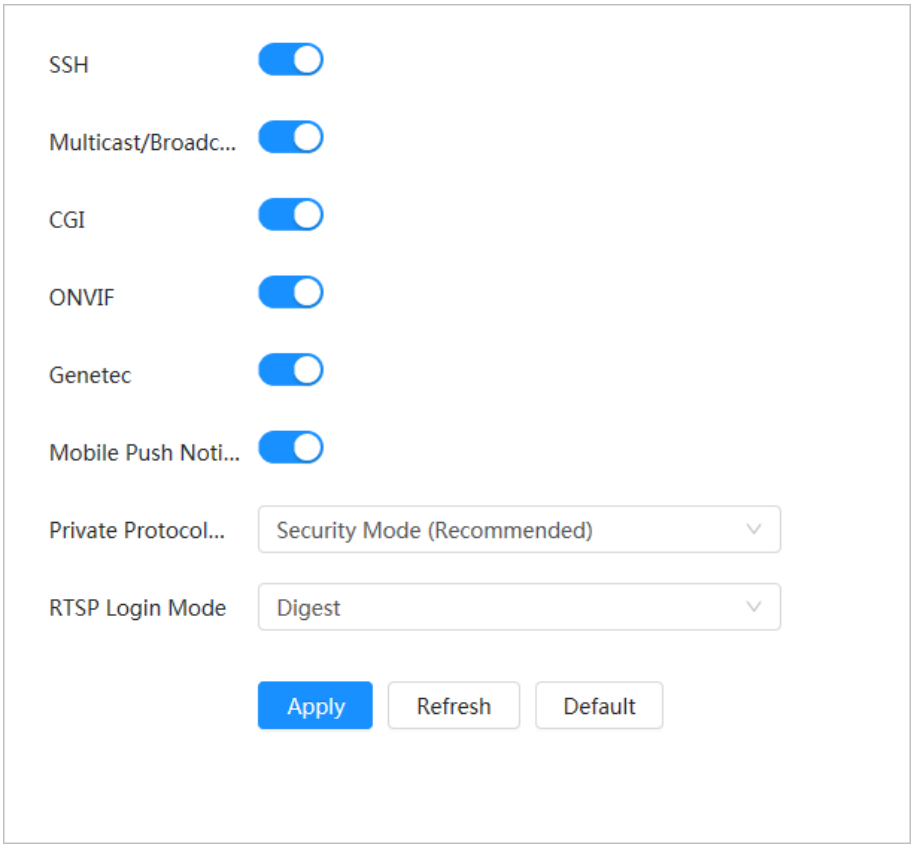
Step 4 Click **Apply**.

4.4.13 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 webpage. This function is to enhance network and data security.

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

Figure 4-43 Basic service



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

Table 4-24 Description of basic service parameters

Function	Description
SSH	You can enable SSH (Secure Shell) authentication to perform safety management. The function is closed by default.
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. CGI: Common Gateway Interface
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. The function 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	Compatible with the old platform login mode. The default is digest mode.

Step 3 Click **Apply**.

4.5 PTZ

This section introduces the configuration of PTZ parameters, such as preset, tour, and PTZ speed.

- The panorama camera channel and the detail camera channel support different functions, and might differ from the actual pages.
- Some models of panorama camera channels do not support focus, zoom and iris adjustment functions, and might differ from the actual pages.

It supports two ways to enter the **PTZ** page. The following content of the chapter uses the button entry from the upper-right corner of the home page as an example.

- On the home page, click **PTZ**.
- Click on the upper-right corner of the page, and then click **PTZ**.

4.5.1 Configuring Presets

The Camera saves parameters (such as current status of PTZ pan/tilt, focus) to the memory, so that you can quickly call these parameters and adjust the PTZ to the correct position.

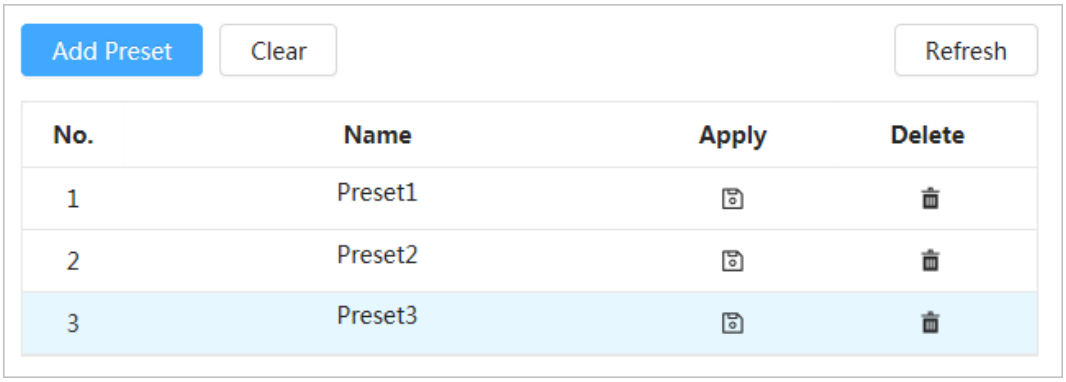
Procedure

Step 1 Click , and then select **PTZ** > **Preset**.

Step 2 Set step length, and then click the direction buttons to adjust the PTZ Direction. Click to adjust zoom, focus and iris to move the Camera to the proper position.

Step 3 Click **Add Preset** to add the current position to be a preset, and then the preset is displayed in preset list.

Figure 4-44 Add preset



Step 4 Double-click **Preset Title** to change the name of the corresponding preset.

Step 5 Click to save the preset.

Related Operations

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

4.5.2 Configuring Tour

Configure tour groups, and then the Camera repeats performing tours among the configured presets.

Prerequisites

You need to setup several presets in advance.

Procedure

Step 1 Click , and then select **PTZ** > **Tour**.

Step 2 Click **Add Tour Group**, and then double-click **Name** to change the name of tour.

Step 3 Select tour group, and then click **Add Tour Group**.

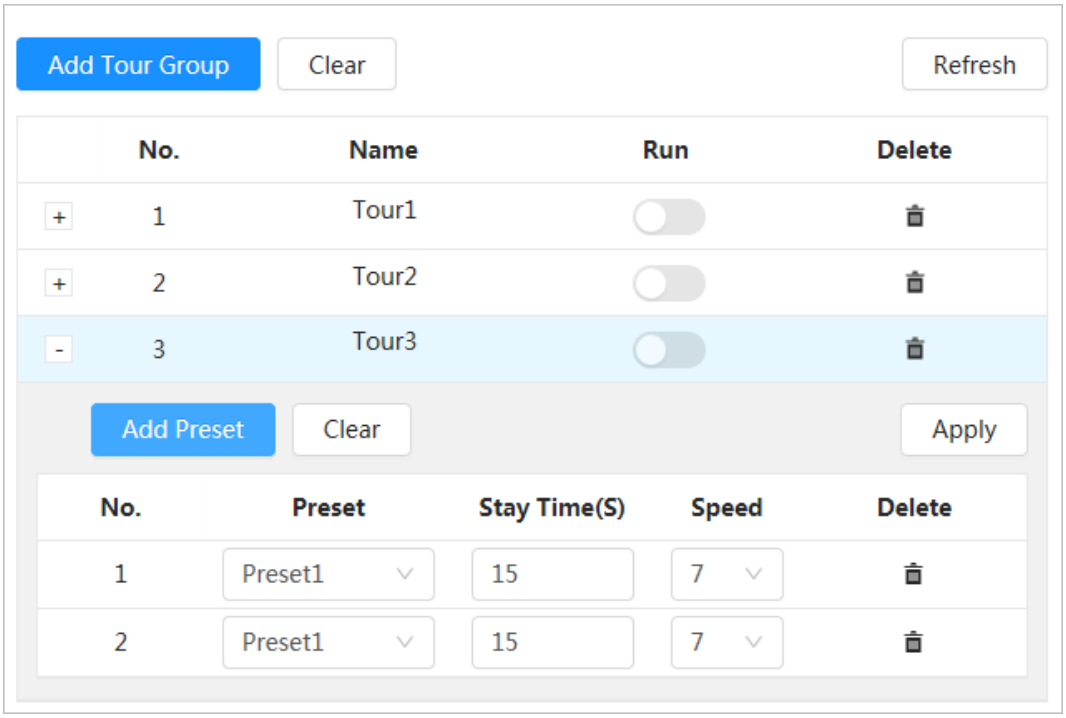
Step 4 Select the presets from the **Preset Point** drop-down list on the left.

Repeat this step to add several presets for the tour group.

Step 5 Set **Stay Time(S)** and **speed** to set the Camera's stay time at the preset point and its rotating speed.

Stay time is measured in seconds. The value ranges from 15 seconds to 3,600 seconds.

Figure 4-45 Tour group



Step 6 Select tour mode.

- Original path: The Camera rotates in the order of selected preset points.
- Shortest path: The Camera rearranges the preset points according to distance, and rotates them according to the shortest path.

This function is available on select models.

Step 7 Click **Apply** to complete settings.

Step 8 Click to start tour.

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

Related Operations

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

4.5.3 Configuring Scan

Scan means the Camera moves horizontally at a certain speed between the defined left and right boundaries.

Procedure

Step 1 Click , and then select **PTZ** > **Scan**.

Step 2 Click **Add Scan**, and then double-click **Name** to change the name of scan.

Step 3 Configure the left and right boundaries of the scan.

1) Adjust the direction of the Camera to the left edge of the scan, and then click on the **Left Limit** to set the current position to the **Left Limit** of the camera.

2) Adjust the direction of the camera to the right edge of the scan, and then click on the **Right Limit** to set the current position to the **Right Limit** of the camera.

Figure 4-46 Scan



Step 4 Click to start scanning.

Click to stop scanning.

Related Operations

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

4.5.4 Configuring Pan

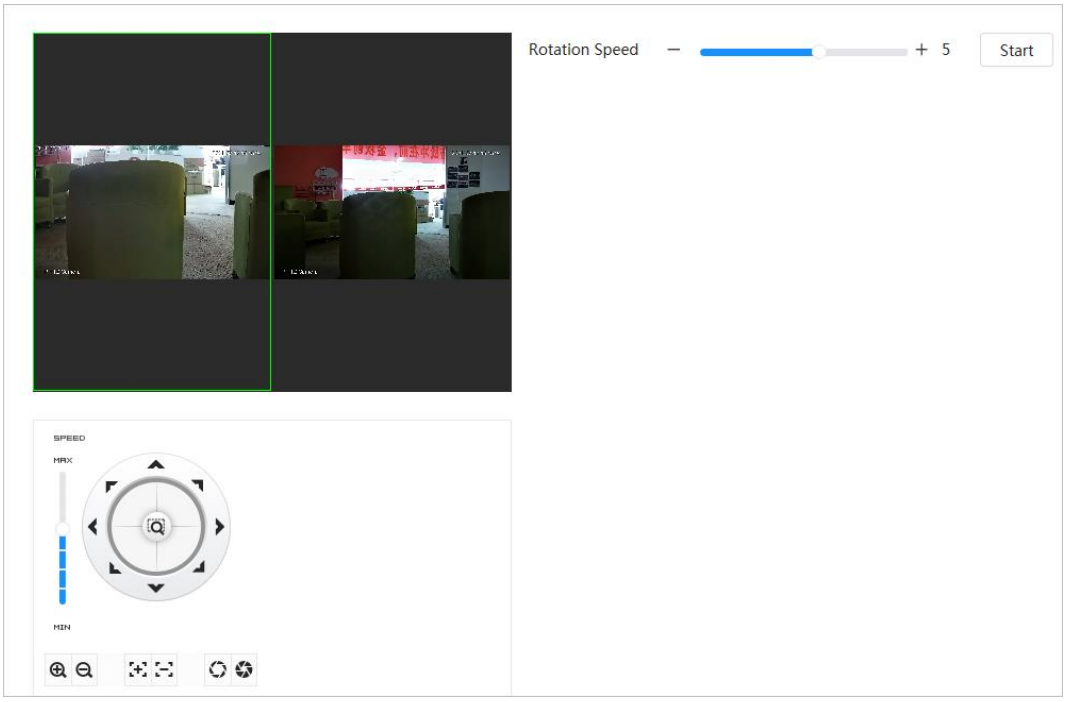
Pan refers to the continuous 360° rotation of the Camera in a horizontal way at a certain speed.

Step 1 Click , and then select **PTZ** > **Pan**.

Step 2 Configure the rotation speed.

- Click **Start** to start the pan.
- Click **Stop** to stop the pan.

Figure 4-47 Pan

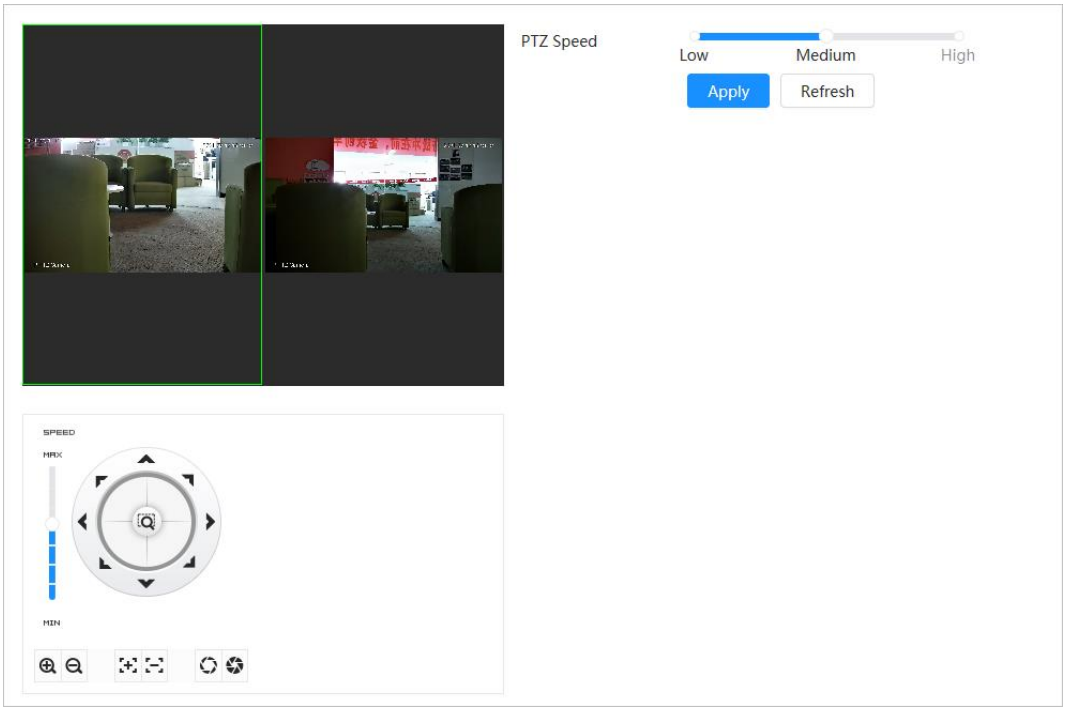


4.5.5 Configuring PTZ Speed

Configure the rotation speed when manually controlling the PTZ.

Step 1 Click , and then select **PTZ** > **PTZ Speed**.

Figure 4-48 PTZ Speed



Step 2 Select PTZ speed, and then click **Apply**.

4.5.6 Configuring Idle Motion

Idle motion refers to a preset motion when the PTZ does not receive any valid command within a certain period.

Prerequisites

You have set PTZ motions such as preset, tour, scan and pattern in advance.

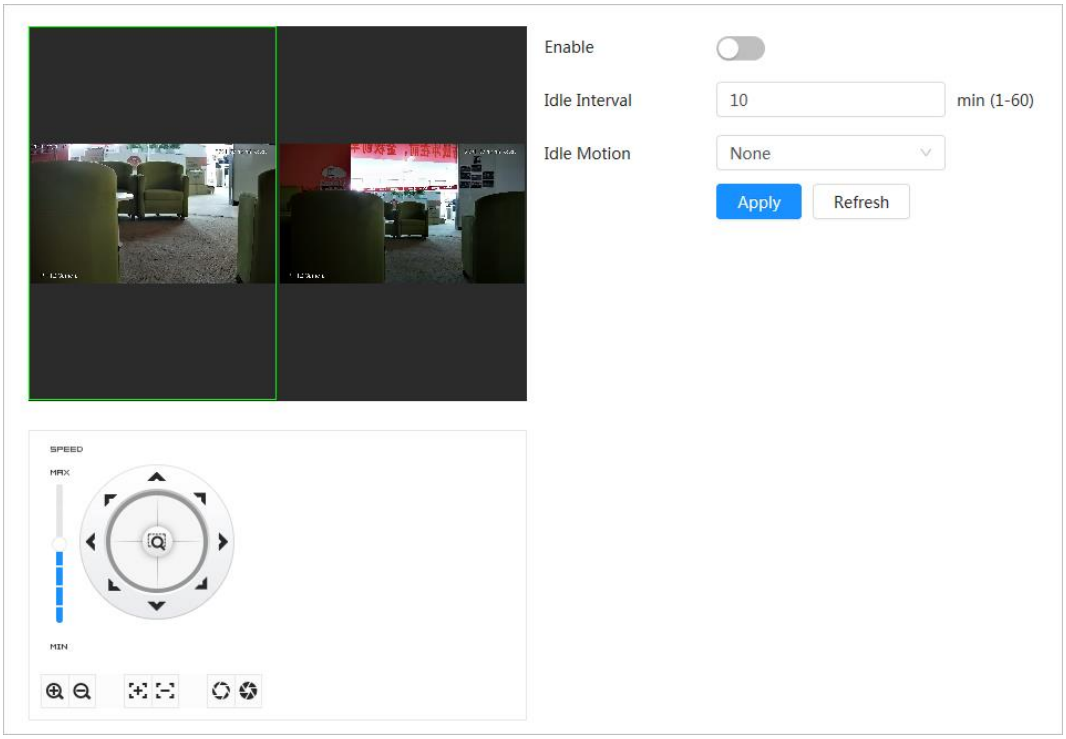
Procedure

Step 1 Click , and then select **PTZ** > **PTZ Speed**.

Step 2 Click to enable the function.

Step 3 Configure idle interval, and then select idle motion.

Figure 4-49 Idle motion



Step 4 Click **Apply**.

4.5.7 Configuring PowerUp

After configuring PowerUp, the Camera will automatically perform the set motion after being powered up.

Prerequisites

You have set PTZ motions such as preset, tour, scan and pattern in advance.

Procedure

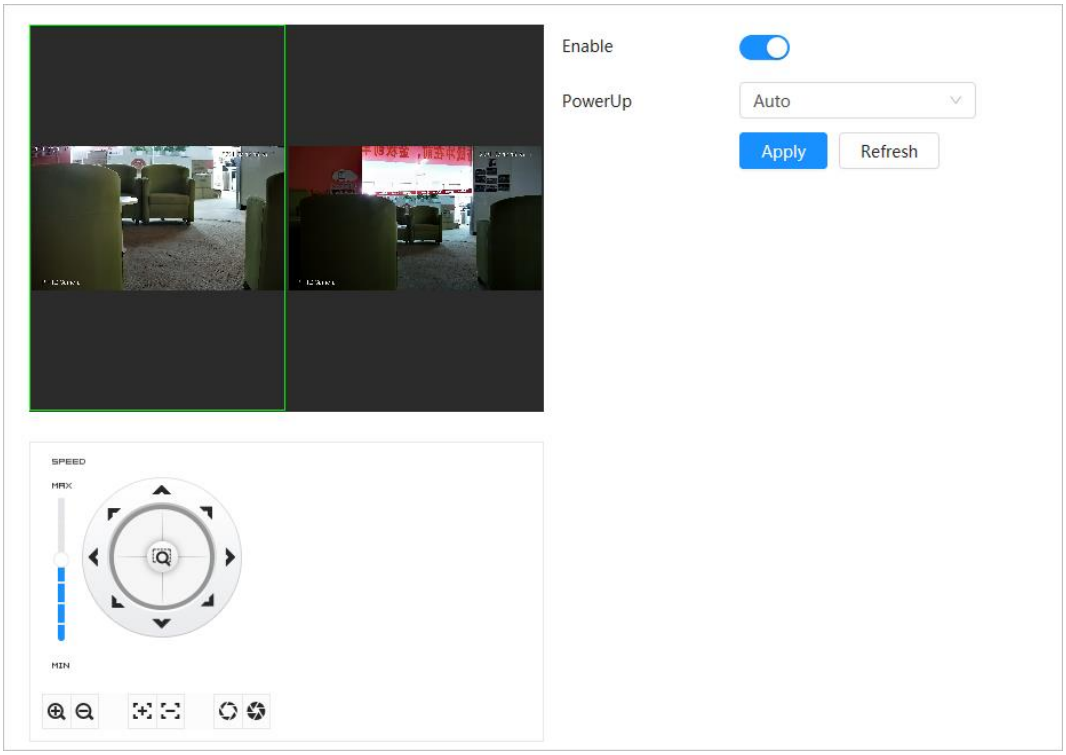
Step 1 Click , and then select **PTZ** > **PowerUp**.

Step 2 Click to enable PowerUp function.

Step 3 Select PowerUp mode.

Select **Auto**, and then the system will implement the last action performed for more than 20 seconds before the Camera is shut down.

Figure 4-50 PowerUp



Step 4 Click **Apply**.

4.5.8 Configuring PTZ Rotation Limit

Configure PTZ rotation limit and enable the camera to move only within the defined PTZ area, and to rotate only within the limit range when calling functions such as tour and pan.

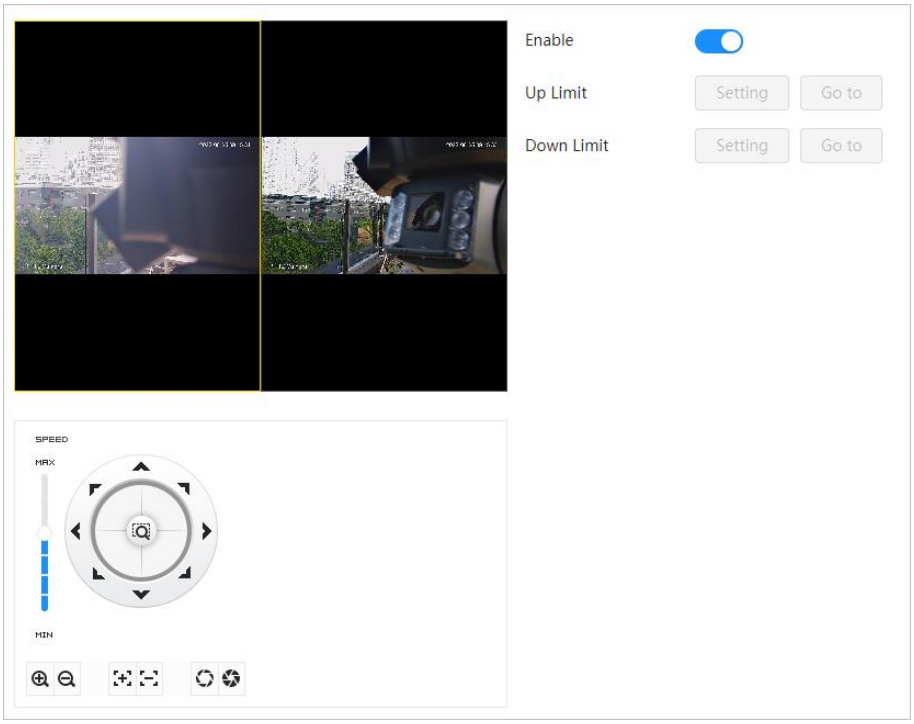
Step 1 Click , and then select **PTZ** > **PTZ Rotation Limit**.

Step 2 Adjust the device direction to the **Up Limit**, and then click up limit **Setting** to set the current position to the up limit.

Step 3 Adjust the device direction to the **Down Limit**, and then click down limit **Setting** to set the current position to the down limit.

Step 4 Click **Go to** to preview the defined up/down limit.

Figure 4-51 PTZ rotation limit



Step 5 Click **Enable** to enable PTZ rotation limit function.

4.5.9 Configuring Scheduled Task

After setting scheduled task, the Camera performs the relevant motions during the set period.

Prerequisites

You have set PTZ motions such as preset, tour, scan and pattern in advance.

Procedure

Step 1 Click , and then select **PTZ** > **Scheduled Task**.

Step 2 Click **Add Scheduled Task**.

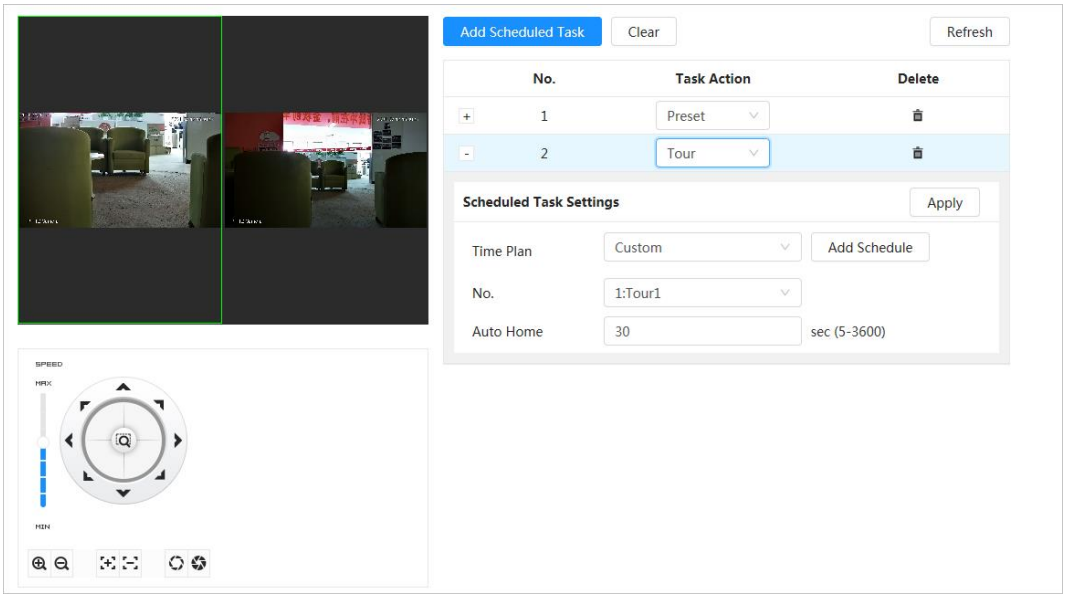
Step 3 Select **Task Action**.

Some task actions need to select the corresponding action number.

Step 4 Select **Time Plan** or click **Add Schedule**. Configure the name and time of the scheduled task in the pop-up window, and then click **Apply**.

For details on configuring arming/disarming period, see "4.6.1.2.1 Adding schedule".

Figure 4-52 Scheduled task



Step 5 Set the time for **Auto Home**.

Auto Home: When the scheduled task is interrupted by an artificial call to the PTZ, the Camera will automatically resume the scheduled task after the **Auto Home** time.

Step 6 Click **Apply**.

4.5.10 Configuring PTZ Maintenance

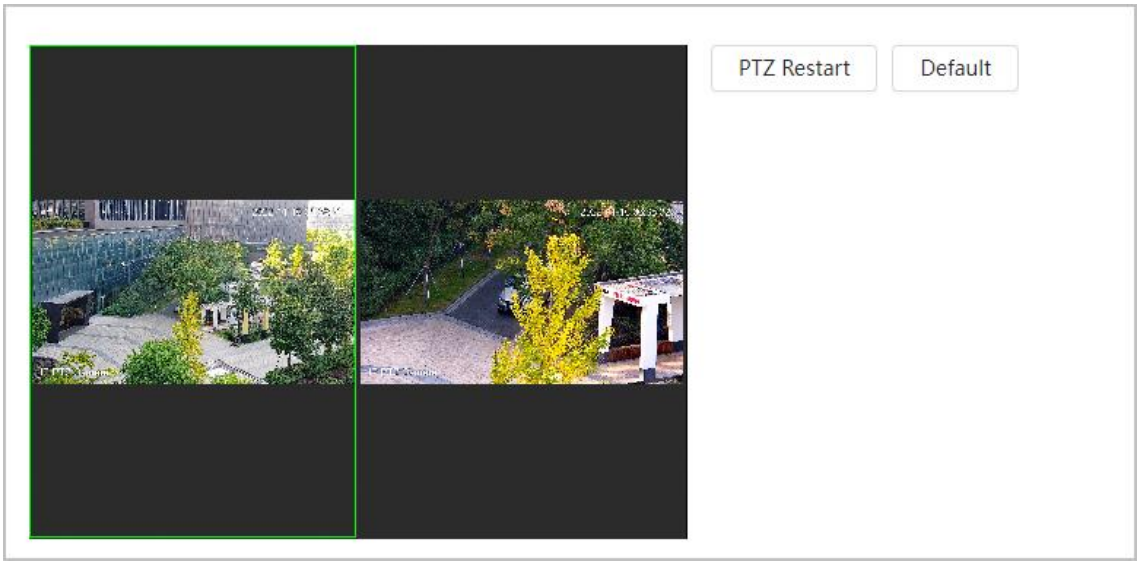
PTZ maintenance includes **PTZ Restart** and **Default**.

Step 1 Click , and then select **PTZ** > **PTZ Maintenance**.

Step 2 Click **PTZ Restart** to restart PTZ or click **Default** to restore Camera to defaults.

Default PTZ will restore the Camera to defaults. Think twice before clicking **Default**.

Figure 4-53 PTZ maintenance



4.6 Event

Click **Event** to configure general events, including alarm linkage exception, video detection, and audio detection.

It supports two ways to enter the **PTZ** page. The following content of the chapter uses the button entry from the upper-right corner of the home page as an example.

- Method 1: Click on the right-upper corner of the home page, and then click **Event**.
- Method 2: Click **Event** on the home page.

4.6.1 Setting Alarm Linkage

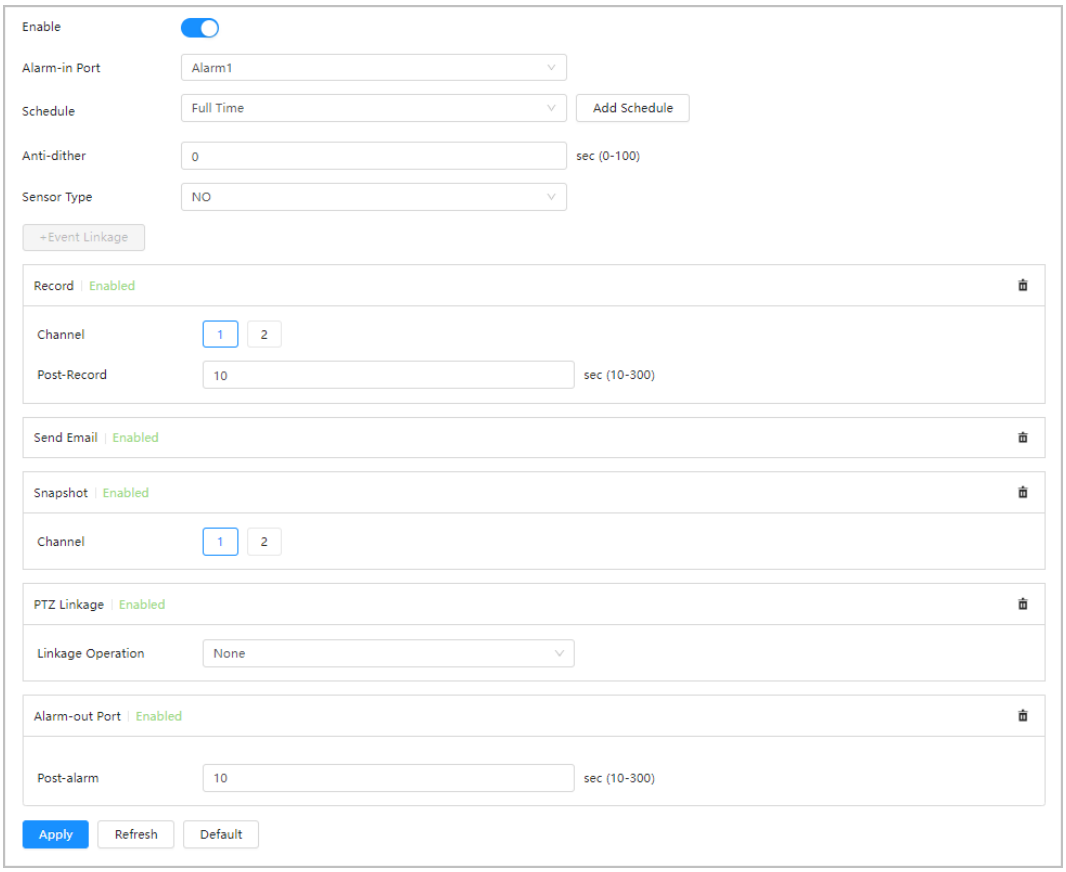
4.6.1.1 Setting Alarm-in

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

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

Step 2 Click to enable alarm linkage function.

Figure 4-54 Alarm linkage



Step 3 Select an alarm-in port and a sensor type.

- Anti-dither: Only record one alarm event during the anti-dither period.
- Sensor type: **NO** or **NC**.

Step 4 Select the schedule and arming periods and alarm linkage action. For details, see "4.6.1.2

Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add new schedule. For details, see "4.6.1.2.1 Adding schedule".

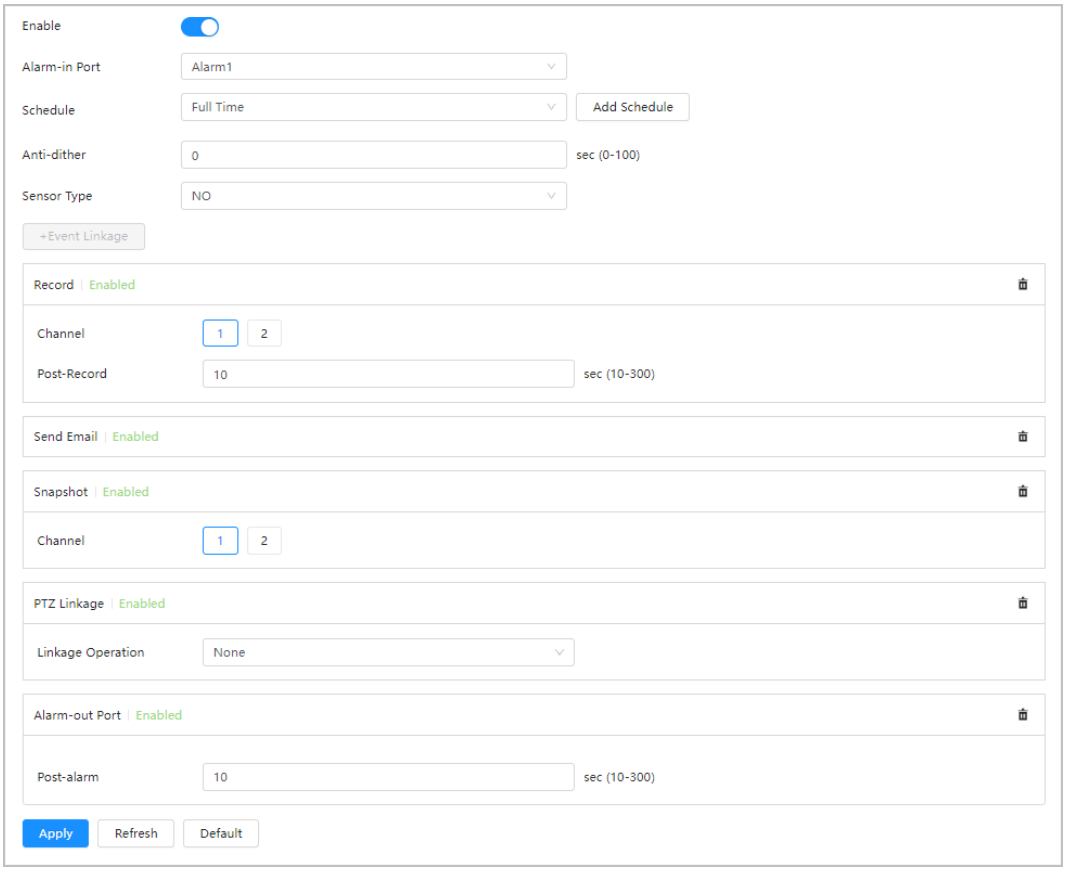
Step 5 Click **Apply**.

4.6.1.2 Alarm Linkage

When configuring alarm events, set alarm linkages, such as record, snapshot and more. When the corresponding alarm is triggered in the configured arming period, the system will perform the defined alarm linkage.

Select > **Event** > **Alarm**, and then click to enable alarm linkage function.

Figure 4-55 Alarm linkage



4.6.1.2.1 Adding schedule

Configure the 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**.

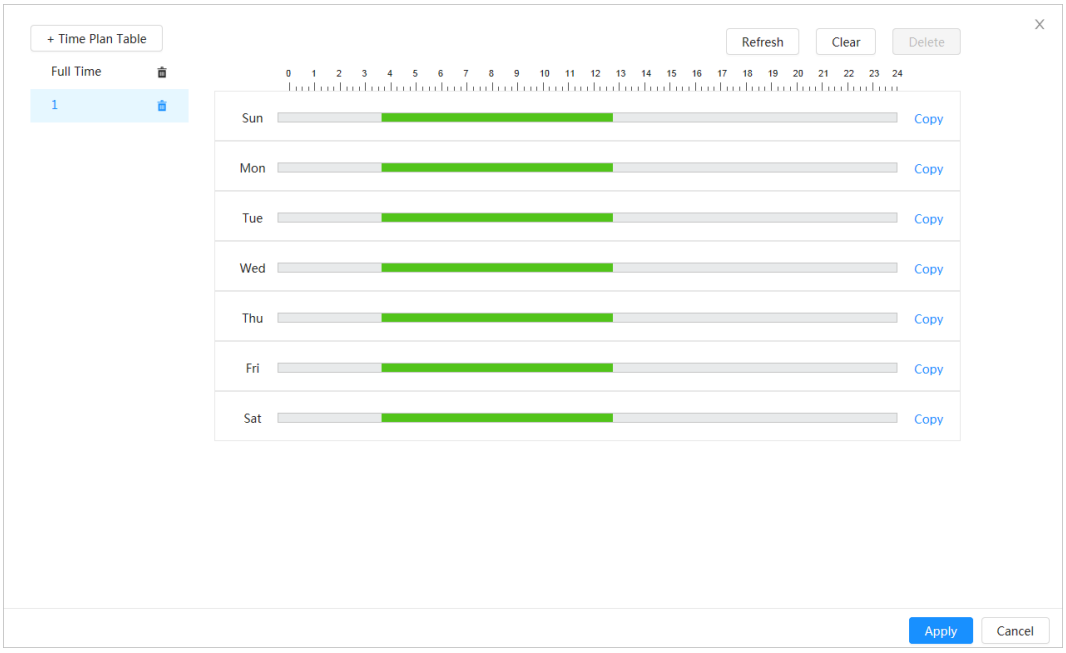
You can set up multiple time plan tables for selection.

Step 3 Double-click the time plan to customize the name of the **Time Plan Table**.

Step 4 Configure arming periods.

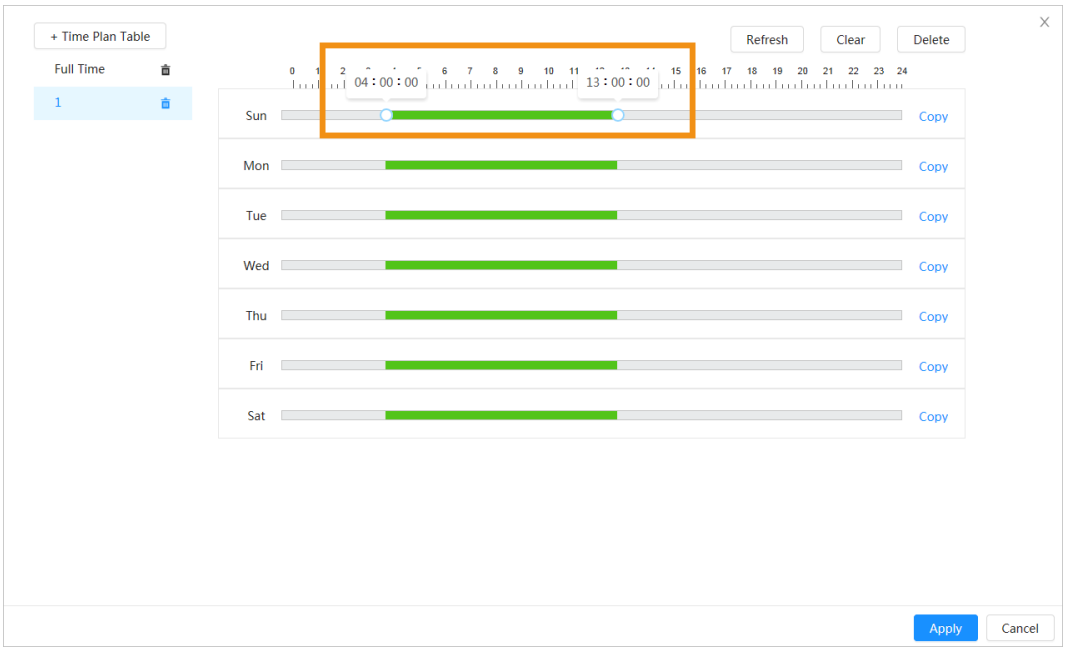
1) Press and drag the left mouse button on the timeline to set arming periods. Alarms will be triggered in the time period in green on the timeline.

Figure 4-56 Configuring arming period



2) Click the selected time period, and then enter the specific time in the text box to configure exact arming period.

Figure 4-57 Configuring exact arming period



Step 5 (Optional) Click **Copy**, select the days, and then click **Apply**.
Time plans for the current day can be quickly copied to other days.

Step 6 Click **Apply**.

4.6.1.2.2 Record Linkage

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

Prerequisites

- After the corresponding alarm type (**Normal**, **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 the channel, and then set **Post-Record** to configure alarm linkage and record delay.

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

Click to delete record linkage function.

Figure 4-58 Record linkage



4.6.1.2.3 Email Linkage

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

Click **+Event Linkage**, and then select **Send Email**.

Email linkage takes effect only when SMTP is configured. For details, see "4.4.5 Email".

Click to delete email linkage function.

Figure 4-59 Email linkage



4.6.1.2.4 Snapshot Linkage

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

Prerequisites

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

Setting record linkage

On the **Alarm** page, select the channel as needed.

Click to delete snapshot linkage function.

Figure 4-60 Snapshot linkage



4.6.1.2.5 PTZ Linkage

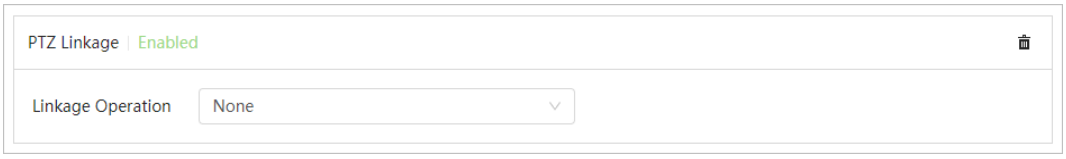
When an alarm is triggered, the system will automatically link PTZ devices.

Click **+Event Linkage**, and then select **PTZ linkage**.

Select PTZ linkage operation.

Click to delete PTZ linkage function.

Figure 4-61 PTZ linkage



4.6.1.2.6 Alarm-out Linkage

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

On the **Alarm** page, select the channel, and then configure **Post-alarm** time.

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

Figure 4-62 Alarm-out linkage



4.6.1.3 Subscribing Alarm

4.6.1.3.1 Alarm Types

Following are the alarm types and preparations of alarm events.

Table 4-25 Description of alarm types

Alarm Type	Description	Preparation
Motion Detection	The alarm is triggered when a moving object is detected.	Motion detection is enabled. For details, see "4.6.3.1 Setting Motion Detection".

Alarm Type	Description	Preparation
Disk Full	The 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 "4.6.2.1 Setting SD Card Exception".
Disk Error	The alarm is triggered when there is a failure or malfunction in the SD card.	SD card failure detection is enabled. For details, see "4.6.2.1 Setting SD Card Exception".
Video Tampering	The alarm is triggered when the camera lens is covered or there is a defocus in video images.	Video tampering is enabled. For details, see "4.6.3.2 Setting Video Tampering".
External Alarm	The alarm is triggered when there is an external alarm input.	The device has alarm input ports and external alarm function is enabled. For details, see "4.6.1.1 Setting Alarm-in".
Security Warning	The alarm is triggered when there is a security warning.	Security warning is enabled. For details, see "10.6 Security Warning"
Audio Detection	The alarm is triggered when there is a audio connection problem.	Abnormal audio detection is enabled. For details, see "4.6.4 Setting Audio Detection".
AI Event	The alarm is triggered when an intelligent rule is triggered.	Enable IVS, crowd map, face detection or people counting, and other intelligent functions.
Scene Changing	The alarm is triggered when the device monitoring scene changes.	Scene changing detection is enabled. For details, see "4.6.3.3 Setting Scene Changing".

4.6.1.3.2 Subscribing Alarm Information

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

Functions might vary depending on different devices.

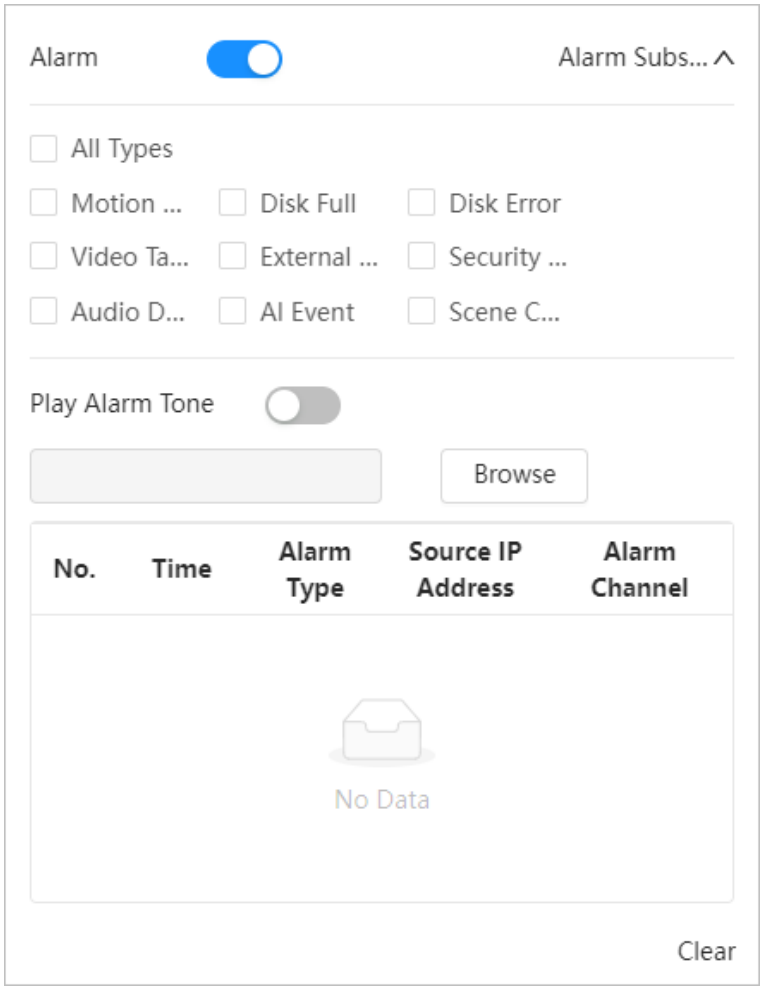
Step 1 Click on the upper-right corner of the home page.

Step 2 Click next to **Alarm** to enable alarm subscription, and then 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.

Figure 4-63 Alarm (subscription)



Step 3 Click next to **Play Alarm Tone**, and then select the tone path.

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

4.6.2 Setting Exception

Abnormality includes SD card and network exception.

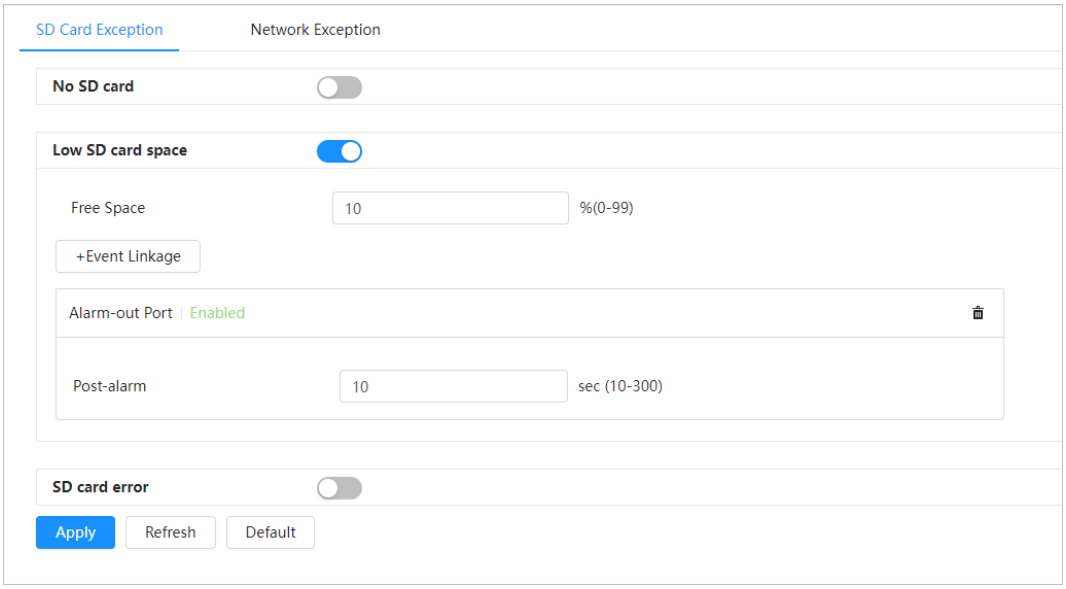
Only the device with SD card has SD card exception setting functions, including **No SD card**, **Low SD card space**, and **SD card error**.

4.6.2.1 Setting 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**.

Figure 4-64 SD card exception



Step 2 Click to enable the SD card detection functions.

When **Low SD card space** is enabled, set **Free Space**. When the remaining space of SD card is less than this value, the alarm is triggered.

Step 3 Set alarm linkage actions. For details, see "4.6.1.2 Alarm Linkage".

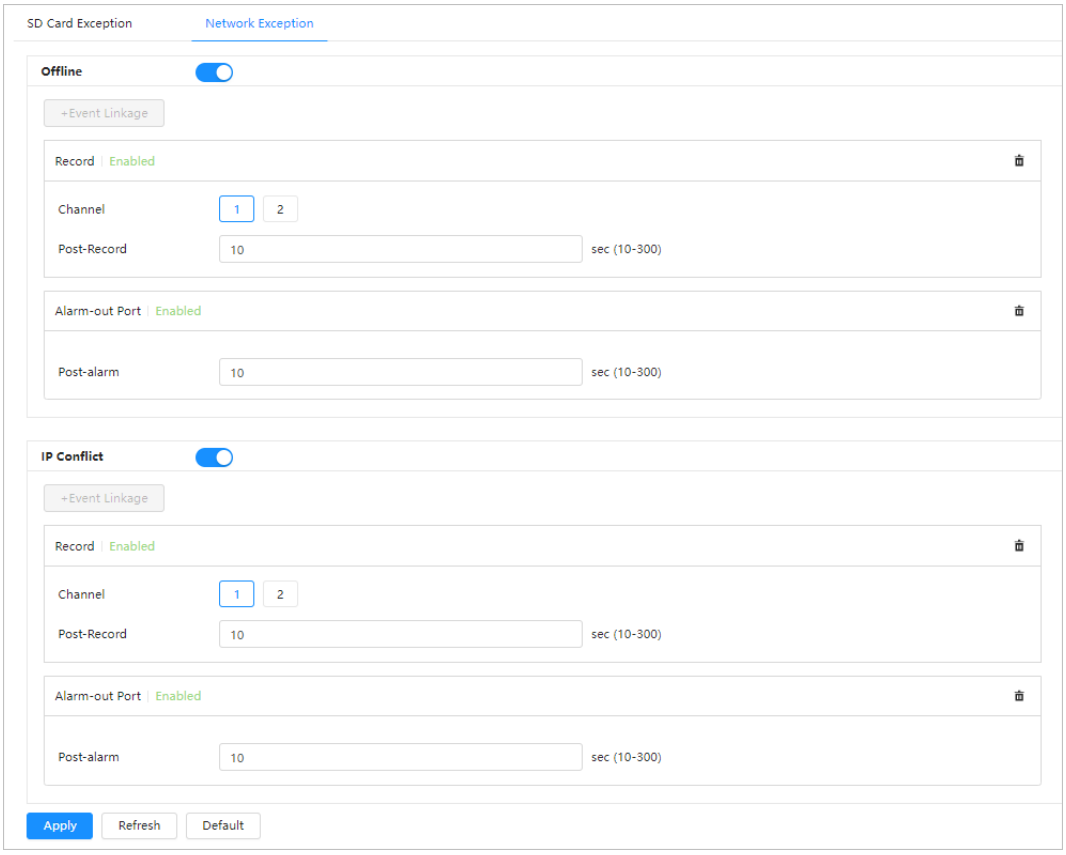
Step 4 Click **Apply**.

4.6.2.2 Setting Network Exception

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

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

Figure 4-65 Network exception



Step 2 Click to enable the network detection function.

Step 3 Set alarm linkage actions. For details, see "4.6.1.2 Alarm Linkage".

Step 4 Click **Apply**.

4.6.3 Setting 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.

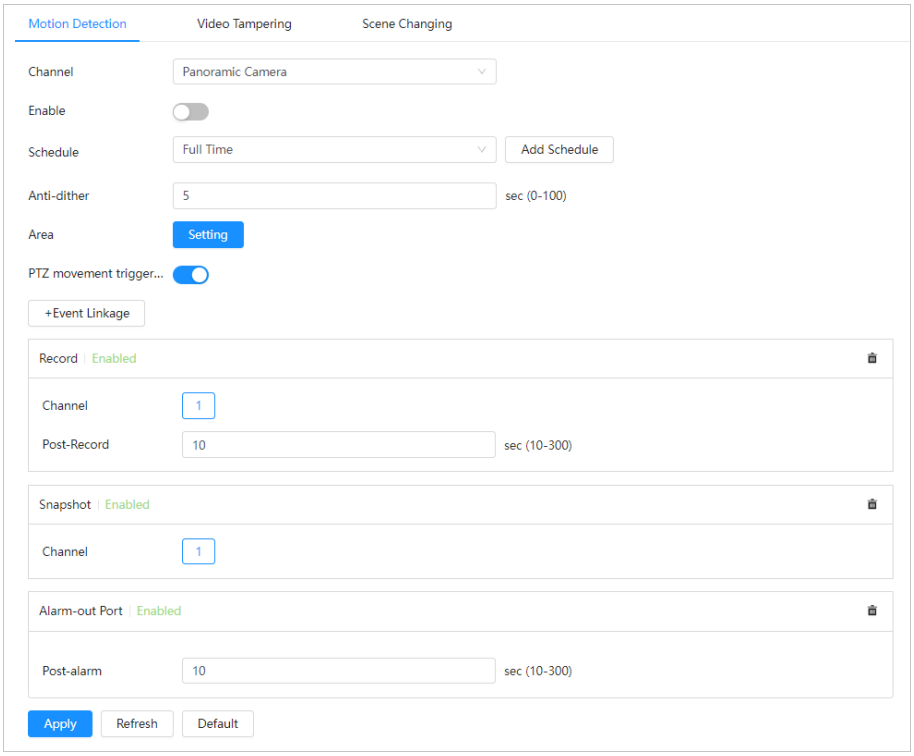
4.6.3.1 Setting Motion Detection

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 then 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 and configure the linked activities, all the configured linkages take effect when motion detection is triggered.

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

Figure 4-66 Motion detection

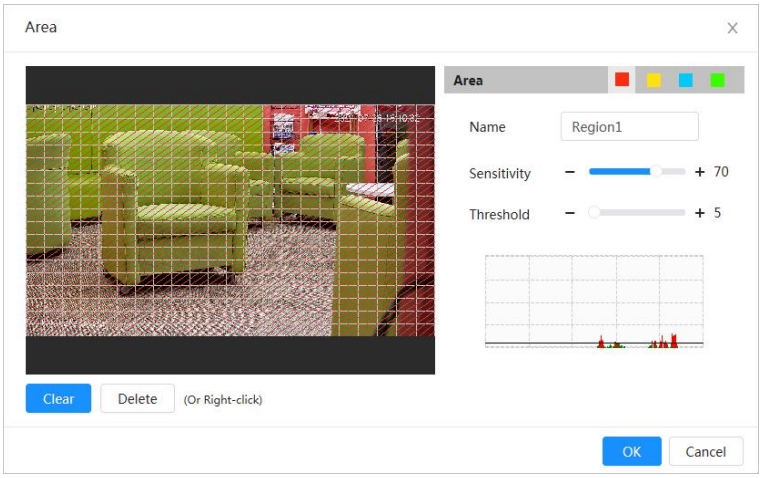


Step 2 Click to enable the motion detection function.

Step 3 Set the area for motion detection.

1) Click **Setting** next to **Area**.

Figure 4-67 Area



2) Select a color and set the region name. Select an effective area for motion detection in the image, and then set **Sensitivity** and **Threshold**.

- Select a color on to set different detection parameters for each region.
- Sensitivity: Sensitive degree of outside changes. The higher sensitivity, the easier to trigger the alarm.
- Threshold: Effective area threshold for motion detection. The smaller the threshold, 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 line indicates that there is no motion detection. Adjust sensitivity and threshold according to the waveform.

3) Click **OK**.

Step 4 Set arming periods and alarm linkage action. For details, see "4.6.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".

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

Step 5 Click **Apply**.

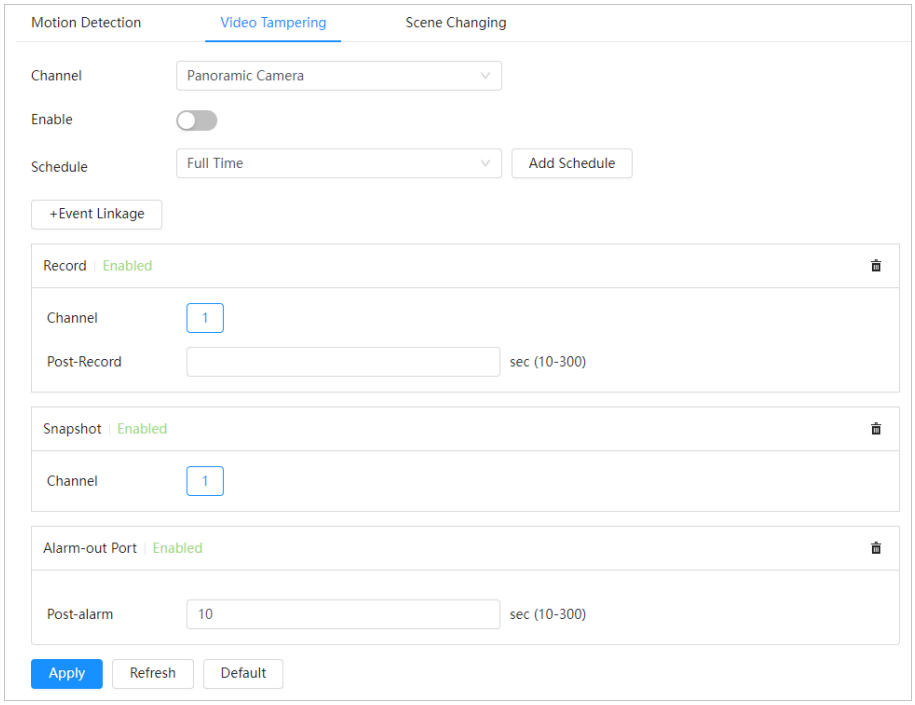
4.6.3.2 Setting Video Tampering

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

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

Step 2 Select **Channel**, and then click to enable the video tampering detection.

Figure 4-68 Video Tampering



Step 3 Set arming periods and alarm linkage action. For details, see "4.6.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".

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

Step 4 Click **Apply**.

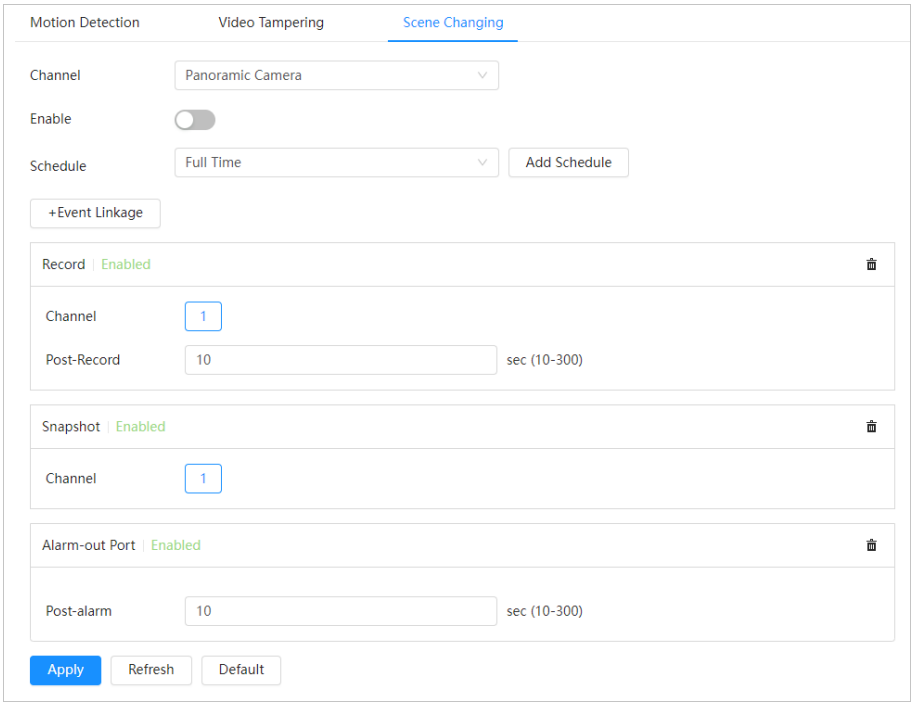
4.6.3.3 Setting Scene Changing

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 **Channel**, and then click to enable the scene changing detection.

Figure 4-69 Scene changing



Step 3 Set arming periods and alarm linkage action. For details, see "4.6.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".

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

Step 4 Click **Apply**.

4.6.4 Setting 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 (Optional) Select audio channels.

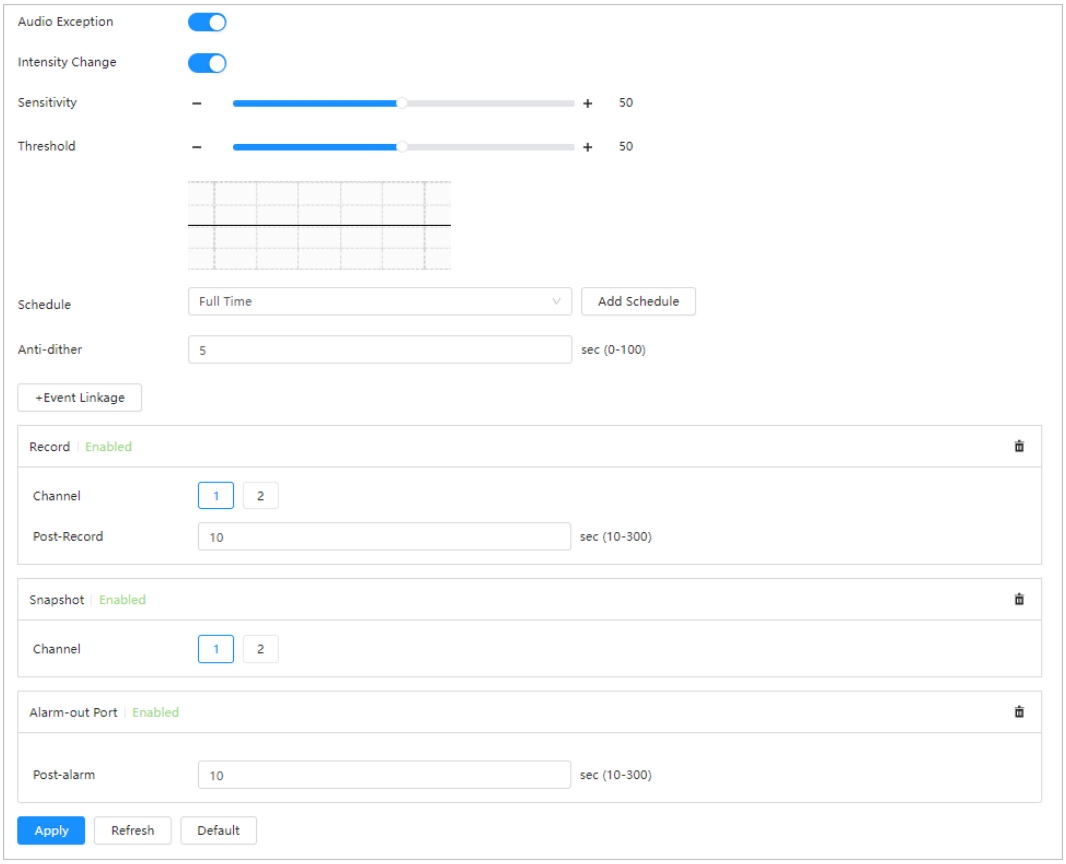
When the camera supports multiple audio channels, you can select different audio channels.

Step 3 Configure parameters of audio detection.

- Input abnormal: Click next to **Audio Exception**, and then 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.
  - The alarm is easier to be triggered 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 line indicates no audio detection. Adjust sensitivity and threshold according to the

waveform.

Figure 4-70 Audio detection



Step 4 Set arming periods and alarm linkage action. For details, see "4.6.1.2 Alarm Linkage".

If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".

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

Step 5 Click **Apply**.

4.7 Storage

Display 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.

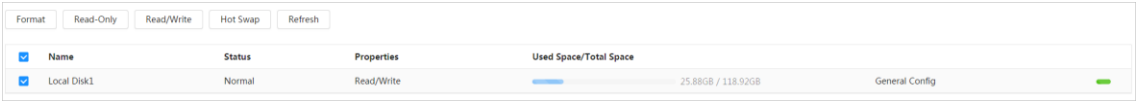
Functions might vary with different models.

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.

- The health status of the SD card is as follows:
  - Green: Indicates that the SD card status is excellent.
  - Blue: Indicates that the SD card status is good.
  - Orange: Indicates that the SD card status is medium.
  - Red: Indicates that the SD card status is poor, please replace the SD card in time.
- When reading SD card on the computer, if the SD card capacity is much less than the nominal capacity, it means that 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 4-71 Storage



4.8 System

This section introduces system configurations, including general, date & time, account, default, import/export, maintenance, upgrade and more.

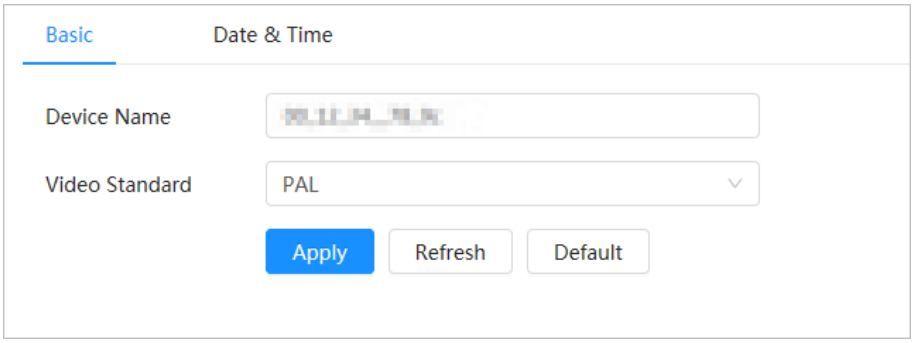
4.8.1 General

4.8.1.1 Basic

You can configure device name and video standard.

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

Figure 4-72 Basic



Step 2 Configure basic parameters.

Table 4-26 Description of general parameters

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

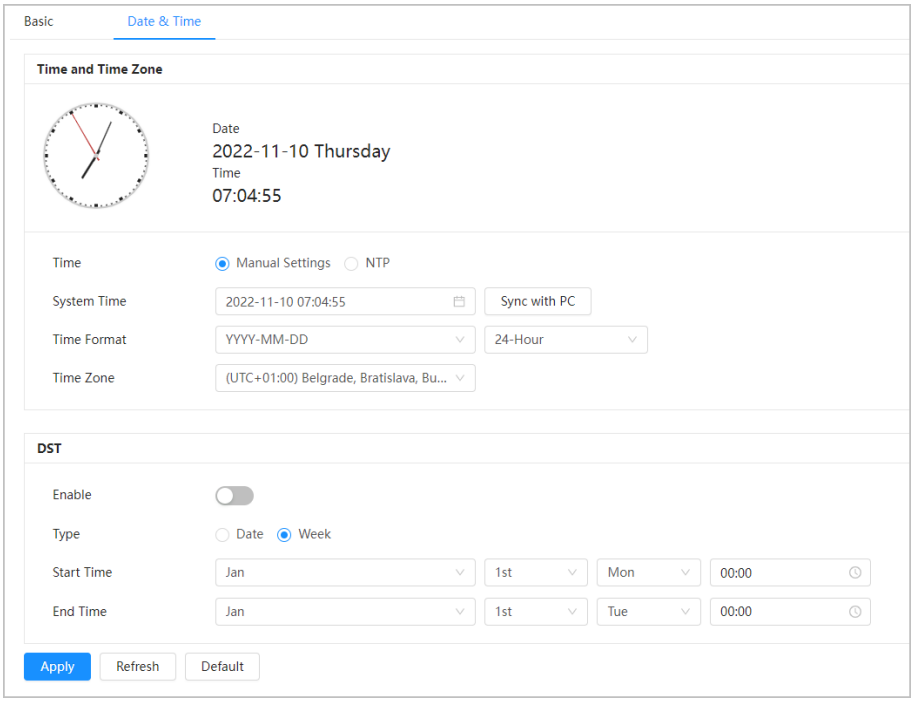
Step 3 Click **Apply**.

4.8.1.2 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**.

Figure 4-73 Date and time



Step 2 Configure date and time parameters.

Table 4-27 Description of date and time parameters

Parameter	Description
Time	• **Manually Settings**: Configure the parameters manually. • **NTP**: When selecting NTP, the system synchronizes time with the internet server in real time. You can also enter the IP address, port number and interval of the computer which installed NTP server to use NTP.
System Time	Configure system time. Click **Sync PC**, and the system time changes to the PC time.
Time Format	Configure the time format. You can select from **12-Hour** or **24-Hour**.
Time Zone	Configure the time zone that the camera is at.
DST	Enable DST as needed. Click , and then configure start time and end time of DST with **Date** or **Week**.

Step 3 Click **Apply**.

4.8.2 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.

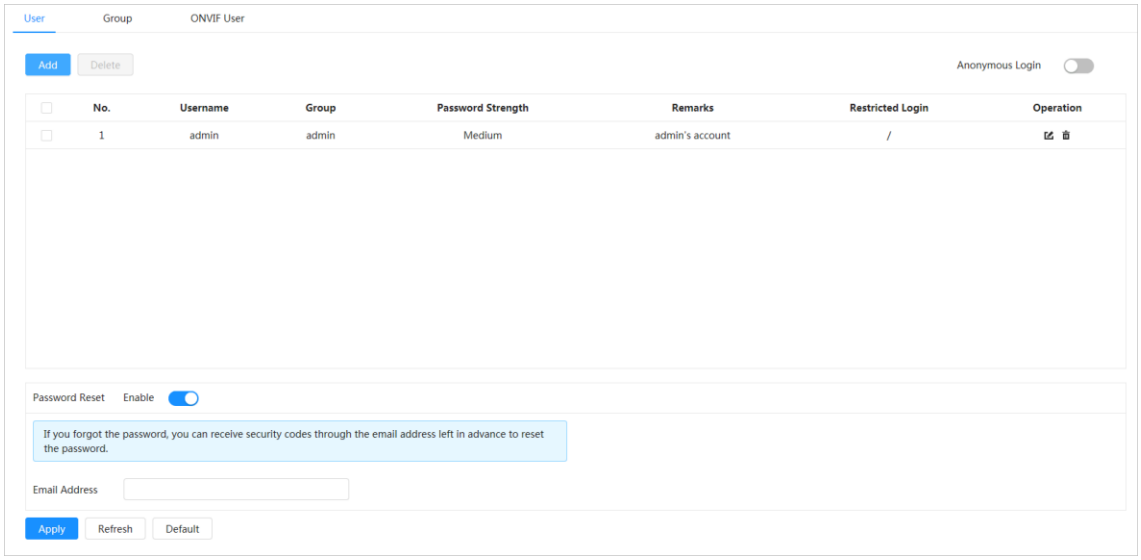
- The max length of the user or group name is 31 characters which consist of number, letter, underline, dash, dot and @.
- The password must consist of 8 to 32 non-blank characters and contain at least two types of characters among upper case, lower case, number, and special character (excluding ' " ; : &).
- You can have 18 users and 8 groups at most.
- You can manage users through a single user or a group. 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.

4.8.2.1 Adding User

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

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

Figure 4-74 User



Step 2 Click **Add**.

Figure 4-75 Add user (system)

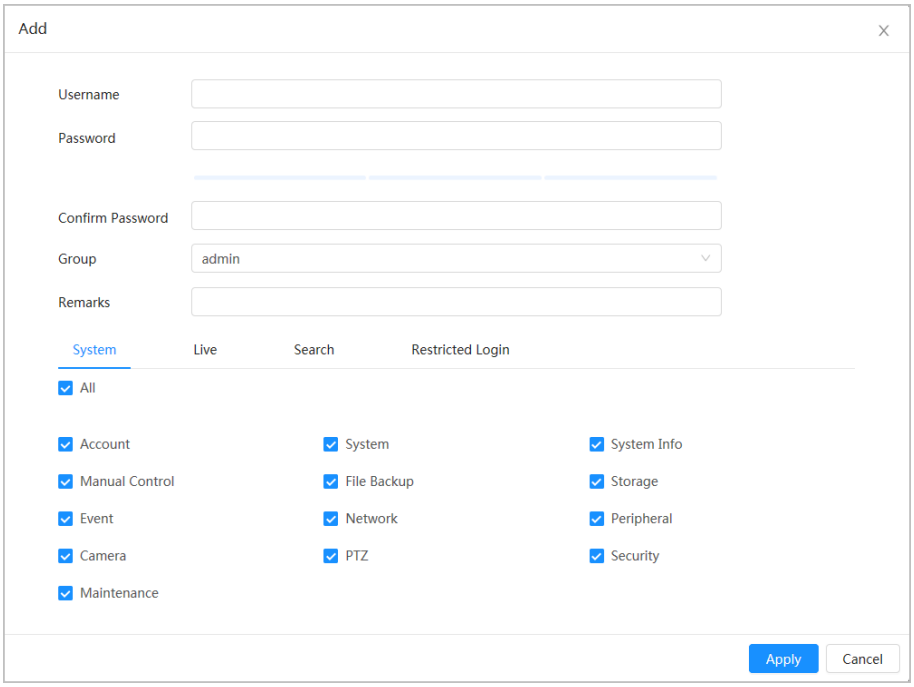


Figure 4-76 Add user (live)

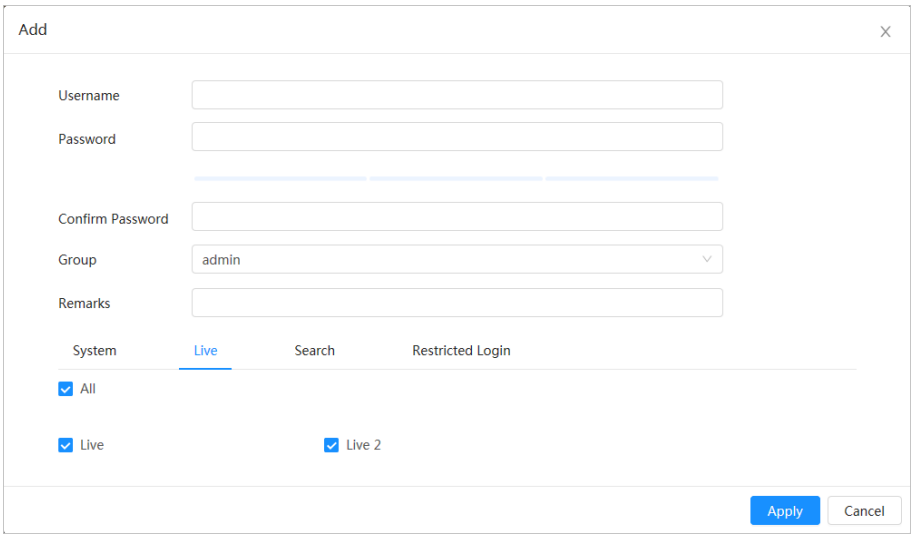


Figure 4-77 Add user (search)

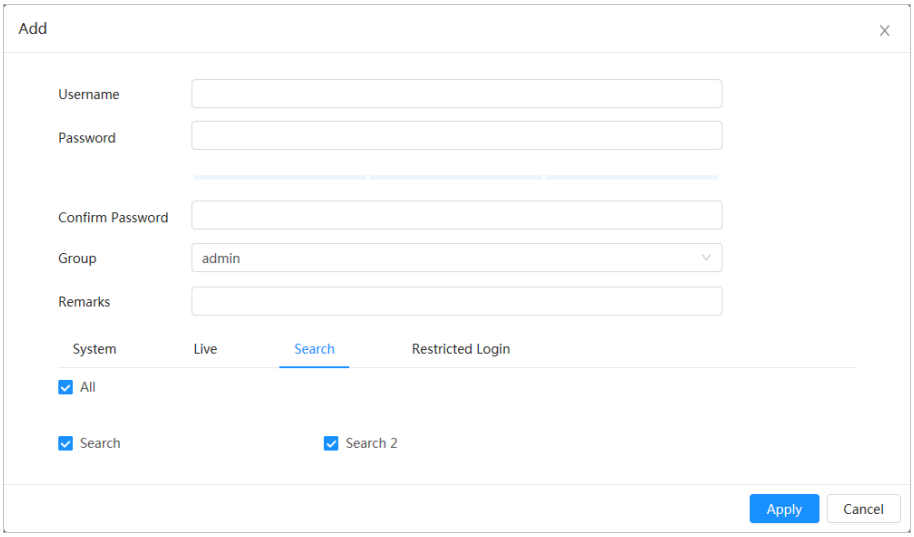
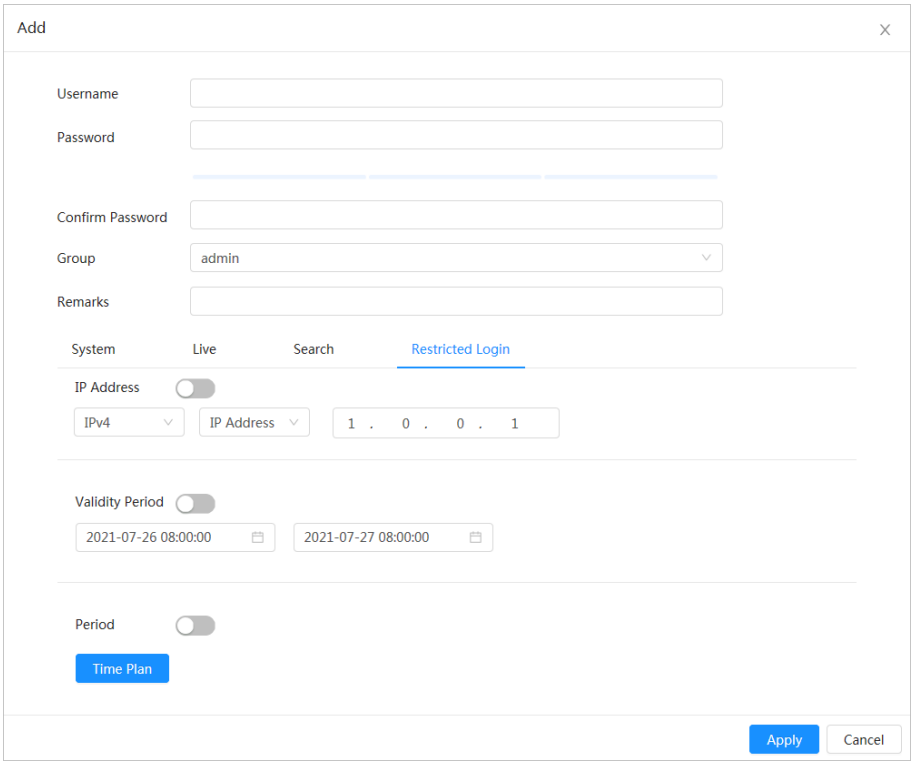


Figure 4-78 Add user (restricted log)



Step 3 Configure user parameters.

Table 4-28 Description of user parameters

Parameter	Description
Username	User's unique identification. You cannot use existed user name.
Password	Enter and confirm the 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 ' " ; : &).
Confirm Password	
Group	The group that users belong to. Each group has different authorities.
Remarks	Describe the user.
System	Select authorities as needed. We recommend you give fewer authorities to normal users than premium users.
Live	Select the live view authority for the user to be added.
Search	Select the search authority for the user to be added.

Parameter	Description
Restricted Login	Set the computer address that allows the defined user to log in to the Camera, and the validity period and time range. You can log in to the webpage with the defined IP in the defined time range of validity period. ● IP address: You can log in to webpage through the computer with the set IP. ● Validity period: You can log in to webpage in the set validity period. ● Period: You can log in to webpage in the set time range. Set as follows: 1. Enable **IP Address** function, and then select the IP type and enter 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** function, and then set the start time and the end time. 3. Enable **Period** function, and then click **Time Plan** to set the time period for login. For details, see "4.6.1.2.1 Adding schedule".

Step 4 Click **Apply**.

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

Related Operations

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

  For admin account, you can only edit the password.
- Click to delete the added users.

  The admin account cannot be deleted.

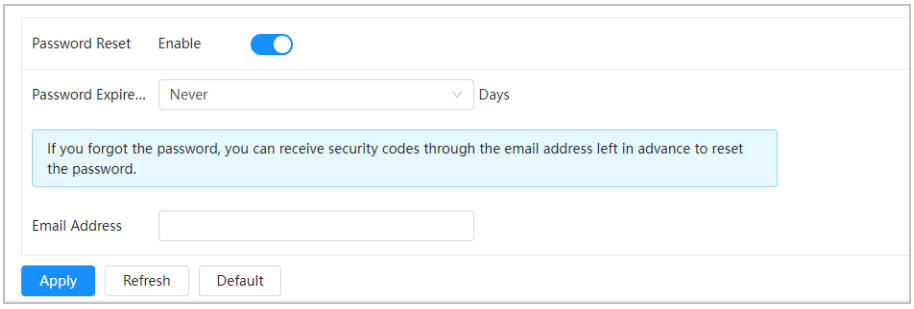
4.8.2.2 Resetting Password

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.

Procedure

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

Figure 4-79 Resetting password



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 Select the password expire days, and then enter the reserved email address.

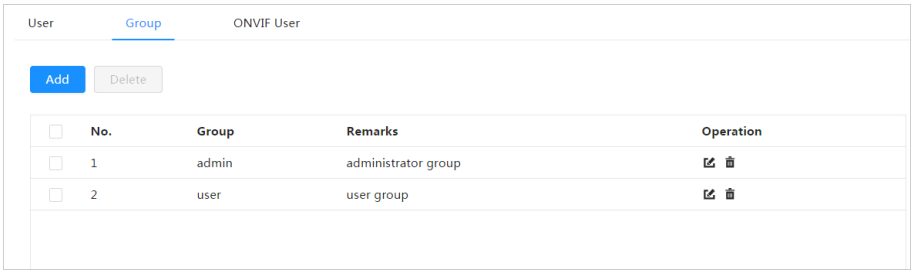
Step 4 Click **Apply**.

4.8.2.3 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.

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

Figure 4-80 Group name



Step 2 Click **Add**.

Figure 4-81 Add group

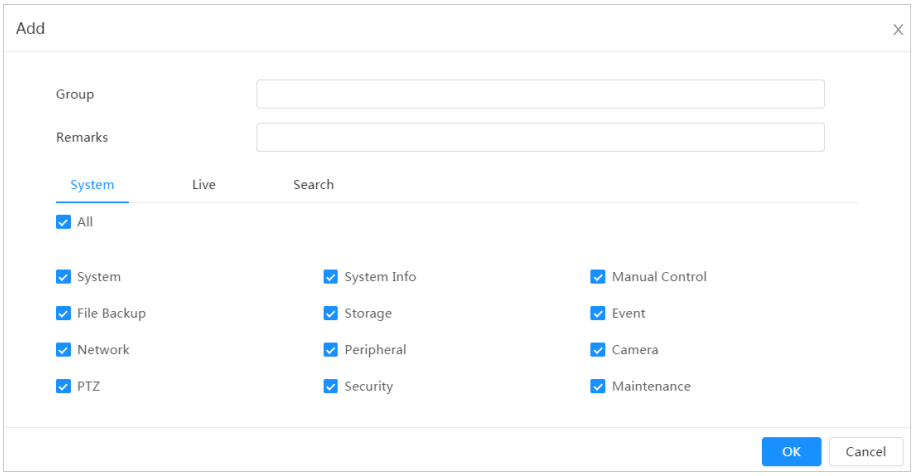


Table 4-29 Description of user group parameters

Group Authority	Admin	User	Functions
System	YES	NA	System time setting and more.

Group Authority	Admin	User	Functions
System Info	YES	NA	Version information, system logs and more.
Manual Control	YES	NA	PTZ settings.
File Backup	YES	NA	File backup.
Storage	YES	NA	Storage point configuration, snapshot recording time configuration, SFTP configuration and more.
Event	YES	NA	Video detection settings, audio detection settings, alarm settings and more.
Network	YES	NA	IP settings, SMTP settings, SNMP settings, AP Hotspot settings and more.
Peripheral	YES	NA	External light, wiper and serial port settings.
Camera	YES	NA	Camera property settings, audio and video settings and more.
PTZ	YES	NA	Preset settings, tour settings and more.
Security	YES	NA	HTTPS settings, RTSP over TLS settings and more.
Maintenance	YES	NA	Automatic maintenance settings and more.

- Any user in the Admin group has User authorities to modify group authorities. The User group does not have this authority.
- The functions of the device correspond to the authority control respectively. Only user with specified authority can use corresponding function; the Admin group has all the authorities.

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

Step 4 Click **OK** to finish configuration.

The newly added group displays in the group name list.

Related Operations

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

  For admin account, you can only edit the password.

- Click to delete the added users.

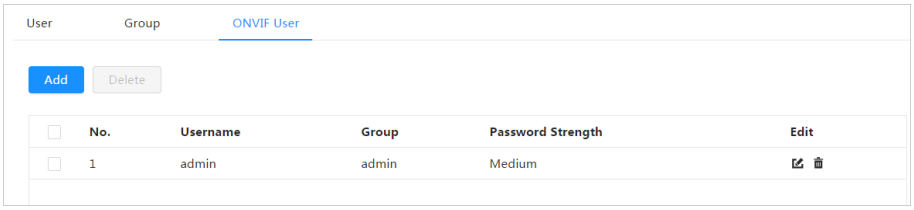
  The admin account cannot be deleted.

4.8.2.4 ONVIF User

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

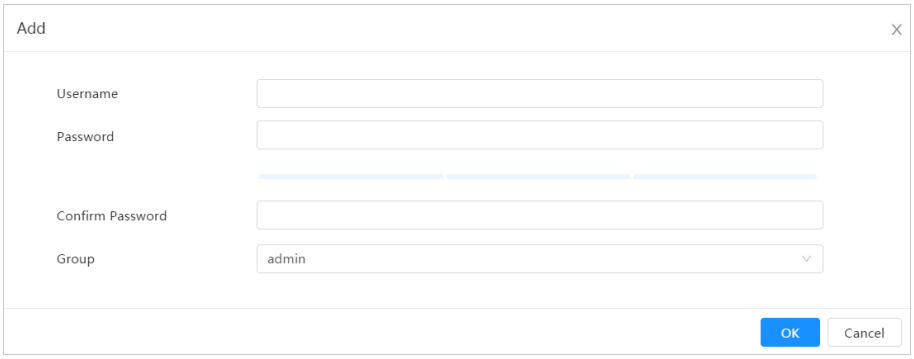
Step 1 Select > **System** > **Account** > **ONVIF User**.

Figure 4-82 ONVIF user



Step 2 Click **Add**.

Figure 4-83 Add ONVIF user



Step 3 Configure user parameters.

Table 4-30 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 edit the password.

- Click to delete the added users.

  The admin account cannot be deleted.

4.8.3 Manager

4.8.3.1 Requirements

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

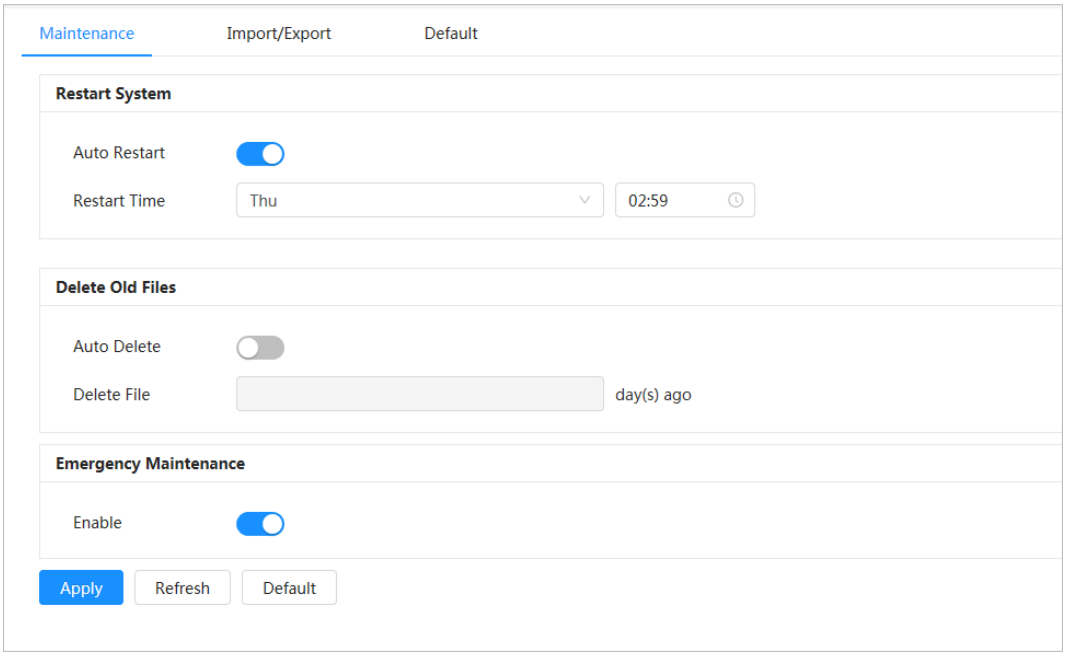
- Check surveillance images regularly.
- Clear regularly user and user group information that are not frequently used.
- Change the password every three months. For details, see "4.8.2 Account".
- View system logs and analyze them, and process the abnormity in time.
- Back up the system configuration regularly.
- Restart the device and delete the old files regularly.
- Upgrade firmware in time.

4.8.3.2 Maintenance

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

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

Figure 4-84 Maintenance



Step 2 Configure auto maintain parameters.

- Click next to **Auto Reboot** in **Restart System**, set the restart time, and then the system automatically restarts at the set time every week.
- Click next to **Auto Delete** in **Delete Old Files**, set the time, and then the system automatically deletes old files at 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. Please operate it carefully.

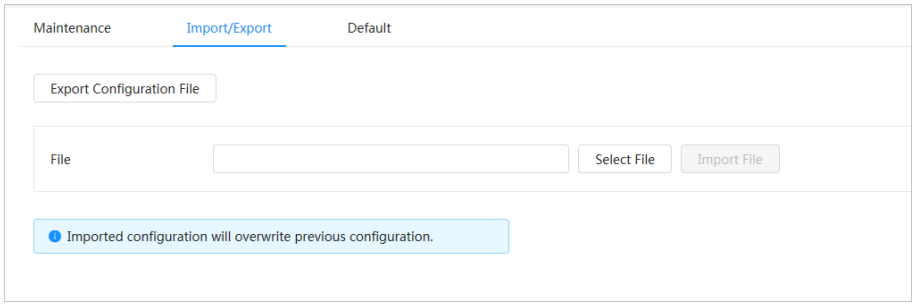
Step 3 Click **Apply**.

4.8.3.3 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**.

Figure 4-85 Import/export



Step 2 Import or export configuration files.

- Import: Click **Select File** to select local configuration file, and then 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

computer.

4.8.3.4 Default

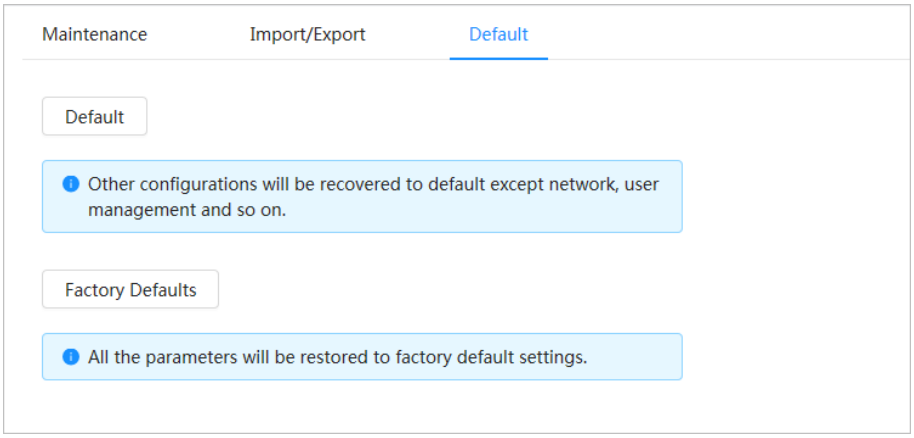
Restore the device to default configuration or factory settings.

Restoring the device to default configuration or factory settings will clear the relevant information of the device. Please operate it carefully.

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

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

Figure 4-86 Default



4.8.4 Upgrade

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

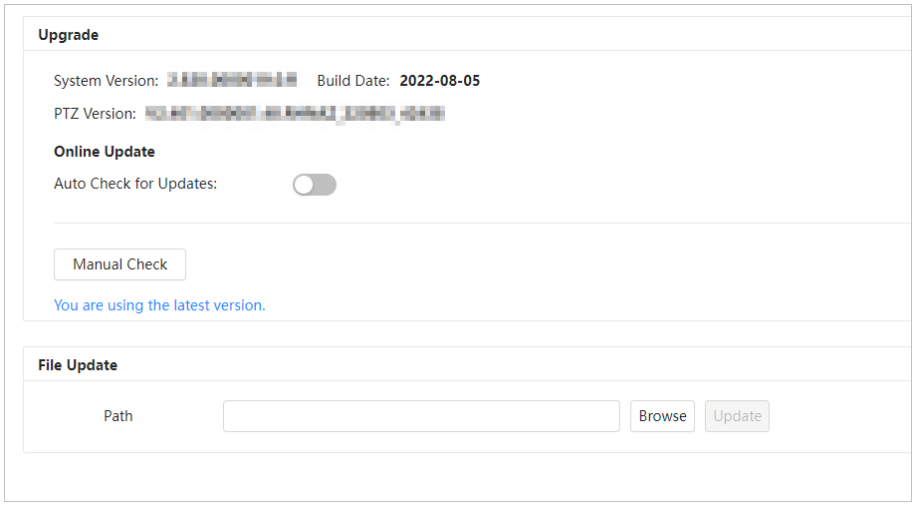
If wrong upgrade file has been used, restart the device; otherwise some functions might not work properly.

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

Step 2 Enable **Auto Check for Update**, and then the system will automatically detect whether there is an update version.

Click **Manual Check**, and then the system detects whether there is a later version.

Figure 4-87 Upgrade



Step 3 Click **Browse**, and then upload upgrade file.

The upgrade file should be a .bin file.

Step 4 Click **Upgrade**.

The upgrade starts.

4.9 System Information

4.9.1 Version

View the **ONVIF Version**, **System Version**, **Web Version** and other information of the Camera.

Select > **System Info** > **Version** to view the version information of the Camera.

4.9.2 Online User

View all the current users logging into the webpage.

Select > **System Info** > **Online User** to view all the current users logging into the device.

4.9.3 Durability Statistics

View the **Total Working Time**, **Update Times**, **Last Upgrade Date** of the Camera.

Select > **System Info** > **Durability Statistics** to view the durability statistics of the Camera.

4.9.4 Legal Information

View the **Open Source Software Notice** of the Camera.

Select > **System Info** > **Legal Info** to view the legal information of the Camera.

4.10 Setting Log

4.10.1 Log

You can view and back up logs.

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

Step 2 Configure **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**, **Config**, **Storage**, **Alarm**, **Event**, **Record**, **Account**, **Security**, **Clear Log**.

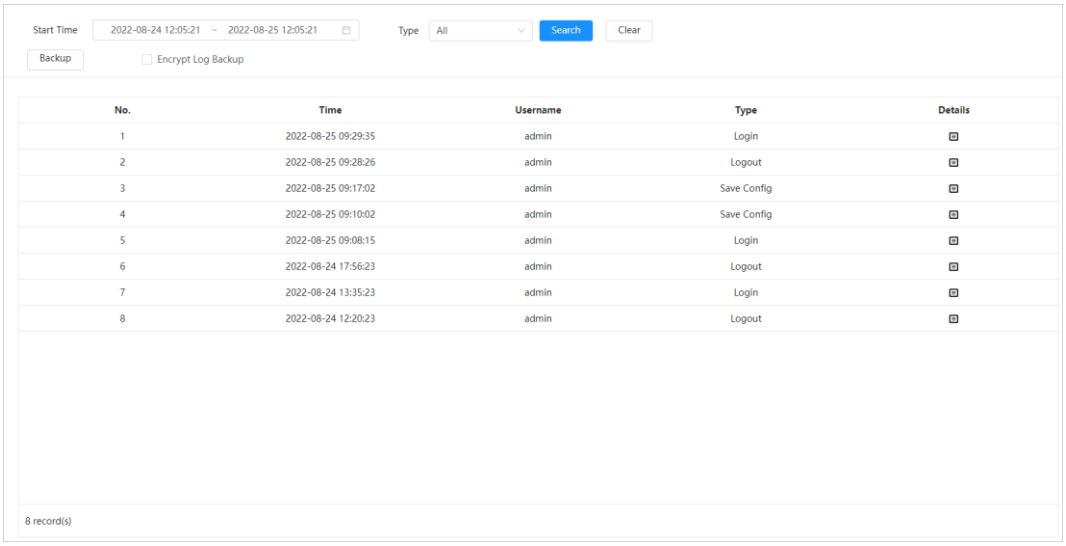
Table 4-31 Log type

Type	
System	Includes program start, abnormal close, close, program restart, device closedown, device restart, system restart and system upgrade.
Config	Includes saving configuration and deleting configuration file.
Storage	Includes configuring disk type, clearing data, hot swap, FTP state and record mode.
Alarm Event	Includes event start and event end. Events includes video detection, smart plan, alarm and abnormality and more.
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.
Clear Log	Includes clearing system log.

Step 3 Click **Search**.

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

Figure 4-88 Log



4.10.2 Remote Log

Configure remote log. You can get the related log by accessing the set address.

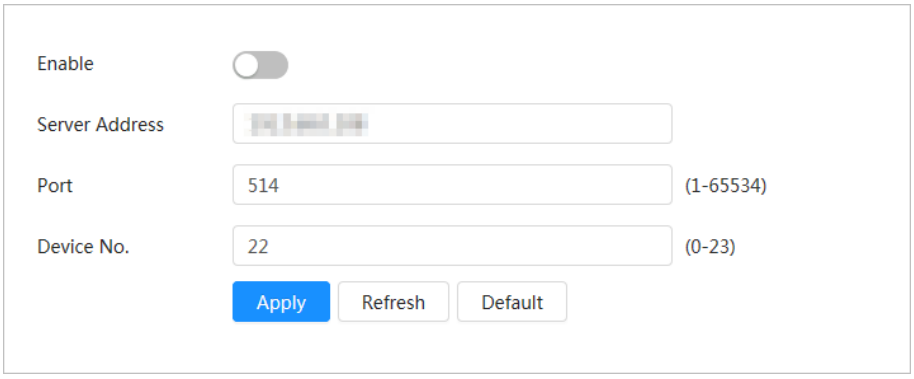
Step 1 Select > **Log** > **Remote Log**.

Step 2 Click to enable remote log function.

Step 3 Configure server address, port and device number.

Step 4 Click **Apply**.

Figure 4-89 Remote log



5 Live

This chapter introduces the layout of the **Live** page and function configuration.

5.1 Live Page

This section describes the different modules on the **Live** page.

Click **Live** on the home page to enter the **Live** page.

Pages might vary with different models.

Figure 5-1 Live page



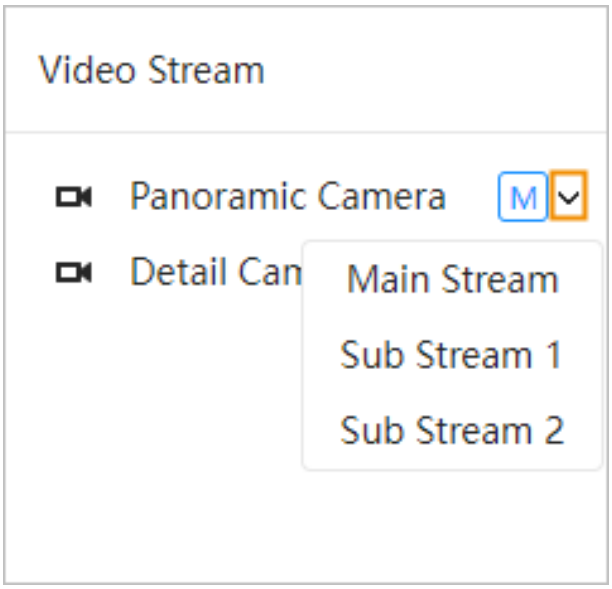
Table 5-1 The description of live page

Number	Function	Description
1	Display mode	Switch the video display mode. It includes general mode and traffic event mode. For details, see "5.5 Display Mode".
2	Channel list	Displays all channels. You can select the channel and set the stream type.
3	Image adjustment	Adjusts the images in the live viewing. For details, see "5.4 Window Adjustment Bar".
4		
5	Live view	Displays the real-time monitoring image.
6	Live view function bar	Displays the shortcut for available functions. Among them, some shortcut buttons of multi-channel devices are in the upper-right corner of the channel screen. For details, see "5.3 Live View Function Bar".

5.2 Configuring Encoding

On the left side of the **Live** page, click ⌄ on the right side of the video channel to select the video stream.

Figure 5-2 Configure video stream



- **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 "4.3.2.1 Encode".
- **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 "4.3.2.1 Encode".
- M means the current stream is main stream; S1 means the current stream is sub stream 1; S2 means the current stream is sub stream 2.
  Click this icon to choose whether to display the video image.

5.3 Live View Function Bar

This section introduces the shortcuts supported when viewing live video.

Table 5-2 Description of live view function bar

Icon	Function	Description
	Alarm	Displays the status of the alarm sound, click the icon to turn on or off the alarm sound.
	Manual Position	Select the area in the panorama camera screen, and the detail camera screen will be automatically positioned to the selected area.
	Force Alarm	Displays alarm output state of the corresponding channel. When the alarm output interface is connected to the alarm output device, click the icon to force to enable or disable alarm output. • Red: Alarm output enabled. • Black: Alarm output disabled.

Icon	Function	Description
	Talk	Enable or disable the audio talk.

5.4 Window Adjustment Bar

5.4.1 Adjustment

This section introduces the adjustment of image.

Table 5-3 Description of adjustment bar

Icon	Function	Description
	W:H	Click the icon to resume original ratio or change ratio. It supports **Original** and **Adaptive**.
	Fluency Adjustment	Click the icon to adjust the fluency of the image. It supports **Realtime**, **Fluent** and **General**. • Realtime: Guarantees the real time of the image. When the bandwidth is not enough, the image might not be smooth. • Fluent: Guarantees the fluency of the image. There might be delay between live view image and real-time image. • General: It is between **Realtime** and **Fluent**.
	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.
	Anti-aliasing	Click this icon to enable or disable anti-aliasing function.
	Multi-channel screen display	This icon is displayed only on multi-channel devices. Click the icon to select the channel screen display mode.

5.4.2 PTZ Control

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

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

Figure 5-3 PTZ Control

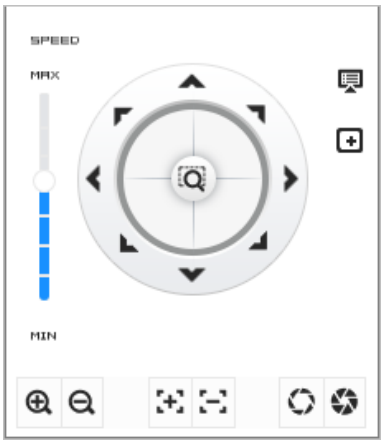


Table 5-4 Description of PTZ control functions

Function	Description
	This function supports control device toward eight directions, including up, down, left, right, left up, right up, left down and right down. Click  , and then in the selected area of 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, the faster the device rotates. For example, the rotation with a speed of 8 is much faster than the rotation with a speed of 1.
	Zoom: Adjust the zooming of images.
	Focus: Adjust the degree of camera focus.
	Iris: Adjust the iris of images.
	PTZ Menu: Click to enter PTZ menu. Configure the camera setting, PTZ setting, system management and other functions according to the actual page.
	Area Focus: Focus on the selected area. Select the **Live** page, click the icon, and then select the area on the **Live** page. The device will automatically focus on this area.

5.4.3 PTZ Function

On the **Live** page, click the **PTZ Function** on the lower-left corner of the page. Before using PTZ function, please see "4.5 PTZ" to configure PTZ function.

The value range of the PTZ function (such as preset and tour) depends on the specific PTZ protocol.

Figure 5-4 PTZ function

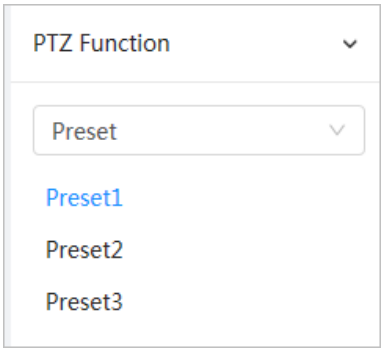


Table 5-5 Description of PTZ function

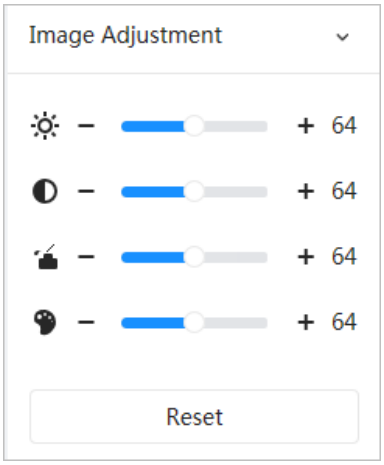
Parameter	Description
Preset	Configure the preset number, and then click **View** to position the device to the corresponding point. The preset contains PTZ's horizontal angle, tilt angle, lens focal length and other parameters.
Tour Group	Configure the tour number. Click **Start**, and then the Camera automatically rotates back and forth in the order of the set preset points. Click **Stop** to finish tour.
Go to	Configure the horizontal angle, vertical angel and zoom. Click **Go to** to pinpoint to a point.

5.4.4 Image Adjustment

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

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

Figure 5-5 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 the 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.

5.5 Display Mode

Display mode includes general mode and traffic event mode. For general mode, see "5.1 Live Page".

Prerequisites

Before previewing with traffic event mode, configure corresponding AI function in advance.

Traffic event mode

Select **Face Mode** on the upper left corner of the **Live** page, and then the page turns into traffic event mode.

Figure 5-6 Traffic event mode



Table 5-6 Description of display mode

Number	Function	Description
1	Display mode	Switches the video display mode. It includes general mode and traffic event mode.
2	Channel list	Displays all channels. You can select the channel and set the stream type.
3	Image adjustment	Adjusts the images in the live viewing. For details, see "5.4 Window Adjustment Bar".
4		
5	Traffic event information bar	Displays the detail information on the traffic events, including the event time, lane No., plate No. and more.

Number	Function	Description
6	License plate image	Displays the vehicle image of the traffic event. The license plate identified by the system and the license plate image captured by the camera are displayed below the picture.
7	Live view function bar	Displays the shortcut for available functions. Among them, some shortcut buttons of multi-channel devices are in the upper-right corner of the channel screen. For details, see "5.3 Live View Function Bar".
8	Live view	Displays the real-time monitoring image.

6 Record

This chapter introduces the related functions and operations of video playback, including setting video parameters, setting video plan and video storage.

6.1 Playback

This section describes playing back videos and downloading videos.

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, please 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 Storage".

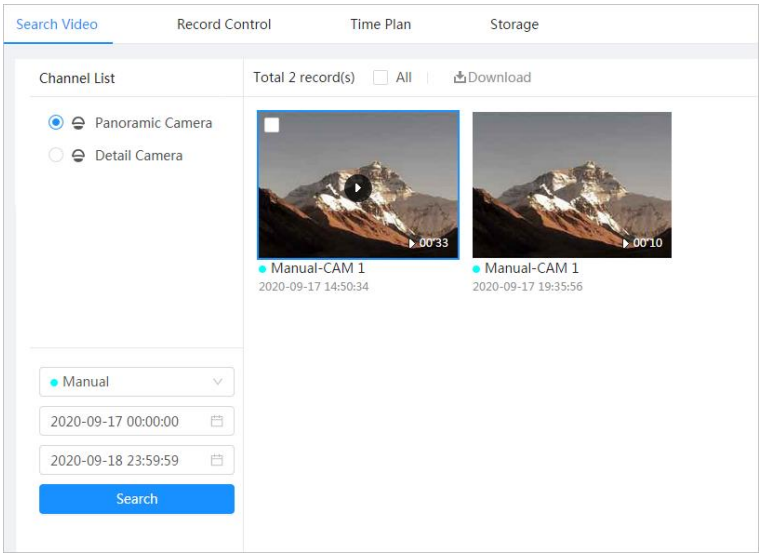
Procedure

Step 1 Select **Record** > **Search Video** on the home page.

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

- Click **All**, and then 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.

Figure 6-2 Video playback

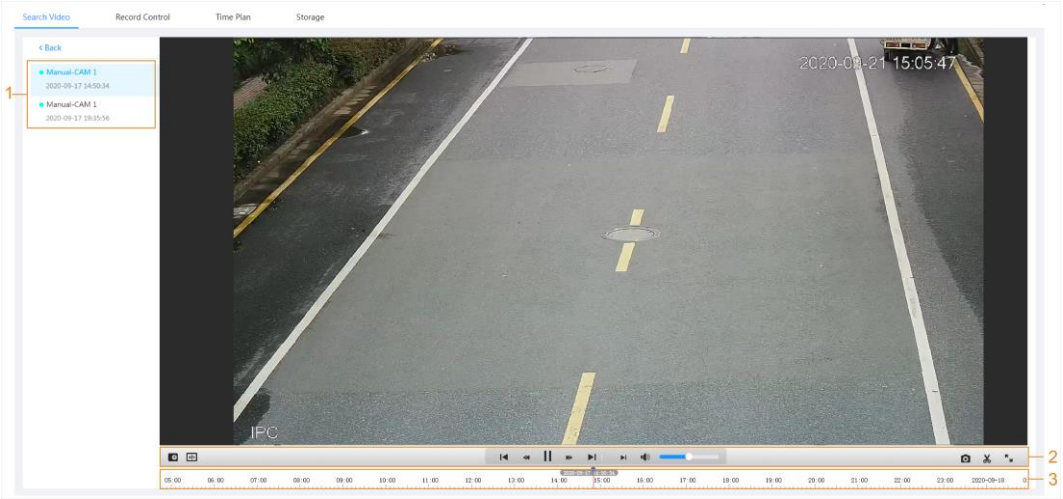


Table 6-1 Description of video playback page

No	Function	Description
1	Recorded video list	Displays all searched recorded video files. Click any files to view the recording. Click **Back** at the upper-left corner to go to the **Search Video** interface.
2	Digital Zoom	You can zoom in or out video image of the selected area through two operations. • Click the icon, and then select an area on the video image to zoom in; right-click on the image to resume the original size. • Click the icon, and then scroll the mouse wheel on 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 displaying AI rules. This function is disabled by default. AI rules are available only when you enabled the rule during recording.
	Play control bar	Controls playback. • : Click the icon to play the previous recorded video in the recorded video list. • : Click the icon to slow down the playback. • : Click the icon to stop playing recorded videos, and then the icon changes to . Click to play recorded videos. • : Click the icon to speed up the playback. • : Click the icon to play 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 then it will be saved to the configured storage path. For details on viewing or configuring storage path, see "6.4.1 Local Storage".
	Video clip	Click to clip a certain recorded video, and then save it. For details, see "6.1.2 Clipping Video".
	Full Screen	Click , and then the image is displayed in full-screen; double-click the image or press the Esc key to exit.
3	Progress bar	Displays the record type and the corresponding period. • Click any point in the colored area, and then system will play back the recorded video from the selected moment. • Each record type has its own color. You can see their relations in **Record Type** bar.

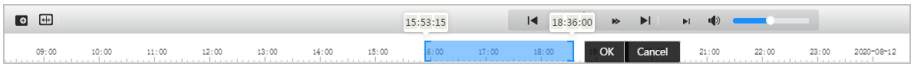
6.1.2 Clipping Video

During the video playback, you can clip a video.

Step 1 Click below the video during playback.

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

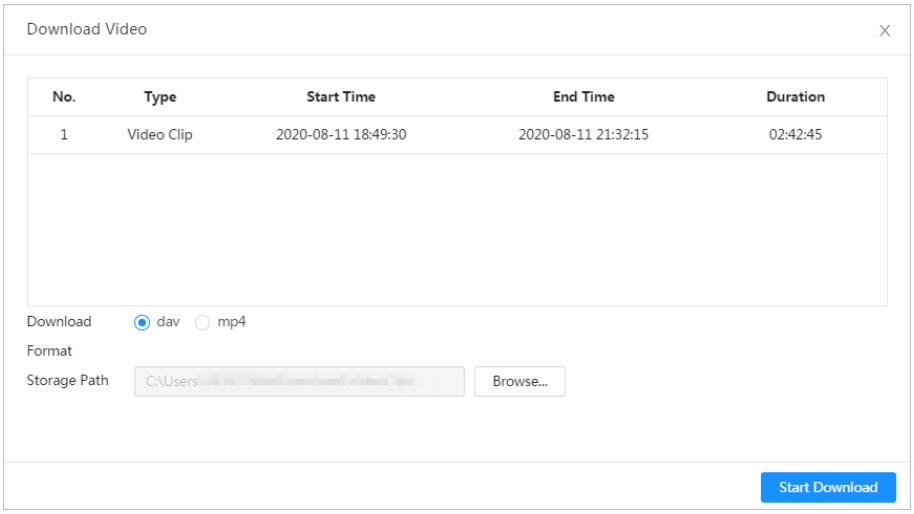
Figure 6-3 Clipping video



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** to start downloading clipped video and display download progress. After downloading successfully, the clipped file is saved in the configured storage path. For details on storage path, see "4.2 Local".

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 on viewing or setting storage path, see "4.2 Local".

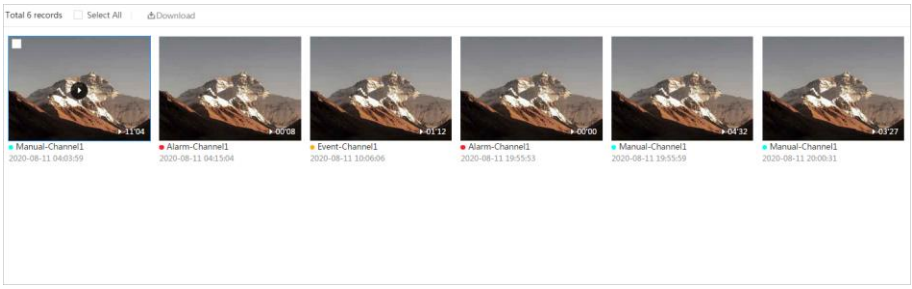
Step 1 Select **Record** > **Search Video** on the home page.

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

Step 3 Select videos to be downloaded.

- Select ☐ on the upper-left corner of each video file to select one or more videos. The icon on the upper-left corner of the selected file changes to ☑.
- Select ☐ next to **Select All** to select all searched videos.

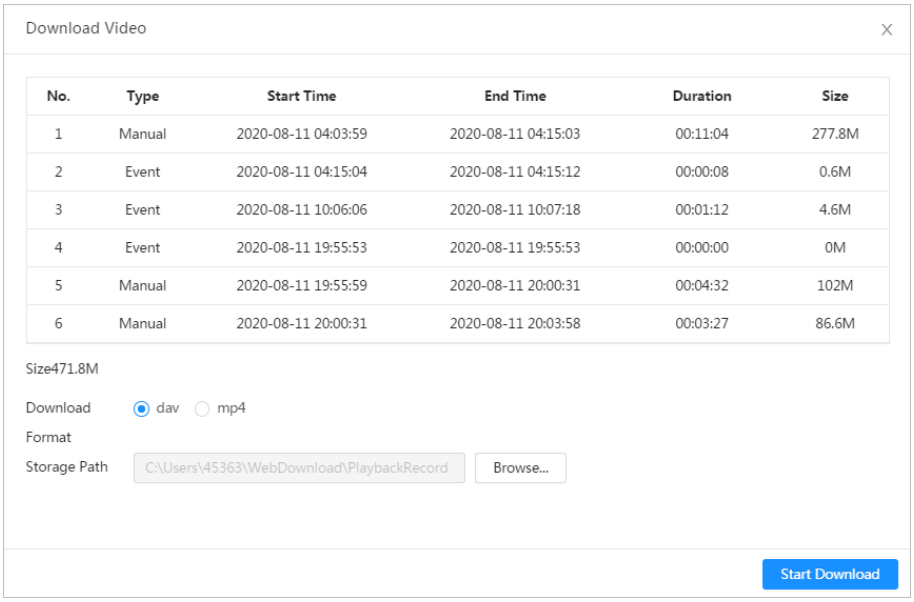
Figure 6-5 Selecting video file



Step 4 Click **Download**.

Step 5 Select the download format and storage path.

Figure 6-6 Downloading video



Step 6 Click **Start Download**.

The system starts to download the video and displays the download progress. After the video is downloaded successfully, the video file is saved in the configured storage path. For details on storage path, see "4.2 Local".

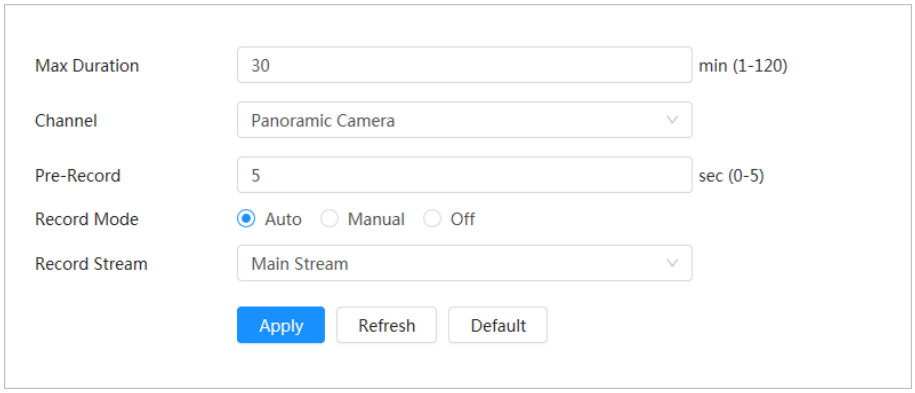
6.2 Setting Record Control

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

When a Dahua smart SD card is inserted into a device that supports Dahua smart SD card, make sure that the SD card has been authenticated before using the video recording function. For details, see "4.2 Local".

Step 1 Select **Record** > **Record Control** on the home page.

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.
Channel	Select the camera that needs to configure record control parameters.
Pre-Record	The time to record the video in advance of a triggered alarm. For example, if the pre-event record is set to be 5 s, the system saves the recorded video 5 s before the alarm. When an alarm or motion detection links recording, if the recording function is not enabled, the system saves the recording within the pre-event record time to the video file.
Record Mode	• **Manual**: The system starts recording. • **Auto**: The system starts recording in the configured time period of record plan. • **Off**: The system does not record.
Record Stream	Select the record stream, including **Main Stream** and **Sub Stream**.

Step 3 Click **Apply**.

6.3 Setting Record Plan

According to the configured record plan, the system enables or disables recording at corresponding time.

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

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

Step 1 Select **Record** > **Time Plan** on the home page.

Step 2 Select record channel, and then set record plan.

- Green represents normal record plan (such as timing recordings).
- Yellow represents motion record plan (such as recordings triggered by AI events).
- Red represents alarm record plan (such as recordings triggered by alarm-in).

1) Select a record type, and then left-click and drag on the timeline to set the recording period of each event.

Figure 6-8 Configure through timeline



2) Click the selected time range, and then enter a specific time in the time text box to configure an accurate start and end time.

Figure 6-9 Configure accurate time period



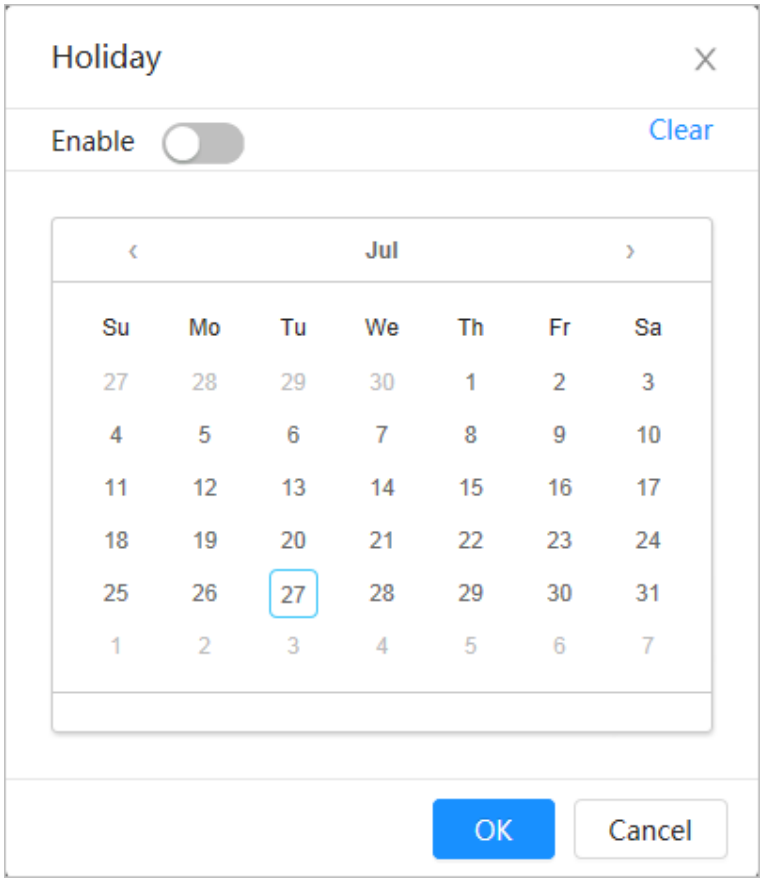
3) Click **Copy**, and then select the days that you want to copy to on the prompt page.

- Select the **Select All** checkbox to select all day to copy the configuration.
- You can set 6 time periods per day.

4) Click **Apply**.

Step 3 Click **Holiday** to set the holiday record plan.

Figure 6-10 Holiday plan



1) Click to enable the holiday plan, and then select the days that you need to set as the holiday.
   The selected date is shown with a blue shading.
2) 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 captures or records as general setting.

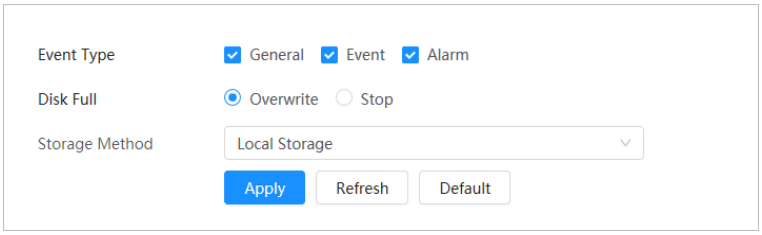
Step 4 Click **OK**.

6.4 Storage

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

Step 1 Select **Record** > **Storage** on the home page.

Figure 6-11 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 **General**, **Event** 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 select models that support SD card. • **Network storage**: Save the recorded videos on the FTP (File Transfer Protocol) or NAS (Network Attached Storage).

Step 3 Click **Apply**.

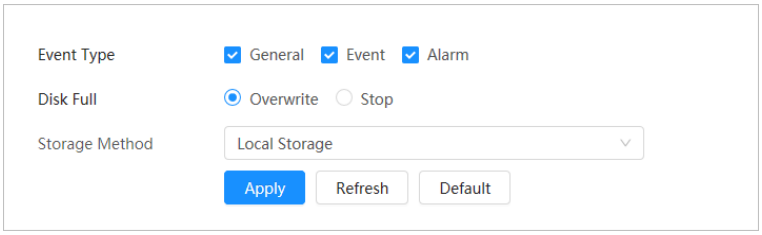
6.4.1 Local Storage

Step 1 Select **Record** > **Storage** on the home page.

Step 2 Select the recording strategy in **Disk Full**.

Step 3 Select **Local storage** as **Storage Method** to save the recorded videos in the internal SD card.

Figure 6-12 Local storage



Step 4 Click **Apply**.

6.4.2 Network Storage

You can select from **FTP** and **NAS**.

When the network does not work, you can save all the files to the internal SD card for emergency.

6.4.2.1 FTP

Enable this function, and then you can save all the files in the FTP server.

Step 1 Select **Record** > **Storage** on the home page.

Step 2 Select the recording strategy in **Disk Full**.

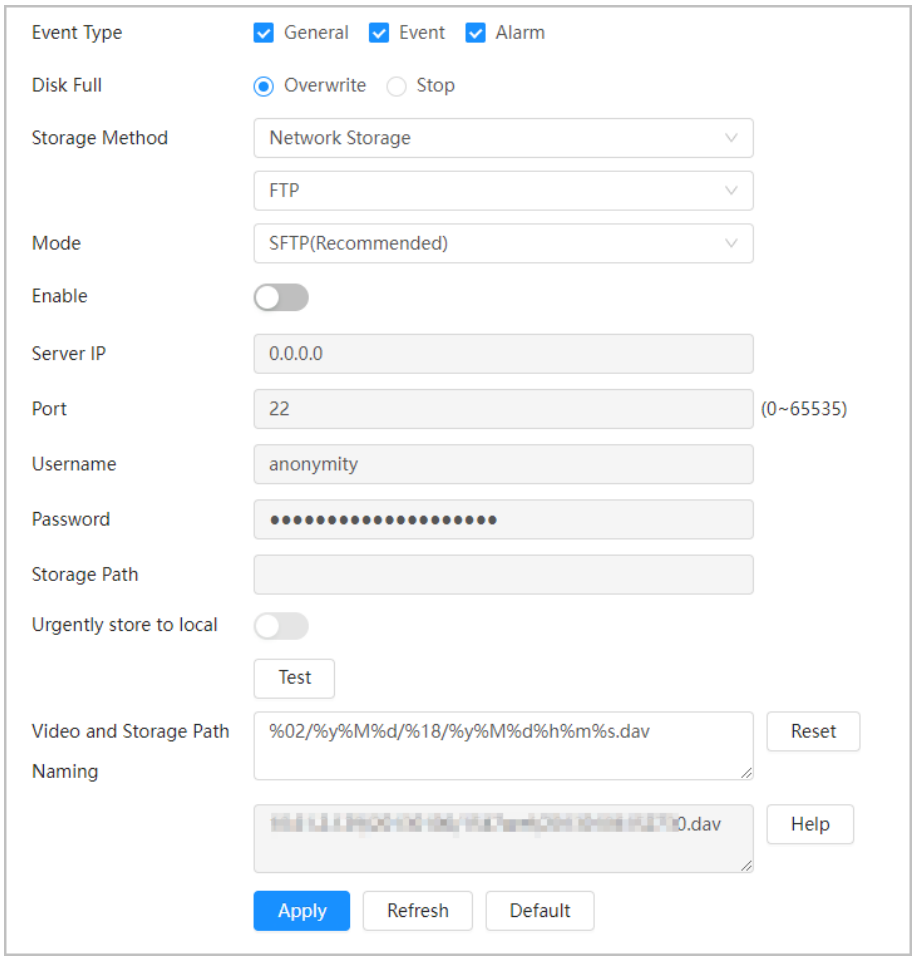
- **Overwrite**: Cyclically overwrite the earliest video when the disk is full.
- **Stop**: Stop recording when the disk is full.

Step 3 Select **Network storage** as **Storage Method**, and then select **FTP** to save the recorded videos in FTP server.

You select **FTP** or **SFPT** as the mode. **SFPT** is recommended to enhance network security.

Step 4 Click to enable the FTP function.

Figure 6-13 FTP



Step 5 Configure FTP parameters.

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.

Parameter	Description
Urgently store to local	Click , and then when the FTP server does not work, all the files are saved to the internal SD card.
Video and Storage Path Naming	Enter the name of the video and storage path. Click **Reset** to reset the name. Click **Help** to view the name format.

Step 6 Click **Apply**.

Step 7 Click **Test** to test whether FTP function works normally.

6.4.2.2 NAS

Enable this function, and then you can save all the files in the NAS.

Step 1 Select **Record** > **Storage** on the home page.

Step 2 Select the recording strategy in **Disk Full**.

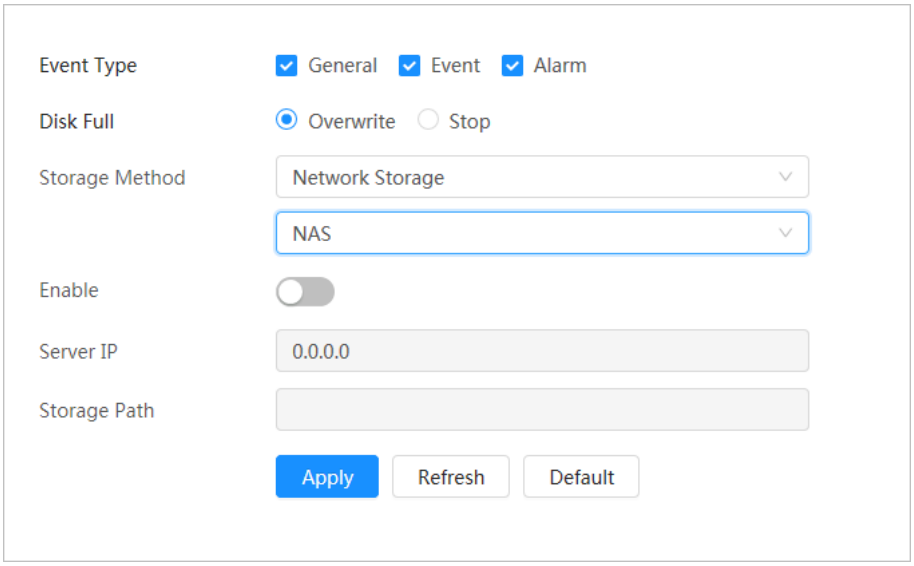
- **Overwrite**: Cyclically overwrite the earliest video when the disk is full.
- **Stop**: Stop recording when the disk is full.

Step 3 Select **Network storage** as **Storage Method**, and then select **NAS** to save the recorded videos in NAS server.

Step 4 Select NAS protocol type.

- **NFS** (Network File System): A file system which enables computers on the same network to share files through TCP/IP.
- **SMB** (Server Message Block): Used for web connection and information communication between clients and servers.

Figure 6-14 NAS



Step 5 Click to enable the NAS function., and then configure NAS parameters.

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.

Parameter	Description
Password	Password for logging in to the NAS server. This is required when the protocol type is SMB.
Username	Username for logging in to the NAS server. This is required when the protocol type is SMB.

Step 6 Click **Apply**.

7 Picture

This chapter introduces the related functions and operations of picture playback, including setting snapshot parameters, setting snapshot plan and snapshot storage.

7.1 Playback

This section describes playing back pictures and downloading pictures.

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 pictures, please configure snapshot time range, snapshot storage method, snapshot plan. For details, see"7.2 Setting Snapshot Parameters", "7.3 Setting Snapshot Plan" and "7.4 Storage".

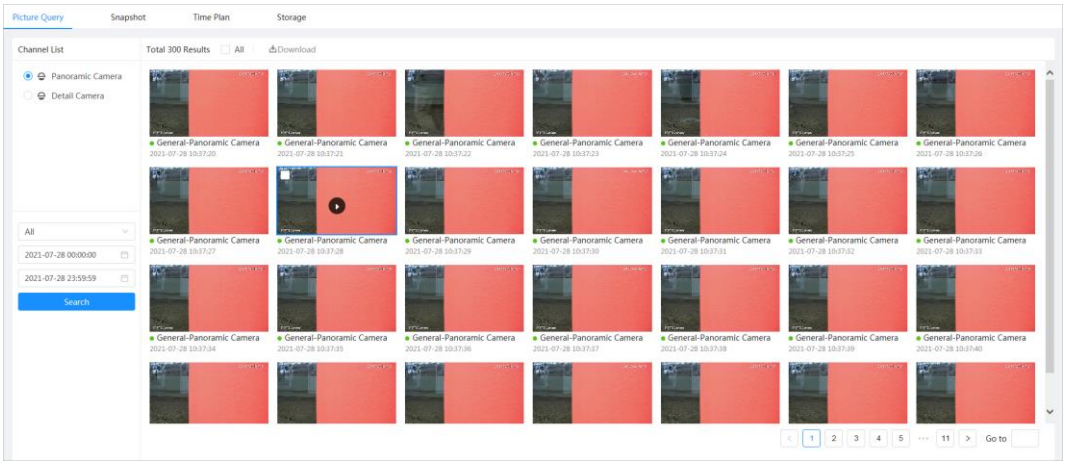
Procedure

Step 1 Select **Record** > **Picture Query** on the home page.

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

- Click **All**, and then 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.

Figure 7-2 Picture playback

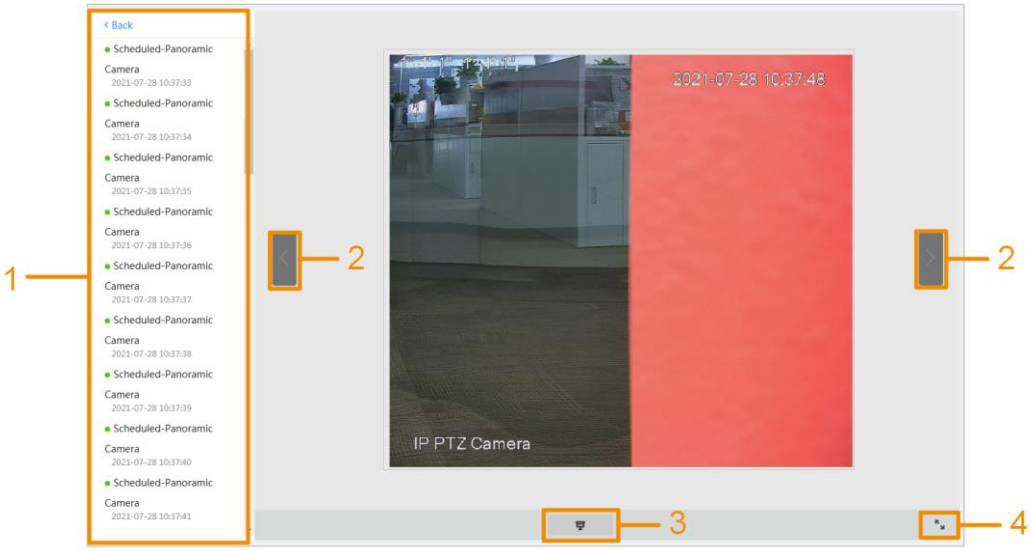


Table 7-1 Description of picture playback page

No	Function	Description
1	Snapshot list	Displays all searched snapshots. Click any files to play back it. Click **Back** on 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 next 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 then the snapshot is displayed in full-screen mode; double-click the image or press the 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 on viewing or setting storage path, see "4.2 Local".

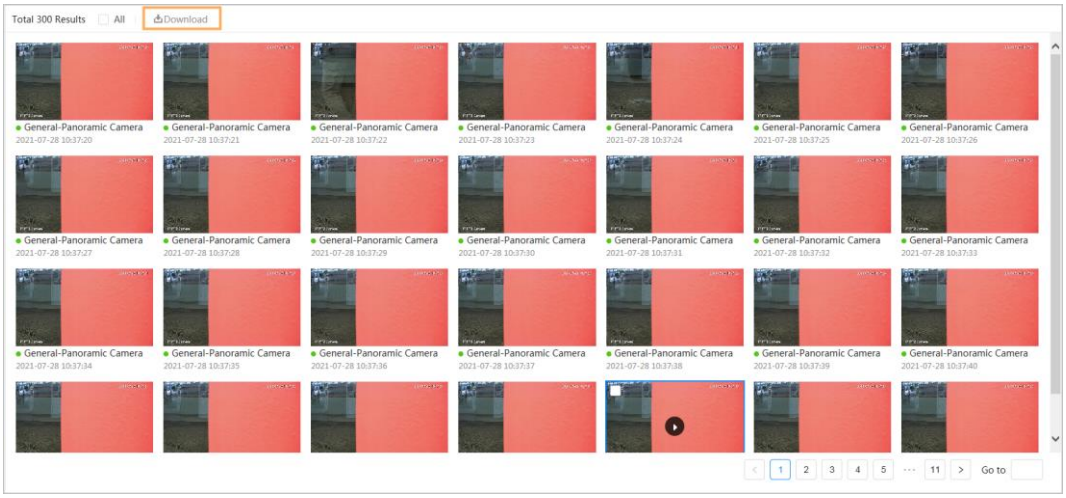
Step 1 Select **Picture** > **Picture Query** on the home page.

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

Step 3 Select the pictures to be downloaded.

- Select ☐ on the upper-left corner of each picture to select one or multiple pictures. The icon on the upper-left corner of the selected file changes to ☑.
- Select ☐ next to **Select All** to select all searched pictures.

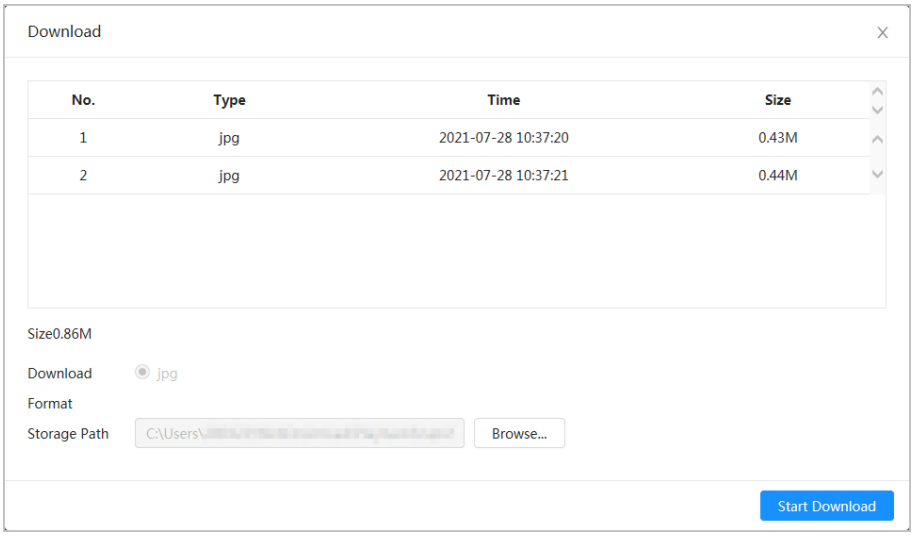
Figure 7-3 Selecting picture file



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 "4.2 Local".

7.2 Setting Snapshot Parameters

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

Step 1 Select **Picture** > **Snapshot** on the home page.

Step 2 Select the channel, and then set the parameters.

Figure 7-5 Snapshot

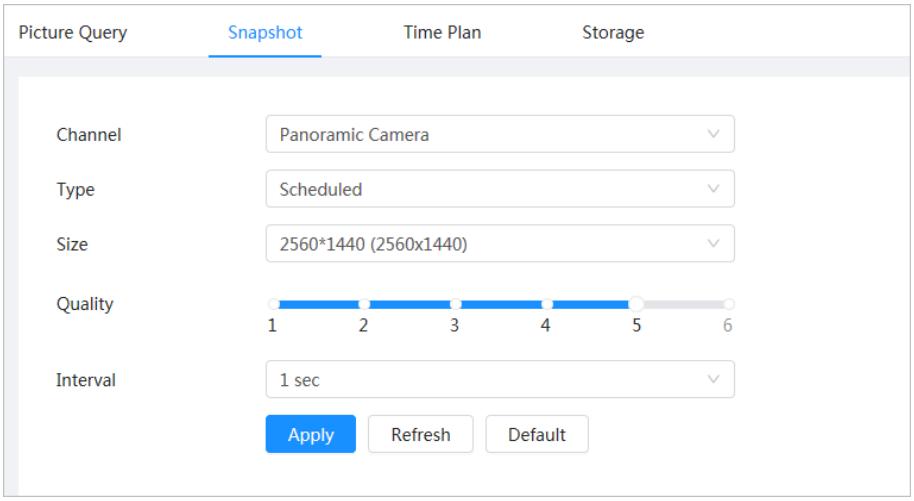


Table 7-2 Description of snapshot parameters

Parameter	Description
Type	You can select from **General** and **Event**. • **General**: Capture images in the defined period. For details, see "7.3 Setting Snapshot Plan". • **Event**: Capture images when configured event is triggered, such as **Motion Detection**, **Video Tamper** and **Scene Changing**. Make sure that you have enabled the corresponding event detection and the snapshot function.
Size	Set the size of snapshot. It is the 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.

After the corresponding alarm type (**General**, **Event**, and **Alarm**) is enabled, the camera channel links snapshot.

Step 1 Select **Picture** > **Time Plan** on the home page.

Step 2 Select snapshot channel, and then set snapshot plan.

- Green represents normal snapshot plan (such as timing snapshots).
- Yellow represents motion snapshot plan (such as snapshots triggered by AI events).
- Red represents alarm snapshot plan (such as snapshots triggered by alarm-in).

1) Select a snapshot type, and then left-click and drag on the timeline to set the snapshot period of each event.

Figure 7-6 Configure through timeline



2) Click the selected time range, and then enter a specific time in the time text box to configure an accurate start and end time.

Figure 7-7 Configure accurate time period



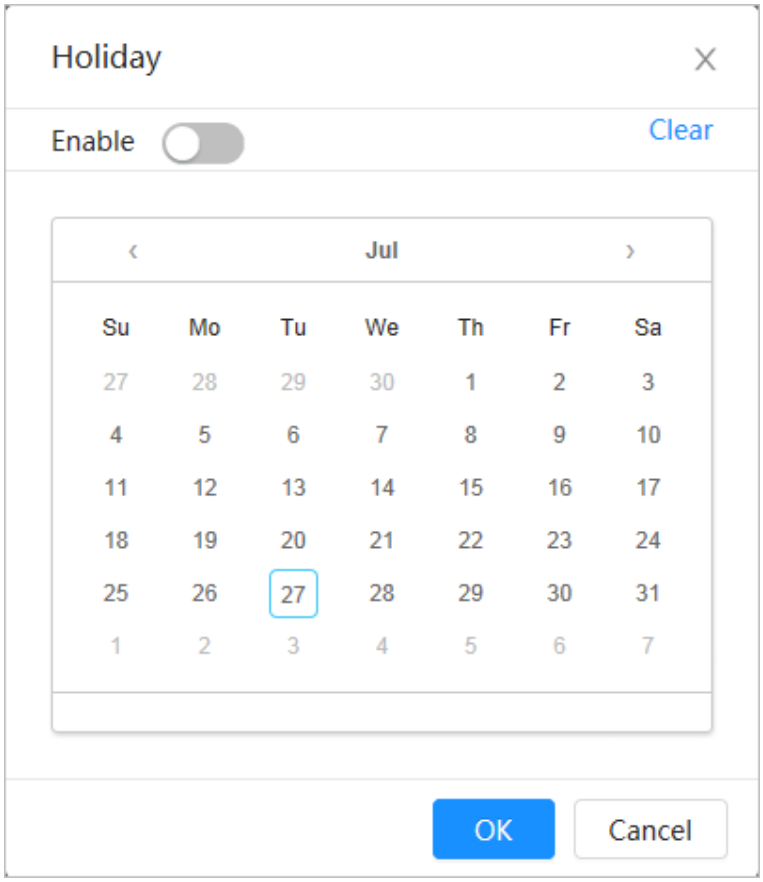
3) Click **Copy**, and then select the days that you want to copy to on the prompt page.

- Select the **Select All** checkbox to select all day to copy the configuration.
- You can set 6 time periods per day.

4) Click **Apply**.

Step 3 Click **Holiday** to set the holiday snapshot plan.

Figure 7-8 Holiday plan



1) Click to enable the holiday plan, and then select the days that you need to set as the holiday.
   The selected date is shown with a blue shading.
2) 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 captures or records as general setting.

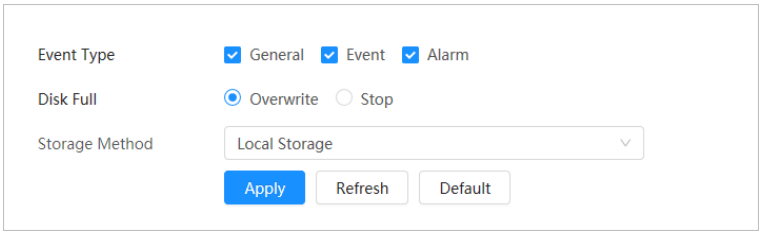
Step 4 Click **OK**.

7.4 Storage

This section introduces the configuration of the storage method for the snapshot.

Step 1 Select **Picture** > **Storage** on the home page.

Figure 7-9 Live



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

Table 7-3 Description of storage parameters

Parameter	Description
Event Type	Select from **General**, **Event** 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 snapshots in the internal SD card. **Local storage** is displayed only on select models that support SD card. • **Network storage**: Save the snapshots in the FTP (File Transfer Protocol) or NAS (Network Attached Storage).

Step 3 Click **Apply**.

7.4.1 Local Storage

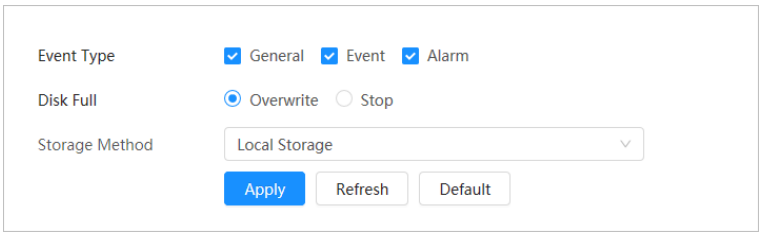
Step 1 Select **Picture** > **Storage** on the home page.

Step 2 Select the snapshot strategy in **Disk Full**.

- **Overwrite**: Cyclically overwrite the earliest snapshot when the disk is full.
- **Stop**: Stop recording when the disk is full.

Step 3 Select **Local storage** as **Storage Method** to save the snapshots in the internal SD card.

Figure 7-10 Local storage



Step 4 Click **Apply**.

7.4.2 Network Storage

You can select from **FTP** and **NAS**.

When the network does not work, you can save all the files to the internal SD card for emergency.

7.4.2.1 FTP

Enable this function, and then you can save all the files in the FTP server.

Step 1 Select **Picture** > **Storage** on the home page.

Step 2 Select the snapshot strategy in **Disk Full**.

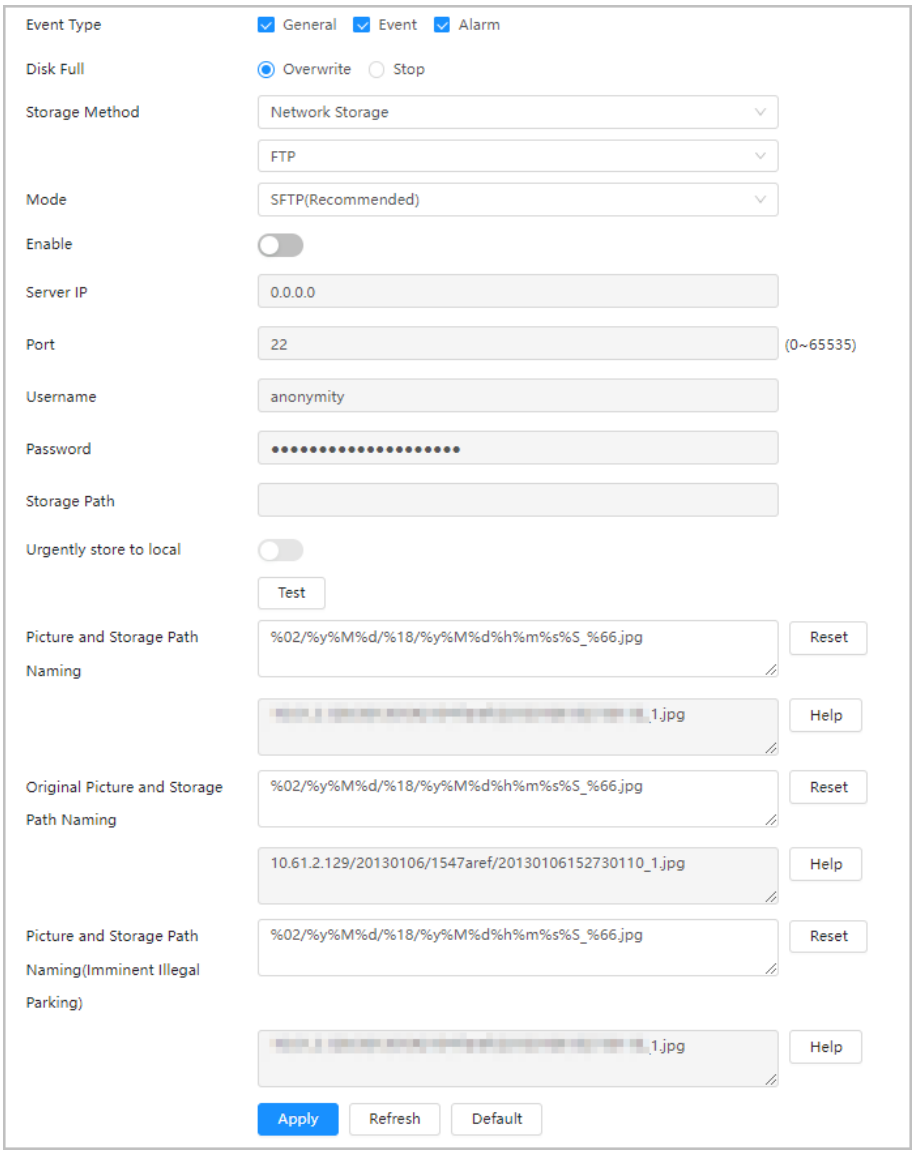
- **Overwrite**: Cyclically overwrite the earliest snapshot when the disk is full.
- **Stop**: Stop snapshot when the disk is full.

Step 3 Select **Network storage** as **Storage Method**, and then select **FTP** to save the snapshots in FTP server.

You select **FTP** or **SFPT** as the mode. **SFPT** is recommended to enhance network security.

Step 4 Click to enable the FTP function.

Figure 7-11 FTP



Step 5 Configure FTP parameters.

Table 7-4 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.
Urgently store to local	Click , and when the FTP server does not work, all the files are saved to the internal SD card.
Picture and storage path naming	Enter the name of the video and storage path. Click **Reset** to reset the name. Click **Help** to view the name format.
Original picture and storage path naming	Enter the original name of the video and storage path. Click **Reset** to reset the name. Click **Help** to view the name format.
Picture and Storage Path Naming (Imminent Illegal Parking)	Enter the name of the video and storage path for imminent illegal parking. Click **Reset** to reset the name. Click **Help** to view the name format.

Step 6 Click **Apply**.

Step 7 Click **Test** to test whether FTP function works normally.

7.4.2.2 NAS

Enable this function, and then you can save all the files in the NAS.

Step 1 Select **Picture** > **Storage** on the home page.

Step 2 Select the snapshot strategy in **Disk Full**.

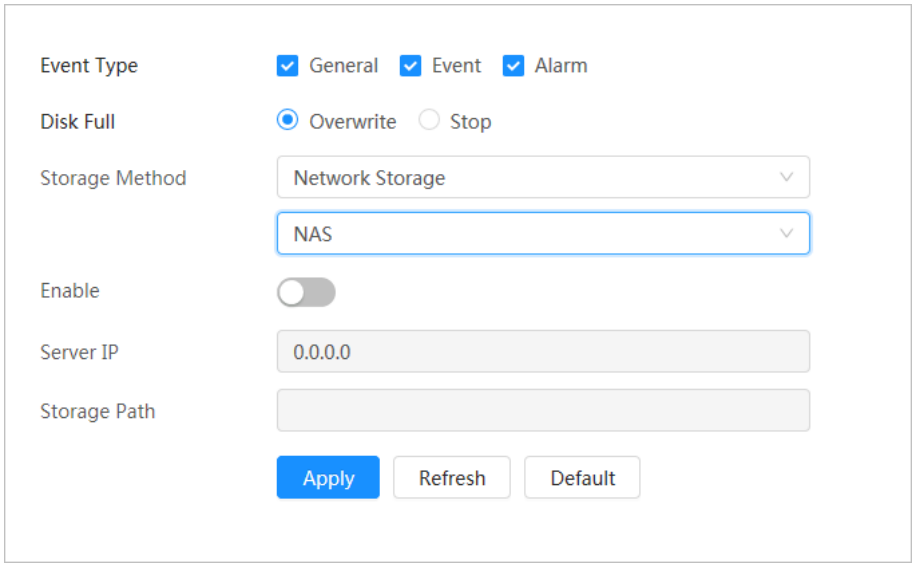
- **Overwrite**: Cyclically overwrite the earliest snapshot when the disk is full.
- **Stop**: Stop snapshot when the disk is full.

Step 3 Select **Network storage** as **Storage Method**, and then select **NAS** to save the snapshots in NAS server.

Step 4 Select NAS protocol type.

- **NFS** (Network File System): A file system which enables computers in the same network share files through TCP/IP.
- **SMB** (Server Message Block): Used for web connection and information communication between clients and servers.

Figure 7-12 NAS



Step 5 Select **Enable**, and then configure NAS parameters.

Table 7-5 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	Username for logging in to the NAS server. This is required when the protocol type is SMB.
Password	Password for logging in to the NAS server. This is required when the protocol type is SMB.

Step 6 Click **Apply**.

8 AI

This chapter describes how to configure device AI events, including smart plan, panoramic linkage and tour plan.

The device supports panoramic camera channel and detail camera channel. Snapshots and functions in this section are for reference only, and might differ from the actual models.

8.1 Configuring Smart Plan

The smart functions of the camera cannot take effect until the smart plan has been enabled.

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

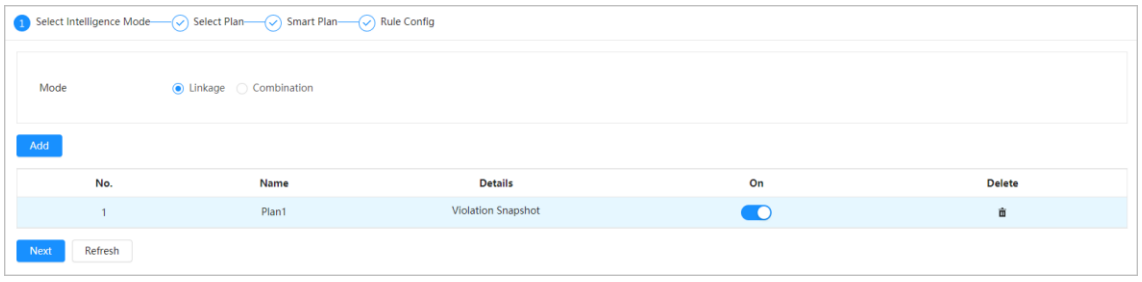
Step 2 Select intelligence mode.

- Linkage mode: Supports the combination of panoramic camera and detail camera to capture illegal parking during the tour.
  The panoramic camera supports the simultaneous detection of ANPR and illegal parking, and then the detail camera links illegal parking detection to capture the license plate.

  The panoramic camera supports adding multiple preset points for the tour, and the detail camera only supports recognition and capture.

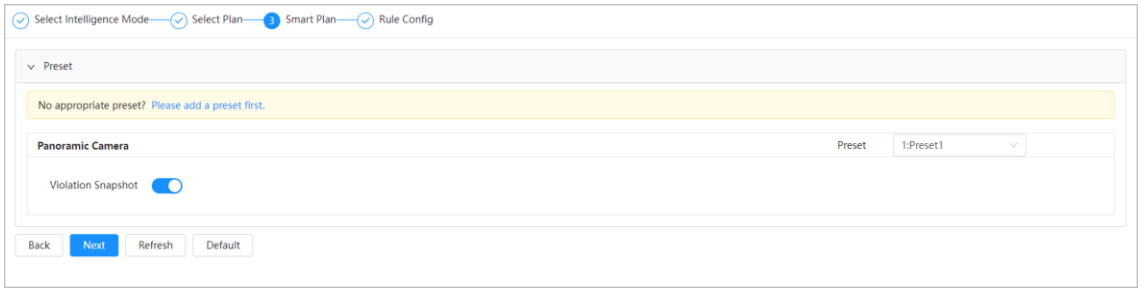
  1. Click **Add**, and double-click the plan to change the name of the plan.
     Click to delete the plan.

Figure 8-1 Linkage mode



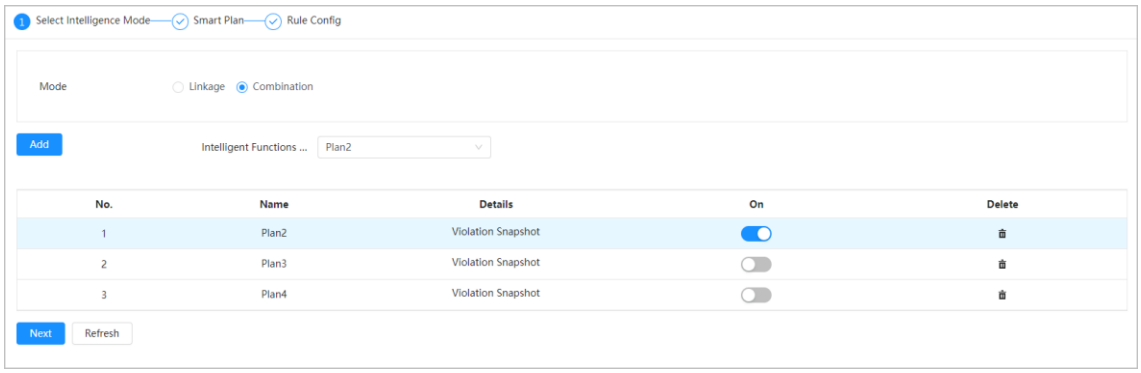
  2. Click to enable the plan, and then click **Next**.
  3. Click **Panorama-Detail Linkage**, and then click **Next**.
  4. Select the preset, enable the **Violation Snapshot** function, and then click **Next**.

Figure 8-2 Enable violation snapshot (linkage mode)



- Combination mode: Supports the panoramic camera and the detail camera to perform different intelligent function independently.
  The panoramic camera supports the simultaneous detection of ANPR and illegal parking, and during the illegal parking detection, it can link detail camera to capture the license plate.
  The detail camera supports violation snapshot (it can tour independently, but when the detail camera is on a panoramic linkage, it performs panoramic linkage first).
  1. Click **Add**, and double-click the plan to change the name of the plan.
     Click  to delete the plan.

Figure 8-3 Combination mode

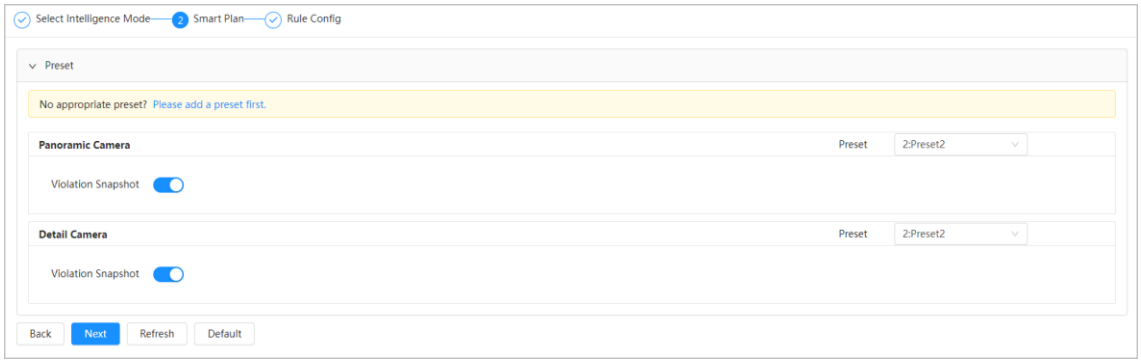


  2. Click  to enable the plan, and then click **Next**.
  3. (Optional) Select the plan from the **Intelligent Functions Linked to** drop-down list.
     The **Intelligent Functions Linked to** function only takes effect when touring 2 or more combination mode smart plans.

     After selecting the plan to which the intelligent function is linked, the panoramic function of the plan is the same as the linked plan. During the tour, when switching to a certain plan and the plan has been linked with other plans, the panoramic intelligence continues to use the linked panoramic smart plan.
     For example, you add plan 1, plan 2 and plan 3 to the tour plan successively, and set plan 2 intelligently linked to plan 3. When the device switches from plan 1 to plan 2, the panoramic camera will directly use plan 3 for detection, and the detail camera will normally switch from plan 1 to plan 2.
  4. Click **Next**.

Step 3 Enable the smart functions of the preset plan for different channels based on actual needs, and then click **Next**.

Figure 8-4 Enable violation snapshot (combination mode)



Step 4 Configure smart function rule as required. For details, see "8.2 Configuring Violation Snapshot".

8.2 Configuring Violation Snapshot

8.2.1 Scene Setting

Configure the scenes of violation snapshot, including drawing area, setting horizontal ratio after positioning and snapshot parameters.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Figure 8-5 Select smart plan (linkage mode)

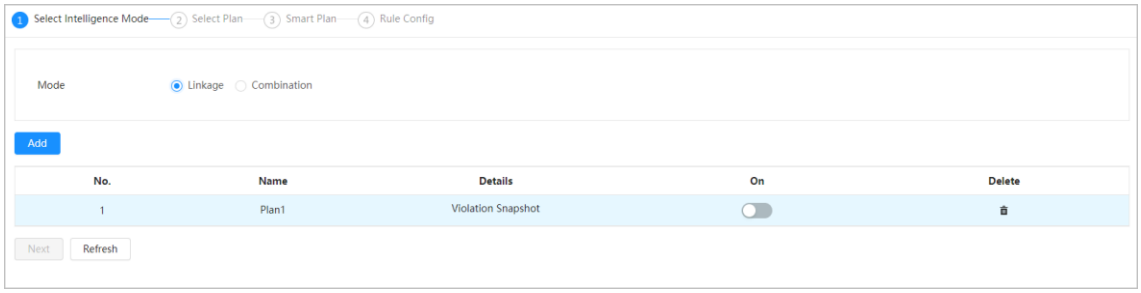
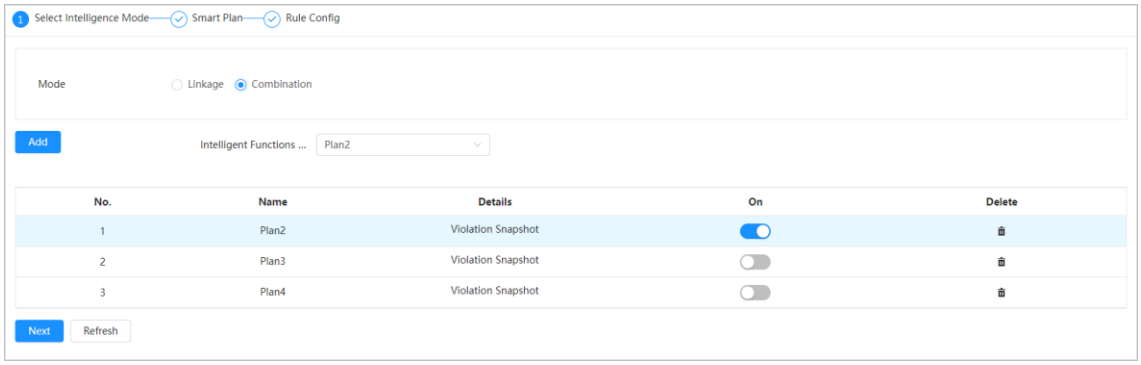


Figure 8-6 Select smart plan (combination mode)



Step 3 Click **Violation Snapshot**, and then click **Scene Setting** tab.

Step 4 Select channel from the drop-down list, and then click **Area** to configure the area.

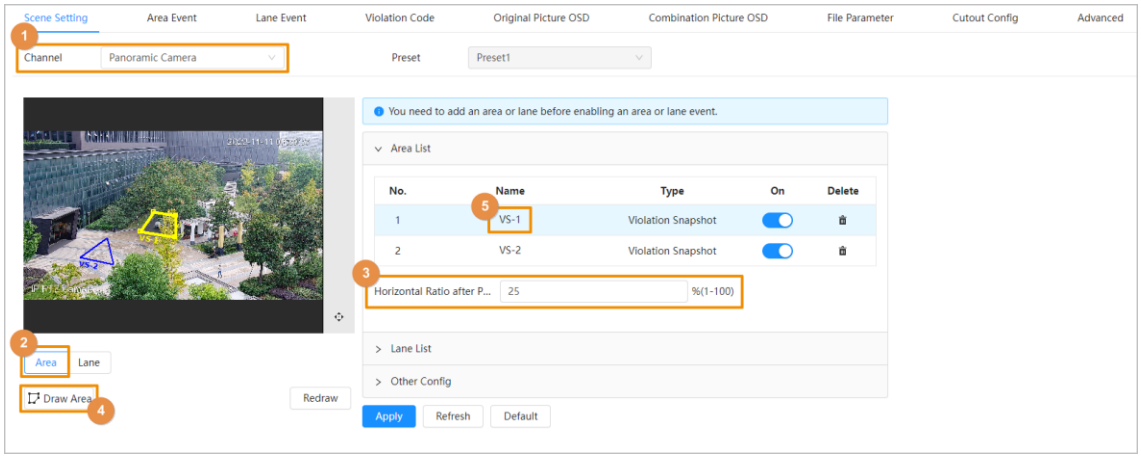
1) Set the **Horizontal Ratio after Positioning**.

Horizontal Ratio After Positioning: Set the proportion of the target object in the horizontal direction of the picture after positioning.

2) Click **Draw Area** to draw an area where the rule take effect on the live view page, and then right-click to finish the drawing.
You can draw multiple detection areas, and the function is enabled by default after the rule is drawn. Click **Redraw** to redraw the detection area.

- Click in the area list to delete the drawn detection area of the filtering rule.
- Click to adjust the monitoring screen through the PTZ control panel.

Figure 8-7 Configure the area



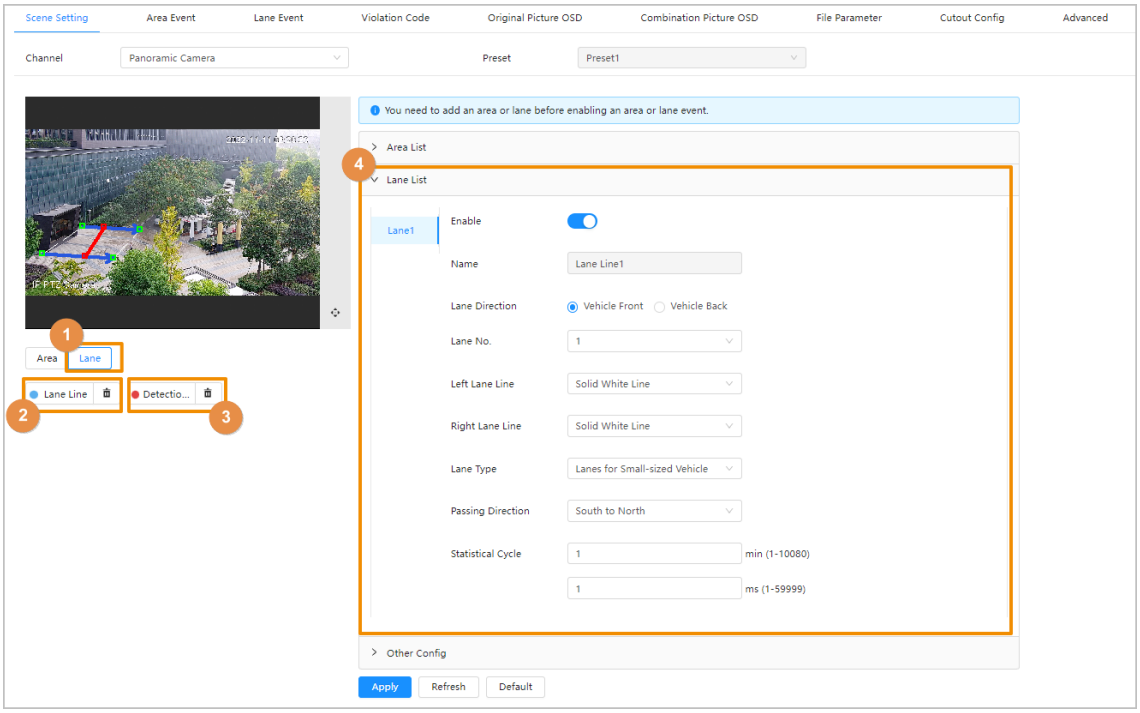
3) Click the **Name** in the area list to modify the name of the rule.

Step 5 Click **Lane** to configure the lanes.

1) Click Lane Line and Detection Line respectively, and then draw lines in the monitoring screen.
You can draw multiple lanes, and the lanes are enabled by default after drawing. Click to delete the lane line or detection line.

- Lane Line: Draw lines of the lanes to be detected according to the actual traffic situation.
  Two lane lines are required for each lane. A blue line with arrow will be displayed when drawing a lane line, and the direction of arrow indicate the direction of vehicles.
- Detection Line: Draw the detection line which triggers video capture, it is as functional as the line in real traffic. It will trigger and take snapshot when the vehicle crosses the detection line.
  The detection line is shown as a red line, and only displays within the range of drawn lane lines. Lines outside the range will not be displayed.

Figure 8-8 Configure lanes



2) Configure lane parameters.

Table 8-1 Description of lane parameters

Parameter	Description
Lane Direction	You can select Vehicle Head or Vehicle Tail. The direction of the lane arrow changes simultaneously when you select the lane direction. The default selection is Vehicle Head.
Lane No.	You can configure from 1-16. The default number starts with 1.
Left Lane Line	You can select from **Solid White Line**, **White Dotted Line** and **Solid Yellow Line**. The default is **Solid White Line**.
Right Lane Line	
Lane Type	You can select from **Lanes for Small-sized Vehicle**, **Bus Lane** and **Non-motor Vehicle Lane**. The default is **Lanes for Small-sized Vehicle**.
Passing direction	You can select from **South to North**, **West to East**, **North to South** and **East to West**. The default is **South to North**.
Statistical Cycle	Set the statistical cycle for collecting traffic data. The traffic data includes traffic flow, average speed (km/h), time occupancy rate (%), space occupation rate (%), space headway (m), time headway (s), queue length (m), passing status and more.

Step 6 Configure parameters in **Other Config** area.

Table 8-2 Description of other configuration parameters

Parameter	Description
Non-motor Vehicle Snapshot	After enabling, the Camera can capture the non-motor vehicles.
Unlicensed Vehicle Snapshot	After enabling, when the license plate is not recognized or the vehicle has no license plate, it will be captured and reported as an unlicensed vehicle.

Parameter	Description
Target Plate Size	Set the pixel size of the target license plate.
Plate Matching Ratio	Set the matching ratio of two captured tight shot of the license plate. It is 100 by default.

Step 7 Click **Apply**.

8.2.2 Configuring Area Event

Set the illegal parking detection rules for different regions.

Prerequisites

The detection area is drawn in **Scene Setting**.

Procedure

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Violation Snapshot**, and then click **Area Event** tab.

Step 4 Select the detection area from the **Area** drop-down list.

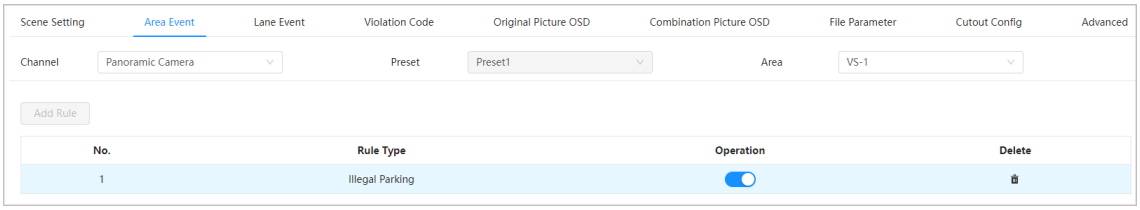
Only one detection rule can be added to an area where a preset point is specified for a channel.

Step 5 Click **Add Rule**, and then select the rule type.

The supported rule types include **Illegal Parking**, **Illegal Parking B**, **Illegal Parking C**, and **Illegal Parking D**.

The added rules are displayed in the drop-down list. The rule is enabled by default.

Figure 8-9 Area event



Step 6 Configure rule parameters for area events.

The parameters might vary depending on different rule types.

Figure 8-10 Configure area event

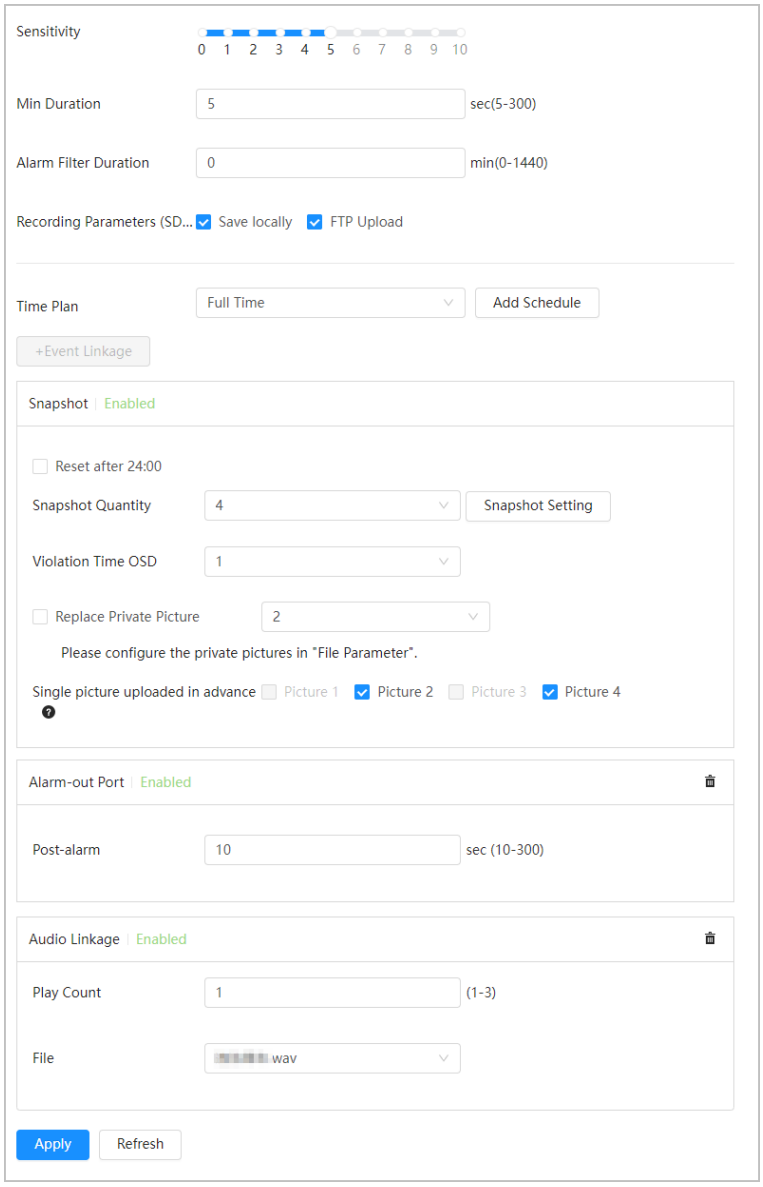


Table 8-3 Description of rule configuration parameters (area event)

Parameter	Description
Sensitivity	Set the sensitivity of the area illegal parking snapshot or accident snapshot.
Min Duration	When the illegal parking is detected to exceed the minimum duration, the illegal parking is judged to have triggered.
Alarm Filter Duration	Set the uploading interval of the snapshot of the same vehicle. When the same alarm is triggered for several times within the set time, the system uploads only one alarm event. It is 1440 minutes (1 day) by default.
FTP Upload Save locally	Select the storage location of the videos. You can select Local Save or FTP Upload. Only when an SD card has been formatted and installed on the device can the video be saved locally.

Parameter	Description
Reset after 24:00	Select the checkbox, and then the uploading interval of the composite picture will be cleared at 0 o'clock every day.
Snapshot Quantity	Set the number of the snapshot; the value ranges from 2 to 6. Set the number of snapshots. Click **Snapshot Setting** to set the Camera capture distant view, medium view, close view or plate future, and the snapshot interval between two pictures.
Violation Time OSD	Set on which snapshot you want to overlay the illegal time. The value ranges from 1 to 4.
Replace Private Picture	Select the check box, select the picture number in the list, and then the picture with the number will be replaced by the picture uploaded by the user.
Single picture uploaded in advance	Select the picture number, and the picture can be uploaded to the platform in advance.
Post-alarm	When the alarm event is detected and links alarm output, you can set the Post-alarm time, and then the system keeps the alarm going for the set period after the alarm event.
Play Count	Set the number of times the alarm audio is played.
File	Select the alarm audio file.

Step 7 Set arming periods and alarm linkage action.

- If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".
- Click **Event Linkage**, add linkage actions, and then set linkage parameters. For details, see "4.6.1.2 Alarm Linkage".

Step 8 Click **Apply**.

If you need to view alarm information on the upper-right corner of the page through clicking  , you need to subscribe relevant alarm event. For details, see "4.6.1.3.2 Subscribing Alarm Information".

8.2.3 Configuring Lane Event

Set the illegal parking detection rules for different regions.

Prerequisites

The lanes are drawn in **Scene Setting**.

Procedure

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

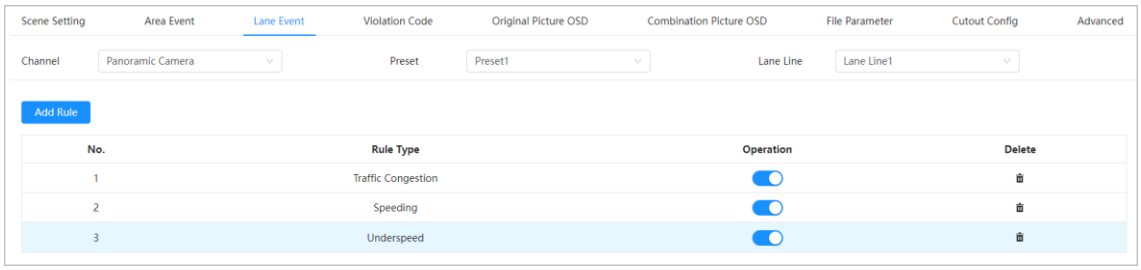
Step 3 Click **Violation Snapshot**, and then click **Lane Event** tab.

Step 4 Select the channel, preset and lane line from the drop-down list.

Step 5 Click **Add Rule**, and then select the rule type.

You can add traffic congestion, illegal lane change and other 14 rules. The added rules are displayed in the drop-down list. The rule is enabled by default.

Figure 8-11 Lane event



Step 6 Configure rule parameters for lane events.

The parameters might vary depending on different rule types.

Figure 8-12 Lane event (underspeed)

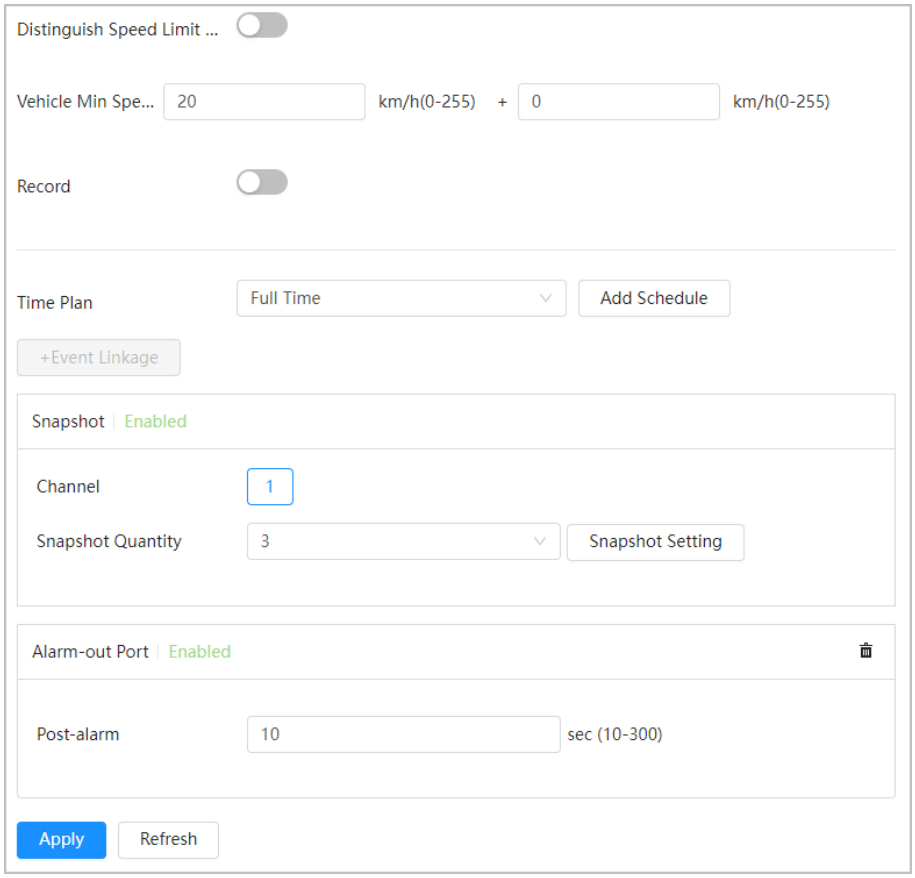


Figure 8-13 Lane event (no truck parking)

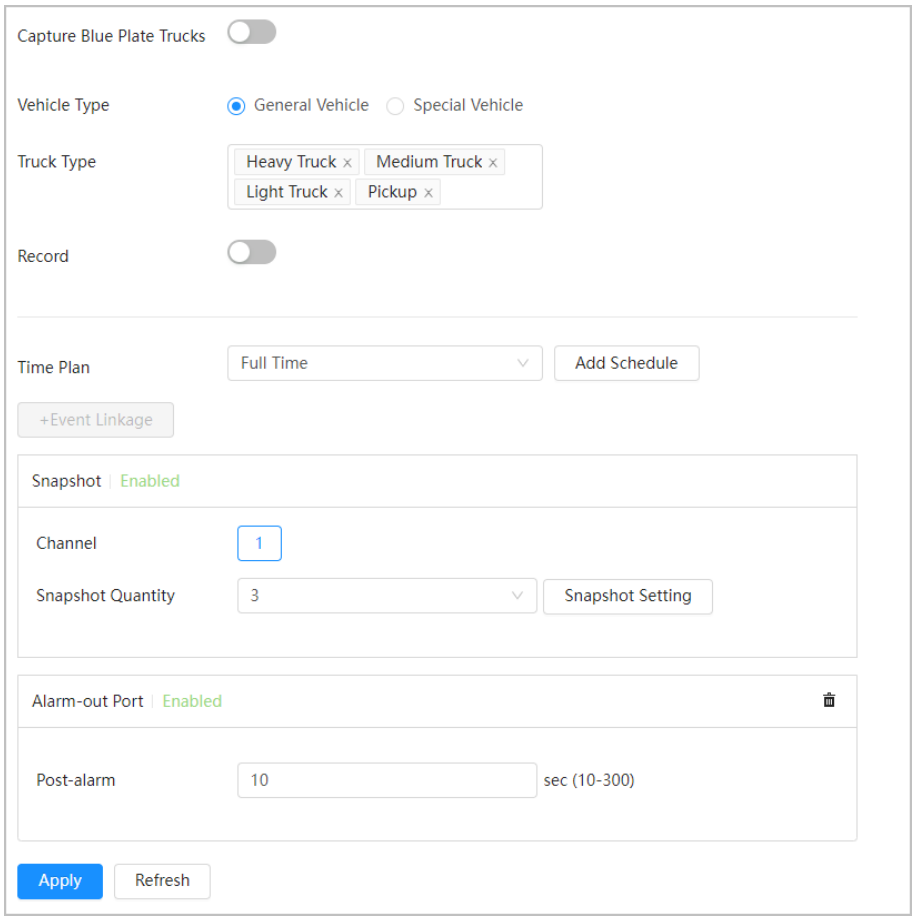


Figure 8-14 Lane event (speeding)

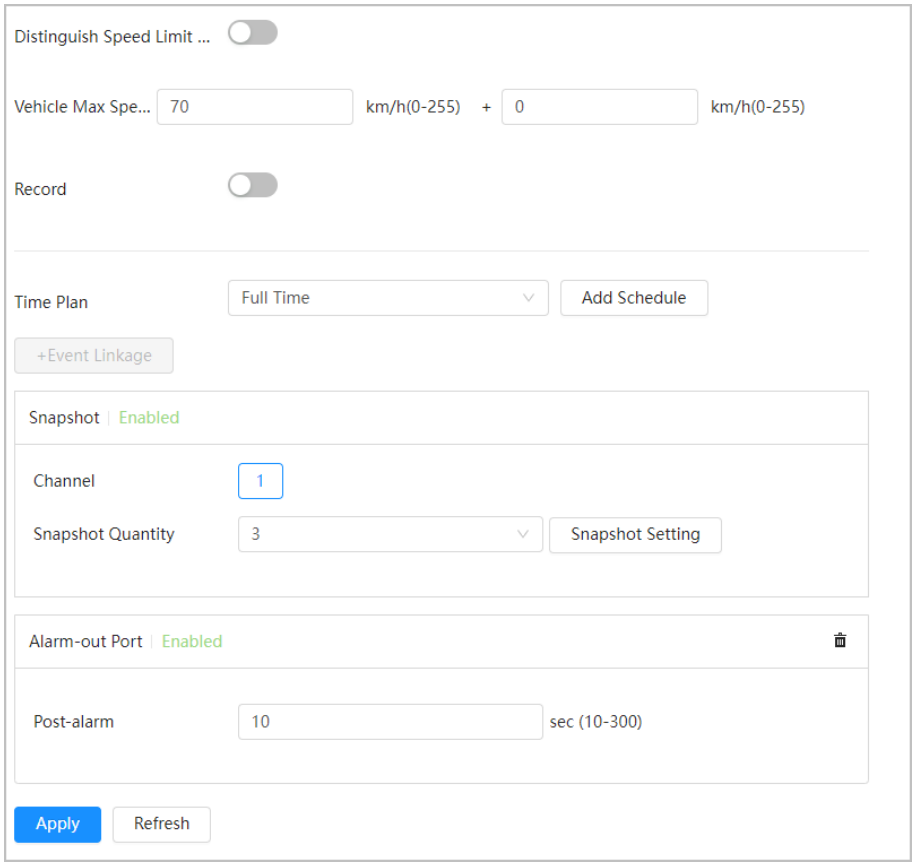


Figure 8-15 Lane event (traffic congestion)

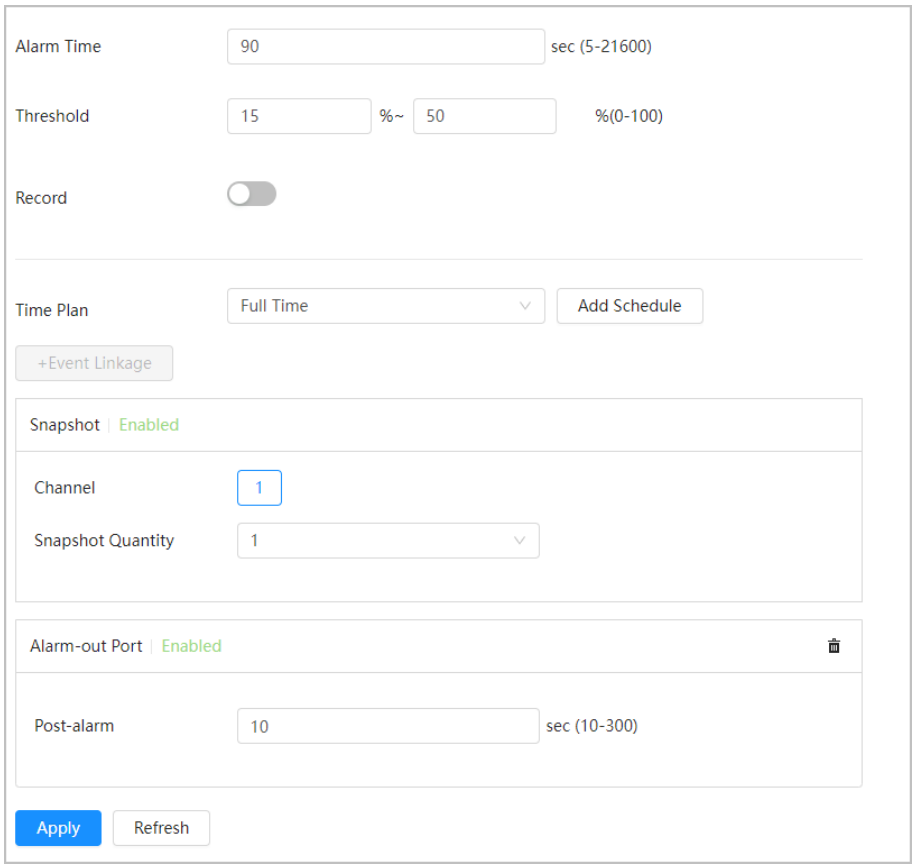


Table 8-4 Description of rule configuration parameters (lane event)

Rule Type	Parameter	Description
Underspeed	Distinguish Speed Limit Between Large and Small Vehicle	After enabling, you need to set the lowest speed limit of small-sized vehicle and large-sized vehicle. • **Small-sized Vehicle Lowest Speed Limit**: Set the lowest speed of small-size vehicles. • **Large-sized Vehicle Lowest Speed Limit**: Set the lowest speed of large-size vehicles.
	Vehicle Min Speed Limit	Set the minimum speed limit for the vehicle.
Speeding	Distinguish Speed Limit Between Large and Small Vehicle	After enabling, you need to set the highest speed limit of small-sized vehicle and large-sized vehicle. • **Small-sized Vehicle Highest Speed Limit**: Set the maximum speed limit for small-sized vehicle. • **Large-sized Vehicle Highest Speed Limit**: Set the maximum speed limit for large-sized vehicle.
	Vehicle Max Speed Limit	Set the maximum speed limit for the vehicle.
No Truck Parking	Capture Blue Plate Trucks	Enable capturing blue plate trucks function.
	Vehicle type	You can select from General Vehicle and Special Vehicle.

Rule Type	Parameter	Description
	Truck Type	Select one or more truck types to be queried. • When you select **General Vehicle** as the **Vehicle Type**, you can select **Heavy Truck**, **Medium Truck**, **Light Truck** and **Pickup** as the **Truck Type**. • When you select **Special Vehicle** as the **Vehicle Type**, you can select **Dangerous Goods Vehicle**, **Tank Truck**, **Construction Truck**, **Mixer Truck**, **Engineering Truck**, **Powder Material Truck** and **Sewage Suction Truck** as the **Truck Type**.
Traffic Congestion	Alarm Time	Set the duration for traffic congestion to trigger the alarm. When the traffic congestion time exceeds this value, the alarm will be triggered.
	Threshold	Set the ratio of traffic congestion to the total length of the drawn lanes. If the upper limit of the range is exceeded, the alarm will be triggered. When the congestion team drops to the lower limit of the set threshold, the alarm will be cancelled.
Other rules (except underspeed, speeding, no truck parking and traffic congestion)	Sensitivity	Set the sensitivity of lane event snapshot.
	Record	Enable the local recording function.

Step 7 Configure snapshot parameters.

- Channel: The default snapshot channel is 1.
- **Snapshot Quantity**: Set the number of snapshots. You can set up to 4 snapshots. The number of snapshots might vary depending on different rules.
- Click **Snapshot Setting**, and then set the **Cutout Proportion**.

Step 8 Set arming periods and alarm linkage action.

- If the exiting schedules cannot meet the scene requirement, you can click **Add Schedule** to add a new schedule. For details, see "4.6.1.2.1 Adding schedule".
- Click **Event Linkage** to add linkage actions, and then set linkage parameters. For details, see "4.6.1.2 Alarm Linkage".

Step 9 Click **Apply**.

If you need to view alarm information on the upper-right corner of the page through clicking  , you need to subscribe relevant alarm event. For details, see "4.6.1.3.2 Subscribing Alarm Information".

8.2.4 Configuring Violation Code

You can set the violation name and violation code of violation snapshot, and you can overlay the violation information on the combination picture.

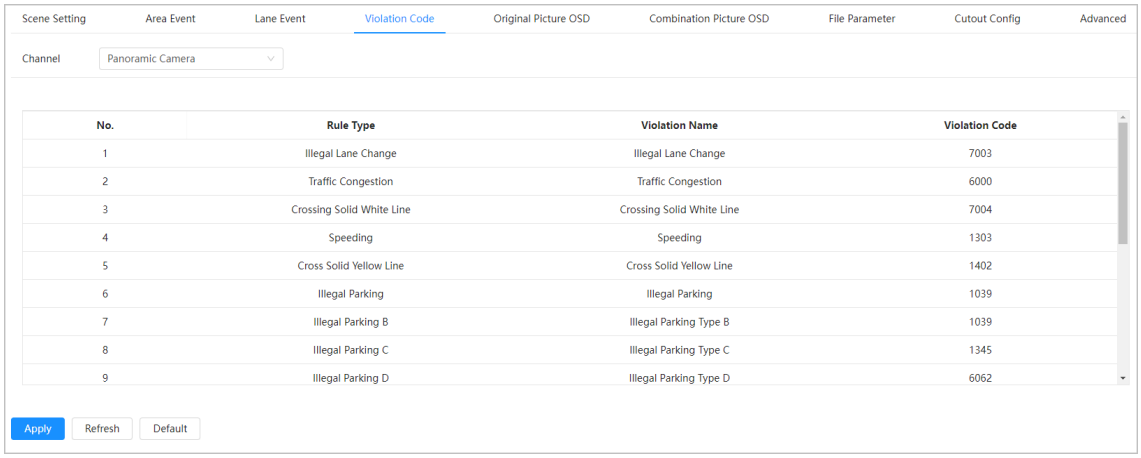
Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Violation Snapshot**, and then click **Lane Event** tab to view the existing violation codes for area events and lane events.

Step 4 Click **Violation Name** and **Violation Code** to modify the name and code.

Figure 8-16 Violation code



Step 5 Click **Apply**.

8.2.5 Configuring Original Picture OSD

You can set the content and style of the OSD information on the original snapshot.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

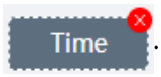
Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Original Picture OSD** tab, and then select the rule type from the left side of the page.

Step 4 Click **Recommend Overlay** or **OSD Option** to select overlay information.

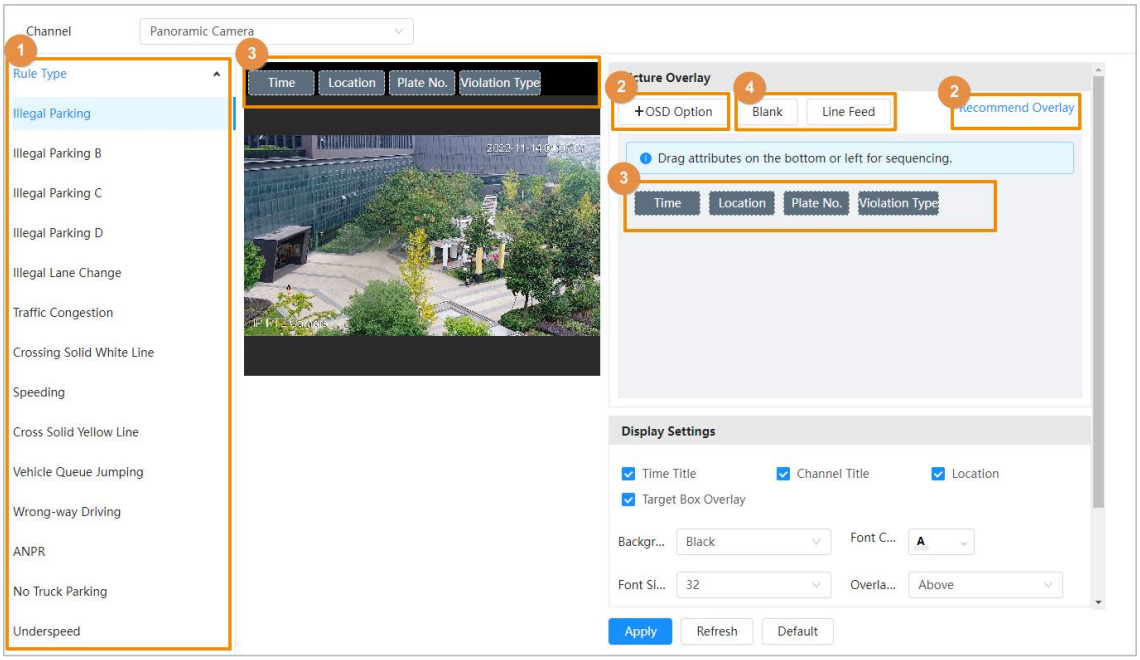
Recommended Overlay indicates a combination of common OSD options is generated automatically.

Step 5 Drag attributes above the live view screen or in the picture overlay area to adjust the sequence.

- Point to the attribute, and then a red × appears in the upper right corner of the attribute, for example 

. Click × to delete the attribute.
- Click the attribute, and then you can configure the prefix, suffix and delimiter quantity of the attribute.

Figure 8-17 Original picture OSD



Step 6 Click **Blank** or **Line Feed** to add a blank or line between different attributes to separate OSD information.

Step 7 Configure the parameters in **Display Settings** and **Picture Parameter**.

The parameters might vary depending on different rule types.

Figure 8-18 Display settings and picture parameters

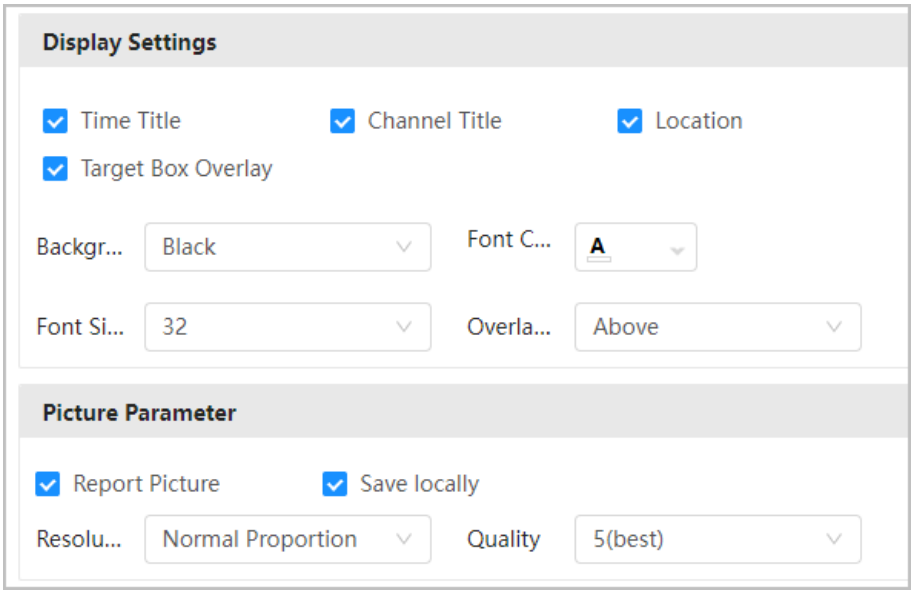


Table 8-5 Description of original picture OSD parameters

Parameter	Description
Time Title	Select to display the time title on the OSD information.
Channel Title	Select to display the channel title on the OSD information.
Location	Select to display the location on the OSD information.
Target Box Overlay	Select to enable the target box overlay function on the OSD information.

Parameter	Description
Background Color	Set the background color of the OSD information.
Font Color	Set the font color of the OSD information.
Font Size	Set the font size of the OSD information.
Overlay Position	Select the overlay position of the OSD information from **Above**, **Below** or **None**. When you select **None**, the **OSD Location** is displayed on the page, and you can select from **Top Left**, **Top Right**, **Bottom Left** and **Bottom Right**.
OSD Location	
Report Picture	Select to save the pictures to local computer or uploaded to the platform.
Save locally	
Resolution	Set the resolution of pictures. You can select **Normal Proportion**, **1/4 Size** or **1/9 Size**.
Quality	Set the picture quality. The larger the value, the better the picture quality.

Step 8 Click **Apply**.

8.2.6 Configuring Combination Picture OSD

You can set the content and style of the OSD information on combination pictures.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Combination Picture OSD** tab, and then select the rule type from the left side of the page.

Step 4 Click **Recommend Overlay** or **OSD Option** to select overlay information.

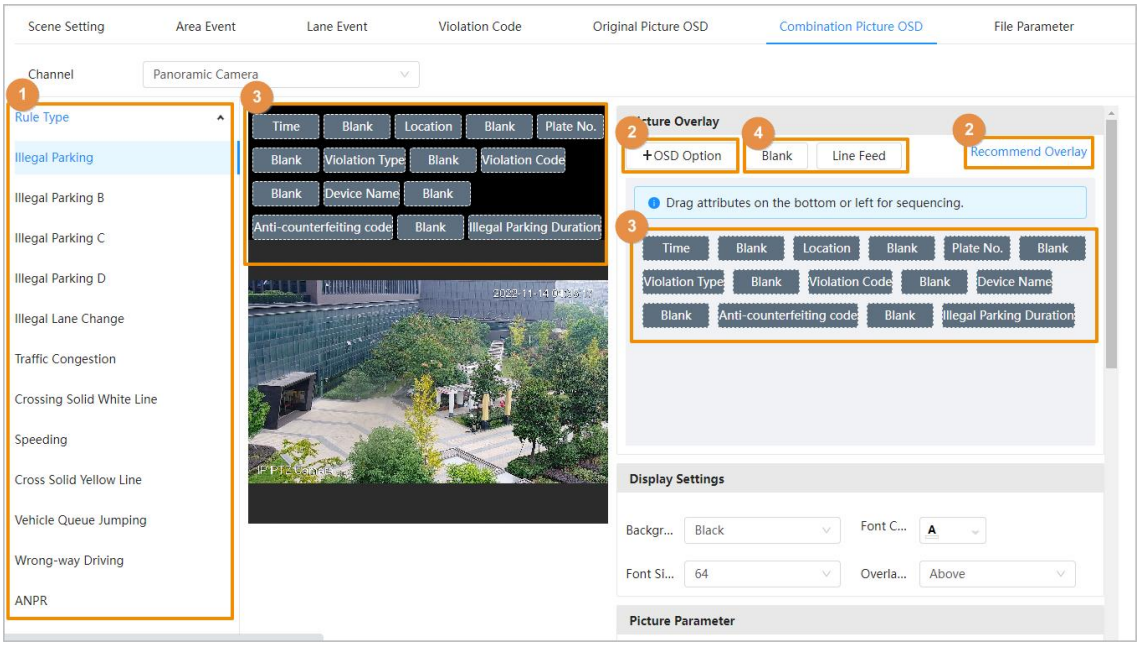
Recommended Overlay indicates a combination of common OSD options is generated automatically.

Step 5 Drag attributes above the live view screen or in the picture overlay area to adjust the sequence.

- Point to the attribute, and then a red × appears in the upper right corner of the attribute, for example 

. Click × to delete the attribute.
- Click the attribute, and then you can configure the prefix, suffix and delimiter quantity of the attribute.

Figure 8-19 Combination picture OSD



Step 6 Click **Blank** or **Line Feed** to add a blank or line between different attributes to separate OSD information.

Step 7 Configure the parameters in **Display Settings**, **Picture Parameter** and **Composite Picture Order**.

Table 8-6 Description of combination picture OSD parameters

Parameter	Description
Background Color	Set the background color of the OSD information.
Font Color	Set the font color of the OSD information.
Font Size	Set the font size of the OSD information.
Overlay Position	Select the overlay position from **Above** and **Below**.
Report Picture Save locally	Select to save the pictures to local computer or uploaded to the platform.
Resolution	Set the resolution of pictures. You can select **Normal Proportion**, **1/4 Size** or **1/9 Size**.
Quality	Set the picture quality. The larger the value, the better the picture quality.
Composite Picture Order	Select the splicing way of composite picture.

Step 8 Click **Apply**.

8.2.7 Configuring File Parameter

You can add local pictures to replace pictures of the illegal events. and set the picture used to replace a picture of a composite image of one scene.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

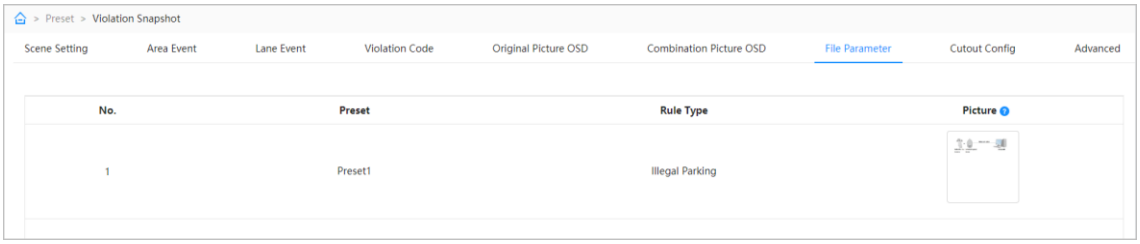
Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **File Parameter** tab, and then click **Upload Picture**. Select a picture from local

computer, and then click **Open**.

- The images are not limited to resolution, but the size of the image cannot exceed 4 M. The format is .jpg, and the color is 256 colors.
- Point to the image, click to enlarge the picture or click to delete the picture.

Figure 8-20 File parameters



8.2.8 Configuring Cutout

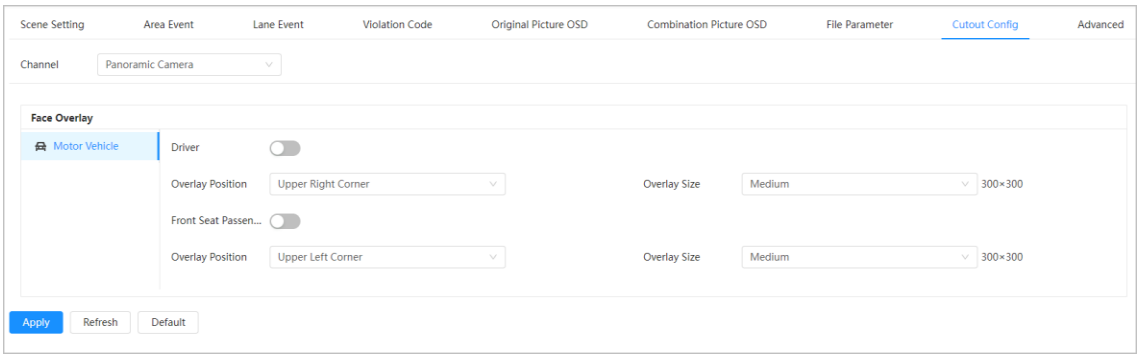
Configure picture cutout to overlay face information on the original image.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Cutouts Config** tab.

Figure 8-21 Cutout configuration



Step 4 Configure Face Overlay parameters.

- Driver: Click to enable driver cutout function.
- Front Seat Passenger: Click to enable front seat passenger cutout function.
- Overlay Position: Set the overlay position of the cutout.
- Overlay Size: Set the overlay size of the cutout.

Step 5 Click **Apply**.

8.2.9 Advanced configuration

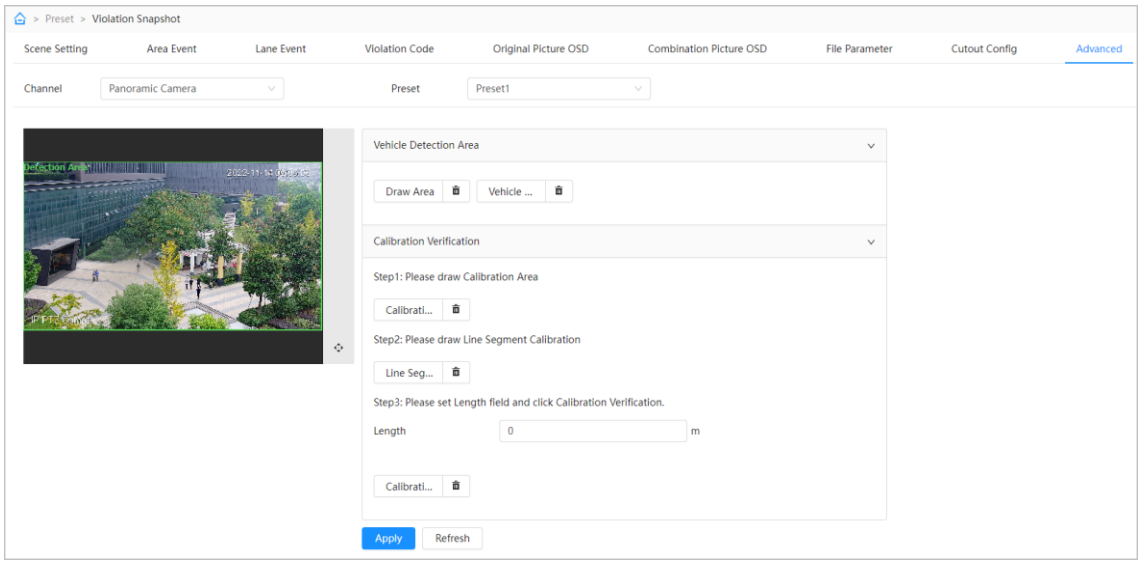
Configure advanced parameters for speed measurement.

Step 1 On the webpage, select **AI** > **AI Config** > **Smart Plan**.

Step 2 Select the added plan that has been enabled, and then click **Rule Config**.

Step 3 Click **Advanced** tab, and then select channel and preset from the drop-down list.

Figure 8-22 Advanced configuration



Step 4 Draw the vehicle detection area.

- Click **Draw Area** to draw the detection area; click **Vehicle Area** to draw the vehicle detection area.
- Click to delete the drawn area.

Step 5 Configure calibration verification.

1) Click **Calibration Area** to the draw the calibration area.
2) Click **Line Segment Calibration** to the draw the line segment calibration.
3) Configure the length.
4) Click **Calibration Verification**.

Step 6 Click **Apply**.

8.3 Panoramic Linkage

After the calibration of the panoramic camera and the detail camera, the panoramic camera can be used as the main camera to view panoramic images. and the detail camera can be used as a subordinate camera from to view detailed images.

Calibration types include manual calibration and automatic calibration.

- Manual calibration: Select the same point for calibration in the panoramic camera channel and the detail camera channel. When there are multiple obvious static marks in the monitoring environment, the calibration can be completed accurately with the help of the marks. If the user has special requirements for the calibration results, manual calibration can be applied.
- Auto calibration: The camera selects the calibration point in the monitoring picture through the algorithm, which has high calibration speed and accuracy. Auto calibration can be applied when the user has no special requirements for calibration results.

8.3.1 Manual Calibration

Step 1 Click **AI** > **anoramic Linkage**.

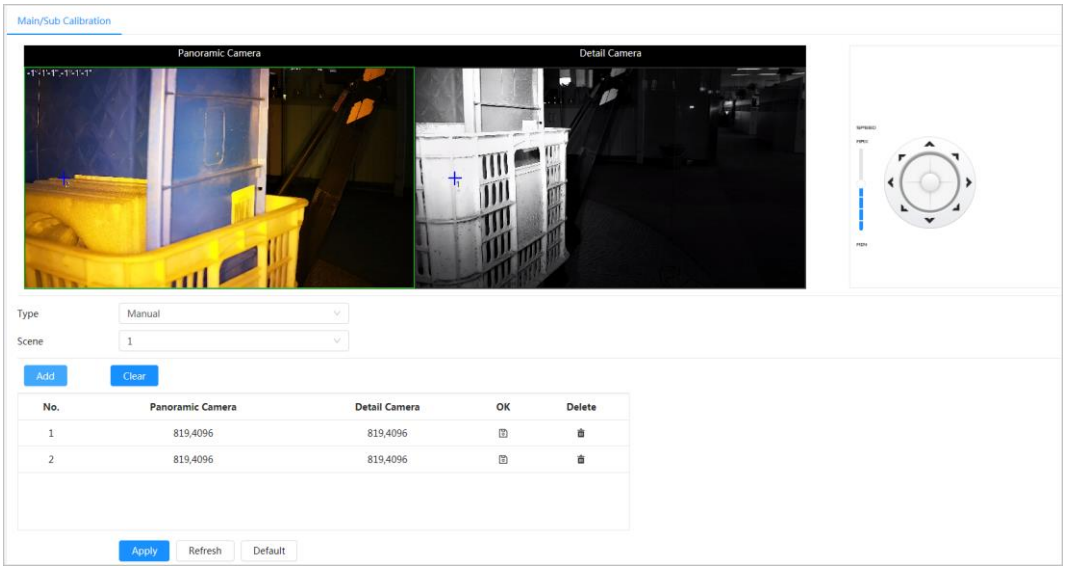
Step 2 Select **Manual** from the type drop-down list.

Step 3 Select the calibration scene in turn, and then adjust the PTZ of the detail camera to the appropriate calibration position to calibrate the panoramic camera and the detail camera. At least 4 pairs of calibration dots are needed to ensure the views of the detail camera and the panoramic camera as similar as possible, up to 10 groups, and 6 groups are recommended.

1) Click **Add**.
2) Move the point in the panoramic camera channel on the left and the detail camera channel on the right of the monitoring picture respectively, and the two points in the two channels serve as a group of calibration.
3) Click .

- It is recommended to calibrate from far to near, clockwise or counterclockwise, and the calibration points are evenly distributed.
- The calibration point is a corner point with obvious position characteristics, such as a clear point on an object or a boundary crossing point.

Figure 8-23 Main/sub calibration



Step 4 Click **Apply**.

8.3.2 Auto Calibration

Step 1 Click **AI** > **Panoramic Linkage**.

Step 2 Select **Auto** from the type drop-down list.

Step 3 Click **Start Calibration**.

Wait for the calibration progress to complete.

If you are not satisfied with the calibration results, you can carry out auto calibration again.

Step 4 Click **Apply**.

8.4 Configuring tour plan

You can configure the tour mode and time plan for different time periods.

Step 1 Select **AI** > **Tour Plan**.

Step 2 Select **Enable** to enable tour plan function.

Step 3 Select Tour mode and Idle Interval.

The tour plan is disabled by default. If two or more plans are configured, you need to enable the tour plan.

- Tour mode: It only supports **Scene Priority** at present. The Device tours according to the set duration of the scene.
- Idle Interval: The time between the user manually operate the Device and the Device automatically rotates to the smart plan scene.

Step 4 Configure tour plan.

1) Set the start time and end time of the tour.
2) Select time period, and then click **Setting** to configure multi-scenario tour.

Figure 8-24 Multi-scenario tour

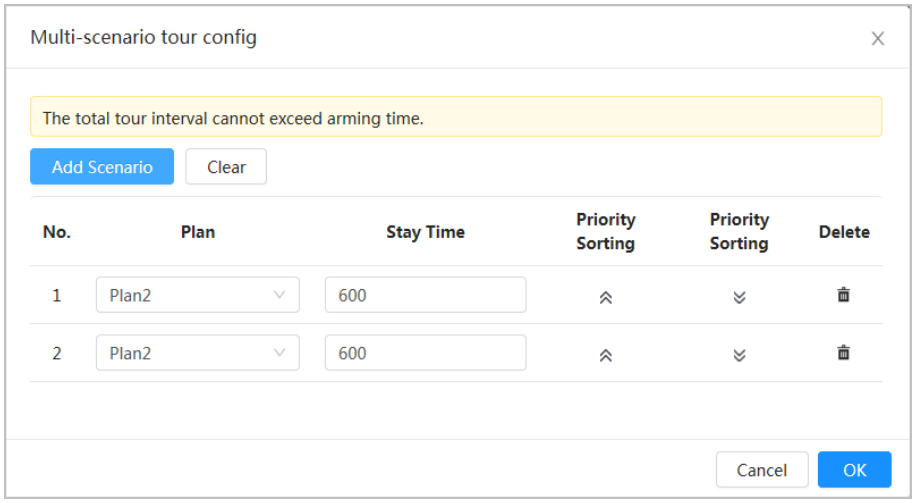


Table 8-7 Description of multi-scenario tour parameters

Parameter	Description
Stay Time	Set the time that the Device stays in the scene. Double-click stay time to modify the time.
Priority Sorting	Set the priority of multiple scenes. Click ⌃⌃ or ⌄⌄ to adjust the order.
Delete	Click 🗑 to delete the scene.
Add Scenario	Click **Add Scenario** to add a new tour scene.

3) Click **OK** to complete the configuration of multi-scenario tour.

Step 5 (Optional) Click **Copy** to copy the configuration to the selected date.

Step 6 Click **OK**.

9 Report

9.1 Traffic Data Report

Step 1 Select **Report** > **Report** > **Traffic Data**.

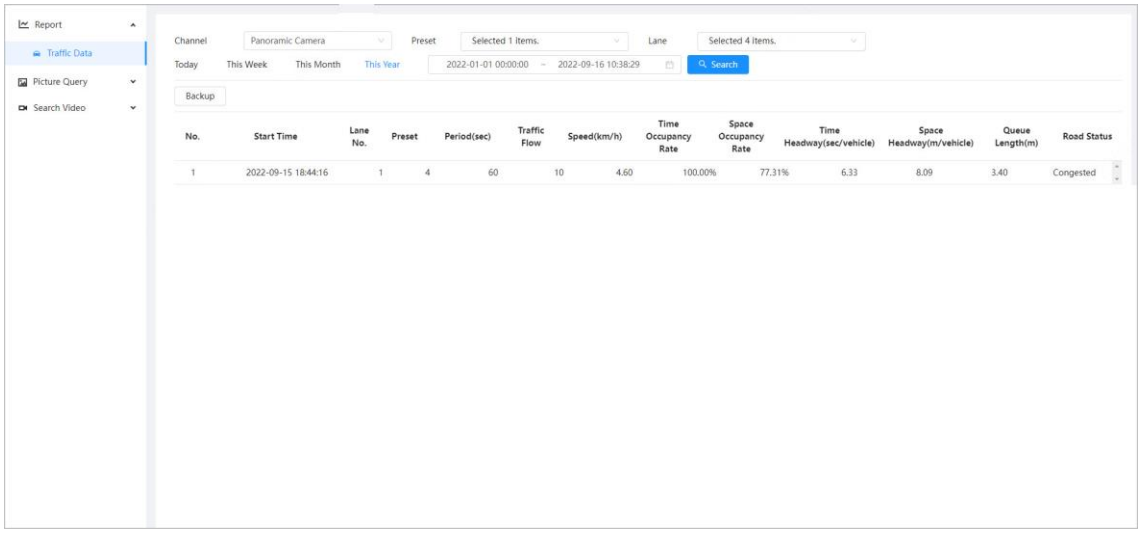
Step 2 Select the channel, preset and lane.

You can select multiple presets and lanes at a time.

Step 3 Set the query time, click **Search**, and then the traffic data such as lane number, preset number, period and more are displayed on the page.

Click a report to view the details of the vehicle.

Figure 9-1 Traffic data report



Step 4 Click **Backup** to backup the report to the computer.

9.2 Picture Query

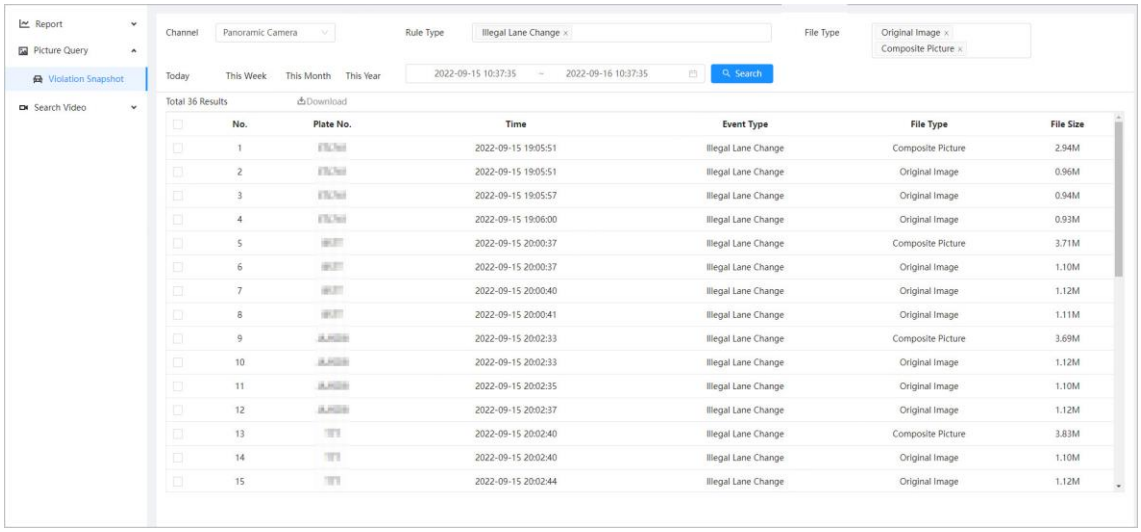
Step 1 Select **Report** > **Report** > **Picture Query** > **Violation Snapshot**.

Step 2 Select the channel, rule type and file type.

You can select multiple rule types and file types at a time.

Step 3 Set the query time, and then click **Search**.

Figure 9-2 Picture query



Step 4 Click **Download** to download the picture to the computer.

9.3 Video Query

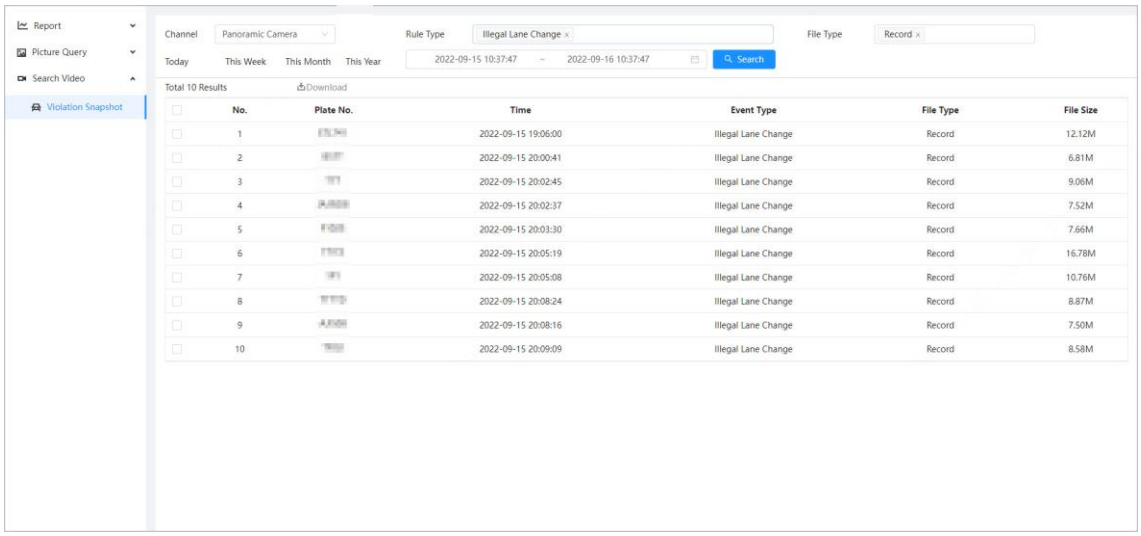
Step 1 Select **Report** > **Report** > **Search Video** > **Violation Snapshot**.

Step 2 Select the channel, rule type and file type.

You can select multiple rule types and file types at a time.

Step 3 Set the query time, and then click **Search**.

Figure 9-3 Video query



Step 4 Click **Download** to download the picture to the computer.

10 Security

10.1 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.

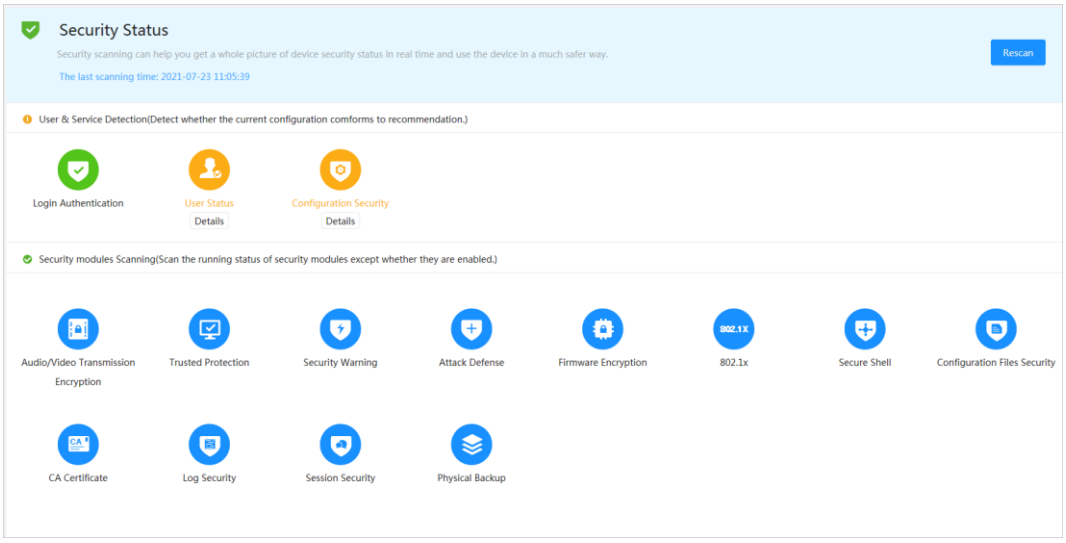
Procedure

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

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

During the scanning, the icon is grey. When the icon turns blue, the scanning is complete.

Figure 10-1 Security status

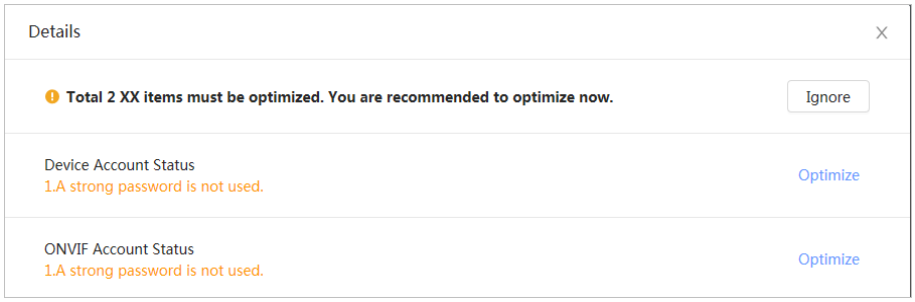


Related Operations

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 interface is displayed, and you can edit the configuration to clear the exception.

Figure 10-2 Security status



10.2 System Service

Service functions can be used only after system services are enabled.

10.2.1 802.1x

Cameras can connect to LAN after passing 802.1x authentication.

Step 1 Select **Security** > **System Service** > **802.1x** on the home page.

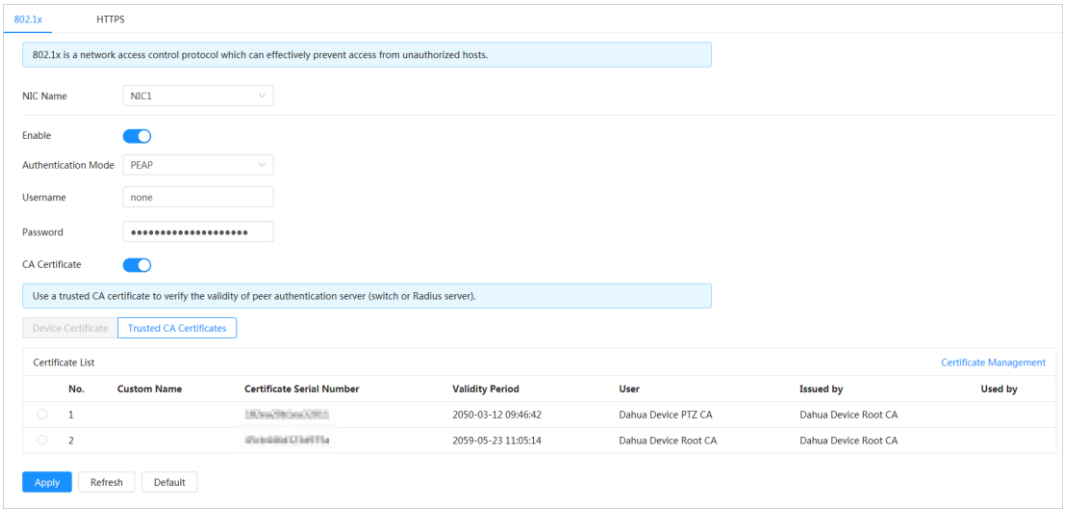
Step 2 Select the NIC name as needed, and then click to enable it.

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. (Optional) Click next to CA certificate, and then select the trusted CA certificate in list.

     If there is no certificate in the list, click **Certificate Management** on the left navigation bar. For details, see "10.4.2 Installing Trusted CA Certificate".

Figure 10-3 802.1x (PEAP)



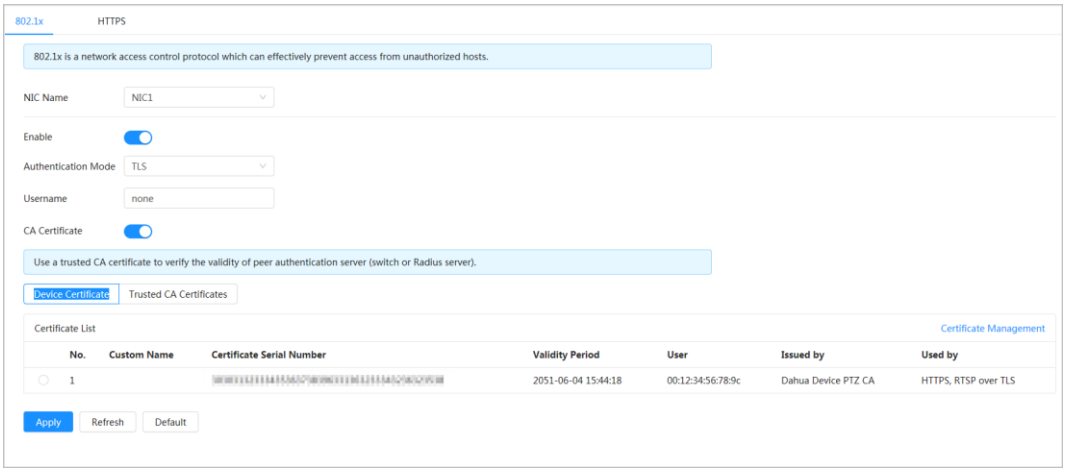
- TLS: Transport Layer Security. It is applied in two communication application programs to guarantee the security and integrity of the data.
  1. Select TLS as the authentication mode.

2. Enter the username.
3. Select the certificate from the certificate list on the **Device Certificate** page.

   If there is no certificate in the list, click **Certificate Management** on the left navigation bar. For details, see "10.4.1 Installing Device Certificate".
4. (Optional) Click next to CA certificate, and then select the trusted CA certificate in list.

   If there is no certificate in the list, click **Certificate Management** on the left navigation bar. For details, see "10.4.2 Installing Trusted CA Certificate".

5. Figure 10-4 802.1x (TLS)



Step 4 Click **Apply**.

10.2.2 HTTPS

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

After HTTPS is enabled, TLSv1.1 and earlier versions are supported by default. However, earlier version of TLS may have security risks. Please select carefully.

Procedure

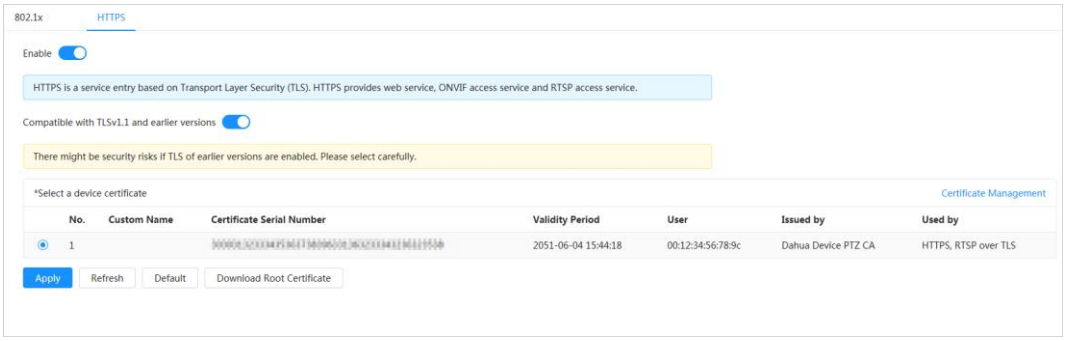
Step 1 Select **Security** > **System Service** > **HTTPS** on the home page.

Step 2 Click to enable the HTTPS function.

Step 3 Select the certificate.

If there is no certificate in the list, click **Certificate Management** on the left navigation bar. For details, see "10.4.2 Installing Trusted CA Certificate".

Figure 10-5 HTTPS



Step 4 Click **Apply**.

10.3 Attack Defense

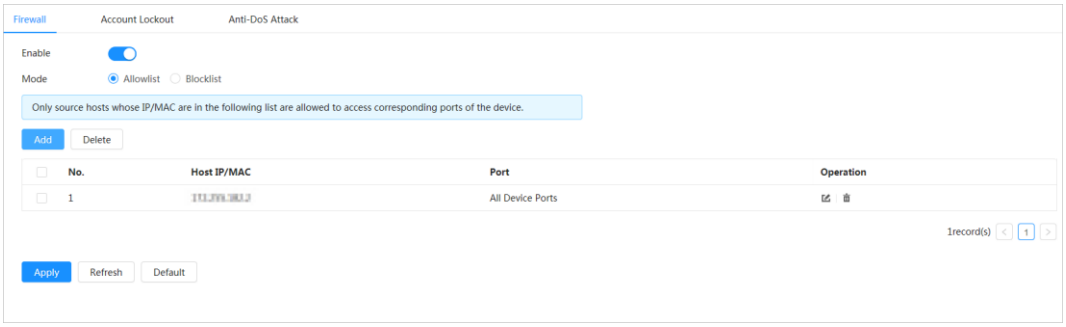
10.3.1 Firewall

Configure firewall to limit access to the camera.

Step 1 Select **Security** > **Attack Defense** > **Firewall** on the home page.

Step 2 Click to enable the firewall function.

Figure 10-6 Firewall

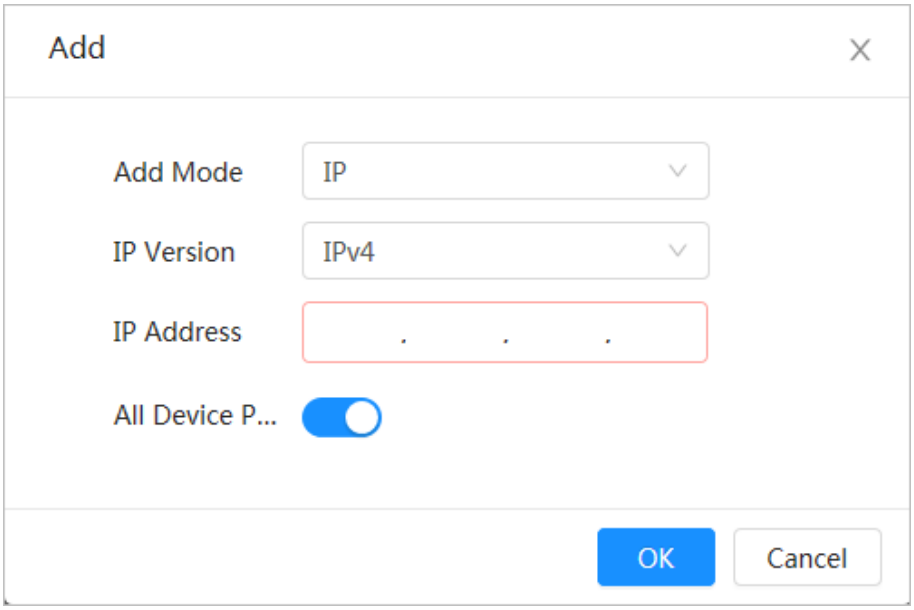


Step 3 Select the mode: **Allowlist** and **Blocklist**.

- **Allowlist**: Only when the IP/MAC of your computer is in the allowlist, can you access the camera. Ports are the same.
- **Blocklist**: When the IP/MAC of your computer is in the blocklist, 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 10-7 Firewall



Step 5 Click **Apply**.

Related Operations

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

10.3.2 Account Lockout

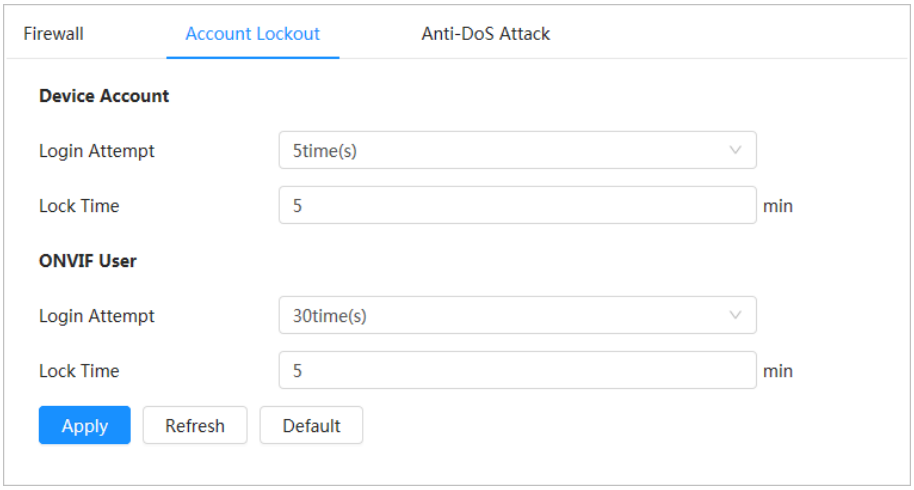
If you consecutively enter a wrong password more than the configured value, the account will be locked.

Step 1 Select **Security** > **Attack Defense** > **Account Lockout** on the home page.

Step 2 Configure the login attempt and lock time for the 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 10-8 Account lockout



Step 3 Click **Apply**.

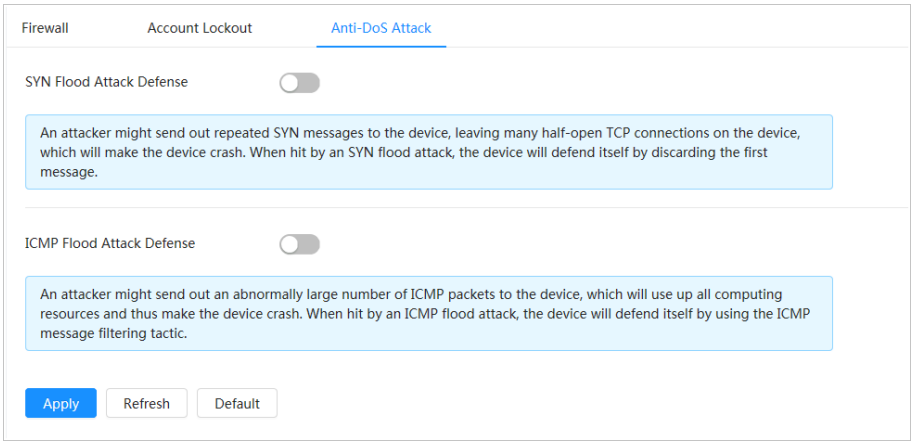
10.3.3 Anti-DoS Attack

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** on the home page.

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

Figure 10-9 Anti-DoS attack



10.4 CA Certificate

10.4.1 Installing Device Certificate

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

10.4.1.1 Creating Certificate

Creating certificate in the device.

Procedure

Step 1 Select **Security** > **CA Certificate** > **Device Certificate** on the home page.

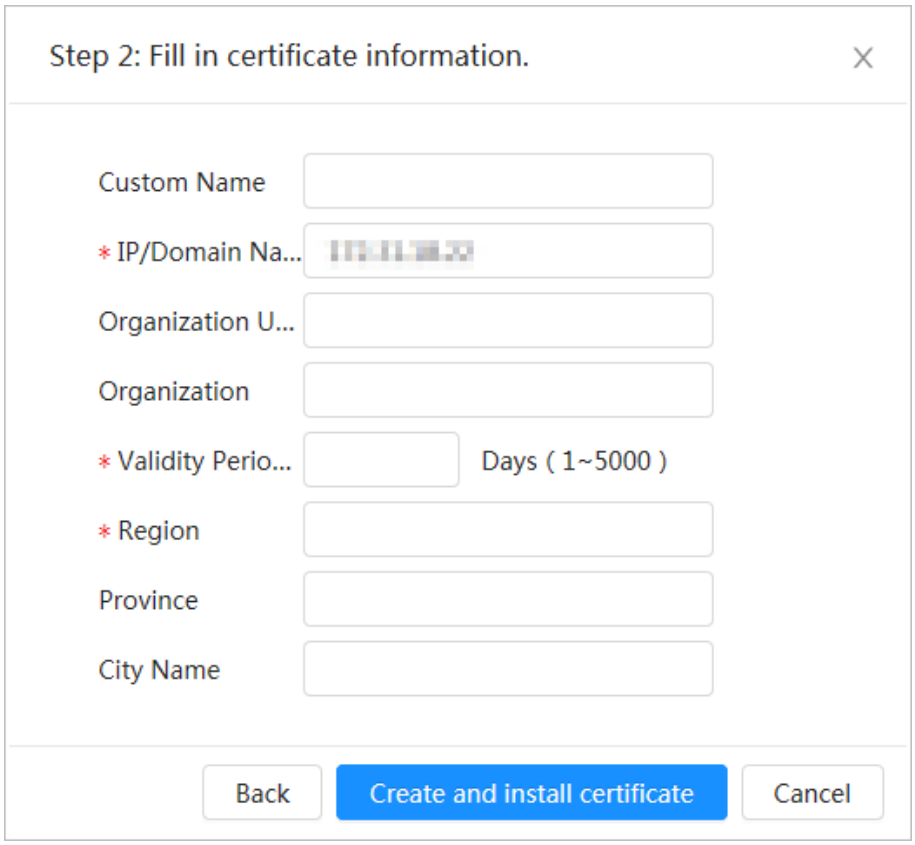
Step 2 Select **Install Device Certificate**.

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

Step 4 Enter the certificate information.

IP/Domain Name fills in the IP or domain name of the device.

Figure 10-10 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.

10.4.1.2 Applying for and Importing CA Certificate

Import the third-party CA certificate to the camera.

Procedure

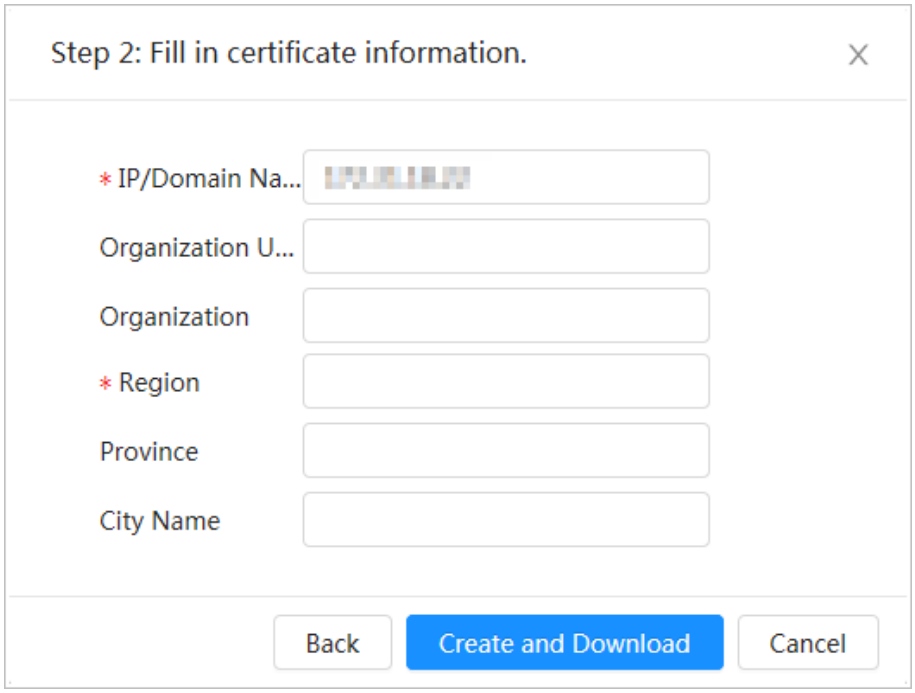
Step 1 Select **Security** > **CA Certificate** > **Device Certificate** on the home page.

Step 2 Select **Install Device Certificate**.

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

Step 4 Enter the certificate information.

Figure 10-11 Certificate information (2)



Step 5 Click **Create and Download** to save the request file to your computer.

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 computer.
2) Select **Install Device Certificate**, click **Apply for CA Certificate and Import (Recommended)**, and then click **Next**.
3) Click **Browse** to select the signed CA certificate.
4) 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** to edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

10.4.1.3 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.

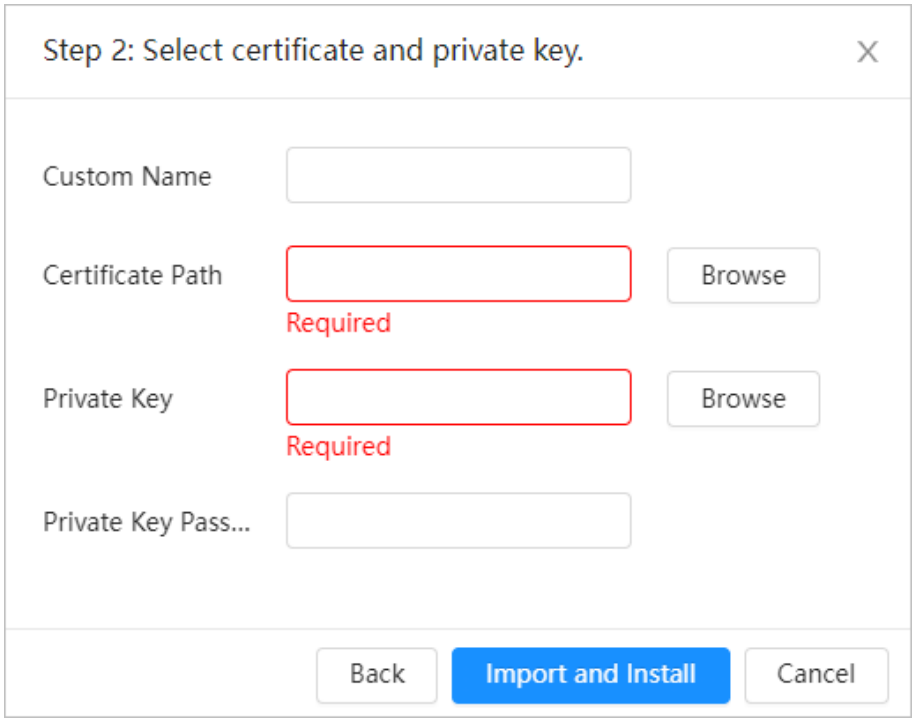
Step 1 Select **Security** > **CA Certificate** > **Device Certificate** on the home page.

Step 2 Select **Install Device Certificate**.

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

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

Figure 10-12 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** to edit the custom name of the certificate.
- Click to download the certificate.
- Click to delete the certificate.

10.4.2 Installing Trusted CA Certificate

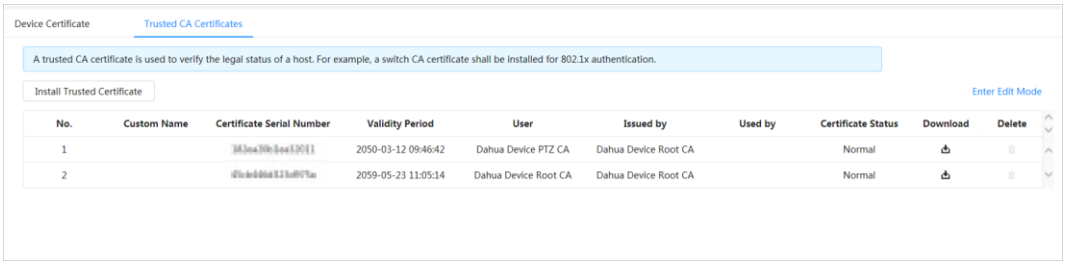
CA certificate is a digital certificate for the legal identity of the camera. For example, when the camera accesses the LAN through 802.1x, the CA certificate is required.

Step 1 Select **Security** > **CA Certificate** > **Trusted CA Certificates** on the home page.

Step 2 Select **Install Trusted Certificate**.

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

Figure 10-13 Installing trusted certificate



Step 4 Click **OK**.

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

Related Operations

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

10.5 A/V Encryption

The camera supports audio and video encryption during data transmission.

We recommend you enable A/V Encryption function. There might be safety risk if this function is disabled.

Step 1 Select **Security** > **A/V Encryption** on the home page.

Step 2 Configure the parameters.

Figure 10-14 A/V encryption

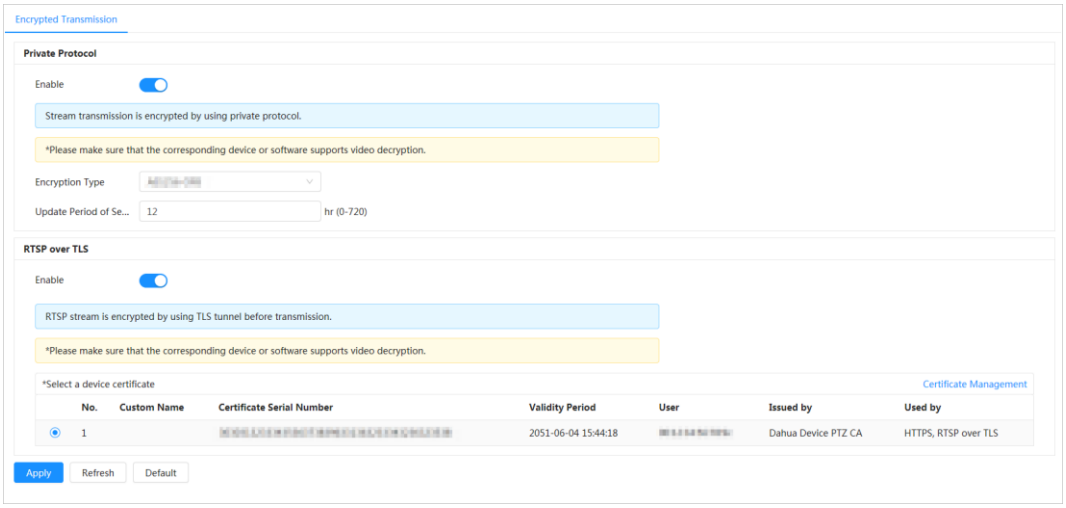


Table 10-1 A/V encryption parameter

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.

Area	Parameter	Description
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 on certificate management, see "10.4.1 Installing Device Certificate".

Step 3 Click **Apply**.

10.6 Security Warning

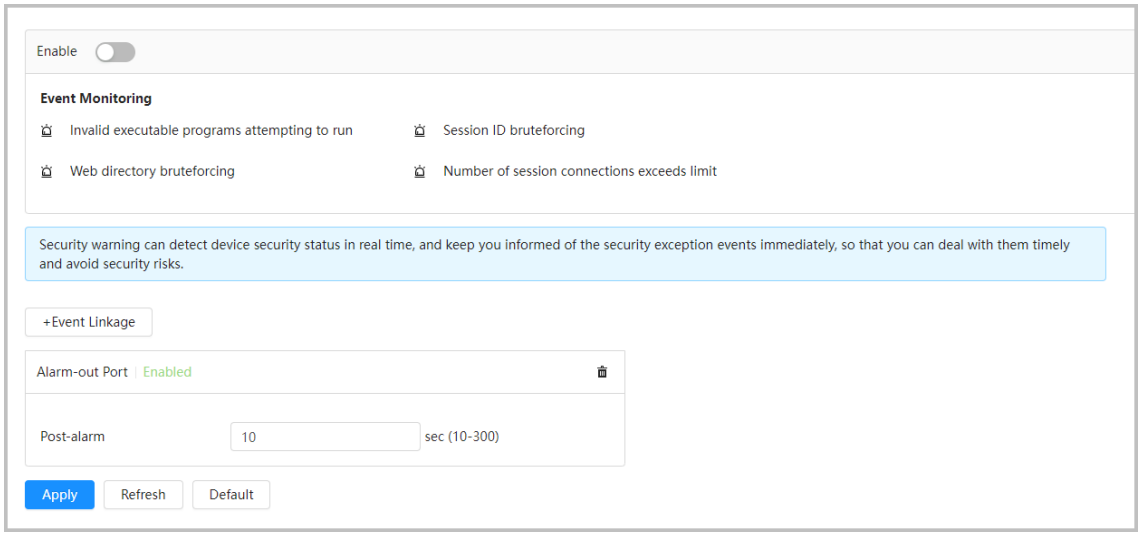
When security exception event is detected, the camera sends a warning to remind you to process it timely, to avoid security risk.

Step 1 Select **Security** > **Security Warning** on the home page.

Step 2 Click to enable security warning function.

Step 3 Configure the parameters.

Figure 10-15 Security warning



Step 4 Set arming periods and alarm linkage action. For details, see "4.6.1.2 Alarm Linkage".

Click **Event Linkage** to set the linkage action.

Step 5 Click **Apply**.

Appendix 1 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations from Dahua on how to create a more secured security system.

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.

More information

Please visit Dahua official website security emergency response center for security announcements and the latest security recommendations.

ENABLING A SAFER SOCIETY AND SMARTER LIVING

ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
Address: No. 1399, Binxing Road, Binjiang District, Hangzhou, P. R. China | Website: www.dahuasecurity.com | Postcode: 310053
Email: dhoverseas@dhvisiontech.com | Tel: +86-571-87688888 28933188